

# *High Water*



## **PREPAREDNESS INFORMATION GUIDE**

*ROUTT COUNTY... READY TO HELP  
CITIZENS HELP THEMSELVES*

April 2011

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To Residents, Business Owners, and Visitors of Routt County:

With the heavy snowfalls this season, Routt County could realize the effects of the melting snow from mid-May through June. A packet of information has been assembled to inform the community about the impacts of high water. The Towns and County have prepared a plan of action and all departments are ready for a possible high water event! ***Routt County is prepared to help citizens help themselves.***

Routt County could realize the effects of the melting snow from mid-May through June. However, no one can predict the spring weather, including warm temperatures and precipitation which will determine the rate of flow in the tributaries, creeks and rivers in Routt County. Local and State officials have been monitoring the flows in the Yampa and Elk River drainages and are prepared to respond to the possibilities of high water situations.

During May and June, the Public Works departments in the county will begin managing debris and obstructions in waterways. Sandbags can be purchased at various locations around the county and more information on sandbags is included in this packet.

On the following pages please find a summary of information, questions and answers assembled for your convenience to prepare for high water. Flood Insurance Rate Maps to assist you in locating your property and evaluating its proximity to the 100-year flood areas are available on-line at [www.fema.gov](http://www.fema.gov) or you may call the Planning department in your city/town or the county for information on your property.

Another great resource is [www.Ready.gov](http://www.Ready.gov) and the USGS site that monitors the flow (CFS-cubic feet per second) in area creeks and rivers and for other information as the spring melt situation unfolds.

In the case of a significant flooding event anywhere in the county, the County-wide Incident Command Center will be activated and all emergency management agencies in the county will be participating and assisting.

On behalf of the City of Steamboat Springs, the Towns of Hayden, Oak Creek and Yampa, and Routt County Government, thank you for your cooperation and concern.

City of Steamboat Springs  
Town of Hayden  
Town of Oak Creek  
Town of Yampa  
Routt County Government

## **INTRODUCTION**

Cities and counties in all parts of Colorado, with the assistance of the federal and state government, have developed and are continuing to develop comprehensive emergency preparedness programs to reduce loss of life and protect property from disasters. Many lives are being saved by these programs. People are being warned of impending emergencies/ disasters, evacuated from danger areas, treated for injury, and helped to resume their normal lives after disaster strikes.

The primary purpose of this guide is to save lives, reduce injuries, and protect property. It is designed to present information and guidance on action to take to enhance survival in the event of natural and human caused disasters.

You can give yourself and your family a much better chance of surviving and recovering from major disasters if you will take time now to:

- Understand the dangers you would face in an emergency;
- Make your own preparations; and
- Learn what actions you should take at the time of the emergency.

This guide discusses preparation and emergency actions that will help people cope with the impacts of high water.

# HIGH WATER EVENTS IN ROUTT COUNTY

## BACKGROUND

- Unusually high snowpacks naturally raise the risk of future high water.
- The rate at which snowpacks melt in the spring may determine high water risk.
- Rain, coupled with warm weather and snow melt, increases the risk of high water.
- High water risk is determined by a number of factors.
  - Proximity to waterway
  - Time the dwellings were built (prior to the floodplain regulations)
- Significant high water events occurred in 1934, 1952, 1974, 1984, 1997 and 2006.



*Figure 1*  
Flooding along 6th Street, April 1974.



*Figure 2*  
James Street during the April 1974 flood.



*Figure 3*  
A residence on Oak Street, April 1974.

## **HIGH WATER PREPAREDNESS**

### **WHAT CAN CITIZENS DO TO PREPARE FOR AN EMERGENCY?**

#### ***Am I in a risk area:***

Do you live in a low-lying area susceptible to high water?

Do you know enough about high water risk?

The severity of local high water, and whether or not major high water occurs along tributaries, creeks and rivers in Routt County, depends mostly on the weather conditions during snowmelt in May and June. The weather determines when and how rapidly snowmelt occurs. Unusually high snowpacks naturally raise the possibility of high water, but risk is determined by a combination of events and conditions:

- Heavy, concentrated rain events
- Heavy rains mixed with spring's melting snow, creating excessive run-off into rivers and creeks
- Ice jams – water upstream is blocked by ice downstream

Remember that if rising waters become a threat to your safety, follow the instructions of local emergency officials who are involved in rescue or high water response operations, including those directing traffic, as water can be deeper than it appears. Keep disaster response routes clear.

#### ***Before a high water emergency:***

- Know if you live in a high water-risk area.
- Purchase flood insurance, if desired.
- Prepare personal emergency supply kits for your home, car and work.
- Have a grab-and-go kit ready if you have to leave your home quickly.
- Keep important papers in watertight containers and have a record of your valuables in a safe place to help with insurance claims.
- Choose a relative or close friend out of the area as a contact person for family members and friends.
- If high water is likely in your area, pay attention to the local media for information.
- Watch for warning signs: increase in height and intensity of water flows, mudslides, debris in creeks, color changes in water, or leaning trees.
- Know that banks of rivers and streams may be unstable and dangerous.
- Teach your children about high water safety.
- Consider arrangements for your pets and any livestock.
- Check on elderly or disabled neighbors to ensure they are aware of the situation.
- Prepare an evacuation plan from your home to a safe area.

***If you are at risk, there is much you can do now to prepare.***

High water may occur in the area where you live, and although your home may not be immediately affected, you may be cut off from outside resources (phone, electricity, safe drinking water, road access) and even some members of your household.

You should have in place, at all times:

- An emergency plan that every household member knows. The plan should include information on how to shut off electrical power and natural gas sources, safe meeting places out of the high water-risk area, an out-of-area contact, plans for pets and livestock, and a neighborhood safety plan that identifies people who may need extra help. Once you formulate your plan, rehearse it!
- An emergency supply kit containing non-perishable foods, bottled water, first aid kit, necessary medications, flashlights and batteries, personal toiletries, identification for each family member, some cash and any important family documents. Be prepared to be on your own for at least 72 hours, possibly longer. All perishable items should be changed or replaced every six months.
- Have a grab-and-go emergency kit ready for each member of your household as you may have to leave in the middle of the night or on short notice. This kit should have basic essential items such as prescription medications, eye glasses, important papers, flashlight, clothing, identification and some cash.
- A battery-powered or wind-up radio that allows you to access weather warnings and disaster instructions from local radio stations.
- A plan for protecting your home and the tools and items you may need to do so (wrenches for shutting off valves, plastic sheeting or sandbags).
- A full tank of gas in your vehicle.

***During a high water emergency:***

Rising water levels may indicate your home will become unsafe to be in and you will most likely have to evacuate. There are things you can do now to prepare if you are at high risk:

- Work in cooperation with Policy, Public Works and Emergency personnel. Always follow the instructions given.
- Volunteer your time and energy to assist in efforts to protect city/town/county facilities and private property.

***During a high water emergency (continued):***

- Plan how you will leave and where you will go if you are advised to evacuate
- Make sure everything is in place for the possible evacuation of your pets and livestock.
- When you leave your home, don't forget to lock all your doors and windows.
- Prevent illness by understanding there is a possibility that drinking water may become contaminated. Listen for boil water advisories or other safety instructions from local emergency officials.
- Keep a stock of food that requires no cooking or refrigeration. Store drinking water in clean, closed containers.
- Keep in mind that high waters may make travel unsafe – know if there are different routes out of the area if high waters are impacting roads.
- Never attempt to drive through high water. Two (2) feet of water can carry away most cars. The most dangerous thing you can do is to try walking, swimming, or driving through high waters.
- Organize your homeowners association, neighbors and friends to assist with filling and placing of sandbags.
- Help a neighbor who may require special assistance – infants, elderly people, and people with disabilities.
- An oil tank will float if it isn't full. Stabilize your oil tank and weigh it down with sandbags or wedge it against a solid object.
- Anchor propane tanks. Both full and empty propane tanks will float. Turn off valves and anchor tanks to a solid object with a chain or cable.
- If you are instructed by local authorities, turn off all utilities at the main power switch and close the main gas valve.
- Dangerous chemicals such as weed killers, insecticides, fertilizers, and corrosives should be moved to a safe, dry area to reduce the dangers of chemical contamination, fires, explosions, and personal injuries.
- Identify dams in your area. Be aware of what could happen if they fail. Become familiar with local emergency action plans.

***After a high water emergency:***

- Do not visit disaster areas until authorized to do so. High water dangers do not end when the water begins to recede. Use common sense and exercise caution.
- If you have flood insurance and suffer a loss, notify your agent.
- Listen for news reports to learn whether the water supply is safe to drink.
- Avoid high waters; water may be contaminated or may be electrically charged from underground or downed power lines.
- Return home only when authorities indicate it is safe.
- Clean and disinfect everything that got wet. Mud left from high water can contain sewage and chemicals.
- Do not turn on electrical switches or wet electrical equipment unless Okayed by an electrician.
- To avoid a health hazard from eating food contaminated with high water, or left in an unplugged refrigerator or freezer – if in doubt, throw it out. Contamination can spoil foods and medicines, making them dangerous to consume.





## HIGH WATER SAFETY

More deaths occur due to high water each year than from any other thunderstorm or hurricane-related hazard. Many of these casualties are a result of careless or unsuspecting motorists who attempt to navigate flooded roads. The National Weather Service now warns anyone who comes to a flooded roadway, "Turn around ... don't drown!"

- If high water occurs, get to higher ground. Stay away from high water-prone areas, including dips, low spots, valleys, ditches, washes, etc.
- Avoid flooded areas or those with rapid water flow. Do not attempt to cross a flowing stream. It takes only six inches of fast flowing water to sweep you off your feet.
- Don't allow children to play near high water, storm drains or ditches. Hidden dangers could lie beneath the water.
- Flooded roads could have significant damage hidden by high waters. Never drive through high waters or on flooded roads. If your vehicle stalls, leave it immediately and seek higher ground. Water only two feet deep can float away most automobiles.
- Do not camp or part your vehicle along streams and washes, particularly when threatening conditions exist.
- Be especially cautious at night when it is harder to recognize flood dangers.
- Monitor NOAA Weather Radio (162.525) or your local media for vital weather-related information.



# HIGH WATER PUBLIC WORKS ACTION PLAN

## WHAT CAN YOU EXPECT FROM PUBLIC WORKS?

### Primary responsibilities of Public Works staff:

- Monitoring rivers and streams in the city, towns and county.
- Managing debris which might impede the flow of water in creeks and culverts in public right-of-way.
- Evaluating levels of flooding and/or anticipated flood threat and determining needs.
- Establishing priorities for the protection of life safety, essential facilities, access roads, bridge structures and culverts.



## CONTACT INFORMATION (during business hours):

### City of Steamboat Springs

Police Department	(970) 879-1144
Public Works	(970) 879-1807
Floodplain Manager (Bob Keenan)	(970) 871-8260

### Town of Hayden

Police Department	(970) 276-3232
Public Works	(970) 276-3840
Floodplain Manager (David Torgler)	(970) 276-3741

### Town of Oak Creek

Police Department	(970) 736-8355
Public Works	(970) 736-2459
Floodplain Manager (Oak Creek Town Hall)	(970) 736-2422

### Town of Yampa

Public Works / Floodplain Manager (Eric Berry)	(970) 638-4511
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### Routt County

Sheriff	(970) 879-1090
Office of Emergency Management	(970) 870-5551
Road & Bridge	(970) 879-0831
Floodplain Manager (Rebecca Bessey)	(970) 870-5599

AFTER BUSINESS HOURS CALL THE ROUTT COUNTY COMMUNICATIONS CENTER	(970) 879-1090
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# HIGH WATER LAW ENFORCEMENT ACTION PLAN

## WHAT WILL THE LOCAL LAW ENFORCEMENT AND ROUTT COUNTY SHERIFF'S OFFICE DO IN THE EVENT OF A HIGH WATER SITUATION?

### Duties of Law Enforcement:

- Protect life (health and well-being of the community).
- Minimize the threat to people and property in response to flooding (via evacuation if necessary).
- Continue to provide essential law enforcement services.

### Priorities:

- Evaluate the threat level
  - 24-hour stream watch during peak run-off period
  - Communication with affected agencies
  - Obtain hydrologic information from relevant sources
- Identify actual affected areas
  - Life threatening potential
  - Need to evacuate
  - Secure affected area (traffic/crowds)
  - Establish and secure access to affected areas
- Secure property impacted by high water
  - Public property (local government infrastructure)
  - Private property (prevent looting)
- Continue to provide essential police services
  - Prioritize police response to requests for service
  - Additional manpower and other resources from local agencies



## **SANDBAGGING**

### **Public Works:**

- Although Public Works generally does not provide sandbagging services, you can contact your local Public Works office with questions (refer to contact information for appropriate contact numbers).

### **Routt County Road & Bridge:**

- Sandbags will only be provided for the protection of public infrastructure.

### **Sandbags can be purchased locally at the following locations:**

- Elk River Farm & Feed – 2680 Copper Ridge Circle – Steamboat Springs – (970) 879-5383
- Yampa Valley Feeds – 198 East Lincoln Avenue – Hayden – (970) 276-4250
- MJK Sales & Feed – 290 Ranney – Craig – (970) 824-6581

Refer to the Yellow Pages of your phone book for sand and delivery contractors.

Trying to determine how much sand and how many sandbags you might need?

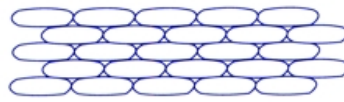
To construct a levee one (1) foot high and 20 feet long, it takes seven (7) cubic yards of sand to fill the required 100 sandbags. It takes two (2) people one (1) hour to fill and place the 100 bags.

### **General sandbagging Information:**

- Do not stack sandbags against the outside walls of your home to keep water out. Stack sandbags away from house walls to prevent high water from reaching your home.
- When high water is likely, it is better to permit the high water to flow freely into the basement (or flood the basement yourself with clean water, if you are sure it will be flooded anyway). This will avoid structural damage to the foundation and the house by equalizing the water pressure on the outside of the basement walls and floors.
- Construct the sandbag dike on high ground, as close as possible to your home or building. By being closer to your home or building, fewer bags will be needed, and the sandbag dike will be less exposed to the tributary, creek or river.
- Sandbagging should also focus along existing flood works or any low spots along dikes for maximum protection.
- Dig a trench one bag in depth and two bags wide as a foundation for the dike structure.
- To be effective, a dike must be three times as wide as its base as it is high.
- Sandbags should be turned right side out and filled half full. They need not be tied shut, just laid overlapping each other.
- The open ends of the sandbags should be facing upstream and/or uphill so that the moving water will not remove the sand from the bags as readily.
- Alternate direction of sandbags with bottom layer, i.e., bottom layer lengthwise with dike, next layer crosswise.
- As individual bags are put in place, walk on bags to tamp them into place to ensure maximum strength. Take care to avoid puncturing the bags.
- The butt ends of the bags should be placed facing the stream, for rows that are perpendicular to the stream.
- Each successive layer should be set back one-half sandbag width on both sides in each additional layer so a completed dike has a triangular cross-section.
- The number of sandbags needed to protect a home or building varies depending on the local topography and the anticipated depth of water.

## RECOMMENDED METHOD FOR SANDBAG DYKING

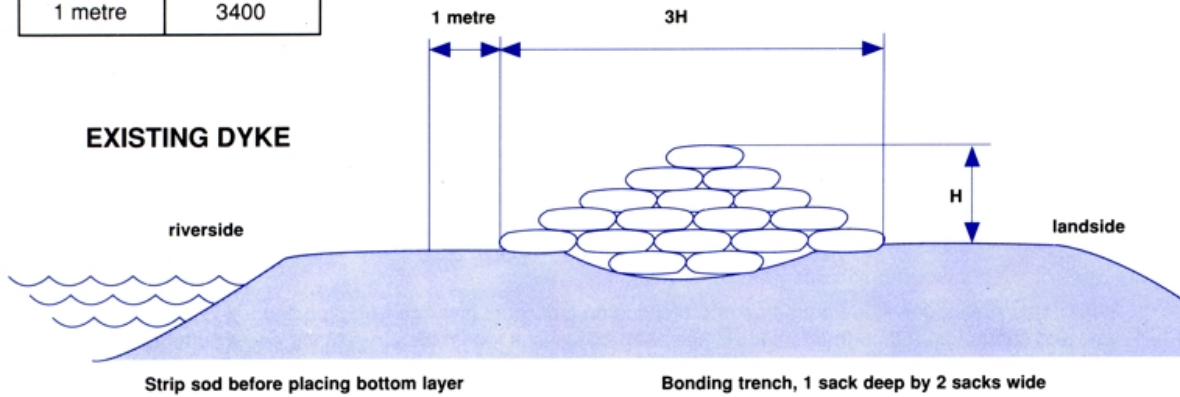
Bags Required for 100 Linear Feet of Dyke	
Height Above Dyke	Bags Required
1/3 metre	600
2/3 metre	2000
1 metre	3400



PLAN OF BOTTOM LAYER



METHOD OF LAPPING SACKS



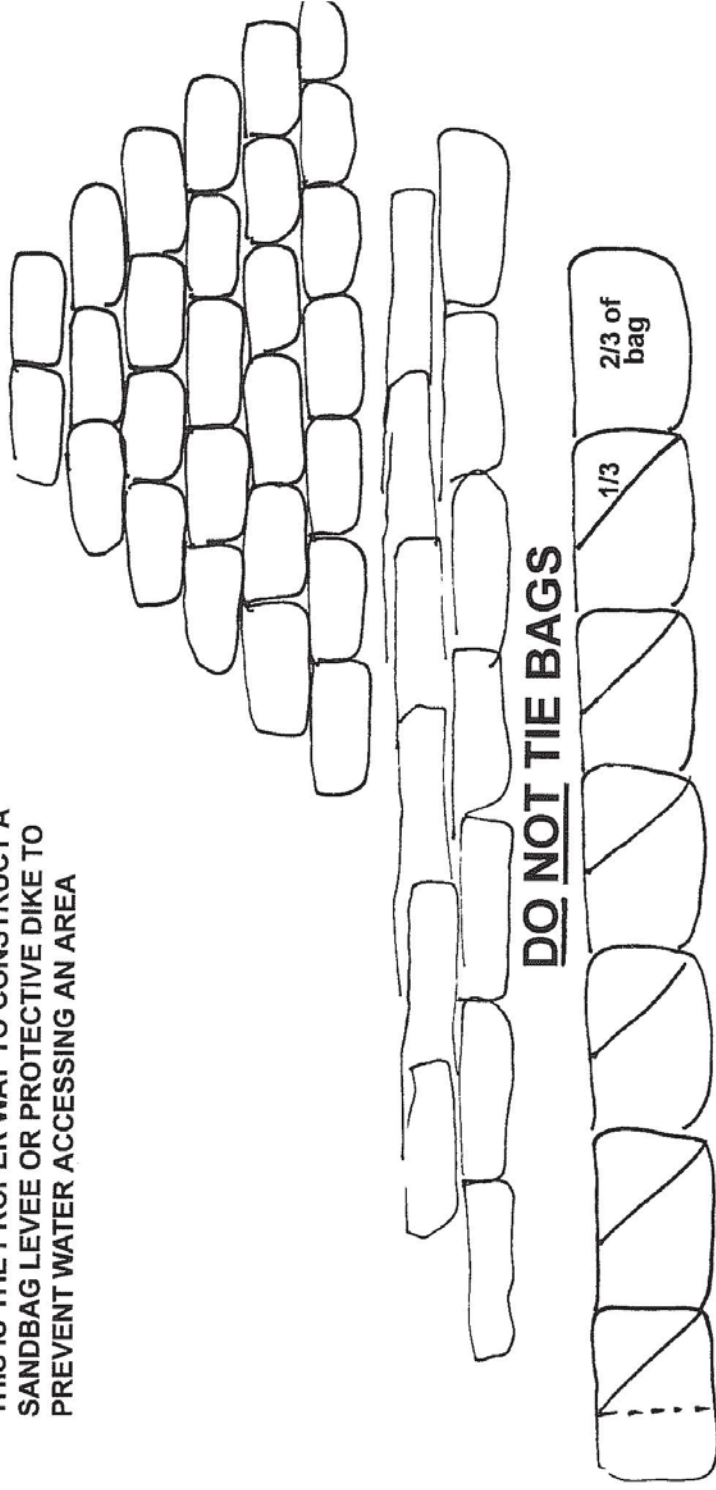
1. Alternate direction of sacks with bottom layer, i.e. bottom layer lengthwise with dyke, next layer crosswise.
2. Lap unfilled portion under next sack.
3. Tying or sewing of sacks not necessary.

4. Sacks should be approximately one-half full of clay, silt or sand.
5. Tamp thoroughly in place.

### Clean-up Procedures After High Water:

- Sandbags may be taken to the Routt County Landfill for disposal.

**THIS IS THE PROPER WAY TO CONSTRUCT A  
SANDBAG LEVEE OR PROTECTIVE DIKE TO  
PREVENT WATER ACCESSING AN AREA**



**Only fill bags  $1/2$  to  $2/3$  full - note the lap made by the excess material - fold it diagonally in half and walk right down the top of the bags to compact. Each additional row ties the lower ones in.**

## **HIGH WATER PREPAREDNESS RESOURCES**

To watch the flow in area rivers & streams

**go to**

<http://waterdata.usgs.gov/co/nwis/discharge>

**or**

<http://cwcb.state.co.us>

303-866-3441

The Colorado Water Conservation Board (CWCB) is the state authority on the administration of flood insurance and information. They are actively engaging in preparatory activities and updating information on their website throughout the flood season.

### **Website links with flood information pertinent to Routt County homeowners:**

Certificates of Elevation can be obtained from a licensed PLS (surveyor) in the state of Colorado. Blank certificates and detailed instructions can be found on-line at the FEMA website: <http://www.fema.gov/library/viewRecord.do?id=1383>.

Routt County can provide guidance on the basis of floodway/floodplain information available to them, but cannot verify all of the information provided to them. FEMA's Flood Insurance Rate Maps (FIRMs) are available at the City and County Planning Departments for review by the public. They are also available on-line at the FEMA website: [www.fema.gov](http://www.fema.gov) then click on the 'FEMA flood map store' link (on the left side), then proceed to look for the flood map for your location.

- National Weather Service: <http://www.floodsafety.noaa.gov/>
- Federal Alliance for Safe Homes: [www.flash.org](http://www.flash.org) or 1-877-221-SAFE
- Flood Insurance: [www.floodsmart.gov](http://www.floodsmart.gov)
- Emergency Preparedness: [www.fema.gov](http://www.fema.gov) or [www.redcross.org](http://www.redcross.org) or [www.readycolorado.org](http://www.readycolorado.org) or [www.co.routt.co.us](http://www.co.routt.co.us) (Emergency Management)
- Colorado Water Conservation Board: [www.cwcb.state.co.us](http://www.cwcb.state.co.us)
- Flood Information: [www.floodsafety.com](http://www.floodsafety.com)
- Institute for Business and Home Safety: [www.ibhs.org](http://www.ibhs.org)
- U.S. Army Corp of Engineers: <http://www.usace.army.mil/Emergency/Pages/home.aspx>
- Colorado University Hazards Site: <http://www.colorado.edu/hazards/resources/web/floods.html>
- Flood Recovery and Related Health Issues: <http://www.ksre.ksu.edu/library/DesktopDefault.aspx?tabid=57>



## FEMA FLOOD INSURANCE RATE MAPS

Flood Insurance Rate Maps (FIRMs) are available as part of the National Flood Insurance Program.

Routt County can provide guidance on the basis of floodway/floodplain information available to them. FEMA's Flood Plain Insurance Rate Maps are available at the <http://msc.fema.gov/webapp/wcs/stores/servlet/CategoryDisplay?catalogId=10001&storeId=10001&categoryId=12001&langId=&userType=G&type=1> for review by the public. Information on flood maps and flood insurance is available at

<http://cwcb.state.co.us/>

then click on the "Flood Protection" tab on the left for the following:

- Colorado Flood and Weather Information
- FEMA Resources (maps, documents, technical guidance)
- Flood Insurance Information and Floodplain Maps
- Floodplain Management Presentations and Reports
- Forms and Documents (flood-related downloads)

For assistance in determining whether your property is in the 100-year flood area, please contact the Planning Department in your city/town or the county.

(Please note: Flood insurance rate maps are available for review and the various towns will answer general questions for the public. However, lending institutions, not the towns, determine whether flood insurance will be required for a property and the related liability potential.)

**Prepared by:**

## **ROUTT COUNTY OFFICE OF EMERGENCY MANAGEMENT**

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