STATE OF COLORADO

Colorado Water Conservation Board
Department of Natural Resources
1313 Sherman Street, Room 721
Denver, Colorado 80203
Phone: (303) 866-3441
Fax: (303) 866-4474
www.cwcb.state.co.us

TO: Colorado Water Conservation Board Members

FROM: Tom Browning, Section Chief
Kevin Houck, Section Engineer
Watershed Protection & Flood Mitigation Section

DATE: January 15, 2010

SUBJECT: **Agenda Item 21, January 26-27, 2010 Board Meeting**
Notice of Formal Rulemaking for Floodplain Regulations

Introduction and Background

The CWCB originally promulgated floodplain rules and regulations (Rules) in 1988, and then undertook a formal rulemaking process to revise them in 2005. The purpose of the Rules is to provide uniform standards for regulatory floodplains in Colorado, including standards for activities that may impact those floodplains, and to stipulate the process by which floodplains will be designated and approved by the CWCB.

Staff is now proposing to initiate formal rulemaking in order to once again amend the Rules, which are currently known as "Rules and Regulations for Regulatory Floodplains in Colorado" (2 CCR 408-1). Staff made a formal presentation to the Board during its May 2009 meeting in Pueblo, and conceptually outlined all proposed revisions to the Rules. Board members provided feedback to staff at that time. Status updates were presented to the Board during its July and September 2009 meetings.

The rulemaking process thus far has consisted of multiple meetings and email communications with an appointed Advisory Committee and the AG's office, as well as mass distribution of the draft rules to various professional groups, local governments, and non-profit organizations.

During this agenda item, staff plans to:

- Update the Board regarding rulemaking activities (draft rules attached)
- Introduce the Advisory Committee Chair with brief comments
- Recommend approval for initiation of formal rulemaking (file a Notice of Rulemaking)
- Recommend an appropriate timeline for the rulemaking process (attached)
- Recommend approval for a rulemaking Hearing Officer

Staff Recommendation

Staff requests that the Board approve: 1) the initiation of formal rulemaking (file a Notice of Rulemaking), 2) the proposed timeline for the rulemaking process, and 3) the Hearing Officer for the rulemaking hearing.

DEPARTMENT OF NATURAL RESOURCES
COLORADO WATER CONSERVATION BOARD

RULES AND REGULATIONS FOR REGULATORY FLOODPLAINS IN COLORADO

July 2010

RULES AND REGULATIONS FOR REGULATORY FLOODPLAINS IN COLORADO

COLORADO WATER CONSERVATION BOARD
DEPARTMENT OF NATURAL RESOURCES

TABLE OF CONTENTS

RULES AND REGULATIONS FOR REGULATORY FLOODPLAINS IN COLORADO

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 2009 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 37-60-106(1)(c), 37-60-106(1)(e), 37-60-106(1)(f), 37-60-106(1)(g), 37-60-106(1)(h), 37-60-106(1)(k), 37-60-108, 30-28-111(1) & (2), 31-23-301(1) & (3), 24-65.1-202(2)(a)(I) and 24-65.1-302(1)(b)&(2)(a) and 24-65.1-403(3) and 24-4-103, C.R.S. (2009).

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 100-year 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. These Rules shall also apply to Federal activities that are fully or partially financed by state funds. The Rules shall not apply to federal activities fully financed by the Federal government, although local governments shall retain the power to enforce these Rules at their discretion for such activities through local Rules or ordinances or permitting. These Rules also apply to projects or studies for which the Board has made a loan or grant pursuant to section 37-60-120(2) and 37-60-121(1)(b)(VII) & (IX)(C), C.R.S. (2009).

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 approval of subdivision drainage reports that provide 100-year and 500-year floodplain information, which is a responsibility of local government and is covered in Rule 6. However, local governments should ensure that site-specific floodplain delineations prepared during development activities are consistent with floodplain information designated and approved by the Board.

(3) **Design Criteria**. These Rules do not apply to the selection of optimal economic criteria for the construction of roads, bridges, irrigation structures, or any other facility in the floodplain.

(4) **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:

Term	**Definition**
100-year Flood	A flood having a recurrence interval that has a one-percent chance of being equaled or exceeded during any year (1% chance exceedance probability). 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 .2-percent chance of being equaled or exceeded during any year (.2% chance exceedance probability). 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.
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	Low-lying area where water flows regularly or intermittently with a perceptible current between observable banks, although the location of banks may vary under different conditions.
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. FEMA regulations are codified at 44 C.F.R.§ 1.1 *et. seq.* The FEMA regulations are incorporated herein by reference and available for viewing at www.gpoaccess.gov/CFR/ and for inspection at the CWCB offices at 1313 Sherman Street, Room 721, Denver CO 80203. The FEMA regulations incorporated herein by reference are only the rules 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.

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
Critical Facility or Facilities	Means a facility, including without limitation, a structure, infrastructure, property, equipment or service, that if flooded may result in severe consequences 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 and water 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 of 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	FEMA digital floodplain map. These digital

Rate Map (DFIRM)	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 Mapping Specifications and Guidelines are incorporated herein by reference and available for viewing at www.fema.gov/fhm/dl_cgs.shtm and for inspection at the CWCB offices. 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"	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 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 bridge openings and the hydrological effect of urbanization of the watershed.
Geographic Information Systems (G.I.S.)	Computer software that utilizes databases and terrain mapping to store and display special 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 or basins.
Hydrologic Analysis	The determination of the peak rate of flow, or discharge in cubic feet per second, for various selected probabilities for streams, channels, or basins 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 elevation.
Letter of Map Revision Based on Fill	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, in areas in which land falls away from a watercourse, that contains, controls, or diverts the flow of water. This structure may be built with or without the express purpose of containing, controlling, or diverting the flow of the watercourse.
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

	hydrograph 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.
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 regrowth, and other factors.
Provisionally Accredited Levee (PAL)	A levee that FEMA has previously credited with providing 1-percent chance annual protection on an effective FIRM or DFIRM, for which FEMA is awaiting data and/or documentation that will show the the Levee's compliance with Levee certification requirements of the NFIP regulations.
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 for purposes other than Flood Mitigation Projects that are intended for the improvement of drainage, flood control, flood conveyance,

	environmental enhancement, water supply, recreational improvement, or flood protection.
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.
Topography	Configuration (relief) of the land surface; the graphic delineation or portrayal of that configuration in map form, as by contour lines.
Water Surface Profile	A graph that shows the relationship between the vertical elevation of the top of flowing water and of the streambed with the horizontal distance along the stream channel.

Rule 5. **State Regulatory Floodplain**: For all cases, except those involving Critical Facilities, the regulatory floodplain is the 100-year floodplain. When new Critical Facilities or changes to existing Critical Facilities are proposed, the regulatory floodplain is the 500-year floodplain in reference to those Critical Facilities only. All new Critical Facilities should be outside of the 500-year floodplain, if feasible. "Storm or Floodwater Runoff Channels" are within the 100-year or 500-year floodplain, as appropriate. 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 the 100-year and 500-year floodplains and to assure protection of public health, safety, welfare and property by limiting development in the 100-year and 500-year floodplains. §§ 24-65.1-202(2)(a)(I) and 24-65.1-302(1)(b)&(2)(a) and 24-65.1-403(3) and 24-65.1-101 and 24-65.1-404(3), C.R.S. (2009)

Rule 6. **Critical Facilities:**

A. **Definition.** "Critical facility," for floodplain purposes, means a facility, including without limitation, a structure, infrastructure, property, equipment or service, that if flooded may result in severe consequences to public health and safety or interrupt essential services and operations for the community at any time before, during and after a flood. A critical facility is 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, without limitation, public safety, emergency response, emergency medical, designated emergency shelters, communications, public utility plant facilities and equipment, and transportation lifelines.

Examples include:

a. *Public safety (police, fire and rescue, emergency management);*
b. *Public safety (police, fire and rescue, emergency management);*
c. *Emergency response (emergency responders, vehicle and equipment storage, emergency repair materials, alternative governmental work centers);*
d. *Emergency medical (hospitals, urgent care, ambulance services);*

e. *Designated emergency shelters;*
f. *Communications (telephone, cable systems, satellite dish systems, cellular systems, television, radio, news papers, emergency warning systems);*
g. *Public utility plant facilities and equipment for treatment, generation, storage, pumping and distribution (water, wastewater, power, gas); and*
h. *Transportation lifelines (primary access routes, emergency evacuation routes, bridge and culvert crossing structures, airports, rail systems, mass transit, critical roadways).*

(2) *Hazardous materials facilities* include, without limitation, facilities that produce, distribute, use, store, or sell highly volatile, flammable, explosive, toxic and/or water-reactive materials.

Examples include:
a. *Chemical and pharmaceutical plants (chemical plant, chemical company, pharmaceutical company);*
b. *Laboratories;*
c. *Refineries and bulk plants (bulk fuel);*
d. *Hazardous waste storage and disposal sites; and*
e. *Gasoline and propane sales stations (service station).*

(3) *At-risk population facilities* include, without limitation, medical care, congregate care, schools, guest lodging, and places of assembly.

Examples include:
a. Medical care (hospitals, clinics, nursing homes);
b. Congregate care (senior housing, day care, assisted living);
c. Public and private schools (pre-schools, K-12 schools, colleges and universities, vocational centers, after-school care);
d. Guest lodging (hotels, motels, bed and breakfasts); and
e. Places of assembly (sports arenas, theaters, meeting halls, churches, and community centers).

(4) *Vital to restoring normal services facilities* include, without limitation, public utility infrastructure, government operations and major employment centers.

Examples include:
a. Public utility infrastructure (water, wastewater, power, gas);
b. Government operations (public records and libraries, courts,jails, building permitting and inspection services, community administration and management, maintenance and equipment centers);
c. Major employment centers (local, state and federal offices, major industries, large corporate offices);
d. Parcel Services (mail, parcel service, shipping).

B. **500-year Flood Events.** The CWCB acknowledges that flooding does occur above and beyond 100-year (1% chance) events. Communities shall use the 500-year floodplain for regulating Critical Facilities within their jurisdictions. 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. For circumstances involving Critical Facilities in which the 500-year floodplain is not mapped,

the floodplain for this frequency may be substituted with a delineation based on the base flood elevation plus two feet.

C. **Floods Larger than 500-year Events.** Communities are encouraged to identify areas prone to flooding outside of the 500-year floodplain where loss of life or substantial property damage may occur.

(1) **Protection of Critical Facilities.** All new Critical Facilities and Substantial Changes to Critical Facilities shall be regulated to the 500-year flood. Protection shall include one or more of the following:

(2) Location outside the 500-year floodplain.

(3) Requiring new Critical Facilities to have continuous non-inundated access (ingress and egress) during a 500-year flood event. This is recommended for changes to existing Critical Facilities and use changes involving existing Critical Facilities.

Rule 7. <u>Standards for Delineation of Regulatory Floodplain Information</u>:

A. **Intent of this Rule**. This Rule contains standards for approximate and detailed floodplains. All floodplain information shall be provided to the CWCB for designation and approval in order to enable local governments to regulate floodplains appropriately.

B. **Level of Detail.**

(1) Approximate Floodplain Information will be based on detailed hydrology computed for 100-year and 500-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 and 500-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 only designate and approve 100-year floodplain information and 500-year floodplain information.

C. **Base Mapping.** Base mapping for floodplain studies shall meet the minimum standards as set forth in FEMA Guidelines and Specifications for Flood Hazard Map 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 Map 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 Map 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 Map 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 shall 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 Map 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 Map Partners, as incorporated herein by reference, and shall 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 Map 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 regrowth, 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, hydrologic and hydraulic models, and all pertinent technical backup data 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 flooded area 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) 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 100-year floodplain, or 500-year floodplain for Critical Facilities. Each flood contour shall indicate its elevation to the nearest whole foot.

(3) The flooded area 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.

(4) Where discrepancies appear between flooded area maps and water surface profiles, any 100-year or 500-year 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.

K. **Contractor Qualifications**

(1) Qualified engineers licensed in Colorado shall direct or supervise the floodplain mapping studies and projects pertaining to the State Regulatory Floodplain. All

floodplain maps, reports and project designs pertaining to the State Regulatory Floodplain 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. Communities shall delineate Floodways based on ½-foot rise criteria or based on more strict criteria (e.g. depth and velocity criteria, 0.0-foot rise, etc). This Rule is synonymous with communities' adopted floodway criteria. Where no local Floodway criteria exist, the the use of minimum 0.5-foot rise standard shall be observed.

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) (2009), incorporated herein by reference, for a 1-foot floodway.

C. **Incorporation of FEMA's Floodway Regulations.** All regulations defined in FEMA Regulation 44 C.F.R. § 60.3(c)(10) and 44 C.F.R. § 60.3(d) (2009) are hereby incorporated by reference into this Rule. These Rules do not include later amendments or editions to this incorporate 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 can 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 designated Regulatory Floodplains that have Base Flood Elevations defined for one or more of the waterways within their jurisdictions shall be required to establish technical (quantified) criteria for floodway determination and regulation. This Rule shall not apply in communities without Base Flood Elevations established, unless otherwise adopted by the community.

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 and 500-Year Flood under Foreseeable Development, 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 operated and maintained by a government body. Detention structures that are randomly located or privately operated or maintained shall not be included in the hydrologic analysis unless it can be shown that they exacerbated 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 and 500-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 and 500-Year 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 and 500-Year hydrology can be routed through the reservoir to account for any flood attenuation effects.

D. **Adequate Assurances**. For the purposes of Rule 8. "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, and 500-Year Floodplain for Critical Facilities, 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 and 500-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. <u>Criteria for Determining Effects of Levees on Regulatory Floodplains</u>:

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 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. 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.

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. 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 5 or Rule 6 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 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. **Internal Drainage.** In cases where levees are mapped as providing 100-year protection, or 500-year protection for Critical Facilities, the adequacy of interior drainage systems 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. <u>Floodplain Management Regulations</u>:

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 44 C.F.R. § § 60.3, 60.4 and 60.5 (2009), as incorporated herein by reference, unless more restrictive standards have been adopted as set forth in these Rules or pursuant to regulations adopted by the local community.

B. **Minimum Freeboard.** A minimum freeboard of one foot above the 100-year flood elevation shall apply to structures in the floodplain as follows:

(1) Residential Structures. New, substantially improved, substantially damaged, and additions to existing residential structures shall be constructed with the lowest floor placed at or above the base flood elevation with one foot of freeboard.

(2) Non-residential Structures. New, substantially improved, and additions to existing non-residential structures shall be constructed with the lowest floor placed at or

above the base flood elevation with one foot of freeboard or be flood-proofed to an elevation at or above the base flood elevation with one foot of freeboard.

C. **Permit Restrictions for Properties Removed from the Floodplain by Fill.** No person 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 and an invalidation of the LOMR-F and may result in sanctions or suspension of a community from the NFIP.

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

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 shall be designed and constructed as part of a basinwide program for the watershed.

B. Detention facilities shall adequately consider flow rates and flow volumes.

C. 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.

D. 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 shall be performed to assist in determining the most appropriate design.

E. Project proponents for a mitigation activity must evaluate the residual 100-year floodplain. Proponents are also encouraged to map the 500-year residual floodplain for the evaluation of Critical Facilities.

F. All flood protection and mitigation projects 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 are

noted in such annual inspections, the local regulatory jurisdiction shall notify the CWCB within 30 days of the inspection.

G. Any stream alteration activity proposed by a project proponent must be evaluated for its impact on the regulatory floodplain and be in compliance with federal, state and local floodplain Rules, regulations and ordinances.

H. Any stream alteration activity shall be designed and sealed by a Colorado registered professional engineer.

I. Stream alteration activities shall be properly permitted by local, state and federal agencies and shall be in conformance with FEMA Regulations 44 C.F.R. § § 59, 60, 65, and 70 (2009), as incorporated herein by reference.

J. 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.

K. No adverse floodway impact means that there is a 0.0-foot rise in the proposed conditions compared to existing conditions floodway.

L. The Stream Alteration proponent shall provide Notification to the CWCB whenever the proposed Stream Alteration activity would result in proposed water surface profile increases to the regulatory 100-year flood profile in excess of 0.3 vertical feet (unless the local governing authority has adopted more stringent standards). Such Notification by the proponent shall be in writing, and meet the intent of notice procedures as described in 44 C.F.R. § § 59, 60, 65, and 70 (2009), as incorporated herein by reference. In addition, whenever a proposed Stream Alteration activity, in combination with all other previous floodplain alteration activities, results in a cumulative increase of 1.0 vertical feet or greater, Notification shall also be provided by the Stream Alteration proponent.

M. Whenever a Stream Alteration activity is known or suspected to increase or decrease the regulatory 100-year profile 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.

Rule 13. <u>Process for Designation and Approval of Regulatory Floodplains</u>:

A. **Designation and Approval Requirements**. The Board will designate and approve regulatory floodplains and storm or floodwater runoff channels by the adoption of written resolutions based only upon such floodplain information as the Board determines meets the standards set forth in Rule 6, as applicable, with consideration of the effects of dams and levees being subject to the criteria or Rules 8 and 9, respectively and any mitigation activity

in Rule 11.

B. **Base Flood.** The 100-year flood shall generally be the basis for all designation and approvals by the Board, for zoning purposes, of regulatory floodplains in Colorado. However, for proposed activities involving the construction or modification of Critical Facilities, the 500-year flood shall be the basis for floodplain management criteria, and in these cases, the 500-year flood information shall be presented to the Board for designation and approval.

C. **Conditions.** All designations and approvals of approximate floodplain information by the Board shall be based on the Board's designation action. The community shall be notified by a CWCB resolution that a case-by-case review of the approximate floodplain information will be required, and that a detailed hydrologic and hydraulic analysis will be necessary prior to development activities taking place in the identified approximate 100-year or 500-year floodplain.

D. **Provisional Designation.** The CWCB may designate and approve, on a provisional basis and for a maximum period of time not to exceed three years, floodplain information that does not meet the minimum requirements as set forth in Rule 6.

E. **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 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.

Rule 14. <u>Designation and Approval of Changes to Regulatory Floodplains</u>:

When changes are made to the characteristics of a floodplain that do not 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.

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 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 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. <u>Variances</u>:

A. **Consideration by the Board.** Request for a variance to any of these Rules may be considered by the Board, provided the entity requesting the variance has submitted a written request to the CWCB Director, A notice of the Request must be provided to the community that would be affected by the variance, if different from the entity requesting 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 by the Board 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 and that the hardship is not the community'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.

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 only 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.

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.

Rule 17. **Incorporation by Reference:** FEMA Regulations 44 C.F.R. § § 59, 60, 65, and 70 (2009) are incorporated herein by reference. Materials incorporated by reference are those in existence as of the effective date of this regulation and do not include later amendments. 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. 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.

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. Communities are encouraged to identify areas prone to flooding outside of the 500-year floodplain where loss of life or substantial property damage may occur.

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. 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. 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. 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.
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.

T. 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 on or after _____, 2009 and are, therefore, not retroactive to any floodplain information designated and approved by the Board prior to the effective date.