

**DEPARTMENT OF NATURAL RESOURCES  
COLORADO WATER CONSERVATION BOARD**

**COLORADO FLUVIAL HAZARD ZONE  
OVERLAY DISTRICT  
MODEL ORDINANCE**

**PUBLIC REVIEW DRAFT  
4-30-19**



**COLORADO**

**Colorado Water  
Conservation Board**

Department of Natural Resources

## PREFACE

The purpose of this model ordinance is to assist local officials in addressing the risk fluvial hazards pose to people and property in Colorado. Fluvial (river-related) erosion is a natural process that can become problematic during a flood event, as it may cause excessive erosion of the streambed, banks, and hillslopes or wholesale change in the location of the channel. Fluvial erosion becomes a fluvial hazard when an adjusting stream channel threatens public infrastructure, houses, businesses, property, and other private investments. The Fluvial Hazard Zone (FHZ) is the area a stream has occupied in recent history, could occupy, or could physically influence as it stores and transports sediment and debris during flood events.

National Flood Insurance Program (NFIP) maps by the Federal Emergency Management Agency's (FEMA) are elevation-based, delineating only flood inundation hazards by applying a water surface elevation based standard (i.e. the 100- and 500-year base flood elevations). While NFIP maps and associated floodplain regulations are excellent tools they ultimately only represent a static, and in some cases limited, characterization of a dynamic system. The identification of fluvial hazard zones and the development of planning tools to address the associated hazards has become a high priority in Colorado, as the State recovers from the 2013 floods and transitions toward long-term river corridor planning. During the 2013 floods, approximately half of the private structure damages and losses throughout the Colorado Front Range were located outside of the regulatory floodplain, or Special Flood Hazard Area (SFHA), designated by FEMA. Planning for fluvial hazards is an essential component of effective land use development and the prevention of future flood damages in every Colorado community.

The FHZ Overlay District is a zoning requirement that corresponds with a community's mapped fluvial hazard zone. This model ordinance serves as a starting point for consideration and is written to be tailored to meet a community's needs and to be easily integrated into existing planning mechanisms. The red text should be thought of as "fill-in the blank" while text highlighted in yellow is considered a higher standard and is optional for a community to adopt into their FHZ Overlay District ordinance. For additional information related the FHZ program in Colorado refer to the following Colorado Water Conservation Board documents: *Fluvial Erosion Hazard Area Regulatory Guidelines Memorandum* and the protocol document *Fluvial Hazard Zone Delineation: A Framework for Mapping Channel Migration and Erosion Hazard Areas in Colorado*. Resources can also be found on the Colorado Department of Local Affairs Planning for Hazards website <https://planningforhazards.com/home>.

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## Fluvial Hazard Zone Overlay District Ordinance

### Table of Contents

<b>ARTICLE I – TITLE AND PURPOSE</b>	2
<b>SECTION A. STATUTORY AUTHORIZATION</b>	2
<b>SECTION B. TITLE</b>	2
<b>SECTION C. INTERPRETATION</b>	2
<b>SECTION D. STATEMENT OF PURPOSE</b>	2
<b>SECTION E. APPLICABILITY</b>	3
<b>SECTION F. BASIS FOR ESTABLISHMENT OF THE FLUVIAL HAZARD ZONE</b>	3
<b>SECTION G. WARNING OF DISCLAIMER OF LIABILITY</b>	3
<b>SECTION H. SEVERABILITY</b>	3
<b>ARTICLE II - DEFINITIONS</b>	4
<b>SECTION A. DEFINITIONS</b>	4
<b>ARTICLE III – GENERAL PROVISIONS</b>	9
<b>SECTION A. ESTABLISHMENT OF FLUVIAL HAZARD ZONE OVERLAY DISTRICT</b>	9
3.1 Fluvial Hazard Zone Boundary Delineation	9
<b>SECTION B. DELINEATION DISPUTES AND JURISDICTIONAL DETERMINATION</b>	10
3.2 Map Maintenance and Updates	11
<b>SECTION C. DEVELOPMENT STANDARDS</b>	11
3.3 Development Review in Fluvial Hazard Zones	11
<b>ARTICLE IV – Administration</b>	16
<b>SECTION A. ADMINISTRATIVE OFFICER &amp; APPROPRIATE COMMUNITY PANEL</b>	16
4.1 Administrative Officer	16
4.2 Appropriate Community Panel	16
<b>SECTION B. APPLICATION ADMINISTRATION REQUIREMENTS</b>	16
4.3 Application Submission Requirements	16
4.4 Fluvial Hazard Zone Development Permit	17
4.5 Waivers and Variances Procedures	18
<b>SECTION C. ADMINISTRATIVE RESPONSIBILITIES, RECORDS</b>	20
4.6 Review Procedures	20
4.7 Records	20
<b>SECTION D. PENALTIES FOR NONCOMPLIANCE</b>	20
4.8 Enforcement	20

## ARTICLE I – TITLE AND PURPOSE

### SECTION A. STATUTORY AUTHORIZATION

The Legislature of the State of Colorado has in Title 29, Article 20, of the Colorado Revised Statutes, delegated the responsibility of local governmental bodies to adopt regulations designed to minimize flood losses. Except as additionally described below, all administrative procedures follow. Therefore, the {community governing body} of {community name}, Colorado, does hereby adopt the following regulations:

### SECTION B. TITLE

This regulation shall be known and cited as the {community name}'s Fluvial Hazard Zone Overlay District, hereinafter referred to as the "ordinance".

### SECTION C. INTERPRETATION

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

1. Considered as minimum requirements;
2. Liberally construed in favor of the governing body; and
3. Deemed neither to limit nor repeal any other powers granted under State statutes.

### SECTION D. STATEMENT OF PURPOSE

It is the purpose of this regulation to protect public health, safety and general welfare and to minimize public and private losses due to the fluvial hazards in specific areas by provisions designed to:

1. Protect human life, health and safety;
2. Ensure that the selection, design, creation and use of development in stream corridors is accomplished in a manner that minimizes or eliminates the potential for loss to life and damage to property due to fluvial hazards;
3. Ensure critical stream functions are met for future generations through the maintenance and protection of natural stream processes; connected floodplains; and space for streams to migrate as they store and transport sediments and debris;
4. Ensure that any streambank alterations employ, to the extent reasonably practical, natural streambank protection with riparian revegetation or bio-stabilization and bioengineering techniques preferred over streambank armoring and/or channelization;
5. Minimize prolonged business interruptions;
6. Minimize damage to critical facilities; infrastructure and other public facilities such as water, sewer and gas mains; electric and communications stations; and roads, bridges, culverts, and other transportation infrastructure located in Fluvial Hazard Zones (FHZ);
7. Reduce public and private expenditures on stream corridor maintenance and emergency flood responses and repairs through improved stream corridor management and planning;
8. Help maintain a stable tax base by providing for the sound use and development of fluvial hazard prone areas in such a manner as to minimize future blight areas; and

9. Ensure that potential investors are aware that property may be at risk of fluvial hazards.

#### **SECTION E. APPLICABILITY**

1. This ordinance shall apply to all Fluvial Hazard Zones based on approved FHZ Maps from CWCB and as defined, in {community name}.
2. This ordinance shall apply to new development and any land-disturbing activity including but not limited to: expansion, alteration or reconstruction of buildings, structures, transportation, drainage and communication infrastructure, utilities, landscaping and impervious areas.
3. This ordinance shall not be applied retroactively. The provisions of this ordinance are in effect for future development and substantial improvements, as defined in Article II section B [Definitions].
4. The provisions of this ordinance shall not in any way impair or remove the necessity of compliance with any other local, state, or federal laws or regulations. Where this ordinance imposes a greater restriction, the provisions here shall take precedence.

#### **SECTION F. BASIS FOR ESTABLISHMENT OF THE FLUVIAL HAZARD ZONE**

The Fluvial Hazard Zone identified by the Colorado Water Conservation Board in a scientific and engineering report entitled, " Fluvial Hazard Mapping Report for {community name}," dated {effective date of study}, with accompanying Fluvial Hazard Zone Maps/GIS layers and any revisions thereto are hereby adopted by reference and declared to be a part of this ordinance. The Fluvial Hazard Zones identified by the Mapping Report and attendant mapping are the minimum area of applicability of this ordinance and may be supplemented by studies designated and approved by the {community governing body}. The Floodplain Administrator shall keep a copy of the Fluvial Hazard Zone Maps/GIS layers, and Fluvial Hazard Mapping Report on file and available for public inspection.

#### **SECTION G. WARNING OF DISCLAIMER OF LIABILITY**

The degree of protection from fluvial hazards intended to be provided by this ordinance has been determined reasonable for the protection of life and property and is based upon scientific methods of study; FHZ maps are intended to delineate the area a stream has occupied in recent history, may occupy, or may physically influence as the stream stores and transports water, sediment, and debris. They do not predict the magnitude, frequency, or rate of fluvial geomorphic hazards. As with any hazard map, FHZ boundaries are uncertain. The intended use of FHZ maps is to inform land use planning, emergency planning, floodplain management, as well as stream corridor conservation efforts. This ordinance does not imply that land outside of the areas covered by this ordinance will be free from associated damages of fluvial hazards. This ordinance shall not create liability on the part of {community name}, or any {county or municipality} official or employee thereof, for any damages associated with fluvial hazards that result from reliance on this ordinance, or any administrative decision lawfully made hereunder.

#### **SECTION H. SEVERABILITY**

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

## ARTICLE II - DEFINITIONS

### SECTION A. DEFINITIONS<sup>1</sup>

**Accessory Structure** – A detached subordinate building, such as garages or sheds not occupied as dwelling units or not part of the main structure, the use of which is customarily incidental to that of the main building or the main use of the land and which is located on the same lot with the main building or use.

**Active River Corridor (ARC)** – land adjacent to the river that is alluvially-formed or prone to erosion or deposition by fluvial processes. The active river corridor interacts with the river channel through channel migration and overbank erosion and deposition processes.

**Addition** - Any activity that expands the enclosed footprint or increases the square footage of an existing structure.

**Administrative Review** – Any decision made by the Director of **Community Development**, or his or her designee.

**Area of Special Flood Hazard** – Synonymous meaning with the term “Special Flood Hazard Area”.

**Avulsion** – Wholesale shift in channel position on the valley floor and can result from simple meander neck cutoffs or large island forming and valley-scale avulsions.

**Avulsion Hazard Zone (AHZ)** – Identifies pathways a channel might occupy during a flood event based on its relative elevation compared to the existing dominant flow path and/or the identification of historic (abandoned) channels that might become reactivated under flood flow conditions, and/or active or historic side channels in multi-threaded systems.

**Bank stability** - The ability of a streambank to counteract erosion or gravity forces.

**Building** – A structure enclosed within exterior walls, built, erected and framed of a combination of materials, whether portable or fixed, having a roof, to form a structure for the shelter of persons, animals, or property. See also *structure* definition.

**Channel**- The physical confine of stream or waterway consisting of a bed and stream banks, existing in a variety of geometries.

**Channelization**- The artificial creation, enlargement or realignment of a stream channel.

**Colorado Water Conservation Board (CWCB)** – State agency responsible for providing policy direction on water issues. Responsible for protecting Colorado’s streams and lakes, water conservation policies, flood mitigation, watershed protection, stream restoration, drought planning, water supply planning and water project financing.

**Conditional Use Review** – A review by the **ACP**, generally the community’s planning commission or Board of commissioners, that ensures the conditional use complies with the conditions and standards set forth in this title. The conditional use review enables the **ACP** to assign dimensions to a proposed

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<sup>1</sup> This is a list of proposed definitions; a community may add to this list. It is recommended that the community adopting this ordinance matches definitions on this list with existing definitions in other local regulatory documents (i.e. zoning and subdivision regulations and floodplain regulations)

use or conditions surrounding it after consideration of adjacent uses and their functions and the potential problems which the proposed development presents.

Conservation Uses- Activities that preserve and protect natural resources through prudent management that prevent injury, decay waste or loss of the natural environment.

Critical Facility or Critical Facilities – Facilities that are vital to public health and safety, including police stations, fire and rescue facilities, hospitals, shelters, schools, nursing homes, water supply and waste treatment facilities. Means a structure or related infrastructure, but not the land on which it is situated.

Crossing – Any project extending from one bank to the opposite bank of a river or stream, whether under, through or over the watercourse. Such projects include but may not be limited to roads, fords, bridges, culverts, water and sewer lines, and cables as well as maintenance work on these crossings.

Culvert- A buried pipe that allows flows to pass under a road.

Development – Any man-made change to improved or unimproved real estate, including but not limited to construction of or substantial improvements to buildings and other structures, the placement of mobile homes, mining, dredging, filling, grading, paving, landscaping excavation or drilling operations.

Dredge – Clean out the bed of a body of water by scooping out mud, weeds and rubbish with an apparatus for bringing such objects.

Erosion- Wearing away of rock or soil by the gradual detachment of soil or rock fragments by water, wind, ice, and other mechanical, chemical or biological forces.

Fill- Material such as soil, gravel, or crushed stone which is dumped in an area and to increase the ground elevation. Fill is usually placed in layers and compacted.

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

Floodplain Administrator – Individual designated as responsible for administering a jurisdiction's floodplain management ordinance **and Fluvial Hazard Zone Overlay District Ordinance**.

Fluvial- Of or pertaining to rivers or streams, specifically river processes of flow and sediment movement.

Fluvial Hazard – When an adjusting stream channel threatens public infrastructure, houses, businesses, property and other private investments.

Fluvial Hazard Assessment – A study completed by a qualified professional that identifies existing fluvial hazards. Such an assessment may demonstrate if/how land alterations/development may increase risk of fluvial hazard to the property or properties upstream and downstream of the project.

Fluvial Hazard Buffer (FHB) – The fluvial hazard buffer accounts for erosion prone land located beyond the ARC, such as hillslopes and terraces, that may be susceptible to geotechnical slope failure as a result of toe erosion caused by fluvial scour. It is a buffer applied to the outer boundary of the active river corridor.

Fluvial Hazard Zone (FHZ)– The delineated area of land that a stream has occupied in recent history, could occupy, or could physically influence as it stores and transports water, sediment and debris.

Fluvial Hazard Zone Delineation –The technical and scientific process of determining the fluvial hazard zone area. FHZ delineation procedures can be found in the CWCB protocol document, *Fluvial Hazard Zone Delineation: A Framework for Mapping Channel Migration and Erosion Hazard Areas in Colorado*.

Fluvial Hazard Zone Development Permit – An official document that gives an applicant authorization to develop or alter land located within the FHZ Overlay District. **May be added as an extension or condition of a floodplain permit.**

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

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

Functionally Dependent Use – A use which cannot perform its intended purpose unless it is located or carried out near water.

Geomorphology – A branch of both physiography and geology that deals with the form of the earth, the general configuration of its surface, and the changes that take place due to erosion of the primary elements and the buildup of erosional debris.

Historic Structure – Any structure that is:

1. Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
2. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
3. Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of Interior; or
4. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:
  - a. By an approved state program as determined by the Secretary of the Interior or;
  - b. Directly by the Secretary of the Interior in states without approved programs.

Hydrology- The scientific study of the water of the earth, its occurrence, circulation and distribution, its chemical and physical properties, and its interaction with its environment, including its relationship to living things.

Impervious Surface – Any hard-surfaced, man-made area that does not readily absorb or retain water or substantially prevents the infiltration of stormwater into previously undeveloped land, including but not limited to building roofs, parking and driveways areas, graveled areas, sidewalks, and paved recreation areas.

Infill Development- The construction of new housing, workplaces, shops, and other facilities within existing urban or suburban areas. This development can be of several different types: building on vacant lots; reuse of underutilized sites, such as parking lots and old industrial sites; and rehabilitation or expansion of existing buildings.

Land-Disturbing Activity – Any activity that will result in movement of earth or a change in the existing soil cover or the existing soil topography (both vegetative and non-vegetative), including the creation and/or replacement of impervious surfaces.

Maintenance – In reference to a cleaning, painting, repair or replacement of defective parts in a manner that does not alter the basic copy, design, or structure.

New Development –Development for which the start of construction commenced on or after the effective date of this bylaw and includes any subsequent improvements to such structures.

Overlay District- An area where certain additional requirements are superimposed upon a base zoning district or underlying district. Permitted uses under the underlying district shall continue to be subject to compliance with the regulations of the overlay zone or district.

Reach- A section of stream having relatively uniform physical attributes, such as valley confinement, valley slope, sinuosity, dominant bed material, and bed form, as determined in the preliminary analysis.

Reclamation – The combined process of land treatment of the affected land for useful purposes, and the protection of the natural resources of the surrounding area. The basic objective will be to establish on a continuing basis the vegetative cover, soil stability, water conditions and safety conditions appropriate to the area.

Reconstruction – The rebuilding of a structure in such a manner and to such an extent as to substantially replace the existing structure.

Redevelopment – Construction, installation, modification, renovation or rehabilitation of land, interests in land, buildings, structures, facilities, or other development in a previously development area. The term includes substantial improvements and repairs to substantially damaged buildings.

Rehabilitation – Any improvements or repairs to the interior and exterior of a structure that does not result in any increase in the footprint of the structure. The construction of vertical addition is considered to constitute a rehabilitation.

Renovation – The repair, preservation, and/or improvement of substandard structure. *See also rehabilitation.*

Restoration-The return of an ecosystem to a close approximation of its condition prior to disturbance.

**Repair-** Any change that does not require a building permit, that is not construction, relocation, or alteration.

**Riparian Area-** Relating to the transitional area between upland and aquatic ecosystems, riparian areas are three-dimensional ecotones of interaction that include terrestrial and aquatic ecosystems, that extend down into the groundwater, up above the canopy, outward across the floodplain, up the near-slopes that drain to the water, laterally into the terrestrial ecosystem, and along the water course at a variable width.

**Scour** – The erosive action of running water in streams, which excavates and carries away material from the bed and banks. Scour may occur in both earth and solid rock material and can be classed as general, contraction, or local scour.

**Sediment-** Soil or mineral material transported by water or wind and deposited in streams or other bodies of water.

**Site Plan** – A map or graphic prepared to scale depicting the development of a tract of land as required by regulations. Includes but not limited to lot lines, streets, the location and relationship of structures, streets, driveways, reserved open space, major landscaping features both natural and manmade, utilities, proposed grading and other site development information as related to a proposed development.

**Slope-**The ratio of the change in elevation over distance.

**Special Flood Hazard Area** – Area of special flood hazards means the land in the floodplain within a community subject to a one (1) percent or greater chance of flooding in any given year, i.e., the 100-year floodplain.

**Stream Channel** - A depression shaped by the concentrated flow of water and covered continuously or periodically by water.

**Stream Condition** - Given the land use, channel and floodplain modifications documented at the assessment sites, the current degree of change in the channel and floodplain from the reference condition for parameters such as dimension, pattern, profile, sediment regime, and vegetation.

**Stream Corridor** - The stream its floodplains, riparian zone, and transitional upland fringe.

**Stream Reach** - An individual segment of stream that has beginning and ending points defined by identifiable features such as where a tributary confluence changes the channel character or order.

**Streambank Armoring** – The installation of concrete walls, gabions, stone riprap, and other large erosion resistant material along stream banks.

**Streambank Stabilization** - Measures intended to control erosion that could include streambank armoring and bioengineering techniques.

**Streambed-** (1) The unvegetated portion of a channel boundary below the baseflow level. (2) The channel through which a natural stream of water runs or used to run, as a dry streambed.

**Structure** – A walled and roofed building, including a gas or liquid storage tank, which is principally above ground, as well as a manufactured home.

**Subdivision (of land)** – The division of land into two or more lots.

**Substantial Damage/Substantial Improvement** - Any improvement to, or rehabilitation due to damage of, a structure for which the activity performed equals or exceeds 50% of the pre-improvement or pre-damaged value of the structure. The value of the structure shall be determined by the local jurisdiction having land use authority in the area of interest.

**Utility Corridors**- A right-of-way, easement, or use restriction acquired for public use for sewers, pipelines, electrical transmission and communication lines, pathways, storm drains, drainage, water transmission lines, and similar purposes.

**Variance** - A grant of relief to a person from the requirement of this ordinance when specific enforcement would result in unnecessary hardship. A variance, therefore, permits construction or development in a manner otherwise prohibited by this ordinance.

**Watershed** - An area of land whose total surface drainage flows to a single point in a stream.

**Waterways** – a river, stream, canal or other route of travel by water.

**Waiver** – A modification made in the application of the regulation to a particular property or development. A waiver may be granted in order to remedy a disparity in privileges resulting from specific circumstances applicable to a particular property or development.

## **ARTICLE III – GENERAL PROVISIONS**

### **SECTION A. ESTABLISHMENT OF FLUVIAL HAZARD ZONE OVERLAY DISTRICT**

The Fluvial Hazard Zone Overlay District is an overlay zoning requirement. All other requirements of the underlying zoning district or other overlay districts shall apply in addition to the provisions herein, unless it is otherwise indicated. This ordinance is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this ordinance and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restriction shall prevail.

#### **3.1 Fluvial Hazard Zone Boundary Delineation<sup>2</sup>**

1. **Qualified professional.** The Fluvial Hazard Zone boundary delineation shall be performed by a qualified professional with extensive experience and proven expertise in applied fluvial geomorphology. In some cases, the qualified professional may consult with licensed geologists, civil engineers, geotechnical or water resource engineers.
2. **Preliminary Delineation.** Delineation shall be conducted by a qualified professional as defined in, section 3.1.1, before the FHZ boundary and overlay zone is finalized. The preliminary delineation shall be made according to the procedures within the *Fluvial Hazard Zone Delineation: A Framework for Mapping Channel Migration and Erosion Hazard Areas in Colorado* protocol document, as amended, and shall be subject to formal

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<sup>2</sup> Due to the diverse river types in Colorado, different approaches to FHZ delineation are recommended depending on the geomorphic stream reach, the drainage area and the valley type classification (confined, semi-confined, unconfined and slope) of the river or stream corridor. Refer to CWCB's *Fluvial Hazard Zone Delineation: A Framework for Mapping Channel Migration and Erosion Hazard Areas in Colorado* protocol document for specific guidance on the recommended delineation process.

verification by CWCB and {community's name}'s Floodplain Administrator.

3. Delineation methodology. The delineation shall be made according to the procedures within the *Fluvial Hazard Zone Delineation: A Framework for Mapping Channel Migration and Erosion Hazard Areas in Colorado* protocol document, as amended and shall be subject to formal designation by the CWCB and {community's name}'s Floodplain Administrator.
4. Approval of boundaries. All boundary delineations will be subject to the approval of {community's name}'s Floodplain Administrator.

## **SECTION B. DELINEATION DISPUTES AND JURISDICTIONAL DETERMINATION**

The technical information presented on any maps, or contained in any studies, adopted by reference is presumed accurate. If the applicant disagrees with the determination made by the Floodplain Administrator or the Fluvial Hazard Zone as mapped, the applicant shall meet the following requirements:

1. Hire a qualified professional as defined in subsection 3.1.1 of this Article to conduct a detailed assessment of the FHZ in the vicinity of the dispute. The applicant is responsible for all fees and costs incurred for the detailed analysis and refined FHZ delineation. Upon completion, the revised FHZ boundary and all supplemental information, as described in this subsection of Article III collected shall be provided to the Floodplain Administrator and CWCB for approval. The revised delineation and supporting materials shall become an appendix to the FHZ Mapping Report and be included on all future map products. In the case of a denial from the Floodplain Administrator and CWCB the applicant has the option to follow the procedures under Article IV section B, 4.4.2 [Appeals] of this ordinance.
2. In support of a request for jurisdictional determination, the applicant shall obtain and provide, at a minimum, the following to the {community name}'s Floodplain Administrator:
  - a. A written description of the disputed boundary including the latitude and longitude of the upstream and downstream boundaries of the disputed section and a description of which FHZ components are in dispute (i.e. ARC, FHB AHZ, F, etc.)
  - b. Photos of the area with the disputed boundary;
  - c. A supplemental data set which may include, but is not limited to:
    - i. Geotechnical borings,
    - ii. Soil samples
    - iii. Evidence of watershed change,
    - iv. Evidence of major geomorphic change,
    - v. 2D or 3D hydraulic modeling and associated hydraulic calculations,

- vi. A map of the area that shows the locations of supplemental data collection and photo locations.
3. Proof of ownership. The applicant shall submit to the **Floodplain Administrator** proof of ownership of the property where the disputed boundary is located including copies, **dated no earlier than three (3) weeks** prior to the application being submitted, of the vesting deed, deed(s) of trust or title commitment.
  - a. If the applicant is not the landowner, the applicant shall submit a signed and dated Letter of Authorization from the property owner.
4. The delineation procedures set forth in the *Fluvial Hazard Zone Delineation: A Framework for Mapping Channel Migration and Erosion Hazard Areas in Colorado* protocol document shall be used as amended. Revised delineations requests shall be subject to formal verification by CWCB and **{community's name}**'s **Floodplain Administrator**.

### 3.2 Map Maintenance and Updates

**{Community's name}** shall review and revise all FHZ maps and follow the procedures in the *Fluvial Hazard Zone Delineation: A Framework for Mapping Channel Migration and Erosion Hazard Areas in Colorado* protocol document.

#### 3.2.1 Map Modifications

**{Community's name}** **Floodplain Administrator** shall document and retain any map modifications as part of the public record and included in the CWCB FHZ database.

## SECTION C. DEVELOPMENT STANDARDS

The criteria below are the minimum standards for development in the delineated Fluvial Hazard Zone Overlay District. In addition to complying with all other applicable provisions in **{community's floodplain regulations, subdivision and zoning regulations}** development within the Fluvial Hazard Zone Overlay District shall comply with the applicable provisions herein this ordinance. If there is any conflict between any of the following provisions or any other provision of this ordinance, the more restrictive provision shall prevail.

### 3.3 Development Review in Fluvial Hazard Zones

#### 3.3.1 Exempted Activities

The following activities do not require a permit under this section of the ordinance.

1. Removal of structures. The removal of a structure in whole or in part within the fluvial hazard zone is allowed;
2. Maintenance of existing structures. Any changes, redevelopment, maintenance, repairs, or renovations to an existing structure that will not result in an increase of over 50 percent of the footprint of the structure is allowed;
3. Maintenance of existing sidewalks, roads, parking areas or stormwater drainage that does not include expansions in streambank armoring or channelization to protect these areas is allowed;

4. Maintenance of existing bridges, culverts, and crossings is allowed;
5. Subdivision of land that does not involve or authorize development is allowed.
6. Maintenance of existing diversion structures are allowed.

### **3.3.2 Prohibited Activities**

1. New critical facilities are not allowed with the exception of wastewater treatment facilities and municipal well fields, whose location should be selected carefully to minimize risk from fluvial hazards.
2. No person shall engage in any activity that will disturb, remove, fill, drain, dredge, clear, destroy, or alter any area, including vegetation except as expressly allowed in this Article and with an approved permit.
3. Storage or processing of hazardous materials or other substances is not allowed. Specific exemptions related to this activity that are listed in the {community's name} Floodplain Regulations shall also apply to this ordinance.
4. Irrigated vegetation that would cause channel bank stability issues is not allowed with exception of the activities listed in section 3.3.4 5a [Removal of Vegetation].
5. Any other development that is not listed as exempted or require a conditional review, which could cause or contribute to the risk of fluvial hazards is not allowed.

### **3.3.3 Permits**

Except as provided in subsection 3.3.1 [Exempted Activities], a permit is required from the **Floodplain Administrator** for all future development that is located in the FHZ Overlay District. Refer to subsection 4.4 [Fluvial Hazard Zone Development Permit] for application requirements and approval standards.

### **3.3.4 Administrative Review: Activities Requiring a Permit**

1. Agricultural uses. Buildings for the purpose of conducting agricultural operations, storing equipment, or similar activity are allowable with a permit, so long as they do not require streambank armoring and/or channelization. **Permit fees will be waived for structures under XX square feet.**
2. Conservation uses. Activity related to an existing or future conservation use is allowable with a permit and **will not require permit fees.** This includes but is not limited to the development of natural or paved trails, signs, habitat or geomorphic restoration and enhancement. Non-habitable buildings for the purpose of supporting conservation practices including restrooms and picnic shelters and similar activities are allowed.
3. Protection of paved trails and non-habitable buildings located in the FHZ Overlay District from natural stream processes shall first seek relocation and

avoidance before a permit is issued for protection of the paved trail or non-habitable building with streambank armoring and/or channelization.

4. Recreational uses. Activity related to an existing or future recreational use is allowable with a permit. This includes but is not limited to the development of recreational fields, playground areas and fishing access. Non-habitable buildings for the purpose of supporting recreational practices including restrooms, picnic shelters, docks and similar activities are allowed.
5. Vegetation.
  - a. Removal of vegetation. A landowner seeking the removal of existing vegetation shall be required to receive an FHZ permit. It is recommended that a vegetated buffer consisting of deep-rooted trees and shrubs is maintained for the benefit of streambank stability and the physical and biological health of the stream.
6. Stream Restoration and Channel Improvements. Activity related to stream restoration, channel improvements, are allowable with a permit. New stream restoration and channel improvements should be done with bio-stabilization and bioengineering methods according to the State of Colorado guidance documents wherever feasible and comply with the {community's name} floodplain ordinance.
7. Diversion structures. New diversion structures or the reconstruction of diversion structures is allowed with a permit.
8. A change of use to any existing structure or property or any portion, shall be reviewed by the Floodplain Administrator for consistency with the requirements of this ordinance.
9. Applicants seeking approval of activities not listed above may be required to submit a geomorphic study conducted by a qualified professional to the Floodplain Administrator.

### 3.3.5 Conditional Use Review

The following activities in the FHZ Overlay District may require review and approval by the ACP (*see description in next section*) in addition to an administrative review by the Floodplain Administrator prior to receiving an FHZ Development Permit.

1. Construction of any new structure including any accessory structure, is allowable with a permit following additional review from the Floodplain Administrator including the submittal of written justification or geomorphic/geologic evidence as the Floodplain Administrator deems necessary. All necessary development approvals from the ACP shall be in place prior to receiving an FHZ permit.
2. Utilities. New utilities are prohibited in FHZ Overlay District, except as necessary to cross streams and only after it is determined there is no other economically feasible alternative. Utility crossings are subject to approval by

the **ACP**. Applications for a proposed utility crossing is subject to the following requirements:

- a. The design and construction of any such application shall be planned and carried out so as to minimize the possibility that said utility will be damaged by fluvial processes;
  - b. Below ground utilities. A stability study is to be provided by the applicant and shall be required to determine scour depths and adequate burial depths for all below ground utilities.
  - c. Above ground utilities. All utility poles shall be located outside the ARC or built with breakaway foundations. All utility boxes and other features shall be located outside the ARC. If this is not feasible the applicant must submit a written justification to the **Floodplain Administrator**.
3. Utility corridors. Proposed utility corridors in the FHZ Overlay District, shall be located at the outside edge of the overlay area and access roads and maintenance should be at specific points rather than parallel. If this is not feasible the applicant must submit a written justification to the **Floodplain Administrator**; and
- a. Any disturbance shall be reclaimed by regrading and revegetation. Provisions for reclamation of the disturbed area shall be included in any development improvements agreement for project with collateral.
  - b. Protection of utilities located in the FHZ Overlay District from natural stream processes of erosion and deposition will be required to receive an FHZ permit and shall first seek relocation and avoidance before a permit is issued for protection of the utility with streambank armoring and/or channelization.
4. Trails. New and reconstructed hard surface paths, natural trails, walkways are allowable with a permit.
5. Crossings. New road, bicycle or pedestrian bridges are allowable with a permit only when necessary to cross waterways or to provide passage under bridges.
- a. Improvements to existing crossing structures that result in structures with improved sediment transport, reduced debris blocking potential, and reduced hazards to adjacent properties shall require a permit, though the permit fee may be waived.
  - b. Crossing infrastructure must meet the following conditions prior to the issuance of an FHZ permit:
    - i. Analysis conducted by a qualified professional that shows no feasible alternative location other than within the FHZ overlay area is available;

- ii. A study to determine possible impact upon fluvial erosion characteristics will be required by the Floodplain Administrator and, in such event, the Floodplain Administrator may impose standards for design and construction of the proposed crossing in order to minimize fluvial hazard impacts as a condition of an FHZ permit.
- iii. The angle of any crossing shall be sited to maximize opportunity for sediment and debris passage through the structure during a flood event.
- iv. The number of crossings to a site shall be minimized to the maximum extent feasible.
- v. The number of channel blocking piers and abutments should be minimized to the maximum extent feasible.
- vi. Crossing approaches should be configured to allow for overbank flows to pass over or under via additional culverts per local design standards.
- vii. Protection of crossings located in the FHZ Overlay District from natural stream processes of erosion and deposition shall first seek retrofit, relocation and/or avoidance before a permit is issued for protection of the existing crossing with streambank armoring and/or channelization.

6. Infill development. As defined in Article II section B [Definitions], the applicant shall provide the Floodplain Administrator evidence that the proposed development will not require or result in an increase in the length of existing channel management or bank stabilization measures.

Activities not listed as exempt or permitted through administrative or conditional use review may be required to submit a geomorphic study conducted by a qualified professional to the Floodplain Administrator and an agreement with {community name} that there will not be any streambank armoring or channelization to protect these areas in the future.

#### **SECTION D. SUBSTANTIAL IMPROVEMENT AND SUBSTANTIAL DAMAGE DETERMINATIONS, POST FLOOD PROCEDURES <sup>3</sup>**

When a proposal for the renovation, rehabilitation, restoration or repair of a structure located within the Fluvial Hazard Zone Overlay District is reviewed, the Floodplain Administrator shall make a substantial improvement determination.

In the event of damage to a structure located within the Fluvial Hazard Zone Overlay District from natural stream migration, river flooding (including erosion and depositional processes), or other causes (such as, but not limited to, fire, wind, or snow), the Floodplain Administrator shall make a substantial damage determination based on the damage sustained by the structure regardless of intended repair at that time.

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<sup>3</sup> Recommended this section to mirrors the local floodplain regulations.

Substantial improvement or substantial damage determinations shall be made in accordance with current FEMA guidelines or procedure established by the ACP in accordance to {community's name} floodplain regulations, if located in a Special Flood Hazard Area, as well as in conformance with the requirements set forth in this ordinance and shall be used to determine the appropriate development standards for repair and rebuilding.

## ARTICLE IV – Administration

### SECTION A. ADMINISTRATIVE OFFICER & APPROPRIATE COMMUNITY PANEL

#### 4.1 Administrative Officer <sup>4</sup>

The {community's name} Floodplain Administrator, respectively, are hereby appointed to administer and implement this ordinance by approving, conditionally approving or denying Fluvial Hazard Zone Development Permit applications in accordance with its provisions.

#### 4.2 Appropriate Community Panel

The Appropriate Community Panel (ACP) for this ordinance shall be the Water Board/Zoning Board of Adjustment (ZBA)/Planning Commission (PC)/Board of County Commissioners (BOCC)<sup>5</sup>

The Zoning Board of Adjustment (ZBA)/Planning Commission (PC)/Board of County Commissioners (BOCC) shall have the duties and responsibilities as required by {municipal/county} regulations.

### SECTION B. APPLICATION ADMINISTRATION REQUIREMENTS

#### 4.3 Application Submission Requirements

All applications for development in the Fluvial Hazard Zone Overlay District shall include:

Site Plan. A site plan that depicts the proposed development, all water bodies (including wetlands), all delineated FHZ boundaries, the shortest horizontal distance from the proposed development to the top of the bank of any river, any existing and proposed drainage, any proposed fill, pre- and post-development grades, and the elevation of the proposed lowest floor as referenced to the same vertical datum as the elevation on the current Flood Insurance Rate Maps (FIRM);

Fluvial Hazard Assessment<sup>6</sup>. Information clearly demonstrating how the proposed development meets the requirements in Article III section C [Development Standards]; or

1. A narrative and supporting technical information from a qualified professional that demonstrates how the proposal meets the criteria in Article III section C; or

<sup>4</sup> It is recommended for this position to be the community's existing Floodplain Administrator. To give flexibility to this model code, the Administrative Officer, the individual responsible for implementing and enforcing these regulations should be determined by the community and be based on which existing department and position would best fill this role.

<sup>5</sup> It is recommended the ACP be the Board that currently has the responsibility to hear floodplain development variance requests.

<sup>6</sup> Information for this assessment can be taken from the community's FHZ Mapping Report.

2. Evidence of an approved major or minor map update issued by CWCB in accordance with the process outlined in this ordinance, finding the proposed development meets the provisions of this ordinance.

Proof of ownership. The applicant shall submit to the Floodplain Administrator proof of ownership of the property including copies, dated no earlier than three (3) weeks prior to the application being submitted, of the vesting deed, deed(s) of trust or title commitment.

1. If the applicant is not the landowner, the applicant shall submit to the Floodplain Administrator a signed and dated Letter of Authorization from the property owner.

Referrals. Applications may be referred for additional review to any of {community's name} departments as the Floodplain Administrator deems appropriate.

Supplemental Application Requirements. Some applications may require additional information based on the location and type of the development (e.g., wildfire risk and debris flow risk assessments for the contributing watershed). FHZ Development Permit applications may also be subject to requirements within the {community's name} floodplain regulations.

Public Hearing. Prior to the issuance of a Fluvial Hazard Zone permit, applications with development types required to meet the requirements of a development review hearing shall follow the {community's name} public hearing requirements.

#### **4.4 Fluvial Hazard Zone Development Permit<sup>7</sup>**

A Fluvial Hazard Zone Development Permit is required for all development activities listed in Article III [General Provisions] that are located within the FHZ Overlay District. Any new development that is also subject to the {community's name} regulations in the designated flood hazard areas shall meet the criteria in {community's name} floodplain regulations.

If the FHZ permit expires, any land development on the lot covered under that FHZ permit must cease. All subsequent land development must be approved after the submission of a new application for a permit, and all laws and ordinances then in effect will be applicable.

An FHZ permit shall run with the land regardless of the owner.

##### ***4.4.1 Approval or Denials of FHZ Development Permit***

Approval, conditional approval, or denial of a Fluvial Hazard Zone Development Permit by the Floodplain Administrator shall be based on all of the provisions of this ordinance and the following relevant factors:

1. The danger to life and property due to fluvial or erosion damage;
2. The susceptibility of the proposed development and its contents to damage caused by fluvial hazards and the effect of such damage on the individual owner;

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<sup>7</sup> Recommended for the permitting process and variance procedures follow the community's existing floodplain regulations and permitting processes.

3. The danger that materials may be swept onto other lands to the injury of others;
4. The compatibility of the proposed use with existing and anticipated development;
5. The safety of access to the property in times of flood and when fluvial hazards are present for ordinary and emergency vehicles;
6. The costs of providing governmental services during and after fluvial hazard conditions including maintenance and repair of streets and bridges, and public utilities and facilities such as sewer, gas, electrical and water systems;
7. 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;
8. The necessity to the facility of a waterfront location, where applicable;
9. The availability of alternative locations, not subject to damage caused by fluvial hazards, for the proposed use;
10. The relationship of the proposed use to the {community's name} Comprehensive Plan.

#### **4.4.2 Appeals**

Appeals from any decision or act of the Floodplain Administrator in connection with this ordinance shall be made {state location of municipality/county's appeal process}. Whenever the Floodplain Administrator does not grant an FHZ permit, waiver or variance request on any basis other than the failure of the applicant to submit a complete application, the ACP, as established by the community may reconsider the action. The applicant shall clearly demonstrate that:

1. Circumstances affecting the property that is subject of the application have changed significantly.
2. New information is available that could not with reasonable diligence have been presented at a previous hearing. A request to be heard on this basis shall be filed with the Floodplain Administrator within the time period of an appeal. Such a request does not extend the period within which an appeal shall be taken.

### **4.5 Waivers and Variances Procedures**

#### **4.5.1 Waiver Procedures**

An applicant may apply for a waiver of the FHZ overlay requirements of this ordinance by filing a verified application with the Floodplain Administrator on a form supplied by the Floodplain Administrator<sup>8</sup>. Persons desiring to request a waiver pursuant to this Article shall submit a waiver application together with an FHZ permit application and shall at the time of

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<sup>8</sup> Recommended for the adopting community to develop a waiver form specific the FHZ Overlay District Ordinance. The City of Fort Collins has developed a waiver form specific to the City's erosion buffer zone requirements and is a good example when developing a new form.

said application pay the application permit fee(s). The **Floodplain Administrator** may require the submission of such additional information as they may determine to be reasonably necessary to take action on a wavier application, and no application shall be considered complete until all required information has been submitted.

#### **4.5.2 Variance Procedures**

1. The **ACP**, as established by {community name}, shall hear and render judgment on requests for variances from the requirements of this ordinance.
2. The **ACP** shall hear and render judgment on an appeal only when it is alleged there is an error in any requirement, decision, or determination made by the Floodplain Administrator in the enforcement or administration of this ordinance.
3. Any person or persons aggrieved by the decision of the **ACP** may appeal such decision in the courts of competent jurisdiction.
4. The Floodplain Administrator shall maintain a record of all actions involving an appeal and shall report variances to CWCB upon request.
5. Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places, without regard to the procedures set forth in the remainder of this ordinance.
6. 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 providing the relevant factors in Article III section C of this ordinance have been fully considered. As the lot size increases beyond the one-half acre, the technical justification required for issuing the variance increases.
7. Upon consideration of the factors noted above and the intent of this ordinance, the **ACP** may attach such conditions to the granting of variances as it deems necessary to further the purpose and objectives of this ordinance as stated in Article I, section D [Statement of Purpose].
8. Variances shall not be issued if any increase in fluvial hazards may result.
9. Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.
10. Prerequisites for granting variances:
  - a. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the fluvial hazard, to afford relief.
  - b. Variances shall only be issued upon:
    - i. Showing a good and sufficient cause;

- ii. A determination that failure to grant the variance would result in exceptional hardship to the applicant, and
  - iii. A determination that the granting of a variance will not result in increased fluvial hazards, additional threats to the public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.
11. Variances may be issued by a community for new construction and substantial improvements and for other development necessary for the conduct of a Functionally Dependent Use provided that:
- a. The criteria outlined in Article III, section B, [Variance Procedures] (1)-(9) are met, and
  - b. The structure or other development is protected by methods that minimize fluvial damages and create no additional threats to public safety.

## SECTION C. ADMINISTRATIVE RESPONSIBILITIES, RECORDS

### 4.6 Review Procedures

The **Floodplain Administrator** shall review and approve all land-disturbing activity, including new development and subdivision of land, for compliance with the intent of the FHZ Overlay District and the development standards of this ordinance, at the same time the {community's name} reviews an application for preliminary subdivision plat, site plan or construction/building permit approval, whichever review occurs first.

### 4.7 Records

1. The Floodplain Administrator shall properly file and maintain a record of:
2. All FHZ maps and map updates;
3. All permits issued for development under this jurisdiction of this bylaw;
4. All certifications and analysis required under this regulation; and
5. All decisions of the **Floodplain Administrator** and **ACP** and all supporting findings of fact, conclusions, and conditions.

## SECTION D. PENALTIES FOR NONCOMPLIANCE

### 4.8 Enforcement

*The following is suggested wording for a penalty clause to be included and adopted with your Flood Damage Prevention Ordinance. Wording should be modified as necessary to reflect specific local/state statutory provisions.*

No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this ordinance and other applicable regulations. Violation of the provisions of this ordinance by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute a misdemeanor. Any person who violates this ordinance or fails to comply with any of its requirements shall upon conviction thereof be fined or imprisoned as provided by the laws of {community name}. Nothing herein contained shall prevent the {community name} from taking such other lawful action as is necessary to prevent or remedy any violation.