MAJOR WATER QUALITY IMPACT ASSESSMENT
FAIRFAX PRESBYTERIAN CHURCH
CITY OF FAIRFAX, VIRGINIA

TNT PROJECT NO.: 1708

FOR

HABITAT FOR HUMANITY OF WASHINGTON, D.C.
& NORTHERN VIRGINIA

JULY 20, 2022

ENVIRONMENTAL

July 20, 2022

Rev. John Smoot
Co-President and CEO
Habitat for Humanity of Washington, D.C. & Northern Virginia
6295 Edsall Road, Suite 120
Alexandria, VA 22312

TNT Project Number: 1708

Reference: Major Water Quality Impact Assessment (WQIA), Fairfax Presbyterian Church, City of Fairfax, Virginia
Latitude: 38° 50' 50" N, Longitude: -77° 19' 03" W

Dear Rev. Smoot:

TNT Environmental, Inc. (TNT) is pleased to present this Water Quality Impact Assessment (WQIA) report for the above-referenced project in general accordance with TNT Change Order Proposal Number 4094 dated June 13, 2022. The purpose of the WQIA is to ensure protection of the Resource Protection Areas consistent with the goals, objects, and requirements of the City of Fairfax Chesapeake Bay Preservation Ordinance §110-4.18.8.D, through (1) the identification of the impacts of proposed development or redevelopment on water quality on lands within resource protection and resource management areas, (2) the assurance that, where development does take place within these areas, that it will be located on those portions of a site and in a manner that is least disruptive to the natural functions of land; and (3) the specification of mitigation measures to address water quality protection.

TNT would like to thank you for the opportunity to provide you with this Water Quality Impact Assessment. It is in our opinion that the encroachment into the RPA should be granted as it meets the required findings listed in §110-4.18.8.D as detailed below. Further, the water quality benefits resulting from the proposed improvement will exceed the associated water quality detriments. We look forward to assisting you further with this project and other environmental concerns you may have. If you have any questions, please feel free to contact us at any time at (703) 466-5123.

Sincerely,

TNT ENVIRONMENTAL, INC.

Marjorie E. Mednikova
Environmental Scientist
Marjorie@TNTenv.com

Avi M. Sareen, PWD, ISA-CA
Principal/President
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PROJECT SITE DESCRIPTION

The project site consists of three (3) parcels of land situated on the southern side of Main Street in the City of Fairfax, Virginia (*Appendix I: Figure 1- Project Location Map*). The project site is further identified by physical address 10723 Main Street and City of Fairfax PINs: 57-1-02-123 and 57-1-02-122A. The terrain of the project site consists of a perennial stream, Accotink Creek, and is within the Accotink Creek drainage basin (*Appendix I: Figure 2- USGS Topographic Map*). The site contains the existing Fairfax Presbyterian Church and associated parking lots and driveway, Presbyterian Way.

SECONDARY INFORMATION REVIEW

Secondary information entails the background research and review of recorded data and/or mapping associated with the project site. Resources reviewed include but are not limited to the following:

- U. S. Geological Survey (USGS) Topographic Map, Fairfax Quadrangle, 2016
- U. S. Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI) Online Mapper, https://www.fws.gov/wetlands/data/mapper.html
- Natural Resources Conservation Service (NRCS), Electronic Field Office Technical Guide, City of Fairfax Soils, https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx
- Available aerial photography and GIS data

The USGS Fairfax quadrangle map shows elevations of approximately 420 feet above mean sea level (MSL) in the southern portion of the site, sloping gently down to the north to approximately 380 feet above MSL in the northern portion. As shown on the USGS Map, the project site drains to Accotink Creek, located within the Middle Potomac-Anacostia-Occoquan watershed and identified as Hydrologic Unit Code (HUC) 02070010. The NWI map depicts riverine wetland features within the project site boundaries.

The soil survey indicates that the site is underlain primarily by Glenelg silt loam (39B), Glenelg silt loam (39C), Sumerduck silt loam (93B), Urban land (95), and Wheaton – Glenelg (105B) soils. Sumerduck silt loam (93B) soil is classified by the NRCS as hydric.

GENERAL WQIA INFORMATION

Per the City of Fairfax Chesapeake Bay Preservation Ordinance §110-4.18.8.D, adopted July 12, 2016, a Major WQIA submittal is required if any of the following criteria apply:

- Over 5,000 square feet of disturbance in the RPA; or
- Encroachment into the seaward 50 feet of the RPA buffer; or
- Any disturbance of wetlands or streams; or
- Location in the resource management area and is deemed necessary by the Zoning Administrator.

This project site requires a Major WQIA because the proposed development includes encroachment into the seaward 50 feet of the RPA buffer. All required information is provided below and is referenced on the enclosed Water Quality Impact Assessment Application.

Water Quality Impact Assessment Components per §110-4.18.8.C

Please refer to the enclosed WQIA plan which depicts the proposed development and the existing conditions of the site, including the site-specific RPA boundary and the proposed RPA encroachment area.

1) *Location of the components of any RPA, including the 100-foot buffer area;*

   Based on TNT's wetlands and Waters delineation, Accotink Creek, a perennial stream, intersects the northern portion of the site and continues offsite along the northeastern property boundary. The RPA is comprised of the 100-foot offset from Accotink Creek. There are no contiguous wetlands or tidal shore/tidal wetlands contained within the site-specific RPA or located onsite. The intermittent stream located directly offsite has been significantly impacted by the adjacent sanitary sewer easement and pedestrian trail located to its east. Therefore, because it is not "largely in a natural condition" per the City of Fairfax Chesapeake Bay Preservation Ordinance, it is not included within the RPA. A 100-year FEMA floodplain is located onsite and has been normalized by Charles P. Johnson & Associates, Inc. (2020). The 100-foot offset from the offsite perennial stream goes beyond the floodplain.

2) *Location and nature of proposed improvements, including:*

   a. *Type of paving material;*
      Parking lots to be paved with asphalt are proposed within the western portion of the site adjacent to the existing church, as well as within the eastern portion surrounding the proposed town homes. A 5-foot-wide asphalt path connecting with a concrete sidewalk is also proposed parallel to the northeastern site boundary, crossing Accotink Creek along the eastern side of Presbyterian Way. An additional walkway is proposed along the western side of Presbyterian Way, and the road is proposed to be repaved an additional 3-feet in width to accommodate this walkway.

   b. *Areas of clearing or grading;*
      Please refer to the enclosed Water Quality Impact Assessment Map in Appendix III for the limits of clearing and grading proposed for this project. The areas to be disturbed will exclude the existing church, the maintained lawn within the central portion of the site, and the parking lots surrounding this central area.

   c. *Location of any structures, drives, or other impervious cover; and*
      Ten (10) town homes with associated driveways, parking spaces, and utilities are proposed within the eastern portion of the site. A roadway is proposed to connect the existing parking lots and Presbyterian Way with the proposed improvements.

d. *Sewage disposal systems or reserve drain field sites;*
A sanitary sewer line is proposed within the eastern portion of the site, and the easement associated with this line encompasses 546-square feet of the proposed RPA encroachment. No drain field sites are proposed as part of the development.

3) *Type and location of proposed best management practices to meet the required general performance standards specified in §110-4.18.7;*
The overall site development, which includes the proposed RPA encroachment, will be mitigated through the use of a level 2 bioretention area and multiple manufactured treatment facilities, as well as the revegetation of the RPA, in order to improve water quality.

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*
The project proposes approximately 4,695 square feet of RPA encroachment to accommodate the proposed development. The RPA encroachment area consists of a proposed asphalt pathway, walkway along Presbyterian Way, and sanitary sewer easement. The encroachment will involve the clearing of herbaceous and shrub vegetation within the proposed limits of disturbance, including mature trees where necessary. The portion of RPA encroachment along Presbyterian Way will not involve vegetation removal, as the pathway is proposed along an existing paved road crossing. The required vegetation densities will be planted where needed onsite to supplement the existing vegetation within the RPA.

5) *A revegetation plan that supplements the existing buffer vegetation in a manner that provides for pollutant removal, erosion and runoff control.*
The Applicant proposes to mitigate for allowed RPA encroachments as described herein through riparian buffer plantings, per the densities of the Riparian Buffers Modification & Mitigation Guidance Manual (2006), which are for every 400 square feet, plant 1 unit (1 canopy tree, 2 understory trees and 3 small shrubs).

Based on the encroachment of 4,695 square feet, there are 12 units of planting needed, or 12 canopy trees, 24 understory trees and 36 small shrubs. These plantings shall be placed where needed adjacent to the onsite RPA without disturbing native, thriving vegetation. It is important to note that no planting areas outside the limits of clearing will be disturbed by the proposed development; plantings within this area shall be done by hand without the use of heavy machinery. It is in TNT's opinion that the proposed planting locations and quantities will result in no net degradation to water quality.

The following table is based on the Riparian Buffer revegetation densities and shall be used to plant within the aforementioned areas as shown on the WQIA Plan:

Table 1 – Planting List*

Common Name	Scientific Name	Size (DBH)		Quantity
Overstory Trees				
Red Maple	*Acer rubrum*	2"		3
River Birch	*Betula nigra*	2"		3
American Sycamore	*Platanus occidentalis*	2"		3
Pin Oak	*Quercus palustris*	2"		3
			Subtotal	**12**
Understory Trees				
American Hornbeam	*Carpinus caroliniana*	1"		4
Eastern Redbud	*Cercis canadensis*	1"		4
Sassafras	*Sassafras albidum*	1"		4
Downy Serviceberry	*Amelanchier arborea*	1"		4
Paw Paw	*Asimina triloba*	1"		4
Sweetbay Magnolia	*Magnolia virginiana*	1"		4
			Subtotal	**24**
Shrubs				
Northern Spicebush	*Lindera benzoin*	3 Gallon		6
Hazel Alder	*Alnus serrulata*	3 Gallon		6
Maple-Leaved Viburnum	*Viburnum acerifolium*	3 Gallon		6
Southern Arrowwood	*Viburnum dentatum*	3 Gallon		6
Swamp Azalea	*Rhododendron viscosum*	3 Gallon		6
Red Chokeberry	*Aronia arbutifolia*	3 Gallon		6
			Subtotal	**36**
			Total	**72**

**If species listed on the table above are not reasonably attainable, they may be substituted with similar native species and with the approval of the City.*

6) *Certification of all required information as complete and accurate by a Class IIIB certified land surveyor and professional wetlands delineator.*
Please refer to the enclosed WQIA Map in Appendix III for the certification by a professional wetlands delineator.

Major Water Quality Impact Assessment Components per §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;*
   The terrain of the project site consists of gently to moderately sloping land. The site slopes north and northeast towards Accotink Creek, the perennial stream that intersects the northern portion of the project site. Please refer to the Secondary Information section above and the USGS Topographic Map in Appendix I (Figure 2) for additional information regarding the existing topography, soils, hydrology, and geology of the site.

   b. *Estimates of soil characteristics and potential for erosion;*
   As noted above, the NRCS soil survey indicates that the site is primarily underlain by the following soil types: Glenelg silt loam (39B and 39C), Sumerduck silt loam (93B), Urban land (95), and Wheaton – Glenelg (105B) soils. Of these, Sumerduck silt loam (93B) soil is classified by the NRCS as hydric. Per the NRCS, the erosion hazard rating is moderate for Glenelg silt loam (39B), Sumerduck silt loam (93B), and Wheaton-Glenelg complex (105B), and severe for Glenelg silt loam (39C). Urban land (95) was not rated for erosion hazard by the NRCS.

   c. *Hydrology of the area;*
   The overall site consists of gently to moderately sloping land, and slopes eastward to Accotink Creek and the two ephemeral streams that originate in the northeastern portion of the site. Due to the lack of wetlands onsite, it is unlikely that the proposed project will encounter a high groundwater table.

   d. *Impacts on wetlands and streams;*
   No impacts are proposed to the portions of ephemeral stream in the northeastern part of the site. A sidewalk crossing is proposed at the portion of the site that crosses Accotink Creek, but the existing outfalls associated with the road crossing for Presbyterian Way will remain, maintaining the hydrology of the perennial stream.

   e. *Proposed mitigation measures; and*
   Mitigation will be conducted via native riparian buffer plantings as detailed in Table 1 and shown on the attached WQIA Map (Appendix III).

   f. *A listing of requisite permits with permit or application status.*
   The Applicant will acquire all of the appropriate permits from the City of Fairfax prior to construction. Because no impacts to the onsite streams are proposed and the existing culvert at the Presbyterian Way crossing will be maintained, the applicant will

not need to acquire authorization from the U.S. Army Corps of Engineers (USACE) or the Virginia Department of Environmental Quality (DEQ) for the proposed development.

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;*
   Please refer to the enclosed Tree Inventory (Appendix IV, Sheet 33) for the existing trees identified onsite during a tree survey by Tree Preservation Consultants, LLC.

   b. *Limits of clearing and grading;*
   Please refer to the WQIA map (Appendix III) and the enclosed plan sheets (Appendix IV, Sheets 9-10 and 41-43) for the locations of the limits of disturbance including clearing and grading, and the proposed locations of the townhomes, parking lots, asphalt path, and other associated utilities and infrastructure.

   c. *Trees and indigenous vegetation that are to be preserved within the disturbed area;*
   A total of 115 trees to be preserved onsite are documented in the Tree Inventory in Appendix IV, and all proposed tree save areas can be found in Sheets 34-38 of the enclosed conceptual landscape plan.

   d. *Measures to be taken to protect vegetation, proposed plantings and other vegetative measures used to enhance water quality; and*
   As shown above, a replanting schedule for vegetation to mitigate for the encroachment into the RPA has been provided. Native plantings shall be used and it is TNT's opinion that no net degradation of water quality will result from the proposed development activities.

   e. *A proposed construction schedule that includes all activities related to clearing, grading and proposed plantings.*
   The project will commence once site plan approval has been obtained and the appropriate permits have been procured. The development will take place in two phases. In phase one, ten town homes will be constructed within the eastern portion of the site, with associated driveways, utilities, and parking areas. In phase two, the additional parking area for the existing Fairfax Presbyterian Church will be constructed in the southwestern portion of the site. Please refer to the submitted grading plan prepared by the design engineers for additional information and specifics. Further, the attached Tree Inventory (Appendix IV, Sheet 33) contains a phasing narrative for tree conservation. Proposed plantings are detailed on sheets 34-39. Construction is anticipated to commence in the next 18 months and may take 24 months to complete.

4) *Such other measures as deemed necessary by the Zoning Administrator to ensure the impact to water quality can be accurately predicted; and*

No additional measures have been requested at this time by the Zoning Administrator.

5) *Certification of all required information as complete and accurate by a Class IIIB certified land surveyor and professional wetlands delineator.*
Please refer to the enclosed WQIA Map in Appendix III for the certification by a professional wetlands delineator.

Criteria Evaluation per §110-4.18.8.F.2

a. *The disturbance of any wetlands is minimized.*
No disturbance to wetlands is proposed.

b. *The development will not result in significant disruption of the hydrology of the site.*
The hydrology of the site will be maintained, as the existing culvert at the Accotink Creek crossing will be preserved and the RPA encroachment will be mitigated with appropriate buffer plantings.

c. *The development will not result in significant degradation to aquatic life.*
The onsite perennial stream, Accotink Creek, will not be altered by the development as the proposed asphalt path and walkway will be placed over an existing road crossing and culvert. Because the RPA encroachment will be mitigated through riparian buffer plantings and the ephemeral streams onsite will not be disturbed by the development, it is TNT's opinion that the development will not cause significant degradation to aquatic life.

d. *The development will not result in unnecessary destruction of plant materials on site.*
Destruction of plant materials onsite has been minimized as shown in the attached tree conservation plan (Appendix IV), with a substantial portion of the proposed RPA encroachment contained within areas that are currently paved.

e. *Proposed erosion and sediment control concepts are adequate to achieve the reductions in runoff and prevent off site sedimentation.*
The development will use appropriate erosion and sediment control measures within the RPA, including silt fencing, to achieve the reductions in runoff and prevent off site sedimentation.

f. *Proposed stormwater-management measures are adequate to control the stormwater runoff to achieve the required performance standard for pollutant control.*
Based on the stormwater management calculations prepared by the design engineers, the total phosphorus load reduction needed to meet water quality requirements will be exceeded for the site area (see calculations on Sheet 41, Appendix IV).

g. *Proposed revegetation of disturbed areas will provide optimum erosion and sediment control benefits.*

It is TNT's opinion that the proposed revegetation of the disturbed areas with native species will provide optimum erosion and sediment control benefits. Please refer to the conceptual landscape plan attached in Appendix IV for further detail.

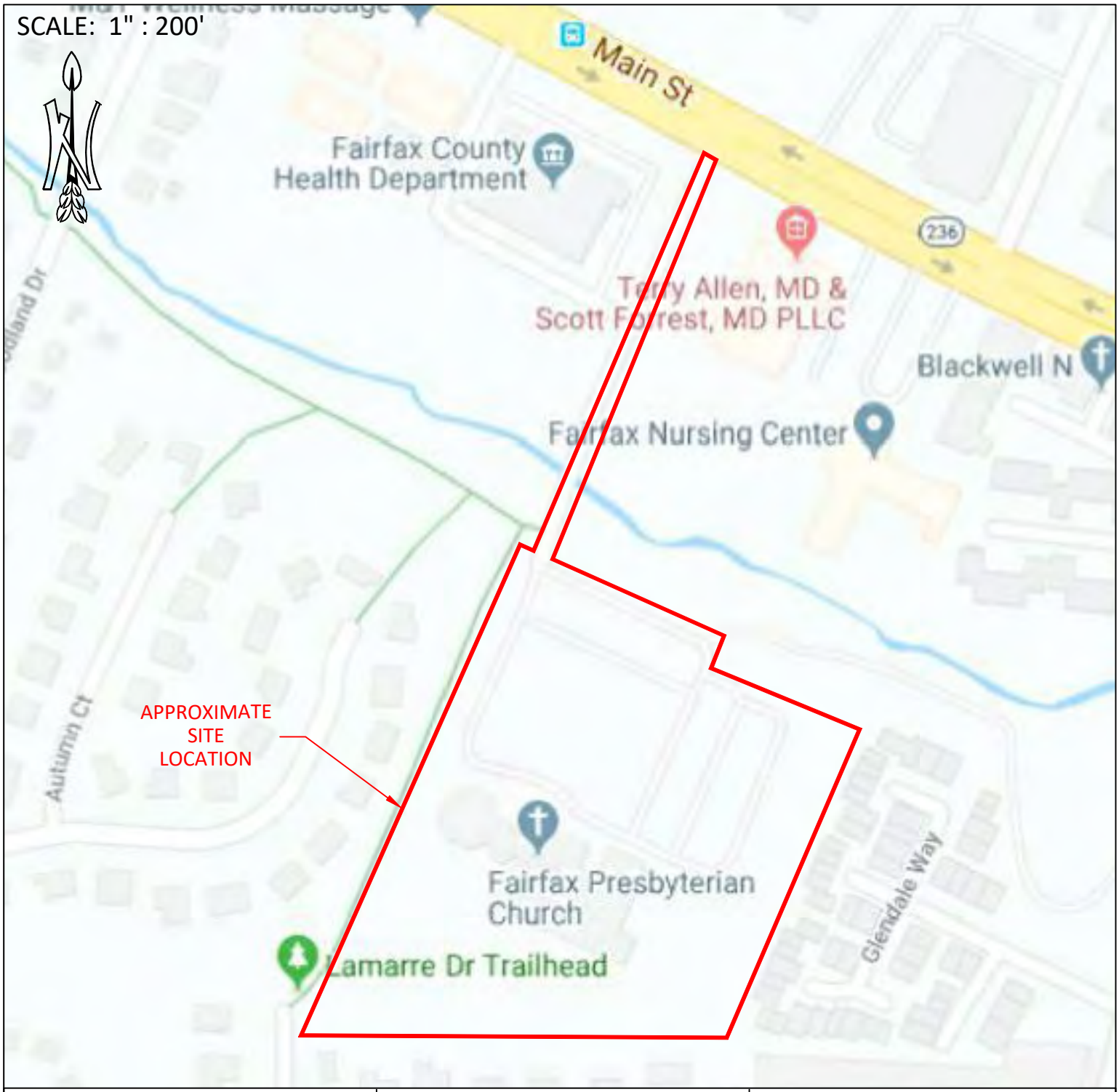
h. *The design and location of any proposed drain field will be in accordance with the general performance standards outlined in §110- 4.18.7.*
No drain fields are proposed as part of the development.

i. *The development, as proposed, is consistent with the purpose and intent of §110-4.16.*
It is in TNT's opinion that the proposed mitigation and design efforts for the project meet or exceed the criteria for RPA encroachments.

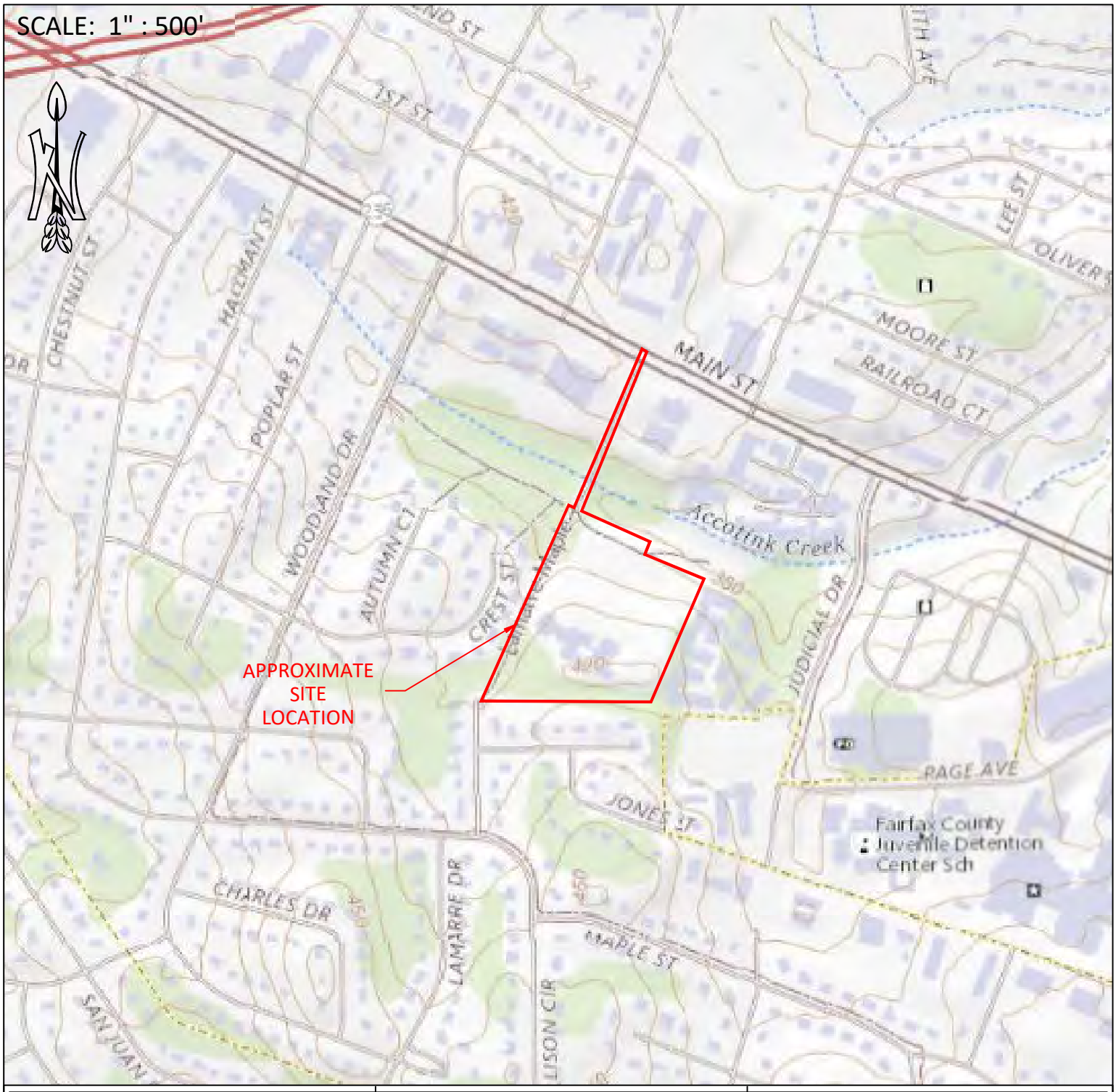
j. *The cumulative impact of the proposed development, when considered in relation to other development in the vicinity, both existing and proposed, will not result in a significant degradation of water quality.*
It is in TNT's opinion that the cumulative impacts on water quality will be appropriately mitigated through revegetation with native species.

APPENDIX I

VICINITY MAP &
USGS TOPOGRAPHIC MAP



MAJOR WATER QUALITY IMPACT ASSESSMENT FAIRFAX PRESBYTERIAN CHURCH CITY OF FAIRFAX, VA JULY 2022	ENVIRONMENTAL **4455 BROOKFIELD CORPORATE DRIVE SUITE 100 CHANTILLY, VIRGINIA 20151**	**FIGURE 1** SITE LOCATION MAP SOURCE: GOOGLE MAPS TNT PROJECT NO: 1708



MAJOR WATER QUALITY IMPACT ASSESSMENT FAIRFAX PRESBYTERIAN CHURCH CITY OF FAIRFAX, VA JULY 2022	ENVIRONMENTAL **4455 BROOKFIELD CORPORATE DRIVE SUITE 100 CHANTILLY, VIRGINIA 20151**	**FIGURE 2** TOPOGRAPHIC MAP SOURCE: USGS *THE NATIONAL MAP* (2021) TNT PROJECT NO: 1708

APPENDIX II

NATIONAL WETLAND INVENTORY MAP &
NRCS SOILS MAP

National Wetlands Inventory Map: Fairfax Presbyterian Church

July 6, 2022

National Wetlands Inventory

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

1:7,298

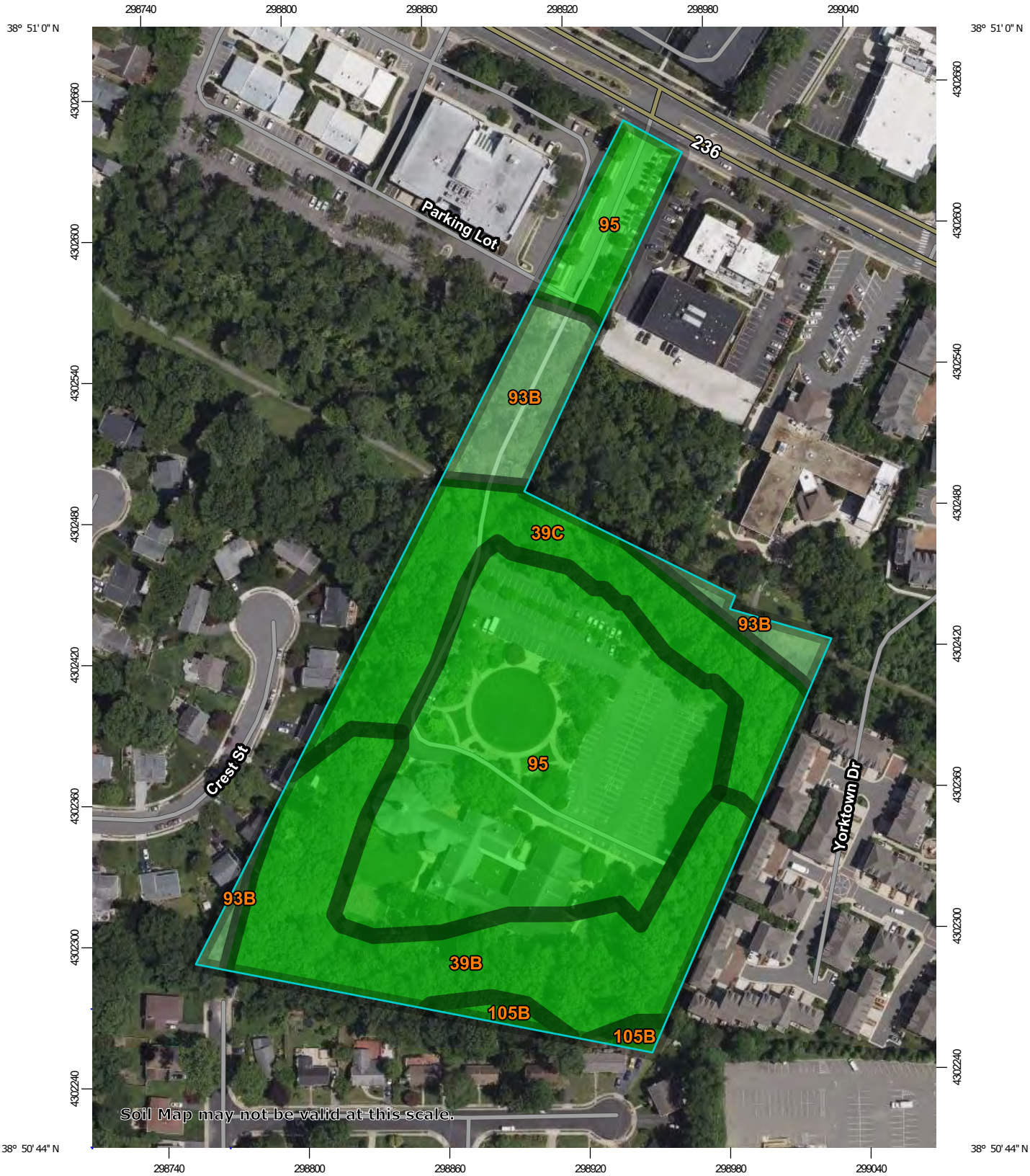
0 0.05 0.1 0.19 mi

0 0.07 0.15 0.3 km

County of Loudoun, Maxar

TNT Environmental, Inc.
2022

Hydric Rating by Map Unit—Fairfax City, Virginia
(Fairfax Presbyterian Church)



Map Scale: 1:2,320 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Fairfax City, Virginia
Survey Area Data: Version 13, Sep 1, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 9, 2021—Aug 15, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
39B	Glenelg silt loam, 2 to 7 percent slopes	0	2.8	25.2%
39C	Glenelg silt loam, 7 to 15 percent slopes	0	2.1	18.4%
93B	Sumerduck silt loam, 2 to 7 percent slopes	2	1.0	8.9%
95	Urban land	0	5.1	45.9%
105B	Wheaton - Glenelg complex, 2 to 7 percent slopes	0	0.2	1.5%
Totals for Area of Interest			**11.2**	**100.0%**

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

APPENDIX III

WATER QUALITY IMPACT
ASSESMENT MAP

MITIGATION PLANTING PLAN TABLE:

Common Name	Scientific Name	Size (DBH)		Quantity
Overstory Trees				
Red Maple	*Acer rubrum*	2"		3
River Birch	*Betula nigra*	2"		3
American Sycamore	*Platanus occidentalis*	2"		3
Pin Oak	*Quercus palustris*	2"		3
			Subtotal	**12**
Understory Trees				
American Hornbeam	*Carpinus caroliniana*	1"		4
Eastern Redbud	*Cercis canadensis*	1"		4
Sassafras	*Sassafras albidum*	1"		4
Downy Serviceberry	*Amelanchier arborea*	1"		4
Paw Paw	*Asimina triloba*	1"		4
Sweetbay Magnolia	*Magnolia virginiana*	1"		4
			Subtotal	**24**
Shrubs				
Northern Spicebush	*Lindera benzoin*	3 Gallon		6
Hazel Alder	*Alnus serrulata*	3 Gallon		6
Maple-Leaved Viburnum	*Viburnum acerifolium*	3 Gallon		6
Southern Arrowwood	*Viburnum dentatum*	3 Gallon		6
Swamp Azalea	*Rhododendron viscosum*	3 Gallon		6
Red Chokeberry	*Aronia arbutifolia*	3 Gallon		6
			Subtotal	**36**
			Total	**72**

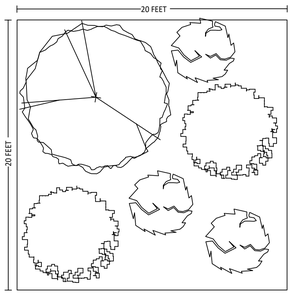
*NOTE: PROPOSED VEGETATION WILL BE PLANTED ONSITE TO COMPLEMENT EXISTING VEGETATION. LOCATIONS WILL BE DECIDED IN THE FIELD AND DISCUSSED WITH COUNTY ARBORISTS. NO PROPOSED PLANTINGS WILL BE PLACED WITHIN ONSITE EASEMENTS.

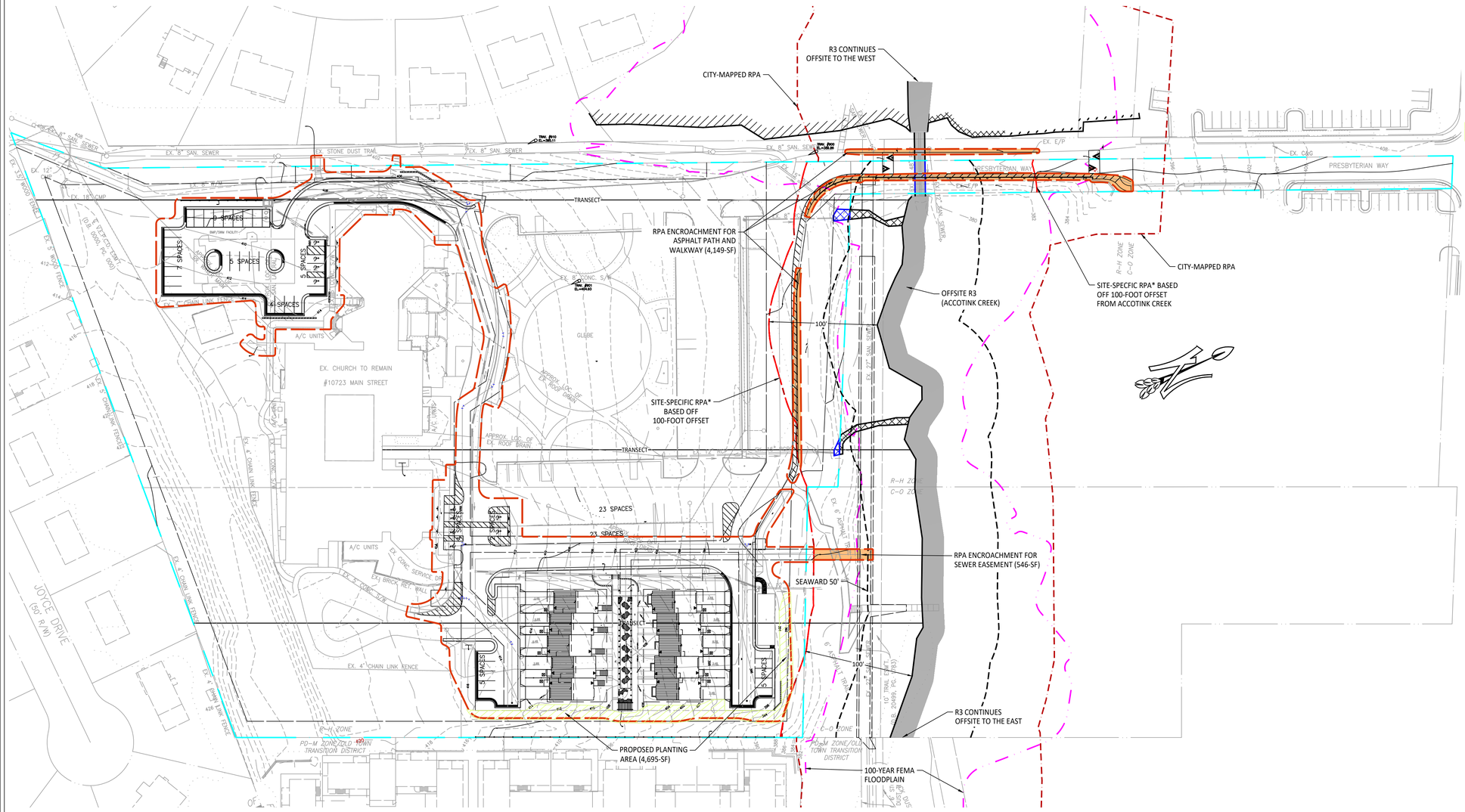
PLANTING PLAN NOTES:

1. THE DISTURBANCE (4,695 SF) INCLUDES THE LIMITS OF CLEARING FOR THE CONSTRUCTION OF A SIDEWALK THAT CROSSES ACCOTINK CREEK AT THE EXISTING ROAD, PRESBYTERIAN WAY, AS WELL AS THE INSTALLATION OF A SANITARY SEWER EASEMENT.

2. PROPOSED VEGETATION WILL BE PLANTED ONSITE TO COMPLEMENT EXISTING VEGETATION. LOCATIONS WILL BE DECIDED IN THE FIELD AND DISCUSSED WITH CITY ARBORISTS DURING A SCHEDULED PRE-INSTALLATION MEETING.

3.PLANTING AREAS SHALL BE DONE BY HAND WITHOUT THE USE OF HEAVY MACHINERY. NO HEAVY MACHINERY SHALL BE PERMITTED OUTSIDE OF THE LIMITS OF DISTURBANCE.





SCALE (IN FEET)
25 50
50 0

LEGEND

- PERENNIAL WATERS (R3)
- EPHEMERAL WATERS (R6)
- OFFSITE PERENNIAL WATERS (R3)
- OFFSITE INTERMITTENT WATERS (R4)
- OFFSITE EPHEMERAL WATERS (R6)
- OFFSITE PALUSTRINE SCRUB-SHRUB (PSS) WETLANDS
- DP- APPROX. DATAPOINT LOCATION
- STUDY AREA
- *SITE-SPECIFIC RESOURCE PROTECTION AREA (RPA)
- CITY-MAPPED RPA
- 100-YEAR FEMA FLOODPLAIN BOUNDARY
- SEAWARD 50' BOUNDARY
- RPA ENCROACHMENT AREA (4,695-SF)
- PROPOSED PLANTING AREA

GENERAL NOTES:

1. THE WETLAND DELINEATION DEPICTED HEREON WAS CONDUCTED BY TNT ENVIRONMENTAL, INC. (TNT) IN SEPTEMBER 2019. EXISTING CONDITION, TOPOGRAPHY AND WETLAND FLAGS WERE SURVEYED BY CHARLES P. JOHNSON & ASSOCIATES, INC. (2019).

2. PROPOSED CONDITIONS WERE PROVIDED BY CHARLES P. JOHNSON & ASSOCIATES, INC. (2022).

3. THE WETLAND AND OTHER WATERS OF THE U.S. BOUNDARIES DEPICTED HEREON WERE CONFIRMED DURING A JURISDICTIONAL DETERMINATION WITH THE US ARMY CORPS OF ENGINEERS (USACE) (NAO-2019-02118), DATED DECEMBER 26, 2019.

ENVIRONMENTAL
4455 Brookfield Corporate Drive, Suite 100
Chantilly, VA 20151
PH: 703-466-5123 WWW.TNTENVIRONMENTALINC.COM

FAIRFAX PRESBYTERIAN CHURCH
CITY OF FAIRFAX

WATER QUALITY IMPACT ASSESSMENT

REVISIONS

DATE	COMMENTS

SHEET 1 OF 1

SCALE: 1" = 50'

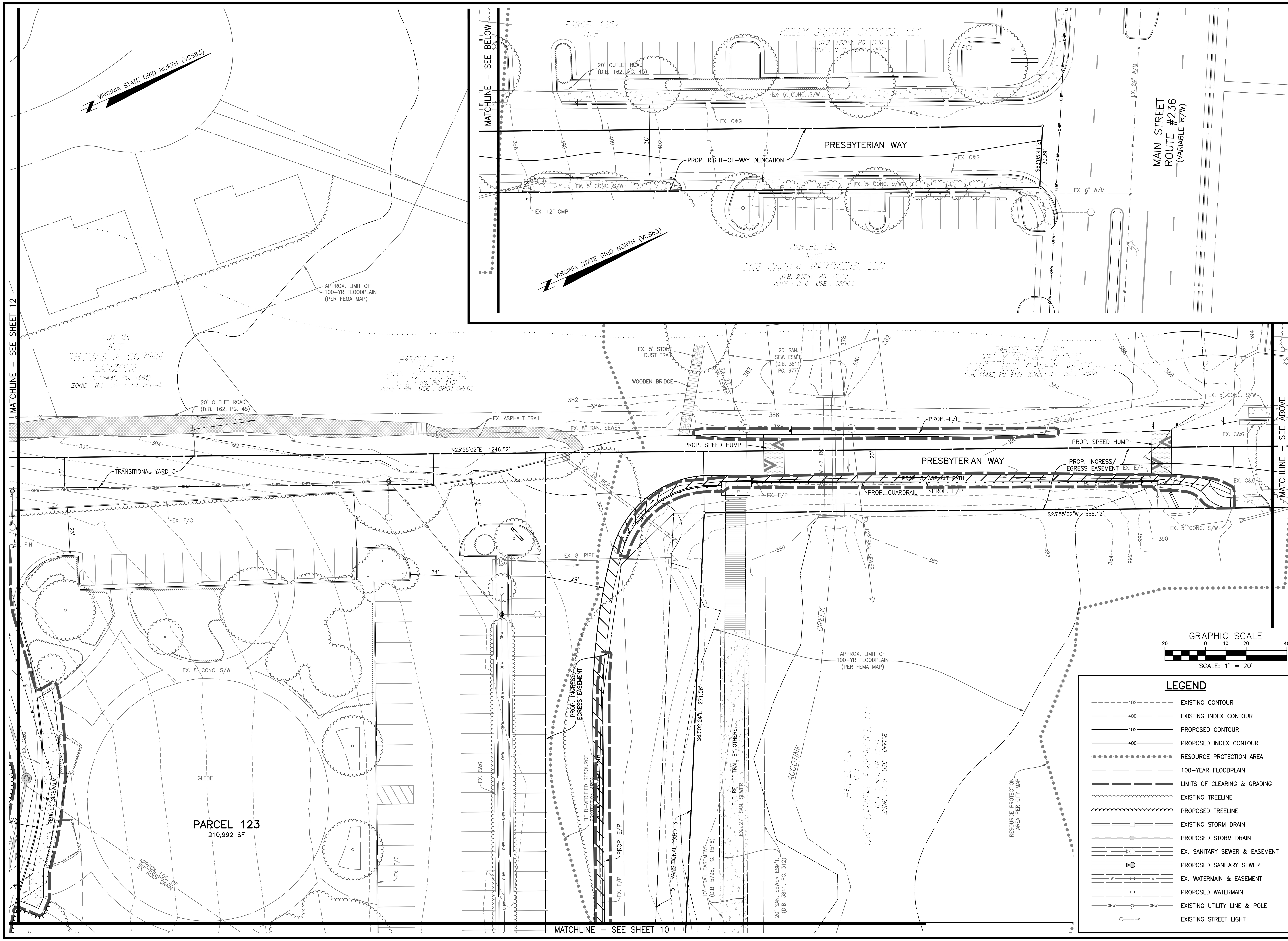
PROJECT DATE: 7/20/22

DRAFT: MEM | CHECK: AMS

FILE NUMBER: 1708

APPENDIX IV

TREE INVENTORY AND STORMWATER CALCULATIONS
(PROVIDED BY CHARLES P. JOHNSON & ASSOCIATES, INC.)



MATCHLINE – SEE BELOW
MATCHLINE – SEE SHEET 12
MATCHLINE – SEE ABOVE
MATCHLINE – SEE SHEET 10
VIRGINIA STATE GRID NORTH (VCS83)
PARCEL 125A
N/F
KELLY SQUARE OFFICES, LLC
20' OUTLET ROAD
(D.B. 162, PG. 45)
EX. 5' CONC. S/W
EX. C&G
PRESBYTERIAN WAY
PROP. RIGHT-OF-WAY DEDICATION
EX. 12" CMP
PARCEL 124
N/F
ONE CAPITAL PARTNERS, LLC
(D.B. 24554, PG. 1211)
ZONE : C-0 USE : OFFICE
MAIN STREET
ROUTE #236
(VARIABLE R/W)
EX. 24" W/M
EX. 6" W/M
APPROX. LIMIT OF
100-YR FLOODPLAIN
(PER FEMA MAP)
LOT 24
N/F
THOMAS & CORINN
LANZONE
PARCEL B-1B
N/F
CITY OF FAIRFAX
PARCEL 1-B, N/F
KELLY SQUARE OFFICE
CONDO UNIT OWNERS ASSOC.
EX. 5' STONE DUST TRAIL
WOODEN BRIDGE
20' SAN. SEW. ESM'T.
EX. ASPHALT TRAIL
EX. 8" SAN. SEWER
N23°55'02"E 1246.52'
TRANSITIONAL YARD 3
PROP. SPEED HUMP
PROP. E/P
PROP. INGRESS/
EGRESS EASEMENT
PROP. GUARDRAIL
S23°55'02"W 555.12'
EX. F/C
EX. 8" PIPE
EX. 8" CONC. S/W
GLEBE
PARCEL 123
210,992 SF
REBUILD SIDEWALK
APPROX. LOC. OF EX. ROOF DRAIN
FIELD-VERIFIED RESOURCE PROTECTION AREA
S63°02'24"E 271.06'
FUTURE 10' TRAIL BY OTHERS
15' TRANSITIONAL YARD 3
10' TRAIL EASEMENT
EX. 27" SAN. SEWER
20' SAN. SEWER ESM'T.
ACCOTINK
CREEK
RESOURCE PROTECTION AREA PER CITY MAP
GRAPHIC SCALE
SCALE: 1" = 20'
LEGEND
EXISTING CONTOUR
EXISTING INDEX CONTOUR
PROPOSED CONTOUR
PROPOSED INDEX CONTOUR
RESOURCE PROTECTION AREA
100-YEAR FLOODPLAIN
LIMITS OF CLEARING & GRADING
EXISTING TREELINE
PROPOSED TREELINE
EXISTING STORM DRAIN
PROPOSED STORM DRAIN
EX. SANITARY SEWER & EASEMENT
PROPOSED SANITARY SEWER
EX. WATERMAIN & EASEMENT
PROPOSED WATERMAIN
EXISTING UTILITY LINE & POLE
EXISTING STREET LIGHT

CPJ Associates
Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers · Planners · Landscape Architects · Surveyors
3959 Pender Dr. Ste. 210 Fairfax, VA 22030 703-385-7555 Fax: 703-273-8595

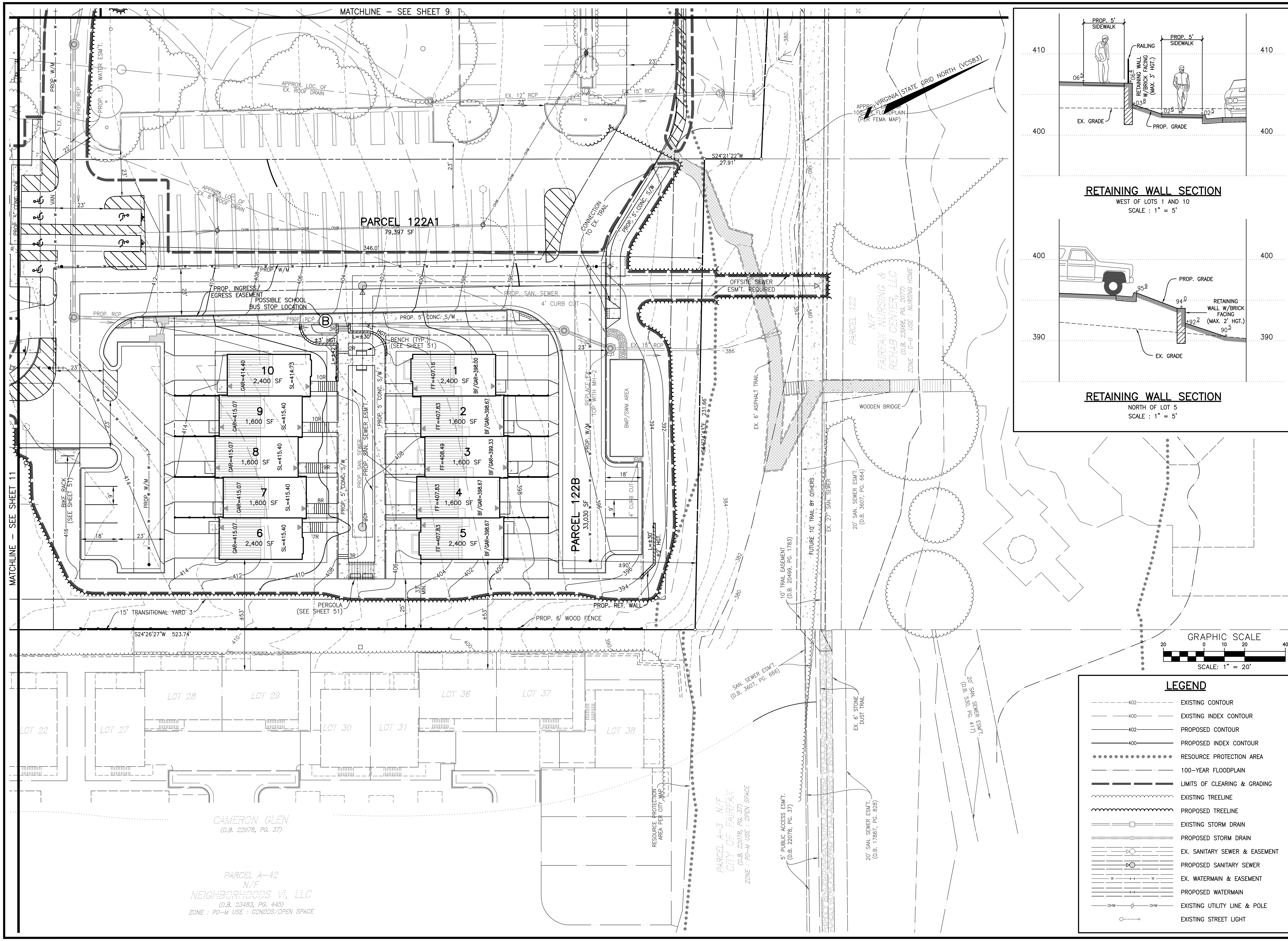
REVISION PRIOR TO APPROVAL

PRELIMINARY GRADING PLAN
FAIRFAX PRESBYTERIAN CHURCH
CITY OF FAIRFAX, VIRGINIA

COMMONWEALTH OF VIRGINIA
BRIAN R. THOMAS
Lic. No. 038937
PROFESSIONAL ENGINEER

DESIGN	DRAFT	APPROVED	DATE	SCALE
KJV	KJV	HMT	JAN. 2021	HORIZ: 1" = 20' VERT: – –

SHEET 9 OF 51
PRJ NO: 2017-2570
TYPE: MDP



MATCHLINE - SEE SHEET 9
MATCHLINE - SEE SHEET 11
PARCEL 122A1
79,397 SF
PARCEL 122B
33,030 SF
APPROX. VIRGINIA STATE GRID NORTH (VCS83)
100-YEAR FLOODPLAIN (PER FEMA MAP)
S24°21'22"W
27.91'
346.0'
S24°26'27"W 523.74'
OFFSITE SEWER ESM'T. REQUIRED
PROP. INGRESS/ EGRESS EASEMENT
POSSIBLE SCHOOL BUS STOP LOCATION
PROP. 5' CONC. S/W
4' CURB CUT
PROP. SAN. SEWER
PROP. RCP
EX. 12" RCP
EX. 15" RCP
CONNECTION TO EX. TRAIL
BENCH (TYP.) (SEE SHEET 51)
BMP/SWM AREA
REPLACE EX. TOP WITH MH-2
PROP. W/M
BIKE RACK (SEE SHEET 51)
PERGOLA (SEE SHEET 51)
PROP. RET. WALL
PROP. 6' WOOD FENCE
15' TRANSITIONAL YARD 3
EX. 6' ASPHALT TRAIL
WOODEN BRIDGE
FUTURE 10' TRAIL BY OTHERS
EX. 27' SAN. SEWER
10' TRAIL EASEMENT (D.B. 20499, PG. 1783)
20' SAN. SEWER ESM'T. (D.B. 3607, PG. 664)
SAN. SEWER ESM'T. (D.B. 3607, PG. 666)
EX. 6' STONE DUST TRAIL
20' SAN. SEWER ESM'T. (D.B. 530, PG. 417)
5' PUBLIC ACCESS ESM'T. (D.B. 22078, PG. 37)
20' SAN. SEWER ESM'T. (D.B. 17887, PG. 828)
RESOURCE PROTECTION AREA PER CITY MAP
PARCEL 122 N/F FAIRFAX NURSING & REHAB CENTER, LLC
PARCEL A-3 N/F CITY OF FAIRFAX (D.B. 22078, PG. 37) ZONE : PD-M USE : OPEN SPACE
CAMERON GLEN (D.B. 22078, PG. 37)
PARCEL A-42 N/F NEIGHBORHOODS VI, LLC (D.B. 23483, PG. 445) ZONE : PD-M USE : CONDOS/OPEN SPACE
LOT 22
LOT 27
LOT 28
LOT 29
LOT 30
LOT 31
LOT 36
LOT 37
LOT 38
1 2,400 SF FF=407.16 BF/GAR=398.00
2 1,600 SF FF=407.83 BF/GAR=398.67
3 1,600 SF FF=408.49 BF/GAR=399.33
4 1,600 SF FF=407.83 BF/GAR=398.67
5 2,400 SF FF=407.83 BF/GAR=398.67
6 2,400 SF GAR=415.07 SL=415.40
7 1,600 SF GAR=415.07 SL=415.40
8 1,600 SF GAR=415.07 SL=415.40
9 1,600 SF GAR=415.07 SL=415.40
10 2,400 SF GAR=414.40 SL=414.73
RETAINING WALL SECTION
WEST OF LOTS 1 AND 10
SCALE : 1" = 5'
PROP. 5' SIDEWALK
RAILING
RETAINING WALL W/BRICK FACING (MAX. 3' HGT.)
EX. GRADE
PROP. GRADE
RETAINING WALL SECTION
NORTH OF LOT 5
SCALE : 1" = 5'
RETAINING WALL W/BRICK FACING (MAX. 2' HGT.)
GRAPHIC SCALE
SCALE: 1" = 20'
LEGEND
EXISTING CONTOUR
EXISTING INDEX CONTOUR
PROPOSED CONTOUR
PROPOSED INDEX CONTOUR
RESOURCE PROTECTION AREA
100-YEAR FLOODPLAIN
LIMITS OF CLEARING & GRADING
EXISTING TREELINE
PROPOSED TREELINE
EXISTING STORM DRAIN
PROPOSED STORM DRAIN
EX. SANITARY SEWER & EASEMENT
PROPOSED SANITARY SEWER
EX. WATERMAIN & EASEMENT
PROPOSED WATERMAIN
EXISTING UTILITY LINE & POLE
EXISTING STREET LIGHT

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PRELIMINARY GRADING PLAN

FAIRFAX PRESBYTERIAN CHURCH

CITY OF FAIRFAX, VIRGINIA

COMMONWEALTH OF VIRGINIA
BRIAN R. THOMAS
Lic. No. 038937
PROFESSIONAL ENGINEER

DESIGN	DRAFT	APPROVED	DATE	SCALE
KJV	KJV	HMF	JAN. 2021	HORIZ: AS VERT: SHOWN

SHEET 10 OF 51

PRJ NO: 2017-2570

TYPE: MDP

Last Saved 7/7/2022 Last Plotted 7/19/2022 11:45 AM Sheet N:\2017-2570\DWG\00-G0701

Attached Xrefs: 00-G0700/00-G0500/XREF-R0401/XREF-R0301

Tree #	Species	Size	Condition	Crown Radius	* Dead Tree	* Poor Condition	* Off Site/Co-Owned	Status
		dbh	%	Avg. Radius (ft)				
201	royal paulownia	24	75	25				PRESERVE
202	white mulberry	5	65	10				PRESERVE
203	eastern white pine	15	70	15				PRESERVE
204	red maple	11	65	15				PRESERVE
205	red maple	13	70	10				PRESERVE
206	red maple	6	0		X			REMOVE
207	eastern white pine	20	75	20				REMOVE
208	bigtooth aspen	5	75	10				REMOVE
209	black locust	5	65	5				PRESERVE
210	black locust	8	80	15				PRESERVE
211	black cherry	16	70	20				REMOVE
212	tulip tree	25	60	15				REMOVE
213	black locust	5	60	5				PRESERVE
214	black locust	7	80	15				PRESERVE
215	eastern white pine	23	65	20				REMOVE
216	black locust	6	75	15				PRESERVE
217	tulip tree	16	60	10				REMOVE
218	bigtooth aspen	16	75	20				REMOVE
219	tree of heaven	4, 3	60	10				REMOVE
220	black locust	9	75	15				REMOVE
221	Virginia pine	12	65	15				REMOVE
222	tulip tree	19	85	25				REMOVE
223	bigtooth aspen	13	0		X			REMOVE
224	bigtooth aspen	9	0		X			REMOVE
225	tulip tree	12	45	10				REMOVE
226	tulip tree	21	80	25				REMOVE
227	flowering dogwood	4	70	10				REMOVE
228	tulip tree	22	80	20				REMOVE
229	black locust	6	80	10				REMOVE
230	black locust	5	75	10				PRESERVE
231	black locust	6	75	15				PRESERVE
232	tulip tree	7	0		X			REMOVE
233	eastern white pine	6	70	5				REMOVE
234	black locust	9	70	10				REMOVE
235	black locust	5	75	10				PRESERVE
236	tulip tree	14	75	20				REMOVE
237	tulip tree	16	80	20				REMOVE
238	black locust	9	0		X			REMOVE
239	black cherry	5	0		X			REMOVE
240	tulip tree	17	80	25				REMOVE
241	flowering dogwood	6	70	10				REMOVE
242	tulip tree	23	80	20				REMOVE
243	red maple	5	65	10				REMOVE
244	tulip tree	16	80	20				REMOVE
245	black locust	4	70	10				PRESERVE
246	black locust	6	80	15				PRESERVE
247	black locust	5	80	15				PRESERVE
248	black locust	7	80	15				PRESERVE
249	black locust	5	80	5				PRESERVE
250	red maple	12,6	65	15				REMOVE
251	blackgum	6	75	15				PRESERVE
252	black locust	5	75	10				PRESERVE
253	black locust	6	75	10				PRESERVE
254	black locust	6	80	15				PRESERVE
255	tulip tree	5	80	10				PRESERVE
256	tulip tree	5	70	10				PRESERVE
257	tulip tree	5	75	10				PRESERVE
258	tulip tree	7	80	10				PRESERVE
259	black locust	4	75	10				PRESERVE
260	black locust	4	75	5				PRESERVE
261	tulip tree	5	75	10				PRESERVE
262	tulip tree	4	70	5				PRESERVE
263	tulip tree	5,4	70	10				PRESERVE
264	black locust	5	70	10				PRESERVE
266	black cherry	6	50	5	X			PRESERVE
267	tulip tree	11	85	20				REMOVE
268	tulip tree	9	80	15			X	PRESERVE
269	sassafras	8	80	15				PRESERVE
270	American sycamore	11	80	15				REMOVE
271	American sycamore	15	80	20				PRESERVE
272	tulip tree	25	75	20				PRESERVE
273	American sycamore	14	75	15				PRESERVE
274	tulip tree	21	75	25				REMOVE
275	American elm	9	80	15			X	PRESERVE
276	American holly	3	80	5			X	PRESERVE
277	tulip tree	21	85	25				REMOVE
278	tulip tree	7	80	15				PRESERVE
279	black cherry	15	70	15				PRESERVE
280	tulip tree	8	65	5			X	REMOVE
282	tulip tree	30,25	80	25			X	PRESERVE
285	tulip tree	22	60	20		X	X	PRESERVE
286	tulip tree	35	75	40			X	PRESERVE
287	tulip tree	24,10	55	20		X	X	PRESERVE
288	red maple	8	45	10		X	X	REMOVE
289	tulip tree	10	0		X			REMOVE
290	American elm	10	65	10				REMOVE
291	American elm	15	70	15				REMOVE
292	red maple	11	75	15				PRESERVE
293	eastern red cedar	12	75	15				REMOVE
294	American elm	9	0		X			REMOVE
295	black cherry	9	75	10				PRESERVE
296	black cherry	8	25	5		X		PRESERVE
297	red maple	20,20,18,10,6	50	20		X	X	PRESERVE
298	black cherry	10	55	10		X		PRESERVE
299	black cherry	10	75	15				PRESERVE
300	common crapemyrtle	6,6,4	80	10				PRESERVE
301	flowering dogwood	8	55	5		X		PRESERVE
302	American holly	14,12,9,9,9	75	15				PRESERVE
303	fringe tree	6,5,4,4	60	10				PRESERVE
304	magnolia species	5,5,4	80	10				PRESERVE
305	purpleleaf plum	10	80	10				REMOVE
306	eastern white pine	30	80	25				PRESERVE
307	willow oak	35	90	45				PRESERVE
308	Japanese maple	11, 9	70	15				PRESERVE

Tree #	Species	Size	Condition	Crown Radius	* Dead Tree	* Poor Condition	* Off Site/Co-Owned	Status
		dbh	%	Avg. Radius (ft)				
317	tulip tree	20	80	20				PRESERVE
318	southern catalpa	15	80	20				PRESERVE
319	southern catalpa	4	70	10				PRESERVE
320	scarlet oak	20	80	25				PRESERVE
328	hickory species	11	80	15			X	PRESERVE
329	tulip tree	18	80	20				PRESERVE
330	blackgum	5	20	5		X	X	PRESERVE
331	red maple	11	80	15			X	PRESERVE
332	white oak	30	80	35			X	PRESERVE
333	hickory species	9	80	15			X	PRESERVE
334	blackgum	12	75	15			X	PRESERVE
335	hickory species	28	85	35			X	REMOVE
336	red maple	8	45	15		X	X	PRESERVE
337	red maple	10	75	15			X	PRESERVE
338	tulip tree	42	85	35				REMOVE
339	white oak	6	80	15			X	REMOVE
340	white oak	5	70	10			X	REMOVE
341	white oak	5	0		X			REMOVE
342	white oak	21	80	25				REMOVE
343	Norway spruce	4,3	35	0		X		PRESERVE
344	scarlet oak	23	75	25			X	PRESERVE
345	scarlet oak	23	80	30				PRESERVE
346	white oak	10	65	15				PRESERVE
347	white oak	8	65	10				PRESERVE
348	white oak	14	75	20				PRESERVE
349	tulip tree	26	80	35				PRESERVE
350	red maple	10,8	70	15				PRESERVE
351	red maple	20,14,12	70	25			X	PRESERVE
352	red maple	31	75	30			X	PRESERVE
353	red maple	22	80	25			X	PRESERVE
354	red maple	15,15	55	20		X	X	PRESERVE
355	American elm	5	80	15			X	PRESERVE
356	American elm	5	75	10				PRESERVE
357	black cherry	12	70	20				PRESERVE
358	red maple	36	70	25				PRESERVE
359	sweet cherry	14	35	10		X		PRESERVE
360	green ash	5,5,4,4	75	15				REMOVE
361	American holly	7	80	10				REMOVE
362	eastern redbud	14	70	15				REMOVE
363	flowering dogwood	6	0			X		REMOVE
364	white oak	19	65	25				PRESERVE
365	white oak	17	70	20				PRESERVE
366	American elm	5	80	10				PRESERVE
367	tulip tree	12	70	15				REMOVE
368	Japanese maple	2,1,1,1	70	10				REMOVE
369	Chinese privet	6	70	10				REMOVE
370	black cherry	5,4	65	10				REMOVE
371	Japanese maple	5,5,4	80	10				REMOVE
372	Japanese maple	8,7,6,6	80	15				REMOVE
373	American beech	14	85	15				REMOVE
374	black oak	10	75	20				REMOVE
375	eastern red cedar	14	65	15				REMOVE
376	eastern redbud	5	75	10				REMOVE
377	American elm	7	75	15				REMOVE
378	red maple	18	80	20				REMOVE
379	eastern hemlock	5	55	5		X		REMOVE
380	red maple	9,5	70	15				REMOVE
381	tulip tree	18	80	20				REMOVE
382	eastern redbud	8	80	15				REMOVE
383	eastern redbud	5,3	80	15				REMOVE
384	eastern redbud	5	75	15				PRESERVE
385	Colorado spruce	16	70	15				REMOVE
386	American elm	11	65	15				REMOVE
387	red maple	8	75	10				REMOVE
388	red maple	14	80	20				REMOVE
389	black cherry	13	60	10				REMOVE
390	black locust	17	60	10				REMOVE
391	tulip tree	24	80	20				REMOVE
392	tulip tree	19	60	20		X	X	REMOVE
393	Virginia pine	15	60	10				REMOVE
394	red maple	6	0			X		REMOVE
395	red maple	11	65	10				REMOVE
396	eastern cottonwood	21	75	25				REMOVE
397	American elm	6	65	5				REMOVE
398	red maple	9	80	15				REMOVE
399	royal paulownia	23	65	15				REMOVE
400	tulip tree	24	80	30				REMOVE
401	red maple	12	75	20				REMOVE
402	American elm	4	80	5				REMOVE
403	red maple	5	80	10				REMOVE
404	red maple	5	80	10				REMOVE
405	black cherry	9	65	10				REMOVE
406	black locust	15,18	45	15		X		REMOVE
407	American elm	15	75	15				REMOVE
408	tulip tree	24	80	25				REMOVE
409	American elm	9	75	10				REMOVE
410	American elm	8	65	5				REMOVE
411	red maple	7	75	10				REMOVE
412	American elm	8	65	10				REMOVE
413	American elm	4	70	5				REMOVE
414	black locust	16	65	15				REMOVE
415	American elm	8	50	10		X		REMOVE
416	white mulberry	8,4	55	10		X		REMOVE
417	red maple	8	80	15				REMOVE
418	red maple	5	0		X			REMOVE
419	tulip tree	31	80	35				REMOVE
420	American elm	9	80	15				REMOVE
421	American elm	5	65	10				REMOVE
422	tulip tree	18	85	20				REMOVE
423	black locust	11	70	10				REMOVE
424	tulip tree	9	70	15				REMOVE
425	tulip tree	11	75	15				REMOVE
426	black cherry	4	60	5				REMOVE

Tree #	Species	Size	Condition	Crown Radius	* Dead Tree	* Poor Condition	* Off Site/Co-Owned	Status
		dbh	%	Avg. Radius (ft)				
427	black cherry	7	70	15				PRESERVE
428	tulip tree	16	75	20				REMOVE
429	tulip tree	5	65	5				REMOVE
430	red maple	5	70	10				REMOVE
431	American elm	4	65	5				REMOVE
432	tulip tree	9	75	15				REMOVE
433	black locust	18	55	15		X		REMOVE
434	sweet cherry	6	60	5				REMOVE
435	black locust	17	75	20				REMOVE
436	black locust	5	0		X			REMOVE
437	American elm	5	70	10				REMOVE
438	sweet cherry	5	70	10				REMOVE
439	tulip tree	11	75	15				REMOVE
440	sweet cherry	6	65	10				REMOVE
441	black locust	14	70	20				REMOVE
442	tulip tree	17	80	20				REMOVE
443	black cherry	5	70	10				REMOVE
444	black locust	8	65	10				REMOVE
445	black locust	21	75	25				REMOVE
446	black cherry	10,9	70	15				REMOVE
447	sweet cherry	3,2	45	5				REMOVE
448	red maple	5	55	5		X		REMOVE
449	sweet cherry	6	70	10				REMOVE
450	tulip tree	5	75	10				REMOVE
451	tulip tree	16	75	20				REMOVE
452	red maple	6	70	10				REMOVE
453	black locust	16	70	20				REMOVE
454	white mulberry	6	65	10				REMOVE
455	sassafras	5	75	10				REMOVE
456	black locust	6,7	0			X		REMOVE
457	sweet cherry	3,2	60	5				REMOVE
458	red maple	7	70	10				REMOVE
459	tulip tree	5,2	60	10				REMOVE
460	sweet cherry	4	65	5				REMOVE
461	red maple	4	75	10				REMOVE
462	sweet cherry	5	80	10				REMOVE
463	tulip tree	21	75	20				REMOVE
464	red maple	9	75	20				REMOVE
465	black cherry	9	65	15				REMOVE
466	sweet cherry	4	60	5				REMOVE
467	sweet cherry	5	65	10				REMOVE
468	sassafras	9	50	10				REMOVE
469	black locust	8	0			X		REMOVE
470	tulip tree	20	80	25				REMOVE
471	American elm	4	75	5				REMOVE
472	red maple	9	80	15				REMOVE
473	sweet cherry	9	65	10				REMOVE
474	black locust	15	70	20				REMOVE
475	sweet cherry	11,6	65	15				REMOVE
476	tulip tree	15	80	15				REMOVE
477	red maple	9	70	15				REMOVE
478	tulip tree	33	80	35				REMOVE
479	tulip tree	23	85	25				REMOVE
480	red maple	7	65	15				REMOVE
481	tulip tree	15	75	20				REMOVE
482	tulip tree	19	80	25				REMOVE
483	tulip tree	5	70	10				REMOVE
484	tulip tree	12	75	15				REMOVE
485	tulip tree	15	75	20				REMOVE
486	tulip tree	7	75	10				REMOVE
487	bigtooth aspen	12	80	15				REMOVE
488	red maple	6	80	15				REMOVE
489	royal paulownia	8	75	15				REMOVE
490	flowering dogwood	4	75	5				REMOVE
491	sassafras	4	70	5				PRESERVE
492	American elm	9	70	10				REMOVE
493	black locust	5	70	5				REMOVE
494	black locust	5	75	10				PRESERVE
495	black locust	4	75	5				PRESERVE
496	cherry species	6	70	10				PRESERVE
497	Japanese maple	5	70	5				REMOVE
8280	blackgum	5	85	10			X	PRESERVE
8293	white oak	5	75	10			X	PRESERVE
8294	white oak	5	75	10			X	PRESERVE
8297	blackgum	3	85	10			X	PRESERVE
8298	Japanese zelkova	4	80	5			X	PRESERVE
8299	Japanese zelkova	4	80	5			X	PRESERVE
8376	scarlet oak	16	65	20			X	PRESERVE
8377	hickory species	15	85	20			X	PRESERVE
8378	tulip tree	12	75	15			X	PRESERVE
8379	white oak	10	75	15			X	PRESERVE
8380	blackgum	8	65	10			X	PRESERVE
8381	tulip tree	15	75	15			X	PRESERVE
8384	hickory species	20,12	80	25			X	PRESERVE
8385	blackgum	10	40	5		X	X	PRESERVE
8387	hickory species	12	80	15			X	PRESERVE
8405	red maple	4	75	10			X	PRESERVE
8418	Colorado spruce	8	0		X			REMOVE

dbh = Diameter at Breast Height (measured 4.5 feet above ground).

* CONDITION RATING - provided as percentages based on methods outlined in the 9th edition of the Guide for Plant Appraisal, published by the International Society of Arboriculture.

* DEAD TREE - tree is dead or near dead and will likely not survive long term. No tree canopy credit taken.

* POOR CONDITION TREE - Tree has been assessed with condition of < 40 or Arborist has determined that tree will likely not survive long term due to poor health, structure or other contributing factors.

* OFF SITE/CO-OWNED TREE - Tree is either off site or co-owned or definitive ownership could not be determined during initial tree inventory. Ownership shall be determined during pre-construction phase of development. Removal or arboricultural treatment of off site trees is prohibited without written permission from landowner. Location and diameter measurements are "estimated" and the trees condition "assessed visually" from proposed development site.

Tree Survey Information Completed by Tree Preservation Consultants, LLC - Arborist Brian Howard - ISA #MA-4677A

City of Fairfax Tree Preservation Narrative

1. All work performed shall meet or exceed industry standards as most recently published by the international society of arboriculture (ISA), American national standards institute (ANSI A-300), or the tree care industry association (TCIA). In the event treatments prescribed are not covered by an existing standard, work shall meet or exceed standards approved by the City of Fairfax Virginia.

2. A professional ISA certified Arborist shall be obtained to ensure the proper implementation of the tree preservation plan as the "project arborist" if required by a City of Fairfax Representative.

3. All tree preservation related work occurring in or adjacent to tree preservation areas such as root pruning, installation of tree protection fencing and silt control devices; removal of trash and debris; or extraction of trees designated to be removed to eliminate hazardous conditions shall be performed in a manner that minimizes damage to trees, understory shrubs, herbaceous plants, leaf litter, root systems and soil conditions. The use of equipment in tree preservation areas will be limited to hand-operated equipment such as chainsaw, wheel barrows, rake and shovels. Any work that requires the use of equipment, such as skid loaders, tractors, trucks, stump-grinders, etc., or any accessory or attachment connected to this type of equipment shall be prohibited subject to review and approval by the Project Arborist and City of Fairfax Virginia.

4. Trees designated in the approved tree conservation plan for "hand removal" in close proximity to the limits of disturbance or within tree save areas shall be removed using a chainsaw as to avoid damage to surrounding trees and understory vegetation to be preserved. If a stump must be removed, this shall be done using a stump-grinding machine in a manner that causes as little disturbance as possible to adjacent trees, vegetation and soil conditions. Project Arborist shall be on-site to monitor all stump grinding operations.

5. Root pruning shall be performed as needed to comply with the requirements of the approved tree conservation plan. Root pruning shall be accomplished in a manner that protects affected and adjacent vegetation to be preserved, and may include, but not be limited to the following;
- root pruning shall be done with a trencher or vibratory plow to a depth of 18 inches.
- root pruning shall take place prior to any clearing and grading.
- Project Arborist shall be on-site to monitor all root pruning operations.

6. Mulching - Following phase II E&S activities, trees indicated for mulching in the approved tree conservation plan shall be mulched. Hardwood chips or shredded mulch shall be applied at a maximum depth of 4 inches and only within 10 feet of the limits of disturbance or as directed by the Project Arborist.
Distribution of chips:
- heavy equipment is prohibited from entering the tree preservation area(s) to distribute mulch.
- heavy equipment may be used to distribute chips over tree protection fencing at "distribution locations" determined by "Project Arborist".
- distribution locations shall be field located by "Project Arborist". Locations shall be chosen to minimize damage to existing overstory and understory vegetation to be preserved.
- during distribution of mulch "Project Arborist" should be on-site to monitor operations.
- mulch shall be spread by hand inside tree preservation areas.
- hardwood chips or shredded mulch from site clearing operation should be used where possible.

7. All construction activity beyond the limits of disturbance shown on the tree conservation plan shall be prohibited unless previously approved. The storage of equipment, materials, chemicals, and debris as well as vehicular traffic or the parking of vehicles shall not be permitted within tree preservation areas.

8. If required by a City of Fairfax Representative at the time of pre-construction meeting, the services of the "Project Arborist" shall be retained. The limits of clearing and grading will be marked with a continuous line of flagging prior to the preconstruction meeting. During the preconstruction meeting, the "Project Arborist" shall walk such limits of clearing and grading with a City of Fairfax representative to determine where adjustments can be made to increase the area of tree preservation and/or to increase the survivability of trees at the edge of the limits of clearing, and such adjustment shall be implemented; provided that no adjustment shall be required that would affect the location and/or design of the approved development.

9. Trees located outside of the limits of clearing and within areas designated to be preserved that have been pre-identified on approved tree preservation plans as "dead", "poor condition" or "potential hazard" shall be evaluated by the Project Arborist during the pre-construction walk-through for removal during the development site's initial land clearing operations. If during the preconstruction walk-through, or during any other inspection of the site, the Project Arborist or a City of Fairfax representative identifies additional trees that have become hazardous or a maintenance nuisance due to the introduction of a target such as a structure, open space frequented by people, or other improvement, removal of these trees shall be required. Removal of trees within close proximity to the limits of disturbance or within tree save areas shall be accomplished as directed by note 4.

10. If required by the City of Fairfax Representative, the services of a Project Arborist shall be retained to monitor implementation of tree preservation activities to ensure they are conducted per approved tree conservation plan as approved by the City of Fairfax. See arborist monitoring schedule for detail.

11. All trees shown to be preserved on the tree preservation plan shall be protected by tree protection fence. Tree protection fencing in the form of four (4) foot high, fourteen (14) gauge welded wire attached to six (6) foot steel posts driven eighteen (18) inches into the ground and placed no further than ten (10) feet apart or super silt fence to the extent that required trenching does not sever roots within structural rooting zone which can lead to structural failure and/or uprooting of trees, shall be erected at the limits of clearing and grading adjacent to the tree preservation areas as shown on the phase I & II erosion and sediment control sheets.

12. Signs stating "tree preservation area - keep out" shall be affixed to the tree preservation fence at least every 50 feet. Signs shall alternate between English and Spanish.

13.) Poor condition trees. Trees designated poor condition in the approved tree conservation plan are subject to additional inspection, removal, pruning or other arboricultural practices at time of initial land clearing phase.

City of Fairfax Tree Conservation Plan Phasing

Pre-construction
1.) Prior to the pre-construction meeting the limits of clearing shall be flagged on site.

2.) Areas show on the approved plans to be preserved that do not contain significant vegetation shall be reviewed on site. If warranted, approval from the City of Fairfax for an exemption from preservation and protection requirements shall be determined at this time.

3.) Trees located outside of the limits of clearing and within tree preservation areas that have been pre-identified on approved tree preservation plans as "dead", "poor condition" or "potential hazard" shall be evaluated by the Project Arborist during the pre-construction walk-through for removal during the development site's initial land clearing operations.

4.) If during the preconstruction walk-through, or during any other inspection of the site, the Project Arborist or a City of Fairfax representative identifies additional trees that have become hazardous or a maintenance nuisance due to the introduction of a target such as a structure, open space frequented by people, or other improvement, removal of these trees shall be required.

5.) If demolition of existing site features is to occur next to trees to be preserved, tree protection measures shall be installed before a demolition permit can be issued.

Initial land clearing operations
1.) Tree protection devices. The above and below-ground portions of all vegetation shown on approved plan to be preserved within and contiguous to the site shall be protected. Protection devices shall be installed prior to any clearing and grading with heavy equipment as specified in the approved tree conservation plan.

2.) Root pruning. Prior to land disturbing activities, root pruning with a vibratory plow, trencher or other device approved by the Project Arborist or City of Fairfax representative shall be conducted along the limits of clearing adjacent to tree preservation areas where called for in the approved tree conservation plan. (see tree preservation narrative and root pruning detail provided)

3.) Trees on the edge of the limits of clearing "hand removals" 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. (see tree preservation narrative note 4)

4.) Trees approved to be removed by Project Arborist or City of Fairfax representatives during pre-construction walk-through shall be removed in conjunction with the development site's initial land clearing operation.

5.) Once clearing is completed and protective devices installed according to the approved phase I erosion and sediment control plan clearing may continue throughout the site.

Construction phase
1.) Trees and forested areas shall be protected and managed during all phases of construction in accordance with the provisions and site-specific guidance provided within the approved tree conservation plan narrative.

2.) In addition to protecting trees, the permittee shall protect all understory plants, leaf litter and soil conditions found in the forested areas designated for preservation except as allowed by the approved tree conservation plan and narrative.

3.) Monitoring: The permittee shall actively monitor the construction site to ensure that inappropriate activities such as storage of construction materials, dumping of debris, and traffic by construction equipment and personnel do not occur within areas shown preserved outside the limits of clearing.

4.) Tree protection devices shall be maintained until all work in the vicinity has been completed and shall not be removed or relocated without the consent of the Project Arborist and City of Fairfax Representative.

5.) Any damage inflicted to the above or below-ground portions of the trees shown to be preserved shall be repaired immediately.

6.) Any portion of the tree preservation area that is disturbed without prior approval of the City of Fairfax shall be mulched immediately with a minimum of 4-inchs of wood chips or other suitable material as approved by the City of Fairfax or tree conservation plan narrative.

NOTE :

TOTAL NO. OF TREES INVENTORIED	= 295
TREES TO BE PRESERVED	= 115
TREES TO BE REMOVED	= 180

TREE INVENTORY

FAIRFAX PRESBYTERIAN CHURCH

CITY OF FAIRFAX, VIRGINIA

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NO.	DATE	REVISION PRIOR TO APPROVAL

COMMONWEALTH OF VIRGINIA
BRIAN R. THOMAS
Lic. No. 038937
PROFESSIONAL ENGINEER

NO.	DESCRIPTION REVISIONS	REVIEW BY	APPRVD	DATE

DESIGN KJV | DRAFT KJV | APPROVED HMF | DATE JAN. 2021 | SCALE HORIZ: --- VERT: ---

SHEET 33 OF 51

PRJ NO: 2017-2570

TYPE: MDP

Attached Xrefs: 00-G0500\XREF-R0401\XREF-R0301

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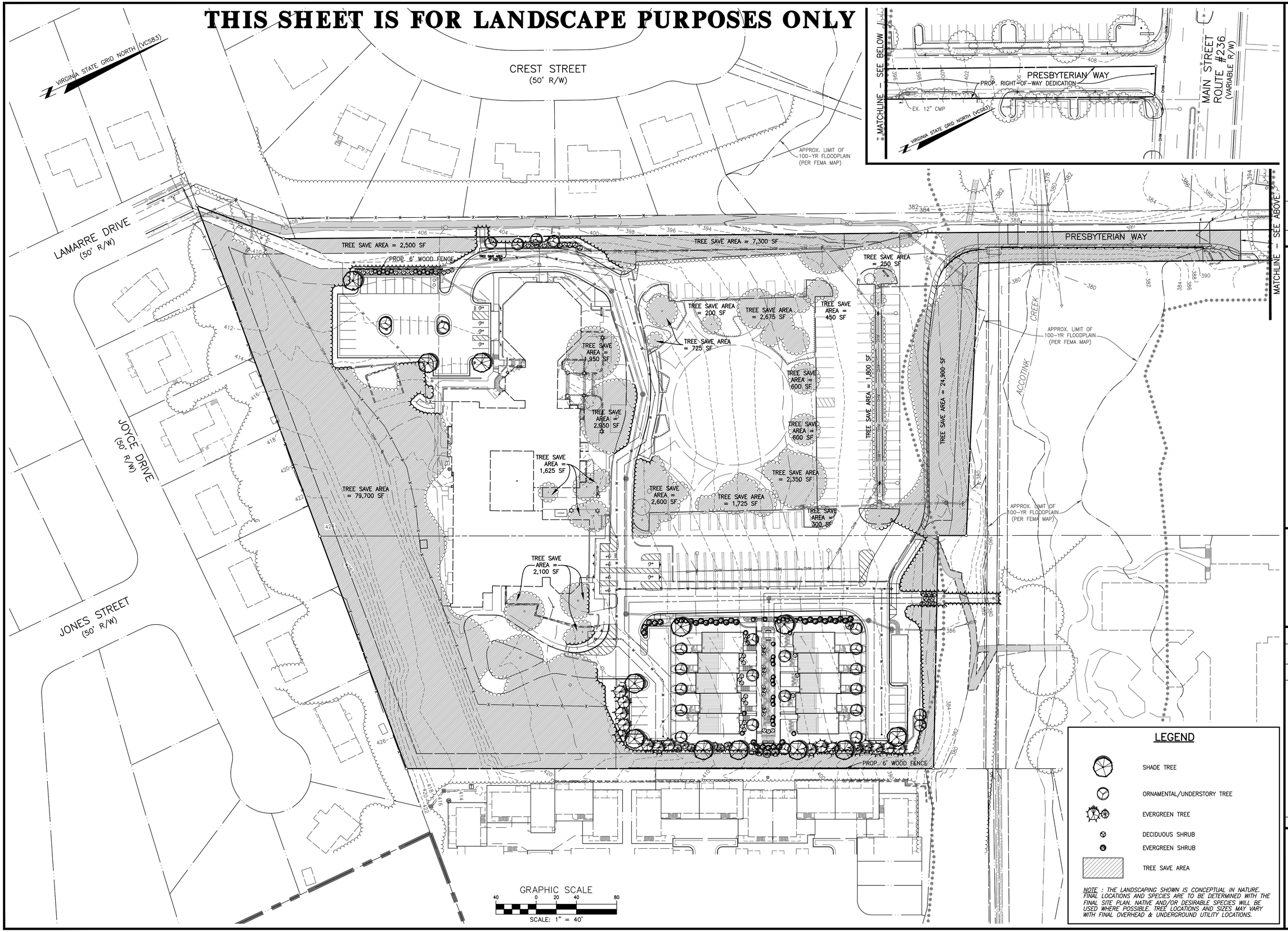

LEGEND

- SHADE TREE
- ORNAMENTAL/UNDERSTORY TREE
- EVERGREEN TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
- TREE SAVE AREA

NOTE : THE LANDSCAPING SHOWN IS CONCEPTUAL IN NATURE. FINAL LOCATIONS AND SPECIES ARE TO BE DETERMINED WITH THE FINAL SITE PLAN. NATIVE AND/OR DESIRABLE SPECIES WILL BE USED WHERE POSSIBLE. TREE LOCATIONS AND SIZES MAY VARY WITH FINAL OVERHEAD & UNDERGROUND UTILITY LOCATIONS.

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OVERALL LANDSCAPE PLAN

FAIRFAX PRESBYTERIAN CHURCH

CITY OF FAIRFAX, VIRGINIA

COMMONWEALTH OF VIRGINIA
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Lic. No. 038937
PROFESSIONAL ENGINEER

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APPROVED HMF		VERT: —	
DATE JAN. 2021			

SHEET 34 OF 51

PRJ NO: 2017-2570

TYPE: MDP

Attached Xrefs: 00-G0700/00-G0500/XREF-R0401/XREF-R0301/00-G6801

VIRGINIA STATE GRID NORTH (VCS83)

MATCHLINE – SEE SHEET 38

APPROX. LIMIT OF 100–YR FLOODPLAIN (PER FEMA MAP)

MATCHLINE – SEE BELOW

20' OUTLET ROAD (D.B. 162, PG. 45)

PRESBYTERIAN WAY

PROP. RIGHT–OF–WAY DEDICATION

EX. 12" CMP

MAIN STREET ROUTE #236 (VARIABLE R/W)

VIRGINIA STATE GRID NORTH (VCS83)

THIS SHEET IS FOR LANDSCAPE PURPOSES ONLY

*** FOR TRANSITIONAL YARD, 10–YEAR TREE CANOPY, AND PARKING LOT LANDSCAPING CALCULATIONS, SEE SHEET 39 ***

20' OUTLET ROAD (D.B. 162, PG. 45)

AREA OF FENCE WAIVER

20' SAN. SEW. ESM'T (D.B. 3811, PG. 677)

AREA OF TRANSITIONAL YARD & FENCE WAIVERS

MATCHLINE – SEE ABOVE

15' TRANSITIONAL YARD 3

PRESBYTERIAN WAY

AREA OF TRANSITIONAL YARD & FENCE WAIVERS

PARCEL 123
210,992 SF

FIELD–VERIFIED RESOURCE PROTECTION AREA

AREA OF FENCE WAIVER

15' TRANSITIONAL YARD 3

10' TRAIL EASEMENT (D.B. 5798, PG. 1516)

20' SAN. SEWER ESM'T (D.B. 3841, PG. 312)

CREEK

ACCOTINK

APPROX. LIMIT OF 100–YR FLOODPLAIN (PER FEMA MAP)

RESOURCE PROTECTION AREA PER CITY MAP

GRAPHIC SCALE
20 0 10 20 40
SCALE: 1" = 20'

LEGEND

① TRANSITIONAL YARD (SEE SHEET 39)

TREE SAVE AREA (SEE SHEET 34)

MATCHLINE – SEE SHEET 36

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CONCEPTUAL LANDSCAPE PLAN

FAIRFAX PRESBYTERIAN CHURCH

CITY OF FAIRFAX, VIRGINIA

COMMONWEALTH OF VIRGINIA
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SHEET 35 OF 51

PRJ NO: 2017–2570

TYPE: MDP

Attached Xrefs: 00–G0700/00–G0500/XREF–R0401/XREF–R0301/00–G6801

MATCHLINE – SEE SHEET 35

MATCHLINE – SEE SHEET 37

PARCEL 122A1
79,397 SF

PARCEL 122B
33,030 SF

SEE SHEET 39 FOR DETAIL

10 2,400 SF
9 1,600 SF
8 1,600 SF
7 1,600 SF
6 2,400 SF
1 2,400 SF
2 1,600 SF
3 1,600 SF
4 1,600 SF
5 2,400 SF

15' TRANSITIONAL YARD 3

PROP. 6' WOOD FENCE

AREA OF FENCE WAIVER

AREA OF FENCE WAIVER

PROP. 15' WATER ESMT.

VAN.

RESOURCE PROTECTION AREA PER CITY MAP

APPROX. LIMIT OF 100-YR FLOODPLAIN (PER FEMA MAP)

VIRGINIA STATE GRID NORTH (VCS83)

20' SAN. SEWER ESMT. (D.B. 3607, PG. 664)

10' TRAIL EASEMENT (D.B. 20499, PG. 1783)

SAN. SEWER ESMT. (D.B. 3607, PG. 666)

20' SAN. SEWER ESMT. (D.B. 530, PG. 417)

5' PUBLIC ACCESS ESMT. (D.B. 22078, PG. 37)

20' SAN. SEWER ESMT. (D.B. 17887, PG. 826)

LEGEND

- TREE TO BE PRESERVED (SEE SHEET 29)
- SHADE TREE
- TREE COUNTED TOWARD PARKING LOT LANDSCAPING (SEE SHEET 39)
- ORNAMENTAL/UNDERSTORY TREE
- EVERGREEN TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
- (1) TRANSITIONAL YARD (SEE SHEET 39)
- TREE SAVE AREA (SEE SHEET 34)

NOTE : THE LANDSCAPING SHOWN IS CONCEPTUAL IN NATURE. FINAL LOCATIONS AND SPECIES ARE TO BE DETERMINED WITH THE FINAL SITE PLAN. NATIVE AND/OR DESIRABLE SPECIES WILL BE USED WHERE POSSIBLE. TREE LOCATIONS AND SIZES MAY VARY WITH FINAL OVERHEAD & UNDERGROUND UTILITY LOCATIONS.

GRAPHIC SCALE
20 0 10 20 40
SCALE: 1" = 20'

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CONCEPTUAL LANDSCAPE PLAN

FAIRFAX PRESBYTERIAN CHURCH

CITY OF FAIRFAX, VIRGINIA

COMMONWEALTH OF VIRGINIA
BRIAN R. THOMAS
Lic. No. 038937
PROFESSIONAL ENGINEER

NO. | DESCRIPTION | REVISIONS | REVIEW BY | APPROVD | DATE

DESIGN KJV | DRAFT KJV | APPROVED HMF | DATE JAN. 2021 | HORIZ: 1" = 20' | VERT: 1" = --

SHEET 36 OF 51

PRJ NO: 2017-2570

TYPE: MDP

00-G0700/00-G0500/XREF-R0401/XREF-R0301/00-G6801

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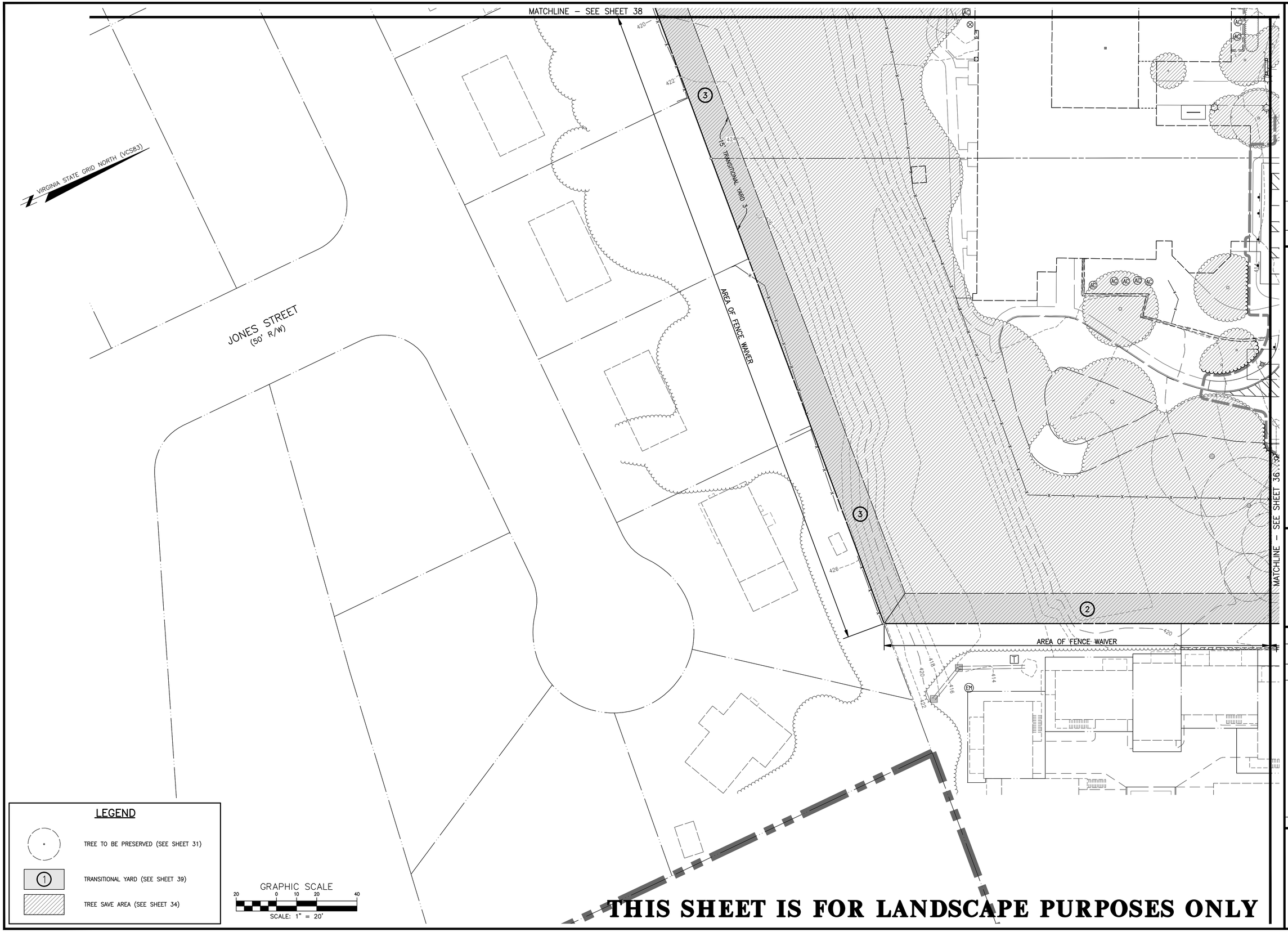

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CONCEPTUAL LANDSCAPE PLAN

FAIRFAX PRESBYTERIAN CHURCH

CITY OF FAIRFAX, VIRGINIA

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APPROVED HMF | DATE JAN., 2021 | SCALE HORIZ.: 1" = 20' VERT.: ---

SHEET 37 OF 51

PRJ NO: 2017-2570

TYPE: MDP

Attached Xrefs: 00-G0700/00-G0500/XREF-R0401/XREF-R0301/00-G6801

THIS SHEET IS FOR LANDSCAPE PURPOSES ONLY

LEGEND

- TREE TO BE PRESERVED (SEE SHEET 29)
- SHADE TREE
- TREE COUNTED TOWARD PARKING LOT LANDSCAPING (SEE SHEET 39)
- ORNAMENTAL/UNDERSTORY TREE
- DECIDUOUS SHRUB
- (1) TRANSITIONAL YARD (SEE SHEET 39)
- TREE SAVE AREA (SEE SHEET 34)

NOTE : THE LANDSCAPING SHOWN IS CONCEPTUAL IN NATURE. FINAL LOCATIONS AND SPECIES ARE TO BE DETERMINED WITH THE FINAL SITE PLAN. NATIVE AND/OR DESIRABLE SPECIES WILL BE USED WHERE POSSIBLE. TREE LOCATIONS AND SIZES MAY VARY WITH FINAL OVERHEAD & UNDERGROUND UTILITY LOCATIONS.

GRAPHIC SCALE
20 0 10 20 40
SCALE: 1" = 20'

VIRGINIA STATE GRID NORTH (VCS83)

CREST STREET
(50' R/W)

LAMARRE DRIVE
(50' R/W)

JOYCE DRIVE
(50' R/W)

AREA OF FENCE WAIVER

20' OUTLET ROAD
(D.B. 162, PG. 45)

TRANSITIONAL YARD 3

AREA OF TRANSITIONAL YARD MODIFICATION

PROP. 15' WATER ESMT.

PROP. 6' WOOD FENCE

16' VEPCO ESMT.
(D.B. & PG. NOT FOUND)

MATCHLINE – SEE SHEET 35

MATCHLINE – SEE SHEET 37

CONCEPTUAL LANDSCAPE PLAN

FAIRFAX PRESBYTERIAN CHURCH

CITY OF FAIRFAX, VIRGINIA

COMMONWEALTH OF VIRGINIA
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REVISIONS

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KJV	KJV
APPROVED	
HMF	
DATE	
JAN., 2021	
SCALE	
HORIZ.: 1" = 20'	
VERT.:	

SHEET	OF
38	51

PRJ NO: 2017-2570
TYPE: MDP

Attached Xrefs: 00-G0700/00-G0500/XREF-R0401/XREF-R0301/00-G6801

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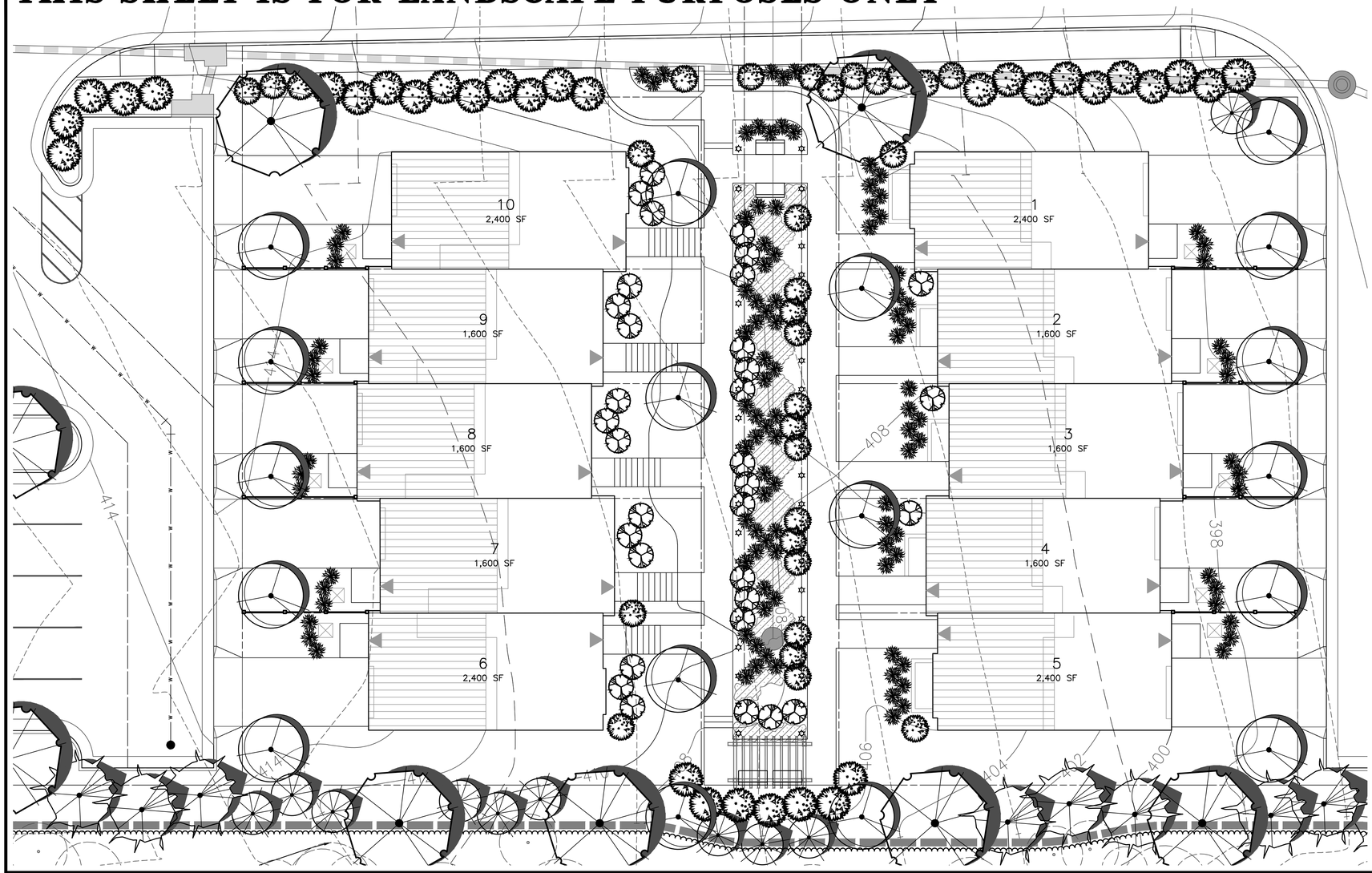

TOWNHOME LANDSCAPING DETAIL

SCALE : 1" = 10'

VIRGINIA STATE GRID NORTH (VCS83)

GRAPHIC SCALE

10 0 5 10 20

SCALE: 1" = 10'

LEGEND

- SHADE TREE
- ORNAMENTAL/UNDERSTORY TREE
- EVERGREEN TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
- ORNAMENTAL GRASS
- GROUNDCOVER
- SOLAR PATHWAY LIGHT (SEE SHEET 51 FOR DETAIL)

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① TRANSITIONAL YARD 3
520 FT LENGTH *

REQUIRED		PROVIDED	
15'	MINIMUM WIDTH	15'	WIDTH
6'	MINIMUM FENCE OR WALL HEIGHT	N/A	FENCE (WAIVED)
21	CANOPY TREES (4 PER 100 FT)	*	CANOPY TREES
21	UNDERSTORY TREES (4 PER 100 FT)	2	UNDERSTORY TREES
21	SHRUBS (4 PER 100 FT)	8	SHRUBS

* 91% OF THE BUFFER IS WITHIN THE TREE SAVE AREA, AND CONTAINS AT LEAST 21 CANOPY TREES

② TRANSITIONAL YARD 3
512 FT LENGTH *

REQUIRED		PROVIDED	
15'	MINIMUM WIDTH	15'	WIDTH
6'	MINIMUM FENCE OR WALL HEIGHT	6'	FENCE (PARTIAL)
20	CANOPY TREES (4 PER 100 FT)	*	CANOPY TREES
20	UNDERSTORY TREES (4 PER 100 FT)	*	UNDERSTORY TREES
20	SHRUBS (4 PER 100 FT)	*	SHRUBS

* THE ENTIRE BUFFER IS WITHIN THE TREE SAVE AREA

③ TRANSITIONAL YARD 3
560 FT LENGTH *

REQUIRED		PROVIDED	
15'	MINIMUM WIDTH	15'	WIDTH
6'	MINIMUM FENCE OR WALL HEIGHT	N/A	FENCE (WAIVED)
22	CANOPY TREES (4 PER 100 FT)	*	CANOPY TREES
22	UNDERSTORY TREES (4 PER 100 FT)	*	UNDERSTORY TREES
22	SHRUBS (4 PER 100 FT)	*	SHRUBS

* THE ENTIRE BUFFER IS WITHIN THE TREE SAVE AREA

④ TRANSITIONAL YARD 3
590 FT LENGTH *

REQUIRED		PROVIDED	
15'	MINIMUM WIDTH	10–15'	WIDTH
6'	MINIMUM FENCE OR WALL HEIGHT	6'	FENCE (PARTIAL)
24	CANOPY TREES (4 PER 100 FT)	*	CANOPY TREES
24	UNDERSTORY TREES (4 PER 100 FT)	4	UNDERSTORY TREES
24	SHRUBS (4 PER 100 FT)	4	SHRUBS

* 83% OF THE BUFFER IS WITHIN THE TREE SAVE AREA, AND CONATINS AT LEAST 24 CANOPY TREES

INTERIOR PARKING LOT LANDSCAPING CALCULATIONS

PHASE OF DEVELOPMENT	ONE	THREE	TOTAL
NUMBER OF PARKING SPACES PROVIDED IN EACH PHASE	10	30	40
CANOPY TREES REQUIRED (1 tree/10 spaces)	1	3	4
CANOPY TREES PROVIDED IN EACH PHASE	3	3	6

NOTE : For expansion of existing parking lot only, per Zoning Ordinance §4.5.7.A.1(b)

= TREE COUNTED TOWARD PARKING LOT LANDSCAPING

PLANT SCHEDULE

	QUANTITY	X CANOPY	= TOTAL
SHADE TREES (3.5" CAL.) *(E.G. RED MAPLE, SCARLET OAK, GINKGO)*	12	250	3,000
UNDERSTORY TREES (2" CAL.) *(E.G. SERVICEBERRY, FRINGETREE, REDBUD)*	26	100	2,600
EVERGREEN TREES (8' HGT.) *(E.G. AMERICAN HOLLY, EASTERN REDCEDAR)*	16	100	1,600
EVERGREEN TREES (6' HGT.) *(E.G. EASTERN ARBORVITAE)*	10	40	400
MEDIUM DECIDUOUS SHRUBS *(E.G. BEAUTYBERRY, VIBURNUM, WINTERBERRY)*	28	0	0
MEDIUM EVERGREEN SHRUBS *(E.G. WHITE CEDAR, YAUPON HOLLY, RHODODENDRON)*	55	0	0
ORNAMENTAL GRASSES *(E.G. LITTLE BLUESTEM, SWITCH GRASS, BOTTLEBRUSH)*	115	0	0
			7,600

IMPERVIOUS SURFACE CALCULATIONS

SITE AREA	359,435 SF
EXISTING CHURCH	27,250 SF
PROPOSED TOWNHOUSES	8,000 SF
SIDEWALKS	23,200 SF
STREETS & PARKING	115,340 SF
TOTAL IMPERVIOUS AREA	173,790 SF
IMPERVIOUS SURFACE RATIO	173,790/359,435 = 48.3%

10–YEAR TREE COVER CALCULATIONS

TREE COVER REQUIRED	
TOTAL SITE AREA	359,435 S.F.
PERCENTAGE OF TREE COVER REQUIRED	10%
TOTAL TREE COVER REQUIRED	35,944 S.F.

TREE COVER PROVIDED	
AREA OF EXISTING TREES TO BE PRESERVED	137,400 S.F.±
AREA OF TREES TO BE PLANTED	7,600 S.F.±
TOTAL TREE COVER PROVIDED (40% OF SITE AREA)	145,000 S.F.±

NO.	DATE	REVISION PRIOR TO APPROVAL

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TOWNHOME LANDSCAPING & LANDSCAPE CALCULATIONS

FAIRFAX PRESBYTERIAN CHURCH

CITY OF FAIRFAX, VIRGINIA

COMMONWEALTH OF VIRGINIA
BRIAN R. THOMAS
Lic. No. 038937
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	REVISIONS	REVIEW BY	APPROVD	DATE

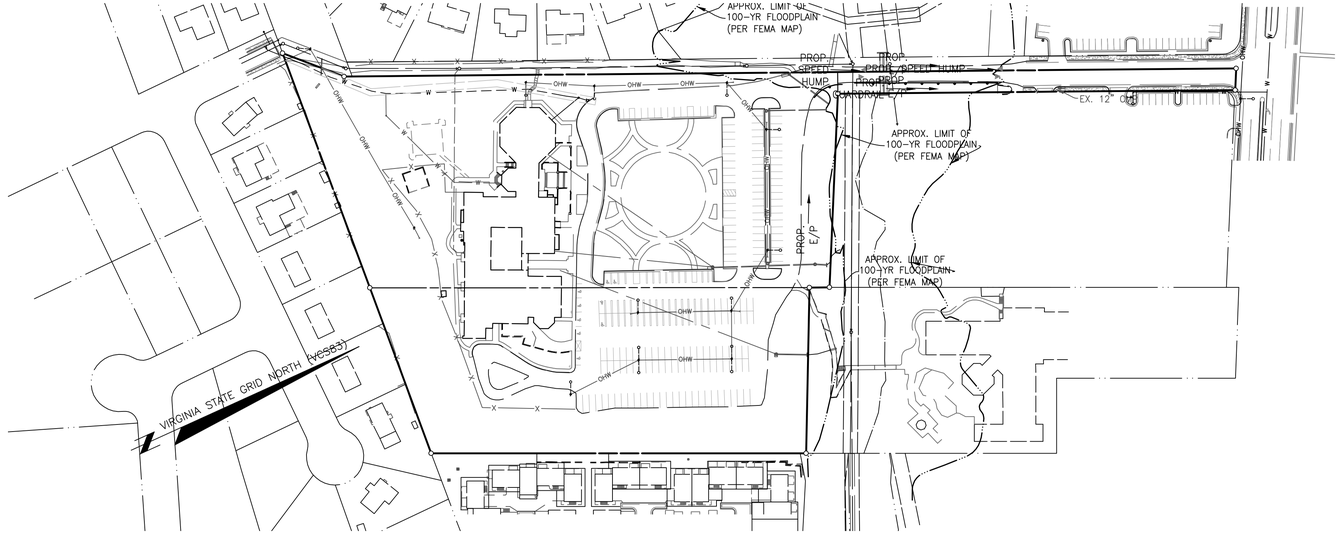
DESIGN	DRAFT
KJV	KJV
APPROVED	DATE
HMF	JAN. 2021
SCALE: HORIZ.: 1" = 10' VERT.: ——	

SHEET 39 OF 51

PRJ NO: 2017–2570

TYPE: MDP

Attached Xrefs: 00–G0700/00–G0500/XREF–R0401/XREF–R0301/00–G6801



PRE-DEVELOPMENT OVERALL DEVELOPMENT

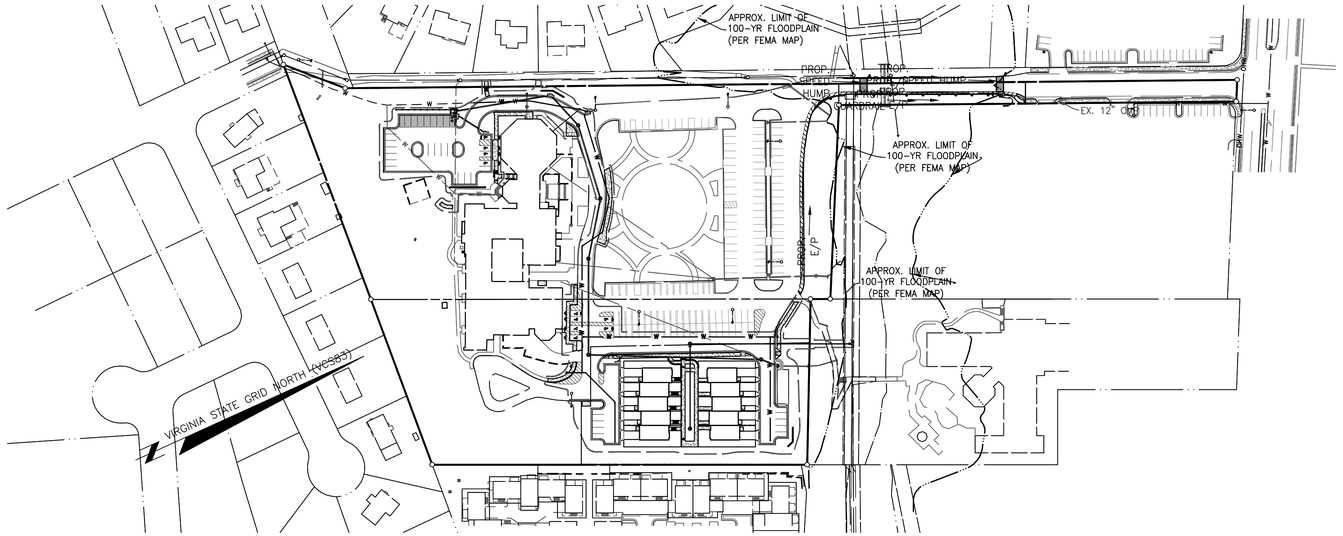
SCALE: 1" = 100'

*FOR DETAILED INFORMATION OF EACH PHASE OF DEVELOPMENT, PLEASE SEE SHEETS 42 AND 43.

GRAPHIC SCALE
100 0 50 100 200
SCALE: 1" = 100'

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space		0.67		0.09	0.76
Managed Turf (acres) -- disturbed, graded for yards or other turf to be		0.06	0.01	0.33	0.40
Impervious Cover (acres)		0.01	0.00	0.91	0.92
					2.08



POST-DEVELOPMENT OVERALL DEVELOPMENT

SCALE: 1" = 100'

*FOR DETAILED INFORMATION OF EACH PHASE OF DEVELOPMENT, PLEASE SEE SHEETS 42 AND 43.

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be		0.41	0.01	0.40	0.82
Impervious Cover (acres)		0.33	0.00	0.93	1.26
Area Check	**OK.**	**OK.**	**OK.**	**OK.**	2.08

OVERALL STORMWATER/OUTFALL NARRATIVE

THE OUTFALL POINT OF THIS PROJECT IS AT ACCOTINK CREEK, ABOUT 340' DOWNSTREAM OF THE EXISTING CULVERTS UNDER PRESBYTERIAN WAY, PER 9VAC25-870-66-B-4. AT THIS POINT, ONSITE RUNOFF DISCHARGES INTO A NATURAL CHANNEL, THROUGH AN EXISTING MAN-MADE STORM SEWER. A LEVEL 2 BIORETENTION AREA AND MULTIPLE MANUFACTURED TREATMENT FACILITIES ARE PROPOSED TO MITIGATE THE IMPACTS OF THE PROPOSED DEVELOPMENT ON THE EXISTING PARKING LOT AND FORESTED AREAS WITHIN THE LIMITS OF CLEARING AND GRADING.

CHANNEL PROTECTION:
POST DEVELOPMENT RUNOFF DURING THE 1-YEAR STORM EVENT HAS BEEN REDUCED IN ACCORDANCE WITH 9VAC25-870-66-B-3-A, AND AS SUCH, CHANNEL PROTECTION REQUIREMENTS HAVE BEEN MET FOR THIS PORTION OF THE SITE.

FLOOD PROTECTION:
THE POST DEVELOPMENT 2-YEAR STORM AND 10-YEAR 24-HOUR STORMS WILL HAVE PEAK RUNOFF RATES WHICH ARE LESS THAN THE PRE DEVELOPMENT CONDITION, PER 9VAC25-870-66-C-1. THE LIMIT OF ANALYSIS FOR FLOOD PROTECTION IS WITHIN ACCOTINK CREEK, 340' DOWNSTREAM OF THE EXISTING CULVERTS UNDER PRESBYTERIAN WAY, PER 9VAC25-870-66-C-3-C.

SEE RUNOFF SUMMARY TABLE ON THIS SHEET.

WATER QUALITY:
BIORETENTION, A LOW IMPACT DEVELOPMENT (LID) TECHNIQUE, IS BEING PROPOSED ON THE TOWN HOME PORTION OF THE PROJECT TO MEET WATER QUALITY REQUIREMENTS. A MANUFACTURED FILTERING DEVICE IS PROPOSED ON THE ADDITIONAL PARKING PORTION OF THE PROJECT TO ADDRESS WATER QUALITY REQUIREMENTS. THE BIORETENTION FACILITY AND THE MANUFACTURED TREATMENT DEVICE WILL BE PRIVATELY OWNED AND MAINTAINED.

SEE VRRM SUMMARY ON THIS SHEET.

THE BMP AND SWM DESIGN SHOWN ARE PRELIMINARY AND MAY CHANGE AT THE TIME OF FINAL ENGINEERING. THE PROJECT MAY USE NUTRIENT CREDITS OR ALTERNATE BMP/SWM FACILITIES TO MEET THE WATER QUALITY AND WATER QUANTITY REQUIREMENTS FOR THIS PROJECT AS NECESSARY.

OVERALL DEVELOPMENT 1-Year Storm Channel Protection	
Pre Dev. Q Onsite	2.55 cfs
Pre Dev Rv	7,154 cf
Post Dev Rv	10,995 cf
Pre/post vol. ratio	0.65
Improvement Factor	0.8
Post Dev Q allowable	1.33 cfs
Offsite Controlled (UGS 1) (pre dev bypass)	0.55 cfs
Offsite Controlled (UGS 2) (pre dev bypass)	0.26 cfs
Total Allowable release	2.14 cfs
Post Dev Onsite Uncontrolled	1.09 cfs
Post Dev UGS 1 Release	0.95 cfs
Post Dev UGS 2 Release	0.05 cfs
Total Post Dev Release	2.09 cfs

Stormwater Quantity Summary - Overall Development			
	1-Year Storm Channel Protection (cfs)	2-Year Storm (cfs)	10-Year Storm Flood Protection (cfs)
Pre Development	3.36	4.88	10.01
Post Development allowable release	2.14	4.88	10.01
Post Development Release	2.09	4.36	9.76

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	3.15
TP LOAD REDUCTION REQUIRED (lb/yr)	1.21
TP LOAD REDUCTION ACHIEVED (lb/yr)	1.26
TP LOAD REMAINING (lb/yr):	1.89
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	0.00 **

** TARGET TP REDUCTION EXCEEDED BY 0.05 LB/YEAR **

6. Bioretention (RR)													
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40	0.34	0.71	0	1,090	1,636	2,726	25	0.00	1.71	0.94	0.77	
14. Manufactured Treatment Devices (no RR)													
14.b. ISOLATOR ROW	0	0.21	0.32	0	0	1,274	1,274	40	0.00	0.80	0.32	0.48	

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NO.	DATE	REVISION PRIOR TO APPROVAL

OVERALL STORMWATER MANAGEMENT/BMP DESIGN

FAIRFAX PRESBYTERIAN CHURCH

CITY OF FAIRFAX, VIRGINIA

COMMONWEALTH OF VIRGINIA
BRIAN R. THOMAS
Lic. No. 039937
PROFESSIONAL ENGINEER

NO.	DESCRIPTION REVISIONS	BY	APPRVD	DATE

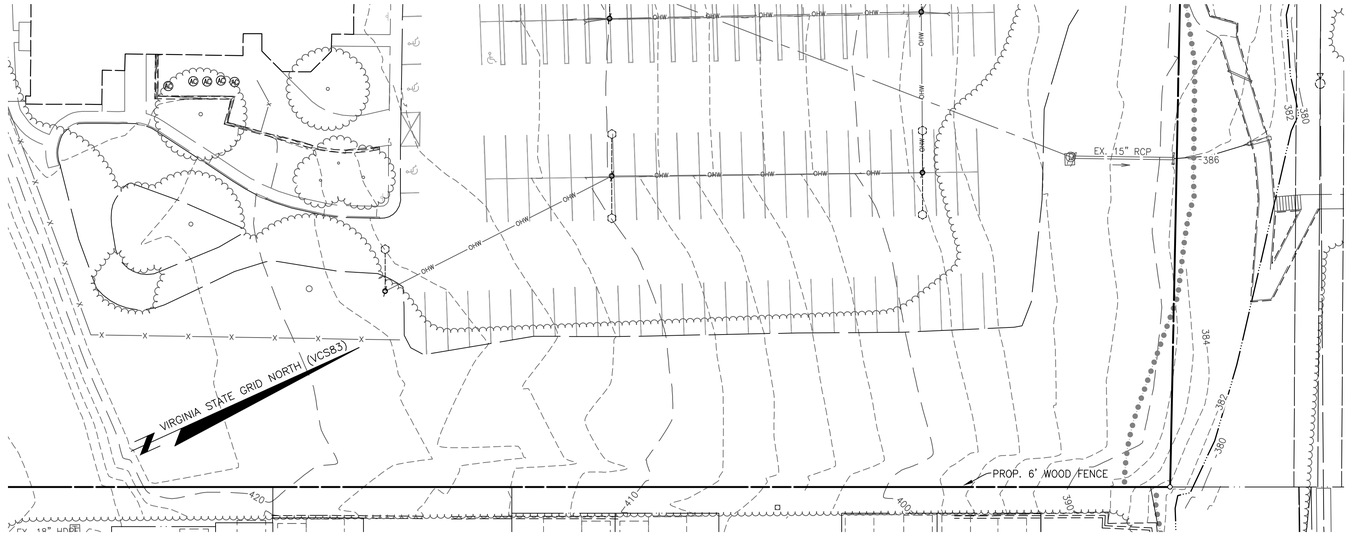
DESIGN GMP | DRAFT GMP | APPROVED BRT | DATE JAN. 2021 | SCALE HORIZ: 1"=100' VERT: ---

SHEET 41 OF 51

PRJ NO: 2017-2570

TYPE: MDP

Attached Xrefs: 00-G0700/00-G0500/XREF-R0401/XREF-R0301

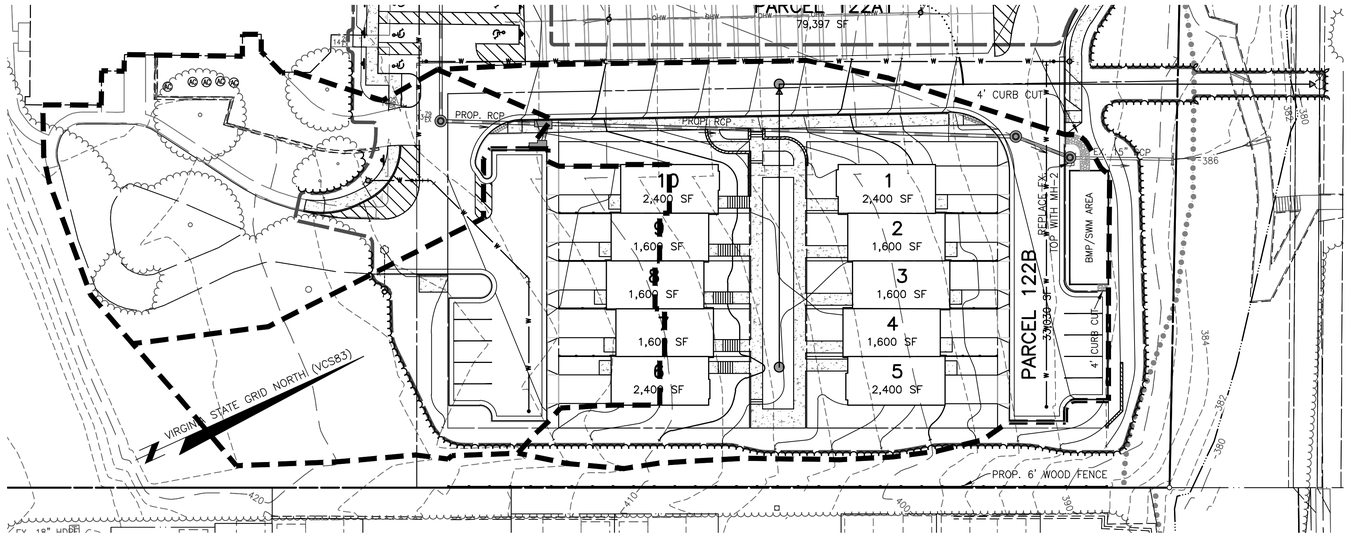


PRE-DEVELOPMENT
PHASE ONE - TOWNHOUSE DEVELOPMENT
SCALE: 1" = 30'

GRAPHIC SCALE
30 0 15 30 60
SCALE: 1" = 30'

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space		0.50			0.50
Managed Turf (acres) -- disturbed, graded for yards or other turf to be		0.01	0.01	0.05	0.07
Impervious Cover (acres)		0.01	0.00	0.93	0.94
					1.51



POST-DEVELOPMENT
PHASE ONE - TOWNHOUSE DEVELOPMENT
SCALE: 1" = 30'

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be		0.29	0.01	0.29	0.59
Impervious Cover (acres)		0.23	0.00	0.69	0.92
Area Check	OK.	OK.	OK.	OK.	1.51

PHASE ONE - TOWNHOUSE DEVELOPMENT STORMWATER/OUTFALL NARRATIVE

THE OUTFALL POINT OF THIS PORTION OF THE PROJECT IS AT ACCOTINK CREEK, ABOUT 340' DOWNSTREAM OF THE EXISTING CULVERTS UNDER PRESBYTERIAN WAY, PER 9VAC25-870-66-B-4. AT THIS POINT, ONSITE RUNOFF DISCHARGES INTO A NATURAL CHANNEL, THROUGH AN EXISTING MAN-MADE STORM SEWER. A LEVEL 2 BIORETENTION AREA IS PROPOSED TO MITIGATE THE IMPACTS OF THE PROPOSED DEVELOPMENT ON THE EXISTING PARKING LOT AND FORESTED AREAS WITHIN THE LIMITS OF CLEARING AND GRADING.

CHANNEL PROTECTION:
POST DEVELOPMENT RUNOFF DURING THE 1-YEAR STORM EVENT HAS BEEN REDUCED IN ACCORDANCE WITH 9VAC25-870-66-B-3-A, AND AS SUCH, CHANNEL PROTECTION REQUIREMENTS HAVE BEEN MET FOR THIS PORTION OF THE SITE.

FLOOD PROTECTION:
THE POST DEVELOPMENT 2-YEAR STORM AND 10-YEAR 24-HOUR STORMS WILL HAVE PEAK RUNOFF RATES WHICH ARE LESS THAN THE PRE DEVELOPMENT CONDITION, PER 9VAC25-870-66-C-1. THE LIMIT OF ANALYSIS FOR FLOOD PROTECTION IS WITHIN ACCOTINK CREEK, 340' DOWNSTREAM OF THE EXISTING CULVERTS UNDER PRESBYTERIAN WAY, PER 9VAC25-870-66-C-3-C.

SEE RUNOFF SUMMARY TABLE ON THIS SHEET.

WATER QUALITY:
BIORETENTION, A LOW IMPACT DEVELOPMENT (LID) TECHNIQUE, IS BEING PROPOSED ON THIS PORTION OF THE PROJECT TO MEET WATER QUALITY REQUIREMENTS. THE BIORETENTION FACILITY WILL BE PRIVATELY OWNED AND MAINTAINED.

SEE VRRM SUMMARY ON THIS SHEET.

THE BMP AND SWM DESIGN IS PRELIMINARY AND MAY CHANGE AT THE TIME OF FINAL ENGINEERING. THE PROJECT MAY USE NUTRIENT CREDITS OR ALTERNATE BMP/SWM FACILITIES TO MEET THE WATER QUALITY AND WATER QUANTITY REQUIREMENTS FOR THIS PROJECT AS NECESSARY.

PHASE 1 - TOWNHOMES 1-Year Storm Channel Protection		
Pre Dev. Q Onsite	2.35	cfs
Pre Dev Rv	6,485	cf
Post Dev Rv	7,982	cf
Pre/post vol. ratio	0.81	
Improvement Factor	0.8	
Post Dev Q allowable	1.53	cfs
Offsite Controlled (UGS 1) (pre dev bypass)	0.55	cfs
Total Allowable release	2.08	cfs
Post Dev Onsite Uncontrolled	0.71	cfs
Post Dev UGS 1 Release	0.95	cfs
Total Post Dev Release	1.66	cfs

Stormwater Quantity Summary - Phase 1 - Townhomes	1-Year Channel Protection (cfs)	2-Year Storm (cfs)	10-Year Storm Flood Protection (cfs)
Pre Development	2.90	4.06	7.87
Post Development allowable release	2.08	4.06	7.87
Post Development Release	1.66	3.64	7.46

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	2.30
TP LOAD REDUCTION REQUIRED (lb/yr)	0.61
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.94
TP LOAD REMAINING (lb/yr):	1.36
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	0.00 **

** TARGET TP REDUCTION EXCEEDED BY 0.33 LB/YEAR **

6. Bioretention (RR)													
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40	0.34	0.71	0	1,090	1,636	2,726	25	0.00	1.71	0.94	0.77	

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NO.	DATE	REVISION PRIOR TO APPROVAL

PHASE ONE STORMWATER MANAGEMENT/BMP DESIGN

FAIRFAX PRESBYTERIAN CHURCH

CITY OF FAIRFAX, VIRGINIA

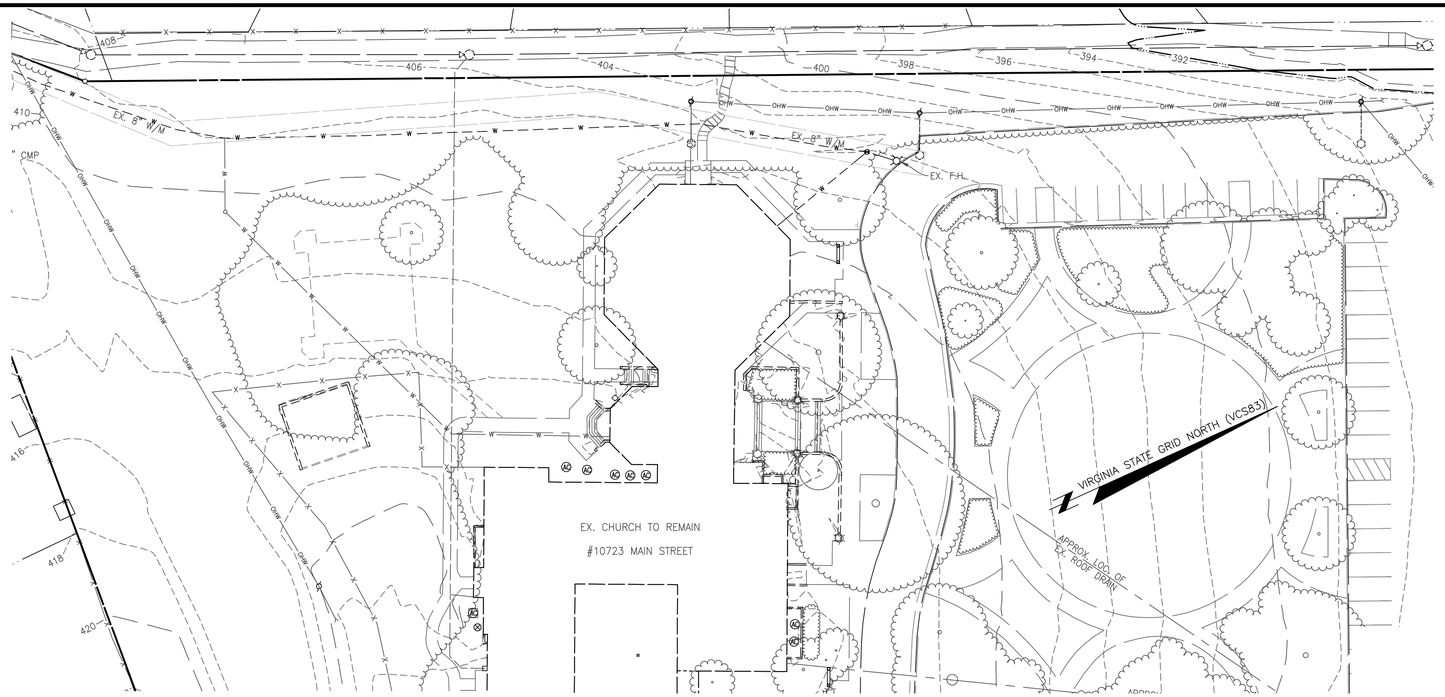
COMMONWEALTH OF VIRGINIA
BRIAN R. THOMAS
Lic. No. 038937
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	REVISIONS	BY	APPVD	DATE

DESIGN GMP | DRAFT GMP | APPROVED BRT | DATE JAN. 2021 | SCALE HORIZ: 1" = 30' VERT: --- | SHEET 42 | OF 51

PRJ NO: 2017-2570
TYPE: MDP

Attached Xrefs: 00-G0700/00-G0500/XREF-RG401/XREF-R0301

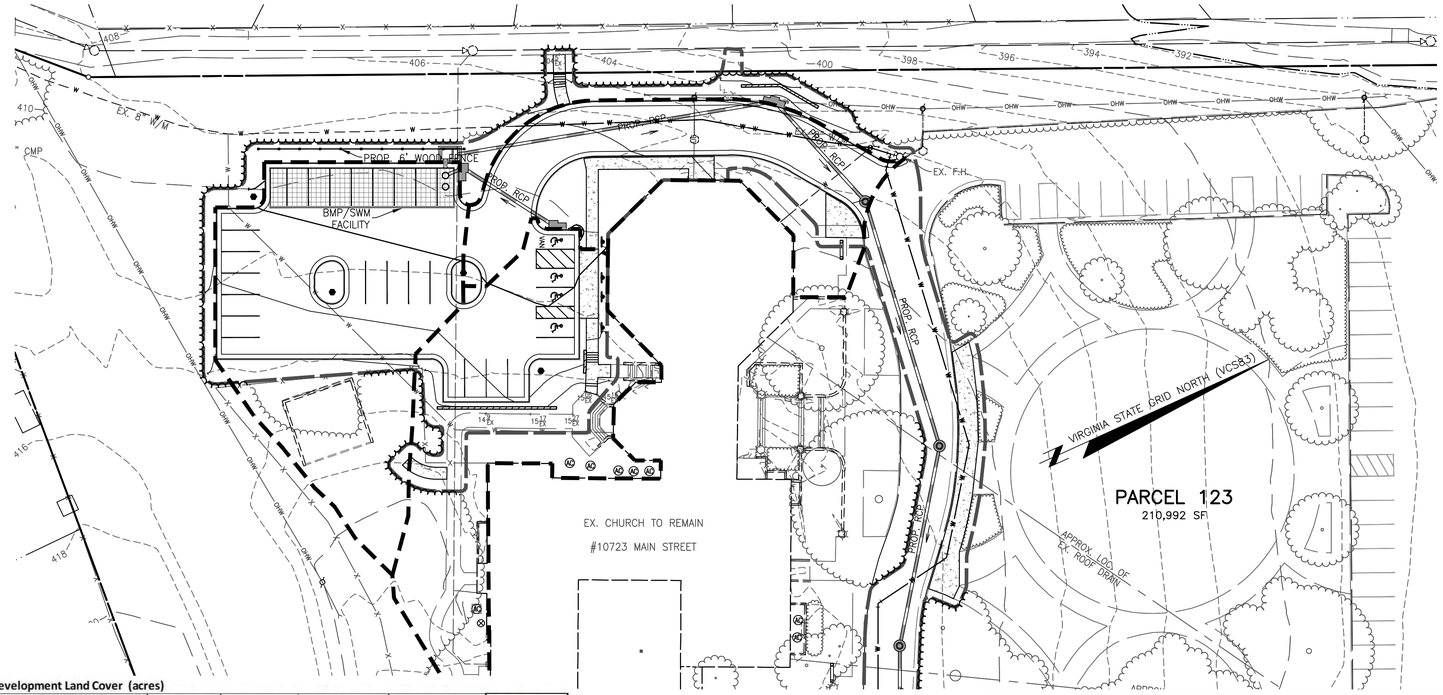


Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space		0.19	0.00	0.07	0.26
Managed Turf (acres) -- disturbed, graded for yards or other turf to be		0.03	0.00	0.27	0.30
Impervious Cover (acres)		0.00	0.00	0.01	0.01
					0.57

PRE-DEVELOPMENT
PHASE TWO – ADDITIONAL PARKING AREA
SCALE: 1" = 30'

GRAPHIC SCALE
30 0 15 30 60
SCALE: 1" = 30'



Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be		0.12	0.00	0.11	0.23
Impervious Cover (acres)		0.10	0.00	0.24	0.34
Area Check	**OK.**	**OK.**	**OK.**	**OK.**	0.57

POST-DEVELOPMENT
PHASE TWO – ADDITIONAL PARKING AREA
SCALE: 1" = 30'

14. Manufactured Treatment Devices (no RR)													
14.b. Manufactured Treatment Device-Filtering	0	0.21	0.32	0	0	1,274	1,274	40	0.00	0.80	0.32	0.48	

14. Manufactured BMP (no RR)				
0.00	5.72	0.00	5.72	

SEE OVERALL DEVELOPMENT FOR RUNOFF CALCULATIONS ON SHEETS 41, 44 & 45

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	0.85
TP LOAD REDUCTION REQUIRED (lb/yr)	0.62
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.32
TP LOAD REMAINING (lb/yr):	0.53
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	0.30 *

* THIS VRRM SHOWS RESULTS OF PHASE 2 AS A STAND ALONE PROJECT. THE OVERALL DEVELOPMENT MEETS VRRM COMPLIANCE SEE SHEET 41 FOR OVERALL CONDITION VRRM SPREADSHEET.

PHASE TWO – ADDITIONAL PARKING STORMWATER/OUTFALL NARRATIVE

THE OUTFALL POINT OF THIS PORTION OF THE PROJECT IS AT ACCOTINK CREEK, ABOUT 340' DOWNSTREAM OF THE EXISTING CULVERTS UNDER PRESBYTERIAN WAY, PER 9VAC25-870-66-B-4. THE RUNOFF DISCHARGES INTO A NATURAL CHANNEL, THROUGH AN EXISTING MAN-MADE STORM SEWER. AN UNDERGROUND DETENTION SYSTEM AND MULTIPLE MANUFACTURED TREATMENT FACILITIES ARE PROPOSED TO MITIGATE THE INCREASE IN IMPERVIOUS AREA FROM THE PARKING LOT.

CHANNEL PROTECTION:
POST DEVELOPMENT RUNOFF DURING THE 1-YEAR STORM EVENT HAS BEEN REDUCED IN ACCORDANCE WITH 9VAC25-870-66-B-3-A, AND AS SUCH, CHANNEL PROTECTION REQUIREMENTS HAVE BEEN MET FOR THIS PORTION OF THE SITE.

FLOOD PROTECTION:
THE POST DEVELOPMENT 2-YEAR STORM AND 10-YEAR 24-HOUR STORMS WILL HAVE PEAK RUNOFF RATES WHICH ARE LESS THAN THE PRE DEVELOPMENT CONDITION, PER 9VAC25-870-66-C-1. THE LIMIT OF ANALYSIS FOR FLOOD PROTECTION IS WITHIN ACCOTINK CREEK, 340' DOWNSTREAM OF THE EXISTING CULVERTS UNDER PRESBYTERIAN WAY, PER 9VAC25-870-66-C-3-C.

SEE RUNOFF SUMMARY TABLE ON THIS SHEET.

WATER QUALITY:
DUE TO SITE CONSTRAINTS, SUCH AS EASEMENTS AND EXISTING UTILITIES, THIS PORTION OF THE PROJECT MEETS WATER QUALITY REQUIREMENTS THROUGH THE USE OF A MANUFACTURED FILTERING DEVICE.

PLEASE NOTE THAT THE PROPOSED MANUFACTURED DEVICE DOES NOT COMPLETELY ADDRESS THE REQUIRED PHOSPHORUS REMOVAL FOR PHASE TWO AS A STAND ALONE PROJECT AS PER VRRM SPREADSHEET. THE MINOR RESIDUAL AMOUNT OF POLLUTANT LOADING IS ADDRESSED BY THE EXCESS POLLUTANT REMOVAL BY THE PHASE ONE BIORETENTION AREA (SEE VRRM ON SHEET 41 FOR COMPLIANCE OF OVERALL DEVELOPMENT).

SEE VRRM SUMMARY ON THIS SHEET.

THE UNDERGROUND DETENTION FACILITY AND MANUFACTURED TREATMENT DEVICE WILL BE PRIVATELY OWNED AND MAINTAINED.

THE BMP AND SWM DESIGN IS PRELIMINARY AND MAY CHANGE AT THE TIME OF FINAL ENGINEERING. THE PROJECT MAY USE NUTRIENT CREDITS OR ALTERNATE BMP/SWM FACILITIES TO MEET THE WATER QUALITY AND WATER QUANTITY REQUIREMENTS FOR THIS PROJECT AS NECESSARY

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NO.	DATE	REVISION PRIOR TO APPROVAL

PHASE TWO STORMWATER MANAGEMENT/BMP DESIGN

FAIRFAX PRESBYTERIAN CHURCH

CITY OF FAIRFAX, VIRGINIA

COMMONWEALTH OF VIRGINIA
BRIAN R. THOMAS
Lic. No. 038937
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	REVISIONS	BY	APPRVD	DATE

DESIGN GMP | DRAFT GMP
APPROVED
DATE
JAN. 2021
SCALE
HORIZ:1" = 30'
VERT: ---

SHEET 43 OF 51

PRJ NO: 2017-2570
TYPE: MDP

Attached Xrefs: 00-G0700/00-G0500/XREF-R0401/XREF-R0301