EXHIBIT NO. 1

5
3-12-11

DOCKET ITEM #6

Text Amendment #2011-0004
Floodplain Regulations

Issue: Consideration of initiation of a text amendment and consideration of an amendment to the Zoning Ordinance to update the City's floodplain regulations as required by FEMA.	Planning Commission Hearing:	March 1, 2011
	City Council Hearing:	March 12, 2011
Staff: Emily Baker, City Engineer, Department of Transportation and Environmental Services Emily.baker@alexandriava.gov		

PLANNING COMMISSION ACTION, MARCH 1, 2011:

On a motion by Commissioner Lyman, seconded by Commissioner Dunn, the Planning Commission voted to initiate the text amendment. The motion carried on a vote of 7 to 0.

On a motion by Commissioner Lyman, seconded by Commissioner Dunn, the Planning Commission voted to recommend approval of the text amendment. The motion carried on a vote of 7 to 0.

Reason: The Planning Commission agreed with the staff analysis.

Speakers:

Poul Hertel, 1217 Michigan Court, expressed concern about the flood mitigation measures included in the Waterfront Plan and the variance process in the floodplain regulations.

This text amendment will provide a new section 6-300 for the zoning ordinance, replacing fully the existing floodplain regulations in accord with model Federal Emergency Management Agency (FEMA) regulations and adopting new Flood Insurance Rate Maps (FIRMs) as the City's floodplain map.

BACKGROUND

Flood Management

The City participates in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP). Under that program, if Alexandria, and other communities, adopts and enforces a floodplain management ordinance to reduce flood risks to new construction in the Special Flood Hazard Areas (100-year floodplain), the Federal Government makes flood insurance available to Alexandria property owners as a financial protection against potential flood losses. The City's floodplain regulations are included in the Zoning Ordinance, at Section 6-300. Providing information about floodplain zones within the City and the requirements for building and other activities in floodplain areas, the regulations create added protection for persons and property within areas of the City prone to flooding. There are currently over 1300 flood insurance policies in effect in the City of Alexandria with a total insured value of over $375 million.

When a community participates in the NFIP, FEMA publishes maps depicting areas subject to flooding, known as the Flood Insurance Rate Maps (FIRMs). The maps identify the areas that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (also referred to as the 100-year flood). FEMA recently issued updated FIRMs for the City with an effective date of June 16, 2011. These new maps will supersede the FIRM for the City dated May 15, 1991 and currently referenced at section 6-301. In addition, FEMA has issued a Flood Insurance Study (FIS) for Alexandria, which contains the detailed flood study, modeling data and analysis performed to develop the FIRM.

The City is required by FEMA, as a condition of continued eligibility in the National Flood Insurance Program, to update its floodplain regulations before June 16, 2011 to incorporate the effective date of the new FIRM.

Comparison of Existing and New FIRM

There are a total of 707 parcels in the floodplain on the new FIRM. As a result of the map changes, 429 parcels are being removed from the floodplain and 298 parcels are being added to the floodplain.

The changes in the FIRM are based on both additional hydraulic modeling and more accurate topographic information. Following the June, 2006 flooding that occurred in the City, particularly along Cameron Run, the City asked the U.S. Army Corps of Engineers (USACE) to conduct a study to assess causes of flooding in the Cameron Run

watershed. As part of this effort, USACE performed a detailed hydrologic and hydraulic analysis of this shed, which includes Hooff's Run. FEMA incorporated the results of this analysis into the new FIRM for Cameron Run and its tributaries. The new detailed study for Cameron Run and its tributaries overall resulted in a decrease in the width of the floodplain. However, the area of Hooff's Run between East Maple Street and Jamieson Avenue was identified as being susceptible to the 100-year flood and has been added to the FIRM.

Additional modeling was not performed for the Potomac River and Four Mile Run floodplains. However, the boundaries of these floodplains have been adjusted slightly because the new map incorporates more accurate topographic information from the City's GIS system.

Technical changes that have not affected the boundaries on the map include changing the vertical datum to match that used in the City's GIS system and conversion of the map to a digital format.

Proposed text changes to floodplain regulations

1. Map

The proposed FIRMS are attached as Attachment 1. They will be referenced at section 6-302 of the zoning ordinance as the City's official floodplain maps.

2. Regulations

The entirety of section 6-300 of the zoning ordinance will be replaced by a new section 6-300. The format of the existing floodplain ordinance is being revised to reflect the Commonwealth of Virginia's Model Floodplain Zoning Ordinance. This model ordinance was published in September 2009 by the Virginia Department of Conservation and Recreation (DCR) and is a tool that local communities can use to ensure compliance with the NFIP requirements.

FEMA has identified a number of technical language changes that must be incorporated to stay consistent with the current Federal floodplain regulations. These changes include the following:

- Adding definitions that are contained in the Code of Federal Regulations pertaining to floodplain management but are not in the City's current ordinance.
- Including a Disclaimer of Liability and Severability section.
- Adding requirements that subdivisions within the floodplain comply with floodplain regulations and are generally consistent with the need to minimize flood damage.
- Clarifying the design requirements for enclosed areas below the 100-year flood elevation.

- Clarifying the criteria for evaluating an application for a floodplain variance.

There are two substantive changes to the regulations. First, staff has corrected an inconsistency with the Uniform Statewide Building Code. The City's current floodplain ordinance requires that a building's lowest floor be constructed at (or flood-proofed to) the elevation of the 100-year flood. The Building Code requires that it be constructed or flood-proofed to one foot above the 100-year flood elevation. The ordinance is being amended to be consistent with the Building Code, but this change will not result in a change to how the floodplain regulations are currently implemented by staff.

The second proposed change will modify how staff applies the floodplain regulations in the case of mixed-use buildings. A definition for mixed-use buildings and structures has been added at section 6303(U), along with regulatory provisions at section 6-306(K). The City's existing floodplain regulations only recognize residential and nonresidential uses, such that mixed-use buildings that contain any residential units are considered to be residential and must meet all of the restrictions for residential buildings. Because FEMA does not permit below grade parking (which meets the definition of a basement) to be constructed in the floodplain for residential structures, the current ordinance prohibits mixed-use development projects from including below grade parking. A review of the FEMA regulations, floodplain management policies and technical bulletins show that mixed-use development can be recognized as its own separate use and include below grade parking, if it is allowed in the local ordinance and if good floodplain management practices are undertaken.

Given that below grade parking is a significant benefit to most new developments that are being built as infill within an urban context, and given that numerous projects being considered within the urban areas of the City include residential components, staff feels that it is very important to begin to address the issue of mixed-use developments that may be partially or wholly within floodplains.

As a first step, staff is proposing to include a narrowly defined mixed-use provision to allow below grade parking to be constructed in certain cases. The definition is based on a single known development proposal that is affected by the prohibition on underground parking in the floodplain for mixed use buildings. Staff has thoroughly studied the impacts associated with the proposed changes as applied in this one instance and believes that they are consistent with good floodplain management practices and do not create increased risk to life or property. These mixed-use provisions meet the requirements of the NFIP and are intended to be a first-step as part of a broader analysis that will be undertaken in the near future. Because staff knows that there are additional locations and circumstances in the City where future mixed use development is likely to be proposed, staff intends to further study those floodplain parcels and determine how best to amend the mixed use definition to cover these situations.

Another text change that is anticipated concerns a series of homes in Rosemont which, because they are now located in the floodplain, will not be able to comply with the infill regulations for average threshold height. Staff will bring forward that amendment in the near future.

Community Outreach

Staff has been working with the community over the past eighteen months to advise property owners of the coming changes to the FIRM. Multiple mailings have been sent to property owners entering the floodplain, leaving the floodplain, and remaining in the floodplain. Two community meetings have been held and staff has responded to dozens of phone calls and emails. Staff is holding a community meeting on February 23 at 7:00 PM at Durant Recreation Center to discuss the changes to the map and regulations.

Staff has discussed these changes with the Environmental Policy Commission, the Federation of Civic Associations, and the local chapter of the Northern Virginia Building Industry Association.

This outreach has aimed primarily at advising property owners of mandatory Federal requirements for the purchase of flood insurance and how they can purchase a policy with the most favorable premium, and explaining the permitting requirements and limitations that apply to structures within the floodplain.

Recommendation

Staff recommends that the Planning Commission initiate the text amendment and recommend approval of the amendment to section 6-300 to update the City's floodplain management regulations.

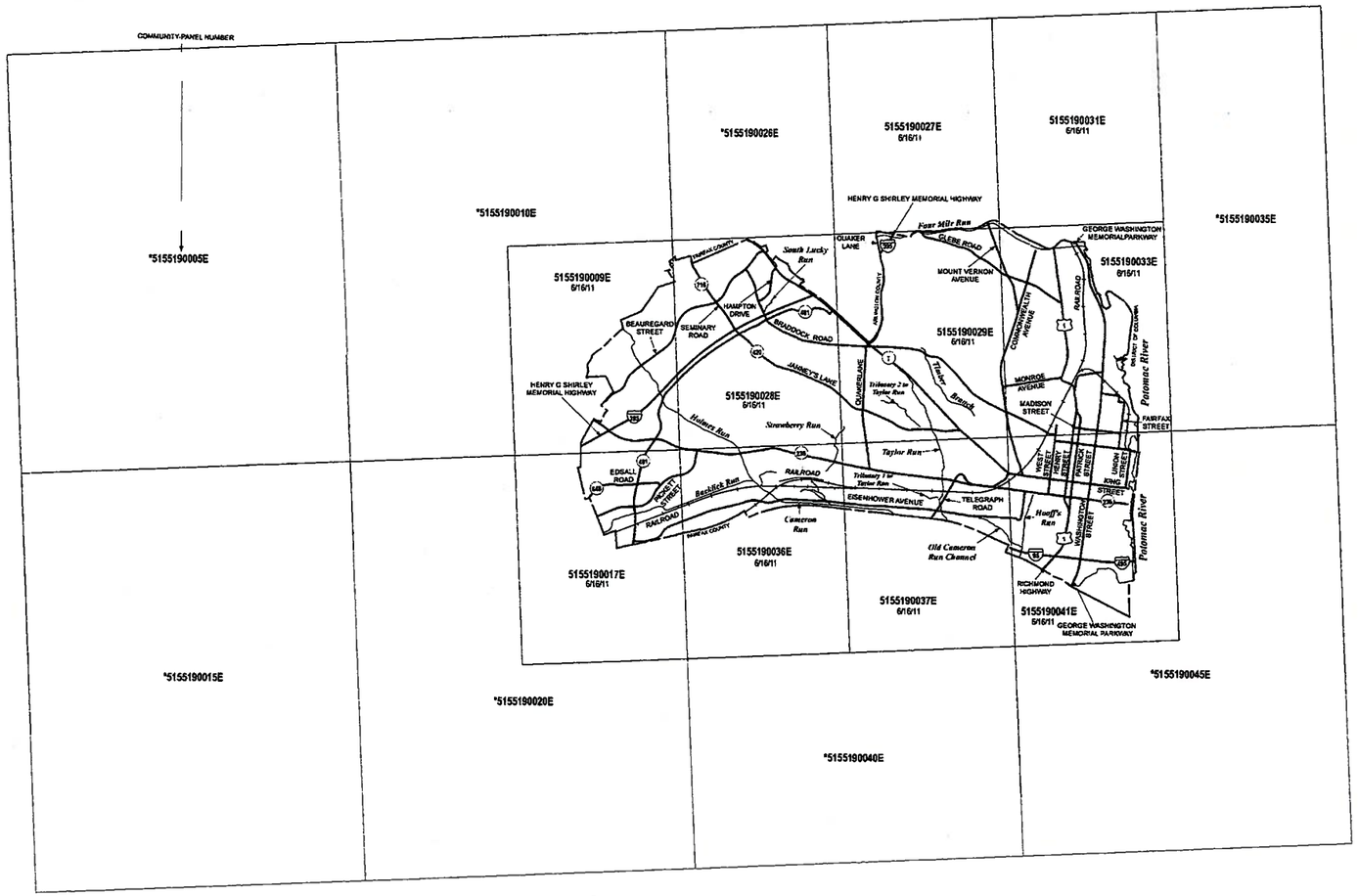
Attachments:

1. Official FIRM
2. Map comparing new and prior FIRM
3. Proposed text changes

Staff: Emily A. Baker, P.E., City Engineer, Transportation and Environmental Services
Erin Bevis-Carver, P.E., Civil Engineer, Transportation & Environmental Services

TEXT AMENDMENT #2011-0004
FLOODPLAIN REGULATIONS

Attachment #1



MAP REPOSITORY
(Maps available for reference only, not for distribution.)

ALEXANDRIA, CITY OF:
City Hall
301 King Street
Alexandria, VA 22314

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM
FLOOD INSURANCE RATE MAP

CITY OF ALEXANDRIA, VIRGINIA
INDEPENDENT CITY

MAP INDEX

PANELS PRINTED: 9, 17, 27, 28, 29, 31, 33, 36, 37, 41

MAP NUMBER
515519IND0A
MAP REVISED
JUNE 16, 2011
Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18. The horizontal datum was NAD 83, GRS 80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282

To obtain current elevation, description, and/or location information about the bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format. Streamline files, road centerline and political boundary files were provided by the City of Alexandria. Digital aerial photography tiles, published in 2004, were also provided by the City of Alexandria. Adjustments were made to specific base map features to align them to 1"=100' digital aerial photography.

Based on updated topographic information, this map reflects more detailed and up-to-date stream channel configurations and floodplain delineations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the *Flood Insurance Study* report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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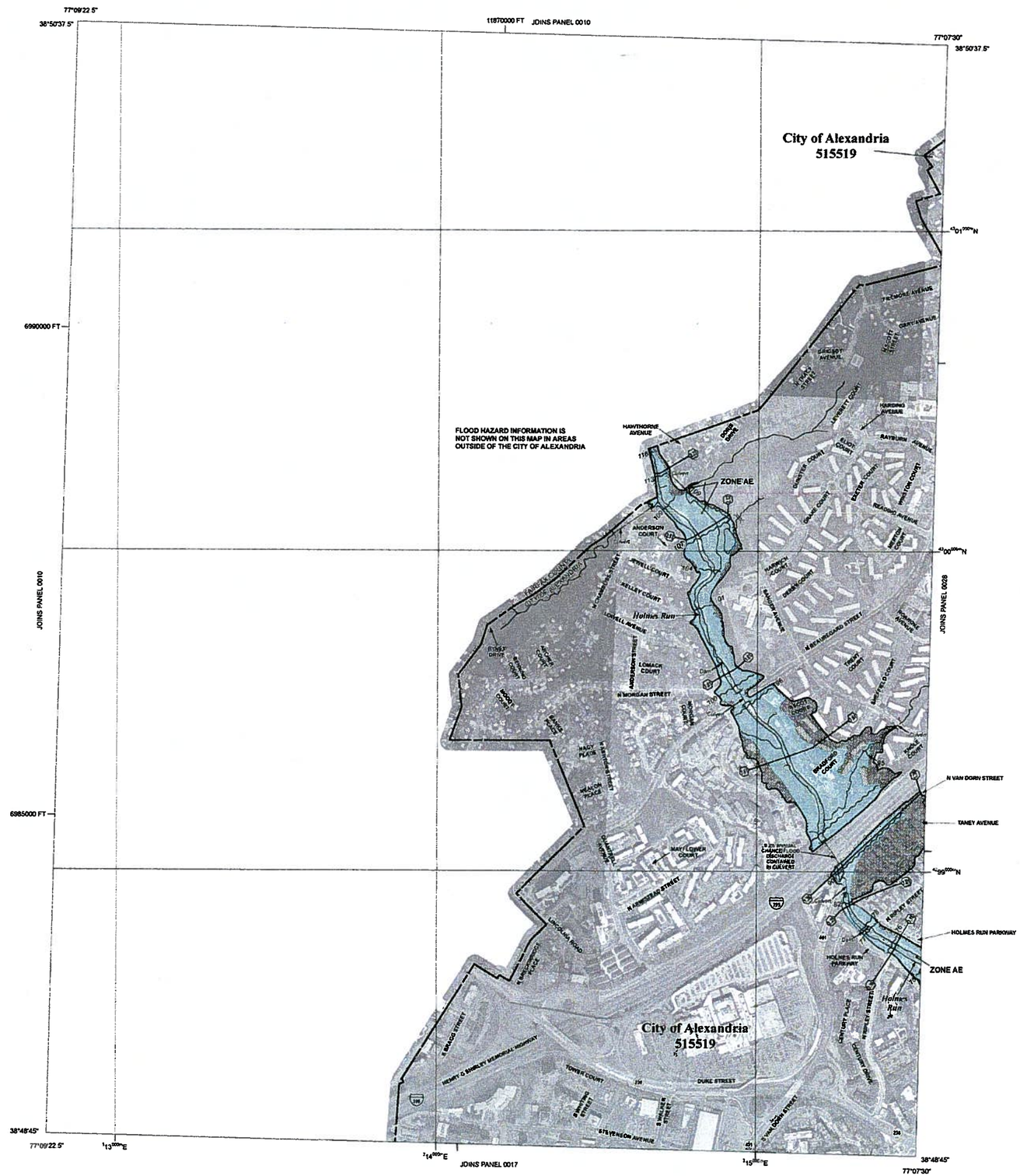
Please refer to the separately printed Map Index for an overview map showing the layout of map panels for this jurisdiction.

For information on available products associated with this FIRM visit the Map Service Center (MSC) website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have questions about this map, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL. 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000mN	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid ticks: Virginia State Plane coordinate system (FIPSZONE 4501), Lambert Conformal Conic projection
DX55 f0 x	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
City Hall 301 King Street Alexandria, VA 22314 (Maps available for reference only, not for distribution)

INITIAL IDENTIFICATION
AUGUST 22, 1969

FLOOD HAZARD BOUNDARY MAP REVISIONS
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE
AUGUST 22, 1969

FLOOD INSURANCE RATE MAP REVISIONS
May 2, 1978 - to add special flood hazard area.
May 28, 1971 - to add special flood hazard area.
July 1, 1974 - to change zone designations.
October 22, 1976 - to reflect corrected flood boundary and to add special flood hazard area.
April 30, 1982 - to change special flood hazard area, to change base flood elevations, to change zone designations, to add streets, to re-align streams, to convert to 2-fold format, and to change to FEMA title block.
October 18, 1985 - to change base flood elevations, and to change special flood hazard areas.
May 15, 1991 - to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to update map format, and to add roads and road names.
June 16, 2011 - To change base flood elevations, to add base flood elevations, to add special flood hazard areas, and to reflect updated topographic information.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 600'
250 0 500 1000 FEET
150 0 150 300 METERS

PANEL 0009E

FIRM
FLOOD INSURANCE RATE MAP
CITY OF ALEXANDRIA, VIRGINIA
INDEPENDENT CITY

PANEL 9 OF 45
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, CITY OF INDEPENDENT CITY	515519	0009	E

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MAP NUMBER
5155190009E

MAP REVISED
JUNE 16, 2011

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

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AUGUST 22, 1969

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PANEL 0017E

FIRM
FLOOD INSURANCE RATE MAP
CITY OF ALEXANDRIA, VIRGINIA
INDEPENDENT CITY

PANEL 17 OF 45
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
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MAP REVISED
JUNE 16, 2011

Federal Emergency Management Agency

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Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282

To obtain current elevation, description, and/or location information about the bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

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Based on updated topographic information, this map reflects more detailed and up-to-date stream channel configurations and floodplain delineations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the *Flood Insurance Study* report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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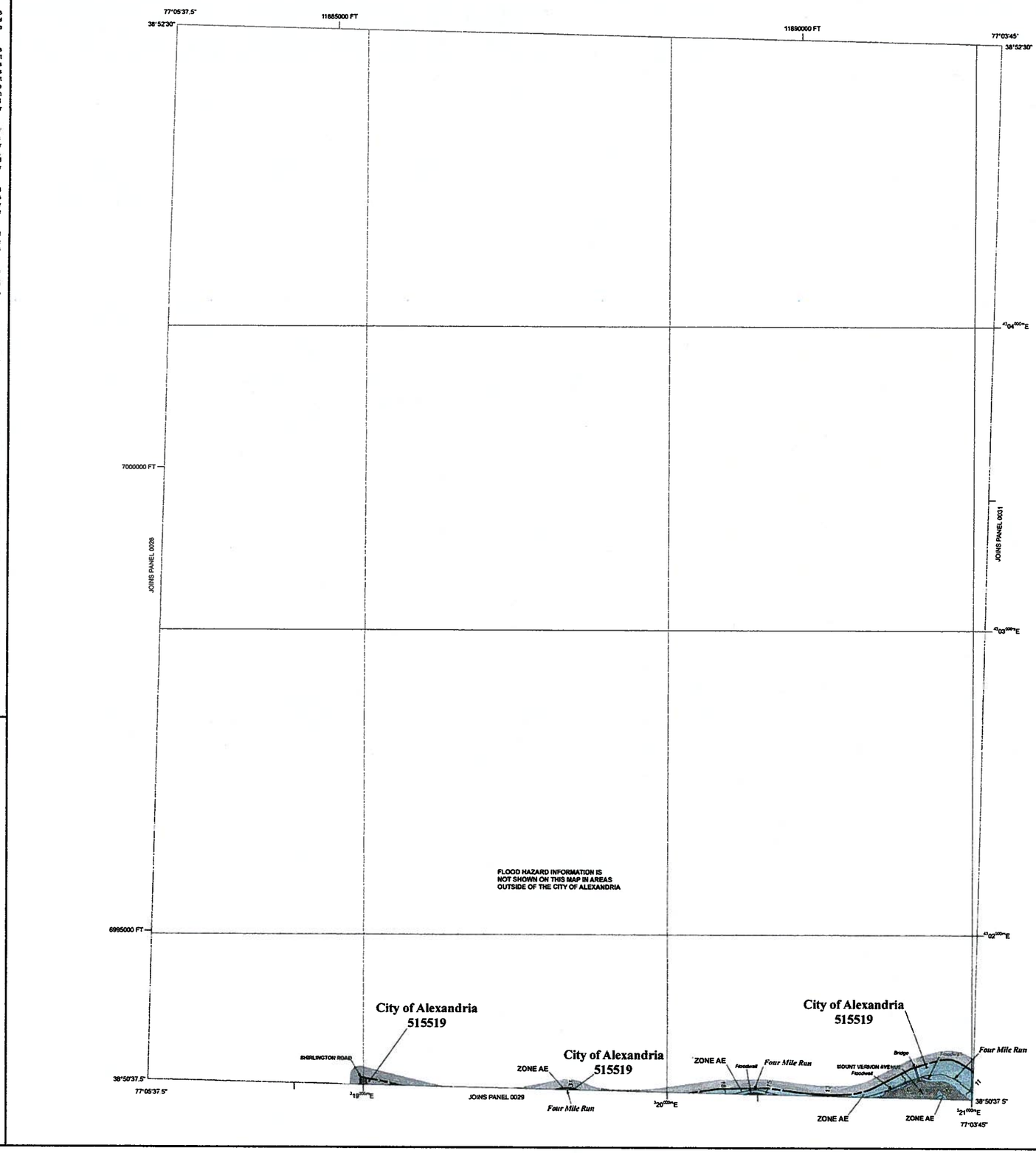

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
B — B	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000mE	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid ticks: Virginia State Plane coordinate system (FIPSZONE 4501), Lambert Conformal Conic projection
DX5510 x	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
City Hall 301 King Street, Alexandria, VA 22314 (Maps available for reference only, not for distribution).

INITIAL IDENTIFICATION
AUGUST 22, 1969

FLOOD HAZARD BOUNDARY MAP REVISIONS
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE
AUGUST 22, 1969

FLOOD INSURANCE RATE MAP REVISIONS
May 2, 1970 - to add special flood hazard area
May 28, 1971 - to add special flood hazard area
July 1, 1974 - to change zone designations.
October 22, 1978 - to reflect curvilinear flood boundary and to add special flood hazard area
April 30, 1982 - to change special flood hazard area; to change base flood elevations, to change zone designations, to add streets, to re-align streams, to convert to 2-fold format, and to change to FEMA title block.
October 18, 1988 - to change base flood elevations, and to change special flood hazard areas.
May 15, 1991 - to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to update map format, and to add roads and road names.
June 16, 2011 - To change base flood elevations, to add base flood elevations, to add special flood hazard areas, and to reflect updated topographic information.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

PANEL 0027E

FIRM
FLOOD INSURANCE RATE MAP

CITY OF ALEXANDRIA, VIRGINIA
INDEPENDENT CITY

PANEL 27 OF 45
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, CITY OF (INDEPENDENT CITY)	515519	0027	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
5155190027E
MAP REVISED
JUNE 16, 2011

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

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1315 East-West Highway
Silver Spring, Maryland 20910-3282

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Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations** and **floodplain delineations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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ZONE A	No Base Flood Elevations determined.
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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A / 23 — 23	Cross section line / Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4307000mE	1000-meter Universal Transverse Mercator grid values, zone 18
800000 FT	5000-foot grid ticks: Virginia State Plane coordinate system (FIPSZONE 4501), Lambert Conformal Conic projection
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
City Hall: 301 King Street, Alexandria, VA 22314 (Maps available for reference only, not for distribution)

INITIAL IDENTIFICATION
AUGUST 22, 1969

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NONE

FLOOD INSURANCE RATE MAP EFFECTIVE
AUGUST 22, 1969

FLOOD INSURANCE RATE MAP REVISIONS
May 2, 1970 - to add special flood hazard area
May 28, 1971 - to add special flood hazard area
July 1, 1974 - to change zone designations
October 22, 1978 - to reflect curvilinear flood boundary and to add special flood hazard area
April 30, 1982 - to change special flood hazard area; to change base flood elevations; to change zone designations; to add streets; to re-align streams; to convert to Z-foot format; and to change to FEMA title block.
October 16, 1985 - to change base flood elevations; and to change special flood hazard areas.
May 15, 1991 - to update corporate limits; to change base flood elevations; to add base flood elevations; to add special flood hazard areas; to change special flood hazard areas; to update map format; and to add roads and road names
June 16, 2011 - To change base flood elevations; to add base flood elevations; to add special flood hazard areas; and to reflect updated topographic information

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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0028E

FIRM
FLOOD INSURANCE RATE MAP
CITY OF ALEXANDRIA, VIRGINIA
INDEPENDENT CITY

PANEL 28 OF 45
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, CITY OF (INDEPENDENT CITY)	515519	0028	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
5155190028E
MAP REVISED
JUNE 16, 2011

Federal Emergency Management Agency

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LEGEND

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ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The Floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
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- DX5510 x — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
City Hall: 301 King Street, Alexandria, VA 22314 (Maps available for reference only, not for distribution)

INITIAL IDENTIFICATION
AUGUST 22, 1969

FLOOD HAZARD BOUNDARY MAP REVISIONS
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE
AUGUST 22, 1969

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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0029E

FIRM
FLOOD INSURANCE RATE MAP

CITY OF ALEXANDRIA, VIRGINIA
INDEPENDENT CITY

PANEL 29 OF 45
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, CITY OF, INDEPENDENT CITY	515519	0029	E

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MAP NUMBER
5155190029E

MAP REVISED
JUNE 16, 2011

Federal Emergency Management Agency

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Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282

To obtain current elevation, description, and/or location information about the bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

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Based on updated topographic information, this map reflects more detailed and up-to-date stream channel configurations and floodplain delineations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the *Flood Insurance Study* report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

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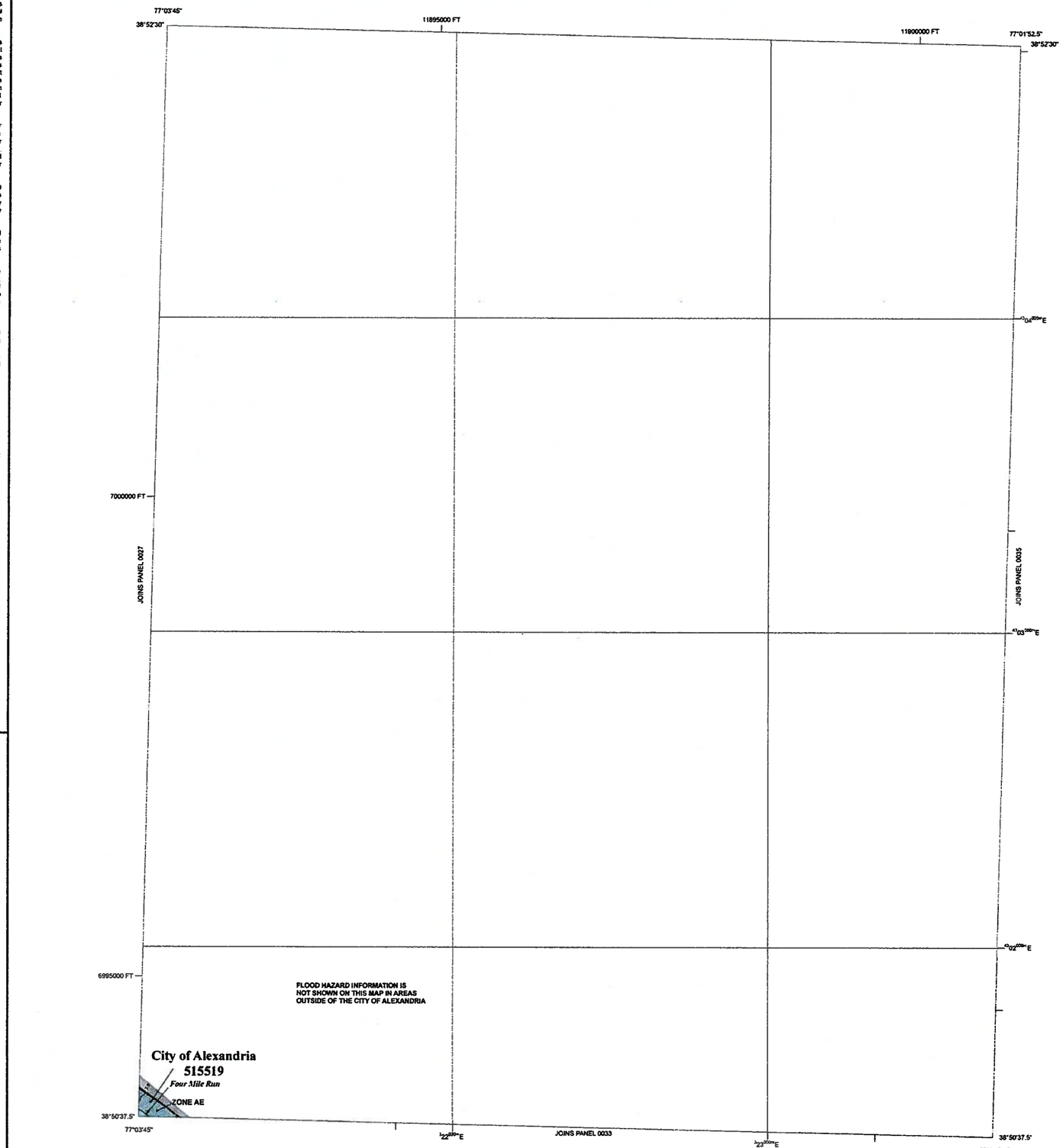

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachments so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL. 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000mE	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid ticks: Virginia State Plane coordinate system (FIPSZONE 4501), Lambert Conformal Conic projection
DX5510 x	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
City Hall: 301 King Street, Alexandria, VA 22314 (Maps available for reference only, not for distribution)

INITIAL IDENTIFICATION
AUGUST 22, 1969

FLOOD HAZARD BOUNDARY MAP REVISIONS
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE
AUGUST 22, 1969

FLOOD INSURANCE RATE MAP REVISIONS
May 2, 1970 - to add special flood hazard area
May 28, 1971 - to add special flood hazard area
July 1, 1974 - to change zone designations.
October 22, 1976 - to reflect curvilinear flood boundary and to add special flood hazard area
April 30, 1982 - to change special flood hazard area, to change base flood elevations, to change zone designations, to add streets, to re-align streams, to convert to Z-fold format, and to change to FEMA title block.
October 18, 1988 - to change base flood elevations, and to change special flood hazard areas.
May 15, 1991 - to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to update map format, and to add roads and road names.
June 16, 2011 - To change base flood elevations, to add base flood elevations, to add special flood hazard areas, and to reflect updated topographic information.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0031E

FIRM
FLOOD INSURANCE RATE MAP

CITY OF ALEXANDRIA, VIRGINIA
INDEPENDENT CITY

PANEL 31 OF 45
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, CITY OF (INDEPENDENT CITY)	515519	0031	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
5155190031E

MAP REVISED
JUNE 16, 2011

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

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Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

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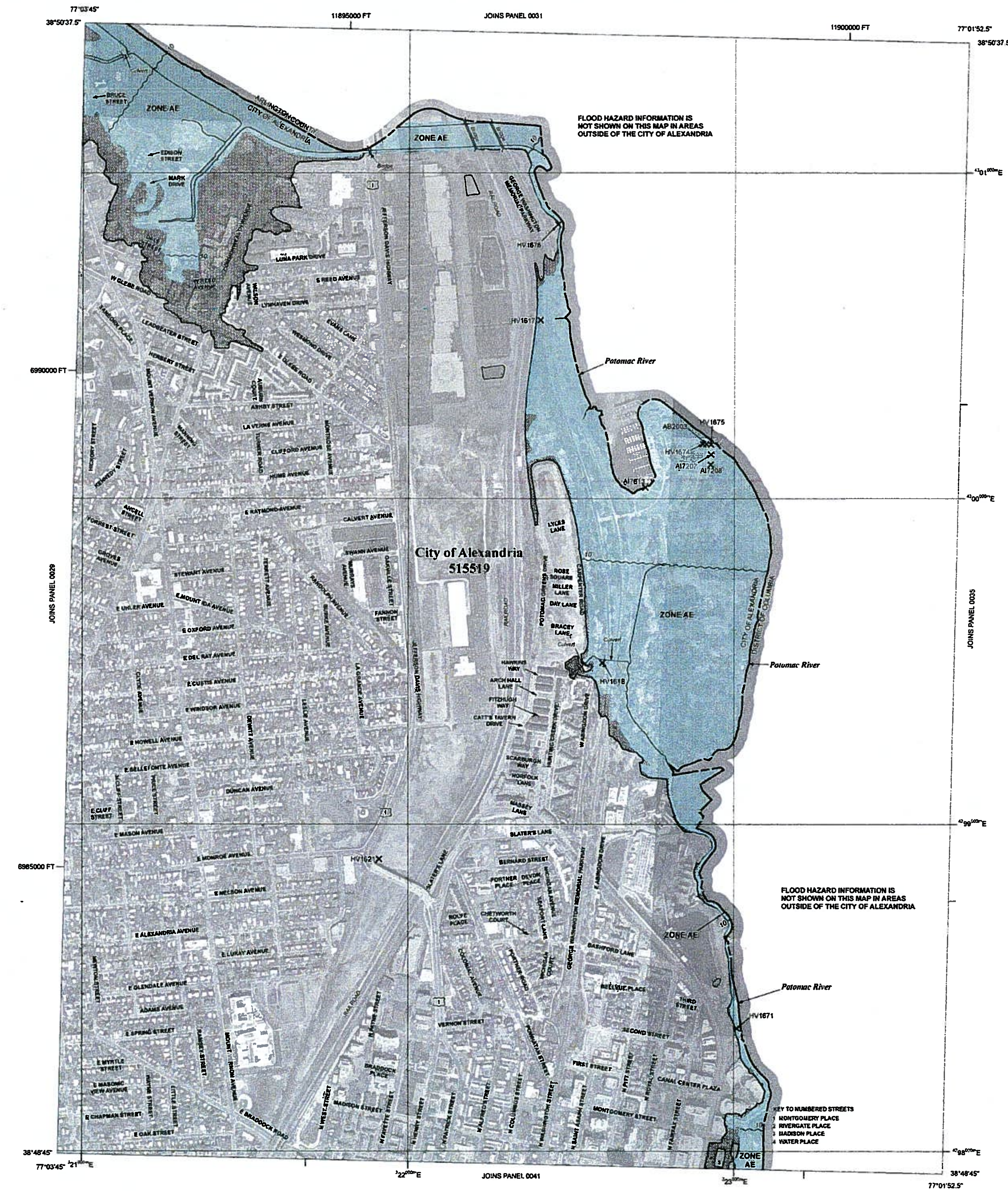

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations Determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)——(A)	Cross section line
(23)——(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000mE	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid ticks: Virginia State Plane coordinate system (FIPSZONE 4501), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
City Hall 301 King Street, Alexandria, VA 22314 (Maps available for reference only, not for distribution)

INITIAL IDENTIFICATION
AUGUST 22, 1969

FLOOD HAZARD BOUNDARY MAP REVISIONS
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE
AUGUST 22, 1969

FLOOD INSURANCE RATE MAP REVISIONS
May 2, 1970 - to add special flood hazard area
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July 1, 1974 - to change zone designations.
October 22, 1976 - to reflect curvilinear flood boundary and to add special flood hazard area
April 30, 1982 - to change special flood hazard area, to change base flood elevations, to change zone designations, to add streets, to re-align streams, to convert to Z-fold format, and to change to FEMA title block.
October 19, 1988 - to change base flood elevations, and to change special flood hazard areas.
May 15, 1991 - to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to update map format, and to add roads and road names.
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To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0033E

FIRM
FLOOD INSURANCE RATE MAP
CITY OF ALEXANDRIA, VIRGINIA
INDEPENDENT CITY

PANEL 33 OF 45
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, CITY OF INDEPENDENT CITY	515519	0033	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
5155190033E

MAP REVISED
JUNE 16, 2011

Federal Emergency Management Agency

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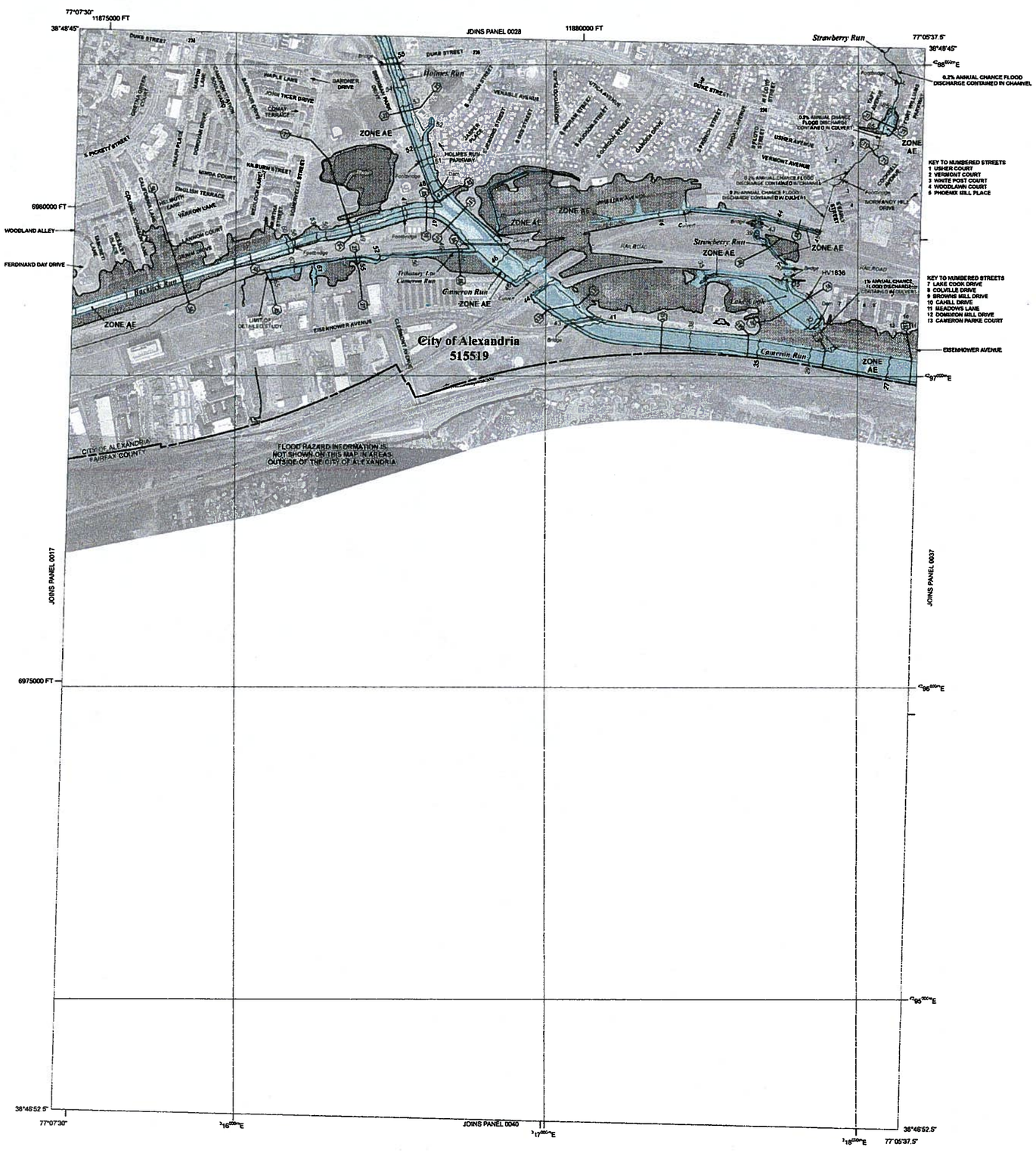

LEGEND

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ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

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DX5510 x	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
City Hall: 301 King Street, Alexandria, VA 22314 (Maps available for reference only, not for distribution)

INITIAL IDENTIFICATION
AUGUST 22, 1969

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NONE

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AUGUST 22, 1969

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October 18, 1988 - to change base flood elevations, and to change special flood hazard areas.
May 15, 1991 - to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to update map format, and to add roads and road names
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0036E

FIRM
FLOOD INSURANCE RATE MAP

CITY OF ALEXANDRIA, VIRGINIA
INDEPENDENT CITY

PANEL 36 OF 45
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, CITY OF (INDEPENDENT CITY)	515519	0036	E

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MAP NUMBER
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MAP REVISED
JUNE 16, 2011

Federal Emergency Management Agency

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To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282

To obtain current elevation, description, and/or location information about the bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format. Streamline files, road centerline and political boundary files were provided by the City of Alexandria. Digital aerial photography tiles, published in 2004, were also provided by the City of Alexandria. Adjustments were made to specific base map features to align them to 1"=100' digital aerial photography.

Based on updated topographic information, this map reflects more detailed and up-to-date stream channel configurations and floodplain delineations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map showing the layout of map panels for this jurisdiction.

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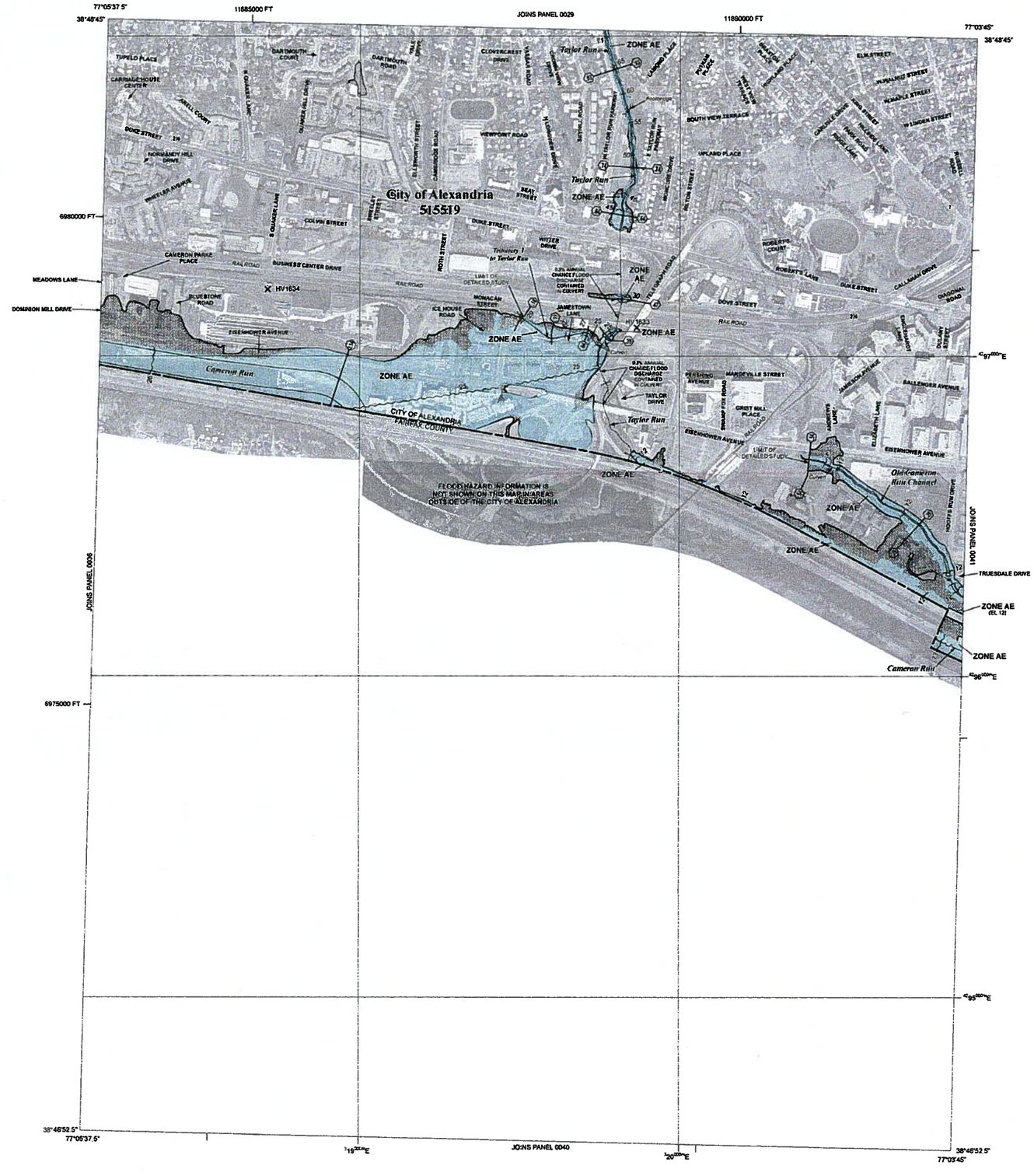
If you have questions about this map, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of special flood hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
B — B	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
1000mE	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid ticks: Virginia State Plane coordinate system (FIPSZONE 4501), Lambert Conformal Conic projection
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
City Hall 301 King Street Alexandria VA 22314 (Maps available for reference only, not for distribution)

INITIAL IDENTIFICATION
AUGUST 22, 1969

FLOOD HAZARD BOUNDARY MAP REVISIONS
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE
AUGUST 22, 1969

FLOOD INSURANCE RATE MAP REVISIONS
May 2, 1970 - to add special flood hazard area
May 28, 1971 - to add special flood hazard area
July 1, 1974 - to change zone designations.
October 22, 1978 - to reflect curvilinear flood boundary and to add special flood hazard area
April 30, 1982 - to change special flood hazard area, to change base flood elevations, to change zone designations, to add streets, to re-align streams, to convert to Z-fold format, and to change to FEMA title block.
October 18, 1985 - to change base flood elevations, and to change special flood hazard areas.
May 15, 1991 - to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to update map format, and to add roads and road names.
June 16, 2011 - To change base flood elevations, to add base flood elevations, to add special flood hazard areas, and to reflect updated topographic information.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

PANEL 0037E

FIRM
FLOOD INSURANCE RATE MAP
CITY OF ALEXANDRIA, VIRGINIA
INDEPENDENT CITY

PANEL 37 OF 45
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, CITY OF (INDEPENDENT CITY)	515519	0037	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
5155190037E

MAP REVISED
JUNE 16, 2011

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

NOTES TO USERS

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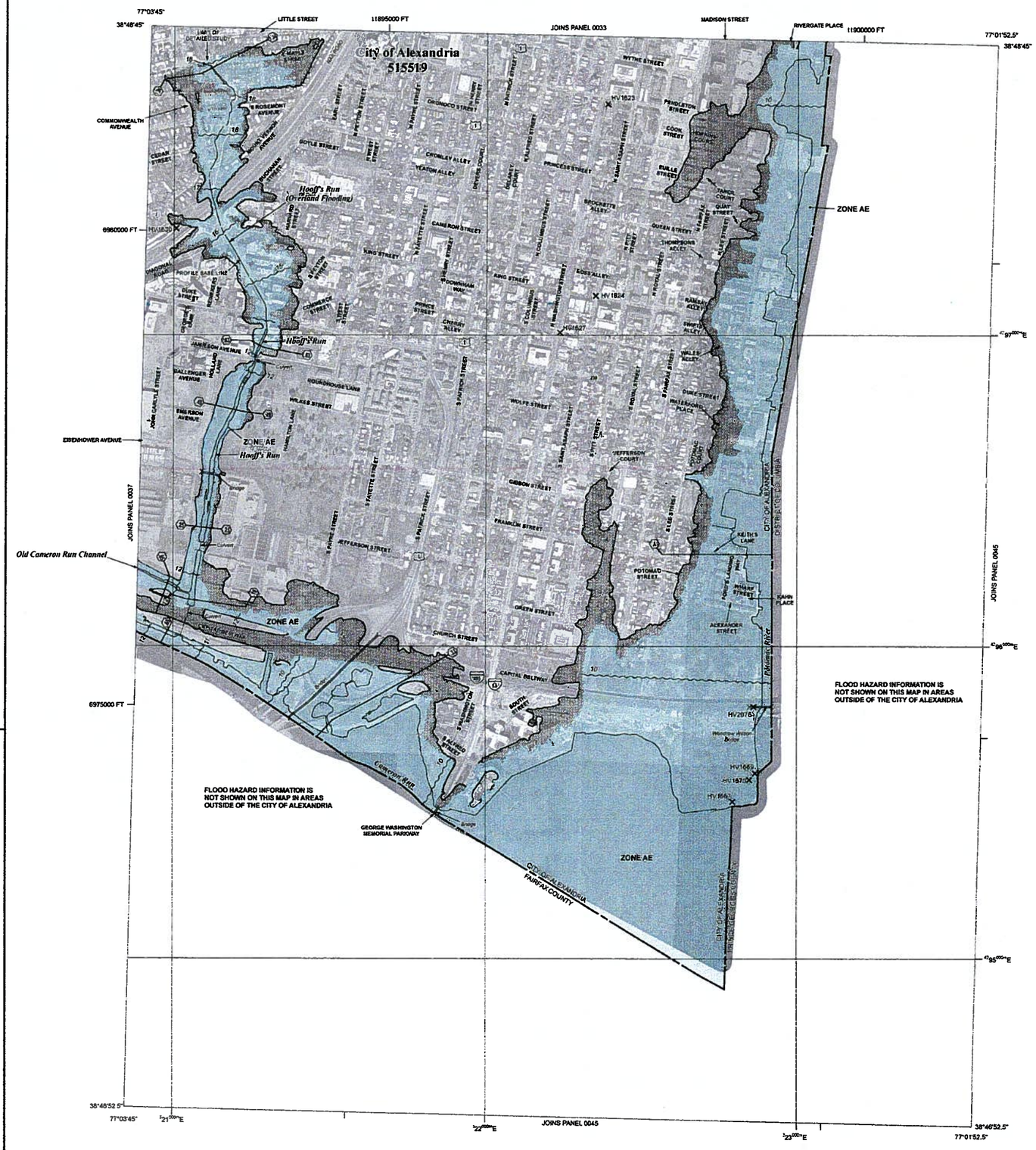

LEGEND

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AUGUST 22, 1969

FLOOD INSURANCE RATE MAP REVISIONS
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May 28, 1971 - to add special flood hazard area
July 1, 1974 - to change zone designations.
October 22, 1978 - to reflect curvilinear flood boundary and to add special flood hazard area
April 30, 1982 - to change special flood hazard area; to change base flood elevations; to change zone designations, to add streets, to re-align streams, to convert to Z-fold format, and to change to FEMA title block.
October 16, 1986 - to change base flood elevations, and to change special flood hazard areas.
May 15, 1991 - to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to update map format, and to add roads and road names
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0041E

FIRM
FLOOD INSURANCE RATE MAP

CITY OF ALEXANDRIA, VIRGINIA
INDEPENDENT CITY

PANEL 41 OF 45
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, CITY OF (INDEPENDENT CITY)	515519	0041	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
51551900041E
MAP REVISED
JUNE 16, 2011

Federal Emergency Management Agency

City of Alexandria
Floodplain Boundary Comparison

N

2011 100-Year Floodplain Boundary (ZONE AE)

2011 100-Year Floodplain Boundary (ZONE A)

2011 Base (100-Year) Flood Elevation

1991 100-Year Floodplain Boundary

0 1,000 2,000 4,000 6,000 8,000 Feet

Attachment # 3

TA #2011-0004
Floodplain Regulations
Updated 2/23/2011

Sec. 6-300 FLOODPLAIN DISTRICT

6-301 Purpose and Intent

(A) This ordinance is adopted pursuant to the authority granted to all localities by Va. Code § 15.2 – 2280, as well as the authority specifically granted to the City in its Charter. 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:

(1) 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;

(2) restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding;

(3) requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or flood-proofed against flooding and flood damage; and,

(4) protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.

6-302 Applicability

(A) These provisions shall apply to all privately and publicly owned lands within the jurisdiction of the City of Alexandria and identified as being in a floodplain as designated in the Flood Insurance Study and as shown on the Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency (FEMA) dated June 16, 2011.

(B) The floodplain district regulations in Section 6-300 are adopted in compliance with floodplain management criteria set forth in regulations promulgated by FEMA.

(C) This section shall be applicable to all applicants for building permits in the floodplain area.

(D) All buildings for which a building permit shall have been duly and regularly issued by the director of building and mechanical inspections on or before May 24, 1977, which permit has not expired, may be completed without the necessity of complying with the floodplain district regulations in Section 6-300, but after completion, any such building or structure and the land on which it is situated shall be subject to all the provisions of said section.

(E) All preliminary site plans which have been duly and regularly approved on or before May 24, 1977, and which have not expired, may be completed without the necessity of complying with the floodplain district regulations in Section 6-300, but after completion, any building or structure on said site plan together with the land included in said site plan shall be subject to all the provisions of said section.

(F) All final site plans which have been duly and regularly approved and released on or before May 24, 1977, and which have not expired may be completed without the necessity of complying with the floodplain district regulations in Section 6-300, but after completion, any building or structure on said site plan together with the land included in said site plan shall be subject to all the provisions of said section.

(G) Any building or structure which is in existence on or before June 15, 2011, or for which a preliminary or combination site plan, building permit or subdivision approved on or before June 15, 2011, continues in force and effect shall not be deemed a nonconforming use provided, that any such building or structure which, following June 15, 2011, is the subject of substantial improvement shall comply with the floodplain regulations in effect at the time of such improvement.

6-303 Definitions

For the purposes of this Section 6-300 the following terms and phrases shall have the meaning ascribed as follows below. Should any uncertainty occur with respect to the definition of any word, term or phrase used in this section, the applicable definitions set out in 44 CFR 59.1, as amended, shall apply.

(A) *A Zone.* An area of the one hundred (100)-year flood as shown on the Flood Insurance Rate Map. This zone is also referred to as the Approximated Floodplain District.

(B) *AE Zone.* An area shown of the 100-year flood on the Flood Insurance Rate Map for which corresponding base flood elevations have been provided. This zone is also referred to as the Special Floodplain District.

(C) *Base flood.* The flood having a one percent chance of being equaled or exceeded in any given year. May also be referred to as the 100-year flood.

(D) *Base flood elevation (BFE).* The FEMA designated 100-year water surface elevation as shown on the Flood Insurance Rate Map that corresponds to the base flood.

(E) *Basement.* Any area of a building (including parking) having its floor subgrade (below ground level) on all sides.

(F) *Development.* Any man-made change to improved or unimproved real estate, including, but not limited to, the construction of buildings or other structures, the placement of manufactured homes, the construction of streets, the installation of utilities and other activities or operations involving paving, filling, grading, excavating, mining, dredging or drilling, the storage of equipment or materials.

(G) *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.

(H) *Flood/flooding.*

(1) A general and 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.
   (c) mudflows which are proximately caused by flooding as defined in paragraph (1)(b) 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.

(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.

(I) *Flood Insurance Rate Map (FIRM)*. An official map of a community, on which the FEMA Federal Insurance Administrator has delineated both the special flood hazard areas and the risk premium zones applicable to the community. A Flood Insurance Rate Map that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM). The official Flood Insurance Rate Map for the City of Alexandria shall be the in the digital format prepared by FEMA, Federal Insurance Administration, dated June 16, 2011, as amended.

(J) *Flood Insurance Study (FIS)*. An examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudflow and/or flood-related erosion hazards. The official Flood Insurance Study for the City of Alexandria shall be the Flood Insurance Study prepared by FEMA, Federal Insurance Administration, dated June 16, 2011, as amended.

(K) *Floodplain.* A relatively flat or low land area adjoining a river, stream or other watercourse which is subject to partial or complete inundation by water from such watercourse, or a land area which is subject to the unusual and rapid accumulation or runoff of surface waters from any source.

(L) *Floodplain district*. The areas encompassed by the 100-year floodplain as shown on the Flood Insurance Rate Map.

(M) *Flood-prone area.* Any land area susceptible to being inundated by water from any source more often than once in a 100-year period.

(N) *Floodproofing*. Any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

(O) *Floodway.* The designated area of a floodplain required to carry and discharge flood waters of a given magnitude. For purposes of this Section 6-300, a floodway must be capable of accommodating a flood of the 100-year magnitude.

(P) *Freeboard.* A factor of safety usually expressed in feet above a specified 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.

(Q) *Highest adjacent grade.* The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

(R) *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 by an approved state program as determined by the Secretary of the Interior or directly by the Secretary of the Interior in states without approved programs.

(S) *Lowest floor.* The lowest floor of the lowest enclosed area (including basement). A parking structure that is below grade on all sides is considered a basement and therefore the lowest floor. An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area (the enclosure is not below grade on all sides) 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 floodproofing non-elevation design requirements of this Section 6-300.

(T) *Manufactured home*. A structure, transportable in one or more sections, which is built on a permanent chassis and is designed to be used as a single-family dwelling, with or without permanent foundation, when connected to the required facilities, and which includes the

plumbing, heating, air conditioning and electrical systems contained in the structure. A manufactured home shall include park trailers and other similar vehicles when placed on a site for greater than 180 days.

(U) Mixed-use building. Any building or structure that is used or intended for use for a mixture of nonresidential and residential uses in the same building or structure. For floodplain management purposes, a mixed-use building is subject to the same rules and conditions as a residential building unless all of the provisions set forth more specifically herein are met.

(V) *New construction*. Buildings and structures as to which the start of construction occurred on or after May 24, 1977, including any subsequent improvements to such buildings or structures. For floodplain management purposes, new construction means structures for which the 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.

(W) *Nonresidential building*. Any building or structure which is not a residential building or a mixed-use building.

(X) *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.

(Y) *Residential building.* Any single-family dwelling, two-family dwelling, row or townhouse dwelling, or multi-family dwelling, and any accessory building or structure.

(Z) *Shallow flooding area*. A special flood hazard area with base flood depths from one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and indeterminate, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

(AA) *Special Flood Hazard Area (SFHA)*. The land in the floodplain subject to a one percent or greater chance of being flooded in any given year as designated on the official Flood Insurance Rate Map for the City of Alexandria.

(BB) *Start of construction.* The date a building permit is issued, provided that the actual start of construction begins within 180 days of the permit issuance date. For new construction, the actual start of construction means the initial placement of permanent construction of a structure on the site, such as the pouring of footings or a slab, the installation of piles, the construction of columns or any work beyond the state 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, or the installation of streets or walkways, or excavation for a basement or for footings, piers or foundations, or the erection of temporary forms, or the installation of accessory buildings, such as garages or sheds not occupied as dwelling units and not part of the main structure. For substantial improvements, the actual start of construction means the first alteration of any wall, ceiling, floor or other structural part of a building, whether or not the alteration affects the external dimensions of the buildings.

(CC) *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:

(1) A building with two or more outside rigid walls and a fully secured roof, that is affixed to a permanent site;
(2) A manufactured home (also known as a mobile home), is a structure: built on a

permanent chassis, transported to its site in one or more sections, and affixed to a permanent foundation; or

(3) A travel trailer without wheels, built on a chassis and affixed to a permanent foundation, that is regulated under the community's floodplain management and building ordinances or laws.

For the latter purpose, "structure" does not mean a recreational vehicle or a park trailer or other similar vehicle, except as described in paragraph (3) of this definition, or a gas or liquid storage tank.

(DD) *Substantial damage*. Damage of any origin sustained by a building or structure whereby the cost of restoring the building or structure to its before damaged condition would equal or exceed 50 percent of the market value of the building or structure before the damage occurred.

(EE) *Substantial improvement.* Any repair, reconstruction, rehabilitation, addition or other improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the building or structure immediately before construction of the improvement is commenced, or any restoration of a building or structure which has incurred substantial damage; provided, that the term does not include:

(1) Any improvement of a building or structure that is necessary to correct existing violations of state or local health, sanitary or safety code specifications which have been identified by appropriate officials of the state or city and which are the minimum necessary to assure safe living conditions; or

(2) Any improvement of a "historic structure," as defined in this section, so long as the improvement does not preclude the structure's continued designation as a "historic structure."

(FF) *Violation*. The failure of a structure or other development to be fully compliant with the City of Alexandria's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in 44 CFR 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.

6-304 Description of Floodplain Districts

(A) The various floodplain districts shall include the Special Flood Hazard Areas described below. The basis for the delineation of these districts shall be the Flood Insurance Study and the Flood Insurance Rate Maps for the City of Alexandria prepared by FEMA, Federal Insurance Administration, dated June 16, 2011, and any subsequent revisions and amendments thereto.

(1) The Special Floodplain District shall include those areas identified as an AE Zone on the Flood Insurance Rate Map for which 100-year base flood elevations have been provided.

(2) The Approximated Floodplain District shall include those areas identified as an A Zone on the Flood Insurance Rate Map. In these zones, no detailed flood profiles or elevations are provided, but the 100-year floodplain boundary has been approximated. For these areas, the 100-year flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific 100-year flood elevation cannot be determined for this area using other sources of data, such as the U.S. Army Corps of Engineers Flood Plain 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 FEMA-approved 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 Director of Transportation and Environmental Services.

(B) The delineation of any of the floodplain districts may be revised by the City of Alexandria 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. Updates to the delineation of the floodplain districts require approval from both the City of Alexandria and the FEMA Federal Insurance Administration.

(C) Any uncertainty on the floodplain district map, or Flood Insurance Rate Map, with respect to the boundary of any floodplain district, either A or AE Zone, shall be determined by the Director of Transportation and Environmental Services by scaling and computation from the map or by land survey information.

6-305 Administration

(A) The Director of Transportation and Environmental Services shall be responsible for the administration of the floodplain management regulations set forth in this Section 6-300. He or she shall be responsible for the review of all proposed uses and development to determine whether the land on which the proposed use or development is located is in a floodplain, and that the site is reasonably safe from flooding.

(B) An applicant must apply for a permit and issuance of the permit is required prior to the start of any development within the Special Flood Hazard Area.

(C) No site plan, subdivision plat or building permit application which proposes to construct or make substantial improvements within any floodplain district shall be approved by any agency of the City of Alexandria without certification by the Director of Transportation and Environmental Services that the plan, plat or permit application meets the requirements of this Section 6-300. The Director of Transportation and Environmental Services shall insure that all other required permits related to development in the floodplain from state or federal governmental agencies have been obtained.

(D) All applications for new construction or substantial improvement within any floodplain district, and all building permits issued for the floodplain shall incorporate the following information:

(1) The base flood elevation at the site.

(2) The elevation of the lowest floor (including basement).

(3) For structures to be floodproofed (nonresidential only), the elevation to which the structure will be floodproofed.

(4) Topographic information showing existing and proposed ground elevations.

(E) The Director of Transportation and Environmental Services may require information from the applicant, including, but not limited to, an engineering study of the floodplain. Upon a determination that the land on which the proposed use or development is located in a floodplain, the Director of Transportation and Environmental Services shall determine whether such use or development may be permitted in accordance with the provisions of Section 6-306 through 6-308 or requires the approval of a variance as set forth in Section 6-311.

(F) The Director of Transportation and Environmental Services shall be responsible for the collection and maintenance of records necessary for the City's participation in the National Flood Insurance Program. 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, the Director of Transportation and Environmental Services shall notify or require the applicant to notify the FEMA Federal Insurance Administrator of any change in base flood elevation or the boundaries of any Special Flood Hazard Area depicted on the City's Flood Insurance Rate Map by submitting technical and scientific data to FEMA for a Letter of Map Revision.

6-306 Special Regulations

Within the boundaries of any A or AE Zones in any floodplain district as shown on the Flood Insurance Rate Map, buildings or structures and their extensions and accessory buildings or structures maybe be constructed or substantially improved only in accordance with the following requirements of this Section 6-300 and all other applicable provisions of law.

(A) The elevation of the lowest floor, including the basement, for any new residential building or any extension to a residential building shall be at least one foot above the base flood elevation.

(B) The elevation of the lowest floor, including the basement for any new nonresidential building or structure and any extension or accessory to a nonresidential building shall be at least one foot above the base flood elevation. Nonresidential buildings located in all A or AE zones may be floodproofed in lieu of being elevated provided that all areas of the building components below the elevation corresponding to the base flood elevation plus one foot are watertight 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. In no event shall any floor below at least one foot above the base flood elevation be used for human or animal habitation, food storage or food preparation.

(C) All new and replacement public utilities, water mains and sanitary sewers shall be designed to minimize or eliminate infiltration and exfiltration and to insure their structural integrity under flood conditions to the satisfaction of the Director of Transportation and Environmental Services.

(D) Water heaters, furnaces, electrical distribution panels and other critical mechanical or electrical installations shall not be installed below the base flood elevation. Separate electrical circuits shall serve areas below the base flood elevation and shall be dropped from above.

(E) Any proposed use of land, development and any new construction or substantial improvement of a building or structure within an A or AE zone, in conjunction with all other uses, existing or possessing a valid permit for construction, shall not increase the water-surface elevation of the 100-year flood by more than 0.5 foot. Any party proposing a land use or development or such construction or improvement within an A or AE Zone shall furnish specific engineering data and information as to the effect of the proposed action on future flood heights and obtain approval from the Director of Transportation and Environmental Services prior to undertaking the action.

(F) No building permit shall be issued for the construction or substantial improvement of a building or structure unless the applicant submits to the Department of Code Administration a certification from a duly registered architect or engineer that the proposed construction (including prefabricated homes) or improvement meets the following requirements:

(1) The construction shall be protected against flood damage

(2) The construction shall be designed (or modified) and anchored to prevent flotation, collapse or lateral movement of the building and structure

(3) The construction shall be built using materials and utility equipment that are resistant to flood damage

(4) The construction shall be built using methods and practices that will minimize flood damage. The certification required be Section 6-306(F)(1) and (2) shall be based on the 100-year flood level as noted on the Flood Insurance Rate Map.

(G) No building permit for the substantial improvement of an existing nonresidential building shall be issued unless the building, together with attendant utility and sanitary facilities, has the lowest floor (including the basement) elevated at least one foot above the base flood elevation. Should this not be feasible, no such permit shall be issued unless the existing structure is watertight floodproofed as described in Section 6-306 in all areas below the base flood elevation to the classification designated by the Director of Transportation and Environmental Services.

(H) No building permit for the substantial improvement of an existing residential building shall be issued unless the building has the lowest floor (including the basement) elevated at least one foot above the base flood elevation.

(I) Wherever floodproofing is utilized within the scope of this Section 6-300, such floodproofing shall be done by approved methods. A registered professional engineer or architect shall certify the adequacy of the floodproofing design to withstand the stresses of the base flood and such plan shall cite the elevation to which the structure is floodproofed. Such certification shall be provided on Federal Emergency Management Agency, National Flood Insurance Program, elevation certificate and/or floodproofing certificate as applicable. Designs meeting the requirements of the W-1 and W-2 without human intervention technique as outlined in floodproofing regulations of the Office of the Chief of Engineers, U.S. Army, December 15, 1995, shall be deemed to comply with this requirement. The building or code official shall maintain a file of such certifications, including the elevation of the lowest floor for structures that are elevated in lieu of watertight floodproofing.

(J) For all new construction or substantially improved structures, fully enclosed areas below the lowest floor (other than a basement) which are below the base flood elevation shall:

(1) shall only be used for the parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises and shall not be designed or used for human habitation. 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 the entry to the living area (stairway or elevator).

(2) be constructed entirely of flood resistant materials below the base flood elevation

(3) include, in A and AE zones, 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 be certified by a professional engineer or architect or meet the 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 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 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.

(K) Any mixed-use building may be considered a nonresidential building for purposes of this Section 6-306 if all of the following conditions are met; otherwise, the building shall be considered a residential building:

(1) No more than twenty percent of the development site(updated 2/22/11) is within the boundaries
of any A or AE Zones in any floodplain district as shown on the Flood Insurance Rate Map;

(2) At least 20,000 square feet of finished floor area of the proposed mixed-use building is devoted to nonresidential use;

(3) Basement areas (including below grade parking) must be located outside the boundaries of any A or AE Zones in any floodplain district;

(4) All floodproofing requirements specified in this Section 6-300 and as specified in FEMA Technical Bulletin 3-93 Non-Residential Floodproofing – Requirements and Certification must be met.

6-307 Other Conditions

(A) No filling of any kind shall be allowed within the boundaries of any A or AE zone except where such filling, when considered in conjunction with all other uses, existing and proposed, will not increase the base flood elevation more than 0.5 foot. Persons proposing such filling shall furnish specific engineering data and information as to the effect of their proposed action on future flood heights and shall obtain approval from the Director of Transportation and Environmental Services prior to any filling.

(B) All uses, activities and development occurring within any floodplain district shall only be undertaken in strict compliance with the Virginia Uniform Statewide Building Code (VA USBC).

(C) No wall, fence or other outdoor obstruction shall be constructed in any floodplain district unless such structure is approved by the Director of Transportation and Environmental Services; provided that open mesh wire fences of not less than No. 9 wire, with mesh openings of not less than six inches times six inches, whose supports shall be securely anchored in concrete and whose wire shall be securely fastened to the supports, may be erected without any review by or approval of the Director of Transportation and Environmental Services under this Section 6-300.

(D) The provisions of this Section 6-300 shall not be construed to prevent the remodeling (not amounting to substantial improvement), maintenance or floodproofing of buildings and structures now existing, or prevent the surfacing or resurfacing of existing streets or parking lots within two inches of the existing grade.

6-308 Subdivision Requirements

(A) Subdivision proposals which are located in A or AE zones must comply with the provisions of Section 6-300 and shall:

(1) be consistent with the need to minimize flood damage.

(2) have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.

(3) Have adequate drainage provided to reduce exposure to flood hazards.

(4) Include base flood elevation data.

6-309 Trailer Camps, Manufactured Homes, Mobile Homes, Recreational Vehicles and Septic Tank Systems

(A) Trailer camps, manufactured homes and mobile homes are not permitted in any floodplain district.
(B) All recreational vehicles in the floodplain must be on the site for fewer than 180 consecutive days and be fully licensed and ready for highway use.
(C) Installation of septic tank systems in any floodplain district is prohibited.

6-310 Flood Prevention Projects

Nothing in Section 6-304 through Section 6-308 shall be construed to prohibit the City of Alexandria or any person from undertaking lawful filling, draining, construction, realignment or relocation of stream channels or any other improvement that is intended to eliminate or reduce the danger of flooding, provided:
(A) The improvement is in accord with the City of Alexandria's flood improvement plan for the district involved and the Director of Transportation and Environmental Services has issued a certificate to that effect.
(B) The improvement is under the general supervision of the Director of Transportation and Environmental Services.
(C) The realignment or relocation of any stream channel is designed and constructed so that there will be no reduction in the natural valley storage capacity of the area with respect to the 100-year flood, unless such relocation or realignment is designed to contain the 100-year flood within the banks of the channel.
(D) Notification, in riverine situations, is provided to adjacent communities, VADCR, FEMA, and other required agencies prior to any alteration or relocation of a watercourse.
(E) The requirements of Section 6-306 (E) and Section 6-307(A) must be met.

6-311 Variances

(A) The City Council may, for good and sufficient cause, permit less than full compliance with or waive the provisions of Section 6-304 through Section 6-310, provided:
  (1) Written application is made stating the hardship which will occur if the variance is not granted;
  (2) A public hearing is held;
  (3) The decision is made by a majority vote of the entire membership of City Council upon finding that the variance us the minimum necessary, considering the flood hazard, to afford relief;
  (4) The Director of Transportation and Environmental Services states in writing that the variance will not result unacceptable or prohibited increases in flood heights, additional threats to public safety, extraordinary public expense; and will not create nuisances, cause fraud or victimization of the public, or conflict with local laws and ordinances.
  (5) The Director of Transportation and Environmental Services notifies the applicant in writing that the issuance of a variance to construct a structure below the base flood elevation will result in increased insurance premium rates for flood insurance and that such construction will increase the risks to life and property.
(B) In evaluating applications for variances, the Director of Transportation and Environmental Services shall satisfy all relevant factors and procedures specified in other sections of the City's ordinance and consider the following additional factors:
  (1) The danger to life and property due to increased flood heights or velocities caused by encroachments.
  (2) The danger that materials may be swept onto other lands or downstream to the injury of others.

(3) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.
(4) The importance of the services provided by the proposed facility to the community.
(5) The requirements of the facility for a waterfront location.
(6) The availability of alternative locations not subject to flooding for the proposed use.
(7) The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.
(8) The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.
(9) The safety of access by ordinary and emergency vehicles to the property in time of flood.
(10) The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site.
(11) Such other factors which are relevant to the purposes of this ordinance.

(C) The Director of Transportation and Environmental Services 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.

(D) 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 that are issued shall be noted in the annual or biennial report submitted to the FEMA Federal Insurance Administrator.

(E) Variances may be issued by a community for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use.

6-312 Compliance, Liability, Severability and Penalties

(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 Section 6-300 and any other applicable ordinances and regulations which apply to uses within the jurisdiction of these floodplain management regulations.

(B) The degree of flood protection required by these floodplain management regulations and all other applicable local, state and federal regulations is considered reasonable for regulatory purposes. Larger floods may occur on rare occasions or flood heights may be increased by man-made or natural causes. Therefore, the regulations set forth in this Section 6-300 do not imply that areas outside the floodplain districts, or land uses permitted within such districts, will be free from flooding and flood damages under all conditions. Additionally, the granting of a permit or approval of a development in an identified floodplain district shall not constitute a representation, guarantee, or warranty of any kind by any official or employee of the City of Alexandria of the practicability or safety of the proposed use, and shall create no liability upon the City of Alexandria, its officials or employees.

(C) If any section, subsection, paragraph, sentence, clause or phrase of this Section 6-300 shall be declared invalid for any reason by a court of competent jurisdiction, such decision shall not affect the remaining portions of this Section 6-300. The remaining portions shall remain in full force and effect; and for this purpose, the provisions of Section this 6-300 are hereby declared to be severable.

(D) Any person who shall engage in new construction, substantial improvement or development without a building permit as required by VA USBC and these floodplain management regulations shall be subject to the penalties provided in Section 11-200 of this ordinance.

6-313 Appeals

Any person aggrieved by a decision of the Director of Transportation and Environmental Services under this Section 6-300 may appeal that decision to City Council; provided, that the appeal shall be filed in writing with the City Clerk within fifteen (15) days of the decision being appealed and shall describe the decision being appealed and the reasons why the person believes the decision to be invalid.

6-314 Annual Report

It shall be the City Manager's duty to submit any reports to FEMA and the floodplain coordinator at the Virginia Department of Conservation and Recreation that may be required regarding the City of Alexandria's compliance with flood management regulations.
(Ord. No. _____, § _, _-__-2011)

SPEAKER'S FORM

spoke

DOCKET ITEM NO. ~~#~~ 5

PLEASE COMPLETE THIS FORM AND GIVE IT TO THE CITY CLERK BEFORE YOU SPEAK ON A DOCKET ITEM

PLEASE ANNOUNCE THE INFORMATION SPECIFIED BELOW PRIOR TO SPEAKING.

1. NAME: Katy Cannady

2. ADDRESS: 20 East Oak St

TELEPHONE NO. 703 549-9386 E-MAIL ADDRESS: Katy—Cannady20@comcast.net

3. WHOM DO YOU REPRESENT, IF OTHER THAN YOURSELF? no one

4. WHAT IS YOUR POSITION ON THE ITEM?
FOR: _____ AGAINST: ✓ OTHER: _____

5. NATURE OF YOUR INTEREST IN ITEM (PROPERTY OWNER, ATTORNEY, LOBBYIST, CIVIC INTEREST, ETC.):
civic

6. ARE YOU RECEIVING COMPENSATION FOR THIS APPEARANCE BEFORE COUNCIL?
YES _____ NO ✓

This form shall be kept as a part of the permanent record in those instances where financial interest or compensation is indicated by the speaker.

A maximum of three minutes will be allowed for your presentation, except that one officer or other designated member speaking on behalf of each *bona fide* neighborhood civic association or unit owners' association desiring to be heard on a docket item shall be allowed five minutes. In order to obtain five minutes, you must identify yourself as a designated speaker, and identify the neighborhood civic association or unit owners' association you represent, at the start of your presentation. If you have a prepared statement, please leave a copy with the Clerk.

Additional time not to exceed 15 minutes may be obtained with the consent of the majority of the council present; provided notice requesting additional time with reasons stated is filed with the City Clerk in writing before 5:00 p.m. of the day preceding the meeting.

The public normally may speak on docket items only at public hearing meetings, and not at regular legislative meetings. Public hearing meetings are usually held on the Saturday following the second Tuesday in each month; regular legislative meetings on the second and fourth Tuesdays in each month. The rule with respect to when a person may speak to a docket item at a legislative meeting can be waived by a majority vote of council members present but such a waiver is not normal practice. When a speaker is recognized, the rules of procedures for speakers at public hearing meetings shall apply. If an item is docketed *for public hearing* at a regular legislative meeting, the public may speak to that item, and the rules of procedures for speakers at public hearing meetings shall apply.

In addition, the public may speak on matters which are not on the docket during the Public Discussion Period at public hearing meetings. The mayor may grant permission to a person, who is unable to participate in public discussion at a public hearing meeting for medical, religious, family emergency or other similarly substantial reasons, to speak at a regular legislative meeting. When such permission is granted, the rules of procedures for public discussion at public hearing meetings shall apply.

Guidelines for the Public Discussion Period

(a) All speaker request forms for the public discussion period must be submitted by the time the item is called by the city clerk.

(b) No speaker will be allowed more than three minutes; except that one officer or other designated member speaking on behalf of each *bona fide* neighborhood civic association or unit owners' association desiring to be heard during the public discussion period shall be allowed five minutes. In order to obtain five minutes, you must identify yourself as a designated speaker, and identify the neighborhood civic association or unit owners' association you represent, at the start of your presentation.

(c) If more speakers are signed up than would be allotted for in 30 minutes, the mayor will organize speaker requests by subject or position, and allocated appropriate times, trying to ensure that speakers on unrelated subjects will also be allowed to speak during the 30 minute public discussion period.

(d) If speakers seeking to address council on the same subject cannot agree on a particular order or method that they would like the speakers to be called on, the speakers shall be called in the chronological order of their request forms' submission.

(e) Any speakers not called during the public discussion period will have the option to speak at the conclusion of the meeting, after all docketed items have been heard.

TEXT AMENDMENT # 2011-0004

ISSUE DESCRIPTION: A) Initiation of a text amendment; B) Consideration of an amendment to Section 6-300 the zoning ordinance regarding floodplain regulations.

CITY DEPARTMENT: Transportation and Environmental Services

PLANNING COMMISSION ACTION: A-Initiated 7-0 3/1/11, B- Recommended approval 7-0 3/1/11.

CITY COUNCIL ACTION City Council approved PC recommendation 7-0 3/12/2011
