

**NATIONAL WEATHER SERVICE MANUAL 10-923**  
**NOVEMBER 29, 2019**

**Operations and Services**  
**Water Resources Services Program, NWSPD 10-9**

**WEATHER FORECAST OFFICE WATER RESOURCES PRODUCT EXAMPLES**

**NOTICE:** This publication is available at: <https://www.nws.noaa.gov/directives/>

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**SUMMARY OF REVISIONS:** This directive supersedes NWS Manual 10-923, “*Weather Forecast Office Hydrologic Product Examples*,” dated September 27, 2017. The following revisions were made to this manual:

- 1) All water resources products issued via RiverPro, WarnGen, GHG, and Hazard Services are in mixed-case text.
- 2) Flood Watches, Warnings, and Advisories for Forecast Points include latitude/longitude polygon coordinates defining the watch, warning, or advisory areas.
- 3) Flash Flood Warnings and Flash Flood Statements are in Impact-Based Warning (IBW) format.
- 4) In Sections 3, 7, and 8, removed “areal” before Flood Watches, Warnings, and Advisories to eliminate any confusion about “areal” appearing anywhere within these products, which cover locations not quantified or indexed at specific locations.

Signed

11/29/2019

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Date

## Weather Forecast Office Water Resources Product Examples

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1. **Introduction.** This directive provides examples of Weather Forecast Office (WFO) water resources products described in [NWS Instruction 10-922, \*Weather Forecast Office Water Resources Products Specification\*](#). Some WFO water resources products issued under a given Advanced Weather Information Processing System (AWIPS) identifier (e.g., flood statement – FLS) are used for multiple purposes. Therefore, several product examples are provided to illustrate key applications. NWS Instruction 10-922 provides flexibility to include or exclude certain items from water resources products, so these examples should not be taken as the only prescribed formats.

2. **Hydrologic Outlook (ESF).**

2.1 **Example #1 - Potential Flooding From Excessive Rainfall: Near Term.** This outlook issued by WFO Chicago, Illinois describes the flood potential in the three- to five-day time frame.

FGUS73 KLOT 242047  
 ESFLOT  
 ILC007-031-037-043-053-063-075-089-091-093-097-099-103-105-111-  
 141-197 201-INC007-073-089-111-127-250900-

Hydrologic Outlook  
 National Weather Service Chicago IL  
 347 PM CDT Sun Jun 24 2018 /447 PM EDT Sun Jun 24 2018/

...THUNDERSTORMS MAY BRING ADDITIONAL HEAVY RAINFALL AND FLOODING  
 LATE MONDAY NIGHT THROUGH TUESDAY NIGHT...

Thunderstorms capable of producing heavy rainfall will return very late Monday night with the threat for heavy rain continuing through Tuesday night. Recent wet conditions, saturated ground, and residual river flooding from last week's heavy rain mean little capacity for additional rain. Hence any additional heavy rainfall may result in flash flooding, flooding of low-lying areas and renewed rises on rivers and streams.

While there is still uncertainty in the exact magnitude and duration of rainfall, plan now for wet conditions late Monday night through Tuesday night. Monitor forecasts for later

updates and possible watches and warnings, especially if you live in an area prone to flooding.

\$\$

**2.2 Example #2 – Probabilistic Hydrologic Outlook: Long Term.** This outlook issued by WFO Eastern North Dakota/Grand Forks describes the potential for snowmelt flooding in the entire hydrologic service area in terms of probabilities of exceeding various stages.

FGUS73 KFGF 151457  
ESFFGF

MNC005-007-027-029-051-057-069-077-087-089-107-111-113-119-125-  
135-159-167-NDC003-005-017-019-027-035-039-063-067-071-073-077-  
081-091-095-097-099-281200-

Probabilistic Hydrologic Outlook  
National Weather Service Eastern North Dakota/Grand Forks ND  
957 AM CDT Fri Mar 15 2019

...SPRING FLOOD AND WATER RESOURCES OUTLOOK...

...RED RIVER BASIN OUTLOOK FOR RIVER FLOOD POTENTIAL...

This outlook covers the Red River of the North  
and its Minnesota and North Dakota tributaries.

...HIGH RISK OF MAJOR FLOODING ALONG THE MAINSTEM RED RIVER CONTINUES  
WITH MODERATE TO ISOLATED MAJOR ALONG THE TRIBUTARIES...

.OUTLOOK SUMMARY...

\* Probabilities for exceeding Major, Moderate, Minor Flood Stage...

Major Flooding...

There is a high risk (greater than 65 percent) of major flooding at Wahpeton/Breckenridge, Fargo/Moorhead, Halstad, Grand Forks/East Grand Forks, Oslo, Drayton, and Pembina on the Red River. In North Dakota, there is a high risk of major flooding at Valley City, Lisbon, Kindred, the West Fargo Diversion, and Harwood on the Sheyenne River and at Abercrombie on the Wild Rice River. In Minnesota, there is a high risk of major flooding at Hendrum on the Wild Rice River, Climax on the Sand Hill River, and at High Landing and Crookston on the Red Lake River.

There is a medium risk (35 to 65 percent) of major flooding at Mapleton on the Maple River and at Grafton on the Park River in North Dakota. In Minnesota, there is a medium risk of major flooding at Twin Valley on the Wild Rice River.

There is a low risk (less than 35 percent) of major flooding throughout the remainder of the basin.

Moderate Flooding...

There is a high risk (greater than 65 percent) of moderate flooding at Hickson on the Red River. In North Dakota, there is a high risk of moderate flooding at Enderlin on the Maple River and Minto on the Forest River. In Minnesota, there is a high risk of moderate flooding at Sabin on the South Branch Buffalo River, Hawley and Dilworth on the Buffalo River, Shelly on the Marsh River, and Hallock on the Two Rivers River.

There is a medium risk (35 to 65 percent) of moderate flooding at Hillsboro on the Goose River. In Minnesota, there is a medium risk of moderate flooding at Alvarado on the Snake River.

Minor Flooding...

In Minnesota, there is a high risk (greater than 65 percent) of minor flooding at Roseau on the Roseau River and a medium risk (35 to 65 percent) of minor flooding near Warren on the Snake River. In North Dakota, there is a low risk (less than 35 percent) of minor flooding at Walhalla and Neche on the Pembina River.

\* This 90-day outlook covers the period from March 18, 2019 to June 16, 2019.

.OUTLOOK DISCUSSION...

Hydrologic and climate conditions which affect each of the several factors that significantly determine the timing and magnitude of spring snowmelt flooding within the Red River of the North are discussed below:

\* SNOWPACK CONDITIONS...

The current snowpack remains above to much above normal. The deepest snowpack remains across the central and southern Red River Valley and into northwestern Minnesota. Due to the recent rain and snow event, the water content of the snowpack across these locations now ranges from roughly 1.5 to 3.5 inches above normal.

\* SOIL MOISTURE...

At the time of freeze-up, soil moisture was above normal across southern portions of the basin, decreasing northward up the valley to below normal near the International border. Note that soil moisture is much below that which preceded the record flood years of 1997, 2009, 2010, and 2011.

\* FROST DEPTHS...

Frost depths continue to be much deeper than normal across the basin. These deeper frost depths are likely to lead to greater potential for significant runoff if the spring warmup/snowmelt occurs quickly and/or is accompanied by rainfall and/or additional snowfall.

\* RIVER FLOWS...

Base streamflows range from near normal across the north to above normal in southern portions of the basin. Note that base streamflows remain much below that which preceded the record flood years of 1997, 2009, 2010, and 2011.

\* RIVER ICE...

River ice and lake ice thicknesses are now above seasonal normals. Note that since most ice is in the lower channels, ice jams are likely to be more of a risk on the tributaries than on the mainstem Red (although not out of the question).

\* FACTORS YET TO BE DETERMINED...

- Further snowpack growth
- Rate of snowmelt/thaw
- Heavy rain on snow or frozen ground during thaw or peak flood
- Heavy rain on ice-covered rivers causing short-term ice jams

\* SHORT TERM FORECAST...

The next two weeks will see a slight warm up with temperatures trending towards more normal values (highs above freezing and lows below freezing). These temperatures coupled with a quieter precipitation pattern will lead to a favorable melt cycle in the short term.

\* LONG TERM OUTLOOK...

Climate outlooks indicate the potential for another cold period to start April with a more uncertain weather pattern.

.NEXT SPRING FLOOD OUTLOOK...

This will be the last probabilistic outlook for the season as we transition into the spring melt and deterministic river forecasts will become available.

.FLOOD OUTLOOK PROBABILITIES TABLES...

The following message has two sections: the first gives the current and normal/historical chances of river locations reaching their minor, moderate, and major flood categories; the second gives the current chances of river locations rising above the river stages listed.

...Red River Long-Range Probabilistic Outlook...

In Table 1 below, the current (CS) and historical (HS), or normal, probabilities of exceeding minor, moderate, and major flood stages are listed for the valid time period.

- CS values indicate the probability of reaching a flood category based on current conditions.
- HS values indicate the probability of reaching a flood category based on historical, or normal, conditions.
- When the value of CS is greater than HS, the probability of exceeding that level is higher than normal. When the value of CS is less than HS, the probability of exceeding that level is lower than normal.

...Table 1--Probabilities for Minor, Moderate, and Major Flooding  
Valid Period: 03/18/2019 - 06/16/2019

: Current and Historical



				:	Chances of Exceeding					
				:	Flood Categories					
				:	as a Percentage (%)					
				:						
				:	Categorical					
				:	Flood Stages (ft)					
Location	Minor	Mod	Major	:	Minor		Moderate		Major	
-----	-----	-----	-----	:	CS HS		CS HS		CS HS	
Red River of the North.....				:						
WAHPETON	11.0	13.0	15.0	:	>95	63	>95	32	70	15
HICKSON	30.0	34.0	38.0	:	>95	28	72	14	6	<5
FARGO	18.0	25.0	30.0	:	>95	82	>95	42	>95	27
HALSTAD	26.0	32.0	37.5	:	>95	35	>95	20	>95	11
GRAND FORKS	28.0	40.0	46.0	:	>95	62	>95	32	94	11
OSLO	26.0	30.0	36.0	:	>95	66	>95	59	>95	28
DRAYTON	32.0	38.0	42.0	:	>95	51	>95	37	94	14
PEMBINA	39.0	44.0	49.0	:	>95	56	>95	43	>95	23

				:	: Current and Historical					
				:	: Chances of Exceeding					
				:	: Flood Categories					
				:	: as a Percentage (%)					
				:						
				:	Categorical					
				:	Flood Stages (ft)					
Location	Minor	Mod	Major	:	Minor	Moderate		Major		
				:	CS HS	CS HS	CS HS	CS HS		
-----	-----	-----	-----	:	---	---	---	---	---	
Minnesota Tributaries.....										
SABIN	13.0	15.0	19.0	:	>95	53	91	17	23	<5
HAWLEY	8.0	9.0	11.0	:	>95	36	>95	23	28	<5
DILWORTH	13.0	20.0	26.0	:	>95	67	>95	20	15	<5
TWIN VALLEY	10.0	12.0	14.0	:	>95	17	90	6	49	<5
HENDRUM	20.0	28.0	32.0	:	>95	56	>95	23	91	6
SHELLY	14.0	20.0	23.0	:	>95	30	76	11	33	<5
CLIMAX	20.0	25.0	30.0	:	>95	26	>95	12	65	7
HIGH LANDING	12.0	12.5	13.0	:	>95	21	93	18	84	16
CROOKSTON	15.0	23.0	25.0	:	>95	53	88	13	65	8
ABOVE WARREN	67.0	71.0	75.0	:	41	13	11	<5	<5	<5
ALVARADO	106.0	108.0	110.0	:	77	21	49	15	11	<5
HALLOCK	802.0	806.0	810.0	:	>95	61	>95	45	23	11
ROSEAU	16.0	18.0	19.0	:	68	20	17	8	6	<5
Note: The Roseau numbers consider the flow thru its diversion										

				:	Current and Historical					
				:	Chances of Exceeding					
				:	Flood Categories					
				:	as a Percentage (%)					
				:						
				:	Categorical					
				:	Flood Stages (ft)					
Location	Minor	Mod	Major	:	Minor	Moderate	Major			
				:	CS HS	CS HS	CS HS			
-----	-----	-----	-----	:	---	---	---	---		
Note: The Roseau numbers consider the flow thru its diversion										
North Dakota Tributaries.....										
ABERCROMBIE	10.0	12.0	18.0	:	>95	39	>95	36	>95	20
VALLEY CITY	15.0	16.0	17.0	:	93	10	78	9	71	<5
LISBON	15.0	17.0	19.0	:	>95	10	84	8	68	6
KINDRED	16.0	19.0	20.5	:	>95	19	>95	10	90	9

WEST FARGO DVRSN	18.0	20.0	21.0	:	>95	11	>95	10	>95	9
HARWOOD	84.0	86.0	91.0	:	>95	24	>95	22	>95	10
ENDERLIN	9.5	12.0	14.0	:	>95	21	93	10	19	<5
MAPLETON	18.0	21.0	23.0	:	>95	37	>95	16	38	<5
HILLSBORO	10.0	13.0	16.0	:	89	15	54	9	19	<5
MINTO	6.0	8.0	11.0	:	>95	32	77	11	<5	<5
GRAFTON	12.0	13.5	14.5	:	78	22	57	8	49	6
WALHALLA	11.0	16.0	18.0	:	17	19	<5	<5	<5	<5
NECHE	18.0	19.0	20.5	:	21	30	20	28	11	19

LEGEND:

CS = Conditional Simulation (Outlook for current conditions) HS  
= Historical Simulation ( " " normal conditions) ft =  
Feet (above gage zero datum)

...Table 2--Long-Range Probabilistic Outlook by River Stage...  
Valid from March 18, 2019 to June 16, 2019

LOCATION	95%	90%	75%	50%	25%	10%	05%
-----	-----	-----	-----	-----	-----	-----	-----
Red River of the North.....							
WAHPETON	13.9	14.1	14.8	15.7	17.0	18.2	19.0
HICKSON	32.1	32.8	33.9	35.1	36.1	37.6	38.6
FARGO	33.8	34.9	36.5	37.9	38.9	40.3	41.4
HALSTAD	38.0	38.5	39.0	39.5	40.0	40.6	41.2
GRAND FORKS	45.8	47.5	49.0	50.6	52.7	54.6	56.7
OSLO	37.2	37.5	37.8	37.9	38.0	38.1	38.1
DRAYTON	41.8	42.4	43.0	43.7	44.6	45.3	46.0
PEMBINA	51.0	51.7	52.2	53.0	53.7	54.5	54.7
Minnesota Tribs:	95%	90%	75%	50%	25%	10%	05%
-----	-----	-----	-----	-----	-----	-----	-----
South Fork Buffalo River.....							
SABIN	14.6	15.0	15.8	17.2	18.6	20.3	21.7
Buffalo River.....							
HAWLEY	9.5	9.8	10.0	10.4	11.2	11.9	13.0
DILWORTH	21.2	21.8	22.7	23.9	25.1	26.7	28.1
Wild Rice River.....							
TWIN VALLEY	10.9	12.0	12.8	13.9	15.6	17.1	18.0
HENDRUM	31.6	32.0	32.6	33.3	34.0	35.0	35.6
Marsh River.....							
SHELLY	17.0	18.0	20.3	22.0	23.9	24.7	25.7
Sand Hill River.....							
CLIMAX	26.6	27.9	29.4	31.2	34.4	37.0	39.1
Red Lake river.....							
HIGH LANDING	12.4	12.7	13.1	13.3	13.5	13.6	13.7
CROOKSTON	21.6	22.5	24.3	26.9	28.5	30.4	32.9
Snake River.....							
ABOVE WARREN	65.0	65.2	65.7	66.8	68.3	72.0	73.1
ALVARADO	104.5	105.0	106.1	108.0	109.1	110.3	110.7
Two Rivers River.....							
HALLOCK	807.4	807.7	808.4	809.5	809.9	811.5	812.0
Roseau River.....	considering the flow thru the Roseau diversion.						

ROSEAU	14.1	14.8	15.6	16.4	17.7	18.8	19.4
North Dakota Tribs:	95%	90%	75%	50%	25%	10%	05%
-----	-----	-----	-----	-----	-----	-----	-----
Wild Rice River.....							
ABERCROMBIE	21.0	21.9	23.4	24.5	25.6	26.9	27.5
Shenando River.....							
VALLEY CITY	13.1	15.2	16.6	18.0	19.8	21.7	22.7
LISBON	15.6	16.4	18.3	20.5	22.4	25.0	28.2
KINDRED	20.2	20.5	21.1	21.2	21.2	21.2	21.2
WEST FARGO DVRSN	21.2	21.2	21.3	21.3	21.3	21.3	21.3
HARWOOD	91.8	91.9	92.1	92.1	92.2	92.3	92.4
Maple River.....							
ENDERLIN	11.8	12.1	12.8	13.3	13.6	14.4	15.0
MAPLETON	22.0	22.2	22.5	22.8	23.2	24.0	24.1
Goose River.....							
HILLSBORO	9.3	9.8	12.1	13.3	14.6	16.5	17.9
Forest River.....							
MINTO	7.3	7.5	8.0	8.5	9.6	9.9	10.2
Park River.....							
GRAFTON	10.5	11.0	12.1	14.1	16.1	17.9	19.4
Pembina River.....							
WALHALLA	5.9	6.1	6.8	7.5	8.7	11.8	12.9
NECHE	10.3	10.6	11.7	13.6	16.6	20.5	21.2

#### .THE OUTLOOK PRODUCTION PROCESS...

This long-range probabilistic outlook is based on a series of peak river levels or crests taken from the forecast hydrograph results of the NWS Community Hydrologic Prediction System (CHPS). The model is run for multiple scenarios starting at current river, snow, and soil conditions using over 60 years of past precipitation and temperature conditions that were experienced for those past years during the timeframe of the outlook period. These crests can then be ranked from lowest to highest and assigned an exceedance probability. For example, for a series of 50 years, the lowest ranked crest has 49 crests above it. Since 95 percent of the crests are above it, it is assigned a 95 percent probability of exceedance (POE).

A YouTube video on "How to Interpret River Outlook Products" is at:

[www.youtube.com/watch?v=pSoEgvsnpv4](http://www.youtube.com/watch?v=pSoEgvsnpv4)

The probabilities can be used for risk management by using them as an indication of the range of crests that may be expected during the valid period of the outlook.

By providing a range of peak river level probabilities, the NWS is contributing to the area's Impact-Based Decision Support Services that help with long-range flood planning and response readiness. This outlook is a part of NOAA'S National Weather Service's Advanced Hydrologic Prediction Services (AHPS).

This outlook was produced using precipitation and temperatures

for the years 1949 through 2012.

.ADDITIONAL INFORMATION SOURCES...

This outlook is also presented as graphs of the probability of stage exceedance for the full period and for weekly intervals during the period. These graphs, together with explanations that help in interpreting them, are available from the NWS Grand Forks AHPS web page at:

[www.weather.gov/grandforks](http://www.weather.gov/grandforks) or [weather.gov/fgf](http://weather.gov/fgf)

then click on "Rivers and Lakes" above the map.

Current river conditions for all river forecast points in the Red River of the North and Devils/Stump Lake basins are available on our web site. Also, 7-day deterministic forecasts will be issued at least once a day when river forecast locations will be at or above flood during that period.

If you have any questions, contact the NWS at 701-772-0720.

You can follow us on Facebook at [www.facebook.com/NWSGrandForks](http://www.facebook.com/NWSGrandForks) and on Twitter at @NWSGrandForks.

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[www.weather.gov/fgf](http://www.weather.gov/fgf)

NNNN

**2.3 Example #3 - Spring Ice Breakup Outlook: Long Term.** This outlook issued by the Alaska Pacific River Forecast Center (RFC) describes the expected spring ice breakup on Alaska rivers. Note: the practice of issuing the ESF product at an RFC only exists in the Alaska Region.

FGAK78 PACR 211818  
ESFAK  
AKZALL-140000-

Hydrologic Outlook  
NWS Alaska Pacific River Forecast Center Anchorage AK  
11AM ADT THU MAR 21 2019

...SPRING BREAKUP OUTLOOK FOR ALASKA...

The Spring Breakup flood potential in Alaska is forecast to be average to below average. This forecast focuses on the Tanana River Valley, Central Yukon River, Koyukuk River, Copper River, and North Slope. This forecast is based on observed snowpack, ice thickness reports, and long-range temperature forecasts.

River Ice conditions

March ice thickness data are available for a limited number of observing sites in Alaska. Late February/Early March measurements indicate that ice

thickness is below average across the state with locations generally between 60-90 percent of normal. A few exceptions are at Tanana where the Yukon River ice thickness was 132% of normal and on the Salcha River at Salcha where the ice thickness was 125% of normal, though open water has also been reported on the Tanana River near Salcha. In general, below normal ice thickness is likely widespread across the interior as temperatures on average have been warmer than normal since river freeze up in October and November. The warmer than normal temperatures are reflected in the accumulated freezing degree days across the state where all locations are below normal. Specifically, at Bethel freezing degree days as of March 1 are 60% of normal, Fairbanks are 80% of normal, and on the Arctic Coast at Deadhorse are 70% of normal.

#### Snowpack

Analysis of the March 1st snowpack by the Natural Resources Conservation Service (NRCS) indicates greater than normal snowpack across the western Alaska and near normal across the central interior and Southcentral Alaska. In the Kuskokwim and Koyukuk Basins snowpack 125-150% of normal, in the Tanana Basin (87%), in the Upper Yukon (72%) and in the Susitna River basin (102%).

#### Climate Outlook

The most important factor determining the severity of ice breakup remains the weather during April and May. Dynamic breakups with a high potential for ice jam flooding typically require cooler than average temperatures for most of April followed by an abrupt transition to warm summer-like temperatures in late April to early May. The temperature outlook for late March and early April suggest an increased chance of average to above average temperatures for most of Alaska. The longer 3-month outlook which includes March, April and May indicates increased chances of above average temperatures in Alaska.

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### **3. Flood Watch and Associated Follow-up Products (FFA).**

**3.1 Example #1 - Flood Watch.** Situation – A storm system is approaching western Washington. Models and Weather Prediction Center (WPC) guidance indicate that the storm could produce moderate to heavy rain over an extended period. Forecasters see the potential for flooding across Mason County, including the Skokomish River. WFO Seattle issues a flood watch for Mason County at 3:08 a.m. on Sunday, November 25, 2018.

WGUS66 KSEW 251108  
FFASEW

URGENT - IMMEDIATE BROADCAST REQUESTED  
Flood Watch  
National Weather Service Seattle WA  
308 AM PST Sun Nov 25 2018

WAC045-261115-  
/O.NEW.KSEW.FA.A.0010.181127T0000Z-181127T1200Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Mason-  
308 AM PST Sun Nov 25 2018

...FLOOD WATCH IN EFFECT FROM MONDAY AFTERNOON THROUGH LATE MONDAY NIGHT...

The National Weather Service in Seattle has issued a

- \* Flood Watch for a portion of northwest Washington, including the following county, Mason.
- \* From Monday afternoon through late Monday night.
- \* Periods of heavy rain will fall on the south facing slopes of the Olympic range starting late tonight and continuing into Monday night. Total rainfall amounts of 3 to 7 inches are forecast on the Skokomish River Basin during the 24-hour period ending at 4 AM PST, Tuesday. This amount of rain could lead to moderate flooding on the Skokomish River Monday night.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Flood Watch means there is a potential for flooding based on the current forecast.

Monitor the forecasts and be alert for possible Flood Warnings. Those living in areas prone to flooding should be prepared to take action should flooding develop.

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### Notes and Explanations:

(1) The forecaster believes the flood threat starts the afternoon of Monday, Nov 26, 2018. Therefore, the Event Beginning Date/Time group is "181127T0000Z" and the beginning time/day phrase used in the second bullet is "Monday afternoon".

(2) The forecaster wants the watch to be valid until late Monday night. Therefore, the Event Ending Date/Time group is "181127T1200Z" and the ending time/day phrase used in the second bullet is the general phrase "late Monday night".

### **3.2 Example #2 - Flood Watch: Follow-up With Cancellation, Extension in Area, and Continuation Segments.**

Situation – After adding Whatcom County to the flood watch and extending the flood watch in time, WFO Seattle added Clallam and Skagit counties to the flood watch, continued the flood watch for Whatcom County, and cancelled the Flood Watch for Mason County and replaced it by a flood warning for the Skokomish River. The product had three segments as follows:

WGUS66 KSEW 261800  
FFASEW

URGENT - IMMEDIATE BROADCAST REQUESTED  
Flood Watch  
National Weather Service Seattle WA  
1000 AM PST Mon Nov 26 2018

WAC045-261900-  
/O.CAN.KSEW.FA.A.0010.181127T0300Z-181128T0300Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Mason-  
1000 AM PST Mon Nov 26 2018

...FLOOD WATCH IS CANCELLED...

The Flood Watch for a portion of northwest Washington has been replaced by a flood warning for the Skokomish River.

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WAC009-057-270600-  
/O.EXA.KSEW.FA.A.0010.181127T0300Z-181128T0300Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Clallam-Skagit-  
1000 AM PST Mon Nov 26 2018

...FLOOD WATCH IN EFFECT FROM 7 PM PST THIS EVENING THROUGH TUESDAY EVENING...

The National Weather Service in Seattle has expanded the

- \* Flood Watch to include a portion of northwest Washington, including the following counties, Clallam and Skagit.
- \* From 7 PM PST this evening through Tuesday evening
- \* Periods of heavy rain will continue through early Tuesday over the Olympics and north Cascades. This amount of rain will lead to the potential for flooding in those counties including the Bogachiel and Skagit Rivers later tonight or Tuesday. River forecasts this morning have the crests a little below flood stage but this storm is rather juicy and if it lingers a little longer over the Olympics or spreads a little further south down the Cascades, these areas will see the streams go higher.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Flood Watch means there is a potential for flooding based on the current forecast.

Monitor the forecasts and be alert for possible Flood Warnings. Those living in areas prone to flooding should be prepared to take action should flooding develop.

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WAC073-270600-  
/O.CON.KSEW.FA.A.0010.181127T0300Z-181128T0300Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Whatcom-

1000 AM PST Mon Nov 26 2018

...FLOOD WATCH REMAINS IN EFFECT FROM 7 PM PST THIS EVENING  
THROUGH TUESDAY EVENING...

The Flood Watch continues for

- \* A portion of northwest Washington, including the following county, Whatcom.
- \* From 7 PM PST this evening through Tuesday evening
- \* Periods of heavy rain will continue through early Tuesday. Heavy rain in the north Cascades will also lead to the potential for flooding in Whatcom County including the Nooksack River later tonight or Tuesday.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Flood Watch means there is a potential for flooding based on the current forecast.

Monitor the forecasts and be alert for possible Flood Warnings. Those living in areas prone to flooding should be prepared to take action should flooding develop.

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### Notes and Explanations:

- (1) A cancellation segment (CAN) is used to remove the county from the area for which a flood watch no longer applies.
- (2) An extension-in-area segment (EXA) is used for the new counties now being covered by the multi-segmented flood watch.
- (3) All three segments in this product have the same event tracking number.
- (4) A continuation segment (CON) is used for the county in the original watch that will continue to be covered in the multi-segmented flood watch.
- (5) All three segments, including the cancellation segment, use the same date and time in the Event Ending Date/Time group - i.e., Tuesday evening on Nov 27, 2018 (181128T0300Z).

**3.3 Example #3 - Flash Flood Watch.** Situation – Training thunderstorms containing high rainfall rates are becoming more likely over portions of southeast Kansas and southwest Missouri. Using WPC Quantitative Precipitation Forecast (QPF) and RFC guidance, forecasters conclude that flash flooding could occur. However, the specific locations that could experience flash flooding cannot be predicted with certainty. At 8:08 p.m. (0108Z) on Wednesday, August 29, 2018, a flash flood watch is issued.

WGUS63 KSGF 300108  
FFASGF

URGENT - IMMEDIATE BROADCAST REQUESTED



Flood Watch  
National Weather Service Springfield MO  
808 PM CDT Wed Aug 29 2018

...EXCESSIVE RAINFALL POSSIBLE LATE TONIGHT INTO THURSDAY...

.Training thunderstorms containing high rainfall rates are becoming more likely over portions of southeast Kansas and southwest Missouri by late tonight and into Thursday.

Thunderstorms developing in an airmass high in moisture content could produce up to three inches of rain. Locally higher amounts are possible where thunderstorms tend to train for extended periods of time.

KSZ073-097-101-MOZ066-077>079-088>090-093>095-101>104-300915-  
/O.NEW.KSGF.FF.A.0002.180830T0900Z-180830T2100Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Bourbon-Crawford-Cherokee-Vernon-Barton-Cedar-Polk-Jasper-Dade-  
Greene-Newton-Lawrence-Christian-McDonald-Barry-Stone-Taney-  
Including the cities of Fort Scott, Pawnee Station, Chicopee,  
Lone Oak, Pittsburg, Baxter Springs, Lowell, Riverton, Columbus,  
Neutral, Sherwin, Stippville, Nevada, Kenoma, Lamar,  
Cedar Springs, El Dorado Springs, Filley, Arnica,  
Caplinger Mills, Stockton, Bolivar, Joplin, Carthage, Greenfield,  
Lockwood, Meinert, Springfield, Neosho, Aurora, Mount Vernon,  
Marionville, Nixa, Christian Center, Ozark, Selmore, Anderson,  
Noel, Goodman, South West City, Pineville, Rocky Comfort, Monett,  
Madry, Cassville, Kimberling City, Crane, Elsey, Indian Point,  
Silver Dollar City, Branson, Hollister, Kirbyville,  
Edgewater Beach, Forsyth, Ozark Beach, and Powersite  
808 PM CDT Wed Aug 29 2018

...FLASH FLOOD WATCH IN EFFECT FROM 4 AM CDT THURSDAY THROUGH  
THURSDAY AFTERNOON...

The National Weather Service in Springfield has issued a

- \* Flash Flood Watch for portions of southeast Kansas and Missouri, including the following areas, in southeast Kansas, Bourbon, Cherokee, and Crawford. In Missouri, Barry, Barton, Cedar, Christian, Dade, Greene, Jasper, Lawrence, McDonald, Newton, Polk, Stone, Taney, and Vernon.
- \* From 4 AM CDT Thursday through Thursday afternoon
- \* Thunderstorms containing high rainfall rates are expected to develop late tonight into Thursday over portions of southeast Kansas and southwest Missouri. Up to three inches of rain are possible. Locally higher amounts can not be ruled out where thunderstorms tend to train for an extended period of time.
- \* Flash flooding of small creeks, rivers, and low-water crossings is possible late tonight and into Thursday. Some of the basins within this watch include, the Spring River, Marmaton River, Shoal Creek, Turnback Creek, Muddy Creek, Lightning Creek, and the James River.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Flash Flood Watch means that conditions may develop that lead to flash flooding. Flash flooding is a VERY DANGEROUS SITUATION.

You should monitor later forecasts and be prepared to take action should Flash Flood Warnings be issued.

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### Notes and Explanations:

(1) The forecaster believes the flood threat starts at 4:00 a.m. on Thursday, August 30, 2018 (0900Z). Therefore, the Event Beginning Date/Time group is "180830T0900Z" and the beginning time/day phrase used in the second bullet is "4 AM CDT Thursday".

(2) The forecaster wants the watch to be valid until 4:00 p.m. Thursday, August 30, 2018 (2100Z). Therefore, the Event Ending Date/Time group is "180830T2100Z" and the ending time/day phrase used in the second bullet is "Thursday afternoon".

### **3.4 Example #4 - Flash Flood Watch: Follow-up With Extension in Time and Extension in Area Segments.**

Situation – Fourteen hours after the initial flash flood watch was issued, forecasters at WFO Springfield, MO observe that the thunderstorms containing high rainfall rates will impact a wider area and have a longer duration than originally anticipated. At 10:28 a.m. on Thursday, August 30, 2018, they issue a flash flood watch that expands coverage into other parts of central and southern Kansas and extends the event expiration time by one hour from 4:00 p.m. to 5:00 p.m. Thursday afternoon.

WGUS63 KSGF 301528  
FFASGF

URGENT - IMMEDIATE BROADCAST REQUESTED  
Flood Watch  
National Weather Service Springfield MO  
1028 AM CDT Thu Aug 30 2018

...EXCESSIVE RAINFALL POSSIBLE TODAY...

MOZ055>057-067>070-080>082-091-092-096-302200-  
/O.EXB.KSGF.FF.A.0002.000000T0000Z-180830T2200Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Benton-Morgan-Miller-St. Clair-Hickory-Camden-Pulaski-Dallas-  
Laclede-Texas-Webster-Wright-Douglas-  
Including the cities of Warsaw, Whitakerville, Cole Camp,  
Crockerville, Mora, Edmonson, Lincoln, Versailles, Rocky Mount,  
Stover, Laurie, Aurora Springs, Eldon, Lake Ozark, Tiffin,  
Appleton City, Johnson City, Weaubleau, Hermitage, Pittsburg,  
Quincy, Wheatland, Cross Timbers, Osage Beach, Camdenton,  
Decaturville, Roach, Village of Four Seasons, Fort Leonard Wood,  
Laquey, Waynesville, Buffalo, Charity, Foose, March, Plad,  
Windyville, Olive, Lynchburg, Lebanon, Plato, Roby, Bendavis,  
Huggins, Marshfield, Northview, Seymour, Rogersville, Dawson,  
Graff, Mountain Grove, Duncan, Mansfield, Vanzant, Ava, Goodhope,

Rome, Squires, and Dogwood  
1028 AM CDT Thu Aug 30 2018

...FLASH FLOOD WATCH IN EFFECT UNTIL 5 PM CDT THIS AFTERNOON...

The National Weather Service in Springfield has expanded the

\* Flash Flood Watch to include portions of central Missouri, south central Missouri, southwest Missouri, and west central Missouri, including the following areas, in central Missouri, Benton, Camden, Hickory, Miller, Morgan, and Pulaski. In south central Missouri, Texas. In southwest Missouri, Dallas, Douglas, Laclede, Webster, and Wright. In west central Missouri, St. Clair.

\* Until 5 PM CDT this afternoon

\* Thunderstorms containing high rainfall rates will continue to move east into the watch area today. Some areas in central Missouri also received heavy rainfall yesterday which has saturated the ground. Additional rainfall will quickly become runoff and contribute to the flash flooding risk. One to three inches of rain will be possible, some of which will occur quickly over an hour or two.

\* Flash flooding of small creeks, rivers, and low-water crossings is possible today.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Flash Flood Watch means that conditions may develop that lead to flash flooding. Flash flooding is a VERY DANGEROUS SITUATION.

You should monitor later forecasts and be prepared to take action should Flash Flood Warnings be issued.

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KSZ073-097-101-MOZ066-077>079-088>090-093>095-101>104-302200-  
/O.EXT.KSGF.FF.A.0002.000000T0000Z-180830T2200Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Bourbon-Crawford-Cherokee-Vernon-Barton-Cedar-Polk-Jasper-Dade-  
Greene-Newton-Lawrence-Christian-McDonald-Barry-Stone-Taney-  
Including the cities of Fort Scott, Pawnee Station, Chicopee,  
Lone Oak, Pittsburg, Baxter Springs, Lowell, Riverton, Columbus,  
Neutral, Sherwin, Stippville, Nevada, Kenoma, Lamar,  
Cedar Springs, El Dorado Springs, Filley, Arnica,  
Caplinger Mills, Stockton, Bolivar, Joplin, Carthage, Greenfield,  
Lockwood, Meinert, Springfield, Neosho, Aurora, Mount Vernon,  
Marionville, Nixa, Christian Center, Ozark, Selmore, Anderson,  
Noel, Goodman, South West City, Pineville, Rocky Comfort, Monett,  
Madry, Cassville, Kimberling City, Crane, Elsey, Indian Point,  
Silver Dollar City, Branson, Hollister, Kirbyville,  
Edgewater Beach, Forsyth, Ozark Beach, and Powersite  
1028 AM CDT Thu Aug 30 2018

...FLASH FLOOD WATCH NOW IN EFFECT UNTIL 5 PM CDT THIS AFTERNOON...

The Flash Flood Watch is now in effect for

- \* Portions of southeast Kansas and Missouri, including the following areas, in southeast Kansas, Bourbon, Cherokee, and Crawford. In Missouri, Barry, Barton, Cedar, Christian, Dade, Greene, Jasper, Lawrence, McDonald, Newton, Polk, Stone, Taney, and Vernon.
- \* Until 5 PM CDT this afternoon
- \* Thunderstorms will continue to move east over the area today. Some storms will have high rainfall rates. Areas where storms persist for a longer period of time as they move west to east will have the potential for an additional one to three inches of rainfall.
- \* Flash flooding of small creeks, rivers, and low water crossings is possible today.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Flash Flood Watch means that conditions may develop that lead to flash flooding. Flash flooding is a VERY DANGEROUS SITUATION.

You should monitor later forecasts and be prepared to take action should Flash Flood Warnings be issued.

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### Notes and Explanations:

- (1) The new zones being added to the flash flood watch are handled in an EXB (extended in both area and time) segment and the zones in the original flood watch are handled in an EXT (extended in time) segment.
- (2) The valid time for the original flash flood watch was 4:00 a.m. Since this follow-up product is being issued at 10:28 a.m., the event is considered to have already begun and the Event Beginning Date/Time groups for both segments are coded with ten zeros (000000T0000Z). Therefore, no beginning time/day phrases are used in the headlines and second bullets of the EXB and EXT segments.
- (3) The forecaster wants to extend the valid time by one hour to 5:00 p.m. (2200Z). Therefore, the Event Ending Date/Time group is "180830T2200Z" and the ending time/day phrase used in the second bullet is "5 PM CDT this afternoon".

**3.5 Example #5 - Flash Flood Watch: Short and Long Zone Names.** Situation – A forecaster at WFO Albuquerque, New Mexico notes that models and WPC guidance indicate conditions are favorable for flash flooding, but the nature of the storm makes it difficult to predict with certainty whether the rainfall will persist and where flooding could occur. Therefore, a flash flood watch is issued from noon through late tonight over a wide area.

WGUS65 KABQ 090753  
FFAABQ

URGENT - IMMEDIATE BROADCAST REQUESTED  
Flood Watch  
National Weather Service Albuquerque NM  
153 AM MDT Thu Aug 9 2018

NMZ508-512>515-521>523-528-529-532-533-537-092200-  
/O.NEW.KABQ.FF.A.0015.180809T1800Z-180810T1000Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Southwest Mountains-West Slopes Sangre de Cristo Mountains-  
Northern Sangre de Cristos above 9500 feet/Red River-  
Southern Sangre de Cristos above 9500 feet-  
East Slopes Sangre de Cristo Mountains-Sandia/Manzano Mountains-  
Estancia Valley-Central Highlands-Far Northeast Highlands-  
Northeast Highlands-Eastern San Miguel County-Guadalupe County-  
De Baca County-  
153 AM MDT Thu Aug 9 2018

...FLASH FLOOD WATCH IN EFFECT FROM NOON MDT TODAY THROUGH LATE  
TONIGHT...

The National Weather Service in Albuquerque has issued a

- \* Flash Flood Watch for a portion of north and central New Mexico, including the following areas: Central Highlands, De Baca County, East Slopes Sangre de Cristo Mountains, Eastern San Miguel County, Estancia Valley, Far Northeast Highlands, Guadalupe County, Northeast Highlands, Northern Sangre de Cristos above 9500 feet including Red River, Sandia and Manzano Mountains, Southern Sangre de Cristos above 9500 feet, Southwest Mountains and West Slopes Sangre de Cristo Mountains.
- \* From noon MDT today through late tonight
- \* Increased moisture, plenty of instability and slow storm motion will enhance the threat for heavy rain and flash flooding this afternoon through the overnight hours. Areas that received heavy rainfall yesterday will be especially susceptible to runoff and flash flooding.
- \* Extreme caution is advised in and around recent wildfire burn scars such as Ute Park, Sardinias Canyon, Morris Creek, and Buzzard. In and downstream of these burn scars, watch for debris flows and mudslides. Keep a watchful eye on arroyos, creeks, small streams and low-lying areas, and stay out of flooded low-water crossings. Rapid rises of rivers, creeks and streams will be possible.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Flash Flood Watch means that conditions may develop that lead to flash flooding. Flash flooding is a very dangerous situation. Monitor later forecasts and be prepared to take action should Flash Flood Warnings be issued.

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### Notes and Explanation:

(1) Note how terrain-oriented names are used for some zones such as “Sandia/Manzano Mountains”, while other zone names correspond one-to-one with counties.

**3.6 Example #6 - Flash Flood Watch: Long Zone Names.** Situation – A storm system with heavy rainfall will move into Southern California. Because it is difficult to predict where and if flash flood-causing rainfall will occur, forecasters at WFO San Diego, CA issue a flash flood watch for Thursday for most of the county warning area.

WGUS66 KSGX 122204  
FFASGX

URGENT - IMMEDIATE BROADCAST REQUESTED  
Flood Watch  
National Weather Service San Diego CA  
204 PM PST Tue Feb 12 2019

...FLASH FLOOD WATCH FOR THURSDAY FOR MUCH OF SOUTHWESTERN CALIFORNIA...

.A Pacific storm system will draw a large amount of moisture across southwestern California on Thursday. This will set the stage for widespread moderate to locally heavy rainfall along and west of the mountains and into the high deserts. Heaviest amounts will be on the coastal mountain slopes with very high snow levels. The warmer conditions at high elevations will also melt much of the snowpack, adding to runoff and potential flooding problems.

CAZ043-048-050-055>058-060-552-554-130615-  
/O.NEW.KSGX.FF.A.0005.190214T1200Z-190215T0600Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
San Diego County Coastal Areas-  
San Bernardino and Riverside County Valleys-The Inland Empire-  
San Diego County Valleys-San Bernardino County Mountains-  
Riverside County Mountains-Santa Ana Mountains and Foothills-  
San Diego County Mountains-Apple and Lucerne Valleys-  
Orange County Coastal Areas-Orange County Inland Areas-  
Including the cities of Oceanside, Vista, Carlsbad, Encinitas,  
Chula Vista, National City, San Diego, Riverside, San Bernardino,  
Ontario, Moreno Valley, Fontana, Rancho Cucamonga, Corona,  
Escondido, El Cajon, San Marcos, La Mesa, Santee, Poway,  
Crestline, Lake Arrowhead, Big Bear City, Big Bear Lake,  
Running Springs, Wrightwood, Idyllwild-Pine Cove, Julian,  
Pine Valley, Victorville, Hesperia, Apple Valley, Lucerne Valley,  
Huntington Beach, Costa Mesa, Newport Beach, Laguna Beach,  
San Clemente, Santa Ana, Anaheim, Garden Grove, Irvine, Orange,  
Fullerton, and Mission Viejo  
204 PM PST Tue Feb 12 2019

...FLASH FLOOD WATCH IN EFFECT FROM LATE WEDNESDAY NIGHT THROUGH THURSDAY EVENING...

The National Weather Service in San Diego has issued a

- \* Flash Flood Watch for a portion of southwest California... including the following...Apple and ...Lucerne Valleys... Orange County Coastal Areas...Orange County Inland Areas... Riverside County Mountains...San Bernardino County Mountains... San Bernardino and Riverside County Valleys-The Inland Empire...San Diego County Coastal Areas...San Diego County Mountains...San Diego County Valleys and Santa Ana Mountains and Foothills.
- \* From late Wednesday night through Thursday evening
- \* Areas of heavy rain developing, combined with excessive run off from the coastal mountain slopes and saturated soils.
- \* Heavy rainfall could trigger flash flooding of low-lying areas, urbanized street flooding, and debris flows in and near recent wildfire burn scars, including the Holy, Canyon 1, and Cranston. Heavy rain capable of triggering debris flows is most likely Thursday afternoon and evening.
- \* PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Flash Flood Watch means that conditions may develop that lead to flash flooding. Flash flooding is a very dangerous situation.

You should monitor later forecasts and be prepared to take action should Flash Flood Warnings be issued.

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### Notes and Explanations:

(1) Note how the highly variable topography in Southern California necessitates the use of more terrain-oriented zone names such as "San Bernardino County Mountains."

**3.7 Example #7 - Flood Watch: Long Zone Names.** Situation – With the combination of low-elevation, heavy rain and snowmelt expected, the forecaster knows that there is some potential for flooding. Therefore, a flood watch is issued until late Tuesday night. The zones covered in this product are different from those common in the central, eastern, and southern United States – highly variable topography in the western states frequently necessitates long zone names which reflect geographic regions (e.g., North Oregon Coast) rather than counties.

WGUS66 KPQR 111724  
FFAPQR

URGENT - IMMEDIATE BROADCAST REQUESTED  
Flood Watch  
National Weather Service Portland OR  
924 AM PST Mon Feb 11 2019

...HEAVY RAIN AT LOWER ELEVATIONS MAY CAUSE URBAN AND SMALL STREAM  
FLOODING TONIGHT AND TUESDAY...  
...MINOR FLOODING POSSIBLE ALONG A FEW RIVERS IN NORTHWEST

OREGON TUESDAY AND TUESDAY NIGHT...

.Heavy precipitation Monday night through Tuesday will likely fall as rain at lower elevations, although uncertainty remains about the snow level Tuesday morning. Rainfall totals of 1 to 4 inches are possible for the coast and inland valleys. The combination of low-elevation heavy rain and snowmelt may result in localized small stream and urban flooding, along with flooding along a few rivers and creeks in the Willamette Valley Tuesday and Tuesday night.

ORZ001>008-WAZ022-039-120800-  
/O.NEW.KPQR.FA.A.0001.190212T0300Z-190213T1200Z/  
/00000.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
North Oregon Coast-Central Oregon Coast-  
Coast Range of Northwest Oregon-  
Central Coast Range of Western Oregon-Lower Columbia-  
Greater Portland Metro Area-Central Willamette Valley-  
South Willamette Valley-I-5 Corridor in Cowlitz County-  
Greater Vancouver Area-  
924 AM PST Mon Feb 11 2019

...FLOOD WATCH IN EFFECT FROM 7 PM PST THIS EVENING THROUGH LATE TUESDAY NIGHT...

The National Weather Service in Portland has issued a

- \* Flood Watch for portions of Northwest Oregon and Southwest Washington, including the following areas, in Northwest Oregon, Central Coast Range of Western Oregon, Central Oregon Coast, Central Willamette Valley, Coast Range of Northwest Oregon, Greater Portland Metro Area, Lower Columbia, North Oregon Coast, and South Willamette Valley. In Southwest Washington, Greater Vancouver Area and I-5 Corridor in Cowlitz County.
- \* From 7 PM PST this evening through late Tuesday night.
- \* Heavy rain at low elevations Monday night and Tuesday may cause ponding in roadway low areas and flooding along small streams. Rainfall totals for low elevations are forecast to be 1 to 4 inches. Minor flooding along a few rivers and creeks in the Willamette Valley and Portland metro area is possible Tuesday and Tuesday night.
- \* Rivers of greatest concern include the Marys in Benton County, the Luckiamute in Polk and Benton counties, and Johnson Creek in Multnomah and Clackamas County. As of Monday morning, only minor flooding is predicted.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Flood Watch means there is a potential for flooding based on current forecasts.

You should monitor later forecasts and be alert for possible Flood Warnings. Those living in areas prone to flooding should be



prepared to take action should flooding develop.

Landslides and debris flows are possible during this flood event. People, structures and roads located below steep slopes, in canyons and near the mouths of canyons may be at serious risk from rapidly moving landslides.

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### Notes and Explanations:

- (1) Note how more terrain-oriented zone names such as "Coast Range of Northwest Oregon" are used because of the mountainous topography in coastal Oregon and Washington.
- (2) Note the highly specific description of the areas and rivers with the potential for flooding.

**3.8 Example #8 - Flood Watch: Follow-up With Long Zone Names.** Fourteen hours after the initial flood watch was issued, forecasters at WFO Portland, OR issued a flood watch to update the original watch.

WGUS66 KPQR 120733  
FFAPQR

Flood Watch  
National Weather Service Portland OR  
1133 PM PST Mon Feb 11 2019

...HEAVY RAIN AT LOWER ELEVATIONS MAY CAUSE URBAN AND SMALL  
STREAM FLOODING TONIGHT AND TUESDAY...  
...MINOR FLOODING POSSIBLE ALONG A FEW RIVERS IN NORTHWEST OREGON  
TUESDAY AND TUESDAY NIGHT...

.Heavy precipitation tonight through Tuesday will likely fall as rain at lower elevations, although uncertainty remains about the snow level Tuesday morning. Rainfall totals of 1 to 4 inches are possible for the coast and inland valleys. The combination of low-elevation heavy rain and snowmelt may result in localized small stream and urban flooding, along with flooding of a few rivers and creeks in the Willamette Valley Tuesday and Tuesday night.

ORZ001>008-WAZ022-039-122000-  
/O.CON.KPQR.FA.A.0001.000000T0000Z-190213T1200Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
North Oregon Coast-Central Oregon Coast-  
Coast Range of Northwest Oregon-  
Central Coast Range of Western Oregon-Lower Columbia-  
Greater Portland Metro Area-Central Willamette Valley-  
South Willamette Valley-I-5 Corridor in Cowlitz County-  
Greater Vancouver Area-  
1133 PM PST Mon Feb 11 2019

...FLOOD WATCH REMAINS IN EFFECT THROUGH LATE TUESDAY NIGHT...

The Flood Watch continues for

\* Portions of Northwest Oregon and Southwest Washington,

including the following areas, in Northwest Oregon, Central Coast Range of Western Oregon, Central Oregon Coast, Central Willamette Valley, Coast Range of Northwest Oregon, Greater Portland Metro Area, Lower Columbia, North Oregon Coast, and South Willamette Valley. In Southwest Washington, Greater Vancouver Area and I-5 Corridor in Cowlitz County.

- \* Through late Tuesday night
- \* Heavy rain at low elevations tonight and Tuesday may cause ponding on roadways and low-lying areas and flooding along small streams. Rainfall totals for low elevations are forecast to be 1 to 4 inches. Minor flooding along a few rivers and creeks in the Willamette Valley and Portland metro area is possible Tuesday and Tuesday night.
- \* Rivers of greatest concern include the Marys in Benton County, the Luckiamute in Polk and Benton counties, and Johnson Creek in Multnomah and Clackamas County. These rivers will likely reach bankfull, but it remains unclear if they will reach minor flood stage.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Flood Watch means there is a potential for flooding based on current forecasts.

You should monitor later forecasts and be alert for possible Flood Warnings. Those living in areas prone to flooding should be prepared to take action should flooding develop.

Landslides and debris flows are possible during this flood event. People, structures and roads located below steep slopes, in canyons and near the mouths of canyons may be at serious risk from rapidly moving landslides.

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**3.9     Example #9 - Flood Watch: Cancellation With Long Zone Names.** Heavy precipitation has been focused across the Northern Willamette Valley and Southwest Washington while lighter than forecast precipitation has been experienced farther south, so forecasters cancel the flood watch for the central and southern Willamette Valley and Central Coast and Coast Range, but continue it across the north.

WGUS66 KPQR 122004  
FFAPQR

Flood Watch  
National Weather Service Portland OR  
1204 PM PST Tue Feb 12 2019

...HEAVY RAIN AT LOWER ELEVATIONS CAUSING URBAN AND SMALL STREAM  
FLOODING...

.Heavy precipitation has mainly been focused over far-northwest Oregon, in Columbia County and western Washington County, along with southwest Washington, in southern Cowlitz County and western Clark County. Rainfall totals of 2 to 4 inches have been observed for that area, with less to the south across the Willamette Valley and the central part of the Coast Range. Rainfall amounts for the rest of today are expected to be a half inch to an inch. There is no longer a significant threat of flooding for the central and southern Willamette Valley.

ORZ002-004-007-008-122115-

/O.CAN.KPQR.FA.A.0001.000000T0000Z-190213T1200Z/

/00000.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/

Central Oregon Coast-Central Coast Range of Western Oregon-

Central Willamette Valley-South Willamette Valley-

1204 PM PST Tue Feb 12 2019

...FLOOD WATCH IS CANCELLED FOR THE CENTRAL AND SOUTHERN WILLAMETTE VALLEY AND THE CENTRAL COAST AND COAST RANGE...

The Flood Watch for a portion of Northwest Oregon has been cancelled. Due to lighter than forecast precipitation for the central and southern Willamette Valley and the central part of the Oregon Coast Range, river forecasts have been reduced for those areas. No flooding is expected along the Marys, Luckiamute, and Johnson Creek.

\$\$

ORZ001-003-005-006-WAZ022-039-131015-

/O.CON.KPQR.FA.A.0001.000000T0000Z-190213T1200Z/

/00000.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/

North Oregon Coast-Coast Range of Northwest Oregon-Lower Columbia-

Greater Portland Metro Area-I-5 Corridor in Cowlitz County-

Greater Vancouver Area-

1204 PM PST Tue Feb 12 2019

...FLOOD WATCH REMAINS IN EFFECT THROUGH LATE TONIGHT...

The Flood Watch continues for

- \* Portions of Northwest Oregon and Southwest Washington, including the following areas, in Northwest Oregon, Coast Range of Northwest Oregon, Greater Portland Metro Area, Lower Columbia, and North Oregon Coast. In Southwest Washington, Greater Vancouver Area and I-5 Corridor in Cowlitz County.
- \* Through late tonight
- \* Heavy rain at low elevations is causing ponding on roadways and low lying areas and flooding along small streams. Rainfall totals of 1 to 4 inches have already occurred for portions of Southwest Washington and far-northwest Oregon, and an additional half inch to inch is expected today.

\* Flows on the Tualatin are increasing, and the river will likely crest near flood stage at Dilley and Farmington tonight or Wednesday.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Flood Watch means there is a potential for flooding based on current forecasts.

You should monitor later forecasts and be alert for possible Flood Warnings. Those living in areas prone to flooding should be prepared to take action should flooding develop.

Landslides and debris flows are possible during this flood event. People, structures and roads located below steep slopes, in canyons and near the mouths of canyons may be at serious risk from rapidly moving landslides.

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**3.10 Example #10 - Flash Flood Watch: Potential Dam Failure.** Situation – The owner of the Moccasin Dam in South Central Tuolumne County in California reports that although water levels on the Moccasin Dam have decreased, the risk of potential failure still exists. WFO Sacramento issues a flash flood watch while the dam owner closely monitors the situation over the weekend.

WGUS66 KSTO 232002  
FFASTO

URGENT - IMMEDIATE BROADCAST REQUESTED  
Flood Watch  
National Weather Service Sacramento CA  
102 PM PDT Fri Mar 23 2018

CAZ067-252015-  
/O.NEW.KSTO.FF.A.0003.180323T2002Z-180326T1900Z/  
/00000.0.DM.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Motherlode-  
102 PM PDT Fri Mar 23 2018

...FLASH FLOOD WATCH IN EFFECT THROUGH MONDAY MORNING FOR  
MOCCASIN DAM IN SOUTH CENTRAL TUOLUMNE COUNTY...

The National Weather Service in Sacramento has issued a

\* Flash Flood Watch for Moccasin Dam and downstream areas  
in South Central Tuolumne County... this does NOT include the  
town of Moccasin.

\* Through Monday morning

\* Local authorities have reported that water levels have decreased  
at the Moccasin Dam and it is no longer in imminent danger of  
failing. However, a risk of potential failure still exists. The

dam owner will continue to closely monitor the situation over the weekend. Portions of Highway 49 remain closed.

- \* This flash flood watch replaces the previous flash flood warning.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

People downstream of the dam in the area of the flash flood watch should monitor NOAA Weather Radio and other news outlets for updates to this situation. A flash flood watch associated with a dam means there is an issue or significant problem at the dam that the dam owner is addressing. If conditions were to deteriorate into a failure, it could lead to flash flooding downstream of the dam. If the dam were to fail, The National Weather Service would upgrade this watch to a flash flood warning.

&&

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### **3.11 Example #11 - Flash Flood Watch for Potential Dam Failure: Cancellation.**

Situation – WFO Sacramento cancels the flash flood watch for the Moccasin Dam in California.

WGUS66 KSTO 241750  
FFASTO

Flood Watch  
National Weather Service Sacramento CA  
1050 AM PDT Sat Mar 24 2018

CAZ067-241900-  
/O.CAN.KSTO.FF.A.0003.000000T0000Z-180326T1900Z/  
/00000.0.DM.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Motherlode-  
1050 AM PDT Sat Mar 24 2018

...FLASH FLOOD WATCH IS CANCELLED FOR MOCCASIN DAM IN SOUTH  
CENTRAL TUOLUMNE COUNTY...

- \* Flash Flood Watch for Moccasin Dam and downstream areas in South Central Tuolumne County has been cancelled.
- \* Authorities report that the reservoir has been emptied. There is no longer a threat of the dam breaking and flooding downstream from an emptied reservoir therefore, the watch has been cancelled.

\$\$

#### 4. Flood Watch for Forecast Points (FFA).

**4.1 Example #1 - Flood Watch for Three Forecast Points.** Several rounds of rain with mild temperatures have melted most of the existing snowpack over the southwest corner of Wisconsin. The potential for flooding has increased, but not certain enough to meet the “imminent” criteria for issuance of flood warnings. At 10:57 a.m. on March 15, 2019, WFO Milwaukee/Sullivan forecasters issue a flood watch for two forecast points.

WGUS63 KMKX 151557  
FFAMKX

Urgent-Immediate Broadcast Requested  
Flood Watch  
National Weather Service Milwaukee/Sullivan WI  
1057 AM CDT Fri Mar 15 2019

...The National Weather Service in Sullivan has issued a Flood Watch for the following rivers in Wisconsin

Rock River Near Lake Koshkonong affecting Jefferson and Rock  
Counties  
Wisconsin River At Portage affecting Columbia County

&&

WIZ064-069-160356-  
/O.NEW.KMKX.FL.A.0001.190317T0000Z-000000T0000Z/  
/NVLW3.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
1057 AM CDT Fri Mar 15 2019

The National Weather Service in Milwaukee/Sullivan has issued a  
\* Flood Watch for  
The Rock River Near Lake Koshkonong  
\* from Saturday evening until further notice.  
\* At 9:15 AM Friday the stage was 8.6 feet.  
\* Moderate flooding is possible.  
\* Flood stage is 10.0 feet.  
\* Forecast...Flood stage may be reached by tomorrow evening and  
will continue to rise to near 11.4 feet by Thursday before  
beginning to fall. This is expected to remain just below Major  
Flooding.

&&

River forecasts are available for some but not all river gaging locations. The 7-day river forecast takes into account past precipitation, soil moisture conditions, and predicted precipitation for the basin. Precipitation is for the next 24 hours in the future from April through September and for 48 hours in the future from October through March.

(stages in ft.)		Bank-	Latest	Forecast stages
-	Flood	full	observed	...for 6 pm...
Location	stage	stage	stage/time	Fri Sat Sun Mon
Lake Koshkonong	10.0	9.0	8.65 09 AM 03/15	9.1 10.0 10.6 11.1

-	Highest	24 hour change	
-	observed	in river stage	
-	stage in	(ft.) up to	Highest stage
-	the last	latest observed	forecast in
-	7 daysstage	next 7 days	Lake Koshkonong
	8.6509 AM 03/15	1.00	11.40 01 AM 03/21

Below is the latest predicted precipitation information in 6 hour increments for the listed sites. This information is updated twice daily - in the morning and evening. Precipitation prediction is for 48 hours into the future from October through March and for 24 hours into the future from April through September.

```
Lk Koshkonong: 6 am-noon  Fri Mar 15  0.00
Lk Koshkonong: noon-6 pm  Fri Mar 15  0.00
Lk Koshkonong: 6 pm-midn  Fri Mar 15  0.00
Lk Koshkonong: midn-6 am  Sat Mar 16  0.00
Lk Koshkonong: 6 am-noon  Sat Mar 16  0.00
Lk Koshkonong: noon-6 pm  Sat Mar 16  0.00
Lk Koshkonong: 6 pm-midn  Sat Mar 16  0.00
Lk Koshkonong: midn-6 am  Sun Mar 17  0.00
```

&&

```
LAT...LON 4293 8897 4283 8883 4282 8891 4278 8899
          4288 8911 4291 8904
```

\$\$

WIZ057-160356-

```
/O.NEW.KMKX.FL.A.0002.190317T0600Z-190320T2100Z/
/PORW3.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/
1057 AM CDT Fri Mar 15 2019
```

The National Weather Service in Milwaukee/Sullivan has issued a

- \* Flood Watch for
- The Wisconsin River At Portage
- \* from late Saturday night to Wednesday afternoon.
- \* At 10:00 AM Friday the stage was 15.6 feet.
- \* Minor flooding is possible.
- \* Flood stage is 17.0 feet.
- \* Forecast...Flood stage may be reached by early Sunday morning and will continue to rise to near 17.8 feet by Monday before beginning to fall. This is expected to remain just below Moderate Flooding.

&&

River forecasts are available for some but not all river gaging locations. The 7-day river forecast takes into account past precipitation, soil moisture conditions, and predicted precipitation for the basin. Precipitation is for the next 24 hours in the future from April through September and for 48 hours in the future from October through March.

(stages in ft.)	Bank-	Latest	Forecast stages				
-	Flood	full	observed	...for 6 pm...			
Location	stage	stage	stage/time	Fri	Sat	Sun	Mon

Portage	17.0	12.7	15.65	10 AM 03/15	15.7	16.7	17.5	17.8
-		Highest		24 hour change				
-		observed		in river stage				
-		stage in		(ft.) up to		Highest stage		
-		the last		latest observed		forecast in		
-	7 days			stage		next 7 days		
Portage	15.65	10 AM 03/15		0.91		17.80	01 PM 03/18	

Below is the latest predicted precipitation information in 6 hour increments for the listed sites. This information is updated twice daily - in the morning and evening. Precipitation prediction is for 48 hours into the future from October through March and for 24 hours into the future from April through September.

Portage: 6 am-noon Fri Mar 15 0.00  
 Portage: noon-6 pm Fri Mar 15 0.00  
 Portage: 6 pm-midn Fri Mar 15 0.00  
 Portage: midn-6 am Sat Mar 16 0.00  
 Portage: 6 am-noon Sat Mar 16 0.00  
 Portage: noon-6 pm Sat Mar 16 0.00  
 Portage: 6 pm-midn Sat Mar 16 0.00  
 Portage: midn-6 am Sun Mar 17 0.00  
 &&

LAT...LON 4351 8970 4365 8966 4359 8937 4339 8939  
 4344 8965 4350 8957

\$\$

### Note and Explanation:

(1) Note how the dependence of forecast stages on past precipitation, soil moisture conditions, and predicted precipitation is clearly indicated.

## 5. Flash Flood Warning (FFW) and Associated Follow-up Products (FES).

**5.1 Example #1 - Flash Flood Warning (FFW).** Situation – Radar shows a large area of showers and thunderstorms moving northeast into Wilkes county in North Carolina. WFO Blacksburg forecasters, using the flash flood monitoring and prediction system, note the likelihood of flash flooding in Wilkes County and decide to issue a flash flood warning at 10:45 p.m. Eastern Daylight Time (EDT) (0245Z). The resulting product is the most common type of flash flood warning issued by the NWS—a flash flood warning for an area.

WGUS51 KRNK 110245  
 FFWRNK  
 NCC193-110545-  
 /O.NEW.KRNK.FF.W.0066.180811T0245Z-180811T0545Z/  
 /00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED  
 Flash Flood Warning  
 National Weather Service Blacksburg VA  
 1045 PM EDT FRI AUG 10 2018

The National Weather Service in Blacksburg has issued a



\* Flash Flood Warning for...  
Wilkes County in northwestern North Carolina...

\* Until 145 AM EDT

\* At 1041 PM EDT, Doppler radar indicated a large area of showers and thunderstorms moving northeast into Wilkes County. The ground is saturated from previous heavy rainfall and excessive heavy rainfall will quickly result in flash flooding across the warned area. Rainfall rates of 1 to 2 inches per hour can be expected from this activity.

HAZARD...Flash flooding caused by heavy rain.

SOURCE...Radar indicated.

IMPACT...Flooding and flash flooding along small creeks and streams, hilly areas, and poor drainage or other low-lying, normally flood prone areas.

\* Some locations that will experience flooding include...  
North Wilkesboro...  
Wilkesboro...  
Ronda...  
Traphill...  
and Boomer.

Additional rainfall amounts of 1 to 2 inches are possible in the warned area.

This includes the following streams and drainages...  
Darnell Creek...  
Big Sandy Creek...  
Mulberry Creek...  
Clear Branch...  
and Middle Fork Reddies River.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Be especially cautious at night when it is harder to recognize the dangers of flooding.

If you are in the warned area, move to higher ground immediately. Residents living along streams and creeks should take immediate precautions to protect life and property.

When it is safe to do so, please send your reports of flooding, including mudslides or flooded roads, to the National Weather Service by calling toll free at 1...8 6 6...2 1 5...4 3 2 4. Reports and pictures can also be shared on the National Weather Service Blacksburg Facebook page and on Twitter.

&&

LAT...LON 3607 8141 3612 8154 3619 8146 3624 8148  
3629 8141 3629 8137 3636 8136 3636 8125

3643 8117 3642 8115 3643 8108 3637 8102  
 3637 8098 3640 8097 3633 8087 3606 8088  
 3606 8098 3603 8107 3604 8120 3600 8132

FLASH FLOOD...RADAR INDICATED  
 EXPRECTED RAINFALL...1-2 INCHES PER HOUR

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### Notes and Explanations:

- (1) In flash flood warnings, the Event Beginning Date/Time is always the same as the product issuance time, so in this case the former (180811T0245Z) corresponds to 10:45 p.m. EDT on Friday, August 10, 2018.
- (2) This flash flood warning does not contain a FLASH FLOOD DAMAGE THREAT... tag because forecasters don't expect damage to be considerable or catastrophic in nature.

### 5.2 Example #2 - Flash Flood Statement: Follow-up to Flash Flood Warning (FFS).

Situation – Around two hours fifteen minutes after the flash flood warning was issued for Wilkes County, the forecaster at WFO Blacksburg issues a flash flood statement to provide updated information on the event.

WGUS71 KRNK 110503  
 FFSRNK

Flash Flood Statement  
 National Weather Service Blacksburg VA  
 103 AM EDT SAT AUG 11 2018

NCC193-110545-  
 /O.CON.KRNK.FF.W.0066.000000T0000Z-180811T0545Z/  
 /00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
 Wilkes NC-  
 103 AM EDT SAT AUG 11 2018

...THE FLASH FLOOD WARNING REMAINS IN EFFECT UNTIL 145 AM EDT FOR  
 WILKES COUNTY...

At 1259 AM EDT, Doppler radar indicates that rainfall has diminished within the warned area. During the past hour, rainfall of an inch fell in parts of the county on ground saturated from previous rainfall. Additional light rain will move into the county from the south, but is not expected to be sufficient to worsen the flood situation.

HAZARD...Flash flooding caused by heavy rain.

SOURCE...Radar indicated.

IMPACT...Flooding and flash flooding along small creeks and streams, hilly areas, and poor drainage or other low-lying, normally flood prone areas.

Some locations that will experience flooding include...  
 North Wilkesboro...  
 Wilkesboro...

Ronda...  
Traphill...  
and Boomer.

This includes the following streams and drainages...  
Darnell Creek...  
Big Sandy Creek...  
Mulberry Creek...  
Clear Branch...  
and Middle Fork Reddies River.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Be especially cautious at night when it is harder to recognize the dangers of flooding.

If you are in the warned area move to higher ground immediately. Residents living along streams and creeks should take immediate precautions to protect life and property.

When it is safe to do so, please send your reports of flooding, including mudslides or flooded roads, to the National Weather Service by calling toll free at 1...8 6 6...2 1 5...4 3 2 4. Reports and pictures can also be shared on the National Weather Service Blacksburg Facebook page and on Twitter.

&&

LAT...LON 3607 8141 3612 8154 3619 8146 3624 8148  
3629 8141 3629 8137 3636 8136 3636 8125  
3643 8117 3642 8115 3643 8108 3637 8102  
3637 8098 3640 8097 3633 8087 3606 8088  
3606 8098 3603 8107 3604 8120 3600 8132

FLASH FLOOD...RADAR INDICATED

\$\$

### **5.3 Example #3 - Flash Flood Statement: Expiration of Flash Flood Warning (FFS).**

Situation – Ten minutes before the flash flood warning was scheduled to expire, WFO Blacksburg issues a flash flood statement to allow the warning to expire and summarize reported impacts.

WGUS71 KRNK 110535  
FFSRNK

Flash Flood Statement  
National Weather Service Blacksburg VA  
135 AM EDT SAT AUG 11 2018

NCC193-110545-  
/O.EXP.KRNK.FF.W.0066.000000T0000Z-180811T0545Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Wilkes NC-  
135 AM EDT SAT AUG 11 2018

...THE FLASH FLOOD WARNING FOR WILKES COUNTY WILL EXPIRE AT 145 AM EDT...

The heavy rain has ended and moved out of the area. Flooding is no longer expected to pose a threat. Please continue to heed any remaining road closures.

When it is safe to do so, please send your reports of flooding, including mudslides or flooded roads, to the National Weather Service by calling toll free at 1...8 6 6...2 1 5...4 3 2 4. Reports and pictures can also be shared on the National Weather Service Blacksburg Facebook page and on Twitter.

LAT...LON 3607 8141 3612 8154 3619 8146 3624 8148  
 3629 8141 3629 8137 3636 8136 3636 8125  
 3643 8117 3642 8115 3643 8108 3637 8102  
 3637 8098 3640 8097 3633 8087 3606 8088  
 3606 8098 3603 8107 3604 8120 3600 8132

\$\$

**5.4 Example #4 - Flash Flood Warning: Flash Flood Damage Threat Characterized as Considerable (FFW).** Situation – Radar shows a slow-moving band of heavy rainfall moving across Charleston County in South Carolina. WFO Charleston forecasters receive reports from Emergency Management of flash flooding and water rescues across the area and decide to issue a flash flood warning at 9:46 a.m. EDT (1346Z).

WGUS52 KCHS 241346  
 FFWCHS  
 SCC019-241515-  
 /O.NEW.KCHS.FF.W.0002.170424T1346Z-170424T1515Z/  
 /00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED  
 Flash Flood Warning  
 National Weather Service Charleston SC  
 946 AM EDT MON APR 24 2017

The National Weather Service in Charleston has issued a

\* Flash Flood Warning for portions of...  
 Charleston County in southeastern South Carolina...

\* Until 1115 AM EDT

\* At 937 AM EDT, Doppler radar indicated a stream of heavy rain continuing to impact Downtown Charleston, Mount Pleasant, and Sullivan's Island. These areas have already received several inches of rain. Rainfall rates of 1 to 2 inches in 30 minutes will persist over the warned area. Additional rainfall amounts of 1 to 2 inches are possible in the warned area.

HAZARD...Flash flooding caused by heavy rain.

SOURCE...Emergency management.

IMPACT...Water rescues are taking place. Water is rising rapidly inundating roads and stalling vehicles. Swift moving water can move vehicles off the road. Water may cause damage to structures/homes.

\* Some locations that will experience flooding include...  
Charleston, Mount Pleasant, Downtown Charleston, Isle of Palms, Sullivan's Island, Boone Hall Plantation, Mount Pleasant Regional Airport and Mount Pleasant Towne Centre.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles.

Report flooding directly to the Charleston National Weather Service at 1-888-383-2024 or email your reports to nws.charlestonsc@noaa.gov.

&&

LAT...LON 3275 7984 3274 7990 3276 7997 3280 7999  
3283 7998 3283 7997 3278 7997 3283 7996  
3283 7990 3292 7978 3289 7972 3280 7971

FLASH FLOOD...OBSERVED  
FLASH FLOOD DAMAGE THREAT...CONSIDERABLE  
EXPRECTED RAINFALL...1-2 INCHES IN 30 MINUTES

\$\$

**5.5 Example #5 - Flash Flood Statement: Follow-up to Flash Flood Warning With Flash Flood Damage Threat Characterized as Considerable (FFS).** Situation – At 10:37 a.m., radar shows the band of torrential rain moving out of the warned area. WFO Charleston forecasters decide to issue a flash flood statement to provide updated information on the event.

WGUS72 KCHS 241437  
FFSCHS

Flash Flood Statement  
National Weather Service Charleston SC  
1037 AM EDT MON APR 24 2017

SCC019-241515-  
/O.CON.KCHS.FF.W.0002.000000T0000Z-170424T1515Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Charleston SC-  
1037 AM EDT MON APR 24 2017

...A FLASH FLOOD WARNING REMAINS IN EFFECT UNTIL 1115 AM EDT FOR PORTIONS OF CHARLESTON COUNTY...

At 1033 AM EDT, Doppler radar indicated a band of torrential rain moving out of the warned area. Several inches of rain have already fallen and flash flooding is already occurring.

HAZARD...Flash flooding caused by heavy rain.

SOURCE...Emergency management.

IMPACT...Flash flooding is already occurring, leading to water rescues.

Some locations that are experiencing flooding include...  
Charleston, Mount Pleasant, Downtown Charleston, Isle of Palms and Sullivan's Island.

Additional rainfall is possible in the warned area, especially as more storms develop to the west and move towards the area.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles.

Report flooding directly to the Charleston National Weather Service at 1-888-383-2024 or email your reports to nws.charlestonsc@noaa.gov.

&&

LAT...LON 3275 7984 3274 7990 3276 7997 3280 7999  
3283 7998 3283 7997 3278 7997 3283 7996  
3283 7990 3292 7978 3289 7972 3280 7971

FLASH FLOOD...OBSERVED

FLASH FLOOD DAMAGE THREAT...CONSIDERABLE

\$\$

**5.6 Example #6 – Flash Flood Warning: Flash Flood Damage Threat Characterized as Catastrophic and Flash Flood Emergency Wording Included (FFW).** Situation – Just before 6:30 a.m. while central North Carolina was experiencing heavy rain, a forecaster receives several reports of major flash flooding in Wake County, and additional heavy rain is tracking into the area. Therefore, the forecaster decides that issuing a flash flood warning, which includes “flash flood emergency” wording and a FLASH FLOOD DAMAGE THREAT tag of CATASTROPHIC, is appropriate.

WGUS52 KRAH 251033  
FFWRAH  
NCC183-251500-  
/O.NEW.KRAH.FF.W.0002.170425T1033Z-170425T1500Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED  
Flash Flood Warning  
National Weather Service Raleigh NC  
633 AM EDT TUE APR 25 2017

...FLASH FLOOD EMERGENCY FOR CENTRAL WAKE COUNTY...

The National Weather Service in Raleigh has issued a

\* Flash Flood Warning for...  
Wake County in central North Carolina...

\* Until 1100 AM EDT

\* At 621 AM EDT, major flooding was occurring along Crabtree Creek at Glenwood Avenue, Anderson Drive, and Wake Forest Road. Law enforcement has reported numerous additional road closures in Raleigh and surrounding areas due to flooding. Flooding will worsen during the rush hour commute this morning as additional heavy rain tracks into Wake County from the east.

HAZARD...Life threatening flash flooding caused by heavy rain.

SOURCE...Law enforcement.

IMPACT...Swift moving water will sweep vehicles off the road. Water will cause damage to homes, buildings, and property. Water will damage roadways and bridges.

\* Some locations that will experience flooding include...  
Raleigh, Cary, Garner, Zebulon, RDU International, Apex, Holly Springs, Morrisville, Knightdale and Wendell.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

This is an extremely dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under an evacuation order.

Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles.

&&

LAT...LON 3594 7858 3596 7841 3585 7827 3581 7826  
3572 7843 3571 7847 3556 7865 3568 7897  
3586 7890 3587 7889 3587 7883 3592 7881  
3593 7880 3592 7876 3598 7871

FLASH FLOOD...OBSERVED

FLASH FLOOD DAMAGE THREAT...CATASTROPHIC

\$\$

**5.7 Example #7 – Flash Flood Statement: Follow-up to Flash Flood Warning With Flash Flood Damage Threat Characterized as Catastrophic and Flash Flood Emergency Wording Included (FFS).** Situation – Two hours after the initial flash flood warning was issued, the effects of earlier torrential rainfall continue to be felt in Wake County. Forecasters issue a flash flood statement, which includes a headline indicating a flash flood emergency and a FLASH FLOOD DAMAGE THREAT tag of CATASTROPHIC.

WGUS72 KRAH 251244  
FFSRAH

Flash Flood Statement  
National Weather Service Raleigh NC  
844 AM EDT TUE APR 25 2017

NCC183-251500-  
/O.CON.KRAH.FF.W.0002.000000T0000Z-170425T1500Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Wake NC-  
844 AM EDT TUE APR 25 2017

...THIS IS A FLASH FLOOD EMERGENCY FOR CENTRAL WAKE COUNTY...

...THE FLASH FLOOD WARNING REMAINS IN EFFECT UNTIL 1100 AM EDT FOR  
WAKE COUNTY...

At 829 AM EDT, major flooding continues in Wake County along  
Crabtree Creek at Glenwood Avenue, Anderson Drive, and Wake Forest  
Road. Water rises on Crabtree Creek have slowed in the past hour as  
rainfall rates have decreased. However, another area of moderate to  
heavy rain is approaching the city and an additional inch of rainfall  
will prolong the flooding through at least midday.

HAZARD...Life threatening flash flooding caused by heavy rain.

SOURCE...Law enforcement.

IMPACT...Swift moving water will sweep vehicles off the road. Water  
will cause damage to homes, buildings, and property. Water  
will damage roadways and bridges.

This is a FLASH FLOOD EMERGENCY for the Central Wake County, including  
the city of Raleigh.

This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW!

Some locations that will experience flooding include...  
Raleigh, Cary, Garner, Zebulon, RDU International, Apex, Holly  
Springs, Morrisville, Knightdale and Wendell.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Life threatening flash flooding is occurring across the area. Do not  
attempt to travel unless you must do so to escape the flooding or are  
under an evacuation order. If you are in a low-lying area, along a  
creek or stream, or in an area experiencing flooding, take action now  
to protect your life. Move to higher ground immediately.

Turn around, don't drown when encountering flooded roads. Most flood  
deaths occur in vehicles.

&&

LAT...LON 3594 7858 3596 7841 3585 7827 3581 7826  
3572 7843 3571 7847 3556 7865 3568 7897  
3586 7890 3587 7889 3587 7883 3592 7881  
3593 7880 3592 7876 3598 7871



FLASH FLOOD...OBSERVED  
FLASH FLOOD DAMAGE THREAT...CATASTROPHIC

\$\$

**5.8 Example #8 - Flash Flood Warning: Dam Failure (FFW).** Situation – At 2:17 p.m., WFO Sacramento receives a report from dam operators that Moccasin Dam is failing due to an expanding leak at the base of the dam. The warning must cover areas along Moccasin Creek downstream from the dam to the Don Pedro Reservoir.

WGUS56 KSTO 222124  
FFWSTO  
CAC109-232115-  
/O.NEW.KSTO.FF.W.0001.180322T2124Z-180323T2115Z/  
/00000.U.DM.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED  
Flash Flood Warning  
National Weather Service Sacramento CA  
224 PM PDT THU MAR 22 2018

The National Weather Service in Sacramento has issued a

- \* Flash Flood Warning for...  
A dam break in south central Tuolumne County on Moccasin Creek  
in northern California...
- \* Until 215 PM PDT Friday
- \* At 217 PM PDT, dam operators reported the imminent failure of  
Moccasin Dam on Moccasin Creek. Floodwaters will move down  
Moccasin Creek to Don Pedro Reservoir.

HAZARD...Flash flooding caused by the failure of Moccasin Dam.

SOURCE...Dam operators.

IMPACT...Highway 49 will continue to be impacted by flooding due  
to outflow from the emergency spillway. Highway 120 may  
be impacted. Facilities downstream of the dam along the  
creek have all been evacuated. Precautionary evacuations  
are being conducted at Moccasin Point Campground. The  
town of Moccasin is above the dam and will not be impacted.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

If you are in the warned area, move to higher ground immediately.  
Residents living along Moccasin Creek from Moccasin Dam to the Don  
Pedro Reservoir should take immediate precautions to protect life and  
property.

&&

LAT...LON 3786 12032 3782 12028 3780 12025 3778 12031

3784 12039

FLASH FLOOD...OBSERVED  
FLASH FLOOD DAMAGE THREAT...CONSIDERABLE  
DAM FAILURE...IMMINENT

\$\$

**5.9 Example #9 - Flash Flood Statement: Follow-up to Flash Flood Warning For a Dam Failure (EFS).** Situation – At 5:00 p.m., a forecaster at WFO Sacramento is notified by local authorities that water levels have decreased at Moccasin Dam. Dam operators continue to monitor the situation and believe the risk of potential failure still exists. The WFO provides this updated information on an active flash flood warning in a flash flood statement.

WGUS76 KSTO 230012  
FFSSTO

Flash Flood Statement  
National Weather Service Sacramento CA  
512 PM PDT THU MAR 22 2018

CAC109-232115-  
/O.CON.KSTO.FF.W.0001.000000T0000Z-180323T2115Z/  
/00000.0.DM.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Tuolumne CA-  
512 PM PDT THU MAR 22 2018

...THE FLASH FLOOD WARNING REMAINS IN EFFECT UNTIL 215 PM PDT FRIDAY  
FOR MOCCASIN DAM IN SOUTH CENTRAL TUOLUMNE COUNTY...

At 500 PM PDT, local authorities have reported that water levels  
have decreased at the Moccasin Dam and it is no longer in imminent  
danger of failing.

However, a risk of potential failure still exists. The dam owner  
will closely monitor the situation overnight.

Local authorities will re-evaluate conditions at the dam Friday  
morning. An update will be issued after the evaluation.

HAZARD...Flash flooding from failure of Moccasin Dam.

SOURCE...Law enforcement.

IMPACT...Evacuations of the fish hatchery and powerhouse remain in  
effect. Portions of highway 49 were washed out near the  
Moccasin Dam.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Check CALTRANS for road updates.

&&

LAT...LON 3786 12032 3782 12028 3780 12025 3778 12031  
3784 12039

FLASH FLOOD...OBSERVED  
FLASH FLOOD DAMAGE THREAT...CONSIDERABLE  
DAM FAILURE...IMMINENT

\$\$

**5.10 Example #10 - Flash Flood Warning: Flash Flood Emergency For a Dam Failure (FFW)**. Situation – Around 4:30 p.m., a forecaster at WFO Sacramento is notified by a dam operator that a hazardous situation is developing with the Oroville Dam auxiliary spillway and that severe erosion could lead to a failure of the structure. The forecaster quickly uses pre-formatted templates to generate a flash flood warning for the area along the river below the dam. Because the emergency action plan for the dam shows that failure would cause disastrous damage and place people in life-threatening situations, the forecaster elects to include flash flood emergency wording in the initial flash flood warning for the failure.

WGUS56 KSTO 130035  
FFWSTO  
CAC007-140015-  
/O.NEW.KSTO.FF.W.0001.170213T0035Z-170214T0015Z/  
/00000.U.DM.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED  
Flash Flood Warning  
National Weather Service Sacramento CA  
435 PM PST SUN FEB 12 2017

The National Weather Service in Sacramento has issued a

- \* Flash Flood Warning for a dam failure in...  
South central Butte County in northern California...
- \* Until 415 PM PST Monday
- \* At 419 PM PST, dam operators reported a hazardous situation is developing with the Oroville Dam auxiliary spillway. Severe erosion could lead to a failure of the structure. Failure of the auxiliary spillway structure will result in an uncontrolled release of flood waters from Lake Oroville.

This is a FLASH FLOOD EMERGENCY FOR LIFE-THREATENING CATASTROPHIC FLOODING. This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW!

HAZARD...Life threatening flash flooding from a potential uncontrolled release at Oroville Dam.

SOURCE...Dam operators.

IMPACT...Immediate evacuation from Oroville to Gridley.  
Low areas around the Feather River will experience rapid river rises.

- \* Locations impacted include...

Oroville, Palermo, Gridley, Thermalito, South Oroville, Oroville  
Dam, Oroville East and Wyandotte.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Move to higher ground now. Act quickly to protect your life.

&&

LAT...LON 3953 12139 3934 12156 3933 12172 3952 12163  
3961 12149

FLASH FLOOD...OBSERVED  
FLASH FLOOD DAMAGE THREAT...CATASTROPHIC  
DAM FAILURE...IMMINENT

\$\$

**5.11 Example #11 - Flash Flood Warning for an Area Where Observations and Forecasts Can Be Provided for a Point (FFW).**

Situation – Radar shows heavy precipitation training over the southern Kansas City area. Forecasters at Pleasant Hill WFO know that a storm with this rainfall amount, intensity, and areal coverage will cause flash flooding on Brush Creek in the Kansas City Plaza area. During the next few minutes, they intend to run the site-specific forecast application to obtain specific forecasts, but for now they issue a standard flash flood warning to alert the public as quickly as possible.

WGUS53 KEAX 092349  
FFWEAX

MOC095-100200-  
/O.NEW.KEAX.FF.W.0007.010809T2349Z-010810T0445Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED  
Flash Flood Warning  
National Weather Service Kansas City/Pleasant Hill MO  
649 PM CDT Thu Aug 9 2001

The National Weather Service in Pleasant Hill has issued a

\* Flash Flood Warning for...  
Jackson County in West Central Missouri...  
Specifically for Brush Creek at Ward Parkway in Kansas City MO

\* Until 1145 PM CDT

\* At 649 PM CDT, radar estimated 3 to 4 inches of rain has fallen  
over the Brush Creek Watershed since late this afternoon.

HAZARD...Flash flooding caused by heavy rain.

SOURCE...Radar indicated.

IMPACT...Runoff from this rainfall will cause Brush Creek at Ward  
Parkway to rise above flood stage. The current stage at  
the Brush Creek at Ward Parkway gage is 43 feet, but is  
expected to rise rapidly.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Never drive where water covers the road. Water depth may be too great to allow your car, truck or SUV to cross safely.

&&

LAT...LON 3901 9456 3887 9439 3889 9426 3902 9413 3918 9432

FLASH FLOOD...RADAR INDICATED

\$\$

**5.12 Example #12 - Flash Flood Statement: Follow-up to Flash Flood Warning for an Area Where Observations and Forecasts Can Be Provided for a Point (FFS)**

Situation – Eleven minutes after the initial flash flood warning was issued, a flash flood statement is issued to follow-up the previous warning. This flash flood statement includes point-specific forecast information at the end after the standard flash flood statement text. This point-specific information would have to be copied from the site-specific application output and manually moved to the bottom of the WarnGen-created product.

WGUS73 KEAX 100000  
FFSEAX

Flash Flood Statement  
National Weather Service Kansas City/Pleasant Hill MO  
700 PM CDT Thu Aug 9 2001

MOC095-100200-  
/O.CON.KEAX.FF.W.0007.000000T0000Z-010810T0445Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Jackson MO-  
700 PM CDT Thu Aug 9 2001

...A FLASH FLOOD WARNING REMAINS IN EFFECT UNTIL 1145 PM CDT FOR JACKSON COUNTY...SPECIFICALLY FOR BRUSH CREEK AT WARD PARKWAY IN KANSAS CITY MISSOURI.

Rainfall has ended over the Brush Creek Watershed with totals reaching 4 inches in Prairie Village Kansas. Runoff will work its way down Brush Creek through tonight with highest flows during the next three hours.

HAZARD...Flash flooding caused by heavy rain.

SOURCE...Radar indicated.

IMPACT...At 48 feet, Ward Parkway and Johnson Drive near the Ward Parkway Bridge are under water. In addition, other bridges and roads upstream and downstream of the Plaza Federal Flood Control Project are flooded.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Motorists are reminded not to drive where water covers the road. Water depth may be too great to allow your car, truck or sport utility vehicle to cross safely.

&&

LAT...LON 3901 9456 3887 9439 3889 9426 3902 9413 3918 9432

FLASH FLOOD...RADAR INDICATED

\$\$

MOC095-100200-

700 PM CDT Thu Aug 9 2001

KWPM7

For Brush Creek at Ward Parkway...

- \* At 700 PM the latest stage was 46 feet.
- \* Moderate flooding is forecast.
- \* Flood stage is 47 feet.
- \* Forecast...Flood stage will be reached at about 730 pm. A maximum stage of 49 feet is expected at about 830 pm. The creek will fall below flood stage at about 1145 pm.
- \* Impact...at 48 feet...Ward Parkway and Johnson Drive near the Ward Parkway Bridge are under water. In addition, other bridges and roads upstream and downstream of the Plaza Federal Flood Control Project are flooded.

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**5.13 Example #13 - Flash Flood Warning for an Ice Jam (FFW).** Situation – Local law enforcement reported an ice jam on a river. Water is rising rapidly as water behind the ice jam continues to rise, so the WFO decides to issue a flash flood warning.

WGUS56 KOTX 101032

FFWOTX

IDC009-079-101630-

/O.NEW.KOTX.FF.W.0001.170210T1032Z-170210T1630Z/

/00000.0.IJ.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED

Flash Flood Warning

National Weather Service Spokane WA

232 AM PST FRI FEB 10 2017

The National Weather Service in Spokane has issued a

- \* Flash Flood Warning for...
  - West central Shoshone County in the Panhandle of Idaho...
  - Northeastern Benewah County in the Panhandle of Idaho...
- \* Until 830 AM PST Friday
- \* At 226 AM PST, local law enforcement officials reported an ice jam on the St Joe River below the communities of St Joe and Calder. Water is rising rapidly and the community of Calder will likely experience flooding soon, as water behind the ice jam continues to rise.

HAZARD...Flash flooding caused by an ice jam.

SOURCE...Law enforcement.

IMPACT...Water over roads between Big Creek and St Maries.

Residents below the ice jam in Benewah County should be prepared for rapid rises on the St Joe River once the ice jam breaks.

\* Some locations that will experience flooding along the St Joe River include...Calder, Huckleberry Campground and St. Joe.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Move to higher ground now. Act quickly to protect your life.

Be especially cautious at night when it is harder to recognize the dangers of flooding.

&&

LAT...LON 4726 11581 4722 11593 4726 11623 4731 11637  
4731 11655 4733 11657 4736 11652 4733 11627  
4729 11619

FLASH FLOOD...OBSERVED

\$\$

**5.14 Example #14 – Flash Flood Statement: Follow-up to Flash Flood Warning for an Ice Jam (FFS).** Situation – There has been inundation of land upstream from the ice jam, and the threat will soon focus on downstream areas, which are likely to be flooded when the ice jam breaks. The WFO issues a flash flood statement continuing the flash flood warning.

WGUS76 KOTX 101219  
FFSOTX

Flash Flood Statement  
National Weather Service Spokane WA  
419 AM PST FRI FEB 10 2017

IDC009-079-101630-  
/O.CON.KOTX.FF.W.0001.000000T0000Z-170210T1630Z/  
/00000.0.IJ.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Shoshone ID-Benewah ID-  
419 AM PST FRI FEB 10 2017

...THE FLASH FLOOD WARNING REMAINS IN EFFECT UNTIL 830 AM PST FOR WEST CENTRAL SHOSHONE AND NORTHEASTERN BENEWAH COUNTIES...

At 400 AM PST, a citizen reported that water was within inches of the Calder Road Bridge over the St Joe River. The community of Calder was in jeopardy of flooding. The river gauge at Calder confirms that the river was rising rapidly.

HAZARD...Flash flooding caused by an ice jam.

SOURCE...Law enforcement and public.

IMPACT...An ice jam between Calder and St Maries has likely caused

the river to back up into the community of Calder. Once the ice jam breaks, communities downstream will experience rapid rises on the St Joe River.

Some locations that will experience flooding include...  
Calder, Huckleberry Campground and St. Joe.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Residents of Calder should move to higher ground immediately.

Residents that live below Calder along the St Joe River should take action now, including lowland residents near the community of St Joe and St Maries.

Be especially cautious at night when it is harder to recognize the dangers of flooding.

&&

LAT...LON 4726 11581 4722 11593 4726 11623 4731 11637  
4731 11655 4733 11657 4736 11652 4733 11627  
4729 11619

FLASH FLOOD...OBSERVED

\$\$

**5.15 Example #15 - Flash Flood Warning for Debris Flows (FFW).** Situation – Heavy rains begin moving into an area affected by large brush/forest fires during the previous dry season. Forecasters at WFO Sacramento decide to issue a flash flood warning, which will highlight the imminent threat to the recent burn areas.

WGUS56 KSTO 291951  
FFWSTO  
CAC007-292245-  
/O.NEW.KSTO.FF.W.0004.181129T1951Z-181129T2245Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED  
Flash Flood Warning  
National Weather Service Sacramento CA  
1151 AM PST THU NOV 29 2018

The National Weather Service in Sacramento has issued a

\* Flash Flood Warning for the Camp Fire Burn Area in...  
Central Butte County in Northern California

\* Until 245 PM PST.

\* At 1146 AM PST, Doppler radar indicated heavy rain is approaching the Camp Fire burn area.

HAZARD...Flash flooding and debris flows caused by heavy rain.



SOURCE...Radar indicated.

IMPACT...Life-threatening flooding of creeks, roads and hillsides is likely. The heavy rains will likely trigger rockslides, mudslides and debris flows in steep terrain, especially in and around these areas.

\* The burned areas of particular concern include the greater Paradise area and local roads, Pulga, Concow, Feather River tributaries, and Highway 70 and the Skyway in Butte County.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

This is a dangerous situation. Persons within the Camp Fire Burn Area need to be alert for the potential of mud and debris flows. These flows could impact area roadways, hill sides, and local streams and creeks. If you observe movement of soils, debris, or large amounts of water, you should move to higher ground immediately. Do not drive through water flowing across roadways.

Move away from recently burned areas.

&&

LAT...LON 3983 12167 3972 12180 3965 12175 3959 12165  
 3961 12150 3974 12136 3981 12135 3982 12135  
 3984 12136 3985 12137 3986 12139 3986 12143  
 3984 12147 3988 12148 3989 12149 3990 12153  
 3990 12156 3989 12157

FLASH FLOOD...RADAR INDICATED

\$\$

### Notes and Explanations:

(1) The procedures in NWS Instruction 10-922 allow any kind of descriptive wording to be used before and after the county names in the first bullet, hence "the Camp Fire Burn Area" was included in front of the county names.

**5.16 Example #16 – Flash Flood Statement: Follow-up to Flash Flood Warning for Debris Flows (FFS).** Situation – Moderate to heavy rains continue over an area affected by large brush/forest fires during the previous dry season. Forecasters at WFO Sacramento issue a flash flood statement continuing the warning and providing updated information on the situation.

WGUS76 KSTO 292135  
 FFSSTO

Flash Flood Statement  
 National Weather Service Sacramento CA  
 135 PM PST THU NOV 29 2018

CAC007-292245-  
 /O.CON.KSTO.FF.W.0004.000000T0000Z-181129T2245Z/  
 /00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
 Butte CA-

135 PM PST THU NOV 29 2018

...THE FLASH FLOOD WARNING FOR THE CAMP FIRE BURN AREA REMAINS IN EFFECT UNTIL 245 PM PST FOR CENTRAL BUTTE COUNTY...

At 120 PM PST, Doppler radar indicated heavy rain in and near the Camp Fire burn area, where 1 to 2 inches of rain have fallen during the past hour. The heaviest rain has been over the western half of the burn area between Chico and Paradise.

HAZARD...Flash flooding and debris flows caused by heavy rain.

SOURCE...Emergency management.

IMPACT...Flooding is occurring with several flooded roads and stranded motorists being reported, including Highway 99 being closed. An evacuation order has been issued for Honey Run Road from the 200 block of Skyway including Horse Run Lane.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

This is a dangerous situation. Persons within the Camp Fire Burn Area need to be alert for the potential of mud and debris flows. These flows could impact area roadways, hill sides, and local streams and creeks. If you observe movement of soils, debris, or large amounts of water, you should move to higher ground immediately. Do not drive through water flowing across roadways.

Move away from recently burned areas. Life-threatening flooding of creeks, roads and hillsides is likely. The heavy rains will likely trigger rockslides, mudslides and debris flows in steep terrain, especially in and around these areas.

&&

LAT...LON 3983 12167 3972 12180 3965 12175 3959 12165  
3961 12150 3974 12136 3981 12135 3982 12135  
3984 12136 3985 12137 3986 12139 3986 12143  
3984 12147 3988 12148 3989 12149 3990 12153  
3990 12156 3989 12157

FLASH FLOOD...OBSERVED

\$\$

**5.17 Flash Flood Warning Extended (FFW).** Situation – At 7:26 p.m. on Sunday, May 27, 2018, radar indicated heavy rain had fallen across the area during the afternoon where Flash Flood Warning (FFW) 0018 had been set to expire at 7:45 p.m. Although additional rain was expected to be lighter, earlier rain would continue to cause rises in streams, some at a rapid pace. As a result, FFW 0018 was extended in time until 10:45 p.m. for the originally warned area.

WGUS51 KLWX 272326

FFWLWX

MDC005-510-280245-

/O.EXT.KLWX.FF.W.0018.000000T0000Z-180528T0245Z/

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED

Flash Flood Warning

National Weather Service Baltimore MD/Washington DC

726 PM EDT SUN MAY 27 2018

The National Weather Service in Sterling Virginia has extended the

\* Flash Flood Warning for...

Baltimore City in northern Maryland...

South central Baltimore County in northern Maryland...

\* Until 1045 PM EDT.

\* At 725 PM EDT, Doppler radar indicated heavy rain had fallen across the area this afternoon, with estimated amounts of 3 to 6 inches in southern Baltimore City and Baltimore County.

HAZARD...Flash flooding caused by heavy rain.

SOURCE...Radar indicated.

IMPACT...Although additional rain is expected to be less heavy, earlier rain will continue to cause rises in streams, some at a rapid pace.

\* Some locations that may experience flooding include...

Baltimore, Dundalk, Catonsville, Arbutus, Rosedale, Brooklyn Park, Edgemere, Lansdowne, Eastpoint, Halethorpe and Turners Station.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles.

Move to higher ground now. Act quickly to protect your life.

Residents living along streams and creeks should take immediate precautions to protect life and property.

&&

LAT...LON 3923 7649 3922 7654 3923 7661 3924 7662  
3923 7663 3924 7670 3928 7671 3931 7671  
3934 7655 3925 7644

FLASH FLOOD...RADAR INDICATED

\$\$

## **6. Flood Warning For Forecast Points (ELW) and Associated Follow-up Products (ELS).**

**6.1 Example #1 - Flood Warning for Forecast Points: Initial Issuance (ELW).** Situation – At 9:15 a.m. on Saturday, November 17, 2018, WFO Wilmington issues a new flood warning for three forecast points in its Hydrologic Service Area (HSA).

WGUS42 KILM 171415

FLWILM  
BULLETIN - IMMEDIATE BROADCAST REQUESTED  
Flood Warning  
National Weather Service Wilmington NC  
915 AM EST Sat Nov 17 2018

...The National Weather Service in Wilmington NC has issued a Flood Warning for the following rivers in North Carolina...South Carolina...

Cape Fear At Lock And Dam 1 affecting Bladen County  
Little Pee Dee At Galivants Ferry affecting Dillon...Horry and Marion Counties  
Lynches At Effingham affecting Florence County

PRECAUTIONARY/PREPAREDNESS ACTIONS...

People with interests along the river should take the necessary precautions to protect life and property from the flood waters.

Additional information is available on our website at [weather.gov/ilm](http://weather.gov/ilm) under the "Rivers and Lakes" link.

&&

NCC017-180615-  
/O.NEW.KILM.FL.W.0035.181119T0000Z-181121T0000Z/  
/CPFN7.1.ER.181119T0000Z.181119T1800Z.181120T1200Z.NO/  
915 AM EST Sat Nov 17 2018

The National Weather Service in Wilmington NC has issued a

- \* Flood Warning for
- The Cape Fear At Lock And Dam 1.
- \* from Sunday evening to Tuesday evening.
- \* At 8:45 AM Saturday the stage was 22.95 feet.
- \* Flood stage is 24.0 feet.
- \* Minor flooding is forecast.
- \* Forecast...Rise above flood stage by tomorrow evening and continue to rise to near 24.3 feet by early Monday afternoon. The river will fall below flood stage by Tuesday morning.
- \* Impact...At 24.0 feet...Lowland flooding will occur along the riverbed.

&&

LAT...LON 3456 7838 3448 7831 3445 7820 3438 7828  
3443 7840 3450 7847

\$\$

SCC033-051-067-180615-  
/O.NEW.KILM.FL.W.0036.181119T1200Z-000000T0000Z/  
/GALS1.1.ER.181119T1200Z.181121T1200Z.000000T0000Z.NO/  
915 AM EST Sat Nov 17 2018

The National Weather Service in Wilmington NC has issued a

- \* Flood Warning for

The Little Pee Dee At Galivants Ferry.  
 \* from Monday morning until further notice.  
 \* At 9:00 AM Saturday the stage was 8.46 feet.  
 \* Flood stage is 9.0 feet.  
 \* Minor flooding is forecast.  
 \* Forecast...Rise above flood stage by Monday morning and continue to rise to near 9.3 feet by Wednesday morning. Additional rises are possible thereafter.  
 \* Impact...At 9.0 feet...Flood waters will begin to affect residential yards in the Fork Retch community upstream of Galivants Ferry near the town of Nichols. Swampland flooding becomes noticeable and natural boat landings will be flooded.

&&

LAT...LON 3423 7921 3419 7910 3405 7920 3398 7928  
 3400 7938 3409 7930

\$\$

SCC041-180615-  
 /O.NEW.KILM.FL.W.0037.181119T1300Z-181121T2100Z/  
 /EFTS1.1.ER.181119T1300Z.181120T0000Z.181121T0900Z.NO/  
 915 AM EST Sat Nov 17 2018

The National Weather Service in Wilmington NC has issued a

\* Flood Warning for  
 The Lynches At Effingham.  
 \* from Monday morning to Wednesday afternoon.  
 \* At 9:00 AM Saturday the stage was 12.48 feet.  
 \* Flood stage is 14.0 feet.  
 \* Minor flooding is forecast.  
 \* Forecast...Rise above flood stage by Monday morning and continue to rise to near 14.8 feet by early Tuesday morning. The river will fall below flood stage by early Wednesday morning.  
 \* Impact...At 15.0 feet...Flood waters will affect roads near Effingham and New Hope. North Old Georgetown, Roundtree and Bengause Roads will flood in low lying areas near the river.

&&

LAT...LON 3410 7974 3396 7963 3393 7974 3398 7976  
 3394 7983 3403 7986

\$\$

## Notes and Explanations:

(1) Each segment has its own event tracking number. This makes it easy to issue and track updates, cancellations, etc. for each forecast point in subsequent products.

**6.2 Example #2 - Flood Statement: Follow-up to Flood Warning For Forecast Points (FLS).** Situation – At 8:28 p.m. on November 17, 2018, WFO Wilmington issues a flood statement to follow up the flood warnings issued earlier today. The flood warning for Cape Fear

at Lock and Dam 1 and Lynches at Effingham have been extended in time while the flood warning for the Little Pee Dee at Galivants Ferry has been continued.

WGUS82 KILM 180128  
FLSILM  
Flood Statement  
National Weather Service Wilmington NC  
828 PM EST Sat Nov 17 2018

...The Flood Warning has been extended for the following rivers...

Cape Fear At Elizabethtown affecting Bladen County NC  
Cape Fear At Lock And Dam 1 affecting Bladen County NC  
Black Creek At Quinby affecting Darlington and Florence Counties SC  
Lynches At Effingham affecting Florence County SC

...The Flood Warning continues for the following rivers...

Cape Fear At William O Huske Lock And Dam 3 affecting Bladen County NC  
Lumber Near Lumberton affecting Robeson County NC  
Little Pee Dee At Galivants Ferry affecting Dillon...Horry and Marion  
Counties SC  
Great Pee Dee At Pee Dee affecting Marion and Florence Counties SC

PRECAUTIONARY/PREPAREDNESS ACTIONS...

People with interests along the river should take the necessary precautions to protect life and property from the flood waters.

Additional information is available on our website at [weather.gov/ilm](http://weather.gov/ilm) under the "Rivers and Lakes" link.

&&

NCC017-181727-  
/O.CON.KILM.FL.W.0032.000000T0000Z-181122T0300Z/  
/STPN7.2.ER.000000T0000Z.181117T0630Z.181121T1500Z.NO/  
828 PM EST Sat Nov 17 2018

The Flood Warning continues for

- The Cape Fear At William O Huske Lock And Dam 3.
- \* until Wednesday evening.
- \* At 8:00 PM Saturday the stage was 55.97 feet.
- \* Flood stage is 42.0 feet.
- \* Moderate flooding is occurring and Moderate flooding is forecast.
- \* Forecast...The river will continue to fall and get below flood stage by late Wednesday morning.

&&

LAT...LON 3485 7886 3485 7875 3478 7874 3472 7865  
3465 7872 3472 7882

\$\$

NCC017-181727-  
/O.EXT.KILM.FL.W.0033.000000T0000Z-181121T1700Z/

/ELZN7.1.ER.000000T0000Z.181118T0600Z.181121T0138Z.NO/  
828 PM EST Sat Nov 17 2018

...Flood Warning now in effect until Wednesday afternoon...

The Flood Warning continues for

The Cape Fear At Elizabethtown.

- \* until Wednesday afternoon.
- \* Flood stage is 25.0 feet.
- \* Forecast...The river is forecast to have a maximum value of 31.8 feet just after midnight tonight.
- \* Impact...At 30.0 feet...Flood waters will affect low grounds along the right bank of the river.

&&

LAT...LON 3472 7865 3466 7852 3456 7838 3450 7847  
3459 7859 3465 7872

\$\$

NCC017-181727-

/O.EXT.KILM.FL.W.0035.181119T0300Z-181121T0400Z/  
/CPFN7.1.ER.181119T0300Z.181119T1800Z.181120T1200Z.NO/  
828 PM EST Sat Nov 17 2018

...Flood Warning now in effect until Tuesday evening...

The Flood Warning continues for

The Cape Fear At Lock And Dam 1.

- \* from Sunday evening to Tuesday evening.
- \* At 7:45 PM Saturday the stage was 23.31 feet.
- \* Flood stage is 24.0 feet.
- \* Minor flooding is forecast.
- \* Forecast...Rise above flood stage by late tomorrow evening and continue to rise to near 24.2 feet by early Monday afternoon. The river will fall below flood stage by Tuesday morning.
- \* Impact...At 24.0 feet...Lowland flooding will occur along the riverbed.

&&

LAT...LON 3456 7838 3448 7831 3445 7820 3438 7828  
3443 7840 3450 7847

\$\$

NCC155-181727-

/O.CON.KILM.FL.W.0029.000000T0000Z-000000T0000Z/  
/LBRN7.2.ER.000000T0000Z.181118T0600Z.000000T0000Z.UU/  
828 PM EST Sat Nov 17 2018

The Flood Warning continues for

The Lumber Near Lumberton.

- \* until further notice.
- \* At 7:00 PM Saturday the stage was 18.27 feet.
- \* Flood stage is 13.0 feet.
- \* Moderate flooding is occurring and Moderate flooding is forecast.
- \* Forecast...The river will continue rising to near 18.4 feet by just after midnight tonight then begin falling.

\* Impact...At 18.0 feet...Flood waters deepen in the Pines and Coxs Pond areas as well as along River Road. Flood waters may affect Carthage Road. Several homes will become isolated or inundated between the Pepsi plant and the river. Chickenfoot Road, Hestertown Road and Noir Street will be closed.

&&

LAT...LON 3467 7916 3468 7904 3457 7891 3452 7899  
3461 7907 3458 7915

\$\$

SCC033-051-067-181727-  
/O.CON.KILM.FL.W.0036.181119T1200Z-000000T0000Z/  
/GALS1.1.ER.181119T1200Z.181121T1800Z.000000T0000Z.NO/  
828 PM EST Sat Nov 17 2018

The Flood Warning continues for

The Little Pee Dee At Galivants Ferry.

- \* from Monday morning until further notice.
- \* At 8:00 PM Saturday the stage was 8.67 feet.
- \* Flood stage is 9.0 feet.
- \* Minor flooding is forecast.
- \* Forecast...Rise above flood stage by Monday morning and continue to rise to near 9.3 feet by Thursday morning.
- \* Impact...At 9.0 feet...Flood waters will begin to affect residential yards In the Fork Retch community upstream of Galivants Ferry near the town of Nichols. Swampland flooding becomes noticeable and natural boat landings will be flooded.

&&

LAT...LON 3423 7921 3419 7910 3405 7920 3398 7928  
3400 7938 3409 7930

\$\$

SCC041-067-181727-  
/O.CON.KILM.FL.W.0030.000000T0000Z-000000T0000Z/  
/PDES1.2.ER.000000T0000Z.181121T1200Z.000000T0000Z.NO/  
828 PM EST Sat Nov 17 2018

The Flood Warning continues for

The Great Pee Dee At Pee Dee.

- \* until further notice.
- \* At 8:00 PM Saturday the stage was 24.91 feet.
- \* Flood stage is 19.0 feet.
- \* Moderate flooding is occurring and Moderate flooding is forecast.
- \* Forecast...The river will continue rising to near 26.9 feet by Wednesday morning then begin falling.
- \* Impact...At 28.0 feet...There will be extensive flooding of timber land and farm land along the river. Access roads may be damaged by the flood waters and operations at industrial plants along the river will be affected.

&&



LAT...LON 3424 7962 3424 7950 3400 7945 3385 7932  
3385 7944 3398 7957

\$\$

SCC031-041-181727-  
/O.EXT.KILM.FL.W.0031.000000T0000Z-181123T0400Z/  
/BCRS1.1.ER.181113T2205Z.181115T0900Z.181122T0900Z.NO/  
828 PM EST Sat Nov 17 2018

...Flood Warning now in effect until Thursday evening...

The Flood Warning continues for

The Black Creek At Quinby.

- \* until Thursday evening.
- \* At 8:00 PM Saturday the stage was 13.47 feet.
- \* Flood stage is 10.0 feet.
- \* Minor flooding is occurring and Minor flooding is forecast.
- \* Forecast...The river will continue to fall and get below flood stage by early Thursday morning.
- \* Impact...At 13.5 feet...Floodwaters begin to affect one mobile home on Creekside Drive and continue to rise in yards.

&&

LAT...LON 3432 7979 3429 7973 3431 7967 3423 7963  
3422 7975 3428 7984

\$\$

SCC041-181727-  
/O.EXT.KILM.FL.W.0037.181119T1342Z-181122T0400Z/  
/EFS1.1.ER.181119T1342Z.181120T0600Z.181121T0900Z.NO/  
828 PM EST Sat Nov 17 2018

...Flood Warning now in effect until Wednesday evening...

The Flood Warning continues for

The Lynches At Effingham.

- \* from Monday morning to Wednesday evening.
- \* At 8:00 PM Saturday the stage was 12.73 feet.
- \* Flood stage is 14.0 feet.
- \* Minor flooding is forecast.
- \* Forecast...Rise above flood stage by Monday morning and continue to rise to near 14.8 feet by early Tuesday morning. The river will fall below flood stage by early Wednesday morning.
- \* Impact...At 15.0 feet...Flood waters will affect roads near Effingham and New Hope. North Old Georgetown, Roundtree and Bengause Roads will flood in low lying areas near the river.

&&

LAT...LON 3410 7974 3396 7963 3393 7974 3398 7976  
3394 7983 3403 7986

\$\$

**6.3 Example #3 - Flood Statement: Continuation of Flood Warning for One Forecast Point, Extension of Flood Warning for One Forecast Point, Cancellation of Flood Warning for One Forecast Point (ELS).**

Situation – At 8:50 a.m. Monday, November 19, 2018 (two days since the initial flood warning), Cape Fear at Lock and Dam 1 has fallen below flood stage. The following product cancels the flood warning for Cape Fear at Lock and Dam 1, extends the flood warning for the Lynches at Effingham, and continues the flood warning for the Little Pee Dee at Galivants Ferry.

WGUS82 KILM 191350  
FLSILM  
Flood Statement  
National Weather Service Wilmington NC  
850 AM EST Mon Nov 19 2018

...The Flood Warning is cancelled for the following rivers...

Cape Fear At Lock And Dam 1 affecting Bladen County NC

...The Flood Warning has been extended for the following rivers...

Cape Fear At William O Huske Lock And Dam 3 affecting Bladen County NC  
Cape Fear At Elizabethtown affecting Bladen County NC  
Lynches At Effingham affecting Florence County SC

...The Flood Warning continues for the following rivers...

Lumber Near Lumberton affecting Robeson County NC  
Little Pee Dee At Galivants Ferry affecting Dillon...Horry and Marion  
Counties SC  
Great Pee Dee At Pee Dee affecting Marion and Florence Counties SC  
Black Creek At Quinby affecting Darlington and Florence Counties SC

PRECAUTIONARY/PREPAREDNESS ACTIONS...

People with interests along the river should take the necessary precautions to protect life and property from the flood waters.

Additional information is available on our website at [weather.gov/ilm](http://weather.gov/ilm) under the "Rivers and Lakes" link.

&&

NCC017-200550-  
/O.EXT.KILM.FL.W.0032.000000T0000Z-181122T0000Z/  
/STPN7.2.ER.000000T0000Z.181117T0630Z.181121T1200Z.NO/  
850 AM EST Mon Nov 19 2018

...Flood Warning now in effect until Wednesday evening...

The Flood Warning continues for

The Cape Fear At William O Huske Lock And Dam 3.

\* until Wednesday evening.

\* At 8:00 AM Monday the stage was 49.97 feet.

\* Flood stage is 42.0 feet.

\* Minor flooding is occurring and Minor flooding is forecast.

\* Forecast...The river will continue to fall and get below flood stage by Wednesday morning.

\* Impact...At 50.0 feet...Extensive lowland flooding will occur along the left bank of the river.

&&

LAT...LON 3485 7886 3485 7875 3478 7874 3472 7865  
3465 7872 3472 7882

\$\$

NCC017-200550-  
/O.EXT.KILM.FL.W.0033.000000T0000Z-181121T0538Z/  
/ELZN7.1.ER.000000T0000Z.181119T1800Z.181120T1738Z.NO/  
850 AM EST Mon Nov 19 2018

...Flood Warning now in effect until late Tuesday night...  
The Flood Warning continues for  
The Cape Fear At Elizabethtown.  
\* until late Tuesday night.  
\* Flood stage is 25.0 feet.  
\* Forecast...The river is forecast to have a maximum value of 29.8 feet this afternoon.  
\* Impact...At 30.0 feet...Flood waters will affect low grounds along the right bank of the river.

&&

LAT...LON 3472 7865 3466 7852 3456 7838 3450 7847  
3459 7859 3465 7872

\$\$

NCC017-191420-  
/O.CAN.KILM.FL.W.0035.000000T0000Z-181120T1700Z/  
/CPFN7.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.NO/  
850 AM EST Mon Nov 19 2018

The Flood Warning is cancelled for  
The Cape Fear At Lock And Dam 1.  
\* At 7:45 AM Monday the stage was 23.70 feet.  
\* Flood stage is 24.0 feet.  
\* Forecast...The river crested below flood stage at 23.7 feet. The river will fall to 23.6 feet by tomorrow morning.  
\* Impact...At 24.0 feet...Lowland flooding will occur along the riverbed.

&&

LAT...LON 3456 7838 3448 7831 3445 7820 3438 7828  
3443 7840 3450 7847

\$\$

NCC155-200550-  
/O.CON.KILM.FL.W.0029.000000T0000Z-000000T0000Z/  
/LBRN7.2.ER.000000T0000Z.181119T1200Z.000000T0000Z.UU/  
850 AM EST Mon Nov 19 2018

The Flood Warning continues for  
The Lumber Near Lumberton.

- \* until further notice.
- \* At 7:00 AM Monday the stage was 18.60 feet.
- \* Flood stage is 13.0 feet.
- \* Moderate flooding is occurring and Moderate flooding is forecast.
- \* Forecast...The river will continue to fall to a stage of 18.1 feet by Tomorrow morning.
- \* Impact...At 19.0 feet...Extensive flooding occurs along the river. Over 50 dwellings will be inundated or isolated due to the flood waters and several roads will be closed especially in the Pines area and Coxs Pond area. Carthage Road may be completely covered with water.

&&

LAT...LON 3467 7916 3468 7904 3457 7891 3452 7899  
3461 7907 3458 7915

\$\$

SCC033-051-067-200550-  
/O.CON.KILM.FL.W.0036.000000T0000Z-000000T0000Z/  
/GALS1.1.ER.000000T0000Z.181120T1800Z.000000T0000Z.NO/  
850 AM EST Mon Nov 19 2018

The Flood Warning continues for

The Little Pee Dee At Galivants Ferry.

- \* until further notice.
- \* At 8:00 AM Monday the stage was 9.41 feet.
- \* Flood stage is 9.0 feet.
- \* Minor flooding is occurring and Minor flooding is forecast.
- \* Forecast...The river will continue rising to near 9.6 feet by early Wednesday morning then begin falling.
- \* Impact...At 9.0 feet...Flood waters will begin to affect residential yards in the Fork Retch community upstream of Galivants Ferry near the town of Nichols. Swamp land flooding becomes noticeable and natural boat landings will be flooded.

&&

LAT...LON 3423 7921 3419 7910 3405 7920 3398 7928  
3400 7938 3409 7930

\$\$

SCC041-067-200550-  
/O.CON.KILM.FL.W.0030.000000T0000Z-000000T0000Z/  
/PDES1.2.ER.000000T0000Z.181120T0600Z.000000T0000Z.NO/  
850 AM EST Mon Nov 19 2018

The Flood Warning continues for

The Great Pee Dee At Pee Dee.

- \* until further notice.
- \* At 8:00 AM Monday the stage was 26.89 feet.
- \* Flood stage is 19.0 feet.
- \* Moderate flooding is occurring and Moderate flooding is forecast.
- \* Forecast...The river will continue rising to near 27.2 feet by just after

midnight tonight then begin falling.

- \* Impact...At 28.0 feet...There will be extensive flooding of timber land and farm land along the river. Access roads may be damaged by the flood waters and operations at industrial plants along the river will be affected.

&&

LAT...LON 3424 7962 3424 7950 3400 7945 3385 7932  
3385 7944 3398 7957

\$\$

SCC031-041-200550-  
/O.CON.KILM.FL.W.0031.000000T0000Z-181123T0600Z/  
/BCRS1.1.ER.181113T2205Z.181115T0900Z.181122T1800Z.NO/  
850 AM EST Mon Nov 19 2018

The Flood Warning continues for

The Black Creek At Quinby.

- \* until late Thursday night.
- \* At 8:00 AM Monday the stage was 12.62 feet.
- \* Flood stage is 10.0 feet.
- \* Minor flooding is occurring and Minor flooding is forecast.
- \* Forecast...The river will continue to fall and get below flood stage by early Thursday afternoon.
- \* Impact...At 12.5 feet...Floodwaters continue to rise on Creekside Drive and East Black Creek Road with water nearing a few homes. Homes along East Black Creek Road become isolated and residents must use boats to exit the neighborhood.

&&

LAT...LON 3432 7979 3429 7973 3431 7967 3423 7963  
3422 7975 3428 7984

\$\$

SCC041-200550-  
/O.EXT.KILM.FL.W.0037.000000T0000Z-181124T0000Z/  
/EFS1.1.ER.000000T0000Z.181121T1800Z.181123T1200Z.NO/  
850 AM EST Mon Nov 19 2018

...Flood Warning now in effect until Friday evening...

The Flood Warning continues for

The Lynches At Effingham.

- \* until Friday evening.
- \* At 8:00 AM Monday the stage was 14.67 feet.
- \* Flood stage is 14.0 feet.
- \* Minor flooding is occurring and Minor flooding is forecast.
- \* Forecast...The river will continue rising to near 15.6 feet by early Wednesday afternoon. The river will fall below flood stage Friday morning.
- \* Impact...At 15.5 feet...Flood waters will affect portions of North Old Georgetown, Roundtree and Bengause Roads near Effingham and New Hope. The roads will be impassable in places.

&&

LAT...LON 3410 7974 3396 7963 3393 7974 3398 7976  
3394 7983 3403 7986

\$\$

#### **6.4 Example #4 - Flood Warning for Forecast Points: Initial Issuance (FLW).**

Situation – Heavy rainfall has elevated flows on the Willamette River. At 1:28 p.m. on Monday, April 8, 2019, WFO Portland, Oregon issues a flood warning for three forecast points.

WGUS46 KPQR 082028  
FLWPQR

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
Flood Warning  
National Weather Service Portland OR  
128 PM PDT Mon Apr 8 2019

Willamette Mainstem Bulletin

...The National Weather Service in Portland has issued a flood warning for the following rivers in Oregon...

Willamette River at Harrisburg affecting Benton...Lane and Linn Counties  
Willamette River at Corvallis affecting Benton and Linn Counties  
Willamette River at Albany affecting Benton and Linn Counties

River forecasts are based on observed and forecast rainfall and temperatures, and they include current and planned reservoir releases.

For the latest river stages and forecasts, visit [weather.gov/portland](http://weather.gov/portland). The next update for these locations will be issued by 9 pm Monday.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Turn around, don't drown. Don't drive into flooded areas.  
Avoid walking near riverbanks during high water.

&&

ORC039-090428-  
/O.ROU.KPQR.HY.S.0000.000000T0000Z-000000T0000Z/  
/EUGO3.N.UU.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
128 PM PDT Mon Apr 8 2019

Forecast information for

Willamette River at Eugene.

- \* At 1 PM Monday the stage was...21.3 feet / 44100 cfs.
- \* Flood stage is 23.0 feet and flood flow is 52600 cfs.
- \* No flooding is currently forecast.
- \* Forecast...This river is forecast to crest around 21.4 ft by 5 PM Monday. The Willamette at Eugene is expected to remain below flood stage. After the crest this afternoon, it will fall slowly but remain about 18.5 feet for a few days.

\* Impact...At 18.5 feet, the Willamette River is at bankfull level.  
Expect localized flooding of some parks and trails immediately  
adjacent to the river.

&&

LAT...LON 4402 12301 4403 12307 4412 12311 4413 12308 4408 12306

\$\$

ORC003-039-043-090428-  
/O.NEW.KPQR.FL.W.0008.190408T2047Z-190411T0220Z/  
/HARO3.1.ER.190408T2047Z.190409T0600Z.190410T1720Z.NO/  
128 PM PDT Mon Apr 8 2019

The National Weather Service in Portland has issued a

\* Flood Warning for  
The Willamette River at Harrisburg  
\* until Wednesday evening.  
\* At 1 PM Monday the stage was...13.8 feet / 62700 cfs.  
\* Flood stage is 14.0 feet and flood flow is 65000 cfs.  
\* Minor flooding is forecast.  
\* Forecast...This river is forecast to rise above flood stage around  
2 PM Monday and is expected to crest at 15.8 ft around 11 PM  
Monday.  
\* Impact...Near 16.0 ft, expect widespread low land flooding mainly  
west of the river. Portions of Highway 99E may be flooded.  
Historically, flooding near the Harrisburg Bridge has occurred at  
this and higher stages.

&&

LAT...LON 4412 12311 4420 12316 4426 12314 4426 12311 4420 12312 4412  
12308

\$\$

ORC003-043-090428-  
/O.NEW.KPQR.FL.W.0009.190409T1038Z-190411T0526Z/  
/CORO3.1.ER.190409T1038Z.190409T1800Z.190410T2026Z.NO/  
128 PM PDT Mon Apr 8 2019

The National Weather Service in Portland has issued a

\* Flood Warning for  
The Willamette River at Corvallis  
\* from late tonight to Wednesday evening.  
\* At 1 PM Monday the stage was...23.6 feet / 46400 cfs.  
\* Flood stage is 30.0 feet and flood flow is 83000 cfs.  
\* Minor flooding is forecast.  
\* Forecast...This river is forecast to rise above flood stage around  
4 AM Tuesday and is expected to crest at 32.5 ft around 11 AM  
Tuesday.  
\* Impact...Above 32 ft, expect flooding of low spots of Hwy 99 south  
of Corvallis, the Corvallis-Albany Hwy, and Hwy 34 near Corvallis.

&&

LAT...LON 4426 12314 4434 12316 4436 12313 4435 12311 4434 12314 4426  
12311

\$\$

ORC003-043-090428-  
/O.NEW.KPQR.FL.W.0010.190409T1434Z-190411T2139Z/  
/ALBO3.1.ER.190409T1434Z.190410T0000Z.190411T1239Z.NO/  
128 PM PDT Mon Apr 8 2019

The National Weather Service in Portland has issued a

- \* Flood Warning for  
The Willamette River at Albany
- \* from Tuesday morning to Thursday afternoon.
- \* At 1 PM Monday the stage was...17.4 feet / 50000 cfs.
- \* Flood stage is 25.0 feet and flood flow is 84000 cfs.
- \* Minor flooding is forecast.
- \* Forecast...This river is forecast to rise above flood stage around  
8 AM Tuesday and is expected to crest at 28.7 ft around 5 PM  
Tuesday.
- \* Impact...At 28 feet, expect some flooding in North Albany, in  
Bryant Park, and in low areas west of Albany.

&&

LAT...LON 4460 12322 4472 12317 4472 12312 4466 12304 4459 12317

\$\$

### Notes and Explanations:

- (1) Note that the observation and flood stage bullets include both stage and flow.

### **6.5 Example #5 - Flood Warning for Forecast Points: Flood Category Increase (FLW).**

Situation – Heavy rains have greatly increased surface runoff in the Willamette basin. At 8:19 a.m. on April 10, 2019, a flood warning is issued for the Willamette River at Corvallis to announce an increase in forecast flood severity from minor to moderate flooding.

WGUS46 KPQR 101519  
FLWPQR

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
Flood Warning  
National Weather Service Portland OR  
819 AM PDT Wed Apr 10 2019

Willamette Mainstem Bulletin

...Forecast flooding changed from Minor to Moderate severity for the  
following rivers in Oregon...

Willamette River at Corvallis affecting Benton and Linn Counties

River forecasts are based on observed and forecast rainfall and  
temperatures, and they include current and planned reservoir  
releases.



For the latest river stages and forecasts, visit  
weather.gov/portland.

The next update for this location will be issued by 1245 pm today.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Turn around, don't drown. Don't drive into flooded areas.  
Avoid walking near riverbanks during high water.

&&

ORC003-043-102318-  
/O.EXT.KPQR.FL.W.0009.000000T0000Z-190412T2222Z/  
/CORO3.2.ER.190410T0130Z.190411T0000Z.190412T1322Z.NO/  
819 AM PDT Wed Apr 10 2019

...Forecast flooding increased from Minor to Moderate severity...

The Flood Warning continues for

The Willamette River at Corvallis

- \* At 8 AM Wednesday the stage was...32.8 feet / 98700 cfs.
- \* Flood stage is 30.0 feet and flood flow is 83000 cfs.
- \* Moderate flood stage is 33.0 feet and flow is 100000 cfs.
- \* Moderate flooding is forecast.
- \* Forecast...This river will crest at 33.2 feet at 5 PM Wednesday.  
It is forecast to fall below 33.0 feet by 10 pm Wednesday and then  
below flood stage around 6 AM Friday morning.
- \* Impact...Above 32 ft, expect flooding of low spots of Hwy 99 south  
of Corvallis, the Corvallis-Albany Hwy, and Hwy 34 near Corvallis.

&&

LAT...LON 4426 12314 4434 12316 4436 12313 4435 12311 4434 12314 4426  
12311

\$\$

### Notes and Explanations:

- (1) Note how the Flood Warning (FLW) identifier is used in a product which is following up a previously issued FLW, but the event tracking number is the same as that in the previously issued product for this segment.
- (2) Note that the overview headline and individual segment headline announce both an increase in forecast flood severity.
- (3) Note that "EXT" is used for the VTEC action code when a category increase also involves a warning extension.

### **6.6 Example #6 - Flood Warning for Forecast Points: Non-Flood Point Included (FLW).**

Situation – WFO Birmingham, Alabama issues a flood warning product covering two forecast points on the Alabama River. However, only the first forecast point is expected to exceed flood stage. The second point is included to give users a complete "picture" of the river reach. Such non-flood forecast points use "HY.S" for the VTEC phenomenon/significance code and would follow the same format, if they were included in flood statements.

WGUS44 KBMX 290148  
FLWBMX

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
Flood Warning  
National Weather Service Birmingham AL  
748 PM CST Fri Dec 28 2018

...The National Weather Service in Birmingham AL has issued a Flood  
Warning for the following rivers in Alabama...

Alabama River At Montgomery Affecting Autauga...Dallas...Elmore...  
Lowndes and Montgomery Counties.

.Heavy rainfall of up to 4 inches Thursday and early Friday across  
the area has caused rises on the Alabama River. A Flood Warning is  
now in effect for the Alabama River at Montgomery.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Do not drive cars through flooded areas. Turn Around...Don't Drown.

Another statement will be issued by Saturday morning...or sooner if  
conditions warrant.

&&

ALC001-047-051-085-101-291347-  
/O.NEW.KBMX.FL.W.0046.181229T1800Z-181231T0900Z/  
/MGMA1.1.ER.181229T1800Z.181230T0600Z.181230T2100Z.NO/  
748 PM CST Fri Dec 28 2018

The National Weather Service in Birmingham AL has issued a

- \* Flood Warning for  
the Alabama River At Montgomery.
- \* from Saturday afternoon to late Sunday night...or until the warning  
is cancelled.
- \* At 7:00 PM Friday The stage was 30.8 feet.
- \* Flood stage is 35.0 feet.
- \* Minor flooding is forecast.
- \* Forecast...rise above flood stage by tomorrow early afternoon and  
continue to rise to near 36.4 feet by early Sunday morning. The  
river will fall below flood stage by Sunday afternoon.
- \* Impact...At 35.0 feet...Extensive flooding of low lands in the area  
occurs.

&&

LAT...LON 3248 8631 3236 8630 3239 8638 3232 8654  
3237 8661 3245 8636

\$\$

ALC047-291347-  
/O.ROU.KBMX.HY.S.0000.000000T0000Z-000000T0000Z/

/SELA1.N.UU.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
748 PM CST Fri Dec 28 2018

Forecast information for

Alabama River At Selma.

- \* At 7:00 PM Friday The stage Was 31.9 feet.
- \* Flood stage is 45.0 feet.
- \* No flooding is currently forecast.
- \* Forecast...The river will rise to near 44.1 feet Sunday evening.
- \* Impact...At 45.0 feet...Extensive overflow of low-lying lands in the area begins. Some low roads in the area begin to flood.

&&

LAT...LON 3234 8691 3234 8699 3222 8712 3224 8721  
3243 8705 3237 8691

\$\$

## 7. Flood Warning (FLW) and Associated Follow-up Products (FLS).

**7.1 Example #1 - Flood Warning (FLW).** Situation – A river gage indicates that flooding is occurring along the Scioto River near Prospect, OH. This is not a river forecast point, so the forecaster decides to issue a flood warning for northwestern Delaware County at 7:52 a.m.

WGUS41 KILN 041252  
FLWILN

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
Flood Warning  
National Weather Service Wilmington OH  
752 AM EST SUN NOV 4 2018

OHC041-051245-  
/O.NEW.KILN.FA.W.0033.181104T1252Z-181105T1245Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Delaware OH-  
752 AM EST SUN NOV 4 2018

The National Weather Service in Wilmington has issued a

- \* Flood Warning for the Scioto River in...  
Northwestern Delaware County in central Ohio...
- \* Until 745 AM EST Monday.
- \* At 750 AM EST, the river gage near Prospect indicated that flooding was occurring along the Scioto River.
- \* Water covers portions of River Road north of Hoskins Road in northwest Delaware County. Lowland flooding also begins along State Route 257 north of Route 36.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Do not drive your vehicle into areas where water covers the roadway.

The water depth may be too great to allow your vehicle to cross safely and the road beneath may not be intact.

&&

LAT...LON 4044 8322 4044 8318 4036 8317 4028 8314  
4028 8318 4036 8321

\$\$

## 7.2 **Example #2 - Flood Statement: Follow-up to a Flood Warning: (FLS).** Situation –

The river gage along the Scioto River near Prospect indicates that flooding is continuing, so WFO Wilmington, Ohio issues a flood statement to continue the flood warning and provides updated flood information.

WGUS81 KILN 051012  
FLSILN

Flood Statement  
National Weather Service Wilmington OH  
512 AM EST MON NOV 5 2018

OHC041-051245-  
/O.CON.KILN.FA.W.0033.000000T0000Z-181105T1245Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Delaware OH-  
512 AM EST MON NOV 5 2018

...THE FLOOD WARNING FOR THE SCIOTO RIVER IN NORTHWESTERN DELAWARE COUNTY REMAINS IN EFFECT UNTIL 745 AM EST...

At 509 AM EST, the river gage near Prospect indicated that flooding was occurring along the Scioto River, with the river level near 12 feet.

At stages near 12 feet, water covers portions of River Road north of Hoskins Road in northwest Delaware County. Lowland flooding is observed along State Route 257 north of Route 36.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Do not drive your vehicle into areas where the water covers the roadway. The water depth may be too great to allow your vehicle to cross safely and the road beneath may not be intact.

&&

LAT...LON 4044 8322 4044 8318 4036 8317 4028 8314  
4028 8318 4036 8321

\$\$

## 7.3 **Example #3 - Flood Statement: Cancellation of a Flood Warning (FLS).** Situation –

The flooding ended earlier than expected and was no longer expected to pose a significant threat, so at 1417Z (9:17 a.m.), WFO Wilmington, OH issues a flood statement to cancel the flood

warning.

WGUS81 KILN 051417  
FLSILN

Flood Statement  
National Weather Service Wilmington OH  
917 AM EST MON NOV 5 2018

OHC041-051426-  
/O.CAN.KILN.FA.W.0033.000000T0000Z-181105T1845Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Delaware OH-  
917 AM EST MON NOV 5 2018

...THE FLOOD WARNING FOR THE SCIOTO RIVER IN NORTHWESTERN DELAWARE  
COUNTY HAS BEEN CANCELLED...

The water is receding and is no longer expected to pose a significant  
threat. Please continue to heed all road closures.

LAT...LON 4044 8322 4044 8318 4036 8317 4028 8314  
4028 8318 4036 8321

\$\$

**7.4 Example #4 - Flood Warning for a River Reach (FLW).** Situation – During the evening of May 9, 2018, emergency managers reported flooding along the Chewuch River north of Winthrop, WA. At 9:12 p.m., a forecaster at WFO Spokane decides to issue a flood warning covering a reach of the Chewuch River in Northwestern Okanogan County north of Winthrop.

WGUS46 KOTX 100412  
FLWOTX

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
Flood Warning  
National Weather Service Spokane WA  
912 PM PDT WED MAY 9 2018

WAC047-120400-  
/O.NEW.KOTX.FA.W.0007.180510T0412Z-180512T0400Z/  
/00000.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Okanogan WA-  
912 PM PDT WED MAY 9 2018

The National Weather Service in Spokane has issued a

- \* Flood Warning for...  
Rain and Snowmelt in...The Chewuch River north of the town of  
Winthrop in Northwestern Okanogan County in northeastern  
Washington...
- \* Until 900 PM PDT Friday
- \* At 905 PM PDT, river gauges indicate the Chewuch River at 10.43  
feet. The historic crest is 10.06 feet in 2018. Emergency managers

reported flooding along the Chewuch River north of Winthrop Washington.

- \* Some locations that will experience flooding include... Winthrop and Memorial Campground. Warm temperatures later in the week could cause additional flooding due to snowmelt.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Please report flooding to your local law enforcement agency when you can do so safely.

A Flood Warning means that flooding is imminent or occurring. All interested parties should take necessary precautions immediately.

&&

LAT...LON 4860 12014 4847 12014 4847 12020 4860 12020

\$\$

**7.5 Example #5 - Flood Statement: Continuation of a Flood Warning (FLS).** Situation – At 9:22 a.m. on Thursday, May 10, 2018, emergency management continued to report flooding on the Chewuch River. The forecaster decides to continue the flood warning for the Chewuch River in Western Okanogan County.

WGUS86 KOTX 101622  
FLSOTX

Flood Statement  
National Weather Service Spokane WA  
922 AM PDT THU MAY 10 2018

WAC047-120400-  
/O.CON.KOTX.FA.W.0007.000000T0000Z-180512T0400Z/  
/00000.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Okanogan WA-  
922 AM PDT THU MAY 10 2018

...A FLOOD WARNING FOR RAIN AND SNOWMELT REMAINS IN EFFECT UNTIL 900 PM PDT FRIDAY FOR WESTERN OKANOGAN COUNTY...

Emergency management has reported flooding along the Chewuch River at 10.43 feet. This morning at 9am the river level is at 10.3 feet. These current levels exceed the historic crest of 10.06 feet from 2008.

Rain and snowmelt will continue to promote high flows in the Chewuch River north of the town of Winthrop in Northwestern Okanogan County in Northeastern Washington.

Locations that will experience flooding include Winthrop and Memorial Campground locations near the Chewuch River.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Please report flooding to your local law enforcement agency when you can do so safely.

A Flood Warning means that flooding is imminent or occurring. All interested parties should take necessary precautions immediately.

&&

LAT...LON 4860 12014 4847 12014 4847 12020 4860 12020

\$\$

**7.6 Example #6 – Flood Warning for an Ice Jam (FLW).** Situation – An ice jam is reported on the Salmon River in northern New York. From a spotter's description of the flooding, the WFO decides to issue a flood warning.

WGUS41 KBTW 132350  
FLWBTV

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
Flood Warning  
National Weather Service Burlington VT  
650 PM EST SAT JAN 13 2018

NYC033-142345-  
/O.NEW.KBTW.FA.W.0015.180113T2350Z-180114T2345Z/  
/00000.0.IJ.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Franklin NY-  
650 PM EST SAT JAN 13 2018

The National Weather Service in Burlington has issued a

\* Flood Warning for Small Streams for...  
An Ice Jam in...  
North central Franklin County in northern New York...

\* Until 645 PM EST Sunday

\* At 647 PM EST, emergency management officials reported continued flooding due to an ice jam in the town of Fort Covington New York along the Salmon River.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Stay away from flooded areas. River banks and culverts can become unstable and unsafe.

Please report flooding to your local law enforcement agency when you can do so safely.

&&

LAT...LON 4500 7453 4499 7434 4489 7432 4489 7453

\$\$

**7.7 Example #7 – Flood Statement: Expiration of a Flood Warning for an Ice Jam**

**(FLS).** Situation – No further ice jam flooding is expected in Fort Covington, New York. Based on this, forecasters at the WFO decide to let the flood warning expire.

WGUS81 KBTW 142340  
FLSBTV

Flood Statement  
National Weather Service Burlington VT  
640 PM EST SUN JAN 14 2018

NYC033-142347-  
/O.EXP.KBTW.FA.W.0015.000000T0000Z-180114T2345Z/  
/00000.0.IJ.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Franklin NY-  
640 PM EST SUN JAN 14 2018

...THE FLOOD WARNING FOR AN ICE JAM WILL EXPIRE AT  
645 PM EST FOR NORTH CENTRAL FRANKLIN COUNTY...

No further ice jam flooding is expected in Fort Covington, New York.  
The threat for excessive runoff is ending. Localized ice jams  
continue to produce minor flooding on area streams and rivers.  
Please continue to heed any road closures.

LAT...LON 4500 7453 4499 7434 4489 7432 4489 7453

\$\$

**8. Flood Advisory (FLS).**

**8.1 Example #1 - Urban and Small Stream Flood Advisory.** Situation – A forecaster at WFO San Angelo notes an area of thunderstorms across Tom Green County in Texas. Based on experience with numerous similar storm systems, the forecaster decides that the likely hydrologic response would not rise to a level warranting a flood or flash flood warning, but instead issues an urban and small stream flood advisory to heighten the level of public awareness in the area.

WGUS84 KSJT 130632  
FLSSJT

Flood Advisory  
National Weather Service San Angelo TX  
132 AM CDT WED MAR 13 2019

TXC451-130730-  
/O.NEW.KSJT.FA.Y.0002.190313T0632Z-190313T0730Z/  
/00000.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Tom Green TX-  
132 AM CDT WED MAR 13 2019

The National Weather Service in San Angelo has issued a

\* Urban and Small Stream Flood Advisory for...



Tom Green County in west central Texas...

\* Until 230 AM CDT.

\* At 128 AM CDT, Doppler radar showed thunderstorms with very heavy rain moving northeast across Tom Green County and the city of San Angelo. Rainfall amounts up to one inch will occur in a short period of time. This will cause street flooding in San Angelo, and flooding of low-lying areas and other flood prone areas in Tom Green County.

\* Some locations that will experience flooding include...  
San Angelo, Christoval, Wall, San Angelo State Park, Grape Creek, Goodfellow Air Force Base, Carlsbad, Veribest, Knickerbocker, Vancourt, Tankersley and Harriet.

This includes the following low water crossings ...

Howard and Webster...  
Jackson From Knickerbocker to South Bryant...  
Southwest Blvd and Loop 306...  
College Hills and Millbrook...  
FM 1692 crossing Sales Branch...  
FM 2334 crossing Dry Lipan Creek...  
1500 Block of Spaulding...  
300 block of North Archer...  
Parkwood and Lindenwood and  
Sul Ross At Red Arroyo Crossing.

Do not drive through these low water crossings or any other low water crossing with water flowing across the roadway.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles.

Be especially cautious at night when it is harder to recognize the dangers of flooding.

&&

LAT...LON 3169 10026 3157 10026 3156 10013 3116 10019  
3110 10068 3168 10067

\$\$

**8.2 Example #2 - Arroyo and Small Stream Flood Advisory.** Situation – A forecaster at WFO Albuquerque observes a line of thunderstorms moving into San Miguel, Harding, and Quay Counties in New Mexico. Based on experience with numerous similar storm complexes, the forecaster decides that the likely hydrologic response would not rise to a level warranting a flood or flash flood warning, but instead issues an arroyo and small stream flood advisory to heighten the level of public awareness in the area. “Arroyo and small stream” is used in the advisory title because it more accurately captures the type of stream channels in the area.

WGUS85 KABQ 080331

FLSABQ

Flood Advisory  
National Weather Service Albuquerque NM  
931 PM MDT SUN OCT 7 2018

NMC021-037-047-080530-  
/O.NEW.KABQ.FA.Y.0573.181008T0331Z-181008T0530Z/  
/00000.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
San Miguel-Harding-Quay-  
931 PM MDT SUN OCT 7 2018

The National Weather Service in Albuquerque has issued a

- \* Arroyo and Small Stream Flood Advisory for...  
Northeastern San Miguel County in northeastern New Mexico...  
Eastern Harding County in northeastern New Mexico...  
Central Quay County in east central New Mexico...
- \* Until 1130 PM MDT.
- \* At 930 PM MDT, Doppler radar indicated heavy rain due to a line of  
thunderstorms stretched from southwest to northeast over the area.  
This will cause arroyo and small stream flooding in the advisory  
area. State Roads 39 and 102 will be impacted.
- \* Some locations that will experience flooding include...  
Mosquero, Bueyeros and Rosebud.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Turn around, don't drown when encountering flooded roads. Most flood  
deaths occur in vehicles.

Be especially cautious at night when it is harder to recognize the  
dangers of flooding.

&&

LAT...LON 3528 10357 3527 10415 3604 10391 3600 10338  
3590 10337

\$\$

**8.3 Example #3 - Small Stream Flood Advisory.** Situation – A forecaster at WFO  
Portland, OR observes that heavy rain has fallen and continues to fall across the hydrologic  
service area. The forecaster decides that the likely hydrologic response would not rise to the  
level of warranting a flood or flash flood warning, but instead issues a small stream flood  
advisory to heighten the level of public awareness in the area.

WGUS86 KPQR 111740  
FLSPQR

Flood Advisory  
National Weather Service Portland OR  
1040 AM PDT TUE SEP 11 2018

WAC069-112030-  
/O.NEW.KPQR.FA.Y.0002.180911T1740Z-180911T2030Z/  
/00000.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
Wahkiakum WA-  
1040 AM PDT TUE SEP 11 2018

The National Weather Service in Portland has issued a

\* Small Stream Flood Advisory for...  
Northwestern Wahkiakum County in southwestern Washington...

\* Until 130 PM PDT.

\* At 1032 AM PDT, Doppler radar and automated rain gauges indicated persistent heavy showers which will cause small stream flooding in the advisory area. As much as 3 to 6 inches of rain has fallen in the vicinity of KM Mountain this morning.

\* Some locations that may experience flooding include...  
Grays River and Rosburg.

In Washington this includes State Route 4 between mile markers 14 and 21.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Excessive runoff from heavy rainfall will cause flooding of small creeks and streams, country roads, farmland, and other low lying spots.

In hilly terrain there are hundreds of low water crossings which are potentially dangerous in heavy rain. Do not attempt to cross flooded roads. Find an alternate route.

&&

LAT...LON 4637 12354 4632 12352 4630 12366 4637 12368

\$\$

#### **8.4 Example #4 - Hydrologic Advisory for Elevated River Levels Caused By Ice Jams.**

Situation – A forecaster receives a report of two large ice jams on the Big Horn River. From observer reports, the ice jams are not causing inundations which reach flood levels, so he decides to issue a hydrologic advisory to elevate public awareness of the unusual hydrologic activity.

WGUS85 KRIW 241641  
FLSRIW

Flood Advisory  
National Weather Service Riverton WY  
941 AM MST FRI FEB 24 2017

WYC003-251630-  
/O.NEW.KRIW.FA.Y.0012.170224T1641Z-170225T1630Z/  
/00000.N.IJ.000000T0000Z.000000T0000Z.000000T0000Z.OO/

Big Horn-  
941 AM MST FRI FEB 24 2017

The National Weather Service in Riverton has issued a

- \* Hydrologic Advisory for...  
An Ice Jam in...  
Central Big Horn County in central Wyoming...
- \* Until 930 AM MST Saturday
- \* At 926 AM MST, Big Horn County emergency management reported there were still 2 large ice jams along the Big Horn River that may cause additional flooding. One ice jam was between Basin and Greybull. This ice jam has moved downstream about a half mile since Thursday night. The other major ice jam is located downstream of Greybull near the Sheep Mountain area and on Georgia Pacific property. No major movement or changes have been reported with that ice jam.
- \* There are also 2 smaller ice jams that are just upstream and downstream of Greybull. These jams are not causing any significant flooding in and around Greybull.
- \* Colder temperatures through early next week should inhibit any significant movement of current ice jams. There also should be no significant additional ice accumulation on the Big Horn River with the expected temperatures through early next week.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

River ice is very unpredictable and may move and jam with little notice. Any ice jam can cause flooding, as the ice dams the river, causing rapid increases in river levels in a short period of time. People living near the Big Horn River should monitor the situation closely and be ready to move to higher ground if flooding occurs.

&&

LAT...LON 4457 10805 4450 10802 4442 10800 4442 10808  
4448 10808 4453 10811 4457 10815 4463 10816  
4471 10820 4477 10822 4475 10813 4469 10810  
4463 10810

\$\$

## 9. **Flood Advisory for Forecast Points (FLS).**

**9.1 Example #1 - Flood Advisory for Multiple Forecast Points.** Situation – Locally heavy rainfall will occur over Southwest Lower Michigan, which will be sufficient to bring the river and key tributaries close to flood stage, but not high enough to warrant a flood warning. WFO Grand Rapids issues a flood advisory for forecast points to notify local residents of an elevated flow situation and let them know that flooding is not expected at this time.

WGUS83 KGRR 140139  
FLSGRR

Flood Advisory  
National Weather Service Grand Rapids MI  
939 PM EDT Fri Apr 13 2018

...The National Weather Service in Grand Rapids has issued a flood advisory for the following rivers in Southwest Lower Michigan...

Grand River At Ionia affecting Ionia County  
Sycamore Creek At Holt affecting Ingham County  
Looking Glass River Near Eagle affecting Clinton County  
Maple River At Maple Rapids affecting Clinton County  
Thornapple River Above Hastings affecting Barry County  
Muskegon River At Bridgeton affecting Newaygo County  
Muskegon River At Newaygo affecting Newaygo County

.Rain showers, locally heavy at times, will develop tonight, and continue through Sunday. 1 to 2 inches of rain is likely, some of which could be freezing rain.

The following forecast is based on observed and forecast 24 hour precipitation.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Safety message...Caution is urged when walking near riverbanks.

A flood advisory means minor flooding is possible and rivers are forecast to exceed bankfull. If you are in the advisory area remain alert to possible flooding...or the possibility of the advisory being upgraded to a warning. Report observed flooding to local emergency services or law enforcement and request they pass this information on to the National Weather Service.

Stay tuned to further developments by listening to your local radio... television... or NOAA Weather Radio station for further information.

&&

MIC067-150339-  
/O.NEW.KGRR.FL.Y.0067.180414T0139Z-180420T1800Z/  
/IONM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
939 PM EDT Fri Apr 13 2018

The National Weather Service in Grand Rapids has issued a

- \* Flood Advisory for  
the Grand River At Ionia.
- \* until Friday April 20.
- \* At 08 PM Friday the stage was 11.1 feet.
- \* Bankfull stage is 13.5 feet.
- \* Flood stage is 21.0 feet.
- \* Forecast, the river will rise to near 15.5 feet by Monday evening.
- \* Impact, at 16.0 feet...Expect extensive lowland overflow to occur.

&&

LAT...LON 4297 8524 4303 8488 4296 8499 4290 8521

\$\$

MIC065-150338-

/O.NEW.KGRR.FL.Y.0068.180414T0139Z-180419T1800Z/  
/HHTM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
939 PM EDT Fri Apr 13 2018

The National Weather Service in Grand Rapids has issued a

- \* Flood Advisory for  
the Sycamore Creek At Holt.
- \* until Thursday afternoon.
- \* There is not current observed data.
- \* Bankfull stage is 6.0 feet.
- \* Flood stage is 8.0 feet.
- \* Forecast, the river will rise to near 7.9 feet tomorrow evening.
- \* Impact, at 8.0 feet...Expect minor flooding of low-lying areas  
adjacent to the river, in the Lansing Municipal Golf Course and  
sections of East Mt. Hope Road.

&&

LAT...LON 4271 8451 4268 8449 4264 8445 4264 8451  
4268 8455 4271 8455

\$\$

MIC037-150338-

/O.NEW.KGRR.FL.Y.0069.180414T0139Z-180420T1800Z/  
/EAGM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
939 PM EDT Fri Apr 13 2018

The National Weather Service in Grand Rapids has issued a

- \* Flood Advisory for  
the Looking Glass River Near Eagle.
- \* until Friday April 20.
- \* At 08 PM Friday the stage was 4.1 feet.
- \* Bankfull stage is 5.0 feet.
- \* Flood stage is 7.0 feet.
- \* Forecast, the river will rise to near 6.7 feet by Monday early  
afternoon.
- \* Impact, at 7.0 feet...Expect minor flooding of homes in Dewitt and  
along the river between Dewitt and Eagle. Flooding occurs in  
Riverside Park in Dewitt and Looking Glass Valley Park in Wacousta.

&&

LAT...LON 4290 8489 4286 8474 4287 8455 4281 8455  
4279 8474 4283 8489

\$\$

MIC037-150338-

/O.NEW.KGRR.FL.Y.0070.180414T0139Z-000000T0000Z/  
/MRPM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

939 PM EDT Fri Apr 13 2018

The National Weather Service in Grand Rapids has issued a

- \* Flood Advisory for  
the Maple River At Maple Rapids.
- \* until further notice.
- \* At 09 PM Friday the stage was 5.3 feet.
- \* Bankfull stage is 7.0 feet.
- \* Flood stage is 9.0 feet.
- \* Forecast, the river will rise to near 8.6 feet by early Tuesday morning.
- \* Impact, at 9.0 feet...Expect minor flooding of County Line Road and a home along County Line Road.

&&

LAT...LON 4302 8495 4314 8471 4317 8456 4310 8457  
4308 8468 4298 8493

\$\$

MIC015-150338-

/O.NEW.KGRR.FL.Y.0071.180414T0139Z-000000T0000Z/  
/HSTM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
939 PM EDT Fri Apr 13 2018

The National Weather Service in Grand Rapids has issued a

- \* Flood Advisory for  
the Thornapple River Above Hastings.
- \* until further notice.
- \* At 09 PM Friday the stage was 3.8 feet.
- \* Bankfull stage is 5.0 feet.
- \* Flood stage is 7.0 feet.
- \* Forecast, the river will rise to near 6.1 feet by Monday evening.
- \* Impact, at 7.0 feet...Expect minor flooding of Tyden Park in Hastings, and homes upstream and downstream of Hastings.

&&

LAT...LON 4273 8541 4265 8524 4266 8517 4260 8516  
4259 8523 4268 8550

\$\$

150338-

/O.NEW.KGRR.FL.Y.0072.180414T0139Z-180420T1800Z/  
/BDGM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
939 PM EDT Fri Apr 13 2018

The National Weather Service in Grand Rapids has issued a

- \* Flood Advisory for  
the Muskegon River At Bridgeton.
- \* until Friday April 20.
- \* At 09 PM Friday the stage was 9.3 feet.
- \* Bankfull stage is 12.0 feet.
- \* Flood stage is 13.0 feet.
- \* Forecast, the river will rise to near 12.6 feet by Monday morning.

\* Impact, at 13.0 feet...Water overflows the banks into wooded areas.

&&

LAT...LON 4333 8604 4331 8604 4334 8593 4335 8593  
4336 8594

\$\$

MIC123-150338-  
/O.NEW.KGRR.FL.Y.0073.180414T0139Z-000000T0000Z/  
/NEWM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
939 PM EDT Fri Apr 13 2018

The National Weather Service in Grand Rapids has issued a

- \* Flood Advisory for  
the Muskegon River At Newaygo.
- \* until further notice.
- \* At 08 PM Friday the stage was 8.9 feet.
- \* Bankfull stage is 10.0 feet.
- \* Flood stage is 11.0 feet.
- \* Forecast, the river will rise to near 10.6 feet by Monday early  
afternoon.
- \* Impact, at 11.0 feet...The river starts exceeding its banks and  
minor flooding begins in low lying areas along the river.

&&

LAT...LON 4338 8591 4336 8594 4335 8593 4337 8589  
4337 8585 4339 8581 4341 8581 43

\$\$

**9.2 Example #2 - Flood Advisory for Multiple Forecast Points: Follow-up.** Situation – Elevated flow continues across Southwest Lower Michigan basins in response to heavy rain occurring on the previous day. Forecasted flows have increased sufficiently at two points covered in the original advisory to allow the flood advisory to be cancelled and replaced by a flood warning for those locations. A flood advisory is also issued for a new forecast point.

WGUS83 KGRR 141801  
FLSGRR

Flood Advisory  
National Weather Service Grand Rapids MI  
201 PM EDT Sat Apr 14 2018

...The flood advisory is cancelled and upgraded to a flood warning  
for the following river in Southwest Lower Michigan...

Muskegon River At Bridgeton affecting  
Muskegon River At Newaygo affecting Newaygo County

...The National Weather Service in Grand Rapids has issued a flood  
advisory for the following rivers in Southwest Lower Michigan...



Muskegon River Near Croton affecting Newaygo County

.Generally 1 to 2 inches of rain with locally higher amounts are expected into next week across the region. Rises are expected on area rivers with levels expected to reach flood stage on several rivers. The following forecast is based on observed and forecast 24 hour precipitation.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Safety message... Caution is urged when walking near riverbanks.

A flood advisory means minor flooding is possible and rivers are forecast to exceed bankfull. If you are in the advisory area, remain alert to possible flooding or the possibility of the advisory being upgraded to a warning. Report observed flooding to local emergency services or law enforcement and request they pass this information on to the National Weather Service.

Stay tuned to further developments by listening to your local radio... television... or NOAA Weather Radio station for further information.

&&

141831-

/O.CAN.KGRR.FL.Y.0072.000000T0000Z-180421T1800Z/  
/BDGM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
201 PM EDT Sat Apr 14 2018

The Flood Advisory is cancelled for  
the Muskegon River at Bridgeton  
and has been upgraded to a flood warning.

- \* At 01 PM Saturday the stage was 10.2 feet.
- \* Bankfull stage is 12.0 feet.
- \* Flood stage is 13.0 feet.
- \* Forecast, the river is forecast to go above flood stage by tomorrow morning. Flood Advisory is cancelled for this location and replaced by a Flood Warning. Please refer to the Flood Warning and any follow up statements for further information.
- \* Impact, at 13.0 feet...Water overflows the banks into wooded areas.

&&

LAT...LON 4333 8604 4331 8604 4334 8593 4335 8593  
4336 8594

\$\$

MIC123-141831-

/O.CAN.KGRR.FL.Y.0073.000000T0000Z-000000T0000Z/  
/NEWM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
201 PM EDT Sat Apr 14 2018

The Flood Advisory is cancelled for  
the Muskegon River At Newaygo

and has been upgraded to a flood warning.  
 \* At 12 PM Saturday the stage was 9.2 feet.  
 \* Bankfull stage is 10.0 feet.  
 \* Flood stage is 11.0 feet.  
 \* Forecast, the river is forecast to go above flood stage by after midnight tonight. Flood Advisory is cancelled for this location and replaced by a Flood Warning. Please refer to the Flood Warning and any follow up statements for further information.  
 \* Impact, at 11.0 feet...The river starts exceeding its banks and minor flooding begins in low lying areas along the river.

&&

LAT...LON 4338 8591 4336 8594 4335 8593 4337 8589  
 4337 8585 4339 8581 4341 8581 43

\$\$

MIC123-152000-  
 /O.NEW.KGRR.FL.Y.0075.180414T1801Z-180420T1800Z/  
 /CROM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
 201 PM EDT Sat Apr 14 2018

The National Weather Service in Grand Rapids has issued a  
 \* Flood Advisory for  
 the Muskegon River Near Croton.  
 \* until Friday afternoon.  
 \* At 01 PM Saturday the stage was 8.3 feet.  
 \* Bankfull stage is 8.0 feet.  
 \* Flood stage is 9.0 feet.  
 \* Forecast, the river will rise to near 8.4 feet by this afternoon.  
 \* Impact, at 8.0 feet...River is bankfull. River begins to exceed its banks and minor flooding begins in low lying areas along the river.

&&

LAT...LON 4335 8604 4345 8582 4346 8570 4342 8562  
 4338 8578 4328 8604

\$\$

**9.3 Example #3 - Flood Advisory for Multiple Forecast Points: Extension.** Situation – Elevated streamflow continues across Southwest Lower Michigan basins in response to heavy rain. The forecaster decides continue or extend the flood advisory at the six remaining forecast points and issue a flood advisory for three new forecast points.

WGUS83 KGRR 150116  
 FLSGRR

Flood Advisory  
 National Weather Service Grand Rapids MI  
 916 PM EDT Sat Apr 14 2018

...The flood advisory continues for the following rivers in Southwest Lower Michigan...

Looking Glass River Near Eagle affecting Clinton County  
Muskegon River Near Croton affecting Newaygo County  
Grand River At Ionia affecting Ionia County  
Sycamore Creek At Holt affecting Ingham County  
Maple River At Maple Rapids affecting Clinton County  
Thornapple River Above Hastings affecting Barry County

...The National Weather Service in Grand Rapids has issued a flood advisory for the following rivers in Southwest Lower Michigan...

Grand River At Lowell affecting Kent County  
Muskegon River At Evart affecting Osceola County  
Chippewa River Below Mt Pleasant affecting Isabella County

.Generally 1 to 2 inches of rain with locally higher amounts are expected into next week across the region. Rises are expected on area rivers with levels expected to reach flood stage on several rivers.

The following forecast is based on observed and forecast 24 hour precipitation.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Safety message...Caution is urged when walking near riverbanks.

A flood advisory means minor flooding is possible and rivers are forecast to exceed bankfull. If you are in the advisory area remain alert to possible flooding...or the possibility of the advisory being upgraded to a warning. Report observed flooding to local emergency services or law enforcement and request they pass this information on to the National Weather Service.

Stay tuned to further developments by listening to your local radio... television... or NOAA Weather Radio station for further information.

&&

MIC133-160316-  
/O.NEW.KGRR.FL.Y.0076.180415T0116Z-180416T1315Z/  
/EVRM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
916 PM EDT Sat Apr 14 2018

The National Weather Service in Grand Rapids has issued a

- \* Flood Advisory for  
the Muskegon River At Evart.
- \* until Monday morning.
- \* At 08 PM Saturday the stage was 9.6 feet.
- \* Bankfull stage is 10.0 feet.
- \* Flood stage is 12.0 feet.
- \* Forecast, the river will rise to near 10.8 feet by early Tuesday morning.
- \* Impact, at 11.0 feet...Over a dozen homes are surrounded by water in the Jeffery subdivision. Portions of Linden Road, Riverside Road, and Muskegon Trail begin to be covered by water. High water also begins to surround several homes in the Doc and Tom

subdivision along Trout Road which is located off of 9 mile road,  
east of M66.

&&

LAT...LON 4390 8537 4395 8527 4398 8515 4391 8515  
4387 8523 4384 8532

\$\$

MIC123-160315-  
/O.EXT.KGRR.FL.Y.0075.000000T0000Z-000000T0000Z/  
/CROM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
916 PM EDT Sat Apr 14 2018

The Flood Advisory is extended for  
the Muskegon River Near Croton  
\* until further notice.  
\* At 08 PM Saturday the stage was 8.3 feet.  
\* Bankfull stage is 8.0 feet.  
\* Flood stage is 9.0 feet.  
\* Forecast, the river will rise to near 8.4 feet by tomorrow morning.  
\* Impact, at 8.0 feet...River is bankfull. River begins to exceed its  
banks and minor flooding begins in low lying areas along the river.

&&

LAT...LON 4335 8604 4345 8582 4346 8570 4342 8562  
4338 8578 4328 8604

\$\$

MIC067-160315-  
/O.CON.KGRR.FL.Y.0067.000000T0000Z-000000T0000Z/  
/IONM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
916 PM EDT Sat Apr 14 2018

The Flood Advisory continues for  
the Grand River At Ionia  
\* until further notice.  
\* At 08 PM Saturday the stage was 12.6 feet.  
\* Bankfull stage is 13.5 feet.  
\* Flood stage is 21.0 feet.  
\* Forecast, the river will rise to near 18.5 feet by Thursday  
morning.  
\* Impact, at 18.0 feet...Water surrounds automobile building at Ionia  
Fairgrounds.

&&

LAT...LON 4297 8524 4303 8488 4296 8499 4290 8521

\$\$

MIC081-160315-  
/O.NEW.KGRR.FL.Y.0077.180415T0116Z-000000T0000Z/

/LWLM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
916 PM EDT Sat Apr 14 2018

The National Weather Service in Grand Rapids has issued a  
\* Flood Advisory for  
the Grand River At Lowell.  
\* until further notice.  
\* There is not current observed data.  
\* Bankfull stage is 10.0 feet.  
\* Flood stage is 15.0 feet.  
\* Forecast, the river will rise to near 12.0 feet early Friday  
morning.  
\* Impact, at 10.0 feet...River is bankfull. Expect flooding of low  
lying areas adjacent to the banks.

&&

LAT...LON 4298 8541 4296 8534 4297 8524 4290 8521  
4289 8534 4289 8548

\$\$

MIC065-160315-  
/O.CON.KGRR.FL.Y.0068.000000T0000Z-180420T1800Z/  
/HHTM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
916 PM EDT Sat Apr 14 2018

The Flood Advisory continues for  
the Sycamore Creek At Holt  
\* until Friday afternoon.  
\* There is not current observed data.  
\* Bankfull stage is 6.0 feet.  
\* Flood stage is 8.0 feet.  
\* Forecast, the river will rise to near 7.9 feet early Monday  
morning.  
\* Impact, at 8.0 feet...Expect minor flooding of low lying areas  
adjacent to the river, in the Lansing Municipal Golf Course and  
sections of East Mt. Hope Road.

&&

LAT...LON 4271 8451 4268 8449 4264 8445 4264 8451  
4268 8455 4271 8455

\$\$

MIC037-160315-  
/O.EXT.KGRR.FL.Y.0069.000000T0000Z-000000T0000Z/  
/EAGM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
916 PM EDT Sat Apr 14 2018

The Flood Advisory is extended for  
the Looking Glass River Near Eagle  
\* until further notice.  
\* At 08 PM Saturday the stage was 5.8 feet.  
\* Bankfull stage is 5.0 feet.  
\* Flood stage is 7.0 feet.

\* Forecast, the river will rise to near 6.5 feet by Tuesday morning.  
\* Impact, at 7.0 feet...Expect minor flooding of homes in Dewitt and  
along the river between Dewitt and Eagle. Flooding occurs in  
Riverside Park in Dewitt and Looking Glass Valley Park in Wacousta.

&&

LAT...LON 4290 8489 4286 8474 4287 8455 4281 8455  
4279 8474 4283 8489

\$\$

MIC037-160315-  
/O.CON.KGRR.FL.Y.0070.000000T0000Z-000000T0000Z/  
/MRPM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
916 PM EDT Sat Apr 14 2018

The Flood Advisory continues for  
the Maple River At Maple Rapids  
\* until further notice.  
\* At 08 PM Saturday the stage was 5.8 feet.  
\* Bankfull stage is 7.0 feet.  
\* Flood stage is 9.0 feet.  
\* Forecast, the river will rise to near 8.8 feet by Tuesday evening.  
\* Impact, at 9.0 feet...Expect minor flooding of County Line Road and  
a home along County Line Road.

&&

LAT...LON 4302 8495 4314 8471 4317 8456 4310 8457  
4308 8468 4298 8493

\$\$

MIC015-160315-  
/O.CON.KGRR.FL.Y.0071.000000T0000Z-000000T0000Z/  
/HSTM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
916 PM EDT Sat Apr 14 2018

The Flood Advisory continues for  
the Thornapple River Above Hastings  
\* until further notice.  
\* At 08 PM Saturday the stage was 4.1 feet.  
\* Bankfull stage is 5.0 feet.  
\* Flood stage is 7.0 feet.  
\* Forecast, the river will rise to near 6.2 feet by Wednesday  
evening.  
\* Impact, at 7.0 feet...Expect minor flooding of Tyden Park in  
Hastings, and homes upstream and downstream of Hastings.

&&

LAT...LON 4273 8541 4265 8524 4266 8517 4260 8516  
4259 8523 4268 8550

\$\$

MIC073-160315-  
 /O.NEW.KGRR.FL.Y.0078.180415T0116Z-000000T0000Z/  
 /MPTM4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
 916 PM EDT Sat Apr 14 2018

The National Weather Service in Grand Rapids has issued a  
 \* Flood Advisory for  
 the Chippewa River Below Mt Pleasant.  
 \* until further notice.  
 \* At 08 PM Saturday the stage was 5.6 feet.  
 \* Bankfull stage is 6.0 feet.  
 \* Flood stage is 8.0 feet.  
 \* Forecast, the river will rise to near 6.4 feet by early Saturday  
 morning.  
 \* Impact, at 6.0 feet...River is bankfull. Expect minor flooding of  
 low lying areas adjacent to the river including portions of the  
 Mount Pleasant Country Club Golf Course.

&&

LAT...LON 4362 8485 4367 8475 4366 8461 4358 8461  
 4360 8472 4356 8480

\$\$

## 10. Hydrologic Statement (RVS).

### 10.1 Example #1 - Information on Notable River Conditions at a Forecast Point.

Situation – Flow on the Pit River has been rising, but is expected to crest below flood stage. The forecaster issues a hydrologic statement to update the current and near-term forecast for the river at the town of Canby. A forecaster could choose to issue a Flood Advisory for Forecast Points (FLS – FL.Y) in such situations, if it was necessary for the product to be disseminated over NOAA Weather Radio. However, the river is forecast to crest just below flood stage and using the Hydrologic Statement (RVS) provides sufficient notification through NOAA Weather Wire and the Internet. Regional and local WFO policies ultimately determine which type of product is issued for near-flood stage situations.

FGUS86 KMFR 150223  
 RVSMFR

CAC049-160222-  
 Hydrologic Statement  
 National Weather Service Medford, OR  
 623 PM PST Thu Feb 14 2019

...Pit River...

.As of 445 PM PST the Pit River at Canby was at 4.83 feet. Action stage is 7.5 feet and minor flood stage is 8.5 feet. The river is expected to continue to rise into Friday morning and is forecast to crest at 8.2 feet, in action stage, between 7 AM PST and 3 PM PST Friday.

For the latest river stages and forecasts, visit our web page at

www.weather.gov/medford or listen to NOAA Weather Radio.

\$\$

**10.2 Example #2 - Elevated River Levels Caused By Ice Jam.** This example illustrates how the information could be provided in a hydrologic statement using a non-bulleted format. The hydrologic statement could be used for this type of elevated streamflow situation, if it was not necessary for the product to be disseminated over NOAA Weather Radio--All Hazards, and it was believed that NOAA Weather Wire and the Internet would be sufficient to get the information to need-to-know officials.

FGUS81 KGYX 240730  
RVSGYX  
NHC009-241930-  
Hydrologic Statement  
National Weather Service Gray ME  
230 AM EST Wed Jan 24 2018

...Ice movement on the Pemigewasset at Plymouth...

At 2am river gauge data indicated ice movement on the Pemigewasset River at Plymouth. Recent rainfall is expected to result in continuing river rises overnight before cresting Wednesday morning. This rise may result in further ice movement with ice jams possible. Ice jams are unpredictable; river levels may fluctuate rapidly.

Keep away from the river, especially at night when it is harder to recognize flooding. Report any flooding to the National Weather Service when safe to do so.

\$\$

## **11. Hydrologic Summary (RVA).**

### **11.1 Example #1 - Report for Rivers and Creeks in Hydrologic Service Area.**

SRUS43 KICT 251418  
RVAICT  
KSC001-009-015-017-019-035-049-053-073-077-079-095-099-105-113-115-  
125-133-155-159-167-169-173-191-205-207-261417-

Hydrologic Summary  
National Weather Service Wichita KS  
918 AM CDT Mon Mar 25 2019

Station	Flood Stage	Stage Height	24-HR Change	Day Time
COWSKIN CREEK				
Wichita 29TH ST N	20	10.81	-0.01	Mon 08 AM
Wichita 119TH ST W	18	7.39	0.01	Mon 08 AM
Wichita Kellogg ST	ND	7.49	-0.01	Mon 08 AM



CALFSKIN CREEK					
Wichita 119TH ST W	11	4.90	-0.05	Mon 09 AM	
WALNUT CREEK					
Albert	24	5.10	-0.18	Mon 09 AM	
ARKANSAS RIVER					
Great Bend	12	1.90	-0.05	Mon 09 AM	
Nickerson	ND	10.96	-0.10	Mon 08 AM	
Haven 3N	10	3.61	-0.06	Mon 08 AM	
Maize 4E	ND	6.44	-0.09	Mon 08 AM	
Wichita	12	4.82	-0.07	Mon 09 AM	
Derby	12	2.45	-0.08	Mon 09 AM	
Mulvane	16.5	7.44	-0.05	Mon 08 AM	
Oxford	17	9.57	-0.01	Mon 09 AM	
Arkansas City	11	5.21	-0.32	Mon 09 AM	
COW CREEK					
Lyons 3S	18	8.07	-0.06	Mon 08 AM	
Hutchinson 7NW	9.5	4.99	-0.04	Mon 08 AM	
EMMA CREEK					
Sedgwick 5N	19	-0.70	-0.04	Mon 08 AM	
LITTLE ARKANSAS RIVER					
Alta Mills	22	1.54	-0.06	Mon 08 AM	
Halstead	25	6.56	-0.03	Mon 08 AM	
Sedgwick	22	3.69	0.13	Mon 08 AM	
Valley Center	19	2.15	0.11	Mon 08 AM	
WHITEWATER RIVER					
Towanda 1W	22	2.43	-0.02	Mon 08 AM	
Augusta	21	4.52	0.00	Mon 08 AM	
WEST BRANCH WALNUT RIVER					
El Dorado	21	6.06	-0.01	Mon 08 AM	
WALNUT RIVER					
El Dorado	19	2.26	-0.02	Mon 09 AM	
Augusta	23	5.95	-0.04	Mon 09 AM	
Winfield	18	3.10	-0.10	Mon 09 AM	
Arkansas City	18	4.60	-0.27	Mon 08 AM	
N FK NINNESCAH RIVER					
Castleton	9	7.17	-0.11	Mon 08 AM	
S FK NINNESCAH RIVER					
Murdock 4SW	8	4.43	-0.08	Mon 09 AM	
NINNESCAH RIVER					
Peck 3WSW	17	4.40	-0.17	Mon 09 AM	
SLATE CREEK					
Wellington	19	4.32	-0.01	Mon 09 AM	
CHIKASKIA RIVER					

**NWSM 10-923 NOVEMBER 29, 2019**

Corbin 3W	10	2.95	-0.02	Mon 08 AM
COTTONWOOD RIVER				
Bel. Marion Lake	18	5.53	-0.01	Mon 08 AM
At Marion	16	5.64	-0.02	Mon 08 AM
Florence 3E	22	3.82	0.00	Mon 08 AM
Plymouth 1SW	32	5.89	-0.10	Mon 09 AM
CEDAR CREEK				
Cedar Point	21	4.62	-0.03	Mon 08 AM
NEOSHO RIVER				
Iola 3SW	15	8.28	-0.02	Mon 08 AM
Chanute 3N	23	10.28	-0.07	Mon 08 AM
Erie 2SW	29	13.62	-0.20	Mon 08 AM
Parsons 8E	21	9.83	-1.61	Mon 08 AM
VERDIGRIS RIVER				
Virgil 1W	ND	7.98	-0.04	Mon 09 AM
Coyville	34	3.42	-0.01	Mon 08 AM
Altoona	19	4.19	-0.01	Mon 09 AM
Neodesha	ND	11.87	-0.02	Mon 08 AM
Independence 2E	30	8.32	-0.16	Mon 09 AM
OTTER CREEK				
Climax	20	2.16	-0.06	Mon 08 AM
FALL RIVER				
Fredonia 1S	17	6.17	-0.03	Mon 09 AM
ELK RIVER				
Elk Falls	21	3.37	-0.04	Mon 09 AM
BIG HILL CREEK				
Cherryvale 5ESE	15	3.66	-0.04	Mon 08 AM
CANEY RIVER				
Cedar Vale 1E	28	11.08	-0.05	Mon 09 AM
Elgin 2W	25	2.34	-0.02	Mon 09 AM
MIDDLE CANEY				
Sedan	15	5.43	-0.01	Mon 09 AM
PARADISE CREEK				
Paradise	14	9.86	-0.05	Mon 08 AM
SALINE RIVER				
Russell 5N	18	6.90	-0.04	Mon 08 AM
Lincoln	30	20.00	-0.19	Mon 09 AM
MULBERRY CREEK				
Salina	24	4.50	-0.01	Mon 09 AM
SMOKY HILL RIVER				
Russell 8S	18	5.26	-0.07	Mon 08 AM
Ellsworth	20	3.69	-0.10	Mon 08 AM
Lindsborg	21	12.26	-1.12	Mon 08 AM

Mentor	20	9.97	-0.07	Mon 09 AM
New Cambria 1SE	27	14.45	-0.06	Mon 09 AM

\$\$

## 12. River and Lake Forecast Product (RVD).

### 12.1 Example #1 - Lake Sites (in SHEF).

FGUS54 KLUB 261216  
 RVDLUB  
 TXC045-075-169-263-270016-  
 Daily River and Lake Summary  
 National Weather Service Lubbock TX  
 716 AM CDT Tue Mar 26 2019

```
.B LUB 0326 DC201903260716 DH12/HP/
:
:RESERVOIR/LAKE SITES
:
:          6AM
: STATION   NORMAL  POOL    24-HR
: ID  NAME   POOL    ELEV.   CHANGE
:
MKZT2 :Mackenzie Lake      3100: 3021.33/: -0.01:
CWRT2 :White River Lake    2370: 2348.75/: -0.01:
LHPT2 :Lake Alan Henry     2220: 2214.22/: -0.01:
:
.END
```

### 12.2 Example #2 - River and Lake Sites.

FGUS51 KLWX 251442  
 RVDLWX  
 DCC001-MDC001-021-023-031-043-VAC013-015-043-047-059-061-069-  
 079-099-107-113-137-139-153-157-165-171-177-179-187-510-600-  
 610-630-660-683-685-790-820-840-WVC003-023-027-031-037-057-  
 065-071-261800-

Daily River and Lake Summary  
 National Weather Service Baltimore MD/Washington DC  
 1042 AM EDT Mon Mar 25 2019

Since Sunday morning, little to no precipitation has been observed across the area. Some light rain is expected Monday afternoon through Monday evening. Precipitation totals will range from less than a tenth of an inch in the DC Metro area, to between a quarter and a half of an inch in western Maryland. No additional rainfall is expected Tuesday through Thursday. River levels are forecast to rise slightly through Tuesday morning, before falling back again through Thursday.

```
.BR LWX 0325 E DC201903251031 DH07/HG/DRH+24/HGIFF/DRH+48/HGIFF/
.B1 DRH+72/HGIFF
:
: Station          Flood  7AM    24 hr        7AM
```

: ID	Name	Stage	Stage Change	Forecasts		
:	:	:	:	Tue	Wed	Thu
:...POTOMAC RIVER BASIN...						
:North Branch Potomac River						
KITM2	:Kitzmiller	9.0:	3.4/: -0.1:	3.9 /	3.6 /	3.5 /
LUKM2	:Luke	10.5:	2.4/: -0.1:	2.5 /	2.4 /	2.4 /
CBEM2	:Cumberland	17.0:	3.6/: -0.1:	4.3 /	3.9 /	3.7 /
:South Branch Potomac River						
FKLW2	:Franklin	7.0:	2.4/: -0.0:	2.8 /	2.6 /	2.4 /
PETW2	:Petersburg	14.0:	4.8/: -0.1:	5.4 /	5.0 /	5.0 /
SPRW2	:Springfield	15.0:	3.1/: -0.2:	3.6 /	3.7 /	3.3 /
:South Fork South Branch Potomac River						
MOFW2	:Moorefield	10.0:	3.6/: -0.0:	4.0 /	3.7 /	3.6 /
:Potomac River						
PAWW2	:Paw Paw	25.0:	7.7/: -0.3:	8.4 /	8.5 /	7.8 /
HNKM2	:Hancock	30.0:	6.6/: -0.4:	6.8 /	7.6 /	6.9 /
SHEW2	:Shepherdstown	15.0:	6.3/: -0.9:	6.2 /	6.9 /	6.3 /
HFEW2	:Harpers Ferry	18.0:	7.2/: -1.0:	6.8 /	7.1 /	6.7 /
PORM2	:Point of Rocks	16.0:	6.8/: -1.3:	6.3 /	6.5 /	6.3 /
EDFM2	:Edwards Ferry	15.0:	9.7/: -1.4:	9.2 /	9.3 /	9.1 /
BRKM2	:Little Falls	10.0:	5.9/: -0.8:	5.6 /	5.6 /	5.5 /
:Wills Creek						
CWCM2	:Cumberland	10.0:	3.5/: -0.0:	3.9 /	3.6 /	3.4 /
:Cacapon River						
GCPW2	:Great Cacapon	9.0:	4.0/: -0.5:	4.5 /	4.1 /	3.7 /
:Conococheague Creek						
FAVM2	:Fairview	10.0:	4.9/: -0.6:	5.3 /	4.9 /	4.5 /
:Opequon Creek						
MBGW2	:Martinsburg	10.0:	4.5/: -0.5:	5.5 /	4.5 /	4.0 /
:Antietam Creek						
SACM2	:Sharpsburg	8.0:	4.4/: -0.3:	4.4 /	4.3 /	4.1 /
:Monocacy River						
FDKM2	:Frederick	15.0:	5.2/: -0.7:	6.0 /	4.9 /	4.2 /
:Goose Creek						
LEEV2	:Leesburg	12.0:	3.2/: -0.3:	3.5 /	3.1 /	2.9 /
:Seneca Creek						
DAWM2	:Dawsonville	7.5:	2.9/: -0.1:	3.2 /	2.8 /	2.8 /
:						
:...SHENANDOAH RIVER BASIN...						
:South River						
WAYV2	:Waynesboro	9.5:	3.7/: -0.2:	3.8 /	3.6 /	3.5 /
:South Fork Shenandoah River						
LYWV2	:Lynnwood	16.0:	4.8/: -0.4:	4.8 /	4.6 /	4.3 /
SFSV2	:Luray	14.0:	5.1/: -0.5:	4.9 /	4.9 /	4.6 /
FROV2	:Front Royal	12.0:	4.3/: -0.6:	4.1 /	3.9 /	3.7 /
:North Fork Shenandoah River						
COOV2	:Cootes Store	15.0:	4.1/: -0.1:	4.5 /	4.1 /	3.9 /
STGV2	:Strasburg	17.0:	4.0/: -0.3:	4.0 /	4.1 /	3.7 /
:Shenandoah River						
MILW2	:Millville	10.0:	6.2/: -0.9:	5.8 /	5.6 /	5.4 /
:						
:...RAPPAHANNOCK RIVER BASIN...						
:Rappahannock River						
RENV2	:Remington	15.0:	5.9/: -0.5:	5.8 /	5.2 /	5.0 /
FDBV2	:Fredericksburg	13.0:	3.9/: -0.4:	3.8 /	3.6 /	3.5 /
:Rapidan River						
CLPV2	:Culpeper	13.0:	2.6/: -0.2:	2.6 /	2.4 /	2.2 /

.END

```
.BR LWX 0325 ES DH07/TW
:   Morning Water Temperatures
:Potomac River
BNMW2 :Barnum WV      :    41
SPRW2 :Springfield WV :    46
PDFM2 :Dam Number Five MD:  46
WLLM2 :Williamsport MD :    46
HFEW2 :Harpers Ferry WV :    46
DCKM2 :Dickerson MD   :    47
BRKM2 :Little Falls MD :    47
WASD2 :Washington DC  :    49
NCDV2 :Dahlgren VA    :    M
MGTM2 :Morgantown MD   :    48
LWTV2 :Lewisetta VA   :    48
:Cacapon River
GCPW2 :Great Cacapon WV :    45
:Rappahannock River
FDBV2 :Fredericksburg VA :   48
:Patuxent River
SLIM2 :Solomons Island MD:   47
:NW Branch Patapsco River
JFTM2 :Inner Harbor MD  :   48
BLTM2 :Fort McHenry MD  :   47
:Anacostia River
ACOM2 :Hyattsville MD   :   48
RVDM2 :Riverdale MD     :   49
BPAD2 :Buzzard Point DC  :   47
:
.END
```

Water conditions above Harpers Ferry are muddy.

These forecasts do not take into account fluctuations caused by changes in reservoir releases. Forecasts include all precipitation through 8am today, plus the effects of projected precipitation through the following 72 hours.

During periods of high water or flooding...crest forecast updates can be obtained in river flood warnings (WBCFLWLWX) and river flood statements (WBCFLSLWX). Updated hydrologic information can also be obtained from our web page at <http://weather.gov/washington>

\$\$

### 13. **Hydrometeorological Data Summary (HYx).**

#### 13.1 **Example #1 - Daily Summary (HYD).**

```
SXUS52 KCHS 251413
HYDCHS
GAZ087-088-099>101-114>119-137>141-SCZ040-042>045-047>052-
260212-
```

Charleston Area Temperatures and Precipitation

National Weather Service Charleston SC  
1013 AM EDT Mon Mar 25 2019

.B CHS 0325 E DH08/TX/TN/TA/PPP/TSIRZX/TSIRZN

:

:MAX..High Temperature Last 24 HRS      MIN..Low Temperature Last 24 HRS

:CUR..Current Temperature                      PCPN..Precipitation Last 24 HRS

:M Indicates Missing Data

:

:

STATION	AIR TEMP			
	MAX	MIN	CUR	PCPN

:

:...SOUTHEAST SOUTH CAROLINA...

:

:Ace Basin RAWS	:ABRS1	71/	53/	59/	0.00	/
:Allendale Airport	:AQX	77/	39/	55/		/
:Beaufort Airport	:ARW	72/	48/	61/		/
:Beaufort MCAS	:NBC	73/	50/	63/	0.00	/
:Beaufort WxFlow	:XBUF	69/	54/	61/		/
:Bennetts Point NERRS	:ACXS1	72/	47/	59/	0.00	/
:Calibogue Sound WxFlow	:XCLB	67/	60/	62/		/
:Charleston Airport	:CHS	73/	42/	58/	0.00	/
:Charleston Downtown	:CHLS1	68/	53/	62/	0.00	/
:Charleston WxFlow	:XCHA	69/	50/	62/		/
:Elba Island	:ELBS1	67/	55/	62/	0.00	/
:Folly Beach WxFlow	:XFOL	62/	56/	61/		/
:Fort Sumter Wxflow	:XSUM	64/	54/	63/		/
:Hilton Head Airport	:HXD	70/	52/	61/		/
:Isle of Palms WxFlow	:XIOP	63/	53/	61/		/
:Jamestown	:JAMS1	77/	36/	52/	0.00	/
:Johns Island Airport	:JZI	70/	43/	57/		/
:McClellanville 7 NE	:SRES1	69/	44/	62/	0.00	/
:Moncks Corner Airport	:MKS	73/	39/	59/		/
:Mt Pleasant Airport	:LRO	70/	43/	63/		/
:Pinopolis	:PNOS1	73/	46/	62/		/
:Savannah RAWS	:SVNS1	73/	52/	60/	0.00	/
:Shutes Folly WxFlow	:XSHF	65/	54/	64/		/
:Sullivans Island	:SULS1	M/	M/	M/	M	/
:Summerville 4 W	:SMVS1	74/	39/	58/	0.00	/
:Summerville Airport	:DYB	73/	37/	57/		/
:Walterboro 1 SW	:WTRS1	74/	50/	51/	0.00	/
:Walterboro Airport	:RBW	73/	37/	52/		/
:Walterboro RAWS	:WTBS1	77/	40/	53/	0.00	/
:Wambaw RAWS	:WMBS1	75/	42/	52/	0.00	/
:Witherbee RAWS	:WTHS1	77/	38/	53/	0.00	/
:Youmans Farm	:YMFS1	M/	M/	M/	M	/

:

:...SOUTHEAST GEORGIA...

:

:Brooklet 1 W	:BRKG1	78/	53/	55/	0.00	/
:Claxton Airport	:CWV	77/	42/	53/		/
:Darlen 7 NNE	:MERG1	76/	58/	60/	0.00	/
:Fort Pulaski	:FPKG1	64/	58/	61/	0.00	/
:Ft Stewart Glisson Pond	:FSGG1	80/	45/	55/	0.00	/
:Ft Stewart Lawson	:FSLG1	76/	45/	53/	0.00	/
:Ft Stewart Pembroke	:FSPG1	78/	42/	54/	0.00	/
:Ft Stewart Richmond Hill	:FSRG1	76/	44/	54/	0.00	/

```

:Ft Stewart Taylors Creek:FSTG1    78/  43/  54/  0.00 /
:Hinesville Airport       :LHW     76/  45/  60/  0.00 /
:Hunter Army Airfield     :SVN     73/  49/  58/  0.00 /
:Hutchinson Island        :SVDG1    70/  52/  62/  0.00 /
:Metter RAWS              :MTFG1    79/  43/  54/  0.00 /
:Midway RAWS              :MDWG1    75/  45/  56/  0.00 /
:Millen Airport           :2J5     78/  42/  54/    /
:Richmond Hill 3 NE       :RICG1    72/  48/  56/  0.00 /
:Rincon 6 SE              :ACMG1    71/  48/  57/  0.00 /
:Rocky Ford 4 SE          :RCFG1    76/  41/  54/  0.00 /
:Sapelo Island            :SPIG1    73/  58/  61/  0.00 /
:Sapelo Island NERRS      :SAXG1    73/  58/  61/  0.00 /
:Savannah Airport        :SAV     76/  47/  59/  0.00 /
:Statesboro Airport       :TBR     77/  41/  52/    /
:Sylvania Airport         :JYL     78/  41/  55/    /
:Tybee North WxFlow       :XTYB    67/  60/  62/    /
:Tybee South WxFlow       :XTYE    66/  61/  63/    /

```

.END

:

...PRECIPITATION ONLY STATIONS...

:

.B CHS 0325 E DH08/PPP

:

: USGS STATIONS - SOUTHEAST SOUTH CAROLINA

:

```

:Limehouse 4 SW           :FWDS1    0.00 /
:Huger 3 NNE              :HUGS1    0.00 /
:Limehouse 3 SW           :LUCS1    0.00 /

```

:

: USGS STATIONS - SOUTHEAST GEORGIA

:

```

:Rincon 4 SE              :ACRG1    0.00 /
:Burtons Ferry            :BFYG1    0.00 /
:Blitchton 4 WSW          :BLIG1    0.00 /
:Hilltonia 4 N            :BRIG1    0.00 /
:Doctortown               :DCTG1    0.00 /
:Eden                     :EDEG1    0.00 /
:Ellabell 7 SE            :ELLG1    0.00 /
:Fort Pulaski             :FTPG1    0.00 /
:Richmond Hill 9 WNW      :FSBG1    0.00 /
:Midville                 :MDVG1    0.00 /
:McIntosh                 :MTHG1    0.00 /
:Oliver 1 SW              :OLVG1    0.00 /
:Port Wentworth 6 N       :PTWG1    0.00 /
:Port Wentworth 2 ESE     :PWMG1    0.00 /
:Port Wentworth           :PWNG1    0.00 /
:Reidsville               :REDG1    0.00 /
:Rocky Ford 1 SW          :RFDG1    0.00 /
:Sardis                   :SARG1    0.00 /

```

:

: MESONET STATIONS - SOUTHEAST SOUTH CAROLINA

:

```

:West Ashley - Church Creek :BEES1    0.00 /
:Mt Pleasant - Waterfront Park :MWPS1    0.00 /
:Mt Pleasant - Rathall Creek :RHCS1    0.00 /

```

:

.END

\$\$

### 13.2 Example #2 - Monthly Summary (HYM).

CSUS46 KMTR 141224

HYMMTR

Monthly Precipitation SF Bay Area and Central Coast  
February 2019

.BR MTR 20190228 P DH24/PPM

ANGC1	20.21	:	Angwin Pacific Union College
BISC1	25.34	:	Big Sur State Park
FORC1	18.54	:	Fort Ross
KICC1	4.77	:	King City
MHMC1	11.57	:	Mount Hamilton
NSHC1	9.87	:	Napa State Hospital
PANC1	5.06	:	Panoche 2W
SFOC1	7.94	:	San Francisco Downtown
SJC	5.61	:	San Jose Intl Airport
SCRC1	11.00	:	Santa Cruz
WVIC1	7.38	:	Watsonville Waterworks
.END			