Boulder County

Land Use

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BOULDER COUNTY PLANNING COMMISSION
AGENDA ITEM # 6

June 15, 2016
Hearing Room, Third Floor
Boulder County Courthouse

PUBLIC HEARING

Docket DC-15-0004: Proposed Boulder County Land Use Code Text Amendments to Floodplain Regulations and related provisions

STAFF PLANNER: Varda Blum, Floodplain Program Manager

BACKGROUND

Since 1979, Boulder County has belonged to the National Flood Insurance Program (NFIP), administered by the Federal Emergency Management Agency (FEMA), which provides a means for the residents of Boulder County to purchase flood insurance and receive assistance from the federal government after flooding. As part of receiving that benefit, Boulder County is required to adopt floodplain regulations that reflect FEMA and the Colorado Water Conservation Board's (CWCB) requirements for development in the floodplain. These floodplain regulations include the requirement for floodplain development permits for all human disturbances in the floodplain and apply throughout the floodplain overlay district, a zoning area that is defined by floodplain maps which depict the extent of the predicted 1% annual-chance (100-year) floodplain.

September 2013 flood:

The September 2013 Flood event significantly disrupted lives and impacted real-world floodplain areas throughout the County. As part of the recovery and rebuilding effort, the existing predictive floodplain maps and associated regulations have been tested as they had never been before. While staff has been able to interpret adopted regulatory maps and post-flood available data and their interaction with the floodplain regulations to manage rebuilding in an altered floodplain, it is not always efficient for staff or clear to residents which data is controlling and how regulations should be interpreted. In anticipation of new floodplain mapping data for most flood affected waterways starting to become available through the Colorado Hazard Mapping Program (CHAMP) beginning in fall 2016, and desire for more easily understood information about which data and mapping is controlling moving forward, staff approached the Board of County Commissioners in September 2015 to request

permission to draft amendments designed to make the regulations more comprehensible and to make the County's use of best available data more transparent to the public.

Floodplain Mapping: Creation of Maps

Floodplain maps are based on hydraulic studies involving data collection, analysis, and numerical modeling of the interaction between the existing topography and the predicted flow in creeks during the 1% chance flood. Study decisions result in floodplain zones with different available information and different ways that data can be used to apply for floodplain development permits. Some of the different types of mapping decisions that result in differing data availability include:

- Mapping certain areas of the physical floodplain in a less expensive, less detailed manner than other areas because of considerations including low population density and/or low predicted flow amounts during the 1% chance flood; and
- Mapping the "floodway," the area of fastest and deepest flow, only in certain areas based on considerations including topography or low population density.

Staff anticipates that the mapping provided by CHAMP will include many newly mapped 'A' zones that do not have detailed information. Staff has been reviewing the existing code to identify areas where regulations need to be updated to be applicable to A zone area.

Floodplain Mapping: Review and Adoption

Under our current floodplain regulations, both the CWCB and FEMA must approve changes to the boundaries of the Floodplain Overlay District. The result is that it takes a long time – often years – to update the regulatory studies and maps. Before the final CWCB and FEMA adoption of revised maps occurs, data and draft maps are available and are considered 'Best Available Data.' This newer data typically is better than that available in older adopted DFIRMs, providing more accurate hazard information critical for bolstering long term planning and resiliency efforts as well as regulatory actions.

While the County Engineer currently has the authority to regulate in the floodplain based on best available data that has not been approved by FEMA and the CWCB, provisions do not currently exist in the Code for a public process to keep residents informed about the existence of best available data that may affect them. This can result in confusion for residents about the data by which they are being regulated. The Transportation Department floodplain team would like to alter provisions of the Code to allow more accurate reflection of real-world conditions post-flood, to more effectively and efficiently incorporate best available data into our regulatory scheme, and to reflect and incorporate efficiencies derived from modernization of map processes.

Use of best available floodplain data to inform floodplain regulation does not affect flood insurance rates. It is only once FEMA takes the final step of map updating and adopts the data on to the Digital Flood Insurance Rate Map (DFIRM) that flood insurance rates are impacted.

Regulations:

The existing floodplain regulations are relatively concise. In order to make decisions on floodplain development requirements, county staff must often refer to FEMA guidance and regulations that the floodplain code is derived from. Residents that try to do their own research about processes and permissible activities in the floodplain are not as able to do this research and generally need clarification about how to interpret the existing regulations.

County staff has been exploring modifications to the code that make requirements for development in the floodplain more comprehensible. County staff has also been exploring ways to comply with FEMA and CWCB minimum requirements but to allow processes that result in resources being most concentrated on potentially impactful developments.

Aligning floodplain code with other sections of the Land Use Code:

Staff and the public have found confusing the difference between the floodplain regulations in existing 4-408, which addresses nonconforming uses and structures within the Floodplain Overlay District, when compared to the general nonconforming uses and structures language of Articles 4-1000 to 4-1003. Similarly, staff and the public have found confusing Article 4-409, which addresses appeals and variances to decisions made by the County Engineer based upon or made in the administration or enforcement of the floodplain regulations when compared to the general language in 4-1200. Staff would like to bring regulations addressing floodplain nonconforming structures and uses as well as appeals and variances into conformance with the general language in the Code in order to create a more transparent, comprehensible regulatory scheme for staff and the public alike.

Clarification of the use of best available data and of floodplain development requirements will allow County staff to better protect the health, safety, and welfare of the residents of and visitors to Boulder County. This clarification will also afford residents an opportunity to be part of the process of incorporating best available data and to have certainty about the regulations and associated mapping that affects property in the County.

SUMMARY OF PROPOSED CHANGES

On September 17, 2015, the Board of County Commissioners authorized staff to pursue text amendments to the Boulder County Land Use Code. Staff is proposing changes to the floodplain regulations in the existing Article 4-400 (FO District), Article 18 (Definitions), and Article 4-800 (SPR). Changes focus on creating transparent processes for use of best available data, clarifying existing regulations, making changes necessary to meet FEMA and CWCB minimum requirements, and associated changes to allow County staff to better protect the health, safety, and welfare of the residents and visitors to Boulder County. No new boundaries of the Floodplain Overlay district are being proposed at this time.

As a result of the proposed text changes, the floodplain code has lengthened considerably. While this lengthening is not ideal, staff finds it necessary in order to clarify previously existing requirements and make clear which data governs with respect to floodplain mapping.

A summary of the substantive changes is provided below in more detailed form. Because of the large amount of text changes and structural reorganization, the detail provided below is a summary description of changes rather than strike-through/underline format. The existing code is attached as Exhibit A. Proposed code is attached as Exhibit B.

Designation of Official Maps

The first step in planning a project that may be in the floodplain is to check the official maps to decide whether the proposed project is in the FO district. Proposed changes to the code related to official maps are in proposed Section 4-403 and include changes to what data makes up the official map of the FO district, and clarification of the processes for interpreting and amending that map.

Staff proposes to create a process to adopt best available data defining the 1% chance floodplain into a supplementary Boulder County floodplain. The County Engineer currently has the authority to use best available data, however there is no public process to adopt that data. The proposed change is intended to make the process of using best available data more transparent.

The proposed adoption process for best available data will include public hearings before the Planning Commission and the Board of County Commissioners. Extents of the Boulder County floodplain will be available on the publicly available county property viewer GIS platform. Existence of an adopted searchable zoning layer of best available data and clarification of regulation that uses this information will improve comprehensibility for residents and facilitate maximum protection of health and safety. In addition, displaying and regulating to information about floodplain mapping that is likely to be adopted in the future on to the FEMA Flood Insurance Rate Maps (FIRM) will enable decision making that is cognizant of potential future flood insurance impact. The County Engineer's authority to interpret the boundaries of the floodplain overlay district based on predicted base flood elevation remains unchanged from the current code.

Additional associated changes are less significant and include:

- Moving from a paper to an official digital representation of the Floodplain Overlay district.
- Incorporating all FEMA updates to DFIRM maps automatically without requiring public hearings outside FEMA's typical public process, given that the County is required by FEMA to regulate to DFIRM maps. Continuing to require hearings to accomplish something about which the County has no choice is not a good use of resources. Hearings will occur much sooner than they have historically when the studies are adopted onto the Boulder County floodplain layer of best available data.
- Adopting as the basis for the FEMA floodplain layer all studies used to derive the DFIRM without expressly listing each study.

Floodplain Development Permits

Once a project is determined to be within the FO district, the next step in project development is to determine whether the proposed activity is allowed within the portion of the floodplain (floodway or flood fringe) proposed and what requirements apply for the needed floodplain development permit application.

Staff proposes to generally maintain existing floodway and flood fringe restricted activities and uses while incorporating CWCB-recommended restrictions on development of new critical facilities in the floodplain. A definition of critical facilities has been added to the Definitions section and includes structures or related infrastructure that, if flooded, may result in significant hazards to public health and safety or interrupt essential services and operations for the community. A prohibition against new or expanded critical facilities in the entire floodplain below 6,000 ft elevation (the plains) has been added to 4-407 (Floodplain Development Permits). In mountain canyons, at and above 6,000 ft elevation, new and expanded critical facilities will be considered on a case by case basis.

These prohibitions are intended to exclude the most critical facilities such as emergency response operations, at-risk populations like day care and elder care facilities, and hazardous materials from the plains area of the floodplains where there usually exists potential to locate outside of the floodplain. In the mountain canyons, development of such facilities within the

floodplain will be reviewed on a case-by-case basis, recognizing that space is limited and there are occasions where the floodplain is the only available location for a critical facility such as a fire station.

Additional proposed changes in this section are less significant. Staff proposes to clarify existing floodway definitions, regulations, and policies. For example:

- Clarifying that the definition of floodway in mountain canyons as equivalent to floodplain except where engineering studies show that not to be the case,
- Clarification of permitting requirements when a proposed development is located within a floodway defined by Boulder County within the FEMA Floodplain or within the Boulder County Floodplain but not the FEMA Floodplain; and
- Restrictions against new development intended for human occupancy.

General and Individual Floodplain Development Permit

As required by the NFIP, Boulder County currently requires Floodplain Development Permits ("FDP") for any floodplain 'development,' defined by FEMA as "any manmade change to improved and unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavating or drilling operations." Boulder County would like to achieve the goal of protecting against adverse impacts to floodplain areas, while lessening the review required for minimal or no impact development within the floodplain. This would lessen the burden on project proponents and would allow both County and resident resources to be focused on those development proposals with the greatest likelihood to affect public health and safety.

Staff proposes to break up the existing FDP into General FDP (4-407.1) and Individual FDP (4-407.2), in a manner similar to the Clean Water Act Section 404 permit program, administered by the U.S. Army Corps of Engineers. Individual FDPs will be required for development with potentially significant impacts to people and property and General FDPs will be issued for development that pose minimal or no impacts. The creation of the General Permit process eliminates individual review for certain activities, allowing them to proceed with little or no delay, provided that the conditions for the General Permit are met. For example, if the proposed regulations are adopted, the County Engineer will have authority to issue a General FDP allowing installation of certain types of utility infrastructure, minor road activities, on-grade pathways, and certain maintenance activities.

Flood Protection Measures

Depending on the type of project, an allowable activity or use may have required flood protection measures. These measures depend on whether a proposed project is related to a new or existing structure, whether the project involves a substantial improvement or modification, and the type of structure that may be involved (residential, non-residential, accessory).

The proposed section titled Flood Protection Measures (4-408), is derived from the existing section Floodproofing (4-405), and has been organized to allow an applicant to more easily determine which flood protection measures apply to their project. The most significant changes from the existing code are:

- An addition of a requirement that substantially damaged structures in the floodway adhere to a rebuilding protocol requiring relocation out of the floodway, engineered foundations using post, columns or piles, or elevation on stem walls parallel to the

direction of flow. Relocation and the proposed types of foundations will result in more resilient rebuilt structures. While the current code requires rebuilt substantially damaged structures to be elevated, adequate detail on evaluation of relocation options and engineering methods is lacking.

- An addition of a requirement that for all structures in the floodway other than primary residences, prior to approval of a proposed substantial improvement, applicants must adhere to a rebuilding protocol requiring evaluation of potential for relocation out of the floodway, engineered foundations using post, columns or piles, or elevation on stem walls parallel to the direction of flow.
- An addition of a definition of new Onsite Wastewater Treatment System ("OWTS") as the first OWTS installed on a parcel.
- Prohibition of Liquid Propane Gas tank siting and OWTS in the floodplain unless such location cannot be avoided.
- Addition of design requirements for new and replacement OWTS installation in the flood fringe and replacement OWTS in the floodway.
- Per FEMA's minimum requirements, changing the existing exemption from FDP for a few categories of minor building permit work to instead be described as repair work necessary for health and safety protection that is covered by the General FDP, the value of which will not be included in a Substantial Improvement calculation.

Additional changes include:

- Detailing flood protection requirements for new construction vs. existing structures.
- Detailing flood protection requirements for residential vs. non-residential structures.
- Detailing flood protection requirements for accessory structures.
- Clarifying detail about criteria for exemption of historic structures from flood protection requirement.
- Clarifying detail about flood protection elevation requirements for areas of less detailed flood study, with limited Base Flood Elevation information and areas of shallow and sheet flooding.

Nonconforming Structures and Uses

Another step in the process is to determine whether the proposed project involves a nonconforming structure and/or a nonconforming use and/or a change of use. An example of a nonconforming structure in the floodplain is a structure built before the initial adoption of the floodplain regulations that does not have its lowest floor appropriately elevated. An example of a nonconforming use in the floodplain is a structure being used for human occupancy in the floodway.

Specific regulations have always applied to nonconforming structures and uses (and changes of use) in the floodplain. Existing regulations are generally maintained in the proposed code for Nonconforming Structures and Uses (now 4-416) except for:

- Limiting to five years, with a one year possible extension, the time period allowed for completion of repair work on a substantially damaged nonconforming structure in the floodway.

- The explicit allowance for relocation of a nonconforming structure without terminating the right to continue using that structure, so long as the relocation reduces the potential risks associated with future flood or other natural hazard events.
- Alignment, as much as possible, with general provisions for nonconforming uses and structures found in Land Use Code 4-1000.

Review, Appeals, Variances, Enforcement

Throughout the proposed process of applying for an FDP, whether General or Individual FDP, the County Engineer (represented by the Transportation floodplain team) has the authority to request additional information, make determinations, and in general, enforce the requirements of the floodplain regulations. It is important for the applicant to understand the authority delegated to the County Engineer and the various methods which exist for the floodplain regulations to be varied, for determinations to be appealed, and for the regulations to be enforced.

In the proposed floodplain regulations, previously existing code sections have been reorganized to more clearly present the authority of the County Engineer and the procedures for appealing determinations or requesting variances. The proposed sections include:

- 4-406 'Review of An Application by the County Engineer' includes the requirement that an application be complete.
- 4-410 'BOCC Review of Permits Approved in the Floodway' includes the unchanged authority of the BOCC to review and call-up to a hearing decisions on FDPs issued for development in the floodway,
- 4-411 'Appeal of the County Engineer Determination' presents the unchanged process for floodplain appeals and clarifies the relationship between this section and 4-1202.
- 4-412 'Variances' presents the unchanged process for requesting a variance to the floodplain regulations and clarifies the relationship between this section and 3-202.
- 4-419 'Enforcement' presents the authority of the County Engineer to enforce compliance with the floodplain regulations in the same manner detailed in Article 17 as other violations of the Land Use Code.

Definitions (including 4-417 and Article 18)

This section's most significant additions/changes include definitions of Maintenance, Critical Facilities, Flood Protection Elevation, and Floodway, including a description of acceptable methods for defining a floodway in areas where a floodway has not be previously-defined.

TEXT AMENDMENT CRITERIA ANALYSIS

Article 16-100(B). contains the criteria for amending the text of the Land use Code. Staff finds that these criteria are met in the context of this Docket, as follows:

1. The existing text is in need of amendment:

Staff has identified the goals of this docket and the reasons why these amendments should be made. Those goals are:

- To make more transparent and less cumbersome the use of best available floodplain data.
- To create a clear regulatory framework which better protects the health and safety of County residents and to address the public's need for more easily understood floodplain regulations.
- To better address the impacts and potential hazards that have become evident since the 2013 flood in Boulder County.
- To revise the County's local floodplain regulations to better align with state and federal requirements.

2. The amendment is not contrary to the intent and purpose of this Code:

The amendments are not contrary to the intent or purpose of the Code.

3. The amendment is in accordance with the Boulder County Comprehensive Plan:

The amendments are in accordance with the Boulder County Comprehensive Plan.

PUBLIC NOTICE AND INVOLVEMENT

Notification of these proposed Land Use Code text amendments has been made through several forums including:

- April 28, 2016 – Draft of proposed changes sent via email to applicable County referral agencies.
- May 9, 2016 – Draft of proposed changes sent via email to CWCB and FEMA Region 8 for comment. Two subsequent conference calls held with CWCB and FEMA representatives.
- June 1, 2016 - Public notice for the June 15, 2016 Boulder County Planning Commission Hearing posted in the Daily Camera and the Times Call. Public comment will be taken at this hearing.
- June 7 2016 – Notice sent via email to five watershed coalitions representatives (Fourmile, St Vrain, Lefthand, Little Thompson, Coal Creek) to distribute to their members.
- June 8, 2016 – Notice sent via email to 862 email addresses comprising the Boulder County Floodplain ListServ.
- June 8, 2016 – Notice sent via email to 987 email addresses comprising the Boulder County Land Use Code ListServ.

- June 8, 2016 – Docket information including a draft of the text amendments and staff's formal recommendation to the Planning Commission was posted to the Boulder County Development Applications webpage at: http://www.bouldercounty.org/property/build/Pages/lucodeupdatedc150004.aspx
- July 20 or August 17, 2016 – Possible second public hearing before Planning Commission. If scheduled, public comment will be taken at this hearing.
- Late August 2016 – Public hearing before the Board of County Commissioners. Public comment will be taken at this hearing.

REFERRAL RESPONSES:

The referral responses received by the Transportation and Land Use Departments are summarized below:

CWCB – This agency reviewed the proposal, provided comments, and noted no conflicts.

FEMA Region 8 – This agency reviewed the proposal, provided comments, and noted no conflicts.

Public Comment – Staff received no comments from members of the public prior to publication of this staff recommendation and the proposed text amendments. Staff will summarize the nature and extent of public comments received after June 8th and prior to the June 15th Planning Commission hearing at the June 15th hearing.

RECOMMENDATION

Staff recognizes that the proposed amendments are lengthy and, in certain respects, complex. Planning Commission, members of the public, and staff would likely benefit from additional time to review and refine the proposed amendments. For example, after noticing this hearing, staff received valuable referral responses from several interested parties such as the Chief Building Official and the Public Health Department. If possible, staff desires to complete the update process prior to the publication of new maps and studies from CWCB, anticipated to occur this fall. Thus, a second Planning Commission hearing in July or August would work within that timeline and be beneficial to the update process.

Alternatively, if Planning Commission is ready to take action on the proposed amendments today, staff recommends that the Planning Commission approve and recommend to the Board of County Commissioners approval of **Docket DC-15-0004: Proposed Boulder County Land Use Code Text Amendments to Floodplain Regulations and related provisions** and certify the Docket for action to the Board of County Commissioners, which certification includes the approved text of the Docket, and the official record of the Docket before the Planning Commission including staff comments and materials, public testimony, and Planning Commission action/discussion.

Attachments:

- Exhibit A – existing floodplain regulations in Articles 4-400
- Exhibit B – proposed floodplain regulations in Articles 4-400

EXHIBIT A

Boulder County Land Use Code Article 4 excerpts:

4-400 Floodplain Overlay District through

4-409 Appeals and Variances

4-400 Floodplain Overlay District

Purpose: To provide land use controls necessary to qualify unincorporated areas of Boulder County for flood insurance under requirements of the National Flood Insurance Act of 1968. as amended, to protect human life and health; to avoid increasing flood levels or flood hazards or creating new flood hazard areas: to minimize public and private losses due to flooding; to reduce the need for expenditures of public money for flood control projects: to reduce the need for rescue and relief efforts associated with flooding: and to prevent or minimize damage to public facilities and utilities: and to aid the public in determining if a property is in a potential flood area.

4-401 Application and Liability

A. The provisions and regulations of this section shall apply to all lands within the unincorporated area of Boulder County which are located within the Floodplain Overlay (FO) Zoning District. If a structure, lot, or other parcel of land lies partly within the FO district or the floodway, the part of such structure, lot, or parcel lying within the district or floodway shall meet all requirements for such district or floodway as set forth in this Code.

B. The degree of flood protection intended to be provided by this section has been determined to be reasonable for regulatory purposes and is based on engineering and scientific methods of study. Floods of greater magnitude may occur and flood heights may be increased by man-made or natural causes, such as ice jams and bridge or culvert openings restricted by debris. This article does not imply that the areas outside floodplain area boundaries or land uses permitted within such areas will be free from flooding or flood damages or that compliance with these regulations will prevent any or all damages from flooding. Nor shall this article create a liability on the part of, or a cause of action against, the County of Boulder or any officer or employee thereof for any flood damages that may result from reliance on this article or any administrative decision.

C. The floodplain regulations of this code are not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where these regulations and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

4-402 Designation of Official Maps

A. The following reports designate the location and boundaries of the FO district.

1. That portion of the Floodplain study entitled 'Floodplain Information/Boulder Creek and South Boulder Creek (Boulder County Volume II),' August 1969, prepared for the Denver Regional Council of Governments by the Department of the Army, Omaha District, Corps of Engineers, which includes all of South Boulder Creek and Boulder Creek in the unincorporated areas west of Valley View Road and east of the Boulder City Limits.

2. 'Floodplain Information/Lower St. Vrain Creek (Boulder County Volume III),' June 1972, prepared for the Urban Drainage and Flood Control District/the City of Longmont/Boulder County by the U.S. Army Corps of Engineers (Omaha, Nebraska).

3. 'Floodplain Information Report/Lefthand Creek, Volume 1 (Mouth to Foothills Highway),' December, 1981, prepared for Boulder County, City of Longmont and the Colorado Water Conservation Board by Gingery Associates, Consulting Engineers.

4. 'Floodplain Information Studies/Upper Lefthand Creek, Volume II, (Foothills Highway to Peak to Peak Highway),' August, 1983, prepared for Boulder County and the Colorado Water Conservation Board by Simons, Li and Associates, Consulting Engineers.

5. 'Floodplain Information Report/Upper Boulder Creek and Fourmile Creek,' December, 1981, prepared for Boulder County and the Colorado Water Conservation Board by Gingery Associates, Consulting Engineers.

6. 'Flood Hazard Area Delineation/Lower Boulder Creek (Valley View Road to Boulder - Weld County Line),' March, 1983, prepared for Urban Drainage and Flood Control District, Colorado Water Conservation Board and Boulder County by Muller Engineering Company, Inc., Consulting Engineers.

7. That portion of the floodplain study entitled, 'Flood Hazard Delineation/Boulder Creek and Dry Creek (Number Three),' June, 1975, for Urban Drainage and Flood Control District and Boulder County by Leonard Rice Consulting Water Engineers, Inc., which includes Dry Creek Number Three.

8. 'Flood Hazard Analysis/Coal Creek and Rock Creek, Boulder and Weld Counties, Colorado,' October, 1976 prepared by U.S. Department of Agriculture, Soil Conservation Service in cooperation with the Colorado Water Conservation Board, Urban Drainage and Flood Control District, Coal Creek Water Users Association, Boulder County and Weld County.

9. 'Floodplain Information/Dry Creek (Number Two) Boulder County - Weld County, Colorado,' June, 1978, prepared for Boulder County, Weld County and Colorado Water Conservation Board by the Department of the Army, Omaha District, Corps of Engineers.

10. 'Floodplain Information, Flood Control and Floodplain Management Plan for St. Vrain Creek at Longmont, Colorado,' April, 1981, prepared for City of Longmont, Boulder County and the Colorado Water Conservation Board by Water Resource Consultants, Inc.

11. 'Floodplain Information and Flood Control and Drainage Plan/Dry Creek Number One,' April, 1980, prepared for Boulder County, City of Longmont and the Colorado Water Conservation Board by Water Resource Consultants.

12. 'Floodplain Information Report/St. Vrain Canyon Upstream of Lyons, Boulder County, Colorado,' October, 1978, prepared for Boulder County and the Colorado Water Conservation Board by Camp, Dresser and McKee, Inc.

13. That portion of the study entitled, 'Floodplain Information/Big Thompson River, Loveland to the Larimer - Weld County Line, Colorado/Little Thompson River, Boulder and Larimer Counties Near Berthoud, Colorado,' June, 1977, prepared for Larimer County, Boulder County, Larimer-Weld Council of Governments and the Colorado Water Conservation Board by the Department of the Army, Omaha District, Corps of Engineers, which includes the Little Thompson River in Boulder County.

14. 'Floodplain Information, Flood Control and Floodplain Management Plan for Coal Creek at Erie, Colorado,' August, 1980, prepared for Boulder County, Weld County, and the Town of Erie and the Colorado Water Conservation Board by Water Resource Consultants.

15. That the portion of the Floodplain study entitled 'South Boulder Creek Flood Hazard Delineation,' July 1986, prepared for the Urban Drainage and Flood Control District and Boulder County in cooperation with the Colorado Water Conservation Board, which includes South Boulder Creek from Eldorado Springs to the Colorado and Southern Railroad (C&S R.R.) crossing, approximately 1100' downstream from Arapahoe Road (S.H. 7).

B. The maps in these reports depicting the floodplain for the base flood shall be considered the official maps for the purposes of locating the FO district and establishing those areas affected by the provisions and regulations of this Section. These maps and reports, together with all amendments, explanatory matter, technical addenda, water surface elevations, profiles, cross sections where available, and the 'Flood Insurance Study,' effective December 18, 2012, and the Flood Insurance Rate Maps of Boulder County as prepared by the Federal Emergency Management Agency are incorporated by reference into this Code. The location and boundaries of the FO district established by this Section are also incorporated into this Code, and are depicted upon the official zoning district maps.

C. The County Engineer shall keep copies of the reports cited in Section 4-402(A) on file and open to public inspection.

D. Interpretation of Official Maps

1. Where interpretation is needed as to the exact location of the boundaries of the FO district, the County Engineer shall make the necessary interpretation by referring, as necessary, to the engineering study upon which the maps and elevations are based, to the professional engineers who prepare the study, to the Colorado Water Conservation Board, and/or the Federal Emergency Management Agency.

2. The base flood water surface elevations, as shown on the flood profiles and in the elevation tables, shall be the governing factor in determining accurate boundaries.

E. Review and Amendment due to Physical Change

1. In the event that significant changes occur or are proposed within the FO district, such as flood control measures, channelization, stream improvements or any other alteration or change in the watercourse, there shall be an evaluation of the boundaries of the floodplain as follows:

a. The County Engineer, in conjunction with the Colorado Water Conservation Board and the Federal Emergency Management Agency, will study the magnitude of the apparent change and determine whether there is need for a full scale study of the boundaries with a view to possible revision.

b. Should the Planning Commission or any person or persons, as a result of such a study or for other reasons, desire to change the boundaries of any FO district, the procedure for rezoning set forth in Section 4-1100 shall be followed.

2. In addition, proposed boundary changes of any FO district that has been approved and incorporated into the National Flood Insurance Program shall also conform with the Federal Emergency Management Agency's map revision/amendment process.

F. Amendment Due to the Incorporation of New Studies

1. If the Colorado Water Conservation Board officially designates and approves additional floodplain reports affecting any river or creek in the unincorporated area of Boulder County, and upon review by the Federal Emergency Management Agency, the County Engineer shall review such reports and make recommendations to the Planning Commission regarding necessary amendments or additions to the boundaries of the FO district.

2. The procedure for such amendments is set forth in Article 16 of this Code.

4-403 Floodway

A. No development, encroachment, use, or alteration in, on or over any part of the floodway shall be permitted which alone or cumulatively with other such uses would cause or result in:

1. the occupation of permanent or temporary structures;

2. the development or use of overnight campgrounds;

3. the storing or processing of materials that are buoyant, flammable, explosive, or otherwise potentially injurious to human, animal or plant life;

4. solid waste disposal sites and central collection sewage treatment facilities and new or expanded individual on-site wastewater systems;

5. the potential of solid debris (including, but not limited to garages, storage sheds, decks, fences, etc.) or waste (including, but not limited to on-site wastewater systems, etc.) being carried downstream; or

6. an encroachment that would adversely affect the efficiency of the floodway or change the direction of flow or cause any increase in the base flood elevation.

B. The following open uses shall be permitted within the floodway to the extent that they are not prohibited in a particular area by any underlying zoning district and only if they do not adversely affect the efficiency of the floodway, change the direction of flow or increase base flood heights:

1. agricultural uses such as general farming, grazing of livestock and horses, truck farming, sod farming and wild crop harvesting;

2. uses accessory to residential uses, including, but not limited to lawns, open areas, gardens, driveways, and play areas;

3. industrial or commercial uses such as loading areas, railroad rights-of-way (but not including freight yards or switching, storage or industrial sidings), parking areas, airport landing strips, and storage yards for equipment or machinery easily moved or not subject to flood damage (excluding junkyards and solid waste disposal facilities);

4. recreational uses not requiring permanent or temporary structures designed for human habitation;

5. utility facilities such as dams, power plants, spillways, transmission lines, pipelines, water monitoring devices, water supply ditches, irrigation ditches and laterals;

6. open mining; or

7. road and highway structures.

C. Any development in the floodway shall be permitted only upon application to the County Engineer and the issuance of a floodplain development permit.

D. The provisions of this Article 4-400 may be waived for properties within a floodway that require a repair or replacement of an existing on-site wastewater system, provided the County Engineer determines that the proposed repair or replacement is consistent with Subsections 1. through 3., below.

1. The property owner has demonstrated that connection to a central sewer system is not feasible by:

a. Providing a letter of denial from the closest sewer provider; or

b. Demonstrating other reasons why connection is not feasible, such as that there is no central sewer system reasonably close to the property or building to be served, or that easement restrictions exist that effectively prohibit connection. For properties within a Community Service Area, connection will be deemed not feasible if the cost of connection exceeds 25% of the most recent assessed value of the subject property.

2. The proposed repair or replacement design must be protective of groundwater and appropriate for a floodway. In making this determination the County Engineer shall consider the following factors, among other pertinent information:

a. Whether it is practical to remove outbuildings or non-conforming additions to allow for increased soil availability so that the proposed repair or replacement can be located outside of the floodway;

b. Whether there is room for an at-grade recirculating sand filter, or similar treatment media, and the required absorption area;

c. What permit requirements might exist or be imposed for on-going operation and maintenance and advanced treatment; and

d. Whether placement in the hydraulic shadow of a legal, pre-existing structure is possible.

3. In no event shall a proposed repair or replacement increase the overall capacity of the existing on-site wastewater system. In addition, the County Engineer may approve a raised absorption system or installation of a vault only as a last option within the floodway if this option meets the provisions of Article 4-407(B).

4. The County Engineer may impose terms and conditions on any waiver that may be granted to ensure that the proposal meets the requirements of this Article 4-403.D.

4-404 Floodfringe

A. Any use permitted by the underlying zoning regulations shall be permitted in the floodfringe, provided the use meets the floodproofing requirements of Paragraph 4-405 of this Section.

B. Any development in the floodfringe shall be permitted only upon application to the County Engineer and the issuance of a floodplain development permit.

4-405 Floodproofing

A. All insubstantial improvements where the lowest floor of the improvement is not above the flood protection elevation shall be floodproofed as follows:

1. The improvement, including attendant and sanitary facilities, be designed so that the structure is watertight with walls substantially impermeable to the passage of water below the flood protection elevation; the structure is anchored to prevent flotation, collapse, or lateral movement of the structure; and the structure is constructed with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

2. The improvement be certified by a Colorado Registered Professional Engineer that the floodproofing methods are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces, and other factors associated with the base flood. Such certification shall also state the specific elevation (in relation to mean sea level) to which the improvements are floodproofed.

B. All new construction and substantial improvements shall be floodproofed as follows:

1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure and capable of resisting the hydrostatic and hydrodynamic loads.

2. All new construction and substantial improvements of any building or other structure shall have the lowest floor (including basements and porches) elevated to or above the flood protection elevation, provided that:

a. Fully enclosed areas below the lowest floor that are subject to flooding and used solely for parking of vehicles, building access, or storage of materials in an area other than a basement shall be designed to equalize the hydrostatic pressure 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:

(i) 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;

(ii) The bottom of all openings shall be no higher than one foot above grade; and

(iii) Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

b. Accessory structures (detached garages, sheds, and barns) and agricultural structures (Including grain bins, corn cribs, and barns) may be constructed at grade and wet-floodproofed by meeting the provisions for fully enclosed areas subject to flooding and subject to the following conditions:

(i) The building must be used only for the parking of vehicles or storage of tools, materials and equipment;

(ii) Agricultural structures (including grain bins, corn cribs, and barns) must be limited in use to agricultural purposes;

(iii) The structure shall not be designed or used for human habitation;

(iv) The accessory structure must represent a maximum investment of less than 10% of the value of the principal structure on the property, or a maximum floor area of 600 square feet;

(v) The structure must have low flood damage potential with respect to both the structure and its contents; and

(vi) Permanently affixed sanitary facilities and appliances (such as furnaces, heaters, washers, dryers, etc.) are prohibited.

c. Accessory structures that do not have at least two rigid walls (including carports, gazebos, and picnic pavilions) may be constructed at grade and do not require floodproofing.

d. Other accessory structures that do not meet the above requirements may be constructed at-grade and will only be permitted by a variance to this section, provided that:

(i) Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters; and

(ii) Service facilities such as electrical and heating equipment shall be elevated or floodproofed.

3. All new construction and substantial improvements on a property removed from the floodplain by the issuance of a FEMA Letter of Map Revision Based on Fill (LOMR-F) shall have the lowest floor elevated to or above the flood protection elevation that existed prior to the placement of fill.

4. All new construction and substantial improvements of any building or other structure, within areas of shallow flooding, as specifically defined by the Federal Emergency Management Agency, shall have the lowest floor (including basements, garages, carports, and porches) elevated to or above the flood protection elevation.
   a. For shallow flooding areas, the County Engineer may reduce the elevation requirement, upon evaluation of the floodplain on and around the proposed development.
   b. Such a reduction shall have the lowest floor elevated to one foot above the base flood elevation, or the highest established adjacent grade plus at least one additional foot above the depth of flooding number specified in feet on the Flood Insurance Rate Maps, or at least three feet above the highest established adjacent grade if no depth number is specified.
   c. Drainage improvements within a shallow flooding area, as specifically defined by the Federal Emergency Management Agency shall be constructed to allow floodwaters to flow around the perimeter of the structure in a controlled manner, without adversely impacting adjacent properties.
5. New construction and substantial improvement of any below-grade crawlspace shall:
   a. Have the interior grade elevation, that is below base flood elevation, no lower than two feet below the lowest adjacent grade;
   b. Have the height of the below-grade crawlspace measured from the interior grade of the crawlspace to the top of the foundation wall, not to exceed four feet at any point;
   c. Have an adequate drainage system that allows floodwaters to drain from the interior area of the crawlspace following a flood;
   d. Meet the provisions of Sections 4-405(B)(1), Anchoring; 4-405(B)(2)(a), Openings in Enclosures Below the Lowest Floor; and 4-405(C), Other Floodproofing Requirements.
6. Unsubstantial improvements, of any building or other structure, shall either have the lowest floor of the improvement elevated to or above the flood protection elevation or shall be designed and constructed according to the requirements of Paragraph 4-405(A).
7. As built lowest floor elevations (in relation to the 1988 North American Vertical Datum, or NAV88) for all new construction, substantial improvements, other improvements, or for new manufactured home stands, shall be certified by a Colorado Registered Professional Engineer or Colorado Registered Professional Land Surveyor. Elevation Certificates shall be submitted to the Building Division Inspector and County Engineer. Failure to submit an Elevation Certificate will result in suspension of work until proper certification is provided. To ensure compliance with floodproofing requirements during and after construction, completed Elevation Certificates shall be submitted at the following times:
   a. For slab on grade foundation, a completed Elevation Certificate or a registered surveyor's certified statement (verifying the elevation) shall be submitted when foundation forms are completed and prior to final pour of foundation.
   b. For buildings on elevated foundations, a completed Elevation Certificate shall be submitted when the foundation is completed and prior to rough framing.
   c. For structures to be floodproofed, a completed floodproofing certificate shall be submitted when the floodproofing measures are completed. Accepted forms include the FEMA Floodproofing Certificate for Non-Residential Structures.
   d. For structures that have achieved finished construction, a completed Elevation Certificate shall be submitted prior to the issuance of Certificate of Occupancy.
8. The storage or processing of materials that are buoyant, flammable, explosive, or in times of flooding could be injurious to human, animal, or plant life, shall be at or above the flood protection elevation.
9. Concerning manufactured home parks, for new parks commenced on or after February 1, 1979; expansions to existing parks; existing parks where the value of the repair, reconstruction, or improvement of the streets, utilities, and pads equals or exceeds 50 percent of the value of the streets, utilities and pads before the repair, reconstruction or improvement has commenced; an existing park on which a manufactured home has incurred substantial damage as the result of a flood; manufactured homes to be placed or substantially improved on-sites in existing parks; and for manufactured homes not placed in a park:
   a. Stands or lots shall be elevated on compacted fill or on pilings so that the lowest floor of the manufactured home will be at or above the flood protection elevation. For homes placed on pilings:
      (i) lots shall be large enough to permit steps;
      (ii) piling foundations shall be placed in a stable soil no more than ten feet apart; and
      (iii) reinforcements shall be provided for pilings more than six feet above the ground level.
   b. Adequate surface drainage shall be provided.
   c. New manufactured homes shall be anchored by providing over-the-top and frame ties to ground anchors as well as the following:
      (i) over-the-top ties at each of the four corners, with two additional ties per side at intermediate locations, with the exception of manufactured homes less than 50 feet long which require only one additional tie per side;

(ii) frame ties at each corner with five additional ties per side at intermediate points, with the exception of manufactured homes less than 50 feet long which require only four additional ties per side;

(iii) all components of a manufactured home anchoring system shall be capable of carrying a force of 4800 pounds; and

(iv) any additions to the manufactured home be similarly anchored.

10. Concerning recreational vehicles, at least one of the following provisions shall be met:

a. The recreational vehicle shall be on the site for fewer than 180 consecutive days.

b. The recreational vehicle shall be fully licensed and ready for highway use.

c. The recreational vehicle shall meet the permit requirements and elevation and anchoring requirements for manufactured homes, in accordance with Section 4-405(B)(9) of this section.

C. Other Floodproofing Requirements

1. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage up to the flood protection elevation.

2. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters.

3. Cutoff valves or the elimination of gravity drains below flood protection elevations in new and replacement sanitation or sewerage systems shall be used to minimize or eliminate infiltration of and discharge into flood waters.

4. The location of new and replacement on-site waste disposal systems shall be done in such a manner to avoid impairment to or contamination from the systems during flooding.

5. New and replacement electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities shall be located at or above the flood protection elevation, unless exempted from floodplain development permit requirements under Section 4-407.F.

6. New buildings or other structures shall be placed with their longitudinal axes parallel to the predicted direction of flow of flood waters or be placed so that their longitudinal axes are on lines, parallel to those of adjoining structures, to the extent consistent with other provisions of this Code. This is intended to minimize the obstruction to flow caused by a building or structure.

7. For all new subdivision proposals and other developments, including proposals for manufactured home parks and subdivisions, greater than 50 lots or 5 acres, whichever is lesser, located within a designated A Zone that does not include a water surface elevation, shall include a base flood elevation as part of the proposal.

4-406 Responsibilities of the County Engineer

A. The County Engineer or designee, is responsible for the administration and implementation of the requirements of this section. Such responsibilities include, but are not limited to:

1. Review floodplain development permit applications, review and make floodway/floodfringe determinations, and issue permits if the applications are in compliance with the provisions and requirements of this Section. The requirements of this Section include the approval of all necessary local, state, or federal permits.

2. Obtain, review, and reasonably utilize any base flood water surface elevation and floodway data available from state or federal agencies, or other reliable sources.

3. Obtain and maintain for public inspection copies of all floodplain reports and maps, resolutions of official floodplain map amendments, and all records pertaining to floodplain developments.

a. These records include certified lowest floor elevations, elevation certificates of floodproofing methods and floodway encroachment, and records of all variance actions.

b. The County Engineer shall report variances issued on an annual basis to the Federal Emergency Management Agency.

4. Notify adjacent communities, potentially affected property owners, and the Colorado Water Conservation Board prior to any alteration or relocation of a watercourse.

a. This is done through the publication of a notice of such proposed alteration or relocation once in a newspaper of general circulation in Boulder County.

b. The County Engineer shall also submit evidence of such notification to the Federal Emergency Management Agency.

5. For any alteration or relocation of a watercourse, the County Engineer shall require that maintenance of the flood carrying capacity of the altered or relocated watercourse is provided.

6. Make interpretations where needed, as to the exact location of the boundaries of the FO district where there appears to be a conflict between a mapped boundary and actual field conditions based upon an engineering study by the applicant.

7. Review and transmit recommendations to the Board of Adjustment regarding requested variances and appeals pursuant to Section 4-409.

8. Review floodplain reports approved by the Colorado Water Conservation Board and make recommendations to the Planning Commission and Board of County Commissioners regarding necessary amendments or additions to the FO district.

4-407 Floodplain Development Permit

A. All building permit applications shall be reviewed by the Building Division to determine whether the proposed development may be within the floodplain, or is exempted from floodplain development permit requirements under Section 4-407.F. If it appears to the Building Division that any proposed development may be within the floodplain and is not exempted from floodplain development permit requirements under Section 4-407.F., then the Building Division shall refer the application to the County Engineer. The Building Division shall not issue a building permit when floodplain issues have been raised unless the County Engineer has issued a floodplain development permit or determined that no such permit is required.

B. Applications for floodplain development permits are to be submitted to the County Engineer and shall include the following information as applicable:

1. A completed application form with all necessary information completed.

2. a plan at a scale of 1' = 200' or larger, stamped by a engineer registered by the State of Colorado, which includes:

a. the site location;

b. a legal description of parcel;

c. base flood limits and water surface elevations;

d. floodway limits;

e. channel of watercourse;

f. existing and proposed contours or elevations at 2' intervals;

g. existing and proposed structures, with the lowest floor elevations (including basements and garages) of each structure;

h. proposed elevations to which structures will be floodproofed (if applicable);

i. location and elevations of existing streets, water supply, and sanitation facilities;

j. limits and total land area of all existing and proposed impervious surfaces, including structures; and

k. existing water supply ditches, irrigation ditches and laterals.

3. A typical valley cross-section showing:

a. the channel of the watercourse;

b. limits of floodplain adjoining each side of channel;

c. cross-section area to be occupied by the proposed development;

d. existing and proposed base flood water surface elevations;

4. Specifications for construction and materials of buildings, floodproofing, filling, dredging, grading, channel improvements, storage of materials, water supply, and sanitation facilities as applicable;

5. Description of the extent to which any water course will be altered or relocated as a result of the proposed development;

6. For development proposed within a floodway the following information is required:

a. A title report prepared by a licensed title insurance or abstract company containing the legal description of the subject property and identifying, listing and certifying the following:

(i) a listing of all owners of record of the subject property;

(ii) all owners and their addresses of real property adjacent to the subject property; and

(iii) all owners of any surface, subsurface, or above surface estates, rights, or interests in the land adjacent to the subject property (including easements and interests in the oil, gas, mineral or water estate) or any other real property associated therewith; the nature and description of each such estate, right, or interest; and the addresses of all owners.

7. A floodway analysis by a Colorado Registered Professional Engineer using methodology acceptable to the Federal Emergency Management Agency and according to the following guidelines:

a. If a detailed hydraulic floodway analysis has not been performed, the responsibility for determining the floodway boundary rests with the floodplain development permit applicant. The need for a detailed hydraulic floodway analysis shall be the decision of the County Engineer.

b. The detailed hydraulic floodway analysis shall be based on the identical hydraulic model which was used to develop the engineering study currently adopted by the Board of County Commissioners. The applicant should obtain, through the County Engineer, a copy of the input data and card deck representing the HEC-2 computer model used for their effective flood hazard study.

c. The model must then be updated to existing hydraulic conditions to determine what surcharge levels have already been achieved by encroachments since the floodplain was established.

(i) Alternate floodway configurations may then be analyzed based on acceptable Encroachment Methods as outlined in the current 'U.S. Army Corps of Engineers HEC-2 Water Surface Profiles Users Manual' and submitted to the County Engineer for review and approval.

(ii) Approval will be based on demonstration that the cumulative effects of the proposed encroachment, plus the effects of encroachments since the original flood hazard area was established, does not cause more than a one foot rise in the established base flood water surface elevation.

(iii) At the County Engineer's discretion, where a regulatory floodway has been designated, it may not be necessary to determine the cumulative effects of existing encroachments.

d. Floodway boundary configurations will be examined and approved by the County Engineer. The following specific information, for the stream reach 1000 feet upstream and 1000 feet downstream from the proposed encroachment, must be submitted:

(i) A copy of the printout for the hydraulic computer model representing the unencroached base flood profile run for conditions existing at the time the currently effective floodplain was developed. The printout must include the full input and output listing.

(ii) A copy of the printout from the hydraulic computer model representing the floodway run for the proposed floodway configuration and including encroachments and other hydraulic changes within the floodplain since the currently effective floodplain was established. The printout must include the full input and output listing with all input changes from the original model highlighted.

(iii) A copy of the floodway data table representing data for the proposed floodway configuration.

(iv) A copy of the currently effective official engineering study showing the existing floodplain and the proposed floodway configuration.

(v) Certification from a Colorado Registered Professional Engineer that the proposed floodway configuration, in combination with current floodplain hydraulic conditions, meets established requirements when evaluated against flood elevations established for unencroached conditions when the original floodplain study was completed.

8. An engineering report addressing those standards set forth in Paragraph 4-407(B) of this Section.

C. Standards for Permit Review

1. In reviewing an application for a floodplain development permit, the County Engineer shall determine the specific flood hazard at the site and shall evaluate the suitability of the proposed use in relation to the flood hazard.

2. In addition, the County Engineer shall consider the following factors in reviewing permit applications:

a. the effect of the proposal upon the efficiency or capacity of the floodway;

b. the effect on lands upstream, downstream and in the immediate vicinity of the development including the potential danger to persons;

c. the effect of the proposal on the flood profile and flood heights;

d. the effect of the proposal on any tributaries to the main stream, drainage ditches, water supply and irrigation ditches, or any other drainage or irrigation facilities or systems;

e. the relationship of the proposed development to the flood management program for the area in question, including whether additional public expenditures for flood protection or prevention will be necessary;

f. whether the applicant would obtain an undue advantage compared to later applicants who might request a permit;

g. if the proposed use is for human occupancy;

h. the probability that materials may be swept onto other lands or downstream to the injury of others;

i. the susceptibility of the proposed facility and its contents to flood damage;

j. the safety of access to the property in times of flood for ordinary and emergency vehicles;

k. whether any proposed changes in a watercourse will have an environmental effect on the watercourse, including streambanks and streamside trees and vegetation;

l. the relationship of the proposed development to the Boulder County Comprehensive Plan and any applicable floodplain management programs;

m. whether the cumulative effect of the proposed development with other existing and anticipated uses will increase flood heights more than one foot; and

n. if the expected heights and velocities of the floodwaters expected at the site will adversely affect the development of surrounding property.

3. If the County Engineer determines that the application for floodplain development permit meets the purposes and requirements of this Section, the floodplain development permit shall be issued, with the attachment of any conditions as deemed necessary to further the purposes of this Section. Such conditions may include, but are not limited to, specifications for modification of waste disposal methods and facilities, landscaping, periods of operation, operational controls, sureties, deed restriction, and adequate floodproofing.

D. Board of Commissioners Review

1. In the event that the County Engineer determines that a floodplain development permit application for any development in the floodway meets the applicable standards for approval, the permit will not be effective until 14 days after the date of permit issuance.

a. At the time of permit approval, the County Engineer shall do the following:

(i) within seven days, publish a public notice of the proposed use and the permit issuance in a newspaper of general circulation in Boulder County;

(ii) shall transmit a copy of the notice to property owners adjacent to the property in question; and

(iii) forward to the Board of County Commissioners a written statement which shall include (1) the location and a description of the proposed use under the permit; (2) the reasons for approval of the permit; and (3) any conditions the County Engineer placed on the issuance of the permit.

b. Upon receiving the Director's statement, and before the effective date of the permit, the Board may call the permit up for review at a public hearing.

(i) This hearing shall constitute a revocation of the permit.

(ii) At the public hearing, the Board shall consider evidence related to the permit which may be presented by the County Engineer, the applicant, or interested members of the public.

(iii) The Board shall determine whether the application meets the requirements of this article, and if it so finds, shall issue the permit, with such conditions as the deemed appropriate.

2. During a declared local disaster emergency, for development in the floodway:

a. At the time of floodplain development permit application submittal, the County Engineer shall transmit a notice of the proposed use to, at a minimum, property owners adjacent to the property in question.

b. The permit will be effective on the date of permit issuance.

3. The County Engineer may waive any or all requirements listed in 4.407.D.1. and 4.407.D.2 for the following floodway development:

a. Emergency activities required for the immediate protection of life, safety, or property, or to restore essential public services,

b. Minor disaster recovery repair work that does not cause a rise in predicted 100-year water surface elevation as determined by a licensed engineer, and

c. Any development activities that take place entirely inside an existing building.

E. Permit Expiration, Certification Enforcement

1. The County Building Official shall not issue any building permit for, nor shall the Director issue any use permit involving any building, structure, or other development within the FO district unless a floodplain development permit has been granted for the development.

2. A floodplain development permit shall expire two years after the date of issuance if the permittee has not commenced construction under the permit.

3. Whenever the County Engineer has personal knowledge of any violation of the provisions of this section, written notice shall be given to the violator to correct such violation within thirty days after the date of such notice.

a. Should the violator fail to correct the violation within this 30 day period, the County Engineer may request that the sheriff of the County issue a summons and complaint to the violator, stating the nature of the violation with sufficient particularity to give notice of said charge to the violator.

b. The summons and complaint shall require that the violator appear in County Court at a definite time and place stated therein to answer and defend the charge.

F. Minor Building Permits Exempted from Floodplain Development Permit Requirements

1. The following types of building permits will not require a floodplain development permit unless they (alone, or in conjunction with a larger project of which they are an actual or logical part) increase the structure's floor area or footprint, cause a floodplain encroachment, under Section 18-159, or constitute a substantial improvement under Section 18-206:

a. Electrical repairs;

b. Furnace repairs or replacements;

c. Water heaters, boilers, and evaporative cooler repairs or replacements;

d. Air conditioner repairs or replacements;

e. Re-roofs;

f. Re-siding;

g. Insulation or simple weatherization or energy efficiency upgrades;

h. Roof-mounted or existing structure-mounted solar collectors;

i. Window and door replacements;

j. Renovation or remodel projects that cost less than $750.

2. The cost of any such exempted work shall not be included in the cumulative calculation required under Article 18-206 (definition of substantial improvement), unless part of a substantial damage calculation or estimate.

4-408 Nonconforming Structures and Uses

A. Existing Structures and Uses

1. The use of any structure on land within the FO district that was lawfully established before the adoption or amendment of this Article 4-400, but that does not conform to the requirements of this Article may be continued subject to the following conditions:

a. No such building structure may be expanded, improved, repaired, restored, or replaced unless the work complies with the floodproofing provisions of Section 4-405 of this Article.

(i) If the work does not constitute a substantial improvement, then only the constructed or reconstructed portion shall have to comply with Section 4-405 of this Article.

(ii) If the work qualifies as a substantial improvement, then the entire structure shall be protected as required in Section 4-405.

b. A change in the use of a building or structure, as defined in Article 18-206, will require that the entire building or structure to be protected pursuant to Section 4-405, unless a waiver is granted by the County Engineer. Floodproofing requirements may be waived for a change in use if the County Engineer determines there is no potential for any significant conflict with this Article 4-400 and the following circumstances are met:

(i) The existing structure is located outside of the floodway;

(ii) The existing structure is determined to be structurally sound by an engineer licensed in the state of Colorado;

(iii) The cost of compliance to this Article 4-400 is less than 50% of the current value of the structure; and

(iv) The proposed change in use is to a use that reduces, minimizes, or otherwise creates a less intensive use or decreases human occupation.

2. No person shall store or process materials that are buoyant, flammable, hazardous, toxic or explosive, or that in times of flooding could be harmful to human, animal, or plant life except at or above the flood protection elevation.

B. If a conflict arises between the requirements of this Section and the provisions of Section 4-1000, Nonconforming Structures and Uses, the requirements of this Section shall control.

4-409 Appeals and Variances

A. Appeals to the Board of Adjustment may be taken by any person aggrieved by his inability to obtain a floodplain development permit or by the decision of the County Engineer based upon or made in the course of the administration or enforcement of the provisions of this Section

1. The Board of Adjustment shall hear and decide appeals and requests for variances from the requirements of this Section 4-400.

2. The Board of Adjustment shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the County Engineer in the enforcement or administration of this Section 4-400.

3. The procedures and requirements for the filing of appeals and variance requests are set forth in Section 2-800 ("Boulder County Board of Adjustment"), the pertinent provisions of Article 3 ("Processes"), and Section 4-1200 ("Board of Adjustment") of this Code, in addition to this Section 4-409.
4. In passing upon such applications, the Board of Adjustment shall consider all technical evaluations, all relevant factors and standards specified in other applicable sections of this Code, 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 owners;
   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 the existing and anticipated development;
   h. the relationship of the proposed use to the Comprehensive Plan, any adopted intergovernmental agreement affecting land use, and any floodplain management program for the subject 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 flood waters and the effects of wave action, if applicable, expected at the site; and,
   k. the 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 systems, streets and bridges.
5. Upon consideration of the factors of Subsection 4-409(A)(4) and the purposes of this Section 4-400, the Board of Adjustment may attach such conditions to the granting of variances as it deems necessary to further the purposes of this Section 4-400.
6. The County Engineer shall maintain the records of all appeal actions, including technical information, and report any variances to the Federal Emergency Management Agency.

B. Conditions for Variances

1. Generally, variances may be issued for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items (i-xi) in Paragraph 4-409(A)(4) have been fully considered. As the lot size increases beyond the one-half acre, the technical justifications required for issuing the variance increases.
2. Variances may be issued for the repair or rehabilitation of designated 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.
3. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
4. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
5. Variances shall only be issued upon:
   a. a showing of 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, extraordinary public expenses, create nuisances, cause fraud on or victimization of the public as identified in Paragraph 4-409(A)(4) or conflict with existing local laws or ordinances.
6. Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk from the reduced lowest floor elevation.

Exhibit B

Proposed Land Use Code Article 4 Amendments

4-400 Floodplain Overlay District through

4-419 Enforcement

4-400 Floodplain Overlay District

4-401 Purpose

A. To provide land use controls necessary to qualify unincorporated areas of Boulder County for flood insurance under requirements of the National Flood Insurance Act of 1968, as amended; to protect life, property, and health; to ensure the best available data is used in making development decisions; to avoid increasing flood levels or flood hazards or creating new flood hazard areas; to minimize public and private losses due to flooding; to reduce the need for expenditures of public money for flood control projects; to reduce the need for rescue and relief efforts associated with flooding; to prevent or minimize damage to public facilities and utilities; and to meet or exceed FEMA and CWCB minimum standards for floodplain regulation.

B. FEMA requires all communities that participate in the National Flood Insurance Program ("NFIP") regulate "Development" that occurs within the Special Flood Hazard Area. FEMA defines Development as "any manmade change to improved and unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavating or drilling operations."

4-402 Applicability and Administration

A. **Applicability.** The provisions and regulations of this section must apply to all lands within the unincorporated area of Boulder County which are located within the Floodplain Overlay (FO) District. If a lot or other parcel of land lies partly within the FO District, the part of such lot or parcel lying within the district must meet all requirements for such district as set forth in this Code. If a structure lies partly within the FO District, then these requirements must apply to the entire structure.

B. **County Engineer Role.** The County Engineer or his or her designee is responsible for the administration and implementation of the requirements of the FO District, including reviewing all development proposals to determine the applicability of this section, all Individual Floodplain Development Permit applications, and all notifications submitted for General Floodplain Development Permit consideration.

C. **No Liability.** The degree of flood protection intended to be provided by this section has been determined to be reasonable for regulatory purposes and is based on engineering and scientific methods of study of the 1%-annual-chance (100-year) flood event. Floods of greater magnitude may occur. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge or culvert openings restricted by debris. This Article 4-400 does not imply that land areas outside of 100-year floodplain boundaries or land uses permitted within such areas will be free from flooding or flood damages, or that compliance with these regulations will prevent any or all damages from flooding. Nor must this Article 4-400 create a liability on the part of, or a cause of action against, Boulder County or any officer or employee thereof for any flood damages that may result from reliance on this article or any administrative decision.

D. **More Restrictive Prevails.**

a. The Federal Emergency Management Agency ("FEMA") and the Colorado Water Conservation Board ("CWCB") have established certain minimum standards for regulatory floodplains. These minimum standards are incorporated herein by this reference. To the extent a FEMA or CWCB requirement conflicts with a provision in 4-400, the most restrictive controls.

b. Similarly, these floodplain regulations are not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. Where these regulations and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more restrictive restrictions must prevail.

E. **Permits Required.**

1. Unless this Article 4-400 specifically exempts an activity from requiring a permit, all development in the FO District requires the issuance of an Individual Floodplain Development Permit or must be covered by the General Floodplain Development Permit. Conducting work in the FO District that is not covered by a General FDP or without an Individual Floodplain Development Permit may result in enforcement action under Article 17.

2. In addition to the Floodplain Development Permits required by this section, anyone conducting work in the FO District is responsible for obtaining all other required local, state, and federal permits prior to project construction.

F. **Referral from Other County Departments.**

1. All development that requires a planning review process through the Boulder County Land Use Department and may be susceptible to flooding will be forwarded to the County Engineer for review and comment. The County Engineer must determine if the work is covered under a General Floodplain Development Permit, requires an Individual Floodplain Development Permit, or does not require any type of Floodplain Development Permit. Where the County Engineer indicates that the development will need a Floodplain Development Permit, the Land Use Department must note that on any planning approval issued.

2. All building permit applications must be reviewed by the Building Division to determine whether the proposed development is potentially within the FO District and therefore may require a Floodplain Development Permit. If it appears to the Chief Building Official that any proposed development may be within the FO District, then the Chief Building Official must refer the application to the County Engineer. The Chief Building Official must not issue a building permit when floodplain issues have been raised unless the County Engineer has confirmed the development is approved under the General FDP, has issued an Individual FDP, or has determined that neither type of floodplain permit is required.

3. All OWTS applications must be reviewed by Boulder County Public Health Department ("Public Health") to determine whether the work, including new OWTS or repair/replacement of an existing OWTS, may be within the FO District. If it appears to Public Health that the proposed work may be within the FO District, then they must refer the application to the County Engineer. Public Health must not issue an OWTS permit when floodplain issues have been raised unless the County Engineer

has issued an Individual Floodplain Development Permit or has determined that no such permit is required.

4-403 Official Map

A. **FO District.** The Boulder County FO District is defined as the FEMA Floodplain together with the Boulder County Floodplain, as those floodplains are defined below.

1. The Digital Flood Insurance Rate Maps ("DFIRM") in effect on the date of a property owner's complete application for any permit or process in this Code must establish the foundational floodplain for the FO District (the "FEMA Floodplain"). The term "DFIRM" includes all flood risk zone designations and technical information displayed on the maps, explanatory matter, technical addenda, modeling and calculations, water surface elevations, profiles, and cross sections, and other underlying detailed study data, such as information published in the Flood Insurance Study ("FIS") report and supporting documentation, as well as approved Letters of Map Revision ("LOMR"), Letters of Map Amendment ("LOMA"), and Letters of Map Revision based on Fill ("LOMR-F"). The FEMA Floodplain includes Zone AE, A, AH, and AO flood risk zone designations, including both Floodway and Flood Fringe areas.

2. In order to ensure that Boulder County floodplain regulations reflect the best data available to Boulder County, the County Engineer may recommend that the Planning Commission recommend to the Board of County Commissioners adoption of a "Boulder County Floodplain" to augment the FEMA Floodplain. The Boulder County Floodplain must be comprised of the same flood risk zone designations as the FEMA Floodplain. The purpose of adopting a Boulder County Floodplain is to allow use of best available data not yet adopted by FEMA to establish floodplain boundaries, Base Flood Elevations (BFEs), and Flood Protection Elevations (FPEs) to better protect residents of Boulder County from flood hazards. In no instance must the Boulder County Floodplain take out of the FO District an area or property designated as within the FO District by the FEMA Floodplain.

B. **Official Map.** The County Engineer must maintain digital maps delineating the location and boundaries of the FEMA Floodplain and the Boulder County Floodplain. The FEMA Floodplain map must depict in plan view the horizontal boundary of the flood hazards described in the underlying flood studies, as published effective by FEMA. The Boulder County Floodplain map must depict in plan view the horizontal boundary of the flood hazards described in the underlying flood studies, as adopted by Boulder County. These maps of the FEMA Floodplain and the Boulder County Floodplain together establish the areas governed by the provisions of this Article 4-400 and constitute the Official Map of Boulder County's FO District ("Official Map").

1. The most current Official Map and supporting data must be on file in the County Engineer's Office in electronic format, available for public inspection during normal business hours, with electronic and paper copies available upon request. The Official Map must also be available to the public on the Boulder County website.

2. Upon approval of changes to the Official Map by the Planning Commission and the Board of County Commissioners, the County Engineer must revise the Official Map accordingly.

3. The County Engineer must maintain records of superseded versions of the Official Map for historical reference. All records pertaining to floodplain development must be on file and open to public inspection. These records include, but are not limited to, certified Lowest Floor Elevations, Elevation Certificates, commercial Floodproofing Certificates, LOMAs, LOMR-Fs, LOMRs, Floodplain Development Permits, and records of action on variance requests.

C. Interpretation of Official Maps

1. Where interpretation is needed as to which uses, parcels, structures, or other facilities are located in or out of the FO District, including in situations where there appears to be a conflict between a mapped boundary and actual field conditions, the County Engineer must make the necessary interpretation by referring, as necessary, to the best available data at that time. Sources of best available data include without limitation the engineering study upon which the maps and elevations are based, the professional engineers who prepared the study, the most recent detailed terrain data, any Base Flood Elevation/water surface elevation and Floodway data available from state or federal agencies, and any other reliable source which the County Engineer finds meets an acceptable level of technical accuracy as determined through prevailing industry practices.

2. The use of aerial photography to interpret FO District boundaries, but without the consideration of local terrain data, must be for informational purposes only, and not for making determinations as to the exact location of the boundaries of the FO District.

3. Any interpretation performed by the County Engineer will be noted in the records associated with the Official Map and available for public inspection.

D. Amendment of Official Map

1. Unless otherwise provided in this Section 4-__, a change in the boundary of the FO District which results in a portion or all of a parcel being added to or removed from the FO District, requires review and approval of a Zoning Map Amendment by the Planning Commission and the Board of County Commissioners per the provisions of Section 4-1100.

2. The FEMA Floodplain within the FO District will be deemed automatically updated when FEMA issues a Letter of Final Determination associated with any map action, or after the effective date of any Letter of Map Change ("LOMC"), without need for approval by the Planning Commission or the Board of County Commissioners, regardless of how many parcels are affected.

    a. If FEMA provides notice of final Base Flood Elevations and sets an effective FIRM revision date (through issuance of a Letter of Final Determination) for studies that had previously been adopted as Boulder County Floodplain, the following rules apply.

(i) If FEMA made no changes whatsoever to the studies previously adopted by Boulder County, then from the effective date of FEMA's map action forward, Boulder County will continue to regulate using those studies to partially define the FO District, but treated as FEMA Floodplain rather than the Boulder County Floodplain. In this event, the County Engineer is not required to obtain review and approval of PC and BOCC because such approval was previously granted during hearings on amending the Boulder County Floodplain.

(ii) Alternatively, if prior to its official action FEMA makes changes to maps, data, or related documentation previously included only in the Boulder County Floodplain, the County Engineer must determine that either (1) FEMA's changes are based on new and better data than was available at the time of the County's adoption and, therefore, the Boulder County Floodplain should be amended accordingly, in which case the County Engineer will propose recommended changes to the Boulder County Floodplain to PC and BOCC for review and approval, or (2) the Boulder County Floodplain need not be amended as a result of FEMA's action, in which case the County Engineer need not obtain further review or approval of PC and BOCC. An interpretation by the County Engineer as to which uses, parcels, structures, or other facilities are located in or out of a previously adopted FEMA Floodplain or a Boulder County Floodplain does not result in an amendment to the Official Map that requires review and approval by the Planning Commission and Board of County Commissioners.

3. If the Board of Adjustment overturns a determination of the County Engineer after hearing an appeal, or the Board of Adjustment grants a request for a variance, such that a modification to the Official Map results, the County Engineer is authorized to make such modification without need for further approval by the Planning Commission or the Board of County Commissioners to get a Zoning Map Amendment approved, regardless of how many parcels are affected.

4. Clerical errors in the Official Map must be corrected by the County Engineer as they are discovered from time to time, without need for approval by the Planning Commission or the Board of County Commissioners, regardless of how many parcels are affected.

5. From time to time, the County Engineer may generate or receive draft and/or preliminary flood risk analyses and reports affecting the FO District. These analyses may be any flood risk analyses, including those designated by CWCB or distributed by FEMA, as well as or any other water surface elevation, and/or Floodway data available from state or federal agencies or any other reliable source. Upon notification of such new study information, the County Engineer must evaluate whether a change to the boundaries of the FO District is required. If so, the County Engineer will submit a proposed Zoning Map Amendment to

Planning Commission and the Board of County Commissioners for review and approval.

6. In accordance with 44 C.F.R. § 65.3, project proponents are required to submit technical data to FEMA, in the form of a map revision request, within 6 months of the date of completion of a project where changes (either increases or decreases) in the 100-year water surface elevation greater than 0.3 foot result. Upon notification of such a man-made physical change, the County Engineer must evaluate whether a change to the boundaries of the FO District is required. If so, the County Engineer will submit a proposed Zoning Map Amendment to Planning Commission and the Board of County Commissioners for review and approval.
7. The County Engineer will monitor large-scale natural physical changes as they occur. If the County Engineer deems it necessary to restudy a mapped floodplain or Floodway as a result of such changes, the County Engineer must first coordinate with CWCB and FEMA and, as appropriate, submit a proposed Zoning Map Amendment to Planning Commission and the Board of County Commissioners for review and approval.

4-404 Pre-application Conference

A pre-application conference as defined in Section 3-201 must be held prior to the submission of an application for a Floodplain Development Permit, unless waived in writing by the County Engineer as unnecessary under the circumstances.

4-405 Submittal Requirements for Individual Floodplain Development Permit Application

A. **Contents of Application.** Applications for Individual Floodplain Development Permits are to be submitted to the County Engineer and must include the following information, as applicable:

1. A completed application form, available from the Transportation Department.
2. A plan at a scale of 1' = 200' or larger, stamped by a engineer registered by the State of Colorado, which includes:
    a. the site location;
    b. a legal description of parcel;
    c. base flood limits and water surface elevations;
    d. floodway limits;
    e. channel of watercourse;
    f. existing and proposed contours or elevations at 2' intervals;
    g. existing and proposed structures, with the lowest floor elevations (including basements and garages) of each structure;
    h. proposed elevations to which structures will be floodproofed (if applicable);
    i. location and elevations of existing streets, water supply, and sanitation facilities;
    j. limits and total land area of all existing and proposed impervious surfaces, including structures; and
    k. existing water supply ditches, irrigation ditches and laterals.
3. A typical valley cross-section showing:
    a. the channel of the watercourse;
    b. limits of floodplain adjoining each side of channel;
    c. cross-section area to be occupied by the proposed development;
    d. existing and proposed base flood water surface elevations;

4. Specifications for construction and materials of buildings, floodproofing, filling, dredging, grading, channel improvements, storage of materials, water supply, and sanitation facilities as applicable;
5. Description of the extent to which any water course will be altered or relocated as a result of the proposed development;
6. A legal description of the subject property and adequate evidence of either direct ownership of the subject property or legal authority to act on behalf of the owner(s) of record;
7. Any additional information required by the County Engineer necessary to allow the review criteria in this Article 4-400 to be adequately evaluated.

B. Procedures for Modeling Proposed Development within the Floodway.

1. Unless one or more requirements below are modified by the County Engineer for good cause shown by the applicant, for all projects confirmed to be wholly or partially within the Floodway the applicant must submit an engineering report, including a Floodway analysis certified by a qualified engineer licensed in Colorado using the same type of model that was used to establish the current regulatory flood hazards. Applicants may obtain a copy of the applicable floodplain model from Boulder County. Models that differ from the type used to establish the regulatory flood hazards must first be approved for use by the County Engineer.
2. Modeling submitted to Boulder County in support of a Floodplain Development Permit must include the following:
    a. Duplicate Effective (Regulatory) Model. This model is necessary to confirm that the regulatory water surface elevations can be reproduced to within 0.5 foot. When Boulder County regulates a floodplain that differs from the FEMA Floodplain, it is the model that is associated with the Boulder County Floodplain.
    b. Corrected Effective Model. The model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections, or incorporates more detailed topographic information than that used in the current effective model. Floodway limits should be manually set at the new cross-section locations by measuring from the effective FIRM . The cumulative reach lengths of the stream should also remain unchanged. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model.
    c. Existing, or Pre-Project Conditions Model. The applicant must revise the duplicate effective or corrected effective model to reflect any modifications (including man-made encroachments) that have occurred within the floodplain since the date of the effective model but prior to construction of the proposed project. If no modifications have occurred since the date of the effective model, then the model would be identical to the duplicate effective or corrected effective model, and only one of these models is required. The results of this existing conditions analysis will

indicate the 100-year elevations to be used for comparison to proposed conditions at the project site.

d. Proposed or Post-Project Conditions Model. The applicant must then modify the existing conditions model (or duplicate effective, or corrected effective, as appropriate) to reflect the proposed project. The overbank roughness coefficients should remain the same unless a reasonable explanation of how the proposed project will impact roughness values is provided, with supporting data. The results of this analysis will indicate the 100-year elevation for proposed or post-project conditions at the project site. These results must demonstrate no impact (measured as 0.00) to the 100-year water surface elevations when compared to the existing conditions model (referred to as a "No-Rise Certification").

(i) Should this comparison result in water surface elevation increases that cannot be mitigated through project design changes, then the provisions of 4-__ above must apply.

3. For any proposed Alteration or relocation of a watercourse, including stream restoration projects and engineered channelization projects, the County Engineer must require that conveyance is not decreased as a result of the project, and that the flood carrying capacity of the watercourse is maintained over time.

a. All proposals for watercourse Alteration or relocation must include, in addition to all other applicable materials, pre- and post-project conveyance calculations to demonstrate that the flood carrying capacity has not been decreased.

b. For engineered channelization projects, permit applicants are required to submit, along with all other applicable materials, a maintenance plan covering a minimum 30-year period that outlines the maintenance activities to be performed, the timing/schedule for those activities, and the specific person(s) responsible for maintenance in order to ensure the flood carrying capacity is maintained.

c. For Alterations or relocations using natural channel design, like that typically associated with stream restoration projects, the provisions of (b) above are not required.

d. Prior to any Alteration or relocation of a watercourse, the County Engineer must notify adjacent communities, potentially affected property owners, and the CWCB in the following manner:

(i) Notification must be done through the publication of a notice of such proposed alteration or relocation once in a newspaper of general circulation in Boulder County.

(ii) The County Engineer must keep on-file evidence of such notification.

4. Watercourse Alteration/relocation/channelization projects in the FO District are still subject to the county's modeling requirements covered in 4-__ and 4-__ prior to permitting

4-406 Review of an Application by the County Engineer

A. Once an application for an FDP is filed, the County Engineer must review it for completeness.

B. The County Engineer may suspend processing an FDP application at any time at the request of the applicant or whenever the County Engineer determines that the application is not complete. The County Engineer may deem the application incomplete, based on the application submittal requirements, at the County Engineer's initiative or at the request of a referral agency. In the event that the County Engineer deems an application incomplete, the County Engineer must immediately notify the applicant of the shortcomings. Once the requested information has been provided, the application must be deemed filed as of that date and the County Engineer must proceed to process the application and render a decision. If an application is not deemed complete within six months of the date of suspension, the County Engineer may declare the application withdrawn. The six month time frame may be extended should the County Engineer determine that circumstances beyond the control of the applicant prevent a timely completion of the application.

C. Any determination by the County Engineer to approve, conditionally approve, or deny a FDP must be in writing and mailed or otherwise provided to the applicant.

4-407 Floodplain Development Permits

A. **Minimum Federal and State Standards.** Development in the FO District must comply with the NFIP and State of Colorado minimum standards, which requires applicants to demonstrate that development projects, when combined with all other existing and anticipated development, will cause an increase in the modeled 1%-annual-chance water surface of not greater than 0.00 feet for projects in the Floodway and not greater than 0.50 foot for projects in the Flood Fringe.

B. **Encroachments Prohibited; Exceptions.** Encroachments within the adopted FEMA Floodway, other than those listed in 4-__, are prohibited, unless it has been demonstrated through hydrologic and hydraulic analyses performed by a qualified engineer licensed in Colorado and in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the Base Flood (a No-Rise Certification).

1. Under the provisions of 44 CFR Chapter 1, Section 65.12, of the NFIP Regulations, a community may permit encroachments within the adopted FEMA regulatory Floodway that would result in an increase in Base Flood Elevations if the applicant first receives an approved CLOMR and/or Floodway revision from FEMA.
2. Where there is a designated FEMA Floodplain but no designated FEMA Floodway, and there is a designated County Floodway, projects that result in increases greater than 0.5 foot in these areas must first receive an approved CLOMR from FEMA, and projects that result in increases between 0.0 and 0.5 foot in these areas must first receive an approved [County CLOMR] from the County Engineer.
3. Where there is no designated FEMA Floodplain, but there is a designated County Floodway, projects that result in any increase in these areas must first receive an approved [County CLOMR] from the County Engineer.
4. Where there is no designated FEMA Floodplain, but there is a designated County Floodplain (but not a County Floodway), the procedure set forth in 4-__ must be followed.
5. In all instances, water surface elevation increases that impact an insurable structure will not be allowed.
6. Following project completion, Floodway encroachments that result in water surface elevation changes greater than those allowed under 4-__ must apply for a map revision from FEMA. See 44 C.F.R. Part 65.

C. **Uses Prohibited in Floodway.** Under no circumstance may the County Engineer issue a Floodplain Development Permit for the following activities and uses, which are prohibited within all mapped Floodways:

1. Construction of new permanent structures (either residential or non-residential);
2. Construction of new temporary structures (either residential or non-residential), unless the County Engineer reviews and approves a specific location in the Floodway in conjunction with a Special Event as defined in the Multimodal Transportation Standards or a Group Gathering / Special Event as defined in the Land Use Code;

3. Construction of additions to existing structures which increase the structure's square footage, footprint, or habitable space;
4. Conversion of existing accessory use space to living or primary use space;
5. Overnight campgrounds;
6. Dispersed camping, unless the camping is approved through the issuance of a Group Gathering / Special Event Permit as defined in the Land Use Code;
7. Parking of Recreational Vehicles for the purposes of overnight habitation;
8. Storing or processing of materials that are buoyant, flammable, explosive, or otherwise potentially injurious to human, animal or plant life;
9. Solid waste disposal sites and central collection sewage treatment facilities;
10. New or expanded individual on-site wastewater systems, unless the expanded system is required to bring existing structures up to code or is allowed per 4-__;
11. Fences composed of solid wood or chain link, or any other fence that does not meet the Boulder County standards for fence installation;
12. Any activity or use that would create the potential for solid debris (including, but not limited to decks and fences) or waste, including rubbish as defined by Article 14, to be carried downstream;
13. New or expanded Critical Facilities below 6,000 feet in elevation; and
14. Any encroachment (including filling and grading) that would adversely affect the efficiency of the Floodway or change the direction of flow, unless it conforms with section 4-__.

D. **Uses Allowed in Floodway under Certain Conditions.** Unless prohibited in a particular area by any underlying zoning district, and only if they do not adversely affect the efficiency of the Floodway, change the direction of flow, increase base flood heights without a FEMA-approved CLOMR, or pose a significant safety hazard, the following development types and open uses may be allowed within the Floodway:

1. Agricultural uses such as general farming, grazing of livestock and horses, truck farming, sod farming, and wild crop harvesting;
2. Uses accessory to residential uses, including, but not limited to lawns, open areas, gardens, driveways, and play areas;
3. Industrial or commercial uses such as loading areas, railroad rights-of-way (but not including freight yards or switching, storage, or industrial sidings), parking areas, and airport landing strips;
4. Recreational uses not requiring permanent or temporary structures designed for human habitation, unless a special event permit has been issued for a temporary structure; and
5. Utility facilities such as dams, power plants, spillways, transmission lines, pipelines, water monitoring devices, water supply ditches, irrigation ditches and laterals; and open mining.

6. Critical Facilities above 6,000 feet in elevation

E. Uses Allowed in Flood Fringe under Certain Conditions. Any use permitted by the underlying zoning regulations must be permitted in the Flood Fringe, provided the use meets the flood protection requirements of Section 4-__.

1. New Critical Facilities are prohibited in the Flood Fringe below 6,000 feet (NAVD88) in elevation.
2. Wastewater treatment facilities serving more than two properties are prohibited in the Flood Fringe.
3. Fences in the Flood Fringe are subject to all Boulder County Building Code and other fence requirements.

4-407.1 General Floodplain Development Permits

A. **Intent.** In order to avoid undue hardship to property owners within Boulder County, yet remain in compliance with FEMA regulations regarding Floodplain permitting, the County Engineer is hereby authorized to issue one or more General Floodplain Development Permits ("General FDP") in accordance with the provisions of this Section 4-407.1. The intent of a General FDP is to allow certain limited uses and activities in the Floodplain without the need to apply for and gain approval of an Individual FDP because the nature and extent of these uses and activities will not increase BFEs.

B. Uses and Activities Eligible for a General FDP. The County Engineer may in his professional judgment as a licensed engineer determine that the following activities will not result in a Technically Measurable increase in the BFE and, consequently, that such projects are deemed approved under a General FDP. If the County Engineer issues such as General FDP, for certain projects delineated below, owners must notify the County Engineer Prior to commencement of work, so that the County Engineer may consider individual and cumulative impacts and ensure minimum compliance with federal and state floodplain rules.

1. Activities that require notification 30 days prior to commencement:

    a. Road and trail widening, surface type changes, and overlays of greater than six inches (if fill is necessary for widening, an Individual FDP is required);

    b. New parking lots greater than 0.1-acre;

    c. New underground utilities that meet one or more of the following criteria (must also not permanently alter topography):

        (i) Greater than 250 feet in length,

        (ii) Installed perpendicular to flood flows, and/or

        (iii) Installed under a perennial stream channel;

    d. Temporary in-stream diversions/alterations (including temporary construction diversions and temporary diversions to maintain an adjudicated water right; and

    e. Permanent fences and new guardrails (all fences must meet Boulder County fence requirements).

    f. Repairs necessary to correct existing violations of Boulder County health and safety codes, per 4-__.

2. Activities that do not require notification:

    a. Road, trail, and parking area patching, sealing, milling, dirt/gravel leveling, and repair of drainage-related damage to match adjacent grade (these activities must not increase grade by 6 inches or more);

    b. New driveways, greenway trails, sidewalks, roads and streets constructed completely at or below-grade;

c. Drainage system and infrastructure repairs and Maintenance including but not limited to sediment removal from culverts and ditch headgates, vegetation maintenance, and outfall and bridge repairs) to previously existing design;

d. In-kind replacement of storm drainage system or infrastructure components (reserved for hydraulic structures such as bridges, culverts, check dams, etc (if physical conditions of the channel have changed to the extent that in-kind replacement is not possible, and for new components, an individual FDP is required);

e. Debris removal;

f. Routine Maintenance of easement and utility corridors;

g. New overhead utilities, including supporting structures, as well as maintenance of overhead utilities;

h. Repair and Maintenance of underground utilities (work must not permanently alter topography);

i. Installation of sign or mailbox posts, telephone poles, deck piers, or similar elements, unless more than 5 such elements are located along a line of the same bearing that are not parallel to flow and could create an obstruction;

j. Activities associated with construction stormwater BMPs, such as temporary erosion control measures, etc.;

k. General farming, pasture, horticultural activities, and forestry that do not involve earthwork that permanently alters the topography or any clearing/grubbing of an area greater than 0.1 acres;

l. Gardening and landscaping including planting vegetation, mulching, and raised beds less than 12 cubic yards total (but not hardscaping such as retaining walls, terraces, etc.); and

m. Lawns and lawn maintenance activities.

C. Notification Process.

1. If notification is required for a project, the owner must submit the following information to the County Engineer a minimum of 30 days prior to commencing work:

   a. Project Description;

   b. Location Description (an accompanying location map is best); and

   c. Site Plan, if necessary to further describe the work.

2. If the work is consistent with the intent of the General FDP, the County Engineer will respond to the owner with this confirmation. If additional information is necessary or if the work requires issuance of an Individual FDP, the County Engineer will inform the owner within 14 days of notification submission. If the

County Engineer does not respond at all to the owner's notification by close of business on the 14th day after transmission, the work is deemed approved.

D. No Permit Fees. If the County Engineer determines a use or activity falls under the approval granted in a General FDP, no permit fee will be charged to the owner.

E. Work Not Approved under a General FDP.

1. Any development within the floodplain that does not meet the criteria of a General FDP requires an Individual FDP prior to beginning the work or a determination by the County Engineer that no type of FDP is required at all.
2. Should any work commence that is assumed by an applicant to be covered by a General FDP, and the County Engineer determines it is not covered by a General FDP, a Stop Work order will be issued. The unpermitted work will be treated as a zoning violation under Article 17 until an approved Individual FDP is issued or the violation is otherwise resolved.
3. Anyone considering a project in the Floodplain that varies from those described above should contact the County Engineer to confirm an Individual FDP application is not required. The County Engineer makes the final decision as to the applicability of a General FDP. Any project determined by the County Engineer to create a significant obstruction to flood flows will require an Individual FDP.

F. **Other Permits.** Eligibility for a General FDP does not eliminate the need for applicants to obtain all other required permits, including building, grading, access, construction, and/or stormwater permits from Boulder County.

G. **Updates to General FDP.** To reflect changes to federal, state, or local regulations or guidance or for other good cause, from time to time the County Engineer may propose updates to the terms and conditions of a General FDP. Copies of all approved General FDPs must be kept on file in the County Engineer's office at all times and available for public review.

4-407.2 Individual Floodplain Development Permits

A. **Site Specific Evaluation.** In reviewing an application for a Floodplain Development Permit, the County Engineer must determine the specific flood hazard at the site in accordance with 4-___ and must evaluate the suitability of the proposed use or development in relation to the flood hazard.

B. **Additional Review Criteria.** The County Engineer must consider the following factors in reviewing Individual Floodplain Development Permit applications:

1. the effect of the proposal upon the efficiency or capacity of the Floodway;
2. the effect on lands upstream, downstream and in the immediate vicinity of the development;
3. the probability that the proposal will result in unreasonable risk of harm to people or property – both onsite and in the surrounding area – from natural hazards;
4. the effect of the proposal on the flood profile and flood heights;
5. the effect of the proposal on any tributaries to the main stream, drainage ditches, water supply and irrigation ditches, or any other drainage or irrigation facilities or systems;
6. the relationship of the proposed development to the flood management program for the area in question, including whether additional public expenditures for flood protection or prevention will be necessary;
7. whether the applicant would obtain an undue advantage compared to later applicants who might request a permit;
8. if the proposed use is for human occupancy;
9. the susceptibility of the proposed facility and its contents to flood damage;
10. the safety of access to the property in times of flood for ordinary and emergency vehicles;
11. whether any proposed changes in a watercourse will have an environmental effect on the watercourse, including streambanks and streamside trees and vegetation;
12. the relationship of the proposed development to the Boulder County Comprehensive Plan, Watershed Master Plans, and any planning-related documents pertaining to development in Boulder County;;
13. whether the cumulative effect of the proposed development with other existing and anticipated uses will increase flood heights more than the allowances specified in 4-__; and
14. if the expected heights and velocities of the floodwaters expected at the site will adversely affect the development of surrounding property.

4-408 Flood Protection Measures

Flood Protection Measures apply to development within the FO District in Zones AE, A, AO, and AH.

A. **Flood Protection Elevations.** For the purposes of this section, the Boulder County FPE is equal to the following:

1. In areas depicted as Zone AE in the FO District, the FPE is equal to the Base Flood water surface elevation plus 2 feet
2. In areas depicted as Zone A in the FO District, the following applies:
    a. Boulder County must obtain and reasonably utilize Base Flood water surface elevation information from local, state, federal, or other reliable sources
    b. In those Zone A areas where a BFE can be determined from these sources, the FPE will be 2 feet above the calculated BFE
    c. In those Zone A areas where a BFE cannot be determined from these sources, the FPE will be 3 feet above the highest grade in the area of the proposed development.
        (i) For buildings, the FPE will be 3 feet above the highest grade within the proposed building footprint, or the highest grade adjacent to the exterior of the existing structure, unless the applicant supplies information sufficient to determine a BFE and subsequent FPE for the structure as a part identifying the Floodway boundary pursuant to 4-__.
        (ii) For all other development that requires determination of a FPE in Zone A, the FPE will be 3 feet above the highest grade in the area of development.
3. In shallow flooding areas (Zone AO), the FPE is equal to:
    a. Two feet above the specified flood depth; or
    b. If no flood depth is specified, 3 feet above the highest grade that exists within the proposed structure footprint.

B. General Requirements

1. All development in the FO District must be adequately protected from flooding according to the requirements of this section.
2. No person must store or process materials that are buoyant, flammable, hazardous, toxic or explosive, or that in times of flooding could be harmful to human, animal, or plant life except at or above the flood protection elevation.
3. All new and replacement water supply systems must be designed to minimize or eliminate infiltration of flood waters into the system.

C. New Construction

1. General Requirements

a. All new construction must be constructed by method and practices that minimize flood damage.

b. New construction in the Floodway is prohibited.

c. New basements in the Flood Fringe are prohibited.

d. All new construction must be constructed with materials and utility equipment resistant to flood damage up to the FPE.

e. All new construction must be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, and must be certified by a P.E. registered in the State of Colorado that they have been constructed to withstand such forces and are adequately protected from flooding up to the FPE;

f. New buildings or other structures must be placed with their longitudinal axes parallel to the predicted direction of flow of flood waters or be placed so that their longitudinal axes are on lines, parallel to those of adjoining structures, to the extent consistent with other provisions of this code. This is intended to minimize the obstruction to flow caused by a building or structure.

g. New and replacement Service Equipment, including, but not limited to, electrical, heating, ventilation, plumbing, and air conditioning equipment, must be located at or above the FPE.

h. New construction in Zone AO or AH must be accompanied by site/property grading to accommodate drainage of floodwaters around the perimeter of the structure in a controlled manner, without adversely impacting adjacent properties.

i. New construction on a property removed from the floodplain by issuance of a LOMR-F from FEMA must have the Lowest Floor elevated to or above the FPE that existed prior to the placement of fill.

2. Residential Structures

a. All new residential structures built in the Flood Fringe or within Zones A, AO, or AH must have their Lowest Floors (including basements, porches, and decks), as well as any and all Service Equipment (excepting the necessary connections to public utility), elevated to the Boulder County FPE, either by the placement of fill or by construction on elevated foundation walls.

b. Fully enclosed areas below the lowest floor of a structure in the FO District must be used solely for parking of vehicles, building access, or storage of materials. These areas must be designed to equalize the hydrostatic pressure flood forces on exterior walls by allowing for the

entry and exit of floodwaters (known as 'wet floodproofing'). 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:

(i) A minimum of two openings on at least 2 walls having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding must be provided;

(ii) The bottom of all openings must be no higher than one foot above grade; and

(iii) Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

3. **Non-residential Structures.** Non-residential structures built in the Flood Fringe, or within Zones A, AO, or AH must conform with 4-__ above, or must conform with the requirements below based on structure type:

a. Commercial Structures

(i) Commercial structures, including attendant and sanitary facilities, must conform with 4-__, or must be designed to be water-tight with walls substantially impermeable to the passage of water below the Flood Protection Elevation.

(ii) The structure must be anchored to prevent flotation, collapse, or lateral movement.

(iii) The structure must be built using structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

(iv) Flood Protection Measures listed above for commercial structures must be certified by a Colorado Registered Professional Engineer that the methods are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces, and other factors associated with the Base Flood. Such certification must also state the specific elevation (including vertical datum reference) to which the construction is protected from flooding. The FEMA Floodproofing Certificate for Non-Residential Structures should be completed, and must be reviewed and approved by Boulder County.

b. Accessory Structures

(i) Accessory structures, including but not limited to detached garages, sheds, barns, and agricultural structures (grain bins, corn cribs, etc) must conform with 4-__ above, or may be constructed at-grade but must meet the requirements of 405(C)(1)(c) above for fully-enclosed areas below the FPE, and are subject to the following conditions:

a. The building must be used only for the parking of vehicles or storage of tools, materials, and equipment;

b. Agricultural structures (including grain bins, corn cribs, and barns) must be limited in use to agricultural purposes;

c. The structure must not be designed or used for human habitation;

d. The accessory structure must represent a maximum investment of less than 10% of the value of the principal structure on the property, or a maximum floor area of 600 square feet;

e. The structure must have low flood damage potential with respect to both the structure and its contents; and

f. Permanently affixed sanitary facilities and appliances (such as furnaces, heaters, washers, dryers, etc.) are prohibited.

g. Prior to issuance of certificate of occupancy or final inspection, whichever occurs last, the property owner must execute a Non-Conversion Agreement and the County must record the agreement in the real estate records. The agreement will be in the form of a restrictive covenant or other County approved binding instrument, where the benefits of the covenant run in favor of the County. The covenant must be drafted to run with the land and bind successors, in perpetuity. The purpose of the covenant is to document the current owner's understanding of the limitations on construction and use of the enclosed area in accordance with the provisions of this section 4-__ (Accessory Structures), and to put prospective purchasers on notice of such restrictions. In addition to any other enforcement mechanisms available, violation of the agreement will be considered a violation of this Article 4-400 and subject to all applicable zoning enforcement procedures.

(ii) Accessory structures that do not have at least two rigid walls, including but not limited to carports, gazebos, and picnic pavilions, may be constructed at grade and do not require wet floodproofing; however, these structures must use flood-resistant materials up to the FPE.

(iii) Accessory Dwelling Units (including detached garages designed with habitable space on the second floor) must meet the requirements of 405__ for residential structures above.

c. Crawlspaces. New construction of any below-grade crawlspace must:

(i) Have the interior grade elevation, that is below base flood elevation, no lower than two feet below the lowest adjacent grade;

(ii) Have the height of the below-grade crawlspace measured from the interior grade of the crawlspace to the top of the foundation wall, not to exceed four feet at any point;

(iii) Have an adequate drainage system that allows floodwaters to drain from the interior area of the crawlspace following a flood; and

(iv) Meet the provisions 4-__, General Requirements.

D. Existing Structures

1. Repairs Exempted from Substantial Improvement Calculations.

a. The following types of structural repairs will require notification of the County Engineer, but will be covered by the General FDP, as they are deemed the minimum necessary to correct existing violations of Boulder County health and safety codes.

b. Costs associated with work to correct these violations, including, but not limited to, the types of work listed in a-f below, will not be counted towards a Substantial Improvement calculation. If this work is performed in-conjunction with other development/improvements, the costs of all other development/improvements will count towards a Substantial Improvement calculation:

(i) Electrical repairs;

(ii) Furnace repairs or replacements;

(iii) Water heaters, boilers, and evaporative cooler repairs or replacements;

(iv) Air conditioner repairs or replacements;

(v) Repairs or replacements to roof coverings;

(vi) Insulation or simple weatherization or energy efficiency upgrades;

c. The work listed in 4-__ above, whenever feasible, must meet the requirements of 4-__.

d. Costs associated with renovations or remodeling projects totaling less than $1,000 (as increased annually by the Consumer Price Index inflation factor applicable to Boulder County) will be exempt from Substantial Improvement calculations, but still require an Individual FDP.

e. Substantial Damage determinations that may have included damages to the items identified in 4-__ above, or other similar items, will not be

updated to reflect the costs associated with repairs necessary to correct existing violations of Boulder County health and safety codes.

2. All other Improvements made to all existing structures in the FO District will be analyzed by Boulder County to determine if the improvement(s) qualify as Substantial Improvements.
3. Substantial Improvement calculations must follow the FEMA-recommended procedures contained within the Substantial Improvement/Substantial Damage Desk Reference (FEMA P-758), dated May 2010, as amended.
    a. Improvement percentages must be cumulative starting September, 11, 2013.
    b. Estimates for repair of damage that include additional improvement costs must apply the pre-damaged market value of the structure to the sum of the repair and improvement costs.
4. Results of the calculations will be handled as-follows:
    a. If it is determined that the work is necessary to repair Substantial Damage, or the improvement(s) constitute a Substantial Improvement, and the structure is not located in the Floodway, then the entire structure must be brought into compliance with 4-__.
    b. For Substantial Improvements or repair of Substantial Damage in the Floodway, the requirements of 4-__ must apply.
5. If a revision to the FO District results in a higher BFE, then any new permits for a previously-compliant building must be checked for Substantial Improvements, and must also comply based on the higher BFE.
6. Improvements that have not been determined by Boulder County to be Substantial Improvements must meet the following requirements:
    a. The improvements must constructed using flood-damage resistant materials up to the FPE (See FEMA Technical Bulletin 2) ;
    b. All Service Equipment must be elevated to the FPE;
    c. Lateral additions to any residential structure must be elevated to the FPE; and
    d. Lateral additions to any commercial or accessory structure must be adequately protected from flooding in accordance with 4-__ and 4-405__.
7. All structures for which construction or Substantial Improvement occurred on or before February 1, 1979 (otherwise known as Pre-FIRM) that possess the proper permits should refer to 4-407, Nonconforming Structures and Uses.
8. All structures for which construction or Substantial Improvement occurred after February 1, 1979 (otherwise known as Post-FIRM) must be considered compliant structures if both a Building Permit and a Floodplain Development Permit were issued prior to construction, and the elevation of the Lowest Floor was constructed at or above the FPE that was regulated at the time of permit issuance.

9. Flood Protection Retrofitting Measures for Existing Structures in the Floodway

    a. Retrofitting existing structures in the Floodway involves techniques that protect the structure from not only flood inundation, but also the potential for scour and erosion, debris impact, and other potential hazards associated with Floodways.

    b. If sufficient area is available on the subject property, all structures that have incurred Substantial Damage must be relocated outside of the Floodway, or to a less hazardous area on the property as determined by the County Engineer, or removed from the subject property, unless the applicant can demonstrate why relocation outside the Floodway is not practicable.

    c. When flood protection of a residential structure is required due to a change in use or as a result of a SI determination, the following measures must be implemented in order to retrofit existing residential structures:

10. Relocation/Removal

    a. For all structures other than primary residences, the applicant must first demonstrate why relocation entirely outside the Floodway is not practicable.

    b. Permanent removal of encroachments in the FEMA or Boulder County Floodway may qualify the owner for bonus Transferable Development Credits pursuant to section 4-1303.

11. Elevation using Posts, Columns, or Piles

    a. This technique requires that the posts or columns be placed in drilled or excavated holes, or that piles be driven into the ground

    b. Posts or columns must be encased in concrete and include a footer.

    c. Posts, columns, and piles must be sufficiently anchored to resist the expected hydrodynamic and hydrostatic flood forces.

    d. Access may be allowed to extend below the FPE

12. Elevation using stem walls parallel to the direction of flow

    a. This technique must allow for water to flow freely at high velocities between stem walls

    b. Footers must be designed and installed to account for potential scour associated with flooding

13. Other techniques proposed by the applicant may be approved by the County Engineer on a case-by-case basis, so long as they address the hazards typical of Floodways, as outlined in 4-__ above.

    a. In all cases, the bottom of lowest horizontal structural member (floor joists), as well as all Service Equipment, must be above the FPE.

b. In all cases, a continuous load path from the retrofitted foundation to the elevated portion of the home is required.

14. For non-residential structures, the applicant must first consider the retrofit requirements for residential structures in 4-__ and 4-__, but at a minimum, the requirements of 4-__ must apply.

15. All Floodway retrofitting techniques will require the certification of a P.E. that demonstrates the technique and associated components will withstand the loads associated with a 1%-annual-chance flood event. In addition to the Elevation Certificate requirements of 4-__, residential structure retrofit projects require completion of the Boulder County Residential Floodway Retrofit Certificate. Non-residential structures require completion of a Floodproofing Certificate in accordance with 4-__.

E. Critical Facilities

1. New Critical Facilities are prohibited in the regulatory floodplain below 6,000 feet (NAVD88) in elevation.

2. In the mountain canyons above 6,000 feet (NAVD88), new Critical Facilities in the FO District will be considered on a case-by-case basis, and may require special design or flood protection considerations, including considerations of hydrodynamic flood forces and flood-induced erosion.

3. Improvements to existing Critical Facilities that are determined to be Substantial Improvements (in accordance with 4-__ require that the entire facility (including attendant utility and sanitary facilities) be elevated to the Boulder County FPE, or, if not prohibited elsewhere in this code, be retrofitted such that 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, including the effects of buoyancy.

F. Manufactured Home Parks

1. General Requirements. All manufactured homes must be installed using methods and practices which minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated to the FPE and anchored to resist floatation, collapse, or lateral movement. All requirements below are in addition to applicable state and local requirements, including those to address wind loads.

2. For new parks commenced on or after February 1, 1979; expansions to existing parks; existing parks where the value of the repair, reconstruction, or improvement of the streets, utilities, and pads equals or exceeds 50 percent of the value of the streets, utilities and pads before the repair, reconstruction or improvement has commenced; an existing park on which a manufactured home has incurred Substantial Damage; manufactured homes to be placed or substantially improved on sites in existing parks; and for manufactured homes not placed in a park:

3. Stands or lots must be elevated on compacted fill or on pilings so that the lowest floor of the manufactured home will be at or above the flood protection elevation. For homes placed on pilings:

    a. lots must be large enough to permit steps;

    b. piling foundations must be placed in a stable soil no more than ten feet apart; and

    c. reinforcements must be provided for pilings more than six feet above the ground level.

4. Adequate surface drainage must be provided.

5. New manufactured homes must be anchored by providing over-the-top and frame ties to ground anchors as well as the following:

    a. over-the-top ties at each of the four corners, with two additional ties per side at intermediate locations, with the exception of manufactured homes less than 50 feet long which require only one additional tie per side;

    b. frame ties at each corner with five additional ties per side at intermediate points, with the exception of manufactured homes less than 50 feet long which require only four additional ties per side;

    c. all components of a manufactured home anchoring system must be capable of carrying a force of 4800 pounds; and

    d. Any additions to the manufactured home be similarly anchored.

G. Recreational Vehicles

1. At least one of the following provisions must be met:

    a. The recreational vehicle must be on the site for fewer than 90consecutive days;

    b. The recreational vehicle must be fully licensed and ready for highway use; or

    c. The recreational vehicle must meet the permit requirements and elevation and anchoring requirements for manufactured homes, in accordance with Section 4-__ of this section.

H. Onsite Wastewater Treatment Systems

1. The location of new and replacement On-site Wastewater Treatment Systems (OWTSs) must be done in such a manner as to avoid impairment to or contamination from the systems during flooding.

    a. Placement of a new or replacement OWTS in the floodplain is prohibited, unless the County Engineer determines placement in the floodplain cannot be avoided, in which case the new or replacement OWTS location must have preference over all other development and improvements, with the exception of the water supply well. Preference must also be given to those

locations on the subject property where flood depths and/or velocities are the lowest.

2. For the purposes of this section, 'New OWTS' is the first OWTS installed on a parcel.
3. New OWTS
    a. All Tanks, including Septic Tanks, for new OWTS in the FO District must be made of concrete.
    b. Tanks must be adequately anchored to protect against buoyant forces associated with flooding and high groundwater, which is typical during flood conditions.
        (i) Tanks that are installed within the Boulder County or FEMA 500-year floodplain must be anchored to protect against uplift from high groundwater.
        (ii) Boulder County requires that the FEMA-recommended calculation for determining buoyant forces (contained in FEMA P-348, or the latest FEMA guidance document covering building utilities) be used to adequately design buoyancy countermeasures. The equation is as-follows:

$$F_b = 0.134 V_t \gamma FS$$

Where:	F_b	is the buoyancy force exerted on the tank, in pounds.
	V_t	is the volume of the tank in gallons.
	0.134	is a factor to convert gallons to cubic feet.
	γ	is the specific weight of flood water surrounding the tank (generally 62.4 lb/ft^3 for fresh water and 64.1 lb/ft^3 for salt water.)
	FS	is a factor of safety to be applied to the computation, typically 1.3 for tanks.

    c. Inspection Ports and access covers must be sealed to prevent the entry of floodwaters or the exit of septic effluent.
    d. Soil Treatment Areas must be designed such that the base of the distribution layer is a minimum of 1 foot above the BFE at the upstream side of the proposed field location.
    e. Connections to the house must be fitted with backflow prevention, unless it is demonstrated in the permit application that the connection pipe rises above the calculated FPE for the site.
    f. With the exception of the Soil Treatment Area, earthwork necessary for system installation must not exceed pre-construction grade.

g. While not required, backup generators are recommended for any system fitted with electric pumps or controls.

h. New OWTS are prohibited in the Floodway, unless a variance has been granted pursuant to section 4-__.

4. Repair/Replacement OWTS

a. For any OWTS in the Flood Fringe that requires replacement, the system must meet the requirements of 4-__.

b. For any repair or replacement of an existing OWTS in the Floodway the County Engineer must determine that the proposed repair/replacement is consistent with Subsections i. through iii., below.

(i) The property owner has demonstrated that connection to a central sewer system is not feasible by:

a. Providing a letter of denial from the closest sewer provider; or

b. Demonstrating other reasons why connection is not feasible, such as that there is no central sewer system reasonably close to the property or building to be served, or that easement restrictions exist that effectively prohibit connection. For properties within a Community Service Area, connection will be deemed not feasible if the cost of connection exceeds 25% of the most recent assessed value of the subject property.

(ii) The proposed repair or replacement design must be protective of groundwater and appropriate for a Floodway. In making a proposal to the County Engineer, the applicant must address the following factors, among other pertinent information:

a. Whether it is practical to remove outbuildings or non-conforming additions to allow for increased soil availability so that the proposed repair or replacement can be located outside of the Floodway;

b. Whether there is room for an at-grade recirculating sand filter, or similar treatment media, and the required absorption area;

c. Whether placement in the hydraulic shadow of a legal, existing structure is possible.

(iii) In no event must a proposed repair or replacement increase the overall capacity of the existing OWTS, unless the expansion is necessary to meet the Boulder County OWTS Regulations, as administered by the Boulder County Public Health Department. In addition, the County Engineer may approve a raised absorption system or installation of a vault only as a last option

within the Floodway and provided that this option meets the provisions of Article 4-__ (Nonconforming Uses).

I. Liquid Propane Gas (LPG) or Other Similar Storage Tanks

1. Placement of a new or replacement LPG or other similar storage tanks in the FO District is prohibited, unless the County Engineer determines that placement in the FO District cannot be avoided, in which case preference must be given to those locations on the subject property where flood depths and/or velocities are the lowest.
2. Above-ground tanks must be placed on a concrete pad that extends to or above the FPE and sufficiently-anchored. If elevation of the tank conflicts with IBC requirements, the IBC requirements must prevail; however, in all cases, sufficient protection must be provided to the tank such that it resists the expected hydrostatic and hydrodynamic flood forces.
3. Underground tanks must be designed and installed to resist the effects of buoyancy during high groundwater or flooding conditions. Buoyancy calculations must assume an empty tank and must use the same calculation outlined for Septic Tanks in 4-__ above. Anchoring of the tank is required if the empty tank alone will not counteract the calculated buoyant force.
4. All connections and components related to the tank or fuel system must be designed such that floodwaters cannot infiltrate or accumulate within any component of the system.
    a. Inspection Ports and access covers must be sealed to prevent the entry of floodwaters or the exit of tank contents, and must extend above the FPE when applicable.
    b. Tanks located inside of a building must also meet all of the requirements of this section.

J. Historic Structures Exempt. The repair or rehabilitation of structures designated as historic through either the Boulder County Historic Landmark process or through a State of Colorado or national historical registry process is exempt from Flood Protection Requirements under Section 4-__. Entitlement to such an exemption requires the applicant to show:

1. Documentation that the structure is designated as a historic structure as defined by Article 18-203A; and
2. Documentation that confirms that the proposed work will not preclude the structure's continued historic designation.

K. Elevation Certificate Requirements

1. As built lowest floor elevations (referenced to the NAVD88 datum) for all new construction, Substantial Improvements, other improvements, or for new manufactured home stands, must be certified by a Colorado Registered Professional Engineer or Colorado Registered Professional Land Surveyor. Elevation Certificates must be submitted to the Building Division Inspector and

County Engineer twice over the duration of the project. Failure to submit an Elevation Certificate will result in a Stop Work Order until proper certification is provided. To ensure compliance with flood protection requirements during and after construction, completed Elevation Certificates must be submitted at the following times:

a. For slab-on-grade foundations, a FEMA Elevation Certificate must be submitted prior to final pour of foundation when foundation forms are completed .

b. For buildings on elevated foundations, such as extended foundation walls, stem walls, or piles, a FEMAElevation Certificate must be submitted prior to rough framing when the foundation is completed..

c. For all structures that have achieved finished construction, a final FEMA Elevation Certificate must be submitted prior to the issuance of Certificate of Occupancy or final inspection.

2. To convert other elevation reference datums to NAVD88, applicants are directed to datum conversion factors within the current effective FEMA FIS report for Boulder County, or to an online datum conversion program. Assumptions used for the datum conversion must be explicitly described to Boulder County on the Elevation Certificate. For datum requirements for permit submittals, please see 4-__.

4-409 County Engineer's Determination

A. If the County Engineer finds in reviewing an FDP application that the application meets the applicable standards set forth in Section 4-40__, the County Engineer must approve the permit.

B. If the County Engineer finds that the application does not meet one or more applicable standards, and that a reasonable basis for mitigation measures has been demonstrated, the County Engineer must approve the application with reasonable conditions that will avoid or acceptably mitigate the significant adverse impacts of the development. Such conditions may include, but are not limited to, specifications for modification of waste disposal methods and facilities, landscaping, periods of operation, operational controls, sureties, deed restriction, and adequate flood protection. The County Engineer must specify when the conditions must be met.

C. If the County Engineer finds that the application does not meet one or more applicable standards and that a reasonable basis for mitigation measures has not been demonstrated, the County Engineer must deny the application as proposed. The County Engineer's determination must specify the reasons for the denial based upon the FDP Approval Standards in Section 4-40__.

D. The County Engineer's determination must become final, and permits applied for in accordance with the determination may be issued, after the expiration of any applicable 14-day call-up period if the application concerned development in the Floodway, and only if the determination is not reviewed and acted upon by the Board of County Commissioners at a subsequent call-up hearing.

4-410 BOCC Review of Permits Approved in Floodway

A. In the event that the County Engineer determines that an Individual Floodplain Development Permit application for any development in the Floodway meets the applicable standards for approval, the permit will not be effective until 14 days after the date of permit issuance.

1. At the time of permit approval, the County Engineer must do the following:

   a. within seven days, publish a public notice of the proposed use and the permit issuance in a newspaper of general circulation in Boulder County;

   b. transmit a copy of the notice to property owners adjacent to the property in question; and

   c. forward to the Board of County Commissioners a written statement which must include:

      (i) The location and a description of the proposed use under the permit;

      (ii) The reasons for approval; and

      (iii) Any conditions the County Engineer placed on the issuance of the permit.

2. Upon receiving the Director's statement, and before the effective date of the permit, the Board may call the permit up for review at a public hearing.

   a. This hearing must constitute a revocation of the permit.

   b. At the public hearing, the Board must consider evidence related to the permit which may be presented by the County Engineer, the applicant, or interested members of the public.

   c. The Board must determine whether the application meets the requirements of this article, and if it so finds, must issue the permit, with such conditions as the County Engineer deemed appropriate.

3. When development is proposed in the Floodway during a declared local disaster emergency, the requirements of 4-__ above will not apply. Instead, at the time of Floodplain Development Permit application submittal, the County Engineer must transmit a notice of the proposed use to property owners adjacent to the subject property. If the County Engineer decides to issue the permit, the permit will be effective on the date of permit issuance.

B. The County Engineer may waive any or all requirements listed in 4-407.D.1. and 4.407.D.2 for the following Floodway development:

1. Emergency activities required for the immediate protection of life, safety, or property, to restore essential public services,

2. Minor disaster recovery repair work that does not cause a rise in predicted 100-year water surface elevation as determined by a qualified engineer licensed in Colorado,

3. Any development activities that take place entirely inside an existing building, and

4-411 Appeal of County Engineer Determination

A. **Right to Appeal.** Any person aggrieved by a final written decision of the County Engineer based upon or made in the course of the administration or enforcement of the provisions of this Article 4-400 may appeal to the Board of Adjustment.

B. **Appeal Application.** The procedures and requirements for filing an appeal may be found in Article 3 and in particular section 3-202(A)(1).

C. **Public Hearing.** Upon receipt of a complete appeal application, the Board of Adjustment must hold a public hearing on the appeal application following the procedures specified in section 3-205(A).

D. **Review Criteria.** In deciding upon an appeal of a County Engineer administrative decision or interpretation made under this Article 4-400, the Board of Adjustment must consider the factors specified in Section 4-1200(A)(1) as well as the additional factors listed below:

1. the technical meaning of the provision being appealed;
2. evidence as to the past interpretation of the provision;
3. the principles of interpretation and rules of construction in Article 1 of this Code;
4. the effect of the interpretation on the intent of this Code and the implementation of the Comprehensive Plan and any applicable intergovernmental agreement affecting land use or development, and any floodplain management program for the subject area;
5. the danger that materials may be swept onto other lands to the injury of others;
6. the danger to life and property due to flooding or erosion damage;
7. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners;
8. the importance of the services provided by the proposed facility to the community;
9. the necessity to the use or structure of a waterfront location, where applicable;
10. the availability of alternative locations for the proposed use or structure which are not subject to flooding or erosion damage;
11. the compatibility of the proposed use or structure with the existing and anticipated development;
12. the safety of access to the property in times of flood for ordinary and emergency vehicles;
13. the expected heights, velocity, duration, rate of rise and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site;

14. the 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 systems, streets and bridges; and
15. the purposes of this Article 4-400.

E. **Decision of the Board.** The Board of Adjustment must make a record of its decision on the appeal in the same manner as other BOA appeals filed under Article 4-1200. The County Engineer must maintain records of the outcome of all appeals filed.

4-412 Variances

A. **Right to Request Variance.** Any person may request the Board of Adjustment grant a variance from the requirements in this Article 4-400 subject to the terms and conditions in this section 4-__.

B. **Variance Application.** The procedures and requirements for filing a request for a variance may be found in Article 3 and in particular section 3-202(A)(19).

C. **Public Hearing.** Upon receipt of a complete variance application, the Board of Adjustment must hold a public hearing on the request following the procedures specified in section 3-205(A).

D. **Limitation on Board's Authority.** In deciding upon a variance request made under this Article 4-400, the Board of Adjustment must comply with the limitations on its authority specified in section 4-1202(B)(1).

E. **Review Criteria.**

1. To grant a variance of a requirement imposed under this Article 4-400, the Board must find that all of the following criteria have been satisfied:

    a. the strict application of this Code would create an exceptional or undue hardship upon the property owner;

    b. the hardship is not self-imposed;

    c. the variance, if granted, will not adversely affect the use of adjacent property as permitted under this Code;

    d. the variance, if granted, will not change the character of the underlying zoning district in which the property is located, and is in keeping with the intent of this Code and the Boulder County Comprehensive Plan;

    e. the variance, if granted, does not adversely affect the health, safety, and welfare of the citizens of Boulder County and is in accordance with the Comprehensive Plan and any applicable intergovernmental agreement affecting land use or development;

    f. the variance is the minimum necessary, considering the flood hazard, to afford relief;

    g. the variance, if granted, will not result in increased flood heights, additional threats to public safety, or extraordinary public expenses; and

    h. the variance, if granted, will not create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

2. Prior to granting a variance of a requirement imposed under this Article 4-400, the Board must also consider the following factors:

    a. the technical meaning of the provision being appealed;

    b. evidence as to the past interpretation of the provision;

c. the principles of interpretation and rules of construction in Article 1 of this Code;

d. the effect of the interpretation on the intent of this Code and the implementation of the Comprehensive Plan and any applicable intergovernmental agreement affecting land use or development, and any floodplain management program for the subject area;

e. the danger that materials may be swept onto other lands to the injury of others;

f. the danger to life and property due to flooding or erosion damage;

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

h. the importance of the services provided by the proposed facility to the community;

i. the necessity to the use or structure of a waterfront location, where applicable;

j. the availability of alternative locations for the proposed use or structure which are not subject to flooding or erosion damage;

k. the compatibility of the proposed use or structure with the existing and anticipated development;

l. the safety of access to the property in times of flood for ordinary and emergency vehicles;

m. the expected heights, velocity, duration, rate of rise and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site;

n. the 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 systems, streets and bridges; and

o. the purposes of this Article 4-400.

3. Variances for construction with a Lowest Floor Elevation below the FPE may be issued for new construction and Substantial Improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the FPE, so long as the criteria in section 4-__ above are met and subject to the following:

   a. As the lot size increases beyond the one-half acre, the technical justifications required for issuing the variance increases.

   b. This type of variance must not be issued within any designated Floodway if any increase in flood levels during the base flood discharge would result.

c. Any applicant to whom such a variance is granted must be given written notice that the structure will be permitted to be built with a Lowest Floor Elevation below the FPE and that the cost of flood insurance will be commensurate with the increased risk associated with the reduced Lowest Floor Elevation.

F. **Decision of the Board.** The Board must approve, conditionally approve, or deny the variance request. The Board may attach such reasonable conditions to the granting of variances as it deems necessary to further the purposes of this Article 4-400. The Board must make a record of its decision on the variance in the same manner as other BOA requests for variances filed under Article 4-1200. The County Engineer must report variances granted on an annual basis to FEMA.

G. **Conflicts with 4-1200.** If a conflict arises between the requirements of this Section and the provisions of Section 4-1200, Board of Adjustment, the requirements of this Section must control.

4-413 Final Inspection

All approved IFDP are subject to final inspection by the County Engineer to verify that all conditions of approval have been satisfied.

4-414 Permit Expiration

An approved Individual FDP must expire two years after the date of issuance if the permittee has not commenced construction under the permit.

4-415 Amendments to an Approved FDP

Any proposal to change the nature or extent of work approved under an issued FDP approved under this Article must require a request to the County Engineer to determine whether the proposed change constitutes a Substantial Modification to the approved plan. If the County Engineer determines that the change constitutes a Substantial Modification, no such change must be allowed to proceed until an application to amend the approved Floodplain Development Permit is filed with the County Engineer and approval granted in accordance with this Article. Any new application is subject to the Code in effect at the time of complete application. The applicant or its successor may appeal the County Engineer's decision to require an amended Floodplain Development Permit to the Board of County Commissioners, provided that any such appeal must be in writing and must be filed with the County Engineer no later than 30 days following the date of the County Engineer's decision to require an FDP amendment.

4-416 Nonconforming Structures and Uses in the FO District

A. Principles of Construction. This Section is to be read in conjunction with Section 4-1000 (Nonconforming Structures and Uses). This section does not supersede 4-1000 in its entirety; rather, it establishes additional requirements for nonconforming structures and uses located in the FO District. If a conflict arises between the requirements of this Section 4-__ and the provisions of Section 4-1000, the requirements of this Section 4-__ must control.

B. Nonconforming Structures.

1. Any structure within the FO District that was lawfully established before the adoption or amendment of this Article 4-400, but that does not conform to the requirements of this Article may be continued subject to the provisions of this Section 4-__ and Section 4-1002.
2. A nonconforming structure (whether residential or non-residential) in the Floodway may be improved, repaired, restored, or replaced so long as it meets the following criteria:
    a. No such structure may be expanded by addition of square footage, footprint, or habitable space.
    b. Substantial Improvements or repair of Substantial Damage to structures in the Floodway must conform with the requirements of 4-__.
    c. If the work to improve, repair, restore, or replace a nonconforming structure in the Floodway is the result of substantial damage to the structure through a flood or other natural hazard event, the applicant must have five years from the date of loss to complete the work. At the expiration of the five year period, the applicant may petition the County Engineer for a single one-year extension.
    d. Any such structure may be relocated in accordance with 4-__, provided that the change in location reduces the potential risks associated with future flood events or other known natural hazard areas or incidents (such as by moving the structure out of the mapped Floodway or floodplain or otherwise to a less hazardous location on the property). Relocation is subject to other provisions of this Code, including but not limited to setback and zoning requirements.
3. Nonconforming structures in the Flood Fringe may not be expanded, improved, repaired, relocated, restored, or replaced unless the work complies with the flood protection provisions of Section 4-__ of this Article.

C. Nonconforming Uses.

1. The use of any structure or property within the FO District that was lawfully established before the adoption or amendment of this Article 4-400, but that does not conform to the requirements of this Article may be continued subject to the provisions of this Section 4-__ and Section 4-1003.

2. A change in use (as uses are defined in Article 4-500) of a structure will require that the entire structure be flood-protected pursuant to Section 4-__; provided, however, that flood protection requirements may be modified or waived for a change in use if the County Engineer determines based on good and sufficient cause shown by the applicant that there is no potential for any significant conflict with this Article 4-400 and all of the following circumstances are met:
    a. The entirety of the existing structure is located outside of the Floodway;
    b. The existing structure is determined to be structurally sound by a qualified engineer licensed in Colorado;
    c. The cost of compliance with this Article 4-400 is less than 50% of the current value of the structure;
    d. The proposed change in use is to a use that is permitted in the zone district applicable to the property; and
    e. The proposed change in use is to a use that reduces, minimizes, or otherwise creates a less intensive use or decreases human occupation.

4-417 Definitions

Accessory Structure. A structure which is on the same parcel of property as a principal or primary structure and the use of which is incidental to the use of the principal or primnary structure. Examples include, but are not limited to, detached garages (but NOT ADUs), storage sheds, barns, boathouses, and pavilions.

Alteration.

Article 4-400. Means sections 4-400 through 4-419, inclusive.

Basement. Any area of a building having a finished floor subgrade on all sides, wheras the finished floor is greater than four feet below the top of the foundation walls or greater than 2 feet below the Lowest Adjacent Grade.

Below-Grade Crawlspace. The interior space between the elevated finished floor of a building and the finished interior grade, whereas the finished grade is no greater than 4 feet below the top of the foundation walls and no greater than 2 feet below the Lowest Adjacent Grade.

Crawlspace. The interior space between the elevated finished floor of a building and the interior finished grade.

Critical Facilities. See CWCB definition.

Development.

Effective Date. See FEMA

Flood Fringe. The portions of the Floodplain Overlay District that are not in the Floodway.

Floodway. The floodway depicts the most hazardous portion of the floodplain, where flood depths and velocities are greatest and damages resulting from flooding are the most catastrophic. As such, Boulder County's development restrictions in the Floodway are stricter than those within the Flood Fringe.

In this Code, "Floodway" means the channel of a river or other watercourse and adjacent land areas that must be kept free of development and other encroachments in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

The Colorado statewide standard for the designated height to be used for all newly studied reaches must be one-half 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.

In the foothill canyons and in any drainage above 6,000 feet (NAVD88) in elevation, based on best terrain data available during the last FO District update, and as a result of the expected high flow velocities, the Floodway comprises the entirety of the 1%-annual-chance (100-year) flood hazard area, except where an engineering study has demonstrated that a distinction between Floodway and Flood Fringe should exist.

In Zone A or AE areas, where no Floodway has been determined, it must be defined as:

1. The channel or flowpath of the river, stream, or other watercourse; and
2. Areas of the floodplain where flood depths are greater than [4] feet, or flood velocities are greater than [4] feet per second; and
3. Those areas determined to be Floodway based on an engineering study, in accordance with 4-406.

For development involving buildings, the responsibility for determining a proposed Floodway boundary rests with the applicant. Once proposed by the applicant, it must be reviewed by Boulder County to determine if the proposed project is in the Floodway or Flood Fringe.

For all new subdivision proposals and other developments (including, but not limited to, manufactured home parks) greater than either 50 lots or 5 acres that are located in Zone A, this analysis must also depict, as a part of the development proposal, the BFEs that Boulder County will use to determine FPEs for the proposed development.

For proposed development that does not involve buildings or structures (including, but not limited to, OWTS and LPG tanks), the Floodway may be determined in accordance with 4-406(G)(2)(b) above, or, at a minimum, must include areas of the floodplain where flood depths are greater than 4 feet, or flood velocities are greater than 4 feet per second. Flow depth and velocity can be determined from a number of sources, including, but not limited to hydraulic modeling, water surface elevation information, terrain data, and flood risk products created specifically to display depth and/or velocity.

In-Kind Replacement. For storm drainage systems and system components, replacement of any system or system component with the same system or component. In-kind Replacement does not include projects that will change the size or function of the system or component.

Letter of Final Determination. See FEMA.

Letter of Map Change, Revision, Amendment. See FEMA.

Lowest Adjacent Grade. See FEMA.

Maintenance. Maintenance means any activity undertaken to repair or prevent the deterioration, impairment, or failure of any stream, utility, structure, or infrastructure component, including, without limitation, the removal of [sediment], debris, and vegetation, installation of erosion and sediment control devices, and the replacement of structural components, so long as the work does not expand the previously-permitted condition. Maintenance does not include expansion or enlargement of a structure, Substantial Modifications, Substantial Improvements, total replacement of existing facilities, or total reconstruction of a facility.

Permanent. Any change or alteration expected to remain for a substantial period of time, but at a minimum will remain after permitted work is complete.

Soil Treatment Area. See Boulder County OWTS Regulations (April 2015), as amended.

Technically Measurable.

4-418 Interpretation

Certain terms used in this Article 4-400 are derived from FEMA and/or CWCB regulations. The federal and state definitions of these terms may not correspond precisely to county definitions of the same or similar terms as used elsewhere in the Land Use Code and related local regulations such as the Building Code. To the extent a term is not defined in this Article 4-400, and a conflict or inconsistency in the meaning of the term cannot be resolved by the principles listed in sections 1-900 and 1-1000, the County Engineer must determine the meaning of the term by examining the following sources in the following order of priority:

1. The meaning of the term as defined in Article 4-400.
2. The meaning of the term as defined in Article 18 of this Code.
3. The meaning of the term as defined by FEMA. See 44 C.F.R. § 59.1, as amended.
4. The meaning of the term as defined by CWCB. See 2 C.C.R. 408-1:4.
5. The meaning of the term as defined elsewhere in this Code, or in another adopted Boulder County publication such as the Multimodal Transportation Standards, the Storm Drainage Criteria Manual, or the Stormwater Quality Management Permit Requirements.
6. The meaning of the term as defined in any other official document deemed a reliable source of authority given the context.

4-419 Enforcement

Upon receiving a complaint that a violation of the requirements of this Article 4-400 has occurred, the County Engineer is authorized to enforce compliance with these floodplain regulations in the same manner as other violations of the Land Use Code are enforced, as detailed in Article 17.

Changes to other parts of the Code

4-1202(C) – Board of Adjustment – Standards of Review

Replace current text with: "Additional requirements for variances and appeals under Section 4-400 of this Code ("Floodplain Overlay District") are set forth in Section ~~4-409~~ 4-4XX."

4-800 – Site Plan Review

Grant Land Use Director the ability to waive the requirement for SPR/LU for a FDP.

Article 18

Edits to existing definitions.