Article 10. Supplemental Standards

10.01 Floodplain Regulations

A. **Intent.** The Flood Plain standards in this Section have the following intent:

1. Minimize public and private losses due to flood conditions in specific areas;
2. Protect human life and health;
3. Minimize expenditure of public money for costly flood control projects;
4. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
5. Minimize prolonged business interruptions;
6. Minimize damage to critical facilities, infrastructure and other public facilities and utilities such as water, sewer and gas mains; electric and communication stations; and streets and bridges located in floodplains;
7. Help maintain a stable tax base by providing for the sound use and development of flood prone areas in such a manner as to minimize future flood blight areas;
8. Ensure that potential buyers are notified that property is in a flood hazard area; and
9. Ensure that those who occupy the property in a flood hazard area assume responsibility for their actions.

B. **Methods of reducing flood losses.** This Section accomplishes the intent in 10.01.A by:

1. Restricting or prohibiting uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
2. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
3. Controlling the alteration of natural floodplains, stream channels and natural protective barriers which help accommodate or channel floodwaters;
4. Controlling, filling, grading, dredging and other development which may increase flood damage; and
5. Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or which may have the cumulative effect of increasing flood hazards in other areas.

C. **General provisions.**

1. *Applicability*. This Section shall apply to all Special Flood Hazard Areas and areas removed from the floodplain by the issuance of a FEMA Letter of Map Revision Based on Fill (LOMR-F) within the jurisdiction of Fort Lupton, Colorado.

2. *Establishment of Flood Hazard Areas*. The Special Flood Hazard Areas identified by the Federal Emergency Management Administration in a scientific and engineering report

entitled "The Flood Insurance Study for the City of Fort Lupton, Colorado," dated October 1978, with accompanying Flood Insurance Rate Maps and/or Flood Boundary-Floodway Maps (FIRM and/or FBFM), and any revisions thereto, are hereby adopted by reference and declared to be a part of this Section. These Special Flood Hazard Areas identified by the FIS and attendant mapping are the minimum area of applicability of this Section and may be supplemented by studies designated and approved by the City Council. The Floodplain Administrator shall keep a copy of the Flood Insurance Study (FIS), DFIRMs, FIRMs and/or FBFMs on file and available for public inspection.

3. *Permit.* A Floodplain Development Permit shall be required to ensure conformance with the provisions of this Section.

4. *Compliance.* No structure or land shall hereafter be located, altered or have its use changed within the Special Flood Hazard Area without full compliance with the terms of this Section and other applicable regulations. Any person who violates this Section or fails to comply with any of its requirements shall be subject to penalties as set forth in Section 1-72 of this Code. Nothing herein shall prevent the City Council from taking such lawful action as is necessary to prevent or remedy any violation. These regulations meet the minimum requirements as set forth by the Colorado Water Conservation Board and the National Flood Insurance Program.

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

6 *Interpretation*. In the interpretation and application of this Section, 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.

7. *Warning and Disclaimer of Liability.* The degree of flood protection required by this Section is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. On rare occasions, greater floods can and will occur and flood heights may be increased by man-made or natural causes. This Section does not imply that land outside the Special Flood Hazard Area or uses permitted within such areas will be free from flooding or flood damages. This Section shall not create liability on the part of the City, any officer or employee thereof or the Federal Emergency Management Administration for any flood damages that result from reliance on this Section or any administrative decision lawfully made thereunder.

D. **Administration.**

1. *Floodplain Administrator.* The City Engineer is hereby appointed as Floodplain Administrator to administer, implement and enforce the provisions of this Section and other appropriate sections of 44 C.F.R. (National Flood Insurance Program Regulations) pertaining to floodplain management.

2. *Floodplain Administrator Duties.* The Floodplain Administrator has the following duties and responsibilities:
   a. Maintain and hold open for public inspection all records pertaining to the provisions of this Section, including the actual elevation (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures and any floodproofing certificate required by Subsection D.3. below.
   b. Review, approve or deny all applications for Floodplain Development Permits required by adoption of this Section.
   c. Review Floodplain Development Permit applications to determine whether a proposed building site, including the placement of manufactured homes, will be reasonably safe from flooding.
   d. Review permits for proposed development to assure that all necessary permits have been obtained from those federal, state or local governmental agencies (including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C., 1334) from which prior approval is required.
   e. Inspect all development at appropriate times during the period of construction to ensure compliance with all provisions of this Section, including proper elevation of the structure.
   f. Where interpretation is needed as to the exact location of the boundaries of the Special Flood Hazard Area (for example, where there appears to be a conflict between a mapped boundary and actual field conditions), the Floodplain Administrator shall make the necessary interpretation.
   g. When Base Flood Elevation data has not been provided, the Floodplain Administrator shall obtain, review and reasonably utilize any Base Flood Elevation data and Floodway data available from a federal, state or other source, in order to administer the provisions of this Section.
   h. For waterways with Base Flood Elevations for which a regulatory Floodway has not been designated, no new construction, substantial improvements or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's 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-half (½) foot at any point within the community.
   i. Under the provisions of 44 C.F.R. Chapter 1, Section 65.12, of the National Flood Insurance Program regulations, a community may approve certain development in Zones A1-30, AE and AH, on the community's FIRM which increases the water surface elevation of the base flood by more than one-half (½) foot, provided that the community first applies for a conditional FIRM revision through FEMA (Conditional Letter of Map Revision), fulfills the requirements for such revisions as established under the provisions of Section 65.12 and receives FEMA approval.
   j. Notify, in riverine situations, adjacent communities and the State Coordinating Agency, which is the Colorado Water Conservation Board, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to FEMA.
   k. Ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained.

3. *Permit Procedures*. Application for a Floodplain Development Permit shall be presented to the Floodplain Administrator on forms furnished by him or her and may include plans in duplicate drawn to scale showing the location, dimensions and elevation of proposed landscape alterations, existing and proposed structures, including the placement of manufactured homes, and the location of the foregoing in relation to the Special Flood Hazard Area. Additionally, the following information is required:
   a. Elevation, in relation to mean sea level, of the lowest floor (including basement) of all new and substantially improved structures;
   b. Elevation, in relation to mean sea level, to which any nonresidential structure has been floodproofed;
   c. A certificate from a registered Colorado professional engineer or architect that the nonresidential floodproofed structure shall meet the floodproofing criteria of Subsection E.2.(b).
   d. A description of the extent to which any watercourse will be altered or relocated as a result of the proposed development.
   e Maintain a record of all such information in accordance with Subsection D.2.

4. *Decision Criteria.* Approval or denial of a Floodplain Development Permit by the Floodplain Administrator shall be based on all of the provisions of this Section and the following relevant factors:
   a. The danger to life and property due to flooding or erosion damage.
   b. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner.
   c. The danger that materials may be swept onto other lands to the injury of others.
   d. The compatibility of the proposed use with existing and anticipated development.
   e. The safety of access to the property in times of flood for ordinary and emergency vehicles.
   f. The costs of providing governmental services during and after flood conditions, including maintenance and repair of streets and bridges, and public utilities and facilities such as sewer, gas, electrical and water systems.
   g. The expected heights, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site.
   h. The necessity to the facility of a waterfront location, where applicable.
   i. The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use.
   j. The relationship of the proposed use to the comprehensive plan for that area.

5. *Variance Procedure.*

   a. Variances may be issued for new construction and substantial improvements to be erected on a lot of one-half (½) acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing the relevant factors in Subsection A. have been fully considered. As the lot size increases beyond the one-half acre, the technical justification required for issuing the variance increases.

   b Upon consideration of the factors noted above and the intent of this Section, the Appeal Board may attach such conditions to the granting of variances as it deems necessary to further the intent this Section

   c. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

   d. Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the

structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

e. Prerequisites for granting variances:
(1) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
(2) Variances shall only be issued upon:
(a) Showing a good and sufficient cause;
(b) A determination that failure to grant the variance would result in exceptional hardship to the applicant; and
(c) A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety or extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.
(3) Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with the lowest floor elevation below the Base Flood Elevation, and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.

f. Variances may be issued by a community for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use, provided that:
(1) The criteria outlined in this Subsection D.5. are met; and
(2) The structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

g Appeal Board.
(1) The Board of Adjustment, as established by the City, shall hear and decide appeals and requests for variance from the requirements of this Section.
(2) The Board of Adjustment shall hear and decide appeals when it is alleged that there is an error in any requirement, decision or determination made by the Planning Department in the enforcement or administration of this Section.
(3) Those aggrieved by the decision of the Board of Adjustment, or any taxpayer, may appeal such decision to the Weld County District Court, as provided in Section 31-23-307, C.R.S.
(4) In passing upon such applications, the Board of Adjustment shall consider all technical evaluations, all relevant factors and standards specified in other sections of this Section and:
(a) The danger that materials may be swept onto other lands to the injury of others.
(b) The danger to life and property due to flooding or erosion damage.
(c) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner.
(d) The importance of the services provided by the proposed facility to the community.
(e) The necessity to the facility of a waterfront location, where applicable.

(f) The availability of alternative locations for the proposed use, which are not subject to flooding or erosion damage.
(g) The compatibility of the proposed use with existing and anticipated development.
(h) The relationship of the proposed use to the Comprehensive Plan and floodplain management program of that area.
(i) The safety of access to the property in times of flood for ordinary and emergency vehicles.
(j) The expected heights, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site.
(k) The costs of providing governmental services during and after the flood conditions, including maintenance and repair of public utilities and facilities, such as sewer, gas, electrical and water systems and streets and bridges.

(5) Upon consideration of the factors of subsection g.(4) above and the purposes of this Section, the Board of Adjustment may attach such conditions to the granting of variances as it deems necessary to further the purposes of this Section.
(6) The Planning Department shall maintain the records of all appeal actions, including technical information, and report any variances to the Federal Emergency Management Agency upon request.

E. **Provisions for Flood Hazard Reduction.**

1. *General Standards.* In all areas of special flood hazards, the following standards are required:

a. Anchoring.
(1) All new construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic loads and hydrostatic loads, including the effects of buoyancy.
(2) All manufactured homes shall be elevated and anchored to resist flotation, collapse or lateral movement by providing over-the-top and frame ties to ground anchors. Special requirements shall be that:
(a) Over-the-top ties be provided at each of the four corners of the manufactured home, with two additional ties per side at intermediate locations, with manufactured homes less than 50 feet long requiring one additional tie per side;
(b) Frame ties be provided at each corner of the home, with five additional ties per side at intermediate points, with manufactured homes less than 50 feet long requiring four additional ties per side;
(c) All components of the anchoring system be capable of carrying a force of 4,800 pounds; and
(d) Any additions to the manufactured home be similarly anchored.

b. Construction materials and methods:
(1) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
(2) All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.
(3) For all new construction and substantial improvements, fully enclosed areas below the lowest floor that are subject to flooding shall be

designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria: a minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers or other coverings or devices, provided that they permit the automatic entry and exit of floodwaters.

c Utilities.

(1) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.

(2) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the system and discharge from the system into floodwaters.

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

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

d Subdivision proposals.

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

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

(3) All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage.

(4) Base flood elevation data shall be provided for subdivision proposals and other proposed developments which contain at least 50 lots or five acres, whichever is less.

2. *Specific Standards.* In all Special Flood Hazard Areas where base flood elevation data have been provided, the following standards are required:

a. *Residential construction*. New construction and substantial improvement of any residential structure shall have the lowest floor (including basement), electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork) elevated to one foot above the base flood elevation. Upon completion of the structure, the elevation of the lowest floor, including basement, shall be certified by a registered Colorado professional engineer, architect or land surveyor. Such certification shall be submitted to the Floodplain Administrator.

b. *Nonresidential construction*. With the exception of critical facilities, outlined in Subsection E.8 of this Section, new construction and substantial improvements of any commercial, industrial or other nonresidential structure shall either have the lowest floor (including basement), electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork) elevated to one foot above the base flood elevation or, together with attendant utility and sanitary facilities, be designed so that at one foot above the base flood

elevation the structure 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.

A registered Colorado professional engineer or architect shall develop and/or review structural design, specifications and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice as outlined in this Subsection. Such certification shall be maintained by the Floodplain Administrator, as proposed in Subsection D.3 above.

c. *Enclosures.* New construction and substantial improvements, with fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access or storage in an area other than a basement, 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 floodwaters.

Designs for meeting this requirement must either be certified by a registered Colorado professional engineer or architect or meet or exceed the following minimum criteria:

(1) A minimum of two openings, having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding, shall be provided.
(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 floodwaters.

d. *Manufactured homes*. All manufactured homes that are placed or substantially improved within Zones A1-30, AH and AE on the community's FIRM on sites (i) outside of a manufactured home park or subdivision, (ii) in a new manufactured home park or subdivision, (iii) in an expansion to an existing manufactured home park or subdivision, or (iv) in an existing manufactured home park or subdivision on which a manufactured home has incurred substantial damage as a result of a flood, shall be elevated on a permanent foundation such that the lowest floor of the manufactured home, electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork) are elevated to one foot above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement.

All manufactured homes placed or substantially improved on sites in an existing manufactured home park or subdivision within Zones A1-30, AH and AE on the community's FIRM that are not subject to the provisions of the above Paragraph, shall be elevated so that either:

(1) The lowest floor of the manufactured home, electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork) are one foot above the base flood elevation; or
(2) The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and are securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement.

e. *Recreational vehicles.* All recreational vehicles placed on sites within Zones A1-30, AH and AE on the community's FIRM shall either:
(1) Be on the site for fewer than 180 consecutive days;
(2) Be fully licensed and ready for highway use; or
(3) Meet the permit requirements of this Section and the elevation and anchoring requirements for manufactured homes in Paragraph 2.d. above.
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.

f. *Prior approved activities.* Any activity for which a Floodplain Development Permit was issued by the City or a CLOMR was issued by FEMA prior to January 27, 2014 may be completed according to the standards in place at the time of the permit or CLOMR issuance and will not be considered in violation of this Section if it meets such standards.

3. *Standards for Areas of Shallow flooding (AO/AH Zones).* Located within the Special Flood Hazard Area established in Subsection C.2 of this Section are areas designated as shallow flooding. These areas have special flood hazards associated with base flood depths of one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow; therefore, the following provisions apply:

a. *Residential construction*. All new construction and substantial improvements of residential structures must have the lowest floor (including basement), electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork) elevated above the highest adjacent grade at least one foot above the depth number specified in feet on the community's FIRM (at least three feet if no depth number is specified). Upon completion of the structure, the elevation of the lowest floor, including basement, shall be certified by a registered Colorado professional engineer, architect or land surveyor. Such certification shall be submitted to the Floodplain Administrator.

b. *Nonresidential construction.* With the exception of critical facilities, outlined in Subsection E.8. below, all new construction and substantial improvements of nonresidential structures must have the lowest floor (including basement), electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork) elevated above the highest adjacent grade at least one foot above the depth number specified in feet on the community's FIRM (at least three feet if no depth number is specified), or, together with attendant utility and sanitary facilities, be designed so that the structure is watertight to at least one foot above the base flood level with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads of effects of buoyancy. A registered Colorado professional engineer or architect shall submit a certification to the Floodplain Administrator that the standards of this Section are satisfied.

Within Zones AH or AO, adequate drainage paths around structures on slopes are required to guide floodwaters around and away from proposed structures.

4. *Floodways*. Floodways are administrative limits and tools used to regulate existing and future floodplain development. The State has adopted floodway standards that are more stringent than the FEMA minimum standard (see the definition of Floodway in Subsection

F.) Located within the Special Flood Hazard Area established in Subsection C.2. of this Section are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of floodwaters which carry debris, potential projectiles and erosion potential, the following provisions shall apply:

a. Encroachments are prohibited, including fill, new construction, substantial improvements and other development within the adopted regulatory floodway, unless it has been demonstrated, through hydrologic and hydraulic analyses performed by a licensed Colorado professional engineer and in accordance with standard engineering practice, that the proposed encroachment would not result in any increase (requires a No-Rise Certification) in flood levels within the community during the occurrence of the base flood discharge.

b. If Paragraph 4.a. above is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of this Section.

c. Under the provisions of 44 C.F.R. Chapter 1, Section 65.12, of the National Flood Insurance Regulations, a community may permit encroachments within the adopted regulatory floodway that would result in an increase in Base Flood Elevations, provided that the community first applies for a CLOMR and floodway revision through FEMA.

5. *Alteration of a Watercourse.* For all proposed developments that alter a watercourse within a Special Flood Hazard Area, the following standards apply:

a. Channelization and flow diversion projects shall appropriately consider issues of sediment transport, erosion, deposition and channel migration and properly mitigate potential problems through the project, as well as upstream and downstream of any improvement activity. A detailed analysis of sediment transport and overall channel stability should be considered, when appropriate, to assist in determining the most appropriate design.

b. Channelization and flow diversion projects shall evaluate the residual 100-year floodplain.

c. Any channelization or other stream alteration activity proposed by a project proponent must be evaluated for its impact on the regulatory floodplain and be in compliance with all applicable federal, state and local floodplain rules, regulations and ordinances.

d. Any stream alteration activity shall be designed and sealed by a registered Colorado professional engineer or certified professional hydrologist.

e. All activities within the regulatory floodplain shall meet all applicable federal, state and city floodplain requirements and regulations.

f. Within the regulatory floodway, stream alteration activities shall not be constructed unless the project proponent demonstrates through a floodway analysis and report, sealed by a registered Colorado professional engineer, that there is not more than a 0.00-foot rise in the proposed conditions compared to existing floodway conditions resulting from the project, otherwise known as a No-Rise Certification, unless the community first applies for a CLOMR and Floodway revision in accordance with Subsection E.4. above.

g. Maintenance shall be required for any altered or relocated portions of watercourses so that the flood-carrying capacity is not diminished.

6 *Properties Removed from the Floodplain by Fill.* A Floodplain Development Permit shall not be issued for the construction of a new structure or addition to an existing structure on a property removed from the floodplain by the issuance of a FEMA Letter of Map Revision Based on Fill (LOMR-F) unless such new structure or addition complies with the following:

a. *Residential construction*. The lowest floor (including basement), electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork) must be elevated to one foot above the Base Flood Elevation that existed prior to the placement of fill.

b. *Nonresidential construction*. The lowest floor (including basement), electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork) must be elevated to one foot above the Base Flood Elevation that existed prior to the placement of fill, or, together with attendant utility and sanitary facilities, be designed so that the structure or addition is watertight to at least one foot above the base flood level that existed prior to the placement of fill, with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads of effects of buoyancy.

7. *Standards for Subdivision Proposals.*
   a. All subdivision proposals including the placement of manufactured home parks and subdivisions shall be reasonably safe from flooding. If a subdivision or other development proposal is in a flood-prone area, the proposal shall minimize flood damage.
   b. All proposals for the development of subdivisions including the placement of manufactured home parks and subdivisions shall meet Floodplain Development Permit requirements of Subsection D.3 and the provisions of this Section.
   c. Base flood elevation data shall be generated for subdivision proposals and other proposed development including the placement of manufactured home parks and subdivisions which is greater than 50 lots or five acres, whichever is lesser, if not otherwise provided pursuant to this Section.
   d. All subdivision proposals including the placement of manufactured home parks and subdivisions shall have adequate drainage provided to reduce exposure to flood hazards.
   e. All subdivision proposals including the placement of manufactured home parks and subdivisions shall have public utilities and facilities, such as sewer, gas, electrical and water systems, located and constructed to minimize or eliminate flood damage.

8. *Standards for Critical Facilities.* A critical facility is a structure or related infrastructure, but not the land on which it is situated, as specified in Rule 6 of the Rules and Regulations for Regulatory Floodplains in Colorado, that, if flooded, may result in significant hazards to public health and safety or interrupt essential services and operations for the community at any time before, during and after a flood.

   a. *Classification of critical facilities*. It is the responsibility of the City Council to identify and confirm that specific structures in their community meet the following criteria:

      Critical facilities are classified under the following categories: (1) essential services; (2) hazardous materials; (3) at-risk populations; and (4) vital to restoring normal services.

      (1) Essential services facilities include public safety, emergency response, emergency medical, designated emergency shelters, communications, public utility plant facilities and transportation lifelines. These facilities consist of:

(a) Public safety (police stations, fire and rescue stations, emergency vehicle and equipment storage and emergency operation centers);
(b) Emergency medical (hospitals, ambulance service centers, urgent care centers having emergency treatment functions, and non-ambulatory surgical structures, but excluding clinics, doctors' offices and nonurgent care medical structures that do not provide these functions);
(c) Designated emergency shelters;
(d) Communications (main hubs for telephone, broadcasting equipment for cable systems, satellite dish systems, cellular systems, television, radio and other emergency warning systems, but excluding towers, poles, lines, cables and conduits);
(e) Public utility plant facilities for generation and distribution (hubs, treatment plants, substations and pumping stations for water, power and gas, but not including towers, poles, power lines, buried pipelines, transmission lines, distribution lines and service lines); and
(f) Air transportation lifelines (airports [municipal and larger]), helicopter pads and structures serving emergency functions and associated infrastructure (aviation control towers, air traffic control centers and emergency equipment aircraft hangars).

Specific exemptions to this category include wastewater treatment plants (WWTP), non-potable water treatment and distribution systems and hydroelectric power generating plants and related appurtenances.

Public utility plant facilities may be exempted if it can be demonstrated to the satisfaction of the City Council that the facility is an element of a redundant system for which service will not be interrupted during a flood. At a minimum, it shall be demonstrated that redundant facilities are available (either owned by the same utility or available through an intergovernmental agreement or other contract) and connected, the alternative facilities are either located outside of the 100-year floodplain or are compliant with the provisions of this Section, and an operations plan is in effect that states how redundant systems will provide service to the affected area in the event of a flood. Evidence of ongoing redundancy shall be provided to the City Council on an as-needed basis upon request.

(2) Hazardous materials facilities include facilities that produce or store highly volatile, flammable, explosive, toxic and/or water-reactive materials. These facilities may include:
(a) Chemical and pharmaceutical plants (chemical plant, pharmaceutical manufacturing);
(b) Laboratories containing highly volatile, flammable, explosive, toxic and/or water-reactive materials;
(c) Refineries;
(d) Hazardous waste storage and disposal sites; and
(e) Aboveground gasoline or propane storage or sales centers.

Facilities shall be determined to be critical facilities if they produce or store materials in excess of threshold limits. If the owner of a facility is required by the Occupational Safety and Health Administration (OSHA) to keep a Material Safety Data Sheet (MSDS) on file for any chemicals stored or used in the work place, AND the chemical is stored in quantities equal to or greater than the Threshold Planning Quantity (TPQ) for that chemical, then that facility shall be considered to be a critical facility. The TPQ for these chemicals is: either 500 pounds or the TPQ listed (whichever is lower) for the 356 chemicals listed under 40 C.F.R. § 302 (2010), also known as Extremely Hazardous Substances (EHS); or 10,000 pounds for any other chemical. This threshold is consistent with the requirements for reportable chemicals established by the Colorado Department of Public Health and Environment. OSHA requirements for MSDS can be found in 29 C.F.R. § 1910 (2010). The Environmental Protection Agency (EPA) regulation "Designation, Reportable Quantities, and Notification," 40 C.F.R. § 302 (2010) and OSHA regulation "Occupational Safety and Health Standards," 29 C.F.R. § 1910 (2010) are incorporated herein by reference and include the regulations in existence at the time of the promulgation of this Section, but exclude later amendments to or editions of the regulations.

Specific exemptions to this category include:

(a) Finished consumer products within retail centers and households containing hazardous materials intended for household use, and agricultural products intended for agricultural use.

(b) Buildings and other structures containing hazardous materials for which it can be demonstrated, to the satisfaction of the local authority having jurisdiction by hazard assessment and certification by a qualified professional (as determined by the local jurisdiction having land use authority), that a release of the subject hazardous material does not pose a major threat to the public.

(c) Pharmaceutical sales, use, storage and distribution centers that do not manufacture pharmaceutical products.

These exemptions shall not apply to buildings or other structures that also function as critical facilities under another category outlined in this Section.

(3) At-risk population facilities include medical care, congregate care and schools. These facilities consist of:

(a) Elder care (nursing homes);

(b) Congregate care serving 12 or more individuals (day care and assisted living);

(c) Public and private schools (pre-schools, K-12 schools), before-school and after-school care serving 12 or more children);

(4) Facilities vital to restoring normal services including government operations. These facilities consist of:

(a) Essential government operations (public records, courts, jails, building permitting and inspection services, community

administration and management, maintenance and equipment centers);

(b) Essential structures for public colleges and universities (dormitories, offices and classrooms only).

These facilities may be exempted if it is demonstrated to the City Council that the facility is an element of a redundant system for which service will not be interrupted during a flood. At a minimum, it shall be demonstrated that redundant facilities are available (either owned by the same entity or available through an intergovernmental agreement or other contract), the alternative facilities are either located outside of the 100-year floodplain or are compliant with this Section, and an operations plan is in effect that states how redundant facilities will provide service to the affected area in the event of a flood. Evidence of ongoing redundancy shall be provided to the City Council on an as-needed basis upon request.

b. *Protection for critical facilities.* All new and substantially improved critical facilities and new additions to critical facilities located within the Special Flood Hazard Area shall be regulated to a higher standard than structures not determined to be critical facilities. For the purposes of this Section, protection shall include one of the following:

(1) Location outside the Special Flood Hazard Area; or

(2) Elevation of the lowest floor or floodproofing of the structure, together with attendant utility and sanitary facilities, to at least two feet above the Base Flood Elevation.

c. I*ngress and egress for new critical facilities*. New critical facilities shall, when practicable as determined by the City Council, have continuous non-inundated access (ingress and egress for evacuation and emergency services) during a 100-year flood event.

F. **Definitions.** For purposes of this Section, the following words shall have the meanings given:

100-year flood means a flood having a recurrence interval that has a one-percent chance of being equaled or exceeded during any given year (*1-percent-annual-chance flood*). The terms *one-hundred-year flood* and *one-percent chance flood* are synonymous with the term *100-year flood*. The term does not imply that the flood will necessarily happen once every 100 years.

100-year floodplain means the area of land susceptible to being inundated as a result of the occurrence of a one-hundred-year flood.

500-year flood means a flood having a recurrence interval that has a 0.2-percent chance of being equaled or exceeded during any given year (0.2-percent-chance annual flood). The term does not imply that the flood will necessarily happen once every 500 years.

500-year floodplain means the area of land susceptible to being inundated as a result of the occurrence of a five-hundred-year flood.

Addition means any activity that expands the enclosed footprint or increases the square footage of an existing structure.

Alluvial fan flooding means a fan-shaped sediment deposit formed by a stream that flows from a steep mountain valley or gorge onto a plain or the junction of a tributary stream with the main stream. Alluvial fans contain active stream channels and boulder bars and recently abandoned

channels. Alluvial fans are predominantly formed by alluvial deposits and are modified by infrequent sheet flood, channel avulsions and other stream processes.

Area of shallow flooding means a designated Zone AO or AH on a community's Flood Insurance Rate Map (FIRM) with a one-percent or greater annual chance of flooding to an average depth of one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

Base Flood Elevation (BFE) means the elevation shown on a FEMA Flood Insurance Rate Map for Zones AE, AH, A1-A30, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/ AO, V1-V30 and VE that indicates the water surface elevation resulting from a flood that has a one-percent chance of equaling or exceeding that level in any given year.

Basement means any area of a building having its floor sub-grade (below ground level) on all sides.

Channel means the physical confines of a stream or waterway consisting of a bed and stream banks, existing in a variety of geometries.

Channelization means the artificial creation, enlargement or realignment of a stream channel.

Code of Federal Regulations (C.F.R.,) means the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government. It is divided into 50 titles that represent broad areas subject to federal regulation.

Community means any political subdivision in the State that has authority to adopt and enforce floodplain management regulations through zoning, including but not limited to cities, towns, unincorporated areas in the counties, Indian tribes and drainage and flood control districts.

Conditional Letter of Map Revision (CLOMR) means FEMA's comment on a proposed project, which does not revise an effective floodplain map, that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodplain.

Critical facility means a structure or related infrastructure, but not the land on which it is situated, as specified in Subsection D.8 that, if flooded, may result in significant hazards to public health and safety or interrupt essential services and operations for the community at any time before, during and after a flood.

Development means any man-made change in improved and 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.

DFIRM Database means a database (usually spreadsheets containing data and analyses that accompany DFIRMs). The FEMA Mapping Specifications and Guidelines outline requirements for the development and maintenance of DFIRM databases.

Digital Flood Insurance Rate Map (DFIRM) means a FEMA digital floodplain map. These digital maps serve as "regulatory floodplain maps" for insurance and floodplain management purposes.

Elevated building means a non-basement building (i) built, in the case of a building in Zones A1-30, AE, A, A99, AO, AH, B, C, X and D, to have the top of the elevated floor above the ground level by means of pilings, columns (posts and piers) or shear walls parallel to the flow of the water, and (ii) adequately anchored so as not to impair the structural integrity of the building

during a flood of up to the magnitude of the base flood. In the case of Zones A1-30, AE, A, A99, AO, AH, B, C, X and D, *elevated building* also includes a building elevated by means of fill or solid foundation perimeter walls with openings sufficient to facilitate the unimpeded movement of floodwaters.

Existing 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 before the effective date of the floodplain management regulations adopted by a community.

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).

Federal Register means the official daily publication for rules, proposed rules and notices of federal agencies and organizations, as well as executive orders and other presidential documents.

FEMA means Federal Emergency Management Agency, the agency responsible for administering the National Flood Insurance Program.

Flood or *flooding* means a general and temporary condition of partial or complete inundation of normally dry land areas from:

a. The overflow of water from channels and reservoir spillways;
b. The unusual and rapid accumulation or runoff of surface waters from any source; or
c. Mudslides or mudflows that occur from excess surface water that is combined with mud or other debris that is sufficiently fluid so as to flow over the surface of normally dry land areas (such as earth carried by a current of water and deposited along the path of the current).

Flood control structure means a physical structure designed and built expressly or partially for the purpose of reducing, redirecting or guiding flood flows along a particular waterway. These specialized flood-modifying works are those constructed in conformance with sound engineering standards.

Flood Insurance Rate Map (FIRM) means an official map of a community, on which the Federal Emergency Management Agency has delineated both the Special Flood Hazard Areas and the risk premium zones applicable to the community.

Flood Insurance Study (FIS) means the official report provided by the Federal Emergency Management Agency. The report contains the Flood Insurance Rate Map, as well as flood profiles for studied flooding sources that can be used to determine Base Flood Elevations for some areas.

Floodplain or *flood-prone area* means any land area susceptible to being inundated as the result of a flood, including the area of land over which floodwater would flow from the spillway of a reservoir.

Floodplain Administrator means the community official designated by title to administer and enforce the floodplain management regulations.

Floodplain Development Permit means a permit required before construction or development begins within any Special Flood Hazard Area (SFHA). If FEMA has not defined the SFHA within a

community, the community shall require permits for all proposed construction or other development in the community, including the placement of manufactured homes, so that it may determine whether such construction or other development is proposed within flood-prone areas. Permits are required to ensure that proposed development projects meet the requirements of the NFIP and these floodplain management regulations.

Floodplain management means the operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works and floodplain management regulations.

Floodplain management regulations means zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as a floodplain ordinance, grading ordinance and erosion control ordinance) and other applications of police power. The term describes such state or local regulations, in any combination thereof, which provide standards for the purpose of flood damage prevention and reduction.

Floodproofing means any combination of structural and/or 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.

Floodway (regulatory floodway) means the channel of a river or other watercourse and adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. The statewide standard for the designated height to be used for all newly studied reaches shall be one-half (½) foot (six inches). Letters of Map Revision to existing floodway delineations may continue to use the floodway criteria in place at the time of the existing floodway delineation.

Freeboard means the vertical distance in feet above a predicted water surface elevation intended to provide a margin of safety to compensate for unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood, such as debris blockage of bridge openings and the increased runoff due to urbanization of the watershed.

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, but does not include long-term storage or related manufacturing facilities.

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:

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
d. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:
    1. By an approved state program as determined by the Secretary of the Interior, or
    2. Directly by the Secretary of the Interior in states without approved programs.

Letter of Map Revision (LOMR) means FEMA's official revision of an effective Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM) or both. LOMRs are generally based on the implementation of physical measures that affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective Base Flood Elevations (BFEs) or the Special Flood Hazard Area (SFHA).

Letter of Map Revision Based on Fill (LOMR-F) means FEMA's modification of the Special Flood Hazard Area (SFHA) shown on the Flood Insurance Rate Map (FIRM) based on the placement of fill outside the existing regulatory floodway.

Levee means a man-made embankment, usually earthen, 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. For a levee structure to be reflected on the FEMA FIRMs as providing flood protection, the levee structure must meet the requirements set forth in 44 C.F.R. 65.10.

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 accordance with sound engineering practices.

Lowest floor means the lowest floor of the lowest enclosed area (including basement). Any floor used for living purposes, which includes working, storage, sleeping, cooking and eating or recreation or any combination thereof. This includes any floor that could be converted to such a use such as a basement or crawl space. The lowest floor is a determinate for the flood insurance premium for a building, home or business. An unfinished or flood-resistant enclosure, usable solely for parking or 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 nonelevation design requirement of Section 60.3 of the National Flood Insurance Program regulations.

Manufactured home means 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. 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 or more manufactured home lots for rent or sale.

Material Safety Data Sheet (MSDS) means a form with data regarding the properties of a particular substance. An important component of product stewardship and workplace safety, it is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner, and includes information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment and spill-handling procedures.

Mean sea level means, for purposes of the National Flood Insurance Program, the 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.

National Flood Insurance Program (NFIP) means FEMA's program of flood insurance coverage and floodplain management administered in conjunction with the Robert T. Stafford Relief and Emergency Assistance Act. The NFIP has applicable federal regulations promulgated in Title 44 of the Code of Federal Regulations. The U.S. Congress established the NFIP in 1968 with the passage of the National Flood Insurance Act of 1968.

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 after the effective date of floodplain management regulations adopted by a community.

No-Rise Certification means a record of the results of an engineering analysis conducted to determine whether a project will increase flood heights in a floodway. A No-Rise Certification must be supported by technical data and signed by a registered Colorado professional engineer. The supporting technical data should be based on the standard step-backwater computer model used to develop the 100-year floodway shown on the Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM).

Physical Map Revision (PMR) means FEMA's action whereby one or more map panels are physically revised and republished. A PMR is used to change flood risk zones, floodplain and/or floodway delineations, flood elevations and/or planimetric features.

Recreational vehicle means a vehicle which is:

a. Built on a single chassis;
b. 400 square feet or less when measured at the largest horizontal projections;
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.

Special flood hazard area means the land in the floodplain within a community, subject to a one-percent or greater chance of flooding in any given year; i.e., the 100-year floodplain.

Start of construction means the date the building permit was issued, including substantial improvements, provided that the actual start of construction, repair, reconstruction, rehabilitation, addition, placement 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 basements, 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 alteration affects the external dimensions of the building.

Structure means a walled and roofed building, including a gas or liquid storage tank, which is principally aboveground, as well as a manufactured home.

Substantial damage means 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% of the market value of the structure just prior to when the damage occurred.

Substantial improvement means any reconstruction, rehabilitation, addition or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before start of construction of the improvement. The value of the structure shall be determined by the local jurisdiction having land use authority in the area of interest. This includes structures which 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 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.

Threshold Planning Quantity (TPQ) means a quantity designated for each chemical on the list of extremely hazardous substances that triggers notification by facilities to the State that such facilities are subject to emergency planning requirements.

Variance means a grant of relief to a person from the requirements of this Section when specific enforcement would result in unnecessary hardship. A variance, therefore, permits construction or development in a manner otherwise prohibited by this Section. (For full requirements, see Section 60.6 of the National Flood Insurance Program regulations).

Violation means 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 Section 60.3(b)(5), (c)(4), (c)(10), (d)(3), (e)(2), (e)(4) or (e)(5) of the National Flood Insurance Program regulations is presumed to be in violation until such time as that documentation is provided.

Water surface elevation means the height, in relation to the North American Vertical Datum (NAVD) of 1988 (or other datum, where specified), of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.