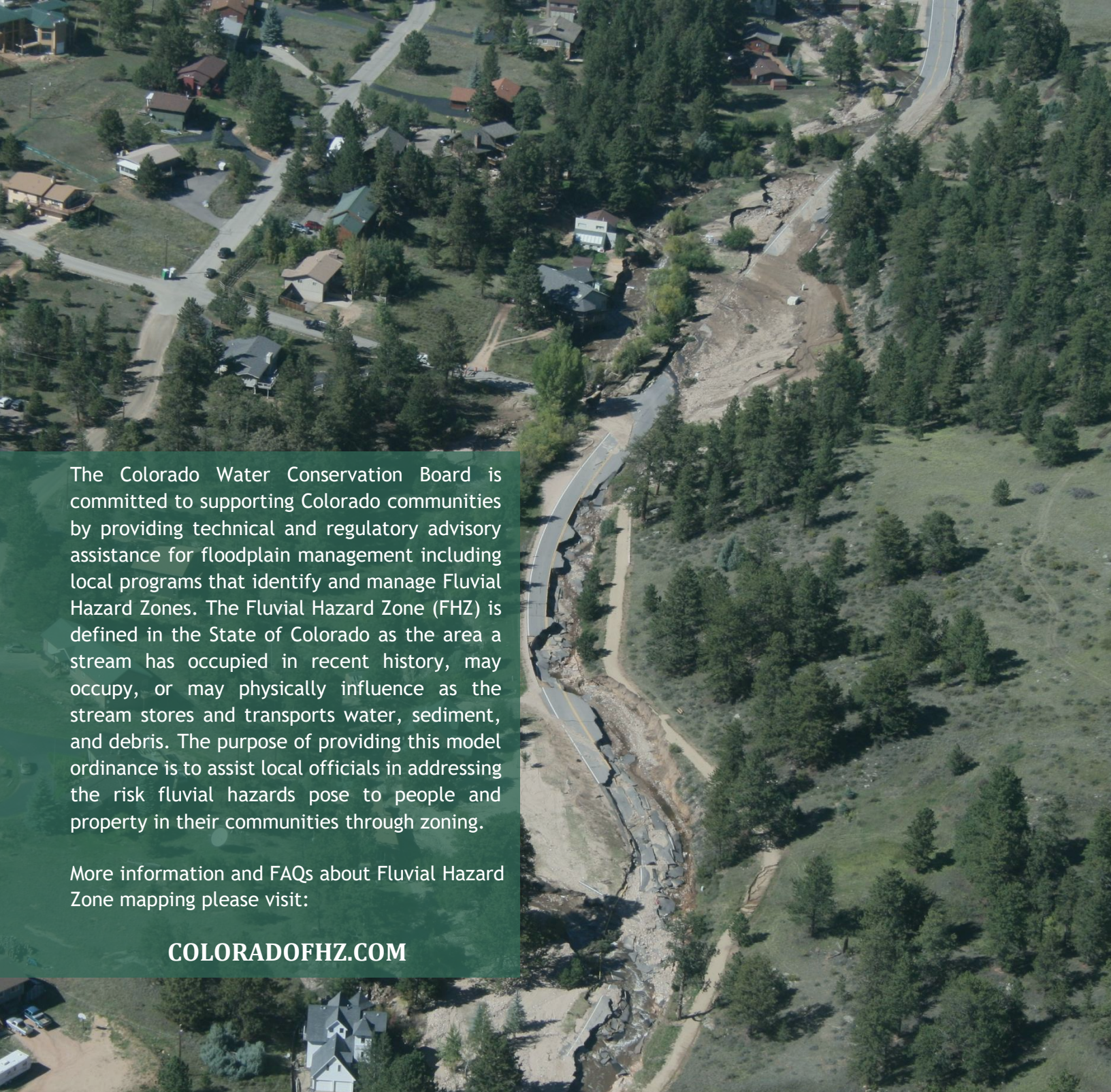


# FLUVIAL HAZARD ZONE OVERLAY DISTRICT MODEL ORDINANCE



The Colorado Water Conservation Board is committed to supporting Colorado communities by providing technical and regulatory advisory assistance for floodplain management including local programs that identify and manage Fluvial Hazard Zones. The Fluvial Hazard Zone (FHZ) is defined in the State of Colorado as 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. The purpose of providing this model ordinance is to assist local officials in addressing the risk fluvial hazards pose to people and property in their communities through zoning.

More information and FAQs about Fluvial Hazard Zone mapping please visit:

[COLORADOFHZ.COM](http://COLORADOFHZ.COM)



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FLUVIAL HAZARD ZONE



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Department of Natural Resources

FHZ MODEL ORDINANCE  
Version 1.0

## PREFACE

Fluvial geomorphic processes are natural phenomena within stream corridors. Commonly observed occurrences of fluvial geomorphic processes include erosion, the transport and deposition of sediment, and the recruitment and relocation of wood. Fluvial geomorphic processes become hazardous when they encounter infrastructure and other investments placed within and adjacent to the stream corridor. In order to recognize and assess the hazards associated with erosion, sediment deposition, and other dynamic river processes, the Colorado Water Conservation Board (CWCB) has developed a technical protocol (Colorado Fluvial Hazard Zone Delineation Protocol) to identify and map fluvial hazard zones in order to help communities better understand their existing risk.

**The Fluvial Hazard Zone (FHZ) is defined as the area a stream has occupied in recent history, could occupy, or could physically influence as it stores and transports water, sediment, and debris during flood events.**

The CWCB is committed to supporting Colorado communities by providing technical and regulatory advisory assistance for local FHZ programs and mapping. The purpose of providing this model ordinance is to assist local officials in addressing the risk fluvial hazards pose to people and property in their communities.

The Federal Emergency Management Agency (FEMA) creates National Flood Insurance Program (NFIP) maps that 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 only provide a static, and in some cases limited, picture of a dynamic system. Identifying Fluvial Hazard Zones and the development of planning tools to address fluvial hazards has become a high priority in Colorado. There is an urgent need to apply what we learned and mitigate risk to future floods. 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. In Colorado, planning for fluvial hazards is an essential component of effective land use development and the prevention of future flood damages in every community.

When adopted, the Fluvial Hazard Zone Overlay District becomes a zoning requirement that correlates to a community's adopted Fluvial Hazard Zone Maps. This model ordinance provides ***suggested text for the establishment and regulation of a Fluvial Hazard Zone Overlay District***. The specific language in this document can be tailored to meet a community's needs for integration into existing planning and regulatory mechanisms. The red text should be thought of as "fill-in the blank" while text highlighted in green is considered a higher standard. ***The recommendations throughout this document are considered best practices but are not mandated by the State of Colorado***. For additional information and resources related to the Fluvial Hazard Zone Program in Colorado visit the program website: <http://www.ColoradoFHZ.com>. Additional planning resources are also available on the Colorado Department of Local Affairs Planning for Hazards website: <https://planningforhazards.com/home>.

## HOW TO USE THIS MODEL ORDINANCE

This Model Ordinance does not prohibit development. It requires that new development projects be reviewed to ensure that they do not adversely affect safety, public health, other properties, water quality, or aquatic and riparian habitat. Here is how it works:

Article 1: This section provides the legal provisions and background needed for a regulatory program, such as the penalties clause.

Article 2: This section defines the technical terms used in the ordinance.

Article 3: This section defines the maps that are used.

Article 4: This section establishes procedures for permits and record keeping.

Article 5: This section provides general development standards.

**Text in red is intended to be written in by the local entity to match their local administrative needs.**

**Highlighted text indicates a higher standard or best practice beyond the baseline recommendation.**

In addition to required local processes, including legal review, it is recommended that communities:

- ❖ Send their draft ordinance to the Colorado Water Conservation Board and Department of Local Affairs for a review of technical and procedural viability.
- ❖ Keep this publication after the ordinance is adopted.
- ❖ Take advantage of training programs related to Fluvial Hazard Zone Mapping and Planning.

# Model Fluvial Hazard Zone Overlay District Ordinance

## Table of Contents

ARTICLE I – TITLE AND PURPOSE	1
SECTION 1.1. STATUTORY AUTHORIZATION .....	1
SECTION 1.2. TITLE .....	1
SECTION 1.3. FINDINGS OF FACT .....	1
SECTION 1.4. STATEMENT OF PURPOSE .....	1
SECTION 1.5. LANDS TO WHICH THIS ORDINANCE APPLIES .....	2
SECTION 1.6. PENALTIES FOR NON-COMPLIANCE .....	2
SECTION 1.7. INTERPRETATION .....	2
SECTION 1.8. ABROGATION AND GREATER RESTRICTIONS .....	2
SECTION 1.9. WARNING AND DISCLAIMER OF LIABILITY .....	3
SECTION 1.10. SEVERABILITY .....	3
ARTICLE II – DEFINITIONS	4
SECTION 2.1. DEFINITIONS INCORPORATED BY REFERENCE .....	4
SECTION 2.2. DEFINITIONS .....	4
ARTICLE III – FLUVIAL HAZARD ZONE OVERLAY DISTRICT AND OFFICIAL MAPS	7
SECTION 3.1. ESTABLISHMENT OF THE FLUVIAL HAZARD ZONE OVERLAY DISTRICT .....	7
SECTION 3.2. FLUVIAL HAZARD ZONE OVERLAY DISTRICT OFFICIAL MAPS .....	7
ARTICLE IV – ADMINISTRATION	8
SECTION 4.1. FLUVIAL HAZARD ZONE USE PERMIT .....	8
4.1.1. Exempt Activities	8
4.1.2. Prohibited Activities	9
4.1.3. Fluvial Hazard Zone Use Permit Application	9
1. 4.1.3.1. Required Application Documentation	9
4.1.4. Fluvial Hazard Zone Use Permit Expiration	9
4.1.5. Fluvial Hazard Zone Use Permit Close-Out	9
SECTION 4.2. ADMINISTRATIVE OFFICIAL & APPROPRIATE COMMUNITY PANEL .....	10
4.2.1. Administrative Official	10
4.2.2. Duties of the Administrative Official	10
4.2.3. Appropriate Community Panel	10
SECTION 4.3. REVIEW PROCEDURES .....	10
4.3.1. Standards for Approval or Denial	10
SECTION 4.4. RECORDS .....	11
SECTION 4.5. DISPUTES, WAIVERS, VARIANCES, AND APPEAL PROCEDURES .....	11
4.5.1. Dispute Procedures	11

4.5.2. Waiver Procedures	11
4.5.3. Variance Procedures	11
4.5.4. Appeals	11
ARTICLE V – GENERAL DEVELOPMENT STANDARDS	12
SECTION 5.1. LAND AND STREAM ALTERATIONS AND COMPENSATORY MEASURES .....	12
SECTION 5.2. SITE DESIGN .....	13
5.2.1. Subdivisions and Multi-Lot Development	13
5.2.2. Single Lot Site Development	13
5.2.3. Utilities	14
5.2.4. Trails, Driveways, and Access Roads	14
SECTION 5.3. CRITICAL FACILITIES .....	14
SECTION 5.4. HAZARDOUS MATERIALS .....	14

## ARTICLE I – TITLE AND PURPOSE

### SECTION 1.1. STATUTORY AUTHORIZATION

{Insert specific local authorization as applicable}. In Title 29, Article 20, of the Colorado Revised Statutes, the Colorado General Assembly grants each local government, within its respective jurisdiction, the authority to plan for and regulate development and activities in hazardous areas as well as the authority to regulate the use of land on the basis of the impact of the use on the community or surrounding areas. Therefore, the {community governing body} of {community name}, Colorado, does hereby adopt the following regulations.

### SECTION 1.2. TITLE

This Ordinance will be known and cited as {community name}'s **Fluvial Hazard Zone Overlay District Ordinance** (the "Ordinance" or "FHZ Ordinance").

### SECTION 1.3. FINDINGS OF FACT

- a. Areas of {community name} are subject to periodic inundation and other fluvial hazards which have the potential to result in loss of life and property, disruption of commerce and governmental services, extraordinary public expenditures for protection and relief from flooding and fluvial hazards, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare of {community name}.
- b. When stream corridors are developed without taking appropriate care and precautions, natural erosion and depositional processes are impeded, degraded, or increased, causing a greater threat to humans, damage to property, destruction of natural floodplain functions, and adverse impacts to water quality and habitat.
- c. Rivers, streams, lakes, and their floodplains are major elements of healthy aquatic and riparian habitats and conveyance of flood waters. If watersheds, rivers, streams, lakes, estuaries, floodplains, and other systems are not viewed holistically as biological and geomorphologic units, serious degradation of habitat and increased flood hazards to people and human development may result.
- d. Prior to development in {community name}, natural watershed processes occurred that allowed for the evolution of complex, healthy ecosystems, and functional floodplains. Disruption of these processes through development and alteration of the stream corridor leads to increased flood hazards, property damage, threats to public welfare, and degradation of the environment.
- e. Erosion and deposition of sediment and debris are significant hazards downstream of burned areas after wildfires. Preserving space to accommodate these hazards before they reach highly developed areas or directing development away from areas subject to these hazards may help protect the public health, safety, and general welfare of {community name}.

### SECTION 1.4. STATEMENT OF PURPOSE

The purpose of the Fluvial Hazard Zone Overlay District is to: encourage and regulate prudent land use to promote the public health, safety and welfare of the citizens of {community name}; permit only such uses that are meant to minimize the danger to public health, safety, welfare and property; reduce the demands for public expenditures for disaster relief, hazard mitigation, and protection and maintenance of infrastructure for structures and facilities permitted in the underlying zone district(s); and minimize disruption of commerce and governmental services, extraordinary public expenditures for protection and relief from fluvial processes, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare of {community name}. Furthermore, the purpose of this Ordinance includes: ensuring channel management activities necessitated by development located

in hazardous areas do not increase vulnerability of adjacent and downstream properties and infrastructure; ensuring critical stream functions and services are functional for future generations through the maintenance and protection of natural stream processes, connected accessible floodplains, and the riparian habitat and wetlands incumbent within them; providing lateral space for streams to migrate as they naturally function to store and transport sediment and debris; and minimizing potential damage to critical facilities and infrastructure.

## **SECTION 1.5. LANDS TO WHICH THIS ORDINANCE APPLIES**

The provisions and regulations of this Ordinance will apply to the Fluvial Hazard Zone Overlay District as defined in Article III.

## **SECTION 1.6. PENALTIES FOR NON-COMPLIANCE<sup>1</sup>**

No development will be undertaken or placed in the areas regulated by this Ordinance without full compliance with the terms of this Ordinance and other applicable regulations of {community name}. Violations 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), will constitute a misdemeanor.

Any person who violates this Ordinance, or fails to comply with any of its requirements, will upon conviction thereof be fined not more than \$1,000 for each violation, and in addition must pay all costs and expenses involved in the case. Nothing herein contained will prevent the {community name} from taking such other lawful action as is necessary to prevent or remedy any violation. Each violation or each day of continued unlawful activity will constitute a separate violation.

## **SECTION 1.7. INTERPRETATION**

All provisions of this Ordinance will be interpreted and applied to be:

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

This Ordinance will not be applied retroactively.

## **SECTION 1.8. ABROGATION AND GREATER RESTRICTIONS**

Where this Ordinance and another code, ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions will prevail.

This Ordinance is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. Uses permitted by any underlying zoning district are allowed unless specifically prohibited or met through submittal requirements of this Ordinance.

The provisions of this Ordinance will not in any way impair or remove the necessity of compliance with any other local, state, or federal laws or regulations.

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<sup>1</sup> The following is suggested wording for a penalty clause to be included and adopted with the Fluvial Hazard Zone Overlay District Ordinance. Wording should be modified as necessary to reflect specific local/state statutory provisions. Consult with the local jurisdiction's attorney(s) on the specific application of this optional section as well as the entirety of the Ordinance to be adopted.

## SECTION 1.9. WARNING AND 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 as identified in the Colorado Fluvial Hazard Zone Delineation Protocol<sup>2</sup>. Fluvial Hazard Zone 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. Fluvial Hazard Zone maps do not predict the magnitude, frequency, or rate of fluvial geomorphic hazards. Fluvial Hazard Zone maps are also intended to inform land use planning, emergency planning, and floodplain management, as well as conservation efforts. This Ordinance does not imply that land outside of the areas covered by this Ordinance will be free from damages associated with fluvial hazards. This Ordinance does not create liability on the part of {community name}, or any officer or employee thereof, for any damages associated with fluvial hazards that result from reliance on this Ordinance, or any administrative decision lawfully made in accordance with this Ordinance.

## SECTION 1.10. SEVERABILITY

The provisions and sections of this Ordinance are deemed separable. The invalidity of any portion of this Ordinance will not affect the validity of the remainder.

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<sup>2</sup> Blazewicz, M., K. Jagt, J. Sholtes. 2020. Colorado Fluvial Hazard Zone Delineation Protocol. Colorado Water Conservation Board.



## ARTICLE II – DEFINITIONS<sup>3</sup>

### SECTION 2.1. DEFINITIONS INCORPORATED BY REFERENCE<sup>4</sup>

All definitions included in the 2020 CWCB Fluvial Hazard Zone Mapping Protocol Glossary (Blazewicz, et al., 2020) are incorporated by reference. If conflicts arise, the definitions in Section 2.2 of this document will be used.

### SECTION 2.2. DEFINITIONS

Appropriate Community Panel (ACP) - The Board, Commission, Council, or Committee in a community that is responsible for decisions on development applications including appeals or floodplain permits. It is recommended for this Ordinance that the ACP be the existing decision-making body that currently has the responsibility to hear and decide on floodplain development variance requests.

Armoring - The installation of concrete walls, gabions, stone, riprap, and other erosion resistant material along stream banks.

Avulsion Hazard Zone (AHZ) - Identifies pathways outside of the Active Stream Corridor that a channel might (re)occupy. Only avulsion pathways that exist outside the Active Stream Corridor are identified as Avulsion Hazard Zones.

Change of Use - The replacement of an existing use or zoning designation by a new use or designation, or a change in the nature of an existing use, but not including a change of ownership, tenancy, or management where the previous nature of the use, line of business, or other function is substantially unchanged.

Channel - An area that contains continuously or periodically flowing water that is confined by banks and a streambed.

Channelization - The process of changing (usually straightening) the natural path of a waterway and/or installing infrastructure, armoring or other similar practices which are intended to inhibit the lateral or vertical movement of a channel.

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

Critical Facility or Critical Facilities - Based on the State of Colorado Water Conservation Board's definitions per the 2010 *Rules and Regulations for Regulatory Floodplains in Colorado*, a critical facility is, "a structure or related infrastructure, but not the land on which it is situated, that if flooded may result in significant hazards to public health and safety or interrupt essential services and operations for the community at any time before, during and after a flood." Critical facilities include but are not limited to police stations, fire and rescue facilities, hospitals, shelters, schools, nursing homes, water supply, and waste treatment facilities.

Crossing - Any infrastructure that extends from one bank to the opposite bank of a stream, whether under, through or over the watercourse including but not limited to: roads, fords, bridges, culverts, water and sewer lines, and utility lines and cables.

Culvert - A buried pipe that allows flows to pass under a road, embankment, or other fill.

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<sup>3</sup> This is a list of proposed definitions; a community may add to or subtract from this list. It is highly recommended that the community adopting this Ordinance match definitions on this list with existing definitions in other local regulatory documents (e.g. zoning and subdivision regulations and floodplain regulations).

<sup>4</sup> If a community wishes to alter a definition that is incorporated by reference, they can redefine the term in Section 2.2 and it will take precedence over the definition provided in the FHZ Mapping Protocol.

**Development** - Any human-made change to improved or unimproved real estate, including but not limited to construction of structures, mining, dredging, filling, grading, paving, landscaping, excavation, or drilling operations.

**Disconnected Active Stream Corridor** - Identifies lands that would normally be mapped as part of the Active Stream Corridor but may not be currently prone to fluvial processes due to the presence of a Disconnecting Structure.

**Disconnecting Structure**: Human structures that delineate the margin between an Active Stream Corridor and a Disconnected Active Stream Corridor.

**Energy Grade Line** - A line that represents the elevation of energy head (in feet or meters) of water flowing in a channel and its adjacent floodplain.

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

**Fans** - Alluvial and debris fans are typically triangular-shaped landforms created by deposition of material at the intersection of a tributary valley with a larger valley. They may also form in the mainstem of a study stream where a steep confined reach rapidly loses confinement and gradient.

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

**Floodplain** - Land that has been eroded by flowing water, or built of sediments deposited by flowing water, and which continues to be influenced by the stream either regularly or occasionally.

**Floodplain Administrator** - Individual designated as responsible for administering a jurisdiction's floodplain management ordinance.

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

**Fluvial Hazard** - A threat to public and/or private property and public safety and/or welfare posed when investments or assets are placed where natural fluvial processes occur.

**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** - Erosion-prone land located beyond the Active Stream Corridor, such as hillslopes and terraces, that may be susceptible to geotechnical slope failure as a result of toe erosion caused by fluvial scour.

**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 Mapping Report** - Report that includes technical details and background information regarding the Fluvial Hazard Zone delineation and methodology used.

**Geomorphology** - The scientific field that studies the evolution of landscapes and changes to the earth's surface.

**Geotechnical Flag** - Areas where hillslope failures initiated by toe erosion may extend past the FHZ delineation due to hillslope steepness, height, and/or material.

**No Impact Determination** - The determination required for an Fluvial Hazard Zone Use Permit to be issued.

**Qualified Professional** - Fluvial geomorphologist, geologists, hydrologists, engineers, or those with related backgrounds, and with substantial experience, education, and field practice in fluvial geomorphology may serve in this role.

Reach - A section of stream that has consistent geomorphic characteristics related to valley and channel geometry as influenced by local geology, valley slope, sediment and water supply, vegetation, and anthropogenic factors.

Scour - The erosive action of running water in streams, which excavates and carries away material from the bed and banks.

Sediment - Solid material that is moved and deposited in a new location by fluid movement (i.e., water or wind).

Sediment Capacity Supply Ratio Study - Execution of the calculations in the National Cooperative Highway Research Program (NCHRP) Research Report 853: Guidance for Design Hydrology for Stream Restoration and Channel Stability. This method is to assist hydraulic engineers in assessing the current conditions using a set of analytical and analog tools and assesses the stream reach for stability and sediment balance.

<http://www.trb.org/NCHRP/Blurbs/176503.aspx>

Site Plan - A map or graphic prepared to scale, depicting the development of a tract of land as required by regulations. Including, 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 a distance.

Special Flood Hazard Area - Area of special flood hazard 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 Corridor - The stream and adjacent lands within a stream valley and active floodplain.

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

## ARTICLE III – FLUVIAL HAZARD ZONE OVERLAY DISTRICT AND OFFICIAL MAPS

### SECTION 3.1. ESTABLISHMENT OF THE FLUVIAL HAZARD ZONE OVERLAY DISTRICT

The {community name} Fluvial Hazard Zone Overlay District is established and defined as all lands identified as either Active Stream Corridor, Fluvial Hazard Buffer, or Avulsion Hazard Zones within {community name}'s {name of map} as approved and adopted by {community's name} on {date of approval}. Areas denoted as Fans, Disconnected Active Stream Corridors, or Geotechnical Flags are shown for informational purposes only and are not subject to regulation by this Ordinance. The Fluvial Hazard Zone Overlay District may be abbreviated as "FHZ Overlay District".

### SECTION 3.2. FLUVIAL HAZARD ZONE OVERLAY DISTRICT OFFICIAL MAPS

{Community name} will maintain digital maps delineating the location and boundaries of the Fluvial Hazard Zone which is comprised of an Active Stream Corridor, Fluvial Hazard Buffer, Avulsion Hazard Zones (if applicable), Disconnected Active Stream Corridor (if applicable), Geotechnical Flags (if applicable), and Fans (if applicable). This map must be adopted for use by {community name} and will establish the areas governed by the provisions of this Ordinance and constitutes the Official Map of {community name}'s Fluvial Hazard Zone Overlay District. Where a Fluvial Hazard Zone has not yet been mapped or adopted, this Ordinance does not apply. The information presented on the official map and contained in the accompanying Fluvial Hazard Zone Mapping Report, adopted by reference, is presumed accurate. The Official Maps are available in electronic format for public inspection at the {name of governing entity GIS portal}.

## ARTICLE IV – ADMINISTRATION

### SECTION 4.1. FLUVIAL HAZARD ZONE USE PERMIT<sup>5</sup>

A Fluvial Hazard Zone Use Permit (FHZ Use Permit) must be obtained before commencing non-exempt activities that occur within the Fluvial Hazard Zone Overlay District. A Fluvial Hazard Zone Use Permit must be associated with the land regardless of the landowner. Only the part of a structure, lot, or parcel lying within the Fluvial Hazard Zone Overlay District will be subject to the requirements for this district as set forth in this Ordinance. Non-ground disturbing activities such as changes to zoning, platting, or re-platting, subdividing, and other changes to land administration will also require a Fluvial Hazard Zone Use Permit.

#### 4.1.1. Exempt Activities

The following activities are allowed and exempt from needing a Fluvial Hazard Zone Use Permit under this Ordinance provided all other Federal, State, and local requirements are met. Note: Normal maintenance activities do not include repair or replacement, in whole or in part, due to damage stemming from fluvial-related erosion or sedimentation.

- a. Selling, gifting, and all other transfers of ownership; leasing, or altering management authorities, stewardship status, or similar actions.
- b. Normal maintenance of existing structures that does not include substantial improvement. Any changes, redevelopment, maintenance, repairs, or renovations to an existing structure that will not result in an increase greater than 10 percent in the footprint of the structure.
- c. Normal maintenance of existing sidewalks, trails, roads, parking areas, or stormwater drainage including filling potholes, repaving, and installing signs and traffic signals, but not including expansion of these areas.
- d. Maintenance of existing bridges, culverts, and crossings provided no more than 10 cubic yards of riprap or other armoring is placed or replaced during this action.
- e. Normal maintenance of existing diversion structures and related infrastructure.
- f. Non-structural agricultural uses and activities including those related to irrigation, plowing, grazing, clearing, harvesting, weeding, planting, and other normal agricultural practices (other than building structures or filling wetlands or floodplains).
- g. Normal maintenance of utilities including power, water, gravity storm drainage infrastructure, sanitary sewage infrastructure, wastewater treatment facilities, and municipal well fields servicing existing structures.
- h. Activities related to an existing or future non-structural conservation use with the sole purpose of creating, restoring, or enhancing natural functions associated with floodplains, streams, lakes, habitat, and riparian areas, provided the activities do not include structures for human use or impervious surfaces.
- i. Normal maintenance of a levee or other flood control facility prescribed in the operations and maintenance plan for the levee or flood control facility are allowed in the Fluvial Hazard Zone Overlay District without need for a Fluvial Hazard Zone Use Permit. Normal maintenance does not include repair from flood damage, expansion of the prism, expansion of the face or toe, or additional placement of armor.
- j. Removal of structures. The removal of a structure in whole or in part within the Fluvial Hazard Zone Overlay District, provided the removed materials are not relocated elsewhere within the Fluvial Hazard Zone Overlay District

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<sup>5</sup> It is recommended that the Fluvial Hazard Zone Use Permit process and variance procedures follow the community's existing floodplain regulations.

### 4.1.2. Prohibited Activities

Any activity that is not listed as Exempt in Subsection 4.1.1. which does not meet the standards in Article V.

### 4.1.3. Fluvial Hazard Zone Use Permit Application

Application for a Fluvial Hazard Zone Use Permit must be made concurrently with the following, whichever review occurs first:

- 4) An application for a Change of Use as defined in Article II of this Ordinance
- 5) Preliminary subdivision plat or site plan
- 6) On-site wastewater treatment permit approval or water and sewer hook-up plan
- 7) Building Permit
- 8) Floodplain Development Permit

#### 1. 4.1.3.1. Required Application Documentation

- 1) Identification of locations and the Fluvial Hazard Zone designation (ASC, FHB, AHZ, F, GF, and/or D-ASC) of all proposed activities.
- 2) Memorandum from a qualified professional with the experience required in the Fluvial Hazard Zone Delineation Protocol that describes:
  - a) The types of fluvial hazards expected in the reach as well as a qualitative Fluvial Hazard Assessment as to if the proposed actions will worsen or ameliorate risks associated with the hazards in the following locations:
    - i) upstream reaches
    - ii) downstream reaches
    - iii) adjacent properties including those upstream, downstream, and on the opposite channel bank(s).
  - b) A Fluvial Hazard Assessment of the impacts of the proposed actions on: sediment continuity, sediment storage, unit stream power, unit stream power longitudinal variability, and the energy grade line through the reach(es).
- 3) Description of the extent to which a channel will be altered or relocated as a result of the proposed development.
- 4) Signed affidavit by the landowner(s) acknowledging that the property and proposed improvements are within a Fluvial Hazard Zone Overlay District along with a written commitment to openly disclose this information when selling, gifting, or otherwise relinquishing ownership of the property, in whole or in part.

### 4.1.4. Fluvial Hazard Zone Use Permit Expiration

If there has been no start of construction, a Fluvial Hazard Zone Use Permit will expire {180} days after the date of issuance. Where the applicant documents a need for an extension beyond this period due to conditions beyond the applicant's control, the {community official} may authorize one or more extensions of up to {180} days each

### 4.1.5. Fluvial Hazard Zone Use Permit Close-Out

The Fluvial Hazard Zone Use Permit close-out requires the applicant to submit documentation stating that the permitted activities were completed per plan and per the conditions in the issued permit as well as a final inspection by the Administrative Official to ensure compliance. Fluvial Hazard Zone Use Permit close-out is a condition for a Certificate of Occupancy being issued for any dwelling covered by the Fluvial Hazard Zone Use Permit.

## SECTION 4.2. ADMINISTRATIVE OFFICIAL & APPROPRIATE COMMUNITY PANEL

### 4.2.1. Administrative Official <sup>6</sup>

The {community official} is hereby appointed as the Administrative Official.

### 4.2.2. Duties of the Administrative Official

The duties of the Administrative Official include but are not limited to:

- 1) Review all Fluvial Hazard Zone Use Permits to determine that the permit application requirements of this Ordinance have been satisfied.
- 2) Ensure that all development activities within the Fluvial Hazard Zone Overlay District of the jurisdiction of {community name} meet the requirements of this Ordinance.
- 3) Inspect all permitted activities before, during, and after completion to ensure compliance with all provisions of this Ordinance.
- 4) Maintain for public inspection all records pertaining to the provisions of this Ordinance as listed in Section 4.4.
- 5) Administer and implement this Ordinance by granting or denying Fluvial Hazard Zone Use Permit applications in accordance with the Ordinance's provisions.

### 4.2.3. Appropriate Community Panel

The Appropriate Community Panel (ACP) for this Ordinance will be the {Water Board/Zoning Board of Adjustment (ZBA)/Planning Commission (PC)/Board of County Commissioners (BOCC)/Board of Trustees/City Council}.<sup>7</sup>

The ACP will have the duties and responsibilities as required by {municipal/county} regulations.

## SECTION 4.3. REVIEW PROCEDURES

The Administrative Official will review the Fluvial Hazard Zone Use Permit for compliance with the intent of the standards of this Ordinance. This review must occur at the same time the {community's name} reviews an application for a change of use, preliminary subdivision plat, site plan, construction/building, or on-site wastewater treatment permit approval, as defined in Article II [Definitions] of this Ordinance, whichever review occurs first.

### 4.3.1. Standards for Approval or Denial

Approval or denial of a Fluvial Hazard Zone Use Permit by the Administrative Official will be based on the completeness of application materials as well as the proposal's compliance with the provisions set forth in Article V of this Ordinance.

<sup>6</sup> It is recommended for this position to be the community's existing Floodplain Administrator. To give flexibility to this model code, the Administrative Official, 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>7</sup> It is recommended the ACP be the Board that currently has the responsibility to hear and decide on floodplain development variance requests. The user of this template should ensure that the term "Appropriate Community Panel" is consistent with the terms used in the sections of code that are referenced in Section 4.5 of this document.

## SECTION 4.4. RECORDS

The Administrative Official will properly file and maintain a record of:

1. All Fluvial Hazard Zone maps and map modifications or updates;
2. All permits issued under this Ordinance;
3. All permits applied for under this Ordinance;
4. All certifications, easements, and analysis required under this Ordinance;
5. All decisions of the Administrative Official and all supporting findings of fact, conclusions, and conditions;
6. All decisions of the Administrative Official and all supporting findings of fact, conclusions, and conditions involving a waiver decision;
7. All decisions of the {ACP} and all supporting findings of fact, conclusions, and conditions involving a variance decision;
8. All decisions of the {City Council or Board of County Commissioners} and all supporting findings of fact, conclusions, and conditions involving an appeal decision.

## SECTION 4.5. DISPUTES, WAIVERS, VARIANCES, AND APPEAL PROCEDURES<sup>8</sup>

### 4.5.1. Dispute Procedures

In cases where the Fluvial Hazard Zone boundary is disputed, the landowner(s) of the property will be given a reasonable opportunity to present their case to the Administrative Official. The landowner(s) must submit technical evidence within 30 days of notification to support the dispute. The Administrative Official will not allow deviations from the boundary line as mapped unless technical and geological evidence clearly and conclusively establish that the map location of the line is incorrect or obsolete, or that the designated hazard conditions do not present a significant hazard to public health, safety, or to property at the specific location within the hazard area boundary for the particular proposed land use. A letter of determination, issued by the {community's name}, will either confirm the existing Fluvial Hazard Zone delineation or will result in an update to the Fluvial Hazard Zone delineation for the area in dispute. If a map update is justified, an updated map will be provided with the letter of determination and maintained for the public record.

### 4.5.2. Waiver Procedures

Waivers will be made in accordance with the appeals process in {community name}'s {floodplain development permit or other land use permit application process} {provide reference to the appropriate section of code here}.

### 4.5.3. Variance Procedures

Variations will be made in accordance with the appeals process in {community name}'s {floodplain development permit or other land use permit application process} {provide reference to the appropriate section of code here}.

### 4.5.4. Appeals

Appeals from any decision or act of the Administrative Official in connection with this Ordinance will be made in accordance with the appeals process in {community name}'s {floodplain development permit or other land use permit application process} {provide reference to the appropriate section of code here}.

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<sup>8</sup> It is highly recommended that these procedures match or be integrated into a community's existing waiver, variance, and appeal procedures.



## ARTICLE V – GENERAL DEVELOPMENT STANDARDS

The criteria below are the general standards for development in the delineated Fluvial Hazard Zone. In addition to complying with all other applicable provisions in {community’s floodplain regulations, subdivision regulations, and zoning regulations} development within the Fluvial Hazard Zone must comply with the standards set forth in Article V and with other applicable provisions in this Ordinance. If there is any conflict between any of the following provisions (or any other provision of this Ordinance) and {community’s floodplain regulations, subdivision regulations, and zoning regulations}, the more restrictive provision will prevail. Additional measures, such as the requirement for a Fluvial Hazard Mitigation Plan prepared by a qualified professional, aimed at reducing the risk of fluvial hazards, may be imposed at the discretion of the {community official} for the type of development being proposed.

### SECTION 5.1. LAND AND STREAM ALTERATIONS AND COMPENSATORY MEASURES

- 1) Activities (e.g., fill, cutting from secondary channels/flowpaths) must not reduce the sediment storage volume of lands within the Fluvial Hazard Zone Overlay District. The FHZ permit application must report for the 2-year, 5-year, 10-year, 25-year, 50-year, 100-year, and 500-year water surface elevations the sediment storage volume in the existing condition, the sediment storage volume that is lost due to fill, grading or other actions, and the compensatory sediment storage volume that is being constructed through project activities.

Every project that proposes to alter the sediment storage volume within the project limits must provide compensatory storage if grading (e.g., cut/fill) or other activities (e.g., construction of buildings) reduce the sediment storage volume. Compensatory sediment storage must:

- A. Provide equivalent sediment storage volume at equivalent elevations to that being displaced by the activity. For this purpose, “equivalent elevation” means having similar relationship to the best available 2-year, 5-year, 10-year, 25-year, 50-year, 100-year, and 500-year water surface profiles;
- B. Be within or immediately adjacent to the parcel on which activities are reducing sediment storage volume;
- C. Be hydraulically connected to the source of flooding;
- D. Provide compensatory storage in the same construction season as when the displacement of sediment storage volume occurs;
- E. Not be the result of dams, berms, dikes, or any similar structure that reduces flood conveyance and/or stores water; or facilities that operate with gates or weirs; or structures that require ongoing maintenance;
- F. Be graded and vegetated.

A No Impact Determination is made when the sediment storage volume within the project limit is not reduced or when the compensatory sediment storage volume for the area is greater than or equal to the existing sediment storage volume at the 2-year, 5-year, 10-year, 25-year, 50-year, 100-year, and 500-year water surface elevations, approximated to the nearest five (5) cubic yards, within the Active Stream Corridor.

- 2) No activities may increase the fluid energy delivered to adjacent or downstream parcel(s) within the Fluvial Hazard Zone Overlay District unless all impacted parcels are owned by the project applicant from the time of application to the time that all permits related to the activity are closed out. The FHZ permit application must report the pre-activity and post-activity Energy Grade Line (EGL) elevations at the upstream and downstream project boundaries as well as for all cross-sections within the project limits based on the same hydraulic model that is filed for the Floodplain Development Permit. This model must comply with all methods and requirements set forth in the Technical Standards established by FEMA and {documents required by community name}.

A No Impact determination will be when the post-activity Energy Grade Line is less than or equal to the pre-activity energy grade line at the upstream and downstream activity extent and for all cross-sections within the project limits for the 2-year, 5-year, 10-year, 25-year, 50-year, 100-year, and 500-year water surface elevations; for streams with slopes over 0.5 percent an increase of 1.0\* feet in EGL elevation is considered acceptable and for streams with slopes under 0.5 percent an increase of 0.5\* feet in EGL is considered acceptable.

If a proposed activity will decrease the Energy Grade Line by for streams with slopes over 0.5 percent an increase of 1.0\* feet in EGL elevation is considered acceptable and for streams with slopes under 0.5 percent an increase of 0.5\* feet , a Sediment Capacity Supply Ratio study is required for the stream through the project area and adjacent reaches. The intent of this study will be to determine if the activity will significantly alter sediment deposition on any parcels adjacent or near to the activity location.

An FHZ permit will only be issued for projects that have a No Impact Determination unless a variance is granted.

\*Please contact The CWCB for guidance with these numerical values.

## SECTION 5.2. SITE DESIGN

### 5.2.1. Subdivisions and Multi-Lot Development

All proposals must be consistent with the need to minimize flood risk and flood damage in the proposed development and on adjacent and nearby properties, including critical infrastructure. If a parcel has a buildable site outside the Fluvial Hazard Zone Overlay District, it may not be subdivided to create a new lot, tract, or parcel within a binding site plan that does not have a buildable site outside the Fluvial Hazard Zone. This provision does not apply to lots set aside from development and preserved as open space or parks. The density of development in the portion of the development outside the Fluvial Hazard Zone Overlay District may be increased to compensate for the amount of land in the Fluvial Hazard Zone Overlay District preserved as open space in accordance with {section of the community's zoning code or other development ordinance that allows PUDs and/or transfers of development rights}.

In the Fluvial Hazard Zone Overlay District, if a zoning change is approved, the resulting zoning must not allow a higher overall density of development than the original zoning designation.

The final recorded subdivision plat must include a notice that part of the property is in the Fluvial Hazard Zone Overlay District.

### 5.2.2. Single Lot Site Development

All new development must be designed and located to minimize the impact on flood flows, flood storage, sediment storage, and flood energy.

If a lot does not have a buildable site out of the Fluvial Hazard Zone Overlay District, all new structures, pavement, and other development must be sited in the location that has the least amount of impact on the fluvial processes acting on adjacent properties. This includes locating structures as far from the water body as possible and/or placing structures on the highest natural land on the lot. Additionally, a minimum setback of {50} feet from any and all active channels, drainages, locations in the Active Stream Corridor that are lower than the active channel, and mapped Avulsion Hazard Zones will be required for all structures.

### 5.2.3. Utilities

New utilities including both main and service lines that service new structures or pass through a Fluvial Hazard Overlay District are subject to the following requirements:

- a. Protection of utilities, other than those at crossings, located in the Fluvial Hazard Zone Overlay District from natural stream processes of erosion and deposition will be required to receive a Fluvial Hazard Zone Use Permit and must first seek relocation and avoidance before a permit is issued for protection of the utility with armoring and/or channelization. Easements to ensure the possibility of relocation may be required prior to the issuance of a Fluvial Hazard Zone Use Permit.
- b. Below ground utilities. A scour study is to be submitted to the Administrative Official by the applicant and should be used to determine scour depths and adequate burial depths and distances for all below ground utilities throughout the Fluvial Hazard Zone Overlay District, not just for active channels.
- c. Above ground utilities. All utility poles must be located outside the Fluvial Hazard Zone Overlay District. If not feasible, the applicant must minimize the number of utility poles in the Fluvial Hazard Zone Overlay District. All utility boxes and other similar features must be located outside the Fluvial Hazard Zone Overlay District. If this is not feasible, the applicant must submit a written justification and adaptive management plan to the Administrative Official.

### 5.2.4. Trails, Driveways, and Access Roads

New construction or reconstruction of existing hard surface paths, natural trails, or walkways within the Fluvial Hazard Zone Overlay District must first be located to avoid the need or future need for stream bank armoring and/or channelization. Where this is not practicable, easements to relocate the trail(s) or walkway(s) should be in place at the time of permitting so that, should the path(s) be located in a vulnerable location within the Fluvial Hazard Zone Overlay District and it becomes flood damaged such that armoring and/or channelization would be required to protect/ repair the path(s), it can at that time be relocated.

## SECTION 5.3. CRITICAL FACILITIES

Construction of new critical facilities must be, to the maximum extent possible, located outside the limits of the Fluvial Hazard Zone Overlay District.

## SECTION 5.4. HAZARDOUS MATERIALS

New development will, to the extent possible, pose no risk to public health, public safety, or water quality. Chemicals, explosives, gasoline, propane, buoyant materials, animal wastes, fertilizers, flammable liquids, pollutants, or other materials that are hazardous, toxic, or a threat to water quality are prohibited from the Fluvial Hazard Zone Overlay District. This prohibition does not apply to small quantities of these materials kept for normal household use. This prohibition does not apply to the continued operations of existing facilities and structures, reuse of existing facilities and structures, or functionally dependent facilities or structures.