



## COMMUNITY DEVELOPMENT

### MEMORANDUM

Planning,  
Zoning,

Building Safety,

Construction Inspection Services,

Public Health,

Housing Inspections,

Code Enforcement

**To:** Planning and Zoning Commission  
**From:** Andrew Fangman, Assistant Community Development Director  
**Date:** December 14, 2021  
**Re:** An Ordinance Revising Title 10, Chapter 4 – FP Flood Plain District & Chapter 5 FC Flood Channel (Floodway) District

**INTRODUCTION:** The City's floodplain management regulations must be updated in order for Muscatine residents and businesses to continue to be able to purchase flood insurance through the National Flood Insurance Program.

#### BACKGROUND:

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

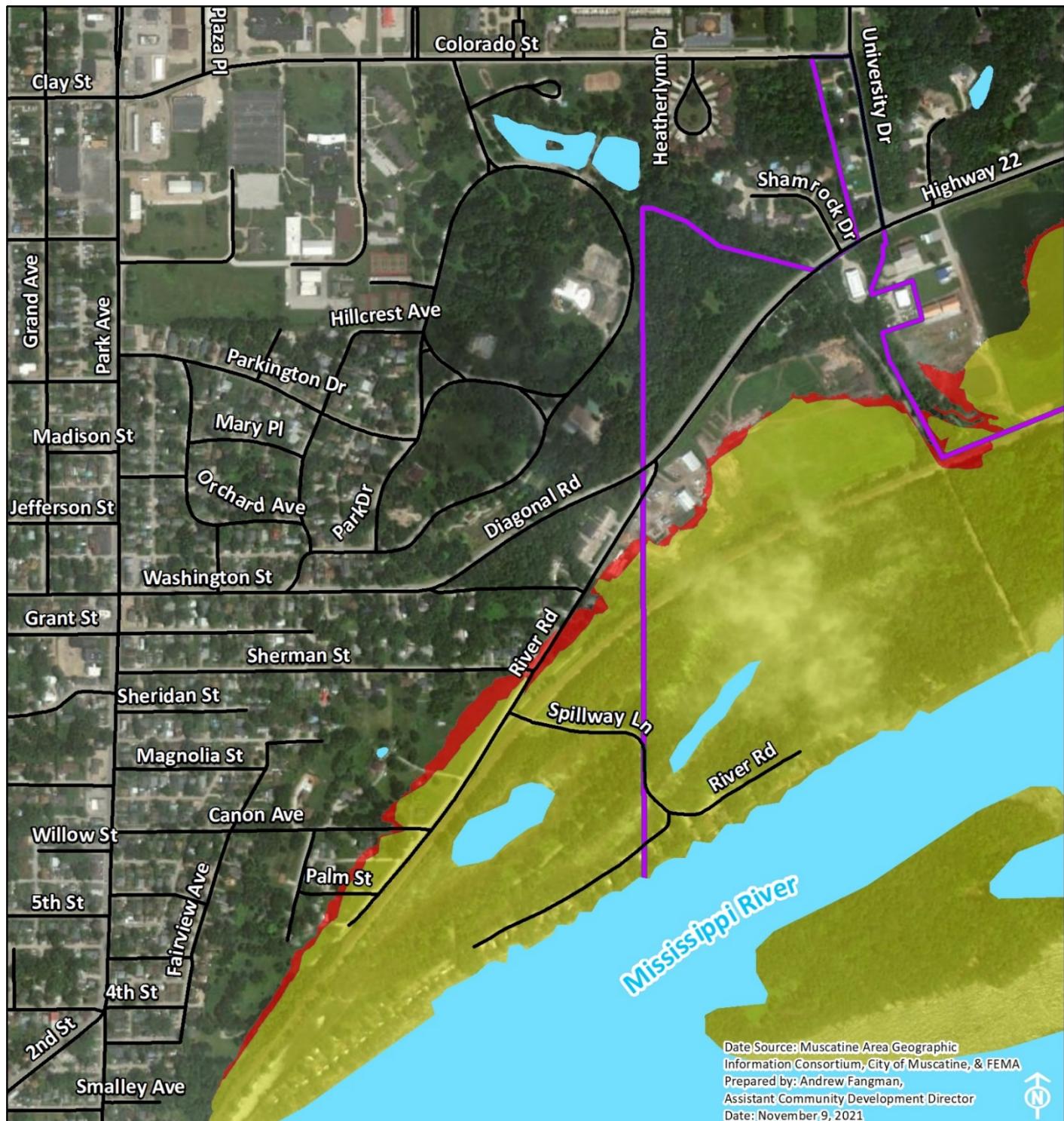
The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60, Criteria for Land Management and Use. The City of Muscatine's current floodplain management regulations can be found in Chapters 4 and 5 of Title 10 of the City Code of Muscatine.

FEMA has prepared revised FIRMs that more accurately depict areas of flood hazard. These maps go into effect on January 28, 2022. In order for City of Muscatine residents and businesses to be able to continue to participate in the National Flood Insurance Program, by January 28<sup>th</sup> these revised FIRMs must be adopted into City Code, as the floodplain and floodway overlay zoning districts. The revision of the FIRMs triggered a review, by of the Iowa Department of Natural Resources (DNR) acting as the designated Iowa agent for FEMA, of the entirety of the City's floodplain regulations, to ensure that they are fully compliant with Title 44 Code of Federal Regulations 60.3 and reflect all changes to federal regulations made since 2019 when the City's flood management regulations were last amended. The attached revised versions of Chapter 4 and Chapter 5 of Title 10 of City Code make all the required changes

The changes to the special flood hazard areas from the forthcoming revisions to the Flood Insurance Rate Map are limited in scope, a small expansion in the vicinity of River Road of the area designated as Zone AE (100-year flood plain, 1% annual chance of flood, with known base flood elevation). Areas designated as Zone AE are part of the Flood Plain Overlay District, and any development within them are subject to the rule of Chapter 4 of Title 10. These rules are intended to ensure that any further development in done in manner that mitigates the risk of damage from flood flooding. The revised FIRMs make are no substantial change to the "regulatory floodway" areas of even higher flood hazard and which comprise the Flood Channel (Floodway) District and are subject the regulations of Chapter 5 of Title 10 in addition to those found in Chapter 4.

The maps of the following page depict how Zone AE will change with the new FIRMs. Areas shown in yellow are in Zone AE in the currently effectives FIRMs, the areas shown in red depict areas that are being added to Zone AE (the Flood Plain Overlay District) by the new FIRMs. The full currently in effect FIRMs for Muscatine can be viewed at this link:  
<https://msc.fema.gov/portal/search?AddressQuery=muscatine%20ia#searchresultsanchor>

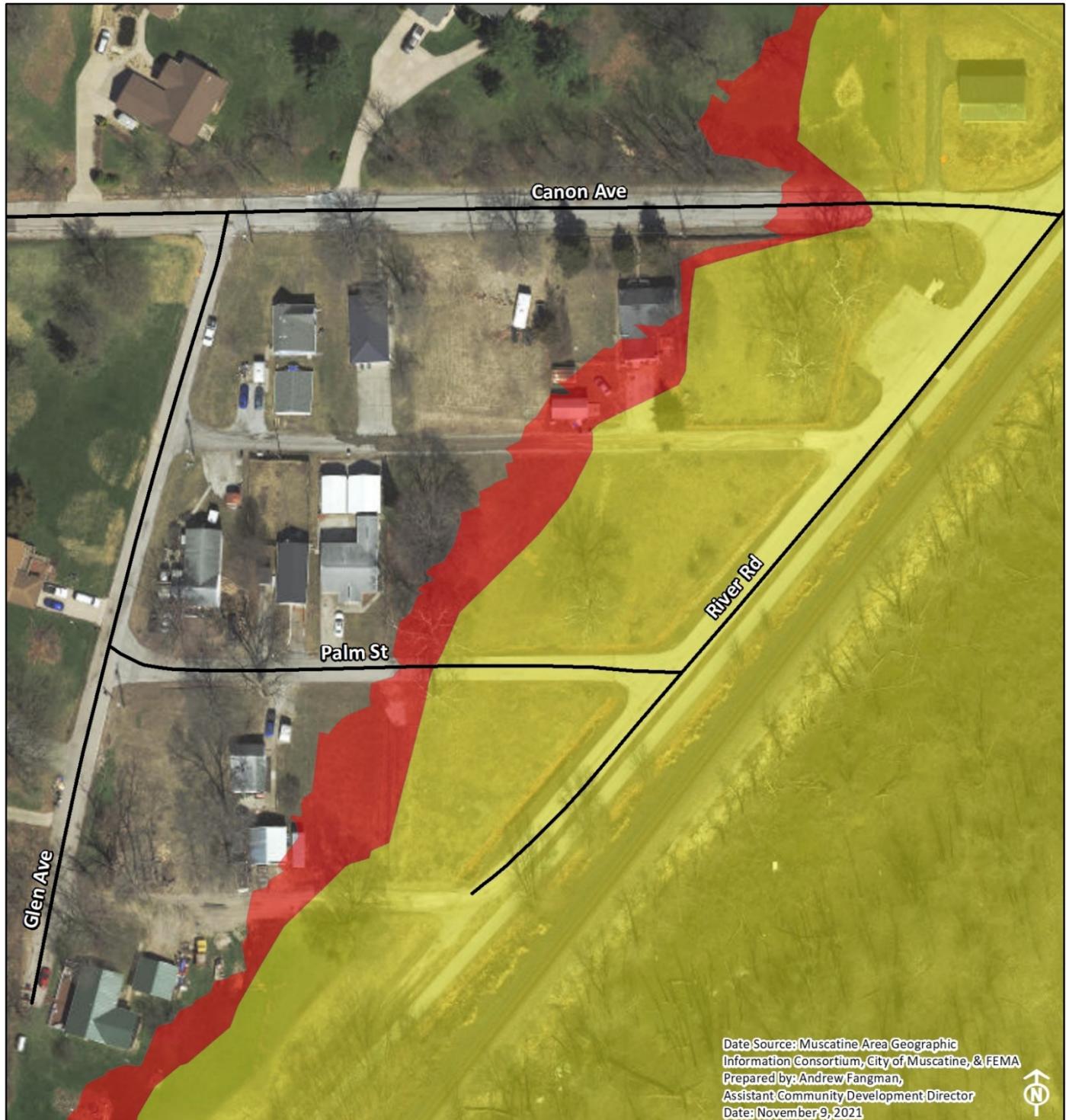


## Changes to Zone AE



- Areas Currently Classified as Zone AE (100-year floodplain, 1% annual chance flood)
- Areas Newly Classified as Zone AE (100-year floodplain, 1% annual chance flood)
- Corporate Limit Line

0 400 800 1,600 Feet



## Changes to Zone AE



- Areas Currently Classified as Zone AE (100-year floodplain, 1% annual chance flood)
- Areas Newly Classified as Zone AE (100-year floodplain, 1% annual chance flood)
- Corporate Limit Line

0 50 100 200 Feet



Date Source: Muscatine Area Geographic  
Information Consortium, City of Muscatine, & FEMA  
Prepared by: Andrew Fangman,  
Assistant Community Development Director  
Date: November 9, 2021

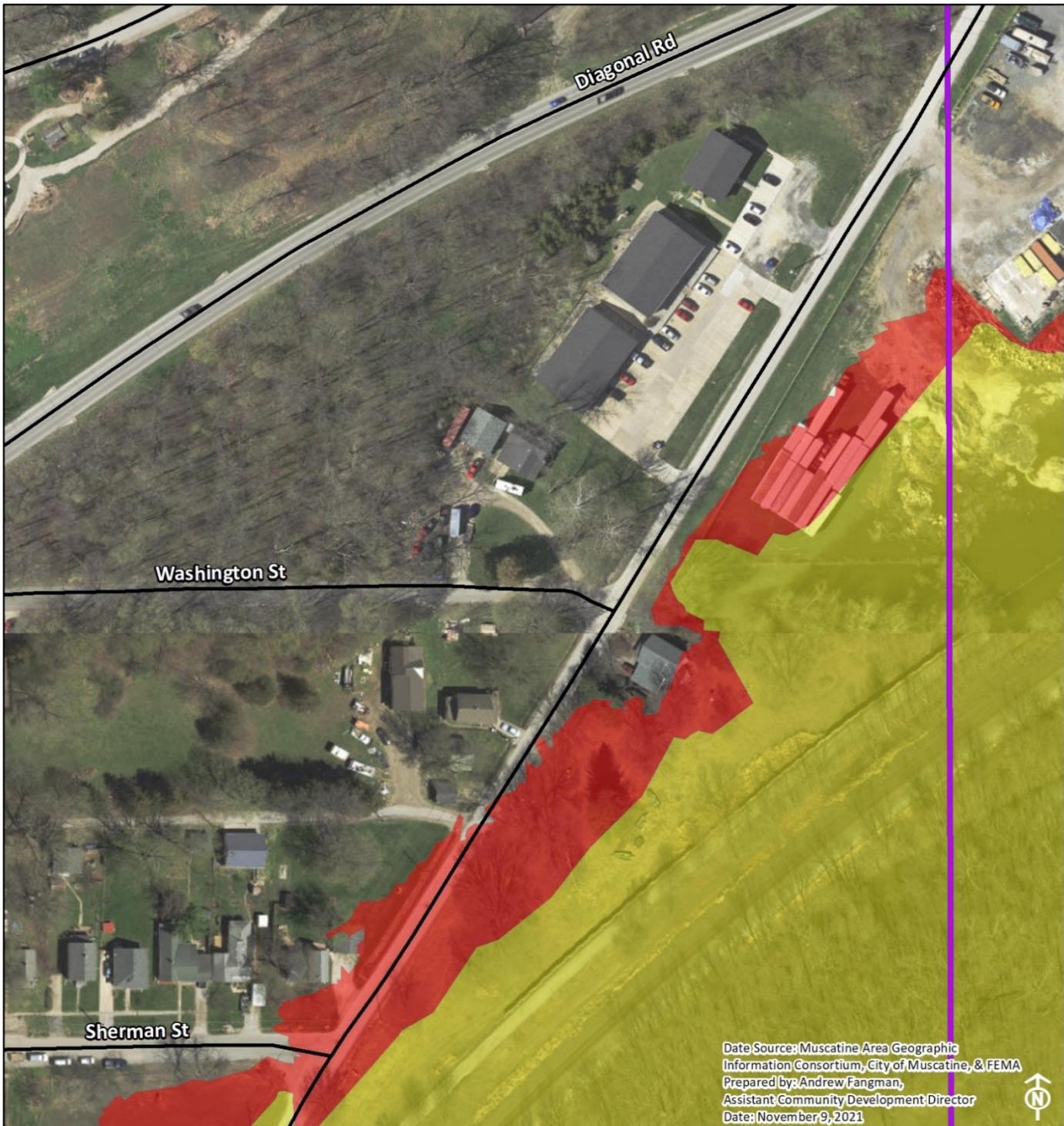


## Changes to Zone AE



- Areas Currently Classified as Zone AE (100-year floodplain, 1% annual chance flood)
- Areas Newly Classified as Zone AE (100-year floodplain, 1% annual chance flood)
- Corporate Limit Line

0 50 100 200 Feet

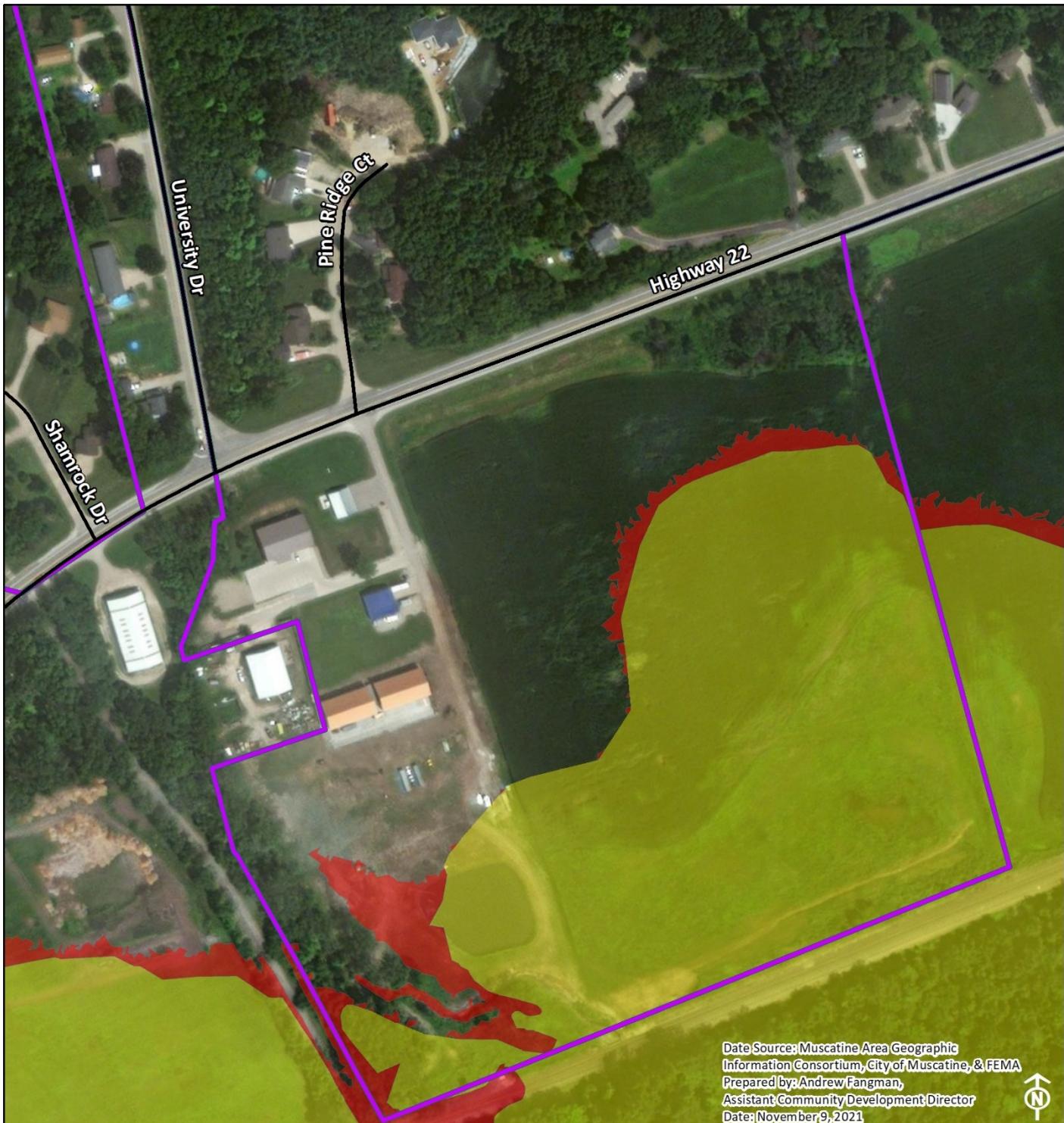


## Changes to Zone AE



- Areas Currently Classified as Zone AE (100-year floodplain, 1% annual chance flood)
- Areas Newly Classified as Zone AE (100-year floodplain, 1% annual chance flood)
- Corporate Limit Line

0 50 100 200 Feet



## Changes to Zone AE



- Areas Currently Classified as Zone AE (100-year floodplain, 1% annual chance flood)
- Areas Newly Classified as Zone AE (100-year floodplain, 1% annual chance flood)
- Corporate Limit Line

0 100 200 400 Feet

## **10-4-2 – General Provisions**

Revise Chapter 10-4-2 to include the following provisions:

- Rules for Interpretation of District Boundaries - The boundaries of the zoning district areas shall be determined by scaling distances on the Official Floodplain Zoning Map. When an interpretation is needed as to the exact location of a boundary, the City Administrator or his/her designee shall make the necessary interpretation. The Board of Adjustment shall hear and decide appeals when it is alleged that there is an error in any requirement, decision, or determination made by the City Administrator or his/her designee in the enforcement or administration of this Chapter.
- Compliance - No structure or land shall hereafter be used and no structure shall be located, extended, converted or structurally altered without full compliance with the terms of this Chapter and other applicable regulations which apply to uses within the jurisdiction of this Chapter.
- Interpretation - In their interpretation and application, the provisions of this Chapter shall be held to be minimum requirements and shall be liberally construed in favor of the governing body and shall not be deemed a limitation or repeal of any other powers granted by State statutes.
- Disclaimer of Liability - The standards required by this Chapter are considered reasonable for regulatory purposes. This Chapter does not imply that areas outside the designated Floodplain (Overlay) District areas will be free from flooding or flood damages. This Chapter shall not create liability on the part of the City of Muscatine or any officer or employee thereof for any flood damages that result from reliance on this Chapter or any administrative decision lawfully made there under.
- Severability - If any section, clause, provision or portion of this Chapter is adjudged unconstitutional or invalid by a court of competent jurisdiction, the remainder of this Chapter shall not be affected thereby.

Revise Subsection 'A' to include the following:

- All other Chapters inconsistent with this Chapter are hereby repealed to the extent of the inconsistency only.

## **10-4-5 – Conditional Uses**

### **10-4-5(C)(1)**

Revise 10-4-5 (C) (1) to read as follows:

- All development shall meet the following standards. Until a regulatory floodway is designated, no development may increase the Base Flood Elevation more than one (1) foot. The applicant will be responsible for providing the Department of Natural Resources with sufficient technical information to make such determination.

### **10-4-5(C)(1)(d)**

Revise 10-4-5 (C) (1) (d) to read as follows:

- All new and substantially improved structures shall be constructed with electric meter, electrical service panel box, hot water heater, heating, air conditioning, ventilation equipment (including ductwork), and other similar machinery and equipment elevated (or in the case of non-residential structures, optionally floodproofed to) a minimum of one (1) foot above the base flood elevation.

**10-4-5(C)(1)(d)**

Delete 10-4-5 (C) (1) (e) and replace with the following:

- All new and substantially improved structures shall be constructed with plumbing, gas lines, water/gas meters and other similar service utilities either elevated (or in the case of non-residential structures, optionally floodproofed to) a minimum of one (1) foot above the base flood elevation or designed to be watertight and withstand inundation to such a level.

Revise 10-4-5 (C) (1) (f) by inserting the following:

- All new residential structures located in areas that would become isolated due to flooding of surrounding ground shall be provided with a means of access that will be passable by wheeled vehicles during the base flood.

Revise 10-4-5 (C) (1) (t) by inserting the following:

- Exemption from the base flood elevation requirements for such a structure may result in increased premium rates for flood insurance coverage of the structure and its contents.

Revise 10-4-5 (C) (3) (b) by inserting with the following:

- Factory-built homes be elevated on a permanent foundation such that the lowest floor of the structure is a minimum of one (1) foot above the base flood elevation.

Delete 10-4-5 (C) (5) (c) and replace with the following:

- Must satisfy the requirements of 10-4-5 (C) (3) (b) regarding anchoring and elevation of factory-built homes

Revise 10-4-5 (C) by inserting the following provisions:

- Pipeline river and stream crossings shall be buried in the streambed and banks, or otherwise sufficiently protected to prevent rupture due to channel degradation and meandering.

Revise 10-4-5 (C) by inserting the following provisions:

- Maximum Damage Potential Development - All new or substantially improved maximum damage potential development shall have the lowest floor (including basement) elevated a minimum of one (1) foot above the elevation of the 500-year flood, or together with attendant utility and sanitary systems, be floodproofed to such a level. When floodproofing is utilized, a professional engineer registered in the State of Iowa shall certify that the floodproofing methods used are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces and other factors associated with

the 0.2% annual chance flood; and that the structure, below the 0.2% annual chance flood elevation is watertight with walls substantially impermeable to the passage of water. A record of the certification indicating the specific elevation (in relation to North American Vertical Datum 1988) to which any structures are floodproofed shall be maintained by the Administrator. Where 0.2% chance flood elevation data has not been provided in the Flood Insurance Study, the Iowa Department of Natural Resources shall be contacted to compute such data. The applicant will be responsible for providing the Department of Natural Resources with sufficient technical information to make such determinations.

#### **10-4-8 Administration**

Revise CH 10-4-8 to include the following provisions:

- Keep a record of all permits, appeals and such other transactions and correspondence pertaining to the administration of this Chapter.
- Review subdivision proposals to ensure such proposals are consistent with the purpose of this Chapter and advise the Board of Adjustment of potential conflict.
- Maintain the accuracy of the community's Flood Insurance Rate Maps when:
  1. Development placed within the Floodway District results in any of the following:
    - a. An increase in the Base Flood Elevations, or
    - b. Alteration to the floodway boundary
  2. Development placed in Zones A, AE, AH, and A1-30 that does not include a designated floodway that will cause a rise of more than one foot in the base elevation; or
  3. Development relocates or alters the channel.
  4. Within 6 months of the completion of the development, the applicant shall submit to FEMA all scientific and technical data necessary for a Letter of Map Revision.
- Perform site inspections to ensure compliance with the standards of this Chapter.
- Forward all requests for Variances to the Board of Adjustment for consideration. Ensure all requests include the information ordinarily submitted with applications as well as any additional information deemed necessary to the Board of Adjustment.

#### **10-4-11 Definitions**

Development – add the following to the current definition:

- “Development” does not include “minor projects” or “routine maintenance of existing buildings and facilities” as defined in this section. It also does not include gardening, plowing, and similar practices that do not involve filling or grading.

Existing Construction – insert the following definition:

- “Any structure for which the “start of construction” commenced before the effective date of the first floodplain management regulations adopted by the community.”

Flood Elevation – delete definition.

- Note: The Flood Insurance Rate Maps should not be used to obtain a Base Flood Elevation (BFE) for a proposed projection. Rather, the stream profiles and/or the Floodway Data Tables found in the Flood Insurance Study shall be used. For proposed projects located in Zone A (those zones without base flood elevations), the applicant or the city shall make a request to the Iowa DNR calculate the BFE.

Flood Insurance Study – revise definition with the following:

- A report published by FEMA for a community issued along with the community's Flood Insurance Rate Map(s). The study contains such background data as the base flood discharge and water surface elevations that were used to prepare the FIRM

Floodway – insert the following definition:

- The channel of a river or stream and those portions of the floodplains adjoining the channel, which are reasonably required to carry and discharge flood waters or flood flows so that confinement of flood flows to the floodway area will not cumulatively increase the water surface elevation of the base flood by more than one (1) foot.

Floodway Fringe – revise definition with the following:

- Those portions of the Special Flood Hazard Area outside the floodway.

Maximum Damage Potential Development – insert the following definition:

- Hospitals and like institutions; buildings or building complexes containing documents, data, or instruments of great public value; buildings or building complexes containing materials dangerous to the public or fuel storage facilities; power installations needed in emergency or other buildings or building complexes similar in nature or use.

New Construction – revise definition with the following:

- New Construction (new buildings, factory-built home parks): Those structures or development for which the start of construction commenced on or after the effective date of the first floodplain management regulations adopted by the community.

Regulatory Floodway – delete definition

Substantial Damage – revise definition with the following:

- Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damage condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred. Volunteer labor and donated materials shall be included in the estimated cost of repair.

Structure – revise definition with the following:

- Anything constructed or erected on the ground or attached to the ground, including, but not limited to, buildings, factories, sheds, cabins, factory-built homes, storage tanks, grain storage facilities and/or other similar uses.

## **Floodway District**

### **10-5-5 Conditional Uses**

Delete 10-5-5 in its entirety and replace with the following:

- A. No development shall be permitted in the Floodway District that would result in any increase in the base flood elevation. Consideration of the effects of any development on flood levels shall be based upon the assumption that an equal degree of development would be allowed for similarly situated lands.
- B. All development within the Floodway District shall:
  1. Be consistent with the need to minimize flood damage.
  2. Use construction methods and practices that will minimize flood damage.
  3. Use construction materials and utility equipment that are resistant to flood damage.
- C. No development shall affect the capacity or conveyance of the channel or floodway of any tributary to the main stream, drainage ditch or any other drainage facility or system.
- D. Structures, buildings, recreational vehicles, and sanitary and utility systems, if permitted, shall meet the applicable performance standards of the Floodway Fringe District and shall be constructed or aligned to present the minimum possible resistance to flood flows.
- E. Structures, if permitted, shall have a low flood damage potential and shall not be for human habitation.
- F. Storage of materials or equipment that are buoyant, flammable, explosive or injurious to human, animal or plant life is prohibited. Storage of other material may be allowed if readily removable from the Floodway District within the time available after flood warning.
- G. Watercourse alterations or relocations (channel changes and modifications) must be designed to maintain the flood carrying capacity within the altered or relocated portion. In addition, such alterations or relocations must be approved by the Department of Natural Resources.
- H. Any fill allowed in the floodway must be shown to have some beneficial purpose and shall be limited to the minimum amount necessary.
- I. Pipeline river or stream crossings shall be buried in the streambed and banks or otherwise sufficiently protected to prevent rupture due to channel degradation and meandering or due to the action of flood flows.

All provisions in 10-4-7, 8, 9, & 10 must also apply to Ch 10-5; the Flood Channel (Floodway) District.

These required changes do no represent a significant change how development in area with a high flood hazard is regulations. Most of these changes provide more detail and clarification on existing regulations and codify administrative procedures in more detail than does current regulations.

**RECOMMENDATION/RATIONALE:** Staff recommends the adoption of the attached revised version Chapter 4 and 5 of Title 10 of City Code. Such action is required for the City of Muscatine to remain compliant with Title 44 Code of Federal Regulations 60.3 and for residents and businesses to remain eligible to participate in the National Flood Insurance Program.

# **Title 10 – Zoning**

## **Chapter 4 – FP Flood Plain District**

### **SECTIONS:**

- 10-4-1 Intent and Purpose
- 10-4-2 District Boundaries
- 10-4-3 General Provisions
- 10-4-4 Permissive Uses
- 10-4-5 Conditional Uses
- 10-4-6 Height, Area, Parking Requirements
- 10-4-7 Flood Control Manual
- 10-4-8 Administration
- 10-4-9 Variances
- 10-4-10 Hearings and Decisions of the Board of Adjustment
- 10-4-11 Definitions

### **10-4-1 Intent and Purpose**

- A. The Legislature of the State of Iowa has in Chapter 414, Code of Iowa, as amended, delegated the power to cities to enact zoning regulations to secure safety from flood and to promote health and the general welfare.
- B. It is the purpose of the Flood Plain District to apply special regulations to the use of land in those areas of the City which are subject to predictable inundations at frequent intervals and to assure that flood carrying capacity within the altered or relocated portion of any watercourse is maintained. Such land use controls are necessary to qualify property owners for flood insurance under the National Flood Insurance Act of 1968 (as amended).
- C. The regulations, while permitting reasonable economic and social use of such properties, will help protect health, safety, and general welfare and reduce financial burdens imposed on the community, governmental units, and its individuals caused by frequent and periodic floods and the overflow of lands.

### **10-4-2 District Boundaries**

- A. The boundaries of the Flood Plain District are hereby established as the areas classified as “Zone AE or Zone A” on the Flood Insurance Rate Map (FIRM) for Muscatine County and Incorporated Areas, City of Muscatine, Panels 19139C0169D, 175D, 187D, 188D, 189D, 193D, 281D, 282D, and 301D, dated April 16, 2014; Panels 19139C0183D, and 191D, dated November 4, 2016; and Panels 19139C0179E, 184E, 185D, 192D, 225D, dated January 28, 2022; which were prepared as part of the Flood Insurance Study for Muscatine County.

- B. These maps hereby adopted by reference and declared to be the Official Floodplain Zoning Map. The flood profiles and all explanatory material contained with the Flood Insurance Study are also declared to be a part of this ordinance.
- C. All lands included in such Flood Plain Districts shall be subject to the terms imposed herein, in addition to the terms imposed by any other zoning use district in which said lands should be located.

**D. Rules for Interpretation of District Boundaries**

The boundaries of the zoning district areas shall be determined by scaling distances on the Official Floodplain Zoning Map. When an interpretation is needed as to the exact location of a boundary, the City Administrator or his/her designee shall make the necessary interpretation. The Board of Adjustment shall hear and decide appeals when it is alleged that there is an error in any requirement, decision, or determination made by the City Administrator or his/her designee in the enforcement or administration of this Chapter.

### **10-4-3 General Provisions**

- A. It is not intended by this Chapter to repeal, abrogate or impair any existing easements, covenants, or deed restrictions. However, where this Chapter imposes greater restrictions, the provision of this Chapter shall prevail.
- B. All activities in this district shall obtain all necessary permits required by Federal or State law (including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334).
- C. No use shall affect the capacity or conveyance of the channel or floodway of any tributary to the main stream, drainage ditch or any other drainage facility or system.

**D. Responsibility for Studies**

- 1. Where topographic data, engineering studies, or other studies are needed by the appropriate City agency and/or Iowa Department of Natural Resources to determine the effects of flooding on a structure and/or the effects of the structure on the flow of water, the applicant shall submit such data or studies. All such data shall be prepared by technically qualified persons. All such data shall be maintained by the City of Muscatine.
- 2. Any development which involves placement of structures, factory-built homes, fill or other obstructions, storage of materials or equipment, excavation or alteration of a watercourse located in Zone A floodplains (without Base Flood Elevations or delineated floodways) shall be reviewed by the Department of Natural Resources to determine (i) whether the land involved is either wholly or partly within the floodway or floodway fringe and (ii) the base flood elevation. The applicant shall be responsible for providing the Department of Natural Resources with sufficient technical information to make the determination.

3. Review by the Iowa Department of Natural Resources is not required for the proposed construction of new or replacement bridges or culverts where:
  - a. The bridge or culvert is located on a stream that drains less than two (2) square miles, and
  - b. The bridge or culvert is not associated with a channel modification that constitutes a channel change as specified in 567-71.2(2), Iowa Administrative Code.
4. All development, or portions thereof, to be located in the floodway fringe as determined by the Department of Natural Resources shall meet the applicable provisions and standards of Section 10-4-5.

**E. Compliance**

No structure or land shall hereafter be used and no structure shall be located, extended, converted or structurally altered without full compliance with the terms of this Chapter and other applicable regulations which apply to uses within the jurisdiction of this Chapter.

**F. Interpretation**

In their interpretation and application, the provisions of this Chapter shall be held to be minimum requirements and shall be liberally construed in favor of the governing body and shall not be deemed a limitation or repeal of any other powers granted by State statutes.

**G. Disclaimer of Liability**

The standards required by this Chapter are considered reasonable for regulatory purposes. This Chapter does not imply that areas outside the designated Flood Channel (Floodway) District areas will be free from flooding or flood damages. This Chapter shall not create liability on the part of the City of Muscatine or any officer or employee.

## **10-4-4 Permissive Uses**

When the use proposed herein is allowable in a zoning district, the following uses and types of activities are permitted in the district; provided that such uses and types of activities do not entail any man-made changes to improved or unimproved real estate, including but not limited to buildings or other structures (including the placement of factory built buildings), mining, dredging, filling, grading, paving, excavation, or drilling operations.

- A. Agricultural uses such as general farming, pasture, grazing, outdoor plant nurseries, horticulture, viticulture, truck farming, forestry, sod farming and wild crop harvesting.
- B. Open recreational uses such as golf courses, tennis courts, driving ranges, archery ranges, picnic grounds, boat launching ramps, swimming areas, parks, wildlife and nature preserves, game farms, fish hatcheries, shooting preserves, target ranges, trap and skeet ranges, hunting and fishing areas, hiking and horseback riding trails.
- C. Marinas.

- D. Industrial-commercial uses such as loading areas, parking areas, airport landing strips.
- E. For residential districts, area within the Flood Plain District, may be used for computing lot area requirements and may, therefore, be used for yard and park areas.
- F. Storage yard for materials and equipment not subject to removal or major damage by flood waters.

## **10-4-5 Conditional Uses**

- A. Any permissive or conditional use in the Zoning District applicable to the location in question and not identified as a permissive use in Section 10-4-4 is considered a conditional use.
- B. Any man-made change to improved or unimproved real estate located in the Flood Plain District, including but not limited to buildings or other structures (including the placement of factory built buildings), mining, dredging, filling, grading, paving, excavation, or drilling operations, is considered a conditional use.
- C. In addition to complying with the provisions contained within Section 10-22-1 of the City Code, conditional uses in the Flood Plain District must meet the following criteria to be approved:
  1. All development shall meet the following standards. Until a regulatory floodway is designated, no development may increase the Base Flood Elevation more than one (1) foot. The applicant will be responsible for providing the Department of Natural Resources with sufficient technical information to make such determination:
    - a. Be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, designed and/or modified and anchored to prevent flotation, collapse, or lateral movement of the structure.
    - b. Use construction materials and equipment that are resistant to flood damage.
    - c. Use construction methods and practices that shall minimize flood damage.
    - d. All new and substantially improved structures shall be constructed with electric meter, electrical service panel box, hot water heater, heating, air conditioning, ventilation equipment (including ductwork), and other similar machinery and equipment elevated (or in the case on non-residential structures, optionally floodproofed to) a minimum of one (1) foot above the base flood elevation.

- e. All new and substantially improved structures shall be constructed with plumbing, gas lines, water/gas meters and other similar service utilities either elevated (or in the case of non-residential structures, optionally floodproofed to) a minimum of one (1) foot above the base flood elevation or designed to be watertight and withstand inundation to such a level.
- f. Factory-built homes including those placed in existing factory-built home parks or subdivisions shall be elevated on a permanent foundation such that the lowest floor of the structure is a minimum of one foot above the base flood elevation
- g. All new construction or substantial improvements of residential structures located in the flood plain shall have the lowest floor (including basement) elevated one foot above the level of the 100-year flood.
- h. All new residential structures located in areas that would become isolated due to flooding of surrounding ground shall be provided with a means of access that will be passable by wheeled vehicles during the base flood.
- i. All new and substantially improved residential and nonresidential structures with fully enclosed areas below the "lowest floor" (not including basements) that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood waters. Designs for meeting this requirement must either be certified by a registered professional engineer or meet or exceed the following minimum criteria:
  - i. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided.
  - ii. The bottom of all openings shall be no higher than one foot above grade.
  - iii. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.
  - iv. Such areas shall be used solely for parking of vehicles, building access, low damage potential storage.
- j. All new construction or substantial improvements of nonresidential structures located in the Flood Plain District shall have the lowest floor (including basement) elevated one foot above the level of the 100-year flood or together with all attendant utility and sanitary systems be flood

proofed. When floodproofing is utilized, a professional engineer registered in the State of Iowa shall certify that:

- i. The floodproofing methods used are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces and other factors associated with the 100-year flood level; and
- ii. That the structure, below the 100-year flood level is watertight with walls substantially impermeable to the passage of water.
- k. All utility and sanitary facilities shall be flood proofed one foot above the level of the 100-year flood so that any space below the level of the 100-year flood is watertight with walls substantially impermeable to the passage of water with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
- l. On site waste disposal systems shall be located or designed to avoid impairment to the system or contamination from the system during flooding.
- m. All new and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the system as well as the discharge of effluent into flood waters.
- n. Wastewater treatment facilities (other than on-site systems) shall be provided with a level of flood protection equal to or greater than one foot above the 100-year flood elevation.
- o. New or replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.
- p. Water supply treatment facilities shall be provided with a level of protection equal to or greater than one foot above the 100-year flood elevation.
- q. Utilities such as a gas or electrical system shall be located and constructed to minimize or eliminate flood damage to the system and the risk associated with such flood damaged or impaired systems.
- r. All applications for conditional use permits for new or substantially improved structures shall be accompanied by records of elevations and flood proofing levels, and whether or not such structures contain a basement. It shall be the responsibility of the applicant to obtain the appropriate topographic data, engineering studies, or other studies needed by the Zoning Board of Adjustment, the City Administrator or his/her designee, and/or other appropriate agency or official. All such data shall be prepared and certified by a professional engineer or land

surveyor, as appropriate, registered in the State of Iowa and will be maintained by the City Administrator or his/her designee.

- s. All applications for conditional use permits for new or substantially improved structures shall be reviewed by the City Administrator or his/her designee to determine if the site of the proposed improvements is reasonably safe from flooding and that all necessary permits have been received as required by Federal or State law (including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334).
- t. Storage of materials and equipment that are flammable, explosive or injurious to human, animal or plant life is prohibited unless elevated a minimum of one foot above the 100- year flood level. Other material and equipment must either be similarly elevated or (i) not be subject to major flood damage and be anchored to prevent movement due to flood waters or (ii) be readily removable from the area within the time available after flood warning.
- u. Flood control structural works such as levees, flood walls, etc. shall provide, at a minimum, protection from a 100-year flood with a minimum of three feet of design freeboard and shall provide for adequate interior drainage. In addition, structural flood control works shall be approved by the Department of Natural Resources.
- v. Detached garages, sheds, and similar structures that are incidental to a residential use are exempt from the base flood elevation requirements where the following criteria are satisfied. Exemption from the base flood elevation requirements for such a structure may result in increased premium rates for flood insurance coverage of the structure and its contents.
  - i. The structure shall be designed to have low flood damage potential. Its size shall not exceed 600 sq. ft. in size. Those portions of the structure located less than one foot above the Base Flood Elevation must be constructed of flood-resistant materials.
  - ii. The structure shall be used solely for low flood damage potential purposes such as vehicle parking and limited storage. The structure shall not be used for human habitation.
  - iii. The structure shall be constructed and placed on the building site so as to offer minimum resistance to the flow of floodwaters.
  - iv. The structure shall be firmly anchored to resist flotation, collapse and lateral movement.

- v. The structure's service facilities such as electrical and heating equipment shall be elevated or floodproofed to at least one foot above the base flood elevation.
- vi. The structure's walls shall include openings that satisfy the provisions of 10-4-5 (C)(1)(g) of this Ordinance.
- vii. Exemption from the base flood elevation requirements for such a structure may result in increased premium rates for flood insurance coverage of the structure and its contents.
- w. All watercourse alterations or relocations must be designed to maintain the flood carrying capacity within the altered or relocated portion. In addition, the Department of Natural Resources must approve such alterations or relocations.

2. All subdivision proposals and all other proposed new developments located in the Flood Plain District shall be reviewed by the appropriate agency to assure that:
  - a. All such proposals are consistent with the need to minimize flood damage.
  - b. All public utilities and facilities, such as sewer, gas, electrical, and water systems, are located and constructed to minimize or eliminate flood damage.
  - c. Adequate drainage is provided to reduce exposure to flood hazards.
  - d. All such proposals greater than 50 lots or five acres, whichever is lesser, include, within such proposals, base flood elevation data.
  - e. Subdivision proposals intended for residential use shall provide all lots with a means of access which will be passable by wheeled vehicles during the 100-year flood
3. Factory-built home development is considered a conditional use in the Flood Plain District, provided the subject property is appropriately zoned for such use and further provided that such development follows the procedures designed in the Zoning Ordinance for consideration of such use.
  - a. For new factory-built home parks, for expansions to existing factory-built home parks and for existing factory-built home parks where the repair, reconstruction, exceeds 50% of the value of the streets, utilities, and pads before the repair, reconstruction, or improvement has commenced, it is required that:
    - i. Ground anchors for tie downs be provided in accordance with the Mobile Home Manufacturers Association standards.

- ii. The special flood hazard is disclosed to the factory built home and/or lot purchaser or lessee in the purchase contract, deed or lease. Notification of both the 100-year flood elevation and the regulatory flood protection elevation shall be provided.
  - iii. Adequate surface drainage and easy access for a hauler is provided.
  - iv. In the instance of elevation on piers, lots are large enough to permit steps, and steel reinforcement is provided for piers more than six feet high.
  - v. Stands or lots are elevated on compacted fill or piers so that the lowest floor of the home will be one foot above the base flood elevation.
- b. For factory-built homes moving into existing factory-built home parks, where concrete pads for the placement of factory-built homes are in existence and where street and utility connections are in existence, it is required that:
  - i. Ground anchors for tie downs are required in accordance with the Mobile Home Manufacturers Association standards.
  - ii. The special flood hazard is disclosed to the factory built home and/or lot purchaser or lessee in the purchase contract, deed, or lease. Notification of both the base flood elevation and the regulatory flood protection elevation shall be provided.
  - iii. Factory-built homes be elevated on a permanent foundation such that the lowest floor of the structure is a minimum of one (1) foot above the base flood elevation.
  - iv. Factory-built homes be anchored to resist flotation, collapse, or lateral movement. Anchorage systems may include, but are not limited to, use of over-the-top or frame ties to ground anchors as required by the State Building Code

4. All pressurized tanks and other containers storing materials or bulk materials hazardous to the public health, safety, and welfare shall be anchored to prevent lateral movement, collapse, flotation, or buoyancy.

5. Further, requirements for recreational vehicles placed on sites within Zone AE or Zone A on the Flood Insurance Rate Map (FIRM) for Muscatine County and Incorporated Areas, City of Muscatine, Panels 19139C0169D, 175D, 187D, 188D, 189D, 193D, 281D, 282D, and 301D, dated April 16, 2014; Panels 19139C0183D, and 191D, dated November 4, 2016; and Panels 19139C0179E, 184E, 185D,

192D, 225D, dated January 28, 2022; which were prepared as part of the Flood Insurance Study for Muscatine County:

- a. Be on the site for fewer than 180 consecutive days.
- b. Be fully licensed and ready for highway use, or
- c. Must satisfy the requirements of 10-4-5 (C) (3) (b) regarding anchoring and elevation of factory-built homes
- d. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by disconnect type utilities and security devices, and has no permanent attached additions.
6. Pipeline river and stream crossings shall be buried in the streambed and banks, or otherwise sufficiently protected to prevent rupture due to channel degradation and meandering.

## 7. Maximum Damage Potential Development

- a. All new or substantially improved maximum damage potential development shall have the lowest floor (including basement) elevated a minimum of one (1) foot above the elevation of the 500-year flood, or together with attendant utility and sanitary systems, be floodproofed to such a level.
- b. When floodproofing is utilized, a professional engineer registered in the State of Iowa shall certify that the floodproofing methods used are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces and other factors associated with the 0.2% annual chance flood; and that the structure, below the 0.2% annual chance flood elevation is watertight with walls substantially impermeable to the passage of water.
- c. A record of the certification indicating the specific elevation (in relation to North American Vertical Datum 1988) to which any structures are floodproofed shall be maintained by the Administrator.
- d. Where 0.2% chance flood elevation data has not been provided in the Flood Insurance Study, the Iowa Department of Natural Resources shall be contacted to compute such data. The applicant will be responsible for providing the Department of Natural Resources with sufficient technical information to make such determinations.

## 10-4-6 Height, Area, & Parking Requirements

The height, area, and parking requirements must conform to the district on which the Flood Plain District is superimposed.

## **10-4-7 Flood Control Manual**

The 2002 Flood Control Manual for the City of Muscatine, as amended, is hereby adopted by reference. Said Flood Control Manual shall have the same force and effect as though fully set forth herein. Copies of said Flood Control Manual are available in the office of the City Clerk.

## **10-4-8 Administration**

Duties and responsibilities of the City Administrator or his/her designee, specifically relating to this Chapter **and Chapter 5**, shall include, but not necessarily be limited to the following:

- A. Review conditional use permit applications to assure that all necessary permits have been obtained from federal, state and local governmental agencies including approval when required from the Department of Natural Resources for floodplain construction.
- B. Record and maintain a record of (i) the elevation (in relation to North American Vertical Datum 1988) of the lowest floor (including basement) of all new or substantially improved structures or (ii) the elevation to which new or substantially improved structures have been floodproofed.
- C. Notify adjacent communities/counties and the Department of Natural Resources prior to any proposed alteration or relocation of a watercourse and submit evidence of such notifications to the Federal Emergency Management Agency.
- D. Submit to the Federal Insurance Administrator an annual report concerning the City of Muscatine's participation, utilizing the annual report form supplied by the Federal Insurance Administrator.
- E. Notify the Federal Insurance Administration of any annexations or modifications to the City of Muscatine corporate limit.
- F. A conditional use permit issued by the Administrator shall be secured prior to any floodplain development (any man-made change to improved and unimproved real estate, including but not limited to buildings or other structures, mining, filling, grading, paving, excavation or drilling operations), including the placement of factory-built homes
- G. Keep a record of all permits, appeals and such other transactions and correspondence pertaining to the administration of this Chapter.
- H. Review subdivision proposals to ensure such proposals are consistent with the purpose of this Chapter and advise the Board of Adjustment of potential conflict.
- I. Maintain the accuracy of the community's Flood Insurance Rate Maps when:
  - 1. Development placed within the Floodway District results in any of the following:
    - a. An increase in the Base Flood Elevations, or

- b.** Alteration to the floodway boundary
- 2. Development placed in Zones A, AE, AH, and A1-30 that does not include a designated floodway that will cause a rise of more than one foot in the base elevation; or
- 3. Development relocates or alters the channel.
- 4. Within 6 months of the completion of the development, the applicant shall submit to FEMA all scientific and technical data necessary for a Letter of Map Revision.

J. Perform site inspections to ensure compliance with the standards of this Chapter.

K. Forward all requests for Variances to the Board of Adjustment for consideration. Ensure all requests include the information ordinarily submitted with applications as well as any additional information deemed necessary to the Board of Adjustment.

## **10-4-9 Variance**

The Board of Adjustment may authorize upon request in specific cases such variances from the terms of this **Chapter and Chapter 5** that will not be contrary to the public interest where, owing to special conditions, a literal enforcement of the provisions of this Ordinance will result in unnecessary hardship. Variances granted must meet the following applicable standards.

- A. Variances shall only be granted upon: (i) a showing of 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 the variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public or conflict with existing local codes or ordinances.
- B. Variances shall not be issued within any designated floodway if any increase in flood levels during the 100-year flood would result. Consideration of the effects of any development on flood levels shall be based upon the assumption that an equal degree of development would be allowed for similarly situated lands.
- C. Variances shall only be granted upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
- D. In cases where the variance involves a lower level of flood protection for buildings than what is ordinarily required by this Ordinance, the applicant shall be notified in writing over the signature of the Administrator that: (i) the issuance of a variance will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage and (ii) such construction increases risks to life and property.
- E. All variances granted shall have the concurrence or approval of the Department of Natural Resources.

## **10-4-10 Hearings and Decisions of the Board of Adjustment**

### **A. Hearings**

Upon the filing with the Board of Adjustment of an Appeal, an application for a Conditional Use or a request for a Variance, the Board shall hold a public hearing. The Board shall fix a reasonable time for the hearing and give public notice thereof, as well as due notice to parties in interest. At the hearing, any party may appear in person or by agent or attorney and present written or oral evidence. The board may require the appellant or applicant to provide such information as is reasonably deemed necessary and may request the technical assistance and/or evaluation of a professional engineer or other expert person or agency, including the Department of Natural Resources.

### **B. Decisions**

The Board shall arrive at a decision on an Appeal, Conditional Use or Variance within a reasonable time. In passing upon an Appeal, the Board may, so long as such action is in conformity with the provisions of this ordinance, reverse or affirm, wholly or in part, or modify the order, requirement, decision, or determination appealed from, and it shall make its decision, in writing, setting forth the findings of fact and the reasons for its decision. In granting a Conditional Use or Variance, the board shall consider such factors as contained in this section and all other relevant sections of this ordinance and may prescribe such conditions as contained in Section 10-4-10 (B) 2.

#### **1. Factors Upon Which the Decision of the Board of Adjustment Shall be Based**

In passing upon applications for Variances, the Board shall consider all relevant factors specified in other sections of this Ordinance and:

- a.** The danger to life and property due to increased flood heights or velocities caused by encroachments.
- b.** The danger that materials may be swept on to other land or downstream to the injury of others.
- c.** The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination and unsanitary conditions.
- d.** The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner.
- e.** The importance of the services provided by the proposed facility to the City.
- f.** The requirements of the facility for a floodplain location.

- g. The availability of alternative locations not subject to flooding for the proposed use.
- h. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.
- i. The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.
- j. The safety of access to the property in times of flood for ordinary and emergency vehicles.
- k. The expected heights, velocity, duration, rate of rise and sediment transport of the flood water expected at the site.
- l. The cost of providing governmental services during and after flood conditions, including maintenance and repair of public utilities (sewer, gas, electrical and water systems), facilities, streets and bridges.
- m. Such other factors which are relevant to the purpose of this Ordinance.

## **2. Conditions Attached to Variances**

Upon consideration of the factors listed above, the Board of Adjustment may attach such conditions to the granting of variances as it deems necessary to further the purpose of this Ordinance. Such conditions may include, but not necessarily be limited to:

- a. Modification of waste disposal and water supply facilities.
- b. Limitation of periods of use and operation.
- c. Imposition of operational controls, sureties, and deed restrictions.
- d. Requirements for construction of channel modifications, dikes, levees, and other protective measures, provided such are approved by the Department of Natural Resources and are deemed the only practical alternative to achieving the purpose of this Ordinance.
- e. Floodproofing measures shall be designed consistent with the flood protection elevation for the particular area, flood velocities, duration, rate of rise, hydrostatic and hydrodynamic forces, and other factors associated with the regulatory flood. The Board of Adjustment shall

require that the applicant submit a plan or document certified by a registered professional engineer that the floodproofing measures are consistent with the regulatory flood protection elevation and associated flood factors for the particular area.

#### **8. Appeals to the Court**

Any person or persons, jointly or severally, aggrieved by any decision of the Board of Adjustment may present to a court of record a petition, duly verified, setting forth that such decision is illegal, in whole or in part, specifying the grounds of the illegality. Such petition shall be presented to the court within thirty days after the filing of the decision in the office of the Board.

### **10-4-11 Definitions**

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

**Appurtenant Structure** - A structure which is on the same parcel of the property as the principal structure to be insured and the use of which is incidental to the use of the principal structure.

**Base Flood Elevation** - The elevation floodwaters would reach at a particular site during the occurrence of a base flood event.

**Basement** - Any enclosed area of a building which has its floor or lowest level below ground level (subgrade) on all sides. Also see "lowest floor."

**Development** - Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations. "Development" does not include "minor projects" or "routine maintenance of existing buildings and facilities" as defined in this section. It also does not include gardening, plowing, and similar practices that do not involve filling or grading.

**Existing Construction** – Any structure for which the "start of construction" commenced before the effective date of the first floodplain management regulations adopted by the community."

**Existing Factory-Built Home Park or Subdivision** - A factory-built home park or subdivision for which the construction of facilities for servicing the lots on which the factory-built homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before August 25, 1981.

**Expansion of Existing Factory-Built Home Park or Subdivision** - The preparation of additional sites by the construction of facilities for servicing the lots on which the factory-built homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

**Factory-Built Home** - Any structure, designed for residential use, which is wholly or in substantial part, made, fabricated, formed or assembled in manufacturing facilities for installation or assembly and installation, on a building site. For the purpose of this Ordinance factory-built homes include mobile homes, manufactured homes and modular homes and also include park trailers, travel trailers and other similar vehicles placed on a site for greater than 180 consecutive days.

**Factory-Built Home Park** - A parcel or contiguous parcels of land divided into two or more factory-built home lots for rent or sale.

**Flood** - A general and temporary condition of partial or complete inundation of normally dry land areas resulting from the overflow of streams or rivers or from the unusual and rapid runoff of surface waters from any source.

**Flood Insurance Rate Map** - The official map prepared as part of (but published separately from) the Flood Insurance Study which delineates both the flood hazard areas and the risk premium zones applicable to the community.

**Flood Insurance Study** - A report published by FEMA for a community issued along with the community's Flood Insurance Rate Map(s). The study contains such background data as the base flood discharge and water surface elevations that were used to prepare the FIRM.

**Flood Plain** - Any land area susceptible to being inundated by water as a result of a flood.

**Flood Plain Management** - An overall program of corrective and preventive measures for reducing flood damages and promoting the wise use of flood plains, including but not limited to emergency preparedness plans, flood control works, floodproofing and flood plain management regulations.

**Floodproofing** - Any combination of structural and nonstructural additions, changes, or adjustments to structures, including utility and sanitary facilities, which will reduce or eliminate flood damage to such structures.

**Floodway** - The channel of a river or stream and those portions of the floodplains adjoining the channel, which are reasonably required to carry and discharge flood waters or flood flows so that confinement of flood flows to the floodway area will not cumulatively increase the water surface elevation of the base flood by more than one (1) foot.

**Floodway Fringe** - Those portions of the Special Flood Hazard Area outside the floodway.

**Highest Adjacent Grade** - The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

**Historic Structure** - Any structure that is:

- A. Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;

- B. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
- C. Individually listed on a State Inventory of Historic Places in states with historic preservation programs which have been approved by the Secretary of the Interior; or
- D. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:
  - 1. By an approved state program as determined by the Secretary of Interior, or
  - 2. Directly by the Secretary of Interior in states without approved programs.

**Lowest Floor** - The floor of the lowest enclosed area in a building including a basement except when all the following criteria are met:

- A. The enclosed area is designed to flood to equalize hydrostatic pressure during floods with walls or openings that satisfy the provisions of Section 10-4-5(C)1(d), and
- B. The enclosed area is unfinished (not carpeted, drywalled, etc.) and used solely for low damage potential uses such as building access, parking or storage, and
- C. Machinery and service facilities (e.g., hot water heater, furnace, electrical service) contained in the enclosed area are located at least one foot above the 100-year flood level, and
- D. The enclosed area is not a "basement" as defined in this section.

In cases where the lowest enclosed area satisfies criteria A, B, C, and D above, the lowest floor is the floor of the next highest enclosed area that does not satisfy the criteria above.

**Maximum Damage Potential Development** – Hospitals and like institutions; buildings or building complexes containing documents, data, or instruments of great public value; buildings or building complexes containing materials dangerous to the public or fuel storage facilities; power installations needed in emergency or other buildings or building complexes similar in nature or use.

**Minor Project** – Small development activities (except for, filling, grading, and excavating) valued at less than \$500.

**New Construction:** Those structures or development for which the start of construction commenced on or after the effective date of the first floodplain management regulations adopted by the community.

**New Factory-Built Home Park or Subdivision** - A factory-built home park or subdivision for which the construction of facilities for servicing the lots on which the factory-built homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of first floodplain management regulations adopted by the community.

**100-Year Flood** - A flood, the magnitude of which has a one percent chance of being equaled or exceeded in any given year or which, on the average, will be equaled or exceeded at least once every 100 years.

**Recreational Vehicle** - A vehicle which is:

- A. Built on a single chassis;
- B. 400 square feet or less when measured at the largest horizontal projection;
- C. Designed to be self-propelled or permanently towable by a light duty truck; and
- D. Designed primarily not for use of a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

**Routine Maintenance of Existing Buildings and Facilities** - Repairs necessary to keep a structure in a safe and habitable condition that do not trigger a building permit, provided they are not associated with a general improvement of the structure or repair of a damaged structure. Such repairs include:

- A. Normal maintenance of structures such as re-roofing, replacing roofing tiles and replacing siding;
- B. Exterior and interior painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work;
- C. Basement sealing;
- D. Repairing or replacing damaged or broken window panes;
- E. Repairing plumbing systems, electrical systems, heating or air conditioning systems and repairing wells or septic systems.

**Substantial Damage** - Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damage condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred. Volunteer labor and donated materials shall be included in the estimated cost of repair.

**Special Flood Hazard Area** - The land subject to the "100-year flood". This land is identified as Zone A or AE on the Flood Insurance Rate Map for Muscatine County and Incorporated Areas, City of Muscatine, Panels 19139C0169D, 175D, 187D, 188D, 189D, 193D, 281D, 282D, and 301D, dated April 16, 2014; Panels 19139C0183D, and 191D, dated November 4, 2016; and Panels 19139C0179E, 184E, 185D, 192D, 225D, dated January 28, 2022; which were prepared as part of the Flood Insurance Study for Muscatine County.

**Start of Construction** - Includes substantial improvement, and means the date the development permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement, was within 180 days of the permit date. The actual start means either the first placement or permanent construction of a structure on a site, such as pouring of a slab or footings, the installation of pile, the construction of columns, or any work beyond the stage of excavation; or the placement of a factory-built

home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of the building, whether or not that alteration affects the external dimensions of the building.

**Structure** - Anything constructed or erected on the ground or attached to the ground, including, but not limited to, buildings, factories, sheds, cabins, factory-built homes, storage tanks, grain storage facilities and/or other similar uses.

**Substantial Improvement** - Any reconstruction, rehabilitation, addition, or other improvement of a structure, which satisfies following criteria:

- A. The cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage," regardless of the actual repair work performed.
- B. Any addition which increases the original floor area of a building by 25 percent or more. All additions constructed after August 25, 1981 shall be added to any proposed addition in determining whether the total increase in original floor space would exceed 25 percent

The term does not, however, include either:

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

**Variance** - A grant of relief by a community from the terms of the floodplain management regulations.

**Violation** - The failure of a structure or other development to be fully compliant with the regulations contained in this chapter.

# **Title 10 – Zoning**

## **Chapter 5 – FC Flood Channel (Floodway) District**

### **SECTIONS:**

- 10-5-1 Intent and Purpose
- 10-5-2 District Boundaries
- 10-5-3 General Provisions
- 10-5-4 Permissive Uses
- 10-5-5 Conditional Uses
- 10-5-6 Responsibility for Studies

### **10-5-1 Intent and Purpose**

1. The Legislature of the State of Iowa has in Chapter 414, Code of Iowa, as amended, delegated the power to cities to enact zoning regulations to secure safety from flood and to promote health and the general welfare.
2. It is the purpose of the Flood Channel (Floodway) District to apply special regulations to the use of land in those areas of the City which are subject to predictable inundation and flow of flood waters such that the floodway efficiency will not be affected, or its capacity restricted. Such land use controls are necessary to qualify property owners for flood insurance under the National Flood Insurance Act of 1968 (as amended). The regulations, while permitting reasonable economic and social use of such properties, will help protect the public health, safety, and general welfare and reduce financial burdens imposed on the community, governmental units, and its individuals caused by frequent and periodic floods and the overflow of lands.
3. The standards required by this Chapter are considered reasonable for regulatory purposes. This Chapter does not imply that areas outside the designated Floodway District areas will be free from flooding or flood damages. This Chapter shall not create liability on the part of the City of Muscatine or any officer or employee thereof for any flood damages that result from reliance on this Chapter or any administrative decision lawfully made there under.

### **10-5-2 District Boundaries.**

The boundaries of the Flood Channel (Floodway) District are here by established as the areas shown as “Regulatory Floodway ” as shown on the Flood Insurance Rate Map (FIRM) for Muscatine County and Incorporated Areas, City of Muscatine, Panels 19139C0169D, 175D, 187D, 188D, 189D, 193D, 281D, 282D, and 301D, dated April 16, 2014; Panels 19139C0183D, and 191D, dated November 4, 2016; and Panels 19139C0179E, 184E, 185D, 192D, 225D, dated January 28, 2022; which were prepared as part of the Flood Insurance Study for Muscatine

County. These maps hereby adopted by reference and declared to be the Official Floodplain Zoning Map. The flood profiles and all explanatory material contained with the Flood Insurance Study are also declared to be a part of this ordinance.

All lands included in such Flood Channel (Floodway) District shall be subject to the terms imposed herein.

### **10-5-3 General Provisions**

**A.** It is not intended by this Chapter to repeal, abrogate or impair any existing easements, covenants, or deed restrictions. However, where this Chapter imposes greater restrictions, the provision of this Chapter shall prevail.

**B.** All activities in this district shall obtain all necessary permits as required by Federal or State law (including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334).

**C.** No use shall affect the capacity or conveyance of the channel or floodway of any tributary to the main stream, drainage ditch or any other drainage facility or system.

**D. Rules for Interpretation of District Boundaries**

The boundaries of the zoning district areas shall be determined by scaling distances on the Official Floodplain Zoning Map. When an interpretation is needed as to the exact location of a boundary, the City Administrator or his/her designee shall make the necessary interpretation. The Board of Adjustment shall hear and decide appeals when it is alleged that there is an error in any requirement, decision, or determination made by the City Administrator or his/her designee in the enforcement or administration of this Chapter.

**E. Responsibility for Studies**

1. Where topographic data, engineering studies, or other studies are needed by the appropriate City agency and/or Iowa Department of Natural Resources to determine the effects of flooding on a structure and/or the effects of the structure on the flow of water, the applicant shall submit such data or studies. All such data shall be prepared by technically qualified persons. All such data shall be maintained by the City of Muscatine.

2. Any development which involves placement of structures, factory-built homes, fill or other obstructions, storage of materials or equipment, excavation or alteration of a watercourse located in Zone A floodplains (without Base Flood Elevations or delineated floodways) shall be reviewed by the Department of Natural Resources to determine (i) whether the land involved is either wholly or partly within the floodway or floodway fringe and (ii) the base flood elevation. The applicant shall be responsible for providing the Department of Natural Resources with sufficient technical information to make the determination.

3. Review by the Iowa Department of Natural Resources is not required for the proposed construction of new or replacement bridges or culverts where:

1. The bridge or culvert is located on a stream that drains less than two (2) square miles, and
2. The bridge or culvert is not associated with a channel modification that constitutes a channel change as specified in 567-71.2(2), Iowa Administrative Code.
4. All development, or portions thereof, to be located in the floodway as determined by the Department of Natural Resources shall meet the applicable provisions and standards of Section 10-5-5.

**F. Compliance**

No structure or land shall hereafter be used and no structure shall be located, extended, converted or structurally altered without full compliance with the terms of this Chapter and other applicable regulations which apply to uses within the jurisdiction of this Chapter.

**G. Interpretation**

In their interpretation and application, the provisions of this Chapter shall be held to be minimum requirements and shall be liberally construed in favor of the governing body and shall not be deemed a limitation or repeal of any other powers granted by State statutes.

**H. Disclaimer of Liability**

The standards required by this Chapter are considered reasonable for regulatory purposes. This Chapter does not imply that areas outside the designated Flood Channel (Floodway) District areas will be free from flooding or flood damages. This Chapter shall not create liability on the part of the City of Muscatine or any officer or employee thereof for any flood damages that result from reliance on this Chapter or any administrative decision lawfully made there under.

**I. Severability**

If any section, clause, provision or portion of this Chapter is adjudged unconstitutional or invalid by a court of competent jurisdiction, the remainder of this Chapter shall not be affected thereby.

## **10-5-4 Permissive Uses**

The following open space uses shall be permitted within the Flood Channel (Floodway) District to the extent that they are not prohibited by any other ordinance and provided that they do not require structures, placement of factory built buildings, fill, other obstructions, excavation, alteration of a watercourse, or storage of materials or equipment unless as otherwise provided by this Ordinance.

- A. Agricultural uses such as general farming, pasture, grazing, outdoor plant nurseries, horticulture, viticulture, truck farming, forestry, sod farming and wild crop harvesting.
- B. Industrial and commercial uses such as docks, dock piers, boat landings, loading areas, parking areas, and airport landing strips.

- C. Open recreational uses such as golf courses, tennis courts, driving ranges, archery ranges, picnic grounds, boat launching ramps, swimming areas, parks, wildlife and nature preserves, game farms, fish hatcheries, shooting preserves, target ranges, trap and skeet ranges, hunting and fishing areas, hiking and horseback riding trails.
- D. Open space, nonstructural uses such as lawns, gardens, parking areas, and play areas.
- E. For residential districts, area within the Flood Channel (Floodway), may be used for computing lot area requirements.
- F. Other water-oriented uses such as dams, power plants, underground pipelines, canals, drainage ditches, and bridges, provided such uses shall be approved by the Iowa Department of Natural Resources and meet other applicable Federal, State, and local regulations (including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334).

## 10-5-5 Conditional Uses

- A. Any permissive or conditional use in the Zoning District applicable to the location in question and not identified as a permissive use in Section 10-5-4 is considered a conditional use.
- B. Any man-made change to improved or unimproved real estate located in the Flood Plain District, including but not limited to buildings or other structures (including the placement of factory built buildings), mining, dredging, filling, grading, paving, excavation, or drilling operations, is considered a conditional use.
- C. In addition to complying with the provisions contained within Section 10-22-1 of the City Code, conditional uses in the Floodway District must meet the following criteria to be approved:
  - 1. No development shall be permitted in the Floodway District that would result in any increase in the base flood elevation. Consideration of the effects of any development on flood levels shall be based upon the assumption that an equal degree of development would be allowed for similarly situated lands.
  - 2. All development within the Floodway District shall:

Be consistent with the need to minimize flood damage.

- a. Use construction methods and practices that will minimize flood damage.
- b. Use construction materials and utility equipment that are resistant to flood damage.
- 3. No development shall affect the capacity or conveyance of the channel or floodway of any tributary to the main stream, drainage ditch or any other drainage facility or system.
- 4. Structures, buildings, recreational vehicles, and sanitary and utility systems, if permitted, shall meet the applicable performance standards of the Floodway

Fringe District, Section 10-4-5(C) and shall be constructed or aligned to present the minimum possible resistance to flood flows.

5. Structures, if permitted, shall have a low flood damage potential and shall not be for human habitation.
6. Storage of materials or equipment that are buoyant, flammable, explosive or injurious to human, animal or plant life is prohibited. Storage of other material may be allowed if readily removable from the Floodway District within the time available after flood warning.
7. Watercourse alterations or relocations (channel changes and modifications) must be designed to maintain the flood carrying capacity within the altered or relocated portion. In addition, such alterations or relocations must be approved by the Department of Natural Resources.
8. Any fill allowed in the floodway must be shown to have some beneficial purpose and shall be limited to the minimum amount necessary.
9. Pipeline river or stream crossings shall be buried in the streambed and banks or otherwise sufficiently protected to prevent rupture due to channel degradation and meandering or due to the action of flood flows.

## **10-5-6 Administration**

Duties and responsibilities of the City Administrator or his/her designee, specifically relating to this Chapter, shall include following and the provisions of Sections 10-4-8, 10-4-9 and 10-4-10:

- A. Review conditional use permit applications to assure that all necessary permits have been obtained from federal, state and local governmental agencies including approval when required from the Department of Natural Resources for floodplain construction.
- B. Notify adjacent communities/counties and the Department of Natural Resources prior to any proposed alteration or relocation of a watercourse and submit evidence of such notifications to the Federal Emergency Management Agency.

## **10-5-7 Definitions**

Words or phrases used in this ordinance shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance its most reasonable application, additionally definitions as contained in Section 10-4-11 shall also apply to this Chapter.