City of Fort Collins

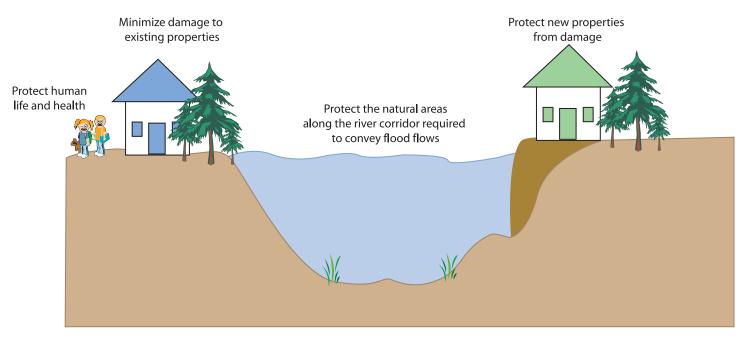
Floodplain Regulations for the **POUDRE RIVER**



Note: This guide was prepared as an educational tool to help explain portions of the floodplain regulations, and is not intended as a complete or detailed explanation of the legal requirements that may apply to a particular property. Article II of Chapter 10 of the *City Code* specifies the requirements and prohibitions that are outlined generally in this guide and is the controlling legal document in the event of any conflict or inconsistency between this guide and the *City Code*. The *Code* provisions can be found at http://www.colocode.com/ftcollins/municipal/chapter10.htm.



Purpose of Floodplain Regulations



Floodplain Facts

- Property in the 100-year floodplain has a 1 percent chance in any given year of being flooded.
- Over a 30-year period, there is a 26 percent chance that a property in the 100-year floodplain will be flooded. For comparison, there is only a 5 percent chance that the building will catch fire during that same 30-year period.
- Some properties have an even higher risk of flooding because they are in areas where smaller, more frequent floods cause damage.

Table of Odds for Different Events

Event	Odds
Structure in the 100-year floodplain being flooded in any given year	1 in 100
Matching one number plus Powerball in the Powerball Lottery	1 in 124
Structure in the 500-year floodplain being flooded in any given year	1 in 500
Annual chance of being killed in a car accident if you drive 10,000 miles/year	1 in 4,000
Being struck by lightning	1 in 600,000
Winning the Powerball Lottery jackpot (matching five numbers and the Powerball)	1 in 120,526,770

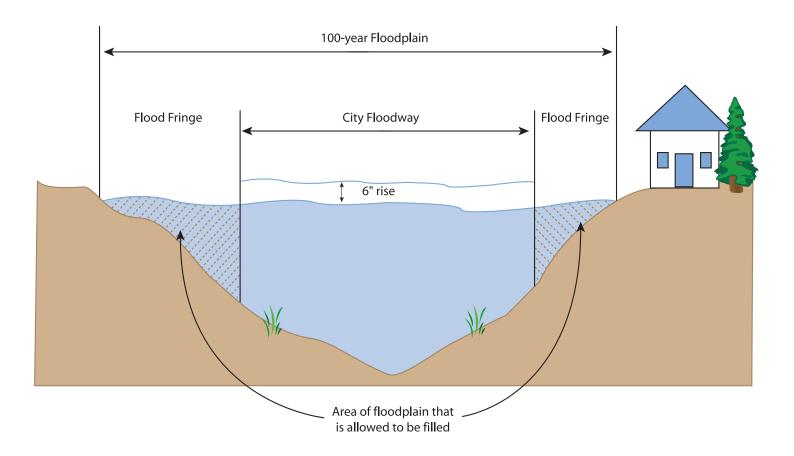
Types of Floodplains

- In Fort Collins, floodplains are designated by the City as well as by the Federal Emergency Management Agency (FEMA).
- The FEMA-basin floodplains cover only the major drainages. Changes in these floodplains must be approved by FEMA (p. 5).
- The City-basin floodplains further identify the flood hazard. Some of the flooding in City-basin floodplains is from irrigation ditch spills or undersized storm sewers that result in overland flooding. Changes in these floodplains can be approved by the City (p. 5).
- For floodplain regulation purposes, a floodplain property is either in a FEMA-basin floodplain, a City-basin floodplain or the Poudre River floodplain.

Floodplain Designations

Floodplain Name	Poudre River	FEMA-Basin	City-Basin
Poudre River	X		
Spring Creek		X	
Dry Creek		X	
Cooper Slough		X	
Boxelder Creek		X	
Fossil Creek			X
Old Town			X
Canal Importation			X
McClellands Creek			X
Mail Creek			X
Foothills Channel			X
West Vine			X

Floodway



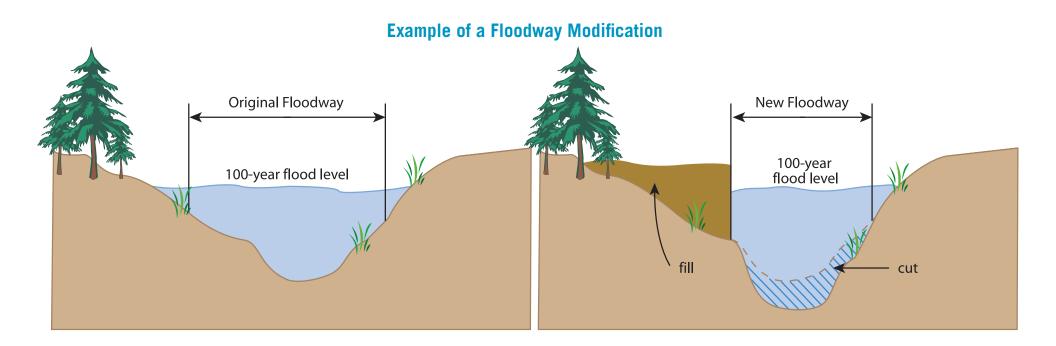
- The floodway is the portion of the floodplain with the greatest depths and velocities.
- The floodway is the area of highest risk.
- The floodway must be preserved to allow the floodwater to pass through without being obstructed.
- Areas along the flood fringe are allowed to be filled and developed, but this raises the 100-year flood level. The City has set an allowable rise of 0.5 feet.

Floodway Modifications

- Floodways can be modified, but the applicant must be able to show that the project casues no-rise in the 100-year flood level.
- In FEMA-basin floodplains, the applicant must submit information to FEMA for approval before construction and after construction if certain changes are being made.

If the applicant's project causes a rise, there are two options:

- 1. In FEMA-basin floodplains, the applicant must show the entire rise is on their property or obtain easements from other property owners. No structures can be impacted by a rise in the flood level.
- 2. In City-basin floodplains, the applicant must show that the entire rise is on their property or obtain easements from other property owners.



Summary of Floodway Development Regulations

Residential Development

New residential development is not allowed.

- Fill is not allowed unless the applicant can show no-rise (Floodway Modifications, p. 5).
- Residential additions are not allowed.
- Remodels are allowed subject to the substantial improvement requirements (p. 14-15).
- Manufactured homes are allowed only in existing manufactured home parks.
- Redevelopment (rebuild) of an existing structure is not allowed.
- Reconstruction of a substantially damaged structure is prohibited
- Detached garages and sheds are not allowed.

Non-Residential Development

- New non-residential development is not allowed.
- Fill is not allowed unless the applicant can show no-rise (Floodway Modifications, p. 5).
- Non-residential additions are not allowed.
- Remodels are allowed subject to the substantial improvement requirements (p. 14-16).
- Mobile buildings (modular offices) are allowed only in existing mobile building developments.
- Redevelopment (rebuild) of an existing structure is not allowed.
- Reconstruction of a substantially damaged structure is prohibited
- Detached garages and sheds are not allowed.

Mixed-Use Development (Residential and Non-Residential in the same building)

- New mixed-use development is not allowed.
- Fill is not allowed unless the applicant can show no-rise (Floodway Modifications, p. 5).
- Additions are not allowed to a mixed-use structure.
- Remodels are allowed subject to the substantial improvement requirements (p. 14-16).

- Redevelopment (rebuild) of an existing structure is not allowed.
- Reconstruction of a substantially damaged structure is prohibited
- Detached garages and sheds are not allowed.

Summary of Floodway Development Regulations (continued)

Residential Development

- Critical facilities are not allowed (See proposed alternatives on p. 18).
- New basements are not allowed below the freeboard level (p. 10). An existing basement in a substantially improved structure is not allowed to remain (p. 10 and 14-15).

Non-Residential Development

- Critical facilities are not allowed (See proposed alternatives on p. 18).
- An emergency response and preparedness plan is required (p. 19).
- New basements are not allowed below the freeboard level (p. 10-11). An existing basement in a substantially improved structure can remain if floodproofed (p. 10-11 and 14-16).

 New outside storage of material or equipment, including flotable materials, is not allowed (p. 21).

Mixed-Use Development (Residential and Non-Residential in the same building)

- Critical facilities are not allowed (See proposed alternatives on p. 18).
- An emergency response and preparedness plan is required (p. 19).
- New basements are not allowed below the freeboard level (p. 10-11). An existing basement in a substantially improved structure is not allowed to remain if it is in residential use (p. 10 and 14-15). An existing basement in a substantially improved structure is allowed to remain if it is in non-residential use and floodproofed (p. 10-11 and 14-16).
- New outside storage of material or equipment, including flotable materials, is not allowed (p. 21).

Summary of Floodplain Fringe Development Regulations

Residential Development

- New residential development is not allowed.
- Fill is allowed.
- Residential additions are not allowed.

- Remodels are allowed subject to the substantial improvement requirements (p. 14-15).
- Manufactured homes are allowed only to replace an existing manufactured home or fill a vacant lot in an existing manufactured home park.
- Redevelopment (rebuild) of an existing structure is allowed (p. 14-15). Must meet the freeboard requirements (p. 10).
- Attached garages are not allowed. Detached garages and sheds are allowed (p. 17).
- Critical facilities are not allowed (See proposed alternatives on p. 18).

Non-Residential Development

- New non-residential development is allowed. Must meet the freeboard requirements (p. 10-11).
- Fill is allowed.
- Non-residential additions are allowed.
 Must meet the freeboard requirements (p. 10-11).
- Remodels are allowed subject to the substantial improvement requirements (p. 14-16).
- Mobile buildings (modular offices) are allowed only to replace an existing mobile building or fill a vacant lot in an existing mobile building development.
- Redevelopment (rebuild) of an existing structure is allowed (p. 14-16). Must meet the freeboard requirements. (p. 10-11).
- Attached garages, detached garages and sheds are allowed (p. 17).
- Critical facilities are not allowed (See proposed alternatives on p. 18).

Mixed-Use Development (Residential and Non-Residential in the same building)

- New mixed-use development is not allowed.
- · Fill is allowed.
- Residential additions are not allowed to a mixed-use structure. Non-residential additions are allowed to a mixed-use structure. Must meet the freeboard requirements (p. 10-11).
- Remodels are allowed subject to the substantial improvement requirements (p. 14-16).

- Redevelopment (rebuild) of an existing structure is allowed (p. 14-16). Must meet the freeboard requirements (p. 10-11).
- Attached garages, detached garages and sheds are allowed (p. 17).
- Critical facilities are not allowed (See proposed alternatives on p. 18).

Summary of Floodplain Fringe Development Regulations (continued)

Residential Development

New basements are not allowed below the freeboard level (p. 10). An existing basement in a redeveloped or substantially improved structure is not allowed to remain (p. 10 and 14-15).

Non-Residential Development

- New outside storage of equipment or materials that are considered "floatable" is not allowed (p. 21).
- New basements are allowed. Must meet freeboard requirements and be floodproofed (p. 10-11). An existing basement below the freeboard level in a redeveloped or substantially improved structure can remain if floodproofed (p. 10-11 and 14-16).

 An emergency response and preparedness plan is required (p. 19).

Mixed-Use Development (Residential and Non-Residential in the same building)

- New outside storage of equipment or materials that are considered "floatable" is not allowed (p. 21).
- New basements are not allowed below the freeboard level for residential portions of mixed-use structures (p. 10). An existing basement in a redeveloped or substantially improved structure is not allowed to remain if it is in residential use (p. 10 and 14-15). New basements are allowed for non-residential portions of mixeduse structures. Must meet freeboard requirements and be floodproofed (p. 10-11). An existing basement in a redeveloped or substantially improved structure is allowed to remain if it is in non-residential use and floodproofed (p. 10-11 and 14-16).
- An emergency response and preparedness plan is required (p. 19).

Summary of 500-Year Floodplain Development Regulations

Residential Development

 At-risk populations and essential services critical facilities are not allowed (p. 18).

Non-Residential Development

 At-risk populations and essential services critical facilities are not allowed (p. 18).

Mixed-Use Development Residential and Non-Residential in the same building)

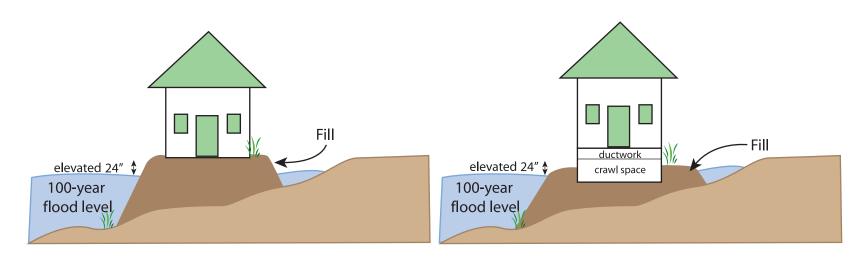
 At-risk populations and essential services critical facilities are not allowed (p. 18).

Freeboard

- Freeboard is a factor of safety that accounts for the allowed rise in flood level due to development in the flood fringe and for larger floods and debris that may cause the flood elevation to be higher.
- Freeboard is a measure of how high above the flood level the structure must be built or floodproofed.

Residential Structures and Residential Portions of Mixed-Use Structures

- Freeboard is 24 inches;
- Must elevate the structure; not allowed to floodproof; and
- The lowest floor of the structure (p. 12-13), including the basement, all HVAC and electrical, must be elevated above the freeboard height.



Slab on grade foundation

Crawl space foundation

Example of redevelopment residential elevation (See p. 12-13 for detailed foundation designs)

Freeboard continued

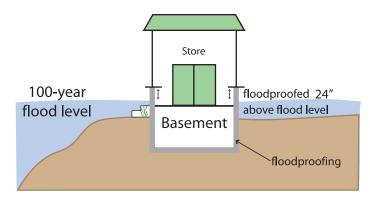
Non-Residential Structures and Non-Residential Portions of Mixed-Use Structures

- Freeboard is 24 inches;
- · Allowed to either elevate or floodproof the structure;
- In the floodway, new basements are not allowed;
- If elevating, the lowest floor of the structure (p. 12-13), including the basement, all HVAC and electrical, must be elevated above the freeboard height; and
- If floodproofing, the structure as well as all HVAC and electrical, must be floodproofed to the freeboard height.

Floodproofing uses various techniques to make a building water tight:

- Sealants and waterproof membranes;
- Closure shields in front of doorways; and
- Mini-walls to protect window or stair wells.

Floodproofing generally works only when flood depths are less than 3 feet.

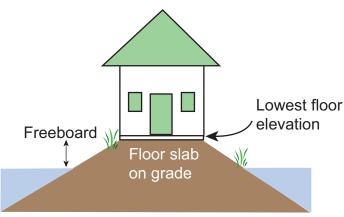


Example of new development non-residential floodproofing

Determination of Lowest Floor Based on Type of Foundation

Slab on Grade

The lowest floor elevation of a slab on grade structure is measured at the top of the slab.



Enclosure (above grade crawl space)

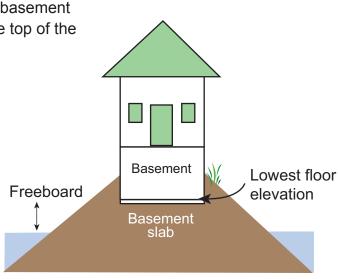
1. The lowest floor elevation of a structure with an enclosure that is built in accordance with the venting criteria (p. 17) is measured at the floor of the first finished floor.

Freeboard

Lowest floor elevation Unfinished area no HVAC

Basement

The lowest floor elevation of a structure with a basement is measured at the top of the basement slab.



2. The lowest floor elevation of a structure with an enclosure that is not built in accordance with the venting criteria (p. 17) is measured at the lowest interior grade of the enclosure.

Can have HVAC in enclosed area

Enclosure

Lowest floor elevation

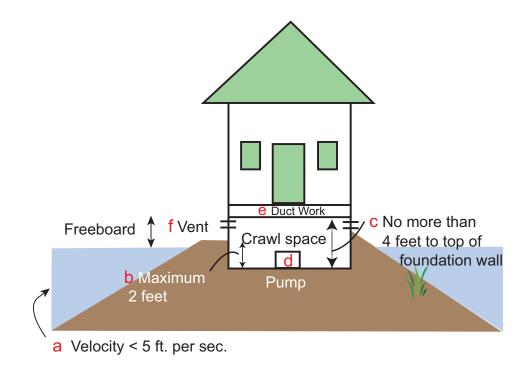
Determination of Lowest Floor Based on Type of Foundation continued

Crawl Space (below grade)

The lowest floor of a structure with a crawl space is measured at the lowest finished floor if the following conditions are met:

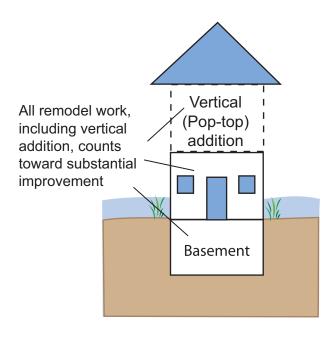
- a. The velocity of the flood flows hitting the structure is less that 5 feet per second;
- The interior grade elevation that is below the flood elevation is no lower than 2 feet below the lowest adjacent grade;
- The height of the crawl space, as measured from the lowest interior grade of the crawl space to the top of the foundation wall, does not exceed 4 feet at any point;
- d. An adequate drainage system is in place, including a totally immersible pump;
- e. All ductwork, HVAC, hot water heater and electrical is elevated to the regulatory flood protection elevation; and
- f. Venting requirements (p. 17) are met.

If the above conditions are not met, the lowest floor is determined based on the criteria for a basement (p. 12).



Remodels or Repair of Damaged Buildings

- Remodels and repairs are allowed subject to the substantial improvement requirements (p. 15-16).
- Vertical additions (pop-tops) are considered a remodel and are subject to the substantial improvement requirements (p. 15-16).



Substantial Improvement and Redevelopment

Substantial improvement occurs when **all** of the following conditions are met:

- 1. A building permit is requested for any repair, reconstruction or improvement to a non-conforming structure, involving alteration of any wall, ceiling, floor or other structural part of the building;
- 2. The cost of the improvement, or the amount of damage, equals or exceeds 50 percent of the market value of the structure either before the improvement or repair is started or before the building was damaged; and
- 3. The cost is calculated cumulatively over the life of the structure during the time the structure has been located in a designated floodplain.

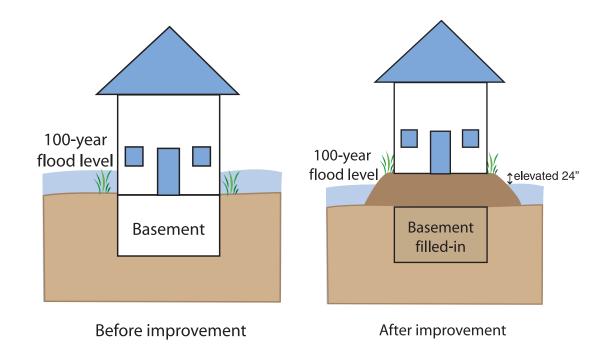
A substantial improvement policy ensures that non-conforming structures are brought into conformance over time and are therefore protected from flood damage and the risk to occupants is reduced.

Redevelopment occurs when there is a substantial improvement **and** more than 50 percent of the wall perimeter of any floor of a structure that is partially or completely below the flood elevation is removed or replaced and the building footprint is not increased.

Residential Structures and Residential Portions of Mixed-Use Structures

If a *substantial improvement* occurs, the lowest floor (*p. 12-13*) of a non-conforming structure, including the basement, and all HVAC, electrical and utilities, must be elevated 24 inches above the flood elevation. After improvements, the structure will be protected from flood damage.

If a **redevelopment** occurs, the lowest floor (p. 12-13) of a non-conforming structure, including the basement, all HVAC, electrical and utilities, must be elevated 24 inches above the flood elevation. After improvements, the structure will be protected from flood damage.



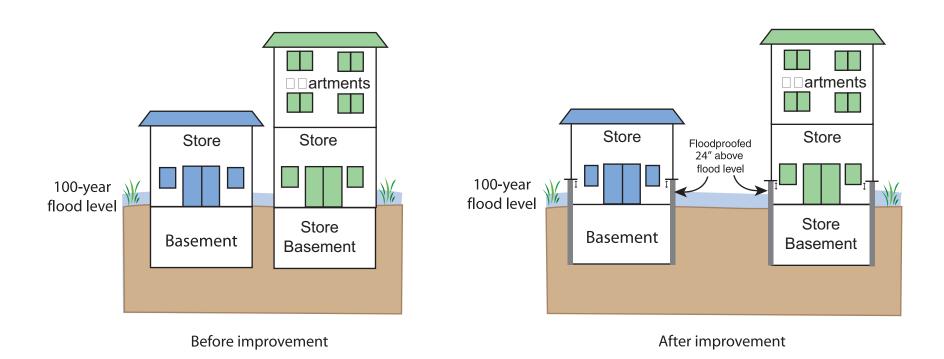
Example of residential substantial improvement or redevelopment

Substantial Improvement and Redevelopment continued

Non-Residential Structures and Non-Residential Portion of Mixed-Use Structures

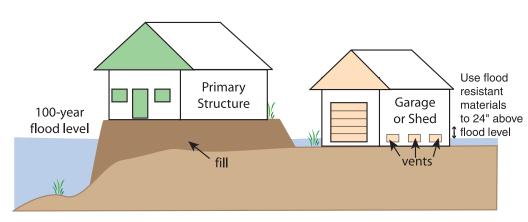
If a **substantial improvement** occurs, the lowest floor (p. 12-13) of a non-conforming structure, including the basement and all HVAC and electrical, must be elevated or floodproofed 24 inches above the flood elevation. After improvements, the structure will be protected from flood damage.

If a **redevelopment** occurs, the lowest floor (p. 12-13) of a non-conforming structure, including the basement and all HVAC and electrical, must be elevated or floodproofed 24 inches above the flood elevation. After improvements, the structure will be protected from flood damage.

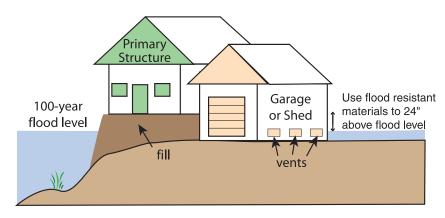


Example of non-residential and mixed-use substantial improvements or redevelopments

Garages, Sheds and Accessory Structures



Example of detached structure



Example of attached structure

- · Used only for parking or storage;
- Is an accessory to a main structure;
- Must be anchored to resist flotation;
- All HVAC and electrical must be elevated to the freeboard level (p. 10-11);
- Can either elevate to freeboard level (p. 10-11) or be built at grade; and
- If not elevated to freeboard level, the garage or shed must meet the following requirements:
 - Must have 1 square inch of venting for every square foot of enclosed area;
 - Must have at least two vents located on different sides of the structure;
 - Have at least one vent on the upstream side of the structure;
 - Bottom of vents cannot be higher than 1 foot above grade; and
 - Flood resistant materials must be used below the freeboard level (p. 10-11).

Venting Calculation Example

600 square foot shed 600 square inches of venting required

Vent size: 12" x 10" = 120 sq. inches per vent

600 divided by 120 = 5 vents

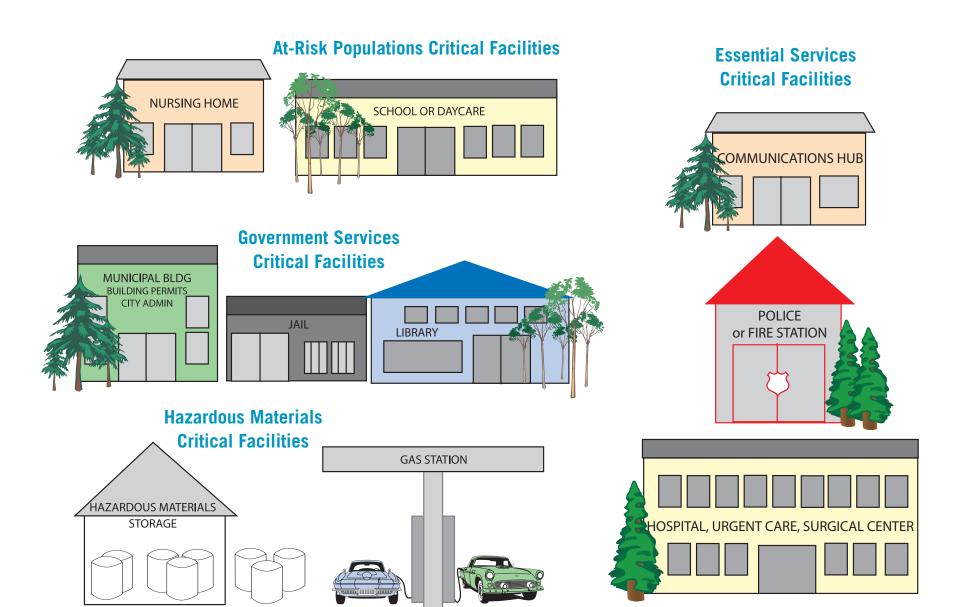
Critical Facilities

100-year floodplain:

• All Critical Facilities not allowed in the 100-year floodplain.

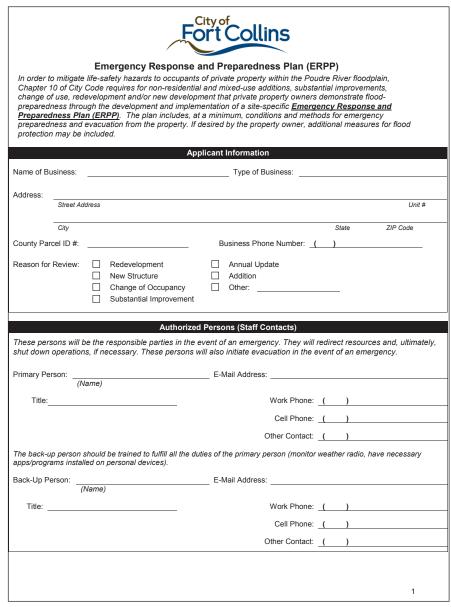
500-year floodplain:

 At-risk Populations and Essential Services Critical Facilities are not allowed in the 500-year floodplain.



Emergency Response and Preparedness Plan

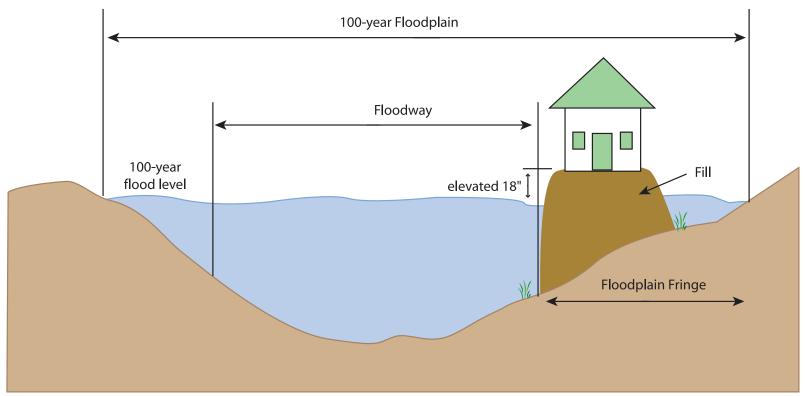
- Required for new non-residential or mixed-use structure, addition, cumulative substantial improvement, redevelopment or change of occupancy
- The following must be included in the plan:
 - Flood Risk Assessment
 - Method of receiving a flood warning
 - Identification and assignment of personnel to implement the plan
 - Procedures for notifying employees, customers and other building occupants
 - Description of procedures for evacuation and shelter-in-place
 - Procedures for protecting the building from damage or hazardous conditions
 - Process for distribution of the plan, evacuation routes and shelter-in-place instructions
 - Description of mandatory training and practice drills
 - Description of post-recovery measures
 - Designation of responsible party
- Plan and documentation of training and drills to remain on file
- The plan must be reviewed in the first quarter of every year and documentation submitted to the City



Sample: page 1 of Emergency Response and Preparedness Plan

Letter of Map Revision Based on Fill

- A Letter of Map Revision Based on Fill (LOMR-Fill) is a FEMA process whereby a property in the flood fringe can be filled and is no longer considered in the floodplain for insurance requirements.
- A community must sign-off on the application to FEMA and certify that all existing and future structures will be "reasonably safe from flooding."
- To meet this "reasonably safe from flooding" standard, all floodplain requirements (p. 8-9) must be met even if fill is placed and the property is "removed" from the floodplain by FEMA.



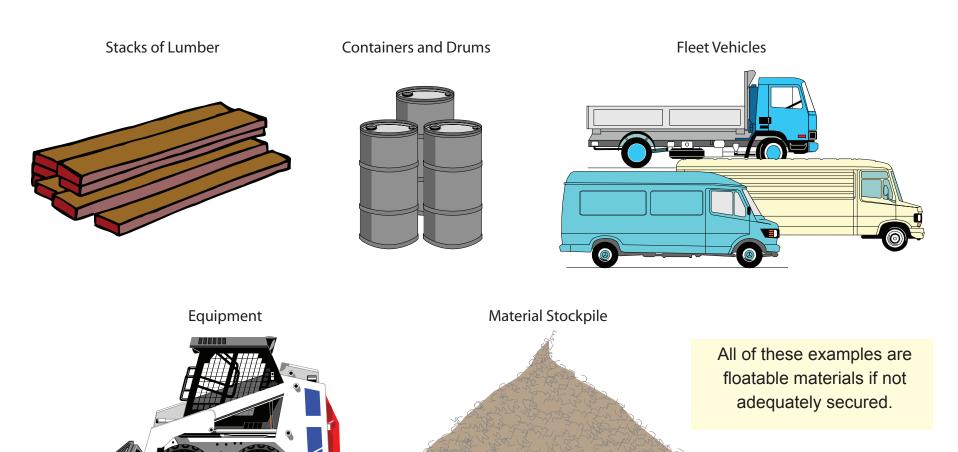
Example of fill placed in the flood fringe

Plan View:



Outside Storage of Materials or Equipment and Floatable Materials

- "Floatable material" is defined as material that is not secured in place or completely enclosed in a structure so that it could float off-site during a flood and potentially cause harm to downstream property owners or that could cause blockage of a culvert, bridge or other drainage facility.
- In the floodway, all outside storage of material or equipment, including floatable materials, associated with any non-residential use is not allowed.
- In the flood fringe, floatable materials associated with any non-residential use is not allowed.
- In the flood fringe, outside storage of material or equipment that is not considered "floatable material" is allowed.



Required Documentation and Submittals

(Note: Some items may require a registered professional engineer.)

Building Permit and Development Review Approval Requirements

- Floodplain Use Permit for any work being done on a structure or property in the floodplain. The permit fees are shown in the table on page 23.
- Building plans showing foundation design, flood elevation, floor elevations, HVAC elevations, size and locations of vents, floodproofing design and other relevant information.
- Emergency Response and Preparedness Plan (p. 19).
- No-Rise certification if working in the floodway.
- Floodplain Modeling Report if doing a floodway modification (p. 5). (See separate modeling guidelines handout.)
- Other plans or reports to document information such as grading, fill, channel stability and floodplain boundaries.

Certificate of Occupancy Approval Requirements

- FEMA Elevation Certificate or FEMA Floodproofing Certificate for any new structure, addition, substantial improvement or redevelopment built in any floodplain. Allow two weeks for review and approval. Requires licensed surveyor for elevation certificate; requires licensed engineer or architect for floodproofing certificate.
- · No-rise certification if working in the floodway.
- As-built modeling report, if applicable.

Variances

The Fort Collins Water Board has the authority to issue variances to the floodplain regulations if certain requirements are met. The Board meets the third Thursday of the month. An application packet must be submitted three weeks prior to the board meeting, with a \$1,000 application fee. (See separate variance submittal handout for documentation and justification requirements.)

Floodplain Information and Assistance

Call Fort Collins Utilities at (970) 221-6700 or e-mail *utilities@fcgov.com* to determine if a property is in the floodplain or to discuss floodplain regulations. More information about floodplain management in Fort Collins is available at *fcgov.com/stormwater/flooding*.

Floodplain Permit Fees

Permit Type/Activity	City of Fort Collins Fees	<u>Fees for</u> 1st and 2nd Reviews	<u>Fees for</u> 3rd, 4th, 5th etc. Reviews
FLOODPLAIN USE PERMIT (FPU)	\$50	N/A	N/A
	,		based on the type of review submittal
All rees in edicatories I through sh		icable fee will be assessed.	oused on the type of review submitted
	CATI	GORY 1	
	MINOR IMPROVEMENTS	/ ACCESSORY STRUCTURES	
Fence/Accessory Structure/Change of use	\$0	Included in \$50 FPU fee	Included in \$50 FPU fee
Deck/Improvement or remodel < 50% Bldg. Value	\$150		
Fill or Grading Only			
REDEVELOPMENT, NEW BUILDINGS, ADDITIONS		GORY 2	NI 50% OF THE VALUE OF THE EVISTI
Slab on Grade	\$150	3 OR REWIODELS GREATER THA	IN 30% OF THE VALUE OF THE EXIST
Enclosure	\$200	Included in \$50 FPU fee	Included in \$50 FPU fee
Crawl Space	\$250	included in \$30170 fee	included in \$30 FF 0 fee
Clawi Space		GORY 3	
		, FLOODPROOFING	
Mobile Home			Included in \$50 FPU fee
Floodproofing	\$250	Included in \$50 FPU fee	
	CATI	GORY 4	
	VAR	IANCES	
Variance Application	\$1,000		
	CATE	GORY 5A	
	PRE-PROJECT FLOODPLAIN ANA	LYSES (CITY BASIN, FEMA, CLO	
FEMA CLOMR/CPMR	\$1,000	Included in \$1,000 fee	\$500 each time + \$50/hr. for each
City of Fort Collins Basin Preliminary Map Revision	\$1,000		review hour over 10 hours
Hydraulic Analysis for No-Rise Certification	\$500	Included in \$500 fee	\$250 each time + \$50/hr. for each
Trydraulic Allarysis for No-Rise Certification	3300		review hour over 5 hours
CLOMR-Fill		Included in \$250 fee	\$125 each time + \$50/hr. for each
	\$250		review hour over 3 hours
No-Rise Certification - without Hydraulic Analysis		Included in \$50 FPU fee	Included in \$50 FPU fee
		GORY 5B	
-	POST-PROJECT FLOODPLAIN AN	ALYSES (CITY BASIN, FEMIA, LO	
FEMA LOMR/PMR	\$1,000	Included in \$1,000 fee	\$500 each time + \$50/hr. for each review hour over 10 hours
City of Fort Collins Basin Final Map Revision			\$250 each time + \$50/hr. for each
Hydraulic Analysis for No-Rise Certification	\$500	Included in \$500 fee	review hour over 5 hours
	\$250	Included in \$250 fee	\$125 each time + \$50/hr. for each
OMR-Fill			review hour over 3 hours
No-Rise Certification - w/o Hydraulic Analysis	→ √250 1	Included in \$50 FPU fee	Included in \$50 FPU fee

Flood Insurance Information

Who needs flood insurance? EVERYONE. Flood Insurance is available for ALL properties in the City of Fort Collins, regardless of location. Approximately 25% of damages occur in low risk areas.

Flood Insurance is required by lenders for any structure in a FEMA 100-year floodplain.Lenders have the option of requiring it in any other area.

- New flood insurance policies will require a FEMA Elevation Certificate documenting the elevation of the structure.
- Fort Collins Utilities has elevation certificates on file for many structures in the City of Fort Collins, free of charge, by calling 970-221-6700 or visiting www.fcgov.com/elevation-certificate.
- Documenting the elevation of the structure allows the flood insurance premium to be calculated based on the risk.
- The higher the structure is elevated above the 100-year flood level, the lower the insurance premium.

Flood Insurance is not mandatory in City-designated floodplains. However, it is strongly recommended.

 Look into a "Preferred Risk" Flood Insurance Policy. It combines structural coverage and contents coverage at a more affordable price.

Important Considerations

- There is a 30-day waiting period before flood insurance becomes effective.
- Disaster assistance is only available for major flood events and does not cover the entire cost to rebuild your home or business.
- Fort Collins is subject to flash flooding—there is little warning time to move your contents to safer locations.

You can receive up to a 30% discount on your flood insurance premiums.

- Fort Collins has some of the lowest flood insurance premiums in the United States due to its proactive floodplain management program.
- Check with your insurance agent to make sure you are receiving the FEMA Community Rating System (CRS) Discount for Fort Collins being a Class 4 Community.



To learn more, visit *http://www.floodsmart.gov/*, contact your insurance agent, or call FEMA at 1-888-379-9531.

Example of Flood Risk Map

