

## CHAPTER XX. FLOODPLAIN MANAGEMENT<sup>1</sup>

### 20.1 DEFINITIONS.

Unless specifically defined below, words or phrases used in this chapter shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance its most reasonable application.

*A zone*—See "Special flood hazard area."

*Accessory structure* means a structure that is either:

1. Solely for the parking of no more than two (2) cars; or
2. A small, low-cost shed for limited storage, less than one hundred fifty (150) square feet and one thousand five hundred (\$1,500.00) dollars in value.

*Accessory use* means a use which is incidental and subordinate to the principal use of the parcel of land on which it is located.

*Alluvial fan* means a geomorphologic feature characterized by a cone or fan-shaped deposit of boulders, gravel, and fine sediments that have been eroded from mountain slopes, transported by flood flows, and then deposited on the valley floors, and which is subject to flash flooding, high velocity flows, debris flows, erosion, sediment movement and deposition, and channel migration.

*Apex* means a point on an alluvial fan or similar landform below which the flow path of the major stream that formed the fan becomes unpredictable and alluvial fan flooding can occur.

*Appeal* means a request for a review of the Floodplain Administrator's interpretation of any provision of this ordinance.

*Area of shallow flooding* means a designated AO or AH zone on the flood insurance rate map (FIRM). The base flood depths range from one (1) to three (3) feet; a clearly defined channel does not exist; the path of flooding is unpredictable and indeterminate; and velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

*Area of special flood hazard*—See "Special flood hazard area."

*Base flood* means a flood which has a one (1%) percent chance of being equaled or exceeded in any given year (also called the "100-year flood"). Base flood is the term used throughout this chapter.

*Base flood elevation (BFE)* means the elevation shown on the flood insurance rate map for zones AE, AH, A1-30, VE and V1-V30 that indicates the water surface elevation resulting from a

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<sup>1</sup>Editor's note(s)—Ord. No. 2997 N.S., § 1, adopted June 17, 2009, amended Ch. XX in its entirety and enacted the provisions set out herein. The former Ch. XX, titled Flood Damage Prevention, derived from Ord. No. 2563, N.S., §§ 1, 5.

flood that has a one (1%) percent or great[er] chance of being equaled or exceeded in any given year.

*Basement* means any area of the building having its floor subgrade—i.e., below ground level—on all sides.

*Breakaway walls* are any type of walls, whether solid or lattice, and whether constructed of concrete, masonry, wood, metal, plastic or any other suitable building material which is not part of the structural support of the building and which is designed to break away under abnormally high tides or wave action without causing any damage to the structural integrity of the building on which they are used or any buildings to which they might be carried by flood waters. A breakaway wall shall have a safe design loading resistance of not less than ten (10) and no more than twenty (20) pounds per square foot. Use of breakaway walls must be certified by a registered engineer or architect and shall meet the following conditions:

1. Breakaway wall collapse shall result from a water load less than that which would occur during the base flood; and
2. The elevated portion of the building shall not incur any structural damage due to the effects of wind and water loads acting simultaneously in the event of the base flood.

*Building*—See "Structure"

*Coastal high hazard area* means an area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. It is an area subject to high velocity waters, including coastal and tidal inundation or tsunamis. The area is designed on a flood insurance rate map (FIRM) as zone V1-V30, VE, or V.

*Development* means any manmade 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.

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

*Existing manufactured home park or subdivision* means a manufactured home park or subdivision for which the construction of facilities for serving 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 June 3, 1975, the date the City of Alameda first adopted a floodplain management ordinance.

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

*Flood, flooding, or flood water* means:

1. A general and 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; and/or mudslides (i.e., mudflows); and

2. The condition resulting from flood-related erosion.

*Flood boundary and floodway map (FBFM)* means the official map on which the Federal Emergency Management Agency or Federal Insurance Administration has delineated both the areas of special flood hazards and the floodway.

*Flood insurance rate map (FIRM)* means the official map on which the Federal Emergency Management Agency or Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

*Flood insurance study* means the official report provided by the Federal Insurance Administration that includes flood profiles, the flood insurance rate map, the flood boundary and floodway map, and the water surface elevation of the base flood.

*Floodplain or flood-prone area* means any land area susceptible to being inundated by water from any source. See "Flooding".

*Floodplain administrator* is the community official designed by title or administer and enforce the floodplain management regulations.

*Floodplain management* means the operation of an overall program of corrective and preventive measures for reducing flood damage and preserving and enhancing, where possible, natural resources in the floodplain, including but not limited to emergency preparedness plans, flood control works, floodplain management regulations, and open space plans.

*Floodplain management regulations* means this chapter and other zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as grading and erosion control) and other application of police power which control development in floodprone areas. This term describes federal, state or local regulations in any combination thereof which provide standards for preventing and reducing flood loss and damage.

*Floodproofing* means any combination of structural and nonstructural 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. For guidelines on dry and wet floodproofing, see FEMA Technical Bulletins TB 1-93, TB 3-93, and TB 7-93.

*Floodway* means 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. Also referred [to] as "regulatory floodway."

*Floodway fringe* is that area of the floodplain on either side of the "regulatory floodway" where encroachment may be permitted.

*Fraud and victimization*" as related to *Section 20-5* means that the variance granted must not cause fraud on or victimization of the public. In examining this requirement, the City of Alameda will consider the fact that every newly constructed building adds to government responsibilities and remains a part of the community for fifty (50) to one hundred (100) years. Buildings that are permitted to be constructed below the base flood elevation are subject during all those years to increased risk of damage from floods, while future owners of the property and the community as a whole are subject to all the costs, inconvenience, danger, and suffering that

those increased flood damages bring. In addition, future owners may purchase the property, unaware that it is subject to potential flood damage, and can be insured only at very high flood insurance rates.

*Functionally dependent use* means a use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes *only* docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, and does *not* include long-term storage or related manufacturing facilities.

*Governing body* is the local governing unit, i.e. county or municipality, that is empowered to adopt and implement regulations to provide for the public health, safety and general welfare of its citizenry.

*Hardship* as related to *Section 20-5* means the exceptional hardship that would result from a failure to grant the requested variance. The City of Alameda requires that the variance be exceptional, unusual, and peculiar to the property involved. Mere economic or financial hardship alone is not exceptional. Inconvenience, aesthetic considerations, physical handicaps, personal preferences, or the disapproval of one's neighbors likewise cannot, as a rule, qualify as an exceptional hardship. All of these problems can be resolved through other means without granting a variance, even if the alternative is more expensive, or requires the property owner to build elsewhere or put to a different use than originally intended.

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

*Historic structure* means 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 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.

*Levee* means a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control or divert the flow of water so as to provide protection from temporary flooding.

*Levee system* means a flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accord with sound engineering practices.

*Lowest floor* means the lowest floor of the lowest enclosed area, including basement. (See "*Basement*" definition.)

1. An unfinished or flood-resistant enclosure below the lowest floor that is 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 it conforms to applicable non-elevation design requirements, including, but not limited to:
  - a. The flood openings standard in *Section 20-4.1.C.3*;
  - b. The anchoring standards in *Section 20-4.1.A*;
  - c. The construction materials and methods standards in *Section 20-4.1.B*; and
  - d. The standards for utilities in *Section 20-4.2*.
2. For residential structures, all subgrade enclosed areas are prohibited as they are considered to be basements. (See "*Basement*" definition.) This prohibition includes below-grade garages and storage areas.

*Manufactured home* means a structure, transportable in one (1) or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does *not* include a "recreational vehicle".

*Manufactured home park or subdivision* means a parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale.

*Market value* is defined in the City of Alameda's, or in [if] none exist, the County of Alameda's substantial damage/improvement procedures. See *Section 20-3.2.B.1*.

*Mean sea level* means, for purpose of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD) of 1929, North American Vertical Datum (NAVD) of 1988, or other datum, to which base flood elevations shown on a community's flood insurance rate map are referenced.

*New construction*, for floodplain management purposes, means structures for which the "start of construction" commenced on or before June 3, 1975, the date the City of Alameda first adopted a floodplain management ordinance, and includes any subsequent improvements to such structures.

*New manufactured home park or subdivision* means 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 on or before June 3, 1975, the date the City of Alameda first adopted a floodplain management ordinance.

*Obstruction* includes, but is not limited to, any dam, wall, wharf, embankment, levee, dike, pile, abutment, protection, excavation, channelization, bridge, conduit, culvert, building, wire, fence, rock, gravel, refuse, fill, structure, vegetation or other material in, along, across or projecting into any watercourse which may alter, impede, retard or change the direction and/or velocity of the flow water, or due to its location, its propensity to snare or collect debris carried by the flow water, or its likelihood of being carried downstream.

*One-hundred-year flood or 100-year flood*—See "Base flood".

*Primary frontal dune* means a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes immediately landward and adjacent to the beach and subject to erosion and overtopping from high tides and waves during major coastal storms. The inland limit of the primary frontal dune occurs at the point where there is a distinct change from a relatively mild slope.

*Program deficiency* means a defect in a community's floodplain management regulations or administrative procedures that impairs effective implementation of those floodplain management regulations.

*Public safety and nuisance* as related to *Section 20-5* of this chapter, means that the granting of a variance must not result in anything which is injurious to safety or health of an entire community or neighborhood, or any considerable number of persons, or unlawfully obstructs the free passage or use, in the customary manner, of any navigable lake, or river, bay, stream, canal, or basin.

*Recreational vehicle* means a vehicle which is:

1. Built on a single chassis;
2. Four hundred (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.

*Regulatory floodway* means 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.

*Remedy a violation* means to bring the structure or other development into compliance with state or local floodplain management regulations, or if this is not possible, to reduce the impacts of its noncompliance. Ways that impacts may be reduced include protecting the structure or other affected development from flood damages, implementing the enforcement provisions of the ordinance or otherwise deterring future similar violations, or reducing state or federal financial exposure with regard to the structure or other development.

*Riverine* means relating to, formed by, or resembling a river (including tributaries), stream, brook, etc.

*Sand dunes* means naturally occurring accumulations of sand in ridges or mounds landward of the beach.

*Sheet flow area*—See "Area of shallow flooding".

*Special flood hazard areas (SFHA)* means an area in the floodplain subject to a one (1) percent or greater chance of flooding in any given year. It is shown on an FHBM or FIRM as zone A, AO, A1-A30, AE, A99, AH, V1-V30, VE or V.

*Start of construction* includes substantial improvement and other proposed new development and means the date the building permit was issued, provided the actual start of

construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement was within one hundred ninety (190) days from the date of the permit. 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 manufacture 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 the 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 construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alternation affects the external dimensions of the building.

*Structure* means a walled and roof building that is principally above ground; this includes a gas or liquid storage tank or a manufactured home.

*Substantial damage* means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage", regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a structure to correct existing violations or state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or
2. Any alteration of a "historic structure" provided that the alteration will not preclude the structure's continued designation as a "historic structure".

*V zone*—See "Coastal high hazard area".

*Variance* means a grant of relief from the requirements of this chapter which permits construction in a manner that would otherwise be prohibited by this chapter.

*Violation* means the failure of a structure or other development to be fully complaint [compliant] with this chapter. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in this chapter is presumed to be in violation until such time as that documentation is provided.

*Water surface elevation* means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929, in the floodplains of coastal or riverine areas.

*Watercourse* means a lake, river, creek, stream, wash, arroyo, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designed areas in which substantial flood damage may occur.

(Ord. No. 2997 N.S., § 1, 6-17-09)

## 20-2 GENERAL PROVISIONS.

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### **20-2.1 Lands to Which This Chapter Applies.**

This chapter shall apply to all areas of special flood hazards within the jurisdiction of City of Alameda.

(Ord. No. 2997 N.S., § 1, 6-17-09)

### **20-2.2 Basis for Establishing the Areas of Special Flood Hazard.**

The areas of special flood hazard identified by the Federal Emergency Management Agency (FEMA) in the "Flood Insurance Study (FIS) for Alameda County, California, and Incorporated Area dated August 3, 2009, with accompanying flood insurance rate maps (FIRMs) and flood boundary and floodway maps (FBFMs), dated August 3, 2009, and all subsequent amendments and/or revisions, are hereby adopted by reference and declared to be a part of this chapter. This FIS and attendant mapping are the minimum area of applicability of chapter and which are recommended to the City Council by the Floodplain Administrator. The study, FIRMs and FBFMs are on file at the public works department.

(Ord. No. 2997 N.S., § 1, 6-17-09)

### **20-2.3 Compliance.**

No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this chapter and other applicable regulations. Violation of the requirements (including violations of conditions and safeguards) shall constitute a misdemeanor. Nothing herein shall prevent the city council from taking such lawful action as is necessary to prevent or remedy any violation.

(Ord. No. 2997 N.S., § 1, 6-17-09)

### **20-2.4 Abrogation and Greater Restrictions.**

This chapter is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this chapter and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

(Ord. No. 2997 N.S., § 1, 6-17-09)

### **20-2.5 Interpretation.**

In the interpretation and application of this chapter, all provisions shall be:

- A. Considered as minimum requirements;
- B. Liberally construed in favor of the governing body; and
- C. Deemed neither to limit nor repeal any other powers granted under state statutes.

(Ord. No. 2997 N.S., § 1, 6-17-09)



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### **20-2.6 Warning and Disclaimer of Liability.**

The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This chapter does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This chapter shall not create liability on the part of the city council, any officer or employee thereof, the State of California, or the Federal Emergency Management Agency, for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

(Ord. No. 2997 N.S., § 1, 6-17-09)

### **20-2.7 Severability.**

This chapter and the various parts hereof are hereby declared to be severable. Should any section of this chapter be declared by the courts to be unconstitutional or invalid, such decision shall not affect the validity of the ordinance as a whole, or any portion thereof other than the section so declared to be unconstitutional or invalid.

(Ord. No. 2997 N.S., § 1, 6-17-09)

## **20-3 ADMINISTRATION**

### **20-3.1 Designation of the Floodplain Administrator.**

The public works director is hereby appointed to administer, implement, and enforce this chapter by granting or denying development permits in accord with its provisions.

(Ord. No. 2997 N.S., § 1, 6-17-09)

### **20-3.2 Duties and Responsibilities of the Floodplain Administrator.**

The duties and responsibilities of the floodplain administrator shall include, but not be limited to, the following:

- A. *Permit Review.* Review all development permits to determine:
  - 1. Permit requirements of this chapter have been satisfied, including determination of substantial improvements and substantial damage of existing structures;
  - 2. All other required state and federal permits have been obtained;
  - 3. The site is reasonably safe from flooding;
  - 4. The proposed development does not adversely affect the carrying capacity of areas where base flood elevations have been determined but a floodway has not been designated. This means 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 (1) foot at any point within Alameda County, California, and Incorporated Area; and

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5. All letters of map revision (LOMRs) for flood control projects are approved prior to the issuance of building permits. Building permits must not be issued based on conditional letters of map revision (CLOMRs). Approved CLOMRs allow construction of the proposed flood control project and land preparation as specified in the "start of construction" definition.
- B. *Development of Substantial Improvement and Substantial Damage Procedures.*
1. Using FEMA publication FEMA 213, "Answers to Questions About Substantially Damaged Building," develop detailed procedures for identifying and administering requirements for substantial improvement and substantial damage, to include defining "market value."
  2. Assure procedures are coordinated with other departments/divisions and implemented by community staff.
- C. *Review, Use and Development of Other Base Flood Data.* When base flood elevation data has not been provided in accordance with section 20-2.2, the floodplain administrator shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a federal or state agency, or other source, in order to administer section 20-4.
- NOTE: A base flood elevation may be obtained using one (1) of two (2) methods from the FEMA publication, FEMA 265, "Managing Floodplain Development in Approximate Zone A Areas—A Guide for Obtaining and Developing Base (100-year) Flood Elevations" dated July 1995.
- D. *Notification of Other Agencies.*
1. *Alteration or relocation of a watercourse:*
    - a. Notify adjacent communities and the California Department of Water Resources prior to alteration or relocation.
    - b. Submit evidence of such notification to the federal Emergency Management Agency; and
    - c. Assure that the flood carrying capacity within the altered or relocated portion of said watercourse is maintained.
  2. *Base flood elevation changes due to physical alterations:*
    - a. Within six (6) months of information becoming available or project completion, whichever comes first, the floodplain administrator shall submit or assure that the permit applicant submits technical or scientific data to FEMA for a letter of map revision (LOMR).
    - b. All LOMRs for flood control projects are approved prior to the issuance of building permits. Building permits must not be issued based on conditional letters of map revision (CLOMRs). Approved CLOMRs allow construction of the proposed flood control project and land preparation as specified in the "start of construction" definition.

Such submissions are necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and floodplain management requirements are based on current data.

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3. *Changes in corporate boundaries:* Notify FEMA in writing whenever the corporate boundaries have been modified by annexation or other means and include a copy of a map of the community clearly delineating the new corporate limits.
- E. *Documentation of Floodplain Development.* Obtain and maintain for public inspection and make available as needed the following:
1. Certification required by *Section 20-4.1.C.1* and *Section 20-4.4* (lowest floor elevations);
  2. Certification required by *Section 20-4.1.C.2* (elevation or floodproofing of nonresidential structures);
  3. Certification required by *Section 20-4.1.C.3* (wet floodproofing standard);
  4. Certification of elevation required by *Section 20-4.3.A.3* (subdivisions and other proposed development standards);
  5. Certification required by *Section 20-4.6.B* (floodway encroachments);
  6. Information required by *Section 20-4.7.F* (coastal construction standards); and
  7. Maintain a record of all variance actions, including justification for their issuance, and report such variances issued in its biennial report submitted to the Federal Emergency Management Agency.
- F. *Map Determination.* Make interpretation where needed, as to the exact location of the boundaries of the areas of special flood hazard, where there appears to be a conflict between a mapped boundary and actual field conditions. The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in *Section 20-3.4*
- G. *Remedial Action.* Take action to remedy violations of this chapter as specified in *Section 20-2.3*
- H. *Biennial Report.* Complete and submit biennial report to FEMA.
- I. *Planning.* Assure community's general plan is consistent with floodplain management objectives herein.

(Ord. No. 2997 N.S., § 1, 6-17-09)

### **20.3.3 Development Permit.**

A development permit shall be obtained before any construction or other development, including manufactured homes, within any area of special flood hazard established in *Section 2-2.2*. Application for a development permit shall be made on forms furnished by the City of Alameda. The applicant shall provide the following minimum information:

- A. Plans in duplicate, drawn to scale, showing:
1. Location, dimensions, and elevation of the area in question, existing or proposed structures, storage of materials and equipment and their location.
  2. Proposed locations of water supply, sanitary sewer, and other utilities;

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3. Grading information showing existing and proposed contours, any proposed fill, and drainage facilities;
  4. Location of the regulatory floodway when applicable;
  5. Base flood elevation information as specified in *Section 20-2.2* or *Section 20-3.2.C*;
  6. Proposed elevation in relation to mean sea level, of the lowest floor (including basement) of all structures; and
  7. Proposed elevation in relation to mean sea level to which any nonresidential structure will be floodproofed, as required in *Section 20-4.1.C.2* of this chapter and detailed in FEMA Technical Bulletin TB 3-93.
- B. Certification from a registered civil engineer or architect that the nonresidential floodproofed building meets the floodproofing criteria in *Section 20-4.1.C.2*.
  - C. For a crawl-space foundation, location and total net area of foundation openings as required in *Section 20-4.1.C.3* of this chapter and detailed in FEMA Technical Bulletins 1-93 and 7-93.
  - D. Description of the extent to which any watercourse will be altered or relocated as a result of proposed development.
  - E. All appropriate certifications listed in *Section 20-3.2.E* of this chapter.

(Ord. No. 2997 N.S., § 1, 6-17-09)

#### **20-3.4 Appeals.**

The City Council of the City of Alameda shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the floodplain administrator in the enforcement or administration of this chapter.

(Ord. No. 2997 N.S., § 1, 6-17-09)

### **20-4 PROVISIONS FOR FLOOD HAZARD REDUCTION**

#### **20-4.1 Standards of Construction.**

In all areas of special flood hazards the following standards are required:

- A. *Anchoring.* All new construction and substantial improvements of structures, including manufactured homes, shall be adequately anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.
- B. *Construction Materials and Methods.* All new construction and substantial improvements of structures, including manufactured homes, shall be constructed:
  1. With flood resistant materials, and utility equipment resistant to flood damage for areas below the base flood elevation;
  2. Using methods and practices that minimize flood damage;

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3. With electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding; and
  4. Within zones AH or AO, so that there are adequate drainage paths around structures on slopes to guide flood waters around and away from proposed structures.

**C. *Elevation and Floodproofing.***

1. ***Residential construction.*** All new construction or substantial improvements of residential structures shall have the lowest floor, including basement:
  - a. In AE, AH, A1-30 zones, elevated to or above the base flood elevation.
  - b. In an AO zone, elevated above the highest adjacent grade to a height equal to or exceeding the depth number specified in feet on the FIRM, or elevated at least two (2) feet above the highest adjacent grade if no depth number is specified.
  - c. In an A zone, without BFEs specified on the FIRM (unnumbered A zone), elevated to or above the base flood elevation; as determined under *Section 20-3.2.C.*

Upon the completion of the structure, the elevation of the lowest floor, including basement, shall be certified by a registered civil engineer or licensed land surveyor, and verified by the community building inspector to be properly elevated. Such certification and verification shall be provided to the floodplain administrator.

2. ***Nonresidential construction.*** All new construction or substantial improvements of nonresidential structures shall either be elevated to conform with *Section 20-4.1.C.1.* or:
  - a. Be floodproofed, together with attendant utility and sanitary facilities, below the elevation recommended under *Section 20-4.1.C.1.*, so that the structure is watertight with walls substantially impermeable to the passage of water;
  - b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and
  - c. Be certified by a registered civil engineer or architect that the standards of *Section 20-4.1.C.2.a. and b.* are satisfied. Such certification shall be provided to the Floodplain Administrator.
3. ***Flood openings.*** All new construction and substantial improvements of structures with fully enclosed areas below the lowest floor (excluding basements) that are usable solely for parking of vehicles, building access or storage, and which are subject to flooding, shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwater. Designs for meeting this requirement must meet the following minimum criteria:
  - a. ***For non-engineered openings:***

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1. Have a minimum of two openings on different sides having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding;
  2. The bottom of all openings shall be no higher than one foot above grade;
  3. Openings may be equipped with screens, louvers, valves or other coverings or devices provided that they permit the automatic entry and exit of floodwater; and
  4. Buildings with more than one enclosed area must have openings on exterior walls for each area to allow flood water to directly enter; or
  5. Be certified by a registered civil engineer or architect.
4. *Manufactured homes.*
    - a. See *Section 20-4.4*
  5. *Garages and low cost accessory structures.*
    - a. *Attached garages.*
      1. A garage attached to a residential structure, constructed with the garage floor slab below the BFE, must be designed to allow for the automatic entry of flood waters. See *Section 20-4.1.C.3*. Areas of the garage below the BFE must be constructed with flood resistant materials. See *Section 20-4.1.B*.
      2. A garage attached to a nonresidential structure must meet the above requirements or be dry floodproofed. For guidance on below grade parking areas, see FEMA Technical Bulletin TB-6.
    - b. *Detached garages and accessory structures.*
      1. "Accessory structures" used solely for parking (two-car detached garages or smaller) or limited storage (small, low-cost sheds), as defined in *Section 20-1* may be constructed such that its floor is below the base flood elevation (BFE), provided the structure is designed and constructed in accordance with the following requirements:
        - a. Use of the accessory structure must be limited to parking or limited storage;
        - b. The portions of the accessory structure located below the BFE must be built using flood-resistant materials;
        - c. The accessory structure must be adequately anchored to prevent floatation, collapse and lateral movement;
        - d. Any mechanical and utility equipment in the accessory structure must be elevated or floodproofed to or above the BFE;
        - e. The accessory structure must comply with floodplain encroachment provisions in *Section 20-4.6*; and

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- f. The accessory structure must be designed to allow for the automatic entry of flood waters in accordance with *Section 20-4.1.C.3.*
  2. Detached garages and accessory structures not meeting the above standards must be constructed in accordance with all applicable standards in *Section 20-4.1*

(Ord. No. 2997 N.S., § 1, 6-17-09)

#### **20-4.2 Standards for Utilities.**

- A. All new and replacement water supply and sanitary sewage systems shall be designed to minimize or eliminate:
  1. Infiltration of flood waters into the systems; and
  2. Discharge from the systems into flood waters.
- B. On-site waste disposal systems shall be located to avoid impairment to them, or contamination from them during flooding.

(Ord. No. 2997 N.S., § 1, 6-17-09)

#### **20-4.3 Standards for Subdivisions and Other Proposed Development.**

- A. All new subdivisions proposals and other proposed development, including proposals for manufactured home parks and subdivisions, greater than fifty (50) lots or five (5) acres, whichever is the lesser, shall:
  1. Identify the special flood hazard areas (SFHA) and base flood elevations (BFE).
  2. Identify the elevations of lowest floors of all proposed structures and pads on the final plans.
  3. If the site is filled above the base flood elevation, the following as-built information for each structure shall be certified by a registered civil engineer or licensed land surveyor and provided as part of an application for a Letter of map revision based on fill (LOMR-F) to the floodplain administrator:
- B. All subdivisions proposals and other proposed development shall be consistent with the need to minimize flood damage.
- C. All subdivision proposals and other proposed development shall be consistent with the need to minimize flood damage.
- D. All subdivisions and other proposed development shall provide adequate drainage to reduce exposure to flood hazards.

(Ord. No. 2997 N.S., § 1, 6-17-09)

#### **20-4.4 Standards for Manufactured Homes.**

- A. All manufactured homes that are placed or substantially improved, on site located: (1) outside of a manufactured home park or subdivision; (2) in a new manufactured home park

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or subdivision; (3) in an expansion to an existing manufactured home park or subdivision; or (4) in an existing manufactured home park or subdivision upon which a manufactured home has incurred "substantial damage" as a result of flood, shall:

1. Within zones A1-30, AH, and AE on the community's flood insurance rate map, be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely fastened to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.
  2. Within zones V1-20, V, and VE on the community's flood insurance rate map, meet the requirements of *Section 20-4.7*
- B. All manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision with zones A1-30, AH, AE, V1-30, V, and VE on the community's flood insurance rate map that are not subject to the provisions of *Section 20-4.4.A.* will be securely fastened to an adequately anchored foundation system to resist flotation, collapse, and lateral movement, and be elevated so that either the:
1. Lowest floor of the manufactured home is at or above the base flood elevation; or
  2. Manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade.

Upon the completion of the structure, the elevation of the lowest floor including basement shall be certified by a registered civil engineer or licensed land surveyor, and verified by the community building inspector to be properly elevated. Such certification and verification shall be provided to the floodplain administrator.

(Ord. No. 2997 N.S., § 1, 6-17-09)

#### **20-4.5 Standards for Recreational Vehicles.**

- A. All recreational vehicles placed in zones A1-20, AH, AE, V1-30 and VE will either:
1. Be on the site for fewer than one hundred eighty (180) consecutive days; or
  2. Be fully licensed and ready for highway use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions; or
  3. Meet the permit requirements of *Section 20-3.3* of this chapter and the elevation and anchoring requirements for manufactured homes in *Section 20-4.4*.
- B. Recreational vehicles placed on sited within zones V1-30, V, and VE on the community's flood insurance rate map will meet the requirements of *Section 20-4.5.A.* and *Section 20-4.7*

(Ord. No. 2997 N.S., § 1, 6-17-09)



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#### **20-4.6 Floodways.**

Since floodways are an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles, and erosion potential, the following provisions apply:

- A. Until a regulatory floodway is adopted, no new construction, substantial development, or other development (including fill) shall be permitted within zones A1-30 and AE, unless it is demonstrated that the cumulative effect of the proposed development, which combined with all other development, will not increase the water surface elevation of the base flood more than one (1) foot at any point within the County of Alameda, California, and Incorporated Area.
- B. Within an adopted regulatory floodway, the County of Alameda, California, and Incorporated Area shall prohibit encroachments, including fill, new construction, substantial improvements, and other development, unless certification by a registered civil engineer is provided demonstrating that the proposed encroachment shall not result in any increase in flood levels during the occurrence of the base flood discharge.
- C. If *Sections 20-4.6.A. and B.* are satisfied, all new construction, substantial improvement, and other proposed new development shall comply with all other applicable flood hazard reduction provisions of *Section 20-4*

(Ord. No. 2997 N.S., § 1, 6-17-09)

#### **20-4.7 Coastal High Hazardous Areas.**

Within coastal high hazard areas, zones V, V1-30, and VE, as established under Section 20-2.2. the following standards apply:

- A. All new residential and non-residential construction, including substantial improvement/damage, shall be elevated on adequately anchored pilings or columns and securely anchored to such pilings or columns so that the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to or above the base flood level. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable state or local building standards.
- B. All new construction and other development shall be located on the landward side of the reach of mean high tide.
- C. All new construction and substantial improvement shall have the space below the lowest floor free of obstructions or constructed with breakaway walls as defined in *Section 20.1* of this chapter. Such enclosed space shall not be used for human habitation and will be usable solely for parking of vehicles, building access or storage.
- D. Fill shall not be used for structural support of buildings.
- E. Man-made alteration of sand dunes which would increase potential flood damage is prohibited.

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- F. The floodplain administrator shall obtain and maintain the following records:
1. Certification by a registered engineer or architect that a proposed structure complies with *Section 20-4.7.A.*; and
  2. The elevation (in relation to mean sea level) of the bottom of the lowest horizontal structural member of the lowest floor (excluding pilings or columns) of all new and substantially improved structures, and whether such structures contain a basement.

(Ord. No. 2997 N.S., § 1, 6-17-09)

## **20-5. VARIANCE PROCEDURE**

### **20-5.1 Nature of Variances.**

The issuance of a variance is for floodplain management purposes only.

The variance criteria set forth in this section of the chapter are based on the general principle of zoning law that variances pertain to a piece of property and are not personal in nature. A variance may be granted for a parcel of property with physical characteristics so unusual that complying with the requirements of this ordinance would create an exceptional hardship to the applicant or the surrounding property owners. The characteristics must be unique to the property and not be shared by adjacent parcels. The unique characteristic must pertain to the land itself, not to the structure, its inhabitants, or the property owners.

It is the goal of the City Council to help protect its citizens from flooding. This need is so compelling and the implications of the cost of insuring a structure built below flood level are so serious that variances from the flood elevation or from other requirements in the flood ordinance are quite rare. The long term goal of preventing and reducing flood loss and damage can only be met if variances are strictly limited. Therefore, the variance guidelines provided in this chapter are more detailed and contain multiple provisions that must be met before a variance can be properly granted. The criteria are designed to screen out those situations in which alternatives other than a variance are more appropriate.

(Ord. No. 2997 N.S., § 1, 6-17-09)

### **20-5.2 Conditions for Variances.**

- A. Generally, variances may be issued for new construction, substantial improvement, or other proposed new development to be erected on a lot of one-half ( $\frac{1}{2}$ ) acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing that the procedures of *Sections 20-3 and 20-4* of this chapter have been fully considered. As the lot size increases beyond one-half ( $\frac{1}{2}$ ) acre, the technical justification required for issuing the variance increases.
- B. Variances may be issued for the repair or rehabilitation of "historic structures" (as defined in *Section 20-1* of this chapter) upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as an historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

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- C. Variances shall not be issued within any mapped regulatory floodway if any increase in flood levels during the base flood discharge would result.
  - D. Variances shall only be issued upon a determination that the variance in the "minimum necessary" considering the flood hazard, to afford relief. "Minimum necessary" means to afford relief with a minimum of deviation from the requirements of this chapter. For example, in the case of variances to an elevation requirement, this means the city council need not grant permission for the applicant to build at grade, or even to whatever elevation the applicant proposes, but only to that elevation which the city council believes will both provide relief and preserve the integrity of the local ordinance.
  - E. Any applicant to whom a variance is granted shall be given written notice over the signature of a community official that:
    - 1. The issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as twenty-five (\$25.00) dollars for one hundred (\$100.00) dollars of insurance coverage, and
    - 2. Such construction below the base flood level increases risks to life and property. It is recommended that a copy of the notice shall be recorded by the floodplain administrator in the Office of the Alameda County Recorder and shall be recorded in a manner so that it appears in the chain of title of the affected parcel of land.
  - F. The floodplain administrator will maintain a record of all variance actions, including justification for their issuance, and report such variances issued in its biennial report submitted to the Federal Emergency Management Agency.

(Ord. No. 2997 N.S., § 1, 6-17-09)

### **20-5.3 Appeal Board.**

- A. In passing upon requests for variances, the city council shall consider all technical evaluations, all relevant factors, standards specified in other sections of this chapter, and the:
  - 1. Danger the materials may be swept onto other lands to the injury of others.
  - 2. Danger of life and property due to flooding or erosion damage;
  - 3. Susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the existing individual owner and future owners of the property;
  - 4. Importance of the services provided by the proposed facility to the community;
  - 5. Necessity to the facility of a waterfront location, where applicable;
  - 6. Availability of alternative locations for the proposed use which are not subject to flooding or erosion damage;
  - 7. Compatibility of the proposed use with existing and anticipated development;
  - 8. Relationship of the proposed use to the comprehensive plan and floodplain management program for that area;
  - 9. Safety to access to the property in time of flood for ordinary and emergency vehicles;

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10. Expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site; and
  11. Costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water system, and streets and bridges.
- B. Variances shall only be issued upon a:
1. Showing of good and sufficient cause;
  2. Determination that failure to grant the variance would result in exceptional "hardship" to the applicant; and
  3. Determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, or extraordinary public expense, create a nuisance (see "Public safety and nuisance"), cause "fraud and victimization" of the public, or conflict with existing local laws or ordinances.
- C. Variances may be issued for new construction, substantial improvement, and other proposed new development necessary for the conduct of a functionally dependent use provided that the provisions of *Sections 20-5.3.A. through 5.3.D.* are satisfied and that the structure or other development is protected by methods that minimize flood damages during the base flood and does not result in additional threats to public safety and does not create a public nuisance.
- D. Upon consideration of the factors of *Section 20-5.2.A.* and the purposes of this chapter, the city council may attach such conditions to the granting of variances as it deems necessary to further the purposes of this chapter
- (Ord. No. 2997 N.S., § 1, 6-17-09)