1972 - CID510173_CityofWinchester_CFPF-2

Application Details

Funding Opportunity:	1448-Virginia Community Flood Preparedness Fund - Study Grants - CY23 Round 4
Funding Opportunity Due Date:	Nov 12, 2023 11:59 PM
Program Area:	Virginia Community Flood Preparedness Fund
Status:	Under Review
Stage:	Final Application
Initial Submit Date:	Nov 9, 2023 3:09 PM
Initially Submitted By:	Jonathan D'Alessandro
Last Submit Date:	
Last Submitted By:	

Contact Information

Primary Contact Information

Active User*:	Yes
Type:	External User
Name*:	Mr. (Salutation) Jonathan (First Name) J (Middle Name) D'Alessandro (Last Name)
Title:	Senior Project Manager
Email*:	jon.dalessandro@kimley-horn.com
Address*:	11400 Commerce Park Drive, Suite 400
	Reston (City) Virginia (State/Province) 20191 (Postal Code/Zip)
Phone*:	703-752-0589 Ext. (Phone ###-###-####)
Fax:	###-###-####
Comments:	

Organization Information

Status*:	Approved
Name*:	Kimley-Horn
Organization Type*:	
Tax ID*:	56-0885615
Unique Entity Identifier (UEI)*:	V8PKGG6NLKV6

Organization Website:

Address*: 421 Fayetteville Street Suite 600

Raleigh North Carolina 27601-
City State/Province Postal Code/Zip

Phone*: 919-677-2000 Ext.
###-###-####

Fax: ###-###-####

Benefactor:

Vendor ID:

Comments:

VCFPF Applicant Information

Project Description

Name of Local Government*: City of Winchester

Your locality's CID number can be found at the following link: Community Status Book Report

NFIP/DCR Community Identification Number (CID)*: 510173

If a state or federally recognized Indian tribe,

Name of Tribe:

Authorized Individual*: Dan Hoffman
First Name Last Name

Mailing Address*: Rouss City Hall
Address Line 1

15 North Cameron Street
Address Line 2

Winchester Virginia 22601
City State Zip Code

Telephone Number*: 540-772-3409

Cell Phone Number*: 540-772-3409

Email*: dan.hoffman@winchester.gov

Is the contact person different than the authorized individual?

Contact Person*: Yes

Contact: Kelly Henshaw
First Name Last Name

301 East Cork Street
Address Line 1

Address Line 2

Winchester Virginia 22601
City State Zip Code

Telephone Number: 540-773-1340

Cell Phone Number: 540-773-1340

Email Address: kelly.henshaw@winchester.gov

Enter a description of the project for which you are applying to this funding opportunity

Project Description*:

This project will be preparation of a study to evaluate the effects of the Abrams Creek floodplain along Featherbed Lane in the City of Winchester and develop conceptual strategies to prevent and mitigate damages from riverine flooding. This study will focus on 2,800 linear feet of Abrams Creek starting at the culvert system at the intersection of South Loudoun Street and Featherbed Lane and ending at the Shopping Center Drive and Mall Road culvert system.

Low-income geographic area means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Is the proposal in this application intended to benefit a low-income geographic area as defined above?

Benefit a low-income geographic area*: Yes

Information regarding your census block(s) can be found at census.gov

Census Block(s) Where Project will Occur*:

518400003021005 518400003021000 518400003024002 518400003024018 518400003024017 518400003024003 5184

Is Project Located in an NFIP Participating Community?*: Yes

Is Project Located in a Special Flood Hazard Area?*: Yes

Flood Zone(s) (if applicable): Zone AE, Zone A, Zone X

Flood Insurance Rate Map Number(s) (if applicable): 51069C0216E

Eligibility - Round 4

Eligibility

Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?

Local Government*: Yes

Yes - Eligible for consideration
No - Not eligible for consideration

If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?

Letters of Support*: No

Yes - Eligible for consideration
No - Not eligible for consideration

Has this or any portion of this project been included in any application or program previously funded by the Department?

Previously Funded*: No

Yes - Not eligible for consideration
No - Eligible for consideration

Has the applicant provided evidence of an ability to provide the required matching funds?

Evidence of Match Funds*: Yes

Yes - Eligible for consideration
No - Not eligible for consideration
N/A - Match not required

Scope of Work - Studies - Round 4

Scope of Work

Upload your Scope of Work

Please refer to Part IV, Section B. of the grant manual for guidance on how to create your scope of work

Scope of Work*:

CID510173_CityofWinchester_CFPF-2-KH_2023-11_7_Featherbed_Lane_Flood_Improvements_Study_Proposal.pdf

Comments:

Attached is the consultants scope of services to provide the study necessitating this grant application. For full scope of work Narrative, please see Combined Grant Application Package attached to this submittal.

Budget Narrative

Budget Narrative Attachment*: CID510173_CityofWincehster_CFPF-2-Section B - Budget Narrative.pdf

Comments:

Attached is Section B of the Combined Grant Application Package attached to this submittal. Section B contains a detailed budget narrative, documentation of funding source, budget narrative template, and funding request authorization

Scoring Criteria for Studies - Round 4

Scoring

Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

Revising Floodplain Ordinances*: No
Select

Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.

Mapping Platform*: No
Select

Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).

Hydrologic and Hydraulic Studies*: No
Select

Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:
Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.

Updating Precipitation Data and IDF Information*: No
Select

Regional relative sea level rise projections for use in determining future impacts.

Projections*: No
Select

Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.

Vulnerability Analysis*: No
Select

Flash flood studies and modeling in riverine regions of the state.

Flash Flood Studies*: Yes
Select

Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.

Stream Gauge Monitoring*: No
Select

New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.

Delineations of Areas of Recurrent Flooding*: No
Select

Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.

Regional Flood Studies*: Yes
Select

Regional Hydrologic and Hydraulic Studies of Floodplains

Regional Hydrologic and Hydraulic Studies of Floodplains*: Yes
Select

Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.

Potential Land Use Strategies*: Yes
Select

Other proposals that will significantly improve protection from flooding on a statewide or regional basis.

Other Proposals*: No
Select

Is the project area socially vulnerable? (based on ADAPT Virginia?s Social Vulnerability Index Score)
Social Vulnerability Scoring:
Very High Social Vulnerability (More than 1.5)
High Social Vulnerability (1.0 to 1.5)
Moderate Social Vulnerability (0.0 to 1.0)
Low Social Vulnerability (-1.0 to 0.0)
Very Low Social Vulnerability (Less than -1.0)

Socially Vulnerable*: High Social Vulnerability (1.0 to 1.5)

Is the proposed project part of an effort to join or remedy the community?s probation or suspension from the NFIP?

NFIP*: No

Is the proposed project in a low-income geographic area as defined below?
"Low-income geographic area" means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Low-Income Geographic Area*: Yes

Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs.
Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?

Reduction of Nutrient and Sediment Pollution*: No

Comments:

Scope of Work Supporting Information - Studies

Scope of Work Supporting Information

Is the proposed study a new study or updates on a prior study?

New or Updated Study*: New Study

Describe the relationship of the study to the local government's needs for flood prevention and protection, equity, community improvement, identification of nature-based solutions or other priorities contained in this manual

Relationship of Study to Priorities Contained in this Manual*:

This project has been identified in the City of Winchester's DCR Approved Resilience Plan. The local government has a significant need for flood prevention and protection throughout the city due to aging and inadequate drainage infrastructure, presences of significant urban stream systems, and a highly urbanized and socially vulnerable area.

Describe the qualifications of the individuals or organizations charged with conducting the study or the elements of any request for proposal that define those qualifications

Qualifications of Individuals Conducting Study*:

For project team conducting the study outlined in this application, please see Combined Grant Application Package - Section A attached to this submittal for full qualifications and resumes of the project team.

Describe the expected use of the study results in the context of the local resilience plan or, in the case of regional plans, how the study improves any regional approach

Expected use of Study Results*:

This study will evaluate the effects of the Abrams Creek floodplain along Featherbed Lane in the City of Winchester, as well as develop conceptual strategies to prevent and mitigate damages from riverine flooding. This study will focus on 2,800 linear feet of Abrams Creek starting at the culvert system at the intersection of South Loudoun Street and Featherbed Lane and ending at the Shopping Center Drive and Mall Road culvert system.

This location has been identified as a frequently flooded area in the City's DCR Approved Resilience Plan and is bounded by significant infrastructure (railroads, culverts, commerical areas) that has historically flooded.

If applicable, describe how the study may improve Virginia's flood protection and prevention abilities in a statewide context (type N/A if not applicable)

Statewide Improvements*:

N/A

Provide a list of repetitive and/or severe repetitive loss properties. Do not provide the addresses for the properties, but include an exact number of repetitive and/or severe repetitive loss structures within the project area

Repetitive Loss and/or Severe Repetitive Loss Properties*: Repetitive_Loss_Statement.docx

Describe the residential and commercial structures impacted by this project, including how they contribute to the community such as historic, economic, or social value. Provide an exact number of these structures in the project area

Residential and/or Commercial Structures*:

There are several commercial structures that are impacted by the Abrams creek floodplain at Featherbed Lane. The Winchester SPCA, Culligan Water Building, Buettner Tire and Auto, among many other commercial areas have historically flooded along Featherbed Lane.

If there are critical facilities/infrastructure within the project area, describe each facility

Critical Facilities/Infrastructure*:

Along with Featherbed Lane, there is a CSX Railroad, Multiple Road culvert crossings, and a superfund location within the project area. See detailed mapping and photos in Combined Grant Application Package - Section C attached to this submittal.

Budget

Budget Summary

Grant Matching Requirement*:	LOW INCOME - Flood Prevention and Protection Studies - Fund 90%/Match 10%
I certify that my project is in a low-income geographic area:	Yes
Total Project Amount*:	$69,955.76
REQUIRED Match Percentage Amount:	$6,995.58

BUDGET TOTALS

Before submitting your application be sure that you meet the match requirements for your project type.

Match Percentage:	10.00% Verify that your match percentage matches your required match percentage amount above.
Total Requested Fund Amount:	$62,960.18
Total Match Amount:	$6,995.58
TOTAL:	$69,955.76

Personnel

Description	Requested Fund Amount	Match Amount	Match Source

No Data for Table

Fringe Benefits

Description	Requested Fund Amount	Match Amount	Match Source

No Data for Table

Travel

Description	Requested Fund Amount	Match Amount	Match Source

No Data for Table

Equipment

Description	Requested Fund Amount	Match Amount	Match Source

No Data for Table

Supplies

Description	Requested Fund Amount	Match Amount	Match Source

No Data for Table

Construction

Description	Requested Fund Amount	Match Amount	Match Source

No Data for Table

Contracts

Description	Requested Fund Amount	Match Amount	Match Source
Consultant Budget needed to perform Study	$62,960.18	$6,995.58	Citywide Stormwater Improvements Fund FY24
	$62,960.18	**$6,995.58**	

Pre-Award and Startup Costs

Description	Requested Fund Amount	Match Amount	Match Source

No Data for Table

Other Direct Costs

Description	Requested Fund Amount	Match Amount	Match Source

No Data for Table

Supporting Documentation

Supporting Documentation

Named Attachment	Required	Description	File Name	Type	Size	Upload Date
Detailed map of the project area(s) (Projects/Studies)		Detailed Maps of Project Area	CID510173_CityofWinchester_CFPF-2-DetailedMapsofProjectAreas.pdf	pdf	3 MB	11/09/2023 02:59 PM
FIRMette of the project area(s) (Projects/Studies)		Firmette of Project Area	CID510173_CityofWinchester_CFPF-2-FirmetteofProjectArea.pdf	pdf	856 KB	11/09/2023 03:00 PM
Historic flood damage data and/or images (Projects/Studies)		Historic Photos of Project Area	CID510173_CityofWinchester_CFPF-2-Photos_Photomap.pdf	pdf	13 MB	11/09/2023 03:01 PM
A link to or a copy of the current floodplain ordinance		Floodplain Ordinance	Winchester Floodplain Ordinance.pdf	pdf	391 KB	11/09/2023 03:02 PM
Maintenance and management plan for project						
A link to or a copy of the current hazard mitigation plan						
A link to or a copy of the current comprehensive plan		Link to Comp Plan	CID510173_CityofWinchester_CFPF-2-LinktoCompPlan.pdf	pdf	183 KB	11/09/2023 03:03 PM
Social vulnerability index score(s) for the project area		SVI Map	CID510173_CityofWinchester_CFPF-2-SVI_map.pdf	pdf	828 KB	11/09/2023 03:04 PM
Authorization to request funding from the Fund from governing body or chief executive of the local government		Funding Authorization Request	CID510173_CityofWinchester_CFPF-2-FundingAuthorizationRequest.pdf	pdf	210 KB	11/09/2023 03:06 PM
Signed pledge agreement from each contributing organization						
Maintenance Plan						
Benefit-cost analysis must be submitted with project applications over $2,000,000. in lieu of using the FEMA benefit-cost analysis tool, applicants may submit a narrative to describe in detail the cost benefits and value. The narrative must explicitly indicate the risk reduction benefits of a flood mitigation project and compares those benefits to its cost-effectiveness.						
Benefit Cost Analysis						
Other Relevant Attachments		Combined CFPF Grant Application Package for Featherbed Lane Floodplain Improvement Study	CID510173_City_of_Winchester_CFPF-2.pdf	pdf	24 MB	11/09/2023 03:08 PM

Letters of Support

Description	File Name	Type	Size	Upload Date
No files attached.				

Detailed Map(s) of Project Area

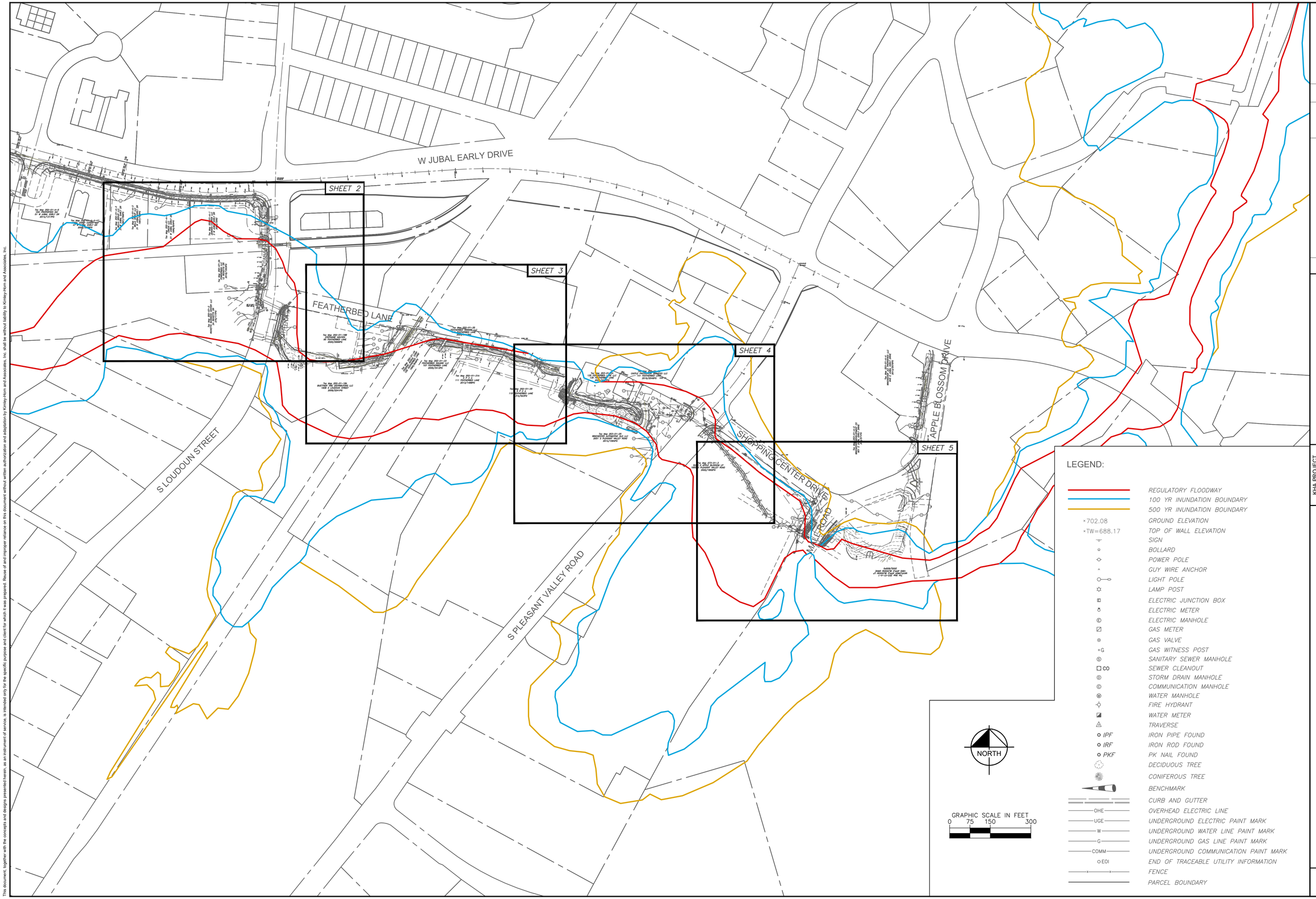
Winchester Virginia

DATE	11/8/2023
DRAWN BY	CDC
CHECKED BY	JJD

CITY OF WINCHESTER
FEATHERBED LANE PROJECT

PREPARED FOR CITY OF WINCHESTER

SCALE	1" = 300'
PROJECT NUMBER	N/A
SHEET NUMBER	APPENDIX C



LEGEND:

- REGULATORY FLOODWAY
- 100 YR INUNDATION BOUNDARY
- 500 YR INUNDATION BOUNDARY
- ×702.08 GROUND ELEVATION
- ×TW=688.17 TOP OF WALL ELEVATION
- SIGN
- BOLLARD
- POWER POLE
- GUY WIRE ANCHOR
- LIGHT POLE
- LAMP POST
- ELECTRIC JUNCTION BOX
- ELECTRIC METER
- ELECTRIC MANHOLE
- GAS METER
- GAS VALVE
- GAS WITNESS POST
- SANITARY SEWER MANHOLE
- SEWER CLEANOUT
- STORM DRAIN MANHOLE
- COMMUNICATION MANHOLE
- WATER MANHOLE
- FIRE HYDRANT
- WATER METER
- TRAVERSE
- IPF IRON PIPE FOUND
- IRF IRON ROD FOUND
- PKF PK NAIL FOUND
- DECIDUOUS TREE
- CONIFEROUS TREE
- BENCHMARK
- CURB AND GUTTER
- OHE OVERHEAD ELECTRIC LINE
- UGE UNDERGROUND ELECTRIC PAINT MARK
- W UNDERGROUND WATER LINE PAINT MARK
- G UNDERGROUND GAS LINE PAINT MARK
- COMM UNDERGROUND COMMUNICATION PAINT MARK
- EOI END OF TRACEABLE UTILITY INFORMATION
- FENCE
- PARCEL BOUNDARY

NORTH

GRAPHIC SCALE IN FEET
0 75 150 300

No.	REVISIONS	DATE	BY

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

KHA PROJECT
CFPF EXHIBIT

DATE	11/1/2023
SCALE	AS SHOWN
DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

SHEET NUMBER
01

SHEET NUMBER 02	CFPF GRANT APPLICATION APPENDIX C - SITE MAPS PREPARED FOR CITY OF WINCHESTER	KHA PROJECT CFPF EXHIBIT DATE 11/1/2023 SCALE AS SHOWN DESIGNED BY J.J.D DRAWN BY C.D.C CHECKED BY J.J.D	Kimley»Horn 11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191 PHONE: 703-674-1300 FAX: 703-674-1350 WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

FEATHERBED LANE

Tax Map 252-01-18B
STEPHANIE NGUYEN
95 FEATHERBED LANE
2020/2966PG

Tax Map 252-01-35
FEATHERBED SQUARE LLC
113 FEATHERBED LANE
2005/3413PG

Tax Map 252-01-18A
BUETTNER TIRE DISTRIBUTORS LLC
1908 S. LOUDOUN STREET
2009/2241PG

Tax Map 252-01-33
FEATHERBED SQUARE LLC
107 FEATHERBED LANE
2005/3413PG

Tax Map 252-01-33
FEDERAL MOGUL CORP
105 FEATHERBED LANE
1995/849PG

Tax Map 252-01-31A
S P C A
111 FEATHERBED LANE
2013/1488PG

Tax Map 252-01-30
S P C A
115 FEATHERBED LANE
314/523PG

CSX RAILROAD

4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

No.	REVISIONS	DATE	BY

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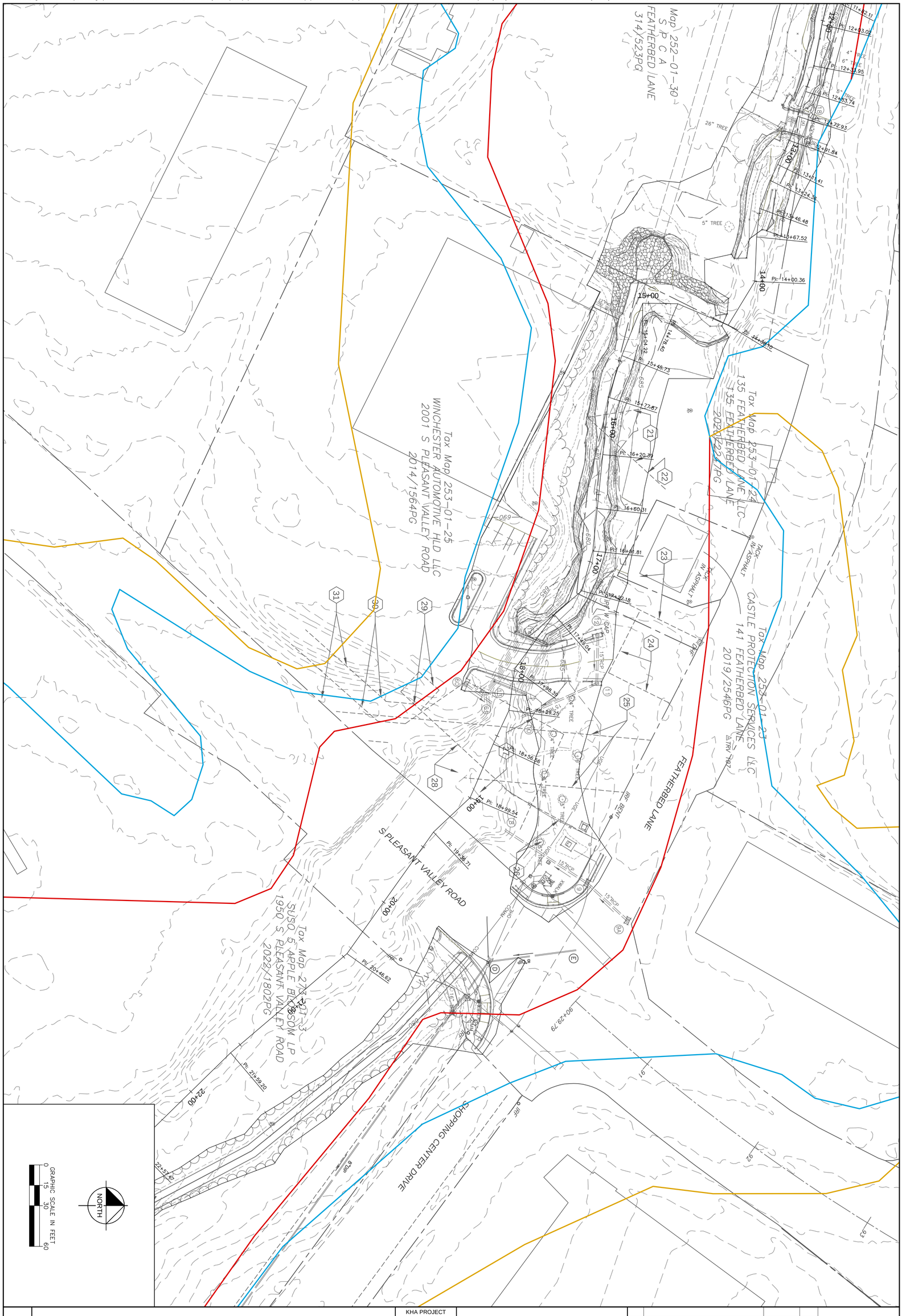
WWW.KIMLEY-HORN.COM

KHA PROJECT
CFPF EXHIBIT

DATE 11/1/2023
SCALE AS SHOWN
DESIGNED BY J.J.D
DRAWN BY C.D.C
CHECKED BY J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

SHEET NUMBER
03



SHEET NUMBER 04

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS

PREPARED FOR CITY OF WINCHESTER

KHA PROJECT	CFPF EXHIBIT
DATE	11/1/2023
SCALE	AS SHOWN
DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
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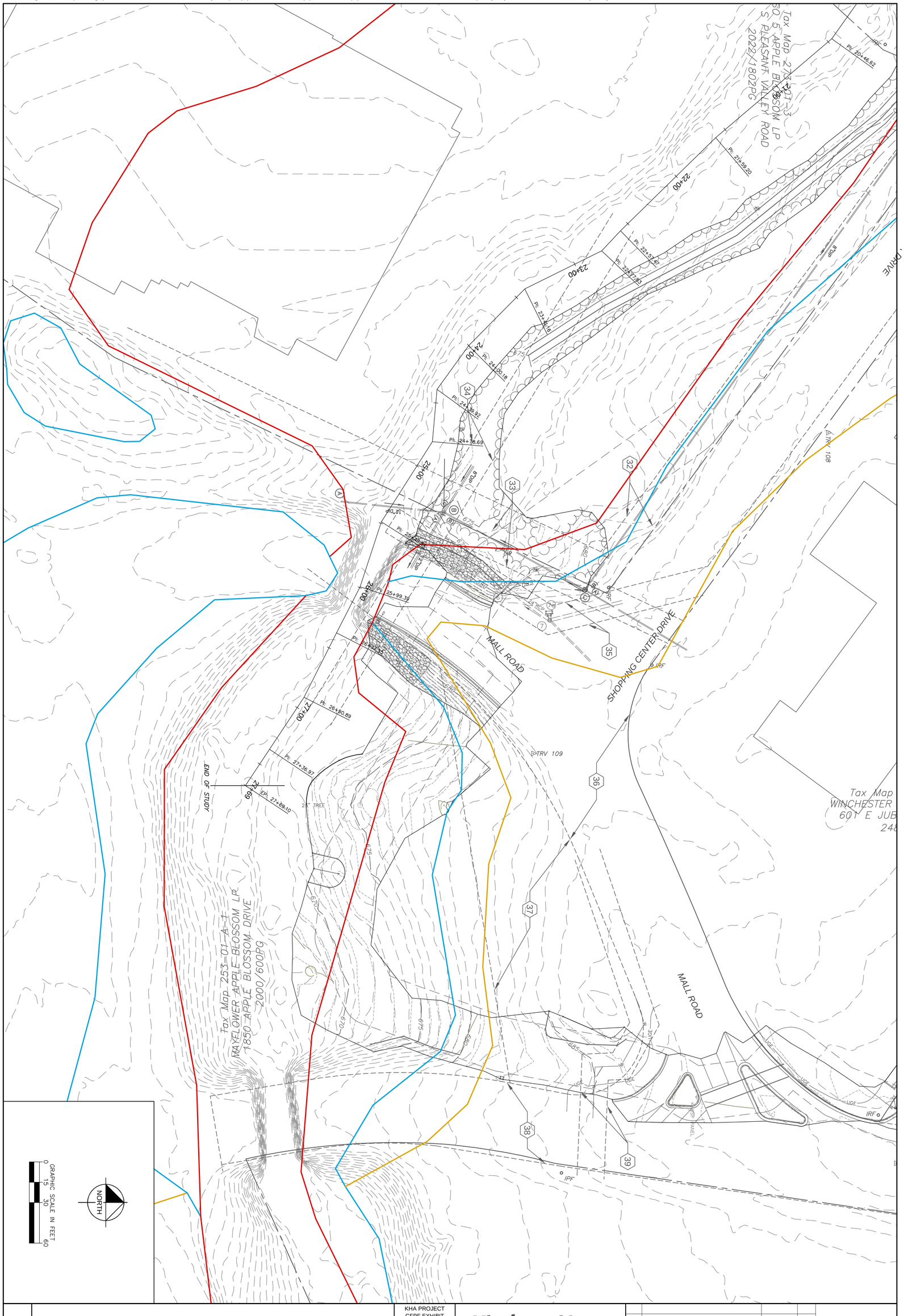
No.	REVISIONS	DATE	BY



SHEET NUMBER 05	CFPF GRANT APPLICATION APPENDIX C - SITE MAPS PREPARED FOR CITY OF WINCHESTER	KHA PROJECT CFPF EXHIBIT DATE 11/1/2023 SCALE AS SHOWN DESIGNED BY J.J.D DRAWN BY C.D.C CHECKED BY J.J.D

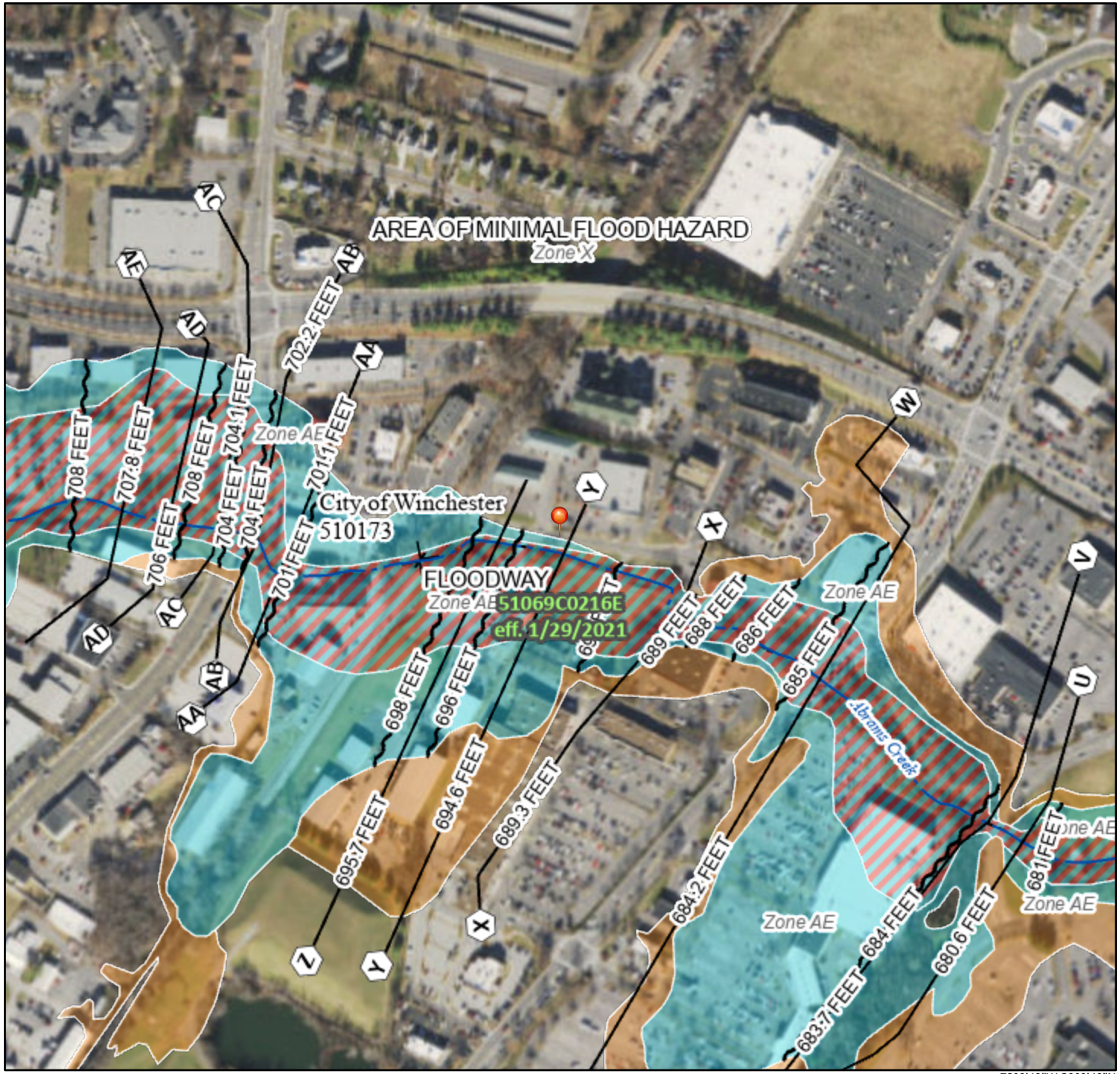
Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

FIRMette of the Project Area(s)

National Flood Hazard Layer FIRMette

78°10'26"W 39°10'7"N



78°9'49"W 39°9'40"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/7/2023 at 4:20 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Historic Flood Damage Data / Images

Photo 1. Abrams Creek at Featherbed Lane,

Photo 2. CSX Railroad Crossing in close proximity to Featherbed Lane

Photo 3. Bank Erosion under Pedestrian Bridge spanning Abrams Creek

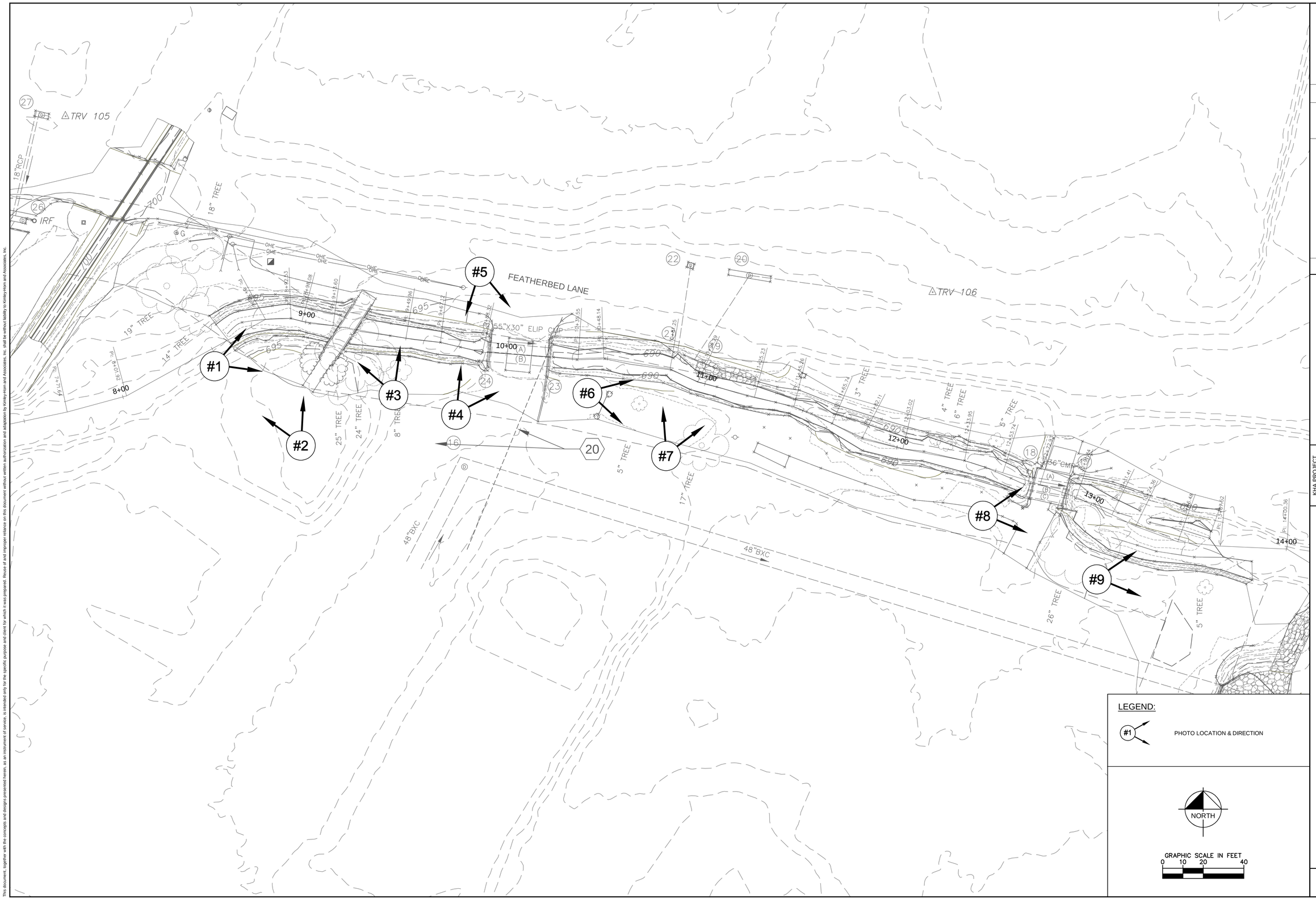
Photo 4. Culvert Crossing at Winchester Area SPCA

Photo 5. Impacts of Abrams Creek Flooding at SPCA

Photo 7. Featherbed Lane Commercial areas within Abrams Creek Floodplain

Photo 6. Culvert Crossing in close proximity to upstream SPCA Culvert Crossing

Photo 7. Abrams Creek Overall



LEGEND:

#1 PHOTO LOCATION & DIRECTION

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

No.	REVISIONS	DATE	BY

Kimley»Horn
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KHA PROJECT	CFPF EXHIBIT
DATE	11/1/2023
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DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
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SHEET NUMBER
01

PHOTO LOCATION 1

PHOTO LOCATION 2

PHOTO LOCATION 3

PHOTO LOCATION 4

PHOTO LOCATION 5

PHOTO LOCATION 6

PHOTO LOCATION 7

PHOTO LOCATION 8

PHOTO LOCATION 9

No.	REVISIONS	DATE	BY

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KHA PROJECT	CFPF EXHIBIT
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DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

SHEET NUMBER
02

ARTICLE 14.1

FLOODPLAIN DISTRICTS - FP

STATEMENT OF INTENT

The purpose of these provisions is to prevent the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

A. Regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies.

B. Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding.

C. Requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or floodproofed against flooding and flood damage.

D. Protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.

14.1-1 APPLICABILITY

These provisions shall apply to all lands within the jurisdiction of the City and identified as being in the 100-year floodplain by the Federal Insurance Administration.

14.1-2 COMPLIANCE AND LIABILITY

A. No land shall hereafter be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered except in full compliance with the terms and provisions of this ordinance and any other applicable ordinances and regulations which apply to uses within the jurisdiction of this ordinance.

B. The degree of flood protection sought by the provisions of this ordinance is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This ordinance does not imply that districts outside the floodplain district, or that land uses permitted within such district will be free from flooding or flood damages.

C. This ordinance shall not create liability on the part of the City or any officer or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made thereunder.

D. Records of actions associated with administering this ordinance shall be kept on file and maintained by the Program Administrator. (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

14.1-3 PENALTY FOR VIOLATIONS

Any person who fails to comply with any of the requirements or provisions of this article or directions of the Program Administrator or any authorized employee of the City of Winchester shall be subject to the penalties therefore.

In addition to the above penalties, all other actions are hereby reserved, including an action in equity for the proper enforcement of this article. The imposition of a fine or penalty for any violation of, or noncompliance with, this article shall not excuse the violation or noncompliance or permit it to continue; and all such persons shall be required to correct or remedy such violations or noncompliances within a reasonable time. Any structure constructed, reconstructed, enlarged, altered or relocated in noncompliance with this article may be declared by the City of Winchester to be a public nuisance and abatable as such. Flood insurance may be withheld from structures constructed in violation of this article.
(9/1/2009, Case TA-09-204, Ord. No. 2009-24)

14.1-4 SEVERABILITY

If any section, subsection, paragraph, sentence, clause, or phrase of this ordinance shall be declared invalid for any reason whatever, such decision shall not affect the remaining portions of this ordinance. The remaining portions shall remain in full force and effect; and for this purpose, the provisions of this ordinance are hereby declared to be severable.
(9/1/2009, Case TA-09-204, Ord. No. 2009-24)

14.1-5 ABROGATION AND GREATER RESTRICTIONS

This ordinance supersedes any ordinance currently in effect in flood-prone districts. However, any underlying ordinance shall remain in full force and effect to the extent that its provisions are more restrictive than this ordinance.

14.1-6 DEFINITIONS

14.1-6-1 Base Flood/One-Hundred Year Flood - A flood that, on the average, is likely to occur once every 100 years (i.e., that has a one (1) percent chance of occurring each year, although the flood may occur in any year). (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

14.1-6-2 Base Flood Elevation (BFE) - The Federal Insurance Administration designated 100 year water surface elevation.

14.1-6-3 Basement – (For purposes of this Article…) Any area of the building having its floor sub-grade (below ground level) on all sides.

14.1-6-4 Development - Any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

14.1-6-5 Elevated building - A non-basement building built to have the lowest floor elevated above the ground level by means of fill, solid foundation perimeter walls, pilings, or columns (posts and piers).

14.1-6-6 Encroachment - The advance or infringement of uses, plant growth, fill, excavation, buildings, permanent structures or development into a floodplain, which may impede or alter the flow capacity of a floodplain.

14.1-6-7 Existing manufactured home park or subdivision - a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the floodplain management regulations adopted by a community.

14.1-6-8 Expansion to an existing manufactured home park or subdivision - the preparation of additional sites by the construction of facilities for servicing the lots on which the manufacturing homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

14.1-6-9 Flood Insurance Rate Map (FIRM) - an official map of a community, on which the Administrator has delineated both the special hazard areas and the risk premium zones applicable to the community

14.1-6-10 Flood or flooding -

1. A general or temporary condition of partial or complete inundation of normally dry land areas from

    a. the overflow of inland or tidal waters; or,

    b. the unusual and rapid accumulation or runoff of surface waters from any source.

2. The collapse or subsistence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in paragraph 1 (a) of this definition.

3. Mudflows which are proximately caused by flooding as defined in paragraph (a)(2) of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

14.1-6-11 Floodway - The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

14.1-6-12 Freeboard - A factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization in the watershed.

14.1-6-13 Historic structure - Any structure that is

1. listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;

2. certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

3. individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or,

4. individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either

   a. by an approved state program as determined by the Secretary of the Interior; or,

   b. directly by the Secretary of the Interior in states without approved programs.

14.1-6-14 Lowest Floor - The lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Federal Code 44CFR §60.3.

14.1-6-15 Manufactured home - A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term manufactured home also includes park trailers, travel trailers, and other similar vehicles placed one a site for greater than 180 consecutive days.

14.1-6-16 Manufactured home park or subdivision - a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

14.1-6-17 New construction - For the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after the effective date of an initial Flood Insurance Rate Map on or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, *new construction* means structures for which *start of construction* commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

14.1-6-18 Recreational vehicle - A vehicle which is

1. built on a single chassis;
2. 400 square feet or less when measured at the largest horizontal projection;
3. designed to be self-propelled or permanently towable by a light duty truck; and,
4. designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.

14.1-6-19 Special flood hazard area - The land in the floodplain subject to a one (1%) percent or greater chance of being flooded in any given year as determined in Section 14.1-6 of this ordinance.

14.1-6-20 Start of construction - The date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, substantial improvement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include

land preparation, such as clearing, grading and filling; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of the construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

14.1-6-21 Structure - for flood plain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home. ``Structure'' for insurance coverage purposes, means a walled and roofed building, other than a gas or liquid storage tank, that is principally above ground and affixed to a permanent site, as well as a manufactured home on a permanent foundation. For the latter purpose, the term includes a building while in the course of construction, alteration or repair, but does not include building materials or supplies intended for use in such construction, alteration or repair, unless such materials or supplies are within an enclosed building on the premises.

14.1-6-22 Substantial Damage - Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

14.1-6-23 Substantial Improvement - Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage" regardless of the actual repair work performed. The term does not, however, include either: (1) any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions or (2) any alteration of a "historic structure", provided that the alteration will not preclude the structures continued designation as a "historic structure".

14.1-6-24 Violation - the failure of a structure or other development to be fully compliant with the community's flood plain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in Sec. 60.3(b)(5), (c)(4), (c)(10), (d)(3), (e)(2), (e)(4), or (e)(5) is presumed to be in violation until such time as that documentation is provided.

14.1-6-25 Watercourse - A lake, river, creek, stream, wash, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

14.1-7 DESCRIPTION OF DISTRICTS

14.1-7-1 Basis of Districts

The various floodplain districts shall include special flood hazard areas. The basis for the delineation of these districts shall be the Flood Insurance Study (FIS) and the Flood Insurance Rate Maps for the City of Winchester prepared by the Federal Emergency Management Agency, Federal Insurance Administration, dated September 2, 2009, as amended. (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

1. The Floodway District is delineated, for purposes of this ordinance, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one hundred (100)-year flood without increasing the water surface elevation of that flood more than one (1) foot at any point. The areas included in this District are specifically defined in Table 2 of the above-referenced Flood Insurance Study and shown on the accompanying Flood Insurance Rate Map.

2. The Approximated Floodplain District shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a one hundred (100)-year floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the Flood Insurance Study. For these areas, the one hundred (100)-year flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific one hundred (100)-year flood elevation cannot be determined for this area using other sources of data, such as the U. S. Army Corps of Engineers Floodplain Information Reports, U. S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this elevation in accordance with hydrologic and hydraulic engineering techniques. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the City.

3. The Special Floodplain District shall be those areas identified as an AE Zone on the maps accompanying the Flood Insurance Study for which one hundred (100)-year flood elevations have been provided.

14.1-7-2 Overlay Concept

1. The Floodplain Districts described above shall be overlays to the existing underlying districts as shown on the Official Zoning Map, and as such, the provisions for the floodplain districts shall serve as a supplement to the underlying district provisions.

2. Any conflict between the provisions or requirements of the Floodplain Districts and those of any underlying district, the more restrictive provisions and/or those pertaining to the floodplain districts shall apply.

3. In the event any provision concerning a Floodplain District is declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying provisions shall remain applicable.

14.1-8 OFFICIAL ZONING MAP

The boundaries of the Floodplain Districts are established as shown on the Flood Insurance Rate Map which is declared to be a part of this ordinance and which shall be kept on file at the City.

14.1-9 DISTRICT BOUNDARY CHANGES

The delineation of any of the Floodplain Districts may be revised by the Governing Body where natural or man-made changes have occurred and/or where more detailed studies have been conducted or undertaken by the U. S. Army Corps of Engineers or other qualified agency, or an individual documents the need for such change. However, prior to any such change, approval must be obtained from the Federal Insurance Administration.

14.1-10 SUBMITTING TECHNICAL DATA

A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, a community shall notify the Federal Insurance Administrator of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data. (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

14.1-11 INTERPRETATION OF DISTRICT BOUNDARIES

Initial interpretations of the boundaries of the Floodplain Districts shall be made by the Administrator. Should a dispute arise concerning the boundaries of any of the Districts, the Board of Zoning Appeals shall make the necessary determination. The person questioning or contesting the location of the District boundary shall be given a reasonable opportunity to present his case to the Board and to submit his own technical evidence if he so desires.

14.1-12 GENERAL PROVISIONS

14.1-12-1 Permit Requirement

All uses, activities, and development occurring within any floodplain district shall be undertaken only upon the issuance of a zoning permit. Such development shall be undertaken only in strict compliance with the provisions of the Ordinance and with all other applicable codes and ordinances, such as the Virginia Uniform Statewide Building Code and the City Land Subdivision Regulations. Prior to the issuance of any such permit, the Administrator shall require all applications to include compliance with all applicable state and federal laws. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of the channels or floodway of any watercourse, drainage ditch, or any other drainage facility or system.

14.1-12-2 Alteration or Relocation of Watercourse

Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction a permit shall be obtained from the U. S. Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission (a joint permit application is available from any of these organizations). Furthermore, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and the Federal Insurance Administration.

14.1-12-3 General Standards

In all special flood hazard areas the following provisions shall apply: (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

a) New construction and substantial improvements shall be according to the VA USBC, and anchored to prevent flotation, collapse or lateral movement of the structure.

b) Manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This standard shall be in addition to and consistent with applicable state requirements for resisting wind forces.

c) New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

d) New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.

e) Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

f) New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

g) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

h) On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

i) Any alteration, repair, reconstruction or improvements to a building that is in compliance with the provisions of this ordinance shall meet the requirements of "new construction" as contained in this ordinance.

j) Any alteration, repair, reconstruction or improvements to a building that is not in compliance with the provisions of this ordinance, shall be undertaken only if said non-conformity is not furthered, extended, or replaced.

k) Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction a permit shall be obtained from the U. S. Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission (a joint permit application is available from any of these organizations). Furthermore, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and the Federal Insurance Administration.

l) The flood carrying capacity within an altered or relocated portion of any watercourse shall be maintained.

14.1-12-4 Drainage Facilities

Storm drainage facilities shall be designed to convey the flow of storm water runoff in a safe and efficient manner. The system shall insure proper drainage along streets, and provide positive drainage away from buildings. The system shall also be designed to prevent the discharge of excess runoff onto adjacent properties.

14.1-12-5 Site Plans and Permit Applications

All applications for development in the floodplain district and all building permits issued for the floodplain shall incorporate the following information:

1. For structures to be elevated, the elevation of the lowest floor (including basement).

2. For structures to be floodproofed (non-residential only), the elevation to which the structure will be floodproofed.

3. The elevation of the one hundred (100)-year flood.

4. Topographic information showing existing and proposed ground elevations.

14.1-12-6 Specific Standards

In all special flood hazard areas where base flood elevations have been provided in the Flood Insurance Study or generated according Article 4, section 4.4 (A), the following provisions shall apply: (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

a) Residential Construction

New construction or substantial improvement of any residential structure (including manufactured homes) shall have the lowest floor, including basement, elevated no lower than 1 foot above the base flood elevation.

b) Non-Residential Construction

New construction or substantial improvement of any commercial, industrial, or non-residential building (or manufactured home) shall have the lowest floor, including basement, elevated to no lower than 1 foot above the base flood elevation. Buildings located in all A1-30, AE, and AH zones may be flood-proofed in lieu of being elevated provided that all areas of the building components below the elevation corresponding to the BFE plus one foot are water tight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied.

c) Elevated Buildings

Enclosed areas, of new construction or substantially improved structures, which are below the regulatory flood protection elevation shall:

1. not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator).

2. be constructed entirely of flood resistant materials below the regulatory flood protection elevation;

3. include, in Zones AE and A, measures to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet the following minimum design criteria:

    a. Provide a minimum of two openings on different sides of each enclosed area subject to flooding.

    b. The total net area of all openings must be at least one (1) square inch for each square foot of enclosed area subject to flooding.

    c. If a building has more than one enclosed area, each area must have openings to allow floodwaters to automatically enter and exit.

    d. The bottom of all required openings shall be no higher than one (1) foot above the adjacent grade.

    e. Openings may be equipped with screens, louvers, or other opening coverings or devices, provided they permit the automatic flow of floodwaters in both directions.

    f. Foundation enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires openings as outlined above.

14.1-12-7 Manufactured Homes and Recreational Vehicles

1. All manufactured homes placed, or substantially improved, on individual lots or parcels, in expansions to existing manufactured home parks or subdivisions, in a new manufactured home park or subdivision or in an existing manufactured home park or subdivision on which a manufactured home has incurred substantial

damage as the result of a flood, must meet all the requirements for new construction.

2. All manufactured homes placed or substantially improved in an existing manufactured home park or subdivision in which a manufactured home has **not** incurred substantial damage as the result of a flood shall be elevated so that either

   a. the lowest floor of the manufactured home is elevated no lower than 3 feet above the base flood elevation; or

   b. the manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade

   c. and be securely anchored to the adequately anchored foundation system to resist flotation, collapse and lateral movement.

3. All recreational vehicles placed on sites must either

   a. be on the site for fewer than 180 consecutive days;

   b. be fully licensed and ready for highway use (a recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices and has no permanently attached additions); or,

   c. meet all the requirements for manufactured homes.

14.1-13 FLOODWAY DISTRICT

In the Floodway District no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in the one hundred (100)-year flood elevation.

14.1-13-1 Permitted Uses in the Floodway District

The following uses and activities are permitted provided that they are in compliance with the provisions of the underlying area and are not prohibited by any other ordinance and provided that they do not require structures, fill, or storage of materials and equipment:

1. Agricultural uses, such as general farming, pasture, grazing, outdoor plant nurseries, horticulture, truck farming, forestry, sod farming, and wild crop harvesting.

2. Public and private recreational uses and activities, such as parks, day camps, picnic grounds, golf courses, boat launching and swimming areas, horseback riding and hiking trails, wildlife and nature preserves, game farms, fish hatcheries, trap and skeet game ranges, and hunting and fishing areas.

3. Accessory residential uses, such as yard areas, gardens, play areas, and pervious loading areas.

4. Accessory industrial and commercial uses such as yard areas, pervious parking and loading areas, airport landing strips, etc.

14.1-14 SPECIAL FLOODPLAIN DISTRICT

The following provisions shall apply within the Special Floodplain District: (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the areas of special flood hazard, designated as Zones A and AE on the Flood Rate Insurance Map, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development will not increase the water surface elevation of the base flood more than one foot at any point within the City of Winchester.

Development activities in Zones A and AE on the Frederick County Flood Insurance Rate Map which increase the water surface elevation of the base flood by more than one foot may be allowed, provided that the applicant first applies – with the City of Winchester's endorsement – for a conditional Flood Insurance Rate Map revision, and receives the approval of the Federal Emergency Management Agency.

14.1-14-1 Standards for Approximated Floodplain

The following provisions shall apply with the Approximate Floodplain District:

1. The Approximated Floodplain District shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a one hundred (100)-year floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the Flood Insurance Study. For these areas, the one hundred (100)-year flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific one hundred (100)-year flood elevation cannot be determined for this area using other sources of data, such as the U. S. Army Corps of Engineers Floodplain Information Reports, U. S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this elevation in accordance with hydrologic and hydraulic engineering techniques. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used

correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the Program Administrator.

2. When such base flood elevation data is utilized, the lowest floor shall be 1 foot above the base flood elevation. During the permitting process, the Program Administrator shall obtain:

   a) the elevation of the lowest floor (including the basement) of all new and substantially improved structures; and,

   b) if the structure has been flood-proofed in accordance with the requirements of this article, the elevation to which the structure has been flood-proofed.

14.1-14-2 Standards for Subdivision Proposals

1. All subdivision proposals shall be consistent with the need to minimize flood damage;

2. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

3. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards, and

4. Base flood elevation data shall be provided for subdivision proposals and other proposed development proposals (including manufactured home parks and subdivisions) that exceed fifty lots or five acres, whichever is the lesser.

14.1-15 VARIANCES: FACTORS TO BE CONSIDERED

In passing upon applications for Variances, the Board of Zoning Appeals ("the Board") shall satisfy all relevant factors and procedures specified in other sections of the zoning ordinance and consider the following additional factors:

A. The danger to life and property due to increased flood heights or velocities caused by encroachments. No variance shall be granted for any proposed use, development, or activity within any Floodway District that will cause any increase in the one hundred (100)-year flood elevation. No variance shall be granted within the Special Flood Plain District for any proposed development that would cause an increase of more than one foot in the one hundred (100) year flood elevation.

B. The danger that materials may be swept on to other lands or downstream to the injury of others.

C. The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination, and unsanitary conditions.

D. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.

E. The importance of the services provided by the proposed facility to the community.

F. The requirements of the facility for a waterfront location.

G. The availability of alternative locations not subject to flooding for the proposed use.

H. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.

I. The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.

J. The safety of access by ordinary and emergency vehicles to the property in time of flood.

K. The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site.

L. The repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

M. Such other factors which are relevant to the purposes of this ordinance.

The Board may refer any application and accompanying documentation pertaining to any request for a variance to any engineer or other qualified person or agency for technical assistance in evaluating the proposed project in relation to flood heights and velocities, and the adequacy of the plans for flood protection and other related matters.

Variances shall be issued only after the Board has determined that the granting of such will not result in (a) unacceptable or prohibited increases in flood heights, (b) additional threats to public safety, (c) extraordinary public expense; and will not (d) create nuisances, (e) cause fraud or victimization of the public, or (f) conflict with local laws or ordinances.
Variances shall be issued only after the Board has determined that variance will be the minimum required to provide relief from hardship to the applicant.

The Board shall notify the applicant for a variance, in writing, that the issuance of a variance to construct a structure below the one hundred (100)-year flood elevation (a) increases the risks to life and property and (b) will result in increased premium rates for flood insurance.

A record shall be maintained of the above notification as well as all variance actions, including justification for the issuance of the variances. Any variances which are issued shall be noted in the annual or biennial report submitted to the Federal Insurance Administrator.

14.1-16 EXISTING STRUCTURES IN FLOODPLAIN DISTRICTS

A structure or use of a structure or premises which lawfully existed before the enactment of these provisions, but which is not in conformity with these provisions, may be continued subject to the following conditions:

A. Existing structures in the Floodway District shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed expansion would not result in any increase in the one hundred (100)-year flood elevation.

B. Any modifications, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use located in any floodplain area to an extent or amount of less than fifty (50) percent of its market value, elevation and/or floodproofing should be considered to the greatest extent possible.

C. The modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, regardless of its locations in a floodplain area, to an extent or amount of fifty (50) percent or more of its market value shall be undertaken only in full compliance with the provisions of this ordinance and the Virginia Uniform Statewide Building Code.

D. Existing structures in the Special Flood Plain District shall not be expanded or enlarged unless it has been demonstrated through hydraulic and hydraulic analyses preformed in accordance with standard engineering practices that the proposed expansion or enlargement would not result in an increase of more than one foot in the one hundred (100) year flood elevation.

14.1-17 FLOODING

Land subject to flooding and land deemed to be topographically unsuitable shall not be platted for residential occupancy, nor for such other uses as may increase danger of health, life or property, or aggravate erosion or flood hazard. Such land within the subdivision shall be set aside on the plat for such uses as shall not be endangered by periodic or occasional inundation or shall not produce conditions contrary to public welfare. All subdivisions within the City of Winchester shall conform with the recommendation of the applicable Storm Drainage Report. Any new subdivision or development shall be subject to the requirements of Article 14.1 FLOODPLAIN DISTRICTS, FP, of the Official Zoning Ordinance.

(Editor's note: Article 14.1 established 10/13/99, Case TA-99-05, Ord. No. 030-99; Comprehensive Revision 9/1/09, Case TA-09-204, Ord. No. 2009-24)

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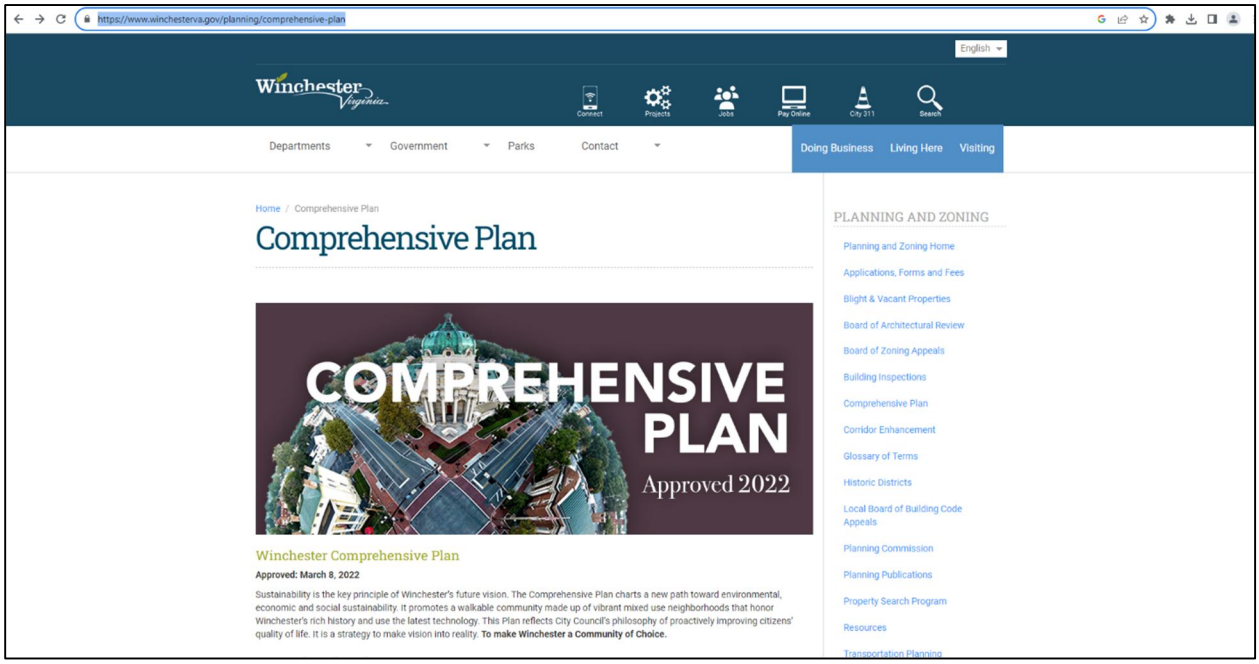
Link to a Copy of the Current Comprehensive Plan

(City of Winchester 2022 Comprehensive Plan)

https://www.winchesterva.gov/planning/comprehensive-plan



Social Vulnerability Index Score(s) for the Project Areas

Social Vulnerability Index	
ID	Social Vulnerability Score
1	1.4325
2	1.3325
3	1.2475
4	1.295
5	1.1625

Legend
Approximate Project Area
Streams
Social Vulnerability Index
High Social Vulnerability

N

0 300 600 US Feet

Winchester Virginia

DATE
11/8/2023

DRAWN BY
CDC

CHECKED BY
JJD

CITY OF WINCHESTER
FEATHERBED LANE PROJECT

PREPARED FOR CITY OF WINCHESTER

SCALE
1" = 300'

PROJECT NUMBER
N/A

SHEET NUMBER
APPENDIX C

Funding Request Authorization

I, Dan Hoffman, City Manager of the City of Winchester, authorize the City of Winchester Department of Public Services to request funding from the 2023 Funding Round of the Virginia Community Flood Preparedness Fund for the development of a Featherbed Lane Floodplain Improvement Study.

Signed: _____

Date: 11/9/23

City of Winchester, VA

INTERNAL ROUTING FORM

Bottom Line Up Front (BLUF)

Date received for filing: 11/9/23
Control #: 2023-

DIVISION	ROUTE SEQ	ACTION CODE	DATE In	DATE Out	INITIALS Concur	INITIALS Non-Concur
City Manager	2	S	11/9/23	11/9/23	DA	
City Attorney						
CFO/Support Svcs. Dir.						
Comm. of the Rev.						
Dep. Clerk of Council						
Downtown Manager						
Economic Redev. Dir.						
Emergency Mgt. Dir.						
Financal Svcs. Director						
Fire & Rescue Chief						
HR Director						
IT Director						
JDC Superintendent						
Parks & Rec Director						
PIO/FOIA						
Planning Director						
Police Chief						
Public Services Dir.	1	X		PE	11/9/23	
Purchasing Agent						
Sheriff						
Social Services Dir.						
Tourism Director						
Treasurer						
WPA Exec. Director						
Zoning Administrator						

Subject: Grant App.-CFPF-Featherbed Lane Corrid

Date:	Originator:	Phone #:
11/7/23	Julie Carter	x1455

Due Date:

Originating Dept: Public Services

Background Info (BLUF):

Attached is the grant application for Community Flood Protection Fund - Featherbed Lane project study for your review and signature.

Please let me know if you have any questions. Thanks.

Comments (add initials after comment):

NOTE: Remember to tab documents where CM signature is needed

ACTION CODES			
X	ORIGINATOR OF REQUEST	F	FYI (INFORMATION)
A	APPROPRIATE ACTION	C	COMMENTS
S	SIGNATURE NEEDED	R	RECOMMENDATION

Winchester Virginia

Last updated: September 2014

City of Winchester, Virginia
Featherbed Lane Floodplain Improvement Study - Community Flood Preparedness Fund (CFPF) Grant Application Package

Submitted by:

City of Winchester
301 E. Cork Street
Winchester, VA 22601

COMMUNITY FLOOD PREPAREDNESS FUND GRANT APPLICATION

The City of Winchester is pleased to submit this application for a Community Flood Preparedness Fund (CFPF) Study Grant that has been developed to meet the applicable scoring criteria outlined in Appendix D of the CFPF Grant Manual.

The impact of historical flooding along Featherbed Lane has necessitated this study grant, which will assist the City in addressing one of its many urban flooding issues. If awarded, this grant will be used to evaluate the effects of Abrams Creek floodplain along Featherbed Lane in the City of Winchester, as well as develop conceptual strategies to prevent and mitigate damages from riverine flooding. Refer to the Scope of Services included in **Section B** for additional information about the proposed work that will be covered under this study grant and **Section A** for the qualifications of the individuals conducting the study.

Table of Contents

SECTION A – ORGANIZATIONAL DATA

Scope of Work Narrative and Qualifications of Project Team

Application Form for Grant and Loan Requests for All Categories

Scope of Work Narrative and Qualifications of Project Team

Scope of Work Narrative

This section includes a summary of the project's background, goals, scope of work, and impact on the community, the qualifications of the individuals on the study project team, and the application form for grant and loan requests for all categories of the CFPF grant.

The impact of historical flooding along Featherbed Lane has necessitated this study grant, which will assist the City in addressing one of its many urban flooding issues. If awarded, this grant will be used to evaluate the effects of Abrams Creek floodplain along Featherbed Lane in the City of Winchester, as well as develop conceptual strategies to prevent and mitigate damages from riverine flooding. Refer to the Scope of Services included in **Section B** for additional information about the proposed work that will be covered under this study grant and **Section A** for the qualifications of the individuals conducting the study. According to the Northern Shenandoah Valley Region Multi-Jurisdictional Hazard Mitigation Plan, the City of Winchester currently has sixty-five repetitive loss properties and is working towards addressing these and other at-risk properties in a floodplain management plan. The flooding issue along Featherbed Lane has been included in the City's resilience plan and has been preliminarily evaluated for improved conveyance. The goal of this project is to supplement that preliminary evaluation by further evaluating the effects of the Abrams Creek floodplain and develop conceptual strategies to prevent and mitigate damages from riverine flooding. A detailed Scope of Services for this project that elaborates on each task, project assumptions and exclusions, and schedule is included in Section B and the qualifications of the individuals executing this project's scope of services are included in this section. An outline of the Kimley-Horn scope of services for this project is as follows:

1. Site Base Mapping, Project Due Diligence, and Site Visit
2. Full Buildout Hydrologic Analysis of the Study Limits Watershed
3. Stream Corridor Hydraulics Study
4. Development of a Featherbed Lane Floodplain Improvement Concept Plan
5. Featherbed Lane Floodplain Improvements Study Report
6. Meetings & Coordination

The following items are anticipated deliverables for this project's scope of services:

- Site specific floodplain data compilation outlined in a Technical Support Data Memo
- HEC-HMS Hydrologic / HEC-RAS Stream Hydraulic Model(s)
- Floodplain Improvements Study – 24x36 AutoCAD Derived Conceptual Plan
- Floodplain Improvements Study – Final Report
- Maps, models, analyses, spreadsheets, and base data utilized for the design (if requested)

This project is estimated to be completed by June 30th, 2024, assuming Kimley-Horn receives notice to proceed by January 31st, 2024. A detailed schedule will be developed for the City outlining project workflow and deliverables after contract execution is complete. The City of

Winchester's Department of Public Services is responsible for managing this project and project progress and budget will be tracked monthly and reported to the City with a monthly progress report containing documentation of services provided. Because the proposed project is a study, no operation or maintenance will be required on behalf of the City or Kimley-Horn. Potential project partners for this project include CSX Rail, Federal Mogul Corporation, and the Winchester Area SPCA.

Although it will not likely impact the state's resilience to flooding, performing a floodplain improvement study utilizing the tasks and procedures in Kimley-Horn's scope of services will help strengthen the City of Winchester's resilience to flooding on a local and basin-wide scale.

Key Individuals

Kimley-Horn brings you a carefully selected team of seasoned professionals who are genuinely committed to the City of Winchester's success. Our team serving the City prides ourselves on maintaining our strong project delivery, reputation for dependability, proactive thinking, and solid, consistent results. We are committed to delivering projects successfully and improving Winchester's resilience to flooding. Brief introductions to our team can be found below and resumes for each team member can be found on subsequent pages.

Jon D'Alessandro, P.E.

Project Manager

Jon has more than 14 years of experience in water resources engineering. He is experienced in the design and implementation of stormwater management projects with core expertise in hydrologic and hydraulic (H&H) modeling, Best Management Practice (BMP) design, BMP retrofit analysis and design, floodplain analysis, dam failure analysis, stream restoration design, and stormwater master planning. He has extensive experience using AutoCAD Civil 3D and Arc-GIS, as well as various H&H modeling software including, but not limited to, HEC-HMS, HEC-RAS, PondPack, Flowmaster, SWMM, WMS, and L-THIA. Additionally, he has supported local government municipal separate storm sewer systems (MS4) permit compliance programs through TMDL Action Plan Development, Program Plan and Annual Reporting Development, and inspection of stormwater infrastructure. His municipal relationships in Virginia include the City of Fairfax, Loudoun County, City of Winchester, Fairfax County, Stafford County, City of Fredericksburg, and support to the Loudoun County Soil and Water Conservation District.

Jared Hodes, P.E.

Jared has more than 7 years of experience in technical H&H modeling with a focus on hydrologic extremes, floodplain management, and municipal flooding issues. Jared has used a variety of H&H software including HEC-RAS, HEC-HMS, XPSWMM, HY-8, FlowMaster, and PondPack to model watersheds, culverts, bridges, dams, stormwater infrastructure, and stormwater BMPs for the purposes of design, retrofitting, municipality permitting, FEMA floodplain permitting, resiliency assessment, and flooding hot spot identification. He has extensive experience using ArcGIS for spatial data analysis, map product creation, online dashboard creation, and compiling and editing ESRI geodatabases for asset management. He has performed field work for stream, stormwater, precipitation, and geophysical measurements and for pollutant sampling projects.

Juan Campos, P.E.

Juan has more than 6 years of water resources experience primarily focused on support of municipal projects needed to meet local and Chesapeake Bay TMDL POC reduction requirements. Juan's core expertise lies in his knowledge of the approved design protocols required for restoration and retrofit projects in the Commonwealth and the implementation of different strategies and funding mechanisms to assist localities with improving their stormwater resiliency efforts. He has executed successful projects in the City of Fairfax, Loudoun County, City of Fredericksburg, City of Winchester, Prince William County, Fauquier County, and as part of the Virginia State Community College System.

Joe Arizzi, P.E.

Joe is an experienced urban stormwater management designer in the State of Virginia. His skills include technical use of ArcGIS for land cover analyses and BMP desktop siting studies, and HEC-RAS and HEC-HMS for hydrology and hydraulic analyses of stream channel characteristics. He is experienced in urban drainage assessments including conveyance system modeling, flood studies, and green infrastructure design.

Michelle Manfrey, EIT

Michelle has 2 years of water resources engineering experience. Michelle's experience is primarily focused on supporting municipal projects needed to meet local and Chesapeake TMDL POC reduction requirements as well as spearheading field campaign efforts. Michelle is well-versed in AutoCAD Civil 3D and ArcGIS and has had exposure to numerous H&H modeling software, including, but not limited to, HEC-HMS, HEC-RAS, and PondPack. Michelle has municipal relationships in the City of Fairfax, Loudoun County, City of Winchester, and Fairfax County.

Jon D'Alessandro, P.E.

Project Manager

Relevant Experience

Lake Drive Dam and Roadway Preliminary Engineering Design, Loudoun County, VA — Senior Project Manager and Senior Engineer. Jon is leading an effort to develop a preliminary design that will improve Lake Drive from Thomas Avenue to the terminus of Lake Drive with the design goal of future road acceptance into the Virginia Department of Transportation (VDOT) Secondary System of Roadways. Jon also is leading a team that is performing an evaluation of rehabilitation, repair, and retrofit options for the pond, dam, and downstream receiving channels at the 30 percent design level. The dam and roadway overtop multiple times annually, and the dam is experiencing significant downstream erosion at the toe of the dam and dam abutments. The dam impoundment area also is exhibiting enhanced sediment loading and erosion along the two main inflow channels.

Willow Lake Dam and Spillway Rehabilitation Plan/Pond Dredging and Retrofit, Loudoun County, VA — Senior Project Manager and Senior Engineer. Jon is the project manager and senior engineer responsible for leading a team in the development of a dam and spillway rehabilitation plan to repair the Willow Lake Dam and accompanying principal and emergency spillway channels. As part of this project, Jon and his team are also providing storm sewer system realignment design services to modify the discharge location of a 48-inch storm sewer pipe away from the toe of the dam to help with embankment erosion.

During the dam and spillway repair design, Jon worked with the County to identify if the corresponding Willow Pond needed maintenance and potential enhancement. From the joint analysis with County, Jon is managing a team that is preparing an accompanying Willow Lake Dredging and Pond Retrofit Design Plan that will be paired with the dam and spillway rehabilitation plan. It is anticipated that once fully designed and constructed, the conversion, enhancement, and retrofit of Willow Lake will provide Phosphorous, Nitrogen, and Total Suspended Solid (TSS) removal capabilities that will assist the County in meeting the pollutant load reduction requirements set forth in their municipal separate storm sewer system (MS4) permit and Chesapeake Bay TMDL Action Plan. Furthermore, the proposed dredging of the pond will return the pond to its original design volume and will help with pond maintenance and the aesthetics of the community.

Ashby Pond Conservancy – Pond Retrofit Final Design Services, Fairfax, VA — Senior Project Manager and Senior Engineer. Jon is leading an effort to finalize design plans for the Ashby Pond Conservancy – Pond Retrofit project. When completed the project will restore, enhance, and retrofit Ashby Pond in the City of Fairfax. This project also includes restoration and stabilization of both inflow channels that drain to the pond. The pond was designed in 2010, constructed in 2011, and does not meet Technical II.B criteria design standards for Wet Ponds outlined in BMP Clearinghouse Specification No. 14.

The project is intended to provide Phosphorous, Nitrogen, and Sediment reductions within the Accotink Creek, Potomac River, and Chesapeake Bay Watershed. The project has duplicative benefits towards assisting the City in meeting their MS4 Permit requirements for Chesapeake Bay TMDL Pollutant of Concern Reductions, as well as assists the City in implementing one of the Means and Methods outlined in their Local TMDL Action Plan for the Benthic/Sediment

Special Qualifications

- More than 14 years of experience in water resources engineering.

Professional Credentials

- Professional Engineer in Virginia
- Bachelor of Science, Biological Systems Engineering, Virginia Polytechnic Institute and State University, 2008
- Bachelor of Science, Biology, Virginia Polytechnic Institute and State University, 2008
- Applied Fluvial Geomorphology (Rosgen Level 1)
- River Morphology and Applications (Rosgen Level 2)
- VDEQ - Stormwater Management Program Administrator
- VDEQ - Stormwater Management Inspector

TMDL for Accotink Creek. Furthermore, this project is a community centerpiece with a trail that encompasses the pond. Once the pond is retrofitted, the trail around the pond will be paired with signage which will provide Public Education and Outreach opportunities for the City which will help address Minimum Control Measure 1 (MCM-1) requirements of the MS-4 Permit.

Staff Augmentation Services for Review of Floodplain Use Determination Request Package Submittals, Fairfax County, VA — Program Manager. Jon is the program manager for a team that provides staff augmentation services related to the review of County Floodplain Use Determination Request Package submissions and re-submissions received by the County.

***Riverbend Stream Restoration Design, Loudoun County, VA —** Senior Project Manager and Senior Engineer. Jon was the project manager and senior engineer responsible for engineering design and analysis for a comprehensive stream and outfall restoration project totaling 3,125 linear feet of stream and five outfall channels totaling at 800 linear feet. The design and corresponding engineering analyses utilized natural channel design (NCD) restoration techniques to repair extreme channel erosion and aimed to minimize grading impacts to the floodplain fringe to preserve existing riparian areas. The outfall restorations were credited and designed in accordance with Protocol 5 *"Recommendations for Crediting Outfall and Gully Stabilization Projects in the Chesapeake Bay Watershed."*

***Moorefield Station East Pond - Dam Safety Compliance Services, Loudoun County, VA —** Senior Project Manager and Senior Engineer. Jon assisted Loudoun County with Dam Safety Compliance Services for the Moorefield Station – East Pond Dam. The dam that impounds the East Pond is a State Regulated, High Hazard Dam classified through the Virginia Department of Conservation and Recreation (DCR) dam safety program. Jon provided engineering and consulting services to assist the County in transferring ownership from the Claude Moore Charitable Foundation to the County. As part of this project Jon recreated existing inundation zone mapping, performed an update of the existing Moorefield Station East Pond – Emergency Action Plan (EAP), researched and provided recommendation(s) for installation of pond and dam gauging equipment, and provided support services for transfer of dam ownership.

***Lake Carroll - Dam Failure Analysis, Dam Inundation Zone Mapping, and Design Alternatives Analysis, Stafford County, VA —** Assistant Project Manager and Lead Engineer. Jon was the lead engineer and assistant project manager for the Lake Carroll Dam Failure Analysis and Dam Design Alternatives Project. Jon was responsible for development of hydrologic, hydraulic, and dam breach modeling input parameters to determine different breach scenarios, derive breach hydrographs, and perform HEC-RAS unsteady state routing of the breach hydrographs to develop respective breach inundation boundaries. Jon was also tasked to develop conceptual design alternatives that could modify the dam to meet Virginia Dam Safety requirements for High Hazard Dams.

***2nd Phase Chesapeake Bay TMDL Action Plan Development, Fairfax, VA —** Senior Project Manager. Jon was responsible for the development of an update of the city's Chesapeake Bay TMDL Action Plan in accordance with Part II.A.11 of the MS4 General Permit. Jon managed a team and provided technical expertise to develop the city's estimated 2nd permit cycle Chesapeake Bay TMDL Pollutant of Concern (POC) Reduction requirements. Jon also was responsible for outlining and developing means and methods to help address the city's 2nd Phase POC reduction goals.

***Smith Run – Pond D Dam Failure Analysis, Dam Inundation Zone Mapping, and Design Alternatives Analysis, City of Fredericksburg, VA —** Senior Project Manager and Engineer of Record for the Dam. Jon prepared a dam failure analysis for the Smith Run – Pond D Dam in accordance with current VA DCR Dam Safety Regulation requirements. As part of this project, Jon managed a team that developed design alternatives analysis to evaluate repair/renovation alternatives needed to meet spillway design requirements in accordance with State Regulations. Also, Jon provided Virginia Dam Safety services to assist the city with the Virginia DCR regulatory requirements related to the Smith Run – Pond D Dam.

***Indicates project completed prior to joining Kimley-Horn**

Jared Hodes, P.E.

Project Engineer

Relevant Experience

Stafford Drive Stream Restoration CLOMR, City of Fairfax, VA — Project Manager. Jared is responsible for managing a team that is providing hydrologic and hydraulic modeling services for approximately 2,400 linear feet of stream restoration along the North Fork Accotink Creek. As part of the permitting process, a CLOMR submittal package was prepared for FEMA approval. The tasks associated with the CLOMR package include HEC-RAS model development to reflect existing and proposed grading reflective of the restoration, evaluation of land cover changes, and utilization of model results to prepare a FEMA MT-2 application.

The Lakes Dam Inundation Study and Emergency Action Plan Development, City of Fayetteville, NC — Project Manager. Jared performed a dam breach analysis and subsequently provided inundation mapping for The Lakes Dam, which is classified as a high hazard dam. As part of this project, Jared updated the existing Emergency Action Plan based on the results of the inundation study. 1/3 Probable Maximum Precipitation and Sunny Day breaches were modeled using HEC-RAS 1-D unsteady methodology. The project resulted in successful approval through North Carolina Dam Safety.

Fairfax County Floodplain Use Determination (FPUD) Reviews and Other Services, Fairfax County, VA — Project Manager. Jared is leading a team contracted to provide engineering augmentation services for county reviews of FPUD requests. This includes utilizing GIS-based tools and detailed Zoning Ordinance understanding to assess if the proposed work is approvable under Zoning Ordinance statutes. This work also includes cost estimation in accordance with FEMA NFIP Substantial Improvement guidelines.

East Durham Water Sewer and Belt Street Stormwater, Durham, NC — Lead Engineer. Kimley-Horn evaluated approximately 68,500 linear feet of waterlines, 56,000 linear feet of sanitary sewer lines, and 9,000 linear feet of stormwater pipes via in-field and CCTV footage assessments. Designed approximately 2,100 linear feet of 15- through 66-inch stormwater infrastructure. A combined 1-D/2-D XPSWMM model was developed for a larger and more complex portion of the stormwater network with known flooding issues to better assess the existing system's performance. The model was field verified in an intense storm event and was then used to help design the proposed system. Civil 3D was utilized for iterative pipe network design and plan set development and hydraulic performance was confirmed in the XPSWMM model.

Lakeside Trail Phases, Henrico County, VA — Lead Engineer. Kimley-Horn is designing 4 phases of the overall Lakeside Trail project in Henrico County. Jared has led the floodplain permitting and modeling effort to provide Henrico County with analyses of the floodplains associated with North Run and Upham Brook in relation to the multi-phase trail design. Jared guided iterative trail design updates to achieve a No-Rise for the County. The County has also asked Kimley-Horn to incorporate an additional adjacent project into Phase 1 of the analysis, since they have been so pleased with the coordination, quality of deliverables, and responsiveness of the team. This project involves coordination with Henrico County and City of Richmond Floodplain Administrators, and VDOT. There are multiple funding sources for this work including County funds, bonds, VDOT, and ARPA funding, which necessitates hitting schedule milestones to bid the work for construction in accordance with the various funding sources.

Special Qualifications

- Experienced water resources engineer
- Applied Fluvial Geomorphology (Rosgen Level1)

Professional Credentials

- Master of Science, Civil and Environmental Engineering, Duke University, 2016
- Bachelor of Science, Atmospheric, Oceanic, and Environmental Sciences, University of California, Los Angeles, 2014
- Professional Engineer in Virginia and North Carolina

Holly Springs Road Widening Phase 2 CLOMR, Holly Springs, NC — Lead Engineer. Jared provided engineering services to the Town of Holly Springs to evaluate the effects of a proposed road widening on the floodplain. One of the main project objectives was to address the recurring flooding at the crossing of Middle Creek. Kimley-Horn designed the conversion of a triple barrel box culvert to a 150 linear foot, 3-span bridge to elevate the roadway profile to avoid roadway overtopping in the 100-year flood event. This work included HEC-RAS model development and modification using best available public data, survey data, proposed grading, land use changes, and FEMA MT-2 application preparation. Effective and Preliminary Floodway remapping was required.

Loudoun Soil and Water Conservation District (LSWCD) Floodplain Services, Loudoun County, VA — Project Manager. Jared is responsible for leading a team that provides floodplain analyses using GIS-based tools and available FEMA models, performing site visits to characterize potential impacts on the floodplain, and coordinating with the county's floodplain administrator to facilitate permit approvals through No-Rise designations. The County has a cost sharing program to help partially fund riparian tree plantings or livestock control fence installations that will lead to improved floodplain management. These projects had previously been on hold due to impasses encountered during floodplain permitting. Kimley-Horn was hired to assist LSWCD navigate the permitting process for these projects without making them cost prohibitive. Kimley-Horn has helped LSWCD successfully navigate the permitting process in a cost-effective manner for all projects worked on thus far.

Junction and Ferrell Industrial & Beth Page Apartments No-Rise Studies, Durham, NC — Project Manager. Jared managed a team that provided engineering services on two sites (for Scannell Properties LLC and Buckingham Companies respectively) with three new roadway crossings in the floodplain. This work required HEC-RAS analyses to design the culvert crossings such that a No-Rise could be achieved for the non-encroachment areas, effective floodplain, and future conditions floodplain along Panther Creek Trib. 1 and Unnamed Trib. to Stirrup Iron Creek Tributary D, per Durham County standards.

Juan Campos, P.E.

Project Engineer

Relevant Experience

Stafford Drive Stream Restoration Construction Plans, Fairfax, VA — Project Manager. Juan managed the design and development of the construction documents for approximately 2,400 linear feet of stream restoration and two outfall restorations along the North Fork of Accotink Creek. As part of the project the following services were performed: threatened & endangered species study, FEMA Conditional Letter of Map Revision (CLOMR) submission, development of a Stormwater Construction General Permit Registration Statement (VAR10), development of a Stormwater Pollutant Prevention Plan (SWPPP), development of a USACE Nationwide Permit 27, and three community outreach presentations to obtain constituents and public official's support.

2022 Virginia Community Flood Preparedness Fund – Resiliency Plan and Mosby Woods Study, Fairfax, VA — Project Manager. Juan managed, prepared, and assembled two grant applications packages for the 2022 Virginia Community Flood Preparedness Fund – Round 3. The first grant application was submitted for the development of a Resilience Plan to assist the City of Fairfax in the development and implementation of a strategy to reduce localized flooding. Once approved, the Resilience Plan will also be used as part of the FEMA Community Rating System (CRS) program under Activity 510 – Floodplain Management Planning. The second grant application was submitted in the Studies category for the evaluation of the effects of the North Fork of Accotink Creek floodplain on the Mosby Woods Condominiums. Both grants were selected and awarded funding as part of Round 3.

Outfall and Gully Stabilization Project (OGSP) 100% Construction Plans, Fairfax, VA — Project Manager. Juan managed the design and development of construction plan sets for three outfall restoration projects on separate sites. The design was done in accordance with the Unified Guide for Crediting Stream and Floodplain Restoration Projects in the Chesapeake Bay Watershed. The projects were conducted to assist the City of Fairfax in meeting their Chesapeake Bay Phase II TMDL Pollutant of Concern (POC) reduction requirements as well as satisfy the City's Benthic (Sediment) Local TMDL Reduction Requirements for Accotink Creek.

Stormwater and Flooding Resilience Plan Development, City of Winchester, VA — Project Manager. Juan managed the preparation and submittal of a Virginia Community Flood Preparedness Fund (CFPF) grant for the development of a Resiliency Plan. The grant application was successful and the City received a 90%/10% match from DCR. The Resilience Plan is now being developed to assist the City in project prioritization and implementation to reduce their localized flooding. The Resilience Plan will serve as the base document for future CFPF grant applications and allow the City to apply for project related grants to offset infrastructure improvements costs.

Tye River Stream Restoration Guidance Document, Nelson County, VA — Project Manager. Juan managed the design and development of guidance documents for approximately 4,350 linear feet of stream restoration. The stream restoration was a critical component of a large private stream mitigation credit bank. Minimal grading practices along with structural solutions were implemented to help minimize the impact to the private property.

Special Qualifications

- 6+ years of water resources engineering experience with a focus in stream & outfall restoration, pond enhancement and retrofit, hydrology & hydraulics, design implementation and construction administration, flood resiliency planning and improvements, and grant funding assistance.
- Applied Fluvial Geomorphology (Rosgen Level 1)

Professional Credentials

- Master of Science, Civil Engineering, Virginia Polytechnic Institute and State University, 2016
- Bachelor of Science, Civil Engineering, Virginia Polytechnic Institute and State University, 2015
- Professional Engineer in Virginia

Joe Arizzi, P.E.

Project Engineer

Relevant Experience

Loudoun County Department of General Services (DGS) On-Call MS4 Support, Loudoun County, VA — Project Engineer. Joe actively assists Loudoun County's DGS department in providing municipal separate storm sewer system (MS4) program support. This work has consisted of various tasks orders including watershed planning for quality and quantity control which includes identifying projects for stream and outfall restorations, BMP retrofits, and infrastructure improvements. Project evaluation for this client has included assessing projects for both phosphorus, nitrogen and TSS reductions associated with the Chesapeake Bay TMDL and TSS reductions for Loudoun County's local TMDL. The assessments include use of GIS to identify project locations based on hydrologic, environmental and developmental restrictions, ease of implementation, and constructibility.

Greening of Lincoln, City of Falls Church, Falls Church, VA — Project Manager. Joe is actively leading a PCSWMM analysis for a 250-acre watershed with known flooding issues in the City of Falls Church. This project is a hybrid stormwater – roadway capital improvement project which also is evaluating traffic calming measures and roadway features along an existing corridor within this watershed. As part of Phase 2 of this project, recommendations and solutions will be presented which incorporate GI along the corridor to act as both community assets and stormwater treatment practices.

Zumot Data Center, Manassas, VA — Task Manager. Joe is the task manager for a data center development in the City of Manassas that included the relocation of an existing stream around the proposed data center, along with the design of several bioretention facilities, dry ponds, and underground detention facilities to meet VSMP requirements for the development. Joe oversaw the design, modeling, and permitting of this task for the approximately 18-acre site in the city.

GMU MS4 and Annual Standards and Specifications Program Mock Audit, Fairfax, VA — Project Engineer. Joe completed a comprehensive review of George Mason's MS4 Program to ensure compliance with regulatory requirements in anticipation of a DEQ audit. This review consisted of the entire program, evaluating each individual MCM and the Annual Standards and Specifications, and determining any outstanding information that should be incorporated to comply with their MS4 permit.

***Fairfax County MSMD Facility Inspections and Reporting, Fairfax, VA —** Task Manager. Joe oversaw a team of 15 stormwater management inspectors responsible for the inspection of privately and publicly owned stormwater management facilities as part of the Maintenance and Stormwater Management Division's inspection program within Fairfax County. Joe managed inspection assignments and tracked progress through ArcCollector. Joe was responsible for the quality control of completed inspection reports, including the review of identified maintenance issues and recommendations for remediation in support of Fairfax County's MS4 Requirements.

Special Qualifications

- Joe is an accomplished water resources engineer providing MS4 Support Services in Virginia for nearly a decade

Professional Credentials

- Bachelor of Science, Environmental Engineering, Rensselaer Polytechnic Institute, 2014
- Professional Engineer in Virginia
- Rosgen II Certified
- VDEQ Stormwater Management Inspector and Plan Reviewer

***Indicates project completed prior to joining Kimley-Horn.**

Michelle Manfrey, EIT

Project Engineer

Relevant Experience

Lake Drive Dam and Roadway Preliminary Engineering Design, Loudoun County, VA — Project Engineer. Michelle is assisting in evaluating rehabilitation, repair, and retrofit options for the Lake Drive pond, dam, and downstream receiving channels. The dam and roadway overtop multiple times annually and the dam is experiencing significant downstream erosion at the toe of the dam and dam abutments. The impoundment area is exhibiting enhanced sediment loading and erosion along the two main inflow channels. This project has required a considerable amount of coordination due to the risk involved as well as the project crossing County lines, HOA-owned property, and privately owned property. In addition to alternatives development, Michelle has been at the forefront of that coordination.

Ashby Pond Wet Pond Enhancement Plans (90% Design), City of Fairfax, VA — Project Engineer. The goal of this project is to restore, enhance, and retrofit Ashby Pond to return the pond to its original design volume and achieve current design standards, as well as restore and stabilize both inflow channels that drain to the pond. Michelle has provided direct engineering support for this project in the form of developing engineering plans, performing hydrologic analyses, and utilizing Quality Assurance and Quality Control protocols throughout the design process. Michelle has also provided auxiliary support by preparing SLAF Grant materials, performing field reconnaissance to provide site status updates, and provided field mapping services for ancillary service.

Accotink Creek Stream Stability Assessment and Prioritization Plan, Fairfax, VA — Project Engineer. The goal of this project is to update the 2008 Accotink Creek Stream Stability Assessment and Prioritization Plan with current stream assessment information. Michelle collaborated with the City to develop a GIS-based platform that allows multiple types of data to be collected simultaneously for rapid assessment of stream geometry and attribute data to automatically prioritize reaches of Accotink Creek in terms of their restoration potential. In addition to her role in its development, Michelle has been instrumental in the field implementation of the data collection platform. Michelle leads and manages data collection efforts, interfaces with the City to communicate progress, and continues to work with the City to refine the platform and create a user-friendly interface and dashboard.

Fairfax County Floodplain Use Determination (FPUD) Reviews and Other Services, Fairfax County, VA — Project Engineer. Kimley-Horn has been contracted to provide engineering augmentation services for county reviews of FPUD requests. Michelle intakes and reviews these cases, which includes utilizing GIS-based tools, detailed Zoning Ordinance understanding, and cost estimation in accordance with FEMA NFIP Substantial Improvement guidelines, to assess if the proposed work is approvable under Zoning Ordinance statutes.

Special Qualifications

- Applied Fluvial Geomorphology (Rosgen Level 1)

Professional Credentials

- Bachelor of Science, Environmental Engineering, University of Florida, 2021
- Engineer-in-Training, 1100025639, FL

Application Form for Grant and Loan Requests for All Categories

Applicants must have prior approval from the Department to submit applications, forms, and supporting documents by mail in lieu of the WebGrants portal.

Appendix A: Application Form for Grant and Loan Requests for All Categories

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Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

Category Being Applied for (check one):

☐ **Capacity Building/Planning**

☐ **Project**

☒ **Study**

NFIP/DCR Community Identification Number (CID) *510173*

Name of Authorized Official and Title: *Dan Hoffman, City Manager*

Signature of Authorized Official: _____

Mailing Address (1): *Rouss City Hall*

Mailing Address (2): *15 North Cameron Street*

City: *Winchester* **State:** *Virginia* **Zip:** *22601*

Telephone Number: (*540*)*772-3409* **Cell Phone Number:** (____) _____

Email Address: *dan.hoffman@winchester.gov*

Contact and Title (If different from authorized official): _____

Mailing Address (1): *301 E. Cork Street*

Mailing Address (2): _____

City: *Winchester* **State:** *VA* **Zip:** *22601*

Telephone Number: (*540*) *773-1340* **Cell Phone Number:** (____) _____

Email Address: *kelly.henshaw@winchester.gov*

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes *X* No ____

Categories (select applicable activities that will be included in the project and used for scoring criterion):

Capacity Building and Planning Grants

☐ Floodplain Staff Capacity.

☐ Resilience Plan Development

- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
- ☐ Resource assessments, planning, strategies, and development.
  - Policy management and/or development.
  - Stakeholder engagement and strategies.

☐ Other: _____

Study Grants (Check All that Apply)

☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP, or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks, freeboard, or other

higher standards, RiskMAP public noticing requirements, or correcting issues identified in a Corrective Action Plan.

- ☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards, and practices.
- ☐ Conducting hydrologic and hydraulic (H&H) studies of floodplains. *Changes to the base flood, as demonstrated by the H&H must be submitted to FEMA within 6 months of the data becoming available.*
- ☐ Studies and Data Collection of Statewide and Regional Significance.
- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.
- ☒ Other relevant flood prevention and protection project or study.

Project Grants and Loans (Check All that Apply – Hybrid Solutions will include items from both the "Nature-Based" and "Other" categories)

Nature-based solutions

- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development, and where the flood mitigation benefits will be achieved as a part of the same project as the property acquisition.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.
- ☐ Living shorelines and vegetated buffers.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool, or the acquisition of developed land for future conservation.
- ☐ Dam removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.

Other Projects

- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.

- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.
- ☐ Dam restoration.
- ☐ Beneficial reuse of dredge materials for flood mitigation purposes
- ☐ Removal or relocation of structures from flood-prone areas where the land will not be returned to open space.
- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development, and where the flood mitigation benefits will **not be** achieved as a part of the same project as the property acquisition.
- ☐ Other project identified in a DCR-approved Resilience Plan.

Location of Project or Activity (Include Maps): *See Appendix C*

NFIP Community Identification Number (CID#) : *510173*

Is Project Located in an NFIP Participating Community? *X* ☐ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? *X* ☐ Yes ☐ No

Flood Zone(s) (If Applicable): *Zone AE, Zone A, Zone X*

Flood Insurance Rate Map Number(s) (If Applicable): *51069C0216E*

Total Cost of Project: *$69,955.76*

Total Amount Requested *$62,960.18*

Amount Requested as Grant *$62,960.18*

Amount Requested as Project Loan (not including short-term loans for up-front costs) *Not Applicable*

Amount Requested as Short-Term loan for Up-Front Costs (not to exceed 20% of amount requested as Grant) *Not Applicable*

For projects, planning, capacity building, and studies in low-income geographic areas: Are you requesting that match be waived? □ Yes X No *(Not Applicable)*

Additional Information for Loan Requests

Requested Loan Security: *Not Applicable*

(General Obligation, Lease, Revenue, Special Fund Revenue, and/or Moral obligation from other government entity)

Desired loan term: *Not Applicable*

Since the date of your latest financial statements, did the applicant issue any new debt? *Not Applicable*
(If yes, provide details)

Is there any pending or potential litigation by or against the applicant? *Not Applicable*

Attach five years of current audited financial statements (FY18-22) or refer to website if posted
(Not necessary for existing VRA borrowers) *Not Applicable*

Attach FY2024 adopted budget or refer to website
Not Applicable

Attach current Capital Improvement Plan
Not Applicable

Attach adopted Financial Policies
Not Applicable

Attach a list of the ten largest employers in the Applicant's jurisdiction.
Not Applicable

Attach a list of the ten largest taxpayers in the Applicant's jurisdiction
Not Applicable

SECTION B – BUDGET DATA

Project Budget Narrative and Scope of Services

Budget Narrative Template

Funding Request Authorization

`

Project Budget Narrative and Scope of Services

`

A detailed budget narrative is included below and contains the required information outlined in the 2023 Funding Manual for the Virginia Community Flood Preparedness Fund. This section also includes the Kimley-Horn Scope of Services to develop the Featherbed Lane Floodplain Improvements Study.

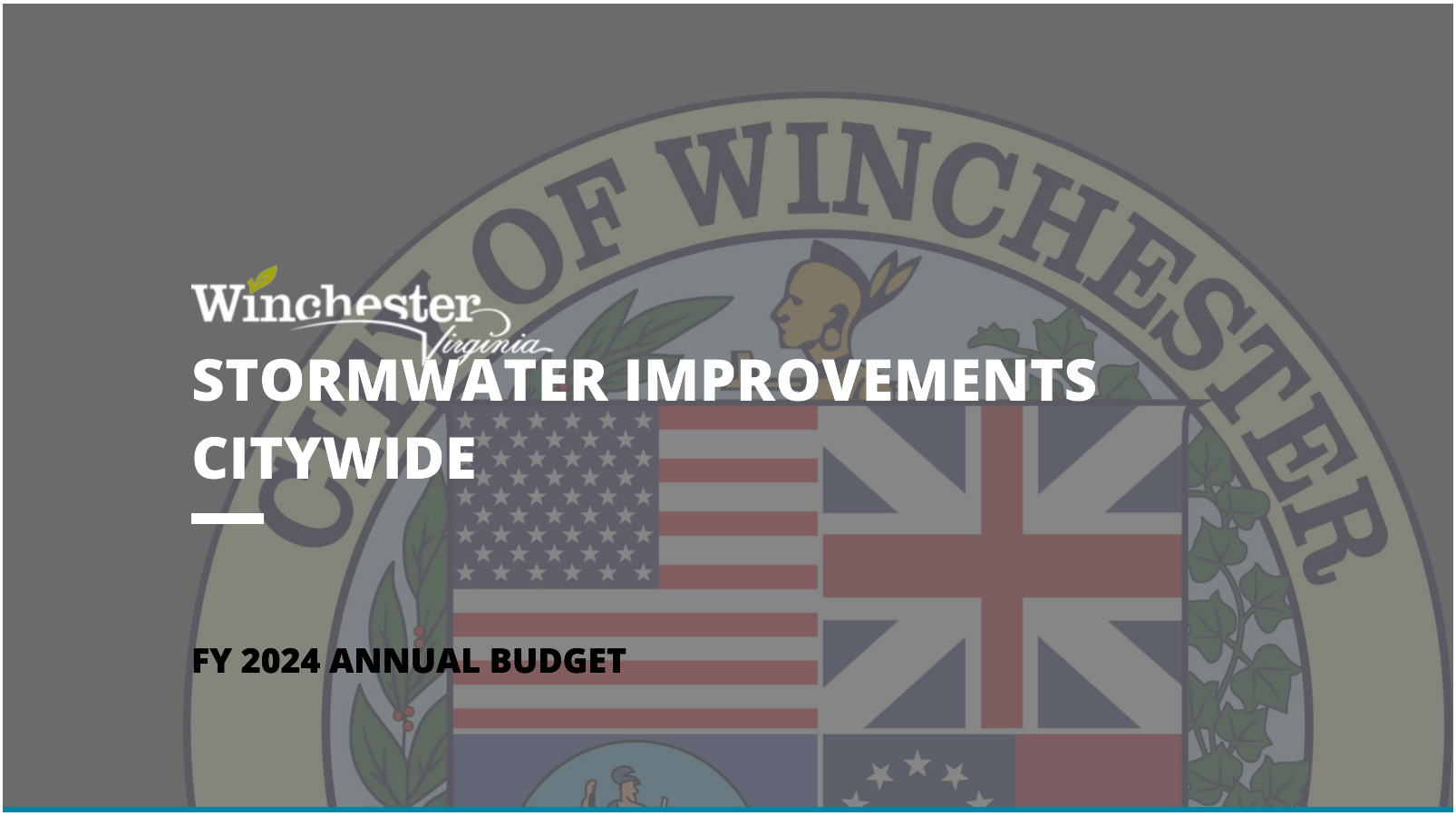
Estimated total project cost: The total identified project cost to complete the Featherbed Lane Floodplain Improvements Study is $69,955.76.

Amount of funds requested from the Fund: The total amount of grant assistance sought from the Fund is $62,960.18. A detailed breakdown of how this funding is proposed to be allocated is shown in this section as an attached Scope of Services.

Amount of funds available: The amount of funds available through this project's funding source is greater total estimated project cost of $69,955.76. The following documentation is included in in the following attached documents:

- City of Winchester – FY2024 Annual Budget- Stormwater Improvements Citywide
    - City of Winchester – FY2024 Outcome Based Budget
- City of Winchester – FY2024 Annual Budget – Stormwater Utility Fund

Authorization to request for funding: A signed statement from the City of Winchester, City Manager authorizing the request for funding for this project has been included in this section.



STORMWATER IMPROVEMENTS CITYWIDE

FY 2024 ANNUAL BUDGET

SUMMARY

PROJECT TITLE: Storm Drainage Improvements

DEPARTMENT: Public Services

BUDGET CODE: 312-4131-441.83-71

JUSTIFICATION: Improves existing service

START DATE (FY): 2024

END DATE (FY): Ongoing

PROJECT DESCRIPTION:

Numerous projects to improve the stormwater system throughout the City that will be funded by the Stormwater Utility recently approved by City Council.

RELATIONSHIP TO STRATEGIC PLAN:

Goal 5 - Support the City's high-performing operations with effective communication, innovation, and sound fiscal policies.

PROJECT OBJECTIVES / STATUS:

Projects are necessary to help alleviate flooding and ensure that the City meets the requirements of its stormwater discharge permit.

COST ESTIMATE

Cost Estimate - Stormwater Improvements Citywide

Itemization Descripti...	2022-23	2023-24	2024-25	2025-26	2026-27	2027-2
Construction	$0	$2,200,000	$10,000,000	$10,000,000	$4,000,000	$4,000,00
Planning	$0	$500,000	$500,000	$500,000	$500,000	$500,00
Land	$0	$500,000	$500,000	$500,000	$500,000	$500,00
TOTAL	**$0**	**$3,200,000**	**$11,000,000**	**$11,000,000**	**$5,000,000**	**$5,000,00**

FUNDING SOURCES

Funding Sources - Stormwater Improvements Citywide

Object (Duplicate)	2022-23	2023-24	2024-25	2025-26	2026-27	2027-2
Other Financing Sour...	$0	$3,000,000	$8,000,000	$8,000,000	$5,000,000	$5,000,00
Federal	$0	$200,000	$3,000,000	$3,000,000	$0	
TOTAL	**$0**	**$3,200,000**	**$11,000,000**	**$11,000,000**	**$5,000,000**	**$5,000,00**

Note: Reference period 2022-23 includes all prior years and 2028-29 includes all future years.

OPERATING IMPACTS

Overall, these projects will help reduce maintenance costs of the stormwater system.

OBB - Variance

Collapse All	FY 2021 Actual	FY 2022 Actual	2022-23 Actual	FY 2023 Adopted Budget	2023-24 Actual	FY 2024 Adopted Budget	FY 2024 Variance
▼ PERSONNEL	$ 0	$ 0	$ 0	$ 0	$ 57,702	$ 430,900	$ 430,900
▸ SALARIES & WAGES	0	0	0	0	40,529	289,589	289,589
▸ OVERTIME	0	0	0	0	2,281	40,000	40,000
▸ FICA	0	0	0	0	3,125	22,134	22,134
▸ RETIREMENT	0	0	0	0	4,556	30,175	30,175
▸ GROUP INSURANCE	0	0	0	0	586	3,880	3,880
▸ DISABILITY INSURANCE	0	0	0	0	33	1,058	1,058
▸ WORKER'S COMPENSATION	0	0	0	0	629	5,534	5,534
▼ OTHER BENEFITS	0	0	0	0	5,932	38,327	38,327
BENEFITS ADMIN FEE	0	0	0	0	152	1,532	1,532
HEALTH INSURANCE	0	0	0	0	5,781	36,795	36,795
▸ VRS HEALTH INS CREDIT	0	0	0	0	31	203	203
▼ CONTRACTUAL SERVICES	0	0	0	0	32,016	161,750	161,750
▼ PROFESSIONAL SERVICES	0	0	0	0	3,035	50,000	50,000
ENGINEERING & ARCHITECT	0	0	0	0	3,035	50,000	50,000
▼ MAINTENANCE SERVICE	0	0	0	0	28,981	111,500	111,500
REPAIRS & MAINTENANCE	0	0	0	0	19,141	100,000	100,000
VEHICLE REPAIRS/MAINT.	0	0	0	0	0	10,000	10,000
COMPUTER HARDWARE/SOFTWAR	0	0	0	0	9,840	1,500	1,500
▸ PRINTING & BINDING	0	0	0	0	0	150	150
▼ PURCHASE SERV OTHER GOVMT	0	0	0	0	0	100	100
SANITARY LANDFILL USAGE	0	0	0	0	0	100	100
▼ INTERNAL SERVICES	0	0	0	0	0	21,000	21,000
▸ MOTOR POOL INTERNAL SVC	0	0	0	0	0	21,000	21,000
▼ OTHER CHARGES	0	0	0	0	12,375	134,150	134,150
▸ UTILITIES	0	0	0	0	407	0	0
▸ COMMUNICATIONS	0	0	0	0	0	4,000	4,000
▸ TRAVEL	0	0	0	0	0	500	500
▸ MISCELLANEOUS	0	0	0	0	3,000	3,200	3,200
▼ MATERIALS & SUPPLIES	0	0	0	0	8,968	126,450	126,450
OFFICE SUPPLIES	0	0	0	0	0	200	200
FOOD & FOOD SERVICE	0	0	0	0	0	200	200
LANDSCAPNG/AGRICULT SUPPL	0	0	0	0	0	1,000	1,000
MEDICAL & LABORATORY	0	0	0	0	0	200	200
BLDG REPAIR/MAINTENANCE	0	0	0	0	8,968	100,000	100,000
VEHICLE & EQUIPMENT FUELS	0	0	0	0	0	500	500
VEHICLE/EQUIPMT SUPPLIES	0	0	0	0	0	2,000	2,000
BOOKS & SUBSCRIPTIONS	0	0	0	0	0	100	100
OTHER OPERATING SUPPLIES	0	0	0	0	0	250	250
STREETS & SIDEWALKS	0	0	0	0	0	20,000	20,000
COMPUTER HARDWARE/SOFTWAR	0	0	0	0	0	2,000	2,000
▼ CAPITAL CHARGES	0	0	0	0	0	11,700,000	11,700,000

	FY 2021 Actual	FY 2022 Actual	2022-23 Actual	FY 2023 Adopted Budget	2023-24 Actual	FY 2024 Adopted Budget	FY 2024 Variance
▾ REPLACEMENT	0	0	0	0	0	3,200,000	3,200,000
STORMWATER IMPROVEMENTS	0	0	0	0	0	3,200,000	3,200,000
▾ ADDITIONS	0	0	0	0	0	200,000	200,000
MACHINERY & EQUIPMENT	0	0	0	0	0	200,000	200,000
▾ CITY CIP PROJECTS	0	0	0	0	0	8,300,000	8,300,000
N CAMERON/KENT ST IMPROV	0	0	0	0	0	8,300,000	8,300,000
Total	$ 0	$ 0	$ 0	$ 0	$ 102,093	$ 12,447,800	$ 12,447,800

Data filtered by Expenses, STORMWATER UTILITY FUND, STORMWATER UTILITY and exported on September 26, 2023. Created with OpenGov

STORMWATER UTILITY FUND

FY 2024 ANNUAL BUDGET

DESCRIPTION

The City is facing significant challenges to fund capital improvement projects related to stormwater management, meeting regulatory requirements related to the Chesapeake Bay, and the ongoing maintenance of an aging stormwater drainage system. Therefore, the City established a stormwater utility in July 2022 and approved a fee schedule in April 2023 (effective January 1, 2024). A stormwater utility is a mechanism where a fee is charged to users (all properties with impervious surface) for providing services related strictly to stormwater management. Current estimates of stormwater capital improvements needed in the City total over $50.0 million within the next 20 plus years.

STRATEGIC PLAN GOALS

Goal 2: Building Winchester - Establish the foundations for a vibrant community by stimulating development of affordable housing, revitalizing catalyst sites, and building smart infrastructure.
Goal 5: Supporting Winchester - Support the City's high-performing operations with effective and open communication, innovation, and sound fiscal policies.

REVENUE AND EXPENDITURE SUMMARY

Stormwater Utility Revenue by Category

	FY 2021 Actual	FY 2022 Actual	2022 - 23 Actual	FY 2023 Adopted Budget	2023 - 24 Actual	FY 2024 Adopted Budget	FY 2024 Variance
Local	$0	$0	$0	$0	$0	$1,900,000	$1,900,000
State	$0	$0	$0	$0	$0	$3,800,000	$3,800,000
Federal	$0	$0	$0	$0	$0	$200,000	$200,000
Other Financing Sources	$0	$0	$0	$0	$0	$7,500,000	$7,500,000
TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$13,400,000**	**$13,400,000**

Stormwater Utility Expenses by Catergory

	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted Budget	FY 2024 Adopted Budget	FY 2024 Variance
PERSONNEL	$0	$0	$0	$430,900	$430,900
CONTRACTUAL SERVICES	$0	$0	$0	$161,750	$161,750
INTERNAL SERVICES	$0	$0	$0	$21,000	$21,000
OTHER CHARGES	$0	$0	$0	$134,150	$134,150
CAPITAL CHARGES	$0	$0	$0	$11,700,000	$11,700,000
OTHER	$0	$0	$0	$952,200	$952,200
TOTAL	**$0**	**$0**	**$0**	**$13,400,000**	**$13,400,000**

Data Updated Aug 10, 2023, 8:09 AM

View Report

STAFFING SUMMARY

Storm Water Fund

Division Description	FY2020	FY2021	FY2022	FY2023	FY2024
FTE Amount					
Stormwater	0.00	0.00	0.00	0.00	1.00
FTE AMOUNT	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**

Data Updated Aug 10, 2023, 2:38 PM

View Report

REVENUE DETAIL

Storm Water Utility Fund Revenue Detail

	FY 2021 Actual	FY 2022 Actual	2022 - 23 Actual	FY 2023 Adopted Budget	2023 - 24 Actual	FY 2024 Adopted Budget	FY 2024 Variance
REVENUE FROM LOCAL SOURCE							
REVENUE-USE OF MONEY/PROP	$0	$0	$0	$0	$0	$0	$1,900,000
CHARGES FOR SERVICES	$0	$0	$0	$0	$0	$1,900,000	$0
REVENUE FROM LOCAL SOURCE TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,900,000**	**$1,900,000**
REVENUE FROM COMMONWEALTH							
STATE CATEGORICAL FUNDS	$0	$0	$0	$0	$0	$3,800,000	$3,800,000
REVENUE FROM COMMONWEALTH TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,800,000**	**$3,800,000**

REVENUE FROM FEDERAL GOVT							
CATEGORICAL AID	$0	$0	$0	$0	$0	$200,000	$200,000
REVENUE FROM FEDERAL GOVT TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$200,000**	**$200,000**
OTHER FINANCING SOURCES							
NON-REVENUE RECEIPTS	$0	$0	$0	$0	$0	$7,500,000	$7,500,000
OTHER FINANCING SOURCES TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$7,500,000**	**$7,500,000**
TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$13,400,000**	**$13,400,000**

Data Updated Sep 26, 2023, 8:14 AM

View Report

EXPENDITURE DETAIL

Stormwater Utility Expense Detail

	FY 2021 Actual	FY 2022 Actual	2022 - 23 Actual	FY 2023 Adopted Budget	2023 - 24 Actual	FY 2024 Adopted Budget	FY 2024 Variance
PERSONNEL							
SALARIES & WAGES	$0	$0	$0	$0	$40,529	$289,589	$289,589
OVERTIME	$0	$0	$0	$0	$2,281	$40,000	$40,000
FICA	$0	$0	$0	$0	$3,125	$22,134	$22,134
RETIREMENT	$0	$0	$0	$0	$4,556	$30,175	$30,175
GROUP INSURANCE	$0	$0	$0	$0	$586	$3,880	$3,880
DISABILITY INSURANCE	$0	$0	$0	$0	$33	$1,058	$1,058
WORKER'S COMPENSATION	$0	$0	$0	$0	$629	$5,534	$5,534
OTHER BENEFITS							
BENEFITS ADMIN FEE	$0	$0	$0	$0	$152	$1,532	$1,532
HEALTH INSURANCE	$0	$0	$0	$0	$5,781	$36,795	$36,795
OTHER BENEFITS TOTAL	**$0**	**$0**	**$0**	**$0**	**$5,932**	**$38,327**	**$38,327**
VRS HEALTH INS CREDIT	$0	$0	$0	$0	$31	$203	$203
PERSONNEL TOTAL	**$0**	**$0**	**$0**	**$0**	**$57,702**	**$430,900**	**$430,900**
CONTRACTUAL SERVICES							
PROFESSIONAL SERVICES							
ENGINEERING & ARCHITECT	$0	$0	$0	$0	$3,035	$50,000	$50,000
PROFESSIONAL SERVICES TOTAL	**$0**	**$0**	**$0**	**$0**	**$3,035**	**$50,000**	**$50,000**
MAINTENANCE SERVICE							
REPAIRS & MAINTENANCE	$0	$0	$0	$0	$19,141	$100,000	$100,000
VEHICLE REPAIRS/MAINT.	$0	$0	$0	$0	$0	$10,000	$10,000
COMPUTER HARDWARE/SOFTWAR	$0	$0	$0	$0	$9,840	$1,500	$1,500
MAINTENANCE SERVICE TOTAL	**$0**	**$0**	**$0**	**$0**	**$28,981**	**$111,500**	**$111,500**
PRINTING & BINDING	$0	$0	$0	$0	$0	$150	$150
PURCHASE SERV OTHER GOVMT							
SANITARY LANDFILL USAGE	$0	$0	$0	$0	$0	$100	$100
PURCHASE SERV OTHER GOVMT TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$100**	**$100**
CONTRACTUAL SERVICES TOTAL	**$0**	**$0**	**$0**	**$0**	**$32,016**	**$161,750**	**$161,750**
INTERNAL SERVICES							
MOTOR POOL INTERNAL SVC	$0	$0	$0	$0	$0	$21,000	$21,000
INTERNAL SERVICES TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$21,000**	**$21,000**
OTHER CHARGES							
UTILITIES	$0	$0	$0	$0	$407	$0	$0
COMMUNICATIONS	$0	$0	$0	$0	$0	$4,000	$4,000
TRAVEL	$0	$0	$0	$0	$0	$500	$500
MISCELLANEOUS	$0	$0	$0	$0	$3,000	$3,200	$3,200
MATERIALS & SUPPLIES							
OFFICE SUPPLIES	$0	$0	$0	$0	$0	$200	$200
FOOD & FOOD SERVICE	$0	$0	$0	$0	$0	$200	$200
LANDSCAPNG/AGRICULT SUPPL	$0	$0	$0	$0	$0	$1,000	$1,000
MEDICAL & LABORATORY	$0	$0	$0	$0	$0	$200	$200
BLDG REPAIR/MAINTENANCE	$0	$0	$0	$0	$8,968	$100,000	$100,000
VEHICLE & EQUIPMENT FUELS	$0	$0	$0	$0	$0	$500	$500
VEHICLE/EQUIPMT SUPPLIES	$0	$0	$0	$0	$0	$2,000	$2,000
BOOKS & SUBSCRIPTIONS	$0	$0	$0	$0	$0	$100	$100
OTHER OPERATING SUPPLIES	$0	$0	$0	$0	$0	$250	$250
STREETS & SIDEWALKS	$0	$0	$0	$0	$0	$20,000	$20,000
COMPUTER HARDWARE/SOFTWAR	$0	$0	$0	$0	$0	$2,000	$2,000
MATERIALS & SUPPLIES TOTAL	**$0**	**$0**	**$0**	**$0**	**$8,968**	**$126,450**	**$126,450**
OTHER CHARGES TOTAL	**$0**	**$0**	**$0**	**$0**	**$12,375**	**$134,150**	**$134,150**
CAPITAL CHARGES							
REPLACEMENT							
STORMWATER IMPROVEMENTS	$0	$0	$0	$0	$0	$3,200,000	$3,200,000
REPLACEMENT TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,200,000**	**$3,200,000**
ADDITIONS							
MACHINERY & EQUIPMENT	$0	$0	$0	$0	$0	$200,000	$200,000
ADDITIONS TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$200,000**	**$200,000**
CITY CIP PROJECTS							
N CAMERON/KENT ST IMPROV	$0	$0	$0	$0	$0	$8,300,000	$8,300,000
CITY CIP PROJECTS TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$8,300,000**	**$8,300,000**
CAPITAL CHARGES TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$11,700,000**	**$11,700,000**
TOTAL	**$0**	**$0**	**$0**	**$0**	**$102,093**	**$12,447,800**	**$12,447,800**

November 7, 2023

Kelly Henshaw, PE, CFM
City Engineer
City of Winchester
301 East Cork Street
Winchester, VA 22601

RE: FEATHERBED LANE FLOODPLAIN IMPROVEMENT STUDY

Dear Mrs. Henshaw:

Kimley-Horn and Associates, Inc. (Kimley-Horn) is pleased to submit this task order proposal to the City of Winchester (City) to provide professional consulting services related to the development of a Featherbed Lane Floodplain Improvement Study. The language outlined below identifies our project understanding, scope of requested services, and accompanying fees related to the overall project.

PROJECT UNDERSTANDING

This proposal summarizes the phases and tasks necessary to prepare a study to evaluate the effects of the Abrams Creek floodplain along Featherbed Lane in the City of Winchester, as well as develop conceptual strategies to prevent and mitigate damages from riverine flooding. This study will focus on 2,800 linear feet of Abrams Creek starting at the culvert system at the intersection of South Loudoun Street and Featherbed Lane and ending at the Shopping Center Drive and Mall Road culvert system, depicted in Attachment 1 (Study Limits) of this Scope of Services.

All analyses referenced in this Scope of Services will be based on the following data:

- Green Circle Trail Extension Survey (GCT Survey) - *Provided by Others*
- Featherbed Lane Project Specific Data, Analyses, and Exhibits referenced in the City of Winchester Flood Preparedness Resilience Plan - *Developed by Kimley-Horn*
- Readily Available City 1-foot Topographic Lidar Data

It is assumed that all project information will be provided to Kimley-Horn from the City prior to commencement of work.

SCOPE OF SERVICES

The proposal has been divided into six (6) tasks:

1. Site Base Mapping, Project Due Diligence, and Site Visit
2. Full Buildout Hydrologic Analysis of the Study Limits Watershed
3. Stream Corridor Hydraulics Study
4. Development of a Featherbed Lane Floodplain Improvement Concept Plan
5. Featherbed Lane Floodplain Improvements Study Report
6. Meetings & Coordination

Each task is outlined below with a summary defining the Scope for each task. A lump sum cost to perform this work is provided (Attachment 2) and includes Kimley-Horn project management and coordination time.

TASK 100 - SITE BASE MAPPING, PROJECT DUE DILIGENCE, AND SITE VISIT

Kimley-Horn will develop both an AutoCAD and Geographic Information Systems (GIS) base-map illustrating the Study Limits. The GCT Survey will be the basis for all base mapping and conceptual exhibits referenced in this Scope of Services. As part of the base map development, The GCT Survey will be supplemented with all pertinent available City of Winchester, Frederick County, Virginia Flood Risk Information System (VFRIS), and FEMA GIS data to depict existing site conditions and display the impacts of the existing flood limits on Study Limit infrastructure. The base mapping will be used by Kimley-Horn to assist in site reconnaissance efforts and to supplement all meetings, efforts, and study deliverables outlined in this Scope of Services.

As part of this task, Kimley-Horn will perform project due diligence for the Study Limits by compiling pertinent information from the following reports and data sets:

- Frederick County - Flood Insurance Study (FIS)
- FEMA relevant Flood Insurance Rate Maps (FIRMs)
- Previous studies performed within the project Study Limits (to be provided by the city, if available)
- Available City of Winchester/Frederick County existing HEC-HMS (Hydrologic Models) and HEC-RAS (Hydraulic / Floodplain Models)
- Available VDOT / City of Winchester Bridge and Culvert Plans for the project Study Limits
- Available CSX Railroad Crossing Plans for the project Study Limits

Kimley-Horn will compile all relevant Study Limits floodplain and site data in a Technical Support Data Memo (TSDM) and submit to the city.

Kimley-Horn will utilize the base mapping and TSDM developed in this task to assist in a site visit to photo-document current conditions along the Study Limits. Kimley-Horn will take georeferenced photos along the study limits and include them in a photo location map that identifies potential Study Limits opportunities and constraints.

TASK 200 – FULL BUILDOUT HYDROLOGIC ANALYSIS OF THE STUDY LIMITS WATERSHED

Kimley-Horn will perform a full buildout hydrologic evaluation of the Study Limits watershed utilizing current aerial imagery and supplemented with data outlined in the City of Winchester Approved 2022 Comprehensive Plan (Comprehensive Plan). As part of this analysis, Kimley-Horn will evaluate the major drainage area sub-basins within the following watersheds:

- Culvert System at the Intersection of South Loudoun Street and Featherbed Lane
- CSX Railroad Crossing Intersection with Featherbed Lane
- Culvert System at Intersection of South Pleasant Valley Road, Featherbed Lane, and Shopping Center Drive

- Culvert System at Shopping Center Drive and Mall Road

Kimley-Horn will use the United States Department of Agriculture's (USDA) Technical Release-55 (TR-55) Urban Hydrology for Small Watersheds SCS Methodology to determine the existing basin hydrologic parameters such as Runoff Curve Numbers (RCNs) and Times of Concentrations (Tc) / Lag Times (Tlag). The hydrology will be developed from a compilation of the most readily available aerial landcover data, survey data, GIS Shapefile data, and NRCS soils data. The drainage basin hydrologic conditions will be used as model input parameters in subsequent tasks to determine the Study Limits basin and stream corridor inflows for the 1-yr, 2-yr, 10-yr, 100-yr, and 500-yr storm events.

The model input parameters will be utilized in conjunction with the Army Corp of Engineers HEC-HMS (Hydrologic Modeling System) software to simulate the hydrologic stream processes at junctions and specific locations within the 2800 linear foot stream corridor that traverses the Study Limits. The model input parameters for the Featherbed Lane Study Limits HEC-HMS model will be developed based on the following information:

- Green Circle Trail (GCT) Extension Survey and Existing Conditions Data
- City of Winchester 1-foot lidar topography.
- NOAA Atlas 14 Precipitation Data and City Specific Precipitation data
- SCS curve numbers based on ArcGIS orthogonal imagery and NRCS Soil information within the Study Limits watershed.
- Time of Concentration / Lag time values developed based on ArcGIS orthogonal imagery and City of Winchester topography.

Drainage basin routing will be performed to determine the effects of different runoff producing events on the Study Limits. In performing the routing, Kimley-Horn will develop time-series hydrographs for all proposed storm events and determine peak flows for each event as well. This data will be utilized as HEC-RAS Model inputs in Task 300 (Stream Corridor Hydraulics Study).

As part of this task, Kimley-Horn will compare the modeled hydrologic results with the published flows outlined in the Frederick County – Flood Insurance Study (FIS) for Abrams Creek at the closest proximity to the Study Limits. Both sets of stream flows (KH derived / FIS) will be used in the hydraulic models developed in Task 300 (Stream Corridor Hydraulics Study).

All information derived and modeled in this task will be documented within the Featherbed Lane Floodplain Improvements Study Final Report (Task 500).

TASK 300 – STREAM CORRIDOR HYDRAULICS STUDY

Existing Conditions Modeling

Kimley-Horn will build an existing conditions floodplain hydraulics model for the 2800 linear foot stream system within the Study Limits using GCT Survey topographic/infrastructure information and supplemented with readily available City GIS data (1ft lidar contour data, building footprints, etc.). Kimley-Horn will generate representative stream reach cross-sections along the Study Limits using a composite surface created from surveyed topography and supplemental 1-foot lidar contour data to input into the Army Corp of Engineers HEC-RAS (River Analysis System) modeling software. Kimley-Horn

will then utilize the GST Survey data to build all culvert systems, railroad crossings, and stream spanning structures in the HEC-RAS Model within the Study Limits. The existing conditions floodplain hydraulics model will be developed to reflect all channel and floodplain cross-sectional geometry indicative of the current (as of 2023) stream reach.

Kimley-Horn will route the flows derived in Task 200 through the existing conditions floodplain hydraulic model to determine existing stream and floodplain hydraulic characteristics along the Study Limits. The modeling output data generated in this task will be used to determine existing Study Limit flood inundation depths, stream and floodplain velocities, cross-sectional top widths, and energy and hydraulic grade line calculations for the 1-yr, 2-yr, 10-yr, 100-yr, and 500-yr storm events.

Once the existing conditions model is developed, Kimley-Horn will create a separate HEC-RAS geometry file that will nest the Kimley-Horn derived exiting conditions model into an, if available, approved FEMA Abrams Creek HEC-RAS model. It is assumed that this model will be provided by the City to Kimley-Horn for this task.

Kimley-Horn will document the results for both the existing conditions floodplain hydraulics model, as well as the nested existing conditions hydraulics model. These values will provide a baseline comparison for all future modeling analysis.

Floodplain Improvements Sensitivity Modeling

Kimley-Horn will modify the existing conditions hydraulics model(s) to evaluate up to three (3) proposed changes that may help abate the flooding along Featherbed Lane and the parcels that parallel the road. Floodplain sensitivity modeling will focus on infrastructure changes at the major culvert systems, stream, and floodplain grading techniques, and pairing of the two within the Study Limits. Evaluation of the overall Study Limits stream corridor will be prioritized as to model the effect of the changes wholistically on the floodplain system, as to not potentially transfer any flooding downstream.

Kimley-Horn will route the flow data derived in Task 200 to analyze the viability and success of potential changes along the Study Limits stream corridor. Revised Water Surface Elevations for all modeled storm events will be compared to existing conditions as to quantify the effect of the proposed improvements on the inundation depths and horizontal spread of the floodplain limits.

Model cross sections and stream profiles will be updated to reflect conceptual proposed infrastructure changes, major grading activities, and/or channel realignment techniques within the Study Limits. This information will be included in the Featherbed Lane Floodplain Improvements Study Report (Task 500).

TASK 400 - DEVELOPMENT OF A FEATHERBED LANE FLOOD IMPROVEMENT CONCEPT PLAN

Based on the results determined in the Floodplain Improvements Sensitivity modeling, Kimley-Horn will derive a 24x36 AutoCAD developed conceptual exhibit that will graphically depict locations of potential improvements along the Study Limits. Kimley-Horn will develop three (3) conceptual design alternatives to implement to help reduce recurrent flooding along Featherbed Lane.

Proposed conceptual improvements will include, but are not limited to the following:

- Infrastructure based improvements
    - Additional pipe locations, inlet placement, junction boxes, etc.
- Natural based solutions
    - Stream and floodplain restoration techniques, outfall channel restoration, creating or enhancing areas of flood storage, etc.
- Preservation and creation of open space and focus on permanent conservation of lands having flood resilience value.

Due to the conceptual nature of this plan all proposed structural improvements, grading and riparian enhancements, and proposed future project implementation locations will have limited engineering design and will focus on project layout and location.

TASK 500 – FEATHERBED LANE FLOODPLAIN IMPROVEMENTS STUDY REPORT

Kimley-Horn will develop a Featherbed Lane Floodplain Improvement Study report outlining the information derived in tasks 100 - 400. Study graphics, tabular summaries, numerical analysis, and conceptual level designs created in all previous tasks will be included in the final report. Recommendations on future basin stormwater management improvements, future storm sewer designs, as well as comprehensive drainage and floodplain improvement implementation scenarios for the Study Limits will be included with the report.

TASK 600 – MEETINGS & COORDINATION

Kimley-Horn staff will be available for up to two (2) project coordination meetings to discuss the project. In addition, Kimley-Horn staff will participate in calls to discuss the project with City staff. If additional meetings and coordination activities are requested, Kimley-Horn will prepare a separate Scope of Services and cost estimate for client approval prior to proceeding with the additional work.

DELIVERABLES

The following items are anticipated as project deliverables for this Scope of Services.

- Site specific floodplain data compilation outlined in a Technical Support Data Memo (TSDM)
- HEC-HMS Hydrologic / HEC-RAS Stream Hydraulic Models(s)
- Featherbed Lane Floodplain Improvements Study – 24 x 36 AutoCAD Derived Conceptual Plan
- Featherbed Lane Floodplain Improvements Study – Final Report
- All maps, models, analyses, spreadsheets, and base data utilized for the design (if requested).

OVERALL PROJECT ASSUMPTIONS

For the purposes of developing this proposed Scope of Services and the accompanying cost estimate, we have made the following assumptions:

- All previous project information developed by others will be provided by the City to Kimley-Horn in a timely manner to accommodate anticipated project schedule.
- The flood studies and analyses proposed in this Scope of Services are intended as a planning level and will not constitute a formal FEMA floodplain study. As such this information and data will not be stamped and sealed by a Virginia Professional Engineer (PE).
- All analyses and studies developed in this Scope of Services will be based on limited survey information, and as such, the information derived will be considered "for information purposes only."
- The Conceptual Design Plan referenced in this Scope of Services will be limited in terms of engineering design and analysis. As such, they will be not stamped by a licensed Virginia Professional Engineer and labeled as "Not for Construction Purposes".
- The city will provide site access permission to Kimley-Horn, for conducting all necessary fieldwork related tasks in a timely manner to facilitate the project schedule.
- Accuracy and precision of data and previous studies provided by others is solely on the consulting firm that derived the studies. Kimley-Horn will review all data provided by the City with regards to the Study Limits but assumes no responsibility for information outlined in the studies developed by others.
- Readily available City GIS shapefile and geodatabase information will be used to supplement this study, as needed.
- The city will provide all coordination with inter-city departments with regards to this project.
- This proposal and the accompanying cost estimate are valid for a period of 90 days and will expire if not accepted within that timeframe.

OVERALL PROJECT EXCLUSIONS

Services that are not currently anticipated as part of this project and are therefore outside the scope of this task order proposal include the following:

- Environmental Site Assessments
- Perennial Stream Assessments and/or Flow Determinations
- Grant Administration Services
- Project Renderings
- FEMA Applications
- Dam Safety Compliance Services
- Dam Break Inundation Zone (DBIZ) Modeling / Mapping
- Engineering Design Plan Submittals
- Utility Design
- VDOT Design or Permitting
- Development/Delivery of Presentations, Board of Supervisors, Committees, or the Public
- Notifications to impacted Property Owners
- All other services not explicitly stated in this Scope of Services

SCHEDULE

The tasks referenced in this scope will be coordinated with City Staff. Assuming Kimley-Horn receives a notice to proceed by January 31, 2024, Kimley-Horn anticipates completion of the Scope of Services

outlined above by June 30, 2024. A detailed schedule will be developed for the City outlining project workflow and deliverables after contract execution.

FEE AND BILLING

Kimley-Horn will provide the following scope of services under our term contract #202205 KHA. The following tasks will be provided for a lump sum cost of **$69,955.76.** A detailed breakdown (by task) of Kimley-Horn's fee estimate is provided in Attachment 1 and utilizes the rate schedule as provided for in the City of Winchester Task Order Contract ##202205 -KHA, Year 2. Please note that fees will be invoiced monthly based upon hours expended for services performed and payment will be due within 25 days of receipt of invoices related to this project.

CLOSURE

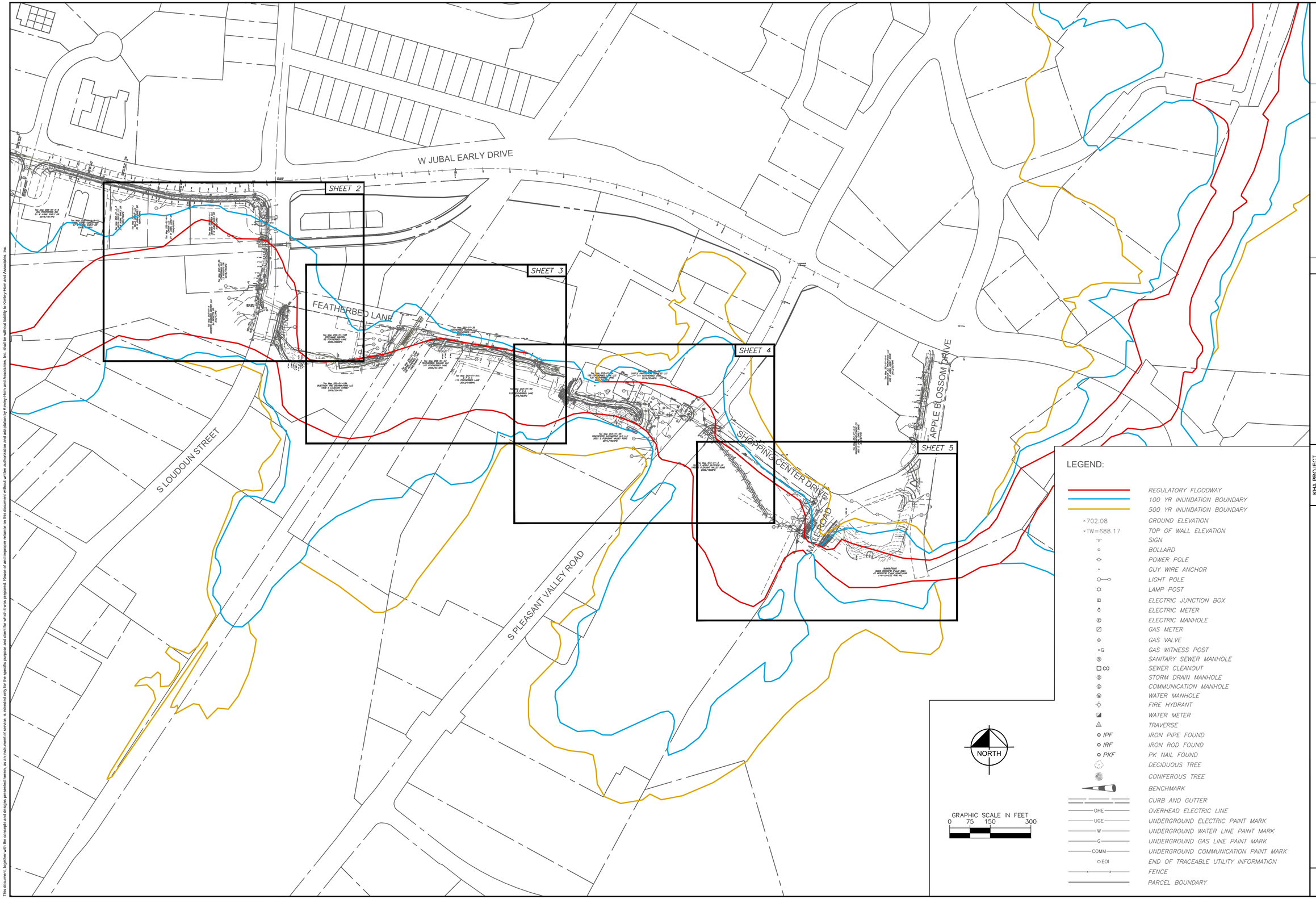
The work described with this proposal will be completed in accordance with the terms and conditions of Contract #202205 between the City of Winchester and Kimley-Horn. We appreciate the opportunity to provide these services to you. Please contact me if you have any questions.

Very truly yours,
KIMLEY-HORN AND ASSOCIATES, INC.

Jon D'Alessandro, P.E.
Senior Project Manager

Kimley»Horn

Attachment 1 – Featherbed Lane Floodplain Improvements Study Limits



LEGEND:

- REGULATORY FLOODWAY
- 100 YR INUNDATION BOUNDARY
- 500 YR INUNDATION BOUNDARY
- ×702.08 GROUND ELEVATION
- ×TW=688.17 TOP OF WALL ELEVATION
- SIGN
- BOLLARD
- POWER POLE
- GUY WIRE ANCHOR
- LIGHT POLE
- LAMP POST
- ELECTRIC JUNCTION BOX
- ELECTRIC METER
- ELECTRIC MANHOLE
- GAS METER
- GAS VALVE
- GAS WITNESS POST
- SANITARY SEWER MANHOLE
- SEWER CLEANOUT
- STORM DRAIN MANHOLE
- COMMUNICATION MANHOLE
- WATER MANHOLE
- FIRE HYDRANT
- WATER METER
- TRAVERSE
- IPF IRON PIPE FOUND
- IRF IRON ROD FOUND
- PKF PK NAIL FOUND
- DECIDUOUS TREE
- CONIFEROUS TREE
- BENCHMARK
- CURB AND GUTTER
- OHE OVERHEAD ELECTRIC LINE
- UGE UNDERGROUND ELECTRIC PAINT MARK
- W UNDERGROUND WATER LINE PAINT MARK
- G UNDERGROUND GAS LINE PAINT MARK
- COMM UNDERGROUND COMMUNICATION PAINT MARK
- EOI END OF TRACEABLE UTILITY INFORMATION
- FENCE
- PARCEL BOUNDARY

NORTH

GRAPHIC SCALE IN FEET
0 75 150 300

No.	REVISIONS	DATE	BY

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

KHA PROJECT
CFPF EXHIBIT

DATE	11/1/2023
SCALE	AS SHOWN
DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

SHEET NUMBER
01

SHEET NUMBER 02	CFPF GRANT APPLICATION APPENDIX C - SITE MAPS PREPARED FOR CITY OF WINCHESTER	KHA PROJECT CFPF EXHIBIT DATE 11/1/2023 SCALE AS SHOWN DESIGNED BY J.J.D DRAWN BY C.D.C CHECKED BY J.J.D	Kimley»Horn 11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191 PHONE: 703-674-1300 FAX: 703-674-1350 WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

FEATHERBED LANE

Tax Map 252-01-18B
STEPHANIE NGUYEN
95 FEATHERBED LANE
2020/2966PG

Tax Map 252-01-35
FEATHERBED SQUARE LLC
113 FEATHERBED LANE
2005/3413PG

Tax Map 252-01-18A
BUETTNER TIRE DISTRIBUTORS LLC
1908 S. LOUDOUN STREET
2009/2241PG

Tax Map 252-01-33
FEATHERBED SQUARE LLC
107 FEATHERBED LANE
2005/3413PG

Tax Map 252-01-33
FEDERAL MOGUL CORP
105 FEATHERBED LANE
1995/849PG

Tax Map 252-01-31A
S P C A
111 FEATHERBED LANE
2013/1488PG

Tax Map 252-01-30
S P C A
115 FEATHERBED LANE
314/523PG

CSX RAILROAD

4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

No.	REVISIONS	DATE	BY

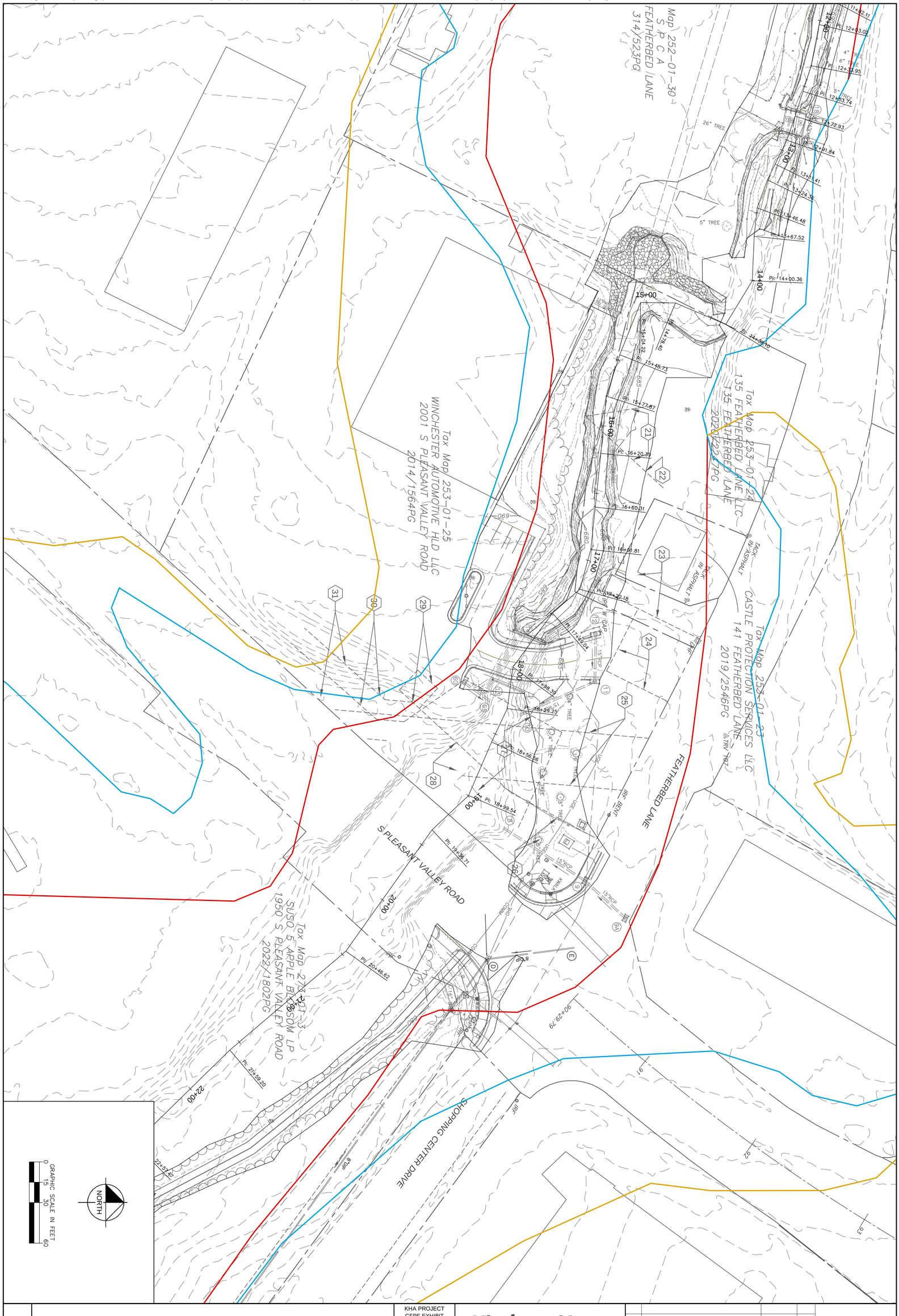
Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

KHA PROJECT
CFPF EXHIBIT

DATE 11/1/2023
SCALE AS SHOWN
DESIGNED BY J.J.D
DRAWN BY C.D.C
CHECKED BY J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

SHEET NUMBER
03



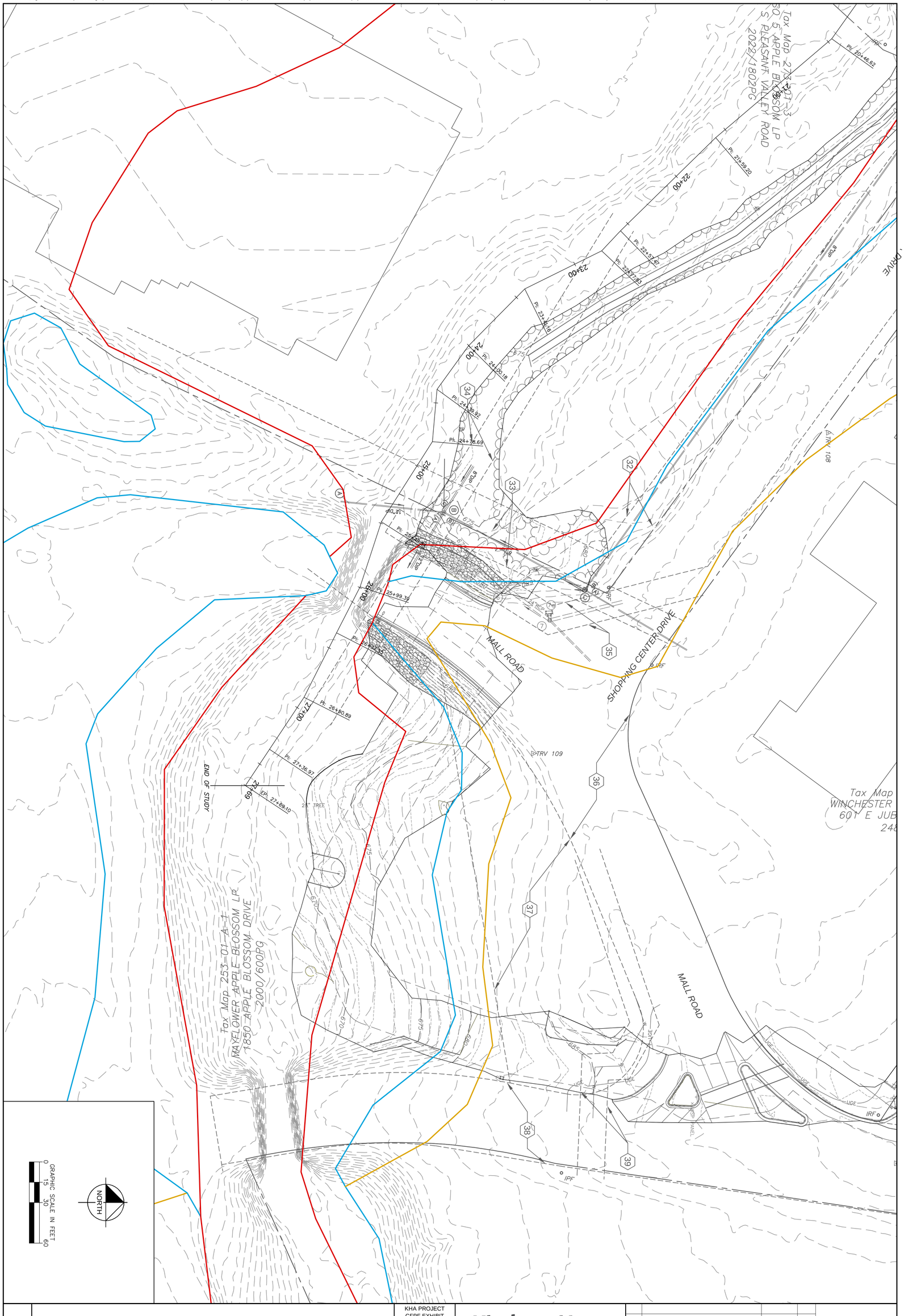
SHEET NUMBER 04

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

KHA PROJECT	CFPF EXHIBIT
DATE	11/1/2023
SCALE	AS SHOWN
DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY



SHEET NUMBER 05	CFPF GRANT APPLICATION APPENDIX C - SITE MAPS PREPARED FOR CITY OF WINCHESTER	KHA PROJECT CFPF EXHIBIT DATE 11/1/2023 SCALE AS SHOWN DESIGNED BY J.J.D DRAWN BY C.D.C CHECKED BY J.J.D

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

Attachment 2 – Kimley Horn Fee Breakdown

Budget Narrative Template

Appendix B: Budget Narrative Template

Applicant Name: **City of Winchester - Department of Public Services**
Community Flood Preparedness Fund &
Resilient Virginia Revolving Loan Fund
Detailed Budget Narrative
Period of Performance: **January 31, 2024** through **June 30, 2024**
Submission Date: **November 10, 2023**

Grand Total State Funding Request	**$62,960.18**
Grand Total Local Share of Project	$**6,995.58**
Federal Funding (if applicable)	$
Project Grand Total	$**69,955.76**
Locality Cost Match	%**10**

Breakout By Cost Type	Personnel	Fringe	Travel	Equipment	Supplies	Contracts	Indirect Costs	Other Costs	Total
Federal Share (if applicable)									
Local Share						**$6,995.58**			**$6,995.58**
State Share						**$62,960.18**			**$62,960.18**
Pre-Award/Startup									
Maintenance									
Total	$	$	$	$	$	$**69,955.76**	$	$	$**69,955.76**

Funding Request Authorization

I, Dan Hoffman, City Manager of the City of Winchester, authorize the City of Winchester Department of Public Services to request funding from the 2023 Funding Round of the Virginia Community Flood Preparedness Fund for the development of a Featherbed Lane Floodplain Improvement Study.

Signed: _____

Date: 11/9/23

City of Winchester, VA

INTERNAL ROUTING FORM

Bottom Line Up Front (BLUF)

Date received for filing: 11/9/23
Control #: 2023-

DIVISION	ROUTE SEQ	ACTION CODE	DATE In	DATE Out	INITIALS Concur	INITIALS Non-Concur
City Manager	2	S	11/9/23	11/9/23	DA	
City Attorney						
CFO/Support Svcs. Dir.						
Comm. of the Rev.						
Dep. Clerk of Council						
Downtown Manager						
Economic Redev. Dir.						
Emergency Mgt. Dir.						
Financal Svcs. Director						
Fire & Rescue Chief						
HR Director						
IT Director						
JDC Superintendent						
Parks & Rec Director						
PIO/FOIA						
Planning Director						
Police Chief						
Public Services Dir.	1	X		PE	11/9/23	
Purchasing Agent						
Sheriff						
Social Services Dir.						
Tourism Director						
Treasurer						
WPA Exec. Director						
Zoning Administrator						

Subject: Grant App.-CFPF-Featherbed Lane Corrid

Date:	Originator:	Phone #:
11/7/23	Julie Carter	x1455

Due Date:

Originating Dept: Public Services

Background Info (BLUF):

Attached is the grant application for Community Flood Protection Fund - Featherbed Lane project study for your review and signature.

Please let me know if you have any questions. Thanks.

Comments (add initials after comment):

NOTE: Remember to tab documents where CM signature is needed

ACTION CODES			
X	ORIGINATOR OF REQUEST	F	FYI (INFORMATION)
A	APPROPRIATE ACTION	C	COMMENTS
S	SIGNATURE NEEDED	R	RECOMMENDATION

Winchester Virginia

Last updated: September 2014

SECTION C - CHECKLIST REQUIREMENTS

Completed 2023 CFPF Funding Manual Checklist

Detailed Map(s) of Project Area

FIRMette of the Project Area(s)

Historic Flood Damage Data / Images

Copy of the City of Winchester Floodplain Ordinance

City of Winchester Comprehensive Plan

Social Vulnerability Index Score(s) for the Project Area

Completed 2023 CFPF Funding Manual Checklist

Appendix C: Checklist All Categories

(Benefit-cost analysis must be included if the proposed Project is over $2 million.)

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

☒ Detailed map of the project area(s) (Projects/Studies)

Included in Section C Appendix

☒ FIRMette of the project area(s) (Projects/Studies)

Included in Section C Appendix

☒ Historic flood damage data and/or images (Projects/Studies)

Included in Section C Appendix

☒ A link to or a copy of the current floodplain ordinance

Included in Section C Appendix

☒ N/A Non-Fund financed maintenance and management plan for project extending a minimum of 10 years from project close

Not Applicable for this Project

☒ A link to or a copy of the current comprehensive plan

Included in Section C Appendix

☒ Social vulnerability index score(s) for the project area from VFRIS SVI Layer

Included in Section C Appendix

☒ N/A If applicant is not a town, city, or county, letters of support from affected localities

Not Applicable for this Project

☒ N/A Letter of support from impacted stakeholders

Not Applicable for this Project

☒ Budget Narrative

Included in Section B Appendix

☒ N/A Supporting Documentation, including the Benefit-Cost Analysis tool/narrative (for projects over $2 million)

Not Applicable for this Project

☒ Authorization to request funding from the Fund from governing body or chief executive of the local government

Included in Section B Appendix

☒ N/A Signed pledge agreement from each contributing organization

Not Applicable for this Project

☒ X Detailed budget and narrative for all costs

Included in Section B Appendix - (Kimley-Horn Scope of Services to develop a Featherbed Lane Floodplain Improvement Study)

Detailed Map(s) of Project Area

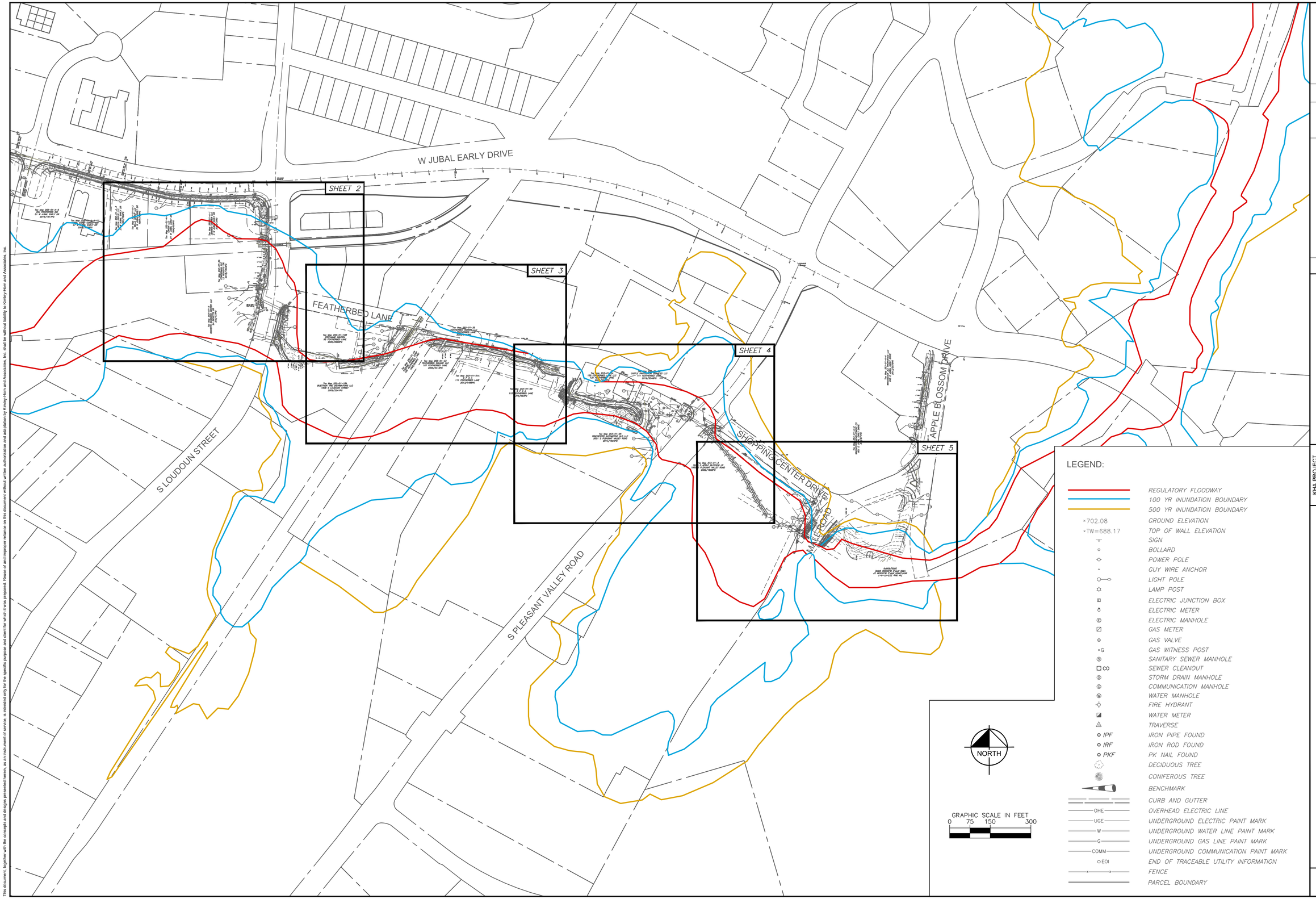
Winchester Virginia

DATE	11/8/2023
DRAWN BY	CDC
CHECKED BY	JJD

CITY OF WINCHESTER
FEATHERBED LANE PROJECT

PREPARED FOR CITY OF WINCHESTER

SCALE	1" = 300'
PROJECT NUMBER	N/A
SHEET NUMBER	APPENDIX C



LEGEND:

- REGULATORY FLOODWAY
- 100 YR INUNDATION BOUNDARY
- 500 YR INUNDATION BOUNDARY
- ×702.08 GROUND ELEVATION
- ×TW=688.17 TOP OF WALL ELEVATION
- SIGN
- BOLLARD
- POWER POLE
- GUY WIRE ANCHOR
- LIGHT POLE
- LAMP POST
- ELECTRIC JUNCTION BOX
- ELECTRIC METER
- ELECTRIC MANHOLE
- GAS METER
- GAS VALVE
- GAS WITNESS POST
- SANITARY SEWER MANHOLE
- SEWER CLEANOUT
- STORM DRAIN MANHOLE
- COMMUNICATION MANHOLE
- WATER MANHOLE
- FIRE HYDRANT
- WATER METER
- TRAVERSE
- IPF IRON PIPE FOUND
- IRF IRON ROD FOUND
- PKF PK NAIL FOUND
- DECIDUOUS TREE
- CONIFEROUS TREE
- BENCHMARK
- CURB AND GUTTER
- OHE OVERHEAD ELECTRIC LINE
- UGE UNDERGROUND ELECTRIC PAINT MARK
- W UNDERGROUND WATER LINE PAINT MARK
- G UNDERGROUND GAS LINE PAINT MARK
- COMM UNDERGROUND COMMUNICATION PAINT MARK
- EOI END OF TRACEABLE UTILITY INFORMATION
- FENCE
- PARCEL BOUNDARY

NORTH

GRAPHIC SCALE IN FEET
0 75 150 300

No.	REVISIONS	DATE	BY

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
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WWW.KIMLEY-HORN.COM

KHA PROJECT
CFPF EXHIBIT

DATE	11/1/2023
SCALE	AS SHOWN
DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

SHEET NUMBER
01

SHEET NUMBER 02	CFPF GRANT APPLICATION APPENDIX C - SITE MAPS PREPARED FOR CITY OF WINCHESTER	KHA PROJECT CFPF EXHIBIT DATE 11/1/2023 SCALE AS SHOWN DESIGNED BY J.J.D DRAWN BY C.D.C CHECKED BY J.J.D	Kimley»Horn 11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191 PHONE: 703-674-1300 FAX: 703-674-1350 WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

FEATHERBED LANE

Tax Map 252-01-18B
STEPHANIE NGUYEN
95 FEATHERBED LANE
2020/2966PG

Tax Map 252-01-35
FEATHERBED SQUARE LLC
113 FEATHERBED LANE
2005/3413PG

Tax Map 252-01-18A
BUETTNER TIRE DISTRIBUTORS LLC
1908 S. LOUDOUN STREET
2009/2241PG

Tax Map 252-01-33
FEATHERBED SQUARE LLC
107 FEATHERBED LANE
2005/3413PG

Tax Map 252-01-33
FEDERAL MOGUL CORP
105 FEATHERBED LANE
1995/849PG

Tax Map 252-01-31A
S P C A
111 FEATHERBED LANE
2013/1488PG

Tax Map 252-01-30
S P C A
115 FEATHERBED LANE
314/523PG

CSX RAILROAD

4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

No.	REVISIONS	DATE	BY

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KHA PROJECT
CFPF EXHIBIT

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DESIGNED BY J.J.D
DRAWN BY C.D.C
CHECKED BY J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
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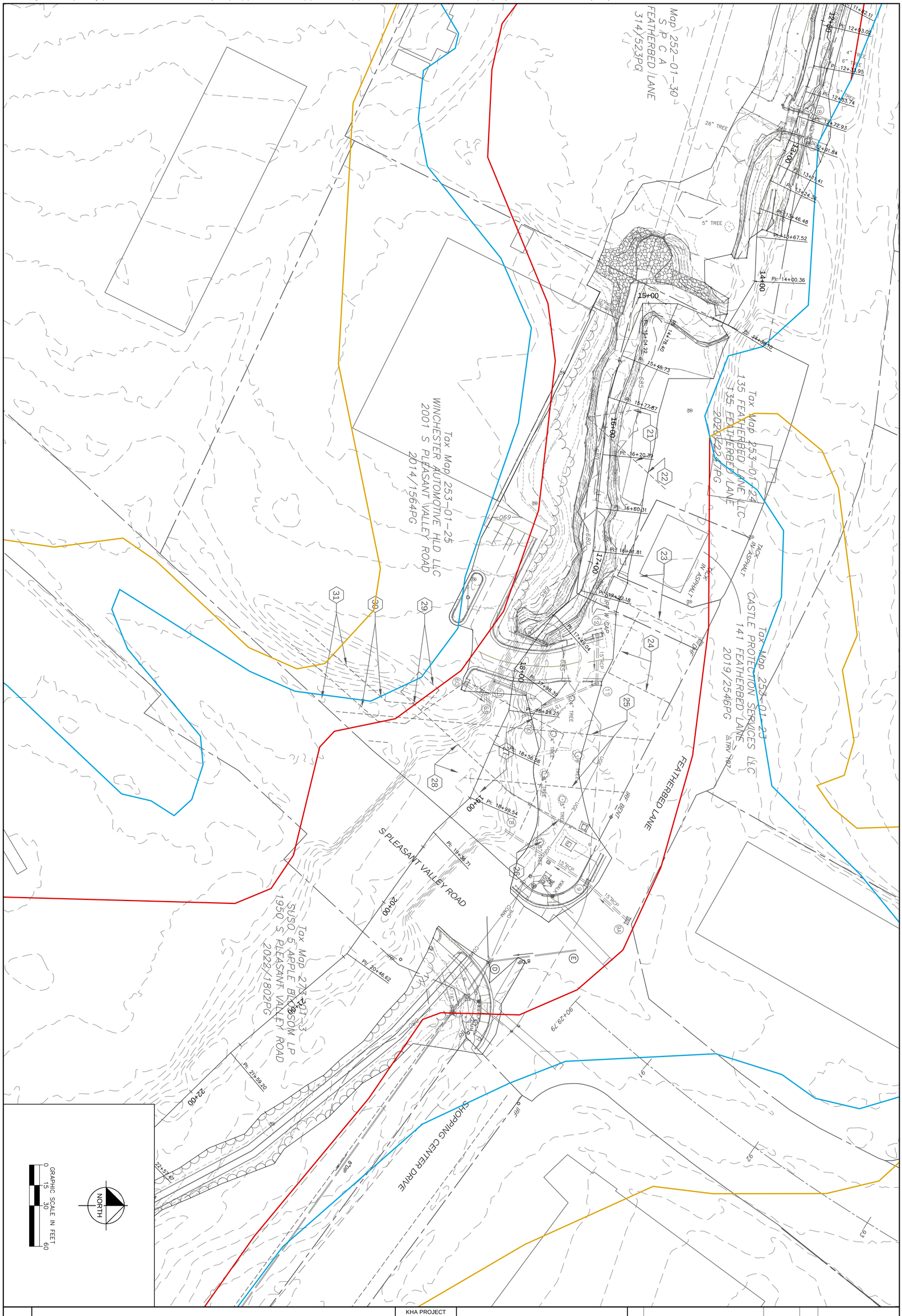
SHEET NUMBER
03



SHEET NUMBER 04

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS

PREPARED FOR CITY OF WINCHESTER

KHA PROJECT	CFPF EXHIBIT
DATE	11/1/2023
SCALE	AS SHOWN
DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

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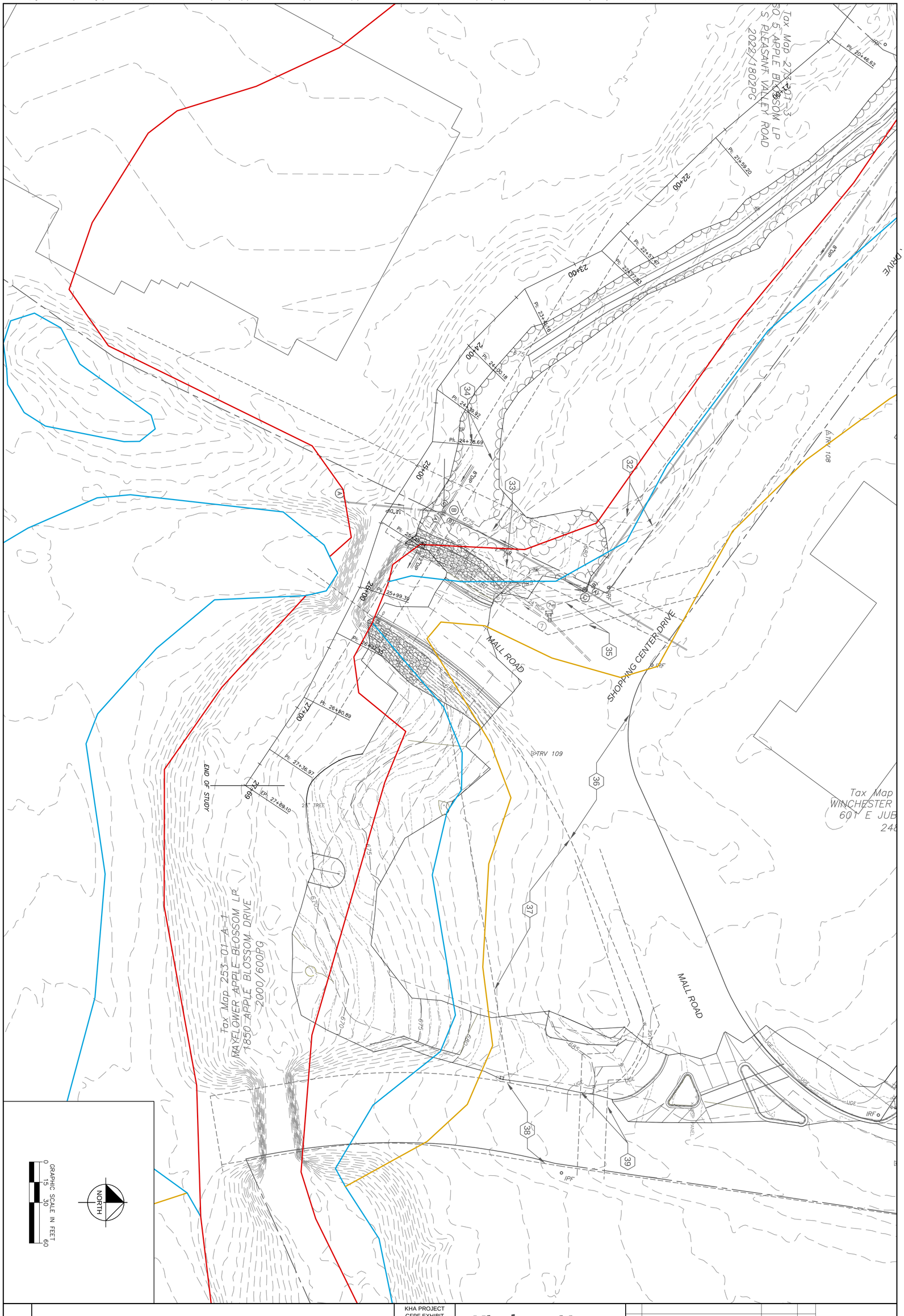
No.	REVISIONS	DATE	BY



SHEET NUMBER 05	CFPF GRANT APPLICATION APPENDIX C - SITE MAPS PREPARED FOR CITY OF WINCHESTER	KHA PROJECT CFPF EXHIBIT DATE 11/1/2023 SCALE AS SHOWN DESIGNED BY J.J.D DRAWN BY C.D.C CHECKED BY J.J.D

Kimley»Horn
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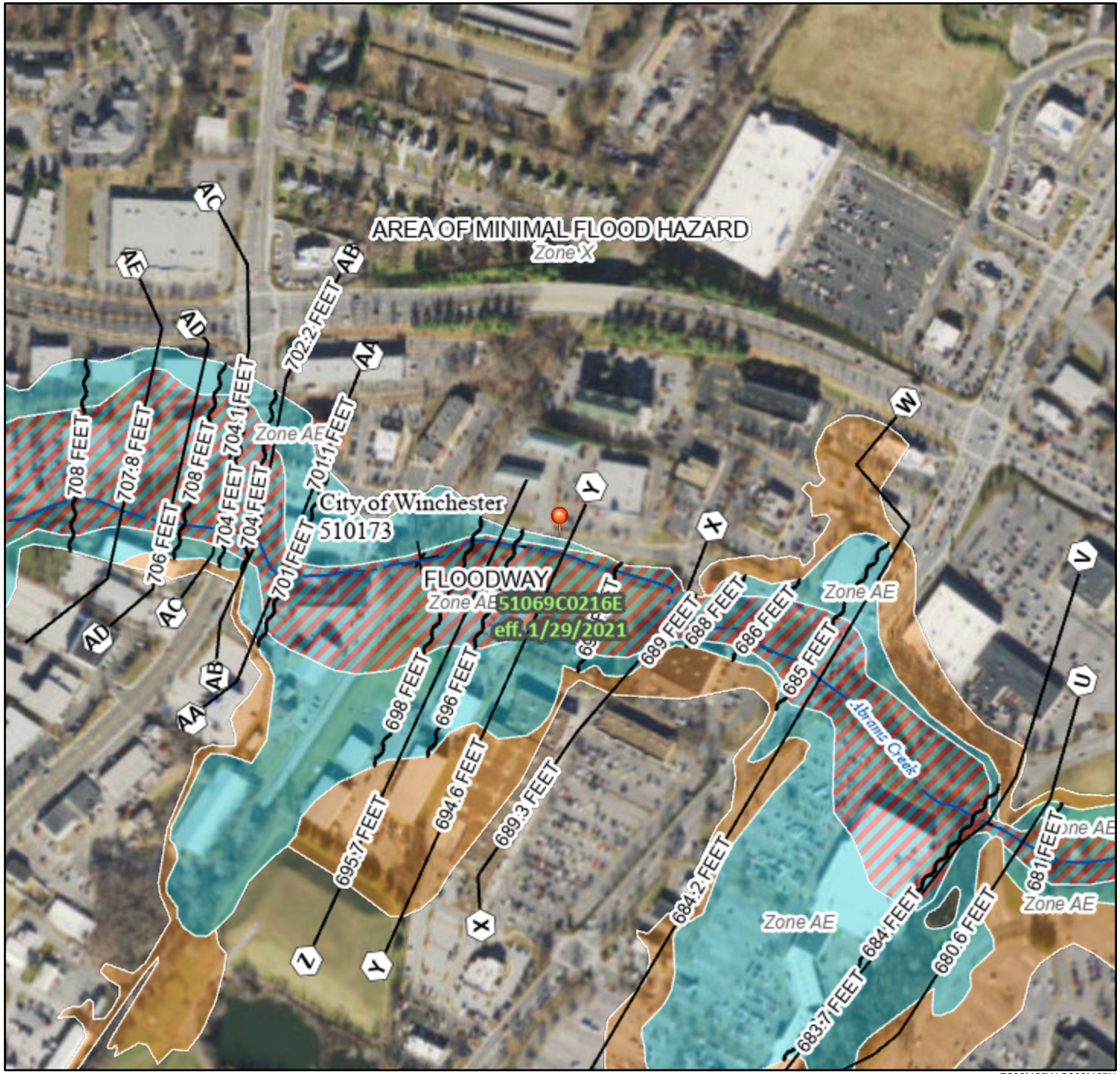
No.	REVISIONS	DATE	BY

FIRMette of the Project Area(s)

National Flood Hazard Layer FIRMette

78°10'26"W 39°10'7"N



78°9'49"W 39°9'40"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/7/2023 at 4:20 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Historic Flood Damage Data / Images

Photo 1. Abrams Creek at Featherbed Lane,

Photo 2. CSX Railroad Crossing in close proximity to Featherbed Lane

Photo 3. Bank Erosion under Pedestrian Bridge spanning Abrams Creek

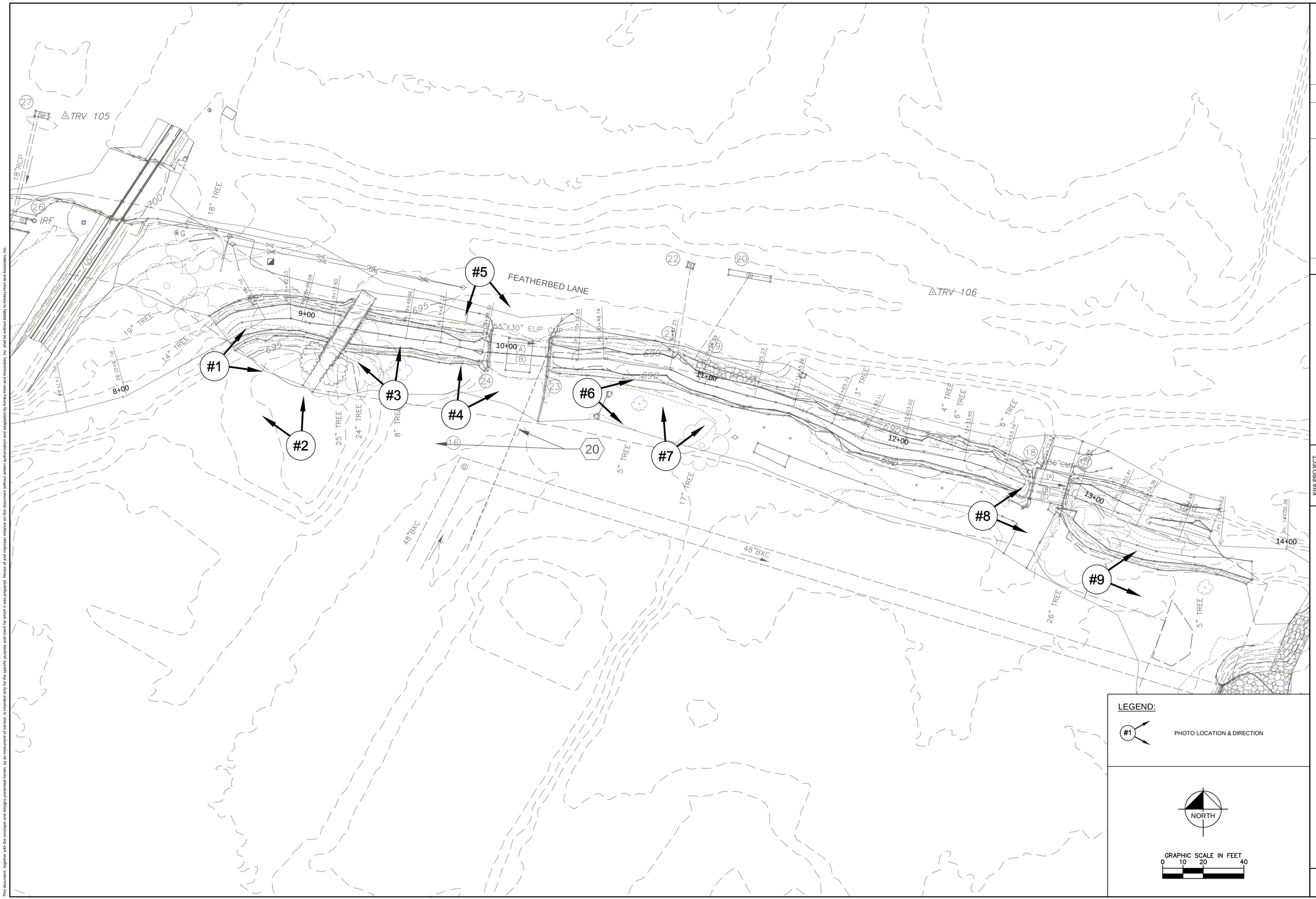
Photo 4. Culvert Crossing at Winchester Area SPCA

Photo 5. Impacts of Abrams Creek Flooding at SPCA

Photo 7. Featherbed Lane Commercial areas within Abrams Creek Floodplain

Photo 6. Culvert Crossing in close proximity to upstream SPCA Culvert Crossing

Photo 7. Abrams Creek Overall



LEGEND:

#1 PHOTO LOCATION & DIRECTION

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

No.	REVISIONS	DATE	BY

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01

PHOTO LOCATION 1

PHOTO LOCATION 2

PHOTO LOCATION 3

PHOTO LOCATION 4

PHOTO LOCATION 5

PHOTO LOCATION 6

PHOTO LOCATION 7

PHOTO LOCATION 8

PHOTO LOCATION 9

No.	REVISIONS	DATE	BY

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CFPF GRANT APPLICATION
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SHEET NUMBER
02

Copy of the City of Winchester Floodplain Ordinance

ARTICLE 14.1

FLOODPLAIN DISTRICTS - FP

STATEMENT OF INTENT

The purpose of these provisions is to prevent the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

A. Regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies.

B. Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding.

C. Requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or floodproofed against flooding and flood damage.

D. Protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.

14.1-1 APPLICABILITY

These provisions shall apply to all lands within the jurisdiction of the City and identified as being in the 100-year floodplain by the Federal Insurance Administration.

14.1-2 COMPLIANCE AND LIABILITY

A. No land shall hereafter be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered except in full compliance with the terms and provisions of this ordinance and any other applicable ordinances and regulations which apply to uses within the jurisdiction of this ordinance.

B. The degree of flood protection sought by the provisions of this ordinance is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This ordinance does not imply that districts outside the floodplain district, or that land uses permitted within such district will be free from flooding or flood damages.

C. This ordinance shall not create liability on the part of the City or any officer or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made thereunder.

D. Records of actions associated with administering this ordinance shall be kept on file and maintained by the Program Administrator. (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

14.1-3 PENALTY FOR VIOLATIONS

Any person who fails to comply with any of the requirements or provisions of this article or directions of the Program Administrator or any authorized employee of the City of Winchester shall be subject to the penalties therefore.

In addition to the above penalties, all other actions are hereby reserved, including an action in equity for the proper enforcement of this article. The imposition of a fine or penalty for any violation of, or noncompliance with, this article shall not excuse the violation or noncompliance or permit it to continue; and all such persons shall be required to correct or remedy such violations or noncompliances within a reasonable time. Any structure constructed, reconstructed, enlarged, altered or relocated in noncompliance with this article may be declared by the City of Winchester to be a public nuisance and abatable as such. Flood insurance may be withheld from structures constructed in violation of this article.
(9/1/2009, Case TA-09-204, Ord. No. 2009-24)

14.1-4 SEVERABILITY

If any section, subsection, paragraph, sentence, clause, or phrase of this ordinance shall be declared invalid for any reason whatever, such decision shall not affect the remaining portions of this ordinance. The remaining portions shall remain in full force and effect; and for this purpose, the provisions of this ordinance are hereby declared to be severable.
(9/1/2009, Case TA-09-204, Ord. No. 2009-24)

14.1-5 ABROGATION AND GREATER RESTRICTIONS

This ordinance supersedes any ordinance currently in effect in flood-prone districts. However, any underlying ordinance shall remain in full force and effect to the extent that its provisions are more restrictive than this ordinance.

14.1-6 DEFINITIONS

14.1-6-1 Base Flood/One-Hundred Year Flood - A flood that, on the average, is likely to occur once every 100 years (i.e., that has a one (1) percent chance of occurring each year, although the flood may occur in any year). (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

14.1-6-2 Base Flood Elevation (BFE) - The Federal Insurance Administration designated 100 year water surface elevation.

14.1-6-3 Basement – (For purposes of this Article…) Any area of the building having its floor sub-grade (below ground level) on all sides.

14.1-6-4 Development - Any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

14.1-6-5 Elevated building - A non-basement building built to have the lowest floor elevated above the ground level by means of fill, solid foundation perimeter walls, pilings, or columns (posts and piers).

14.1-6-6 Encroachment - The advance or infringement of uses, plant growth, fill, excavation, buildings, permanent structures or development into a floodplain, which may impede or alter the flow capacity of a floodplain.

14.1-6-7 Existing manufactured home park or subdivision - a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the floodplain management regulations adopted by a community.

14.1-6-8 Expansion to an existing manufactured home park or subdivision - the preparation of additional sites by the construction of facilities for servicing the lots on which the manufacturing homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

14.1-6-9 Flood Insurance Rate Map (FIRM) - an official map of a community, on which the Administrator has delineated both the special hazard areas and the risk premium zones applicable to the community

14.1-6-10 Flood or flooding -

1. A general or temporary condition of partial or complete inundation of normally dry land areas from

    a. the overflow of inland or tidal waters; or,

    b. the unusual and rapid accumulation or runoff of surface waters from any source.

2. The collapse or subsistence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in paragraph 1 (a) of this definition.

3. Mudflows which are proximately caused by flooding as defined in paragraph (a)(2) of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

14.1-6-11 Floodway - The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

14.1-6-12 Freeboard - A factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization in the watershed.

14.1-6-13 Historic structure - Any structure that is

1. listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;

2. certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

3. individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or,

4. individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either

   a. by an approved state program as determined by the Secretary of the Interior; or,

   b. directly by the Secretary of the Interior in states without approved programs.

14.1-6-14 Lowest Floor - The lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Federal Code 44CFR §60.3.

14.1-6-15 Manufactured home - A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term manufactured home also includes park trailers, travel trailers, and other similar vehicles placed one a site for greater than 180 consecutive days.

14.1-6-16 Manufactured home park or subdivision - a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

14.1-6-17 New construction - For the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after the effective date of an initial Flood Insurance Rate Map on or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, *new construction* means structures for which *start of construction* commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

14.1-6-18 Recreational vehicle - A vehicle which is

1. built on a single chassis;
2. 400 square feet or less when measured at the largest horizontal projection;
3. designed to be self-propelled or permanently towable by a light duty truck; and,
4. designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.

14.1-6-19 Special flood hazard area - The land in the floodplain subject to a one (1%) percent or greater chance of being flooded in any given year as determined in Section 14.1-6 of this ordinance.

14.1-6-20 Start of construction - The date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, substantial improvement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include

land preparation, such as clearing, grading and filling; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of the construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

14.1-6-21 Structure - for flood plain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home. ``Structure'' for insurance coverage purposes, means a walled and roofed building, other than a gas or liquid storage tank, that is principally above ground and affixed to a permanent site, as well as a manufactured home on a permanent foundation. For the latter purpose, the term includes a building while in the course of construction, alteration or repair, but does not include building materials or supplies intended for use in such construction, alteration or repair, unless such materials or supplies are within an enclosed building on the premises.

14.1-6-22 Substantial Damage - Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

14.1-6-23 Substantial Improvement - Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage" regardless of the actual repair work performed. The term does not, however, include either: (1) any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions or (2) any alteration of a "historic structure", provided that the alteration will not preclude the structures continued designation as a "historic structure".

14.1-6-24 Violation - the failure of a structure or other development to be fully compliant with the community's flood plain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in Sec. 60.3(b)(5), (c)(4), (c)(10), (d)(3), (e)(2), (e)(4), or (e)(5) is presumed to be in violation until such time as that documentation is provided.

14.1-6-25 Watercourse - A lake, river, creek, stream, wash, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

14.1-7 DESCRIPTION OF DISTRICTS

14.1-7-1 Basis of Districts

The various floodplain districts shall include special flood hazard areas. The basis for the delineation of these districts shall be the Flood Insurance Study (FIS) and the Flood Insurance Rate Maps for the City of Winchester prepared by the Federal Emergency Management Agency, Federal Insurance Administration, dated September 2, 2009, as amended. (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

1. The Floodway District is delineated, for purposes of this ordinance, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one hundred (100)-year flood without increasing the water surface elevation of that flood more than one (1) foot at any point. The areas included in this District are specifically defined in Table 2 of the above-referenced Flood Insurance Study and shown on the accompanying Flood Insurance Rate Map.

2. The Approximated Floodplain District shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a one hundred (100)-year floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the Flood Insurance Study. For these areas, the one hundred (100)-year flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific one hundred (100)-year flood elevation cannot be determined for this area using other sources of data, such as the U. S. Army Corps of Engineers Floodplain Information Reports, U. S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this elevation in accordance with hydrologic and hydraulic engineering techniques. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the City.

3. The Special Floodplain District shall be those areas identified as an AE Zone on the maps accompanying the Flood Insurance Study for which one hundred (100)-year flood elevations have been provided.

14.1-7-2 Overlay Concept

1. The Floodplain Districts described above shall be overlays to the existing underlying districts as shown on the Official Zoning Map, and as such, the provisions for the floodplain districts shall serve as a supplement to the underlying district provisions.

2. Any conflict between the provisions or requirements of the Floodplain Districts and those of any underlying district, the more restrictive provisions and/or those pertaining to the floodplain districts shall apply.

3. In the event any provision concerning a Floodplain District is declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying provisions shall remain applicable.

14.1-8 OFFICIAL ZONING MAP

The boundaries of the Floodplain Districts are established as shown on the Flood Insurance Rate Map which is declared to be a part of this ordinance and which shall be kept on file at the City.

14.1-9 DISTRICT BOUNDARY CHANGES

The delineation of any of the Floodplain Districts may be revised by the Governing Body where natural or man-made changes have occurred and/or where more detailed studies have been conducted or undertaken by the U. S. Army Corps of Engineers or other qualified agency, or an individual documents the need for such change. However, prior to any such change, approval must be obtained from the Federal Insurance Administration.

14.1-10 SUBMITTING TECHNICAL DATA

A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, a community shall notify the Federal Insurance Administrator of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data. (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

14.1-11 INTERPRETATION OF DISTRICT BOUNDARIES

Initial interpretations of the boundaries of the Floodplain Districts shall be made by the Administrator. Should a dispute arise concerning the boundaries of any of the Districts, the Board of Zoning Appeals shall make the necessary determination. The person questioning or contesting the location of the District boundary shall be given a reasonable opportunity to present his case to the Board and to submit his own technical evidence if he so desires.

14.1-12 GENERAL PROVISIONS

14.1-12-1 Permit Requirement

All uses, activities, and development occurring within any floodplain district shall be undertaken only upon the issuance of a zoning permit. Such development shall be undertaken only in strict compliance with the provisions of the Ordinance and with all other applicable codes and ordinances, such as the Virginia Uniform Statewide Building Code and the City Land Subdivision Regulations. Prior to the issuance of any such permit, the Administrator shall require all applications to include compliance with all applicable state and federal laws. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of the channels or floodway of any watercourse, drainage ditch, or any other drainage facility or system.

14.1-12-2 Alteration or Relocation of Watercourse

Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction a permit shall be obtained from the U. S. Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission (a joint permit application is available from any of these organizations). Furthermore, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and the Federal Insurance Administration.

14.1-12-3 General Standards

In all special flood hazard areas the following provisions shall apply: (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

a) New construction and substantial improvements shall be according to the VA USBC, and anchored to prevent flotation, collapse or lateral movement of the structure.

b) Manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This standard shall be in addition to and consistent with applicable state requirements for resisting wind forces.

c) New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

d) New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.

e) Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

f) New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.

g) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

h) On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

i) Any alteration, repair, reconstruction or improvements to a building that is in compliance with the provisions of this ordinance shall meet the requirements of "new construction" as contained in this ordinance.

j) Any alteration, repair, reconstruction or improvements to a building that is not in compliance with the provisions of this ordinance, shall be undertaken only if said non-conformity is not furthered, extended, or replaced.

k) Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction a permit shall be obtained from the U. S. Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission (a joint permit application is available from any of these organizations). Furthermore, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and the Federal Insurance Administration.

l) The flood carrying capacity within an altered or relocated portion of any watercourse shall be maintained.

14.1-12-4 Drainage Facilities

Storm drainage facilities shall be designed to convey the flow of storm water runoff in a safe and efficient manner. The system shall insure proper drainage along streets, and provide positive drainage away from buildings. The system shall also be designed to prevent the discharge of excess runoff onto adjacent properties.

14.1-12-5 Site Plans and Permit Applications

All applications for development in the floodplain district and all building permits issued for the floodplain shall incorporate the following information:

1. For structures to be elevated, the elevation of the lowest floor (including basement).

2. For structures to be floodproofed (non-residential only), the elevation to which the structure will be floodproofed.

3. The elevation of the one hundred (100)-year flood.

4. Topographic information showing existing and proposed ground elevations.

14.1-12-6 Specific Standards

In all special flood hazard areas where base flood elevations have been provided in the Flood Insurance Study or generated according Article 4, section 4.4 (A), the following provisions shall apply: (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

a) Residential Construction

New construction or substantial improvement of any residential structure (including manufactured homes) shall have the lowest floor, including basement, elevated no lower than 1 foot above the base flood elevation.

b) Non-Residential Construction

New construction or substantial improvement of any commercial, industrial, or non-residential building (or manufactured home) shall have the lowest floor, including basement, elevated to no lower than 1 foot above the base flood elevation. Buildings located in all A1-30, AE, and AH zones may be flood-proofed in lieu of being elevated provided that all areas of the building components below the elevation corresponding to the BFE plus one foot are water tight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied.

c) Elevated Buildings

Enclosed areas, of new construction or substantially improved structures, which are below the regulatory flood protection elevation shall:

1. not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator).

2. be constructed entirely of flood resistant materials below the regulatory flood protection elevation;

3. include, in Zones AE and A, measures to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet the following minimum design criteria:

    a. Provide a minimum of two openings on different sides of each enclosed area subject to flooding.

    b. The total net area of all openings must be at least one (1) square inch for each square foot of enclosed area subject to flooding.

    c. If a building has more than one enclosed area, each area must have openings to allow floodwaters to automatically enter and exit.

    d. The bottom of all required openings shall be no higher than one (1) foot above the adjacent grade.

    e. Openings may be equipped with screens, louvers, or other opening coverings or devices, provided they permit the automatic flow of floodwaters in both directions.

    f. Foundation enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires openings as outlined above.

14.1-12-7 Manufactured Homes and Recreational Vehicles

1. All manufactured homes placed, or substantially improved, on individual lots or parcels, in expansions to existing manufactured home parks or subdivisions, in a new manufactured home park or subdivision or in an existing manufactured home park or subdivision on which a manufactured home has incurred substantial

damage as the result of a flood, must meet all the requirements for new construction.

2. All manufactured homes placed or substantially improved in an existing manufactured home park or subdivision in which a manufactured home has **not** incurred substantial damage as the result of a flood shall be elevated so that either

   a. the lowest floor of the manufactured home is elevated no lower than 3 feet above the base flood elevation; or

   b. the manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade

   c. and be securely anchored to the adequately anchored foundation system to resist flotation, collapse and lateral movement.

3. All recreational vehicles placed on sites must either

   a. be on the site for fewer than 180 consecutive days;

   b. be fully licensed and ready for highway use (a recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices and has no permanently attached additions); or,

   c. meet all the requirements for manufactured homes.

14.1-13 FLOODWAY DISTRICT

In the Floodway District no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in the one hundred (100)-year flood elevation.

14.1-13-1 Permitted Uses in the Floodway District

The following uses and activities are permitted provided that they are in compliance with the provisions of the underlying area and are not prohibited by any other ordinance and provided that they do not require structures, fill, or storage of materials and equipment:

1. Agricultural uses, such as general farming, pasture, grazing, outdoor plant nurseries, horticulture, truck farming, forestry, sod farming, and wild crop harvesting.

2. Public and private recreational uses and activities, such as parks, day camps, picnic grounds, golf courses, boat launching and swimming areas, horseback riding and hiking trails, wildlife and nature preserves, game farms, fish hatcheries, trap and skeet game ranges, and hunting and fishing areas.

3. Accessory residential uses, such as yard areas, gardens, play areas, and pervious loading areas.

4. Accessory industrial and commercial uses such as yard areas, pervious parking and loading areas, airport landing strips, etc.

14.1-14 SPECIAL FLOODPLAIN DISTRICT

The following provisions shall apply within the Special Floodplain District: (9/1/2009, Case TA-09-204, Ord. No. 2009-24)

Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the areas of special flood hazard, designated as Zones A and AE on the Flood Rate Insurance Map, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development will not increase the water surface elevation of the base flood more than one foot at any point within the City of Winchester.

Development activities in Zones A and AE on the Frederick County Flood Insurance Rate Map which increase the water surface elevation of the base flood by more than one foot may be allowed, provided that the applicant first applies – with the City of Winchester's endorsement – for a conditional Flood Insurance Rate Map revision, and receives the approval of the Federal Emergency Management Agency.

14.1-14-1 Standards for Approximated Floodplain

The following provisions shall apply with the Approximate Floodplain District:

1. The Approximated Floodplain District shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a one hundred (100)-year floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the Flood Insurance Study. For these areas, the one hundred (100)-year flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific one hundred (100)-year flood elevation cannot be determined for this area using other sources of data, such as the U. S. Army Corps of Engineers Floodplain Information Reports, U. S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this elevation in accordance with hydrologic and hydraulic engineering techniques. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used

correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the Program Administrator.

2. When such base flood elevation data is utilized, the lowest floor shall be 1 foot above the base flood elevation. During the permitting process, the Program Administrator shall obtain:

   a) the elevation of the lowest floor (including the basement) of all new and substantially improved structures; and,

   b) if the structure has been flood-proofed in accordance with the requirements of this article, the elevation to which the structure has been flood-proofed.

14.1-14-2 Standards for Subdivision Proposals

1. All subdivision proposals shall be consistent with the need to minimize flood damage;

2. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;

3. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards, and

4. Base flood elevation data shall be provided for subdivision proposals and other proposed development proposals (including manufactured home parks and subdivisions) that exceed fifty lots or five acres, whichever is the lesser.

14.1-15 VARIANCES: FACTORS TO BE CONSIDERED

In passing upon applications for Variances, the Board of Zoning Appeals ("the Board") shall satisfy all relevant factors and procedures specified in other sections of the zoning ordinance and consider the following additional factors:

A. The danger to life and property due to increased flood heights or velocities caused by encroachments. No variance shall be granted for any proposed use, development, or activity within any Floodway District that will cause any increase in the one hundred (100)-year flood elevation. No variance shall be granted within the Special Flood Plain District for any proposed development that would cause an increase of more than one foot in the one hundred (100) year flood elevation.

B. The danger that materials may be swept on to other lands or downstream to the injury of others.

C. The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination, and unsanitary conditions.

D. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.

E. The importance of the services provided by the proposed facility to the community.

F. The requirements of the facility for a waterfront location.

G. The availability of alternative locations not subject to flooding for the proposed use.

H. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.

I. The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.

J. The safety of access by ordinary and emergency vehicles to the property in time of flood.

K. The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site.

L. The repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

M. Such other factors which are relevant to the purposes of this ordinance.

The Board may refer any application and accompanying documentation pertaining to any request for a variance to any engineer or other qualified person or agency for technical assistance in evaluating the proposed project in relation to flood heights and velocities, and the adequacy of the plans for flood protection and other related matters.

Variances shall be issued only after the Board has determined that the granting of such will not result in (a) unacceptable or prohibited increases in flood heights, (b) additional threats to public safety, (c) extraordinary public expense; and will not (d) create nuisances, (e) cause fraud or victimization of the public, or (f) conflict with local laws or ordinances.
Variances shall be issued only after the Board has determined that variance will be the minimum required to provide relief from hardship to the applicant.

The Board shall notify the applicant for a variance, in writing, that the issuance of a variance to construct a structure below the one hundred (100)-year flood elevation (a) increases the risks to life and property and (b) will result in increased premium rates for flood insurance.

A record shall be maintained of the above notification as well as all variance actions, including justification for the issuance of the variances. Any variances which are issued shall be noted in the annual or biennial report submitted to the Federal Insurance Administrator.

14.1-16 EXISTING STRUCTURES IN FLOODPLAIN DISTRICTS

A structure or use of a structure or premises which lawfully existed before the enactment of these provisions, but which is not in conformity with these provisions, may be continued subject to the following conditions:

A. Existing structures in the Floodway District shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed expansion would not result in any increase in the one hundred (100)-year flood elevation.

B. Any modifications, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use located in any floodplain area to an extent or amount of less than fifty (50) percent of its market value, elevation and/or floodproofing should be considered to the greatest extent possible.

C. The modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, regardless of its locations in a floodplain area, to an extent or amount of fifty (50) percent or more of its market value shall be undertaken only in full compliance with the provisions of this ordinance and the Virginia Uniform Statewide Building Code.

D. Existing structures in the Special Flood Plain District shall not be expanded or enlarged unless it has been demonstrated through hydraulic and hydraulic analyses preformed in accordance with standard engineering practices that the proposed expansion or enlargement would not result in an increase of more than one foot in the one hundred (100) year flood elevation.

14.1-17 FLOODING

Land subject to flooding and land deemed to be topographically unsuitable shall not be platted for residential occupancy, nor for such other uses as may increase danger of health, life or property, or aggravate erosion or flood hazard. Such land within the subdivision shall be set aside on the plat for such uses as shall not be endangered by periodic or occasional inundation or shall not produce conditions contrary to public welfare. All subdivisions within the City of Winchester shall conform with the recommendation of the applicable Storm Drainage Report. Any new subdivision or development shall be subject to the requirements of Article 14.1 FLOODPLAIN DISTRICTS, FP, of the Official Zoning Ordinance.

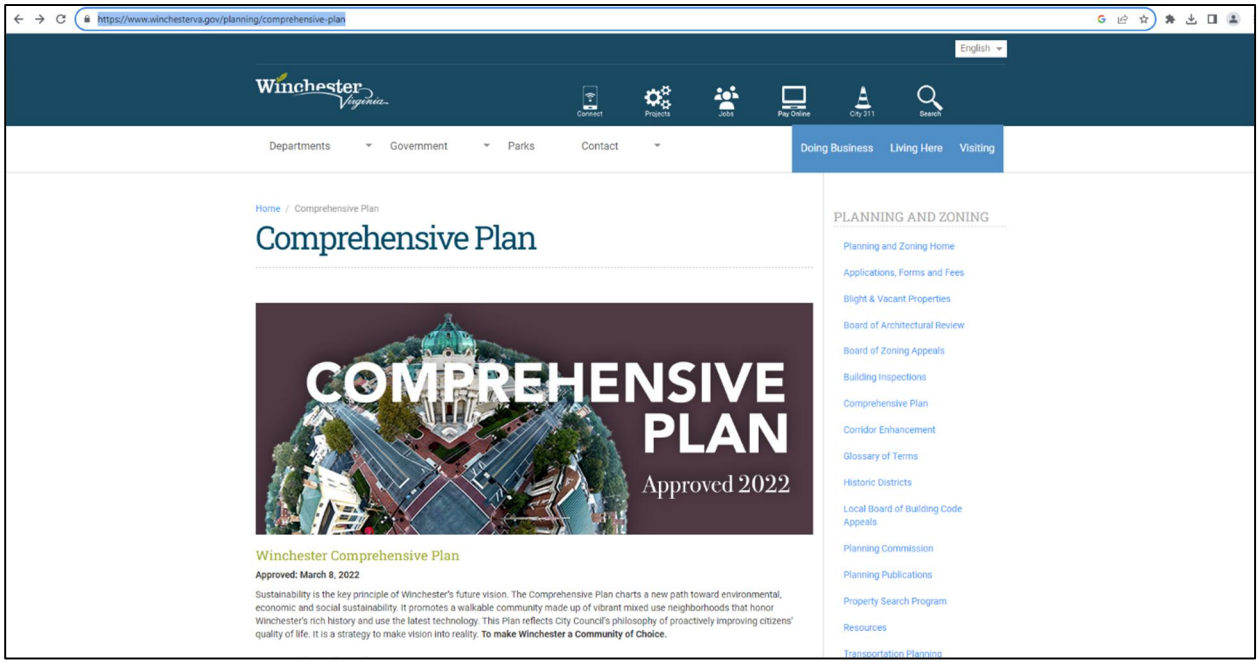
(Editor's note: Article 14.1 established 10/13/99, Case TA-99-05, Ord. No. 030-99; Comprehensive Revision 9/1/09, Case TA-09-204, Ord. No. 2009-24)

City of Winchester Comprehensive Plan

Link to a Copy of the Current Comprehensive Plan

(City of Winchester 2022 Comprehensive Plan)

https://www.winchesterva.gov/planning/comprehensive-plan



Social Vulnerability Index Score(s) for the Project Areas

Social Vulnerability Index	
ID	Social Vulnerability Score
1	1.4325
2	1.3325
3	1.2475
4	1.295
5	1.1625

Legend
Approximate Project Area
Streams
Social Vulnerability Index
High Social Vulnerability

N

0 300 600 US Feet

Winchester Virginia

DATE
11/8/2023

DRAWN BY
CDC

CHECKED BY
JJD

CITY OF WINCHESTER
FEATHERBED LANE PROJECT

PREPARED FOR CITY OF WINCHESTER

SCALE
1" = 300'

PROJECT NUMBER
N/A

SHEET NUMBER
APPENDIX C

November 7, 2023

Kelly Henshaw, PE, CFM
City Engineer
City of Winchester
301 East Cork Street
Winchester, VA 22601

RE: FEATHERBED LANE FLOODPLAIN IMPROVEMENT STUDY

Dear Mrs. Henshaw:

Kimley-Horn and Associates, Inc. (Kimley-Horn) is pleased to submit this task order proposal to the City of Winchester (City) to provide professional consulting services related to the development of a Featherbed Lane Floodplain Improvement Study. The language outlined below identifies our project understanding, scope of requested services, and accompanying fees related to the overall project.

PROJECT UNDERSTANDING

This proposal summarizes the phases and tasks necessary to prepare a study to evaluate the effects of the Abrams Creek floodplain along Featherbed Lane in the City of Winchester, as well as develop conceptual strategies to prevent and mitigate damages from riverine flooding. This study will focus on 2,800 linear feet of Abrams Creek starting at the culvert system at the intersection of South Loudoun Street and Featherbed Lane and ending at the Shopping Center Drive and Mall Road culvert system, depicted in Attachment 1 (Study Limits) of this Scope of Services.

All analyses referenced in this Scope of Services will be based on the following data:

- Green Circle Trail Extension Survey (GCT Survey) - *Provided by Others*
- Featherbed Lane Project Specific Data, Analyses, and Exhibits referenced in the City of Winchester Flood Preparedness Resilience Plan - *Developed by Kimley-Horn*
- Readily Available City 1-foot Topographic Lidar Data

It is assumed that all project information will be provided to Kimley-Horn from the City prior to commencement of work.

SCOPE OF SERVICES

The proposal has been divided into six (6) tasks:

1. Site Base Mapping, Project Due Diligence, and Site Visit
2. Full Buildout Hydrologic Analysis of the Study Limits Watershed
3. Stream Corridor Hydraulics Study
4. Development of a Featherbed Lane Floodplain Improvement Concept Plan
5. Featherbed Lane Floodplain Improvements Study Report
6. Meetings & Coordination

Each task is outlined below with a summary defining the Scope for each task. A lump sum cost to perform this work is provided (Attachment 2) and includes Kimley-Horn project management and coordination time.

TASK 100 - SITE BASE MAPPING, PROJECT DUE DILIGENCE, AND SITE VISIT

Kimley-Horn will develop both an AutoCAD and Geographic Information Systems (GIS) base-map illustrating the Study Limits. The GCT Survey will be the basis for all base mapping and conceptual exhibits referenced in this Scope of Services. As part of the base map development, The GCT Survey will be supplemented with all pertinent available City of Winchester, Frederick County, Virginia Flood Risk Information System (VFRIS), and FEMA GIS data to depict existing site conditions and display the impacts of the existing flood limits on Study Limit infrastructure. The base mapping will be used by Kimley-Horn to assist in site reconnaissance efforts and to supplement all meetings, efforts, and study deliverables outlined in this Scope of Services.

As part of this task, Kimley-Horn will perform project due diligence for the Study Limits by compiling pertinent information from the following reports and data sets:

- Frederick County - Flood Insurance Study (FIS)
- FEMA relevant Flood Insurance Rate Maps (FIRMs)
- Previous studies performed within the project Study Limits (to be provided by the city, if available)
- Available City of Winchester/Frederick County existing HEC-HMS (Hydrologic Models) and HEC-RAS (Hydraulic / Floodplain Models)
- Available VDOT / City of Winchester Bridge and Culvert Plans for the project Study Limits
- Available CSX Railroad Crossing Plans for the project Study Limits

Kimley-Horn will compile all relevant Study Limits floodplain and site data in a Technical Support Data Memo (TSDM) and submit to the city.

Kimley-Horn will utilize the base mapping and TSDM developed in this task to assist in a site visit to photo-document current conditions along the Study Limits. Kimley-Horn will take georeferenced photos along the study limits and include them in a photo location map that identifies potential Study Limits opportunities and constraints.

TASK 200 – FULL BUILDOUT HYDROLOGIC ANALYSIS OF THE STUDY LIMITS WATERSHED

Kimley-Horn will perform a full buildout hydrologic evaluation of the Study Limits watershed utilizing current aerial imagery and supplemented with data outlined in the City of Winchester Approved 2022 Comprehensive Plan (Comprehensive Plan). As part of this analysis, Kimley-Horn will evaluate the major drainage area sub-basins within the following watersheds:

- Culvert System at the Intersection of South Loudoun Street and Featherbed Lane
- CSX Railroad Crossing Intersection with Featherbed Lane
- Culvert System at Intersection of South Pleasant Valley Road, Featherbed Lane, and Shopping Center Drive

- Culvert System at Shopping Center Drive and Mall Road

Kimley-Horn will use the United States Department of Agriculture's (USDA) Technical Release-55 (TR-55) Urban Hydrology for Small Watersheds SCS Methodology to determine the existing basin hydrologic parameters such as Runoff Curve Numbers (RCNs) and Times of Concentrations (Tc) / Lag Times (Tlag). The hydrology will be developed from a compilation of the most readily available aerial landcover data, survey data, GIS Shapefile data, and NRCS soils data. The drainage basin hydrologic conditions will be used as model input parameters in subsequent tasks to determine the Study Limits basin and stream corridor inflows for the 1-yr, 2-yr, 10-yr, 100-yr, and 500-yr storm events.

The model input parameters will be utilized in conjunction with the Army Corp of Engineers HEC-HMS (Hydrologic Modeling System) software to simulate the hydrologic stream processes at junctions and specific locations within the 2800 linear foot stream corridor that traverses the Study Limits. The model input parameters for the Featherbed Lane Study Limits HEC-HMS model will be developed based on the following information:

- Green Circle Trail (GCT) Extension Survey and Existing Conditions Data
- City of Winchester 1-foot lidar topography.
- NOAA Atlas 14 Precipitation Data and City Specific Precipitation data
- SCS curve numbers based on ArcGIS orthogonal imagery and NRCS Soil information within the Study Limits watershed.
- Time of Concentration / Lag time values developed based on ArcGIS orthogonal imagery and City of Winchester topography.

Drainage basin routing will be performed to determine the effects of different runoff producing events on the Study Limits. In performing the routing, Kimley-Horn will develop time-series hydrographs for all proposed storm events and determine peak flows for each event as well. This data will be utilized as HEC-RAS Model inputs in Task 300 (Stream Corridor Hydraulics Study).

As part of this task, Kimley-Horn will compare the modeled hydrologic results with the published flows outlined in the Frederick County – Flood Insurance Study (FIS) for Abrams Creek at the closest proximity to the Study Limits. Both sets of stream flows (KH derived / FIS) will be used in the hydraulic models developed in Task 300 (Stream Corridor Hydraulics Study).

All information derived and modeled in this task will be documented within the Featherbed Lane Floodplain Improvements Study Final Report (Task 500).

TASK 300 – STREAM CORRIDOR HYDRAULICS STUDY

Existing Conditions Modeling

Kimley-Horn will build an existing conditions floodplain hydraulics model for the 2800 linear foot stream system within the Study Limits using GCT Survey topographic/infrastructure information and supplemented with readily available City GIS data (1ft lidar contour data, building footprints, etc.). Kimley-Horn will generate representative stream reach cross-sections along the Study Limits using a composite surface created from surveyed topography and supplemental 1-foot lidar contour data to input into the Army Corp of Engineers HEC-RAS (River Analysis System) modeling software. Kimley-Horn

will then utilize the GST Survey data to build all culvert systems, railroad crossings, and stream spanning structures in the HEC-RAS Model within the Study Limits. The existing conditions floodplain hydraulics model will be developed to reflect all channel and floodplain cross-sectional geometry indicative of the current (as of 2023) stream reach.

Kimley-Horn will route the flows derived in Task 200 through the existing conditions floodplain hydraulic model to determine existing stream and floodplain hydraulic characteristics along the Study Limits. The modeling output data generated in this task will be used to determine existing Study Limit flood inundation depths, stream and floodplain velocities, cross-sectional top widths, and energy and hydraulic grade line calculations for the 1-yr, 2-yr, 10-yr, 100-yr, and 500-yr storm events.

Once the existing conditions model is developed, Kimley-Horn will create a separate HEC-RAS geometry file that will nest the Kimley-Horn derived exiting conditions model into an, if available, approved FEMA Abrams Creek HEC-RAS model. It is assumed that this model will be provided by the City to Kimley-Horn for this task.

Kimley-Horn will document the results for both the existing conditions floodplain hydraulics model, as well as the nested existing conditions hydraulics model. These values will provide a baseline comparison for all future modeling analysis.

Floodplain Improvements Sensitivity Modeling

Kimley-Horn will modify the existing conditions hydraulics model(s) to evaluate up to three (3) proposed changes that may help abate the flooding along Featherbed Lane and the parcels that parallel the road. Floodplain sensitivity modeling will focus on infrastructure changes at the major culvert systems, stream, and floodplain grading techniques, and pairing of the two within the Study Limits. Evaluation of the overall Study Limits stream corridor will be prioritized as to model the effect of the changes wholistically on the floodplain system, as to not potentially transfer any flooding downstream.

Kimley-Horn will route the flow data derived in Task 200 to analyze the viability and success of potential changes along the Study Limits stream corridor. Revised Water Surface Elevations for all modeled storm events will be compared to existing conditions as to quantify the effect of the proposed improvements on the inundation depths and horizontal spread of the floodplain limits.

Model cross sections and stream profiles will be updated to reflect conceptual proposed infrastructure changes, major grading activities, and/or channel realignment techniques within the Study Limits. This information will be included in the Featherbed Lane Floodplain Improvements Study Report (Task 500).

TASK 400 - DEVELOPMENT OF A FEATHERBED LANE FLOOD IMPROVEMENT CONCEPT PLAN

Based on the results determined in the Floodplain Improvements Sensitivity modeling, Kimley-Horn will derive a 24x36 AutoCAD developed conceptual exhibit that will graphically depict locations of potential improvements along the Study Limits. Kimley-Horn will develop three (3) conceptual design alternatives to implement to help reduce recurrent flooding along Featherbed Lane.

Proposed conceptual improvements will include, but are not limited to the following:

- Infrastructure based improvements
    - Additional pipe locations, inlet placement, junction boxes, etc.
- Natural based solutions
    - Stream and floodplain restoration techniques, outfall channel restoration, creating or enhancing areas of flood storage, etc.
- Preservation and creation of open space and focus on permanent conservation of lands having flood resilience value.

Due to the conceptual nature of this plan all proposed structural improvements, grading and riparian enhancements, and proposed future project implementation locations will have limited engineering design and will focus on project layout and location.

TASK 500 – FEATHERBED LANE FLOODPLAIN IMPROVEMENTS STUDY REPORT

Kimley-Horn will develop a Featherbed Lane Floodplain Improvement Study report outlining the information derived in tasks 100 - 400. Study graphics, tabular summaries, numerical analysis, and conceptual level designs created in all previous tasks will be included in the final report. Recommendations on future basin stormwater management improvements, future storm sewer designs, as well as comprehensive drainage and floodplain improvement implementation scenarios for the Study Limits will be included with the report.

TASK 600 – MEETINGS & COORDINATION

Kimley-Horn staff will be available for up to two (2) project coordination meetings to discuss the project. In addition, Kimley-Horn staff will participate in calls to discuss the project with City staff. If additional meetings and coordination activities are requested, Kimley-Horn will prepare a separate Scope of Services and cost estimate for client approval prior to proceeding with the additional work.

DELIVERABLES

The following items are anticipated as project deliverables for this Scope of Services.

- Site specific floodplain data compilation outlined in a Technical Support Data Memo (TSDM)
- HEC-HMS Hydrologic / HEC-RAS Stream Hydraulic Models(s)
- Featherbed Lane Floodplain Improvements Study – 24 x 36 AutoCAD Derived Conceptual Plan
- Featherbed Lane Floodplain Improvements Study – Final Report
- All maps, models, analyses, spreadsheets, and base data utilized for the design (if requested).

OVERALL PROJECT ASSUMPTIONS

For the purposes of developing this proposed Scope of Services and the accompanying cost estimate, we have made the following assumptions:

- All previous project information developed by others will be provided by the City to Kimley-Horn in a timely manner to accommodate anticipated project schedule.
- The flood studies and analyses proposed in this Scope of Services are intended as a planning level and will not constitute a formal FEMA floodplain study. As such this information and data will not be stamped and sealed by a Virginia Professional Engineer (PE).
- All analyses and studies developed in this Scope of Services will be based on limited survey information, and as such, the information derived will be considered "for information purposes only."
- The Conceptual Design Plan referenced in this Scope of Services will be limited in terms of engineering design and analysis. As such, they will be not stamped by a licensed Virginia Professional Engineer and labeled as "Not for Construction Purposes".
- The city will provide site access permission to Kimley-Horn, for conducting all necessary fieldwork related tasks in a timely manner to facilitate the project schedule.
- Accuracy and precision of data and previous studies provided by others is solely on the consulting firm that derived the studies. Kimley-Horn will review all data provided by the City with regards to the Study Limits but assumes no responsibility for information outlined in the studies developed by others.
- Readily available City GIS shapefile and geodatabase information will be used to supplement this study, as needed.
- The city will provide all coordination with inter-city departments with regards to this project.
- This proposal and the accompanying cost estimate are valid for a period of 90 days and will expire if not accepted within that timeframe.

OVERALL PROJECT EXCLUSIONS

Services that are not currently anticipated as part of this project and are therefore outside the scope of this task order proposal include the following:

- Environmental Site Assessments
- Perennial Stream Assessments and/or Flow Determinations
- Grant Administration Services
- Project Renderings
- FEMA Applications
- Dam Safety Compliance Services
- Dam Break Inundation Zone (DBIZ) Modeling / Mapping
- Engineering Design Plan Submittals
- Utility Design
- VDOT Design or Permitting
- Development/Delivery of Presentations, Board of Supervisors, Committees, or the Public
- Notifications to impacted Property Owners
- All other services not explicitly stated in this Scope of Services

SCHEDULE

The tasks referenced in this scope will be coordinated with City Staff. Assuming Kimley-Horn receives a notice to proceed by January 31, 2024, Kimley-Horn anticipates completion of the Scope of Services

outlined above by June 30, 2024. A detailed schedule will be developed for the City outlining project workflow and deliverables after contract execution.

FEE AND BILLING

Kimley-Horn will provide the following scope of services under our term contract #202205 KHA. The following tasks will be provided for a lump sum cost of **$69,955.76.** A detailed breakdown (by task) of Kimley-Horn's fee estimate is provided in Attachment 1 and utilizes the rate schedule as provided for in the City of Winchester Task Order Contract ##202205 -KHA, Year 2. Please note that fees will be invoiced monthly based upon hours expended for services performed and payment will be due within 25 days of receipt of invoices related to this project.

CLOSURE

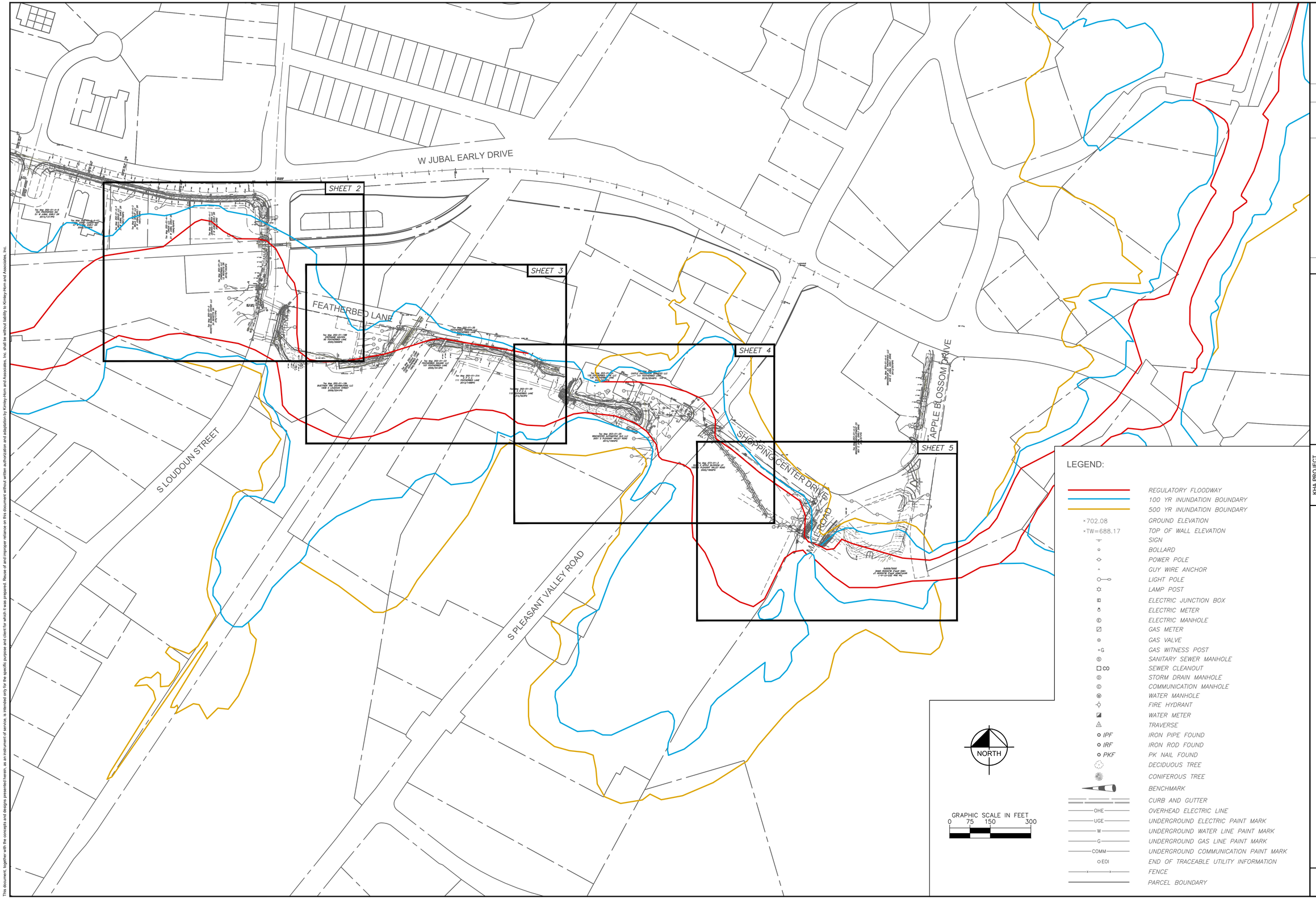
The work described with this proposal will be completed in accordance with the terms and conditions of Contract #202205 between the City of Winchester and Kimley-Horn. We appreciate the opportunity to provide these services to you. Please contact me if you have any questions.

Very truly yours,
KIMLEY-HORN AND ASSOCIATES, INC.

Jon D'Alessandro, P.E.
Senior Project Manager

Kimley»Horn

Attachment 1 – Featherbed Lane Floodplain Improvements Study Limits



LEGEND:

- REGULATORY FLOODWAY
- 100 YR INUNDATION BOUNDARY
- 500 YR INUNDATION BOUNDARY
- ×702.08 GROUND ELEVATION
- ×TW=688.17 TOP OF WALL ELEVATION
- SIGN
- BOLLARD
- POWER POLE
- GUY WIRE ANCHOR
- LIGHT POLE
- LAMP POST
- ELECTRIC JUNCTION BOX
- ELECTRIC METER
- ELECTRIC MANHOLE
- GAS METER
- GAS VALVE
- GAS WITNESS POST
- SANITARY SEWER MANHOLE
- SEWER CLEANOUT
- STORM DRAIN MANHOLE
- COMMUNICATION MANHOLE
- WATER MANHOLE
- FIRE HYDRANT
- WATER METER
- TRAVERSE
- IPF IRON PIPE FOUND
- IRF IRON ROD FOUND
- PKF PK NAIL FOUND
- DECIDUOUS TREE
- CONIFEROUS TREE
- BENCHMARK
- CURB AND GUTTER
- OHE OVERHEAD ELECTRIC LINE
- UGE UNDERGROUND ELECTRIC PAINT MARK
- W UNDERGROUND WATER LINE PAINT MARK
- G UNDERGROUND GAS LINE PAINT MARK
- COMM UNDERGROUND COMMUNICATION PAINT MARK
- EOI END OF TRACEABLE UTILITY INFORMATION
- FENCE
- PARCEL BOUNDARY

NORTH

GRAPHIC SCALE IN FEET
0 75 150 300

No.	REVISIONS	DATE	BY

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

KHA PROJECT
CFPF EXHIBIT

DATE	11/1/2023
SCALE	AS SHOWN
DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

SHEET NUMBER
01

SHEET NUMBER 02	CFPF GRANT APPLICATION APPENDIX C - SITE MAPS PREPARED FOR CITY OF WINCHESTER	KHA PROJECT CFPF EXHIBIT DATE 11/1/2023 SCALE AS SHOWN DESIGNED BY J.J.D DRAWN BY C.D.C CHECKED BY J.J.D	Kimley»Horn 11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191 PHONE: 703-674-1300 FAX: 703-674-1350 WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

FEATHERBED LANE

Tax Map 252-01-18B
STEPHANIE NGUYEN
95 FEATHERBED LANE
2020/2966PG

Tax Map 252-01-35
FEATHERBED SQUARE LLC
113 FEATHERBED LANE
2005/3413PG

Tax Map 252-01-18A
BUETTNER TIRE DISTRIBUTORS LLC
1908 S. LOUDOUN STREET
2009/2241PG

Tax Map 252-01-33
FEATHERBED SQUARE LLC
107 FEATHERBED LANE
2005/3413PG

Tax Map 252-01-33
FEDERAL MOGUL CORP
105 FEATHERBED LANE
1995/849PG

Tax Map 252-01-31A
S P C A
111 FEATHERBED LANE
2013/1488PG

Tax Map 252-01-30
S P C A
115 FEATHERBED LANE
314/523PG

CSX RAILROAD

4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

No.	REVISIONS	DATE	BY

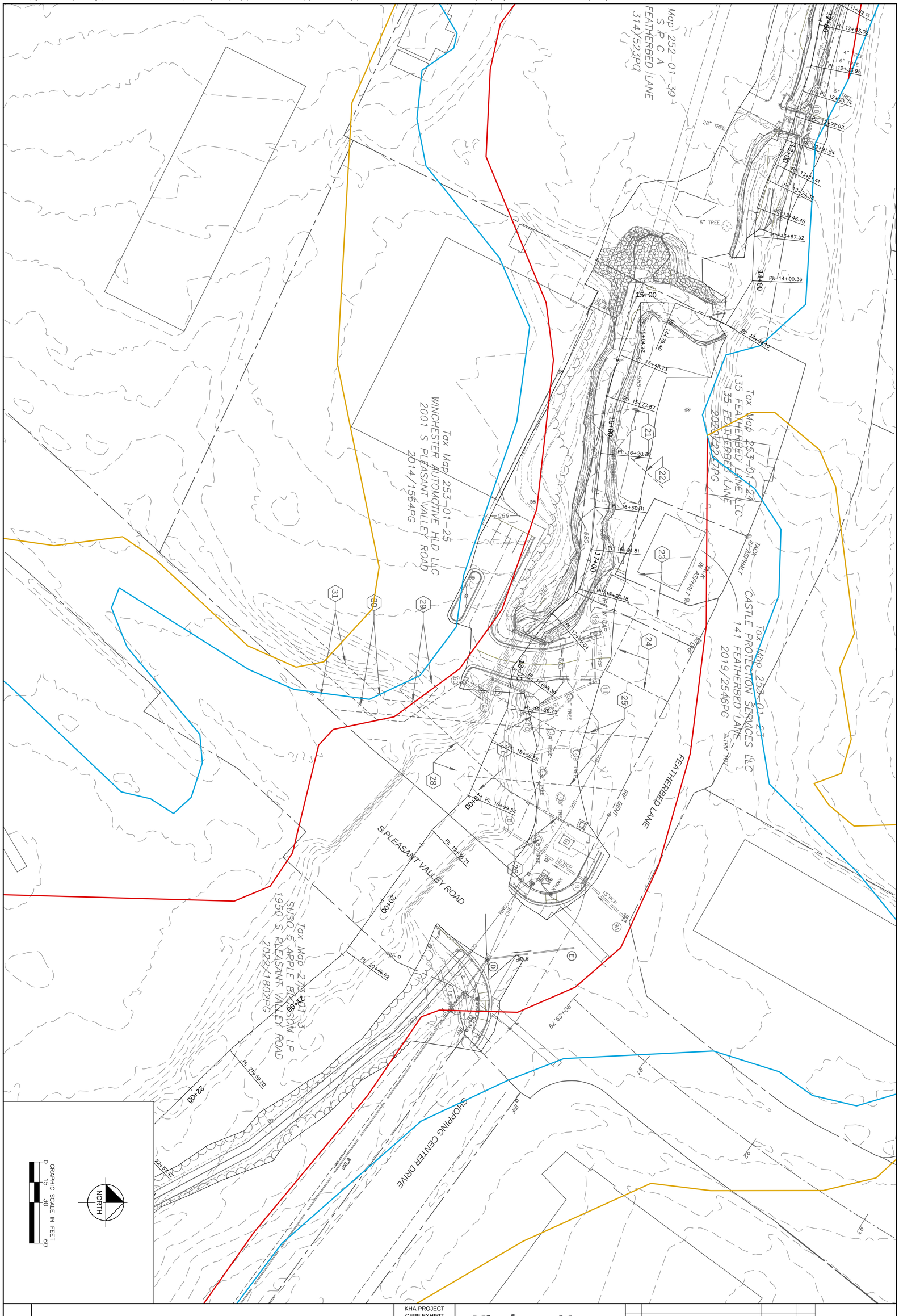
Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

KHA PROJECT
CFPF EXHIBIT

DATE 11/1/2023
SCALE AS SHOWN
DESIGNED BY J.J.D
DRAWN BY C.D.C
CHECKED BY J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

SHEET NUMBER
03



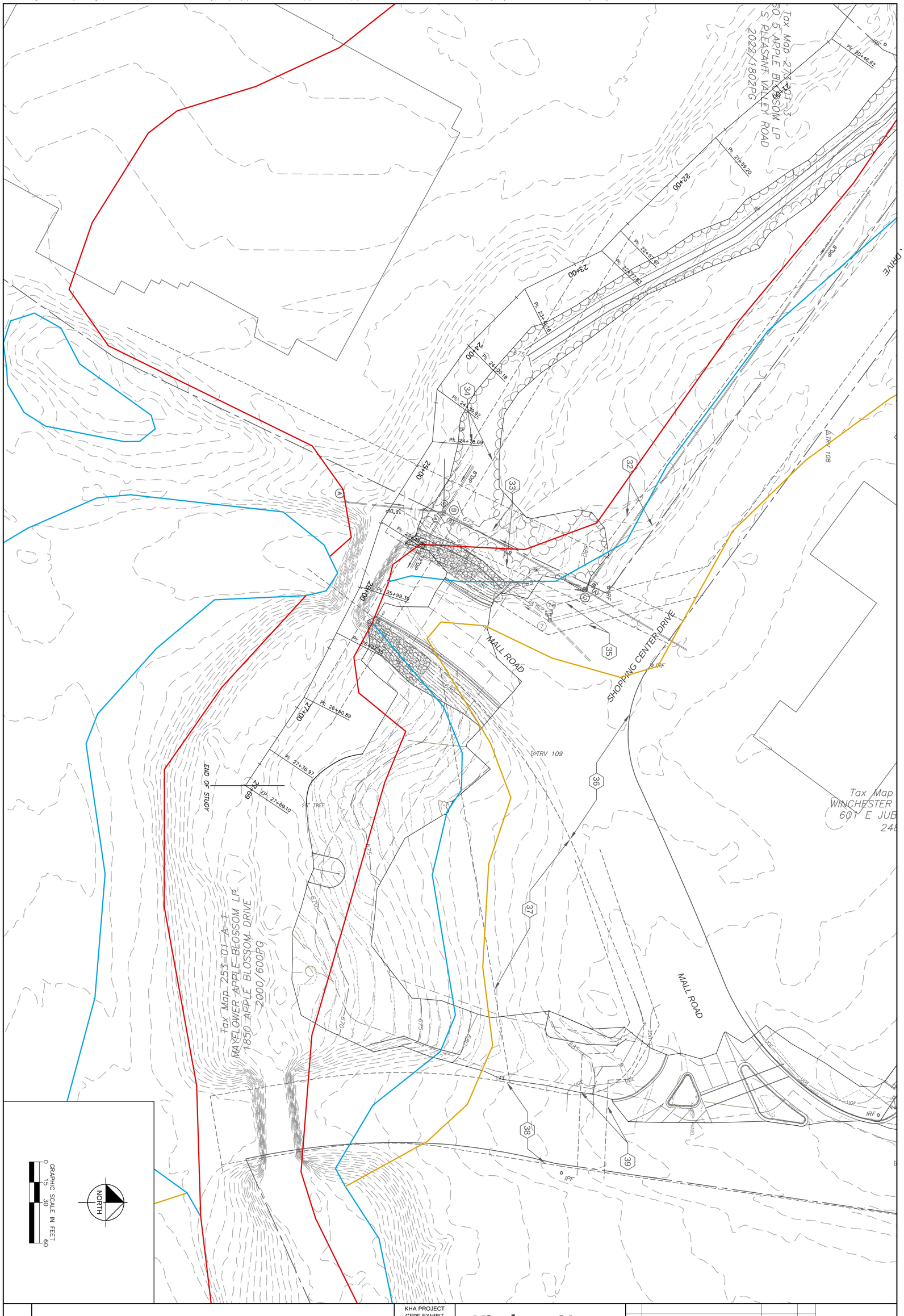
SHEET NUMBER 04

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

KHA PROJECT	CFPF EXHIBIT
DATE	11/1/2023
SCALE	AS SHOWN
DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY



SHEET NUMBER 05	CFPF GRANT APPLICATION APPENDIX C - SITE MAPS PREPARED FOR CITY OF WINCHESTER	KHA PROJECT CFPF EXHIBIT DATE 11/1/2023 SCALE AS SHOWN DESIGNED BY J.J.D DRAWN BY C.D.C CHECKED BY J.J.D

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

Attachment 2 – Kimley Horn Fee Breakdown

SECTION B – BUDGET DATA

Project Budget Narrative and Scope of Services

Budget Narrative Template

Funding Request Authorization

`

Project Budget Narrative and Scope of Services

`

A detailed budget narrative is included below and contains the required information outlined in the 2023 Funding Manual for the Virginia Community Flood Preparedness Fund. This section also includes the Kimley-Horn Scope of Services to develop the Featherbed Lane Floodplain Improvements Study.

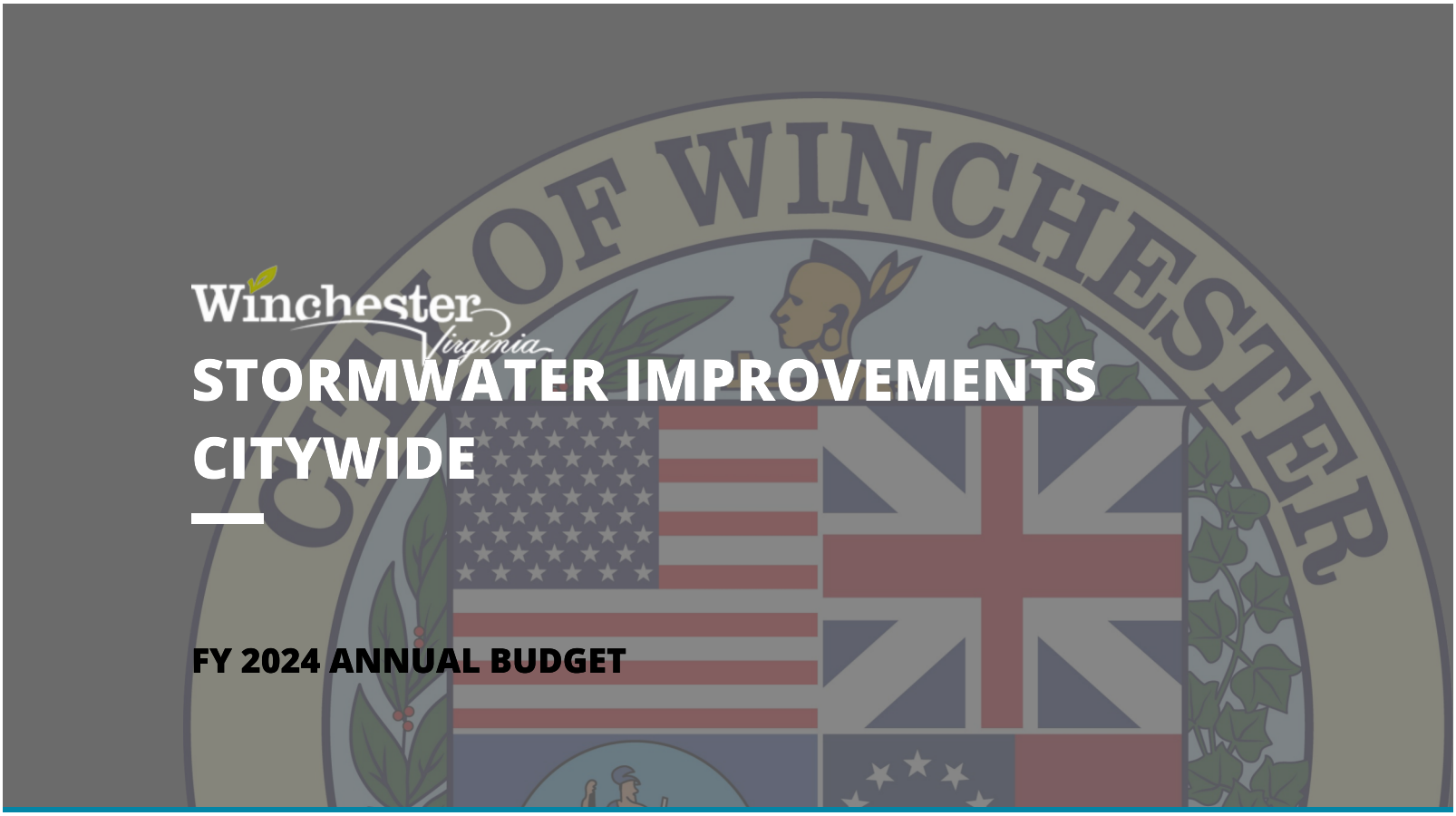
Estimated total project cost: The total identified project cost to complete the Featherbed Lane Floodplain Improvements Study is $69,955.76.

Amount of funds requested from the Fund: The total amount of grant assistance sought from the Fund is $62,960.18. A detailed breakdown of how this funding is proposed to be allocated is shown in this section as an attached Scope of Services.

Amount of funds available: The amount of funds available through this project's funding source is greater total estimated project cost of $69,955.76. The following documentation is included in in the following attached documents:

- City of Winchester – FY2024 Annual Budget- Stormwater Improvements Citywide
    - City of Winchester – FY2024 Outcome Based Budget
- City of Winchester – FY2024 Annual Budget – Stormwater Utility Fund

Authorization to request for funding: A signed statement from the City of Winchester, City Manager authorizing the request for funding for this project has been included in this section.



STORMWATER IMPROVEMENTS CITYWIDE

FY 2024 ANNUAL BUDGET

SUMMARY

PROJECT TITLE: Storm Drainage Improvements

DEPARTMENT: Public Services

BUDGET CODE: 312-4131-441.83-71

JUSTIFICATION: Improves existing service

START DATE (FY): 2024

END DATE (FY): Ongoing

PROJECT DESCRIPTION:

Numerous projects to improve the stormwater system throughout the City that will be funded by the Stormwater Utility recently approved by City Council.

RELATIONSHIP TO STRATEGIC PLAN:

Goal 5 - Support the City's high-performing operations with effective communication, innovation, and sound fiscal policies.

PROJECT OBJECTIVES / STATUS:

Projects are necessary to help alleviate flooding and ensure that the City meets the requirements of its stormwater discharge permit.

COST ESTIMATE

Cost Estimate - Stormwater Improvements Citywide

Itemization Descripti...	2022-23	2023-24	2024-25	2025-26	2026-27	2027-2
Construction	$0	$2,200,000	$10,000,000	$10,000,000	$4,000,000	$4,000,00
Planning	$0	$500,000	$500,000	$500,000	$500,000	$500,00
Land	$0	$500,000	$500,000	$500,000	$500,000	$500,00
TOTAL	**$0**	**$3,200,000**	**$11,000,000**	**$11,000,000**	**$5,000,000**	**$5,000,00**

FUNDING SOURCES

Funding Sources - Stormwater Improvements Citywide

Object (Duplicate)	2022-23	2023-24	2024-25	2025-26	2026-27	2027-2
Other Financing Sour...	$0	$3,000,000	$8,000,000	$8,000,000	$5,000,000	$5,000,00
Federal	$0	$200,000	$3,000,000	$3,000,000	$0	
TOTAL	**$0**	**$3,200,000**	**$11,000,000**	**$11,000,000**	**$5,000,000**	**$5,000,00**

Note: Reference period 2022-23 includes all prior years and 2028-29 includes all future years.

OPERATING IMPACTS

Overall, these projects will help reduce maintenance costs of the stormwater system.

OBB - Variance

Collapse All	FY 2021 Actual	FY 2022 Actual	2022-23 Actual	FY 2023 Adopted Budget	2023-24 Actual	FY 2024 Adopted Budget	FY 2024 Variance
▼ PERSONNEL	$ 0	$ 0	$ 0	$ 0	$ 57,702	$ 430,900	$ 430,900
▸ SALARIES & WAGES	0	0	0	0	40,529	289,589	289,589
▸ OVERTIME	0	0	0	0	2,281	40,000	40,000
▸ FICA	0	0	0	0	3,125	22,134	22,134
▸ RETIREMENT	0	0	0	0	4,556	30,175	30,175
▸ GROUP INSURANCE	0	0	0	0	586	3,880	3,880
▸ DISABILITY INSURANCE	0	0	0	0	33	1,058	1,058
▸ WORKER'S COMPENSATION	0	0	0	0	629	5,534	5,534
▼ OTHER BENEFITS	0	0	0	0	5,932	38,327	38,327
BENEFITS ADMIN FEE	0	0	0	0	152	1,532	1,532
HEALTH INSURANCE	0	0	0	0	5,781	36,795	36,795
▸ VRS HEALTH INS CREDIT	0	0	0	0	31	203	203
▼ CONTRACTUAL SERVICES	0	0	0	0	32,016	161,750	161,750
▼ PROFESSIONAL SERVICES	0	0	0	0	3,035	50,000	50,000
ENGINEERING & ARCHITECT	0	0	0	0	3,035	50,000	50,000
▼ MAINTENANCE SERVICE	0	0	0	0	28,981	111,500	111,500
REPAIRS & MAINTENANCE	0	0	0	0	19,141	100,000	100,000
VEHICLE REPAIRS/MAINT.	0	0	0	0	0	10,000	10,000
COMPUTER HARDWARE/SOFTWAR	0	0	0	0	9,840	1,500	1,500
▸ PRINTING & BINDING	0	0	0	0	0	150	150
▼ PURCHASE SERV OTHER GOVMT	0	0	0	0	0	100	100
SANITARY LANDFILL USAGE	0	0	0	0	0	100	100
▼ INTERNAL SERVICES	0	0	0	0	0	21,000	21,000
▸ MOTOR POOL INTERNAL SVC	0	0	0	0	0	21,000	21,000
▼ OTHER CHARGES	0	0	0	0	12,375	134,150	134,150
▸ UTILITIES	0	0	0	0	407	0	0
▸ COMMUNICATIONS	0	0	0	0	0	4,000	4,000
▸ TRAVEL	0	0	0	0	0	500	500
▸ MISCELLANEOUS	0	0	0	0	3,000	3,200	3,200
▼ MATERIALS & SUPPLIES	0	0	0	0	8,968	126,450	126,450
OFFICE SUPPLIES	0	0	0	0	0	200	200
FOOD & FOOD SERVICE	0	0	0	0	0	200	200
LANDSCAPNG/AGRICULT SUPPL	0	0	0	0	0	1,000	1,000
MEDICAL & LABORATORY	0	0	0	0	0	200	200
BLDG REPAIR/MAINTENANCE	0	0	0	0	8,968	100,000	100,000
VEHICLE & EQUIPMENT FUELS	0	0	0	0	0	500	500
VEHICLE/EQUIPMT SUPPLIES	0	0	0	0	0	2,000	2,000
BOOKS & SUBSCRIPTIONS	0	0	0	0	0	100	100
OTHER OPERATING SUPPLIES	0	0	0	0	0	250	250
STREETS & SIDEWALKS	0	0	0	0	0	20,000	20,000
COMPUTER HARDWARE/SOFTWAR	0	0	0	0	0	2,000	2,000
▼ CAPITAL CHARGES	0	0	0	0	0	11,700,000	11,700,000

	FY 2021 Actual	FY 2022 Actual	2022-23 Actual	FY 2023 Adopted Budget	2023-24 Actual	FY 2024 Adopted Budget	FY 2024 Variance
▾ REPLACEMENT	0	0	0	0	0	3,200,000	3,200,000
STORMWATER IMPROVEMENTS	0	0	0	0	0	3,200,000	3,200,000
▾ ADDITIONS	0	0	0	0	0	200,000	200,000
MACHINERY & EQUIPMENT	0	0	0	0	0	200,000	200,000
▾ CITY CIP PROJECTS	0	0	0	0	0	8,300,000	8,300,000
N CAMERON/KENT ST IMPROV	0	0	0	0	0	8,300,000	8,300,000
Total	$ 0	$ 0	$ 0	$ 0	$ 102,093	$ 12,447,800	$ 12,447,800

Data filtered by Expenses, STORMWATER UTILITY FUND, STORMWATER UTILITY and exported on September 26, 2023. Created with OpenGov

STORMWATER UTILITY FUND

FY 2024 ANNUAL BUDGET

DESCRIPTION

The City is facing significant challenges to fund capital improvement projects related to stormwater management, meeting regulatory requirements related to the Chesapeake Bay, and the ongoing maintenance of an aging stormwater drainage system. Therefore, the City established a stormwater utility in July 2022 and approved a fee schedule in April 2023 (effective January 1, 2024). A stormwater utility is a mechanism where a fee is charged to users (all properties with impervious surface) for providing services related strictly to stormwater management. Current estimates of stormwater capital improvements needed in the City total over $50.0 million within the next 20 plus years.

STRATEGIC PLAN GOALS

Goal 2: Building Winchester - Establish the foundations for a vibrant community by stimulating development of affordable housing, revitalizing catalyst sites, and building smart infrastructure.
Goal 5: Supporting Winchester - Support the City's high-performing operations with effective and open communication, innovation, and sound fiscal policies.

REVENUE AND EXPENDITURE SUMMARY

Stormwater Utility Revenue by Category

	FY 2021 Actual	FY 2022 Actual	2022 - 23 Actual	FY 2023 Adopted Budget	2023 - 24 Actual	FY 2024 Adopted Budget	FY 2024 Variance
Local	$0	$0	$0	$0	$0	$1,900,000	$1,900,000
State	$0	$0	$0	$0	$0	$3,800,000	$3,800,000
Federal	$0	$0	$0	$0	$0	$200,000	$200,000
Other Financing Sources	$0	$0	$0	$0	$0	$7,500,000	$7,500,000
TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$13,400,000**	**$13,400,000**

Stormwater Utility Expenses by Catergory

	FY 2021 Actual	FY 2022 Actual	FY 2023 Adopted Budget	FY 2024 Adopted Budget	FY 2024 Variance
PERSONNEL	$0	$0	$0	$430,900	$430,900
CONTRACTUAL SERVICES	$0	$0	$0	$161,750	$161,750
INTERNAL SERVICES	$0	$0	$0	$21,000	$21,000
OTHER CHARGES	$0	$0	$0	$134,150	$134,150
CAPITAL CHARGES	$0	$0	$0	$11,700,000	$11,700,000
OTHER	$0	$0	$0	$952,200	$952,200
TOTAL	**$0**	**$0**	**$0**	**$13,400,000**	**$13,400,000**

Data Updated Aug 10, 2023, 8:09 AM

View Report

STAFFING SUMMARY

Storm Water Fund

Division Description	FY2020	FY2021	FY2022	FY2023	FY2024
FTE Amount					
Stormwater	0.00	0.00	0.00	0.00	1.00
FTE AMOUNT	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**

Data Updated Aug 10, 2023, 2:38 PM

View Report

REVENUE DETAIL

Storm Water Utility Fund Revenue Detail

	FY 2021 Actual	FY 2022 Actual	2022 - 23 Actual	FY 2023 Adopted Budget	2023 - 24 Actual	FY 2024 Adopted Budget	FY 2024 Variance
REVENUE FROM LOCAL SOURCE							
REVENUE-USE OF MONEY/PROP	$0	$0	$0	$0	$0	$0	$1,900,000
CHARGES FOR SERVICES	$0	$0	$0	$0	$0	$1,900,000	$0
REVENUE FROM LOCAL SOURCE TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,900,000**	**$1,900,000**
REVENUE FROM COMMONWEALTH							
STATE CATEGORICAL FUNDS	$0	$0	$0	$0	$0	$3,800,000	$3,800,000
REVENUE FROM COMMONWEALTH TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,800,000**	**$3,800,000**

REVENUE FROM FEDERAL GOVT							
CATEGORICAL AID	$0	$0	$0	$0	$0	$200,000	$200,000
REVENUE FROM FEDERAL GOVT TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$200,000**	**$200,000**
OTHER FINANCING SOURCES							
NON-REVENUE RECEIPTS	$0	$0	$0	$0	$0	$7,500,000	$7,500,000
OTHER FINANCING SOURCES TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$7,500,000**	**$7,500,000**
TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$13,400,000**	**$13,400,000**

Data Updated Sep 26, 2023, 8:14 AM

View Report

EXPENDITURE DETAIL

Stormwater Utility Expense Detail

	FY 2021 Actual	FY 2022 Actual	2022 - 23 Actual	FY 2023 Adopted Budget	2023 - 24 Actual	FY 2024 Adopted Budget	FY 2024 Variance
PERSONNEL							
SALARIES & WAGES	$0	$0	$0	$0	$40,529	$289,589	$289,589
OVERTIME	$0	$0	$0	$0	$2,281	$40,000	$40,000
FICA	$0	$0	$0	$0	$3,125	$22,134	$22,134
RETIREMENT	$0	$0	$0	$0	$4,556	$30,175	$30,175
GROUP INSURANCE	$0	$0	$0	$0	$586	$3,880	$3,880
DISABILITY INSURANCE	$0	$0	$0	$0	$33	$1,058	$1,058
WORKER'S COMPENSATION	$0	$0	$0	$0	$629	$5,534	$5,534
OTHER BENEFITS							
BENEFITS ADMIN FEE	$0	$0	$0	$0	$152	$1,532	$1,532
HEALTH INSURANCE	$0	$0	$0	$0	$5,781	$36,795	$36,795
OTHER BENEFITS TOTAL	**$0**	**$0**	**$0**	**$0**	**$5,932**	**$38,327**	**$38,327**
VRS HEALTH INS CREDIT	$0	$0	$0	$0	$31	$203	$203
PERSONNEL TOTAL	**$0**	**$0**	**$0**	**$0**	**$57,702**	**$430,900**	**$430,900**
CONTRACTUAL SERVICES							
PROFESSIONAL SERVICES							
ENGINEERING & ARCHITECT	$0	$0	$0	$0	$3,035	$50,000	$50,000
PROFESSIONAL SERVICES TOTAL	**$0**	**$0**	**$0**	**$0**	**$3,035**	**$50,000**	**$50,000**
MAINTENANCE SERVICE							
REPAIRS & MAINTENANCE	$0	$0	$0	$0	$19,141	$100,000	$100,000
VEHICLE REPAIRS/MAINT.	$0	$0	$0	$0	$0	$10,000	$10,000
COMPUTER HARDWARE/SOFTWAR	$0	$0	$0	$0	$9,840	$1,500	$1,500
MAINTENANCE SERVICE TOTAL	**$0**	**$0**	**$0**	**$0**	**$28,981**	**$111,500**	**$111,500**
PRINTING & BINDING	$0	$0	$0	$0	$0	$150	$150
PURCHASE SERV OTHER GOVMT							
SANITARY LANDFILL USAGE	$0	$0	$0	$0	$0	$100	$100
PURCHASE SERV OTHER GOVMT TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$100**	**$100**
CONTRACTUAL SERVICES TOTAL	**$0**	**$0**	**$0**	**$0**	**$32,016**	**$161,750**	**$161,750**
INTERNAL SERVICES							
MOTOR POOL INTERNAL SVC	$0	$0	$0	$0	$0	$21,000	$21,000
INTERNAL SERVICES TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$21,000**	**$21,000**
OTHER CHARGES							
UTILITIES	$0	$0	$0	$0	$407	$0	$0
COMMUNICATIONS	$0	$0	$0	$0	$0	$4,000	$4,000
TRAVEL	$0	$0	$0	$0	$0	$500	$500
MISCELLANEOUS	$0	$0	$0	$0	$3,000	$3,200	$3,200
MATERIALS & SUPPLIES							
OFFICE SUPPLIES	$0	$0	$0	$0	$0	$200	$200
FOOD & FOOD SERVICE	$0	$0	$0	$0	$0	$200	$200
LANDSCAPNG/AGRICULT SUPPL	$0	$0	$0	$0	$0	$1,000	$1,000
MEDICAL & LABORATORY	$0	$0	$0	$0	$0	$200	$200
BLDG REPAIR/MAINTENANCE	$0	$0	$0	$0	$8,968	$100,000	$100,000
VEHICLE & EQUIPMENT FUELS	$0	$0	$0	$0	$0	$500	$500
VEHICLE/EQUIPMT SUPPLIES	$0	$0	$0	$0	$0	$2,000	$2,000
BOOKS & SUBSCRIPTIONS	$0	$0	$0	$0	$0	$100	$100
OTHER OPERATING SUPPLIES	$0	$0	$0	$0	$0	$250	$250
STREETS & SIDEWALKS	$0	$0	$0	$0	$0	$20,000	$20,000
COMPUTER HARDWARE/SOFTWAR	$0	$0	$0	$0	$0	$2,000	$2,000
MATERIALS & SUPPLIES TOTAL	**$0**	**$0**	**$0**	**$0**	**$8,968**	**$126,450**	**$126,450**
OTHER CHARGES TOTAL	**$0**	**$0**	**$0**	**$0**	**$12,375**	**$134,150**	**$134,150**
CAPITAL CHARGES							
REPLACEMENT							
STORMWATER IMPROVEMENTS	$0	$0	$0	$0	$0	$3,200,000	$3,200,000
REPLACEMENT TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,200,000**	**$3,200,000**
ADDITIONS							
MACHINERY & EQUIPMENT	$0	$0	$0	$0	$0	$200,000	$200,000
ADDITIONS TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$200,000**	**$200,000**
CITY CIP PROJECTS							
N CAMERON/KENT ST IMPROV	$0	$0	$0	$0	$0	$8,300,000	$8,300,000
CITY CIP PROJECTS TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$8,300,000**	**$8,300,000**
CAPITAL CHARGES TOTAL	**$0**	**$0**	**$0**	**$0**	**$0**	**$11,700,000**	**$11,700,000**
TOTAL	**$0**	**$0**	**$0**	**$0**	**$102,093**	**$12,447,800**	**$12,447,800**

November 7, 2023

Kelly Henshaw, PE, CFM
City Engineer
City of Winchester
301 East Cork Street
Winchester, VA 22601

RE: FEATHERBED LANE FLOODPLAIN IMPROVEMENT STUDY

Dear Mrs. Henshaw:

Kimley-Horn and Associates, Inc. (Kimley-Horn) is pleased to submit this task order proposal to the City of Winchester (City) to provide professional consulting services related to the development of a Featherbed Lane Floodplain Improvement Study. The language outlined below identifies our project understanding, scope of requested services, and accompanying fees related to the overall project.

PROJECT UNDERSTANDING

This proposal summarizes the phases and tasks necessary to prepare a study to evaluate the effects of the Abrams Creek floodplain along Featherbed Lane in the City of Winchester, as well as develop conceptual strategies to prevent and mitigate damages from riverine flooding. This study will focus on 2,800 linear feet of Abrams Creek starting at the culvert system at the intersection of South Loudoun Street and Featherbed Lane and ending at the Shopping Center Drive and Mall Road culvert system, depicted in Attachment 1 (Study Limits) of this Scope of Services.

All analyses referenced in this Scope of Services will be based on the following data:

- Green Circle Trail Extension Survey (GCT Survey) - *Provided by Others*
- Featherbed Lane Project Specific Data, Analyses, and Exhibits referenced in the City of Winchester Flood Preparedness Resilience Plan - *Developed by Kimley-Horn*
- Readily Available City 1-foot Topographic Lidar Data

It is assumed that all project information will be provided to Kimley-Horn from the City prior to commencement of work.

SCOPE OF SERVICES

The proposal has been divided into six (6) tasks:

1. Site Base Mapping, Project Due Diligence, and Site Visit
2. Full Buildout Hydrologic Analysis of the Study Limits Watershed
3. Stream Corridor Hydraulics Study
4. Development of a Featherbed Lane Floodplain Improvement Concept Plan
5. Featherbed Lane Floodplain Improvements Study Report
6. Meetings & Coordination

Each task is outlined below with a summary defining the Scope for each task. A lump sum cost to perform this work is provided (Attachment 2) and includes Kimley-Horn project management and coordination time.

TASK 100 - SITE BASE MAPPING, PROJECT DUE DILIGENCE, AND SITE VISIT

Kimley-Horn will develop both an AutoCAD and Geographic Information Systems (GIS) base-map illustrating the Study Limits. The GCT Survey will be the basis for all base mapping and conceptual exhibits referenced in this Scope of Services. As part of the base map development, The GCT Survey will be supplemented with all pertinent available City of Winchester, Frederick County, Virginia Flood Risk Information System (VFRIS), and FEMA GIS data to depict existing site conditions and display the impacts of the existing flood limits on Study Limit infrastructure. The base mapping will be used by Kimley-Horn to assist in site reconnaissance efforts and to supplement all meetings, efforts, and study deliverables outlined in this Scope of Services.

As part of this task, Kimley-Horn will perform project due diligence for the Study Limits by compiling pertinent information from the following reports and data sets:

- Frederick County - Flood Insurance Study (FIS)
- FEMA relevant Flood Insurance Rate Maps (FIRMs)
- Previous studies performed within the project Study Limits (to be provided by the city, if available)
- Available City of Winchester/Frederick County existing HEC-HMS (Hydrologic Models) and HEC-RAS (Hydraulic / Floodplain Models)
- Available VDOT / City of Winchester Bridge and Culvert Plans for the project Study Limits
- Available CSX Railroad Crossing Plans for the project Study Limits

Kimley-Horn will compile all relevant Study Limits floodplain and site data in a Technical Support Data Memo (TSDM) and submit to the city.

Kimley-Horn will utilize the base mapping and TSDM developed in this task to assist in a site visit to photo-document current conditions along the Study Limits. Kimley-Horn will take georeferenced photos along the study limits and include them in a photo location map that identifies potential Study Limits opportunities and constraints.

TASK 200 – FULL BUILDOUT HYDROLOGIC ANALYSIS OF THE STUDY LIMITS WATERSHED

Kimley-Horn will perform a full buildout hydrologic evaluation of the Study Limits watershed utilizing current aerial imagery and supplemented with data outlined in the City of Winchester Approved 2022 Comprehensive Plan (Comprehensive Plan). As part of this analysis, Kimley-Horn will evaluate the major drainage area sub-basins within the following watersheds:

- Culvert System at the Intersection of South Loudoun Street and Featherbed Lane
- CSX Railroad Crossing Intersection with Featherbed Lane
- Culvert System at Intersection of South Pleasant Valley Road, Featherbed Lane, and Shopping Center Drive

- Culvert System at Shopping Center Drive and Mall Road

Kimley-Horn will use the United States Department of Agriculture's (USDA) Technical Release-55 (TR-55) Urban Hydrology for Small Watersheds SCS Methodology to determine the existing basin hydrologic parameters such as Runoff Curve Numbers (RCNs) and Times of Concentrations (Tc) / Lag Times (Tlag). The hydrology will be developed from a compilation of the most readily available aerial landcover data, survey data, GIS Shapefile data, and NRCS soils data. The drainage basin hydrologic conditions will be used as model input parameters in subsequent tasks to determine the Study Limits basin and stream corridor inflows for the 1-yr, 2-yr, 10-yr, 100-yr, and 500-yr storm events.

The model input parameters will be utilized in conjunction with the Army Corp of Engineers HEC-HMS (Hydrologic Modeling System) software to simulate the hydrologic stream processes at junctions and specific locations within the 2800 linear foot stream corridor that traverses the Study Limits. The model input parameters for the Featherbed Lane Study Limits HEC-HMS model will be developed based on the following information:

- Green Circle Trail (GCT) Extension Survey and Existing Conditions Data
- City of Winchester 1-foot lidar topography.
- NOAA Atlas 14 Precipitation Data and City Specific Precipitation data
- SCS curve numbers based on ArcGIS orthogonal imagery and NRCS Soil information within the Study Limits watershed.
- Time of Concentration / Lag time values developed based on ArcGIS orthogonal imagery and City of Winchester topography.

Drainage basin routing will be performed to determine the effects of different runoff producing events on the Study Limits. In performing the routing, Kimley-Horn will develop time-series hydrographs for all proposed storm events and determine peak flows for each event as well. This data will be utilized as HEC-RAS Model inputs in Task 300 (Stream Corridor Hydraulics Study).

As part of this task, Kimley-Horn will compare the modeled hydrologic results with the published flows outlined in the Frederick County – Flood Insurance Study (FIS) for Abrams Creek at the closest proximity to the Study Limits. Both sets of stream flows (KH derived / FIS) will be used in the hydraulic models developed in Task 300 (Stream Corridor Hydraulics Study).

All information derived and modeled in this task will be documented within the Featherbed Lane Floodplain Improvements Study Final Report (Task 500).

TASK 300 – STREAM CORRIDOR HYDRAULICS STUDY

Existing Conditions Modeling

Kimley-Horn will build an existing conditions floodplain hydraulics model for the 2800 linear foot stream system within the Study Limits using GCT Survey topographic/infrastructure information and supplemented with readily available City GIS data (1ft lidar contour data, building footprints, etc.). Kimley-Horn will generate representative stream reach cross-sections along the Study Limits using a composite surface created from surveyed topography and supplemental 1-foot lidar contour data to input into the Army Corp of Engineers HEC-RAS (River Analysis System) modeling software. Kimley-Horn

will then utilize the GST Survey data to build all culvert systems, railroad crossings, and stream spanning structures in the HEC-RAS Model within the Study Limits. The existing conditions floodplain hydraulics model will be developed to reflect all channel and floodplain cross-sectional geometry indicative of the current (as of 2023) stream reach.

Kimley-Horn will route the flows derived in Task 200 through the existing conditions floodplain hydraulic model to determine existing stream and floodplain hydraulic characteristics along the Study Limits. The modeling output data generated in this task will be used to determine existing Study Limit flood inundation depths, stream and floodplain velocities, cross-sectional top widths, and energy and hydraulic grade line calculations for the 1-yr, 2-yr, 10-yr, 100-yr, and 500-yr storm events.

Once the existing conditions model is developed, Kimley-Horn will create a separate HEC-RAS geometry file that will nest the Kimley-Horn derived exiting conditions model into an, if available, approved FEMA Abrams Creek HEC-RAS model. It is assumed that this model will be provided by the City to Kimley-Horn for this task.

Kimley-Horn will document the results for both the existing conditions floodplain hydraulics model, as well as the nested existing conditions hydraulics model. These values will provide a baseline comparison for all future modeling analysis.

Floodplain Improvements Sensitivity Modeling

Kimley-Horn will modify the existing conditions hydraulics model(s) to evaluate up to three (3) proposed changes that may help abate the flooding along Featherbed Lane and the parcels that parallel the road. Floodplain sensitivity modeling will focus on infrastructure changes at the major culvert systems, stream, and floodplain grading techniques, and pairing of the two within the Study Limits. Evaluation of the overall Study Limits stream corridor will be prioritized as to model the effect of the changes wholistically on the floodplain system, as to not potentially transfer any flooding downstream.

Kimley-Horn will route the flow data derived in Task 200 to analyze the viability and success of potential changes along the Study Limits stream corridor. Revised Water Surface Elevations for all modeled storm events will be compared to existing conditions as to quantify the effect of the proposed improvements on the inundation depths and horizontal spread of the floodplain limits.

Model cross sections and stream profiles will be updated to reflect conceptual proposed infrastructure changes, major grading activities, and/or channel realignment techniques within the Study Limits. This information will be included in the Featherbed Lane Floodplain Improvements Study Report (Task 500).

TASK 400 - DEVELOPMENT OF A FEATHERBED LANE FLOOD IMPROVEMENT CONCEPT PLAN

Based on the results determined in the Floodplain Improvements Sensitivity modeling, Kimley-Horn will derive a 24x36 AutoCAD developed conceptual exhibit that will graphically depict locations of potential improvements along the Study Limits. Kimley-Horn will develop three (3) conceptual design alternatives to implement to help reduce recurrent flooding along Featherbed Lane.

Proposed conceptual improvements will include, but are not limited to the following:

- Infrastructure based improvements
    - Additional pipe locations, inlet placement, junction boxes, etc.
- Natural based solutions
    - Stream and floodplain restoration techniques, outfall channel restoration, creating or enhancing areas of flood storage, etc.
- Preservation and creation of open space and focus on permanent conservation of lands having flood resilience value.

Due to the conceptual nature of this plan all proposed structural improvements, grading and riparian enhancements, and proposed future project implementation locations will have limited engineering design and will focus on project layout and location.

TASK 500 – FEATHERBED LANE FLOODPLAIN IMPROVEMENTS STUDY REPORT

Kimley-Horn will develop a Featherbed Lane Floodplain Improvement Study report outlining the information derived in tasks 100 - 400. Study graphics, tabular summaries, numerical analysis, and conceptual level designs created in all previous tasks will be included in the final report. Recommendations on future basin stormwater management improvements, future storm sewer designs, as well as comprehensive drainage and floodplain improvement implementation scenarios for the Study Limits will be included with the report.

TASK 600 – MEETINGS & COORDINATION

Kimley-Horn staff will be available for up to two (2) project coordination meetings to discuss the project. In addition, Kimley-Horn staff will participate in calls to discuss the project with City staff. If additional meetings and coordination activities are requested, Kimley-Horn will prepare a separate Scope of Services and cost estimate for client approval prior to proceeding with the additional work.

DELIVERABLES

The following items are anticipated as project deliverables for this Scope of Services.

- Site specific floodplain data compilation outlined in a Technical Support Data Memo (TSDM)
- HEC-HMS Hydrologic / HEC-RAS Stream Hydraulic Models(s)
- Featherbed Lane Floodplain Improvements Study – 24 x 36 AutoCAD Derived Conceptual Plan
- Featherbed Lane Floodplain Improvements Study – Final Report
- All maps, models, analyses, spreadsheets, and base data utilized for the design (if requested).

OVERALL PROJECT ASSUMPTIONS

For the purposes of developing this proposed Scope of Services and the accompanying cost estimate, we have made the following assumptions:

- All previous project information developed by others will be provided by the City to Kimley-Horn in a timely manner to accommodate anticipated project schedule.
- The flood studies and analyses proposed in this Scope of Services are intended as a planning level and will not constitute a formal FEMA floodplain study. As such this information and data will not be stamped and sealed by a Virginia Professional Engineer (PE).
- All analyses and studies developed in this Scope of Services will be based on limited survey information, and as such, the information derived will be considered "for information purposes only."
- The Conceptual Design Plan referenced in this Scope of Services will be limited in terms of engineering design and analysis. As such, they will be not stamped by a licensed Virginia Professional Engineer and labeled as "Not for Construction Purposes".
- The city will provide site access permission to Kimley-Horn, for conducting all necessary fieldwork related tasks in a timely manner to facilitate the project schedule.
- Accuracy and precision of data and previous studies provided by others is solely on the consulting firm that derived the studies. Kimley-Horn will review all data provided by the City with regards to the Study Limits but assumes no responsibility for information outlined in the studies developed by others.
- Readily available City GIS shapefile and geodatabase information will be used to supplement this study, as needed.
- The city will provide all coordination with inter-city departments with regards to this project.
- This proposal and the accompanying cost estimate are valid for a period of 90 days and will expire if not accepted within that timeframe.

OVERALL PROJECT EXCLUSIONS

Services that are not currently anticipated as part of this project and are therefore outside the scope of this task order proposal include the following:

- Environmental Site Assessments
- Perennial Stream Assessments and/or Flow Determinations
- Grant Administration Services
- Project Renderings
- FEMA Applications
- Dam Safety Compliance Services
- Dam Break Inundation Zone (DBIZ) Modeling / Mapping
- Engineering Design Plan Submittals
- Utility Design
- VDOT Design or Permitting
- Development/Delivery of Presentations, Board of Supervisors, Committees, or the Public
- Notifications to impacted Property Owners
- All other services not explicitly stated in this Scope of Services

SCHEDULE

The tasks referenced in this scope will be coordinated with City Staff. Assuming Kimley-Horn receives a notice to proceed by January 31, 2024, Kimley-Horn anticipates completion of the Scope of Services

outlined above by June 30, 2024. A detailed schedule will be developed for the City outlining project workflow and deliverables after contract execution.

FEE AND BILLING

Kimley-Horn will provide the following scope of services under our term contract #202205 KHA. The following tasks will be provided for a lump sum cost of **$69,955.76.** A detailed breakdown (by task) of Kimley-Horn's fee estimate is provided in Attachment 1 and utilizes the rate schedule as provided for in the City of Winchester Task Order Contract ##202205 -KHA, Year 2. Please note that fees will be invoiced monthly based upon hours expended for services performed and payment will be due within 25 days of receipt of invoices related to this project.

CLOSURE

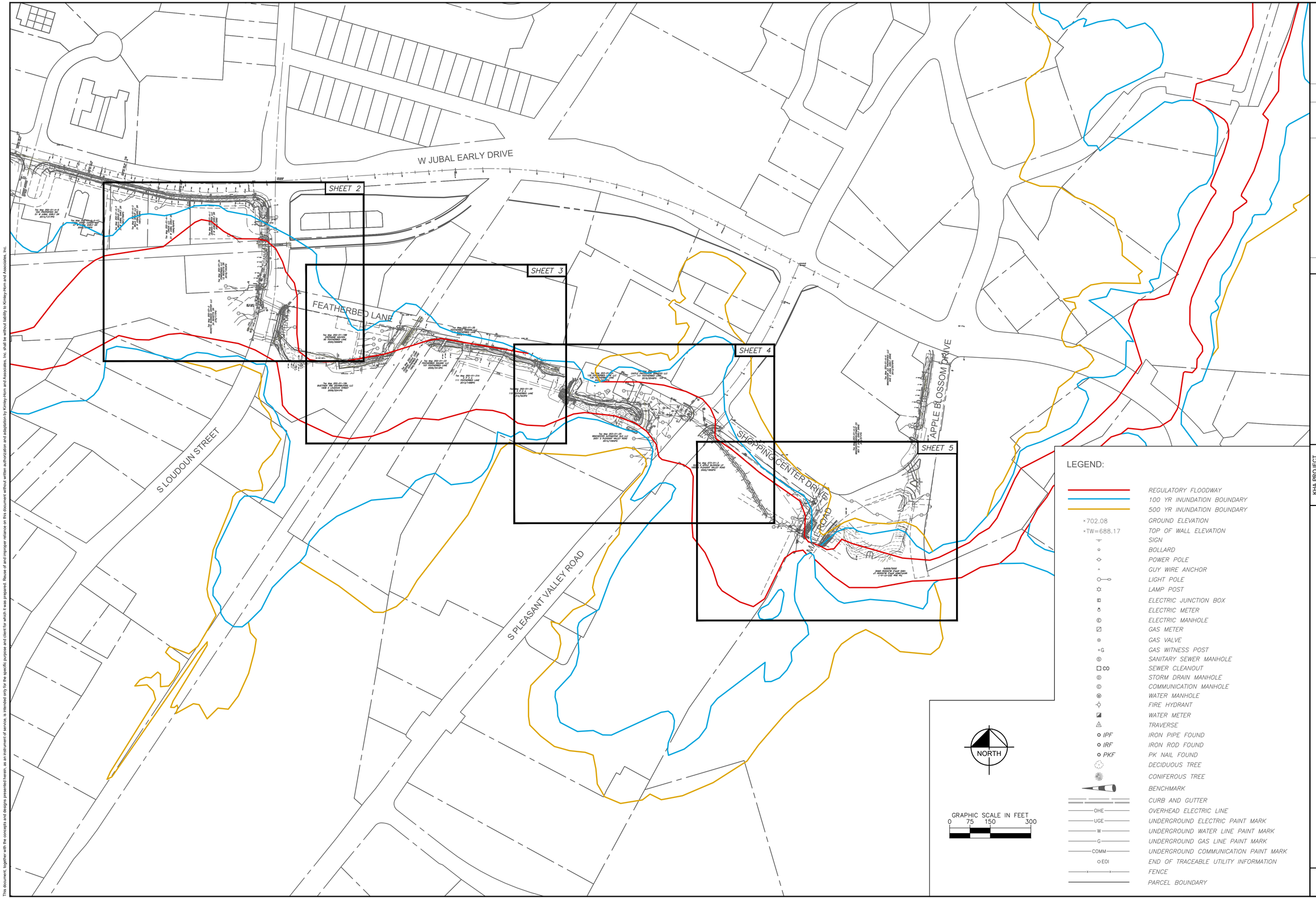
The work described with this proposal will be completed in accordance with the terms and conditions of Contract #202205 between the City of Winchester and Kimley-Horn. We appreciate the opportunity to provide these services to you. Please contact me if you have any questions.

Very truly yours,
KIMLEY-HORN AND ASSOCIATES, INC.

Jon D'Alessandro, P.E.
Senior Project Manager

Kimley»Horn

Attachment 1 – Featherbed Lane Floodplain Improvements Study Limits



LEGEND:

- REGULATORY FLOODWAY
- 100 YR INUNDATION BOUNDARY
- 500 YR INUNDATION BOUNDARY
- ×702.08 GROUND ELEVATION
- ×TW=688.17 TOP OF WALL ELEVATION
- SIGN
- BOLLARD
- POWER POLE
- GUY WIRE ANCHOR
- LIGHT POLE
- LAMP POST
- ELECTRIC JUNCTION BOX
- ELECTRIC METER
- ELECTRIC MANHOLE
- GAS METER
- GAS VALVE
- GAS WITNESS POST
- SANITARY SEWER MANHOLE
- SEWER CLEANOUT
- STORM DRAIN MANHOLE
- COMMUNICATION MANHOLE
- WATER MANHOLE
- FIRE HYDRANT
- WATER METER
- TRAVERSE
- IPF IRON PIPE FOUND
- IRF IRON ROD FOUND
- PKF PK NAIL FOUND
- DECIDUOUS TREE
- CONIFEROUS TREE
- BENCHMARK
- CURB AND GUTTER
- OHE OVERHEAD ELECTRIC LINE
- UGE UNDERGROUND ELECTRIC PAINT MARK
- W UNDERGROUND WATER LINE PAINT MARK
- G UNDERGROUND GAS LINE PAINT MARK
- COMM UNDERGROUND COMMUNICATION PAINT MARK
- EOI END OF TRACEABLE UTILITY INFORMATION
- FENCE
- PARCEL BOUNDARY

NORTH

GRAPHIC SCALE IN FEET
0 75 150 300

No.	REVISIONS	DATE	BY

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

KHA PROJECT
CFPF EXHIBIT

DATE	11/1/2023
SCALE	AS SHOWN
DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

SHEET NUMBER
01

SHEET NUMBER 02	CFPF GRANT APPLICATION APPENDIX C - SITE MAPS PREPARED FOR CITY OF WINCHESTER	KHA PROJECT CFPF EXHIBIT DATE 11/1/2023 SCALE AS SHOWN DESIGNED BY J.J.D DRAWN BY C.D.C CHECKED BY J.J.D	Kimley»Horn 11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191 PHONE: 703-674-1300 FAX: 703-674-1350 WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

FEATHERBED LANE

Tax Map 252-01-18B
STEPHANIE NGUYEN
95 FEATHERBED LANE
2020/2966PG

Tax Map 252-01-35
FEATHERBED SQUARE LLC
113 FEATHERBED LANE
2005/3413PG

Tax Map 252-01-18A
BUETTNER TIRE DISTRIBUTORS LLC
1908 S. LOUDOUN STREET
2009/2241PG

Tax Map 252-01-33
FEATHERBED SQUARE LLC
107 FEATHERBED LANE
2005/3413PG

Tax Map 252-01-33
FEDERAL MOGUL CORP
105 FEATHERBED LANE
1995/849PG

Tax Map 252-01-31A
S P C A
111 FEATHERBED LANE
2013/1488PG

Tax Map 252-01-30
S P C A
115 FEATHERBED LANE
314/523PG

CSX RAILROAD

4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

No.	REVISIONS	DATE	BY

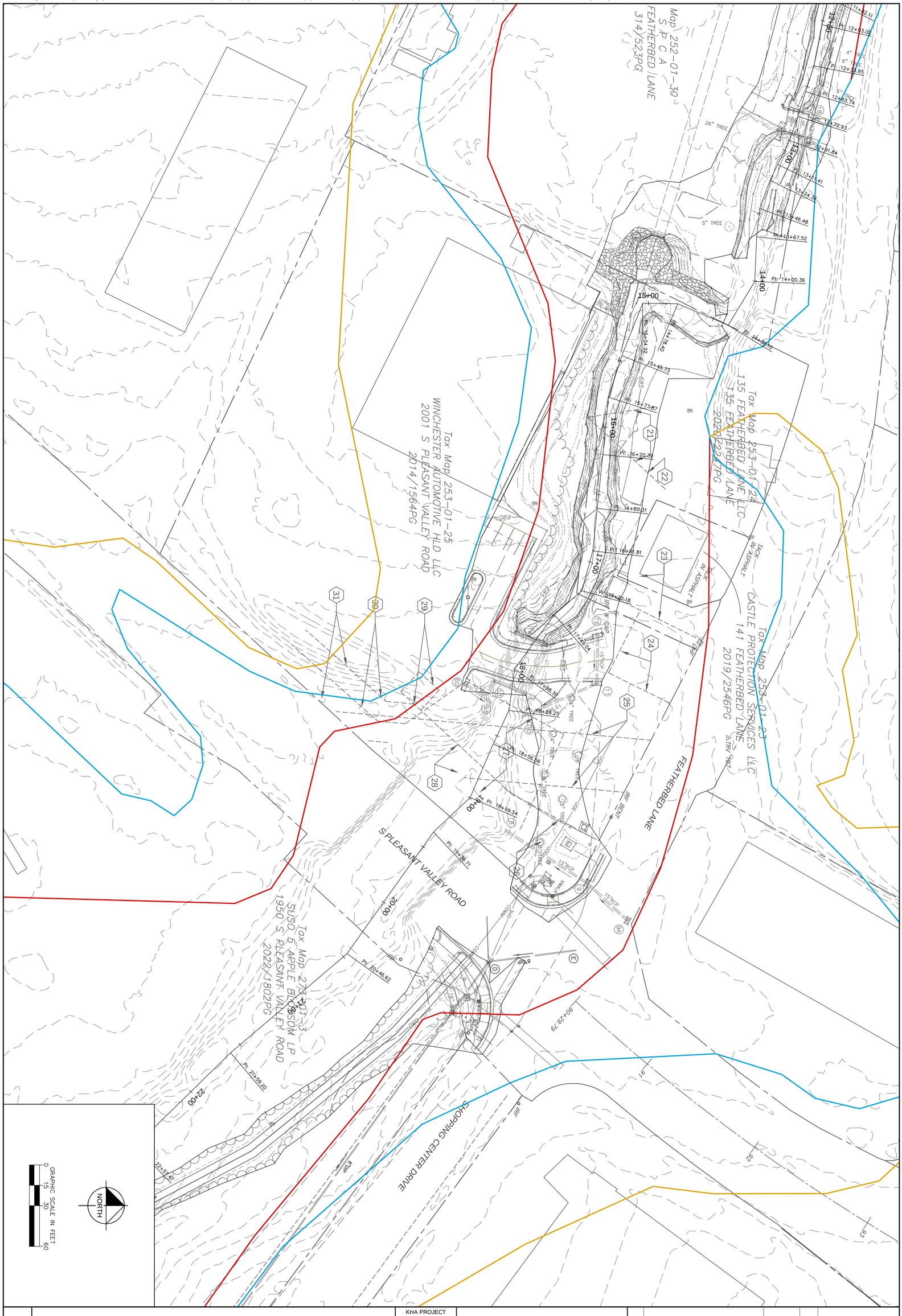
Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

KHA PROJECT
CFPF EXHIBIT

DATE 11/1/2023
SCALE AS SHOWN
DESIGNED BY J.J.D
DRAWN BY C.D.C
CHECKED BY J.J.D

CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS
PREPARED FOR CITY OF WINCHESTER

SHEET NUMBER
03



SHEET NUMBER 04

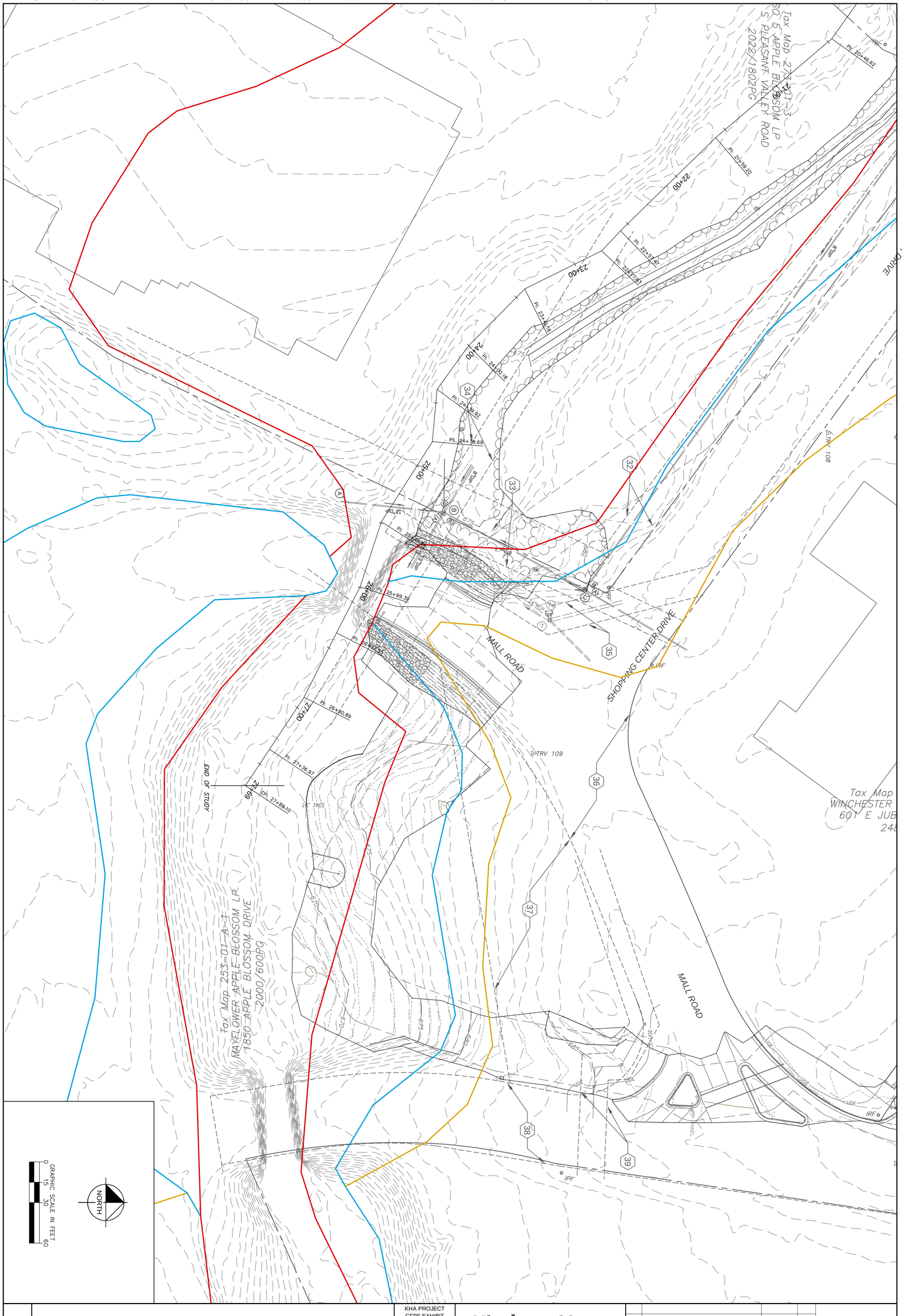
CFPF GRANT APPLICATION
APPENDIX C - SITE MAPS

PREPARED FOR CITY OF WINCHESTER

KHA PROJECT	CFPF EXHIBIT
DATE	11/1/2023
SCALE	AS SHOWN
DESIGNED BY	J.J.D
DRAWN BY	C.D.C
CHECKED BY	J.J.D

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY



SHEET NUMBER 05	CFPF GRANT APPLICATION APPENDIX C - SITE MAPS PREPARED FOR CITY OF WINCHESTER	KHA PROJECT CFPF EXHIBIT DATE 11/1/2023 SCALE AS SHOWN DESIGNED BY J.J.D DRAWN BY C.D.C CHECKED BY J.J.D

Kimley»Horn
11400 COMMERCE PARK DR., SUITE 400, RESTON, VA 20191
PHONE: 703-674-1300 FAX: 703-674-1350
WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

Attachment 2 – Kimley Horn Fee Breakdown

Budget Narrative Template

Appendix B: Budget Narrative Template

Applicant Name: **City of Winchester - Department of Public Services**
Community Flood Preparedness Fund &
Resilient Virginia Revolving Loan Fund
Detailed Budget Narrative
Period of Performance: **January 31, 2024** through **June 30, 2024**
Submission Date: **November 10, 2023**

Grand Total State Funding Request	**$62,960.18**
Grand Total Local Share of Project	$**6,995.58**
Federal Funding (if applicable)	$
Project Grand Total	$**69,955.76**
Locality Cost Match	%**10**

Breakout By Cost Type	Personnel	Fringe	Travel	Equipment	Supplies	Contracts	Indirect Costs	Other Costs	Total
Federal Share (if applicable)									
Local Share						**$6,995.58**			**$6,995.58**
State Share						**$62,960.18**			**$62,960.18**
Pre-Award/Startup									
Maintenance									
Total	$	$	$	$	$	$**69,955.76**	$	$	$**69,955.76**

Funding Request Authorization

I, Dan Hoffman, City Manager of the City of Winchester, authorize the City of Winchester Department of Public Services to request funding from the 2023 Funding Round of the Virginia Community Flood Preparedness Fund for the development of a Featherbed Lane Floodplain Improvement Study.

Signed: _____

Date: 11/9/23

City of Winchester, VA

INTERNAL ROUTING FORM

Bottom Line Up Front (BLUF)

Date received for filing: 11/9/23
Control #: 2023-

DIVISION	ROUTE SEQ	ACTION CODE	DATE In	DATE Out	INITIALS Concur	INITIALS Non-Concur
City Manager	2	S	11/9/23	11/9/23	DA	
City Attorney						
CFO/Support Svcs. Dir.						
Comm. of the Rev.						
Dep. Clerk of Council						
Downtown Manager						
Economic Redev. Dir.						
Emergency Mgt. Dir.						
Financal Svcs. Director						
Fire & Rescue Chief						
HR Director						
IT Director						
JDC Superintendent						
Parks & Rec Director						
PIO/FOIA						
Planning Director						
Police Chief						
Public Services Dir.	1	X		PE	11/9/23	
Purchasing Agent						
Sheriff						
Social Services Dir.						
Tourism Director						
Treasurer						
WPA Exec. Director						
Zoning Administrator						

Subject: Grant App.-CFPF-Featherbed Lane Corrid

Date:	Originator:	Phone #:
11/7/23	Julie Carter	x1455

Due Date:

Originating Dept: Public Services

Background Info (BLUF):

Attached is the grant application for Community Flood Protection Fund - Featherbed Lane project study for your review and signature.

Please let me know if you have any questions. Thanks.

Comments (add initials after comment):

NOTE: Remember to tab documents where CM signature is needed

ACTION CODES			
X	ORIGINATOR OF REQUEST	F	FYI (INFORMATION)
A	APPROPRIATE ACTION	C	COMMENTS
S	SIGNATURE NEEDED	R	RECOMMENDATION

Winchester Virginia

Last updated: September 2014