

§4.14.6. Radioactivity

There shall be no radioactive emission that would be dangerous to health.

§4.14.7. Electrical interference

There shall be no electrical disturbance adversely affecting the operation of any equipment other than that of the creator of such disturbance.

§4.14.8. Liquid or solid wastes

There shall be no discharge of any liquid or solid wastes into any stream, except as authorized by a public agency.

§4.14.9. Glare and heat

There shall be no direct or reflected glare, whether from floodlights or from high-temperature processes (for example, combustion or welding) so as to be visible from within any residential district. There shall be no discharge of heat or heated air from any source so as to be detectable beyond the lot line.

§4.15. FLOODPLAIN REGULATIONS**§4.15.1. Authority**

These regulations are adopted pursuant to the authority granted to localities by Code of Virginia, §15.2 - 2280.

§4.15.2. Purpose

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

- A. Regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;
- B. Restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding;
- C. Requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or floodproofed against flooding and flood damage; and
- D. Protecting individuals from buying land and structures that are unsuited for intended purposes because of flood hazards.

§4.15.3. General Provisions**A. Applicability**

These regulations shall apply to all privately and publicly owned lands within the city and identified as areas of special flood hazard according to the flood insurance rate map (FIRM) that is provided to the city by the Federal Emergency Management Agency (FEMA)

B. Compliance and liability

1. 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 these regulations and any other applicable ordinances and regulations, which apply to uses within the city.

2. The degree of flood protection sought by the provisions of these regulations is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study, but does not imply total flood protection. Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. These regulations do not imply that districts outside the floodplain district or land uses permitted within such district will be free from flooding or flood damages.
3. These regulations shall not create liability on the part of the city or any officer or employee thereof for any flood damages that result from reliance on these regulations or any administrative decision lawfully made thereunder.

C. Records

Records of actions associated with administering these regulations shall be kept on file and maintained by the floodplain administrator.

D. Abrogation and greater restrictions

These regulations supersede any regulations currently in effect in flood-prone districts. Any existing regulation, however, shall remain in full force and effect to the extent that its provisions are more restrictive than the provisions of these regulations.

§4.15.4. Administration

A. Designation of the floodplain administrator

The zoning administrator shall serve as the floodplain administrator and is hereby appointed to administer and implement the regulations of this section and is referred to herein as the floodplain administrator. The floodplain administrator may:

1. Administer and implement floodplain regulations himself or delegate duties and responsibilities set forth in these regulations to qualified technical personnel, plan examiners, inspectors, and other employees.
2. Enter into a written agreement or written contract with another community or private sector entity to administer specific provisions of these regulations. Administration of any part of these regulations by another entity shall not relieve the city of its responsibilities pursuant to the participation requirements of the National Flood Insurance Program (NFIP) as set forth in the Code of Federal Regulations at 44 CFR 59.22.

B. Duties and responsibilities of the floodplain administrator

The duties and responsibilities of the floodplain administrator shall include but are not limited to:

1. Review applications for floodplain permits to determine whether proposed activities will be located in the special flood hazard area.
2. Interpret floodplain boundaries and provide available base flood elevation and flood hazard information.

3. Review applications to determine whether proposed activities will be reasonably safe from flooding and require new construction and substantial improvements to meet the requirements of these regulations.
4. Review applications to determine whether all necessary permits have been obtained from the federal, state or local agencies from which prior or concurrent approval is required; in particular, permits from state agencies for any construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction (including bridges, culverts, structures), any alteration of a watercourse, or any change of the course, current, or cross section of a stream or body of water, including any change to the 100-year frequency floodplain of free-flowing nontidal waters of the state.
5. Verify that applicants proposing an alteration of a watercourse have notified adjacent communities, the Department of Conservation and Recreation (DCR) Division of Dam Safety and Floodplain Management, and other appropriate agencies (Virginia Department of Environmental Quality [VADEQ], United States Army Corps of Engineers [USACE]) and have submitted copies of such notifications to FEMA.
6. Approve applications and issue floodplain permits to develop in flood hazard areas if the provisions of these regulations have been met, or disapprove applications if the provisions of these regulations have not been met.
7. Inspect or cause to be inspected, buildings, structures, and other development for which permits have been issued to determine compliance with these regulations or to determine if non-compliance has occurred or violations have been committed.
8. Review elevation certificates and require incomplete or deficient certificates to be corrected.
9. Submit to FEMA, or require applicants to submit to FEMA, data and information necessary to maintain FIRMs, including hydrologic and hydraulic engineering analyses prepared by or for the city, within six months after such data and information becomes available if the analyses indicate changes in base flood elevations.
10. Maintain and permanently keep records that are necessary for the administration of these regulations, including:
 - (a) Flood insurance studies, FIRMs (including historic studies and maps and current effective studies and maps) and letters of map change; and
 - (b) Documentation supporting issuance and denial of permits, elevation certificates, documentation of the elevation (in relation to the datum on the FIRM) to which structures have been floodproofed, other required design certifications, special exceptions and special use permits, and records of enforcement actions taken to correct violations of these regulation
11. Enforce the provisions of these regulations, investigate violations, issue notices of violations or stop work orders, and require permit holders to take corrective action.
12. Advise the board of zoning appeals, or the city council, as appropriate, regarding the intent of these regulations and, for each application for special exceptions and special use permits, prepare a staff report and recommendation.

13. Administer the requirements related to proposed work on existing buildings:
 - (a) Make determinations as to whether buildings and structures that are located in flood hazard areas and that are damaged by any cause have been substantially damaged.
 - (b) Make reasonable efforts to notify owners of substantially damaged structures of the need to obtain a permit to repair, rehabilitate, or reconstruct, and prohibit the non-compliant repair of substantially damaged buildings except for temporary emergency protective measures necessary to secure a property or stabilize a building or structure to prevent additional damage.
14. Undertake other actions which may include but are not limited to: issuing press releases, public service announcements, and other public information materials related to permit requests and repair of damaged structures; coordinating with other Federal, State, and local agencies to assist with substantial damage determinations; providing owners of damaged structures information related to the proper repair of damaged structures in special flood hazard areas; and assisting property owners with documentation necessary to file claims for Increased Cost of Compliance coverage under NFIP flood insurance policies.
15. Notify FEMA when the corporate boundaries of the city have been modified and:
 - (a) Provide a map that clearly delineates the new corporate boundaries or the new area for which the authority to regulate pursuant to these regulations has either been assumed or relinquished through annexation; and
 - (b) If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in these regulations, prepare amendments to these regulations to adopt the FIRM and appropriate requirements, and submit the amendments to the city council for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended regulations shall be provided to DCR Division of Dam Safety and Floodplain Management and FEMA.
16. Upon the request of FEMA, complete and submit a report concerning participation in the NFIP which may request information regarding the number of buildings in the special flood hazard area, number of permits issued for development in the special flood hazard area, and number of special exceptions and special use permits issued for development in the special flood hazard area.
17. Take into account flood, mudslide and flood-related erosion hazards, to the extent that they are known, in all official actions relating to land management and use throughout the entire jurisdictional area of the city, whether or not those hazards have been specifically delineated geographically (e.g. via mapping or surveying).

C. Use and interpretation of FIRMs

The floodplain administrator shall make interpretations, where needed, as to the exact location of special flood hazard areas, floodplain boundaries, and floodway boundaries. The following shall apply to the use and interpretation of FIRMs and data:

1. Where field surveyed topography indicates that adjacent ground elevations:

- (a) Are below the base flood elevation, even in areas not delineated as a special flood hazard area on a FIRM, the area shall be considered as special flood hazard area and subject to the requirements of these regulations;
 - (b) Are above the base flood elevation, the area shall be regulated as special flood hazard area unless the applicant obtains a letter of map change that removes the area from the special flood hazard area.
2. In FEMA-identified special flood hazard areas where base flood elevation and floodway data have not been identified and in areas where FEMA has not identified special flood hazard areas, any other flood hazard data available from a federal, state, or other source shall be reviewed and reasonably used.
3. Base flood elevations and designated floodway boundaries on FIRMs and in flood insurance studies shall take precedence over base flood elevations and floodway boundaries by any other sources if such sources show reduced floodway widths and/or lower base flood elevations.
4. Other sources of data shall be reasonably used if such sources show increased base flood elevations and/or larger floodways than are shown on FIRMs and in flood insurance studies.
5. If a Preliminary FIRM and/or a Preliminary Flood Insurance Study has been provided by FEMA:
 - (a) Upon the issuance of a letter of final determination by FEMA, the preliminary flood hazard data shall be used and shall replace the flood hazard data previously provided from FEMA for the purposes of administering these regulations.
 - (b) Prior to the issuance of a letter of final determination by FEMA, the use of preliminary flood hazard data shall be deemed the best available data pursuant to §4.15.6.C regarding A Zones, and used where no base flood elevations and/or floodways are provided on the effective FIRM.
 - (c) Prior to issuance of a letter of final determination by FEMA, the use of preliminary flood hazard data is permitted where the preliminary base flood elevations or floodways exceed the base flood elevations and/or designated floodway widths in existing flood hazard data provided by FEMA. Such preliminary data may be subject to change and/or appeal to FEMA.

D. Jurisdictional boundary changes

1. The city floodplain regulations then in effect on the date of annexation or agreed upon boundary line adjustment shall remain in effect and shall be enforced by the city for all annexed areas until the city adopts and enforces an ordinance which meets the requirements for participation in the NFIP. It is a requirement that municipalities with existing floodplain ordinances shall pass a resolution acknowledging and accepting responsibility for enforcing floodplain ordinance standards prior to annexation of any area containing identified flood hazards. If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in these regulations, the city shall prepare amendments to these regulations to adopt the FIRM and appropriate requirements, and submit the amendments to the city council for adoption; such adoption shall take place at the

same time as or prior to the date of annexation and a copy of the amended regulations shall be provided to the DCR Division of Dam Safety and Floodplain Management and FEMA.

2. In accordance with the Code of Federal Regulations, Title 44 Subpart (B) Section 59.22 (a) (9) (v) all NFIP participating communities must notify the Federal Emergency Management Agency and optionally the State Coordinating Office (Virginia Department of Conservation and Recreation – Division of Dam Safety and Floodplain Management) in writing whenever the boundaries of the community have been modified by annexation or the community has otherwise assumed or no longer has authority to adopt and enforce floodplain management regulations for a particular area.
3. In order that all FIRMs accurately represent the city’s boundaries, a copy of a map of the city suitable for reproduction, clearly delineating the new corporate limits or new area for which the community has assumed or relinquished floodplain management regulatory authority must be included with the notification.

E. District boundary changes

The city council may modify the boundaries of the floodplain in accordance with the procedures established for zoning map amendments contained in §6.4. Any such modification shall be based upon hydrologic and hydraulic analyses performed by an engineer who shall certify that the technical methods used correctly reflect accepted engineering design methods. Prior to any such modification, approval shall be obtained from FEMA.

F. Interpretation of district boundaries

The zoning administrator shall be responsible for the interpretation of floodplain boundaries and may approve minor refinements after consulting with the city engineer to more accurately determine the true location of such boundaries. Such approval shall be based on hydrologic and hydraulic analyses performed by an engineer, who shall certify that the technical methods used correctly reflect accepted engineering design methods. The determination of the floodplain boundary by the zoning administrator may be appealed by an aggrieved party to the board of zoning appeals pursuant to §6.21.

G. Submitting technical data

The city’s base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, the city shall notify FEMA of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data.

H. Letters of map revision

When development in the floodplain causes a change in the base flood elevation, the applicant, including state agencies, must notify FEMA by applying for a conditional letter of map revision prior to construction, and a letter of map revision after construction. For example:

1. Any development that causes a rise in the base flood elevations within the floodway.

2. Any development occurring in Zones A1-30 and AE without a designated floodway, which will cause a rise of more than one foot in the base flood elevation.

§4.15.5. Alteration or relocation of a stream

Alteration or relocation of a stream, including but not limited to installing culverts and bridges. [44 CFR 65.3 and 65.6(a)(12)]

§4.15.6. Establishment of special flood hazard districts

A. Description of special flood hazard districts

The various special flood hazard districts shall include the special flood hazard areas. The basis for the delineation of these districts shall be the flood insurance study and the FIRM for the city prepared by FEMA, dated June 2, 2006, and any subsequent revisions or amendments thereto. The city may identify and regulate local flood hazard or ponding areas that are not delineated on the FIRM. These areas may be delineated on a local flood hazard map using best available topographic data and locally derived information such as flood of record, historic high water marks or approximate study methodologies. The boundaries of the special flood hazard areas are established as shown on the FIRM which is declared to be a part of these regulations and which shall be kept on file at the city.

1. The floodway district is in an AE Zone and is delineated, for purposes of These regulations, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one percent annual chance flood without increasing the water surface elevation of that flood more than one foot at any point. The following provisions shall apply within the floodway district of an AE Zone [44 CFR 60.3(d)]:
 - (a) Within any floodway, no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment will not result in any increase in flood levels within the community during the occurrence of the base flood discharge. 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 floodplain administrator.
 - (b) Development activities which increase the water surface elevation of the base flood may be allowed, provided that the applicant first applies – with the city’s endorsement – for a conditional letter of map revision (CLOMR), and receives the approval of FEMA.
 - (c) If §4.15.6.A.1(a) is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of §4.15.7, §4.15.8, §4.15.9, §4.15.10, and §4.15.11.

- B. The AE, or AH Zones on the FIRM accompanying the Flood Insurance Study shall be those areas for which one-percent annual chance flood elevations have been provided and the floodway has not been delineated. The following provisions shall apply within an AE or AH Zone [44 CFR 60.3(c)]:

§4.15.6 Establishment of special flood hazard districts

1. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the areas of special flood hazard, designated as Zones A1-30 and AE or AH on the FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the city.
 2. Development activities in Zones A1-30 and AE or AH, on the city FIRM which increase the water surface elevation of the base flood by more than one foot may be allowed, provided that the applicant first applies – with the city’s endorsement – for a conditional letter of map revision, and receives the approval of FEMA
- C. The A Zone on the FIRM accompanying the Flood Insurance Study shall be those areas for which no detailed flood profiles or elevations are provided, but the one percent annual chance floodplain boundary has been approximated. For these areas, the following provisions shall apply [44 CFR 60.3(b)]:
1. The approximated floodplain district shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a 100-year floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the Flood Insurance Study. For these areas, the base flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific one percent annual chance flood elevation cannot be determined for this area using other sources of data, such as the USACE Floodplain Information Reports, U. S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this base flood elevation. For development proposed in the approximate floodplain the applicant must use technical methods that correctly reflect currently accepted non-detailed technical concepts, such as point on boundary, high water marks, or detailed methodologies hydrologic and hydraulic analyses. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the floodplain administrator.
 2. The floodplain administrator reserves the right to require a hydrologic and hydraulic analysis for any development. When such base flood elevation data is utilized, the lowest floor shall be elevated at least 18 inches above the base flood level.
 3. During the permitting process, the floodplain administrator shall obtain:
 - (a) The elevation of the lowest floor (including the basement) of all new and substantially improved structures; and,
 - (b) If the structure has been floodproofed in accordance with the requirements of this article, the elevation (in relation to mean sea level) to which the structure has been floodproofed.
 4. The AO Zone on the FIRM accompanying the Flood Insurance Study shall be those areas of shallow flooding identified as AO on the FIRM. For these areas, the following provisions shall apply [44 CFR 60.3(c)].
 - (a) All new construction and substantial improvements of residential structures shall have the lowest floor, including basement, elevated above the highest adjacent

grade at least as high as the depth number specified in feet on the FIRM plus 18 inches. If no flood depth number is specified, the lowest floor, including basement, shall be elevated no less than three and one-half feet above the highest adjacent grade.

- (b) All new construction and substantial improvements of nonresidential structures shall:
 - (1) Have the lowest floor, including basement, elevated above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM plus 18 inches. If no flood depth number is specified, the lowest floor, including basement, shall be elevated at least three and one-half feet above the highest adjacent grade; or,
 - (2) Together with attendant utility and sanitary facilities be completely floodproofed to the specified flood level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
- (c) Adequate drainage paths around structures on slopes shall be provided to guide floodwaters around and away from proposed structures.

D. Overlay Concept

The floodplain districts described above shall be overlays to the existing underlying districts as shown on the city's zoning map, and as such, the provisions for the floodplain districts shall serve as a supplement to the underlying district provisions.

1. If there is any conflict between the provisions or requirements of the floodplain districts and those of any underlying district, the more restrictive provisions and/or those pertaining to the floodplain districts shall apply.
2. In the event any provision concerning a floodplain district is declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying provisions shall remain applicable.

§4.15.7. Permit and application requirements

A. Permit requirement

All uses, activities, and development occurring within any floodplain district shall be undertaken only upon the issuance of a zoning permit. Such development shall be undertaken only in strict compliance with the provisions of these regulations and with all other applicable codes and ordinances, as amended, such as the Virginia Uniform Statewide Building Code (USBC) and the city's subdivision ordinance and regulations appertaining thereto. Prior to the issuance of any such permit, the floodplain administrator shall require all applications to include compliance with all applicable state and federal laws and shall review all sites to assure they are reasonably safe from flooding. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch, or any other drainage facility or system. A floodplain permit shall be issued by the zoning administrator after an application has been submitted along with any documentation required by the zoning administrator and a fee in accordance with §6.2.4.

§4.15.7 Permit and application requirements

B. Site plans and permit applications

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

1. The elevation of the base flood 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.

C. Allowed uses

The following uses shall be permitted within the floodplain by right or with a special use permit, as specified; provided, that such uses are permitted in the zoning district within which they are located, the review criteria contained in §4.15.7 are met, and a floodplain permit is obtained as specified in §4.15.4.C.

1. Permitted uses

- (a) Utilities and public facilities and improvements such as streets, channel improvements, bridges, utility pipes, utility transmission lines and stormwater management facilities shall be permitted.
- (b) The following uses and improvements shall be permitted, provided that the development or use is otherwise permitted in this chapter and that the area of impervious surface shall not exceed 2,500 square feet and such uses or improvements shall not contain areas of fill in excess of 12 inches in depth:
 - (1) Agricultural uses such as farming, gardening, grazing and similar uses.
 - (2) Outdoor recreational uses such as parks, trails, picnic grounds, athletic fields, play grounds, golf courses, tennis courts and archery ranges.

2. Special uses

The following uses and improvements shall be permitted with a special use permit issued by the city council in accordance with the provisions of §6.7, provided that such use is permitted in the zoning district in which the proposed use or improvement is located:

(a) Area specified

The uses permitted and specified in §4.15.7.C.1 where the area of impervious surface will exceed 2,500 square feet or such uses or improvements will contain areas of fill in excess of 12 inches in depth.

(b) Redevelopment of property

- (1) For the purposes of §4.15, redevelopment shall be any reconstruction, conversion, structural alteration, relocation or enlargement of any structure or any extension of the use of the land. No redevelopment shall be permitted in any floodplain until the developer submits to the zoning administrator a study performed by an engineer, which addresses the review criteria contained in §4.15.8.

- (2) Redevelopment shall only be permitted if construction techniques are employed which floodproof each structure located within the floodplain in accordance with the NFIP, USBC floodproofing standards and all other applicable requirements. Within Zone AO the underside of the lowest floor (including basement) of any structure shall be a minimum of three and one-half feet above the highest adjacent grade. In addition, the underside of the lowest floor (including basement) of any structure shall be a minimum of 18 inches above the floodplain elevation.

§4.15.8. Approval criteria

- A. Permitted uses, activities or developments (including redevelopments) within the floodplain shall be permitted only when all available alternative locations not within the floodplain have been properly considered and it is not possible to accommodate reasonable development outside the floodplain boundaries. Each application for a floodplain permit, together with required supporting documentation, shall clearly demonstrate that the proposed use, activity or development:
 1. Shall minimize grading to the maximum possible extent.
 2. Shall minimize the amount of impervious surface to the maximum possible extent through site design, the use of porous construction materials, grid or modular pavement, and other reasonable methods.
 3. Shall minimize the loss of natural vegetation and natural stormwater characteristics.
 4. Shall minimize the susceptibility of structures and their contents to flood damage.
 5. Shall not negatively affect water quality.
 6. Shall not increase the intensity or extent of flooding of lands above or below the property or jeopardize property or human life.
 7. Shall not adversely affect the capacity of the floodplain channel or increase erosion within or adjacent to the floodplain. Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within the city all applicable permits shall be obtained from the USACE, the VADEQ, and the Virginia Marine Resources Commission. Furthermore, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the DCR, and the Federal Insurance Administration.
 8. Shall minimize negative impacts upon wildlife habitat.
 9. Shall have its design incorporate base (100-year) flood elevation data for any proposed new activity or development greater than 50 lots or five acres, whichever is the lesser, if located within Zone A. In addition, the best available floodway information from federal, state, or other sources acceptable to the zoning administrator shall be used.
 10. Shall not result in more than a one-foot increase in the base (100-year) flood elevation. This shall include the cumulative effect of the proposed use, activity, or development when combined with all other existing and anticipated uses, activities, or development.
 11. Shall not negatively affect drainage.

§4.15.9. General standards

- A. New construction and substantial improvements shall be according to the Virginia USBC, and anchored to prevent flotation, collapse or lateral movement of the structure.
- B. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
- C. New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.
- D. Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
- E. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
- F. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into floodwaters.
- G. On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

§4.15.10. Elevation and construction standards

In all identified flood hazard areas where base flood elevations have been provided in the Flood Insurance Study or generated by a certified professional in accordance with §4.15.6.C, the following provisions shall apply:

A. Residential Construction

New construction or substantial improvement of any residential structure in Zones A1-30, AE, AH and A with detailed base flood elevations shall have the lowest floor, including basement, elevated at least 18 inches above the base flood level.

B. Non-Residential Construction

New construction or substantial improvement of any commercial, industrial, or nonresidential building shall have the lowest floor, including basement, elevated at least 18 inches above the base flood level. Buildings located in all A1-30, AE, and AH 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 water tight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this §4.15.10 are satisfied. Such certification, including the specific elevation (in relation to mean sea level) to which such structures are floodproofed, shall be maintained by the zoning administrator).

C. Space Below the Lowest Floor

In Zones A, AE, AH, AO, and A1-A30, fully enclosed areas, of new construction or substantially improved structures, which are below the regulatory flood protection elevation shall:

- 1. Not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in

connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator).

2. Be constructed entirely of flood resistant materials below the regulatory flood protection elevation;
3. Include measures to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet the following minimum design criteria:
 - (a) Provide a minimum of two openings on different sides of each enclosed area subject to flooding.
 - (b) The total net area of all openings must be at least one 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.

D. Manufactured homes

All manufactured homes shall be prohibited within the city. No special exceptions or variances will be granted.

E. Recreational vehicles

All recreational vehicles shall be prohibited within any special flood hazard area. No special exceptions or variances will be granted.

§4.15.11. Subdivision standards

- A. All subdivisions shall minimize flood damage;
- B. All subdivisions proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;
- C. All subdivisions shall have adequate drainage provided to reduce exposure to flood hazards, and
- D. Base flood elevation data shall be obtained from other sources or developed using detailed methodologies, hydraulic and hydrologic analysis, comparable to those contained in a Flood

§4.15.12 Existing structures in floodplain areas

Insurance Study for subdivision proposals and other proposed development proposals (including subdivisions) that exceed 50 lots or five acres, whichever is the lesser.

§4.15.12. Existing structures in floodplain areas

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

- A. Existing structures in the floodway shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed expansion would not result in any increase in the base flood elevation.
- B. Any modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use located in any floodplain areas to an extent or amount of less than 50 percent of its market value shall conform to the Virginia USBC and the appropriate provisions of these regulations.
- C. The modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, regardless of its location in a floodplain area to an extent or amount of 50 percent or more of its market value shall be undertaken only in full compliance with these regulations and shall require the entire structure to conform to the Virginia USBC.

§4.15.13. Special exceptions

- A. The board of zoning appeals may, by special exception, permit within the floodplain additional uses where such uses are not permitted uses specified in §4.15.6, provided that:
 1. Such additional use is permitted in the underlying zoning district;
 2. Special exceptions shall be granted only in accordance with the procedures and limitations established for special use permits in §6.7; and
 3. The special exception granted represents the minimum variation necessary to afford relief.
- B. In reviewing a special exception request, the board of zoning appeals shall consider the following additional factors:
 1. The danger to life and property due to increased flood heights or velocities caused by encroachments. No special exception shall be granted for any proposed use, development, or activity within any floodway that would cause any increase in the 100-year flood elevation.
 2. The compatibility of the proposed use with existing development and nearby development anticipated in the foreseeable future.
 3. The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.
 4. For historic structures, a determination that the exception is the minimum necessary to preserve the historic character and design of the structure and would not preclude the structures continued designation as a historic structure.
 5. The danger that materials may be swept on to other lands or downstream to the injury of others.

6. The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination, and unsanitary conditions.
 7. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.
 8. The importance of the services provided by the proposed facility to the community.
 9. The requirements of the facility for a waterfront location.
 10. The availability of alternative locations not subject to flooding for the proposed use.
 11. The safety of access by ordinary and emergency vehicles to the property in time of flood.
 12. The expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters expected at the site.
- C. A special exception shall be granted only after the board of zoning appeals has determined that the granting of such would not (i) result in unacceptable or prohibited increases in flood heights, (ii) pose additional threats to public safety, (iii) require extraordinary public expense, (iv) create any nuisances, (v) cause fraud or victimization of the public, and (vi) conflict with local laws or ordinances. Special exceptions shall be granted only after the board of zoning appeals has determined that a special exception would be the minimum required to provide relief from any hardship to the applicant.
- D. The board of zoning appeals shall notify, in writing, the applicant for a special exception request that the issuance of a special exception to construct a structure below the 100-year flood elevation (i) increases the risks to life and property and (ii) may result in increased premium rates for flood insurance.
- E. A record shall be maintained of the above notification as well as all special exception actions, including justification for the issuance of the special exceptions. The annual or biennial report submitted to the FEMA shall note any special exceptions, which are issued during the period covered by the report.
- F. A special exception shall meet the elevation and construction standards established in §4.15.10.

§4.15.14. Variances

- A. Applications for a variance, pursuant to the requirements of §6.18, will be subject to the same considerations as a special exception, as set forth in §4.15.13.
- B. The board of zoning appeals shall notify, in writing, the applicant for a variance request that the issuance of a variance to construct a structure below the 100-year flood elevation (i) increases the risks to life and property and (ii) may result in increased premium rates for flood insurance.

§4.15.15. Definitions

For the purposes of 4.15, the following words and phrases shall have the meanings respectively ascribed to them by 4.15 unless the context clearly indicates otherwise:

100-YEAR FLOODPLAIN: The Federal Emergency Management Agency designated one percent annual chance water surface elevation. For the purposes of this ordinance, the 100-year flood is the base flood.

§4.15.15 Definitions

A, A1-30, AND AE ZONES: Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Base flood elevations are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.

AH ZONE: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between one and three feet. Base flood elevations derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.

AO ZONE: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply. Some AO Zones have been designated in areas with high flood velocities such as alluvial fans and washes. Communities are encouraged to adopt more restrictive requirements for these areas.

APPROXIMATED FLOODPLAIN DISTRICT: The floodplain area for which no detailed flood profiles or elevations are provided, but where a 100-year floodplain boundary has been approximated.

BASE FLOOD: The flood having a one percent chance of being equaled or exceeded in any given year.

BASE FLOOD ELEVATION (BFE): The FEMA designated one percent annual chance water surface elevation and the elevation determined per §4.15.10. The water surface elevation of the base flood in relation to the datum specified on the city's FIRM. For the purposes of these regulations, the base flood is the 100-year flood or 1 percent annual chance flood.

BASEMENT: Any area of the building having its floor sub-grade (below ground level) on all sides.

CONDITIONAL LETTER OF MAP REVISION (CLOMR): A formal review and comment as to whether a proposed flood protection project or other project complies with the minimum NFIP requirements for such projects with respect to delineation of special flood hazard areas. A CLOMR does not revise the effective Flood Insurance Rate Map or Flood Insurance Study.

DCR: Virginia Department of Conservation and Recreation.

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

ELEVATION CERTIFICATE: An administrative tool of the National Flood Insurance Program which is to be used to provide elevation information necessary to ensure compliance with to community floodplain management ordinances, to determine the proper insurance premium rate, or support a request for a Letter of Map Amendment.

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

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA): The federal agency under which the NFIP is administered. In March 2003, FEMA became part of the newly created U.S. Department of Homeland Security.

FLOOD OR FLOODING: A general or temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters; the unusual and rapid accumulation or runoff of surface waters from any source. Mudflows which are proximately caused by such

accumulation or runoff of surface waters 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. The collapse or subsidence 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 the overflow of inland or tidal waters. .

FLOOD INSURANCE RATE MAP (FIRM): an official map of a community, on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).

FLOOD INSURANCE STUDY (FIS): A report by FEMA that examines, evaluates and determines flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudflow and/or flood-related erosion hazards.

FLOODPLAIN AREA: Any land area susceptible to being inundated by water from any source.

FLOODPLAIN DISTRICT: District designated as a special flood hazard area.

FLOODPLAIN ADMINISTRATOR: the individual appointed to administer and implement these regulations. The zoning administrator has been appointed as the floodplain administrator.

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.

FLOODWAY: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

FLOODWAY DISTRICT: The area within an AE Zone that is delineated, for purposes of this ordinance, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one percent annual chance flood without increasing the water surface elevation of that flood more than one foot at any point. See §4.15.6.A.

HIGHEST ADJACENT GRADE: the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

HISTORIC STRUCTURE: Any structure that is: (a) 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; (b) 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; (c) 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, (c) individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either; (d) by an approved state program as determined by the Secretary of the Interior; or (e) directly by the Secretary of the Interior in states without approved programs.

LETTER OF FINAL DETERMINATION (LFD): A letter FEMA sends to the chief executive officer of a community stating that a new or updated FIRM or DFIRM will become effective in six months.

§4.15.15 Definitions

LETTER OF MAP CHANGE (LOMC): A letter of map change is an official FEMA determination, by letter, that amends or revises an effective Flood Insurance Rate Map or Flood Insurance Study. Letters of map change include:

LETTER OF MAP AMENDMENT (LOMA): An amendment based on technical data showing that a property was incorrectly included in a designated special flood hazard area. A LOMA amends the current effective Flood Insurance Rate Map and establishes that land as defined by meets and bounds or structure is not located in a special flood hazard area.

LETTER OF MAP REVISION (LOMR): A revision based on technical data that may show changes to flood zones, flood elevations, floodplain and floodway delineations, and planimetric features. A letter of map revision based on fill (LOMR-F), is a determination that a structure or parcel of land has been elevated by fill above the base flood elevation and is, therefore, no longer exposed to flooding associated with the base flood. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the community's floodplain management regulations.

LOCAL FLOOD HAZARD MAP – A map created by the city of Fairfax to identify and regulate local flood hazard or ponding areas that are not delineated on the Flood Insurance Rate Map.

LOWEST ADJACENT GRADE: the lowest natural elevation of the ground surface next to the walls of it structure.

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

MANUFACTURED HOME: A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term "manufactured home" also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than 180 consecutive days, but does not include a recreational vehicle.

NEW CONSTRUCTION: For the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after December 23, 1971, or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, new construction means structures for which 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.

POST-FIRM STRUCTURES: A structure for which construction or substantial improvement occurred after December 31, 1974 or on or after December 23, 1971, whichever is later.

PRE-FIRM STRUCTURES: A structure for which construction or substantial improvement occurred on or before December 31, 1974 or before December 23, 1971.

RECREATIONAL VEHICLE: A vehicle which is: (a) built on a single chassis; (b) 400 square feet or less when measured at the largest horizontal projection; (c) designed to be self-propelled or permanently towable by a light duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.

REGULATORY FLOOD PROTECTION ELEVATION: See "base flood elevation".

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.

SPECIAL FLOOD HAZARD AREA: The land in the floodplain subject to a one percent or greater chance of being flooded in any given year as determined in §4.15.6.

START OF CONSTRUCTION: The date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, substantial improvement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of the construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

STRUCTURE: A walled and roofed building, including a gas or liquid storage tank that is principally above ground, as well as a manufactured home.

SUBSTANTIAL DAMAGE: Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

SUBSTANTIAL IMPROVEMENT: Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. This term includes structures that have incurred substantial damage regardless of the actual repair work performed. The term does not, however, include either: (a) any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions, or (b) any alteration of a historic structure, provided that the alteration will not preclude the structure's continued designation as a historic structure. Historic structures undergoing repair or rehabilitation that would constitute a substantial improvement as defined above, must comply with all ordinance requirements that do not preclude the structure's continued designation as a historic structure. Documentation that a specific ordinance requirement will cause removal of the structure from the National Register of Historic Places or the State Inventory of Historic places must be obtained from the Secretary of the Interior or the State Historic Preservation Officer. Any exemption from ordinance requirements will be the minimum necessary to preserve the historic character and design of the structure.

USACE: United States Army Corps of Engineers.

USBC: Virginia Uniform Statewide Building Code.

VADEQ: Virginia Department of Environmental Quality.

§4.16.1 Purpose

VIOLATION: the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in these regulations is presumed to be in violation until such time as that documentation is provided.

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

§4.16. STORM DRAINAGE FACILITIES

§4.16.1. Purpose

- A. The purpose of §4.16 to define those storm drainage facilities which must be provided by landowners to control rainfall runoff from and across their property in a manner not detrimental to other inhabitants of the city and to preserve, where possible, presently existing natural creek channels. It is the further purpose of §4.16 to minimize the adverse effects of stormwater runoff on downstream drainageways within the city.
- B. Article 2.3 (§62.1-44.15:27) of Chapter 3.1 of Title 62.1 of the Code of Virginia establishes the requirement for localities to establish a stormwater management program. §4.16 is adopted pursuant to Chapter 3.1 of Title 62.1 of the Code of Virginia (§62.1-44.15:25 and §62.1-44.15:28 et seq.).

§4.16.2. Performance standards for facilities

Stormwater BMPs, on-site detention facilities, and on-site drainage facilities shall be designed and maintained in such a manner as to minimize economic and environmental costs to the city and its inhabitants in accordance with §4.16.7.

§4.16.3. Performance requirements

Performance requirements for stormwater BMPs, on-site detention facilities, and on-site drainage facilities shall be as specified in §4.16.8.

§4.16.4. Design, construction, inspection and maintenance requirements

Design, construction, inspection and maintenance requirements shall be as defined in the city storm drainage facility specifications as they may be hereafter promulgated by the city engineer and approved by the city council from time to time.

§4.16.5. Usage, improvement and preservation of creeks and channels

- A. Natural creeks and drainage channels may be used where available to route stormwater runoff from the city.
- B. Natural drainage systems will be improved where necessary in accordance with 9VAC25-870-66 of the Regulations. To the maximum degree possible, these improvements shall be made in such a manner as to preserve, enhance or restore the vegetation, including trees, along the creek line so that the aesthetic, environmental and ecological values of the vegetation are not lost to the community.
- C. Land disturbances within resource protection areas or resource management areas may require a water quality impact assessment in accordance with §4.18.8.