



AGENDA
CITY OF GLENWOOD SPRINGS
REGULAR CITY COUNCIL MEETING
AUGUST 4, 2022
101 W. 8TH STREET
6:15 PM

The agenda is subject to *change, including the addition of items 24 hours in advance or the deletion of items at any time.*
The order and times of agenda items listed are approximate and intended as a guideline for the City Council.

ATTENTION: To ensure your written comments are included in the City Council packet, public comments must be received by 4 p.m. on the day before City Council meetings. Comments may be submitted to ryan.muse@cogs.us.
Written comments may be submitted after this deadline and will be shared via email to City Council but are not guaranteed to make it into the meeting packet. Submit comments at any time directly to City Council via email at citycouncil@cogs.us.

MORNING WORK SESSION

- | | | |
|------|---------------------------|------------------------|
| 8:30 | 1. 2023 Budget Discussion | Information/Discussion |
| 9:15 | 2. Downtown Security | Information/Discussion |

WORK SESSION

- | | | |
|------|-------------------------------------|------------------------|
| 3:30 | 3. Rural Fire District Work Session | Information/Discussion |
|------|-------------------------------------|------------------------|

REGULAR SESSION

- | | | |
|------|---|------------------------|
| 4:00 | 4. Executive Session on City Manager Search | Information/Discussion |
|------|---|------------------------|

Executive Session pursuant to CRS 24-6-402(4)(f)(I) regarding personnel matters which no employee has requested be in an open meeting more specifically regarding the City Manager's search.

ZOOM INSTRUCTIONS

You are invited to a Zoom webinar.

When: Aug 4, 2022 06:15 PM Mountain Time (US and Canada)

Topic: 2022/08/04 Regular Council Meeting

Please click the link below to join the webinar: <https://us02web.zoom.us/j/82315731820?pwd=QnVRckxHMmJMdk0xbUZWYURXM0FhQT09>
Passcode: 899107

Or One tap mobile: US: +12532158782,,82315731820# or +13462487799,,82315731820#

Or Telephone: Dial(for higher quality, dial a number based on your current location):

US: +1 253 215 8782 or +1 346 248 7799 or +1 669 444 9171 or +1 669 900 6833 or +1 386 347 5053 or +1 564 217 2000 or +1 646 931 3860 or +1 929 205 6099 or +1 301 715 8592 or +1 312 626 6799

Webinar ID: 823 1573 1820

International numbers available: <https://us02web.zoom.us/j/82315731820>

- | | | |
|------|--|--------------------------|
| 6:15 | 5. Roll Call | |
| | 6. Pledge of Allegiance | |
| | 7. Agenda Changes & Conflicts | |
| 6:20 | 8. Citizens Appearing Before Council (for items not on the Agenda-comments limited to 3 minutes) | |
| 6:30 | 9. Consent Agenda | Discussion and/or Action |
| | A. July 21, 2022 Council Minutes | |
| | B. Resolution 2022-28; Federal Mineral Lease District Grant for Sayre Park Inclusive Playground | |
| | C. Award Request for Proposal 2022-19 Airport Asphalt | |
| | D. Award Request for Proposal 2022-21P Strategic Housing Plan Update | |

- E. Resolution 2022-30; New Alternate Representative for the Municipal Energy Association of Nebraska (MEAN)
- F. Resolution 2022-17 - National Endowment for the Arts our Town Grant

ACTIONS AND/OR PRESENTATIONS

- | | | |
|------|--|--------------------------|
| 6:30 | 10. Ordinance 2022-19; Planning item 12-22, Code Amendments to Title 070.040 as it Relates to Floodplain Regulations (To Be Continued to the Next Meeting) | Discussion and/or Action |
| 6:35 | 11. Affordable/Workforce Housing Ballot Decision | Discussion and/or Action |
| 7:20 | 12. Urban Forestry and Beetle Kill | Discussion and/or Action |
| 7:50 | 13. Council Comments | |
| 8:00 | 14. Report from City Administration | |
| | A. City Manager | |
| | B. City Attorney | |
| | C. Correspondence Incoming/Outgoing | |
| 8:10 | 15. Adjournment | |

WORK SESSION

- | | | |
|------|----------------------------|------------------------|
| 8:10 | 16. 2023 Budget Discussion | Information/Discussion |
|------|----------------------------|------------------------|



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item:	2023 Budget Discussion
Action Requested:	NA
Department:	City Administration
Presented By:	Steve Boyd
Strategic Goals:	Provide Efficient and Responsive City Government Preserve and Improve Infrastructure Protect and Preserve our Quality of Life Generate Sustainable Economic Development Ensure Public Safety
Background Info:	Staff will present major projects in the public works budgets: -Electric -Water/Wastewater -Streets and alleys -Broadband -Street Tax Fund -Special Work Activities Team (SWAT)
Issues:	Staff will submit a budget to Council on October 6th. The vote to approve it will be on November 3rd.
Fiscal Impact:	Approximately \$90 million in appropriations.
Legal Review:	NA
Staff Recommendation:	NA



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item: Downtown Security

Action Requested: NA

Department: Police Department

Presented By: Bill Kimminau

Strategic Goals: Ensure Public Safety

Background Info: The City of Glenwood Springs began contracting with Citadel Security in the Summer of 2020 to provide security patrols in the downtown area on weekends during peak tourist season. The patrols are limited to specific days/times. Currently the patrols serve on Fri/Sat from 4 PM until 10 PM. On Sundays they work from 3 PM until 8 PM. In 2020 this service was deemed necessary during the COVID pandemic to help compliance with the mask mandate that was in effect at that time.

In 2021 the city chose to continue the security patrols with a budget of \$20,000.00. Two supplemental appropriations were done during the year raising the 2021 budget to \$130,000.00; we expended \$117,000.00. Through June 2022 we have expended \$36,000 of a \$48,000 budget.

Presently we have budgeted \$60,000.00 for this service. In June we were notified of an hourly rate increase from \$26.50 per hour per officer to \$32.60 per hour, per officer.

Issues: The original logic behind this contracted service was to supplement a security presence the designated area. Police department staffing was critically low. These unarmed security personnel have served as ambassadors for the city and notification mechanism to police officers in the event of a serious situation.

Since its inception the department has received very few if any calls from the patrols for enforcement actions. It seems there is a lack of presence when a situation has arisen. We have come to realize the security staff who have been assigned to this detail do not know what their assignment involves, the equipment needed and are largely unprepared.

We have met with the Citadel leadership team. They've acknowledged these shortcomings and pledged to address the issues internally to provide a better product.

Fiscal Impact: Neutral

Legal Review: NA

Staff Recommendation: Discontinue security services and supplant with:

- A. During peak tourist months, as call volume allows, we have rotated on-duty officers to the downtown area during the same peak hours.
- B. Overtime shifts for officers to work in this designated area and to pass through area parks.



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item:	Rural Fire District Work Session
Action Requested:	NA
Department:	Attorney
Presented By:	Steve Boyd
Strategic Goals:	Ensure Public Safety
Background Info:	The city's fire department provides protection for the Rural Fire Protection District under the terms of a negotiated annual intergovernmental agreement that is attached to this agenda item.
Issues:	The district has a property tax that is split between the city's Fire/ Emergency Medical Services (EMS) funds for operating expenses and the Fire Equipment Replacement Fund. The current split is 3.5 mills to operating and 2.5 mills to capital. If Council were to change that split it would have an impact on one fund and an opposite impact on the other.
Fiscal Impact:	The tax generated roughly \$1.2 million in revenue between the two funds.
Legal Review:	NA
Staff Recommendation:	NA

INTERGOVERNMENTAL AGREEMENT FOR FIRE
PROTECTION AND AMBULANCE SERVICES

THIS INTERGOVERNMENTAL AGREEMENT is made and entered into between the City of Glenwood Springs, Colorado ("City") and the Glenwood Springs Rural Fire Protection District ("District"), to be effective as set forth in paragraph 1 hereof.

RECITALS;

(a) The City is a home rule municipality organized pursuant to Article XX of the Colorado Constitution.

(b) The City provides fire protection and ambulance services pursuant to its municipal authority.

(c) The District is a quasi-municipal corporation organized pursuant to Title 32, Article 1 of the Colorado Revised Statutes.

(d) According to its petition for organization and service plan as filed in Civil Action No. 6146 of the District Court in and for Garfield County, the District exists for the purpose of affording fire protection services to those areas of Garfield County which are situated in the general service area of the City of Glenwood Springs.

(e) The District is authorized by C.R.S. §32-1-1002(c) to furnish ambulance and emergency medical services in conjunction with its fire protection services.

(f) The parties are authorized by Article XIV, Section 18 of the Colorado Constitution and C.R.S. §29-1-201, et seq., to enter into intergovernmental agreements.

(g) The parties have in fact heretofore entered into an intergovernmental agreement for the provision of fire protection services, dated January 1, 1991, as amended.

(h) The parties now desire to enter into a new agreement to replace and supersede all prior agreements and to provide for the delivery of fire and ambulance services by the City to the District according to the standards, terms, and conditions set forth herein.

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, the City and the District agree as follows:

1. Effective Date and Term. The initial term of this Agreement shall be January 1, 2018 to December 31, 2018, and shall be automatically renewed thereafter on a year to year basis until January 1, 2029, unless earlier terminated pursuant to paragraph 7 of this Agreement.

2. Obligations of the City.

A. The City shall provide fire protection and ambulance services to the District.

B. In order to ensure equal or superior levels of service during the term of this Agreement, the City shall maintain, at a minimum, the levels of facilities, equipment, response time and staff currently maintained. Furthermore, the City shall replace obsolete facilities and equipment as necessary, shall expand resources as necessary to address changed circumstances in the City and the District, and shall otherwise comply with the 5-year plan as set forth in this Agreement in order to ensure no deterioration of services.

C. The City shall endeavor to keep and recruit fire and ambulance employees in sufficient numbers to maintain response times within national standards.

D. The City shall assume all costs incidental to fire protection and ambulance services, exclusive of any debt service for bonded indebtedness, and subject to the District's share of fire and ambulance costs as set forth in Exhibit A attached hereto and incorporated herein. By way of example, the City shall assume all costs associated with personnel, upkeep and maintenance of facilities and equipment, capital replacement and expansion, overhead and administration, and insurance, whether such costs are associated with assets heretofore owned by the City or assets retained in title by the District and utilized by the City in accordance with this Agreement.

E. In assuming full responsibility for fire protection and ambulance services to the District, the City, to the extent permitted by law, hereby agrees to indemnify and hold harmless the District and its officers from and against all liability, claims, and demands on account of injury, loss or damage of any kind whatsoever which arise out of or are in any manner connected with this Agreement, unless such injury, loss or damage is or is claimed to be caused in whole or in part by the act, omission, or fault of the District or its officers. The City agrees to investigate, handle, respond to, and to provide defense for any such liability, claims or demands at the sole expense of the City, and agrees to bear all other costs and expenses related thereto, including court costs and attorneys' fees, whether or not such liability, claims or demands alleged are groundless, false or fraudulent.

F. The City agrees to procure and maintain a policy or policies of insurance sufficient to insure against all obligations assumed by the City pursuant to this Agreement. Said policies shall be endorsed to include the District and its officers as additional insured and certificates of insurance shall be supplied to the District upon request.

G. The City shall operate its fire and ambulance departments under one Fire Department which shall be directly accountable to the City Manager.

H. The City has created an equipment replacement fund with contributions from the City and the District in proportion to their assessed valuations, the purpose of which is to amass monies for the replacement of fire and ambulance facilities and equipment in order to ensure that the quality of services provided by these departments and as guaranteed in this Agreement do not deteriorate.

I. The City shall collect and account for the revenues and expenditures of the City and the District associated with the provision of fire protection and ambulance services within separate funds.

3. Obligations of the District.

A. The District has delegated to the City the complete and exclusive authority for the provision of fire protection and ambulance services in the District through the City's Fire Department. Included with this delegation of authority is the authority for the City to perform fire inspections for the District in accordance with any codes duly adopted by the District, and to perform any other duties or services which the District may be authorized to perform, by law. During the term of this Agreement, the District shall not separately acquire additional assets, incur additional liabilities or hire personnel for purposes of fire protection and ambulance services, but shall rely upon the City for these services in accordance with this Agreement.

B. The District shall certify a mill levy and remit tax revenues, less expenses, to the City to pay their share of fire and ambulance costs as more fully set forth in Exhibit A.

C. The District shall remain intact as it is presently constituted for purposes of retiring the District's existing bonded indebtedness (Glenwood Springs Rural Fire Protection District General Obligation Refunding Bonds, Series 2001), shall continue to certify an appropriate mill levy therefor, and shall otherwise fully comply with its obligations under said bonds. The District shall not refinance, refund, extend or otherwise alter the terms and conditions of said bond without the consent of the City.

D. The District shall pay costs attributable to the administration of the District such as District audits, legal fees, and directors' bonds.

E. Upon any annexation by the City of that property commonly known as the Four Mile Fire Station, the District shall maintain ownership of the Four Mile Fire Station, separate from the City.

F. The District shall not expand its jurisdiction through the inclusion of additional territory without the consent of the City.

4. Consultation Requirements.

A. On or before August 1 of each year this Agreement is in effect, the City shall prepare and submit to the District an annual report which shall consist of:

(i) A detailed report of the City's fire protection and ambulance services to the District for the preceding year.

(ii) A proposed budget for the City's Fire Department for the ensuing years, including an estimate of costs to be ascribed to the District, subject to the District's share of fire and ambulance costs according to the formula set forth in Exhibit A. The District will have an opportunity to review and provide input and recommendations for the Fire Department's operations budget.

(iii) An update of the 5-year plan for the Fire Department.

The report shall be formally presented by the City's Fire Chief to the District's board. On or before October 1, the District shall submit to the City in writing any recommendations the District may have regarding the budget and plan as necessary to ensure compliance with the performance standards of this Agreement.

The City shall then adopt the budget in the course of its regular budgetary procedures and notify the District in writing of the costs to be charged to the District for the ensuing year as set forth in Exhibit A.

In the event the adopted budget reflects the potential for significant negative consequences to the levels of service provided by the City as set forth in paragraph 2B of this Agreement, the parties will meet within thirty (30) days after the budget is adopted to discuss potential ways to avoid a decrease in service levels. At the request of either party, the parties will retain a mutually acceptable facilitator and/or mediator to assist in this or subsequent discussions regarding this issue. If the parties fail to reach a mutually acceptable resolution regarding service levels provided by the City, the District may proceed with Termination for Failure to Perform pursuant to Paragraph 7.A.

B. In addition to the foregoing, the City's Fire Chief or a representative shall attend regular meetings of the District's Board of Directors and shall supply a monthly report of calls in the District. The Fire Chief's obligation to attend such meetings shall not exceed once per month; however, the board reserves the right to meet as frequently as it deems necessary. The Fire Chief shall remain accessible at all times to the District's Board and its constituents to address inquiries and complaints regarding fire protection and ambulance services in the District.

C. If at any time during the term of this Agreement an ad valorem tax does not pass, the City and the District will determine if an amendment to the operational budget is required.

5. Five-Year Plan. The City has adopted a five-year plan addressing the projected acquisition and replacement of facilities and equipment utilized by the City's Fire Department. The object of the plan is to project and anticipate capital needs to maintain the quality of service standards set forth in this Agreement. The plan shall be updated annually during the City's budgetary process. In accordance with City Charter Section 9.3(e), the City shall append the five-year plan to its annual budget.

6. Exclusion of Territory. During the term of this Agreement or any renewals, the parties stipulate and agree to the exclusion from the District of territory which has been or will be annexed to the City. The District agrees that it will not oppose such exclusions as long as the following terms and conditions are met:

A. The City shall petition for such exclusions at the City's sole expense.

B. The petition for exclusion shall reference this Agreement as the "plan for the disposition of assets and continuation of services" as required by C.R.S. §32-1-505(2)(c).

C. The District's current ad valorem tax base shall remain intact for purposes of retiring the District's existing bonded indebtedness.

D. Any division of assets is expressly deferred unless and until this Agreement is terminated and a property settlement occurs in accordance with this Agreement.

E. The City fully complies with all other requirements of C.R.S. §32-1-501, et seq.

7. Termination.

A. Termination for Failure to Perform. Either party may terminate this Agreement due to the other party's failure to perform its obligations under the Agreement upon providing six months' written notice to the nonperforming party and an opportunity to cure the nonperformance to the satisfaction of the other party within 6 months.

B. Termination for Convenience. Either party may terminate this Agreement for no reason upon providing 24 months' advance written notice to the other party.

C. Apportionment of Assets. Upon termination of this Agreement the parties shall cooperate in the equitable apportionment of assets based on contributions made both directly and via bonded indebtedness. At the request of either party, the parties will retain a mutually acceptable mediator to assist in this process.

8. Non-appropriation. Nothing contained herein shall be deemed to be a call or a claim upon any future budget or appropriation of the respective parties. Performance of the obligations set forth herein is and shall continue to be subject to the regular budgeting and appropriation processes of the respective parties on a year-to-year basis.

9. Notice. Any notices or other communications required to be given pursuant to this Agreement shall be considered delivered when mailed to the following addresses, unless the parties submit a written notice of change of address:

TO THE DISTRICT: President of the Board of Directors
 Glenwood Springs Rural Fire Protection District
 c/o Glenwood Springs Fire Chief
 806 Cooper Avenue
 Glenwood Springs, CO 81601

TO THE CITY: City Manager
 City of Glenwood Springs
 101 W. 8th Street
 Glenwood Springs, CO 81601

10. Prior Agreements. This Agreement shall replace and supersede any and all prior agreements between the parties, effective January 1, 2018, and all such prior agreements shall then be considered null and void and of no further force and effect.

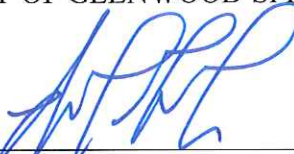
11. Complete Agreement. This Agreement represents the full and complete agreement of the parties and shall not be modified or amended except pursuant to the express written consent of the District's Board of Directors and the City's City Council.

12. Mutual Aid Agreements. Nothing contained herein shall be construed to affect any mutual aid agreements for fire protection or ambulance services heretofore entered into by the parties with any third parties. However, henceforth neither the City nor the District shall enter into any new mutual aid agreement with any third party without the mutual consent of the other party to this agreement

12. Binding Effect. The terms and conditions of this Agreement shall extend to and be binding upon the respective parties hereto, and their successors and assigns.

IN WITNESS WHEREOF, the parties have executed this Intergovernmental Agreement for Fire Protection and Ambulance Services this 6th day of September, 2018.

CITY OF GLENWOOD SPRINGS

By: 
Michael Gamba, Mayor

ATTEST:


Catherine Mythen Fletcher, City Clerk

GLENWOOD SPRINGS RURAL
FIRE PROTECTION DISTRICT

By: 
William B. Swigert, President

ATTEST:

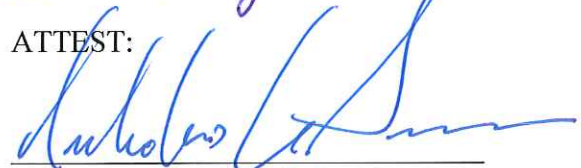

Nicholas P. Seain, Secretary

EXHIBIT A

The District's contribution to the funding of the City operated Fire Department is as follows:

Operations:

The District receives "general fund" revenue from an ad valorem property tax as approved by voters for fire and ambulance services. In 2018, the ad valorem rate is 8.339 mills and this exhibit assumes the continuation of the current tax rate.

Revenue by the District less administrative expenses will be transferred to the City as the District's entire share of fire and ambulance costs for that year.

Capital:

The City and The District both have existing bond payments and capital improvement or equipment replacement fund revenues approved by voters in 2000 and set to payoff and expire December 31, 2020.

The equipment replacement fund revenue is set at \$ 250,000.00 annually, split between City and District taxpayers in proportion to each jurisdiction's assessed valuation.



City Council
STAFF REPORT
City of Glenwood Springs
September 6, 2018

Agenda Item:	Intergovernmental Agreement for Fire Protection and Ambulance Services
Action Requested:	Approve revised IGA for Provision of Fire Protection and Ambulance Services
Presented By:	Fire Chief Gary Tillotson
Background Info:	In 1991 the City and the Glenwood Springs Rural Fire Protection District entered into an Intergovernmental agreement for fire protection and ambulance services that effectively detailed the combining of two separate fire departments and the City run Ambulance Service, their stations, equipment and workforce into one department operated by the City. Under the terms of the original agreement, the District was required to pay a proportionate share of the department operational costs based on a formula that compared total assessed valuations and calls for service in the respective taxing areas. The original agreement was amended three times over the last twenty-seven years rendering it almost incomprehensible with outdated station and equipment designations, requirements for transfer of title, and performance standards that have long since been surpassed. This newly written IGA replaces the old outdated version with new language outlining expectations of the parties and moving funding agreements to an exhibit that is easily amended when needed.
Issues:	I believe any issues that had come up in review with the Rural District Board and subsequent legal review have been successfully addressed in this version.
Action Alternatives:	Council can approve the new IGA or direct staff to revise and re-submit to District Board.
Staff Recommendation:	Approve IGA



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item: Executive Session on City Manager Search

Action Requested: NA

Department: Attorney

Presented By: Karl Hanlon

Strategic Goals: Provide Efficient and Responsive City Government
Preserve and Improve Infrastructure
Protect and Preserve our Quality of Life
Generate Sustainable Economic Development
Ensure Public Safety

Background Info: Council will review applications and select semi-finalists

Issues: NA

Fiscal Impact: NA

Legal Review: NA

Staff Recommendation: NA



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item: July 21, 2022 Council Minutes

Action Requested: July 21, 2022 City Council Minutes

Department: City Clerk

Presented By:

Strategic Goals: Provide Efficient and Responsive City Government

Background Info:

Issues:

Fiscal Impact:

Legal Review:

Staff Recommendation:



MINUTES
CITY OF GLENWOOD SPRINGS
REGULAR CITY COUNCIL MEETING
JULY 21, 2022
6:15 PM

Note: Official meeting minutes are located on the City website via YouTube video at the following link: <https://www.youtube.com/user/GlenwoodSprings1885/videos>. The times in agenda items indicate approximately where the item can be found on the YouTube video timeline.

REGULAR SESSION

Item 4. :04 Roll Call

Present: Mayor Godes, Mayor Pro-Tem Willman, Councilor Dehm, Councilor Stepp, Councilor Kaup, Councilor Wussow, and Councilor Hershey. Also present were Debra Figueroa, City Manager; Steve Boyd, Chief Operating Officer; Jenn Ooton, Asst. City Manager; Ryan Muse, City Clerk; Matt Langhorst, Director of Public Works; Yvette Gustad, Finance Director; Brian Smith, Parks, and Recreation Director; Terri Partch, City Engineer; and Karl Hanlon, City Attorney.

:05 Councilor Hershey moved, seconded by Mayor Pro-Tem Willman, to allow Councilor Stepp to appear virtually.

Motion passed unanimously.

Item 5. :05 Pledge of Allegiance

Mayor Godes led the Pledge of Allegiance.

Comments were made by Councilor Hershey.

Item 6. :06 Agenda Changes or Conflicts

Comments were made by Councilor Wussow and City Attorney Karl Hanlon.

Item 7. :06 Citizens Appearing Before Council

Citizen comments were made.

Item 8. :10 Consent Agenda

:10 Councilor Kaup moved, seconded by Councilor Dehm, to approve the Consent Agenda without item B. Ordinance 2022-18: Hotel Conversions Second Reading.

Ayes: Godes, Willman, Kaup, Dehm, Stepp, Wussow

Nays: Hershey

Motion passed 6-1.

Consent Agenda Item B. :11 Ordinance 2022-18; Code Amendments to Title 060 and 070 Related to Hotel Conversions, Second Reading

Comments were made by Councilor Wussow, Councilor Kaup, and City Attorney Karl Hanlon.

Jenn Ooton Assistant City Manager, presented.

Comments were made by City Attorney Karl Hanlon, Mayor Godes, Assistant City Manager Jenn Ooton, Mayor Pro-Tem Willman, Councilor Wussow, Councilor Stepp, and Councilor Kaup.

:37 Mayor Godes opened the item for public comment.

Public comment was taken.

:53 Mayor Godes closed the item for public comment.

Comments were made by City Attorney Hanlon, Mayor Pro-Tem Willman, Councilor Hershey, Councilor Wussow, Councilor Stepp, Councilor Kaup, Councilor Dehm, and Mayor Godes.

1:20 Councilor Kaup moved, seconded by Councilor Wussow, to adopt the regulations to Ordinance 2022-18; Code Amendments to Title 060 and 070 Related to Hotel Conversions, Second Reading, minus exhibit b, with the conditions of increasing the amount required to be deed restricted from 20% to 50%, with an average rent of 100%, not to exceed 80%, with 35% affordable units, and with the understanding that next meeting a comparable minimum standards on kitchenettes be implemented by Economic and Community Development and a parking management ordinance be designed minus exhibit b.

Comments were made by Councilor Hershey, Mayor Pro-Tem Willman, and City Attorney Hanlon,

1:24 Councilor Kaup amended her motion, seconded by Councilor Wussow, to adopt the regulations to Ordinance 2022-18; Code Amendments to Title 060 and 070 Related to Hotel Conversions, Second Reading, minus exhibit b, with the conditions of increasing the amount required to be deed restricted from 20% to 50%, with an average rent of 100%, not to exceed 80%, with 35% affordable units, and with the understanding that next meeting a separate ordinance on comparable minimum standards and a separate ordinance on parking management will be brought to Council.

Comments were made by Councilor Stepp and Mayor Godes.

Motion passed unanimously.

Comments made by Council Hershey, City Attorney Karl Hanlon, and Councilor Wussow.

Item 9. 1:27 Planning item 12-22, Code Amendments to Title 070.040 as it Relates to Floodplain Regulations (To be continued)

1:27 Mayor Pro-Tem Willman moved, seconded by Councilor Hershey, to move Planning item 12-22, Code Amendments to Title 070.040 as it Relates to Floodplain Regulations to the next regular scheduled meeting.

Motion passed unanimously.

Item 10. 1:27 Community Wildfire Protection Plan Update

Gary Tillotson Glenwood Springs Rural Fire Protection District Chief and Terri Partch City Engineer, presented.

Comments were made by Councilor Wussow, City Attorney Karl Hanlon, Councilor Stepp, Mayor Godes, Gary Tillman, and Councilor Hershey.

1:46 Mayor Godes opened the item for public comment.

Public comment was taken.

1:58 Mayor Godes closed the item for public comment.

Comments were made by Mayor Godes, City Attorney Karl Hanlon, and Councilor Hershey.

2:00 Councilor Wussow moved, seconded by Councilor Kaup, to move Item 13, Urban Forestry and Beetle Kill, to the next meeting.

Motion passed unanimously.

2:00 Break

Item 11. 2:12 North Landing

Danielle Campbell presented.

Comments were made by Councilor Hershey, Councilor Kaup, Acting City Manager Steve Boyd, and Councilor Wussow.

2:24 Mayor Godes opened the item for public comment.

No public comment was given.

2:24 Mayor Godes closed the item for public comment.

2:24 Mayor Pro-Tem Willman moved, seconded by Councilor Dehm, to approve \$90,192 for the cost of construction drawings and the funds be drawn from Capitol Projects and not out of the A&I fund.

Motion passed unanimously.

Item 12. 2:25 Affordable Housing Ad Hoc Update

Ellen Dole, member of the Ad Hoc Committee, and Clark Anderson from Glenwood Springs Housing Coalition, presented.

Comments were made by Councilor Kaup, City Attorney Karl Hanlon, and Councilor Stepp.

2:57 Mayor Godes opened the item for public comment.

Public comment was taken.

2:57 Mayor Godes closed the item for public comment.

Comments were made by Councilor Hershey, Councilor Kaup, Councilor Stepp, Councilor Wussow, Councilor Dehm, and Mayor Pro-Tem Willman.

3:38 Councilor Hershey moved, seconded by Councilor Dehm, to a question on the ballot in November for a 3.5% increase in lodging tax.

Comments were made by Mayor Godes, and Councilor Wussow.

3:43 Councilor Wussow moved, seconded by Councilor Dehm, to continue the course until the Ad Hoc Committee gives an official recommendation as to what they would like to see on a ballot and at that point, Council will decide.

Comments were made by City Attorney Karl Hanlon, Glenwood Springs Housing Coalition member Clark Anderson, Councilor Dehm, Mayor Godes, Councilor Kaup.

Ayes: Godes, Willman, Kaup, Dehm, Stepp, Wussow

Nays: Hershey

Motion passed 6-1.

Item 13. 3:51 Council Comments

Comments were made by Mayor Pro-Tem Willman, Councilor Wussow, and Mayor Godes.

Item 14. 3:58 Report from Administration

City Manager

No comments were made.

City Attorney

Comments were made by City Attorney Karl Hanlon.

Correspondence Incoming/Outgoing

Comments were made by Acting City Manager Steve Boyd.

Item 23. 4:01 Executive Session

4:02 Councilor Hershey motioned, seconded by Councilor Kaup, to go into an Executive Session pursuant to CRS 24-6-402(4) (d) regarding specialized details of security arrangements

or investigations, including defenses against terrorism, both domestic and foreign, and including where disclosure of the matters discussed might reveal information that could be used for the purpose of committing, or avoiding prosecution for, a violation of the law; regarding Downtown Security and adjourn at the end of the executive session.

Motion passed unanimously.



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item:	Resolution 2022-28; Federal Mineral Lease District Grant for Sayre Park Inclusive Playground
Action Requested:	Approve Resolution 2022-28 in support of a \$250,000 Federal Mineral Lease District grant for the Sayre Park Inclusive Playground.
Department:	Parks & Recreation
Presented By:	Brian Smith
Strategic Goals:	Protect and Preserve our Quality of Life Provide Efficient and Responsive City Government
Background Info:	Glenwood Springs is applying for a \$250,000 Grant from the Federal Mineral Lease District (FMLD) as the last piece of funding for Sayre Park Phase 2 – Play for All project. The City secured \$900,000 in funding for phase 2 through the National Park Service (NPS) Land and Water Conservation Fund program. Glenwood Springs will reserve \$590,000 in its budget to support this project, with \$10,000 in local community match from the Rotary Club. Additional community donations will be raised by the Rotary Club and the planning firm, which will offset the City's contribution. The "Sayre Park Improvements Phase 2 - Play for All" project includes the construction of a universal design playground, American Disability Act walkways, a new restroom facility, landscaping, new furnishings, irrigation efficiency upgrades, and a pavilion in the northeast quadrant of the park. Phase 2 improvements build off Phase 1, which was completed Labor Day 2021. The combined upgrades Phase I and Phase 2 improvements provide will ensure that Sayre Park can be enjoyed by individuals of all ages and ability levels.
Issues:	None
Fiscal Impact:	\$590,000 from the capital projects fund less whatever is raised by the public in 2023.
Legal Review:	NA
Staff Recommendation:	Approve Resolution 2022-28 in support of a \$250,000 Federal Mineral Lease District Grant for the Sayre Park Inclusive Playground.

RESOLUTION 2022-28

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF GLENWOOD SPRINGS, COLORADO, AUTHORIZING AND SUPPORTING THE APPLICATION FOR A GRANT FROM THE GARFIELD COUNTY FEDERAL MINERAL LEASE DISTRICT FOR THE SAYRE PARK IMPROVEMENT – PLAY FOR ALL

WHEREAS, the City of Glenwood Springs (“City”) is a political subdivision of the State of Colorado, and therefore an eligible applicant for a grant awarded by the Garfield County Federal Mineral Lease District (“GCFMLD”); and

WHEREAS, the City desires to complete Play for All improvements in Sayre Park, Glenwood Springs; and

WHEREAS, the City will submit a Grant Application to undertake the construction of the ADA improvements , requesting a total award of \$250,000 with a \$25,000 match from both the City including both in-kind and cash funding; and

WHEREAS, the City supports the completion of the project if a grant is awarded by the GCFMLD.

NOW, THEREFORE, IT IS RESOLVED BY THE CITY COUNCIL OF THE CITY OF GLENWOOD SPRINGS, COLORADO, THAT:

Section 1. The above recitals are hereby incorporated as findings by the City.

Section 2. The City strongly supports the Grant Application and has appropriated matching funds for a grant with Garfield County Federal Mineral Lease District.

Section 3. The City Council of the City of Glenwood Springs will authorize the expenditure of funds necessary to meet the terms and obligations of any grant awarded pursuant to a Grant Agreement with the GCFMLD.

Section 4. If a grant is awarded, the City of Glenwood Springs hereby authorizes the Mayor or Mayor Pro Tem to sign a Grant Agreement with the GCFMLD.

INTRODUCED, READ, AND PASSED THIS 3RD DAY OF MARCH 2022.

CITY OF GLENWOOD SPRINGS, COLORADO

Jonathan Godes, Mayor

ATTEST:

Ryan Muse, City Clerk



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item: Award Request for Proposal 2022-19 Airport Asphalt

Action Requested: Award Request for Proposal 2022-19 Airport Asphalt

Department: Facilities

Presented By: Brian Smith

Strategic Goals: Protect and Preserve our Quality of Life

Background Info: The City was awarded a grant for \$150,000 from the Aeronautical Division of the Colorado Department of Transportation to help re-pave parts of the runway and apron. The city's match is \$19,000 and is in the 2022 budget. The first amendment to the 2022 budget included a line item for \$169,000. We received a qualified proposal for \$169,004.

Issues: Staff is currently working with Grand River Construction to agree on contract terms and bring the contract below budget. If we are not able to reach agreement we will not execute a contract.

Fiscal Impact: The impact to the City is \$19,000 and has already been appropriated in the Airport Enterprise Fund.

Legal Review: Legal will review the agreement.

Staff Recommendation: Award Request for Proposal 2022-19P to Grand River Construction subject to final negotiations.



**Request for Proposal 2022-19P
Airport Runway Asphalt**

Bid of Grand River Construction, Inc.

RFP 2022-19P Airport Runway Asphalt

Section I: Introduction

Bidders will observe the following instructions. These instructions are supplementary to the Instructions contained in the "Request for Proposal" to which each Bidder shall also give particular attention in preparing his bid.

The City of Glenwood Springs uses the Rocky Mountain E-Purchasing System ("BidNet") to post solicitations and any supporting or additional information, including Addenda, Bid Sheet, and awards. Proposals must be submitted prior to close on BidNet. The City of Glenwood cannot accept a response that did not come through BidNet on time. All documents and information are available at www.bidnetdirect.com/cityofglenwoodsprings. If you require additional information regarding BidNet you may call Vendor Support at 800-835-4603 anytime Monday-Friday from 6:00 am to 6:00 pm Mountain Time.

DESCRIPTION OF PROJECT

The City of Glenwood Springs is soliciting proposals to coat seal and re-pave its airport runway per the specifications attached.

Section II: Timeline

a. Proposal Timeline.

TIMELINE	DATE	TIME
Mandatory Site Visit	JUNE 15	2:00 p.m.
Questions and Clarifications Due	JULY 15	2:00 p.m.
Addendum and Submittal Sheet Posted to BidNet	JULY 18	2:00 p.m.
Request for Proposals (RFP) Due on BidNet	JULY 22	2:00 p.m.
Target Award Date (Subject to Change)	AUGUST 5	2:00 p.m.

Section III: Instructions to Submitters

- a. This process is expected to be competitive with numerous vendors participating. The City of Glenwood Springs endeavors to provide a uniform distribution of information to vendors and conduct a fair selection process. We ask that you please follow these instructions carefully and not contact any City employee other than City Clerk Ryan Muse at ryan.muse@cogs.us. Any submittal that does not meet the requirements set forth in this document and any addenda will not be considered by the Selection Committee.
- b. Please upload your submittal to BidNet in one single PDF file.
- c. The following items must be submitted with your submittal: All relevant warranty information, a list of three (3) references for similar projects and a schedule for delivery.
- d. Questions regarding this RFP should be submitted to bidresponse@cogs.us prior to the question due date. All such addenda issued by The City of Glenwood Springs prior to the time that proposals are received shall be considered part of the RFP. It shall be the Bidder's responsibility to view all documents posted at BidNet.
- e. Once you've uploaded your response to BidNet per the instructions in this document the RFP will be governed by the established timeline. The City of Glenwood cannot see who or how many responses have been submitted to BidNet prior to the closing date so we are unable to confirm receipt. However, you may assume your upload was successful if BidNet accepts the document.
- f. The Bidder shall purchase and maintain at its own insurance which is at least as broad, and with limits at least as great as outlined in Section IV: If your proposal is successful and a contract awarded, a compliant certificate of insurance will be required with all endorsements at that time.
- g. The City of Glenwood Springs makes no guarantee that an award will be made as a result of this RFP and reserves the right to accept or reject any or all proposals, waive any formalities or technical inconsistencies, or delete any item/requirements from this RFP or resulting contract when deemed to be in the City's best interest.
- h. Representations made within the proposal will be binding on Bidder. Failure to comply with the requirements contained in this RFP will result in the rejection of your proposal.
- i. Bidder recognizes and understands that any costs incurred by the Bidder from submitting a response to this RFP are the responsibility of the bidder.
- j. Once this RFP awarded and throughout completion of the project the Airport Manager will be the main contact. All NOTAM's and other public announcements will be issued by the Manager. Before commencing any construction activity, parking vehicles, or storing construction equipment and materials near the airport, coordination with the Airport Manager is required.
- k. In the event of an emergency of any type on or affecting the airport, emergency vehicle access will be coordinated with Airport Staff. Contractor crews, when directed, will immediately cease construction and return all equipment to the contractor staging area as necessary for any emergency.
- l. This RFP is listed on Bidnet as "Lump Sum" meaning you only need to upload one document, we would like to see pricing broken out per the submittal sheet that will be available at the time the question addendum is issued.

Section IV: Insurance Requirements

RFP 2022-19P Airport Runway Asphalt

General Liability

Policy form:	Occurrence
Policy Aggregate	\$ 2,000,000
Products/completed operations aggregate	2,000,000
Each occurrence limit	1,000,000
Personal & advertising injury limit	1,000,000
Products/completed operations	
Defense in excess of limits	
Per location / per job aggregate limit	
Blanket contractual	
Independent contractors	
Primary & non-contributory	
Show Waiver of Subrogation in favor of the City	
All locations / operations (if not, show city job/location specifically)	
Name the City as "Additional Insured"	

Automobile Liability:

Combined single limit:	\$ 1,000,000
Any auto	(or Hired & Non-owned, if you own no vehicles)
Show Waiver of Subrogation in favor of the City	
Primary & non-contributory	
Auto pollution liability	(IF you carry any hazardous cargo)
(If the Vendor is providing repairs to City vehicles on the Vendor's property, the Vendor shall possess Garage Liability Insurance, covering premises, auto and completed operations)	
Name the City as "Additional Insured"	

Pollution Liability:

Policy form:	Occurrence
(if not, claims-made retro date must predate our contract or date of service)	
Per claim or occurrence limit:	\$ 1,000,000
Blanket contractual	
Primary & non-contributory	
Show Waiver of Subrogation in favor of the City	Per location / per job aggregate limit
Defense in excess of limits	
Designated Location or Operation must e shown as per your contract for the City	
Name the City as "Additional Insured"	

Umbrella:

Policy form:	Occurrence - Umbrella
Each occurrence or claim limit:	\$ 1,000,000
Excess commercial general liability	
Excess Products/completed operations	
Show Waiver of Subrogation in our favor	
Excess automobile liability	
Excess professional liability	(if you provide professional services)
Excess pollution liability	(if any pollution exposure exists)
Excess employer's liability	
Blanket contractual	
Per location / per job aggregate limit	
Defense in excess of limits	
Primary & non-contributory	
All locations / operations (if not, designate specific project or location)	
Name the City as Additional Insured including Products/Completed Operations	

RFP 2022-19P Airport Runway Asphalt

Workers' Compensation:

Workers Compensation benefits:	per Colorado Statute
Employers liability – limit per accident	\$ 100,000
Employers liability – limit per disease	100,000
Employers liability – disease aggregate	500,000
All owners/officers who will be on City property or job site must be covered	
Show Waiver of Subrogation in favor of the City	
Coverage must apply to workers in Colorado	

Insurance companies providing the coverage's specified above must be authorized to do business under the laws of the State of Colorado and must be rated no less than "A-" by A.M. Best Company. Issuance of a contract is contingent upon verification of all required coverage.

Section V: Selection Criteria

In evaluating Proposals, the City shall consider the qualifications of the Submitters, whether or not the Proposals comply with the prescribed requirements, and alternates and unit prices if requested in the Proposal forms. The City may consider the qualifications and experience of sub-contractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the work. S/He may conduct such investigations as s/he deems necessary to establish the responsibility, qualifications, and financial ability of the Proposers, proposed sub-contractors and other persons and organizations to do the Work in accordance with the Contract Documents to City's satisfaction within the prescribed time. The City reserves the right to reject the Proposal of any firm that does not pass any such evaluation to the City's satisfaction.

Section VI: RFP Terms & Conditions

Discussions/Negotiations

The City of Glenwood Springs reserves the right to contact any Bidder for clarification of information submitted; The City reserves the right to conduct discussions with Bidders, to accept or not accept revisions of Proposals, and to negotiate any point in the proposal or the subsequent contract at the sole discretion of the Director of Purchasing & Contracts.

Indemnification

If any litigation from any claims, disputes or other matters in question arising out of or relating to this agreement, or the breach thereof, the successful party in the litigation shall be entitled to reasonable legal expenses as part of any judgment.

Liquidated damages

Should the contractor fail to complete the work, or any part thereof, in the time stipulated in the agreement or within such extra time as may have been allowed for delays by extensions granted as provided in the contract documents, the contractor shall reimburse the owner for the additional expense and damage for each calendar day, Sundays and holidays excluded, that the contract remains uncompleted after the contract completion date. The said amounts are hereby agreed upon as liquidated damages for the loss to the owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the owner would in such event sustain.

It is expressly understood and agreed that this amount is not to be considered in the nature of a penalty, but as liquidated damages which have accrued against the contractor; and the owner is authorized to deduct the amount of such damages from any monies due the contractor for work performed or material furnished under this agreement; and the contractor and his sureties shall be liable for any excess.

RFP 2022-19P Airport Runway Asphalt

The contractor agrees to pay as liquidated damages, the sum of \$500.00 for each consecutive day thereafter as hereinafter provided in these supplemental conditions.

Payment and Performance Bond

The successful contractor may be required to provide a performance bond and payment bond, equal to 100% of the contract amount. If required, the performance bond shall remain in full force and effect through the guarantee period.

Undocumented Workers

By submitting a proposal, a Bidder certifies pursuant to C.R.S. § 8-17.5-102(1) that, at the time of proposal submission, it does not knowingly employ or contract with an illegal alien and that the contractor has participated or attempted to participate in the Basic Pilot Program that is administered by the United States Department of Homeland Security in order to verify that it does not employ any illegal aliens.

Section VII: Warranties, Representations and Acknowledgements of Bidder

- a. By submitting a proposal, Bidder acknowledges and agrees that (1) this RFP is a solicitation for proposal and is not a contract or an offer to contract and (2) the submission of a proposal by Bidder in response to this RFP will not create a contract between the City of Glenwood and Bidder.
- b. By submitting a proposal, Bidder offers and agrees to furnish to the City of Glenwood with the products and/or services described in its proposal, at the prices quoted in the proposal, and to comply with all terms, conditions, and requirements set forth in the RFP documents and contained herein.
- c. By submitting a proposal, Bidder represents and warrants that (1) Bidder is a reputable company regularly engaged in providing products and/or services necessary to meet the terms, conditions, and requirements of the RFP; (2) Bidder has the necessary experience, knowledge, abilities, skills, and resources to satisfactorily perform the terms, conditions and requirements of the RFP; (3) Bidder is aware of, is fully informed about, and is in full compliance with all applicable federal, state, and local laws, rules, regulations, and ordinances; (4) Bidder understands the requirements and specifications set forth in this RFP and the terms and conditions set forth; and (5) all statements, information, and representations prepared and submitted in response to this RFP are current, complete, true, and accurate. Bidder acknowledges that the City of Glenwood will rely on such statements, information, and representations in selecting the successful Bidder. If selected by the City as the successful Bidder, Bidder will notify the City immediately of any material change in any matters with regard to which Bidder has made a statement or representation or provided information.
- d. By submitting a proposal, Bidder agrees to be in compliance with all federal laws and regulations pertaining to Equal Employment Opportunities and Affirmative Action.

Section VIII: Scope of Work

We would like to work in 2 phases with the prep work of new asphalt and laying down the new asphalt to be completed with either the north or south end being first as we would like the airport to remain operational as much as possible. The proposing firm should indicate which Phase they intend to do first in the bid.

There will be a job walkthrough per the timeline above. This is mandatory so that all firms that submit a proposal have access to the same information and have seen the existing condition. Anyone can represent

RFP 2022-19P Airport Runway Asphalt

your firm at this walkthrough, we just need to have your firm name on the sign in sheet to submit a compliant proposal.

Prep Work for All New Asphalt Areas (Phase I and Phase II):

Clear, grub and dispose of 5" of existing grass, sod, topsoil or other material below the adjacent asphalt grade.

Apply soil sterilant

Place and compact 2" of base course to 95% of the maximum density in accordance with AASHTO T180. The moisture content of the base course will be plus or minus 2% of optimum.

Place and compact 3" of asphalt grade 64-22, Materials shall conform to CDOT Section 702. Placement shall be in accordance with CDOT construction specifications Section 400.

Prepwork for CrackSeal and Slurry Seal Areas (Phase I and Phase II)

Crack seal material shall meet the requirements of ASTM D 6690, Type I or Type II. Cracks shall be blown out to remove dirt and vegetation before crack seal application.

Slurry Seal shall conform to CDOT Standard Specifications section 411. Sand shall be added to the runway areas only. The emulsion shall be diluted at a 3:2 emulsion to water dilution rate.



RFP 2022-19P Airport Runway Asphalt

PHASE I PROJECT:

#4, Pink: North Taxi, minus east west runway connections: Chipseal Removal (14,094 sf), New Asphalt. 22,511 sf.

#4 Pink: 1st Entrance starting from South in Pink section. Widen to 40'. New asphalt 2760 sf.

#4/#11 Pink & Sky Blue: 2nd Entrance starting from South in Pink section Widen to 40'. New asphalt 2,800 sf.

#6, Yellow: Maintenance Shop Area at the South end: New asphalt 14,000 sf.

#7, Blue: North Turn Around, New asphalt 2,250 sf.

#8, Purple: North Taxi, New asphalt. Widen to 40': 5,240 sf.

#12, White: New Fueling Station, New Asphalt, base course and clear and grub: 13,305 sf.

#13, Green: South Tie Down, New asphalt. Extend from existing asphalt to property line: 6,810 sf.

Phase 1 bid:

Clear, grub and dispose of material (including vegetation and old chip seal) for areas for new asphalt. Total 47,954 SF	Unit cost <u>\$1.65 per SF</u>	Total cost <u>\$79,124.10</u>
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Class 6" Base Course. Place and Compact and apply soil sterilant 639 Tons	Unit Cost <u>\$77.00 per Ton</u>	Total Cost <u>\$49,203.00</u>
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Hot Mix Asphalt 64-22 - 1036 Tons	Unit Cost <u>\$125.00 per Ton</u>	Total Cost <u>\$129,500.00</u>
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Total bid for Phase I:

Two Hundred Fifty Seven Thousand Eight Hundred Twenty Seven and 10/100----- \$257,827.10

PHASE II PROJECT:

Crack Fill & Seal Coat

Seal Coat Using P-608-R (Rapid Cure)/GSB-78 OR P-608/GSB-88 From (ASI) Asphalt Systems Inc.
<https://www.asphaltsystemsinc.com/airfields-preserve-pavement/>

Asphalt Systems, Inc. (ASI), based in Salt Lake City, Utah. For more information, please call 801-972-2757, email info@asphaltsystemsinc.com or visit www.asphaltsystemsinc.com

Sand will be used on runway only. Federal Aviation Administration (FAA) approved runway sand.

#1, Red: Whole Runway: 170,000sf Crack length 1525'

#2, Yellow: Midfield Ramp, 23,000sf Crack length 172'

#3, Sky Blue: North Tie Down, 35,534sf Crack length 1647'

#4, Pink: North Taxi, 8,417sf (older asphalt) Crack length 912'

#5, Green: North Hangars, 54,230sf Crack length 2055'

#14, Turquoise: South Taxi: 37,000sf Crack length 997'

RFP 2022-19P Airport Runway Asphalt

Route out and Crack Seal Cracks in all Phase II areas - 7308 LF

Unit cost \$1.75 per LF

Total cost \$12,789.00

Slurry Seal Coat all Phase II areas – 36,465 SY – 3,646 Gallons

Unit Cost \$2.25 Per SY

Total Cost \$82,046.25

Stripping :

Material for striping shall be paint in conformance with CDOT Standard Specification 708.05.
Application shall be in conformance with Section 627.

#1 Red: Replace white striping down center line of runway. Lines are 120' feet long, 1' foot wide with 80' foot gap in-between. Runway is 3,305' long.

Replace white numbers 14 & 32 at ends of runway for runway markings, same as before. Numbers are white and 60' foot tall and 20' foot wide each number.

At #8, #11 and #4 Replace Yellow Hold Short line Stripping as is, each will be lengthen to 40' wide. 2 solid yellow lines with 2 dashed lines adjacent 3' foot long with 3' foot long space. Same as before with the exception of lengthening to 40'.

#6 by Maintenance Shop: Repaint as is, yellow hold short line.

#2 Yellow Midfield Ramp: Replace as is, yellow Hold Short line.



Unit Cost per linear foot: _____

Lump Sum Cost for Numbers: _____

Total striping cost: \$7,000.00

Total Bid for Phase II:

One Hundred One Thousand Eight Hundred Thirty Five and 25/100 ----- \$101,835.25

BID ALTERNATES:

Concrete for tie downs shall be CDOT Class D

#9, Purple, East of Sky Blue: North Tie Down Extension, Lay New asphalt. Extend existing parking area 10' so tail of aircraft is on asphalt: 3,200sf.

21 sets of tie downs, 3 units per tie down. Painted Yellow T, Refer to diagram.

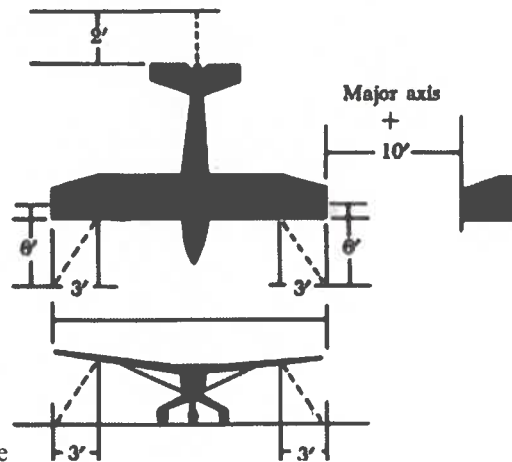
#3, Sky Blue: North Tie Down areas, insert 13 sets of tie downs, 6 on the West side, 7 on the East side.

RFP 2022-19P Airport Runway Asphalt

#13 Green: Insert 8 sets of tie downs remove old cable wire and anchors.

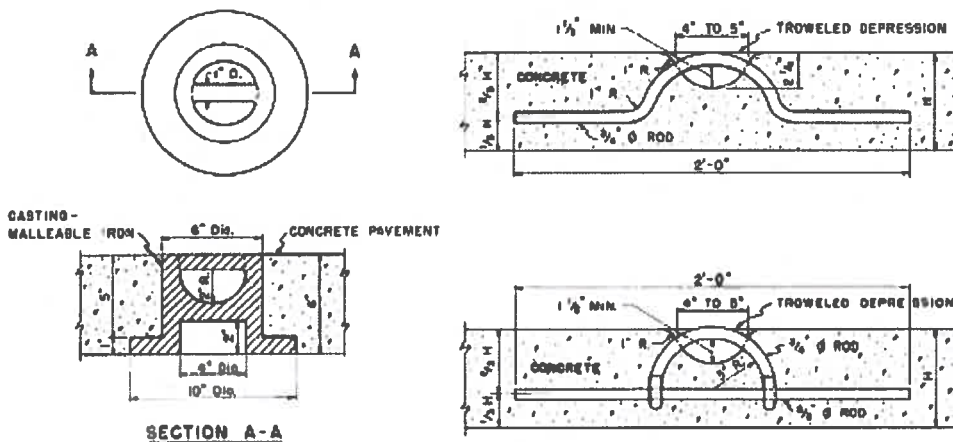


Tie Down Anchor Example



Drill 24" diameter holes and insert cast steel recessed anchors with rebar and reinforced concrete 24"-30" depth leveled with the pavement, so hook is under level of ground for snowplow. Refer to diagram.

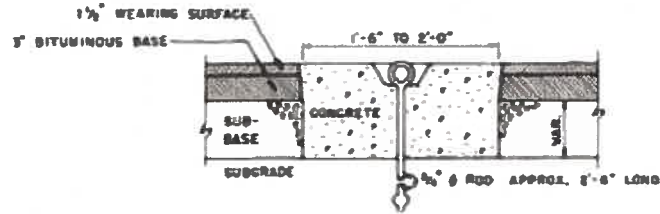
TIEDOWN ANCHORS FOR CONCRETE PAVED AREAS



OR

RFP 2022-19P Airport Runway Asphalt

TIEDOWN ANCHOR FOR BITUMINOUS PAVED AREAS



Wingspan Width is 37' Feet:

Stripe all 21 new Tie Downs with a yellow T, 24' feet by 17' feet with 10' foot gap in-between using a 37' foot wingspan that centers inside of the yellow T. Refer to diagram for measurements.

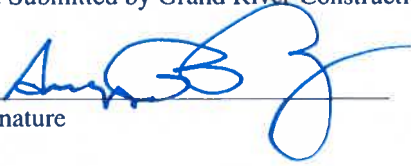
	Total Quantity			Unit Cost
Airport Tie Downs	21	EA		\$2,450.00
Total Cost				\$51,450.00

#12 New Asphalt Area LS This item is in phase 1 Bid

#9 New asphalt Area LS \$16,500.00

RFP 2022-19P Airport Runway Asphalt

Bid Submitted by Grand River Construction


Signature

Gregg Rippy
Printed Name

President
Title

07/22/2022
Date



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item: Award Request for Proposal 2022-21P Strategic Housing Plan Update

Action Requested: Award Request for Proposal 2022-21P to Economic and Planning Systems (EPS)

Department: Economic and Community Development

Presented By: Hannah Klausman

Strategic Goals:
Protect and Preserve our Quality of Life
Generate Sustainable Economic Development
Provide Efficient and Responsive City Government

Background Info: The City of Glenwood Springs was awarded a Department of Local Affairs Planning Grant for Innovative Housing Strategies. The Planning Grant Program provides grants to local governments to help them better understand their housing needs and adopt policy and regulatory strategies in order to promote the development of affordable housing and qualify for the Incentives Grant Program. The City applied for the grant to update the 2010 Strategic Housing Plan and to review and recommend qualifying housing development strategies for possible adoption.

The Request for Proposal sought a consultant to update the 2010 Strategic Housing Plan and to incorporate housing strategies that incentivize affordable housing development and the preservation of existing affordable housing units.

Economic and Plannings Solutions submitted a proposal and was interviewed by a panel including staff and Ellen Dole, a member of the City of Glenwood Springs Housing Commission. The interview panel found EPS's proposal compelling and thorough and thought that the updated Housing Gaps and Need research that would be provided would be highly valuable and informative for the City's ongoing housing efforts.

The consultant will help develop a Housing Action Plan that provides targeted recommendations for advancing the adoption and successful enforcement of affordable housing strategies to include:

- Use of vacant publicly owned real property within the local government for the development of affordable housing;
- Establishment of a density bonus program to increase the construction of units that meet critical needs in the local community;
- The creation of dedicated funding sources to subsidize affordable housing and infrastructure costs/associated fees related to publicly owned water, sanitary sewer, storm sewers, and roadways infrastructure;
- The creation of a land donation, land acquisition, or land banking program; and
- Mobile home and other naturally occurring affordable housing retention.

Staff has included the Request for Proposal document, as well as EPS's response documents and budget as attachments to this report.

Issues: The Planning Grant does require that the awarded municipality adopt a qualifying housing strategy within the granting period for completion. City Council should consider this and utilize the research provided by the Contractor to refine any housing policy initiatives to coincide with the granting period for adoption.

Fiscal Impact:	The grant funding is for a total of \$60,000 including a \$15,000 match from the City of Glenwood Springs. An additional \$7,780 would be needed from previously allocated Community Development housing funds to cover the bid proposal from EPS in the amount of \$67,780. The Bid Budget is included as an attachment to this report.
Legal Review:	N/A
Staff Recommendation:	Staff recommends approving the award of RFP 2022-21P to Economic and Planning Systems as proposed.



Strategic Housing Plan Update

RFP 2022-21P

Prepared for:



Prepared by:



Revised: July 26, 2022

EPS #223087

1. INTRODUCTION AND ORGANIZATION INFORMATION

- a. Strategic Housing Plan Update - RFP 2022-21P
- b. Economic & Planning Systems, Inc.
730 17th Street, Suite 630
Denver, CO 80202
- c. Economic & Planning Systems, Inc. is an S-Corporation.
- d. The firm formed in 1983 and incorporated in the State of California in 1987.
- e. epsys.com
- f. Officers and Principals:

EPS Denver: 730 17th Street, Suite 630, Denver, CO 80202, (303) 623-3557
Daniel R. Guimond, Senior Principal; Andrew Knudtsen, Managing Principal, CCIM; Brian Duffany, Principal

EPS Oakland: 1330 Broadway, Suite 450, Oakland, CA 94612, (510) 841-9190
Managing Principals: Darin Smith, Secretary; Jason Moody, President; Teifion Rice-Evans; Senior Principals: Walter Kieser, James R. Musbach; Principals: Benjamin Sigman, Ashleigh Kanat

EPS Sacramento: 455 Capitol Mall, Suite 701, Sacramento, CA 95814, (916) 649-8010; Managing Principals: David Zehnder, Vice President; Jamie Gomes, Treasurer; Principal: Amy Lapin
- g. Contact:
Andrew Knudtsen, Managing Principal
Economic & Planning Systems, Inc.
730 17th Street, Suite 630
Denver, CO 80202
(303) 623-3557 (o)
(720) 460-3301 (d)
(303) 929-2344 (m)
aknudtsen@epsdenver.com



July 8, 2022

Mr. Ryan Muse
Procurement Department
City of Glenwood Springs
101 West 8th St.
Glenwood Springs, CO 81601

Subject: 2. Signature Requirements / Cover Letter
Strategic Housing Plan Update - RFP 2022-21P; EPS #223087

Dear Mr. Muse:

Economic & Planning Systems (EPS) in conjunction with RRC Associates is pleased to present this proposal for a Strategic Housing Plan for the City of Glenwood Springs. EPS and RRC bring a depth of experience developing actionable plans that integrate funding sources, construction projects, and policy tools that provide cities like Glenwood Springs with a suite of actions that effect change. We understand from our extensive work in the region that the goal is to focus on actionable items, rather than on documentation of needs.

The work that the City has delineated for this project can be grouped into three categories:

1. ***Housing Development on City-owned Parcels*** – This approach, essentially a public private partnership, combines the skills and resources of both the public and private sectors to execute housing objectives. EPS has extensive experience with P3s and understands the metrics to gauge viability by both sectors. Documenting returns by partner is critical in the City's effort to attract partners who can take these sites vertical. We have worked with many organizations on P3 projects nationally and bring that experience to enable Glenwood to successfully complete housing projects.
2. ***Density Bonus Programs and other Regulatory Tools*** – EPS has structured numerous land use regulatory tools that incent developers to produce housing. EPS understands the financial elements to real estate development and can quantify the degree of 'bonus' needed to generate the housing type and affordability desired by the community. It is important to note that land use regulations are one of the strongest tools available to cities and the options they have (such as density bonus) to direct development, and can help the City vet options, as desired.
3. ***Dedicated Funding Sources*** – EPS is providing cutting edge ideas to a number of clients throughout the state on ways to establish dedicated funding sources. There is more latitude currently to entertain Fee-Based

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approaches and we can advise the City on what sources best lend themselves to a fee or tax approach. We recently helped the City of Aspen navigate this very issue, which included a multifaceted approach tailoring specific revenue sources to specific activities, with both fees and taxes. We understand the range of options available and the legal basis for different types of programs and can provide the nexus studies needed to underpin them.

We are highly familiar with Glenwood Spring and the surrounding context, having worked for most municipalities in the Colorado River Valley, Roaring Fork Valley, and Eagle County. Current clients as of July 2022 include Eagle, Fruita, Vail, Aspen, Pitkin County, and Eagle County.

We have included an additional task (Task 7) not listed in the scope that would, if desired by the City, delineate a specific housing production target. We recognize that the most recent work conducted by EPS in the Roaring Fork Valley was regional in nature and provided a high-level sense of the need. EPS has completed numerous housing studies and can take the analysis to a degree of specificity that will enable community member, stakeholders, and elected officials to adopt a target and measure annual progress towards meeting it.

In closing, we would like to emphasize our enthusiasm for working with you. We like assignments that focus on action and implementation. We understand the context well and appreciate the challenges Glenwood Springs locals face as it relates to finding affordable rental and ownership housing. We believe in the cause and have helped numerous cities and developers find creative solutions to advance housing solutions and would like to bring that expertise to you.

We take a collaborative approach to everything we do and look forward to your input as we refine a scope and move forward.

By submission of this proposal, and signature below, I acknowledge that I have the authority to sign this and bind the company to the obligations contained in the proposal and in the resulting contract.

Sincerely,

ECONOMIC & PLANNING SYSTEMS, INC.



Andrew Knudtsen
Managing Principal

3. TEAM QUALIFICATIONS

Andrew Knudtsen, CCIM

Managing Principal



Education

Bachelors of Environmental Design, Summa Cum Laude
University of Colorado

Employment History

22 Years with EPS

27 Years Experience

Affiliations

CCIM – Certified Commercial Investment Manager;
Certificate No.: 18731

ULI – Member of the Explorers Committee

State of Colorado Governor's Blue Ribbon Affordable Housing Panel

Publications

"Urban-Suburbia", Urban Land, October 2008.

Speaking Engagements

Rail-Volution "Feasibility Evaluation of Joint Venture Development" Vancouver, BC

Rail-Volution "Value Capture for the Rest of US" Seattle, WA

Appraisal Institute "Transit Oriented Development: Value Capture and Market Positioning" San Diego, CA

Urban Land Institute "Quantifying Sustainability" Washington, D.C.

Sonoran Institute Summit "Real Estate Premiums and Sustainable Development Trends" Bozeman, MT



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Andrew Knudtsen, CCIM, draws from over 25 years experience addressing the economic basis for land use policy, with a specific focus on affordable housing programs, policies, incentives, and requirements. Andrew has conducted numerous affordable housing studies – including many LIHTC projects. He has advised both public and private sector entities around affordable housing requirements and understands the policy goals and community need for housing, as well as the economic implications. His work spans a number of disciplines that he draws from to inform clients regarding market potentials and affordable housing viability.

SELECTED PROJECT MANAGEMENT EXPERIENCE

- TOD Feasibility Study | Westminster, CO
- Inclusionary Housing Ordinance Study | Denver, CO
- Denver Housing Authority Redevelopment of Sun Valley | Denver, CO
- Low Income Housing Tax Credit Inventory Market Studies
 - Bear Valley LIHTC Market Assessment | Denver, CO
 - Linden Park LIHTC Market Analysis | Grand Junction, CO
 - Stapleton LIHTC Market Study | Denver, CO
 - Three Springs LIHTC Housing Market Analysis | Durango, CO
 - Lakewood Station Apartments LIHTC Market Analysis
Lakewood, CO
- Permanent Affordable Housing Funding Source | Aspen, CO
- San Antonio Housing Authority Artisan Park Feasibility Evaluation
San Antonio, TX
- Consolidated Plan | Aurora, CO
- Pueblo Funding Priorities | Pueblo, CO
- Affordable Housing Mitigation Rate And Fee-In-Lieu Updates
Vail, CO
- Affordable Housing Strategic Plan | Aspen, CO
- Cattle Creek Crossing Market Study | Garfield County, CO
- Center City Bonus and Transfer Mechanism | Portland, OR



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Rachel Shindman, AICP

Vice President

Education

Master of Regional Planning,
Cornell University

B.A., Queen's University

B.Ed., Queen's University

Certificate in GIS, Queen's
University

Employment History

7 Years with EPS

Affiliations

American Institute of Certified
Planners

American Planning Association
Urban Land Institute

Presentations

*Tiny Homes, Big Ideas:
Alternative Housing,
Conventional Reality* Panel
Discussion (convener and
facilitator) American Planning
Association – Colorado State
Conference, Keystone, CO 2018

*Can Tiny Homes Help Solve
Denver's Affordable Housing
Crisis?* Panel Discussion
(moderator) Denver Design
Week, Denver, CO 2018

*Finding the "Opportunity"
in Opportunity Zones* Panel
Discussion (convener and
moderator) American Planning
Association – Colorado State
Conference, Snowmass 2019



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Rachel Shindman, AICP, brings several years of experience in many of EPS's practice areas. Her specializations include housing, real estate economics, fiscal and economic impact analysis, and economic development and revitalization. She has recently completed affordable housing studies for a number of Colorado communities include Aspen, Vail, Frisco, and Fort Morgan. Rachel enjoys engaging on projects at the intersection of topics and interests, focusing on the economic and fiscal impact and consideration of policy and planning such as affordable housing policy, transit-oriented development, funding and financing strategies, and comprehensive planning. She has a strong skill set for addressing urban economic and policy issues, and her experience in public, private, and nonprofit organizations enables her to work successfully with a diverse set of clients and stakeholders.

SELECTED PROJECT EXPERIENCE

- Affordable Housing Mitigation Rate and Fee-In-Lieu Updates
Vail, CO
- Housing Needs Update | Summit County, CO
- Housing Needs Assessment | Lake County, CO
- Housing Linkage Fee Study | Mountain Village, CO
- Housing Needs Study | Archuleta County, CO
- Housing Trends and Strategic Plan | Plano, TX
- Comprehensive Housing Policy Framework | San Antonio, TX
- Nashville Inclusionary Housing Study | Nashville, TN
- Downtown Workforce Housing Needs Assessment | Billings, MT
- Comprehensive Housing Needs Assessment | Fort Morgan, CO
- Comprehensive Affordable Housing Assessment | Eagle, CO
(current)
- St. Anthony Summit Hospital Housing Development | Frisco, CO
- Housing Needs Assessment | Upper Arkansas Area Council of
Governments, CO



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rshindman@epsdenver.com



Sarah Dunmire

Associate

Education

Masters of Urban and Regional Planning at the University of Colorado Denver

BS in Community, Environment, and Development; Minors in Economics and Communication Arts and Sciences—The Pennsylvania State University, 2015

Employment History

6 Years Experience

5 Years with EPS

Affiliations

Urban Land Institute

Sarah joined EPS in 2017, bringing her academic and professional experience in planning and economics. Prior to EPS, Sarah worked in the public sector as a Regional Planner gaining experience in regional planning, growth management, and community development. Additionally, through her time as an Economic Analysis Program Assistant for Penn State Extension, Community and Economic Development she learned skills of economic development, strategic planning, and facilitation. She is passionate about equitable development and affordable housing and has experience with housing needs assessments, housing demand analysis, and housing policy.

SELECTED PROJECT EXPERIENCE

- Grand Avenue Corridor Plan | Eagle, CO
- Comprehensive Housing Needs Assessment | Fort Morgan, CO
- San Miguel County Housing Demand Analysis | San Miguel County, CO
- Affordable Housing Entitlement Support | Loveland, CO
- Affordable Housing Task Force | Loveland, CO
- Kane-Elgin Consolidated Plan and Analysis of Impediments Kane County, IL
- Rural Housing Initiative Market Study | Telluride, CO
- Fruita in Motion | Fruita, CO
- West Vail Master Plan | Vail, CO
- Market Assessment Tool for HOME-Assisted Ownership | Kane County, IL
- Zoning Feasibility Analysis | State College, PA
- SA Tomorrow Comprehensive Plan | San Antonio, TX
- San Marcos Comprehensive Plan Update | San Marcos, TX



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Education

B.A. in Economics and
in German - Washington
and Lee University

Employment History

3 Years with EPS

Previous Experience

Fulbright teaching
fellowship, Nuremberg,
Germany

Washington and Lee
University Real Estate
Society

Charlotte Chamber of
Commerce Intern

Carson Bryant

Associate

Carson Bryant has significant experience with housing market analysis, housing policy, affordable housing strategy, real estate finance, and financial modeling in downtowns and other infill settings. He has worked on a variety of projects across the region and has a strong skill set for identifying market opportunities and constraints, and formulating creative approaches to address them.

SELECTED PROJECT EXPERIENCE

- Downtown Housing Market Analysis | Oklahoma City, OK
- Aspen Lumber Yard | Aspen, CO
- Inclusionary Zoning and Linkage Fee Study | Fort Collins, CO
- Loveland Affordable Housing Task Force Support | Loveland, CO
- COVID-19 Economic Resiliency Plan | Ouray County, CO
- Housing Fee Study | Fruita, CO
- Pitkin County Economic Analysis Study | Colorado
- Mountain Village Comprehensive Plan | Colorado
- Housing Affordability Study | Oklahoma City, OK
- Los Alamos North Mesa Redevelopment | Los Alamos, NM
- Hensley Field Market Analysis | Dallas, TX
- Beartooth RC&D Regional Housing Study and Needs Assessment | Joliet, MT



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**CONTACT**

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E: chris@rrcassociates.comW: rrcassociates.com**RELEVANT BOARD
EXPERIENCE**

- **(Former)**
Breckenridge
Outdoor
Education Center,
Breckenridge, CO
– boec.org
- **GP RED –**
Research,
Education and
Development for
Health,
Recreation and
Land

C. Chris Cares

Managing Director/Founding Partner

ABOUT

Chris possesses a diverse background in recreation and tourism research. A founding partner of RRC Associates, he specializes in practical research techniques including survey and qualitative research, modeling and applied analysis to support planning efforts and to solve problems in municipal administration and business applications. Parks and recreation needs assessments, with emphasis on adventure sports, are particular areas of specialization. Additionally, Chris has decades of experience working with the outdoor recreation industry including mountain resorts on summer and winter activities/facilities. Chris has overseen hundreds of community/citizen surveys in cities and counties throughout the United States, which provide input to parks, recreation, trails, open space, and planning needs assessments. These studies are typically incorporated into parks and open space master plans, or other policy documents.

EDUCATION

Master of City Planning: Harvard University 1975

Bachelor of Arts, Political Science: University of Rochester 1972

PROFESSIONAL EXPERIENCE

<i>1983 to present</i>	Managing Director/Founding Partner, RRC Associates, Boulder, CO
<i>1977 to 1981</i>	Planner/Associate, Gage Davis Associates, Boulder, CO
<i>1976 to 1977</i>	Planner, City of Boulder, Boulder, CO

RELEVANT WORK EXPERIENCE**Parks & Rec. Surveys/Assessments**

Broomfield, CO
Cedar Rapids, IA
Cripple Creek, CO
Eagle-Vail, CO
Erie, CO
Fruita, CO
Grand Junction, CO
Ken Caryl Ranch, CO
Jefferson County, CO
Larimer County, CO
Louisville, CO
Lafayette, CO
Oklahoma City, OK
Palm Springs, CA
Park County, CO
State of New Mexico SCORP
Spokane, WA
Superior, CO
Village at Castle Pines, CO

Housing & Transportation Assessments

Aspen/Pitkin County, CO
Boulder, CO
Eagle County and Town of Vail, CO
Grand Junction, CO
Lafayette, CO
Longmont, CO
Pueblo, CO
San Miguel County, CO
Weld County, CO
Westminster, CO

Tourism and Ski Area Visitor Research

National Ski Areas Association
Colorado Ski Country USA
Vail Resorts
Breckenridge Tourism Office
Copper Mountain
Telluride Ski and Golf Company
Upper Colorado River Research, CO



David Becher

Director of Research

CONTACT

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E: david@rrcassociates.com

W: rrcassociates.com

ABOUT

David has diverse experience managing and conducting many types of market research and planning projects for public and private sector clients in his more than two decades at RRC. With an educational background in urban and regional planning, public administration, and business administration, David works extensively in the areas of survey research, economic and demographic research, community planning, and affordable housing.

EDUCATION

Master of Business Administration, University of Colorado at Boulder
Master of Urban and Regional Planning, University of Colorado at Denver
Master of Public Administration, University of Colorado at Denver
Bachelor of Arts, Philosophy major, concentration in Environmental Studies, Williams College

PROFESSIONAL EXPERIENCE

2008 to present Director of Research, RRC Associates, Boulder, CO
1992 to 2008 Research Analyst and Sr. Research Analyst, RRC Associates, Boulder, CO

RELEVANT WORK EXPERIENCE

Planning & Affordable Housing

Aspen Employment Generation Study, CO
Boulder Afford. Housing & HOA Study, CO
Boulder Comprehensive Plan Survey, CO
Gunnison County Fee-In-Lieu Update, CO
Mesa County Master Plan Survey, CO
Monroe County Job Generation Study, FL
North Lake Tahoe Community Survey, CA
Park County Housing Survey, CO
Roaring Fork Valley Housing Study, CO
San Miguel County Housing Study, CO
Snowmass Village Housing Study, CO
Telluride Region Growth Study, CO
Teton County Housing Nexus Survey, WY

Economic & Fiscal Impact Analysis

Boulder Regional Economic Analysis, CO
Clifton Incorporation Feasibility Study, CO
Economic Impact of Skiing-CO, ID, UT, WI
River Run Fiscal & Economic Impact, ID
Montrose Regional Econ. Analysis, CO
Snowbasin Cost/Benefit Analysis, UT
South Lake Tahoe Retail Analysis, CA
Wasatch Peaks Ranch Fiscal Impact, UT
Winter X Games Economic Impact, CO

Tourism / Visitor Research

Aspen Summer Visitor Research, CO
Downtown Boulder Visitor Research, CO
Elko Airport Market Demand, NV
Estes Park Visitor Research, CO
Las Cruces Airport Market Demand, NM
Lea County Airport Market Demand, NM
Jackson Hole Airport User Research, WY
North Lake Tahoe Visitor Research, CA
Snowmass Strategic Tourism Plan, CO
Sun Valley Airport User Research, ID
Vail Special Events Research, CO
Visit Littleton Branding Research, CO
Yakima Airport Market Demand, WA

Skier Research

Alterra Mountain Company
Colorado Ski Country USA
Jackson Hole Mountain Resort, WY
NSAA National Demographic Study, US
NSAA Kottke Survey, US
Ski Idaho
Ski Utah
Ski Wisconsin
Vail Resorts



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4. PROJECT EXPERIENCE

About Economic & Planning Systems

Economic & Planning Systems, Inc. (EPS) is a land economics consulting firm experienced in the full spectrum of services related to real estate development, the financing of public infrastructure and government services, land use and conservation planning, and government organization.

EPS was founded on the principle that real estate development and land use-related public policy should be built on realistic assessment of market forces and economic trends, feasible implementation measures, and recognition of public policy objectives, including provisions for required public facilities and services.

AREAS OF EXPERTISE

- ▶ Real Estate Economics
- ▶ Public Finance
- ▶ Land Use & Transportation
- ▶ Economic Development & Revitalization
- ▶ Fiscal and Economic Impact Analysis
- ▶ Housing Policy
- ▶ Public-Private Partnership (P3)
- ▶ Parks and Open Space Economics

Clients Served

Since 1983 EPS has provided consulting services to hundreds of public- and private-sector clients in Colorado and throughout the United States. Clients include cities, counties, special districts, multi-jurisdictional authorities, property owners, developers, financial institutions, and land use attorneys.

Staff Capabilities

The professional staff includes specialists in public finance, real estate development, land use and transportation planning, government organization, and computer applications. The firm excels in preparing concise analyses that disclose risks and impacts, support decision making, and provide solutions to real estate development and land use-related problems.

- a. EPS has worked extensively throughout the State of Colorado on Housing Plan Actions for nearly 25 years. We have worked in most every community in the Colorado and Roaring Fork Valleys, as well as to the east in Eagle County. We understand the economic drivers for communities like Glenwood Springs, and the corresponding affordable housing needs. EPS has worked on comprehensive Affordable Housing Strategic Plans for Aspen and Telluride. We have also worked on many specific Action Plans for specific projects, such as tax initiatives, fee programs, P3 advisory for housing construction projects, and many programs including density bonus structuring and/or inclusionary housing mitigation standards. In short, few firms offer the range of expertise that we bring to this project.
- b. In terms of outreach to underrepresented populations, EPS has done and is doing many projects in communities with marginalized populations. In the past 18 months, our DEI work includes projects in Tacoma, WA; McKinney, TX; Denver, CO; Fort Morgan, CO; and San Antonio, TX. In most cases, this work involves housing stabilization and economic development for legacy businesses or startups owned by BIPOC members of a local community. EPS has found that we can offer credible processes and meaningful recommendations based on the premise that 1 – we listen well; 2 – we believe that the best answers are generated locally; and 3 – that empowering local stakeholder groups is the best way to effect long-term change.

Project Experience Examples

Housing Conditions and Policy Update

Basalt, Colorado

EPS was retained to identify how market and economic conditions since the recession had changed and to what extent housing supply was or was not meeting demand. EPS conducted a targeted employee survey to collect primary data on residence preferences and assessed how widening gaps between local housing costs and lower-paid employees and their households were contributing to the need for a locally-funded affordable housing solution. The work included a full analysis of supply and demand conditions, such as trends in demographics, employment, wages and income, and commuting, as well as the housing inventory. EPS found that exacerbated cost-burden conditions, a drastic increase in low-wage jobs, housing prices in excess of the local workforce, and the lack of new affordable inventory in the pipeline contributed to a workforce development problem. Recommendations were made related to actions that the Town could take to mitigate the causes and effects of these problems.

Short Term Rental Fee Study

Aspen, Colorado

Aspen and other mountain resort communities in Colorado are evaluating tools to regulate the impact of STRs on housing availability and affordability. EPS was retained by the City to analyze a fee-based approach that would levy an annual licensing fee on these units, with the fee revenue dedicated to providing a specific purpose such as housing development or housing programs.

EPS completed a fee study outlining an administrative fee that the City can charge to cover the costs of regulating and managing STRs, as well as a fee structure that would link expenditures from STR guests to housing need in the community, based on employment supported

through spending. The analysis included a detailed nexus study to document the community need stemming from expenditures, and how that linkage could be used to form the basis for a fee. As the project progressed, City Council adopted the administrative fee and gave direction to pursue a tax initiative to address housing impacts. The EPS nexus analysis is being used to calibrate the parameters in considering a ballot measure to adopt an excise tax on STRs.

Fruita Housing Fee Study

Fruita, Colorado

EPS is completing a housing funding strategy that is focused on generating new revenue streams and how those funds can be most effectively allocated to create more workforce housing options. The study is also modeling various housing programs, including an ADU program, land banking, and down payment assistance, to determine the impact of new funding in relation to housing targets and the financial feasibility of establishing a revolving loan fund for the City. Based on our recommendations, the City intends to establish permanent funding sources for housing and to consider a combination of supply- and demand-side programs aimed at workforce housing.

Telluride Affordable Housing Implementation Strategy

Telluride, Colorado

The Town of Telluride faced the challenge of maintaining its affordable housing inventory for local residents and employees in the face of escalating housing prices. The Town was concerned that the employment base would be inadequate to support local businesses in the future. Additionally, the Town was concerned that residents, including children growing up in Telluride, would be unable to afford to remain in the community.

The Town retained EPS to develop a housing strategy to identify production targets and evaluate funding sources. For the initial task, EPS quantified the current and future supply and demand for housing. Existing housing programs in the Telluride Region were evaluated, as well as employment projections, commuting patterns, and residency goals. EPS developed production targets that included number of units, type of unit, and sales/rental rates based on the analysis of local demographics. EPS then worked with Town staff to assess vacant sites, establish ranking criteria, and identify a top tier of potential sites. The final task involved a financial analysis and an implementation program prioritizing capital and operating investments against revenue sources.

Economic Impact of Resident Housing Investment

Vail, Colorado

The Town of Vail has made significant financial investments in resident housing over many decades. Such investments were rooted in an awareness that affordability and availability of housing for residents and the workforce benefit the broader Vail economy, business community, the overall community character, and the quality of the guest experience. One of Vail's more innovation and effective investment strategies has been deed-restriction acquisitions, in which the Town appropriates funds annually to ensure that homes are available for residents and the workforce. A new deed restriction purchase program, called Vail InDEED, was recently created to ensure Vail meets its 2027 Vail Housing 2027 Strategic Plan goal of acquiring 1,000 additional resident housing unit deed restrictions by the year 2027. In times of competing community investment priorities and alternatives, it is important that the benefits

of resident housing investment are quantified and understood by the community and its leadership. For this purpose, the Vail Local Housing Authority (VLHA) contracted with EPS to quantify the economic values and community benefits of resident housing investment on the local economy and community.

Mountain Village Affordable Housing Mitigation Strategies

Mountain Village, Colorado

Mountain Village, located at the base of the Telluride Ski Area, is a municipality that sought to generate affordable housing solutions. Mountain Village, along with many peer communities throughout the Rocky Mountain West, is challenged to provide the workforce to staff local business. In addition to economic goals, these towns also seek to increase community vitality with a greater number of affordable housing units for local residents.

Mountain Village retained EPS to provide affordable housing mitigation strategies that covered all uses of new development. The mitigation model that EPS constructed identified both the employment generation rates for all types of residential product as well as all types of commercial uses. Following the employment generation rates, the model identified the financial gaps faced by local households. These factors were used to generate mitigation programs that the Town began applying to development requests immediately following the adoption of the program. The benefit will be the construction of dedicated affordable housing and/or the generation of fees that the Town will use to fund its development efforts.

St. Anthony Summit Medical Center Workforce Housing Solutions

Frisco, Colorado

SASMC hired EPS to provide options to address the housing-related challenges it faces to recruit and retain a qualified workforce. Based on analysis of a survey fielded to all associates, market data, and a series of focus groups, EPS recommended a range of strategies SASMC could implement to address housing challenges among its workforce. These strategies varied in terms of cost, target employee cohort, and timing. Recommendations included staffing solutions, existing and new housing development solutions, commuter assistance, strategic partnerships, and financial mechanisms.

Affordable Housing Strategic Plan

Aspen, Colorado

The City of Aspen retained EPS to provide a strategy for increasing the inventory of affordable housing in the city. The primary purpose of the strategy was to help the City understand where it could leverage its resources and capitalize on the greatest opportunities in a cost effective manner. EPS grounded the strategy with a housing needs assessment, which provided aggregate targets for housing production, as well as goals for specific income levels. EPS evaluated multiple housing development options, including those involving the public and private sectors. Based on detailed pro forma models developed for seven sites and three prototypical infill projects, EPS prioritized the development opportunities using policy-based evaluation criteria, which included the relative subsidies required for each site. In addition, a financial analysis of the costs and revenues associated with the aggregate housing program over a 10-year period was provided to document how the City could accomplish its goals. Based on the analysis provided by EPS, the City adopted the recommended 10-year action plan and proceeded with the highest priority project. The City also restructured the Housing Authority and staff based on recommendations contained in the plan.

Affordable Housing Employee Generation Rate Peer Review **Summit County, Colorado**

The County had recently commissioned a study to estimate the number of full-time equivalent jobs (FTEs) in a planned development to determine compliance with an affordable housing mitigation requirement within zoning. EPS was engaged to complete a peer review of the “Study of Employee Generation Rates” to provide assurances for the County that its findings and recommendations met professional standards for housing and economic impact analysis.

Central City Density Bonus and Incentive Policy Update **Portland, Oregon**

The City of Portland has historically offered developers additional density, or transfers at entitlement in exchange for meeting one or more of nearly 20 different civic and community amenities. The incentive programs had been met with varying degrees of success and usage overtime, and the transfer options had created a secondary market for transferable FAR. Among the issues facing the City was the reality that the vast number of options not only competed with each other but diluted efforts to make strides toward achieving any one of these civic goals, specifically incenting affordable housing production. The goal of the study was to recalibrate the incentive structure so that developers would find an economically compelling course of action to incorporate incentive measures and build affordable housing.

EPS structured an analysis to evaluate the development feasibility of all development types throughout the Central City’s entitlement zones. The analysis compared the feasibility of by-right use to developments with a density bonus that provided affordable housing. Developers and industry professionals were engaged throughout the process, including one-on-one interviews and roundtable discussions. Affordable housing experts, brokers, legal experts, builders, and other city staff were also actively engaged throughout. EPS constructed a pro forma model to test a wide range of development scenarios and based on the findings recommended a threshold for FAR and AMI that could be more monetized by developers.

Downtown TOD Strategic Plan **Rifle, Colorado**

EPS was hired as part of a multidisciplinary team to evaluate the potential for downtown Rifle to become a model “21st Century” mountain community. This included analyzing the regional economy and the impact of natural gas and alternative energy, as well as evaluating the development potential in downtown over both the short and mid-term. Specific EPS tasks included regional growth forecasts, identifying downtown development potentials, financial feasibility testing, local property-owner engagement, and the potential for a public financing strategy that supports new development and identifies funding sources for new transportation and “green” infrastructure included in future sustainability programs.

EPS also helped the City with an outreach effort to identify potential housing and commercial developers that may be attracted to doing a project in downtown Rifle. The goal was to identify viable development projects that could be built to catalyze redevelopment. EPS provided the technical data needed to inform potential developers, as well as feasibility analysis to assess various development concepts. EPS also advised the City on the best way to leverage its downtown urban renewal district, suggested approaches to modifying the boundaries and approaches for the City to the use urban renewal to better leverage the existing district and future districts.

5. REFERENCES

Michelle Haynes, Planning and Development Services Director, Town of Mountain Village | 970 239 4061 | mhaynes@mtnvillage.org

George Ruther, Housing Department Director, Town of Vail | 970 479 2145 | gruther@vailgov.com

Dan Caris, Director, Planning & Development, City of Fruita | 970 858 0786 | dcaris@fruita.org

Phillip Supino, AICP, Director, Community Development, City of Aspen | 970 429 2767
phillip.supino@aspen.gov

6. PROJECT PLAN AND SCHEDULE

The following is our proposed scope of work based on our understanding of the study objectives shown in the RFP. Please consider this scope of work a first draft; we welcome the opportunity to review this with you and tailor it to best meet your needs and objectives.

Task 1: Project Initiation

EPS will meet with staff and review the methodology and background for each of the five tasks shown below. We recognize that the effort is action oriented, and accordingly will frame the activities to be completed for each. During the project initiation, we will construct our approach to the work while incorporating your help and fulfilling the objectives of the RFP.

Task 2: Use of Vacant Public Land to Develop Housing

As noted previously, we bring extensive set of experience with partnerships, by which a city can put land under a developer, and then execute a specific affordable housing development. We will review the attributes of each site, its context, and the desired development program, including density uses, AMI targets, etc., and define the objectives that the City intends to accomplish that are needed to support the project.

The next step is to construct a financial feasibility analysis to document costs, revenues, risk, and returns. EPS will document the industry standards for metrics of return for static and dynamic pro forma for leveraged and unleveraged deals. Because EPS has extensive experience in presenting to investment committees, we understand what private developers require in order to engage. We will also explain how the City can provide those levels of return and what it needs to contribute to make the project viable.

Other factors to account for in this process will be the status of the land, whether the City desires to sell or lease, and if subordination is a consideration. We will work with staff to frame sources of financing for debt and equity and provide direction on ways to balance the goals of the City with the needs of the developer. Our work will include ways to frame the opportunity that can engage the development community and delineate terms on a spectrum of 'most-' to 'least-' negotiable. We will provide clarity and specificity for the interested developers, along with a latitude that allows for their expertise and creativity.

Task 3: Density Bonus Program and other Land Use Policy Regulatory Approaches

For this task, EPS will review with City staff the parameters for a Density Bonus Program. We would like to hear how the program has been framed thus far, options that have been considered, goals to be accomplished, and the magnitude of development as subject to the new standards. We will then document the costs to developers to achieve the goal, the value of the density bonus (or other tools), and how to achieve parity.

EPS completed a similar study for the City of Portland which enabled it to simplify its density bonus program and make it more effective, using an evaluation of real estate market considerations that informed the policy and balanced the civic goals of modest mass and bulk with the community needs for affordable housing. Using the tools we have developed for density bonus programs elsewhere, we can tailor the program to the parameters that are appropriate for the Glenwood market.

If desired by the City, EPS can evaluate other regulatory tools that can be adopted to create inventory. For a recently completed project for Mountain Village, EPS provided the complete basis for inclusionary commercial and residential programs, with a graduated scale for fulfillment that provided options and maximized the affordable housing delivery for the community. EPS generated a simple two-sheet excel program for developers to use to quantify their affordable housing requirements that proved to be both transparent and incremental to the user and simplified what can otherwise be complex.

Task 4: Dedicated Funding Sources

For this task, EPS will lead the process for the City of Glenwood to evaluate options for fees and taxes and will provide the technical analysis to support the decision-making process. In addition, we will frame revenue potentials, evaluate the pros and cons for the City relative to each option, and delineate the process for adoption.

EPS is on the forefront of creating dedicated housing funding sources. Recently, EPS developed a highly innovative approach for revenue generation for the City of Fruita. As part of that work, we collaborated with legal firms, one of which is based in Glenwood Springs, and one of which is recognized as a statewide expert on the ability of local jurisdictions to adopt revenue generating programs. We have therefore taken the conversation regarding fees and taxes to a new level of understanding and completed the research needed to determine a local government's set of options.

As noted in the cover letter, EPS has worked recently with the City of Aspen on both a fee and tax approach. We also worked with the Town of Vail and supported their recently successful adoption of a half-cent sales tax for affordable housing. In addition, we have worked with numerous cities and town on housing fees and impact fees.

In addition to these more innovative discussions, EPS is established and well-recognized for fee-based programs for water, sewer, libraries, roads, parks, municipal buildings, and more. We thoroughly understand the logistics and basis for fee programs, how to size them relative to the current level of service, future needs, and the ways to project revenues and size fees to meet the civic needs.

Task 5: Land Banking and Preservation of Existing Affordable Housing

EPS will provide a summary of options for ways to establish a Land Bank and/or a Community Land Trust. Both are good solutions, and both could be effective in the Glenwood Springs context. The most important element of these types of programs is to construct a decision-making system that can work with the market and acquire land (or establish options, at a minimum) as key parcels become available.

EPS will show how to both generate revenue for the fund and deploy those revenues; we will also work with the City to establish criteria for acquisition. Most importantly, we will advise the City on ways it can use its tools to increase value as it holds the land.

Preservation of existing or naturally occurring housing is becoming more important to communities as they compare costs of construction to preservation. To that end, EPS will document the financial options for each and how the City can direct its resources to maximize the benefit. This analysis will include mobile home communities, dated rental properties, and other enclaves of existing affordable housing units.

Task 6: Strategic Action Plan

EPS will prepare a Technical Memorandum for each of these tasks and use that to facilitate listening sessions with the City Council and community outreach. Following the process in which the community and elected officials will provide their feedback, EPS will incorporate the responses and provide the City staff with a Plan delineating a comprehensive set of actions the City can take to increase the inventory of affordable housing.

Task 7: Housing Gaps and Determination of Need

If desired by the City, EPS can provide a specific target of affordable housing needs based on the household income and housing market data analyzed in the previous tasks. EPS will perform a housing gap analysis to identify the income ranges, market segments, and household types with the greatest housing needs. Gaps will be identified for ownership and rental housing. The existing gap analysis, also defined as the 'catch up need,' will identify the degree of need by tenure and income level. In terms of future needs, also defined as the 'keep up need,' the consultant team will rely on Colorado Department of Local Affairs (DOLA) projections for Glenwood Springs' future economic growth, and based on these projections, we will estimate the amount of housing demand generated by future economic growth. The conclusions of this task will illuminate which segments of the community warrant the greatest attention to help prioritize housing resources.

Schedule

As shown in **Figure 1** below, EPS believes we can complete the project within five months of contract execution. The tasks are interwoven with engagement milestones, with staff, community members, and a final session with City Council.

Figure 1. Proposed Project Schedule

Task	Week	Month 1		Month 2		Month 3		Month 4		Month 5	
		1-2	3-4	1-2	3-4	1-2	3-4	1-2	3-4	1-2	3-4
Task 1: Project Initiation		□									
Task 2: Use of Vacant Public Land to Develop Housing											
Task 3: Density Bonus Program / Other Land Use Policy Regulatory Approaches						■					
Task 4: Dedicated Funding Sources							□		■		
Task 5: Land Banking and Preservation of Existing Affordable Housing											
Task 6: Strategic Action Plan										□	● □
Task 7: Housing Gaps and Determination of Need											

□ = Project initiation / Check Ins

■ = Staff engagement (workshop to review completed tasks)

□ = Community engagement (workshops 1 & 2)

□ = City Council engagement

● = Final report/presentation

The plan calls for two work sessions with staff, at milestones in which the technical analysis for two work program elements has been completed. Based on the staff input, we would then prepare for a followup community outreach. The intent is to break down the material into smaller pieces, such that meaningful input can be collected. For the community sessions, EPS will be present in the community for a full day, and can incorporate meeting with staff and key stakeholders, in addition to the larger community meeting. We look forward to hearing suggestions from you as to what works best within Glenwood Springs. A final session with City Council has been included. If there is a desire to redirect those funds to other parts of the effort, EPS is flexible.

7. PROJECT BUDGET

EPS agrees to complete the above scope of work within approximately five months on a time and materials basis not to exceed \$67,780 without prior approval of the City. There are three, two-person trips for Community and City Council engagement meetings included in the budget shown in **Table 1** on the next page.

Table 1. Proposed Project Budget

Tasks	Total
Task 1: Project Initiation	\$1,560
Task 2: Use of Vacant Public Land to Develop Housing	\$8,240
Task 3: Density Bonus Program and other Land Use Policy Regulatory Approaches	\$6,240
Task 4: Dedicated Funding Sources	\$7,240
Task 5: Land Banking and Preservation of Existing Affordable Housing	\$4,560
Task 6: Strategic Action Plan	\$6,940
Task 7: Housing Gaps and Determination of Need	\$12,500
Labor Costs	\$47,280
Staff Engagement	
Workshop to review work on Task 2 and Task 5	\$2,000
Workshop to review work on Task 3 and Task 4	\$2,000
Community Engagement	
Community Workshop #1	\$5,500
Community Workshop #2	\$5,500
City Council Engagement	\$5,500
Engagement Costs	\$20,500
Total Budget	\$67,780

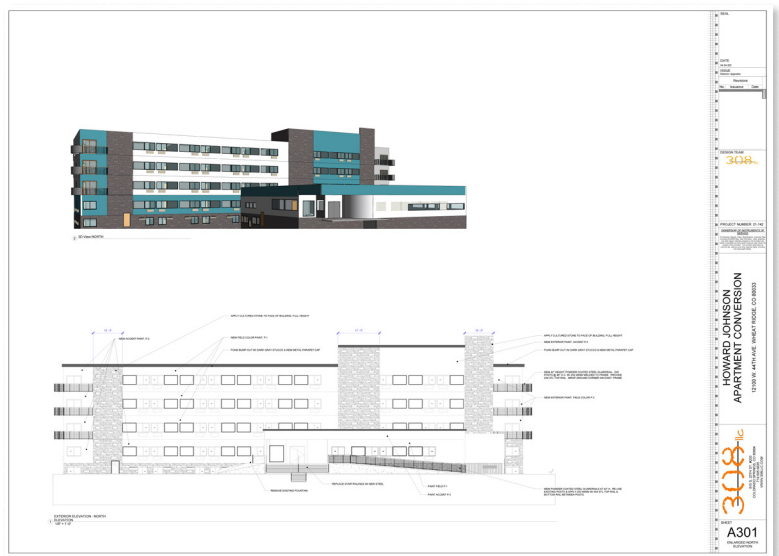
Source: Economic & Planning Systems, Inc.

8. EXAMPLES

Provided below are two examples of projects in which EPS consulted that are in the development phase.

Howard Johnson Hotel Conversion - Wheat Ridge, Colorado

EPS was retained by the City of Wheat Ridge Urban Renewal Authority to provide financial feasibility analysis regarding a proposed redevelopment project that was seeking tax increment financing (TIF) assistance. The developers converted an old 108-room hotel into 97 multifamily units of workforce housing. The new residential development, Prospect Park Apartments, includes studio, 1-, and 2-bedroom units at rental rates below market rate for the local workforce. It also has residential amenities with a fitness room, co-working space, storage units, and dog park. EPS worked closely with the developer and City to form a public private partnership that served the interest of both the private and public sector. EPS conducted a technical financial evaluation of the project to determine the financial gap of providing additional improvements and amenities requested by the City. This included a financial model that assessed the





feasibility of the project with and without public assistance. The developer received financial gap assistance from the URA to provide the additional improvements and amenities based on the financial model. The City and the developer worked together to create an affordable housing development that met the standards of the City with below market rents, exterior improvements, and residential amenities.

Units: 97 multifamily workforce housing with studio, 1-bed, and 2-bed units (268-520 square feet per unit)

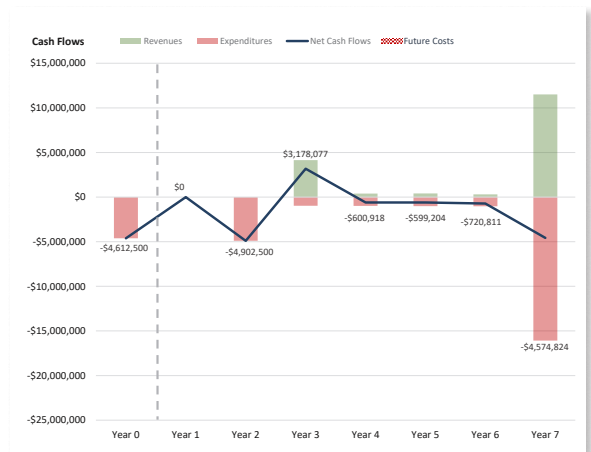
Development Cost: \$10.7 million

Currently under construction

Scobey Complex Feasibility Analysis - San Antonio, Texas

EPS has assisted VIA Metropolitan Transit in San Antonio, TX with implementing a joint development and Transit Oriented Development (TOD) program for a number of sites throughout the San Antonio region. The most recent assignment has been a series of tasks to transform the area immediately surrounding VIA's transit hub, Centro Plaza. The agency purchased a block of historic structures that were last in active use several decades ago. EPS evaluated the context surrounding the site and completed a market analysis based on regional and submarket potentials. EPS worked closely with the larger prime consultants and VIA staff to write and issue a developer solicitation, stipulating the inclusion of affordable housing into the project. EPS evaluated the proposals, helped select the developer, and is currently negotiating with the selected team using a pro forma that includes general partners, limited partners, the transit agency, and the City that allocates returns to each, based on the degree of risk and level of involvement.

The proposed Scobey redevelopment is anticipated to include: 104 multifamily residential units ranging from 60 to 140% of AMI; 32,000 square feet of retail space; 26,500 square feet of office space, and 36,000 square feet of self-storage space. Redevelopment costs are estimated at approximately \$66 million and will be financed at a 65% loan-to-cost ratio.



9. DISCLOSURES

Economic & Planning Systems states that it has no any claims, lawsuits, formal disputes for work or services previously or currently being performed. Nor has it experienced any loss of funding due to any circumstance.

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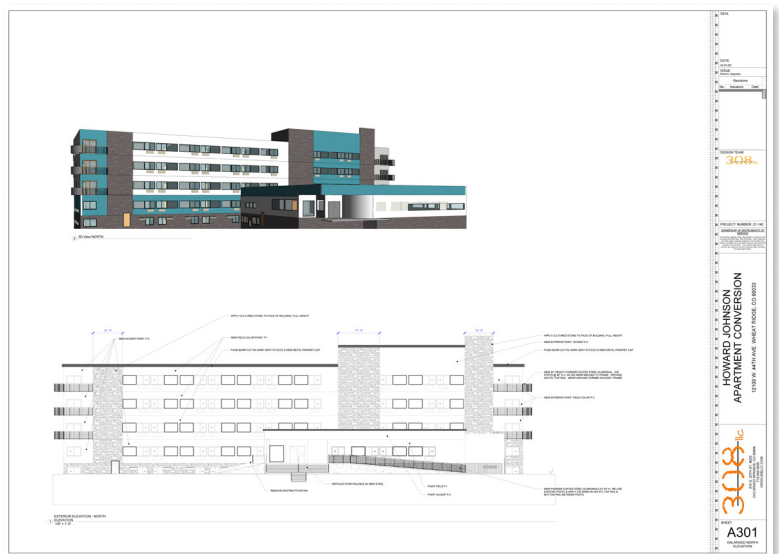
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City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item:	Resolution 2022-30; New Alternate Representative for the Municipal Energy Association of Nebraska (MEAN)
Action Requested:	Approve resolution
Department:	Public Works
Presented By:	Matthew Langhorst
Strategic Goals:	
Background Info:	This was passed at the last meeting and is a formality required by Mean (Municipal Energy Association of Nebraska).
Issues:	NA
Fiscal Impact:	NA
Legal Review:	NA
Staff Recommendation:	Staff supports approval.

Resolution No. 2022-30

Appointment to NMPP Members' Council

Alternate Representative to the Members Council of the NMPP

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Glenwood Springs, State of Colorado, that: The City Council of the City of Glenwood Springs, State of Colorado, does hereby appoint Doug Hazard as the alternate representative* of the City of Glenwood Springs, State of Colorado, to the Members' Council of the Nebraska Municipal Power Pool.

**Pursuant to Article V of the Amended and Restated Bylaws of the Nebraska Municipal Power Pool, "Any person appointed as Representative or Alternate Representative shall be a resident of the area receiving services from the appointing Member."*

This is to certify that the appointments set out above were approved by the City Council of the City of Glenwood Springs, State of Colorado, at their meeting on August 4, 2022.

Clerk

(SEAL)



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item:	Resolution 2022-17 - National Endowment for the Arts our Town Grant
Action Requested:	Approval of a resolution supporting a grant application to the National Endowment from the Arts (NEA) for the creation and fabrication of metal art banners for the Grand Avenue Bridge.
Department:	City Administration
Presented By:	Jenn Ooton
Strategic Goals:	Protect and Preserve our Quality of Life
Background Info:	During the Grand Avenue Bridge project, banner poles were installed on the light poles. This grant application would support project for the creation and fabrication of metal art banners for the empty banner poles. It would include a call for art process and public charrettes to develop the themes and refine final designs.
Issues:	N/A
Fiscal Impact:	The grant requires a one-to-one match, which in this case would be \$66,000. The DDA has offered to contribute half of the required match through the Director's time to facilitate charrettes (in-kind) and through a cash contribution for the project.
Legal Review:	The City Attorney's Office drafted the resolution.
Staff Recommendation:	Approval of the resolution supporting the grant application and appropriating funds for the project.

RESOLUTION 2022 - 17

A RESOLUTION OF THE CITY COUNCIL OF GLENWOOD SPRINGS, COLORADO, SUPPORTING A NATIONAL ENDOWMENT FOR THE ARTS OUR TOWN GRANT AND THE ACCEPTANCE AND APPROPRIATION OF ANY GRANT FUNDS AWARDED

WHEREAS, the City of Glenwood Springs is a political subdivision of the State of Colorado, and therefore an eligible applicant for a grant awarded by the Colorado Department of Local Affairs (“DOLA”); and

WHEREAS, the City of Glenwood Springs intends to submit a \$66,000 grant application to the National Endowment for the Arts to create designs and fabricate metal art banners to hang on 24 banner poles on the Grand Avenue Bridge; and

WHEREAS, the City will provide a match of \$66,000 for the grant application; and

WHEREAS, the Downtown Development Authority has agreed to contribute half of the needed match in cash and in-kind;

WHEREAS, the City Council strongly supports the creation of art that reflects the uniqueness of our community, promotes cultural tourism, and helps humanize the built environment.

NOW, THEREFORE, IT IS RESOLVED BY THE CITY COUNCIL OF THE CITY OF GLENWOOD SPRINGS, COLORADO, THAT:

Section 1. The above recitals are hereby incorporated as findings by the City.

Section 2. The City strongly supports the NEA Grant and has appropriated \$66,000 for the Project.

Section 3. The City Council of the City of Glenwood Springs will authorize the expenditure of funds necessary to meet the terms and obligations of any grant awarded pursuant to a Grant Agreement with the National Endowment for the Arts.

Section 4. If a grant is awarded, the City Council of the City of Glenwood Springs hereby authorizes the Mayor or Mayor Pro Tem to sign a Grant Agreement with the NEA.

INTRODUCED, READ, AND PASSED THIS ____ DAY OF AUGUST 2022.

CITY OF GLENWOOD SPRINGS, COLORADO

Jonathan Godes, Mayor

ATTEST:

Ryan Muse, City Clerk



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item: Ordinance 2022-19; Planning item 12-22, Code Amendments to Title 070.040 as it Relates to Floodplain Regulations (To Be Continued to the Next Meeting)

Action Requested: In January of 2022 the Colorado Water Conservation Board revised the regulations regarding the evaluation of floodplains in the State of Colorado. These new rules will replace our old code section regarding the review of floodplains.

Department: Engineering

Presented By: Terri Partch

Strategic Goals: Ensure Public Safety

Background Info: The Colorado Water Conservation Board (CWCB) revised the state regulations regarding floodplains. Substantial changes include:

- Specifying the hydrologic and hydraulic requirements for floodplain modeling
- Specifying the topographic and survey requirements for representation of the floodplain
- Specifying the qualifications required to develop a flood study.
- Requirements for modeling flood control structures.
- Requirements for the use of levees
- Restrictions on permitting of new structures in areas that have been removed from the floodplain through fill.
- Letter of Map Revision (LOMR) is now required for any stream alteration activity that results in a 0.30 foot change in the base flood elevation.

For changes to Title 070, the Planning Commission is a recommending body to City Council. The Planning Commission held a public hearing on this item on April 26, and voted to recommend approval unanimously.

For code amendments to Title 070, the Planning Commission and City Council consider whether and to what extent the proposed amendments are:

Are consistent with the Comprehensive Plan and other City policies;

Do not conflict with other provisions of this Code or other provisions in the Glenwood Springs Municipal Code;

Are necessary to address a demonstrated community need;

Are necessary to respond to substantial changes in conditions and/or policy; and

Are consistent with the general purpose and intent of this Code.

Issues: None at this time.

Fiscal Impact: None.

Legal Review: NA

Staff Recommendation: Approve the Municipal Code revision to reflect the new State requirements for floodplains.

DEPARTMENT OF NATURAL RESOURCES

Colorado Water Conservation Board

RULES AND REGULATIONS FOR REGULATORY FLOODPLAINS IN COLORADO

2 CCR 408-1

Rule 1. Title:

The formal title of the previous Rules and Regulations was "Rules and Regulations for the Designation and Approval of Floodplains and of Storm or Floodwater Runoff Channels in Colorado" as approved in 1988. The title for these Rules and Regulations was revised in 2005 to "Rules and Regulations for Regulatory Floodplains in Colorado," and amended here under the same title (referred to herein collectively as the "Rules" or individually as "Rule"). These Rules supersede the 2010, the 2005 and the 1988 Rules.

Rule 2. Authority:

These Rules are promulgated pursuant to the authority granted the Colorado Water Conservation Board (Board or CWCB) in sections, 24-65.1-101(1)(c), 24-65.1-202(2)(a), 24-65.1-302(2)(a), 24-65.1-403(3), 37-60-106(1), 37-60-106(1)(c)–(g), (j), (k), and 37-60-108, C.R.S..

Rule 3. Purpose and Scope:

- A. **Purpose.** The purpose of these Rules is to provide uniform standards for Regulatory Floodplains (or Floodplains) in Colorado, to provide standards for activities that may impact Regulatory Floodplains in Colorado, and to define the process by which floodplains will be Designated and Approved by the Board. Rules for Regulatory Floodplains are of statewide concern to the State of Colorado and the Board in order to prevent Flooding and the negative impacts of Floods, as well as to promote public health, safety, welfare and property by limiting Development in Floodplains. These Rules also assist the CWCB and Communities in Colorado to develop sound Floodplain Management practices and implement the NFIP. These Rules shall apply throughout the State of Colorado, without regard to whether a Community participates in the National Flood Insurance Program. These Rules shall also apply to Stream Alteration Activities conducted by state agencies and to federal Stream Alteration Activities that are fully or partially financed by state funds. These Rules also apply to projects or studies for which the Board has made a loan or grant pursuant to sections 37-60-120(2) and 37-60-121(1)(b)(VII), (IX)(C), C.R.S.
- B. **Scope.**
- (1) **Zoning.** These Rules apply to all Floodplain information developed for zoning and for Floodplain permitting purposes for waterways in the State of Colorado by, but not limited to, individuals, corporations, local government agencies, regional government agencies, state government agencies, Native American tribes, and federal government agencies.
 - (2) **Subdivisions.** These Rules generally apply to the local approval of subdivision drainage reports that provide 100-Year Floodplain information. Local governments should ensure that site-specific Floodplain delineations, intended for regulatory purposes when they are

prepared for Development activities, are consistent with Floodplain information Designated and Approved by the Board.

- (3) **Dam Failure Floodplain.** These Rules do not apply to the identification of the area potentially inundated by the catastrophic or sudden failure of any man-made structure such as a dam, canal, irrigation ditch, pipeline, or other artificial channel.

Rule 4. Definitions:

The following definitions are applicable to these Rules and Regulations for Regulatory Floodplain in Colorado:

<u>Term</u>	<u>Definition</u>
100-Year-Flood	A Flood having a recurrence interval that has a 1-percent-annual-chance of being equaled or exceeded during any given year (1-percent-annual-chance-Flood). For the purpose of these Rules, the terms "100-Year-Flood" "1-percent -annual-chance Flood," and "base Flood," are synonymous. The term does not imply that the Flood will necessarily happen once every one hundred years.
100-Year-Floodplain	The area of land susceptible to being inundated as a result of the occurrence of a 100-Year-Flood. 100-Year-Floodplains are considered to be areas of high Flood hazard. For the purposes of these Rules, the terms "100-Year-Floodplain," "Regulatory Floodplain," and "Special Flood Hazard Area" are synonymous.
500-Year-Flood	A Flood having a recurrence interval that has a 0.2-percent-annual-chance of being equaled or exceeded during any given year (0.2-percent- annual-chance-Flood). The terms "five-hundred-year Flood" and "0.2-percent -annual-chance Flood" are synonymous with the term "500-Year-Flood." The term does not imply that the Flood will necessarily happen once every five hundred years.
500-Year-Floodplain	The area of land susceptible to being inundated as a result of the occurrence of a 500-year-Flood. 500-Year-Floodplains are typically considered to be areas of moderate Flood hazard.
Accessory Structure	A structure which is on the same parcel of property as a principal structure and the use of which is incidental to the use of the principal structure.
Addition	Any activity that expands the enclosed footprint or increases the horizontal square footage of an existing structure.
Agricultural Structure	For Floodplain Management Regulation purposes, Agricultural Structures are structures that are used exclusively for agricultural purposes or uses in connection with the production, harvesting, storage, raising, or drying of agricultural commodities and livestock.

Structures used for human habitation and those that are places of employment or entertainment and structures with multiple or mixed purposes do not satisfy the “exclusive use” requirement and are not Agricultural Structures.

Alluvial Fans

A fan-shaped sediment deposit formed by a stream that flows from a steep mountain valley or gorge onto a plain or the junction of a tributary stream with the main stream. Alluvial Fans contain active stream Channels and boulder bars, and recently abandoned Channels. Alluvial Fans are predominantly formed by alluvial deposits and are modified by infrequent sheet Flood, Channel avulsions and other stream processes.

**Approximate
Floodplain Information**

Flood hazard information based on a reduced level of detail for topographic mapping or hydraulic calculations. Analysis results may be used to develop Flood hazard delineations and corresponding data (i.e., water surface elevations, associated depths and velocities). This may or may not have a comparison of water surface profiles with a topographic map of compatible accuracy. The level of detail for hydrology is consistent with that of detailed Floodplain information. Base Flood Elevations are often not portrayed on a mapped stream reach with Approximate Floodplain Information.

Base Flood

Is synonymous with 100-Year-Flood and is a Flood having a 1-percent-annual-chance of being equaled or exceeded in any given year.

**Base Flood Elevation
(BFE)**

The elevation shown on a FEMA FIRM for Zones AE, AH, A1-A30, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO, V1-V30, and VE that indicates the water surface elevation resulting from a Flood that has a 1-percent-annual-chance of equaling or exceeding that level in any given year.

Basin

The total land surface area from which precipitation is conveyed or carried by a stream or system of streams under the force of gravity and discharged through one or more outlets.

Board

Refers to the Board of Directors of the Colorado Water Conservation Board.

Channel

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

Channelization

The artificial creation, enlargement or realignment of a stream Channel.

**Code of Federal
Regulations (CFR)**

The codification of the general and permanent Rules published in the Federal Register by the executive departments and agencies of the Federal Government. It is divided into 50 titles that represent broad

	areas subject to Federal regulation.
Colorado Floodplain and Stormwater Criteria Manual	The Manual prepared by the CWCB to, if needed, aid local officials and engineers in the proper regulation and design of Flood protected facilities. The Manual is advisory, rather than regulatory, in purpose.
Colorado Revised Statutes (CRS)	The codified general and permanent statutes of the Colorado General Assembly.
Colorado Water Conservation Board	As used in these Rules, "CWCB" refers to the agency and its staff, and "Board" refers to the Board of Directors of the Colorado Water Conservation Board.
Community	Any political subdivision in the state of Colorado that has authority to adopt and enforce Floodplain Management Regulations through zoning, including, but not limited to, cities, towns, unincorporated areas in the counties, Native American tribes and drainage and Flood control districts.
Conditional Letter of Map Revision (CLOMR)	FEMA's comment on a proposed project, which evaluates potential project impacts on the hydrologic or hydraulic characteristics of a Flooding source. A CLOMR does not revise an effective Floodplain Map, but determines whether a proposed project, once constructed, would warrant revisions to the effective Flood Hazard Information.
Critical Facility or Critical Facilities	Means a structure or related infrastructure, but not the land on which it is situated, as specified in Rule 6, that if flooded may result in significant hazards to public health and safety or interrupt essential services and operations for the Community at any time before, during and after a Flood. See Rule 6.
Debris Flow	Movement of mud, water, and other materials downward over sloping terrain. The flow typically consists of a mixture of soil, rock, woody debris and water that flows down steep terrain.
Designation and Approval	Certification by formal action of the Board that technical information developed through scientific study using accepted engineering methods is suitable for local governments making land use decisions under statutorily authorized zoning powers.
Detailed Floodplain Information	Floodplain information prepared utilizing topographic base mapping, supplemental survey data, Hydrologic Analysis, and hydraulic calculations (at the time of the study) to arrive at precise Flood Hazard Information suitable for making land use decisions under statutorily authorized zoning powers.
Development	Any man-made changes to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining,

dredging, filling, grading, paving, excavation or drilling operations.

FEMA

Federal Emergency Management Agency.

**FEMA Risk Mapping
Assessment and
Planning (Risk MAP)
Technical References,
Guidelines and
Standards for Flood
Risk Analysis and
Mapping Activities**

FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping, and associated resources, define the implementation details for statutory and regulatory requirements for NFIP mapping.

Flood or Flooding

A general and temporary condition of partial or complete inundation of normally dry land areas from:

1. The overflow of water from Channels and reservoir spillways;
2. The unusual and rapid accumulation or runoff of surface waters from any source; or
3. Mudslides or mudflows that occur from excess surface water that is combined with mud or other debris that is sufficiently fluid so as to flow over the surface of normally dry land areas (such as earth carried by a current of water and deposited along the path of the current.

**Flood Control
Structure**

A physical structure designed and built expressly or partially for the purpose of reducing, redirecting, or guiding Flood flows along a particular waterway.

**Flood Hazard
Information**

Floodplain Maps, profiles, and other related information for Flood hazard areas that have been Designated and Approved by the Board. See Rule 5.

**Flood Insurance Rate
Map (FIRM)**

A FIRM is the official FEMA Flood map for a Community for delineating both the 100-Year-Floodplain and 500-Year-Floodplain, the Floodway, and hazard zone designations applicable to the Community.

**Flood Insurance Study
(FIS)**

A FEMA FIS is a compilation and presentation of Flood hazard data (information and maps) for watercourses, lakes, and other sources of Flood hazard within a Community for the NFIP. The FIS report contains detailed Flood elevation data in Flood profiles and data

tables.

Floodplain	The area of land that could be inundated as a result of a Flood, including the area of land over which floodwater would flow from the spillway of a reservoir.
Floodplain Management	The operation of an overall program of corrective, preventive, and maintenance measures for reducing potential Flood risk and associated damage, including, but not limited to, zoning or land-use regulations, Flood mitigation measures, and emergency preparedness plans.
Floodplain Management Regulations	Zoning ordinances, subdivision regulations, building codes, health regulations, land-use permits, special purpose ordinances (Floodplain ordinance, grading ordinance, or erosion control ordinance) and other applications of regulatory powers. The term describes state/local regulations that provide standards for Floodplain preservation and potential Flood risk reduction to life, safety, health and property.
Floodplain Maps	Maps that show in a plan view the horizontal boundary of Floods of various magnitudes or frequencies. Such maps include, but are not limited to, Flood Hazard Boundary Maps (FHBM), and Flood Insurance Rate Maps (FIRMs) published by FEMA, Flood Prone Area Maps published by the U.S. Geological Survey (USGS), Flooded Area Maps published by the U. S. Army Corps of Engineers (USACE), Floodplain Information Reports published by the CWCB or others, Flood Hazard Area Delineation studies (FHADs) published by the Urban Drainage and Flood Control District (UDFCD) a/k/a the Mile High Flood District, and other locally adopted Floodplain Studies and master plans.
Floodplain Studies	A formal presentation of the study process, results, and technical support information developed for Floodplain Maps.
Floodway	The Channel of a river or other watercourse and the adjacent land areas that must be kept free of obstructions in order to discharge the Base Flood without cumulatively increasing the water surface elevation more than a designated height.
Freeboard	The vertical distance in feet above a predicted water surface elevation intended to provide a margin of safety to compensate for unknown factors that could contribute to Flood heights greater than the height calculated for a selected size Flood such as debris blockage of bridge openings and the increased runoff due to urbanization of the

	watershed.
Geographic Information Systems (GIS)	Computer software that utilizes databases and terrain mapping to store and display spacial and tabular data, such as floodplains, as layers (e.g. political boundaries, roadways, structures, topographic information, land use) for natural resource management and other uses.
Hydraulic analysis	The determination of Flood elevations, depths, and velocities for various storm frequencies/events based on a scientific analysis of the movement and behavior of floodwaters in Channels and overbank areas through a Basin or watershed.
Hydrologic Analysis	The computation of the hydrograph, peak rate of flow, or discharge in cubic feet per second, for various storm frequencies/events for streams, Channels, or watersheds based on a scientific analysis of the physical process resulting in precipitation runoff amounts at specific locations.
Letter of Map Revision (LOMR)	An official revision issued by FEMA to modify the currently effective FIRM and FIS. Based on supporting technical documentation, it is issued by FEMA for changes to Flood hazard potential, Flood zones, Flood hazard delineations, and corresponding Flood elevations.
Letter of Map Revision Based on Fill (LOMR-F)	FEMA's official determination document supporting a revision to the 100-Year-Floodplain, also known as the "Special Flood Hazard Area (SFHA)" or high risk Flood zone shown on the effective FIRM based on the placement of fill outside the effective regulatory Floodway. The determination is based on either the lowest adjacent grade or Lowest Floor relative to the effective BFE or 100-Year water surface elevation. This type of revision does not physically change the SFHA, but provides the property owner an official document verifying the property or building is above the regulatory Flood elevation at that location.
Levee or Levee System	A man-made structure or land feature (or series of structures or land features) designed and operated, wholly or in part, for the purpose of containing, controlling, or diverting the flow of water to reduce Flood risk potential for areas on the landward side of the Levee or Levee System.
Lowest Floor	The lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, useable solely for parking of vehicles, building access, or storage in an area other than a basement area is not considered a building's lowest floor. Provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of 44 C.F.R. § 60.3. See Rule 17.

**Low Impact
Development (LID)**

Development design/construction strategy that maintains the predevelopment hydrologic regime to the extent possible at the development site. The goal of LID is to mimic the natural runoff hydrograph as much as practicable in terms of magnitude, frequency, duration, timing, and rate of change of stream flows. LID focuses on small scale stormwater retention and detention, reduced impervious areas, and increased runoff periods.

**Material Safety Data
Sheet (MSDS)**

A form with data regarding the properties of a particular substance. An important component of product stewardship and workplace safety, it is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner, and includes information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill-handling procedures.

Mitigation

The process of preventing disasters or reducing impacts of related hazards. Structural Mitigation, includes, but is not limited to, Flood proofing structures, diverting floodwaters, detention ponds, floodwalls or Levees. Nonstructural Mitigation includes, but is not limited to, education, planning, and design of Flood prevention measures, emergency preparedness plans, elevating or relocating structures, purchasing property for open space, and/or early Flood warning detection systems.

**Model-Backed
Approximate Flood
Elevation**

The 100-Year-Flood water surface elevation resulting from a hydraulic model used to determine an Approximate Floodplain.

**National Flood
Insurance Program
(NFIP)**

FEMA's program of Flood insurance coverage and national Floodplain Management administered in conjunction with the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The NFIP has applicable federal regulations promulgated in Title 44 of the Code of Federal Regulations. The U.S. Congress established the NFIP in 1968 with the passage of the National Flood Insurance Act of 1968.

**Notice of Non-
Compliance (NONC)**

Written notification notifying a Community or person that the CWCB has discovered potential violations of these Rules.

**Post-Wildfire
Hydrology**

Methodologies and calculations developed to account for the increased stormwater runoff following forest fires. Post-wildfire hydrology is typically evaluated every 3 to 5 years to assess the need for further revision based on watershed recovery, forest re-growth, and other factors.

**Provisionally
Accredited Levee
(PAL)**

A temporary FEMA Levee designation option for previously accredited Levees or Levee Systems recognized on a FIRM that allows mapping for an area while affording time for a Levee owner or Community to

provide data and documentation demonstrating the Levee still meets requirements set forth in 44 C.F.R § 65.10. A PAL notation on the FIRM indicates that the Levee owner has signed and submitted an agreement to FEMA to provide documentation of the structure's compliance under NFIP regulations within a specified period of time. As a result, FEMA has provisionally accredited the Levee (for a defined period of time), and that any designation of existing Zone X (shaded) areas due to Flood hazard reduction from a 1-percent-annual-chance-Flood on an effective FIRM (landward of the Levee) is also provisional.

Regulatory Floodplain

In Colorado the Regulatory Floodplain is the extents of the area subject to inundation by the 100-Year-Floodplain that have been Designated and Approved by the Board, unless a Community voluntarily elects to regulate to a 500-Year-Flood standard for certain circumstances.

Residual Risk

The Flood risk (probability of capacity exceedance or failure and the associated consequences) that remains after a Flood risk management or Mitigation measure has been implemented.

Special Flood Hazard Area (SFHA)

Special Flood Hazard Area means an area having special Flood, mudslide (i.e. mudflow), or Flood-related erosion hazards, and show on a Flood Hazard Boundary Map or FIRM as Zone A, AO, A1-30, AE, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, A99, AH.

Stream Alteration Activity

Any manmade activity within a stream or Floodplain that alters the natural Channel, geometry, or flow characteristics of the stream.

Substantial Damage / Substantially Damaged

Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

Substantial Improvement / Substantially Improved

Any reconstruction, rehabilitation, addition, or other improvement of a structure, 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 that have been Substantially Damaged, regardless of the actual repair work performed. The term does not, however, include either: 1) 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 Community and which are the minimum necessary to assure safe living conditions; or 2) Any alteration of a "historic structure," provided that the alteration will not preclude the structure's continued designation as a "historic structure."

Threshold Planning Quantity (TPQ)	A quantity designated for each chemical on the list of extremely hazardous substances that triggers notification by facilities to the State that such facilities are subject to emergency planning requirements.
Topography	Configuration (relief) of the land surface elevation; the graphic delineation or portrayal of that configuration in map form, as by lines of constant elevation called contour lines.
Use Change	Any change in the primary use of a facility or unimproved land.
Water Surface Profile	A graph that shows the relationship between the vertical elevation of the top of the floodwater and of the streambed with the horizontal distance along the stream alignment.

Rule 5. Regulatory Floodplain:

The Regulatory Floodplain in Colorado is the 100-Year-Floodplain, unless a Community voluntarily elects to regulate to a 500-Year-Flood standard for certain circumstances. The Board will also Designate and Approve 500-Year-Floodplain information when available. In addition, previously designated Floodplain areas that have been removed from FEMA's effective Regulatory Floodplain by a Letter of Map Revision based on Fill (LOMR-F) shall remain within the Regulatory Floodplain for all activities affected by Rule 11.C. All Designated and Approved Regulatory Floodplain information can be used by Communities for the purpose of local regulation. The General Assembly has deemed the designation of Floodplains a matter of statewide importance and interest and gave the CWCB the responsibility for the designation of Regulatory Floodplains and to promote protection of public health, safety, welfare and property by protecting development in the Regulatory Floodplains. § § 24-65.1-101, 24-65.1-202(2)(a)(I), 24-65.1-302(1)(b), (2)(a), 24-65.1-403(3), 24-65.1-404(3).

Rule 6. Critical Facilities:

- A. **Classification:** Critical Facilities are classified under the following categories: (1) Essential services facilities; (2) Hazardous materials facilities; (3) At risk populations facilities; and (4) Facilities vital to restoring normal services.
- (1) *Essential services facilities* include public safety, emergency response, emergency medical, designated emergency shelters, communications, public utility plant facilities, and transportation lifelines.
- a. These facilities consist of:
- i. Public safety (police stations, fire and rescue stations, emergency vehicle and equipment storage, and emergency operation centers);
 - ii. Emergency medical (hospitals, ambulance service centers, urgent care centers having emergency treatment functions, and non-ambulatory surgical structures but excluding clinics, doctor offices, and non-urgent care medical structures that do not provide these functions);

- iii. Designated emergency shelters;
 - iv. Communications (main hubs for telephone, broadcasting equipment for cable systems, satellite dish systems, cellular systems, television, radio, and other emergency warning systems, but excluding towers, poles, lines, cables, and conduits);
 - v. Public utility plant facilities for generation and distribution (hubs, treatment plants, substations and pumping stations for water, power and gas, but not including towers, poles, power lines, buried pipelines, transmission lines, distribution lines, and service lines); and
 - vi. Air transportation lifelines [airports (municipal and larger), helicopter pads and structures serving emergency functions], and associated infrastructure (aviation control towers, air traffic control centers, and emergency equipment aircraft hangars).
- b. Specific exemptions to this category include wastewater treatment plants, non-potable water treatment and distribution systems, and hydroelectric power generating plants and related appurtenances.
- i. Owners of these facilities are encouraged to meet the spirit of Rule 6.D. when practicable in order to protect their own infrastructure and to avoid system failures during extreme Flood events. Emergency restoring plans following major Flood events should be considered as a prudent addition to operation and maintenance plans for those facilities.
 - ii. Public utility plant facilities may be exempted if it is demonstrated to the satisfaction of the Community that the facility is an element of a redundant system for which service will not be interrupted during a Flood. At a minimum, it shall be demonstrated that redundant facilities are available (either owned by the same utility or available through an intergovernmental agreement or other contract) and connected, the alternative facilities are either located outside of the Regulatory Floodplain or are compliant with this Rule, and an operations plan is in effect that states how redundant systems will provide service to the affected area in the event of a Flood. Evidence of ongoing redundancy shall be provided to the Community on an as-needed basis upon request by that Community.
- (2) *Hazardous materials facilities* include facilities that produce or store highly volatile, flammable, explosive, toxic, and/or water reactive materials.
- a. These facilities consist of:
 - i. Chemical and pharmaceutical plants (chemical plant, pharmaceutical manufacturing);

- ii. Laboratories containing highly volatile, flammable, explosive, toxic and/or water reactive materials;
 - iii. Refineries;
 - iv. Hazardous waste storage and disposal sites; and
 - v. Above ground gasoline or propane storage or sales centers.
 - b. Facilities shall be determined to be Critical Facilities if they produce or store materials in excess of threshold limits. If the owner of a facility is required by the Occupational Safety and Health Administration (OSHA) to keep a MSDS on file for any chemicals stored or used in the work place, AND the chemical(s) is stored in quantities equal to or greater than the TPQ for that chemical, then that facility shall be considered to be a Critical Facility. OSHA requirements for MSDS can be found in 29 C.F.R. § 1910. See Rule 17.
 - i. The TPQ for these chemicals is: either 500 pounds or the TPQ listed (whichever is lower) for the 356 chemicals listed under 40 C.F.R. § 302, also known as Extremely Hazardous Substances; or 10,000 pounds for any other chemical. This threshold is consistent with the requirements for reportable chemicals established by the Colorado Department of Public Health and Environment (CDPHE). The Environmental Protection Agency (EPA) regulation "Designation, Reportable Quantities, and Notification," can be found at 40 C.F.R. § 302. See Rule 17.
 - c. Specific exemptions to this category include: Finished consumer products within retail centers and households containing hazardous materials intended for household use, and agricultural products intended for agricultural use; Buildings and other structures containing hazardous materials for which it can be demonstrated to the satisfaction of the Community and certification by a qualified professional (as determined by the Community) that a release of the subject hazardous material does not pose a major threat to the public; and Pharmaceutical sales, use, storage, and distribution centers that do not manufacture pharmaceutical products.
 - d. These exemptions shall not apply to buildings or other structures that also function as Critical Facilities under another category outlined in this Rule 6.A.
- (3) *At risk population facilities* include medical care, congregate care, and schools.
- a. These facilities consist of:
 - i. Elder care (nursing homes);
 - ii. Congregate care serving 12 or more individuals (day care and assisted living); and

- iii. Public and private schools (pre-schools, K-12 schools), before-school and after-school care serving 12 or more children);
- (4) *Facilities vital to restoring normal services* including government operations.
 - a. These facilities consist of:
 - i. Essential government operations (public records, courts, jails, building permitting and inspection services, community administration and management, maintenance and equipment centers);and
 - ii. Essential structures for public colleges and universities (dormitories, offices, and classrooms only);
 - b. These facilities may be exempted if it is demonstrated to the satisfaction of the Community that the facility is an element of a redundant system for which service will not be interrupted during a Flood. At a minimum, it shall be demonstrated that redundant facilities are available (either owned by the same entity or available through an intergovernmental agreement or other contract), the alternative facilities are either located outside of the Regulatory Floodplain or are compliant with this Rule, and an operations plan is in effect that states how redundant facilities will provide service to the affected area in the event of a Flood. Evidence of ongoing redundancy shall be provided to the Community on an as-needed basis upon request by that Community.

B. Identification of Critical Facilities.

- (1) It is the responsibility of the Community to identify and confirm that specific structures in their Community meet the criteria outlined in Rule 6.A. and are deemed to be Critical Facilities. All structures that clearly meet the intent of Rule 6 shall be deemed Critical Facilities by that Community. For those structures for which it is unclear or otherwise ambiguous if the criteria are met, the Community shall have the sole discretion to determine if the structure is a Critical Facility. Communities may adopt ordinances that regulate to higher standards or that include additional facilities within the definition of Critical Facilities. Critical Facilities that are also designated as historic structures (determinations by the State Historic Preservation Office) are exempt from these requirements. Pursuant to section 24-65.1-202(2)(a)(I)(A), C.R.S., open space activities such as agriculture, horticulture, floriculture, recreation, and mineral extraction, including oil and gas activities, shall be encouraged in the Floodplain, and are exempt as Critical Facilities unless provisions within Rule 6.A.(2) apply. These activities may still require coordination with the Community and be subject to other local, state, and federal requirements or permits.
- (2) Required identification of Critical Facilities shall be limited to owner-occupied structures. Communities may, at their sole discretion, include leased facilities in their identification of Critical Facilities.

- C. **500-Year-Flood Events.** The CWCB acknowledges that Flooding does and has occurred above and beyond 100-Year-Flood events. Communities are encouraged to regulate Development of Critical Facilities within the 500-Year-Floodplain, when available.
- D. **Protection of Critical Facilities.**
- (1) All new, Substantially Damaged, and Substantially Improved Critical Facilities, and new Additions to Critical Facilities, shall be regulated to a higher standard than those structures not determined to be Critical Facilities. Communities are encouraged to consult with the owner of the Critical Facility in determining the value of the Critical Facility when a Substantial Damage and/or Substantial Improvement is being considered.
 - (2) This Rule 6 shall be applied to a Use Change if the new use meets the provisions within Rule 6.A. Further, although Rule 6 shall apply to new Additions made at Critical Facilities, it shall only apply to the new Additions, and not the Critical Facility to the extent the Critical Facility existed prior to the amendment of these Rules.
 - (3) The higher standard for Critical Facilities shall be as follows: For Critical Facilities located within the Regulatory Floodplain, the structure shall be protected according to Rule 11.B. herein, with the exception of a two-foot Freeboard requirement substituted for the standard one-foot Freeboard. The International Building Code and Flood Resistant Design and Construction (ASCE 24) can be used as reference tools for this standard, but are not incorporated by reference herein.
 - (4) For the purposes of this Rule 6.D., protection shall include one of the following:
 - a. Location outside the Regulatory Floodplain; or
 - b. Elevation or Flood proofing of the structure so that it is protected to the level indicated in this Rule 6.D.
 - (5) Unimproved lands associated with a Critical Facility that lie within a Regulatory Floodplain shall not be subject to this requirement, until future Development takes place on those lands. Likewise, if an undeveloped portion of a facility's property lies within a Regulatory Floodplain, but the developed portion of that facility lies outside of the Regulatory Floodplain, then that facility shall not be classified as a Critical Facility.
 - (6) All other rules and regulations governing structures not deemed Critical Facilities remain in effect and unchanged.
- E. **Ingress and Egress for New Critical Facilities.** New Critical Facilities shall, when practicable as determined by the Community, have continuous non-inundated access (ingress and egress for evacuation and emergency services) during a Regulatory Flood event. This criterion is also recommended, but not required, for changes to existing Critical Facilities and use changes involving existing structures or unimproved lands whose classification changes to Critical Facilities.

- F. **Variances.** For all Critical Facilities, the Variance procedure outlined in Rule 15 herein remains available and may be considered when deemed necessary and appropriate by the Community over the Critical Facility.

Rule 7. Standards for Delineation of Regulatory Floodplain Information:

- A. **Intent of this Rule.** This Rule contains standards for approximate and detailed Floodplains. All Floodplain information intended to be used by Communities for the purpose of regulating Flood hazard areas, with the exception of local stormwater drainage reports, CLOMR, LOMR, and LOMR-F submittals, and supporting documentation submitted to FEMA, shall be provided to the CWCB for Designation and Approval by the Board in order to enable Communities to regulate floodplains appropriately. The standards in this rule reference, and incorporate herein, the FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities, and associated resource documents.
- B. **Level of Detail.**
- (1) Approximate Floodplain Information will be based on detailed hydrology computed for 100-Year-Floods. Hydraulic information shall be produced using approximate, field, or limited techniques and best available topographic/survey data.
 - (2) Detailed Floodplain Information will be based on detailed hydrologic and hydraulic determinations for 100-Year-Floods, Flood profiles and Floodplain delineations for 100-Year-Flood and other frequencies, if any, shall be plotted, preferably using a digital method. The Board shall Designate and Approve 100-Year-Floodplain information, and 500-Year-Floodplain information when available.
- C. **Base Mapping.** Base mapping for Floodplain Studies shall meet the minimum standards as set forth in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities.
- D. **Topography and Surveys.** Topographic and field survey information for Floodplain Studies shall meet the minimum standards as set forth in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities.
- E. **Geographic Information Systems (GIS).** GIS information for Floodplain Studies in Colorado shall meet the minimum standards as set forth in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities.
- F. **Hydrology.** Hydrologic Analyses for Floodplain Studies in Colorado shall be completed using the information set forth in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities. The Colorado Floodplain and Criteria Stormwater Manual may be used as a reference document to aid in this analysis. In addition, hydrology studies must comply with the following:
- (1) All Floodplain Studies, regardless of the level of detail, (e.g., approximate or detailed) shall utilize detailed hydrologic information. The CWCB recognizes existing and future watershed conditions for the purposes of computing Flood hydrology. The CWCB may evaluate future watershed conditions, in addition to existing conditions.

- (2) Any new study to evaluate hydrologic information and/or design storm criteria shall be completed in such a way that it is scientifically defensible and technically reproducible.
 - (3) All jurisdictions and Communities affected by revised hydrologic data, due to their geographic proximity to the affected stream reach within a particular watershed, are encouraged to participate in the update process, and shall be given the opportunity by the study sponsor to review and comment on the revised information. Opponents to the revised information may present technically accurate and sound scientific data to the Board that clearly demonstrates that the information in question is inaccurate pursuant to Rule 12. The Board shall make the final determination regarding disputes.
 - (4) Within any given watershed, or hydrologic subregion, consistency in hydrologic data and runoff methodology shall be pursued to the extent possible through cooperation of all affected jurisdictions and entities.
- G. **Detailed Hydraulic Method.** Hydraulic Analyses for Floodplain Studies in Colorado shall be completed using protocols set forth FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities.
- H. **Floodplain Delineations.** Floodplain delineations shall be completed using protocols set forth in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities , and shall, at a minimum, comply with the technical quality assurance standards as follows:
- (1) The Flood elevations and the Floodplain delineations on the maps must meet or exceed FEMA NFIP standards for tolerance and technical accuracy for correlation to the best available topographic information for the stream and adjacent corridor.
 - (2) The planimetric features on the Floodplain Maps (including, but not limited to: streets and highways, stream centerlines, bridges and other critical hydraulic features, corporate limits, section lines and corners, survey benchmarks) must be consistent with the best available geospatial data for the stream and the adjacent corridor, as determined through prevailing industry practices, and must meet an acceptable level of technical accuracy.
- I. **Special Floodplain Conditions.** There are a number of special Floodplain conditions, or natural Flood hazards, in Colorado that fall outside of the standard riverine environment. Studies for the Regulatory Flood involving special conditions shall be completed using protocols set forth in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities. The special conditions are:
- (1) Alluvial Fan and Debris Flow Floodplains located within foothill and mountainous regions of Colorado shall be considered on a case-by-case basis.
 - (2) Post-Wildfire Hydrology may be evaluated on a case-by-case basis in forested areas immediately following moderate to intense wildfires resulting in approximately 15% or greater burn area of the affected watershed. Interim Flood advisory maps, based on burned watershed conditions, may be produced at the request of the Community or by Board initiative. The interim Floodplain Maps should show increased runoff from hydrophobic soils and lack of vegetation. The post-wildfire maps may be evaluated every

3 to 5 years to assess the need for further revision based on watershed recovery, forest re-growth, and other factors.

- (3) Ice jam Flooding shall be considered within stream reaches where this phenomenon is known to occur. Ice jam Flooding may be analyzed utilizing methodologies outlined in the FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities, *Guidance for Flood Risk Analysis and Mapping: Ice Jam Analyses and Mapping*.

J. **Written reports and maps.** The results of the Hydrologic Analyses, Hydraulic Analyses, and Flood hazard area delineations shall be summarized in a written report and submitted to the CWCB. All Approximate and Detailed Floodplain Information that is presented to the Board for Designation and Approval shall be properly titled, dated, organized, and compiled as a stand-alone digital document (in MS Word and PDF formats). All pertinent technical backup data to support the flood hazard study, regardless of data format be provided to the CWCB in acceptable digital formats. The CWCB shall make pertinent supporting documentation for flood hazard studies available for access to interested parties, to the extent possible, through a secure data sharing platform. In one-dimensional riverine situations, where discrepancies appear between Regulatory Floodplain maps and water surface profiles, any regulatory water surface profile designated and approved by the Board shall take precedence over any corresponding flooded area map for the same stream reach or site location, unless a profile error is identified and substantiated.

K. **Contractor Qualifications.**

- (1) Qualified engineers licensed in Colorado shall direct or supervise the Flood hazard studies and projects pertaining to the Regulatory Floodplain. All Floodplain maps, reports and project designs pertaining to the Regulatory Floodplain, except those prepared by federal agencies, shall be certified and sealed by the Colorado Registered Professional Engineer of record.
- (2) Federal agencies or other recognized and qualified government authorities may produce Floodplain mapping work as a study proponent or on behalf of a study proponent.

Rule 8. Standards for Regulatory Floodways:

A. **Establishment of Floodway Criteria.** The CWCB recognizes that Designated Floodways are administrative limits and tools used by Communities to regulate existing and future Floodplain Development within their jurisdictions. This Rule 8.A. does not require Communities to automatically map ½ foot floodways within their jurisdictions. However, at such time when Floodways are to be delineated based on revised Flood hazard studies or through physical map revisions involving local government participation, Communities shall delineate Floodways for the revised reaches based on ½-foot rise criteria. Letters of Map Revision to existing Floodway delineations may continue to use the Floodway criteria in place at the time of the existing Floodway delineation. Until such time that Floodways are revised and designated, Communities may continue to regulate their mapped one-foot Floodways. For reaches where a transition must be shown to connect new studies to existing studies with different Floodway criteria, the transition length shall not exceed 2,000 feet.

- B. **Designation of Floodways.** Designation and Approval of Floodplain information shall also include the Designation and Approval of corresponding Floodway Information. For waterways with Model-Backed Approximate Flood Elevations or BFEs for which Floodways are not computed, the Community shall apply a ½ foot Floodway regulation according to its own determination, as outlined in FEMA Regulation 44 C.F.R. § 60.3(c)(10), for the FEMA minimum requirement of a 1-foot floodway. See Rule 17.
- C. **Incorporation of FEMA's Floodway Regulations.** All Communities participating in the NFIP that have BFEs or Model-Backed Approximate Flood Elevation defined for one or more of the waterways within their jurisdictions shall adopt and enforce the "Criteria for Land Management and Use" Floodway regulations at 44 C.F.R. § 60.3(c)(10), (d). Failure to enforce Floodway regulations may impact the Community's standing in the NFIP and may eliminate or reduce eligibility for federal or state financial assistance for Flood Mitigation and disaster relief purposes.
- D. **Communities in Which This Rule Applies.** Communities with Regulatory Floodplains that have been Designated and Approved by the Board with BFEs or Model-Backed Approximate Flood Elevations defined for one or more of the waterways within their jurisdictions shall be required to establish technical (quantified) surcharge criteria for Floodway determination and regulation, which must meet or exceed the requirements set forth in this Rule. This Rule shall not apply to approximate stream reaches for which BFEs or Model-Backed Approximate Flood Elevation have not been defined (i.e. non-model-backed Flood hazard areas).

Rule 9. Criteria for Determining the Effects of Flood Control Structures on Regulatory Floodplains:

- A. For the purposes of this Rule, local and regional hydraulic structures providing local or regional Flood or stormwater detention, shall be considered to be Flood Control Structures. There are no separate criteria for these structures.
- B. **Flood Control Structures.**
 - (1) If a publicly operated and maintained structure, as further defined in subparagraph B.(3), is specifically designed and operated either in whole or in part for Flood control purposes, then its effects shall be taken into consideration when delineating the Floodplain below such structure. The effects of the structure shall be based upon the 100-Year-Flood with full credit given to the attenuation of peak Flood discharges, which would result from normal Flood Control Structure operating procedures.
 - (2) The Hydrologic Analysis pertaining to State Regulatory Floodplains shall consider the effects of on-site detention for rooftops, parking lots, highways, road fills, railroad embankments, diversion structures, refuse embankments (including, but not limited to, solid waste disposal facilities), mill tailings, impoundments, siltation ponds, livestock water tanks, erosion control structures, or other structures, only if they have been designed and constructed with the purpose of impounding water for Flood detention and/or infiltration and are publicly operated and maintained in accordance with subparagraph B.(3).
 - (3) For the purposes of this Rule, public operation and maintenance is required for credit of the flood control structure, which may include direct responsibility, ultimate Community responsibility, or Community enforcement. See 44 C.F.R. § 65.6 (a)(12). This does not

apply to state or federally operated and/or maintained facilities. Detention structures that are privately operated or maintained shall not be included in the Hydrologic Analysis unless it can be shown that they exacerbate downstream peak discharges.

- C. **Non-Flood Control Structures.** If a structure is not specifically designed and operated, either in whole or in part, for Flood control purposes, then its effects, even if it provides inadvertent Flood routing capabilities that reduce the 100-Year-Flood impacts downstream, shall not be taken into account, and the delineation of the Flood hazard areas below such structure shall be based upon the 100-Year-Flood that could occur absent the structure's influence. However, if adequate assurances have been obtained to preserve the Flood routing capabilities of such structure, then the delineation of the Flood hazard areas below the structure may, but need not, be based on the assumption that the reservoir formed by the structure will be filled to the elevation of the structure's emergency spillway and the 100-Year-Flood hydrology can be routed through the reservoir to account for any Flood attenuation effects.
- D. **Adequate Assurances.** For the purposes of this Rule 9 "adequate assurances" shall, at a minimum, include appropriate recognition in either a signed adequate assurance agreement, or the Community's adopted master plan of:
- (1) The Flood routing capability of the reservoir, as shown by comparison of the 100-Year-Flood hazard area in plan and profile (where applicable) with and without the structure in place, in order that the public may be made aware of the potential change in level of Flood protection in the event that the reservoir Flood routing capability is lost;
 - (2) The need to preserve that Flood routing capability by whatever means available in the event that the reservoir owners attempt to make changes that would decrease the Flood routing capability; and
 - (3) A complete operations and maintenance plan.
- E. **Irrigation Facilities.** The CWCB recommends that irrigation facilities (including, but not limited to, ditches and canals) not be used as stormwater or Flood conveyance facilities, unless specifically approved and designated by Community and approved by the irrigation facility owners. The Flood conveyance capacity of irrigation facilities shall be acknowledged only by agreement between the facility owners and Communities, with review and concurrence from the Colorado Division of Water Resources to ensure that water rights administration needs are properly considered. A maintenance easement or agreement shall be in place allowing the Community maintenance access to the irrigation facility if needed.

Unless specified otherwise by aforementioned written agreement, Flood hydrology for State Regulatory Floodplain mapping purposes shall consist of peak hydrologic flows that are identical immediately downstream and immediately upstream of a ditch or canal that is generally perpendicular to the stream or drainageway of interest. The irrigation facility shall be assumed as running full so that there are no computed Flood reduction benefits downstream of the irrigation facility. Backwater behind irrigation facilities shall be mapped. The Board will Designate and Approve 100-Year-Flood Flood Hazard Information for irrigation facilities if the above recommendations are met. This Rule is not intended in any way to interfere with Colorado water law.

Rule 10. Criteria for Determining Effects of Levees on Regulatory Floodplains:

- A. **General.** The use of Levees for property protection, Flood control, and Flood hazard Mitigation is not encouraged by the CWCB, unless other Mitigation alternatives are not viable. The areas landward of an accredited Levee and Provisionally Accredited Levee (PAL) system shall be mapped and annotated on the FIRM in accordance with FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities. In situations where Levees are the only viable alternative for protection of existing development, “setback” levees should be designed and constructed to maintain the natural Channel and reserve a portion of the natural Floodplain capacity. Levees should not be used for Flood protection along streams or watercourses where new Development is planned. However, Levees may be used to protect public utility plant facilities for wastewater treatment and pumping as well as electric power plants due to their close proximity to natural waterways. For existing Levees that protect existing development, proper maintenance should be performed by Levee owners/operators, or non-federal sponsors in the case of federal Levees, according to an operations and maintenance plan.
- (1) Levees should not be constructed for the primary purpose of removing undeveloped lands from mapped Floodplain areas for the purposes of developing those lands because of the potential impairment of the health, safety, welfare and property of the people. Design and construction of Levees identified for this purpose will not be eligible for CWCB grants or loans.
 - (2) When constructed, Levees for which protection will be considered for designation and approval must meet the requirements set forth in “Mapping of Areas Protected by Levee Systems,” 44 C.F.R. § 65.10. Artificial embankments that either function as a Levee or a Flood Control Structure must meet the provisions of this Rule or the “Office of the State Engineer Rules and Regulations for Dam Safety and Dam Construction,” 2 C.C.R. 402-1, respectively, in order to be considered as providing protection. See Rule 17.
- B. **Maintenance.** An operating and maintenance manual that ensures continuous proper function of the structure shall be prepared and updated. The Levee shall be structurally sound and adequately maintained. Sedimentation effects shall be considered for all Levee projects. Certification from a federal agency, state agency, or a Colorado Registered Professional Engineer that the Levee meets the minimum Freeboard criteria, as stated above in Rule 10.A.(2), shall be provided to CWCB. A visual inspection shall be required on a three-year basis to demonstrate that the Levee continues to be structurally sound and adequately maintained and results of the inspection shall be provided to the CWCB. Levees that have obvious structural defects or that are obviously lacking in proper maintenance shall not be considered in the Hydraulic Analysis without a funded project plan to bring the Levee deficiencies into compliance (to be considered on a case-by-case basis).
- C. **Ownership.** Privately-owned or non-Community-owned Levee systems shall only be considered in the Hydraulic Analysis if they are publicly operated and maintained. For the purposes of this Rule, public operation and maintenance is required for credit of the Levee system, which may include direct responsibility, ultimate Community responsibility, or Community enforcement. See 44 C.F.R. § 65.6 (a)(12). Levees for which the Community, state, or federal government has responsibility for operations and maintenance will be considered, provided that the criteria set forth in this Rule are met.

- D. **Levee Analysis and Standards Consistent with Federal Regulation.** To comply with these Rules, analysis of Levees and Levee standards for Freeboard, interior drainage, and human intervention and operation must comply with the standards in 44 CFR § 65.10 and the FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis & Mapping Activities, *Guidance for Flood Risk Analysis and Mapping: Levees*, Guidance Document 95.

Rule 11. Floodplain Management Regulations:

- A. **Compliance with Minimum Standards of the National Flood Insurance Program.** Each Community in the State of Colorado shall comply with the minimum Floodplain criteria set forth in the FEMA regulation “Criteria for Land Management and Use,” 44 C.F.R. § 60.3–60.5, see Rule 17, unless more restrictive standards have been adopted as set forth in these Rules or pursuant to regulations adopted by the Community. These Rules do not apply to local stormwater or local storm drainage studies where riverine Flooding sources are not considered.
- B. **Minimum Freeboard.** A minimum Freeboard of one foot above the 100-Year-Flood elevation (BFE or Model-Backed Approximate Flood Elevation) shall apply to structures in the Floodplain as follows:
- (1) **Residential Structures.** New, Substantially Damaged, and/or Substantially Improved residential structures, and Additions to existing residential structures shall be constructed with the Lowest Floor, including basements, placed with a minimum of one foot of Freeboard above the BFE or Model-Backed Approximate Flood Elevation. In AO Zones, new, Substantially Damaged, and/or Substantially Improved residential structures, and Additions to existing residential structures shall be constructed with the Lowest Floor, including basements, elevated above the highest adjacent grade at least as high as the depth number specified in feet on the Community’s FIRM (at least two feet if no depth number is specified) plus one foot of Freeboard.
 - (2) **Non-residential Structures.**
 - a. New, Substantially Damaged, and/or Substantially Improved non-residential structures, and Additions to existing non-residential structures shall be constructed with the Lowest Floor, including basements, placed with a minimum of one foot of Freeboard above the BFE or Model-Backed Approximate Flood Elevation, or together with attendant utility and sanitary facilities, be designed so that the structure is watertight to an elevation at least one foot above the BFE or Model-Backed Approximate Flood Elevation with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. In AO Zones, new, Substantially Damaged, and/or Substantially Improved non-residential structures and Additions to existing non-residential structures shall be constructed with the Lowest Floor, including basements, elevated above the highest adjacent grade at least as high as the depth number specified in feet on the Community’s FIRM (at least two feet if no depth number is specified) plus one foot of Freeboard, or together with attendant utility and sanitary facilities be completely floodproofed to that level with walls substantially impermeable to the past of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. Agricultural

Structures and Accessory Structures shall be exempt from the Freeboard requirement but shall meet all other requirements set forth in FEMA Policy No. 104-008-03: Floodplain Management Requirements for Agricultural Structures and Accessory Structures.

- b. Critical Facilities shall be regulated according to Rule 6.D. This Rule does not affect the Freeboard requirement for Levees described in Rule 10.D.
- C. **Permit Restrictions for Properties Removed from the Floodplain by Fill.** No Community shall issue a permit for the construction of a new structure on a property removed from the Floodplain by the issuance of a FEMA LOMR-F unless the Lowest Floor elevation placed below the BFE or Model-Backed Approximate Flood Elevation with one foot of Freeboard that existed prior to the placement of fill. In AO Zones, new structures shall be constructed with the Lowest Floor, including basements, elevated above the highest adjacent grade at least as high as the depth number specified in feet on the Community's FIRM (at least two feet if no depth is specified) that existed prior to the placement of fill plus one-foot of Freeboard. Issuance of any such permit shall constitute a violation of these Rules. Critical Facilities are exempted from this restriction if the facility is protected according to Rule 6.D. herein.
- D. **Highest Adjacent Grade.** For the purposes of this Rule 11, highest adjacent grade means the highest natural elevation of the ground surface, prior to the start of construction, next to the proposed walls of a structure.

Rule 12. Effects of Flood Mitigation Measures and Stream Alteration Activities on Regulatory Floodplains:

In order to assist the CWCB in carrying out its mission to protect the health, safety, welfare and property of the public, through the prevention of Floods in Colorado, the CWCB requires the following:

- A. Flood control Channels shall include a low-flow Channel with a capacity to convey the average annual flow rate, or other appropriate flow rate as determined through a hydrogeomorphological analysis, without excessive erosion or Channel migration, with an adjacent overbank Floodplain to convey the remainder of the 100-Year-Flood flow. The Channel improvement shall not cause increased velocities or erosive forces upstream or downstream of the improvement.
- B. Channelization and flow diversion projects shall appropriately consider issues of sediment transport, erosion, deposition, and Channel migration and properly mitigate potential problems through the project as well as upstream and downstream of any improvement activity. A detailed geomorphological analysis should be considered, when appropriate, to assist in determining the most appropriate design.

Project proponents for a Mitigation activity must evaluate the residual 100-Year-Floodplain. Proponents are also encouraged to map the residual 500-Year-Floodplain.

- C. All dams must be maintained to ensure that they retain their structural and hydraulic integrity pursuant to FEMA Risk MAP Technical References, Guidelines, and Standards for Flood Risk Analysis and Mapping Activities, *Dams/Reservoirs and Non-Dam Features*. See Rule 17. All Levees must be maintained to ensure that they retain their structural and hydraulic integrity

pursuant to FEMA Risk MAP Technical References, Guidelines, and Standards for Flood Risk Analysis and Mapping Activities, *Levees*. See Rule 17.

- D. Any Stream Alteration Activity proposed by a project proponent in either i) a Floodway or ii) a Regulatory Floodplain with no established Floodway (except in shallow Flooding areas, defined as Flooding with an average depth limited to 3.0 feet or less where no defined Channel exists) must be evaluated for its impact on the Regulatory Floodplain. All Stream Alteration Activity shall be in compliance with all applicable federal, state and local Floodplain rules, regulations and ordinances.
- E. Any Stream Alteration Activity shall be designed and sealed by a Colorado Registered Professional Engineer.
- F. All activities within the Regulatory Floodplain performed by federal agencies using local or state funds, or by private, local or state entities shall meet all applicable federal, state and local Floodplain requirements.
- G. For compliance purposes, Stream Alteration Activities shall not be constructed in a Floodway unless the project proponent demonstrates through a Floodway analysis and report, sealed by a Colorado Registered Professional Engineer, that there is no rise resulting from the project unless a CLOMR has been obtained. No rise means a 0.00-foot rise or a decrease in the Flood elevation between the existing and proposed conditions. Stream Alteration Activities proposed in a Regulatory Floodplain with no established Floodway (except in shallow Flooding areas, defined as Flooding with an average depth limited to 3.0 feet or less where no defined Channel exists), shall demonstrate no more than $\frac{1}{2}$ -foot rise in Flood elevations (or a more stringent standard adopted by the Community) between the existing and proposed conditions unless a CLOMR is obtained. This requirement only applies on stream reaches with BFEs or Model-Backed Approximate Flood Elevations established.
- H. Rule 12.D. addresses when hydraulic modeling is required for Stream Alteration Activities. For map update purposes, regardless of whether modeling is required or not, whenever a Stream Alteration Activity is shown by hydraulic modeling to increase or decrease the established BFE in excess of 0.30 vertical feet between the pre-project and post-project conditions (or a more stringent standard adopted by the Community), a LOMR (or comparable revision process) showing such changes shall be obtained in order to accurately reflect the proposed changes on the Regulatory Floodplain map for the stream reach. This is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk assessment and Floodplain management requirements will be based upon current data, 44 CFR § 65.3. The Community is responsible for ensuring that this process is pursued. This section herein does not require a CLOMR to be applied for, unless mandated by the Community. This section reflects state policy and may not fully reflect federal and other requirements for map maintenance. This section is not intended to undermine or replace federal requirements, and Communities and project proponents are responsible for satisfying any other map maintenance requirements as a result of Stream Alteration Activities.

Rule 13. Process for Designation and Approval of Regulatory Floodplains:

- A. **Designation and Approval Requirements.** The Board will Designate and Approve Regulatory Floodplains by the adoption of written resolutions based only upon such Floodplain information as the CWCB determines meets the standards set forth in Rule 7, as applicable, with consideration of the effects of dams and Levees being subject to the criteria of Rules 9 and 10, respectively and any Mitigation activity in Rule 12.
- B. **Base Flood.** 100-Year-Floodplain information shall generally be the basis for all Designation and Approval actions by the Board for regulatory purposes in Colorado. However, the Board will Designate and Approve 500-Year-Floodplain information when available.
- C. **Provisional Designation.** The Board may Designate and Approve, on a provisional basis and for a maximum period of time not to exceed two years, Floodplain information that does not meet the minimum requirements as set forth in Rule 7.
- D. **Process for Taking Designation and Approval Actions.** The Board shall consider the Designation and Approval of Floodplain information either by request of a Community or by acting on its own initiative.
 - (1) **Consideration at a Community's Request.** The Board shall consider Designation and Approval of Floodplain information upon written request from the Community having jurisdiction in the area where the Floodplain information is applicable. The letter of request shall identify the report title, date, author or agency which prepared the report, stream name(s), upstream and downstream limits of the stream reach(es) to be designated, stream length(s) in miles, type of designation requested (detailed or approximate), and any other relevant information. The CWCB shall receive such a request at least 30 days prior to the Board meeting at which consideration of Designation and Approval is requested.
 - (2) **Consideration at the CWCB's initiative.** If Designation and Approval of a Floodplain would be in the best interest of the health, safety, welfare and property of the citizens of the State of Colorado, then the CWCB may take action at its own initiative to consider the Designation and Approval of Floodplain information. In such cases, the CWCB shall notify the affected Communities in writing at the time of study initiation or, in the case of a previously completed study, the CWCB will endeavor to receive concurrence in writing from the affected Community at least 45 days prior to the Board meeting at which it will consider the Designation and Approval of Floodplain information within their jurisdiction. Regardless of Community concurrence, CWCB may pursue Designation and Approval.
 - (3) **Notification of Adopted Resolutions.** The CWCB shall send signed copies of each adopted resolution of Designation and Approval to each Community in the study area and to FEMA within 30 days of adoption.

Rule 14. Designation and Approval of Changes to Regulatory Floodplains:

When changes are made to the characteristics of a Floodplain that result in a revision of a Community's FIRMs or Flood Hazard Boundary Maps (and a subsequent designation of the new map), the Board will Designate and Approve changes to the Regulatory Floodplain caused by Development, new or better technical information, or other sources. The Board will designate the revised Floodplains by adopting

written resolutions based upon such Floodplain information as the Board determines meets the standards set forth in Rules 6-12.

- A. In the event that a Community is aware of and has access to better available information on a previously designated flooding source, then the CWCB allows for that undesignated information to be used for regulatory purposes if it is to the same or greater level of detail as the previously designated Regulatory Floodplain information, has been approved through a detailed technical review by a qualified Colorado Professional Engineer, and meets one of the following conditions in (1) – (3). Communities may need to formally adopt this information through its local adoption process.
- (1) Regulatory Floodplain included on a FEMA FIRM – the revised Floodplain mapping is more restrictive, the Community has informed all impacted property owners of the change and provided due process as established in Community guidelines, and the revised Floodplain mapping is ultimately Designated and Approved by the Board; or
 - (2) Regulatory Floodplain not included on a FEMA FIRM – the Community has informed all impacted property owners of the change, and provided due process as established in Community guidelines. The Community must submit Floodplain mapping revisions for Designation and Approval by the Board in a timely manner (not to exceed two years from the date of completion); or
 - (3) Regulatory Floodplain – the revised Floodplain mapping has been approved by FEMA through a LOMR or Physical Map Revision process, and ultimately Designated and Approved by the Board.
- B. **Conditions.** All changes to Regulatory Floodplains shall meet or exceed the same conditions as those required for original Designation and Approval.
- C. **Process for Designation and Approval of Changes to a Regulatory Floodplain.** The Board may consider the Designation and Approval of changes to Regulatory Floodplain information either by request of a Community or by acting on its own initiative.
- (1) **Consideration at a Community's Request.** The Board shall consider Designation and Approval of changes to a Regulatory Floodplain upon written request from the governing body of any Community having jurisdiction in the area where the Floodplain information is applicable. The CWCB staff shall receive such requests at least 30 calendar days prior to the Board meeting at which consideration of Designation and Approval is requested.
 - (2) **Consideration at the CWCB's Initiative.** If Designation and Approval of changes to a Regulatory Floodplain would be in the best interest of the health, safety, welfare and property of the citizens of the State of Colorado, then the CWCB may take action at its own initiative to consider the Designation and Approval of Floodplain information. In such cases, the CWCB shall notify the affected Communities in writing at the time of the study initiation or, in the case of a previously completed study, the CWCB will endeavor to receive concurrence in writing from the affected Community at least 45 days prior to the Board meeting at which it will consider the Designation and Approval of Floodplain information within their jurisdiction. Regardless of Community concurrence, CWCB may pursue Designation and Approval.

- (3) **Notification of Adopted Resolution.** The CWCB shall send signed copies of each adopted resolution of Designation and Approval of changes to a Regulatory Floodplain to each Community within the limits of the changed Floodplain within 30 calendar days of Designation and Approval.
- D. **Identification of Designations of Changes to a Regulatory Floodplain.** The designation of the changes to the Regulatory Floodplain will be given a reference identification number that will differentiate the changed designation from the original. It is implied that designations to changes to a Regulatory Floodplain will only rescind the affected portions of the previously designated Floodplain information. All other unaffected reaches will remain as originally designated.
- E. **Map Revisions to Flood Insurance Rate Maps (FIRMs) or Flood Hazard Boundary Maps.** Floodplain Map revisions (e.g., FEMA LOMRs) may be designated twice annually by the Board during a regularly scheduled Board meeting and will not be subject to a full technical review by the CWCB staff.

Rule 15. Variances:

- A. **Consideration by Community.** Request for a variance to any of these Rules may be considered by the Community, provided the entity or individual requesting the variance has submitted a written request to the appropriate authority. A notice of the request must be provided to any adjacent Communities that would be affected by the variance.
- B. **Contents of a Request for Variance.** The request for a variance shall identify:
 - (1) The Rule from which the variance is requested;
 - (2) The Communities that would be affected by the variance;
 - (3) The reasons why the Rule cannot be complied with;
 - (4) The estimated difference in water surface elevations, Flood velocities and Flood boundaries that would result if the requested variance were granted than if the calculations were made through strict compliance with the Rule;
 - (5) The estimated number of people and structures that will be impacted by granting of the variance; and
 - (6) Any other evidence submitted by the Community, the CWCB staff, or other party of interest.
- C. **Factors to be considered.** Variances may be issued if it can be determined that:
 - (1) There is a good and sufficient cause; and
 - (2) The variance is the minimum necessary, considering the Flood hazard, to afford relief; and

- (3) Failure to grant the variance would result in exceptional hardship to the Community or the requestor and that the hardship is not the Community's or requestor's own making; and
- (4) The granting of a variance will not result in increased vulnerability to Flood losses, additional threats to public safety and welfare, extraordinary public expense, create nuisances, cause fraud or victimization of the public, hide information of significant interest to the public, or conflict with existing local laws or regulations.
- (5) In lieu of items C(1) through C(4) above, a Community may, at its sole discretion, use an established variance procedure.

D. Variance Process. Variance requests shall be processed as follows:

- (1) Communities shall render, confirm, modify, or reject all variance requests pertaining to these Rules.
- (2) The Board may review local variance decisions on a case-by-case basis to ensure that the overall intent and spirit of these Rules are properly considered at the local level.
- (3) Informal variance determination request may be presented to CWCB staff in order to guide Community officials or project applicants as to whether a formal variance would be needed on a case-by-case basis.

Rule 16. Enforcement of Floodplain Rules and Regulations:

A. Procedure to be followed regarding alleged violations

(1) Notice of Non-Compliance.

- a. A NONC may be prepared and transmitted by the CWCB or its Director. Information regarding potential violations may be discovered directly by CWCB staff or can be brought to the CWCB or its Director by a Complainant, such as FEMA, other state agencies, the Community within whose boundaries the alleged violation took place, or by any other person who may be directly and adversely affected or aggrieved as a result of the alleged violation.
- b. Oral complaints shall be confirmed in writing by the Complainant. Persons making a complaint are required to submit a formal letter of complaint to the CWCB Director.
- c. NONC process.
 - i. An NONC issued by the CWCB shall be delivered to an alleged violator by personal delivery or by certified mail (return receipt requested). A copy of the NONC shall be transmitted to FEMA Region VIII and the Community.
 - ii. The NONC does not constitute final agency action.

- iii. The NONC shall identify the statute, Rule, regulation, or policy subject to CWCB jurisdiction allegedly violated and the facts alleged to constitute the violation. The NONC may propose appropriate corrective action and suggested corrective action(s) if any, that the CWCB recommends.
- (2) FEMA Region VIII shall support, through its NFIP activities, these Rules. This support will include the existing ability for FEMA to place sanctions upon a Community for non-compliance.
- (3) Certain Board decisions to provide Flood and watershed related grant funding to Communities may be directly dependent upon a Community's compliance with these Rules.

Rule 17. Incorporation by Reference:

A. The following rules, regulations, standards, and guidelines are hereby incorporated by reference:

- (1) FEMA Risk Mapping, Assessment and Planning (Risk MAP) Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities, December 1, 2020, available at <https://www.fema.gov/flood-maps/guidance-reports/guidelines-standards>, including but not limited to the following specific guidance documents:
 - a. *Guidance for Flood Risk Analysis and Mapping: Ice Jam Analyses and Mapping;*
 - b. *Guidance for Flood Risk Analysis and Mapping: Levees; and*
 - c. *Guidance for Flood Risk Analysis and Mapping: Dams/Reservoirs and Non-Dam Features.*
- (2) FEMA National Flood Insurance Program, 44 C.F.R. §§ 59, 60, 65, 70, and 72, May 13, 2021, available at <https://www.ecfr.gov/cgi-bin/text-idx?SID=504ee2bfc731d90f6be69c8f09fd0b3c&mc=true&tpl=/ecfrbrowse/Title44/44CIsu-bchapB.tpl>.
- (3) The United States Environmental Protection Agency Superfund, Emergency Planning, and Community Right-to-Know Programs, Designation, Reportable Quantities, and Notification Regulations, 40 C.F.R. § 302, May 13, 2021, available at <https://www.ecfr.gov/cgi-bin/text-idx?node=pt40.30.302&rgn=div5>.
- (4) The Occupational Safety and Health Administration Occupational Safety and Health Standards Regulations, 29 C.F.R. § 1910, May 13, 2021, available at <https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=13981877314c1c75ef4ee8c5652c8449&ty=HTML&h=L&mc=true&n=pt29.5.1910&r=PART>.
- (5) The Colorado Office of the State Engineer Rules and Regulations for Dam Safety and Dam Construction Materials, 2 CCR 402-1, January 1, 2020, available at <https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=8426&fileName=%20CCR%20402-1>.

- (6) FEMA Policy No. 104-008-03: Floodplain Management Requirements for Agricultural Structures and Accessory Structures, February 2020, available at https://www.fema.gov/sites/default/files/2020-08/fema_floodplain-management_agriculture-accessory-structures_2020.pdf.
- B. These rules, regulations, standards, and guidelines in subparagraphs (1)-(6) of Rule 17.A. are hereby incorporated by reference by the Board and made a part of these Rules. Materials in these Rules, which are incorporated by reference are limited to those materials in existence as of the effective date of these revised Rules and do not include later amendments to or editions of such rules, regulations, standards, and guidelines. The material incorporated by reference is available for public inspection during regular business hours at the office of the Colorado Water Conservation Board, 1313 Sherman Street, Room 718, Denver, CO 80203 or may be examined at any state or federal publications depository library, or on the FEMA or CWCB website.

Rule 18. Severability:

If any portion of these Rules is found to be invalid, the remaining portion of the Rules shall remain in force and in effect.

Rule 19. Recommended Activities for Regulatory Floodplains:

The following list contains Floodplain Management activities and actions suggested by the CWCB to increase a Community's overall level of Flood protection. Communities and other authorized government entities may:

- A. Adopt local standards above and beyond the FEMA and CWCB minimum requirements.
- B. Develop a Flood response plan that identifies responsibilities/actions before, during, and after a Flood event.
- C. Enroll in FEMA's NFIP and possibly FEMA's Community Rating System Program.
- D. Develop an early warning Flood detection system (Flood warning system) using available technologies such as automated precipitation and stream flow gages linked to an appropriate notification system.
- E. Coordinate with lenders, insurance agents, real estate agents, and developers to prepare and discuss educational tools based on state and federal requirements.
- F. Promote wise Floodplain Development and support effective structural and non-structural Flood Mitigation projects.
- G. Conduct Floodplain Studies in areas of foreseeable development that do not currently have detailed Floodplain Studies.
- H. Maintain an electronic or paper library of local flood related data.
- I. Develop a Flood risk outreach program and notify Flood prone residents annually of Flood hazards and the need for Flood insurance.

- J. Encourage elevation of Flood-prone structures and Flood-proofing of structures in the Floodplains.
- K. Utilize available state/federal Mitigation and preparedness funds.
- L. Require certified Floodplain managers to review proposed land developments.
- M. Advise the public at large that Flooding does occur above and beyond the 100-Year-Flood and 500-Year-Floods. Floods greater than 500-Year-Floods (0.2-percent-annual-chance Floods) do occur, and loss of life and property is possible in areas mapped outside of both the 100-Year-Floodplain and 500-Year-Floodplain.
- N. Utilize the concept of "No Adverse Impact" Floodplain Management where the action of one property owner does not adversely impact the rights of other property owners, as measured by increased Flood peaks, Flood stage, Flood velocity, and erosion and sedimentation. "No Adverse Impact" could be extended to entire watersheds as a means to promote the use of retention/detention or other techniques to mitigate increased runoff from urban areas.
- O. Prohibit the construction of new Levees that are intended to remove land from a Regulatory Floodplain for the purpose of allowing new Development activity to take place in areas that are otherwise Flood prone.
- P. Require an appropriate level of Freeboard at bridges between the 100-Year-Flood water surface elevation and the lowest elevation of the lowest structural member to allow for passage of waterborne debris.
- Q. Identify areas prone to Flooding outside of the 500-Year-Floodplain where loss of life or Substantial Damage may occur. Flooding greater than 500-Year-Flood events can and do occur as well, and loss of life and property is possible in areas mapped outside of both the 100-Year-Floodplain and 500-Year-Floodplain. Communities are encouraged to map and regulate 500-Year-Floodplains for Critical Facilities at their sole discretion.
- R. Maintain a Flood hazard page on the Community website with links to the CWCB, FEMA Flood Map Service Center, NFIP, National Weather Service, local building codes, and local permitting information.
- S. The CWCB discourages compensatory Flood storage because existing Flood storage volume should be preserved. However, when necessary, structures and fill that displace Floodplain storage volume shall be compensated for by excavation of equivalent volumes at equivalent elevations within a nearby vicinity of the displaced volume. The compensatory storage area shall be hydraulically connected to the source of Flooding.
- T. Adopt buffer ordinances that limit Development in and near natural protective features such as riparian stream corridors and wetlands. Natural protective features may extend beyond 100-Year-Flood elevations. Extra protections for these areas are beneficial because these areas attenuate runoff periods, improve water quality, stabilize streambanks, recharge groundwater aquifers, allow for lateral stream migration, and protect aquatic and terrestrial habitat. Riparian and wetland areas also enhance the general aesthetic value of a community.

- U. Buffer ordinances are often seen as part of land use or zoning code. They may also stand alone in other portions of the municipal code. Options for widths include fixed width, variable width, or multi-zoned buffers.
- V. **Establish Residual Risk Mapping.** Residual Risk is the threat to the areas behind Levees that may still be at risk for Flooding. FEMA has identified thousands of miles of Levees nationwide, affecting millions of people. It is important for Levee owners, Communities, and homeowners to understand the risks associated with living in Levee-impacted areas and the steps that can be taken to provide full protection from Flooding. Even the best Flood protection system or structure cannot completely eliminate the risk of every Flood event, and when Levee systems fail, the results may be catastrophic and the damage may be more significant than if the Levee system had not been built.
- W. A Community may regulate any Designated and Approved 100-Year shallow Flooding areas, defined as Flooding with an average depth limited to 3.0 feet or less where no defined Channel exists.
- X. Detention/Flood control storage and LID should be considered, when practicable, as part of a basinwide program for the watershed.

Rule 20. Effective Date:

These revised Rules shall apply to the Designation and Approval of all Flood Hazard Information made by the CWCB and all other Floodplain activities on or after January 14, 2022 and are, therefore, not retroactive to any Floodplain information Designated and Approved by the Board or other Floodplain activities prior to the effective date.

070.040.020 Sensitive Area Protection.

(a) General Provisions.

- (1) *Purpose.* This Section 070.040.020 is intended to protect and enhance the natural features that contribute significantly to Glenwood Springs's quality and character, including but not limited to the varying topography and hillsides, floodplains, wetlands, viewsheds, and other significant features. This Section also is intended to ensure that land subject to natural hazards such as flooding, falling rock, landslides, mud flows, or snowslides is not approved for development without appropriate consideration by the City of potential conditions and safeguards to help protect life, health, and property.
- (2) *Applicability.* This Section shall apply to any proposed development that requires one (1) or more of the following:
 - a. Any development permit required by Section 070.060.050, Development Permits, including:
 1. Site/Architectural Plan Review (Subsection 070.060.050(a));
 2. Master Plan (Subsection 070.060.050(b));
 3. Final Plans (Subsection 070.060.050(c));
 4. Location and Extent Review (Subsection 070.060.050(d));
 5. Special Use Permit (Subsection 070.060.050(e)); and/or
 6. Right-of-Way Encroachment License (Subsection 070.060.050(f)).
 - b. A variance required by Subsection 070.060.070(a), Variance;
 - c. A permit for excavation and/or grading, as required by the Engineering Standards;
 - d. A building permit for construction of a new building or structure; or
 - e. A building permit for addition, alteration, or repair of an existing building or structure, the value of which exceeds fifty (50) percent of the assessed value of the building or structure.
- (3) *Additional Submittal Requirements.*
 - a. In order to evaluate and ensure compliance with the standards in this Section, the Director may require existing conditions reports and other technical reports and plans, as set forth in the Administrative Manual, that identify slopes, soil conditions, floodplains, geologic hazards, and other sensitive features present on the site, and that recommend steps to mitigate any hazards in order to comply with this Code.
 - b. Such reports shall be prepared to standards adopted by the City Engineer. Best practices to mitigate such hazards recommended in such reports shall be required. Geotechnical and geologic reports shall be prepared by a licensed professional engineer.
- (4) *Limits of Disturbance.*
 - a. *Establishment of Limits of Disturbance.* Except for properties in the Downtown Core, for every development subject to this Section the applicant shall establish "limits of disturbance" that indicate the specific area(s) of a site within which construction and development activity shall be contained. The limits of disturbance shall be shown on the site/architectural plan.
 - b. *Criteria for Establishing Limits of Disturbance.* In establishing limits of disturbance, the following criteria and standards shall be considered and applied, as well as applicable requirements from the City's Engineering Standards:

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1. Minimize visual impacts from the development, including but not limited to screening from adjacent and downhill properties, ridgeline area protection, and protection of scenic views;
 2. Erosion prevention and control, including but not limited to protection of steep slopes and natural drainage channels;
 3. Fire prevention and safety, including but not limited to location of trees and vegetation near structures;
 4. Preservation of significant trees or vegetation;
 5. Conservation of water including but not limited to preservation of existing native vegetation, reduction in amounts of irrigated areas, and similar considerations;
 6. Wildlife habitat protection, including but not limited to preservation of critical wildlife habitat and identified migration corridors and routes;
 7. Stream corridor and wetland protection and buffering; and
 8. Preservation of the maximum amount of the site's natural topography, tree cover, and vegetation.
- c. *Maximum Limits of Disturbance.*
1. *Single-Family Detached Residential Uses.* For single-family detached residential uses subject to the requirements of Subsection 070.040.020(b), Hillside Development, the limits of disturbance for an individual single-family detached residential use and any accessory structure shall not exceed fifty (50) percent of the total gross area of the underlying lot or lots, or twenty thousand (20,000) square feet, whichever is less. For most single-family residential development, limits of disturbance will cover the area(s) needed to provide the building sites for the principal structure and any major accessory structure(s), plus the area(s) necessary to provide an access driveway and necessary septic systems, utilities, services, and drainage facilities.
 2. *All Other Developments.* For all other types of development, including planned unit developments, the limits of disturbance, including parking areas and accessory buildings and structures, shall be determined on a case-by-case basis, as determined by setback, common open space, landscaping, and other requirements of this Code.
 3. *On-Site Wastewater Treatment Systems.* For all types of development, leach fields constructed in connection with an on-site sewer system shall not be counted toward the maximum limits of disturbance provided the leach field is revegetated with native vegetation in accord with state onsite wastewater treatment regulations.
- d. *Location of Limits of Disturbance.*
1. *Zero Lot Lines.* Where appropriate to preserve or to protect steep slopes or other natural features, a structure may be located on a lot in such a manner that one (1) or both of the side facades of a structure rest directly on a lot line. This provision shall not be interpreted to exempt a structure from any applicable building and fire code provisions or requirements.
 2. *Contiguity.* Limits of disturbance necessary to accommodate proposed development may be non-contiguous in order to best meet the criteria and standards set forth in this Section.
 3. *Clustering.* Clustering of building pads and parking areas within a building site is strongly encouraged and may be required to minimize the size of the limits of disturbance and to maintain the maximum amount of open space in the development.

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- e. *Modification of Limits of Disturbance.* The Director has discretion to administratively increase the limits of disturbance by a maximum of twenty (20) percent where applicable, provided one (1) of the following criteria is met:
1. The modification is designed to yield:
 - i. More effective preservation of existing mature trees, vegetation, riparian areas, rock outcrops, or other significant natural features of the site;
 - ii. Less visual impact on the property or on the surrounding area; or
 - iii. Better protection of wildlife habitat; or,
 2. Strict application of the standard(s) would render a site undevelopable.
- (5) *Clustering.* Clustering of development in sensitive areas is strongly encouraged and may be required to meet the requirements of this Section. (Figure 040-1)
- a. *When Allowed.* Minimum lot size may be reduced through clustering of development if the applicable decision-making body finds that:
1. The clustering proposal, compared with a more traditional site development plan, better attains the policies and objectives of this Article, such as providing more open space, preserving existing trees and vegetation coverage, and preserving sensitive environmental areas such as stream corridors, slide areas, wetlands, and steep slopes;
 2. The clustering proposal will have no significant adverse impact on adjacent properties or development, or the applicant has agreed to adopt appropriate mitigation measures such as landscaping, screening, illumination standards, and other design features as recommended by the Director to buffer and protect adjacent properties from the proposed clustered development;
 3. The architecture, height, building materials, building colors, and other design features of the development are compatible with adjacent properties or development and blend with the surrounding natural landscape; and
 4. The clustering proposal meets all other applicable requirements set forth in this Article or in other applicable ordinances or regulations.

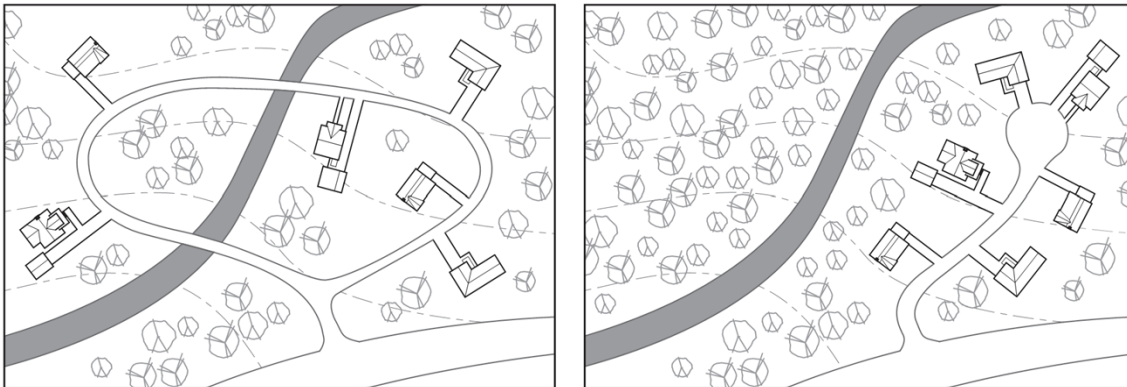


Figure 040-1: Clustering

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- b. *Minimum Lot Size Reduction.* Minimum lot sizes required for the underlying zoning district in Article 070.020: Zoning Districts, may be reduced by up to twenty-five (25) percent for lots within cluster developments that satisfy the above standards.
 - c. *Pre-Application Conference Required.* Any applicant proposing to reduce minimum lot sizes through clustering shall be required to attend a pre-application conference pursuant to Subsection 070.060.030(b), Pre-Application Conference, prior to submitting a development application.
- (6) *Interpretation.* The provisions of this Section 070.040.020 shall be deemed to be minimum requirements. Nothing in this Section shall impair the obligations of or interfere with private agreements in excess of the minimum requirements. Where this Section imposes a restriction different from that imposed by other applicable provisions of law, contract, or deed, the more restrictive provision shall control.
 - (7) *Disclaimer of Liability.* This Section 070.040.020 is intended to provide some degree of protection to life, safety, and property. It is based on scientific and engineering considerations that are continually being developed and proven. Compliance with this Section cannot ensure freedom from risk to life, safety, or property. This Section shall not create liability on the part of the City or any officer or employee of the City for any damage that may result from reliance on this Section or any administrative decision lawfully made pursuant to this Code.
- (b) *Hillside Development.*
- (1) *Purpose.* The purpose of this Subsection is to:
 - a. Minimize the negative environmental and visual effects of mass cut-and-fill of large pads and excessive terracing through retention of the natural topography of the hillsides;
 - b. Prevent soil erosion and landslides;
 - c. Provide safe circulation of vehicular and pedestrian traffic to and within hillside areas and to provide access for emergency vehicles necessary to serve the hillside areas;
 - d. Preserve visually significant slope banks, ridge lines, rock outcroppings, native plant materials, natural hydrology, and other areas of visual significance;
 - e. Encourage innovative architectural, landscaping, circulation, and site design that serve to preserve the significant natural resources and visual character of the City;
 - f. Protect the public from natural hazards caused by unstable slopes and soils, debris flow, erosion and other geologic hazards of hillside development; and
 - g. Minimize the threat and subsequent damage of wildfire through safe building practices.
 - (2) *Applicability.* This Subsection shall apply to any of the application types listed in Subsection 070.040.020(a)(2), Applicability (Sensitive Area Protection), that meet any of the following criteria:
 - a. *Hillside Preservation District.* Any proposed development in the Hillside Preservation district; see Section 070.020.170.
 - b. *Slopes.* Any proposed development on a lot with average slopes in excess of twenty (20) percent within the limits of disturbance area.
 - c. *Areas of Geologic Hazard.* Any proposed development in Areas of Geologic Hazard, which consists of the Hazard Avoidance Districts and Hazard Mitigation Districts as defined in Subsection 070.040.020(c)(2)b., Establishment of Geological Hazards Districts.
 - (3) *Lot and Density/Intensity Requirements.*

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- a. *Minimum Lot Size.* All development subject to this Subsection shall comply with the minimum lot size and lot width standards required in the underlying zone district and with other development standards in this Article 070.040: Development Standards.
 - b. *Allowed Density/Intensity.*
 1. *Residential Development.* The maximum number of residential units permitted within areas subject to the Hillside Development standards shall be pursuant to Table 040.1 below. In addition, a detached accessory dwelling unit may be allowed so long as the limits of disturbance does not exceed fifty (50) percent of the total gross area of the underlying lot or lots, or twenty thousand (20,000) square feet, whichever is less.

Table 040.1: Allowed Residential Development	
Average Slope of Overall Site (within LOD)	Residential: Allowable Units
In excess of 20% and up to 25%	1 dwelling unit per 10,000 square feet
In excess of 25% and up to 30%	1 dwelling unit per 20,000 square feet

2. *Nonresidential Development.* The maximum amount of nonresidential gross square footage permitted within areas subject to the Hillside Development standards shall be the square footage allowed by the zoning district. Nonresidential buildings are prohibited on slopes greater than twenty (20) percent; however, open decks and support structures for existing buildings may be constructed.
 3. *Calculating Density/Intensity.* For the purposes of calculating density/intensity, only the average slope within the proposed area within the limits of disturbance of a specific lot or parcel shall be considered.
- c. *Prohibition of Development on Steep Slopes.* No development, including clearing, excavation, and grading, shall be allowed where the average slope within the limits of disturbance is greater than thirty (30) percent. Structures shall be set back from ascending or descending slopes greater than thirty (30) percent in accordance with the requirements of the current adopted building code.
 - d. *Consolidation of Substandard Lots.*
 1. *General Rule: Consolidation Required.* Two (2) or more lots or parcels subject to these Hillside Development standards shall be considered to be a single, undivided lot or parcel for the purposes of this Code, if all the following factors apply:
 - i. The lots or parcels are contiguous;
 - ii. The lots or parcels are in single and common ownership and are of record on the effective date of this Code;
 - iii. No structures are located on the lots or parcels;
 - iv. All or part of the lots or parcels do not meet the minimum lot area or lot width requirements set forth in the base zoning district; and
 - v. Such lots have not been improved with individual and separate connections to municipal water or sewer systems.

No portion of such lots or parcels subject to this consolidation provision shall be used or sold in a manner that renders compliance with the lot width and lot area requirements set forth in this Subsection less feasible.

2. *Exception.* Notwithstanding the general rule for consolidation set forth in c. above, if a lot or parcel that would otherwise be subject to the general consolidation rule meets the minimum lot area or lot width requirements set forth in the underlying zone district, then consolidation shall not be required.

e. *Slope Calculations.*

1. Slope shall be calculated as the vertical rise in feet measured over a horizontal distance, expressed as a percentage. Slope calculations shall not include areas outside the limits of disturbance.
2. The applicant shall indicate on a site/architectural plan the limits of proposed development and disturbance and shall include the calculation of the average slope of that area.

(4) *Site Development Standards.*

- a. *Building Envelope and Site Design Generally.* Building envelopes and setbacks shall be determined on the basis of natural landforms, vegetation, and underlying geology. The designation of the limits of disturbance, which shall include all structures and access areas, shall be designed to avoid and minimize disturbance to sensitive areas and geologic and natural vegetative features. Natural vegetation, rock outcroppings, and significant landforms shall be retained to the maximum extent practicable. Flexibility and creativity are encouraged in designing development around existing features.
- b. *Protection from Potential Hazards.* All proposed development shall be designed to protect the public from the potential hazards of drainage, debris flow, rock fall, fire, and erosion. Projects shall be designed with existing features in order to minimize disturbance to, and therefore mitigation of, surficial hillside geology.
- c. *Access Roads.* New roads shall comply with the street standards in Section 070.040.070, Access and Circulation. Such access shall be approved by the Fire Department and the City Engineer.
- d. *Fire Hazard Mitigation.*
 1. Brush and vegetated areas shall be cleared and maintained according to the Fire Department.
 2. New vegetation shall be fire- and drought-resistant species.
 3. Roofs, overhangs, and exposed balconies shall be fire-rated according to the adopted Fire Code.
 4. Water supply, fire breaks, and access shall be approved by the Fire Department.
 5. Buildings shall be sited so that fire hazard clearing zones will not affect mature vegetation.
- e. *Viewshed Protection.* Proposed development shall retain the essential visual qualities of the site so that views from public open space areas, rights-of-way, and other public places will not be negatively impacted. In designing a proposed development, applicants shall adhere to the following principles:
 1. Following construction, off-site views of retaining walls, structures, parking areas, and landscaping on the development site shall be minimized.
 2. The disturbance areas shall be reclaimed as soon as possible after construction ends.

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- f. *Geology, Soils, and Grading.* Development shall be designed to reduce the potential for soil erosion and slope degradation during and after construction. In addition to meeting the standards of Subsection 070.040.020(a)(5), Clustering, the following standards shall apply:
1. A grading permit shall be required for disturbance in excess of one thousand (1,000) square feet. Grading plans shall be submitted and reviewed according to the City's Engineering Standards.
 2. Structures shall be designed to step down with the existing topography. To the maximum extent feasible, building designs that require extensive cut and fills shall not be allowed.
 3. Except for driveways, cut-and-fill slopes shall be entirely contained within a lot (i.e., natural grade at the lot lines shall be maintained).
 4. Sharp angles shall be rounded off, in a natural manner, at the top and ends of cut and fill slopes (within approximately five (5) feet of the sharp angle) unless steep angles are a natural character of the site. Where this would damage tree root systems, the amount of rounding off may be reduced and shrubs used instead to hide the transition.
 5. The subdivider and/or property owner shall maintain in perpetuity and repair (or supply a program for preventative maintenance) of manufactured slope areas, erosion control devices, retaining walls, drainage structures and fire prevention measures as specified in an approved development.
 6. Trees and vegetation shall be maintained to provide slope stability and prevent visual scarring wherever possible. When this requirement conflicts with fire hazard mitigation such as defensible space, appropriate mitigation shall be provided as determined by the Fire Department and the Director. A revegetation landscape plan is required for disturbed site areas.
 7. Final contours and slopes shall reflect existing landforms to the maximum extent practicable.
 8. The grade of a lot shall not be raised or lowered more than four (4) feet at any point for construction of any structure or improvement, except:
 - i. The site's original grade may be raised or lowered a maximum of six (6) feet if retaining walls are used to reduce the steepness of man-made slopes, provided that the retaining walls comply with the requirements set forth in this Subsection.
 - ii. Grade changes or retaining walls up to six (6) feet may be allowed if necessary to construct a driveway from the street to a garage or parking area,
 - iii. For the purposes of this Subsection, basements and buildings set into a slope are not considered to lower the natural grade within their footprint.
- g. *Retaining Walls and Fencing.*
1. Generally, a retaining wall shall be no higher than six (6) feet, except that a wall varied in height to accommodate a variable slope shall have an average height no greater than four (4) feet and a maximum height no greater than eight (8) feet in any sixty-foot length. A higher wall is permitted:
 - i. Where used internally at the split between one- and two-story portions of a building; and

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- ii. Where substantially hidden from public view at the rear of a building, where it may not exceed the eave height of the building.
 - 2. Visible retaining walls and fencing shall be designed to maintain human scale and reduce the visual impact of cut lines on the hillside through the use of indigenous materials, terracing and aligning construction with the natural topography.
 - 3. Indigenous materials and/or earth-toned concrete shall be used, and terraced to match existing terrain.
 - 4. Terraced walls and retaining structures should incorporate landscaping, if approved by the City Engineer.
 - 5. Retaining walls and fencing shall comply with all standards in Subsection 070.040.050(f)(3), Retaining Wall Standards.
 - h. *Water Supply.* Water supply and pressure shall be adequate to serve both residential and emergency services pursuant to the adopted Fire Code.
 - i. *Drainage.*
 - 1. Natural drainage courses shall not be disturbed by construction activity, and natural runoff shall be maintained unless approved by the City Engineer.
 - 2. A drainage plan prepared by a licensed professional engineer shall be submitted in accordance with the City's Engineering Standards.
- (5) *Building Design Standards.*
- a. *Structure Design Generally.* Building massing and roof lines shall be designed to blend with the natural terrain. When possible, the massing of the structure shall be broken up using the slope and terrain to vary the exterior dimensions.
 - b. *Ground Plane.*
 - 1. Buildings that firmly meet the ground convey an appearance of greater permanence and are strongly encouraged.
 - 2. To the maximum extent feasible, placing buildings on piers such that exterior walls do not continue down to the ground shall be prohibited because of aesthetic and energy efficiency concerns. This requirement shall not apply in areas of waterways and areas of special flood hazard.
 - c. *Building Mass and Scale.*
 - 1. To the maximum extent feasible, building design shall incorporate changes in the planes of walls and changes in the slope and height of roof lines to add variety, create visual interest, and minimize scale.
 - 2. Building mass and wall lines shall be broken up to conform to existing slope and avoid unbroken expanses of building mass and walls that can intrude into the natural setting and dominate a site.
 - d. *Building Colors.*
 - 1. Colors that enhance the natural colors of the building materials shall be used in developing an overall color scheme. Predominant tones on exterior walls shall tend toward neutral colors such as warm earthy hues, dark green of forests, greys and grey-brown of the mountains, the tan of grasses, and similar colors. Bright, harshly contrasting color combinations shall be avoided.

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2. Exterior building, roofing, and exposed rooftop mechanical equipment shall be warm or dark earth-toned colors with low reflectivity.
 3. Color and intensity of color proposed for all exterior building and roofing materials, including exposed rooftop mechanical systems such as HVAC equipment, roof vents, air handling/exchange units, shall be subject to approval by the Planning and Zoning Commission and/or City Council, as applicable.
 4. Exterior building and roofing colors shall not include white, off-white, high-intensity primary colors, and/or fluorescent colors.
- e. *Building Materials.*
1. Primary building materials shall be selected for their ability to withstand Glenwood Springs' variable mountain climate. Materials with demonstrated durability include, but are not limited to:
 - i. Brick;
 - ii. Stone;
 - iii. Cementitious siding products;
 - iv. Log construction;
 - v. Cast concrete; or
 - vi. Other comparable materials as approved by the Director.
 2. Exterior Insulation and Finish Systems (EIFS) shall not be utilized in high-traffic areas, such as at primary building entrances, where it may be easily damaged.
- f. *Parking Areas.*
1. Parking lots and detached garages accessory to residential uses shall be located so that they can be screened to blend into the natural environment and will not require backing onto an arterial or collector street.
 2. To the maximum extent feasible, parking lots and detached garages accessory to residential uses shall be located where they can be screened so they do not dominate the streetscape. Parking facilities shall be designed to follow the existing topography and to provide adequate snow storage areas.
- (c) *Development in Areas of Geologic Hazard.*
- (1) *Purpose.* The purpose of this Subsection 070.040.020(c) is to promote the public health, safety, and general welfare and to minimize public and private losses due to geologic conditions in specific areas by regulations designed to:
 - a. Protect human life, safety and property;
 - b. Minimize damage to public facilities and utilities;
 - c. Minimize the need for relief and clean-up operations due to geologic events with their accompanying public and private costs;
 - d. Minimize the need for expensive mitigation measures to protect public and private property; and
 - e. Alert property owners and potential buyers of geologic hazards existing in certain areas so that they may protect their own property and avoid endangering the property of others.
 - (2) *General Provisions.*

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- a. *Types of Geologic Hazards.* As used in this Subsection, the term "geologic hazard" shall include the following hazards, as defined in Colorado Geological Survey Open File Report 78-10 ("C.G.S. 78-10"):
1. "Corrosive soils" are potentially corrosive to concrete and steel.
 2. "Debris flow hazard" means severe and moderate debris flow hazard.
 - i. "Severe debris flow hazard" poses possible serious damage to structures and risk to life, and mitigation is necessary.
 - ii. "Moderate debris flow hazard" poses possible minor damage to structures and risk to life. Mitigation is recommended and may be required and major cleanup is probable.
 3. "Landslide hazard" is shown in areas of identified landslide features. Slides are mostly older features but have potential for reactivation.
 4. "Rockfall hazard criteria" includes an identifiable source area for rocks and the presence of fallen rocks with intermediate diameters of two (2) feet or more.
 5. "Slope instability" denotes areas of past and current mass wasting processes.
- b. *Establishment of Geological Hazards Districts.* There are hereby created within the City the following Geologic Hazards Districts:
1. *Hazard Avoidance District.* This district includes undeveloped parcels with the potential or presence of severe debris flow, and/or rockfall. The district also includes developed parcels with the potential or presence of severe geologic hazards where additional development will significantly increase the risk of damage from the hazard or significantly increase the cost to the community of mitigating the hazard.
 2. *Hazard Mitigation District.* This district includes parcels with severe geologic hazards where significant development already exists and where additional development will not significantly increase the risk of damage from the hazard nor significantly increase the cost to the community of mitigating the hazard. It also includes areas with the potential or presence of moderate debris flow, and/or rockfall hazards.
- c. *Geologic Hazards District Map.* The locations and boundaries of the Geologic Hazards Districts established by this Subsection shall be those established by the official report entitled "Geologic Hazards of the Glenwood Springs Metropolitan Area" as released by the C.G.S. 78-10. The geologic hazards maps that accompany C.G.S. 78-10 are hereby adopted as the "official geologic hazards maps" and shall be maintained along with accompanying sensitive area reports by the Office of the City Engineer. These maps shall serve as official reference in case of dispute regarding the location of hazards, and the City Engineer's interpretation of these maps shall be final. The maps shall be interpreted by the City Engineer as follows:
1. *Hazard Avoidance Districts.*
 - i. Undeveloped parcels lying entirely or partly in any area identified as a severe hazard zone on the Map of Debris Flow Fan Deposits and Hazards and/or the General Geologic Hazards Map.
 - ii. Developed parcels identified as lying entirely or partly in any area identified as a severe hazard zone on the aforesaid maps where the City Engineer has determined that additional development will increase the risk of damage from the hazards and/or significantly increase the cost to the community of mitigating the hazards.

2. *Hazard Mitigation Districts.*

- i. Parcels lying entirely or partly in any area identified as a moderate hazard zone on the Map of Debris Flow Fan Deposits and Hazards and/or the General Geologic Hazards Map.
 - ii. Developed parcels identified as lying entirely or partly in any area identified as a severe hazard zone on the aforementioned maps where the City Engineer has determined that additional development will not increase the risk of damage from the hazard and/or will not significantly increase the cost to the community of mitigating the hazard.
- d. *Annexation of Land Within an Area of Geologic Hazard.* Upon annexation of any land within an area of geologic hazard, as determined on the official geologic hazards maps, such land shall be added to the appropriate geologic hazards district, and all provisions of this Subsection shall apply.

(3) *Geologic Hazards District Standards.*

- a. *Hazard Avoidance Districts.* No improvement, building, structure, excavation, dumping, or backfill shall be placed, built, undertaken or approved in a Hazard Avoidance District except for fences, geologic stabilization structures, or paths for nonmotorized use unless, before application for a development permit or, if no development permit is required, for a grading or building permit, the applicant demonstrates to the City Engineer and the Director by clear and convincing evidence that one (1) of the following conditions is met:
 1. The land to be affected does not lie within an area of severe debris flow, rockfall hazard, or a drainage basin contributing to any such hazard, as shown on the official geologic hazards maps, and the proposal is in conformance with the purposes of this Subsection.
 2. The severe hazard does not exist on the subject site in the proposal and is in conformance with the purposes of this Subsection. Such a determination shall require detailed analysis of the area by a qualified geologist and an engineering geology report, which report may be submitted by the City to the Colorado Geologic Survey for review. For purposes of this provision, the area" means the site of the proposed development as well as adjacent land and upslope drainage basins as necessary to compare the area analysis with the official geologic hazards maps. Upon submittal of this report by the applicant, application may be made for a development, grading, or building permit, but such a permit shall not be issued until the City Engineer and the Director have determined that the conditions of this Paragraph are met.
 3. The proposed development meets all of the following conditions:
 - i. It will include no human habitation;
 - ii. It will not require City water, wastewater, streets or other public service;
 - iii. It will not increase the hazard to other public or private property; and
 - iv. It is consistent with the intent and purposes of this Article.
 4. The subject site lies within an area with rockfall hazard but not debris flow and not within a drainage basin contributing to any such hazard as shown on the official geologic hazards maps. In the case of such a determination by the City Engineer, a mitigation plan shall be required before issuance of a development, grading or building permit. The mitigation plan shall be produced and certified by a qualified engineer and shall demonstrate to the City

Engineer and the Director by clear and convincing evidence that rockfall damage will be prevented by a catchment wall or other means.

b. *Hazard Mitigation Districts.*

1. *Applicability.* All new structures and additions or improvements subject to this Subsection and proposed in a hazard mitigation district shall be subject to the requirements of Subsection 070.040.020(c)(3)b.2., Standards, unless before application for a development permit, or, if no development permit is required, for excavation or building permit, the applicant demonstrates to the City Engineer and the Director by clear and convincing evidence that one (1) of the following conditions is met:
 - i. The land to be affected does not lie within an area of severe or moderate debris flow, rockfall hazard, or a damage basin contributing to any such hazard as shown on the official geologic hazards maps.
 - ii. The severe or moderate hazards as specified in C.G.S. 78-10 do not exist on the subject site and the proposal is in conformance with the purposes of this Subsection. Such a determination shall require detailed analysis of the area by a qualified geologist in an engineering geology report, which report may be submitted by the City to the Colorado Geological Survey for review. For purposes of this provision, "the area" means the site of the proposed development, as well as the adjacent land and upslope drainage basin as necessary to compare the area analysis with the official geologic hazard maps. Upon submittal of this report by the applicant, application may be made for a development, excavation, or building permit, but such permit shall not be issued until the City Engineer and the Director have determined that the conditions of this Subparagraph are met.

2. *Standards.*

- i. In areas with moderate or severe debris flow hazard as shown on the official geologic hazards maps, before issuance of a development permit or, if no development permit is required, an excavation or building permit, the applicant shall demonstrate to the City Engineer and the Director by clear and convincing evidence that any structure or grading change that may divert debris flow or floodwaters from the subject property will not increase hazards to other public or private properties. Such a determination shall require an engineering geology report produced and certified by a qualified engineer.
- ii. Before issuance of a building permit, the applicant shall demonstrate to the City Engineer and the Building Official by clear and convincing evidence that all applicable requirements in the City's Engineering Standards are met.

(4) *Public Improvements in Areas of Geologic Hazard.* Public improvements, including but not limited to streets, water, wastewater, and electrical services, will not be extended into the Hazard Avoidance District, except where:

- a. An area or a proposed development meets one (1) of the conditions of Subsection 070.040.020(c)(3)a., Hazard Avoidance Districts; or
- b. The public good is better served by the extension which shall be in compliance with the City goals and policies. Such determination shall be made by the City Council upon a recommendation from the Planning Commission.

(d) *Development in Waterways and Areas of Special Flood Hazard.*

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- (1) *Findings of Fact.*
- a. The flood hazard areas of the City are subject to periodic inundation which can result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, of which adversely affect the public health, safety and general welfare of the public.
 - b. These flood losses are created by the cumulative effect of obstructions in floodplains which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, flood-proofed, or otherwise protected from flood damage.
- (2) *Statement of Purpose.* It is the purpose of this Subsection 070.040.020(d) to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions to specific areas by provisions designed to:
- a. Protect human life and health;
 - b. Minimize expenditure of public money for costly flood control projects;
 - c. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
 - d. Minimize prolonged business interruptions;
 - e. Minimize damage to critical facilities, infrastructure and other public facilities such as water, sewer and gas mains, electric and communication stations, and streets and bridges located in floodplains;
 - f. Help maintain a stable tax base by providing for the sound use and development of flood-prone areas in such a manner so as to minimize future flood blight areas; and
 - g. Ensure that potential buyers are notified that property is located in a flood hazard area.
- (3) *Methods of Reducing Flood Losses.* In order to accomplish its purposes, this Subsection uses the following methods:
- a. Restrict or prohibit uses that are dangerous to health, safety or property in times of flood, or cause excessive increases in flood heights or velocities;
 - b. Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
 - c. Control the alteration of natural floodplains, stream channels and natural protective barriers, which are involved in the accommodation of flood waters;
 - d. Control filling, grading, dredging and other development which may increase flood damage; and
 - e. Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.
- (4) *Lands to Which this Subsection Applies.* This Subsection shall apply to all areas of Special Flood Hazard Areas and areas removed from the floodplain by the issuance of a FEMA Letter of Map Revision Based on Fill (LOMR-F) within the jurisdiction of the City.
- (5) *Basis for Establishing Areas of Special Flood Hazard.* The special flood hazard areas identified by the Federal Emergency Management Agency in a scientific and engineering report entitled, "The Flood Insurance Study for the City of Glenwood Springs," dated October 15, 1985, with an accompanying Flood Insurance Rate Map (FIRM) and/or Flood Boundary-Floodway Maps (FIRM and/or FBFM) and any revisions thereto are hereby adopted by reference and declared to be a part of this Title. The Special

Flood Hazard Areas identified by the FIS and attendant mapping are the minimum area of applicability of this Subsection and may be supplemented by studies designated and approved by the City. The Floodplain Administrator shall keep a copy of the Flood Insurance Study (FIS), DFIRMs, FIRMs and/or FBFMs on file and are available for public inspection.

- (6) *Establishment of Floodplain Development Permit.* A floodplain development permit shall be required to ensure conformance with the provisions of this Subsection.
- (7) *Compliance.* No structure or land shall hereafter be located, altered or have its use changed within the Special Flood Hazard Area without full compliance with the terms of this Subsection and other applicable regulations. Nothing herein shall prevent the City from taking such lawful action as is necessary to prevent or remedy any violation. These regulations meet the minimum requirements as set forth by the Colorado Water Conservation Board and the National Flood Insurance Program.
- (8) *Abrogation and Greater Restrictions.* This Subsection is not intended to repeal, abrogate or impair any existing easements, covenants or deed restrictions. However, where this Subsection and another provision of this Code, easement, covenant or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.
- (9) *Interpretation.* In the interpretation and application of this Subsection, all provisions shall be:
 - a. Considered as minimum requirements;
 - b. Liberally construed in favor of the governing body; and
 - c. Deemed neither to limit nor repeal any other powers granted under state statutes.
- (10) *Warning and Disclaimer of Liability.* The degree of flood protection required by this Subsection is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. On rare occasions, greater floods can and will occur and flood heights may be increased by manmade or natural causes. This Subsection does not imply that land outside the areas of special flood hazard or uses permitted within such areas will be free from flooding or flood damages. This Subsection shall not create liability on the part of the City, any official or employee thereof, for any flood damages that result from reliance on this Subsection or any administrative decision lawfully made thereunder.
- (11) *Designation of the Floodplain Administrator.* The City Engineer is hereby appointed as Floodplain Administrator to administer, implement and enforce the provisions of this Subsection and other appropriate sections of 44 CFR (National Flood Insurance Program Regulations) pertaining to floodplain management.
- (12) *Duties and Responsibilities of Floodplain Administrator.* Duties of the Floodplain Administrator shall include, but not be limited to the following:
 - a. Maintain and hold open for public inspection all records pertaining to the provisions of this Subsection, including the actual elevation (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures and any floodproofing certificate required by Subsection 070.040.020(d)(13).
 - b. Review, approve, or deny all applications for floodplain development permits required by adoption of this Subsection.
 - c. Review floodplain development permit applications to determine whether a proposed building site, including the placement of manufactured homes, will be reasonably safe from flooding.
 - d. Review permits for proposed development to ensure that all necessary permits have been obtained from those federal, state or local governmental agencies (including Section 404 of the

Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334) from which prior approval is required.

- e. Inspect all development at appropriate times during the period of construction to ensure compliance with all provisions of this Subsection, including proper elevation of the structure.
- f. Where interpretation is needed as to the exact location of the boundaries of the Special Flood Hazard Area (for example, where there appears to be a conflict between a mapped boundary and actual field conditions) the Floodplain Administrator shall make the necessary interpretation.
- g. When Base Flood Elevation data has not been provided in accordance with Section 070.090.060, the Floodplain Administrator shall obtain, review and reasonably utilize any Base Flood Elevation data and Floodway data available from a federal, state or other source, in order to administer the provisions of this Subsection.
- h. For waterways with Base Flood Elevations for which a regulatory Floodway has not been designated, no new construction, substantial improvements or other development (including fill) shall be permitted within Zones A1—30 and AE on the City's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one-half (½) foot at any point within the City.
- i. Under the provisions of 44 CFR Chapter 1, Section 65.12, of the National Flood Insurance Program regulations, the City may approve certain development in Zones A1—30, AE, AH, on the City's FIRM which increases the water surface elevation of the base flood by more than one-half (½) foot, provided that the City first applies for a conditional FIRM revision through FEMA (Conditional Letter of Map Revision), fulfills the requirements for such revisions as established under the provisions of Section 65.12, and receives FEMA approval.
- j. Notify, in riverline situations, adjacent communities and the State Coordinating Agency which is the Colorado Water Conservation Board, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to FEMA.
- k. Ensure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained.

(13) *Permit Procedures.*

- a. *Application.* Application for a Floodplain Development Permit shall be presented to the Floodplain Administrator on forms furnished by him/her and may include, but not be limited to, plans in duplicate drawn to scale showing the location, dimensions and elevations of proposed landscape alterations; existing or proposed structures, including the placement of manufactured homes and the location of the foregoing in relation to Special Flood Hazard Area. Additionally, the following information is required:
 - 1. Elevation (in relation to mean sea level) of the lowest floor (including basement) of all new and substantially improved structures;
 - 2. Elevation in relation to mean sea level to which any nonresidential structure shall be floodproofed;
 - 3. A certificate from a registered Colorado Professional Engineer or architect that the nonresidential floodproofed structure shall meet the floodproofing criteria in Subsection 070.040.020(d)(16)b.;
 - 4. Description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of proposed development; and

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5. Maintain a record of all such information in accordance with Subsection 070.040.020(d)(12).
- b. *Approval Criteria.* Approval or denial of a floodplain development permit by the Floodplain Administrator shall be based on all of the provisions of this Subsection and the following relevant factors:
1. The danger to life and property due to flooding or erosion damage;
 2. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
 3. The danger that materials may be swept onto other lands to the injury of others;
 4. The compatibility of the proposed use with existing and anticipated development;
 5. The safety of access to the property in times of flood for ordinary and emergency vehicles;
 6. The costs of providing governmental services during and after flood conditions including maintenance and repair of streets and bridges, and public utilities and facilities such as sewer, gas, electrical and water systems;
 7. The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site;
 8. The necessity to the facility of a waterfront location, where applicable;
 9. The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use; and
 10. The relationship of the proposed use to the comprehensive plan for that area.

(14) *Variance Procedure.*

- a. The Planning and Zoning Commission ("Commission") shall hear and render judgment on requests for variances from the requirements of this Subsection.
- b. The Commission shall hear and render judgment on an appeal only when it is alleged there is an error in any requirement, decision, or determination made by the Floodplain Administrator in the enforcement or administration of this Subsection. Such appeals shall be subject to the procedures set forth in Subsection 070.060.070(c).
- c. Any person or persons aggrieved by the decision of the Commission may appeal such decision in the courts of competent jurisdiction upon completing the administrative procedures set forth in Subsection 070.060.070(c).
- d. The Floodplain Administrator shall maintain a record of all actions involving an appeal and shall report variances to the Federal Emergency Management Agency upon request.
- e. Variances may be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places without regard to the procedures set forth in the remainder of this Subsection.
- f. Variances may be issued for new construction and substantial improvements to be erected on a lot of one-half (½) acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, provided that the requirements of Subsection 070.040.020(d)(13) have been fully considered. As the lot size increases beyond the one-half (½) acre, the technical justifications required for issuing the variance increases.

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- g. Upon consideration of the factors noted above and the intent of this Subsection, the Commission may attach such conditions to the granting of variances as it deems necessary to further the purpose and objectives of this Subsection as stated in Subsection 070.040.020(d)(2), Statement of Purpose.
 - h. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
 - i. Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.
 - j. Prerequisites for granting variances:
 - 1. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
 - 2. Variances shall only be issued 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 a variance will not result in increased flood heights, additional threats to public safety or extraordinary public expense, create nuisances, cause fraud on or victimization of the public or conflict with this Code or the City goals, policies and plans.
 - k. Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor elevation below the Base Flood Elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.
 - l. Variances may be issued for new constructions and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that:
 - 1. The criteria outlined in Subsections 070.040.020(d)(14)a.—i. are met; and
 - 2. The structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.
- (15) *General Standards.* In all areas of special flood hazards, the following standards are required:
- a. All new construction or substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrostatic and hydrodynamic loads, including the effects of buoyancy;
 - b. All new construction or substantial improvements shall be constructed by methods and practices that minimize flood damage;
 - c. All new construction or substantial improvements shall be constructed with materials resistant to flood damage;
 - d. All new construction or substantial improvements shall be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding;

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- e. All manufactured homes shall be installed using methods and practices which minimize flood damage. For purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable state and local anchoring requirements for resisting wind forces.
 - f. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system;
 - g. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters; and
 - h. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.
- (16) *Specific Standards.* In all Special Flood Hazard areas where Base Flood Elevation data has been provided as set forth in Subsection 070.040.020(d)(5), Subsection 070.040.020(d)(12)g., and/or Subsection 070.040.020(d)(21), the following provisions are required:
- a. *Residential Construction.* New construction and substantial improvement of any residential structure shall have the lowest floor (including basement), electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork), elevated to one (1) foot above the Base Flood Elevation. Upon completion of the structure, the elevation of the lowest floor, including basement, shall be certified by a registered Colorado Professional Engineer, architect or land surveyor. Such certification shall be submitted to the Floodplain Administrator.
 - b. *Nonresidential Construction.*
 - 1. With the exception of Critical Facilities outlined in 070.040.020(d)(22), new construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor (including basement), electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), elevated to one (1) foot above the Base Flood Elevation; or, together with attendant utility and sanitary facilities, shall: be designed so that at one (1) foot above the Base Flood Elevation the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
 - 2. A registered Colorado Professional Engineer or architect shall develop and/or review structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice as outlined in this Subsection. Such certifications shall be maintained by the Floodplain Administrator, as set forth in Subsection 070.040.020(d)(13).
 - c. *Enclosures.*
 - 1. New construction and substantial improvements, with fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access, or storage in an area other than a basement and which are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters.
 - 2. Designs for meeting this requirement must either be certified by a registered Colorado Professional Engineer or architect or meet or exceed the following minimum criteria:

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- i. A minimum of two (2) openings having a total net area of not less than one (1) 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 (1) 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.
 - d. *Manufactured Homes.*
 - 1. All manufactured homes that are placed or substantially improved within Zones A1—30, AH and AE on the City's FIRM on sites: (1) outside of a manufactured home park or subdivision; (2) in a new manufactured home park or subdivision; (3) in an expansion to an existing manufactured home park or subdivision; or (4) in an existing manufactured home park or subdivision on which a manufactured home has incurred substantial damage as the result of a flood, be elevated on a permanent foundation such that the lowest floor of the manufactured home, electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork) are elevated to one (1) foot above the Base Flood Elevation and be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement.
 - 2. All manufactured homes placed or substantially improved on sites in existing manufactured home parks or subdivision within Zones A1—30, AH and AE on the City's FIRM that are not subject to the provisions of the previous paragraph shall be elevated so that either: (1) the lowest floor of the manufactured home, electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), are one (1) foot above the Base Flood Elevation; or (2) the manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade and shall be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement.
 - e. *Recreational Vehicles.*
 - 1. All recreational vehicles placed on sites within Zones A1—30, AH, and AE on the City's FIRM sites either: (1) be on the site for fewer than one hundred eighty (180) consecutive days; (2) be fully licensed and ready for highway use; or (3) meet the permit requirements of Subsection 070.040.020(d)(13), and the elevation and anchoring requirements for "manufactured homes" in Paragraph d. above.
 - 2. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.
 - f. *Prior Approved Activities.* Any activity for which a floodplain development permit was issued by the City or a CLOMR was issued by FEMA prior to the effective date of this Subsection may be completed according to the standards in place at the time of the permit or CLOMR issuance and will not be considered in violation of this Subsection if it meets such standards.
 - (17) *Standards for Areas of Shallow Flooding (AO/AH Zones).* Located within the Special Flood Hazard Area established in Subsection 070.040.020(d)(5), are areas designated as shallow flooding. These areas have special flood hazards associated with base flood depths of one (1) to three (3) feet where a clearly defined channel does not exist and where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow; therefore, the following provisions apply:

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- a. *Residential Construction.* All new construction and substantial improvements of residential structures must have the lowest floor (including basement), electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), elevated above the highest adjacent grade at least one (1) foot above the depth number specified in feet on the City's FIRM (at least three (3) feet if no depth number is specified). Upon completion of the structure, the elevation of the lowest floor, including basement, shall be certified by a registered Colorado Professional Engineer, architect, or land surveyor. Such certification shall be submitted to the Floodplain Administrator.
- b. *Nonresidential Construction.*
1. With the exception of Critical Facilities, outlined in Subsection 070.040.020(d)(22), all new construction and Substantial Improvements of non-residential structures, must have the lowest floor (including basement), electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), elevated above the highest adjacent grade at least one (1) foot above the depth number specified in feet on the City's FIRM (at least three (3) feet if no depth number is specified), or together with attendant utility and sanitary facilities, be designed so that the structure is watertight to at least one (1) foot above the base flood level with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads of effects of buoyancy. A registered Colorado Professional Engineer or architect shall submit a certification to the Floodplain Administrator that the standards of this Subsection, as proposed in Subsection 070.040.020(d)(13), are satisfied.
 2. Within Zones AH or AO, adequate drainage paths around structures on slopes are required to guide flood waters around and away from proposed structures.
- (18) *Floodways.* Floodways are administrative limits and tools used to regulate existing and future floodplain development. The State of Colorado has adopted Floodway standards that are more stringent than the FEMA minimum standard (see definition of Floodway in Subsection 070.040.020(d)(25)). Located within Special Flood Hazard Areas established in Subsection 070.040.020(d)(5) are areas designated as Floodways. Since the Floodway is an extremely hazardous area due to the velocity of floodwaters which carry debris, potential projectiles and erosion potential, the following provisions apply:
- a. Encroachments are prohibited, including fill, new construction, substantial improvements and other development within the adopted regulatory Floodway unless it has been demonstrated through hydrologic and hydraulic analysis performed by a licensed Colorado Professional Engineer and in accordance with standard engineering practice that the proposed encroachment would not result in any increase (requires a No-Rise Certification) in flood levels within the City during the occurrence of the base flood discharge.
 - b. If Paragraph a. above is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of Subsections 070.040.020(d)(15) through 070.040.020(d)(22).
 - c. Under the provisions of 44 CFR Chapter 1, Section 65.12 of the National Flood Insurance Regulations, the City may permit encroachments within the adopted regulatory floodway that would result in an increase in Base Flood Elevations, provided that the City first applies for a CLOMR and floodway revision through FEMA.
- (19) *Alteration of a Watercourse.* For all proposed developments that alter a watercourse within a Special Flood Hazard Area, the following standards apply:

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- a. Channelization and flow diversion projects shall appropriately consider issues of sediment transport, erosion, deposition, and channel migration and properly mitigate potential problems through the project as well as upstream and downstream of any improvement activity. A detailed analysis of sediment transport and overall channel stability should be considered, when appropriate, to assist in determining the most appropriate design.
 - b. Channelization and flow diversion projects shall evaluate the residual one-hundred-year floodplain.
 - c. Any channelization or other stream alteration activity proposed by a project proponent must be evaluated for its impact on the regulatory floodplain and be in compliance with all applicable federal, state and local floodplain rules, regulations and ordinances.
 - d. Any stream alteration activity shall be designed and sealed by a registered Colorado Professional Engineer or Certified Professional Hydrologist.
 - e. All activities within the regulatory floodplain shall meet all applicable federal, state and City floodplain requirements and regulations.
 - f. Within the Regulatory Floodway, stream alteration activities shall not be constructed unless the project proponent demonstrates through a Floodway analysis and report, sealed by a registered Colorado Professional Engineer, that there is not more than a 0.00 foot rise in the proposed conditions compared to existing conditions Floodway resulting from the project, otherwise known as a No-Rise Certification, unless the City first applies for a CLOMR and Floodway revision in accordance with Subsections 070.040.020(d)(15) through 070.040.020(d)(22).
 - g. Maintenance shall be required for any altered or relocated portions of watercourses so that the flood-carrying capacity is not diminished.
- (20) *Properties Removed from the Floodplain by Fill.* A floodplain development permit shall not be issued for the construction of a new structure or addition to an existing structure on a property removed from the floodplain by the issuance of a FEMA Letter of Map Revision Based on Fill (LOMR-F), unless such new structure or addition complies with the following:
- a. *Residential Construction.* The lowest floor (including basement), electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), must be elevated to one (1) foot above the Base Flood Elevation that existed prior to the placement of fill.
 - b. *Nonresidential Construction.* The lowest floor (including basement), electrical, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), must be elevated to one (1) foot above the Base Flood Elevation that existed prior to the placement of fill, or together with attendant utility and sanitary facilities be designed so that the structure or addition is watertight to at least one (1) foot above the base flood level that existed prior to the placement of fill with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads of effects of buoyancy.
- (21) *Standards for Subdivision Proposals.*
- a. All subdivision proposals including the placement of manufactured home parks and subdivisions shall be reasonably safe from flooding. If a subdivision or other development proposal is in a flood-prone area, the proposal shall minimize flood damage.
 - b. All proposals for the development of subdivisions including the placement of manufactured home parks and subdivisions shall meet floodplain development permit requirements of

Subsection 070.040.020(d)(6), Subsection 070.040.020(d)(13), and the provisions of Subsections 070.040.020(d)(15) through 070.040.020(d)(22).

- c. Base Flood Elevation data shall be generated for subdivision proposals and other proposed development including the placement of manufactured home parks and subdivisions which is greater than fifty (50) lots or five (5) acres, whichever is lesser, if not otherwise provided pursuant to Subsection 070.040.020(d)(5) or Subsection 070.040.020(d)(12).
 - d. All subdivision proposals including the placement of manufactured home parks and subdivisions shall have adequate drainage provided to reduce exposure to flood hazards.
 - e. All subdivision proposals including the placement of manufactured home parks and subdivisions shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage.
- (22) *Standards for Critical Facilities.* A Critical Facility is a structure or related infrastructure, but not the land on which it is situated, as specified in Rule 6 of the Rules and Regulations for Regulatory Floodplains in Colorado, that if flooded may result in significant hazards to public health and safety or interrupt essential services and operations for the City at any time before, during and after a flood.
- a. *Classification of Critical Facilities.*
 - 1. It is the responsibility of the City to identify and confirm that specific structures meet the following criteria: Critical Facilities are classified under the following categories: (a) essential services (b) hazardous materials (c) at-risk populations, and (d) vital to restoring normal Services.
 - 2. Essential services facilities include public safety, emergency response, emergency medical, designated emergency shelters, communications, public utility plant facilities, and transportation lifelines. These facilities consist of:
 - i. Public safety (police stations, fire and rescue stations, emergency vehicle and equipment storage, and emergency operation centers);
 - ii. Emergency medical (hospitals, ambulance service centers, urgent care centers having emergency treatment functions, and non-ambulatory surgical structures but excluding clinics, doctor's offices, and non-urgent care medical structures that do not provide these functions;
 - iii. Designated emergency shelters;
 - iv. Communications (main hubs for telephone, broadcasting equipment for cable systems, satellite dish systems, cellular systems, television, radio, and other emergency warning systems, but excluding towers, poles, lines, cables and conduits);
 - v. Public utility plant facilities for generation and distribution (hubs, treatment plants, substations and pumping stations for water, power and gas, but not including towers, poles, power lines, buried pipelines, transmission lines, distribution lines, and service lines); and
 - vi. Air transportation lifelines (airports [municipal and larger], helicopter pads and structures serving emergency functions, and associated infrastructure [aviation control towers, air traffic control centers, and emergency equipment aircraft hangars]).

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- vii. Specific exemptions to this category include wastewater treatment plants (WWTP), non-potable water treatment and distribution systems, and hydroelectric power generating plants and related appurtenance.
 - viii. Public utility plant facilities may be exempted if it can be demonstrated to the satisfaction of the City that the facility is an element of a redundant system for which service will not be interrupted during a flood. At a minimum, it shall be demonstrated that redundant facilities are available (either owned by the same utility or available through an intergovernmental agreement or other contract) and connected, the alternative facilities are either located outside of the one-hundred-year floodplain or are compliant with the provisions of this Subsection, and an operations plan is in effect that states how redundant systems will provide service to the affected area in the event of a flood. Evidence of ongoing redundancy shall be provided to the City on an as-needed basis upon request.
3. Hazardous materials facilities include facilities that produce or store highly volatile, flammable, explosive, toxins and/or water-reactive materials. These facilities may include:
- i. Chemical and pharmaceutical plants (chemical plants, pharmaceutical manufacturing);
 - ii. Laboratories containing highly volatile, flammable, explosive, toxins and/or water-reactive materials;
 - iii. Refineries;
 - iv. Hazardous waste storage and disposal sites; and
 - v. Above ground gasoline or propane storage or sales centers.
 - vi. Facilities shall be determined to be Critical Facilities if they produce or store materials in excess of threshold limits. If the owner of a facility is required by the Occupational Safety and Health Administration (OSHA) to keep a Material Safety Data Sheet (MSDS) on file for any chemicals stored or used in the workplace, AND the chemical(s) is stored in quantities equal to or greater than the Threshold Planning Quantity (TPQ) for that chemical, then that facility shall be considered to be a Critical Facility. The TPQ for these chemicals is: either five hundred (500) pounds or the TPQ listed (whichever is lower) for the three hundred fifty-six (356) chemicals listed under 40 C.F.R. § 302 (2010), also known as Extremely Hazardous Substances (EHS); or ten thousand (10,000) pounds for any other chemical. This threshold is consistent with the requirements for reportable chemicals established by the Colorado Department of Health and Environment. OSHA requirements for MSDS can be found in 29 C.F.R. § 1910 (2010). The Environmental Protection Agency (EPA) regulation "Designation, Reportable Quantities, and Notification" 40 C.F.R. § 302 (2010) and OSHA regulation "Occupational Safety and Health Standards", 29 C.F.R. § 1910 (2010) are incorporated herein by reference and include the regulations in existence at the time of the promulgation of this Subsection, but exclude later amendments to or editions of the regulations. Specific exemptions to this category include:
 - a. Finished consumer products within retail centers and households containing hazardous materials intended for household use, and agricultural products intended for agricultural use.

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- b. Buildings and other structures containing hazardous materials for which it can be demonstrated to the satisfaction of the local authority having jurisdiction by hazard assessment and certification by a qualified professional (as determined by the local jurisdiction having land use authority) that a release of the subject hazardous material does not pose a major threat to the public.
 - c. Pharmaceutical sales, use, storage, and distribution centers that do not manufacture pharmaceutical products.
 - d. These exemptions shall not apply to building or other structures that also function as Critical Facilities under another category outlined in this Subsection.
 - vii. At-risk population facilities include medical care, congregate care, and schools. These facilities consist of:
 - a. Elder care (nursing homes);
 - b. Congregate care serving twelve (12) or more individuals (day care and assisted living);
 - c. Public and private school (pre-schools, K—12 schools), before-school and after-school care serving twelve (12) or more children.
 - viii. Facilities vital to restoring normal services including government operations. These facilities consist of:
 - a. Essential government operations (public records, courts, jails, building permitting and inspection services, City administration and management, maintenance and equipment centers);
 - b. Essential structures for public colleges and universities (dormitories, offices, and classrooms only).
 - c. These facilities may be exempted if it is demonstrated to the City that the facility is an element of a redundant system for which service will not be interrupted during a flood. At a minimum, it shall be demonstrated that redundant facilities are available (either owned by the same entity or available through an intergovernmental agreement or other contract), the alternative facilities are either located outside of the one-hundred-year floodplain or are compliant with this Subsection, and an operations plan is in effect that states how redundant facilities will provide service to the affected area in the event of a flood. Evidence of ongoing redundancy shall be provided to the City on an as-needed basis upon request.
 - b. *Protection for Critical Facilities.* All new and substantially improved Critical Facilities and new additions to Critical Facilities located within the Special Flood Hazard Area shall be regulated to a higher standard than structures not determined to be Critical Facilities. For the purposes of this Subsection, protection shall include one (1) of the following:
 - 1. Location outside the Special Flood Hazard Area; or
 - 2. Elevation of the lowest floor or floodproofing of the structure, together with attendant utility and sanitary facilities, to at least two (2) feet above the Base Flood Elevation.

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- c. *Ingress and Egress for New Critical Facilities.* New Critical Facilities shall, when practicable as determined by the City, have continuous non-inundated access (ingress and egress for evacuation and emergency services) during a one-hundred-year flood event.
- (23) *Amendments.* Any amendments of this Subsection or the maps or studies incorporated herein shall be subject to and governed by the provisions of Subsection 070.040.020(d)(5).
- (24) *Conservation of Waterways.* It is the purpose of this subsection to conserve and promote the health of the City's riparian ecosystems, water quality, and protect human drinking water by maintaining a functional natural buffer adjacent to waterways.
- a. *Applicability.* All new improvements, buildings, additions, structures, excavations, grading, dumping, clearing of native vegetation, or backfill shall be subject to the requirements of Section 070.040.020(d)(24). A permit, engineering or other study would not be required to be in compliance with Section 070.040.020(d)(24)b, if any of the following conditions are met. This would not exempt the following activities from permits or engineering studies required by other parts of the Municipal Code:
1. The removal of native vegetation existing on or before September 17, 2020, not to exceed twenty (20) percent of the setback area defined below, to allow a property owner private access to and personal enjoyment of the waterway. This shall not be interpreted to allow for permanent structures of any kind within said area.
 2. The construction of bridges, public utilities, public paths for non-motorized use, public open space areas and boat ramps, wildfire mitigation activities, irrigation structures, flood control and erosion protection devices that do not result in a material increase in water quality degradation, stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.
 3. Removal of vegetation listed on the Garfield County noxious weed list, Chinese Elm, or Siberian Elm in compliance with applicable regulations or removal of dead vegetation. The type, kind and amount of replacement vegetation shall be at the discretion of the property owner provided it includes native riparian plant species and is sufficient to limit and prevent erosion at the riverbank.
 4. The property owner demonstrates one (1) or more of the following:
 - i. The area on or before September 17, 2020 did not contain significant riparian plant species or functions;
 - ii. The area on or before September 17, 2020 was impacted by previous earth disturbing activities; and/or
 - iii. Any improvement (including but not limited to the pruning of vegetation, construction of access path or steps, hot springs pools) does not result in a material increase in water quality degradation, stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.
- b. *Standards.*
1. No improvement, building, structure, excavation, grading, dumping, clearing of native vegetation, or backfill shall be placed, built, undertaken or approved within thirty-five (35) feet of the ordinary high-water mark (as defined by the U.S. Army Corp of Engineers), measured horizontally, of any river or live perennial stream.
 2. No chemical treatments, including but not limited to fertilizers, pesticides, and/or herbicides, are permitted within said thirty-five-foot setback area.

(25) *Definitions Related to Floodplain Regulations.* Unless specifically defined below, words or phrases used in this Subsection shall be interpreted so as to give them the meaning they have in common usage and to give this Subsection the most reasonable application.

- a. *One-Hundred-Year Flood.* A flood having a recurrence interval that has a one (1) percent chance of being equaled or exceeded during any given year (one (1) percent annual chance of flood). The term "one (1) percent chance flood" is synonymous with the term "one-hundred-year flood." The term does not imply that the flood will necessarily happen once every one hundred (100) years.
- b. *One-hundred-Year Floodplain.* The area of land susceptible to being inundated as a result of the occurrence of a one-hundred-year flood.
- c. *Five-Hundred-Year Flood.* A flood having a recurrence interval that has a 0.2 percent chance of being equaled or exceeded during any given year (0.2 percent chance annual of flood). The term does not imply that the flood will necessarily happen once every five hundred (500) years.
- d. *Five-Hundred-Year Floodplain.* The area of land susceptible to being inundated as a result of the occurrence of a five-hundred-year flood.
- e. *Addition.* Any activity that expands the enclosed footprint or increases the square footage of an existing structure.
- f. *Alluvial Fan Flooding.* A fan-shaped sediment deposit formed by a stream that flows from a steep mountain valley or gorge onto a plain or the junction of a tributary stream with the main stream. Alluvial fans contain active stream channels and boulder bars, and recently abandoned channels. Alluvial fans are predominantly formed by alluvial deposits and are modified by infrequent sheet flood, channel avulsions and other stream processes.
- g. *Area of Shallow Flooding.* A designated Zone AO or AH on a Community's Flood Insurance Rate Map (FIRM) with a one (1) percent chance or greater annual chance of flooding to an average depth of one (1) to three (3) feet where a clearly defined channel does not exist; where the path of flooding is unpredictable, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.
- h. *Base Flood Elevation (BFE).* The elevation shown on a FEMA Flood Insurance Rate Map for Zones AE, AH, A1—A30, AR AR/A, AR/AE, AR/A1—A30, AR/AH, AR/AO, V1—V30, and VE that indicates the water surface elevation resulting from a flood that has a one (1) percent chance of equaling or exceeding that level in any given year.
- i. *Basement.* Any area of a building having its floor sub-grade (below ground level) on all sides.
- j. *Channel.* The physical confine of stream or waterway consisting of a bed and stream banks, existing in a variety of geometries.
- k. *Channelization.* The artificial creation, enlargement, or realignment of a stream channel.
- l. *Code of Federal Regulations (CFR).* The codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government. It is divided into fifty (50) titles that represent broad areas subject to Federal regulation.
- m. *Community.* Any political subdivision in the state of Colorado that has authority to adopt and enforce floodplain management regulations through zoning, including but not limited to, cities, towns, unincorporated areas in the counties, Indian tribes, and drainage and flood control districts.
- n. *Conditional Letter of Map Revision (CLOMR).* FEMA's comment on a proposed project, which does not revise an effective floodplain map that would, upon construction, affect the hydrologic or

hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodplain.

- o. *Critical Facility.* A structure or related infrastructure but not the land on which it is situated, as specified in Section 070.090.210, that if flooded may result in significant hazards to public health and safety or interrupt essential services and operations for the City at any time before, during and after a flood.
- p. *Development.* Any manmade change in improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, or drilling operations or storage of equipment or materials.
- q. *DFIRM Database (usually spreadsheets containing data and analyses that accompany DFIRMs).* The FEMA Mapping Specifications and Guidelines outline requirements for the development and maintenance of DFIRM databases.
- r. *Digital Flood Insurance Rate Map (DFIRM).* The FEMA digital floodplain map. These digital maps serve as "regulatory floodplain maps" for insurance and floodplain management purposes.
- s. *Elevated Building.* A non-basement building (i) built, in the case of a building in Zones A1—30, AE, A, A99, AO, AH, B, C, X and D, to have the top of the elevated floor above the ground level by means of pilings, columns (posts and piers) or shear walls parallel to the flow of the water, and (ii) adequately anchored so as not to impair the structural integrity of the building during a flood of up to the magnitude of the base flood. In the case of Zones A1—30, AE, A, A99, AO, AH, B, C, X, and D, "elevated building" also includes a building elevated by means of fill or solid foundation perimeter walls with openings sufficient to facilitate the unimpeded movement of flood waters.
- t. *Existing Manufactured Home Park or Subdivision.* A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured 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 the effective date of the Floodplain Management Regulations adopted by the City.
- u. *Expansion to Existing Manufactured Home Park or Subdivision.* The preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets and either final site grading or the pouring of concrete pads).
- v. *Federal Register.* The official daily publication for Rules, proposed Rules, and notices of Federal agencies and organizations, as well as executive orders and other presidential documents.
- w. *FEMA.* The Federal Emergency Management Agency, the agency responsible for administering the National Flood Insurance Program.
- x. *Flood or Flooding.* A general and temporary condition of partial or complete inundation of normally dry land areas from:
 - 1. The overflow of water from channels and reservoir spillways;
 - 2. The unusual and rapid accumulation or runoff of surface waters from any source; or
 - 3. Mudslides or mudflows that occur from excess surface water that is combined with mud or other debris that is sufficiently fluid so as to flow over the surface of normally dry land areas (such as earth carried by a current of water and deposited along the path of the current).

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- y. *Flood Insurance Rate Map (FIRM)*. An official map of a Community, on which the Federal Emergency Management Agency has delineated both the Special Flood Hazard Areas and the risk premium zones applicable to the Community.
 - z. *Flood Insurance Study (FIS)*. The official report provided by the Federal Emergency Management Agency. The report contains the Flood Insurance Rate Map as well as flood profiles for studied flooding sources that can be used to determine Base Flood Elevations for some areas.
 - aa. *Floodplain or Flood-Prone Area*. Any land area susceptible to being inundated as the result of a flood, including the area of land over which floodwater would flow from the spillway of a reservoir.
 - bb. *Floodplain Administrator*. The City Engineer, who is the City official designated to administer and enforce the floodplain management regulations.
 - cc. *Floodplain Development Permit*. A permit required before construction or development begins within any Special Flood Hazard Area (SFHA). If FEMA has not defined the SFHA within the City, the City shall require permits for all proposed construction or other development in the City including the placement of manufactured homes so that it may determine whether such construction or other development is proposed within flood-prone areas. Permits are required to ensure that proposed development projects meet the requirements of the NFIP and this Subsection.
 - dd. *Floodplain Management*. The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works and floodplain management regulations.
 - ee. *Floodplain Management Regulations*. Zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as a floodplain ordinance, grading ordinance and erosion control ordinance) and other applications of police power. The term describes such state or local regulations, in any combination thereof, which provide standards for the purpose of flood damage prevention and reduction.
 - ff. *Flood Control Structure*. A physical structure designed and built expressly or partially for the purpose of reducing, redirecting or guiding flood flows along a particular waterway. These specialized flood modifying works are those constructed in conformance with sound engineering standards.
 - gg. *Floodproofing*. Any combination of structural and/or non-structural additions, changes or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.
 - hh. *Floodway (Regulatory Floodway)*. The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. The Colorado statewide standard for the designated height to be used for all newly studied reaches shall be one-half (½) foot (six (6) inches). Letters of Map Revision to existing floodway delineations may continue to use the floodway criteria in place at the time of the existing floodway delineation.
 - ii. *Freeboard*. The vertical distance in feet above a predicted water surface elevation intended to provide a margin of safety to compensate for unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood such as debris blockage of bridge openings and the increased runoff due to urbanization of the watershed.
 - jj. *Functionally Dependent Use*. A use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities

that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

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

ll. *Historic Structure*. Any structure that is:

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

mm. *Letter of Map Revision (LOMR)*. FEMA's official revision of an effective Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM), or both. LOMRs are generally based on the implementation of physical measures that affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective Base Flood Elevations (BFEs) or the Special Flood Hazard Area (SFHA).

nn. *Letter of Map Revision Based on Fill (LOMR-F)*. FEMA's modification of the Special Flood Hazard Area (SFHA) shown on the Flood Insurance Rate Map (FIRM) based on the placement of fill outside the existing regulatory floodway.

oo. *Levee*. A manmade embankment, usually earthen, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding. For a levee structure to be reflected on the FEMA FIRMs as providing flood protection, the levee structure must meet the requirements set forth in 44 CFR 65.10.

pp. *Levee System*. A flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices.

qq. *Lowest Floor*. The lowest floor of the lowest enclosed area (including basement). Any floor used for living purposes which includes working, storage, sleeping, cooking and eating, or recreation or any combination thereof. This includes any floor that could be converted to such a use such as a basement or crawl space. The lowest floor is a determinate for the flood insurance premium for a building, home or business. An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area, is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Section 60.3 of the National Flood Insurance Program regulations.

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- rr. *Manufactured Home*. A structure, transportable in one (1) or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. The term manufactured home does not include a recreational vehicle.
 - ss. *Manufactured Home Park or Subdivision*. A parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale.
 - tt. *Mean Sea Level*. For purposes of the National Flood Insurance Program, the North American Vertical Datum (NAVD) of 1988 or other datum, to which Base Flood Elevations shown on a Community's Flood Insurance Rate Map are referenced.
 - uu. *Material Safety Data Sheets (MSDS)*. A form with data regarding the properties of a particular substance. An important component of product stewardship and workplace safety, it is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner, and includes information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill-handling procedures.
 - vv. *National Flood Insurance Program (NFIP)*. FEMA's program of flood insurance coverage and floodplain management administered in conjunction with the Robert T. Stafford Relief and Emergency Assistance Act. The NFIP has applicable Federal regulations promulgated in Title 44 of the Code of Federal Regulations. The U.S. Congress established the NFIP in 1968 with the passage of the National Flood Insurance Act of 1968.
 - ww. *New Manufactured Home Park or Subdivision*. A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured 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 Flood Plain Management Regulations adopted by the City.
 - xx. *No-Rise Certification*. A record of the results of an engineering analysis conducted to determine whether a project will increase flood heights in a floodway. A No-Rise Certification must be supported by technical data and signed by a registered Colorado Professional Engineer. The supporting technical data should be based on the standard step-backwater computer model used to develop the one-hundred-year floodway show on the Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM).
 - yy. *Physical Map Revision (PMR)*. FEMA's action whereby one (1) or more map panels are physically revised and republished. A PMR is used to change flood risk zones, floodplain and/or floodway delineations, flood elevations, and/or planimetric features.
 - zz. *Recreational Vehicle*. A vehicle which is: (a) built on a single chassis; (b) four hundred (400) square feet or less when measured at the largest horizontal projections; (c) designed to be self-propelled or permanently towable by a light duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel or seasonal use.
 - aaa. *Special Flood Hazard Area*. The land in the floodplain within a Community subject to a one (1) percent or greater chance of flooding in any given year, i.e., the one-hundred-year floodplain.
 - bbb. *Start of Construction*. The date the building permit was issued, including substantial improvements, provided that the actual start of construction, repair, reconstruction, rehabilitation, addition, placement or other improvement was within one hundred eighty (180) days of the permit date. The actual start means the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, installation of piles, construction of

columns or any work beyond the stage of excavation or the placement of a manufactured 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 a building, whether or not that alteration affects the external dimensions of the building.

- ccc. *Structure*. A walled and roofed building including a gas or liquid storage tank, which is principally above ground as well as a manufactured home.
- ddd. *Substantial Damage*. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed fifty (50) percent of the market value of the structure just prior to when the damage occurred.
- eee. *Substantial Improvement*. Any reconstruction, rehabilitation, addition or other improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure before the start of construction of the improvement. The value of the structure shall be determined by the local jurisdiction having land use authority in the area of interest. This includes structures which have incurred substantial damage regardless of the actual repair work performed. The term does not however, include either:
 - 1. 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 conditions; or
 - 2. Any alteration of an historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.
- fff. *Threshold Planning Quantity (TPQ)*. A quantity designated for each chemical on the list of extremely hazardous substances that triggers notification by facilities to the State that such facilities are subject to emergency planning requirements.
- ggg. *Variance*. A grant of relief from the requirements of this Subsection when specific enforcement would result in unnecessary hardship. A variance, therefore, permits construction or development in a manner that would otherwise be prohibited by this Subsection. (For full requirements see Section 60.6 of the National Flood Insurance Program regulations.)
- hhh. *Violation*. The failure of a structure or other development to be fully compliant with the City's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance with Section 60.3(b)(5), (c)(4), (c)(10), (d)(3), (e)(2), (e)(4) or (e)(5) of the National Flood Insurance Program regulations is presumed to be in violation until such time as that documentation is provided.
- iii. *Water Surface Elevation*. The height, in relation to the North American Vertical Datum (NAVD) of 1988 (or other datum, where specified), of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

(Ord. No. 19-2018 , § 2(Exh. A), 8-2-2018; Ord. No. 15-2020 , § 2(Exh. A), 7-2-2020; Ord. No. 21-2020 , § 3, 9-17-2020; Ord. No. 3-2021 , § 2(Exh. A), 5-20-2021)

070.040.020 Sensitive Area Protection.

(a) *General Provisions.*

- (1) *Purpose.* This Section 070.040.020 is intended to protect and enhance the natural features that contribute significantly to Glenwood Springs's quality and character, including but not limited to the varying topography and hillsides, floodplains, wetlands, viewsheds, and other significant features. This Section also is intended to ensure that land subject to natural hazards such as flooding, falling rock, landslides, mud flows, or snowslides is not approved for development without appropriate consideration by the City of potential conditions and safeguards to help protect life, health, and property.
- (2) *Applicability.* This Section shall apply to any proposed development that requires one (1) or more of the following:
 - a. Any development permit required by Section 070.060.050, Development Permits, including:
 1. Site/Architectural Plan Review (Subsection 070.060.050(a));
 2. Master Plan (Subsection 070.060.050(b));
 3. Final Plans (Subsection 070.060.050(c));
 4. Location and Extent Review (Subsection 070.060.050(d));
 5. Special Use Permit (Subsection 070.060.050(e)); and/or
 6. Right-of-Way Encroachment License (Subsection 070.060.050(f)).
 - b. A variance required by Subsection 070.060.070(a), Variance;
 - c. A permit for excavation and/or grading, as required by the Engineering Standards;
 - d. A building permit for construction of a new building or structure; or
 - e. A building permit for addition, alteration, or repair of an existing building or structure, the value of which exceeds fifty (50) percent of the assessed value of the building or structure.
- (3) *Additional Submittal Requirements.*
 - a. In order to evaluate and ensure compliance with the standards in this Section, the Director may require existing conditions reports and other technical reports and plans, as set forth in the **Administrative Manual**, that identify slopes, soil conditions, floodplains, geologic hazards, and other sensitive features present on the site, and that recommend steps to mitigate any hazards in order to comply with this Code.
 - b. Such reports shall be prepared to standards adopted by the City Engineer. Best practices to mitigate such hazards recommended in such reports shall be required. Flood hazard studies, flood maps, flood reports. Geotechnical and geologic reports shall be prepared by a Colorado licensed professional engineer.
- (4) *Limits of Disturbance.*
 - a. *Establishment of Limits of Disturbance.* Except for properties in the Downtown Core, for every development subject to this Section the applicant shall establish "limits of disturbance" that indicate the specific area(s) of a site within which construction and development activity shall be contained. The limits of disturbance shall be shown on the site/architectural plan.

- b. *Criteria for Establishing Limits of Disturbance.* In establishing limits of disturbance, the following criteria and standards shall be considered and applied, as well as applicable requirements from the City's Engineering Standards:
1. Minimize visual impacts from the development, including but not limited to screening from adjacent and downhill properties, ridgeline area protection, and protection of scenic views;
 2. Erosion prevention and control, including but not limited to protection of steep slopes and natural drainage channels;
 3. Fire prevention and safety, including but not limited to location of trees and vegetation near structures;
 4. Preservation of significant trees or vegetation;
 5. Conservation of water including but not limited to preservation of existing native vegetation, reduction in amounts of irrigated areas, and similar considerations;
 6. Wildlife habitat protection, including but not limited to preservation of critical wildlife habitat and identified migration corridors and routes;
 7. Stream corridor and wetland protection and buffering; and
 8. Preservation of the maximum amount of the site's natural topography, tree cover, and vegetation.
- c. *Maximum Limits of Disturbance.*
1. *Single-Family Detached Residential Uses.* For single-family detached residential uses subject to the requirements of Subsection 070.040.020(b), Hillside Development, the limits of disturbance for an individual single-family detached residential use and any accessory structure shall not exceed fifty (50) percent of the total gross area of the underlying lot or lots, or twenty thousand (20,000) square feet, whichever is less. For most single-family residential development, limits of disturbance will cover the area(s) needed to provide the building sites for the principal structure and any major accessory structure(s), plus the area(s) necessary to provide an access driveway and necessary septic systems, utilities, services, and drainage facilities.
 2. *All Other Developments.* For all other types of development, including planned unit developments, the limits of disturbance, including parking areas and accessory buildings and structures, shall be determined on a case-by-case basis, as determined by setback, common open space, landscaping, and other requirements of this Code.
 3. *On-Site Wastewater Treatment Systems.* For all types of development, leach fields constructed in connection with an on-site sewer system shall not be counted toward the maximum limits of disturbance provided the leach field is revegetated with native vegetation in accord with state onsite wastewater treatment regulations.
- d. *Location of Limits of Disturbance.*
1. *Zero Lot Lines.* Where appropriate to preserve or to protect steep slopes or other natural features, a structure may be located on a lot in such a manner that one (1) or both of the side facades of a structure rest directly on a lot line. This provision shall not be interpreted to exempt a structure from any applicable building and fire code provisions or requirements.
 2. *Contiguity.* Limits of disturbance necessary to accommodate proposed development may be non-contiguous in order to best meet the criteria and standards set forth in this Section.

3. *Clustering.* Clustering of building pads and parking areas within a building site is strongly encouraged and may be required to minimize the size of the limits of disturbance and to maintain the maximum amount of open space in the development.
- e. *Modification of Limits of Disturbance.* The Director has discretion to administratively increase the limits of disturbance by a maximum of twenty (20) percent where applicable, provided one (1) of the following criteria is met:
 1. The modification is designed to yield:
 - i. More effective preservation of existing mature trees, vegetation, riparian areas, rock outcrops, or other significant natural features of the site;
 - ii. Less visual impact on the property or on the surrounding area; or
 - iii. Better protection of wildlife habitat; or,
 2. Strict application of the standard(s) would render a site undevelopable.
- (5) *Clustering.* Clustering of development in sensitive areas is strongly encouraged and may be required to meet the requirements of this Section. (Figure 040-1)
 - a. *When Allowed.* Minimum lot size may be reduced through clustering of development if the applicable decision-making body finds that:
 1. The clustering proposal, compared with a more traditional site development plan, better attains the policies and objectives of this Article, such as providing more open space, preserving existing trees and vegetation coverage, and preserving sensitive environmental areas such as stream corridors, slide areas, wetlands, and steep slopes;
 2. The clustering proposal will have no significant adverse impact on adjacent properties or development, or the applicant has agreed to adopt appropriate mitigation measures such as landscaping, screening, illumination standards, and other design features as recommended by the Director to buffer and protect adjacent properties from the proposed clustered development;
 3. The architecture, height, building materials, building colors, and other design features of the development are compatible with adjacent properties or development and blend with the surrounding natural landscape; and
 4. The clustering proposal meets all other applicable requirements set forth in this Article or in other applicable ordinances or regulations.

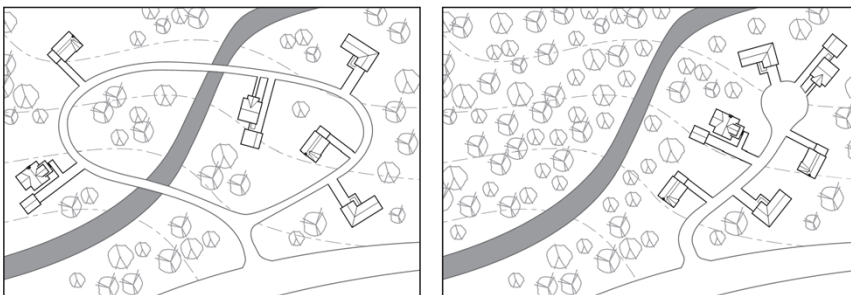


Figure 040-1: Clustering

- b. *Minimum Lot Size Reduction.* Minimum lot sizes required for the underlying zoning district in Article 070.020: Zoning Districts, may be reduced by up to twenty-five (25) percent for lots within cluster developments that satisfy the above standards.
 - c. *Pre-Application Conference Required.* Any applicant proposing to reduce minimum lot sizes through clustering shall be required to attend a pre-application conference pursuant to Subsection 070.060.030(b), Pre-Application Conference, prior to submitting a development application.
 - (6) *Interpretation.* The provisions of this Section 070.040.020 shall be deemed to be minimum requirements. Nothing in this Section shall impair the obligations of or interfere with private agreements in excess of the minimum requirements. Where this Section imposes a restriction different from that imposed by other applicable provisions of law, contract, or deed, the more restrictive provision shall control.
 - (7) *Disclaimer of Liability.* This Section 070.040.020 is intended to provide some degree of protection to life, safety, and property. It is based on scientific and engineering considerations that are continually being developed and proven. Compliance with this Section cannot ensure freedom from risk to life, safety, or property. This Section shall not create liability on the part of the City or any officer or employee of the City for any damage that may result from reliance on this Section or any administrative decision lawfully made pursuant to this Code.
- (b) *Hillside Development.*
- (1) *Purpose.* The purpose of this Subsection is to:
 - a. Minimize the negative environmental and visual effects of mass cut-and-fill of large pads and excessive terracing through retention of the natural topography of the hillsides;
 - b. Prevent soil erosion and landslides;
 - c. Provide safe circulation of vehicular and pedestrian traffic to and within hillside areas and to provide access for emergency vehicles necessary to serve the hillside areas;
 - d. Preserve visually significant slope banks, ridge lines, rock outcroppings, native plant materials, natural hydrology, and other areas of visual significance;
 - e. Encourage innovative architectural, landscaping, circulation, and site design that serve to preserve the significant natural resources and visual character of the City;
 - f. Protect the public from natural hazards caused by unstable slopes and soils, debris flow, erosion and other geologic hazards of hillside development; and
 - g. Minimize the threat and subsequent damage of wildfire through safe building practices.
 - (2) *Applicability.* This Subsection shall apply to any of the application types listed in Subsection 070.040.020(a)(2), Applicability (Sensitive Area Protection), that meet any of the following criteria:
 - a. *Hillside Preservation District.* Any proposed development in the Hillside Preservation district; see Section 070.020.170.
 - b. *Slopes.* Any proposed development on a lot with average slopes in excess of twenty (20) percent within the limits of disturbance area.
 - c. *Areas of Geologic Hazard.* Any proposed development in Areas of Geologic Hazard, which consists of the Hazard Avoidance Districts and Hazard Mitigation Districts as defined in Subsection 070.040.020(c)(2)b., Establishment of Geological Hazards Districts.

(3) *Lot and Density/Intensity Requirements.*

- a. *Minimum Lot Size.* All development subject to this Subsection shall comply with the minimum lot size and lot width standards required in the underlying zone district and with other development standards in this Article 070.040: Development Standards.
- b. *Allowed Density/Intensity.*
 1. *Residential Development.* The maximum number of residential units permitted within areas subject to the Hillside Development standards shall be pursuant to Table 040.1 below. In addition, a detached accessory dwelling unit may be allowed so long as the limits of disturbance does not exceed fifty (50) percent of the total gross area of the underlying lot or lots, or twenty thousand (20,000) square feet, whichever is less.

Table 040.1: Allowed Residential Development	
Average Slope of Overall Site (within LOD)	Residential: Allowable Units
In excess of 20% and up to 25%	1 dwelling unit per 10,000 square feet
In excess of 25% and up to 30%	1 dwelling unit per 20,000 square feet

2. *Nonresidential Development.* The maximum amount of nonresidential gross square footage permitted within areas subject to the Hillside Development standards shall be the square footage allowed by the zoning district. Nonresidential buildings are prohibited on slopes greater than twenty (20) percent; however, open decks and support structures for existing buildings may be constructed.
3. *Calculating Density/Intensity.* For the purposes of calculating density/intensity, only the average slope within the proposed area within the limits of disturbance of a specific lot or parcel shall be considered.
- c. *Prohibition of Development on Steep Slopes.* No development, including clearing, excavation, and grading, shall be allowed where the average slope within the limits of disturbance is greater than thirty (30) percent. Structures shall be set back from ascending or descending slopes greater than thirty (30) percent in accordance with the requirements of the current adopted building code.
- d. *Consolidation of Substandard Lots.*
 1. *General Rule: Consolidation Required.* Two (2) or more lots or parcels subject to these Hillside Development standards shall be considered to be a single, undivided lot or parcel for the purposes of this Code, if all the following factors apply:
 - i. The lots or parcels are contiguous;
 - ii. The lots or parcels are in single and common ownership and are of record on the effective date of this Code;
 - iii. No structures are located on the lots or parcels;
 - iv. All or part of the lots or parcels do not meet the minimum lot area or lot width requirements set forth in the base zoning district; and

- v. Such lots have not been improved with individual and separate connections to municipal water or sewer systems.

No portion of such lots or parcels subject to this consolidation provision shall be used or sold in a manner that renders compliance with the lot width and lot area requirements set forth in this Subsection less feasible.

- 2. *Exception.* Notwithstanding the general rule for consolidation set forth in c. above, if a lot or parcel that would otherwise be subject to the general consolidation rule meets the minimum lot area or lot width requirements set forth in the underlying zone district, then consolidation shall not be required.

e. *Slope Calculations.*

- 1. Slope shall be calculated as the vertical rise in feet measured over a horizontal distance, expressed as a percentage. Slope calculations shall not include areas outside the limits of disturbance.
- 2. The applicant shall indicate on a site/architectural plan the limits of proposed development and disturbance and shall include the calculation of the average slope of that area.

(4) *Site Development Standards.*

- a. *Building Envelope and Site Design Generally.* Building envelopes and setbacks shall be determined on the basis of natural landforms, vegetation, and underlying geology. The designation of the limits of disturbance, which shall include all structures and access areas, shall be designed to avoid and minimize disturbance to sensitive areas and geologic and natural vegetative features. Natural vegetation, rock outcroppings, and significant landforms shall be retained to the maximum extent practicable. Flexibility and creativity are encouraged in designing development around existing features.
- b. *Protection from Potential Hazards.* All proposed development shall be designed to protect the public from the potential hazards of drainage, debris flow, rock fall, fire, and erosion. Projects shall be designed with existing features in order to minimize disturbance to, and therefore mitigation of, surficial hillside geology.
- c. *Access Roads.* New roads shall comply with the street standards in Section 070.040.070, Access and Circulation. Such access shall be approved by the Fire Department and the City Engineer.
- d. *Fire Hazard Mitigation.*
 - 1. Brush and vegetated areas shall be cleared and maintained according to the Fire Department.
 - 2. New vegetation shall be fire- and drought-resistant species.
 - 3. Roofs, overhangs, and exposed balconies shall be fire-rated according to the adopted Fire Code.
 - 4. Water supply, fire breaks, and access shall be approved by the Fire Department.
 - 5. Buildings shall be sited so that fire hazard clearing zones will not affect mature vegetation.
- e. *Viewshed Protection.* Proposed development shall retain the essential visual qualities of the site so that views from public open space areas, rights-of-way, and other public places will not be negatively impacted. In designing a proposed development, applicants shall adhere to the following principles:
 - 1. Following construction, off-site views of retaining walls, structures, parking areas, and landscaping on the development site shall be minimized.

2. The disturbance areas shall be reclaimed as soon as possible after construction ends.
- f. *Geology, Soils, and Grading.* Development shall be designed to reduce the potential for soil erosion and slope degradation during and after construction. In addition to meeting the standards of Subsection 070.040.020(a)(5), Clustering, the following standards shall apply:
 1. A grading permit shall be required for disturbance in excess of one thousand (1,000) square feet. Grading plans shall be submitted and reviewed according to the City's Engineering Standards.
 2. Structures shall be designed to step down with the existing topography. To the maximum extent feasible, building designs that require extensive cut and fills shall not be allowed.
 3. Except for driveways, cut-and-fill slopes shall be entirely contained within a lot (i.e., natural grade at the lot lines shall be maintained).
 4. Sharp angles shall be rounded off, in a natural manner, at the top and ends of cut and fill slopes (within approximately five (5) feet of the sharp angle) unless steep angles are a natural character of the site. Where this would damage tree root systems, the amount of rounding off may be reduced and shrubs used instead to hide the transition.
 5. The subdivider and/or property owner shall maintain in perpetuity and repair (or supply a program for preventative maintenance) of manufactured slope areas, erosion control devices, retaining walls, drainage structures and fire prevention measures as specified in an approved development.
 6. Trees and vegetation shall be maintained to provide slope stability and prevent visual scarring wherever possible. When this requirement conflicts with fire hazard mitigation such as defensible space, appropriate mitigation shall be provided as determined by the Fire Department and the Director. A revegetation landscape plan is required for disturbed site areas.
 7. Final contours and slopes shall reflect existing landforms to the maximum extent practicable.
 8. The grade of a lot shall not be raised or lowered more than four (4) feet at any point for construction of any structure or improvement, except:
 - i. The site's original grade may be raised or lowered a maximum of six (6) feet if retaining walls are used to reduce the steepness of man-made slopes, provided that the retaining walls comply with the requirements set forth in this Subsection.
 - ii. Grade changes or retaining walls up to six (6) feet may be allowed if necessary to construct a driveway from the street to a garage or parking area,
 - iii. For the purposes of this Subsection, basements and buildings set into a slope are not considered to lower the natural grade within their footprint.
- g. *Retaining Walls and Fencing.*
 1. Generally, a retaining wall shall be no higher than six (6) feet, except that a wall varied in height to accommodate a variable slope shall have an average height no greater than four (4) feet and a maximum height no greater than eight (8) feet in any sixty-foot length. A higher wall is permitted:
 - i. Where used internally at the split between one- and two-story portions of a building; and

- ii. Where substantially hidden from public view at the rear of a building, where it may not exceed the eave height of the building.
 - 2. Visible retaining walls and fencing shall be designed to maintain human scale and reduce the visual impact of cut lines on the hillside through the use of indigenous materials, terracing and aligning construction with the natural topography.
 - 3. Indigenous materials and/or earth-toned concrete shall be used, and terraced to match existing terrain.
 - 4. Terraced walls and retaining structures should incorporate landscaping, if approved by the City Engineer.
 - 5. Retaining walls and fencing shall comply with all standards in Subsection 070.040.050(f)(3), Retaining Wall Standards.
 - h. *Water Supply.* Water supply and pressure shall be adequate to serve both residential and emergency services pursuant to the adopted Fire Code.
 - i. *Drainage.*
 - 1. Natural drainage courses shall not be disturbed by construction activity, and natural runoff shall be maintained unless approved by the City Engineer.
 - 2. A drainage plan prepared by a licensed professional engineer shall be submitted in accordance with the City's Engineering Standards.
- (5) *Building Design Standards.*
- a. *Structure Design Generally.* Building massing and roof lines shall be designed to blend with the natural terrain. When possible, the massing of the structure shall be broken up using the slope and terrain to vary the exterior dimensions.
 - b. *Ground Plane.*
 - 1. Buildings that firmly meet the ground convey an appearance of greater permanence and are strongly encouraged.
 - 2. To the maximum extent feasible, placing buildings on piers such that exterior walls do not continue down to the ground shall be prohibited because of aesthetic and energy efficiency concerns. This requirement shall not apply in areas of waterways and areas of special flood hazard.
 - c. *Building Mass and Scale.*
 - 1. To the maximum extent feasible, building design shall incorporate changes in the planes of walls and changes in the slope and height of roof lines to add variety, create visual interest, and minimize scale.
 - 2. Building mass and wall lines shall be broken up to conform to existing slope and avoid unbroken expanses of building mass and walls that can intrude into the natural setting and dominate a site.
 - d. *Building Colors.*
 - 1. Colors that enhance the natural colors of the building materials shall be used in developing an overall color scheme. Predominant tones on exterior walls shall tend toward neutral colors such as warm earthy hues, dark green of forests, greys and grey-brown of the mountains, the

tan of grasses, and similar colors. Bright, harshly contrasting color combinations shall be avoided.

2. Exterior building, roofing, and exposed rooftop mechanical equipment shall be warm or dark earth-toned colors with low reflectivity.
3. Color and intensity of color proposed for all exterior building and roofing materials, including exposed rooftop mechanical systems such as HVAC equipment, roof vents, air handling/exchange units, shall be subject to approval by the Planning and Zoning Commission and/or City Council, as applicable.
4. Exterior building and roofing colors shall not include white, off-white, high-intensity primary colors, and/or fluorescent colors.

e. *Building Materials.*

1. Primary building materials shall be selected for their ability to withstand Glenwood Springs' variable mountain climate. Materials with demonstrated durability include, but are not limited to:
 - i. Brick;
 - ii. Stone;
 - iii. Cementitious siding products;
 - iv. Log construction;
 - v. Cast concrete; or
 - vi. Other comparable materials as approved by the Director.
2. Exterior Insulation and Finish Systems (EIFS) shall not be utilized in high-traffic areas, such as at primary building entrances, where it may be easily damaged.

f. *Parking Areas.*

1. Parking lots and detached garages accessory to residential uses shall be located so that they can be screened to blend into the natural environment and will not require backing onto an arterial or collector street.
2. To the maximum extent feasible, parking lots and detached garages accessory to residential uses shall be located where they can be screened so they do not dominate the streetscape. Parking facilities shall be designed to follow the existing topography and to provide adequate snow storage areas.

(c) *Development in Areas of Geologic Hazard.*

- (1) *Purpose.* The purpose of this Subsection 070.040.020(c) is to promote the public health, safety, and general welfare and to minimize public and private losses due to geologic conditions in specific areas by regulations designed to:
 - a. Protect human life, safety and property;
 - b. Minimize damage to public facilities and utilities;
 - c. Minimize the need for relief and clean-up operations due to geologic events with their accompanying public and private costs;
 - d. Minimize the need for expensive mitigation measures to protect public and private property; and

- e. Alert property owners and potential buyers of geologic hazards existing in certain areas so that they may protect their own property and avoid endangering the property of others.

(2) *General Provisions.*

- a. *Types of Geologic Hazards.* As used in this Subsection, the term "geologic hazard" shall include the following hazards, as defined in Colorado Geological Survey Open File Report 78-10 ("C.G.S. 78-10"):
 - 1. "Corrosive soils" are potentially corrosive to concrete and steel.
 - 2. "Debris flow hazard" means severe and moderate debris flow hazard.
 - i. "Severe debris flow hazard" poses possible serious damage to structures and risk to life, and mitigation is necessary.
 - ii. "Moderate debris flow hazard" poses possible minor damage to structures and risk to life. Mitigation is recommended and may be required and major cleanup is probable.
 - 3. "Landslide hazard" is shown in areas of identified landslide features. Slides are mostly older features but have potential for reactivation.
 - 4. "Rockfall hazard criteria" includes an identifiable source area for rocks and the presence of fallen rocks with intermediate diameters of two (2) feet or more.
 - 5. "Slope instability" denotes areas of past and current mass wasting processes.
- b. *Establishment of Geological Hazards Districts.* There are hereby created within the City the following Geologic Hazards Districts:
 - 1. *Hazard Avoidance District.* This district includes undeveloped parcels with the potential or presence of severe debris flow, and/or rockfall. The district also includes developed parcels with the potential or presence of severe geologic hazards where additional development will significantly increase the risk of damage from the hazard or significantly increase the cost to the community of mitigating the hazard.
 - 2. *Hazard Mitigation District.* This district includes parcels with severe geologic hazards where significant development already exists and where additional development will not significantly increase the risk of damage from the hazard nor significantly increase the cost to the community of mitigating the hazard. It also includes areas with the potential or presence of moderate debris flow, and/or rockfall hazards.
- c. *Geologic Hazards District Map.* The locations and boundaries of the Geologic Hazards Districts established by this Subsection shall be those established by the official report entitled "Geologic Hazards of the Glenwood Springs Metropolitan Area" as released by the C.G.S. 78-10. The geologic hazards maps that accompany C.G.S. 78-10 are hereby adopted as the "official geologic hazards maps" and shall be maintained along with accompanying sensitive area reports by the Office of the City Engineer. These maps shall serve as official reference in case of dispute regarding the location of hazards, and the City Engineer's interpretation of these maps shall be final. The maps shall be interpreted by the City Engineer as follows:
 - 1. *Hazard Avoidance Districts.*
 - i. Undeveloped parcels lying entirely or partly in any area identified as a severe hazard zone on the Map of Debris Flow Fan Deposits and Hazards and/or the General Geologic Hazards Map.

- ii. Developed parcels identified as lying entirely or partly in any area identified as a severe hazard zone on the aforesaid maps where the City Engineer has determined that additional development will increase the risk of damage from the hazards and/or significantly increase the cost to the community of mitigating the hazards.
 - 2. *Hazard Mitigation Districts.*
 - i. Parcels lying entirely or partly in any area identified as a moderate hazard zone on the Map of Debris Flow Fan Deposits and Hazards and/or the General Geologic Hazards Map.
 - ii. Developed parcels identified as lying entirely or partly in any area identified as a severe hazard zone on the aforementioned maps where the City Engineer has determined that additional development will not increase the risk of damage from the hazard and/or will not significantly increase the cost to the community of mitigating the hazard.
 - d. *Annexation of Land Within an Area of Geologic Hazard.* Upon annexation of any land within an area of geologic hazard, as determined on the official geologic hazards maps, such land shall be added to the appropriate geologic hazards district, and all provisions of this Subsection shall apply.
- (3) *Geologic Hazards District Standards.*
- a. *Hazard Avoidance Districts.* No improvement, building, structure, excavation, dumping, or backfill shall be placed, built, undertaken or approved in a Hazard Avoidance District except for fences, geologic stabilization structures, or paths for nonmotorized use unless, before application for a development permit or, if no development permit is required, for a grading or building permit, the applicant demonstrates to the City Engineer and the Director by clear and convincing evidence that one (1) of the following conditions is met:
 - 1. The land to be affected does not lie within an area of severe debris flow, rockfall hazard, or a drainage basin contributing to any such hazard, as shown on the official geologic hazards maps, and the proposal is in conformance with the purposes of this Subsection.
 - 2. The severe hazard does not exist on the subject site in the proposal and is in conformance with the purposes of this Subsection. Such a determination shall require detailed analysis of the area by a qualified geologist and an engineering geology report, which report may be submitted by the City to the Colorado Geologic Survey for review. For purposes of this provision, the area" means the site of the proposed development as well as adjacent land and upslope drainage basins as necessary to compare the area analysis with the official geologic hazards maps. Upon submittal of this report by the applicant, application may be made for a development, grading, or building permit, but such a permit shall not be issued until the City Engineer and the Director have determined that the conditions of this Paragraph are met.
 - 3. The proposed development meets all of the following conditions:
 - i. It will include no human habitation;
 - ii. It will not require City water, wastewater, streets or other public service;
 - iii. It will not increase the hazard to other public or private property; and
 - iv. It is consistent with the intent and purposes of this Article.
 - 4. The subject site lies within an area with rockfall hazard but not debris flow and not within a drainage basin contributing to any such hazard as shown on the official geologic hazards maps. In the case of such a determination by the City Engineer, a mitigation plan shall be required

before issuance of a development, grading or building permit. The mitigation plan shall be produced and certified by a qualified engineer and shall demonstrate to the City Engineer and the Director by clear and convincing evidence that rockfall damage will be prevented by a catchment wall or other means.

b. *Hazard Mitigation Districts.*

1. *Applicability.* All new structures and additions or improvements subject to this Subsection and proposed in a hazard mitigation district shall be subject to the requirements of Subsection 070.040.020(c)(3)b.2., Standards, unless before application for a development permit, or, if no development permit is required, for excavation or building permit, the applicant demonstrates to the City Engineer and the Director by clear and convincing evidence that one (1) of the following conditions is met:

- i. The land to be affected does not lie within an area of severe or moderate debris flow, rockfall hazard, or a damage basin contributing to any such hazard as shown on the official geologic hazards maps.
- ii. The severe or moderate hazards as specified in C.G.S. 78-10 do not exist on the subject site and the proposal is in conformance with the purposes of this Subsection. Such a determination shall require detailed analysis of the area by a qualified geologist in an engineering geology report, which report may be submitted by the City to the Colorado Geological Survey for review. For purposes of this provision, "the area" means the site of the proposed development, as well as the adjacent land and upslope drainage basin as necessary to compare the area analysis with the official geologic hazard maps. Upon submittal of this report by the applicant, application may be made for a development, excavation, or building permit, but such permit shall not be issued until the City Engineer and the Director have determined that the conditions of this Subparagraph are met.

2. *Standards.*

- i. In areas with moderate or severe debris flow hazard as shown on the official geologic hazards maps, before issuance of a development permit or, if no development permit is required, an excavation or building permit, the applicant shall demonstrate to the City Engineer and the Director by clear and convincing evidence that any structure or grading change that may divert debris flow or floodwaters from the subject property will not increase hazards to other public or private properties. Such a determination shall require an engineering geology report produced and certified by a qualified engineer.
- ii. Before issuance of a building permit, the applicant shall demonstrate to the City Engineer and the Building Official by clear and convincing evidence that all applicable requirements in the City's Engineering Standards are met.

- (4) *Public Improvements in Areas of Geologic Hazard.* Public improvements, including but not limited to streets, water, wastewater, and electrical services, will not be extended into the Hazard Avoidance District, except where:

- a. An area or a proposed development meets one (1) of the conditions of Subsection 070.040.020(c)(3)a., Hazard Avoidance Districts; or
- b. The public good is better served by the extension which shall be in compliance with the City goals and policies. Such determination shall be made by the City Council upon a recommendation from the Planning Commission.

(d) *Development in Waterways and Areas of Special Flood Hazard.*

(1) *Findings of Fact.*

- a. The flood hazard areas of the City are subject to periodic inundation which can result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, of which adversely affect the public health, safety and general welfare of the public.
- b. These flood losses are created by the cumulative effect of obstructions in floodplains which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, flood-proofed, or otherwise protected from flood damage and by steep canyon walls that occasionally generate mud/debris flows.

c. The Regulatory Floodplain in Colorado is the 100-Year-Floodplain, unless the city voluntarily elects to regulate to a 500-Year-Flood standard for certain circumstances. The Colorado Water Conservation Board (CWCB) will also Designate and Approve 500-Year-Floodplain information when available. In addition, previously designated Floodplain areas that have been removed from FEMA's effective Regulatory Floodplain by a Letter of Map Revision based on Fill (LOMR-F) shall remain within the Regulatory Floodplain for all activities affected by Rule 11.C below. All Designated and Approved Regulatory Floodplain information can be used by Communities for the purpose of local regulation.

d. In order to maintain flood insurance within the city, the city is required to enforce the Rules and Regulations for Regulatory Flood Plains in Colorado as developed by the Colorado Water Conservation Board (CWCB), 2 CCR 408-1

(2) *Statement of Purpose.* It is the purpose of this Subsection 070.040.020(d) to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions to specific areas by provisions designed to:

- a. Protect human life and health;
- b. Minimize expenditure of public money for costly flood control projects;
- c. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- d. Minimize prolonged business interruptions;
- e. Minimize damage to critical facilities, infrastructure and other public facilities such as water, sewer and gas mains, electric and communication stations, and streets and bridges located in floodplains;
- f. Help maintain a stable tax base by providing for the sound use and development of flood-prone areas in such a manner so as to minimize future flood blight areas; and
- g. Ensure that potential buyers are notified that property is located in a flood hazard area.

i. To provide standards for activities that may impact Regulatory Flood Plains, and to define the process by which floodplains will be Designated and Approved by the local jurisdiction and or CWCB.

(3) *Methods of Reducing Flood Losses.* In order to accomplish its purposes, this Subsection uses the following methods:

- a. Restrict or prohibit uses that are dangerous to health, safety or property in times of flood, or cause excessive increases in flood heights or velocities;

- b. Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
 - c. Control the alteration of natural floodplains, stream channels and natural protective barriers, which are involved in the accommodation of flood waters;
 - d. Control filling, grading, dredging and other development which may increase flood damage; and
 - e. Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.
- (4) *Lands to Which this Subsection Applies.* This Subsection shall apply to all areas of Special Flood Hazard Areas and areas removed from the floodplain by the issuance of a FEMA Letter of Map Revision Based on Fill (LOMR-F) within the jurisdiction of the City. In addition:
- o **Zoning.** These Rules apply to all Floodplain information developed for zoning and for Floodplain permitting purposes for waterways in the State of Colorado by, but not limited to, individuals, corporations, local government agencies, regional government agencies, state government agencies, Native American tribes, and federal government agencies.
 - o **Subdivisions.** These Rules generally apply to the local approval of subdivision drainage reports that provide 100-Year Floodplain information. The city will ensure that site-specific Floodplain delineations, intended for regulatory purposes when they are prepared for Development activities, are consistent with Floodplain information Designated and Approved by the Board.
 - o **Dam Failure Floodplain.** These Rules do not apply to the identification of the area potentially inundated by the catastrophic or sudden failure of any man-made structure such as a dam, canal, irrigation ditch, pipeline, or other artificial channel.
- (5) *Basis for Establishing Areas of Special Flood Hazard.* The special flood hazard areas identified by the Federal Emergency Management Agency in a scientific and engineering report entitled, "The Flood Insurance Study for the City of Glenwood Springs," dated October 15, 1985, with an accompanying Flood Insurance Rate Map (FIRM) and/or Flood Boundary-Floodway Maps (FIRM and/or FBFM) and any revisions thereto are hereby adopted by reference and declared to be a part of this Title. The Special Flood Hazard Areas identified by the FIS and attendant mapping are the minimum area of applicability of this Subsection. Remapping of the city's flood plains is underway by the Colorado Water Conservation Board. New maps are anticipated in 2024. Preliminary mapping data is available through the City Engineer and is considered Best Available Data, and may be supplemented by studies designated and approved by the City. The Floodplain Administrator shall keep a copy of the Flood Insurance Study (FIS), DFIRMs, FIRMs and/or FBFMs on file and are available for public inspection.
- (6) *Establishment of Floodplain Development Permit.* A floodplain development permit shall be required to ensure conformance with the provisions of this Subsection.
- (7) *Compliance.* No structure or land shall hereafter be located, altered or have its use changed within the Special Flood Hazard Area without full compliance with the terms of this Subsection and other applicable regulations. Nothing herein shall prevent the City from taking such lawful action as is necessary to prevent or remedy any violation. These regulations meet the minimum requirements as set forth by the Colorado Water Conservation Board and the National Flood Insurance Program.
- (8) *Abrogation and Greater Restrictions.* This Subsection is not intended to repeal, abrogate or impair any existing easements, covenants or deed restrictions. However, where this Subsection and another provision

of this Code, easement, covenant or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

- (9) *Interpretation.* In the interpretation and application of this Subsection, all provisions shall be:
- a. Considered as minimum requirements;
 - b. Liberally construed in favor of the governing body; and
 - c. Deemed neither to limit nor repeal any other powers granted under state statutes.
- (10) *Warning and Disclaimer of Liability.* The degree of flood protection required by this Subsection is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. On rare occasions, greater floods can and will occur and flood heights may be increased by manmade or natural causes. This Subsection does not imply that land outside the areas of special flood hazard or uses permitted within such areas will be free from flooding or flood damages. This Subsection shall not create liability on the part of the City, any official or employee thereof, for any flood damages that result from reliance on this Subsection or any administrative decision lawfully made thereunder.
- (11) *Designation of the Floodplain Administrator.* The City Engineer is hereby appointed as Floodplain Administrator to administer, implement and enforce the provisions of this Subsection and other appropriate sections of 44 CFR (National Flood Insurance Program Regulations) pertaining to floodplain management.
- (12) *Duties and Responsibilities of Floodplain Administrator.* Duties of the Floodplain Administrator shall include, but not be limited to the following:
- a. Maintain and hold open for public inspection all records pertaining to the provisions of this Subsection, including the actual elevation (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures and any floodproofing certificate required by Subsection 070.040.020(d)(13).
 - b. Review, approve, or deny all applications for floodplain development permits required by adoption of this Subsection.
 - c. Review floodplain development permit applications to determine whether a proposed building site, including the placement of manufactured homes, will be reasonably safe from flooding.
 - d. Review permits for proposed development to ensure that all necessary permits have been obtained from those federal, state or local governmental agencies (including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334) from which prior approval is required.
 - e. Inspect all development at appropriate times during the period of construction to ensure compliance with all provisions of this Subsection, including proper elevation of the structure.
 - f. Where interpretation is needed as to the exact location of the boundaries of the Special Flood Hazard Area (for example, where there appears to be a conflict between a mapped boundary and actual field conditions) the Floodplain Administrator shall make the necessary interpretation.
 - g. When Base Flood Elevation data has not been provided in accordance with Section 070.090.060, the Floodplain Administrator shall obtain, review and reasonably utilize any Base Flood Elevation data and Floodway data available from a federal, state or other source, in order to administer the provisions of this Subsection.
 - h. For waterways with Base Flood Elevations for which a regulatory Floodway has not been designated, no new construction, substantial improvements or other development (including fill) shall be permitted within Zones A1—30 and AE on the City's FIRM, unless it is demonstrated that the

cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one-half (½) foot at any point within the City.

- i. Under the provisions of 44 CFR Chapter 1, Section 65.12, of the National Flood Insurance Program regulations, the City may approve certain development in Zones A1—30, AE, AH, on the City's FIRM which increases the water surface elevation of the base flood by more than one-half (½) foot, provided that the City first applies for a conditional FIRM revision through FEMA (Conditional Letter of Map Revision), fulfills the requirements for such revisions as established under the provisions of Section 65.12, and receives FEMA approval.
- j. Notify, in riverline situations, adjacent communities and the State Coordinating Agency which is the Colorado Water Conservation Board, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to FEMA.
- k. Ensure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained.

(13) *Permit Procedures.*

- a. *Application.* Application for a Floodplain Development Permit shall be presented to the Floodplain Administrator on forms furnished by him/her and may include, but not be limited to, plans in duplicate drawn to scale showing the location, dimensions and elevations of proposed landscape alterations; existing or proposed structures, including the placement of manufactured homes and the location of the foregoing in relation to Special Flood Hazard Area. Additionally, the following information is required:
 - 1. Elevation (in relation to mean sea level) of the lowest floor (including basement) of all new and substantially improved structures;
 - 2. Elevation in relation to mean sea level to which any nonresidential structure shall be floodproofed;
 - 3. A certificate from a registered Colorado Professional Engineer or architect that the nonresidential floodproofed structure shall meet the floodproofing criteria in **Subsection 070.040.020(d)(16)b.**;
 - 4. Description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of proposed development; ~~and~~
 - 5. Level of Detail

o Approximate Floodplain Information will be based on detailed hydrology computed for 100-Year-Floods. Hydraulic information shall be produced using approximate, field, or limited techniques and best available topographic/survey data.

o Detailed Floodplain Information will be based on detailed hydrologic and hydraulic determinations for 100-YearFloods, Flood profiles and Floodplain delineations for 100-Year-Flood and other frequencies, if any, shall be plotted, using a digital method. The city and the Board shall Designate and Approve 100-Year-Floodplain information, and 500-Year-Floodplain information when available.

(6) **Base Mapping.** Base mapping for Floodplain Studies shall meet the minimum standards as set forth

in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities.

- (7) **Topography and Surveys.** Topographic and field survey information for Floodplain Studies shall meet the minimum standards as set forth in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities.
- (8) **Geographic Information Systems (GIS).** GIS information for Floodplain Studies in Colorado shall meet the minimum standards as set forth in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities.
- (9) **Hydrology.** Hydrologic Analyses for Floodplain Studies in Colorado shall be completed using the information set forth in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities. The Colorado Floodplain and Criteria Stormwater Manual may be used as a reference document to aid in this analysis. In addition, hydrology studies must comply with the following:
- o All Floodplain Studies, regardless of the level of detail, (e.g., approximate or detailed) shall utilize detailed hydrologic information. The city and the CWCB recognize existing and future watershed conditions for the purposes of computing Flood hydrology. The city and the CWCB may require the evaluation of future watershed conditions, in addition to existing conditions.
 - o Any new study to evaluate hydrologic information and/or design storm criteria shall be completed in such a way that it is scientifically defensible and technically reproducible.
 - o All jurisdictions and Communities affected by revised hydrologic data, due to their geographic proximity to the affected stream reach within a particular watershed, are encouraged to participate in the update process, and shall be given the opportunity by the study sponsor to review and comment on the revised information. Opponents to the revised information may present technically accurate and sound scientific data to the city and the Board that clearly demonstrates that the information in question is inaccurate pursuant to Rule 12 below. The city and or the Board shall make the final determination regarding disputes.
 - o Within any given watershed, or hydrologic subregion, consistency in hydrologic data and runoff methodology shall be pursued to the extent possible through cooperation of all affected jurisdictions and entities.
- (10) **Detailed Hydraulic Method.** Hydraulic Analyses for Floodplain Studies in Colorado shall be completed using protocols set forth FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities.
- (11) **Floodplain Delineations.** Floodplain delineations shall be completed using protocols set forth in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities, and shall, at a minimum, comply with the technical quality assurance standards as follows:

- The Flood elevations and the Floodplain delineations on the maps must meet or exceed FEMA NFIP standards for tolerance and technical accuracy for correlation to the best available topographic information for the stream and adjacent corridor.

- The planimetric features on the Floodplain Maps (including, but not limited to: streets and highways, stream centerlines, bridges and other critical hydraulic features, corporate limits, section lines and corners, survey benchmarks) must be consistent with the best available geospatial data for the stream and the adjacent corridor, as determined through prevailing industry practices, and must meet an acceptable level of technical accuracy.

(12) **Special Floodplain Conditions.** There are a number of special Floodplain conditions, or natural Flood hazards, in Colorado that fall outside of the standard riverine environment. Studies for the Regulatory Flood involving special conditions shall be completed using protocols set forth in FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities. The special conditions are:

- Alluvial Fan and Debris Flow Floodplains located within foothill and mountainous regions of Colorado shall be considered on a case-by-case basis.
- Post-Wildfire Hydrology may be evaluated on a case-by-case basis in forested areas immediately following moderate to intense wildfires resulting in approximately 15% or greater burn area of the affected watershed. Interim Flood advisory maps, based on burned watershed conditions, may be produced at the request of the Community or by Board initiative. The interim Floodplain Maps should show increased runoff from hydrophobic soils and lack of vegetation. The post-wildfire maps may be evaluated every 3 to 5 years to assess the need for further revision based on watershed recovery, forest re-growth, and other factors.
- Ice jam Flooding shall be considered within stream reaches where this phenomenon is known to occur. Ice jam Flooding may be analyzed utilizing methodologies outlined in the FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities, Guidance for Flood Risk Analysis and Mapping: Ice Jam Analyses and Mapping.

(13) **Written reports and maps.** The results of the Hydrologic Analyses, Hydraulic Analyses, and Flood hazard area delineations shall be summarized in a written report and submitted to the city. All Approximate and Detailed Floodplain Information that is presented to the city for Designation and Approval shall be properly titled, dated, organized, and compiled as a stand-alone digital document (in MS Word and PDF formats). All pertinent technical backup data to support the flood hazard study, regardless of data format must be provided to the city in acceptable digital formats. In one-dimensional riverine situations, where discrepancies appear between Regulatory Floodplain maps and water surface profiles, any regulatory water surface profile designated and approved by the Board shall take precedence over any corresponding flooded area map for the same stream reach or site location, unless a profile error is identified and substantiated.

(14) **Contractor Qualifications.**

- Qualified engineers licensed in Colorado shall direct or supervise the Flood hazard studies and projects pertaining to the Regulatory Floodplain. All Floodplain maps, reports and project designs pertaining to the Regulatory Floodplain, except those prepared by federal agencies, shall be certified and sealed by the Colorado Registered Professional Engineer of record.
- Federal agencies or other recognized and qualified government authorities may produce Floodplain mapping work as a study proponent or on behalf of a study proponent.

Rule 8. Standards for Regulatory Floodways:

- A. **Establishment of Floodway Criteria.** The city recognizes that Designated Floodways are administrative limits and tools used by FEMA to regulate existing and future Floodplain Development within their jurisdictions. This Rule 8.A. does not require Communities to automatically map ½ foot floodways within their jurisdictions. However, at such time when Floodways are to be delineated based on revised Flood hazard studies or through physical map revisions involving local government participation, Communities shall delineate Floodways for the revised reaches based on ½-foot rise criteria. Letters of Map Revision to existing Floodway delineations may continue to use the Floodway criteria in place at the time of the existing Floodway delineation. Until such time that Floodways are revised and designated, Communities may continue to regulate their mapped one-foot Floodways. For reaches where a transition must be shown to connect new studies to existing studies with different Floodway criteria, the transition length shall not exceed 2,000 feet.
- B. **Designation of Floodways.** Designation and Approval of Floodplain information shall also include the Designation and Approval of corresponding Floodway Information. For waterways with Model-Backed Approximate Flood Elevations or BFEs for which Floodways are not computed, the Community shall apply a ½ foot Floodway regulation according to its own determination, as outlined in FEMA Regulation 44 C.F.R. § 60.3(c)(10), for the FEMA minimum requirement of a 1-foot floodway. See Rule 17.
- C. **Incorporation of FEMA's Floodway Regulations.** All Communities participating in the NFIP that have BFEs or Model-Backed Approximate Flood Elevation defined for one or more of the waterways within their jurisdictions shall adopt and enforce the "Criteria for Land Management and Use" Floodway regulations at 44 C.F.R. § 60.3(c)(10), (d). Failure to enforce Floodway regulations may impact the Community's standing in the NFIP and may eliminate or reduce eligibility for federal or state financial assistance for Flood Mitigation and disaster relief purposes.
- D. **Communities in Which This Rule Applies.** Communities with Regulatory Floodplains that have been Designated and Approved by the Board with BFEs or Model-Backed Approximate Flood Elevations defined for one or more of the waterways within their jurisdictions shall be required to establish technical (quantified) surcharge criteria for Floodway determination and regulation, which must meet or exceed the requirements set forth in this Rule. This Rule shall not apply to approximate stream reaches for which BFEs or Model-Backed Approximate Flood Elevation have not been defined (i.e. non-model-backed Flood hazard areas

**Maintain a record of all such information in accordance with
Subsection 070.040.020(d)(12).**

**Rule 9. Criteria for Determining the Effects of Flood Control Structures
on Regulatory Floodplains:**

A. For the purposes of this Rule, local and regional hydraulic structures providing local or regional Flood or stormwater detention, shall be considered to be Flood Control Structures. There are no separate criteria for these structures.

B. Flood Control Structures.

(1) If a publicly operated and maintained structure, as further defined in subparagraph B.(3), is specifically designed and operated either in whole or in part for Flood control purposes, then its effects shall be taken into consideration when delineating the Floodplain below such structure. The effects of the structure shall be based upon the 100-Year-Flood with full credit given to the attenuation of peak Flood discharges, which would result from normal Flood Control Structure operating procedures.

(2) The Hydrologic Analysis pertaining to State Regulatory Floodplains shall consider the effects of on-site detention for rooftops, parking lots, highways, road fills, railroad embankments, diversion structures, refuse embankments (including, but not limited to, solid waste disposal facilities), mill tailings, impoundments, siltation ponds, livestock water tanks, erosion control structures, or other structures, only if they have been designed and constructed with the purpose of impounding water for Flood detention and/or infiltration and are publicly operated and maintained in accordance with subparagraph B.(3).

(3) For the purposes of this Rule, public operation and maintenance is required for credit of the flood control structure, which may include direct responsibility, ultimate Community responsibility, or Community enforcement. See 44 C.F.R. § 65.6 (a)(12). This does not apply to state or federally operated and/or maintained facilities. Detention structures that are privately operated or maintained shall not be included in the Hydrologic Analysis unless it can be shown that they exacerbate downstream peak discharges.

A. **Non-Flood Control Structures.** If a structure is not specifically designed and operated, either in whole or in part, for Flood control purposes, then its effects, even if it provides inadvertent Flood routing capabilities that reduce the 100-Year-Flood impacts downstream, shall not be taken into account, and the delineation of the Flood hazard areas below such structure shall be based upon the 100-Year-Flood that could occur absent the structure's influence. However, if adequate assurances have been obtained to preserve the Flood routing capabilities of such structure, then the delineation of the Flood hazard areas below the structure may, but need not, be based on the assumption that the reservoir formed by

the structure will be filled to the elevation of the structure's emergency spillway and the 100-Year-Flood hydrology can be routed through the reservoir to account for any Flood attenuation effects.

B. Adequate Assurances. For the purposes of this Rule 9 "adequate assurances" shall, at a minimum, include appropriate recognition in either a signed adequate assurance agreement, or the Community's adopted master plan of:

- (1) The Flood routing capability of the reservoir, as shown by comparison of the 100-Year- Flood hazard area in plan and profile (where applicable) with and without the structure in place, in order that the public may be made aware of the potential change in level of Flood protection in the event that the reservoir Flood routing capability is lost;
- (2) The need to preserve that Flood routing capability by whatever means available in the event that the reservoir owners attempt to make changes that would decrease the Flood routing capability; and
- (3) A complete operations and maintenance plan.

C. Irrigation Facilities. The CWCB recommends that irrigation facilities (including, but not limited to, ditches and canals) not be used as stormwater or Flood conveyance facilities, unless specifically approved and designated by Community and approved by the irrigation facility owners. The Flood conveyance capacity of irrigation facilities shall be acknowledged only by agreement between the facility owners and Communities, with review and concurrence from the Colorado Division of Water Resources to ensure that water rights administration needs are properly considered. A maintenance easement or agreement shall be in place allowing the Community maintenance access to the irrigation facility if needed.

Unless specified otherwise by aforementioned written agreement, Flood hydrology for State Regulatory Floodplain mapping purposes shall consist of peak hydrologic flows that are identical immediately downstream and immediately upstream of a ditch or canal that is generally perpendicular to the stream or drainageway of interest. The irrigation facility shall be assumed as running full so that there are no computed Flood reduction benefits downstream of the irrigation facility. Backwater behind irrigation facilities shall be mapped. The Board will Designate and Approve 100-Year-Flood Flood Hazard Information for irrigation facilities if the above recommendations are met. This Rule is not intended in any way to interfere with Colorado water law.

Rule 10. Criteria for Determining Effects of Levees on Regulatory Floodplains:

A. General. The use of Levees for property protection, Flood control, and Flood hazard Mitigation is not encouraged by the CWCB, unless other Mitigation alternatives are not viable. The areas landward of an accredited Levee and Provisionally Accredited Levee (PAL) system shall be mapped and annotated on the FIRM in accordance with FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities. In situations where Levees are the only viable alternative for protection of existing development, "setback" levees should be designed and constructed to maintain the natural Channel and reserve a portion of the natural Floodplain capacity. Levees should not be used for Flood protection along streams or watercourses where new Development is planned. However, Levees may be used to protect public utility plant facilities for wastewater treatment and pumping as well as electric power plants due to their close proximity to natural waterways. For existing Levees that protect existing

development, proper maintenance should be performed by Levee owners/operators, or non- federal sponsors in the case of federal Levees, according to an operations and maintenance plan.

(1) Levees should not be constructed for the primary purpose of removing undeveloped lands from mapped Floodplain areas for the purposes of developing those lands because of the potential impairment of the health, safety, welfare and property of the people. Design and construction of Levees identified for this purpose will not be eligible for C WCB grants or loans.

(2) When constructed, Levees for which protection will be considered for designation and approval must meet the requirements set forth in "Mapping of Areas Protected by Levee Systems," 44 C.F.R. § 65.10. Artificial embankments that either function as a Levee or a Flood Control Structure must meet the provisions of this Rule or the "Office of the State Engineer Rules and Regulations for Dam Safety and Dam Construction," 2 C.C.R. 402-1, respectively, in order to be considered as providing protection. See Rule 17.

B. **Maintenance.** An operating and maintenance manual that ensures continuous proper function of the structure shall be prepared and updated. The Levee shall be structurally sound and adequately maintained. Sedimentation effects shall be considered for all Levee projects. Certification from a federal agency, state agency, or a Colorado Registered Professional Engineer that the Levee meets the minimum Freeboard criteria, as stated above in Rule 10.A.(2), shall be provided to CWC.B. A visual inspection shall be required on a three-year basis to demonstrate that the Levee continues to be structurally sound and adequately maintained and results of the inspection shall be provided to the CWC.B. Levees that have obvious structural defects or that are obviously lacking in proper maintenance shall not be considered in the Hydraulic Analysis without a funded project plan to bring the Levee deficiencies into compliance (to be considered on a case-by-case basis).

C. **Ownership.** Privately-owned or non-Community-owned Levee systems shall only be considered in the Hydraulic Analysis if they are publicly operated and maintained. For the purposes of this Rule, public operation and maintenance is required for credit of the Levee system, which may include direct responsibility, ultimate Community responsibility, or Community enforcement. See 44 C.F.R. § 65.6 (a)(12). Levees for which the Community, state, or federal government has responsibility for operations and maintenance will be considered, provided that the criteria set forth in this Rule are met.

D. **Levee Analysis and Standards Consistent with Federal Regulation.** To comply with these Rules, analysis of Levees and Levee standards for Freeboard, interior drainage, and human intervention and operation must comply with the standards in 44 CFR § 65.10 and the FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis & Mapping Activities, *Guidance for Flood Risk Analysis and Mapping: Levees*, Guidance Document 95.

Rule 11. Floodplain Management Regulations:

A. **Compliance with Minimum Standards of the National Flood Insurance Program.** Each Community in the State of Colorado shall comply with the minimum Floodplain criteria set forth in the

FEMA regulation "Criteria for Land Management and Use," 44 C.F.R. § 60.3–60.5, see Rule 17, unless more restrictive standards have been adopted as set forth in these Rules or pursuant to regulations adopted by the Community. These Rules do not apply to local stormwater or local storm drainage studies where riverine Flooding sources are not considered.

B. **Minimum Freeboard.** A minimum Freeboard of one foot above the 100-Year-Flood elevation (BFE or Model-Backed Approximate Flood Elevation) shall apply to structures in the Floodplain as follows:

(1) **Residential Structures.** New, Substantially Damaged, and/or Substantially Improved residential structures, and Additions to existing residential structures shall be constructed with the Lowest Floor, including basements, placed with a minimum of one foot of Freeboard above the BFE or Model-Backed Approximate Flood Elevation. In AO Zones, new, Substantially Damaged, and/or Substantially Improved residential structures, and Additions to existing residential structures shall be constructed with the Lowest Floor, including basements, elevated above the highest adjacent grade at least as high as the depth number specified in feet on the Community's FIRM (at least two feet if no depth number is specified) plus one foot of Freeboard.

(2) **Non-residential Structures.**

New, Substantially Damaged, and/or Substantially Improved non-residential structures, and Additions to existing non-residential structures shall be constructed with the Lowest Floor, including basements, placed with a minimum of one foot of Freeboard above the BFE or Model-Backed Approximate Flood Elevation, or together with attendant utility and sanitary facilities, be designed so that the structure is watertight to an elevation at least one foot above the BFE or Model-Backed Approximate Flood Elevation with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. In AO Zones, new, Substantially Damaged, and/or Substantially Improved non-residential structures and Additions to existing non-residential structures shall be constructed with the Lowest Floor, including basements, elevated above the highest adjacent grade at least as high as the depth number specified in feet on the Community's FIRM (at least two feet if no depth number is specified) plus one foot of Freeboard, or together with attendant utility and sanitary facilities be completely floodproofed to that level with walls substantially impermeable to the past of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. Agricultural Structures and Accessory Structures shall be exempt from the Freeboard requirement but shall meet all other requirements set forth in FEMA Policy No. 104-008-03: Floodplain Management Requirements for Agricultural Structures and Accessory Structures.

a. Critical Facilities shall be regulated according to Rule 6.D. This Rule does not affect the Freeboard requirement for Levees described in Rule 10.D.

C. **Permit Restrictions for Properties Removed from the Floodplain by Fill.** No Community shall

issue a permit for the construction of a new structure on a property removed from the Floodplain by the issuance of a FEMA LOMR-F unless the Lowest Floor elevation placed below the BFE or Model-Backed Approximate Flood Elevation with one foot of Freeboard that existed prior to the placement of fill. In AO Zones, new structures shall be constructed with the Lowest Floor, including basements, elevated above the highest adjacent grade at least as high as the depth number specified in feet on the Community's FIRM (at least two feet if no depth is specified) that existed prior to the placement of fill plus one-foot of Freeboard. Issuance of any such permit shall constitute a violation of these Rules. Critical Facilities are exempted from this restriction if the facility is protected according to Rule 6.D. herein.

- D. **Highest Adjacent Grade.** For the purposes of this Rule 11, highest adjacent grade means the highest natural elevation of the ground surface, prior to the start of construction, next to the proposed walls of a structure.

Rule 12. Effects of Flood Mitigation Measures and Stream Alteration

Activities on Regulatory Floodplains:

In order to assist the CWCB in carrying out its mission to protect the health, safety, welfare and property of the public, through the prevention of Floods in Colorado, the CWCB requires the following:

- A. Flood control Channels shall include a low-flow Channel with a capacity to convey the average annual flow rate, or other appropriate flow rate as determined through a hydrogeomorphological analysis, without excessive erosion or Channel migration, with an adjacent overbank Floodplain to convey the remainder of the 100-Year-Flood flow. The Channel improvement shall not cause increased velocities or erosive forces upstream or downstream of the improvement.
- B. Channelization and flow diversion projects shall appropriately consider issues of sediment transport, erosion, deposition, and Channel migration and properly mitigate potential problems through the project as well as upstream and downstream of any improvement activity. A detailed geomorphological analysis should be considered, when appropriate, to assist in determining the most appropriate design.

Project proponents for a Mitigation activity must evaluate the residual 100-Year-Floodplain. Proponents are also encouraged to map the residual 500-Year-Floodplain.

- C. All dams must be maintained to ensure that they retain their structural and hydraulic integrity pursuant to FEMA Risk MAP Technical References, Guidelines, and Standards for Flood Risk Analysis and Mapping Activities, *Dams/Reservoirs and Non-Dam Features*. See Rule 17. All Levees must be maintained to ensure that they retain their structural and hydraulic integrity pursuant to FEMA Risk MAP Technical References, Guidelines, and Standards for Flood Risk Analysis and Mapping Activities, *Levees*. See Rule 17.
- D. Any Stream Alteration Activity proposed by a project proponent in either i) a Floodway or ii) a Regulatory Floodplain with no established Floodway (except in shallow Flooding areas, defined as Flooding with an

average depth limited to 3.0 feet or less where no defined Channel exists) must be evaluated for its impact on the Regulatory Floodplain. All Stream Alteration Activity shall be in compliance with all applicable federal, state and local Floodplain rules, regulations and ordinances.

- E. Any Stream Alteration Activity shall be designed and sealed by a Colorado Registered Professional Engineer.
- F. All activities within the Regulatory Floodplain performed by federal agencies using local or state funds, or by private, local or state entities shall meet all applicable federal, state and local Floodplain requirements.
- G. For compliance purposes, Stream Alteration Activities shall not be constructed in a Floodway unless the project proponent demonstrates through a Floodway analysis and report, sealed by a Colorado Registered Professional Engineer, that there is no rise resulting from the project unless a CLOMR has been obtained. No rise means a 0.00-foot rise or a decrease in the Flood elevation between the existing and proposed conditions. Stream Alteration Activities proposed in a Regulatory Floodplain with no established Floodway (except in shallow Flooding areas, defined as Flooding with an average depth limited to 3.0 feet or less where no defined Channel exists), shall demonstrate no more than 1/2-foot rise in Flood elevations (or a more stringent standard adopted by the Community) between the existing and proposed conditions unless a CLOMR is obtained. This requirement only applies on stream reaches with BFEs or Model-Backed Approximate Flood Elevations established.
- H. Rule 12.D. addresses when hydraulic modeling is required for Stream Alteration Activities. For map update purposes, regardless of whether modeling is required or not, whenever a Stream Alteration Activity is shown by hydraulic modeling to increase or decrease the established BFE in excess of 0.30 vertical feet between the pre-project and post-project conditions (or a more stringent standard adopted by the Community), a LOMR (or comparable revision process) showing such changes shall be obtained in order to accurately reflect the proposed changes on the Regulatory Floodplain map for the stream reach. This is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk assessment and Floodplain management requirements will be based upon current data, 44 CFR § 65.3. The Community is responsible for ensuring that this process is pursued. This section herein does not require a CLOMR to be applied for, unless mandated by the Community. This section reflects state policy and may not fully reflect federal and other requirements for map maintenance. This section is not intended to undermine or replace federal requirements, and Communities and project proponents are responsible for satisfying any other map maintenance requirements as a result of Stream Alteration Activities.

Rule 13. Process for Designation and Approval of Regulatory Floodplains:

- A. **Designation and Approval Requirements.** The CWCB will Designate and Approve Regulatory Floodplains by the adoption of written resolutions based only upon such Floodplain information as the CWCB determines meets the standards set forth in Rule 7, as applicable, with consideration of the effects of dams and Levees being subject to the criteria of Rules 9 and 10, respectively and any Mitigation activity in Rule 12.

- B. **Base Flood.** 100-Year-Floodplain information shall generally be the basis for all Designation and Approval actions by the Board for regulatory purposes in Colorado. However, the Board will Designate and Approve 500-Year-Floodplain information when available.
- C. **Provisional Designation.** The Board may Designate and Approve, on a provisional basis and for a maximum period of time not to exceed two years, Floodplain information that does not meet the minimum requirements as set forth in Rule 7.
- D. **Process for Taking Designation and Approval Actions.** The Board shall consider the Designation and Approval of Floodplain information either by request of a Community or by acting on its own initiative.
- (1) **Consideration at a Community's Request.** The Board shall consider Designation and Approval of Floodplain information upon written request from the Community having jurisdiction in the area where the Floodplain information is applicable. The letter of request shall identify the report title, date, author or agency which prepared the report, stream name(s), upstream and downstream limits of the stream reach(es) to be designated, stream length(s) in miles, type of designation requested (detailed or approximate), and any other relevant information. The CWCB shall receive such a request at least 30 days prior to the Board meeting at which consideration of Designation and Approval is requested.
- (2) **Consideration at the CWCB's initiative.** If Designation and Approval of a Floodplain would be in the best interest of the health, safety, welfare and property of the citizens of the State of Colorado, then the CWCB may take action at its own initiative to consider the Designation and Approval of Floodplain information. In such cases, the CWCB shall notify the affected Communities in writing at the time of study initiation or, in the case of a previously completed study, the CWCB will endeavor to receive concurrence in writing from the affected Community at least 45 days prior to the Board meeting at which it will consider the Designation and Approval of Floodplain information within their jurisdiction. Regardless of Community concurrence, CWCB may pursue Designation and Approval.
- (3) **Notification of Adopted Resolutions.** The CWCB shall send signed copies of each adopted resolution of Designation and Approval to each Community in the study area and to FEMA within 30 days of adoption.

Rule 14. Designation and Approval of Changes to Regulatory Floodplains:

- A. When changes are made to the characteristics of a Floodplain that result in a revision of a Community's FIRMs or Flood Hazard Boundary Maps (and a subsequent designation of the new map), the Board will Designate and Approve changes to the Regulatory Floodplain caused by Development, new or better technical information, or other sources. The Board will designate the revised Floodplains by adopting written resolutions based upon such Floodplain information as the Board determines meets the standards set forth in Rules 6-12.

B. In the event that a Community is aware of and has access to better available information on a previously designated flooding source, then the CWCB allows for that undesignated information to be used for regulatory purposes if it is to the same or greater level of detail as the previously designated Regulatory Floodplain information, has been approved through a detailed technical review by a qualified Colorado Professional Engineer, and meets one of the following conditions in (1) – (3). Communities may need to formally adopt this information through its local adoption process.

(1) Regulatory Floodplain included on a FEMA FIRM – the revised Floodplain mapping is more restrictive, the Community has informed all impacted property owners of the change and provided due process as established in Community guidelines, and the revised Floodplain mapping is ultimately Designated and Approved by the Board; or

(2) Regulatory Floodplain not included on a FEMA FIRM – the Community has informed all impacted property owners of the change, and provided due process as established in Community guidelines. The Community must submit Floodplain mapping revisions for Designation and Approval by the Board in a timely manner (not to exceed two years from the date of completion); or

(3) Regulatory Floodplain – the revised Floodplain mapping has been approved by FEMA through a LOMR or Physical Map Revision process, and ultimately Designated and Approved by the Board.

C. **Conditions.** All changes to Regulatory Floodplains shall meet or exceed the same conditions as those required for original Designation and Approval.

D. **Process for Designation and Approval of Changes to a Regulatory Floodplain.** The Board may consider the Designation and Approval of changes to Regulatory Floodplain information either by request of a Community or by acting on its own initiative.

(1) **Consideration at a Community's Request.** The Board shall consider Designation and Approval of changes to a Regulatory Floodplain upon written request from the governing body of any Community having jurisdiction in the area where the Floodplain information is applicable. The CWCB staff shall receive such requests at least 30 calendar days prior to the Board meeting at which consideration of Designation and Approval is requested.

(2) **Consideration at the CWCB's Initiative.** If Designation and Approval of changes to a Regulatory Floodplain would be in the best interest of the health, safety, welfare and property of the citizens of the State of Colorado, then the CWCB may take action at its own initiative to consider the Designation and Approval of Floodplain information. In such cases, the CWCB shall notify the affected Communities in writing at the time of the study initiation or, in the case of a previously completed study, the CWCB will endeavor to receive concurrence in writing from the affected Community at least 45 days prior to the Board meeting at which it will consider the Designation and Approval of Floodplain information within their jurisdiction. Regardless of Community concurrence, CWCB may pursue Designation and Approval.

(3) **Notification of Adopted Resolution.** The CWCB shall send signed copies of each adopted resolution of Designation and Approval of changes to a Regulatory Floodplain to each

Community within the limits of the changed Floodplain within 30 calendar days of Designation and Approval.

E. **Identification of Designations of Changes to a Regulatory Floodplain.** The designation of the changes to the Regulatory Floodplain will be given a reference identification number that will differentiate the changed designation from the original. It is implied that designations to changes to a Regulatory Floodplain will only rescind the affected portions of the previously designated Floodplain information. All other unaffected reaches will remain as originally designated.

F. **Map Revisions to Flood Insurance Rate Maps (FIRMs) or Flood Hazard Boundary Maps.** Floodplain Map revisions (e.g., FEMA LOMRs) may be designated twice annually by the Board during a regularly scheduled Board meeting and will not be subject to a full technical review by the CWCB staff.

- b. *Approval Criteria.* Approval or denial of a floodplain development permit by the Floodplain Administrator shall be based on all of the provisions of this Subsection and the following relevant factors:
1. The danger to life and property due to flooding or erosion damage;
 2. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
 3. The danger that materials may be swept onto other lands to the injury of others;
 4. The compatibility of the proposed use with existing and anticipated development;
 5. The safety of access to the property in times of flood for ordinary and emergency vehicles;
 6. The costs of providing governmental services during and after flood conditions including maintenance and repair of streets and bridges, and public utilities and facilities such as sewer, gas, electrical and water systems;
 7. The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site;
 8. The necessity to the facility of a waterfront location, where applicable;
 9. The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use; and
 10. The relationship of the proposed use to the comprehensive plan for that area.

(14) *Variance Procedure.*

- a. ~~The Planning and Zoning Commission ("Commission") shall hear and render judgment on requests for variances from the requirements of this Subsection.~~
- b. ~~The Commission shall hear and render judgment on an appeal only when it is alleged there is an error in any requirement, decision, or determination made by the Floodplain Administrator in the enforcement or administration of this Subsection. Such appeals shall be subject to the procedures set forth in Subsection 070.060.070(c).~~

- e. Any person or persons aggrieved by the decision of the Commission may appeal such decision in the courts of competent jurisdiction upon completing the administrative procedures set forth in Subsection 070.060.070(c).
- d. The Floodplain Administrator shall maintain a record of all actions involving an appeal and shall report variances to the Federal Emergency Management Agency upon request.
- e. Variances may be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places without regard to the procedures set forth in the remainder of this Subsection.
- f. Variances may be issued for new construction and substantial improvements to be erected on a lot of one-half (½) acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, provided that the requirements of Subsection 070.040.020(d)(13) have been fully considered. As the lot size increases beyond the one-half (½) acre, the technical justifications required for issuing the variance increases.
- g. Upon consideration of the factors noted above and the intent of this Subsection, the Commission may attach such conditions to the granting of variances as it deems necessary to further the purpose and objectives of this Subsection as stated in Subsection 070.040.020(d)(2), Statement of Purpose.
- h. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
- i. Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.
- j. Prerequisites for granting variances:
1. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
 2. Variances shall only be issued 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 a variance will not result in increased flood heights, additional threats to public safety or extraordinary public expense, create nuisances, cause fraud on or victimization of the public or conflict with this Code or the City goals, policies and plans.
 - k. Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor elevation below the Base Flood Elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.
 - l. Variances may be issued for new constructions and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that:
 1. The criteria outlined in Subsections 070.040.020(d)(14)a.—i. are met; and
 2. The structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

Commented [TP1]: Are we sure we want to allow this?

1. **Consideration by Community.** Request for a variance to any of these Rules may be considered by the city Planning and Zoning Commission provided the entity or individual requesting the variance has submitted a written request. A notice of the request must be provided to any adjacent property owners and Communities that would be affected by the variance.

2. **Contents of a Request for Variance.** The request for a variance shall identify:

- (1) The Rule from which the variance is requested;
- (2) The adjacent property owners and Communities that would be affected by the variance;
- (3) The reasons why the Rule cannot be complied with;
- (4) The estimated difference in water surface elevations, Flood velocities and Flood boundaries that would result if the requested variance were granted than if the calculations were made through strict compliance with the Rule;
- (5) The estimated number of people and structures that will be impacted by granting of the variance; and
- (6) Any other evidence submitted by the Community, the CWCB staff, or other party of interest.

3. **Factors to be considered.** Variances may be issued if it can be determined that:

- (1) There is a good and sufficient cause; and
- (2) The variance is the minimum necessary, considering the Flood hazard, to afford relief; and
- (3) Failure to grant the variance would result in exceptional hardship to the Community or the requestor and that the hardship is not the Community's or requestor's own making; and
- (4) The granting of a variance will not result in increased vulnerability to Flood losses, additional threats to public safety and welfare, extraordinary public expense, create nuisances, cause fraud or victimization of the public, hide information of significant interest to the public, or conflict with existing local laws or regulations.
- (5) In lieu of items C(1) through C(4) above, a Community may, at its sole discretion, use an established variance procedure.

4. **Variance Process.** Variance requests shall be processed as follows:

- (1) The city Planning and Zoning Commission shall render, confirm, modify, or reject all variance requests pertaining to these Rules.

2. The Commission shall hear and render judgment on an appeal only when it is alleged there is an error in any requirement, decision, or determination made by the Floodplain Administrator in the enforcement or administration of this Subsection. Such appeals shall be subject to the procedures set forth in Subsection 070.060.070(c).
3. Any person or persons aggrieved by the decision of the Commission may appeal such decision in the courts of competent jurisdiction upon completing the administrative procedures set forth in Subsection 070.060.070(c).
4. Upon consideration of the factors noted above and the intent of this Subsection, the Commission may attach such conditions to the granting of variances as it deems necessary to further the purpose and objectives of this Subsection as stated in Subsection 070.040.020(d)(2), Statement of Purpose.
5. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
6. Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor elevation below the Base Flood Elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.
7. The Floodplain Administrator shall maintain a record of all actions involving an appeal and shall report variances to the CWCB upon request.
8. The CWCB may review local variance decisions on a case-by-case basis to ensure that the overall intent and spirit of these Rules are properly considered at the local level.
9. Informal variance determination request may be presented to CWCB staff in order to guide Community officials or project applicants as to whether a formal variance would be needed on a case-by-case basis.

Rule 16. Enforcement of Floodplain Rules and Regulations:

A. Procedure to be followed regarding alleged violations

(1) Notice of Non-Compliance.

- a. A NONC may be prepared and transmitted by the CWCB or its Director. Information regarding potential violations may be discovered directly by CWCB staff or can be brought to the CWCB or its Director by a Complainant, such as FEMA, other state agencies, the Community within whose boundaries the alleged violation took place, or by any other person who may be directly and adversely affected or aggrieved as a result of the alleged violation.
- b. Oral complaints shall be confirmed in writing by the Complainant. Persons making a complaint are required to submit a formal letter of complaint to the CWCB Director.

c. NONC process.

- i. An NONC issued by the CWCB shall be delivered to an alleged violator by personal delivery or by certified mail (return receipt requested). A copy of the NONC shall be transmitted to FEMA Region VIII and the Community.
- ii. The NONC does not constitute final agency action.
- i. The NONC shall identify the statute, Rule, regulation, or policy subject to CWCB jurisdiction allegedly violated and the facts alleged to constitute the violation. The NONC may propose appropriate corrective action and suggested corrective action(s) if any, that the CWCB recommends.

(2) FEMA Region VIII shall support, through its NFIP activities, these Rules. This support will include the existing ability for FEMA to place sanctions upon a Community for non- compliance.

(3) Certain Board decisions to provide Flood and watershed related grant funding to Communities may be directly dependent upon a Community's compliance with these Rules.

(15) *General Standards.* In all areas of special flood hazards, the following standards are required:

- a. All new construction or substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrostatic and hydrodynamic loads, including the effects of buoyancy;
- b. All new construction or substantial improvements shall be constructed by methods and practices that minimize flood damage;
- c. All new construction or substantial improvements shall be constructed with materials resistant to flood damage;
- d. All new construction or substantial improvements shall be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding;
- e. All manufactured homes shall be installed using methods and practices which minimize flood damage. For purposes of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable state and local anchoring requirements for resisting wind forces.
- f. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system;
- g. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters; and
- h. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

(16) *Specific Standards.* In all Special Flood Hazard areas where Base Flood Elevation data has been provided as set forth in Subsection 070.040.020(d)(5), Subsection 070.040.020(d)(12)g., and/or Subsection 070.040.020(d)(21), the following provisions are required:

- a. *Residential Construction.* New construction and substantial improvement of any residential structure shall have the lowest floor (including basement), electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork), elevated to one (1) foot above the Base Flood Elevation. Upon completion of the structure, the elevation of the lowest floor, including basement, shall be certified by a registered Colorado Professional Engineer, architect or land surveyor. Such certification shall be submitted to the Floodplain Administrator.
- b. *Nonresidential Construction.*
 1. With the exception of Critical Facilities outlined in 070.040.020(d)(22), new construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor (including basement), electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), elevated to one (1) foot above the Base Flood Elevation; or, together with attendant utility and sanitary facilities, shall be designed so that at one (1) foot above the Base Flood Elevation the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
 2. A registered Colorado Professional Engineer or architect shall develop and/or review structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice as outlined in this Subsection. Such certifications shall be maintained by the Floodplain Administrator, as set forth in Subsection 070.040.020(d)(13).
- c. *Enclosures.*
 1. New construction and substantial improvements, with fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access, or storage in an area other than a basement and which are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters.
 2. Designs for meeting this requirement must either be certified by a registered Colorado Professional Engineer or architect or meet or exceed the following minimum criteria:
 - i. A minimum of two (2) openings having a total net area of not less than one (1) 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 (1) 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.
- d. *Manufactured Homes.*
 1. All manufactured homes that are placed or substantially improved within Zones A1—30, AH and AE on the City's FIRM on sites: (1) outside of a manufactured home park or subdivision; (2) in a new manufactured home park or subdivision; (3) in an expansion to an existing manufactured home park or subdivision; or (4) in an existing manufactured home park or subdivision on which a manufactured home has incurred substantial damage as the result of a flood, be elevated on a permanent foundation such that the lowest floor of the manufactured

home, electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities (including ductwork) are elevated to one (1) foot above the Base Flood Elevation and be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement.

2. All manufactured homes placed or substantially improved on sites in existing manufactured home parks or subdivision within Zones A1—30, AH and AE on the City's FIRM that are not subject to the provisions of the previous paragraph shall be elevated so that either: (1) the lowest floor of the manufactured home, electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), are one (1) foot above the Base Flood Elevation; or (2) the manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade and shall be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement.

e. *Recreational Vehicles.*

1. All recreational vehicles placed on sites within Zones A1—30, AH, and AE on the City's FIRM sites either: (1) be on the site for fewer than one hundred eighty (180) consecutive days; (2) be fully licensed and ready for highway use; or (3) meet the permit requirements of Subsection 070.040.020(d)(13), and the elevation and anchoring requirements for "manufactured homes" in Paragraph d. above.
2. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.

- f. *Prior Approved Activities.* Any activity for which a floodplain development permit was issued by the City or a CLOMR was issued by FEMA prior to the effective date of this Subsection may be completed according to the standards in place at the time of the permit or CLOMR issuance and will not be considered in violation of this Subsection if it meets such standards.

- (17) *Standards for Areas of Shallow Flooding (AO/AH Zones).* Located within the Special Flood Hazard Area established in Subsection 070.040.020(d)(5), are areas designated as shallow flooding. These areas have special flood hazards associated with base flood depths of one (1) to three (3) feet where a clearly defined channel does not exist and where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow; therefore, the following provisions apply:

- a. *Residential Construction.* All new construction and substantial improvements of residential structures must have the lowest floor (including basement), electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), elevated above the highest adjacent grade at least one (1) foot above the depth number specified in feet on the City's FIRM (at least three (3) feet if no depth number is specified). Upon completion of the structure, the elevation of the lowest floor, including basement, shall be certified by a registered Colorado Professional Engineer, architect, or land surveyor. Such certification shall be submitted to the Floodplain Administrator.
- b. *Nonresidential Construction.*
 1. With the exception of Critical Facilities, outlined in Subsection 070.040.020(d)(22), all new construction and Substantial Improvements of non-residential structures, must have the lowest floor (including basement), electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), elevated above the highest adjacent grade at least one (1) foot above the depth number specified in feet on the

City's FIRM (at least three (3) feet if no depth number is specified), or together with attendant utility and sanitary facilities, be designed so that the structure is watertight to at least one (1) foot above the base flood level with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads of effects of buoyancy. A registered Colorado Professional Engineer or architect shall submit a certification to the Floodplain Administrator that the standards of this Subsection, as proposed in Subsection 070.040.020(d)(13), are satisfied.

2. Within Zones AH or AO, adequate drainage paths around structures on slopes are required to guide flood waters around and away from proposed structures.

- (18) *Floodways.* Floodways are administrative limits and tools used to regulate existing and future floodplain development. The State of Colorado has adopted Floodway standards that are more stringent than the FEMA minimum standard (see definition of Floodway in Subsection 070.040.020(d)(25)). Located within Special Flood Hazard Areas established in Subsection 070.040.020(d)(5) are areas designated as Floodways. Since the Floodway is an extremely hazardous area due to the velocity of floodwaters which carry debris, potential projectiles and erosion potential, the following provisions apply:
- a. Encroachments are prohibited, including fill, new construction, substantial improvements and other development within the adopted regulatory Floodway unless it has been demonstrated through hydrologic and hydraulic analysis performed by a licensed Colorado Professional Engineer and in accordance with standard engineering practice that the proposed encroachment would not result in any increase (requires a No-Rise Certification) in flood levels within the City during the occurrence of the base flood discharge.
 - b. If Paragraph a. above is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of Subsections 070.040.020(d)(15) through 070.040.020(d)(22).
 - c. Under the provisions of 44 CFR Chapter 1, Section 65.12 of the National Flood Insurance Regulations, the City may permit encroachments within the adopted regulatory floodway that would result in an increase in Base Flood Elevations, provided that the City first applies for a CLOMR and floodway revision through FEMA.
- (19) *Alteration of a Watercourse.* For all proposed developments that alter a watercourse within a Special Flood Hazard Area, the following standards apply:
- a. Channelization and flow diversion projects shall appropriately consider issues of sediment transport, erosion, deposition, and channel migration and properly mitigate potential problems through the project as well as upstream and downstream of any improvement activity. A detailed analysis of sediment transport and overall channel stability should be considered, when appropriate, to assist in determining the most appropriate design.
 - b. Channelization and flow diversion projects shall evaluate the residual one-hundred-year floodplain.
 - c. Any channelization or other stream alteration activity proposed by a project proponent must be evaluated for its impact on the regulatory floodplain and be in compliance with all applicable federal, state and local floodplain rules, regulations and ordinances.
 - d. Any stream alteration activity shall be designed and sealed by a registered Colorado Professional Engineer or Certified Professional Hydrologist.
 - e. All activities within the regulatory floodplain shall meet all applicable federal, state and City floodplain requirements and regulations.

- f. Within the Regulatory Floodway, stream alteration activities shall not be constructed unless the project proponent demonstrates through a Floodway analysis and report, sealed by a registered Colorado Professional Engineer, that there is not more than a 0.00 foot rise in the proposed conditions compared to existing conditions Floodway resulting from the project, otherwise known as a No-Rise Certification, unless the City first applies for a CLOMR and Floodway revision in accordance with Subsections 070.040.020(d)(15) through 070.040.020(d)(22).
 - g. Maintenance shall be required for any altered or relocated portions of watercourses so that the flood-carrying capacity is not diminished.
- (20) *Properties Removed from the Floodplain by Fill.* A floodplain development permit shall not be issued for the construction of a new structure or addition to an existing structure on a property removed from the floodplain by the issuance of a FEMA Letter of Map Revision Based on Fill (LOMR-F), unless such new structure or addition complies with the following:
- a. *Residential Construction.* The lowest floor (including basement), electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), must be elevated to one (1) foot above the Base Flood Elevation that existed prior to the placement of fill.
 - b. *Nonresidential Construction.* The lowest floor (including basement), electrical, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork), must be elevated to one (1) foot above the Base Flood Elevation that existed prior to the placement of fill, or together with attendant utility and sanitary facilities be designed so that the structure or addition is watertight to at least one (1) foot above the base flood level that existed prior to the placement of fill with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads of effects of buoyancy.
- (21) *Standards for Subdivision Proposals.*
- a. All subdivision proposals including the placement of manufactured home parks and subdivisions shall be reasonably safe from flooding. If a subdivision or other development proposal is in a flood-prone area, the proposal shall minimize flood damage.
 - b. All proposals for the development of subdivisions including the placement of manufactured home parks and subdivisions shall meet floodplain development permit requirements of Subsection 070.040.020(d)(6), Subsection 070.040.020(d)(13), and the provisions of Subsections 070.040.020(d)(15) through 070.040.020(d)(22).
 - c. Base Flood Elevation data shall be generated for subdivision proposals and other proposed development including the placement of manufactured home parks and subdivisions which is greater than fifty (50) lots or five (5) acres, whichever is lesser, if not otherwise provided pursuant to Subsection 070.040.020(d)(5) or Subsection 070.040.020(d)(12).
 - d. All subdivision proposals including the placement of manufactured home parks and subdivisions shall have adequate drainage provided to reduce exposure to flood hazards.
 - e. All subdivision proposals including the placement of manufactured home parks and subdivisions shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage.
- (22) **Standards for Critical Facilities.** ~~A Critical Facility is a structure or related infrastructure, but not the land on which it is situated, as specified in Rule 6 of the Rules and Regulations for Regulatory Floodplains in Colorado, that if flooded may result in significant hazards to public health and safety or interrupt essential services and operations for the City at any time before, during and after a flood.~~
- a. *Classification of Critical Facilities.*

1. It is the responsibility of the City to identify and confirm that specific structures meet the following criteria: Critical Facilities are classified under the following categories: (a) essential services (b) hazardous materials (c) at-risk populations, and (d) vital to restoring normal Services.
2. Essential services facilities include public safety, emergency response, emergency medical, designated emergency shelters, communications, public utility plant facilities, and transportation lifelines. These facilities consist of:
 - i. Public safety (police stations, fire and rescue stations, emergency vehicle and equipment storage, and emergency operation centers);
 - ii. Emergency medical (hospitals, ambulance service centers, urgent care centers having emergency treatment functions, and non-ambulatory surgical structures but excluding clinics, doctor's offices, and non-urgent care medical structures that do not provide these functions;
 - iii. Designated emergency shelters;
 - iv. Communications (main hubs for telephone, broadcasting equipment for cable systems, satellite dish systems, cellular systems, television, radio, and other emergency warning systems, but excluding towers, poles, lines, cables and conduits);
 - v. Public utility plant facilities for generation and distribution (hubs, treatment plants, substations and pumping stations for water, power and gas, but not including towers, poles, power lines, buried pipelines, transmission lines, distribution lines, and service lines); and
 - vi. Air transportation lifelines (airports [municipal and larger], helicopter pads and structures serving emergency functions, and associated infrastructure [aviation control towers, air traffic control centers, and emergency equipment aircraft hangars]);
 - vii. Specific exemptions to this category include wastewater treatment plants (WWTP), non-potable water treatment and distribution systems, and hydroelectric power generating plants and related appurtenance.
 - viii. Public utility plant facilities may be exempted if it can be demonstrated to the satisfaction of the City that the facility is an element of a redundant system for which service will not be interrupted during a flood. At a minimum, it shall be demonstrated that redundant facilities are available (either owned by the same utility or available through an intergovernmental agreement or other contract) and connected, the alternative facilities are either located outside of the one-hundred-year floodplain or are compliant with the provisions of this Subsection, and an operations plan is in effect that states how redundant systems will provide service to the affected area in the event of a flood. Evidence of ongoing redundancy shall be provided to the City on an as-needed basis upon request.
3. Hazardous materials facilities include facilities that produce or store highly volatile, flammable, explosive, toxins and/or water-reactive materials. These facilities may include:
 - i. Chemical and pharmaceutical plants (chemical plants, pharmaceutical manufacturing);
 - ii. Laboratories containing highly volatile, flammable, explosive, toxins and/or water-reactive materials;
 - iii. Refineries;
 - iv. Hazardous waste storage and disposal sites; and
 - v. Above ground gasoline or propane storage or sales centers.

- vi. Facilities shall be determined to be Critical Facilities if they produce or store materials in excess of threshold limits. If the owner of a facility is required by the Occupational Safety and Health Administration (OSHA) to keep a Material Safety Data Sheet (MSDS) on file for any chemicals stored or used in the workplace, AND the chemical(s) is stored in quantities equal to or greater than the Threshold Planning Quantity (TPQ) for that chemical, then that facility shall be considered to be a Critical Facility. The TPQ for these chemicals is: either five hundred (500) pounds or the TPQ listed (whichever is lower) for the three hundred fifty-six (356) chemicals listed under 40 C.F.R. § 302 (2010), also known as Extremely Hazardous Substances (EHS); or ten thousand (10,000) pounds for any other chemical. This threshold is consistent with the requirements for reportable chemicals established by the Colorado Department of Health and Environment. OSHA requirements for MSDS can be found in 29 C.F.R. § 1910 (2010). The Environmental Protection Agency (EPA) regulation "Designation, Reportable Quantities, and Notification" 40 C.F.R. § 302 (2010) and OSHA regulation "Occupational Safety and Health Standards", 29 C.F.R. § 1910 (2010) are incorporated herein by reference and include the regulations in existence at the time of the promulgation of this Subsection, but exclude later amendments to or editions of the regulations. Specific exemptions to this category include:
- a. Finished consumer products within retail centers and households containing hazardous materials intended for household use, and agricultural products intended for agricultural use.
 - b. Buildings and other structures containing hazardous materials for which it can be demonstrated to the satisfaction of the local authority having jurisdiction by hazard assessment and certification by a qualified professional (as determined by the local jurisdiction having land use authority) that a release of the subject hazardous material does not pose a major threat to the public.
 - c. Pharmaceutical sales, use, storage, and distribution centers that do not manufacture pharmaceutical products.
 - d. These exemptions shall not apply to building or other structures that also function as Critical Facilities under another category outlined in this Subsection.
- vii. At-risk population facilities include medical care, congregate care, and schools. These facilities consist of:
- a. Elder care (nursing homes);
 - b. Congregate care serving twelve (12) or more individuals (day care and assisted living);
 - c. Public and private school (pre-schools, K-12 schools), before-school and after-school care serving twelve (12) or more children.
- viii. Facilities vital to restoring normal services including government operations. These facilities consist of:
- a. Essential government operations (public records, courts, jails, building permitting and inspection services, City administration and management, maintenance and equipment centers);
 - b. Essential structures for public colleges and universities (dormitories, offices, and classrooms only);
 - c. These facilities may be exempted if it is demonstrated to the City that the facility is an element of a redundant system for which service will not be interrupted during a flood. At a minimum, it shall be demonstrated that redundant facilities are available (either owned by the same entity or available through an intergovernmental agreement or other contract), the alternative

facilities are either located outside of the one-hundred-year floodplain or are compliant with this Subsection, and an operations plan is in effect that states how redundant facilities will provide service to the affected area in the event of a flood. Evidence of ongoing redundancy shall be provided to the City on an as-needed basis upon request.

A. **Classification:** Critical Facilities are classified under the following categories: (1) Essential services facilities; (2) Hazardous materials facilities; (3) At risk populations facilities; and (4) Facilities vital to restoring normal services.

(1) Essential services facilities include public safety, emergency response, emergency medical, designated emergency shelters, communications, public utility plant facilities, and transportation lifelines.

a. These facilities consist of:

- i. Public safety (police stations, fire and rescue stations, emergency vehicle and equipment storage, and emergency operation centers);
- ii. Emergency medical (hospitals, ambulance service centers, urgent care centers having emergency treatment functions, and non-ambulatory surgical structures but excluding clinics, doctor offices, and non-urgent care medical structures that do not provide these functions);
- i. Designated emergency shelters;
- ii. Communications (main hubs for telephone, broadcasting equipment for cable systems, satellite dish systems, cellular systems, television, radio, and other emergency warning systems, but excluding towers, poles, lines, cables, and conduits);
- iii. Public utility plant facilities for generation and distribution (hubs, treatment plants, substations and pumping stations for water, power and gas, but not including towers, poles, power lines, buried pipelines, transmission lines, distribution lines, and service lines); and
- iv. Air transportation lifelines (airports (municipal and larger), helicopter pads and structures serving emergency functions), and associated infrastructure (aviation control towers, air traffic control centers, and emergency equipment aircraft hangars).

b. Specific exemptions to this category include wastewater treatment plants, non-potable water treatment and distribution systems, and hydroelectric power generating plants and related appurtenances.

- i. Owners of these facilities are encouraged to meet the spirit of Rule 6.D. when practicable in order to protect their own infrastructure and to avoid system failures during extreme Flood events. Emergency restoring plans following

major Flood events should be considered as a prudent addition to operation and maintenance plans for those facilities.

- ii. Public utility plant facilities may be exempted if it is demonstrated to the satisfaction of the Community that the facility is an element of a redundant system for which service will not be interrupted during a Flood. At a minimum, it shall be demonstrated that redundant facilities are available (either owned by the same utility or available through an intergovernmental agreement or other contract) and connected, the alternative facilities are either located outside of the Regulatory Floodplain or are compliant with this Rule, and an operations plan is in effect that states how redundant systems will provide service to the affected area in the event of a Flood. Evidence of ongoing redundancy shall be provided to the Community on an as-needed basis upon request by that Community.

(2) Hazardous materials facilities include facilities that produce or store highly volatile, flammable, explosive, toxic, and/or water reactive materials.

a. These facilities consist of:

- i. Chemical and pharmaceutical plants (chemical plant, pharmaceutical manufacturing);
- i. Laboratories containing highly volatile, flammable, explosive, toxic and/or water reactive materials;
- ii. Refineries;
- iii. Hazardous waste storage and disposal sites; and
- iv. Above ground gasoline or propane storage or sales centers.

b. Facilities shall be determined to be Critical Facilities if they produce or store materials in excess of threshold limits. If the owner of a facility is required by the Occupational Safety and Health Administration (OSHA) to keep a MSDS on file for any chemicals stored or used in the work place, AND the chemical(s) is stored in quantities equal to or greater than the TPQ for that chemical, then that facility shall be considered to be a Critical Facility. OSHA requirements for MSDS can be found in 29 C.F.R. § 1910. See Rule 17.

- i. The TPQ for these chemicals is: either 500 pounds or the TPQ listed (whichever is lower) for the 356 chemicals listed under 40 C.F.R. § 302, also known as Extremely Hazardous Substances; or 10,000 pounds for any other chemical. This threshold is consistent with the requirements for reportable chemicals established by the Colorado Department of Public Health and Environment (CDPHE). The Environmental Protection Agency (EPA) regulation "Designation,

Reportable Quantities, and Notification,” can be found at 40 C.F.R. § 302. See Rule 17.

c. Specific exemptions to this category include: Finished consumer products within retail centers and households containing hazardous materials intended for household use, and agricultural products intended for agricultural use; Buildings and other structures containing hazardous materials for which it can be demonstrated to the satisfaction of the Community and certification by a qualified professional (as determined by the Community) that a release of the subject hazardous material does not pose a major threat to the public; and Pharmaceutical sales, use, storage, and distribution centers that do not manufacture pharmaceutical products.

d. These exemptions shall not apply to buildings or other structures that also function as Critical Facilities under another category outlined in this Rule 6.A.

(3) At risk population facilities include medical care, congregate care, and schools.

a. These facilities consist of:

i. Elder care (nursing homes);

ii. Congregate care serving 12 or more individuals (day care and assisted living); and

i. Public and private schools (pre-schools, K-12 schools), before-school and after-school care serving 12 or more children);

(4) Facilities vital to restoring normal services including government operations.

a. These facilities consist of:

i. Essential government operations (public records, courts, jails, building permitting and inspection services, community administration and management, maintenance and equipment centers);and

ii. Essential structures for public colleges and universities (dormitories, offices, and classrooms only);

b. These facilities may be exempted if it is demonstrated to the satisfaction of the Community that the facility is an element of a redundant system for which service will not be interrupted during a Flood. At a minimum, it shall be demonstrated that redundant facilities are available (either owned by the same entity or available through an intergovernmental agreement or other contract), the alternative facilities are either located outside of the Regulatory Floodplain or are compliant with this Rule, and an operations plan is in effect that states how redundant facilities will provide service to

the affected area in the event of a Flood. Evidence of ongoing redundancy shall be provided to the Community on an as-needed basis upon request by that Community.

B. Identification of Critical Facilities.

- (1) It is the responsibility of the Community to identify and confirm that specific structures in their Community meet the criteria outlined in Rule 6.A. and are deemed to be Critical Facilities. All structures that clearly meet the intent of Rule 6 shall be deemed Critical Facilities by that Community. For those structures for which it is unclear or otherwise ambiguous if the criteria are met, the Community shall have the sole discretion to determine if the structure is a Critical Facility. Communities may adopt ordinances that regulate to higher standards or that include additional facilities within the definition of Critical Facilities. Critical Facilities that are also designated as historic structures (determinations by the State Historic Preservation Office) are exempt from these requirements. Pursuant to section 24-65.1-202(2)(a)(i)(A), C.R.S., open space activities such as agriculture, horticulture, floriculture, recreation, and mineral extraction, including oil and gas activities, shall be encouraged in the Floodplain, and are exempt as Critical Facilities unless provisions within Rule 6.A.(2) apply. These activities may still require coordination with the Community and be subject to other local, state, and federal requirements or permits.
- (2) Required identification of Critical Facilities shall be limited to owner-occupied structures. Communities may, at their sole discretion, include leased facilities in their identification of Critical Facilities.

C. 500-Year-Flood Events. The CWCB acknowledges that Flooding does and has occurred above and beyond 100-Year-Flood events. Communities are encouraged to regulate Development of Critical Facilities within the 500-Year-Floodplain, when available.

- b. *Protection for Critical Facilities.* All new and substantially improved Critical Facilities and new additions to Critical Facilities located within the Special Flood Hazard Area shall be regulated to a higher standard than structures not determined to be Critical Facilities. For the purposes of this Subsection, protection shall include one (1) of the following:
1. Location outside the Special Flood Hazard Area; or
- (1) 2. Elevation of the lowest floor or floodproofing of the structure, together with attendant utility and sanitary facilities, to at least two (2) feet above the Base Flood Elevation. All new, Substantially Damaged, and Substantially Improved Critical Facilities, and new Additions to Critical Facilities, shall be regulated to a higher standard than those structures not determined to be Critical Facilities. Communities are encouraged to consult with the owner of the Critical Facility in determining the value of the Critical Facility when a Substantial Damage and/or Substantial Improvement is being considered.
- (2) This Rule 6 shall be applied to a Use Change if the new use meets the provisions within Rule

6.A. Further, although Rule 6 shall apply to new Additions made at Critical Facilities, it shall only apply to the new Additions, and not the Critical Facility to the extent the Critical Facility existed prior to the amendment of these Rules.

(3) The higher standard for Critical Facilities shall be as follows: For Critical Facilities located within the Regulatory Floodplain, the structure shall be protected according to Rule 11.B. herein, with the exception of a two-foot Freeboard requirement substituted for the standard one-foot Freeboard. The International Building Code and Flood Resistant Design and Construction (ASCE 24) can be used as reference tools for this standard, but are not incorporated by reference herein.

(4) For the purposes of this Rule 6.D., protection shall include one of the following:

a. Location outside the Regulatory Floodplain; or

b. Elevation or Flood proofing of the structure so that it is protected to the level indicated in this Rule 6.D.

(5) Unimproved lands associated with a Critical Facility that lie within a Regulatory Floodplain shall not be subject to this requirement, until future Development takes place on those lands. Likewise, if an undeveloped portion of a facility's property lies within a Regulatory Floodplain, but the developed portion of that facility lies outside of the Regulatory Floodplain, then that facility shall not be classified as a Critical Facility.

(6) All other rules and regulations governing structures not deemed Critical Facilities remain in effect and unchanged.

D. c. **Ingress and Egress for New Critical Facilities.** New Critical Facilities shall, when practicable as determined by the City, have continuous non-inundated access (ingress and egress for evacuation and emergency services) during a one-hundred-year flood event. New Critical Facilities shall, when practicable as determined by the Community, have continuous non-inundated access (ingress and egress for evacuation and emergency services) during a Regulatory Flood event. This criterion is also recommended, but not required, for changes to existing Critical Facilities and use changes involving existing structures or unimproved lands whose classification changes to Critical Facilities.

E. **Variances.** For all Critical Facilities, the Variance procedure outlined in Rule 15 herein remains available and may be considered when deemed necessary and appropriate by the Community over the Critical Facility.

(23) *Amendments.* Any amendments of this Subsection or the maps or studies incorporated herein shall be subject to and governed by the provisions of Subsection 070.040.020(d)(5).

(24) *Conservation of Waterways.* It is the purpose of this subsection to conserve and promote the health of the City's riparian ecosystems, water quality, and protect human drinking water by maintaining a functional natural buffer adjacent to waterways.

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- a. *Applicability.* All new improvements, buildings, additions, structures, excavations, grading, dumping, clearing of native vegetation, or backfill shall be subject to the requirements of Section 070.040.020(d)(24). A permit, engineering or other study would not be required to be in compliance with Section 070.040.020(d)(24)b, if any of the following conditions are met. This would not exempt the following activities from permits or engineering studies required by other parts of the Municipal Code:

1. The removal of native vegetation existing on or before September 17, 2020, not to exceed twenty (20) percent of the setback area defined below, to allow a property owner private access to and personal enjoyment of the waterway. This shall not be interpreted to allow for permanent structures of any kind within said area.
2. The construction of bridges, public utilities, public paths for non-motorized use, public open space areas and boat ramps, wildfire mitigation activities, irrigation structures, flood control and erosion protection devices that do not result in a material increase in water quality degradation, stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.
3. Removal of vegetation listed on the Garfield County noxious weed list, Chinese Elm, or Siberian Elm in compliance with applicable regulations or removal of dead vegetation. The type, kind and amount of replacement vegetation shall be at the discretion of the property owner provided it includes native riparian plant species and is sufficient to limit and prevent erosion at the riverbank.
4. The property owner demonstrates one (1) or more of the following:
 - i. The area on or before September 17, 2020 did not contain significant riparian plant species or functions;
 - ii. The area on or before September 17, 2020 was impacted by previous earth disturbing activities; and/or
 - iii. Any improvement (including but not limited to the pruning of vegetation, construction of access path or steps, hot springs pools) does not result in a material increase in water quality degradation, stream bank erosion, or a reduction in the function and quality of a riparian area or wetland.

- b. *Standards.*

1. No improvement, building, structure, excavation, grading, dumping, clearing of native vegetation, or backfill shall be placed, built, undertaken or approved within thirty-five (35) feet of the ordinary high-water mark (as defined by the U.S. Army Corp of Engineers), measured horizontally, of any river or live perennial stream.
2. No chemical treatments, including but not limited to fertilizers, pesticides, and/or herbicides, are permitted within said thirty-five-foot setback area.

(25) *Definitions Related to Floodplain Regulations.* Unless specifically defined below, words or phrases used in this Subsection shall be interpreted so as to give them the meaning they have in common usage and to give this Subsection the most reasonable application.

- a. *One-Hundred-Year Flood.* A flood having a recurrence interval that has a one (1) percent annual chance of being equaled or exceeded during any given year (one (1) percent annual chance of flood). For the purpose of these rules the term "one (1) percent chance flood", "base flood" and is synonymous with the term "one-hundred-year flood." are synonymous. The term does not imply that the flood will necessarily happen once every one hundred (100) years.

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- b. *One-hundred-Year Floodplain.* The area of land susceptible to being inundated as a result of the occurrence of a one-hundred-year flood. The area of land susceptible to being inundated as a result of the occurrence of a 100-Year-Flood. 100-Year-Floodplains are considered to be areas of high Flood hazard. For the purposes of these Rules, the terms "100-Year-Floodplain," "Regulatory Floodplain," and "Special Flood Hazard Area" are synonymous.
- c. *Five-Hundred-Year Flood.* A flood having a recurrence interval that has a 0.2 percent chance of being equaled or exceeded during any given year (0.2 percent chance annual of flood). The terms "five-hundred-year Flood" and "0.2-percent -annual-chance Flood" are synonymous with the term "500-Year-Flood. The term does not imply that the flood will necessarily happen once every five hundred (500) years.
- d. *Five-Hundred-Year Floodplain.* The area of land susceptible to being inundated as a result of the occurrence of a five-hundred-year flood. 500-Year-Floodplains are typically considered to be areas of moderate Flood hazard.
- e. *Accessory Structure.* A structure which is on the same parcel of property as a principal structure and the use of which is incidental to the use of the principal structure.
- f. *Addition.* Any activity that expands the enclosed footprint or increases the square footage of an existing structure.

G. *Agricultural Structure.* For Floodplain Management Regulation purposes, Agricultural Structures are structures that are used exclusively for agricultural purposes or uses in connection with the production, harvesting, storage, raising, or drying of agricultural commodities and livestock. Structures used for human habitation and those that are places of employment or entertainment and structures with multiple or mixed purposes do not satisfy the "exclusive use" requirement and are not Agricultural Structures.

hf. *Alluvial Fans-Flooding.* A fan-shaped sediment deposit formed by a stream that flows from a steep mountain valley or gorge onto a plain or the junction of a tributary stream with the main stream. Alluvial fans contain active stream channels and boulder bars, and recently abandoned channels. Alluvial fans are predominantly formed by alluvial deposits and are modified by infrequent sheet flood, channel avulsions and other stream processes.

ig. *Approximate Floodplain Information.* Flood hazard information based on a reduced level of detail for topographic mapping or hydraulic calculations. Analysis results may be used to develop Flood hazard delineations and corresponding data (i.e., water surface elevations, associated depths and velocities). This may or may not have a comparison of water surface profiles with a topographic map of compatible accuracy. The level of detail for hydrology is consistent with that of detailed Floodplain information.

j. *Base Flood.* Is synonymous with 100-Year-Flood and is a Flood having a 1- percent-annual-chance of being equaled or exceeded in any given year.

Area of Shallow Flooding. A designated Zone AO or AH on a Community's Flood Insurance Rate Map (FIRM) with a one (1) percent chance or greater annual chance of flooding to an average depth of one (1) to three (3) feet where a clearly defined channel does not exist; where the path of flooding is unpredictable, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

h. *Base Flood Elevation (BFE).* The elevation shown on a FEMA Flood Insurance Rate Map for Zones AE, AH, A1—A30, AR AR/A, AR/AE, AR/A1—A30, AR/AH, AR/AO, V1—V30, and VE

that indicates the water surface elevation resulting from a flood that has a one (1) percent chance of equaling or exceeding that level in any given year. The elevation shown on a FEMA FIRM for Zones AE, AH, A1-A30, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO, V1-V30, and VE that indicates the water surface elevation resulting from a Flood that has a 1-percent-annual-chance of equaling or exceeding that level in any given year.

- i. Basin. The total land surface area from which precipitation is conveyed or carried by a stream or system of streams under the force of gravity and discharged through one or more outlets. Basement. Any area of a building having its floor sub-grade (below ground level) on all sides.
- j. Board. Refers to the Board of Directors of the Colorado Water Conservation Board.
- j. *Channel.* The physical confine of stream or waterway consisting of a bed and stream banks, existing in a variety of geometries.
- k. *Channelization.* The artificial creation, enlargement, or realignment of a stream channel.
- l. *Code of Federal Regulations (CFR).* The codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government. It is divided into fifty (50) titles that represent broad areas subject to Federal regulation.
- m. Colorado Floodplain and Stormwater Criteria Manual. The Manual prepared by the CWCB to, if needed, aid local officials and engineers in the proper regulation and design of Flood protected facilities. The Manual is advisory, rather than regulatory, in purpose.
- N Colorado Revised Statutes. The codified general and permanent statutes of the Colorado General Assembly
- o. Colorado Water Conservation Board. -As used in these Rules, "CWCB" refers to the agency and its staff, and "Board" refers to the Board of Directors of the Colorado Water Conservation Board
- m. *Community.* Any political subdivision in the state of Colorado that has authority to adopt and enforce floodplain management regulations through zoning, including but not limited to, cities, towns, unincorporated areas in the counties, Indian tribes, and drainage and flood control districts.
- n. ~~Conditional Letter of Map Revision (CLOMR). FEMA's comment on a proposed project, which does not revise an effective floodplain map that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodplain. FEMA's comment on a proposed project, which evaluates potential project impacts on the hydrologic or hydraulic characteristics of a Flooding source. A CLOMR does not revise an effective Floodplain Map, but determines whether a proposed project, once constructed, would warrant revisions to the effective Flood Hazard Information.~~
- o. ~~Critical Facility. A structure or related infrastructure but not the land on which it is situated, as specified in Section 070.090.210, that if flooded may result in significant hazards to public health and safety or interrupt essential services and operations for the City at any time before, during and after a flood. A structure or related infrastructure, but not the land on which it is situated, as specified in Rule 6, that if flooded may result in significant hazards to public health and safety or interrupt essential services and operations for the Community at any time before, during and after a Flood. See Rule 6.~~
- p. Debris Flow. Movement of mud, water, and other materials downward over sloping terrain. The flow typically consists of a mixture of soil, rock, woody debris and water that flows down steep terrain

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- g. Designation and Approval. Certification by formal action of the Board that technical information developed through scientific study using accepted engineering methods is suitable for local governments making land use decisions under statutorily authorized zoning powers
- r. Detailed Floodplain Information. Floodplain information prepared utilizing topographic base mapping, supplemental survey data, Hydrologic Analysis, and hydraulic calculations (at the time of the study) to arrive at precise Flood Hazard Information suitable for making land use decisions under statutorily authorized zoning powers
- p. *Development.* Any manmade change in improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, or drilling operations or storage of equipment or materials.
- q. *DFIRM Database (usually spreadsheets containing data and analyses that accompany DFIRMs).* The FEMA Mapping Specifications and Guidelines outline requirements for the development and maintenance of DFIRM databases.
- r. *Digital Flood Insurance Rate Map (DFIRM).* The FEMA digital floodplain map. These digital maps serve as "regulatory floodplain maps" for insurance and floodplain management purposes.
- s. *Elevated Building.* A non-basement building (i) built, in the case of a building in Zones A1—30, AE, A, A99, AO, AH, B, C, X and D, to have the top of the elevated floor above the ground level by means of pilings, columns (posts and piers) or shear walls parallel to the flow of the water, and (ii) adequately anchored so as not to impair the structural integrity of the building during a flood of up to the magnitude of the base flood. In the case of Zones A1—30, AE, A, A99, AO, AH, B, C, X, and D, "elevated building" also includes a building elevated by means of fill or solid foundation perimeter walls with openings sufficient to facilitate the unimpeded movement of flood waters.
- t. *Existing Manufactured Home Park or Subdivision.* A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured 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 the effective date of the Floodplain Management Regulations adopted by the City.
- u. *Expansion to Existing Manufactured Home Park or Subdivision.* The preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets and either final site grading or the pouring of concrete pads).
- v. *Federal Register.* The official daily publication for Rules, proposed Rules, and notices of Federal agencies and organizations, as well as executive orders and other presidential documents.
- w. *FEMA.* The Federal Emergency Management Agency, the agency responsible for administering the National Flood Insurance Program.
- x. FEMA Risk Mapping Assessment and Planning (Risk Map) Technical References, Guidelines and standards for Flood Risk Analysis and Mapping Activities. FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping, and associated resources, define the implementation details for statutory and regulatory requirements for NFIP mapping
- x. *Flood or Flooding.* A general and temporary condition of partial or complete inundation of normally dry land areas from:
1. The overflow of water from channels and reservoir spillways;
 2. The unusual and rapid accumulation or runoff of surface waters from any source; or

Commented [TP2]: Both of these definitions are not in the new regulation. Lets discuss

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3. Mudslides or mudflows that occur from excess surface water that is combined with mud or other debris that is sufficiently fluid so as to flow over the surface of normally dry land areas (such as earth carried by a current of water and deposited along the path of the current).

- y. Flood Control Structure. A physical structure designed and built expressly or partially for the purpose of reducing, redirecting, or guiding Flood flows along a particular waterway.
- z. Flood Hazard Information. Floodplain Maps, profiles, and other related information for Flood hazard areas that have been Designated and Approved by the Board. See Rule 5
- y. Flood Insurance Rate Map (FIRM). An official map of a Community, on which the Federal Emergency Management Agency has delineated both the Special Flood Hazard Areas and the risk premium zones applicable to the Community. A FIRM is the official FEMA Flood map for a Community for delineating both the 100-Year-Floodplain and 500-Year-Floodplain, the Floodway, and hazard zone designations applicable to the Community.
- z. Flood Insurance Study (FIS). The official report provided by the Federal Emergency Management Agency. The report contains the Flood Insurance Rate Map as well as flood profiles for studied flooding sources that can be used to determine Base Flood Elevations for some areas. A FEMA FIS is a compilation and presentation of Flood hazard data (information and maps) for watercourses, lakes, and other sources of Flood hazard within a Community for the NFIP. The FIS report contains detailed Flood elevation data in Flood profiles and data tables.
- aa. *Floodplain or Flood-Prone Area.* Any land area susceptible to being inundated as the result of a flood, including the area of land over which floodwater would flow from the spillway of a reservoir.
- bb. *Floodplain Administrator.* The City Engineer, who is the City official designated to administer and enforce the floodplain management regulations.
- cc. *Floodplain Development Permit.* A permit required before construction or development begins within any Special Flood Hazard Area (SFHA). If FEMA has not defined the SFHA within the City, the City shall require permits for all proposed construction or other development in the City including the placement of manufactured homes so that it may determine whether such construction or other development is proposed within flood-prone areas. Permits are required to ensure that proposed development projects meet the requirements of the NFIP and this Subsection.
- dd. *Floodplain Management.* The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works and floodplain management regulation. The operation of an overall program of corrective, preventive, and maintenance measures for reducing potential Flood risk and associated damage, including, but not limited to, zoning or land-use regulations, Flood mitigation measures, and emergency preparedness plans.
- ee. *Floodplain Management Regulations.* Zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as a floodplain ordinance, grading ordinance and erosion control ordinance) and other applications of regulatory police powers. The term describes such state or local regulations, in any combination thereof, which provide standards for the purpose of flood damage prevention and reduction. The term describes state/local regulations that provide standards for Floodplain preservation and potential Flood risk reduction to life, safety, health and property
- ff. Floodplain Maps. Maps that show in a plan view the horizontal boundary of Floods of various magnitudes or frequencies. Such maps include, but are not limited to, Flood

Hazard Boundary Maps (FHBM), and Flood Insurance Rate Maps (FIRMs) published by FEMA, Flood Prone Area Maps published by the U.S. Geological Survey (USGS), Flooded Area Maps published by the U. S. Army Corps of Engineers (USACE), Floodplain Information Reports published by the CWCB or others, Flood Hazard Area Delineation studies (FHADs) published by the Urban Drainage and Flood Control District (UDFCD) a/k/a the Mile High Flood District, and other locally adopted Floodplain Studies and master plans.

- gg. Floodplain Studies. A formal presentation of the study process, results, and technical support information developed for Floodplain Maps
- ff. *Flood Control Structure.* A physical structure designed and built expressly or partially for the purpose of reducing, redirecting or guiding flood flows along a particular waterway. These specialized flood modifying works are those constructed in conformance with sound engineering standards.
- gg. *Floodproofing.* Any combination of structural and/or non-structural additions, changes or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.
- hh. *Floodway (Regulatory Floodway).* The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. The Colorado statewide standard for the designated height to be used for all newly studied reaches shall be one-half (1/2) foot (six (6) inches). Letters of Map Revision to existing floodway delineations may continue to use the floodway criteria in place at the time of the existing floodway delineation. The Channel of a river or other watercourse and the adjacent land areas that must be kept free of obstructions in order to discharge the Base Flood without cumulatively increasing the water surface elevation more than a designated height
- ii. *Freeboard.* The vertical distance in feet above a predicted water surface elevation intended to provide a margin of safety to compensate for unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood such as debris blockage of bridge openings and the increased runoff due to urbanization of the watershed.
- jj. *Functionally Dependent Use.* A use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.
- kk. *Highest Adjacent Grade.* The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.
- ll. *Historic Structure.* Any structure that is:
1. Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
 2. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary of the Interior to qualify as a registered historic district;
 3. Individually listed on the state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of Interior; or

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4. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

i. By an approved state program as determined by the Secretary of the Interior;
or

ii. Directly by the Secretary of the Interior in states without approved programs.

mm. Geographic Information Systems (GIS). Computer software that utilizes databases and terrain mapping to store and display spatial and tabular data, such as floodplains, as layers (e.g. political boundaries, roadways, structures, topographic information, land use) for natural resource management and other uses.

nn. Hydraulic Analysis. The determination of Flood elevations, depths, and velocities for various storm frequencies/events based on a scientific analysis of the movement and behavior of floodwaters in Channels and overbank areas through a Basin or watershed.

oo. Hydrologic Analysis. The computation of the hydrograph, peak rate of flow, or discharge in cubic feet per second, for various storm frequencies/events for streams, Channels, or watersheds based on a scientific analysis of the physical process resulting in precipitation runoff amounts at specific locations

mm. Letter of Map Revision (LOMR). FEMA's official revision of an effective Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM), or both. LOMRs are generally based on the implementation of physical measures that affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective Base Flood Elevations (BFEs) or the Special Flood Hazard Area (SFHA). An official revision issued by FEMA to modify the currently effective FIRM and FIS. Based on supporting technical documentation, it is issued by FEMA for changes to Flood hazard potential, Flood zones, Flood hazard delineations, and corresponding Flood elevations.

nn. Letter of Map Revision Based on Fill (LOMR-F). FEMA's modification of the Special Flood Hazard Area (SFHA) shown on the Flood Insurance Rate Map (FIRM) based on the placement of fill outside the existing regulatory floodway. FEMA's official determination document supporting a revision to the 100-Year-Floodplain, also known as the "Special Flood Hazard Area (SFHA)" or high risk Flood zone shown on the effective FIRM based on the placement of fill outside the effective regulatory Floodway. The determination is based on either the lowest adjacent grade or Lowest Floor relative to the effective BFE or 100-Year water surface elevation. This type of revision does not physically change the SFHA, but provides the property owner an official document verifying the property or building is above the regulatory Flood elevation at that location

oo. Levee or Levee System. A manmade embankment, usually earthen, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding. For a levee structure to be reflected on the FEMA FIRMs as providing flood protection, the levee structure must meet the requirements set forth in 44 CFR 65.10. A man-made structure or land feature (or series of structures or land features) designed and operated, wholly or in part, for the purpose of containing, controlling, or diverting the flow of water to reduce Flood risk potential for areas on the landward side of the Levee or Levee System

pp. Levee System. A flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices.

qq. Lowest Floor. The lowest floor of the lowest enclosed area (including basement). Any floor used for living purposes which includes working, storage, sleeping, cooking and

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eating, or recreation or any combination thereof. This includes any floor that could be converted to such a use such as a basement or crawl space. The lowest floor is a determinate for the flood insurance premium for a building, home or business. An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area, is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Section 60.3 of the National Flood Insurance Program regulations. The lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, useable solely for parking of vehicles, building access, or storage in an area other than a basement area is not considered a building's lowest floor. Provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of 44 C.F.R. § 60.3. See Rule 17.

rr. Low Impact Development (LID). Development design/construction strategy that maintains the predevelopment hydrologic regime to the extent possible at the development site. The goal of LID is to mimic the natural runoff hydrograph as much as practicable in terms of magnitude, frequency, duration, timing, and rate of change of stream flows. LID focuses on small scale stormwater retention and detention, reduced impervious areas, and increased runoff periods.

rr. *Manufactured Home.* A structure, transportable in one (1) or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. The term manufactured home does not include a recreational vehicle.

ss. *Manufactured Home Park or Subdivision.* A parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale.

tt. *Mean-Sea-Level.* For purposes of the National Flood Insurance Program, the North American Vertical Datum (NAVD) of 1988 or other datum, to which Base Flood Elevations shown on a Community's Flood Insurance Rate Map are referenced.

uu. *Material Safety Data Sheets (MSDS).* A form with data regarding the properties of a particular substance. An important component of product stewardship and workplace safety, it is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner, and includes information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill-handling procedures.

vv. Mitigation. The process of preventing disasters or reducing impacts of related hazards. Structural Mitigation, includes, but is not limited to, Flood proofing structures, diverting floodwaters, detention ponds, floodwalls or Levees. Nonstructural Mitigation includes, but is not limited to, education, planning, and design of Flood prevention measures, emergency preparedness plans, elevating or relocating structures, purchasing property for open space, and/or early Flood warning detection systems

ww. Model Backed Approximate Flood Elevation. The 100-Year-Flood water surface elevation resulting from a hydraulic model used to determine an Approximate Floodplain.

vv. *National Flood Insurance Program (NFIP).* FEMA's program of flood insurance coverage and floodplain management administered in conjunction with the Robert T. Stafford Relief and Emergency Assistance Act. The NFIP has applicable Federal regulations promulgated in Title 44 of the Code of Federal Regulations. The U.S. Congress established the NFIP in 1968 with the passage of the National Flood Insurance Act of 1968.

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- ww. **New Manufactured Home Park or Subdivision.** A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured 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 Flood Plain Management Regulations adopted by the City.
- xx. Notice of Non Compliance Written notification notifying a Community or person that the CWCB has discovered potential violations of these Rules.
- xx. **No-Rise Certification.** A record of the results of an engineering analysis conducted to determine whether a project will increase flood heights in a floodway. A No-Rise Certification must be supported by technical data and signed by a registered Colorado Professional Engineer. The supporting technical data should be based on the standard step-backwater computer model used to develop the one-hundred-year floodway show on the Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM).
- yy. Post Wildfire Hydrology. Methodologies and calculations developed to account for the increased stormwater runoff following forest fires. Post-wildfire hydrology is typically evaluated every 3 to 5 years to assess the need for further revision based on watershed recovery, forest re-growth, and other factors.
- yy. Provisionally Accredited Levee A temporary FEMA Levee designation option for previously accredited Levees or Levee Systems recognized on a FIRM that allows mapping for an area while affording time for a Levee owner or Community to provide data and documentation demonstrating the Levee still meets requirements set forth in 44 C.F.R § 65.10. A PAL notation on the FIRM indicates that the Levee owner has signed and submitted an agreement to FEMA to provide documentation of the structure's compliance under NFIP regulations within a specified period of time. As a result, FEMA has provisionally accredited the Levee (for a defined period of time), and that any designation of existing Zone X (shaded) areas due to Flood hazard reduction from a 1-percent- annual-chance-Flood on an effective FIRM (landward of the Levee) is also provisional
- yy. **Physical Map Revision (PMR).** FEMA's action whereby one (1) or more map panels are physically revised and republished. A PMR is used to change flood risk zones, floodplain and/or floodway delineations, flood elevations, and/or planimetric features.
- zz. **Recreational Vehicle.** A vehicle which is: (a) built on a single chassis; (b) four hundred (400) square feet or less when measured at the largest horizontal projections; (c) designed to be self-propelled or permanently towable by a light duty truck; and (d) designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel or seasonal use.
- Aaa. Regulatory Floodplain. In Colorado the Regulatory Floodplain is the extents of the area subject to inundation by the 100-Year-Floodplain that have been Designated and Approved by the Board, unless a Community voluntarily elects to regulate to a 500-Year-Flood standard for certain circumstances.
- Bbb. Residual Risk. The Flood risk (probability of capacity exceedance or failure and the associated consequences) that remains after a Flood risk management or Mitigation measure has been implemented.
- aaa. **Special Flood Hazard Area.** The land in the floodplain within a Community subject to a one (1) percent or greater chance of flooding in any given year, i.e., the one-hundred-year floodplain. Special Flood Hazard Area means an area having special Flood, mudslide (i.e. mudflow), or Flood-related erosion hazards, and show on a Flood Hazard Boundary Map or FIRM as Zone A, AO, A1-30, AE, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, A99, AH.

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ccc. Stream Alteration Activity. Any manmade activity within a stream or Floodplain that alters the natural Channel, geometry, or flow characteristics of the stream.

bbb. *Start of Construction.* The date the building permit was issued, including substantial improvements, provided that the actual start of construction, repair, reconstruction, rehabilitation, addition, placement or other improvement was within one hundred eighty (180) days of the permit date. The actual start means the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, installation of piles, construction of columns or any work beyond the stage of excavation or the placement of a manufactured 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 a building, whether or not that alteration affects the external dimensions of the building.

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

ddd. *Substantial Damage.* Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed fifty (50) percent of the market value of the structure just prior to when the damage occurred.

eee. *Substantial Improvement.* ~~Any reconstruction, rehabilitation, addition or other improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure before the start of construction of the improvement. The value of the structure shall be determined by the local jurisdiction having land use authority in the area of interest. This includes structures which have incurred substantial damage regardless of the actual repair work performed. The term does not however, include either:~~

1. ~~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 conditions; or~~
2. ~~Any alteration of an historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.~~

Any reconstruction, rehabilitation, addition, or other improvement of a structure, 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 that have been Substantially Damaged, regardless of the actual repair work performed. The term does not, however, include either: 1) 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 Community and which are the minimum necessary to assure safe living conditions; or 2) Any alteration of a "historic structure," provided that the alteration will not preclude the structure's continued designation as a "historic structure."

fff. *Threshold Planning Quantity (TPQ).* A quantity designated for each chemical on the list of extremely hazardous substances that triggers notification by facilities to the State that such facilities are subject to emergency planning requirements.

ggg. *Variance.* A grant of relief from the requirements of this Subsection when specific enforcement would result in unnecessary hardship. A variance, therefore, permits construction or

development in a manner that would otherwise be prohibited by this Subsection. (For full requirements see Section 60.6 of the National Flood Insurance Program regulations.)

hhh. *Violation.* The failure of a structure or other development to be fully compliant with the City's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance with Section 60.3(b)(5), (c)(4), (c)(10), (d)(3), (e)(2), (e)(4) or (e)(5) of the National Flood Insurance Program regulations is presumed to be in violation until such time as that documentation is provided.

Ggg. Topography. Configuration (relief) of the land surface elevation; the graphic delineation or portrayal of that configuration in map form, as by lines of constant elevation called contour lines.

Hhh. Use Change. Any change in the primary use of a facility or unimproved land.

iii. Water Surface Profile. A graph that shows the relationship between the vertical elevation of the top of the floodwater and of the streambed with the horizontal distance along the stream alignment.

iii. *Water Surface Elevation.* The height, in relation to the North American Vertical Datum (NAVD) of 1988 (or other datum, where specified), of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

(Rule 17. Incorporation by Reference:

A. The following rules, regulations, standards, and guidelines are hereby incorporated by reference:

(1) FEMA Risk Mapping, Assessment and Planning (Risk MAP) Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities, December 1, 2020, available at <https://www.fema.gov/flood-maps/guidance-reports/guidelines-standards>, including but not limited to the following specific guidance documents:

a. *Guidance for Flood Risk Analysis and Mapping: Ice Jam Analyses and Mapping;*

b. *Guidance for Flood Risk Analysis and Mapping: Levees; and*

c. *Guidance for Flood Risk Analysis and Mapping: Dams/Reservoirs and Non-Dam Features.*

(2) FEMA National Flood Insurance Program, 44 C.F.R. §§ 59, 60, 65, 70, and 72, May 13, 2021, available at https://www.ecfr.gov/cgi-bin/text-idx?SID=504ee2bfc731d90f6be69c8f09fd0b3c&mc=true&tpl=/ecfrbrowse/Title44/44CIsu_bchapB.tpl.

(3) The United States Environmental Protection Agency Superfund, Emergency Planning, and Community Right-to-Know Programs, Designation, Reportable Quantities, and Notification Regulations, 40 C.F.R. § 302, May 13, 2021, available at <https://www.ecfr.gov/cgi-bin/text-idx?node=pt40.30.302&rgn=div5>.

(4) The Occupational Safety and Health Administration Occupational Safety and Health Standards Regulations, 29 C.F.R. § 1910, May 13, 2021, available at <https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=13981877314c1c75ef4ee8c5652c8449&ty=HTML&h=L&mc=true&n=pt29.5.1910&r=PART>.

(5) The Colorado Office of the State Engineer Rules and Regulations for Dam Safety and Dam Construction Materials, 2 CCR 402-1, January 1, 2020, available at <https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=8426&fileName=2%20CCR%20402-1>.

(1) FEMA Policy No. 104-008-03: Floodplain Management Requirements for Agricultural Structures and Accessory Structures, February 2020, available at https://www.fema.gov/sites/default/files/2020-08/fema_floodplain-management_agriculture-accessory-structures_2020.pdf.

B. These rules, regulations, standards, and guidelines in subparagraphs (1)-(6) of Rule 17.A. are hereby incorporated by reference by the Board and made a part of these Rules. Materials in these Rules, which are incorporated by reference are limited to those materials in existence as of the effective date of these revised Rules and do not include later amendments to or editions of such rules, regulations, standards, and guidelines. The material incorporated by reference is available for public inspection during regular business hours at the office of the Colorado Water Conservation Board, 1313 Sherman Street, Room 718, Denver, CO 80203 or may be examined at any state or federal publications depository library, or on the FEMA or CWCB website.

Ord. No. 19-2018 , § 2(Exh. A), 8-2-2018; Ord. No. 15-2020 , § 2(Exh. A), 7-2-2020; Ord. No. 21-2020 , § 3, 9-17-2020; Ord. No. 3-2021 , § 2(Exh. A), 5-20-2021)

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(Supp. No. 25)



APPROVED MINUTES
CITY OF GLENWOOD SPRINGS
Planning and Zoning Commission
Regular Meeting
APRIL 26, 2022
Council Chambers, First Floor
101 W. 8TH STREET
6:00 PM

1 Roll Call

Present: Commissioners Weimer, Hardcastle, Connerton, Shaver, Waller, White, Cipperly.

Also Present: Asst. City Manager Jenn Ooton, Asst. City Attorney Richard Peterson, Asst. Community Development Director Hannah Klausman, City Engineer Terri Partch, Planner I Emery Ellingson.

2 Receipt of the Minutes

- A. Draft Minutes March 22, 2022 Planning and Zoning Commission Meeting
Commissioner Waller motioned to approve the minutes. Commissioner Connerton seconded the motion.
Chair Shaver asked about the mention of adding windows to the east side of the Parks and Recreation Building and whether that made it into the motion. Staff added that the windows aspect would be double checked and added into the minutes if it was indeed part of the approved motion for the Location and Extent Application.

3 Comments from citizens appearing for items not on the agenda

No comments from the public.

4 Agenda Change

Chair Shaver asked for a motion to move item C under the New Items section to be considered first. Commissioner Weimer motioned to approve the agenda change. Commissioner Waller seconded the motion. Unanimously approved.

5 New Items

A. Code Amendments to Title 070.040 as it relates to Floodplain regulations

City Engineer, and City Floodplain administrator Terri Partch explained that these regulations are State initiated and are required in order for the City to maintain Floodplain compliance.

Commissioner Questions:

Are the floodplain maps changing?

Staff: No

What would a variance from the floodplain regulations look like?

Staff: We have never had a variance requested from a developer and likely variances of this nature would not be supported by staff.

Would any of these regulations be applied retroactively.

Staff: No, we will apply these when they go into effect after approval from City Council.

If these were applied, would Two Rivers Park have been able to be built.

Staff: Yes, we took those into consideration when designing Two Rivers Park.

What part of the Sensitive Area code is being changed.

Staff: Section 15 of 070.040 is the area of code that is being revised. Much of the language will remain the same. Staff clarified that section 24 relating to the high water setback will also be kept as part of the code.

Commissioner Hardcastle motions to approve, Seconded by Commissioner Cipperly.

Motion passes unanimously with a vote of 7-0.

B. Planning Item 66-21 Variance 727 Blake Avenue

Planner I Emery Ellingson presented the variance application to the Commission.

Commissioner Hardcastle asked if building commenced after a meeting with staff. Ellingson explained project was completed after correspondence between staff and applicant and that the project did not require a building permit due to size of structure being under 120 square feet.

Applicant James Shannon provided further explanation to the timeline of correspondence and construction including site visits. Applicant indicated that they received verbal approval to build the shed.

Commissioner Hardcastle asked how approval of this item could affect future variance applications and how to avoid a similar situation in the future.

Staff explained that the cooperation of the applicant in remedying the situation resulted in staff recommending approval and that staff would review an application differently if an applicant did not show good faith in complying with code.

Commissioner Shaver opened the item for public comment. No members of the public presented. Commissioner Shaver closed the item for public comment.

Commissioner White motioned to approve the Variance request at 727 Blake Avenue. Commissioner Hardcastle seconded the motion.

Commissioner White commented that construction like this happens frequently and commended the applicant for thoughtful conversations with staff.

Motion passes unanimously with a vote of 7-0.

C. Planning Item 82-21 Design Variance 1120 Palmer

Commissioner Waller disclosed that he is friends with the applicants. Commissioner White also disclosed that she is friends with the applicants. Both Commissioners stated they have no conflict of interest outside of knowing the applicant.

Planner I Emery Ellingson presented the design variance and administrative adjustment application to Commission.

Commissioner White asked why Code prohibits front loading garages in the Downtown Core, questioning if it was a safety issue or an aesthetic issue.

Staff explained the Code requirement addressed both safety and aesthetic concerns.

Commissioner White also asked how the administrative adjustment for height would impact surrounding properties such as view from the parcel to the rear of 1120 Palmer.

Staff explained that there is a Right of Way to the rear of the property to create distance and that the slope increase results in a grade differential that would not negatively impact the viewshed of any potential development to the rear of 1120 Palmer.

Commissioner Hardcastle asked if the current use was nonconforming to any degree.

Staff explained the current use is a trailer which is located within the front yard setback, there is a shed in the side setback, and the existing curb cut are all non-conforming aspects of the property.

Commissioner Cipperly asked for further clarification on covered porches in front yard setbacks.

Staff explained the an open porch can extend into the front yard setback and that a porch can be covered with a roof but must be an open porch.

Commissioner Waller asked about staff review process for determining how the 3:12 pitch fit in with the neighborhood and how that standard would be applied elsewhere in the Downtown Core.

Staff explained a future similar variance application would be evaluated according to neighborhood context on the block face.

Commissioner Shaver asked how the project meet the design requirement for transition to existing residential.

Staff confirmed the proposed project met that design requirement for stepping down to provide transition to existing residential.

Commissioner Shaver had additional questions on how the height was measured on the north and west elevations and if that measurement was taken from existing grade or finished grade.

Staff confirmed measurement taken from finished grade to midpoint of highest gable and provided additional information as to how height was measured.

Commissioner Connerton asked staff if the administrative adjustment would have been processed by staff if it had not been concurrent with variance applications. Staff confirmed that if not for the design variances, that the administrative adjustment would have been reviewed by staff.

Applicant Tim Cashel, 1120 Palmer provided additional information on the project.

Commissioner White asked which materials would be used on exterior of building. Cashel provided additional information.

Commissioner Cipperly had questions on locations of stairs, grading, and porch columns.

Commissioner Hardcastle asked the difference between proposed height and existing height as well as existing structure.

Cashel explained existing trailer was approximately 12' tall and proposed structure would be closer to 30' to midpoint of gable facing Palmer.

Hardcastle also asked if further excavation could be used to drop the height and Cashel explained that further excavation would likely still require an adjustment.

Chair Shaver opened the item to public comment. No members of the public presented for comment. Shaver closed the item to public comment.

Action Item 1. Commissioner Waller motioned to approve the design variance for front loading garages with findings and conditions on pages 14-17 of the staff report. Commissioner Connerton seconded the motion.

The applicant submitted two handwritten letters from neighbors in support of the project. Staff had not seen the letters and indicated they will be added to record of application.

Motion passes unanimously with a vote of 7-0.

Action Item 2. Commissioner Waller motioned to approved the design variance request for a roof pitch of less than 6:12 in the Downtown Core with findings and conditions on pages 14-17 of the staff report. Commissioner Connerton seconded the motion.

Commissioner Cipperly cited the finding that the adjacent properties have similar roofs.

Motion passes unanimously with a vote of 7-0.

Action Item 3. Administrative adjustment for building height.

Commissioner Waller motions to approve the adjustment for building height with findings and conditions on pages 14-17 of the staff report. Commissioner Cipperly seconded the motion.

Motion passes unanimously with a vote of 7-0.

6 Commissioner Comments

Commissioner Waller asked for an update on the Affordable Housing RFP.

Staff gave a brief overview of the Request for proposals that Habitat for Humanity responded to. on upcoming meeting for final Council approval of the project.

Commissioner Shaver complemented Emery Ellingson, Staff Planner on his work with short term rentals.

7 Director Comments

Director Ooton mentioned the upcoming Comprehensive Plan Steering committee meeting in May.

8 Adjournment

Meeting adjourned at 7:42 PM



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item:	Affordable/Workforce Housing Ballot Decision
Action Requested:	Decision related to whether to put a ballot question on the November ballot for workforce housing.
Department:	Economic and Community Development
Presented By:	Jenn Ooton
Strategic Goals:	Protect and Preserve our Quality of Life
Background Info:	The Glenwood Community Housing Coalition will be meeting Monday, August 1 to discuss a recommendation to City Council. Staff will circulate any deliverables that come out of that meeting to Council.
Issues:	September 9 is the last day for the County to certify the ballot content.
Fiscal Impact:	Unknown.
Legal Review:	N/A
Staff Recommendation:	Staff defers to Council.



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item: Urban Forestry and Beetle Kill

Action Requested: NA

Department: Parks & Recreation

Presented By: Brian Smith

Strategic Goals: Preserve and Improve Infrastructure
Protect and Preserve our Quality of Life
Ensure Public Safety

Background Info: Trees provide essential ecosystem and economic benefits such as energy cost savings, storm water absorption, and carbon sequestration. Climate change is now causing major symptoms in our ecosystem with a drastic increase in disease and parasites and trees and vegetation dry out. Glenwood Springs trees are being threatened by Ips Beetles. They develop under the bark and produce girdling tunnels that can cause dieback and kill trees. It is vital that a proper response is coordinated with the public to protect our urban canopy.

Information included in the packet:

- The grant program draft outline
- Tree species guide draft
- Tree analytics (canopy count and health – outdated inventory count, currently being updated)
- A draft outline for an urban forestry board
- The first 20 pages from the updated Urban Forestry Management plan
- Immediate forestry needs budget list (not a full budget)
- Several Ips beetle flyers (Pinion Ips is most relevant)

Issues: Ips Beetle is quickly spreading throughout the city from both western and eastern neighboring towns, killing trees around the community. Dying and dead trees are a huge fire risk. Infected trees threaten other trees and could devastate our urban canopy if left unmitigated. Minimizing infections can help to minimize costs for treatment and prevent spread. This issue will likely persist as the effects of climate change worsen.

Fiscal Impact: Unknown

Legal Review: NA

Staff Recommendation: NA



Urban Forestry Assistant Program

Grant Description:

Glenwood Springs is in need of a Hazardous Tree Services Grant Program to provide aid to Glenwood Springs residents for assessment, removal, pruning, or treatment of dead or dying hazard trees which qualify as posing significant risk. Since the inception of the tree ordinance requiring homeowners to be responsible for ROW trees, the City has seen many residents come forward with requests for tree care and removal assistance. Unfortunately, with the requests coming in to a variety of departments and with the changes in leadership, many citizens have expressed confusion as to when and why the city provides assistance. It is Parks' recommendation that a grant program be established to help mitigate these issues and manage these requests.

Size of the Grant: up to \$1,500 MATCH.

Qualifying Details: Candidacy of trees for the program is to be determined by, and at the full discretion of the city Arborist and/or Urban Forestry Board based via a free assessment and list of qualifying factors.

Award Details:

Option A) Following the assessment, qualifying applicants must agree to and remit payment for their portion for immediate tree removal, pruning, OR treatment services. All services will be arranged by a city arborist and/or Urban Forestry Board representative. Stump removal is not included in the grant program and is a separate cost incurred by the property owner.

Option B) Following the assessment, qualifying applicants must agree to and schedule immediate tree removal, pruning, OR treatment services with an approved contractor (approved by city arborist/Urban Forestry Board). Following tree removal, pruning, OR treatment, and submission of a receipt, grant money in the predetermined amount will be paid as a match to the qualifying property owner. Stump removal is not included in the grant program and is a separate cost incurred by the property owner.

Funding Information: A reimbursement of 50% up to \$1,500 for removal, 50% up to \$1,000 for pruning (for hazard or health), OR 50% up to \$250 for treatment may be given.

Eligibility Criteria:

- Available to City of Glenwood Springs residential and commercial property owners only.
- Only one tree and type of service per property per two-year period.
- Tree must be assessed by a City employed or approved certified arborist to determine eligibility. ISA standards will be used to determine qualifying level of need for assistance..

⚠️ YOUR TREES ARE AT RISK ⚠️

Glenwood Springs trees are being threatened by Ips Beetles. They develop under the bark and produce girdling tunnels that can cause dieback and kill trees.



Why is this important?

- Trees provide essential ecosystem and economic benefits such as energy cost savings, storm water absorption, and carbon sequestration.
- Dying and dead trees are a huge fire risk.
- Infected trees threaten other trees and could devastate our urban canopy if left unmitigated.
- Minimizing infections can help to minimize costs for treatment and prevent spread.
- This issue will likely persist as the effects of climate change worsen.

Symptoms of Ips Beetle Infestation

- Yellowish- or reddish-brown dust accumulating in bark crevices or around the base of the tree
- Tree discoloration ("fade"); dieback at the top of the tree
- Woodpeckers feeding on the trunk or larger branches (they're a common predator of the Ips beetle)
- Small round holes in the bark. You'll usually see these after the beetles have already done their damage and exited the tree.

Trees at Risk:

Newly transplanted trees, trees suffering root injuries from construction, trees surrounded by large breeding populations of Ips beetles, and trees experiencing climate stressors.



TAKE ACTION

Remember – property owners are responsible for trees on your property AND in the adjacent right-of-way!

- Closely monitor spruce and pine trees for infection. Notify the City immediately if you suspect your tree is infected.
- Wait until temperatures drop to cut down trees to limit the spread of beetles.
 - This winter, cut down infested trees and remove infested logs from your property and have them debarked or chipped.
- Ensure trees are properly irrigated. Adequately, but not excessively, water on your scheduled watering days.
- Store freshly cut branches or logs, or stack unseasoned firewood, a mile or more away from susceptible trees as it will attract the beetles.
 - Cover piles of cut wood in a minimum of 6 mil. plastic and seal edges with soil. Leave for two to four weeks to ensure solarization.
- Consider preventive insecticide applications before infestation. Treatment is only effective if the tree has not yet been attacked. Plan to treat trees next year, before beetles emerge (late February or early March).



← For more information and resources visit www.cogs.us/beetles

Contact: Heather Listermann, Parks & Recreation
970.471.4063 | heather.listermann@cogs.us



TREES & SHRUBS

Ips Beetles

no. 5.558

by W. Cranshaw and D.A. Leatherman¹

Quick Facts...

Ips is a common group of bark beetles that infests pine and spruce trees.

Ips beetles rarely attack healthy trees. Most problems with ips occur to newly transplanted pines or when plants are under stress.

Several generations of ips can occur in a season.

There are 11 species of ips beetles found in Colorado.

Ips beetles, sometimes known as “engraver beetles,” are bark beetles that damage pine and spruce trees. They develop under the bark and produce girdling tunnels that can cause dieback and kill trees. Eleven species of ips beetles occur in Colorado (see Table 1).

Ips beetles are generally not considered as destructive or aggressive as bark beetles in the genus *Dendroctonus* (mountain pine beetle, spruce beetle, Douglas-fir beetle). Normally ips beetles limit their attacks to trees that are in decline due to root injuries, wounding, or other stresses. However, under widespread conditions which allow improved survival and large population build-ups, ips beetles are a considerable threat to living trees. Two factors that recently contributed to ips beetle problems in Colorado include: prolonged drought stress; and the creation of freshly-cut wood (which is a preferred breeding site) from forest homeowner efforts to reduce wildfire hazards.

Ips beetles are small (1/8 to 3/8 inch long), reddish-brown to black beetles. They have a pronounced cavity at the rear end, which is lined with three to six pairs of tooth-like spines, depending on the species. The latter feature distinguishes them from other bark beetles (see Figure 1).

Symptoms of Ips Beetle Injury

As adult ips beetles enter trees and tunnel, a yellowish- or reddish-brown boring dust is produced and accumulates in bark crevices or around the base of the tree. When the larval tunnel, affected parts of the tree discolor (“fade”) and die. These symptoms may be limited to parts of the tree, such as a single branch or the top. However unlike mountain pine beetle, infestation by ips beetles does not necessarily mean the whole tree will die, but over time, attacks may progress as later generations “fill” the tree and then ultimately the host can die.

Small round holes in the bark of infested trees indicate the beetles have completed development in that part of the tree and the adults have exited. The presence of these holes peppering the bark show the beetles have moved to another part of the same tree or to neighboring trees.

Woodpeckers are common predators of ips beetles. Their presence may also

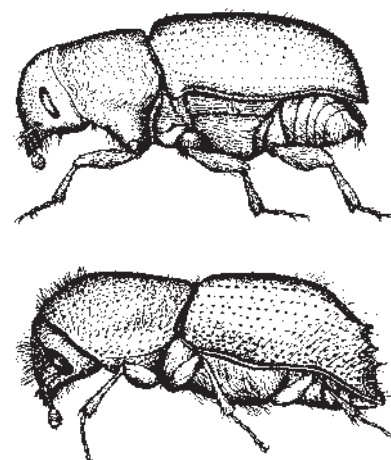


Figure 1: Adult *Dendroctonus* (top) versus *Ips* (bottom). Note gradually curved wing of *Dendroctonus*. Actual size of *Dendroctonus* from 1/8 to 1/3 inch, *Ips* 1/8 to 3/8 inch.

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Table 1. Common ips beetles (*Ips* species) affecting pines and spruce in Colorado.

Species	Hosts	Comments
<i>Ips hunteri</i>	Spruce	This is a common species affecting Colorado blue spruce in landscape settings. Upper portions of the tree are typically infested first.
<i>Ips pilifrons</i>	Spruce	A forest species often called the “spruce ips”; tends to infest the upper part of fallen trunks.
<i>Ips pini</i>	Ponderosa, lodgepole	The most common species associated with other pines in Colorado.
<i>Ips knausi</i>	Ponderosa pine	Common at base of trunk and in fresh stumps.
<i>Ips calligraphus</i>	Ponderosa pine	Largest ips species in Colorado; often in main trunk.
<i>Ips confusus</i>	Piñon, rarely other pines	Periodically kills piñons over large areas.
<i>Ips latidens</i>	3- and 5-needled pines	
<i>Ips borealis</i>	Engelmann spruce	
<i>Ips integer</i>	primarily Ponderosa pine	
<i>Ips woodi</i>	Limber pine	
<i>Ips mexicanus</i>	Lodgepole and limber pines	



Boring dust at the base of a pine tree. Reddish boring dust is caused by ips beetles. The whitish dust is from ambrosia bark beetles.



Tunneling by *Ips hunteri* in blue spruce.

Note: Concentrations of insecticides used to control bark beetles are often considerably greater than those used for insects on foliage. To avoid needle burning, try to limit the application to the bark, particularly when using liquid (emulsifiable concentrate) formulations that have increased risk of causing plant injuries.

indicate bark beetle activity.

Woodpeckers often remove the tree bark in an effort to obtain this food source. This habit results in ragged holes or patches of missing bark on the tree.

Generalized Life History

Adults overwinter under the bark or in surrounding litter at the tree base. They begin to attack weakened trees in the spring. Initially the male enters the tree, constructs a cavity under the bark known as the “nuptial chamber.” Females are attracted to the tree by chemicals (pheromones) produced by the male.

After mating, females (usually three) excavate egg galleries off the central chamber. The tunnels produced by the adults appear as a “Y”- or “H”-shaped pattern. These galleries are mostly free of boring dust, which is pushed out of the entrance hole as the adult beetles work. These “cleared out” galleries have a different appearance than the debris-filled galleries of *Dendroctonus*. Eggs are laid along the gallery and young larvae soon hatch and begin tunneling smaller lateral galleries that lightly etch the sapwood. They are small grubs, about 1/4 inch long when mature, white to dirty gray, legless, with dark heads. In Colorado, two to four generations of these beetles usually develop per year.

Management

To prevent ips beetle attacks, use practices that promote vigorous tree growth. Properly siting trees in landscape plantings is important to allow optimal growing conditions as the tree matures. Adequate – but not excessive – water may be needed. Root injuries caused by mechanical damage, compaction, or disease should be avoided.

Freshly-cut material that results from pruning or thinning practices (called “slash”) should be removed from the vicinity of valuable trees. Never stack green or infested coniferous wood next to living coniferous trees. Such green woody material should be chipped or treated so that the inner bark area is destroyed. Ips larvae will not survive standard chipping or debarking treatments. Other treatments could include scattering (as opposed to piling) slash to promote rapid drying.

Trees at risk of ips attack include newly transplanted trees, trees suffering root injuries from construction, and trees surrounded by large breeding populations of ips beetles. These types of trees can benefit from preventive insecticide applications.

Insecticides are used as drenching preventive sprays on the trunks and larger branches. These insecticides need to be applied prior to adult beetle infestation. (Remember that overwintering beetles begin emerging in spring as soon as daytime temperatures consistently reach 50 F to 60 F.) However, timing can be difficult to determine since ips beetles can have multiple, overlapping generations and life cycles. Adults have been observed entering trees during warm days as early as late-February on through November. Because of this extended activity, two treatments (early spring and summer) may be needed to protect trees during high-risk conditions.



Top dieback of spruce from drought stress and ips attack.



Storing cut firewood near susceptible trees greatly increases the risk of ips beetle attack.

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This fact sheet was produced in cooperation with the Colorado State Forest Service.

¹W. Cranshaw, Colorado State University Cooperative Extension entomologist and professor, bioagricultural sciences and pest management; and D.A. Leatherman, Colorado State Forest Service entomologist.

Insecticides used to prevent ips include either permethrin or carbaryl (Sevin) as the active ingredient. There are many products currently on the market containing these active ingredients. Follow the manufacturer's recommendation for the proper rate for bark beetle treatment. Bark beetle applications at the labeled rate should provide at least three months control of ips beetles.

When a preventively-sprayed tree later dies of beetle attack, it is usually for one of the following reasons: 1) the tree was sprayed after it was attacked; 2) the spray was applied at too dilute a rate; 3) the entire bark surface of the susceptible part of the tree was not sprayed; or 4) the material wore off and was no longer effective.

Insecticide applications are not needed when ips beetles do not pose a serious risk to healthy trees. Ips problems are often an issue for a few years, then lessen naturally to non-threatening levels. This is the normal condition in Colorado. A rule of thumb when deciding if preventive treatments are needed is to survey for infested groups of bark beetle-killed trees (as determined by dead foliage) within sight of the live trees in question. Also, transplants or recently disturbed trees in natural forest areas or near other known sources of ips may warrant protection. Tree value, of course, is always a consideration. There is often more interest in protecting high-value trees such as those around residences, golf courses, or in other highly visible settings.

No chemical treatment exists for trees or wood already infested by ips beetles. In rare cases where it is feasible to reduce the threat to live trees by killing beetles within infested trees before they exit, treatments involve bark removal, chipping the wood into small pieces, covering piles with a double-layer of 6-mil thick clear plastic sealed around the edges with soil to heat (solarize) the wood, or physical removal of infested material from the site to an area a mile or more from susceptible trees.



Ips confusus pitch tubes on infested pinyon pine trunk.



Ips pini egg galleries under bark of ponderosa pine trunk.

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QUICK GUIDE SERIES

FM 2020-6

Piñon Ips Bark Beetle



A northwest Colorado landowner points to an adult piñon ips beetle discovered making a gallery underneath piñon pine bark. Photo: Dennis Brock, for CSFS

The piñon ips beetle (*Ips confusus*) is a native Colorado insect with a notable ability to take advantage of environmental changes and spread rapidly. In the southwest part of the state, this insect kills more mature piñon pine trees than any other pest.

Colorado's weather patterns help create ideal conditions for many bark beetle populations to increase, including piñon ips. Oscillations between warm and dry spells throughout much of the state have become all too frequent. During periods of below average precipitation and warmer than average temperatures, trees become stressed from a lack of water. Stressed trees have a difficult time defending themselves against beetles and succumb to infestations easier than healthy

trees. As more trees become infested, beetle populations increase, resulting in widespread tree mortality.

Not only can piñon ips beetles attack stressed trees, they also can reproduce in any fresh, green, recently cut material over 1 inch in diameter, such as green firewood or piles of branches left on the ground after pruning or cutting live piñon trees. Paying attention to how wood is stored is of the utmost importance when considering beetle life cycles and mitigating risk.

Homeowners and landowners can play a crucial role in minimizing the spread of piñon ips by following the tips offered in this Quick Guide. Concentrated outbreaks can be addressed with a few simple actions that help keep populations of this insect in check.

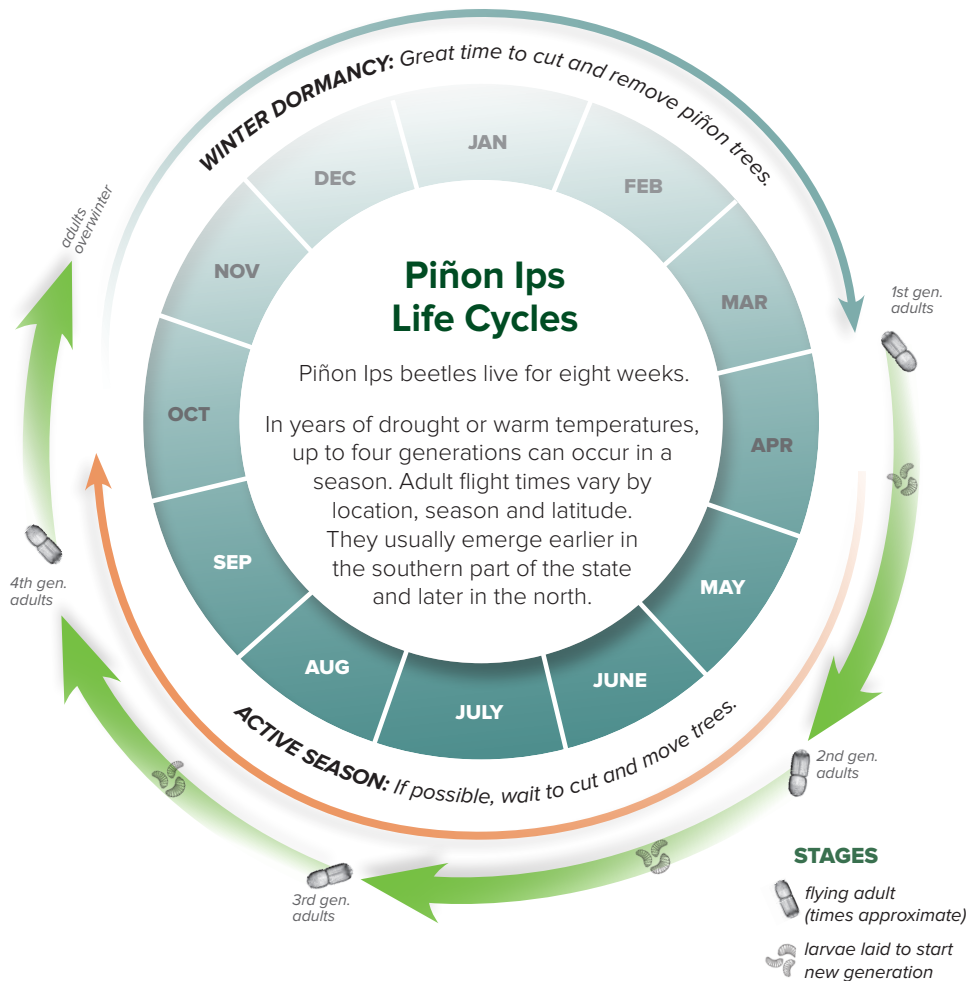
This Quick Guide is produced by the Colorado State Forest Service to promote knowledge transfer.



Piñon Ips beetle. Photo: Pest and Diseases Image Library, bugwood.org

QUICK FACTS

- » **IDENTIFICATION:** Piñon Ips bark beetles are often light to dark brown and small, about 4 millimeters long.
- » **ACTIVITY BEGINS:** once daytime temperatures are consistently above 50 degrees.
- » **ACTIVITY ENDS:** once daytime temperatures are consistently below 50 degrees.
- » Piñon Ips beetles prefer piñon and only rarely attack other pine species. They will not attack juniper (cedar) trees.
- » Ips is a common group of bark beetles that infests pine and spruce trees.
- » There are 11 species of Ips beetles in Colorado. Only *Ips confusus* specializes in attacking piñon pines here and around the southwestern United States.
- » All members of the Ips genus have spines along the ends of their wing covers (elytra).
- » Ips beetles rarely attack healthy trees. Most attacks occur to newly transplanted pines or when trees are under stress.
- » There are 45 species of Ips beetles worldwide, 31 of those are found in North America.



How Piñon Ips Attack

Piñon Ips beetles target piñon pines, which typically grow in harsh, low elevations below mixed-conifer/ponderosa pine forests of Colorado. Piñons often grow in proximity to juniper trees and lowland shrubs, where conditions are dry and precipitation fluctuations are normal.

These beetles are attracted to piñon trees with weakened defenses. Piñon Ips usually limit their attacks to trees that are in decline due to root injuries, wounding, compacted soil, winter damage, underwatering or overwatering. However, during high-stress environmental situations, such as drought, beetle populations can increase and pose a considerable threat, even to healthy trees. These beetles kill piñon trees by attacking in mass numbers, and they have to work fast because they only live for about eight weeks.

The trees die when adult beetles create galleries (tunnels) between the bark and wood of the trunk and branches, where they mate and lay eggs.

Piñon Ips beetle flight activity begins in early spring with an emergence of adults

that overwintered underneath the bark. This first generation infests stressed trees, freshly cut green logs or firewood, or any green branches removed after tree cutting (called slash). The smell of fresh piñon sap attracts the beetles.

Before piñon Ips die, they mate and lay eggs to ensure another generation will survive. Piñon Ips beetles are prolific breeders and can produce up to four generations a year.

Once hatched, larvae begin creating small galleries in the tree layers under the bark (called phloem), which provide the tree with water and nutrients. The larval galleries cut off nutrients and water supply to the whole tree. This kills the tree by slowly starving it to death.

During development, larvae increase in size. Once they grow into adult beetles and harden their exoskeleton, they chew their way out of the bark. These new adult beetles must seek live or recently cut green piñon tree material to survive — suitable material that has nutrients to sustain larval growth within its phloem.

Signs and Symptoms of an Infestation



When piñon Ips attack, needles throughout the tree fade quickly to a straw color, then red and brown as the tree dies. Photo: Luke Dittrich, CSFS



Pitch tubes are a sign the tree has tried to drown the piñon Ips beetle with sap as the insect bores into the tree. Photo: Kamie Long, CSFS

Fading Needles

Following a successful beetle attack on a piñon, needles fade from green to a straw or rust color. On infested trees, needles continue to die, turning red and eventually brown.

By the time a piñon appears to be dying, the beetles likely have already emerged, moved on and attacked a new tree. In dry years, it is not unusual for needles to start fading just weeks after infestation. But in years with adequate precipitation, needles may slowly fade for several months after attack.

Pitch Tubes

These are a sign the tree's defense system has attempted to flush the wound and drown the beetle as it enters the bark. Pitch tubes are small, thumbnail-sized clumps of sap that appear on the bark where the beetles attempted to or successfully entered the tree. They have a reddish hue from the sawdust the beetles create as they bore through the bark. Pitch tubes only appear if the tree has enough moisture and energy available to produce sap to defend itself during an attack.



Piñon Ips exit holes, at the top of this section of bark, are small and concise, like BB holes. The larger hole, at center, is indicative of woodpecker activity feeding on larvae underneath the bark. Photo: Kamie Long, CSFS



Piñon Ips bore through a tree's bark, creating tunnel-like galleries underneath. Photo: Jerald E. Dewey, USDA Forest Service, bugwood.org

Entry and Exit Holes

One easy way to tell if a tree is or was infested is to look for entry and exit holes in the bark. Entry holes can be accompanied by other signs, like pitch tubes and sawdust. Exit holes are nearly round and the size of a pinhead or BB pellet, made when adult beetles emerge from under the bark. If exit holes are present, even if the tree is still green, the beetles have likely emerged and flown to another tree.

Galleries

Another way to diagnose if a tree is infested with piñon Ips is by peeling a piece of bark off of the outside of the tree and looking for galleries in the inner bark (phloem and cambium). These characteristic tunnels are made by Ips adults and larvae underneath the bark, and usually form a Y or H shape. Piñon Ips galleries are typically free from boring dust created by their excavation, which sets Ips beetles apart from other bark beetles found in pine species.

Treatment and Prevention Tips

The best way to prevent Ips beetle attacks is to maintain a healthy forest. Thinning your forest, by spacing trees farther apart and removing those that are unhealthy or have dwarf mistletoe, may help increase individual tree health. Consult

your local CSFS forester for information.

If dying or recently killed piñon trees are detected, or Ips beetles identified, all surrounding green trees should be inspected to determine if the beetles have successfully attacked other piñons.

Currently infested trees are usually still green and should be promptly removed. It is important to remove trees with beetle larvae or pupae from the property before they emerge and attack other green piñon trees. (See section: *How to Handle Wood*).

Cutting Trees

- » Remove trees infested with piñon Ips as soon as they are identified.

- » To prevent colonization, ensure all material is dry (no green wood remaining) or removed from the site before late March.

- » When bark is cracking and splitting from the wood, the tree is dry and beetles have already left. This wood is safe to move.

- » Remove dead trees as time and money allow for wildfire hazard reduction and aesthetics. This can be done any time of year since there is no sap produced to attract these beetles.

- » **BETWEEN APRIL AND OCTOBER:** Cutting during this time is not recommended unless personal safety is a concern. If green material must be cut when Ips beetles are most active, remove all material from site as quickly as possible (within days) and bury the stump to reduce chances of attracting beetles.

- » **IN OCTOBER AND NOVEMBER:** As daytime temperatures fall below 50 degrees, beetles are unlikely to search out new material. This is a good time to split and scatter wood larger than 4 inches in diameter and cut branches into short pieces, leaving it in sunny locations to encourage rapid drying. That's important because early next spring, beetles may still attack previously cut material that is still green.

- » **BETWEEN NOVEMBER AND FEBRUARY:** Winter is the beetle's inactive period and the best time to cut and remove infested green trees if beetle populations are high. Ensure any slash, chips or wood created is dry prior to beetle emergence in the spring.

- » Thin forests during winter months to allow for more water, nutrients and sunlight for each tree. Creating more space between trees improves individual tree health and reduces wildfire intensity.

Winter Watering

- » Watering favorite trees in the summer in periods of drought and also in winter months can help protect against tree stress.

- » Conifer trees release moisture through their needles all year long in a process called transpiration. When the soil is dry from lack of moisture (snow or rain), trees can become stressed.

- » During the winter, water favorite trees about once a month when there is no snow on the ground and the temperature is above 40 degrees. In some areas, this may only occur in the fall and early spring.

- » Apply water at the edge of the tree crown's drip line, where rain would drip off. This area is where most of the absorbing tree roots are located. The root system of piñon trees includes tap and spreading roots, which can reach deep and out to twice the height of the tree.

Spraying

- » Spray favorite trees with a preventive chemical at least two times per year to prevent bark beetle attack when beetle populations are high in the area.

Environmental and economic concerns around insecticide spraying exist, so homeowners must choose which trees to protect rather than treating large areas. Chemical treatments should never be applied on piñon trees that provide nuts for human consumption.

- » Treatment options may include external sprays or injections. Follow insecticide labels for application. Depending on the insecticide, multiple treatments per year may be needed.

- » Many products on the market contain ingredients necessary to kill bark beetles. Look at labels for active ingredients such as carbaryl, permethrin or bifenthrin.

- » Use insecticides as a drenching spray on the entire trunk and all branches greater than 1 inch in diameter. Follow the manufacturer's recommendation for bark beetle treatment.

- » Once a tree is infested, preventive insecticide treatments are ineffective and should not be used. Infested trees should be removed and disposed of properly.

Is The Wood Still Useable?



Once trees are identified as having a piñon Ips infestation, removing the wood should be done cautiously to avoid spreading the insect further. Cut material left at the base of live trees draws beetles in and allows them to overcome otherwise healthy trees. Move cut material at least 1 mile from any piñons. Photo: Austin Shelby, CSFS

Six Ways to Handle Infested Wood

Wood material infested with piñon Ips beetles should be handled cautiously, as should any previously cut green wood on a property. After cutting, piñon material may give off a scent that attracts beetles for up to six months.

Solar treatments, with or without clear plastic, are not effective at destroying the beetles, primarily because of their short life cycle.

Wood may be treated in the following ways to prevent this insect from spreading:

- 1. GRIND (MASTICATE) OR CHIP LOGS AND SLASH.** This destroys the larvae and quickly dries the slash, making it useless for beetle reproduction. Grinding and chipping should be done ideally in November or December, when beetles are dormant and the material will have time to dry before more beetles emerge the next spring. On larger acreages, professional mastication may be an economical method of treatment.
- 2. SPLIT AND SCATTER, DON'T STACK.** Wood larger than 4 inches in diameter should be split and scattered to encourage rapid drying before beetle flight resumes in the spring.
- 3. TRANSPORT GREEN MATERIAL** to a site that is farther than 1 mile from any piñon trees.
- 4. BURN INFESTED OR GREEN MATERIAL,** if burning regulations allow. Take care to remove cut green material from the site, instead of piling it, while beetles are active.
- 5. BURY THE MATERIAL** more than 8 inches in the soil.
- 6. DEBARK LARGE LOGS** with chainsaw attachments that assist stripping bark from logs. This exposes beetles to the elements.



Piñon wood that shows cracking, splitting and chipping bark is dry and safe to use. Photo: Adam Moore, CSFS

Piñon Ips beetles do not damage the wood inside a tree; it can still be used for lumber, firewood or other products once it has dried out. If bark is splitting or cracking, the wood is dry and safe to use.

If exit holes are present on standing dead trees, or all the needles have fallen off the tree, piñon Ips beetles likely have flown to another tree. Once beetles have left the tree, it can be removed any time of year and used for firewood or other purposes.



Piñon pines in southwest Colorado show fading, one of the symptoms of a piñon Ips beetle attack. Photo: Dan West, CSFS

Learn More

about piñon Ips bark beetle and piñon-juniper tree management on the CSFS website at csfs.colostate.edu, or contact your local foresters at the nearest Colorado State Forest Service field office.

The Colorado State Forest Service is a service and outreach agency of the Warner College of Natural Resources at Colorado State University. CSFS programs are available to all without discrimination. No endorsement of products or services is intended.

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INTRODUCTION

History of Our Community Forestry Program

Glenwood Springs initiated a community forestry program in 1888 when the board of trustees authorized the building of irrigation ditches and planting shade trees on Cooper, Grand, Blake and Pitkin Streets. A contract was awarded for planting 3,000 trees at \$.75 each.

A report was given in a council meeting in 1889 that some person had damaged several trees on Bennett Avenue between 8th and 9th and also on Blake between 8th and 9th. The mayor was authorized to offer a reward of \$50.00 for the discovery of the guilty person or persons. Council minutes of the early years show serious concern for watering and pruning the trees.

Early pictures of Glenwood Springs show Grand Avenue lined with beautiful cottonwoods. Today the Glenwood Springs city administration continues its concern for quality physical environment . Many trees in the older area of the city need attention due to decline from age and from the effects of improper pruning. Wider species variety needs to be utilized in new plantings .

In 1997, the city of Glenwood Springs contracted with Colorado State Forest Service to conduct a tree inventory and make management recommendations for the Glenwood Springs urban forest.

The Glenwood Springs tree inventory covered the older established business areas from First Street to Fourteenth Street and from Terrace Avenue to School Street. This is the area for which an evaluation of the older established tree resource is most needed. Also, this is the area of the city where public and private property lines are most easily distinguished. Public trees (city property & park trees) make up the inventory. Kiwanis Park, Sayre Park, and Rosebud Cemetery are all presented in separate inventories.

Tree conditions and needs in the subdivisions of South Glenwood were presented from general observation since the inventory approach would be impractical in these areas. Management recommendations for these areas will be directed primarily toward involvement of homeowners in private tree improvement programs.

 As of 1997, street Trees in our downtown and residential areas totalled 994, and had a value of \$697,773.

 As of 1997, street Trees in our North Glenwood residential areas totalled 93, and had a value of \$102,261.

URBAN FOREST MANAGEMENT

Glenwood Springs Urban Forest Management Program

Management of the public forest is the responsibility of public and private owners. Optimum results may be obtained only through the cooperation of the city administration and the private tree owners.

The Glenwood Springs Parks Commission is given responsibility to study the present situation and needs of Glenwood public trees, determine goals and priorities for optimum management, and present these findings to the Glenwood Springs city council. The city council, accepting the community forestry management philosophy, will consider the Parks Commission recommendations, enlist the services of the commission as a tree management resource agency, and make decisions concerning the tree management program.

Private homeowners are concerned with management problems of their trees and seek assistance in tree and shrub planting and maintenance. The trees, public and private, of the Glenwood community are regarded as an urban forest with a high dollar value. Good management enhances the value of this resource making life more pleasant for all. With this goal in mind, Glenwood Springs continues its tradition of community forestry activity.

Goals of Urban Forest Management

Growing conditions for trees and other plants become more difficult as cities grow. Established trees are forced to give way to new shopping centers, office and apartment complexes, and housing developments. New highways and parking areas take their toll on the existing green environment. Trees that remain often suffer from soil disturbances, air pollution, and other urban hazards. All too often, the welfare of trees is neglected, resulting in very decided deterioration of the urban physical environment.

Urban forest management seeks to better maintain and preserve existing trees and shrubs and to plant suitable species of new trees in appropriate locations. Tree removal is also involved in the management system.

Plantings, maintenance, and removals must be planned in terms of the needs of the community, trees in the city, properly selected and located, can protect us from heat of the summer sun and permit warming rays of the sun to come through in winter. Properly maintained, they live long lives and give us a few problems. Adversely,

improperly planted or maintained trees may become costly and dangerous. Some examples include:

- **Trees selected for extremely rapid growth** soon become brittle, break in storms, and are subject to many diseases.
- **Trees planted in the wrong places** may block visibility, interfere with power lines or buildings, or break sewer lines and sidewalks.
- **Trees neglected** by mismanagement suffer from stress, insect and disease attack, and general decline.
- **Topped trees** become weak, disease prone, and unsightly.

Urban forestry applies scientific management principles for the enhancement of the urban physical environment with trees and shrubs. The ultimate goal is sociological , physiological , and economic benefits for the community.

The Value of Our Urban Canopy

- 🌿 Trees provide pleasant views, protection from the elements, air purification, noise abatement, soil stability, and many other benefits.
- 🌿 Through a process called photosynthesis , they take carbon dioxide from the air and give back oxygen .
- 🌿 By a process called transpiration, trees give off large quantities of water to the air. Much of this moisture-laden air stays near leaves and twigs and traps air-born polluted particles from the air.
- 🌿 Trees and shrubs reduce noise levels by breaking up sound waves and reducing their intensity.
- 🌿 Glare and reflection can be reduced by placing plants where they will intercept light.
- 🌿 Unsightly views can be screened and unpleasant odors can be reduced.
- 🌿 Trees and shrubs provide their own inherent beauty by the lines, forms ,colors, and textures they project.
- 🌿 They enframe views, soften lines, and accent architectural elements . The city would be a forlorn place to live if it were not for trees.
- 🌿 Real estate values are increased 10-20% by trees around the home.

- 🌿 Summer cooling bills are considerably reduced by broadleaf trees that provide shade. These same trees drop their leaves in the winter to allow warming from the sun, again reducing utility bills.
- 🌿 Tree-lined streets and parking lots attract shoppers to the city.
- 🌿 Trees make parks and playgrounds more useful as areas of recreation .

GLENWOOD SPRINGS URBAN FOREST

Present Condition

An inventory of the existing public trees of the older residential and business area of the city is used as a base for management planning. Our tree inventory has not been fully updated since 1998.

Urban Forest Needs

Forestry Board

A board to act as a reviewing body for the purpose of determining, professional qualification and competence to engage in the business of cutting, trimming, pruning, spraying, or removing trees by giving written, oral, and practical license examinations.

Urban Forestry Grant Program

Glenwood Springs is in need of a Hazardous Tree Services Grant Program to provide aid to Glenwood Springs residents for assessment, removal, pruning, or treatment of dead or dying hazard trees which qualify as posing significant risk. Since the inception of the tree ordinance requiring homeowners to be responsible for ROW trees, the City has seen many residents come forward with requests for tree care and removal assistance. Unfortunately, with the requests coming in to a variety of departments and with the changes in leadership, many citizens have expressed confusion as to when and why the city provides assistance. It is the recommendation of the city arborist that a grant program be established to help mitigate these issues and manage these requests.

Size of the Grant: up to \$1,500 MATCH.

Qualifying Details: Candidacy of trees for the program is to be determined by, and at the full discretion of the city Arborist and/or Urban Forestry Board based via a free assessment and list of qualifying factors.

Award Details:

Option A) Following the assessment, qualifying applicants must agree to and remit payment for their portion for immediate tree removal, pruning, OR treatment services. All services will be arranged by a city arborist and/or Urban Forestry Board representative. Stump removal is not included in the grant program and is a separate cost incurred by the property owner.

Option B) Following the assessment, qualifying applicants must agree to and schedule immediate tree removal, pruning, OR treatment services with an approved contractor (approved by city arborist/Urban Forestry Board). Following tree removal, pruning, OR treatment, and submission of a receipt, grant money in the predetermined amount will be paid as a match to the qualifying property owner. Stump removal is not included in the grant program and is a separate cost incurred by the property owner.

Funding Information: A reimbursement of 50% up to \$1,500 for removal, 50% up to \$1,000 for pruning (for hazard or health), OR 50% up to \$250 for treatment may be given.

Eligibility Criteria:

- Available to City of Glenwood Springs residential and commercial property owners only.
- Only one tree and type of service per property per two-year period.
- Tree must be assessed by a City employed or approved certified arborist to determine eligibility. ISA standards will be used to determine qualifying level of need for assistance.

Dedicated Forestry & Horticulture Crew

The City currently employees one certified arborist, and one forestry and part-time gardens technician. It would be very beneficial for Parks and Recreation to have a slightly larger dedicated crew for preserving the health of Glenwood Springs' urban forest and plants. This crew would be responsible for pruning, plant and tree health record keeping, hazardous trees maintenance, and addressing insect and disease control for the City's more than 3000 trees in parks, City facilities, and right-of-way zones. Glenwood Springs has been a Tree City USA award winner for 37 years.

We could by expanding our part time forestry and gardens position to a full time forestry and horticulture staff position, and add one more for a total of tull full time forestry and horticulture staff positions who are coordinated by the city arborist and/or Urban Forestry Board.

Additional Funding for Forestry Needs & Aggressive Tree Planting Program

Currently our parks financial needs for essential urban forestry care total approximately \$28,000. This only includes the bare essential needs to remove hazardous trees and to provide necessary pruning and treatment to prevent incurring additional removal costs.

Trees cost approximately \$450 per tree to plant, and any additional funding for replacement trees is advised.

Management Needs – Older Residential and Business Areas

ROW (right of way) trees are a primary concern. As of 1998, Siberian elm and boxelder are the trees in poorest condition and together they made up over 60% of the total. Today the majority of our urban canopy inventory is still primarily Siberian Elm, but with the addition of Ash and Maple trees being the other dominant species. It would be in the best interest of our urban forest to diversify as much as possible and prevent our canopy from becoming large swaths of monoculture forests that can be easily wiped out with one species specific infestation or disease.

- Ash trees present a real problem because of the imminent threat of the Emerald Ash Borer.
- Elms pose a risk due to Dutch Elm disease and Elm Beetles.
- Maples are highly disease prone.

Residential Zones

-  Topping should be discontinued and "drop crotching" should be utilized instead. This method improves health, strength, and form of the tree. Priorities of pruning should be removal of dead, dying , diseased, or interfering branches.
-  Siberian elms, ash, and maples, should begin to be "replaced" with species from the recommended list.
-  Slime flux, an oozing of liquid material through cracks or wounds of the tree, caused by a bacterial infection within, is very prevalent, especially in Siberian elms. A simple treatment of this condition will alleviate the situation somewhat . A treatment project, in cooperation with homeowners, could be organized.

Business & Commercial Zones

Many residents remember the beauty of the trees that once lined Grand Avenue. A special effort at landscaping this street would undoubtedly have public support and thus a positive public relations value

-  Use mainly the smaller varieties of deciduous trees. A large range of ornamental crab or plum trees, non-fruiting varieties, are available. Select by recommendation of local nurserymen and from color preferences. Honey Locust and littleleaf linden are two larger varieties that would be suitable.
-  Plant trees at a minimum two feet spacing from the curb and a minimum three feet from the store front. Maintain a minimum thirty feet spacing between trees but this need not be uniform since in many cases store owners will not want windows or signs covered
-  Form, color, and texture may be blended to create a pleasant effect in the central area of the block, but contrast should be used near intersections.
-  An interesting color contrast may be created with sunburst locust and purple leaf plum.
-  Raised planter boxes are not advisable here.

Management Needs – North Glenwood Residential and Business

Residential

-  Siberian elm, cottonwood, and boxelder all show poor to average condition. A program of replacement plantings for these species is needed.
-  American elm trees in this area are suffering from infestation of European elm scale. Some pruning (deadwood removal only) is needed and dormant oil should be used to abate the elm scale problem.
-  In many cases, trees are suffering from drought . A public education program on maintenance should be launched in that area. Watering, especially deep watering techniques and winter watering, should be emphasized.
-  Trees on private property in the Hot Springs Lodge and Pool area are not in this inventory but might be used as an example of good management . A few of these trees have been pruned back a little more than necessary, but in no cases has drastic topping been done. The trees are healthy, showing the results of good care.

Business

- 🌿 The business area of North Glenwood, namely 6th Street, presents a unique landscape challenge. Absence of sidewalks and curb precludes the type of planting system recommended for Grand Avenue.
- 🌿 Elongated raised planters, at least three feet in width, may be used in a few areas where they will not block access to business establishments, Drive-inns, service stations, motels, etc. predominate this business area so planter locations must be carefully planned with business owners and the city engineering department with the snow removal problem in mind.
- 🌿 The principles of form, texture, and color blend or contrast should be used, and small trees should be emphasized in this area .

Management Needs – Parks and Cemetery

- 🌿 Sayre Park is an example of good tree selection. Ash and honey locust are used to good advantage here. As the east side of the park is planted, more evergreens should be used along with Norway maple, linden, and hackberry.
- 🌿 Kiwanis Park needs some pruning (deadwood removal only) in elms and cottonwoods and a replacement program for some of the oldest trees of these species.
- 🌿 Rosebud cemetery is very well managed despite the obvious problems of decline from aging in the old cottonwoods and the high maintenance needs of Siberian elms due to stopping several years ago. Both species should be eventually removed and replaced.
- 🌿 More trees are needed in Rosebud Cemetery, especially in the north side which is mainly treeless. A plan for tree planting in areas that will least interfere with grass mowing should be worked out with the cemetery board. Memorial trees for families could be planted in areas other than the grave site. This is a public relations problem which could best be handled by a long range planting plan.

Sayre Park Trees – 1998

Species	Count	Percent of Total	Average DBH	Average Condition	Average Value	Total Value
Honeylocust	22	25	7	0.9	\$ 435	\$ 9,563
Green Ash	21	25	9	0.85	\$ 545	\$ 11,445

Lombardy Poplar	12	14	10	0.57	\$ 200	\$ 2,400
Chokecherry	10	12	2	0.9	\$ 45	\$ 450
Juniper	4	5	4	0.7	\$ 175	\$ 700
Silver	3	4	24	0.9	\$ 2,052	\$ 6,155
Fruit	3	4	5	0.78	\$ 300	\$ 900
Austrian Pine	3	4	14	0.9	\$ 1,400	\$ 4,200
Blue Spruce	2	2	4	0.9	\$ 250	\$ 500
Aspen	2	2	2	0.9	\$ 95	\$ 190
Weeping Willow	1	1	20	0.9	\$ 712	\$ 712
Russian Olive	1	1	12	0.9	\$ 256	\$ 256
Cottonwood	1	1	40	0.6	\$ 1,900	\$ 1,900
Totals	85	100				\$ 39,371

Kiwanis Park Trees – 1998

Species	Count	Percent of Total	Average DBH	Average Condition	Average Value	Total Value
Siberian Elm	32	42	9	0.74	\$ 237	\$ 7,584
Cottonwood	24	31	0.15	0.69	\$ 614	\$ 14,745
Aspen	8	10	8	0.85	\$ 323	\$ 2,584
Blue Spruce	6	8	4	0.9	\$ 250	\$ 1,500
Boxelder	5	6	3	0.75	\$ 65	\$ 325
Choke-Cherry	2	3	3	0.8	\$ 65	\$ 130
Totals	77					\$ 26,868

Rosebud Cemetery Trees - 1998

Species	Count	Percent of Total	Average DBH	Average Condition	Average Value	Total Value
SiberianElm	72	33	21	0.63	\$ 550	\$ 39,600
Cottonwood	28	13	26	0.45	\$ 200	\$ 33,600
BlueSpruce	33	15	13	0.87	\$ 1,164	\$ 38,405
GreenAsh	34	16	12	0.91	\$ 37	\$ 35,280
Juniper	31	14	5	0.83	\$ 320	\$ 9,920
EuropeanMountainAsh	5	1	4	0.81	\$ 227	\$ 1,134
Boxelder	4	1	18	0.57	\$ 365	\$ 1,462
Linden	4	1	10	0.82	\$ 650	\$ 2,600
WhitePoplar	2	1	16	0.73	\$ 740	\$ 1,480
WeepingWillow	1	1	24	0.8	\$ 912	\$ 912
LombardyPoplar	1	1	10	0.56	\$ 110	\$ 110
SilverMaple	1	1	16	0.75	\$ 760	\$ 760
ScotchPine	1	1	12	0.87	\$ 990	\$ 990
Totals	217					\$ 166,253

Management Needs – South Glenwood

Newer residential areas were surveyed for tree management needs, especially for private yard trees. A street by street inventory was not done here because of the greater difficulty of determining property lines and because the main need here is to work with homeowners on an educational basis .

Species diversity is better here than in the older areas. There are still too many of the short-lived trees and an educational program on tree selection is needed.

The pruning problem is not nearly so evident here because trees are younger and have not reached the stage where owners might think about topping. An educational program about proper tree pruning will pay great dividends in this area by prevention of future problems.

Main objectives for the Glenwood Springs community forestry program in this area should be assistance to property owners in tree selection, planting, and care.

Long Range Goals

3 – 5 year goals (To be achieved by 2025)

-  Select a board of interested citizens to be called a "tree board" or "forestry board" to function as an advisory board to the parks superintendent, parks commission, and cemetery board.
-  The tree board should also plan and present educational programs and media communications about tree selection, planting and maintenance.
 - a. Demonstrate pruning for practicing arborists, city personnel, and the general public. Field demonstrations should be used as well as classroom sessions on tree growth and the pruning response. Early spring, while trees are still dormant, would be the best time.
 - b. Demonstrate to homeowners the way to treat slime flux . Alot two days of parks crew time each year to contact homeowners and demonstrate on street trees.
 - c. Mail out an information sheet on tree planting and tree care four times each year to homeowners with their water bills. The tree board should prepare the material for the information sheet. Seasonal topics, such as planting methods in spring, insect pests in summer, and watering, especially in winter months, should be featured.

- 🌿 Start a cost-sharing program with homeowners to assist with trees within public right-of-way.
- 🌿 Remove the oldest trees from city Parks that pose hazards and replace.
- 🌿 Develop a planting plan that will be compatible with maintenance activities.
- 🌿 Update the tree ordinance for Glenwood Springs to require more strict guidelines for contractors and tree removal and replacement—due to the influx of pests and disease that are threatening the urban forest.
- 🌿 Launch an educational campaign regarding beetle and disease related issues in our urban forest.

5 – 10 year goals (To be achieved by 2032)

- 🌿 Increase the cost share program to provide assistance for all homeowners in some way, whether it be via increased grant funding or city provided labor.
- 🌿 Have tree topping eliminated in Glenwood Springs and as much as possible in the surrounding area.
- 🌿 Have a nursery functioning to produce needed trees for parks, cemetery, and street tree planting.
- 🌿 Have 75% of Siberian elms and Green Ash street trees replaced.
- 🌿 Have a street tree population composed of trees from approved species list with no single species making up more than 15% of total.

10 – 20 year goals (To be achieved by 2042)

- 🌿 Move to a total tree care program for street trees as well as parks.
- 🌿 Have the city do planting, pruning, disease treatment, and removals of street trees with homeowners doing the watering.

As the community forestry program progresses, its benefits will become obvious. With citizen interest and greater appreciation of trees, budget dollars will become more available. Experience shows that the increase in dollar value of the tree resource will surpass the expenditure of funds and the aesthetic and environmental benefits will be a source of pride to all citizens of Glenwood Springs.

Glenwood Springs Soils and Climate

Glenwood Spring 's climate is typical of the general Rocky Mountain area.

Rainfall averages less than 12 inches annually and average humidity of the air is low. Wintertime, especially, may cause plant difficulties due to dryness of the air and the reflection of bright sunlight from the snow cover.

Soils of the Glenwood Spring 's area are generally low in humus with a tendency toward alkalinity. Soil reaction, or alkalinity, is measured in terms of pH, on a scale of 1 to 14. A neutral soil is pH 7; 8 or above is alkaline and 6 or below is acid. Most Rocky Mountain area soils are 8 or above. Most trees prefer a neutral or slightly acid soil .

In recent years, Glenwood Springs has experienced extreme drought. The U.S drought monitor below shows periods of dryness and drought as follows:

D0 – Abnormally Dry

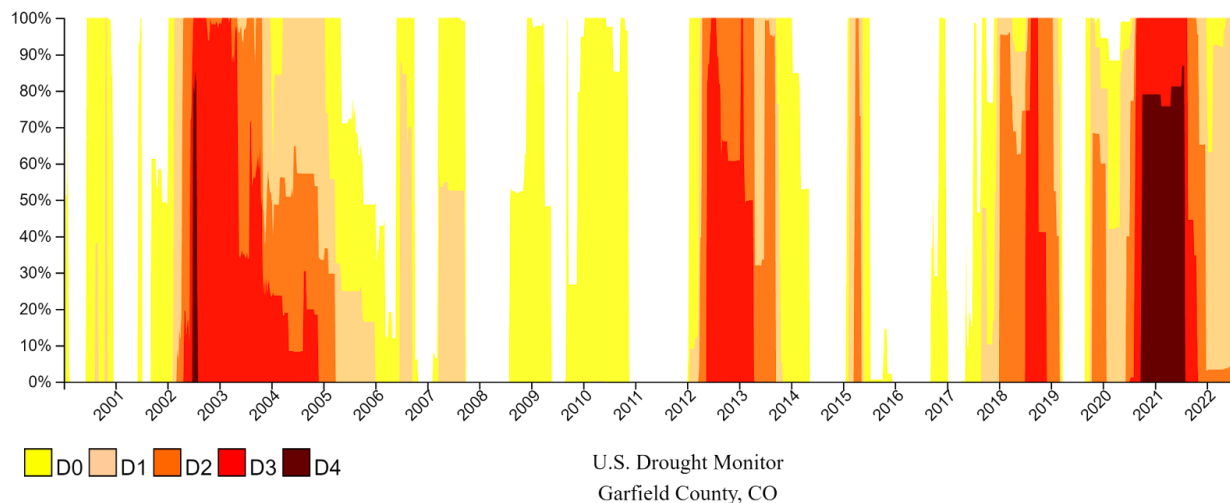
D1 – Moderately Dry

D3 – Extreme Drought

D2 – Severe Drought

D4 – Exceptional Drought

In 2020 and 2021 Glenwood Springs saw periods of extreme drought that our city hasn't experienced in nearly 20 years.



Because of the above described soil and climate limitations, trees and shrubs for Glenwood Springs must be carefully selected for hardiness and adaptability. Cultural and maintenance practices must be determined by climate and soil conditions.

Tree Planting

About 150 trees per street mile (each side of street) or a spacing of 30–40 feet, depending on tree size, is optimum for street tree density. Ideally, no single species should make up more than 15% of the street tree population .

Deciduous and evergreen trees may be successfully transplanted in spring or fall , but spring is generally preferred. Colorado winters may be especially stressful to trees because of dry conditions. Evergreen trees should be moved later in the spring and with a soil ball rather than with bare roots. Deciduous trees may be moved with soil ball or bare root, although the latter results in greater transplant shock and slower re-establishment.

Wilding trees may be transplanted to new sites but with considerably less success than nursery stock. These trees have fewer roots, many of which are long and scraggly .

Container grown trees suffer less transplant shock than balled and burlapped trees. The trees should be removed from the containers or in the case of paper mache pots, the sides may be scored with a knife. Containers that are called "plantable" may be planted in acid soils where they will deteriorate rapidly, but this is not the case in alkaline soils.

A mulch of some kind around the tree will help keep the surface of the soil from drying out.

-  If a plant has bare roots, never allow the roots of plants to dry. Keep roots covered or in water. Remove and plant one at a time .
-  Fertilizer may be placed in the back fill before planting.
 -  Four (4) tablespoons of 10 nitrogen fertilizer per cubic foot of backfill is adequate.
-  Dig holes deep and wide enough to accommodate roots without crowding. A hole 12 inches larger than root spread in diameter and depth is sufficient.
-  Fill hole with water, let drain.
-  Place roots over a mound of good soil. Set roots in a natural position at the same or slightly higher depth than the tree grew in the nursery.
-  Work soil around roots by hand. Fill hole half with soil , pack firmly, later, fill with soil, pack firmly again , and water.
-  For balled and burlapped plants , dig the hole deep and wide enough to comfortably hold the root ball. A diameter 12 inches larger than the root ball is adequate.
-  Fertilizer may be combined with backfill at the same rate as mentioned in f 4 .
-  Remove any wire or plastic mesh holding burlap to the ball.

- 🌱 Fill hole 3/ 4 full with soil and water.
- 🌱 Remove any twine from around the stem or trunk.
- 🌱 Finish filling hole and water thoroughly.

- ✗ Do not plant trees and shrubs too close to existing buildings.
- ✗ Do not backfill the hole with soil or rock. Only dig as deep as the top of the rootball. Loose soil under the rootball may cause the tree to lean as it settles.
- ✓ Think of future growth, size, and shape before planting.
- ✓ Some species need protection from the elements.
- ✓ Tree wrap may be used for the first few winters to protect deciduous trees.
- ✓ Shape the basin around the tree to help hold water.
- ✓ Put on a layer of mulch.
- ✓ If the tree needs support, use stakes but do not let them damage bark.
- ✓ Water deeply at least once a week during the first two growing seasons. 10- 15 gallons of water per caliper inch is what most arborists suggest.

Before planting or transplanting trees, several factors concerning the planting stock and the planting site must be carefully considered .

- ✓ Think of future growth, size, and shape before planting. A good transplanting job requires only a little more time and effort than a poor one and is well worth the difference in terms of growth and development of the tree.
- ✓ Trees obtained from nurseries may be bare root, balled and burlapped (B&B), or container grown stock. Only plants which are well shaped and healthy should be considered.
- ✓ Bare root stock is best planted in early spring before growth begins. Plants must be well packed and kept moist in material such as sphagnum moss during shipping and handling . Upon delivery they should be unpacked and soaked in water or "heeled-i n" in moist soil.
- ✓ In all cases, roots must be kept moist until planted.
- ✗ Heavy , poorly drained soils are unsuitable for tree planting sites because they do not allow space for oxygen which is needed for root growth .
- ✓ Tiling with perforated pipe is one system of improving soil drainage but is expensive. An alternate solution is to incorporate organic matter deeply in the soil, Use old , well rotted manure or a thoroughly decomposed compost. Avoid fine textured material such as sewer sludge.
- ✓ Planting holes for bare root plants must be large enough so that roots are not crowded or restricted.

Add backfill and water working out large air pockets as shown in Figure 6. Add the remaining backfill soil to form a slight slope, build a small dike, and fill with later. Do not tamp the backfill, because small air pockets are needed.

Balled and burlapped stock must be planted in a hole at least 50% larger than the diameter of the ball. The ball should be placed on a layer of backfill with the top of the ball even or slightly above grade level.

Remove the top portion of the burlap and any wire or plastic twine. The plant must be lifted by the ball and never by the trunk.

Make sure the plant is straight and if there is a best side, face it in the direction that people are most likely to see. Backfilling procedure is the same as with bare root stock and as shown in Figures 7 and 8.

Container grown stock may be planted successfully in either spring or fall. These plants have been grown for at least a year in the container, from one to five gallon tin cans, metal buckets, plastic or papier-mache which ensures a well established root system. Various types of containers or pots are used.

In all cases, remove the tree from the container to plant. Several types are marketed as Plantable containers, which may be true for acid soils but not for arid alkaline soils. Backfill and water the same as with bare root or balled and burlapped plants.

Tree spade – a hydraulically operated soil cutter to scoop out a soil ball.

Trees of larger sizes, up to 10" caliper trunk, may be removed with a lift the tree, transport, and set it into a hole.

Root Balls must be 8" for each 1" of trunk diameter for evergreens and 9" for deciduous trees. The tree should be protected from drying out during transport and well staked after transplanting carefully with a tree spade or root pruned the previous year.

Root pruning – most trees dug and transplanted from a wild state die unless moved may be done with a sharp spade slanting the cut slightly inward about a foot out from the trunk for each inch of trunk diameter. The tree must then be watered during the growing season and moved early the next spring while still in dormant conditions, and planting techniques pay great dividends in tree survival. Proper attention to type and quality of planting stock, soil and site and health. The great benefits derived from trees make this effort very worthwhile.

Selecting Trees for Hardiness

Many varieties of trees are available today for use in the urban forest. Trees are planted for different reasons so a careful process must be followed in choosing size, form, texture, color, branching habit, and other characteristics to achieve desired function. Before choosing trees for a particular area, the list must be narrowed to those trees adapted to the area.

Select for form and function from a list that has been narrowed to include only those trees and shrubs that are adapted to the soils and climate of the area. Most books and articles on horticulture or landscaping are written with reference to environmental conditions in the eastern United States or to California. While much of this material is of value for the Rocky Mountain area, the point must always be remembered that some of it is not. Soils and climate of Colorado are different from those of most areas of the United States.

Hardiness is a term denoting whether or not a tree will grow in a particular area. Temperature, rainfall, and soil conditions are the main factors that determine hardiness. Limited rainfall and the resulting generally alkaline condition of soils make western Colorado unique in problems concerned with plant growth.

Much of the precipitation occurs at times and in quantities which do not give optimum benefits to growing plants. Lack of humus from decaying roots and tops of plants does not provide the acidifying materials.

Soil tests determine degree of acidity or alkalinity, which is expressed as pH. Most landscape plants prefer a pH level of 5.5 to 7.5 since within this range nutrients are most available to plants.

Addition of humus by mulching and use of chelated iron or sulfates will help to make soil more acidic, but the best practice is to select trees and shrubs that are more alkaline tolerant.

Ash, honeylocust, hackberry, and lindens are more tolerant of alkaline soils than are oaks and maples.

Selection of trees and shrubs for a particular zone may be complicated by microclimate conditions within zones. Data from a tree inventory may show trees doing well in contradiction to "what the book says". Norway maple is one example. Observation of trees of the area and experience related by longtime residents are valuable sources of information for tree selection.

Selecting Trees for Low Maintenance

As hardiness is a primary factor in tree selection, maintenance requirements are a very practical factor. Community residents often develop a somewhat negative attitude toward trees in general because they are so annoyed by the nuisance aspects of some of our prevalent species of trees.

Siberian elm is the classic example. In terms of structural strength, cleanliness, life expectancy, and resistance to insect and disease, the tree is a real loser even though it is obviously very tolerant of difficult growing sites. This species predominates in many communities because of its adaptability and its rapid growth rate.

Willows and poplars are other examples of rapid growth, high maintenance trees. Tree inventories in most small western Colorado communities show overwhelming numbers of fast-growing, short-lived, high maintenance trees and a decided lack of the higher quality, slower growing, structurally sound, low maintenance species.

A major challenge of urban forest management is to replace declining weak trees with higher quality, longer-lived species. Obviously, this task cannot be accomplished in a short period of time nor will municipal or private homeowner budgets allow an all-out program. As the project proceeds gradually, replacement tree species must be selected with great care.

Even though examples quoted above show some of our weakest trees to be most adapted to local sites, there are alternatives. Where soils are highly alkaline, the choices are most limited.

Planting a monoculture {high concentration of a certain species in a certain area} is a major error. The risk of outbreak of a disease specific to that species could cause major losses. A good example is the extensive loss of American elm from Dutch elm disease that has occurred in many areas of the country. Major losses of honey locust have occurred in Denver due to an outbreak of nectria canker. Honey Locust is a quality tree and should be used but definitely not in a monoculture.

Species composition of the urban forest should be such that no one species makes up more than 15% of the total. Even with a short list of hardy, low maintenance quality trees, a suitable mixture of species may be accomplished in a given area.

Following is a list of trees recommended for the arid alkali conditions of western Colorado. This list is based on hardiness, structural strength, life expectancy, and resistance to insects and disease.

Marshall Seedless Ash - Moderate growth rate, tolerant of difficult soil conditions. Somewhat subject to boring insects but otherwise very few maintenance problems.

Urban Forestry Species Guide

Suggested for Streets & Sidewalk Areas	Low-Moderate Water Needs	Native Species*	Group	Botanic Name	Common Name	Height & Spread	Drought Tolerance	Shade Tolerance	Salt Tolerance	Fire Tolerance	Growth Rate	Bloom Season	Inflorescence Color (conspicuous)	Conspicuous Fruit/Seed	Wildlife	Notes
☐	☒	☒	Trees - Evergreen	Abies concolor	White Fir	50' x 30'	Drought Tolerant	Seedlings part shade, full grown up to full sun.	None	Moderate	Slow	Late Spring	Red	Unimportant, brown	Deer, elk, bear, and mountain beaver habitat. Many bird species, including bald eagle, northern spotted owl, brown creeper, and red-breasted nuthatches are associated with white fir habitat types.	Specimen tree, exceptional foliage. Underutilized.
☒	☐	☐	Trees - Deciduous	Acer ginnalla	Amur Maple	15' x 20'	Low	Intermediate	Moderate	High	Rapid	Early Spring	white	Winged Samaras	Food and cover for birds	Fragrant flowers, fiery red fall color, red winged seeds, drought. Shrubby form, multi-stemmed, good for hedging.
☒	☒	☒	Trees - Deciduous	Acer glabrum	Rocky Mountain Maple	20' x 15'	Moderate	Intermediate	None	High	Rapid	Late Spring	green	Winged Samaras	Regular source of cover for wildlife.	Multi-stemmed, fragrant flowers, orange-red fall foliage. Long-lived and shade tolerant.
☒	☒	☒	Trees - Deciduous	Acer grandidentatum	Bigtooth Maple	30' x 25'	Moderate	Intermediate	Very Low	Low		Mar - Apr	white	Winged Samaras	Food and cover for birds	Shade tolerant, blazing autumn foliage, adaptable
☒	☒	☒	Trees - Deciduous	Acer negundo 'sensation'	Sensation Box Elder	30' x 25'	Drought Tolerant	Tolerant	Moderate	Low	Rapid	Summer	yellow/green	Winged Samaras	Seeds are winter forage for birds and small mammals, deer browse young plants.	Red expanding leaves in spring, brilliant red in fall. useful for quick growth in naturalized riparian plantings, but they are short-lived and disease-prone.
☒	☐	☐	Trees - Deciduous	Acer platanoides 'Emerald Queen'	Emerald Queen Norway Maple	40' x 40'	Low	Intermediate	Moderate	Low	Rapid	Early Spring	green	Winged Samaras	Food and cover for birds	Yellow showy flowers in spring, bright yellow fall foliage
☒	☐	☐	Trees - Deciduous	Acer platanoides 'Royal Red'	Royal Red Norway Maple	30' x 30'	Low	Intermediate	Moderate	Low	Rapid	Early Spring	green	Winged Samaras	Food and cover for birds	Leaves are a glossy deep maroon, nice ornamental tree
☐	☒	☐	Trees - Deciduous	Acer saccharinum	Silver Maple	15' x 20'	Low	Intermediate	Low	Low	Rapid	Early Spring	Yellow	Brown	Buds are forage for squirrels, provides nesting for ducks and other birds. Attracts beavers.	Silver bark when young, leaves are green on top and silver/white on the underside. Very rapid growth. Not recommended for streets due to structural insecurity.
☒	☒	☐	Trees - Deciduous	Acer tataricum	Tatarian Maple 'Hot Wings'	18' x 18'	Drought Tolerant	Intermediate	Low	Low		Early Spring	white	Winged Samaras	Food and cover for birds	Showy flowers, yellow, orange red fall foliage, scarlet red samaras
☐	☒	☐	Trees - Deciduous	Aesculus glabra	Ohio Buckeye	30' x 30'	Moderate	Tolerant	None	Low		Mid Spring	Green	Yes, brown	Squirrels love the fruits (nuts)	Falling fruit would also be a problem along streets. It is suited for naturalized or park plantings.
☒	☒	☐	Trees - Deciduous	Amelanchier x grandiflora 'Autumn Brilliance'	Autumn Brilliance Serviceberry	25' x 20'	Moderate	Intermediate	Moderate	Unknown	Slow	Spring	white	yes, red	Food and cover for birds, berries profive forage for multiple species.	Clusters of white flowers in spring, nice orange fall color. Needs very little pruning, has strong structure.
☐	☐	☐	Trees - Deciduous	Betula nigra	River Birch	50' x 30'	Low	None	None	Moderate	Rapid	Mid Spring	brown	No	Forage for grouse, turkey, white- tailed deer; cover and nesting sites for waterfowl.	Specimen tree, soft yellow fall foliage, exfoliating bark. Good for use in rain garden, or planted along a waterway.
☐	☐	☒	Trees - Deciduous	Betula occidentalis	Water Birch	30' x 25'	Low	Intermediate	None	High		Mid Spring	Yellow	No	Forage for mule deer, moose; cover for various wildlife, important habitat for birds.	Cinnamon-brown bark, multi- stemmed, yellow fall foliage. Good for use in rain garden, or planted along a waterway.

Urban Forestry Species Guide

Suggested for Streets & Low-Moderate Water Needs	Native Species*	Group	Botanic Name	Common Name	Height & Spread	Drought Tolerance	Shade Tolerance	Salt Tolerance	Fire Tolerance	Growth Rate	Bloom Season	Inflorescence Color (conspicuous)	Conspicuous Fruit/Seed	Wildlife	Notes	
☐	☐	☒	Trees - Deciduous	Betula papyrifera	Paper Birch	50' x 25'	Low	None	Moderate	High		Mid Spring	Yellow	No	Young stands provide cover for deer and moose and cavity-nesting birds including woodpeckers, chickadees, nuthatches, and swallows.	Specimen tree w/ gleaming white peeling bark, golden fall foliage. Paper birch is useful for long-term revegetation and soil stabilization of severely disturbed sites. Good for use in rain garden, or planted along a waterway.
☐	☐	☒	Trees - Deciduous	Betula pendula	European White Birch, Silver Birch, or Warty Birch	50' x 30'	Low	None	Low	Low		Mid Spring	Brown	No		Specimen tree, yellow flowers, white bark, yellow fall foliage. Good for use in rain garden, or planted along a waterway.
☒	☒	☒	Trees - Deciduous	Catalpa speciosa	Northern Catalpa, Cigar Tree	50' x 40'	Moderate	None	Low	None	Early Summer	White	Yes; Long, Narrow, Brown Pods	Special value to honeybees.	Fragrant white flowers, large-heart shape leaves. Catalpas are major litter producers, shedding flowers, small branches, large leaves and seedpods. Brittle branches break easily in wind storms. Best for naturalized and park areas.	
☐	☒	☒	Trees - Deciduous	Celtis occidentalis	Northern Hackberry, American Hackberry, False Elm	50' x 50'	Drought Tolerant	Tolerant	Low	Low	Mid Spring	Green	Yes, Brown	Forage and cover for deer, small wildlife and birds.	Yellow fall foliage, fruit a purply-red, slow grower, long-lived	
☒	☐	☐	Trees - Deciduous	Cornus mas	Cornelian Cherry, Cornelian Cherry Dogwood	15' x 15'	Low	Intermediate	Low	None	Mid Spring	Yellow	Yes - Red	Forage and cover for deer, small wildlife and birds.	Early spring yellow flowers, fall foliage is purply-red. Winter hardy and good for hedges.	
☐	☒	☐	Trees - Deciduous	Corylus columa	Turkish Filbert, Turkish Hazelnut	45' x 40'	Moderate	Intermediate	Unknown	Unknown	March	Yellow	Yes	Forage and cover for deer, small wildlife and birds.	Pyramidal form, thrives in poor soil, moderately drought tolerant. Litter from nuts make it better suited for naturalized or park areas.	
☒	☒	☐	Trees - Deciduous	Crataegus ambigua	Russian Hawthorn	15' x 20'	Drought Tolerant	Intermediate	Low	Unknown	Apr - May	White	Yes - Red	Forage and cover.	Yellow fall foliage, peeling bark. Occasional thinning required in spring and every summer trim back any suckers that may occur at base.	
☐	☒	☐	Trees - Deciduous	Crataegus crus-galli 'inermis'	Thornless Cockspur	20' x 20'	Drought Tolerant	None	Low	Unknown	Apr - May	White	Yes - Red	Forage and cover.	Fragrant white flowers in spring, dark red fruits, golden foliage	
☒	☒	☒	Trees - Deciduous	Crataegus douglassii	Douglas Hawthorn	25' x 25'	Moderate	None	Low	Unknown	Apr - May	White	Yes, Black	Important forage for grouse, ungulates, and waterfowl.	Showy white flowers, orange-red fall foliage	
☒	☒	☒	Trees - Deciduous	Gleditsia triacanthos inermis 'Imperial'	Imperial Honeylocust	30' x 40'	Drought Tolerant	None		Moderate	Late spring	Yellow	Yes, Green	Forage and cover for a variety of mammals and birds.	Fine textured foliage , fall color: soft yellow, seedless	
☐	☒	☒	Trees - Deciduous	Gleditsia triacanthos inermis 'Shademaster'	Shademaster Honeylocust	40' x 40'	Drought Tolerant	None	Moderate	Moderate	Late spring	Yellow	Yes, Green	Forage for larger mammals.	Fine textured foliage , fall color: lemon yellow, seedless	
☐	☒	☒	Trees - Deciduous	Gleditsia triacanthos inermis 'Skyline'	Skyline Honeylocust	40' x 40'	Drought Tolerant	None	Moderate	Moderate	Late spring	Yellow	Yes, Green	Forage for larger mammals.	Fine textured foliage , fall color: lemon yellow, seedless	

Urban Forestry Species Guide

Suggested for Streets & Sidewalk Areas	Low-Moderate Water Needs	Native Species*	Group	Botanic Name	Common Name	Height & Spread	Drought Tolerance	Shade Tolerance	Salt Tolerance	Fire Tolerance	Growth Rate	Bloom Season	Inflorescence Color (conspicuous)	Conspicuous Fruit/Seed	Wildlife	Notes
☐	☒	☐	Trees - Deciduous	Gymnocladus dioicus	Kentucky Coffeetree	50' x 40'	Drought Tolerant	None	Moderate	Low		Early Summer	White	Yes, Brown Pods		Drought, pollution, fragrant female flowers, yellow fall foliage
☒	☒	☐	Trees - Deciduous	<i>Gymnocladus dioicus 'Espresso'</i>	Seedless Kentucky Coffeetree	50' x 50"	Drought Tolerant	None	Moderate	Low		Early Summer	White	Yes, Brown Pods		Large, bipinnate leaves, yellow fall color, seedless
☒	☒	☐	Trees - Evergreen	Juniperus chinensis	Chinese Juniper	15' x 6'	Moderate	None	Moderate - High	Low		Spring	White	No		Ornamental upright juniper, topiary, fast grower
☐	☒	☒	Trees - Evergreen	Juniperus monosperma	One Seed Juniper	30' x 12'	Drought Tolerant	None	None	None				Yes, Purple		Upright, rounded habit, scale-like leaves, high habitat value
☐	☒	☒	Trees - Evergreen	Juniperus osteosperma	Utah Juniper	20' x 15'	Drought Tolerant	None	Low	Low				Yes, Blue		Small tree, foliage & fruit important wildlife forage
☒	☒	☒	Trees - Evergreen	Juniperus scopulorum	Rocky Mountain Juniper	20' x 15'	Drought Tolerant	None	Moderate	Low				Yes, Blue		Pyramidal to upright, exfoliating bark, high habitat value
☒	☒	☐	Trees - Deciduous	Koeleruteria paniculata	Goldenrain Tree	30' x 30'	Moderate	None	Low	Low		Late Spring	Yellow	Yes, Brown		Striking yellow flowers, ornamental fruit, orange-yellow fall foliage
☐	☐	☐	Trees - Evergreen	Larix decidua	European Larch	70' x 25'	None	None	None	None	Moderate			Yes, Brown		Underutilized, deciduous conifer, brilliant yellow fall color
☒	☐	☐	Trees - Deciduous	Malus spp.	Crabapple	20' x 20'	Depends on spp.	Depends on spp.	Depends on spp.	Depends on spp.		Spring	Pink, White	Yes	Forage for all wildlife.	Notable flowers, edible fruit and desirable fall color. This is not the most recommended tree to plant due to bear attraction , but is approved for planting due to high demand.
☐	☒	☒	Trees - Evergreen	Picea pungens	Colorado Blue Spruce	60' x 30'	Moderate	Intermediate	Low	Low						Green to silvery blue, pyramidal, overused in the landscape
☒	☒	☒	Trees - Evergreen	Pinus aristata	Bristlecone Pine	30' x 20'	Drought Tolerant	None	None	High						Rounded to pyramidal, needles dotted w/ white resin
☒	☐	☐	Trees - Evergreen	Pinus bungeana	Lacebark Pine	40' x 25'										Specimen tree w/ glossy needles and showy exfoliating bark
☒	☐	☒	Trees - Evergreen	Pinus contorta var. latifolia	Rocky Mountain Lodgepole Pine	50' x 15'										Provide cover & habitat for big game animals
☒	☒	☒	Trees - Evergreen	Pinus edulis	Pinyon Pine	20' x 20'	Drought Tolerant	None	Moderate	Low						Broadly rounded, edible fruit/ nut
☐	☒	☒	Trees - Evergreen	Pinus flexilis	Limber Pine	40' x 30'	Drought Tolerant	None	None	Low						Pyramidal form with smooth greenish-grey bark
☒	☒	☐	Trees - Evergreen	Pinus nigra	Austrian Pine	40' x 40'	Moderate	Intolerant	Moderate	Low	Moderate	Late Spring	No	No	Provides forage for mule deer and cover for birds.	Fast growing, adaptable. Tolerant of harsh urban conditions
☒	☒	☒	Trees - Evergreen	Pinus ponderosa	Ponderosa Pine	80' x 30'	High	Intolerant	Moderate	High	Moderate	Mid Spring	No	No		Open form, pyramidal, red to brown plated bark
☐	☒	☒	Trees - Evergreen	Pinus strobiformis	Southwestern White Pine	50' x 30'	Moderate	Intolerant	Low	Low	Rapid	Mid Spring	No	No		Fine textured tree with ornamental blue-green needles
☒	☐	☐	Trees - Evergreen	Pinus sylvestris	Scots Pine	40' x 30'			Moderate-High							Bright orange exfoliating bark, blue-green needles

Urban Forestry Species Guide

Suggested for Streets & Sidewalk Areas	Low-Moderate Water Needs	Native Species*	Group	Botanic Name	Common Name	Height & Spread	Drought Tolerance	Shade Tolerance	Salt Tolerance	Fire Tolerance	Growth Rate	Bloom Season	Inflorescence Color (conspicuous)	Conspicuous Fruit/Seed	Wildlife	Notes
☒	☐	☒	Trees - Deciduous	Populus angustifolia	Narrowleaf Cottonwood	50' x 30'	Low	None	Moderate-High	Moderate	Rapid	Spring	Green	White	Narrowleaf cottonwood and other Populus species in Colorado provide habitat for over 200 wildlife species, including but not limited to the greater peewee, sharp-shinned hawk, bald eagle, pronghorn, elk, deer and beaver.	Best growing along the river with optimal growing conditions. Well adapted to disturbed sites.
☒	☐	☒	Trees - Deciduous	Populus tremuloides	Quaking Aspen	40' x 50'	Low	None	Moderate	High	Rapid	Mid Spring			Provides important breeding, foraging, and resting habitat for a variety of birds and mammals. The browse value is higher than many other winter browsing options.	Does not have longevity below 6,500' - pests this tree. New trees are frequently produced from root system, so it can be difficult to manage.
☐	☐	☒	Trees - Deciduous	Populus x acuminata	Lanceleaf Cottonwood	60' x 40'	None		Moderate-High	None			Catkin	Green		Messy. Upright, rounded form, yellow fall color, fast grower. Requires constantly moist soil. Do not plant too close to buildings because of the invasive root systems.
☒	☐	☐	Trees - Deciduous	Prunus armeniaca 'Pioneer'	Chinese Apricot 'Pioneer'	15' x 15'	Low to Moderate	Low to Moderate	Low					Yes - Gold		Late bloomer, fragrant pink flowers, good fall foliage. Cold hardy and frost resistant.
☐	☒	☐	Trees - Deciduous	Prunus maackii	Amur Chokecherry	30' x 25'	Low	None	Moderate	None	Moderate	Spring	White	Yes, black		Fragrant white flowers, yellow fall foliage, black fruit, peeling bark
☒	☐	☐	Trees - Deciduous	Prunus nigra 'Princess Kay'	Princess Kay Plum	20' x 20'	None	None	None	None	Moderate	Mid Spring	Red			Fast growing, double white blossoms, red fall foliage
☒	☐	☐	Trees - Deciduous	Prunus padus	Mayday Tree/Bird Cherry	30' x 25'	None	None	Moderate	Low	Moderate	Spring	White	Yes, black		Fragrant white flowers, bitter black fruit, yellow fall foliage
☒	☒	☒	Trees - Deciduous	Prunus virginiana	Chokecherry	25' x 20'	Moderate	None	Moderate	High	Rapid	Spring	White	Yes, black	High value for forage and habitat.	Good for watershed protection, improving species diversity, and rehabilitation of disturbed sites.
☒	☐	☒	Trees - Evergreen	Pseudotsuga menziesii	Douglas Fir	60' x 25'	Low	Moderate	Low	Low	Moderate				Important source of forage for small mammals	Shade tolerant, needles and seeds valuable forage for wildlife.
☒	☒	☐	Trees - Deciduous	Pyrus ussuriensis	Ussurian Pear	25' x 25'	Moderate	None	Low	None	Slow	Mid Spring	White	Green		Profuse white flowers, fall foliage ranges from brilliant yellows and oranges to a deep burgundy.
☒	☐	☒	Trees - Deciduous	Quercus gambelii	Gambel Oak	20' x 12'	Low	None	None	High	Slow			Acorns	Ecologically important for providing forage and cover for many animal and bird species.	Usually multi-stemmed tree, good wildlife forage
☒	☒	☐	Trees - Deciduous	Quercus macrocarpa	Bur Oak	50' x 40'	High	Moderate	Low	High	Slow			Acorns		Stately tree, golden fall color, acorn important wildlife forage
☒	☒	☐	Trees - Deciduous	Quercus muehlenbergii	Chinkapin Oak	45' x 45'	High	None	None	Low	Moderate			Acorns		Sharply toothed leaves. Fall foliage a deep yellow-orange, acorn important wildlife forage
☐	☐	☐	Trees - Deciduous	Quercus rubra	Northern Red Oak	50' x 50'	Low	Moderate	Moderate	High	Slow			Acorns		Sharply lobed leaves with intensely bright red fall color
☒	☐	☒	Trees - Deciduous	Quercus undulata	Wavyleaf oak	10' x 10'	Low	Moderate to High	Moderate - High		Slow			Acorns		Small tree/shrub, bluish-green leaves with wavy margins
☐	☐	☒	Trees - Deciduous	Salix amygdaloides	Peach Leaf Willow	60' x 30'	Low	None	None	High	Rapid				Particularly important for moose, elk, and other ungulates.	Upright & irregular, needs adequate space

Urban Forestry Species Guide

Suggested for Streets & Sidewalk Areas	Low-Moderate Water Needs	Native Species*	Group	Botanic Name	Common Name	Height & Spread	Drought Tolerance	Shade Tolerance	Salt Tolerance	Fire Tolerance	Growth Rate	Bloom Season	Inflorescence Color (conspicuous)	Conspicuous Fruit/Seed	Wildlife	Notes
☒	☐	☐	Trees - Deciduous	Sorbus aucuparia	European Mountain Ash	35' x 15'	Low	Moderate	Low	None	Rapid					Symmetrical & tidy habit, bright red fruit. Susceptible to fireblight
☒	☐	☐	Trees - Deciduous	Sorbus intermedia	Swedish Whitebeam	35' x 25'	Moderate	Moderate to High	Low				White	Orange/Red		White blossoms late spring, fall foliage apricot orange
☒	☐	☐	Trees - Deciduous	Syringa reticulata	Peking Tree Lilac	20' x 15' 2 of 4			Moderate - High							Fine textured tree, fragrant large white flowers, exfoliating bark
☒	☐	☐	Trees - Deciduous	Tilia americana	American Linden or American Basswood	40' x 30'	Low	High	Low	Moderate	Moderate					Fragrant flowers, dangling, rounded fruits, yellow fall foliage
☐	☒	☐	Trees - Deciduous	Tilia cordata	Littleleaf Linden	30' x 30'	Moderate	Moderate	None	High	Moderate					Fragrant flowers, dangling, rounded fruits, yellow fall foliage
☐	☒	☐	Trees - Deciduous	Ulmus americana	Washington Elm	60' x 45'	Moderate	Moderate	Low	Low	Rapid					Vase shape, yellow fall foliage. Resistant to Dutch Elm Disease
☒	☐	☐	Trees - Deciduous	<i>Ulmus japonica</i> x <i>U. wilsoniana</i>	Accolade Elm	50' x 35'			Moderate							Dark green foliage, yellow fall color. Resistant to Dutch Elm Disease
☒	☐	☐	Trees - Deciduous	<i>Ulmus pumila</i> x <i>U. japonica</i> x <i>U. wilsoniana</i>	Triumph Elm 'Morton Glossy'	55' x 45'			Moderate							Glossy green foliage. Resistant to Dutch Elm Disease
☒	☐	☐	Trees - Deciduous	<i>Ulmus wilsoniana</i> 'Prospector'	Prospector Elm	50' x 30'			Moderate							Dark green foliage, yellow fall color. Resistant to Dutch Elm Disease

* **Regarding "native" plants and trees:** This indicates that the species is native to Colorado. Planting native species anywhere and everywhere in a given region can be problematic. Example 1: An aspen planted on a dry site where little supplemental moisture is available will die. Example 2: Planting of pinyon on naturally wet sites or sites where we water heavily will also lead to plant death. The focus in using native trees should be on trees that are native to the region and that are well-adapted to the specific site where they will be planted.

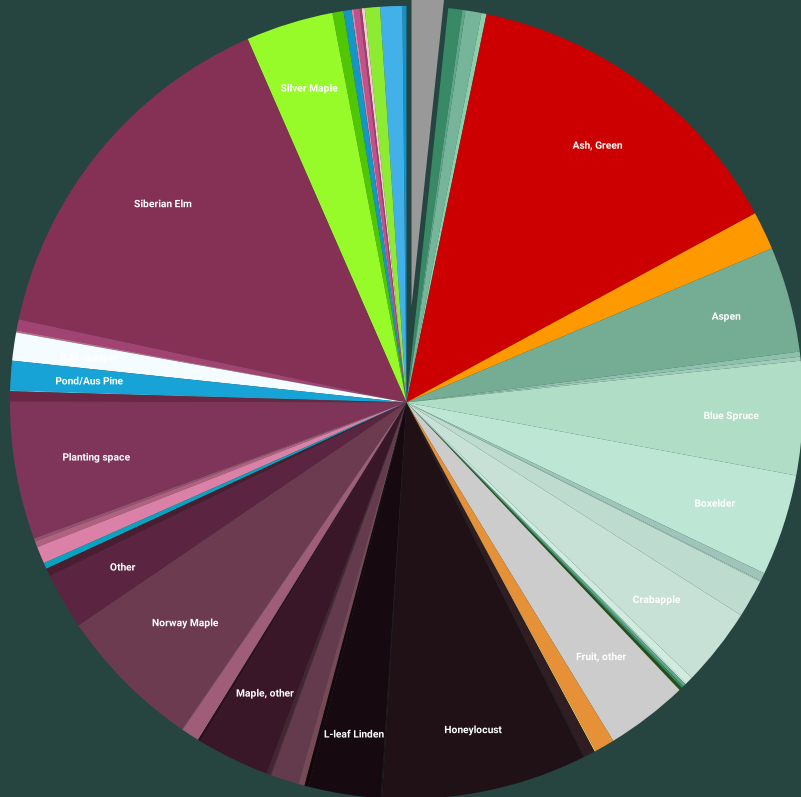
****Regarding "fire tolerance":** There is no such thing as a fire proof tree. Trees with this box checked indicate that the tree can adapt or recover more easily from surrounding fire and smoke damage.

*****Regarding Xeric Species:** Even species with low water needs will establish better and grow more quickly when given regular irrigation during the first 3 years of growth. As they begin to reach maturity, watering frequency can be reduced to a good deep soaking every 10 to 14 days during the heat of summer.

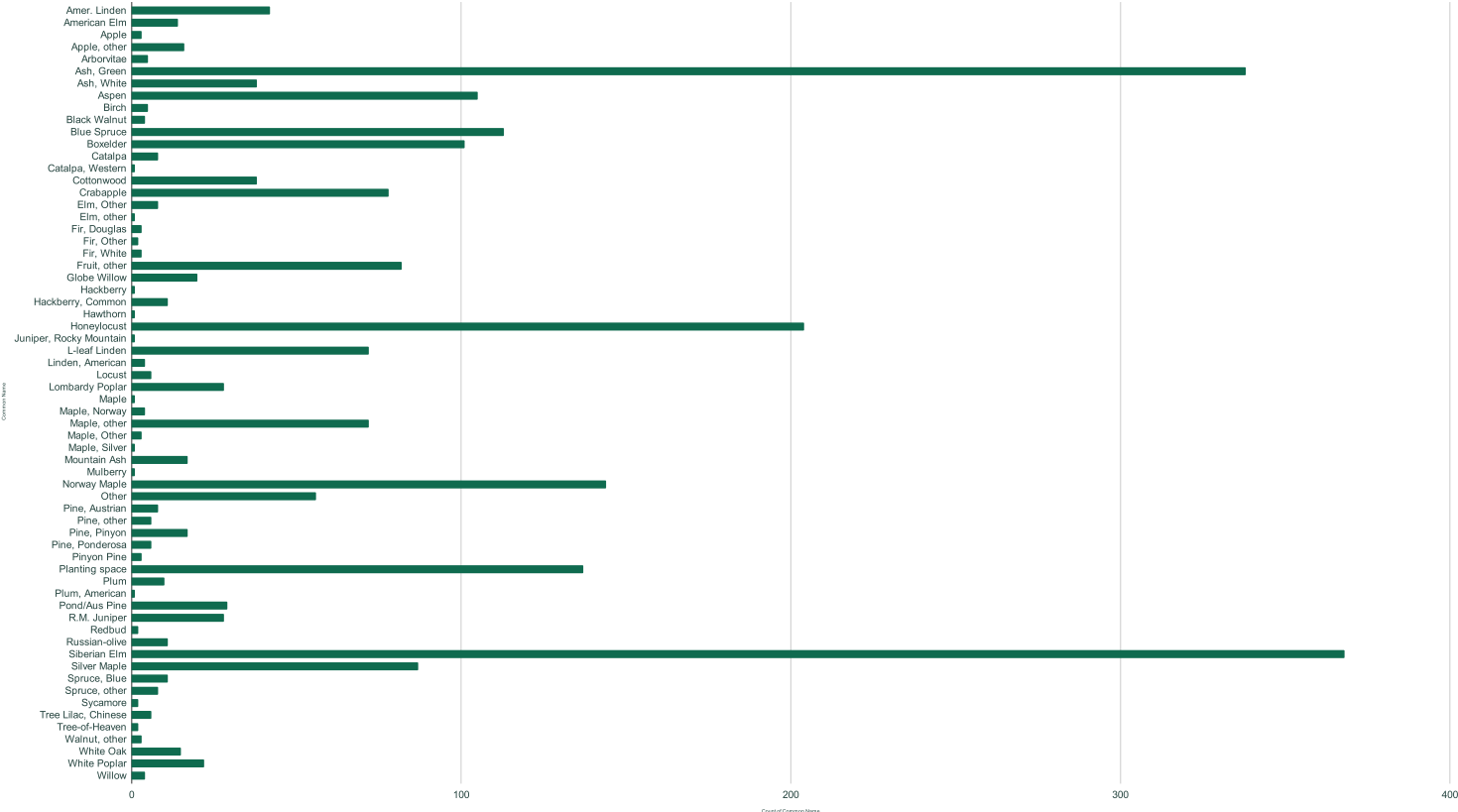


Canopy Diversity Chart

- Amer. Linden
- American Elm
- Apple
- Apple, other
- Arbutus
- Ash, Green
- Ash, White
- Aspen
- Birch
- Black Walnut
- Blue Spruce
- Bovelder
- Catalpa
- Catalpa, Western
- Cottonwood
- Crabapple
- Elm, Other
- Elm, other
- Fir, Douglas
- Fir, Other
- Fir, White
- Fruit, other
- Globe Willow
- Hackberry
- Hackberry, Common
- Hawthorn
- Honeylocust
- Juniper, Rocky Mountain
- L-leaf Linden
- Linden, American
- Locust
- Lombardy Poplar
- Maple
- Maple, Norway
- Maple, other
- Maple, Other
- Maple, Silver
- Mountain Ash
- Mulberry
- Norway Maple
- Other
- Pine, Austrian
- Pine, other
- Pine, Pinyon
- Pine, Ponderosa
- Pinyon Pine
- Planting space
- Plum
- Plum, American
- Pond/Aus Pine
- R.M. Juniper
- Redbud
- Russian-olive
- Siberian Elm
- Silver Maple
- Spruce, Blue
- Spruce, other
- Sycamore
- Tree Lilac, Chinese
- Tree-of-Heaven
- Walnut, other
- White Oak
- White Poplar
- Willow



Count of Common Name





Urban Forestry Board

Creation and Establishment.

There is hereby created and established the Urban Forestry Board for the city of Glenwood Springs, Colorado, which shall consist of up to seven (7) members, citizens and residents of this city who shall be selected and appointed by.....

Term of Office.

The term of office of the seven (7) persons selected shall be three (3) years. In the event that a vacancy shall occur during the term of any member, a successor shall be appointed for the unexpired portion of the term.

Duties and Responsibilities.

1. It shall be the responsibility of the Urban Forestry Board to study and develop and/or update a written proposed work plan. Said plan will include recommended practices and associated costs for the care, preservation, trimming, planting, replanting, removal or disposition of street and park trees and landscape plantings.
 - 1.1. The Board will create a plan for the City to assist with Hazardous trees in residential areas.
2. *The plan will be presented annually to the City Council (?)and, upon its acceptance and approval, shall constitute the official comprehensive urban forestry plan for the City. The City Council will attempt to follow, as closely as possible, the plan submitted by the Urban Forestry Board.*
3. The Urban Forestry Board, when requested by the City Council, shall consider, investigate, make findings, report and recommend upon any special matter of question coming within the scope of its work.
4. The Urban Forestry Board shall develop and implement a public education plan.

- 4.1. The plan should include assisting residents determine what are appropriate, climate-adapted, drought tolerant species of trees and landscape plantings, as well as proper planting techniques of the same.
5. The Urban Forestry Board shall work with City staff to ensure City and Park trees are pruned properly, through training efforts implemented by the Board.
6. The Urban Forestry Board will act as advocates of the existing urban forest by identifying areas or specific vegetation in need of care to City staff, and work with staff to ensure proper upkeep.
7. The Urban Forestry Board may be consulted with planning choices for street landscaping and municipal projects.

Operation.

1. The Urban Forestry Board shall choose its own officers, make its own rules and regulations, and keep a journal of its proceedings.
2. A majority of the members shall be a quorum for the transaction of business. Interested individuals may attend meetings but will not vote.

City of Glenwood Springs Immediate and Upcoming Forestry Needs

Description	Cost	Complete	Immediate	1 Year	3 Years	Notes
Sullivan Park conifer tree maintenance	\$ 349.00	☐	☒	☐	☐	
Two Rivers Park conifer tree maintenance	\$ 3,635.00	☒	☐	☐	☐	
Veltus Park conifer tree maintenance	\$ 716.00	☐	☒	☐	☐	
Wulfsohn trails tree/chip removal and repurposing for mulch in parks	\$ 2,750.00	☐	☒	☐	☐	
O'Leary Park conifer tree maintenance	\$ 229.00	☐	☐	☒	☐	
Rosebud Cemetery evergreen and deciduous tree maintenance	\$ 14,000.00	☐	☒	☐	☐	
Sayre Park evergreen tree maintenance	\$ 631.00	☐	☒	☐	☐	
St. Lucy Park evergreen tree maintenance	\$ 356.00	☐	☐	☒	☐	
Brush Creek Park evergreen tree maintenance	\$ 806.00	☐	☐	☒	☐	
Centennial Park evergreen tree maintenance	\$ 184.00	☐	☒	☐	☐	
Conservancy Park evergreen tree maintenance	\$ 294.00	☐	☐	☒	☐	
Gregory Park evergreen and deciduous tree maintenance	\$ 2,553.00	☐	☒	☐	☐	
Horseshoe Bend Park evergreen tree maintenance	\$ 257.00	☐	☐	☒	☐	
	\$ 26,760.00	☐	☐	☐	☐	
Updated tree inventory – initial scope of work	\$ 30,000.00	☐	☒	☐	☐	
Tree inventory advanced data field sets, statistics, risk assessment, work history, and ecosystem benefit analysis – 3 years	\$ 11,000.00	☐	☒	☐	☐	1 year option also available for \$4,500
Canopy inventory for trails and open spaces – 3 year	\$ 9,000.00	☐	☐	☒	☐	1 year option also available for \$5,000
	\$ 50,000.00					

August 4, 2022

Charles Small, Deputy Assistant Secretary
Intergovernmental Affairs
United States Department of Transportation



RE: Support for the CDOT RAISE Grant Application.

Dear Mr. Small,

As the USDOT RAISE grant review process is coming to a close, I wanted to thank you for your consideration of CDOT's Multimodal Options for a Vibrant, Equitable (MOVE) Western Slope project and urge US DOT one final time to fund this worthy project. The project will establish three mobility hubs along the Interstate-70 Corridor – in Grand Junction, Rifle, and Glenwood Springs – to provide affordable transportation options to workers, reduce congestion, and curb greenhouse gas emissions.

Glenwood Springs will benefit particularly from the implementation of the West Glenwood Transit Hub. This will allow to RFTA to extend its VelociRFTA BRT system from its current terminus at the southern edge of the City (27th Street) to our downtown core, and then to the West Glenwood Transit Hub. Development of the West Glenwood Transit Hub is the first step in RFTA's plan to connect RFTA's acclaimed BRT system on the SH82 corridor with the I-70 corridor, eventually operating on I-70 up to 40 miles between the Town of Parachute and Glenwood Springs. The City of Glenwood Springs is the region's center of employment, shopping, entertainment, tourism, and services; and it will be the midway point in this future 80-mile inter-regional BRT system. The West Glenwood Transit Hub will feature spacious, enclosed bus waiting areas, restrooms, sheltered boarding areas, real-time arrival, first and last mile mobility options (FLMM) and other amenities to make the critical connection between SH82 and Interstate 70 seamless and comfortable.

The RAISE grant will also help to complete the funding package for the 27th street bicycle and pedestrian crossing, which allows people to cross several lanes of State Highway 82 below grade, eliminating conflicts between vehicles and other modes, which will reduce the risk of accidents and fatalities at this congested and dangerous intersection. 27th street is the current terminus of the BRT system, with over one thousand estimated boardings and alighting daily.

I strongly urge you to fund this proposal. It meets the intent of the RAISE grant and it is a perfect demonstration of leveraging modest Federal infrastructure grants to accomplish extraordinary results.

Thank you again for your consideration.

Sincerely,

Jonathan Godes
Mayor



Middle Colorado Watershed Council

July 26, 2022

City of Glenwood Springs
101 W 8th St
Glenwood Springs CO 81601

Dear City of Glenwood Springs and the Glenwood Springs City Council

The Middle Colorado Watershed Council was honored to receive the \$7,500 grant from the City of Glenwood Springs to support their endeavors and projects that enhance and protect the health of the Middle Colorado watershed. Our greatest asset is the platform that we provide for collaborative, inclusive, and creative cooperation between a wide variety of stakeholders. MCWC is helping to find a balance between human needs and ecosystem needs given a limited amount of water.

Thank you for your support and city leadership. We will continue to engage and coordinate with city staff on cross-over projects that benefit this community and the watershed. If you have questions or additional concerns, please don't hesitate to contact us.

Attached is the signed and notarized FAB agreement.

Sincerely,

Paula Stepp
Executive Director, MCWC

Morgan Hill
Board of Directors President, MCWC

Thank you for your generous support
of the 125th Annual Strawberry Days
Festival. Your contribution and
participation help make this community
event happen. We are beyond grateful
and appreciative.

Again, thank you for sharing in
the comeback of our beloved festival!

Sincerely,



Theresa Saver



City Council
STAFF REPORT
City of Glenwood Springs
August 4, 2022

Agenda Item: 2023 Budget Discussion

Action Requested: NA

Department: City Administration

Presented By: Steve Boyd

Strategic Goals: Provide Efficient and Responsive City Government
Preserve and Improve Infrastructure
Protect and Preserve our Quality of Life
Generate Sustainable Economic Development
Ensure Public Safety

Background Info: If there is time we can run through the following budgets:
-Marijuana Tax Fund
-Tobacco Tax Fund
-General Improvement District (GID)
-Victim Advocates for Law Enforcement (VALE)
-Conservation Trust

Issues: NA

Fiscal Impact: Part of appropriated budget

Legal Review: NA

Staff Recommendation: NA