

**BEFORE THE COLORADO WATER CONSERVATION BOARD
STATE OF COLORADO**

**IN THE MATTER OF THE RULEMAKING HEARING TO REVISE RULES
AND REGULATIONS FOR REGULATORY FLOODPLAINS IN COLORADO,
2 CCR 408-1**

**PREHEARING STATEMENT OF STAFF TO THE COLORADO WATER
CONSERVATION BOARD**

Pursuant to the Hearing Officer's September 22, 2021 Order Re: Procedures and Deadlines for Prehearing Submissions, Staff to the Colorado Water Conservation Board ("CWCB Staff") submits the following Prehearing Statement:

A. Statement of Position

CWCB Staff recommends the Colorado Water Conservation Board adopt the rules as noticed and proposed on July 30, 2021, published in the Colorado Register on August 10, 2021, and revised according to stakeholder engagement and feedback. These proposed rule amendments are consistent with the published Notice of Proposed Rulemaking which stated the proposed amendments: 1) update the standards and processes for floodplain designation to make the Rules consistent with Federal Emergency Management Administration (FEMA) floodplain mapping procedures, 2) amend and clarify Rule 4 definitions, 3) update references to external documents, and 4) revise for clarification Rules 5, 7, 8.D, 10.C-F, 11.B, 12.D, 12.J, the introductory paragraph to Rule 14, Rules 17, and 20.

Since the Notice of Proposed Rulemaking was filed with the Secretary of State's Office on July 30, 2021, Staff has engaged with stakeholders in two

additional work group calls to discuss proposed changes to Rule 12.J. (now proposed Rule 12.H.) and the introductory paragraph to Rule 14 (now proposed Rule 14.A.). As a result of the stakeholder work group meeting regarding Rule 12.J., Staff sought clarification from FEMA regarding FEMA’s policy and requirements for letters of map revisions, and when such processes must be completed. The existing Rule 12.J. was based on CWCB’s understanding of FEMA policy as it existed in 2010 when these rules were last updated. Upon clarification, CWCB learned that in practice FEMA has taken a slightly different stance on the requirement for letters of map revision, and when that process is triggered. As such, CWCB has further revised Rule 12.J. from what was originally proposed in July 2021 to better align with FEMA’s current policy direction. While this proposed rule revision reflects a slight change in Staff’s understanding of FEMA policy, it is consistent with the Notice of Proposed Rulemaking because it seeks to align CWCB rules with FEMA requirements. Additionally, the new proposed revisions clarify for anyone reading or relying on the rules when a letter of map revision is required by changing the “known or suspected” standard to the more certain standard of when “shown by modeling.” This makes the rules more definitive and facilitates compliance.

The updated proposed revision to the introductory paragraph of Rule 14 (now proposed Rule 14.A.) reflects discussions with the stakeholder group that brought to Staff’s attention differing interpretations of the current rule language leading to different perspectives on what compliance looks like. As such, Staff proposes the three subsections in Rule 14.A. that further clarify what constitutes “better

available information" in an effort to bring about agreement among stakeholders and overall better compliance with the rule.

Additional Rule clarifications were added based on stakeholder input during Staff's ongoing outreach and stakeholder engagement process. Rules 9.B. and 10.C. now clarify requirements to claim credit for publicly owned or operated, and publicly maintained flood control structures and levee systems.

B. Witness List

1. Kevin Houck, Section Chief of the CWCB Watershed and Flood Protection Section (resume included as Appendix A).
 - i. Mr. Houck may testify to the following:
 1. FEMA floodplain mapping and management requirements;
 2. Development of proposed rules, including public outreach;
 3. Proposed revisions to the rules; and
 4. Responses to issues and proposed amendments raised by either the Board or in public comment.
 - ii. Mr. Houck will be available to answer questions from the Board as required during the rulemaking hearing.
2. Terri Fead, Floodplain Mapping Coordinator (resume included as Appendix B). Ms. Fead may also testify to the information contained in B.1.i, and will be available to answer questions from the Board as required during the rulemaking hearing.

C. Statement of Open Legal Questions

To the best of Staff's knowledge and understanding, there are no open legal questions at issue in this rulemaking proceeding.

D. Statement of Relief Requested

CWCB Staff requests the CWCB adopt the rules as noticed, proposed, and published in the Colorado Register, with certain additional revisions that were the result of continued stakeholder engagement. CWCB Staff reserves the right to propose additional rule revisions prior to or at the hearing in this matter.

E. Desired Time

CWCB Staff requests 120 minutes to present any testimony, rebuttal information, and to answer any questions.

F. Exhibit List

<u>Exhibit Number</u>	<u>Exhibit Name</u>
CWCBStaff-1	Rules and Regulations for Regulatory Floodplains in Colorado 2 CCR 408-1
CWCBStaff-2	Notice of Proposed Rulemaking, published in the Colorado Register on August 10, 2021
CWCBStaff-3	Proposed Rule Amendments to Rules and Regulations for Regulatory Floodplains in Colorado, 2 CCR 408-1
CWCBStaff-4	Statement of Basis and Purpose

Dated this 22nd day of October, 2021.

PHIL WEISER
Attorney General

/s/ Allison Robinette
ALLISON ROBINETTE, #49930
Assistant Attorneys General
Natural Resources & Environment Section
Attorneys for the Staff to the Colorado Water Conservation Board
*Counsel of Record

CERTIFICATE OF SERVICE

I hereby certify that I have duly served the copies of the foregoing **Prehearing Statement of the Staff to the Colorado Water Conservation Board** upon all parties herein by email, this 22nd day of October, 2021, addressed as follows:

Hearing Officer

Jen Mele
First Assistant Attorney General
Natural Resources & Environment Section
Office of the Colorado Attorney General
1300 Broadway, 7th Floor
Denver, Colorado 80203
720-508-6282
Email: jen.mele@coag.gov

Copy to: john.watson@coag.gov

Rulemaking Parties

<u>Staff to the Colorado Water Conservation Board</u> Kevin Houck Colorado Water Conservation Board 1313 Sherman Street, Room 718 Denver, CO 80203 303-866-3441, ext. 3204 Email: kevin.houck@state.co.us	
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/s/ Allison D. Robinette

KEVIN HOUCK, P.E., CFM
Colorado Water Conservation Board
1313 Sherman Street, Room 721, Denver, CO 80203
303-866-3441 x3219

EDUCATION:

Master of Science, Civil Engineering – University of Colorado Denver, Denver, Colorado, 2002
Bachelor of Science, Civil Engineering - Washington State University, Pullman, Washington, 1994 (cum laude)
Bachelor of Arts, Business Administration - Washington State University, Pullman, Washington, 1994 (cum laude)

REGISTRATIONS AND CERTIFICATIONS:

Professional Engineer, Colorado (#34083) (1999)
Professional Engineer, California (#59007) (1999)
Professional Engineer, Louisiana (#29519) (2001)
Certified Floodplain Manager (2004)

PROFESSIONAL EXPERIENCE:

2003 – Present COLORADO WATER CONSERVATION BOARD (CWCB), Denver, CO

Chief, Watershed and Flood Protection: Management and supervision of the Watershed and Flood Protection Section within CWCB. Provides assistance with flood mapping studies, engineering project management, grants management, general technical assistance, and public outreach regarding the flood hazards in the state. Manages the Floodplain Designation program for the State of Colorado. Developed the Emergency Watershed Protection (EWP) program in partnership with the NRCS and the Colorado Hazard Mapping Program (CHAMP), both in response to the 2013 Colorado floods. Participated in the Statewide Floodplain Rules and Regulations in 2005 and 2010. Managed the Community Assistance Program (CAP) in partnership with FEMA and served as the State Floodplain Manager.

2001-2003 BOYLE ENGINEERING CORPORATION, Lakewood, CO

Associate Engineer: Performed hydrologic and hydraulic analyses of bridges and streams. Produced plan sheets, cost estimates, and specifications for stream stabilization and flood control projects. Prepared designs for canal structures. Aided in drainage support for roadway and railroad projects. Performed quality control services for a number of projects. Co-managed railroad investigation program, which included client contacts, budget management, invoices, deliverable review, workload coordination with other project managers, and oversight of program personnel. Also served as project manager for a number of local floodplain management, flood control, and stream stabilization projects.

1997-2001 HDR ENGINEERING, Denver, CO

Project Engineer: Performed hydrologic and hydraulic analyses of bridges and streams. Developed basinwide stormwater master plans. Prepared plan sheets and other documents for stream stabilization and flood control projects. Aided in drainage support for roadway and railroad projects. Managed railroad investigation program, which included client contacts, budget management, invoices, production and review of deliverables, workload coordination with other project managers, and oversight of program personnel.

1995-1997 MERRICK AND COMPANY, Aurora, CO

Engineer-in-Training: Performed hydrologic and hydraulic analyses of bridges and streams. Aided in development of hydraulic design and preparation of construction plans for storm and sanitary sewer systems. Performed construction observations for bank stabilization and storm sewer outfall projects. Nature of the work was primarily technical with minimal supervisory work of non-professional employees.

PROFESSIONAL SOCIETY LEADERSHIP:

Colorado Association of Stormwater and Floodplain Managers (CASFM), Chair, Instructor for Certified Floodplain Manager Review Course

Association of State Floodplain Managers (ASFPM), Treasurer, Board of Directors (Region VIII Representative), Arid Regions Committee National Liaison

American Public Works Association of Colorado (APWA-CO), Board of Directors (At Large), Water Resources Committee Chairperson

American Water Resources Association of Colorado (AWRA-CO), Board of Directors (At Large)

TERRI FEAD
1313 Sherman Street, Room 718, Denver, CO 80203
303-866-3441x3230

EDUCATION:

MSCE - Colorado State University, Fort Collins, Colorado, 1984
BSCE - Colorado State University, Fort Collins, Colorado, 1981

REGISTRATION:

Professional Engineer, Colorado (PE #26060);
Certified Floodplain Manager (2001)

PROFESSIONAL EXPERIENCE:

2020 – Present COLORADO WATER CONSERVATION BOARD (CWCB), Denver, CO

Floodplain Mapping Coordinator: Obtain, manage, and administer FEMA Cooperative Technical Partner Grants to partner with FEMA, Communities, and other stakeholders for developing and revising flood hazard information compliant with the National Flood Insurance Program (NFIP) within Colorado (outside the Denver metropolitan area). Manage administration and quality assurance for CWCB Letter of Map Revision (LOMR) Review Partner grant on behalf of FEMA.

2009 – 2020 MILE HIGH FLOOD DISTRICT (MHFD), Denver, CO

Floodplain Manager/Project Manager/Senior Project Engineer/Project Engineer, Engineering Services: Provided guidance, technical review, and quality assurance for development and revision of flood hazard information for watersheds within the MHFD service area in accordance with National Flood Insurance Program (NFIP) regulations. Performed and provided assistance on floodplain mapping, management and regulation in coordination with other MHFD staff, FEMA (Region 8 and HQ), CWCB, local governments, and other agencies/stakeholders. Provided education and assistance to local governments, applicants, engineers, property owners, regarding NFIP compliance and Letters of Map Change (LOMC) processes.

2001 – 2009 Independent Consultant (Urban Drainage and Flood Control District, Denver, CO)

Independent Consultant: Performing technical review of supporting documentation for Flood Hazard Area Delineation studies, community development projects for compliance with the UDFCD (aka, MHFD) criteria. Performed technical review and processing of LOMC submittals for compliance with NFIP requirements.

1999 - 2001 ICON ENGINEERING, INC., Englewood, CO

Project Manager: Part of LOMR Delegation pilot project team with UDFCD, FEMA, and Michael Baker Jr., to initiate FEMA Cooperating Technical Partner LOMC processing in the nation. Performed technical review and processing of LOMCs within UDFCD service area. Responsible for writing reports, preparing cost estimates, performing hydrologic and hydraulic analysis design of master planned improvements.

1997 - 1999 TAGGART ENGINEERING ASSOCIATES, INC., Denver, CO

Associate: Responsible for writing proposals and reports, preparing cost estimates, performing and reviewing hydrologic and hydraulic analyses, and providing assistance to other engineers. Performed field investigations, hydrologic and hydraulic analyses for LOMC submittals and Flood Insurance Study (FIS) updates.

1995 - 1997 MICHAEL BAKER JR., INC., Alexandria, VA

Regional Manager/Engineer: Managed the Region 8 LOMC cases for FEMA NFIP Technical Review contract. Provided technical/process assistance to staff engineers, presented technical issues to FEMA, performed peer review of letters/analyses, and ensured quality of technical/mapping work. Performed/reviewed hydrologic and hydraulic analyses for floodplain/floodway revisions for communities within the NFIP. Coordinated and communicated with federal/state/local agencies, engineering firms, property owners, and developers to obtain supporting documentation for LOMCs.

1988 - 1994 CITY OF FORT COLLINS, STORMWATER UTILITY, Fort Collins, CO

Capital Projects Manager/Civil Engineer II: Managed and administered contracts for professional and construction services for capital projects. Reviewed design, hydraulic analyses, construction drawings and specifications for projects. Performed scope preparation, budget determination, consultant selection and contract administration for master planning (hydrologic, hydraulic and sedimentation analyses, problem identification, alternative evaluation and conceptual design of improvements along multi-use river corridor). Administered and reviewed supporting documentation for FIS completion. Coordinated with federal/state/local agencies, special interest groups, property owners, ditch companies, and other City departments.

1984 - 1988 MCLAUGHLIN WATER ENGINEERS, LTD., Denver, CO and Tulsa, OK

Assistant Office Manager/Project Manager/Project Engineer: Liaison for Tulsa projects, supervised and worked with engineers, and technical and administrative support personnel. Performed field investigations, hydrologic/hydraulic analyses, problem identification, damage assessments, alternative evaluation, economic analyses, drainage/flood control facility design.



DEPARTMENT OF NATURAL RESOURCES

Colorado Water Conservation Board

RULES AND REGULATIONS FOR REGULATORY FLOODPLAINS IN COLORADO

2 CCR 408-1

[Editor's Notes follow the text of the rules at the end of this CCR Document.]

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 both 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 24-4-103, 24-65.1-101(1)(c)(I), 24-65.1-202(2)(a)(I), 24-65.1-302(2)(a), 24-65.1-403(3), 30-28-111(1)–(2), 31-23-301(1)–(3), 37-60-106(1), 37-60-106(1)(c)–(g), (j), (k), C.R.S. (2010).

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 stipulate the process by which floodplains will be designated and approved by the CWCB. Rules for Regulatory Floodplains are of statewide concern to the State of Colorado and the Colorado Water Conservation Board in order to prevent flooding and the negative impacts of floods, as well as to assure public health, safety, welfare and property by limiting development in floodplains. These Rules will also assist the CWCB and communities in Colorado to develop sound floodplain management practices and implement the National Flood Insurance Program (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 activities conducted by state agencies and to Federal 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).

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, Indian 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 one-percent chance of being equaled or exceeded during any given year (1-percent-annual-chance-flood). The terms "one-hundred-year flood" and "one percent chance flood" are synonymous with the term "100-year flood." 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 one-hundred-year flood.
500-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-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 five-hundred-year flood.
Addition	Any activity that expands the enclosed footprint or increases the horizontal square footage of an existing structure.
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	Floodplain information that significantly reduces the level of detail for topographic mapping or hydraulic calculations to arrive at floodplain delineations without 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	Is synonymous with 100-year flood and is a flood having a one percent chance of being equaled or exceeded in any given year.
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 percent 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.
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 aid local officials and engineers in the proper regulation and design of flood protected facilities. The Manual is advisory, rather than regulatory, in purpose.
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.
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.
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, hydrologic analysis, and hydraulic calculations to arrive at precise water surface profiles and floodplain delineations 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.
DFIRM Database	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.

Digital Flood Insurance Rate Map (DFIRM)	FEMA digital floodplain map. These digital maps serve as “regulatory floodplain maps” for insurance and floodplain management purposes.
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.
FEMA	Federal Emergency Management Agency.
FEMA Guidelines & Specifications for Flood Hazard Mapping Partners	Floodplain mapping specifications published by FEMA. The FEMA Guidelines and Specifications for Flood Hazard Mapping Partners (2009) are incorporated herein by reference and available for viewing at www.fema.gov/fhm/dl_cgs.shtm and for inspection at the CWCB offices at 1313 Sherman Street, Room 721, Denver CO 8020. The regulations may also be examined at any state or federal publications depository library. The FEMA Mapping Specifications and Guidelines incorporated herein by reference are only those in existence at the time of the promulgation of these Rules and Regulations for Regulatory Floodplains in Colorado and do not include later amendments to or editions of the incorporated material.
"Flood" or "Flooding"	<p>A general and temporary condition of partial or complete inundation of normally dry land areas from:</p> <ol style="list-style-type: none"> 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 Contour	A line shown on a map joining points of equal elevation on the surface of floodwater that is perpendicular to the direction of flow.
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 Insurance Rate Map (FIRM)	A FIRM is the official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community.
Flood Mitigation Project	A project within or adjacent to a flooding source that is specifically intended to reduce or eliminate the negative impacts caused by excessive floodwaters through improvement of drainage, flood control, flood conveyance or flood protection.
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 and preventive measures for reducing flood damage, including, but not limited to, zoning or land-use regulations, flood control works, 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 flood damage preservation and reduction.
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), Flood Insurance Rate Maps (FIRM), and Digital Flood Insurance Rate Maps (DFIRM) 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 (COE), Floodplain Information Reports published by the CWCB or others, Flood Hazard Area Delineations (FHAD) published by the Urban Drainage and Flood Control District (UDFCD), 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.
Foreseeable Development	The potential future development of, or changes in, the land uses that are likely to take place during the period of time covered by a community's adopted master land use plan or comprehensive community plan, or if no time period is specified, over a 20-year period. If there is no adopted community plan, then potential development patterns based on zoning, annexations, and other relevant factors should be evaluated.
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 (G.I.S.)	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) for natural resource management and other uses.
Hydraulic analysis	The determination of flood elevations and velocities for various probabilities based on a scientific analysis of the movement and behavior of floodwaters in channels and overbank areas.
Hydrologic Analysis	The computation of the peak rate of flow, or discharge in cubic feet per second, for various selected probabilities for streams, channels, or watersheds based on a scientific analysis of the physical process.
Letter of Map Revision (LOMR)	An official revision to the currently effective FEMA map. It is issued by FEMA and changes flood zones, delineations, and elevations.

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.
Levee	An artificial structure or land feature that has been designed and is operated, wholly or in part, for the purpose of containing, controlling, or diverting the flow of water.
Low Impact Development (LID)	Development design/construction strategy that maintains the predevelopment hydrologic regime to the extent possible. 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 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 relocating structures, purchasing property for open space, or early flood warning detection systems.
National Flood Insurance Program (NFIP)	FEMA's program of flood insurance coverage and 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.
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 levee that FEMA has previously credited with providing protection from a 1-percent-chance-annual-flood on an effective FIRM or DFIRM, for which FEMA is awaiting data and/or documentation that will show the Levee's compliance with Levee certification requirements of the NFIP regulations.
Regulatory Floodplain	Floodplain Maps, Profiles, and related information for flood hazard areas that have been designated and approved by the CWCB. See Rule 5.
Residual Risk	The threat to the areas behind levees that may still be at risk for flooding. Although the probability of flooding may be lower because a levee exists, the consequence to personal safety and property is much higher should a levee overtop or fail.

Stream Alteration Activity	Any manmade activity within a stream or floodplain that alters the natural channel, geometry, or flow characteristics of the stream.
Substantial Change	Any improvement to, or rehabilitation due to damage of, a structure for which the activity performed equals or exceeds 50% of the pre-improvement or pre-damaged value of the structure. The value of the structure shall be determined by the local jurisdiction having land use authority in the area of interest.
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.
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 channel.

Rule 5. Regulatory Floodplain:

The Regulatory Floodplain in Colorado is the 100-year floodplain. However, the CWCB will Designate and Approve 500-year floodplain information but only at the written request of a local authority having land use jurisdiction. 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 local authorities having land use jurisdiction 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 assure 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; (2) Hazardous Materials; (3) At-risk Populations; and (4) 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.

These facilities consist of:

- a. *Public safety (police stations, fire and rescue stations, emergency vehicle and equipment storage, and, emergency operation centers);*

- b. Emergency medical (hospitals, ambulance service centers, urgent care centers having emergency treatment functions, and non-ambulatory surgical structures but excluding clinics, doctors offices, and non-urgent care medical structures that do not provide these functions);*
- c. Designated emergency shelters;*
- d. 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);*
- e. 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*
- f. 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).*

Specific exemptions to this category include wastewater treatment plants (WWTP), Non-Potable water treatment and distribution systems, and hydroelectric power generating plants and related appurtenances.. 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.

Public utility plant facilities may be exempted if it is demonstrated to the satisfaction of the local authority having jurisdiction 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 100-year 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 local authority on an as-needed basis upon request by that local authority.

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

These facilities may include:

- a. Chemical and pharmaceutical plants (chemical plant, pharmaceutical manufacturing);*
- b. Laboratories containing highly volatile, flammable, explosive, toxic and/or water-reactive materials;*
- c. Refineries;*
- d. Hazardous waste storage and disposal sites; and*

e. Above ground gasoline or propane storage or sales centers.

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 work place, 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** 500 pounds **or** the TPQ listed (**whichever is lower**) for the 356 chemicals listed under 40 C.F.R. § 302 (2010), also known as Extremely Hazardous Substances (EHS); **or** 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), *available at* http://www.access.gpo.gov/nara/cfr/waisidx_03/40cfr302_03.html, and OSHA regulation "Occupational Safety and Health Standards," 29 C.F.R. § 1910 (2010), *available at* http://www.access.gpo.gov/nara/cfr/waisidx_99/29cfr1910_99.html, are incorporated herein by reference and include the regulations in existence at the time of the promulgation of these Rules, 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.

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.

These facilities consist of:

- a. Elder care (nursing homes);*
- b. Congregate care serving 12 or more individuals (day care and assisted living);*
- c. 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.

These facilities consist of:

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

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

These facilities may be exempted if it is demonstrated to the satisfaction of the local authority having jurisdiction 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 100-year 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 local authority on an as-needed basis upon request by that local authority.

- B. Identification of Critical Facilities.** It is the responsibility of the local jurisdiction having land use authority 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 jurisdiction. For those structures for which it is unclear or otherwise ambiguous if the criteria are met, the local jurisdiction shall have the sole discretion to determine if the structure is a Critical Facility. Local jurisdictions 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. (2010), 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.

Required identification of Critical Facilities shall be limited to owner-occupied structures. Local jurisdictions 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 occur above and beyond 100-year (1% annual chance) events. Communities are encouraged to regulate development of Critical Facilities within the 500-year floodplain, when available.

- D. Protection of Critical Facilities.** All new and Substantially Changed Critical Facilities, and new Additions to Critical Facilities, shall be regulated to a higher standard than those structures not determined to be Critical Facilities. Local jurisdictions having land use authority are encouraged to consult with the owner of the Critical Facility in determining the value of the Critical Facility when a Substantial Change is being considered. 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. The higher standard for Critical Facilities shall be as follows: For Critical Facilities located within the 100-Year Floodplain, the structure shall be protected according to Rule 11(B) herein, with the exception of a freeboard of two feet substituted for the standard one-foot freeboard. The *International Building Code* (2006) and *Flood Resistant Design and Construction* (ASCE 24) (2005) can be used as reference tools for this standard, but are not incorporated by reference herein.

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).

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

- E. **Ingress and Egress for New Critical Facilities** shall, when practicable as determined by the local jurisdiction having land use authority, have continuous non-inundated access (ingress and egress for evacuation and emergency services) during a 100-year flood event. This criterion is also recommended, but not required, for changes to existing Critical Facilities and use changes involving existing structures whose classification changes to Critical Facilities.
- F. **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 local jurisdiction having land use authority 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 local jurisdictions for the purpose 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 in order to enable local governments to regulate floodplains appropriately. The standards in this rule reference, and incorporate herein, the FEMA Guidelines and Specifications for Flood Hazard Mapping Partners. Whenever such a reference is made, it includes the FEMA Guidelines and Specifications for Flood Hazard Mapping Partners material in existence at the time of the promulgation of these Rules, but excludes later amendments to or editions of the material.
- 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 CWCB shall designate and approve 100-year floodplain information, and 500-year information but only at the request of a local authority having land use jurisdiction.
- C. **Base Mapping.** Base mapping for floodplain studies shall meet the minimum standards as set forth in FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference.
- D. **Topography and Surveys.** Topographic and field survey information for floodplain studies shall meet the minimum standards as set forth in FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference.
- E. **Geographic Information Systems (GIS).** GIS information for floodplain studies in Colorado shall meet the minimum standards as set forth in FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference.

F. **Hydrology.** Hydrologic analyses for floodplain studies in Colorado shall be completed using the information set forth in FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference. The Colorado Floodplain and Criteria 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 when Foreseeable Development is expected.
- (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 CWCB that clearly demonstrates that the information in question is inaccurate pursuant to Rule 12. The CWCB 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 in FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference.

H. **Floodplain Delineations.** Floodplain delineations shall be completed using protocols set forth in FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference, 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 correlate reasonably to the best available topographic information for the stream and adjacent corridor and must meet an acceptable level of technical accuracy.
- (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 aerial photographs or other suitable information 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 100-year flood involving special conditions shall be completed using protocols set forth in FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference. 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 shall 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, shall be produced at the request of the local governing authority or by Board initiative. The interim floodplain maps shall show increased runoff from hydrophobic soils and lack of vegetation. The post-wildfire maps shall 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 available through the U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL), located in Hanover, New Hampshire.

J. Written reports and maps. The results of the hydrologic analyses, hydraulic analyses, and floodplain delineations shall be summarized in a written report and submitted to the CWCB. All Approximate and Detailed Floodplain Information that is presented to the CWCB for designation and approval shall be properly titled, dated, organized, and bound as a stand-alone document. In addition to the hard copy final report, the CWCB requires that a digital copy of the final report be submitted in MS Word and PDF formats. All pertinent technical backup data such as GIS files, and hydrologic and hydraulic models shall also be provided to the CWCB in acceptable digital formats. The CWCB shall electronically distribute to interested parties, to the extent possible, pertinent study information. Access to original GIS information shall be provided to local governments and other authorized users through a secure and protected website or other secure means.

- (1) The Regulatory Floodplain maps shall show, at a minimum, the flood boundaries, the location of all cross sections used in the hydraulic analysis, the reference line drawn down the center of the floodplain or low flow channel, and a sufficient number of flood contours in order to reconstruct the flood water surface profiles.
- (2) New Physical Map Revisions requested by local jurisdictions or involving local jurisdictions should include detailed 500-year floodplain information when practicable.
- (3) Flood contours, or Base Flood Elevations, shall be shown as wavy lines drawn perpendicular to the direction of flow of floodwater and shall extend completely across the area of the mapped Regulatory Floodplain. Each flood contour shall indicate its elevation to the nearest whole foot.
- (4) The Regulatory Floodplain map scale shall be 1-inch equals 1000 feet or such map scale showing greater detail. FEMA map panels may also be published at 1 inch equals 500 feet, 1 inch equals 1,000 feet or 1 inch equals 2000 feet.
- (5) 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 floodplain mapping 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 developments 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 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 Base Flood Elevations 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) (2010), incorporated herein by reference, for a 1-foot floodway. This reference is *available at* http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfr60_02.html, and is hereby incorporated by reference into this Rule and includes the material in existence at the time of the promulgation of these Rules, but does not include later amendments to or editions of this incorporated material
- C. **Incorporation of FEMA's Floodway Regulations.** All regulations defined in the FEMA regulations "Criteria for Land Management and Use," 44 C.F.R. § 60.3(c)(10), (d) (2010) *available at* http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfr60_02.html, are hereby incorporated by reference into this Rule and includes the material in existence at the time of the promulgation of these Rules, but does not include later amendments to or editions of this incorporated material. All communities participating in the National Flood Insurance Program that have Base Flood Elevations defined for one or more of the waterways within their jurisdictions shall adopt and enforce these floodway regulations. Failure to enforce floodway regulations may impact the community's standing in the National Flood Insurance Program and may eliminate or reduce eligibility for federal or state financial assistance for flood mitigation and disaster purposes.
- D. **Communities in Which This Rule Applies.** Communities with Regulatory Floodplains that have been Designated and Approved by the CWCB with Base 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 in communities without Base Flood Elevations established, unless otherwise adopted by the community. This Rule shall not apply to approximate stream reaches for which Base Flood Elevations have not been defined.

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.** If a publicly operated and maintained structure 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 diminution of peak flood discharges, which would result from normal Flood Control Structure operating procedures.

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 are publicly operated and maintained. For the purposes of this Rule, Public operation and maintenance may include direct responsibility or ultimate responsibility through written agreement. 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 downstream, shall not be taken into account, and the delineation of the Floodplain 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 Floodplain 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 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 the community's adopted master plan of: (1) the flood routing capability of the reservoir, as shown by comparison of the 100-Year Floodplain in plan and profile 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 local governing jurisdictions 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 local governing jurisdictions, 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 local government maintenance access 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 CWCB will designate and approve 100-Year Floodplain 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:

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 as Zone X (shaded). The Digital Flood Insurance Rate Maps (DFIRMs) for these areas will include an informational note that advises users of the flood risk in levee-impacted areas. 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.

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.

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 (2010). Artificial embankments that either function as a Levee or a Flood Control Structure must meet the provisions of this Rule or "Office of the State Engineer Rules and Regulations for Dam Safety and Dam Construction," 2 C.C.R. § 402-1 (2010), respectively, in order to be considered as providing protection. 44 C.F.R. § 65.10 (2010), *available at* http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfr65_02.html, and 2 C.C.R. § 402-1 (2010), *available at* http://water.state.co.us/pubs/rule_reg/ds_rules07.pdf, are hereby incorporated by reference and include the incorporated material in each in existence at the time of the promulgation of these Rules, but do not include later amendments to or editions of either.

- A. **Maintenance.** An Operating and Maintenance manual that ensures continuing 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, and that it appears, on visual inspection, to be structurally sound and adequately maintained shall be required on a three-year basis and 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.
- B. **Ownership.** Privately-operated or maintained levee systems will not be considered in the hydraulic analysis performed pursuant to Rule 7 unless a local ordinance mandates operation and maintenance of the levee system and the criteria set forth below are met. Levees for which the community, State, or Federal government has responsibility for operations and maintenance will be considered, provided that the criteria set forth below are met. Privately-owned levee systems shall only be considered in the hydraulic analysis if a fully executed agreement exists between the levee owner and a governmental entity enabling unrestricted access to the governmental entity for the purposes of inspection and maintenance and gives the governmental entity responsibility for maintenance. A copy of the executed agreement shall be provided to the Board and the Board shall be notified in writing of any changes made to this agreement.
- C. **Freeboard.** A minimum levee freeboard of 3 feet shall be necessary, with an additional 1-foot of freeboard within 100 feet of either side of hydraulic structures within the levee or wherever the flow is constricted, such as at bridges. An additional 0.5-foot above this minimum is also required at the upstream end of the levee.
- D. **Interior Drainage.** In cases where levees are mapped as providing 100-year protection the adequacy of interior drainage systems, on the landward side of the levee, shall be evaluated. Areas subject to flooding from inadequate interior drainage behind levees will be mapped using standard procedures.

- E. **Human Intervention and Operation.** In general, evaluation of levees shall not consider human intervention (e.g., capping of levees by sandbagging, earth fill, or flashboards) for the purpose of increasing a levee's design level of protection during an imminent flood. Human intervention shall only be considered for the operation of closure structures (e.g., gates or stop logs) in a levee system designed to provide at least 100-year flood protection, including adequate freeboard as described above, provided that such human operation is specifically included in an emergency response plan adopted by the community.
- F. **Analysis.** For areas protected by a levee providing less than 100-year protection (e.g., 10-year protection), flood elevations shall be computed as if the levee did not exist. For the unprotected area between the levee and the source of flooding, the elevations to be shown shall be obtained from either the flood profile that would exist at the time levee overtopping begins or the profile computed as if the levee did not exist, whichever is higher. This procedure recognizes the increase in flood elevation in the unprotected area that is caused by the levee itself. This procedure may result in flood elevations being shown as several feet higher on one side of the levee than on the other. Both profiles shall be shown in the final report and labeled as "before levee overtopping" and "after levee overtopping" respectively.

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 (2010), unless more restrictive standards have been adopted as set forth in Rules 1 through 20 of these Rules and Regulations for Regulatory Floodplains in Colorado or pursuant to regulations adopted by the local community. These Rules do not apply to local stormwater or local storm drainage studies where riverine flooding sources are not considered. 44 C.F.R. § § 60.3–60.5 (2010) *available at* http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfr60_02.html, are hereby incorporated by reference and include the material in existence at the time of the promulgation of these Rules, but do not include later amendments to or editions of the material.
- B. **Minimum Freeboard.** A minimum freeboard of one foot above the 100-year flood elevation (Base Flood Elevation) shall apply to structures in the floodplain as follows:
- (1) **Residential Structures.** New and Substantially Changed 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 Base Flood Elevation.
 - (2) **Non-residential Structures.** New and Substantially Changed 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 Base Flood Elevation, or be flood-proofed to an elevation at least one foot above the Base Flood Elevation. Agricultural structures shall be exempt from this requirement.
- Critical Facilities shall be regulated according to Rule 6.D. This rule does not affect the freeboard requirement for levees described in Rule 10.C.
- 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 Letter of Map Revision Based on Fill (LOMR-F) with a floor elevation placed below the base flood elevation with one foot of freeboard that existed prior to the placement of fill. 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.

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. Detention/flood control storage and LID should be considered, when practicable, as part of a basinwide program for the watershed.
- B. 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 flow. The channel improvement shall not cause increased velocities or erosive forces upstream or downstream of the improvement.
- C. 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 500-year residual floodplain.

- D. All public and private Flood Control Structures shall be maintained to ensure that they retain their structural and hydraulic integrity. Annual inspections including, as appropriate, field surveys of stream cross-sections, shall demonstrate to the appropriate regulatory jurisdictions that the project features are in satisfactory structural condition, that adequate flow capacity remains available for conveying flood flows, and that no encroachment by vegetation, animals, geological processes such as erosion, deposition, or migration, or by human activity, endanger the proper function of the project. If any significant problems, as identified within annual inspection reports,, the facility or project owner shall notify the CWCB within 60 days of the inspection. The inspections shall be conducted by the local jurisdiction for all publicly owned or publicly maintained facilities, and shall be conducted by the property owner or facility owner for all privately owned and maintained facilities.
- E. Any 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.
- F. Any stream alteration activity shall be designed and sealed by a Colorado Registered Professional Engineer or Certified Professional Hydrologist.
- G. 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.
- H. Stream alteration activities shall not be constructed unless the project proponent demonstrates through a floodway analysis and report, sealed by a Colorado Registered Professional Engineer, that there are no adverse floodway impacts resulting from the project. This requirement only applies on stream reaches with Base Flood Elevations established.
- I. No adverse floodway impact means that there is a 0.00-foot rise in the proposed conditions compared to existing conditions floodway.

- J. Whenever a Stream Alteration activity is known or suspected to increase or decrease the established Base Flood Elevation in excess of 0.3 vertical feet (or a more stringent standard adopted by the local government authority), a Letter of Map Revision showing such changes shall be obtained in order to accurately reflect the proposed changes on FEMA's regulatory floodplain map for the stream reach. The local community is responsible for ensuring that this process is pursued. This section herein does not require a Conditional Letter of Map Revision (CLOMR) to be applied for, unless mandated by the local government having land use authority.

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 Board 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 or 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 CWCB will designate and approve 500-year floodplain information but only at the written request of a local authority having land use jurisdiction.
- C. **Provisional Designation.** The CWCB 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 governing body of any 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 Board 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 Board'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 Board may take action at its own initiative to consider the designation and approval of floodplain information. In such cases, the Board shall notify the affected communities in writing at the time of study initiation or, in the case of a previously completed study, the Board shall 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.
- (3) **Notification of Adopted Resolutions.** The CWCB shall send signed copies of each adopted resolution of designation and approval to the applicable local legislative bodies of each community having jurisdiction over land-use decisions 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 Flood Insurance Rate Maps 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 CWCB will designate the changed floodplains by adopting written resolutions based upon such floodplain information as the Board determines meets the standards set forth in Rules 6-12. 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.

- A. **Conditions.** All changes to designated floodplains shall meet the same conditions as those required for original approval and designation.
- B. **Process for Designation and Approval of Changes to a Regulatory Floodplain.** The Board may 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 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 Board 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 Board'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 Board may take action at its own initiative to consider the designation and approval of floodplain information. In such cases, the Board shall notify the affected communities in writing at the time of the study initiation or, in the case of a previously completed study, the Board shall 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.
 - (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 the applicable local legislative bodies of each community having jurisdiction over land-use decisions within the limits of the changed floodplain within 30 calendar days of designation and approval.
- C. **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.
- D. **Map Revisions to Flood Insurance Rate Maps or Flood Hazard Boundary Maps.** Floodplain map revisions (e.g., FEMA Letters of Map Revision) will be designated twice annually by the CWCB 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 local jurisdiction.** Request for a variance to any of these Rules may be considered by the local jurisdiction having land use authority, 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 local jurisdiction having land use authority may, at its sole discretion, use an established variance procedure.

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

- (1) Local jurisdictions having land use authority 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 Notice of Non-Compliance (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 the Federal Emergency Management Agency, other state agencies, the local government 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 local jurisdiction having land use authority.

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 elects to require.

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

(3) Certain CWCB 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:

FEMA Regulations 44 C.F.R. § § 59, 60, 65, and 70 (2010), *available at* http://www.access.gpo.gov/nara/cfr/waisidx_00/44cfrv1_00.html, EPA Regulations 40 CFR § 302 (2010), *available at* http://www.access.gpo.gov/nara/cfr/waisidx_03/40cfr302_03.html, and OSHA Regulations 29 CFR § 1910 (2010), *available at* http://www.access.gpo.gov/nara/cfr/waisidx_99/29cfr1910_99.html, are incorporated herein by reference. In addition, The Colorado "Office of the State Engineer Rules and Regulations for Dam Safety and Dam Construction Materials," set forth in 2 C.C.R. § 402-1 (2010), *available at* http://water.state.co.us/pubs/rule_reg/ds_rules07.pdf, are incorporated herein by reference. The FEMA Guidelines and Specifications for Flood Mapping Partners (2009), *available at* www.fema.gov/fhm/dl_cgs.shtm, are also incorporated herein by reference. These regulations are hereby incorporated by reference by the Colorado Water Conservation Board and made a part of these Rules and Regulations for Regulatory Floodplains in Colorado. Materials in these Rules, including, but not limited to those mentioned here in Rule 17, which are incorporated by reference are those materials in existence as of the effective date of these Rules and do not include later amendments to or editions of these materials. The material incorporated by reference is available for public inspection during regular business hours at the Colorado Water Conservation Board, 1313 Sherman Street, Room 721, 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 National Flood Insurance Program (NFIP) and possibly FEMA's Community Rating System (CRS) 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 and 500-year floods. Floods greater than 500-year floods do occur, and loss of life and property is possible in areas mapped outside of both the 100-year and 500-year floodplains.
- 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 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 property damage may occur. Flooding greater than 500-year (0.2% chance) events can and do occur as well, and loss of life and property is possible in areas mapped outside of both the 100-year and 500-year regulatory floodplains. 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 Store, National Flood Insurance Program, 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.

Rule 20. Effective Date:

These Rules shall apply to the designation and approval of all floodplain information made by the Board and all other floodplain activities on or after January 14, 2011 and are, therefore, not retroactive to any floodplain information designated and approved by the Board or other floodplain activities prior to the effective date. These Rules contain provisions that will require many local ordinances to be updated to be consistent with these rules. A transition period of three years beginning from the effective date of these rules will be in effect during which all local governments may follow current local ordinances but must undertake activities to come into compliance with these Rules. Following this transition period, all floodplain activities shall be in conformance with these Rules. In addition, communities may, at their sole discretion, allow un-built projects that were previously permitted by the local government, prior to the adoption date of the local ordinance for which these Rules are incorporated, to be built and therefore considered to be in compliance with these Rules. Communities may also, at their sole discretion, permit and allow projects for which a valid CLOMR was issued prior to the adoption date of the local ordinance for which these Rules are incorporated.

Editor's Notes

History

Entire rule eff. 01/14/2011.

NOTICE OF PROPOSED RULEMAKING AND PUBLIC RULEMAKING HEARING BEFORE THE COLORADO WATER CONSERVATION BOARD

I. NATURE OF PUBLIC RULEMAKING HEARING

Pursuant to section 24-4-103, C.R.S., this is a notice of proposed rulemaking and public rulemaking hearing before the Colorado Water Conservation Board (“Board”) for consideration of amendments to the Board’s Rules and Regulations for Regulatory Floodplains in Colorado, 2 CCR 408-1 (“Rules”).

The Board is amending the Rules to: (1) update the standards and processes for floodplain designation to make the Rules consistent with Federal Emergency Management Administration (FEMA) floodplain mapping procedures, (2) amend and clarify Rule 4 definitions; (3) update references to external documents; and (4) revise for clarification the following Rules: Rule 5, Rule 7, Rule 8.D, Rule 10.C-F., Rule 11.B, Rule 12.D., Rule 12.J., the introductory paragraph to Rule 14, Rule 17, and Rule 20.

II. DESCRIPTION OF THE SUBJECTS AND ISSUES INVOLVED

Board Staff (“Staff”) drafted proposed changes to the Rules, solicited written comments from interested parties, and held public (a/k/a stakeholder) meetings on June 29, July 9, and July 12 2021, to allow interested parties to provide input on the proposed changes. At its July 22, 2021 meeting, the Board appointed a hearing officer and authorized Staff and the hearing officer to initiate the formal rulemaking process. The formal rulemaking process is initiated by filing a notice of proposed rulemaking with the Secretary of State and publication in the Colorado Register in accordance with section 24-4-103(2.5), C.R.S.

The primary purpose for the revisions to the Rules is to make them consistent with the FEMA’s Risk Mapping, Assessment and Planning Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities, December 1, 2020. The revisions to the Rules also: clarify defined terms contained in the Rules, including to make them consistent with FEMA definitions; clarify the use of defined terms throughout the Rules; move all incorporations by reference to Rule 17; and make the following additional clarifications:

RULE 5 REGULATORY FLOODPLAIN

- Clarifies that the Regulatory Floodplain is the 100-Year Floodplain unless a community chooses to regulate to the 500-Year-Floodplain.
- Clarifies that CWCB automatically designates 500-Year Floodplain information when available

RULE 7 STANDARDS FOR DELINEATION OF REGULATORY FLOODPLAIN INFORMATION

- Removal of Floodplain report requirements list – these are covered in external references and this section is redundant
- Clarified that reports submitted to CWCB must be in digital format

RULE 8 STANDARDS FOR REGULATORY FLOODWAYS

- Clarifies that Floodway regulations still apply to areas of Model-Backed Approximate Flood Elevations (Zone A) but not to Zone A without supporting documentation

RULE 10 CRITERIA FOR DETERMINING EFFECTS OF LEVEES ON REGULATORY FLOODPLAINS

- Refers to external documents for Levee requirements and restrictions to avoid redundancy

RULE 11 FLOODPLAIN MANAGEMENT REGULATIONS

- Clarification for regulations associated with non-residential structures to be in conformance FEMA

RULE 12 EFFECTS OF FLOOD MITIGATION MEASURES AND STREAM ALTERATION ACTIVITIES ON REGULATORY FLOODPLAINS

- Clarification and simplification of Rule 12.D maintenance requirements for dams and Levees in accordance with FEMA Guidelines.
- Clarification of the State's position of when a Letter of Map Revision (LOMR) is required and clarification that this does not circumvent other (i.e. FEMA) requirements
- Clarification on how to determine if increase or decrease of Base Flood Elevation of greater than 0.3 vertical feet has occurred.

RULE 14 DESIGNATION AND APPROVAL OF CHANGES TO REGULATORY FLOODPLAINS

- Clarification that undesignated information to a previously designated reach may be used under the following conditions:
 - The undesignated information has the same or greater level of detail as previously designated information
 - The undesignated information is more restrictive than the previously designated information
 - The Community ultimately obtains Board Designation and Approval of the information

RULE 17 INCORPORATION BY REFERENCE

- Previously, state and federal guidelines used by CWCB as resources for Floodplain management were incorporated by reference and repeated throughout the rules. References to incorporated resource documents remain throughout the Rules, while APA required information, in accordance with section 24-4-103(12.5), C.R.S. relocated to Rule 17

RULE 20 EFFECTIVE DATE

- Update effective date for these rule revisions
- Reference to Community ordinance updates removed.

These proposed revisions to the Rules also include minor clerical and grammatical revisions for

clarification and readability.

The language of the proposed amendments to the Rules, and a proposed statement of basis and purpose and specific statutory authority for the amendments, are available on the Board's website at <https://cwcb.colorado.gov/floodplain-rules-revisions>, and are available upon request of Staff. Please contact Kevin Houck at (303) 866-3441, extension 3219 or at kevin.houck@state.co.us for further information.

III. SPECIFIC STATUTORY AUTHORITY

The statutory authority for promulgating the Rules and any amendments thereto is found at sections 37-60-106 and 37-60-108, C.R.S.

IV. PARTY STATUS

The Notice of Proposed Rulemaking and Public Rulemaking Hearing will be published in the Colorado Register on August 10, 2021. Applications for party status will be accepted through September 10, 2021. Applications for party status should be submitted to the Board's Hearing Officer, Jen Mele, by email to jen.mele@coag.gov. Applications for party status shall include: (1) the name of the person, persons or entity seeking party status; (2) a contact person, if different from IV.(1); (3) the appropriate mailing address, phone number, and email address for the contact person listed in IV.(2); (4) the interest of the person(s) or entity in the proposed amendments to the Rules; and (5) a description of the general nature of the evidence or information to be presented in the course of the proceedings.

V. PRE-HEARING CONFERENCE

Prior to the rulemaking hearing, the Hearing Officer will hold a pre-hearing conference. After September 10, 2021, when all party status applications have been received, the Hearing Officer will issue an order notifying all parties of the date, time, and location or call-in information for the first pre-hearing conference. The order will also provide any other deadlines and procedures that are appropriate at the time. Participation in the pre-hearing conference may be available by telephone or video conference at the Hearing Officer's discretion, and participation information will be included in an order of the Hearing Officer.

Each applicant for party status must submit a pre-hearing statement in order to participate in the pre-hearing conference.

VI. RULEMAKING HEARING

Date, Time, and Location

DATE: November 18, 2021

TIME: 9:00 a.m. (or as otherwise directed by the Hearing Officer)

LOCATION: Participation information to be provided at a later date (1) on the Board's website

at <https://cweb.colorado.gov/> and (2) order of the Hearing Officer to the people or entities who have applied for party status.

Procedures

The role of the Board's Hearing Officer is to provide orderly procedures for the rulemaking; ruling on substantive issues is a Board responsibility. The Hearing Officer will issue orders designed to streamline and clarify processes consistent with this Notice of Proposed Rulemaking and Public Rulemaking Hearing and as permitted by law.

The Board may ask questions of any person appearing before it.

The Board will consider alternative proposals related to the proposed amendments, subject to the procedures established by the Hearing Officer.

The Board may modify the proposed amendments to the Rules from those published in the Colorado Register. Only proposed amendments within the scope of this Notice will be considered for permanent adoption.

After the conclusion of the rulemaking hearing and after consideration of the relevant matters presented, the Board through its Hearing Officer will render its decision to the parties to the hearing.

Hearing Participation

At the hearing, parties shall be afforded the opportunity to submit written data, views, or arguments, and to present the same orally, unless the Board deems it unnecessary. The submittal of such material and summations, either in writing or orally, shall be as directed by the Hearing Officer or the Board.

If alternative amendments to the proposed amendments to the Rules are requested by a party, the Board encourages those amendments to be included in the written materials, along with a proposed statement of basis and purpose of the alternative amendments.

Once any written material is submitted, the material becomes part of the administrative rulemaking record and the property of the Board and will not be returned to the person(s) or entity submitting the material.

The Hearing Officer will decide the timing and order of oral presentations by the parties, if any. Any person who is not a party to the hearing but wishes to provide comment may do so in writing prior to the date of the hearing. The Board strongly encourages all interested persons to submit comments in writing; however, a short period of time at the rulemaking hearing (a total of 30 minutes or less) will be reserved for oral comments by interested persons who do not have party status.

VII. ADOPTION OF THE RULES

The Board will consider all information presented at the hearing.

The Board may modify the proposed amendments to the Rules in adopting amendments to the Rules.

The final amended Rules, as adopted by the Board, shall become effective no sooner than twenty (20) days after publication in the Colorado Register.

VIII. ADMINISTRATIVE RULEMAKING RECORD

Staff will maintain a record of the rulemaking proceeding pursuant to section 24-4-103(8.1). C.R.S. The initial proposed rule amendments submitted to the Secretary of State with this Notice of Proposed Rulemaking and Public Rulemaking Hearing are available on the Board's website at <https://cwcb.colorado.gov/floodplain-rules-revisions>.

The administrative rulemaking record, including the proposed rule amendments, submitted applications for party status, pre-hearing statements, submitted written comments, and all other written materials to be considered by the Board in this rulemaking, will be available following the conclusion of these proceedings and upon request to doug.mahan@state.co.us, and at the Board's office at 1313 Sherman Street, Room 718, Denver, CO 80203, during normal business hours (8:00 a.m.-5:00 p.m.), once state agencies are again open to the public.

DATED this 30th day of July, 2021.



Rebecca Mitchell
Director
Colorado Water Conservation Board
1313 Sherman Street, Rm. 718
Denver, CO 80203

FINAL PROPOSED RULE REVISIONS

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 ~~both 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 ~~24-4-103~~, 24-65.1-101(1)(c)(~~H~~), 24-65.1-202(2)(a)(~~H~~), 24-65.1-302(2)(a), 24-65.1-403(3), ~~30-28-111(1)-(2), 31-23-301(1)-(3)~~, 37-60-106(1), 37-60-106(1)(c)-(g), (j), (k), and 37-60-108, C.R.S. ~~(2010)~~.

Rule 3. Purpose and Scope:

- A. **Purpose.** The purpose of these Rules is to provide uniform standards for ~~R~~egulatory ~~f~~Floodplains (or ~~F~~floodplains) in Colorado, to provide standards for activities that may impact ~~R~~egulatory ~~f~~Floodplains in Colorado, and to ~~define~~stipulate the process by which floodplains will be ~~D~~esignated and ~~A~~pproved by the ~~CWCB~~Board. Rules for Regulatory Floodplains are of statewide concern to the State of Colorado and the ~~Colorado Water Conservation~~ Board in order to prevent ~~F~~flooding and the negative impacts of ~~F~~floods, as well as to ~~assure~~promote public health, safety, welfare and property by limiting ~~d~~Development in ~~f~~Floodplains. These Rules ~~will~~ also assist the CWCB and ~~C~~ommunities in Colorado to develop sound ~~F~~floodplain ~~M~~anagement practices and implement the ~~National Flood Insurance Program~~ ~~(NFIP)~~. These Rules shall apply throughout the State of Colorado, without regard to whether a ~~C~~ommunity participates in the ~~National Flood Insurance Program~~ ~~NFIP~~. These Rules shall also apply to Stream Alteration ~~a~~Activities conducted by state agencies and to ~~f~~Federal Stream Alteration ~~a~~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 ~~f~~Floodplain information developed for zoning and for ~~f~~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, ~~Indian Native American~~ tribes, and federal government agencies.

- (2) **Subdivisions.** These Rules generally apply to the local approval of subdivision drainage reports that provide 100-~~Y~~year ~~F~~Floodplain information. Local governments should ensure that site-specific ~~F~~Floodplain delineations, intended for regulatory purposes when they are prepared, ~~r~~ for ~~d~~Development activities, ~~s~~ are consistent with ~~F~~Floodplain information ~~D~~designated and ~~a~~Approved by the Board.
- (3) **Dam Failure ~~F~~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-Yyear-Flood	A F flood having a recurrence interval that has a one 1-percent- annual- chance of being equaled or exceeded during any given year (1-percent- annual-chance- F flood). For the purpose of these Rules, t The terms " one 100-hundred-y-Year- F flood" and " one 1-percent annual- chance F Flood," and " base Flood, " are synonymous with the term " 100-year flood. " The term does not imply that the F Flood will necessarily happen once every one hundred years.
100-Yyear-Floodplain	The area of land susceptible to being inundated as a result of the occurrence of a one hundred 100-yYear- F Flood. <u>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.</u>
500-Yyear-FFlood	A F 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- chance- annual- chance- F flood). <u>The terms "five-hundred-year Flood" and "0.2-percent -annual-chance Flood" are synonymous with the term "500-Year-Flood."</u> The term does not imply that the F Flood will necessarily happen once every five hundred years.
500-Yyear-Floodplain	The area of land susceptible to being inundated as a result of the occurrence of a five hundred year 500-year-Flood. <u>500-Year-Floodplains are typically considered to be areas of moderate Flood hazard.</u>
<u>Accessory Structure</u>	<u>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.</u>
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 ~~F~~ans contain active stream ~~e~~Channels and boulder bars, and recently abandoned ~~C~~echannels. Alluvial ~~f~~Fans are predominantly formed by alluvial deposits and are modified by infrequent sheet ~~F~~flood, ~~C~~echannel avulsions and other stream processes.

**Approximate
Floodplain Information**

~~Floodplain-Flood hazard~~ information ~~that significantly reduces based on a reduced the~~ level of detail for topographic mapping or hydraulic calculations. ~~Analysis results may be used to arrive at develop floodplain-Flood hazard~~ delineations ~~and corresponding data (i.e., water surface elevations, associated depths and velocities). This may or may not have without~~ 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 ~~F~~floodplain information. ~~BFEs are often not portrayed on a mapped stream reach with~~ Approximate Floodplain Information.

Base Flood

Is synonymous with 100-~~Y~~year-~~F~~flood and is a ~~F~~flood having a ~~one1-~~percent-annual-chance of being equaled or exceeded in any given year.

**Base Flood Elevation
(BFE)**

The elevation shown on a FEMA ~~Flood Insurance Rate Map~~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 ~~f~~Flood that has a ~~one1-~~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 ~~C~~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 ~~F~~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 ~~f~~Floodplain ~~M~~management ~~R~~regulations through zoning, including, but not limited to, cities, towns, unincorporated areas in the counties, ~~Indian-Native American~~ tribes and drainage and ~~f~~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 ~~f~~Flooding source. A CLOMR does not revise an effective ~~f~~Floodplain ~~m~~Map, but determines whether a proposed project, once constructed, that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and thus result in warrant the modification of the existing regulatory floodplain 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 ~~e~~Ccommunity at any time before, during and after a ~~f~~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 water surface profiles and floodplain delineations 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.

DFIRM Database

~~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.~~

Digital Flood Insurance Rate Map (DFIRM)

~~FEMA digital floodplain map. These digital maps serve as "regulatory floodplain maps" for insurance and floodplain management purposes.~~

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.~~

FEMA

Federal Emergency Management Agency.

FEMA Guidelines & Specifications for Flood Hazard Mapping Partners Risk Mapping Assessment and Planning (Risk MAP) Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities

~~Floodplain mapping specifications published by FEMA. The FEMA Guidelines and Specifications for Flood Hazard Mapping Partners (2009) are incorporated herein by reference and available for viewing at www.fema.gov/fhm/dl_cgs.shtm and for inspection at the CWCB offices at 1313 Sherman Street, Room 721, Denver CO 8020. The regulations may also be examined at any state or federal publications depository library. The FEMA Mapping Specifications and Guidelines incorporated herein by reference are only those in existence at the time of the promulgation of these Rules and Regulations for Regulatory Floodplains in Colorado and do not include later amendments to or editions of the incorporated material. 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 Contour

~~A line shown on a map joining points of equal elevation on the surface of floodwater that is perpendicular to the direction of flow.~~

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 ~~ef-for a C~~ommunity for delineating on which FEMA has delineated both the 100-Year-Floodplain and 500-Year-Floodplain, the Floodway, and special hazard areas and the hazard risk premium zones designations applicable to the eCommunity.

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.

Flood Mitigation Project

~~A project within or adjacent to a flooding source that is specifically intended to reduce or eliminate the negative impacts caused by excessive floodwaters through improvement of drainage, flood control, flood conveyance or flood protection.~~

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, and preventive, and maintenance measures for reducing potential flood risk and associated damage, including, but not limited to, zoning or land-use regulations, Flood ~~control works~~mitigation measures, and emergency

preparedness plans.

Floodplain Management Regulations

Zoning ordinances, subdivision regulations, building codes, health regulations, land-use permits, special purpose ordinances (~~F~~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 flood-damage 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 ~~F~~Floods of various magnitudes or frequencies. Such maps include, but are not limited to, Flood Hazard Boundary Maps (FHBM), and Flood Insurance Rate Maps (FIRM), ~~and Digital Flood Insurance Rate Maps (DFIRM)~~ 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 (~~COE~~USACE), Floodplain Information Reports published by the CWCB or others, Flood Hazard Area Delineation ~~s~~ studies (FHAD~~s~~) published by the Urban Drainage and Flood Control District (UDFCD) a/k/a the Mile High Flood District, and other locally adopted ~~F~~floodplain ~~s~~Studies and master plans.

Floodplain Studies

A formal presentation of the study process, results, and technical support information developed for ~~f~~Floodplain ~~m~~Maps.

Floodway

The ~~C~~channel of a river or other watercourse and the adjacent land areas that must be kept free of obstructions in order to discharge the ~~b~~Base ~~F~~flood without cumulatively increasing the water surface elevation more than a designated height.

~~Foreseeable Development~~

~~The potential future development of, or changes in, the land uses that are likely to take place during the period of time covered by a community's adopted master land use plan or comprehensive community plan, or if no time period is specified, over a 20-year period. If there is no adopted community plan, then potential development patterns based on zoning, annexations, and other relevant factors should be evaluated.~~

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 ~~F~~flood heights greater than the height calculated for a selected size ~~F~~flood such as debris blockage of bridge openings and the increased runoff due to urbanization of the watershed.

Geographic Information Systems (G.I.S.)

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 ~~F~~lood elevations, depths, and velocities for various storm frequencies/events probabilities 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 ~~selected probabilities~~storm frequencies/events for streams, Channels, or watersheds based on a scientific analysis of the physical process resulting in rainfall runoff amounts at specific locations.

Letter of Map Revision (LOMR)

An official revision issued by FEMA to modify the currently effective ~~FEMA-FIRM and FISmap~~. Based on supporting technical documentation, it is issued by FEMA ~~and 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~~modification of the~~ 100-Year-Floodplain, also known as the "Special Flood Hazard Area (SFHA)" or high risk Flood zone shown on the effective Flood Insurance Rate Map (FIRM) based on the placement of fill outside the ~~existing 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

~~An artificial~~A man-made structure or land feature (or series of structures or land features) ~~that has been~~ designed and ~~is~~ 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, 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. FEMA has previously credited with providing protection from a 1-percent-chance-annual-flood on an effective FIRM or DFIRM, for which FEMA is awaiting data and/or documentation that will show the Levee's compliance with Levee certification requirements of the NFIP regulations.

Regulatory Floodplain

Floodplain Maps, Profiles, and related information for flood hazard areas that have been designated and approved by the CWCB. See Rule 5. 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 The threat to the areas behind levees that may still be at risk for flooding. Although the probability of flooding may be lower because a levee exists, the consequence to personal safety and property is much higher should a levee overtop or fail. (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 ~~f~~loodplain that alters the natural ~~C~~channel, geometry, or flow characteristics of the stream.

Substantial Change

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

Substantial Damage /

Damage of any origin sustained by a structure whereby the cost of

Substantially Damaged

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 channel alignment.

Rule 5. Regulatory Floodplain:

The Regulatory Floodplain in Colorado is the 100-~~y~~Year-~~f~~Floodplain, unless a Community voluntarily elects to regulate to a 500-Year-Flood standard for certain circumstances. ~~However, the~~The CWCB Board will also Designate and Approve 500-~~y~~Year-~~f~~Floodplain information when available but only at the written request of a local authority having land use jurisdiction. In addition, previously designated ~~F~~floodplain areas that have been removed from FEMA's effective ~~R~~egulatory ~~F~~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(~~e~~)~~C~~. All Designated and Approved Regulatory Floodplain information can be used by ~~local authorities having land use jurisdiction~~ Communities for the purpose of local regulation. The General Assembly has deemed the designation of ~~f~~Floodplains a matter of statewide importance and interest and gave the CWCB the responsibility for the designation of Regulatory Floodplains and to ~~assure~~-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 ~~s~~Services ~~facilities~~; (2) Hazardous ~~m~~Materials ~~facilities~~; (3) At ~~-~~risk ~~p~~Populations ~~facilities~~; and (4) ~~Facilities~~ ~~V~~vital to ~~R~~restoring ~~N~~normal ~~S~~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:

a.i. Public safety (police stations, fire and rescue stations, emergency vehicle and equipment storage, and, emergency operation centers);

b.ii. Emergency medical (hospitals, ambulance service centers, urgent care centers having emergency treatment functions, and non-ambulatory surgical structures but excluding clinics, doctors offices, and non-urgent care medical structures that do not provide these functions);

c.iii. Designated emergency shelters;

d.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);

e.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

f.vi. Air transportation lifelines [~~f~~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 (~~WWTP~~), ~~n~~Non-~~P~~otable 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(~~2~~D), when practicable in order to protect their own infrastructure and to avoid system failures during extreme ~~f~~Flood events. Emergency restoring plans following major ~~f~~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 ~~local authority having jurisdiction~~Community that the facility is an element of a redundant system for which service will not be interrupted during a ~~F~~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 ~~100-year 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 ~~local authority~~ Community on an as-needed basis upon request by that ~~Community~~ local authority.

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

a. These facilities ~~may include~~ consist of:

- ai. Chemical and pharmaceutical plants (chemical plant, pharmaceutical manufacturing);
- bii. Laboratories containing highly volatile, flammable, explosive, toxic and/or water reactive materials;
- ciii. Refineries;
- dii. Hazardous waste storage and disposal sites; and
- ey. 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 ~~Material Safety Data Sheet (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 ~~Threshold Planning Quantity (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 ~~(2010)~~, also known as Extremely Hazardous Substances ~~(EHS)~~; 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. ~~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," can be found at 40 C.F.R. § 302. See Rule 17. (2010), available at http://www.access.gpo.gov/nara/cfr/waisidx_03/40cfr302_03.html, and OSHA regulation "Occupational Safety and Health Standards," ~~29 C.F.R. § 1910 (2010), available at~~ http://www.access.gpo.gov/nara/cfr/waisidx_99/29cfr1910_99.html, are

~~incorporated herein by reference and include the regulations in existence at the time of the promulgation of these Rules, but exclude later amendments to or editions of the regulations.~~

~~c.~~ 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~~Community and certification by a qualified professional (as determined by the ~~local jurisdiction having land use authority~~Community) 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 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:

~~a.i.~~ Elder care (nursing homes);

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

~~c.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:

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

~~b.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 ~~local authority having jurisdiction~~Community that the facility is an element of a redundant system for which service will not be interrupted during a ~~flood~~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 ~~100-year Regulatory floodplain~~Floodplain or are compliant with this ~~Rule~~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 ~~f~~Flood. Evidence of ongoing redundancy shall be provided to the ~~local authority~~ Community on an as-needed basis upon request by that ~~local authority~~ Community.

B. Identification of Critical Facilities.

(1) It is the responsibility of the ~~local jurisdiction having land use authority~~ Community to identify and confirm that specific structures in their ~~C~~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 ~~jurisdiction~~ Community. For those structures for which it is unclear or otherwise ambiguous if the criteria are met, the ~~local jurisdiction~~ Community shall have the sole discretion to determine if the structure is a Critical Facility. ~~Local jurisdictions~~ 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. ~~(2010)~~, open space activities such as agriculture, horticulture, floriculture, recreation, and mineral extraction, including oil and gas activities, shall be encouraged in the ~~F~~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. ~~Local jurisdictions~~ Communities may, at their sole discretion, include leased facilities in their identification of Critical Facilities.

C. **500-year Flood Events.** The CWCB acknowledges that ~~f~~Flooding does and has occurred above and beyond 100-~~y~~Year-Flood ~~(1% annual chance)~~ events. Communities are encouraged to regulate ~~d~~Development of Critical Facilities within the 500-~~Y~~year-~~F~~floodplain, when available.

D. Protection of Critical Facilities.

(1) All new, Substantially Damaged, and Substantially Changed-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. ~~Local jurisdictions having land use authority~~ 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-Change 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 ~~100-Year-Regulatory~~ Floodplain, the structure shall be protected according to Rule 11 ~~(B)~~ herein, with the exception of a two-foot ~~f~~Freeboard requirement of two feet substituted for the standard one-foot ~~F~~freeboard. The International Building Code ~~(2006)~~

and Flood Resistant Design and Construction (ASCE 24) ~~(2005)~~ 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 ~~local jurisdiction having land use authority~~ Community, have continuous non-inundated access (ingress and egress for evacuation and emergency services) during a ~~100-year 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 ~~local jurisdiction having land use authority~~ 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 ~~Flood~~ floodplains. All ~~Flood~~ floodplain information intended to be used by ~~local jurisdictions~~ Communities for the purpose of regulating ~~Flood~~ 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 ~~local governments~~ Communities to regulate floodplains appropriately. The standards in this rule reference, and incorporate herein, the ~~FEMA Guidelines and Specifications for Flood Hazard Mapping Partners~~ FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities, and associated resource documents. ~~Whenever such a reference is made, it includes the FEMA Guidelines and Specifications for Flood Hazard Mapping Partners material in existence at the time of the promulgation of these Rules, but excludes later amendments to or editions of the material.~~
- B. **Level of Detail.**

- (1) Approximate Floodplain Information will be based on detailed hydrology computed for 100-~~Y~~year-~~f~~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-~~y~~Year-~~f~~Floods. Flood profiles and ~~f~~Floodplain delineations for 100-~~Y~~year-~~f~~Flood and other frequencies, if any, shall be plotted, preferably using a digital method. The ~~CWCB-Board~~ shall ~~D~~esignate and ~~A~~pprove 100-~~Y~~year-~~f~~Floodplain information, and 500-~~Y~~year-~~Floodplain~~ information ~~when available but only at the request of a local authority having land use jurisdiction.~~
- C. **Base Mapping.** Base mapping for ~~f~~Floodplain ~~s~~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 FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference.~~
- D. **Topography and Surveys.** Topographic and field survey information for ~~f~~Floodplain ~~s~~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 FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference.~~
- E. **Geographic Information Systems (GIS).** GIS information for ~~f~~Floodplain ~~s~~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 FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference.~~
- F. **Hydrology.** Hydrologic ~~A~~analyses for ~~f~~Floodplain ~~S~~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 FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference.~~ The Colorado Floodplain and Criteria Manual may be used as a reference document to aid in this analysis. In addition, hydrology studies must comply with the following:
- (1) All ~~f~~Floodplain ~~s~~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 ~~f~~Flood hydrology. The CWCB may evaluate future watershed conditions, in addition to existing conditions ~~when Foreseeable Development is expected.~~
 - (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 ~~C~~ommunities 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 ~~CWCB-Board~~ that clearly demonstrates that the information in question is inaccurate

pursuant to Rule 12. The ~~CWCB 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 ~~A~~analyses for ~~f~~Floodplain ~~s~~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~~in FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference.~~

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~~FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference~~, and shall, at a minimum, comply with the technical quality assurance standards as follows:

- (1) The ~~F~~flood elevations and the ~~f~~Floodplain delineations on the maps must meet or exceed FEMA NFIP standards for tolerance and technical accuracy for correlation~~correlate reasonably~~ to the best available topographic information for the stream and adjacent corridor, ~~and must meet an acceptable level of technical accuracy.~~
- (2) The planimetric features on the ~~F~~floodplain ~~m~~M~~a~~ps (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~~aerial photographs or other suitable information~~ 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 ~~F~~floodplain conditions, or natural ~~f~~Flood hazards, in Colorado that fall outside of the standard riverine environment. Studies for the ~~100-year Regulatory~~ ~~f~~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~~FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as incorporated herein by reference.~~ The special conditions are:

- (1) Alluvial Fan and Debris Flow ~~f~~Floodplains located within foothill and mountainous regions of Colorado shall be considered on a case-by-case basis.
- (2) Post-~~w~~Wildfire ~~H~~hydrology ~~shall 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 ~~F~~flood advisory maps, based on burned watershed conditions, ~~shall may~~ be produced at the request of the ~~local governing authority~~Community or by Board initiative. The interim ~~f~~Floodplain ~~m~~M~~a~~ps ~~shall should~~ show increased runoff from hydrophobic soils and lack of vegetation. The post-wildfire maps ~~shall 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 ~~F~~looding shall be considered within stream reaches where this phenomenon is known to occur. Ice jam ~~F~~looding may be analyzed utilizing methodologies ~~available through the U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL), located in Hanover, New Hampshire~~ 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 ~~h~~Hydrologic ~~A~~Analyses, ~~H~~Hydraulic ~~A~~Analyses, and ~~floodplain~~ 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 ~~CWCB Board~~ for Designation and ~~A~~Approval shall be properly titled, dated, organized, and ~~bound~~ compiled as a stand-alone digital document (in MS Word and PDF formats). ~~In addition to the hard copy final report, the CWCB requires that a digital copy of the final report be submitted in MS Word and PDF formats.~~ All pertinent technical backup data to support the flood hazard study, regardless of data format such as GIS files, and hydrologic and hydraulic models shall also be provided to the CWCB in acceptable digital formats. The CWCB shall ~~electronically distribute~~ make pertinent supporting documentation for flood hazard studies available for access to interested parties, to the extent possible, ~~pertinent study information. Access to original GIS information shall be provided to local governments and other authorized users through a secure data sharing platform, and protected website or other secure means.~~ 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.

- (1) ~~The Regulatory Floodplain maps shall show, at a minimum, the flood boundaries, the location of all cross sections used in the hydraulic analysis, the reference line drawn down the center of the floodplain or low flow channel, and a sufficient number of flood contours in order to reconstruct the flood water surface profiles.~~
- (2) ~~New Physical Map Revisions requested by local jurisdictions or involving local jurisdictions should include detailed 500-year floodplain information when practicable.~~
- (3) ~~Flood contours, or Base Flood Elevations, shall be shown as wavy lines drawn perpendicular to the direction of flow of floodwater and shall extend completely across the area of the mapped Regulatory Floodplain. Each flood contour shall indicate its elevation to the nearest whole foot.~~
- (4) ~~The Regulatory Floodplain map scale shall be 1-inch equals 1000 feet or such map scale showing greater detail. FEMA map panels may also be published at 1 inch equals 500 feet, 1 inch equals 1,000 feet or 1 inch equals 2000 feet.~~
- (5) ~~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 ~~floodplain mapping~~~~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 ~~e~~C~~ommunities~~ to regulate existing and future Floodplain ~~d~~D~~evelopments~~ within their jurisdictions. This Rule 8(A) does not require ~~C~~e~~ommunities~~ to automatically map ½ foot floodways within their jurisdictions. However, at such time when ~~F~~Floodways are to be delineated ~~based on revised Flood hazard studies or~~ through ~~p~~P~~hysical~~ ~~m~~M~~ap~~ ~~r~~R~~evisions~~ involving local government participation, ~~C~~e~~ommunities~~ shall delineate ~~F~~Floodways for the revised reaches based on ½-foot rise criteria. Letters of Map Revision to existing ~~F~~Floodway delineations may continue to use the ~~F~~Floodway criteria in place at the time of the existing ~~F~~Floodway delineation. Until such time that ~~F~~Floodways are revised and designated, ~~C~~e~~ommunities~~ may continue to regulate their mapped one-foot ~~F~~Floodways. For reaches where a transition must be shown to connect new studies to existing studies with different ~~F~~Floodway criteria, the transition length shall not exceed 2,000 feet.
- B. **Designation of ~~F~~Floodways.** Designation and ~~A~~a~~pproval~~ of Floodplain information shall also include the ~~D~~d~~esignation~~ and ~~a~~a~~pproval~~ of corresponding Floodway Information. For waterways with ~~Model-Backed Approximate Flood Elevation or Base Flood Elevations~~~~BFEs~~ for which Floodways are not computed, the ~~C~~e~~ommunity~~ shall apply a ½ foot ~~F~~Floodway regulation according to its own determination, as outlined in FEMA Regulation 44 C.F.R. § 60.3(c)(10) (2010), ~~incorporated herein by reference, for the minimum a~~ 1-foot floodway. ~~See Rule 17. This reference is available at http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfr60_02.html, and is hereby incorporated by reference into this Rule and includes the material in existence at the time of the promulgation of these Rules, but does not include later amendments to or editions of this incorporated material~~
- C. **Incorporation of FEMA's Floodway Regulations.** ~~All regulations defined in the FEMA regulations "Criteria for Land Management and Use," 44 C.F.R. § 60.3(c)(10), (d) (2010) available at http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfr60_02.html, are hereby incorporated by reference into this Rule and includes the material in existence at the time of the promulgation of these Rules, but does not include later amendments to or editions of this incorporated material.~~ All ~~e~~C~~ommunities~~ participating in the ~~National Flood Insurance Program~~~~NFIP~~ that have ~~Base Flood Elevations~~~~BFEs~~ or ~~Model-Backed Approximate Flood Elevation~~ defined for one or more of the waterways within their jurisdictions shall adopt and enforce these ~~"Criteria for Land Management and Use"~~ ~~F~~Floodway regulations ~~at 44 C.F.R. § 60.3(c)(10), (d).~~ Failure to enforce ~~F~~Floodway regulations may impact the ~~C~~e~~ommunity's~~ standing in the ~~National Flood Insurance Program~~~~NFIP~~ and may eliminate or reduce eligibility for federal or state financial assistance for ~~F~~Flood ~~M~~m~~itigation~~ and disaster ~~relief~~ purposes.

- D. **Communities in Which This Rule Applies.** Communities with Regulatory Floodplains that have been Designated and Approved by the ~~CWCB Board~~ with ~~Base Flood Elevations~~ BFEs or Model-Backed Approximate Flood Elevation 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 in communities without Base Flood Elevations established, unless otherwise adopted by the community.~~ This Rule shall not apply to approximate stream reaches for which ~~Base Flood Elevations~~ 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 diminution-attenuation of peak ~~flood~~ discharges, which would result from normal Flood Control Structure operating procedures.
- (2) The ~~Hydrologic~~ aAnalysis 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, ~~or~~ ultimate Community responsibility, or Community enforcement through written agreement. See 44 C.F.R. § 65.6 (a)(12). Detention structures that are privately operated or maintained shall not be included in the ~~Hydrologic~~ Aanalysis 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 ~~Floodplain-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 ~~Floodplain-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 ~~e-Flood~~ hydrology can be routed through the reservoir to account for any ~~fFlood~~ 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 ~~C~~community's adopted master plan of: (1) the ~~F~~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 ~~fFlood~~ routing capability is lost; (2) the need to preserve that ~~fFlood~~ routing capability by whatever means available in the event that the reservoir owners attempt to make changes that would decrease the ~~fFlood~~ 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 ~~fFlood~~ conveyance facilities, unless specifically approved and designated by ~~local governing jurisdictions~~Community and approved by the irrigation facility owners. The ~~F~~flood conveyance capacity of irrigation facilities shall be acknowledged only by agreement between the facility owners and ~~local governing jurisdictions~~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 ~~local government~~Community maintenance access to the irrigation facility if needed.

Unless specified otherwise by aforementioned written agreement, ~~F~~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 ~~F~~flood reduction benefits downstream of the irrigation facility. Backwater behind irrigation facilities shall be mapped. The ~~CWCB-Board~~ will ~~d~~Designate and ~~a~~Approve 100-Year ~~-Flood~~plain 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 ~~l~~Levees for property protection, ~~fFlood~~ control, and ~~fFlood~~ hazard ~~M~~itigation is not encouraged by the CWCB, unless other ~~m~~Mitigation alternatives are not viable. The areas landward of an accredited ~~L~~evee and Provisionally Accredited Levee (PAL) system shall be mapped and annotated on the FIRM mapped as Zone X (shaded) in accordance with FEMA Risk MAP Technical References, Guidelines and Standards for Flood Risk Analysis and Mapping Activities. ~~The Digital Flood Insurance Rate Maps (DFIRMs) for these areas will include an informational note that advises users of the flood risk in levee-impacted areas.~~ In situations where ~~l~~Levees are the only viable alternative for protection of existing development, "setback" levees should be designed and constructed to maintain the natural ~~C~~channel and reserve a portion of the natural ~~fFlood~~plain capacity. Levees should not be used for ~~F~~flood protection along streams or watercourses where new ~~D~~evelopment is planned. However, ~~L~~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 ~~L~~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-~~(2010)~~. 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-~~(2010)~~, respectively, in order to be considered as providing protection. See Rule 17, 44 C.F.R. § 65.10 (2010), available at http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfr65_02.html, and 2 C.C.R. § 402-1 (2010), available at http://water.state.co.us/pubs/rule_reg/ds_rules07.pdf, are hereby incorporated by reference and include the incorporated material in each in existence at the time of the promulgation of these Rules, but do not include later amendments to or editions of either.

AB. Maintenance. An Operating and Maintenance manual that ensures continuing 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), and that it appears, on visual inspection, to be structurally sound and adequately maintained shall be required on a three-year basis and 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 Aanalysis without a funded project plan to bring the Levee deficiencies into compliance (to be considered on a case-by-case basis).

BC. 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). Privately-operated or maintained levee systems will not be considered in the hydraulic analysis performed pursuant to Rule 7 unless a local ordinance mandates operation and maintenance of the levee system and the criteria set forth below are met. Levees for which the Community, state, or federal government has responsibility for operations and maintenance will be considered, provided that the criteria set forth below in this Rule are met. Privately-owned levee systems shall only be considered in the hydraulic analysis if a fully executed agreement exists between the levee owner and a governmental entity enabling unrestricted access to the governmental entity for the purposes of inspection and maintenance and gives the governmental entity responsibility for maintenance. A copy of the executed agreement shall be provided to the Board and the Board shall be notified in writing of any changes made to this agreement.

~~GD.~~ **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. **Freeboard.** A minimum levee freeboard of 3 feet shall be necessary, with an additional 1-foot of freeboard within 100 feet of either side of hydraulic structures within the levee or wherever the flow is constricted, such as at bridges. An additional 0.5-foot above this minimum is also required at the upstream end of the levee.

~~D.~~ **Interior Drainage.** In cases where levees are mapped as providing 100-year protection the adequacy of interior drainage systems, on the landward side of the levee, shall be evaluated. Areas subject to flooding from inadequate interior drainage behind levees will be mapped using standard procedures.

~~E.~~ **Human Intervention and Operation.** In general, evaluation of levees shall not consider human intervention (e.g., capping of levees by sandbagging, earth fill, or flashboards) for the purpose of increasing a levee's design level of protection during an imminent flood. Human intervention shall only be considered for the operation of closure structures (e.g., gates or stop logs) in a levee system designed to provide at least 100-year flood protection, including adequate freeboard as described above, provided that such human operation is specifically included in an emergency response plan adopted by the community.

~~FE.~~ **Analysis.** For areas protected by a levee providing less than 100-year protection (e.g., 10-year protection), flood elevations shall be computed as if the levee did not exist. For the unprotected area between the levee and the source of flooding, the elevations to be shown shall be obtained from either the flood profile that would exist at the time levee overtopping begins or the profile computed as if the levee did not exist, whichever is higher. This procedure recognizes the increase in flood elevation in the unprotected area that is caused by the levee itself. This procedure may result in flood elevations being shown as several feet higher on one side of the levee than on the other. Both profiles shall be shown in the final report and labeled as "before levee overtopping" and "after levee overtopping" respectively.

Rule 11. Floodplain Management Regulations:

A. **Compliance with Minimum Standards of the National Flood Insurance Program.** Each ~~C~~community in the State of Colorado shall comply with the minimum ~~F~~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 (2010)~~, unless more restrictive standards have been adopted as set forth in ~~these Rules 1 through 20 of these Rules and Regulations for Regulatory Floodplains in Colorado~~ or pursuant to regulations adopted by the ~~local~~ ~~e~~Community. These Rules do not apply to local stormwater or local storm drainage studies where riverine ~~f~~E flooding sources are not considered. ~~44 C.F.R. §§ 60.3–60.5 (2010) available at http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfr60_02.html, are hereby incorporated by reference and include the material in existence at the time of the promulgation of these Rules, but do not include later amendments to or editions of the material.~~

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

(1) **Residential Structures.** New, ~~Substantially Damaged~~, and/or Substantially ~~Changed~~ Improved residential structures, and Additions to existing residential structures shall be constructed with the ~~L~~owest ~~f~~Floor, including basements, placed with a minimum of one foot of ~~F~~reeboard above the ~~Base Flood Elevation~~BFE or Model-Backed Approximate Flood Elevation.

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

a. ~~New, Substantially Damaged, and/or Substantially Changed~~ Improved non-residential structures, and Additions to existing non-residential structures shall be constructed with the ~~L~~owest ~~f~~Floor, including basements, placed with a minimum of one foot of ~~f~~Freeboard above the ~~Base Flood Elevation~~BFE or Model-Backed Approximate Flood Elevation, 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 or be flood-proofed to an elevation at least one foot above the Base Flood Elevation. Agricultural ~~S~~tructures and Accessory Structures shall be exempt from ~~this 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 ~~R~~ule does not affect the ~~f~~Freeboard requirement for ~~L~~evees described in Rule 10.C.

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 ~~F~~floodplain by the issuance of a FEMA ~~Letter of Map Revision Based on Fill (LOMR-F)~~ with a ~~Lowest f~~Floor elevation placed below the ~~base flood~~BFE or Model-Backed Approximate Flood Elevation~~elevation~~ with one foot of ~~f~~Freeboard that existed prior to the placement of fill. 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.

Rule 12. Effects of Flood Mitigation Measures and Stream Alter~~n~~ation 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 ~~F~~floods in Colorado, the CWCB requires the following:

A. ~~Detention/flood control storage and LID should be considered, when practicable, as part of a basinwide program for the watershed.~~

B. ~~Flood control~~ ~~C~~hannels shall include a low-flow ~~C~~hannel 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 ~~C~~channel migration, with an adjacent overbank ~~f~~Floodplain to convey the remainder of the 100-~~Y~~year-~~F~~lood flow. The ~~e~~Channel improvement shall not cause increased velocities or erosive forces upstream or downstream of the improvement.

- ~~CB~~. Channelization and flow diversion projects shall appropriately consider issues of sediment transport, erosion, deposition, and ~~C~~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 ~~m~~Mitigation activity must evaluate the residual 100-~~Y~~year-~~f~~Floodplain. Proponents are also encouraged to map the residual 500-~~y~~Year-~~F~~loodplain ~~residual floodplain~~.

- ~~DC~~. ~~All public and private Flood Control Structures shall be maintained to ensure that they retain their structural and hydraulic integrity. Annual inspections including, as appropriate, field surveys of stream cross-sections, shall demonstrate to the appropriate regulatory jurisdictions that the project features are in satisfactory structural condition, that adequate flow capacity remains available for conveying flood flows, and that no encroachment by vegetation, animals, geological processes such as erosion, deposition, or migration, or by human activity, endanger the proper function of the project. If any significant problems, as identified within annual inspection reports,, the facility or project owner shall notify the CWCB within 60 days of the inspection. The inspections shall be conducted by the local jurisdictionCommunity for all publicly owned or publicly maintained facilities, and shall be conducted by the property owner or facility owner for all privately owned and maintained facilitiesAll 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.~~

- ~~ED~~. Any ~~s~~Stream ~~A~~alteration ~~a~~Activity proposed by a project proponent in either i) a Floodway or ii) a Regulatory Floodplain with no established Floodway must be evaluated for its impact on the Regulatory ~~f~~Floodplain, and All Stream Alteration Activity shall be in compliance with all applicable federal, state and local ~~f~~Floodplain rules, regulations and ordinances.

- ~~FE~~. Any ~~s~~Stream ~~A~~alteration ~~A~~activity shall be designed and sealed by a Colorado Registered Professional Engineer ~~or Certified Professional Hydrologist~~.

- ~~GF~~. All activities within the ~~r~~Regulatory ~~F~~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 ~~f~~Floodplain requirements.

- ~~HG~~. Stream ~~A~~alteration ~~a~~Activities shall not be constructed in a Floodway unless the project proponent demonstrates through a ~~F~~floodway analysis and report, sealed by a Colorado Registered Professional Engineer, that there ~~are is~~ no ~~adverse floodway impacts~~rise resulting from the project. No rise means that there is either a 0.00-foot rise or a decrease in the Flood elevation from the proposed conditions compared to existing conditions. This requirement only applies on stream reaches with ~~Base FloodBFE or Model-Backed Approximate Flood~~ Elevations established.

~~I.H.~~ No adverse floodway impact means that there is a 0.00-foot rise in the proposed conditions compared to existing conditions floodway.

~~J.H.~~ Whenever a Stream Alteration activity is known or suspected shown by modeling to increase or decrease the established Base Flood Elevation BFE in excess of 0.30 vertical feet between the pre-project and post-project conditions (or a more stringent standard adopted by the local government authority Community), a Letter of Map Revision LOMR showing such changes shall be obtained in order to accurately reflect the proposed changes on FEMA's 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 local Community is responsible for ensuring that this process is pursued. This section herein does not require a Conditional Letter of Map Revision (CLOMR) to be applied for, unless mandated by the local government having land use authority 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 Board-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 or 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 CWCB Board will Designate and Approve 500-Year-floodplain information when available but only at the written request of a local authority having land use jurisdiction.
- C. **Provisional Designation.** The CWCB 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 governing body of any 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 Board-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 ~~Board's~~ CWCB's initiative.** If ~~D~~esignation and ~~a~~Approval of a ~~F~~loodplain would be in the best interest of the health, safety, welfare and property of the citizens of the State of Colorado, then the ~~Board~~ CWCB may take action at its own initiative to consider the ~~D~~esignation and ~~A~~pproval of ~~f~~loodplain information. In such cases, the ~~Board~~ CWCB shall notify the affected ~~C~~ommunities in writing at the time of study initiation or, in the case of a previously completed study, the ~~Board~~ CWCB shall receive concurrence in writing from the affected ~~C~~ommunity at least 45 days prior to the Board meeting at which it will consider the ~~D~~esignation and ~~A~~pproval of ~~F~~loodplain information within their jurisdiction.
- (3) **Notification of Adopted Resolutions.** The CWCB shall send signed copies of each adopted resolution of ~~D~~esignation and ~~A~~pproval to ~~the applicable local legislative bodies of each C~~ommunity ~~having jurisdiction over land use decisions~~ 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 ~~F~~loodplain that result in a revision of a ~~C~~ommunity's ~~Flood Insurance Rate Maps~~ FIRMs or Flood Hazard Boundary Maps (and a subsequent designation of the new map), the Board will ~~d~~esignate and ~~a~~pprove changes to the ~~R~~egulatory ~~f~~loodplain caused by ~~D~~evelopment, new or better technical information, or other sources. The ~~CWCB~~ Board will designate the ~~changed-revised~~ ~~F~~loodplains by adopting written resolutions based upon such ~~F~~loodplain 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.

AB. Conditions. All changes to ~~designated~~ ~~Regulatory~~ ~~f~~loodplains shall meet or exceed the same conditions as those required for original ~~approval and designation~~ Designation and Approval.

BC. Process for Designation and Approval of Changes to a Regulatory Floodplain. The Board may consider the ~~D~~esignation and ~~A~~pproval of ~~F~~loodplain information either by request of a ~~C~~ommunity or by acting on its own initiative.

- (1) **Consideration at a Community's Request.** The Board shall consider ~~d~~esignation and ~~A~~pproval of changes to a ~~R~~egulatory ~~F~~loodplain upon written request from the governing body of any ~~C~~ommunity having jurisdiction in the area where the ~~F~~loodplain information is applicable. The ~~Board-CWCB~~ staff shall receive such requests at least 30 calendar days prior to the Board meeting at which consideration of ~~D~~esignation and ~~A~~pproval is requested.
- (2) **Consideration at the Board's Initiative.** If ~~D~~esignation and ~~A~~pproval of ~~changes to a Regulatory F~~loodplain would be in the best interest of the health, safety, welfare and property of the citizens of the State of Colorado, then the Board may take action at its own initiative to consider the ~~D~~esignation and ~~A~~pproval of ~~F~~loodplain information. In such cases, the ~~Board-CWCB~~ shall notify the affected ~~C~~ommunities in writing at the time of the study initiation or, in the case of a previously completed study, the Board shall receive concurrence in writing from the affected ~~e~~Community at least 45 days prior to the Board meeting at which it will consider the ~~D~~esignation and ~~a~~pproval of ~~F~~loodplain information within their jurisdiction.
- (3) **Notification of Adopted Resolution.** The CWCB shall send signed copies of each adopted resolution of ~~d~~esignation and ~~A~~pproval of changes to a ~~r~~egulatory ~~f~~loodplain to ~~the applicable local legislative bodies of each C~~ommunity ~~having jurisdiction over land-use decisions~~ within the limits of the changed ~~f~~loodplain within 30 calendar days of ~~d~~esignation and ~~a~~pproval.

CD. Identification of Designations of Changes to a Regulatory Floodplain. The designation of the changes to the ~~r~~egulatory ~~F~~loodplain 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 ~~r~~egulatory ~~F~~loodplain will only rescind the affected portions of the previously designated ~~F~~loodplain information. All other unaffected reaches will remain as originally designated.

DE. Map Revisions to Flood Insurance Rate Maps (FIRMs) or Flood Hazard Boundary Maps. Floodplain ~~M~~map revisions (e.g., FEMA Letters of Map Revision) ~~will~~may be designated twice annually by the ~~CWCB-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 ~~local jurisdiction~~Community.** Request for a variance to any of these Rules may be considered by the ~~local jurisdiction having land-use authority~~Community, provided the entity or individual requesting the variance has submitted a written request to the appropriate authority. A notice of the ~~r~~Request must be provided to any adjacent ~~C~~ommunities 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 ~~e~~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, ~~f~~Flood velocities and ~~f~~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 ~~C~~eommunity, 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 ~~F~~flood hazard, to afford relief; and
- (3) Failure to grant the variance would result in exceptional hardship to the ~~C~~eommunity or the requestor and that the hardship is not the ~~C~~eommunity's or requestor's own making; and
- (4) The granting of a variance will not result in increased vulnerability to ~~f~~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 ~~local jurisdiction having land use authority~~Community may, at its sole discretion, use an established variance procedure.

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

- (1) ~~Local jurisdictions having land use authority~~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 ~~C~~eommunity 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 ~~Notice of Non-Compliance (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 ~~local~~ governmentCommunity 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 ~~local jurisdiction having land use authority~~ 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 ~~elects to require~~ recommends.
- (2) FEMA Region VIII shall support, through its ~~National Flood Insurance Program NFIP~~ activities, these Rules. This support will include the existing ability for FEMA to place sanctions upon a ~~C~~community for non-compliance.
- (3) Certain ~~CWCB-Board~~ decisions to provide ~~F~~lood and watershed related grant funding to ~~C~~ommunities may be directly dependent upon a ~~C~~ommunity'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&rqn=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.FEMA Regulations 44 C.F.R. §§ 59, 60, 65, and 70\(2010\)](https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=8426&fileName=%20CCR%20402-1.FEMA Regulations 44 C.F.R. §§ 59, 60, 65, and 70(2010)), available at http://www.access.gpo.gov/nara/cfr/waisidx_00/44cfrv1_00.html, EPA Regulations 40 CFR § 302 (2010), available at http://www.access.gpo.gov/nara/cfr/waisidx_03/40cfr302_03.html, and OSHA Regulations 29 CFR § 1910 (2010), available at http://www.access.gpo.gov/nara/cfr/waisidx_99/29cfr1910_99.html, are incorporated herein by reference. In addition, The Colorado “Office of the State Engineer Rules and Regulations for Dam Safety and Dam Construction Materials,” set forth in 2 C.C.R. § 402-1 (2010), available at http://water.state.co.us/pubs/rule_reg/ds_rules07.pdf, are incorporated herein by reference. The FEMA Guidelines and Specifications for Flood Mapping Partners (2009), available at www.fema.gov/fhm/dl_cgs.shtm, are also incorporated herein by reference.
- (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 Colorado Water Conservation Board and made a part of these Rules and Regulations for Regulatory Floodplains in Colorado. Materials in these Rules, including, but not limited to those mentioned here in Rule 17, 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 these such materials 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 ~~724~~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 ~~F~~floodplain ~~m~~Mangement activities and actions suggested by the CWCB to increase a ~~e~~Community's overall level of ~~F~~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 ~~R~~esponse ~~P~~lan that identifies responsibilities/actions before, during and after a ~~F~~flood event.
- C. Enroll in FEMA's ~~National Flood Insurance Program (NFIP)~~ and possibly FEMA's Community Rating System ~~(CRS)~~ Program.
- D. Develop an early warning ~~f~~Flood detection system (~~F~~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 ~~f~~Floodplain ~~D~~evelopment and support effective structural and non-structural ~~f~~Flood ~~m~~Mitigation projects.
- G. Conduct ~~f~~Floodplain ~~s~~Studies in areas of ~~f~~Foreseeable ~~d~~Development that do not currently have detailed ~~F~~floodplain ~~S~~udies.
- H. Maintain an electronic or paper library of local flood related data.
- I. Develop a ~~F~~flood risk outreach program and notify ~~f~~Flood prone residents annually of ~~f~~Flood hazards and the need for ~~f~~Flood insurance.
- J. Encourage elevation of ~~F~~flood-prone structures and ~~f~~Flood-proofing of structures in the ~~f~~Floodplains.
- K. Utilize available state/federal ~~m~~Mitigation and preparedness funds.
- L. Require certified ~~F~~floodplain managers to review proposed land developments.

- M. Advise the public at large that ~~f~~Flooding does occur above and beyond the 100-~~Y~~year-~~F~~Flood and 500-~~y~~Year-~~f~~Floods. Floods greater than 500-~~y~~Year-~~f~~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-~~Y~~year-~~F~~Flood and 500-~~y~~Year-~~f~~Floodplains.
- N. Utilize the concept of “No Adverse Impact” ~~F~~floodplain ~~m~~Management where the action of one property owner does not adversely impact the rights of other property owners, as measured by increased ~~f~~Flood peaks, ~~f~~Flood stage, ~~F~~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 ~~L~~Levees that are intended to remove land from a ~~R~~regulatory ~~f~~Floodplain for the purpose of allowing new ~~D~~development activity to take place in areas that are otherwise ~~f~~Flood prone.
- P. Require an appropriate level of ~~f~~Freeboard at bridges between the 100-~~Y~~year-~~F~~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 ~~F~~flooding outside of the 500-~~Y~~year-~~f~~Floodplain where loss of life or ~~S~~substantial ~~property~~ ~~D~~amage may occur. Flooding greater than 500-~~Y~~year-~~F~~Flood (~~0.2% chance~~) events can and do occur as well, and loss of life and property is possible in areas mapped outside of both the 100-~~y~~Year-~~F~~Floodplain and 500-~~Y~~year-~~F~~Floodplain ~~R~~regulatory ~~f~~Floodplains. Communities are encouraged to map and regulate 500-~~y~~Year-~~f~~Floodplains for Critical Facilities at their sole discretion.
- R. Maintain a ~~F~~flood hazard page on the ~~C~~community website with links to the CWCB, FEMA Flood Map ~~Store~~~~Service Center~~, ~~National Flood Insurance Program~~~~NFIP~~, National Weather Service, local building codes, and local permitting information.
- S. The CWCB discourages ~~C~~ompensatory Flood ~~S~~sstorage because existing ~~f~~Flood storage volume should be preserved. However, when necessary, structures and fill that displace ~~f~~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 ~~f~~Flooding.
- T. Adopt ~~B~~buffer ~~O~~rdinances that limit ~~D~~development in and near natural protective features such as riparian stream corridors and wetlands. Natural protective features may extend beyond 100-~~y~~Year-~~f~~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 ~~L~~Levees that may still be at risk for ~~F~~flooding. FEMA has identified thousands of miles of ~~L~~Levees nationwide,

affecting millions of people. It is important for ~~L~~evee owners, ~~e~~Communities, and homeowners to understand the risks associated with living in ~~L~~evee-impacted areas and the steps that can be taken to provide full protection from ~~F~~looding. Even the best ~~F~~lood protection system or structure cannot completely eliminate the risk of every ~~F~~lood event, and when ~~L~~evee systems fail, the results may be catastrophic and the damage may be more significant than if the ~~L~~evee system had not been built.

W. A Community may regulate any 100-Year shallow Flooding areas, defined as a 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 ~~d~~Designation and ~~a~~Approval of all ~~floodplain-Flood Hazard~~ ~~i~~nformation made by the ~~Board-CWCB~~ and all other ~~F~~loodplain activities on or after January 14, ~~2014~~ ~~2022~~ and are, therefore, not retroactive to any ~~F~~loodplain information ~~D~~esignated and ~~A~~pproved by the Board or other ~~F~~loodplain activities prior to the effective date. ~~These Rules contain provisions that will require many local ordinances to be updated to be consistent with these Rules. A transition period of three years beginning from the effective date of these rules will be in effect during which all local governments may follow current local ordinances but must undertake activities to come into compliance with these Rules. Following this transition period, all floodplain activities shall be in conformance with these Rules. In addition, communities may, at their sole discretion, allow un-built projects that were previously permitted by the local government, prior to the adoption date of the local ordinance for which these Rules are incorporated, to be built and therefore considered to be in compliance with these Rules. Communities may also, at their sole discretion, permit and allow projects for which a valid CLOMR was issued prior to the adoption date of the local ordinance for which these Rules are incorporated.~~

Colorado Water Conservation Board

Rules and Regulations for Regulatory Floodplains in Colorado (Rules)

2 CCR 408-1

Statement of Basis and Purpose

This Statement of Basis and Purpose has been prepared to elaborate upon and clarify the 2021 revisions to these Rules, which incorporate by reference updated external documents in order to remain consistent with current Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP) mapping standards and technical references and guidance. In addition, based on years of interaction and stakeholder input, some Rule provisions have been modified to provide desired clarification. Removal of outdated terminology and terms not used in the Rules, as well as small clerical changes are included in the revisions

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..

The Rules provide technical standards for floodplain designation and approval by the State and also provide required State higher standards above minimum requirements in the NFIP for floodplain regulation.

In general, the purpose of these Rules is to provide uniform standards for regulatory 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. These Rules will also assist the CWCB and Colorado communities in developing sound floodplain management practices and in assisting with the implementation of the NFIP. Further, the Rules set forth the process and procedures for the CWCB to designate and approve regulatory floodplains. The 100-Year-Floodplain is generally the Regulatory Floodplain in Colorado and shall continue to be the basis for designation and approval by the Board, although communities may continue to choose to regulate to the 500-Year Floodplain for some conditions. If a community chooses to regulate to the 500-Year-Floodplain, the 500-Year-Floodplain information will also be designated and approved by the Board. These Rules apply throughout the State of Colorado, without regard to whether a community participates in the NFIP.

In this 2021 permanent rulemaking, there are no substantive changes to the following existing Rules, but rather these Rules have been updated to use defined terms and refer to references incorporated into the Rules, appropriately:

<u>RULE 1</u>	TITLE
<u>RULE 2</u>	AUTHORITY
<u>RULE 3</u>	PURPOSE AND SCOPE
<u>RULE 6</u>	CRITICAL FACILITIES
<u>RULE 13</u>	PROCESS FOR DESIGNATION AND APPROVAL OF REGULATORY FLOODPLAINS
<u>RULE 15</u>	VARIANCES
<u>RULE 16</u>	ENFORCEMENT OF FLOODPLAIN RULES AND REGULATIONS

RULE 18 **SEVERABILITY**
RULE 19 **RECOMMENDED ACTIVITIES FOR REGULATORY FLOODPLAINS**

The following Rules have been revised in accordance with FEMA NFIP requirements, policies, and standards, in addition to established CWCB practices and procedures:

Rule 4. Definitions

Terms have been added to provide clarity to the Rules, some existing definitions have been refined, and outdated terminology or terms not used in the Rules have been removed.

Rule 5. State Regulatory Floodplain

This clarifies that the Regulatory Floodplain in Colorado is the 100-Year-Floodplain, and provides for a community to choose to regulate to the 500-Year-Floodplain. It clarifies that CWCB automatically designates available 500-Year-Floodplain information.

Rule 7. Standards for Delineation of Regulatory Floodplain Information

Revisions include external reference updates, removal of Floodplain report requirements (redundant, since covered in external references), stipulates digital format for reports submitted to CWCB, and minor clerical and grammatical revisions for additional clarification. Specifically, Rule 7.J. has been revised to remove subparagraph (1) through (4) because these items are redundant requirements that appear in controlling FEMA Regulations and guidance which are already incorporated by reference in Rule 17. Removing this passage, which does not add any additional clarity to the rule set, will simplify the Rules. This removal does not affect the Rules because it already exists in documents incorporated by reference.

Rule 8. Standards for Regulatory Floodways

Revisions include external reference updates, clarification that Floodway regulations still apply to Model-Backed Approximate Flood Elevations (Zone A), but not to Zone A without supporting documentation, and minor clerical and grammatical revisions for additional clarification.

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

Revisions to Rule 9.B. are the result of a question raised during the rulemaking process and aim to clarify that ultimate responsibility lies with the regulatory Community for maintenance of flood control structures that a Community wants credit for when establishing or revising Regulatory Floodplains. This is consistent with FEMA requirements.

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

Revisions include external reference updates, removes redundant levee requirements that are stipulated in the external references, and minor clerical and grammatical revisions for additional clarification. Revisions to Rule 10.C. (formerly 10.B.) aim to clarify that ultimate responsibility lies with the affected Community for maintenance of levees that a Community wants credit for when establishing or revising Regulatory Floodplains. This is consistent with FEMA requirements. Further, Rule 10.D. through 10.F. have been revised regarding levee requirements, which requirements are consolidated and described in greater detail in updated FEMA guidance, incorporated by reference in Rule 17. Removing this passage, which does not add any additional clarity to the rule set, will simplify the Rules. This removal does not affect the Rules because it already exists in documents incorporated by reference.

Rule 11. Floodplain Management Regulations

Revisions include external reference updates, clarification for regulations associated with non-residential structure to be in conformance with FEMA, and minor clerical and grammatical revisions for additional clarification.

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

Revisions to 12.D clarifies maintenance requirements for dams and levees that are detailed in the external references. Those under 12.H. (formerly Rule 12.J.) further explain the State's position of when it will actively enforce the requirement for a Community to provide a Letter of Map Revision (LOMR). While stream alteration activities may or may not impact the base flood elevation, a 0.30-foot increase or decrease is considered to be a measurable and significant change to warrant revising Community flood hazard information for Floodplain regulation. The update also stipulates that the State's position does not circumvent other (i.e., FEMA or local) requirements for maintenance of flood hazard mapping or additional regulation. Following extensive stakeholder conversations with community regulators and FEMA, the CWCB determined to further revise Rule 12.H. to align with current FEMA guidance and requirements when evidence of an increase or decrease, as further defined in the rule, is available (i.e., modeling results), which differs from the previous position shared with the CWCB, which required modeling for changes to all areas within regulatory floodplains. Previously, CWCB required a LOMR when a Community was aware of or suspected a BFE change, whether modeled or documented by another method. Current FEMA interpretation does not require modeling outside of the Floodway of reaches for which a regulatory Floodway exists, but requires a LOMR when available information shows that changes are known to exist. Revisions also include minor clerical and grammatical revisions for additional clarification.

Rule 14. Designation and Approval of Changes to Regulatory Floodplains

Clarification of conditions when undesignated information to a previously designated stream reach may be used, and minor clerical and grammatical revisions for additional clarification.

Rule 17. Incorporation by Reference

Revisions include placement of all external documents to be incorporated by reference throughout the Rules document be listed in Rule 17 for easy reference (previously these external documents were listed throughout the Rules document). Minor clerical and grammatical revisions have been included for additional clarification.

Rule 20. Effective Date

Includes the effective date for these rule revisions, which will follow the completion of the rulemaking process in January 2022, and minor clerical and grammatical revisions have been included for additional clarification. The reference to community ordinance updates (required for the 2010 update) has been removed, since the 2021 update will not require local ordinance updates.