

**NATIONAL WEATHER SERVICE MANUAL 10-923**  
**JULY 17, 2007**

**Operations and Services**  
**Hydrologic Services Program, NWSPD 10-9**

**WEATHER FORECAST OFFICE HYDROLOGIC PRODUCT EXAMPLES**

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

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**OPR:** W/OS31 (T. Helble)  
**Type of Issuance:** Routine.

**Certified by:** W/OS3 (T. Graziano)

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**SUMMARY OF REVISIONS:** This directive supersedes NWS Manual 10-923, dated July 11, 2006. The following revisions were made to this manual:

- 1) Removes the green font from examples in section 4 (Flood Watch for Forecast Points [FFA]), section 6 (Flood Warning for Forecast Points [FLW] and Associated Follow-up Products [FLS]), and section 9 (Flood Advisory for Forecast Points [FLS]). VTEC is now operational for the products covered in these sections.
- 2) To identify text pertaining to VTEC which will be implemented at a later date, continues using a green font in section 5 (Flash Flood Warning [FFW] and Associated Follow-up Products [FFS]), section 7 (Areal Flood Warning [FLW] and Associated Follow-up Products [FLS]), and section 8 (Areal Advisories [FLS]).
- 3) Corrects MND product type line for the four examples of areal advisories in section 8 and the three examples of flood advisories for forecast points in section 9 to read “FLOOD ADVISORY.” This brings MND product type lines shown in the areal and point-specific flood advisory examples into conformity with sections 11.3.5 and 12.3.5 of NWSI 10-922.
- 4) To reflect the current practice, adds ellipsis (...) to the end of the first bullet in Flash Flood Warnings, Areal Flood Warnings, and Flood Statement - Areal Advisories.
- 5) To reflect the current practice, adds periods to the end of the third and fourth bullets in Flash Flood Warnings, Areal Flood Warnings, and Flood Statement - Areal Advisories.
- 6) To be consistent with the change in NWSI 10-922, deletes the example of point-specific forecast bullets at the end of a flash flood warning in Section 5.8. Now, only the follow-up flash flood statement example in Section 5.9 contains point-specific information.
- 7) To reflect the current practice, adds periods to the end of appropriate bullets in examples of Flood Warnings for Forecast Points, Flood Statements – Follow up to Flood Warning for Forecast Points, Flood Watches for Forecast Points, and Flood Advisories for Forecast Points.
- 8) Begins call-to-action statements located at the top of examples of Flood Warnings for Forecast Points and Flood Statements – Follow-up to Flood Warning for Forecast Points with the words “SAFETY MESSAGE...”



**Weather Forecast Office Hydrologic Product Examples**

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**1. Introduction.** This directive provides examples of weather forecast office (WFO) hydrologic products described in [NWS Instruction 10-922, \*Weather Forecast Office Hydrologic Products Specification\*](#). Some WFO hydrologic 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 hydrologic 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 Springfield, Missouri describes the flood potential in the three to five day time frame.

FGUS73 KSGF 102135  
ESFSGF  
MOC055-056-058-060>062-110400-

HYDROLOGIC OUTLOOK  
NATIONAL WEATHER SERVICE SPRINGFIELD MO  
335 PM CST FRI DEC 10 1999

...ANOTHER HEAVY RAINMAKER TO HIT THE OZARKS COULD PRODUCE FLOODING  
EARLY NEXT WEEK...

OVER THE PAST COUPLE OF WEEKS...SIGNIFICANT RAINFALL HAS FALLEN  
ACROSS THE OZARKS. AS A RESULT...MOST OF SOUTHWEST MISSOURI IS ALMOST  
BACK TO NORMAL RAINFALL...AND IN SOME CASES ABOVE NORMAL. THROUGH  
DECEMBER 10...SPRINGFIELD HAS RECEIVED 6.84 INCHES AND MANY AREAS  
OF THE OZARKS HAVE RECEIVED MORE THAN EIGHT INCHES. THE NORMAL  
RAINFALL FOR SPRINGFIELD IN DECEMBER IS 3.16 INCHES.

BEGINNING MONDAY AND EARLY TUESDAY...THE OZARKS WILL RECEIVE ANOTHER  
SOAKING RAIN. CURRENT WEATHER MODELS INDICATE A STORM TRACK ACROSS  
NORTHERN ARKANSAS AND SOUTHERN MISSOURI...BASICALLY THE SAME TRACK  
TAKEN BY THE RECENT STORMS. THIS MEANS ABUNDANT GULF MOISTURE WILL  
BE PULLED INTO THE STORM AND DEPOSIT UPWARDS OF ONE TO TWO INCHES  
ACROSS MOST SECTIONS OF SOUTHERN MISSOURI.

FLOODING MAY OCCUR BECAUSE THE GROUND IS SATURATED FROM RECENT  
RAINS. LOW WATER CROSSINGS AND SMALL STREAMS COULD SWELL TO SMALL  
RAGING STREAMS OF WATER. RIVERS...MAINLY ACROSS SOUTHERN MISSOURI...  
COULD RISE CLOSE TO OR ABOVE FLOOD STAGE BY NEXT TUESDAY.

THE HAZARDOUS WEATHER OUTLOOK PRODUCT WILL BE UPDATED WITH THE LATEST  
INFORMATION THROUGHOUT THE WEEKEND. ANOTHER SOURCE OF CURRENT WEATHER  
INFORMATION FOR SOUTHERN MISSOURI IS THROUGH OUR WEB PAGE AT:  
[WWW.CRH.NOAA.GOV/SGF/](http://WWW.CRH.NOAA.GOV/SGF/).

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**2.2 Example #2 - Spring Flood Outlook (Long Term).** This outlook issued by WFO Bismarck, North Dakota describes the low potential for snowmelt flooding in the entire hydrologic service area.

FGUS73 KBIS 251451

ESFBIS

NDC001-007-011-015-021-025-029-031-033-037-041-043-045-047-051-053-  
055-057-059-065-083-085-087-089-093-103-105-101800-

HYDROLOGIC OUTLOOK

NATIONAL WEATHER SERVICE BISMARCK ND

900 AM CST FRI FEB 25 2005

...SPRING FLOOD AND WATER RESOURCES OUTLOOK NUMBER 1...

THIS OUTLOOK IS FOR FLOOD POTENTIAL FOR WEST AND CENTRAL NORTH DAKOTA AND INCLUDES THE MISSOURI AND JAMES RIVER BASIN DRAINAGE SYSTEMS.

THE RELATIVE ABSENCE OF SNOW ON THE GROUND IN WEST AND CENTRAL NORTH DAKOTA COMBINED WITH BELOW NORMAL FALL MOISTURE CONDITIONS HAS RESULTED IN LITTLE OR NO CHANCE OF FLOODING THIS SNOWMELT SEASON... EVEN IF NORMAL PRECIPITATION FOR THE NEXT FEW WEEKS IS FACTORED IN. WARM TEMPERATURES THIS WINTER HAVE ALREADY PRODUCED LIMITED RUNOFF.

SOIL CONDITIONS IN WESTERN NORTH DAKOTA ARE NORMAL TO BELOW NORMAL WHILE THE EAST HAS NORMAL TO ABOVE NORMAL SOILS.

SNOW DEPTHS IN THE JAMES BASIN GENERALLY RANGE FROM 1 TO 5 INCHES WITH 0.1 TO 0.3 INCHES OF WATER EQUIVALENT. IN THE LAKE SAKAKAWEA REGION...SNOW DEPTHS RANGE FROM 2 TO 4 INCHES AND WATER EQUIVALENTS UP TO 0.4 INCHES. THE REMAINDER OF THE REGION HAS LITTLE OR NO SNOW ON THE GROUND.

RIVERS ARE ICE-COVERED AND FLOWS BELOW AVERAGE AT THE PRESENT TIME. WHEN THEY BEGIN TO BREAK UP, ICE-JAM FORMATION IS ALWAYS A POSSIBILITY.

MOUNTAIN SNOWPACK IN WYOMING AND MONTANA IS 60 TO 80% OF NORMAL.

LINGERING DRYNESS HAS LED TO DROUGHT CONDITIONS ACROSS MOST OF WESTERN NORTH DAKOTA. THE DROUGHT MONITOR HAS DESIGNATED MOST OF THE AREA AS D1...MODERATE DROUGHT WHICH AFFECTS STREAMFLOW...RESERVOIR STORAGE AND LEVELS...AND AGRICULTURE:

[HTTP://WWW.DROUGHT.UNL.EDU/DM/MONITOR.HTML](http://www.drought.unl.edu/dm/monitor.html)

THIS OUTLOOK CONTAINS A GENERALIZED SUMMARY OF SNOWMELT FLOOD POTENTIAL. ABOVE NORMAL FUTURE SNOW ACCUMULATIONS COMBINED WITH HEAVY RAINS AND RAPID MELT WILL INCREASE THE CURRENT FLOOD POTENTIAL WHILE BELOW NORMAL FUTURE PRECIPITATION AND GRADUAL OR INTERMITTENT FREEZING AND THAWING WILL DECREASE THE MAGNITUDE OF THE CURRENT ASSESSMENT.

...ADVANCED HYDROLOGIC PREDICTION SERVICES (AHPS) ENABLE THE NATIONAL WEATHER SERVICE TO PROVIDE LONG-RANGE PROBABILISTIC RIVER OUTLOOKS...

LONG-RANGE PROBABILISTIC OUTLOOK  
VALID FEBRUARY 28, 2005 - MAY 29, 2005

CLIMATE OUTLOOKS FOR NORTH DAKOTA FOR THE MONTH OF MARCH INDICATE NO DEVIATION FROM NORMAL FOR PRECIPITATION AND ABOVE NORMAL TEMPERATURES. FOR THE PERIOD MARCH THROUGH MAY...NO DEVIATION FROM NORMAL IS EXPECTED FOR PRECIPITATION OR TEMPERATURES:

[HTTP://WWW.CPC.NCEP.NOAA.GOV/PRODUCTS/FORECASTS](http://www.cpc.ncep.noaa.gov/products/forecasts)

BELOW IS TABLE 1 WHICH SHOWS THE PROBABILITY OF EXCEEDING FLOOD STAGE. FOR MORE DETAILS SUCH AS CHANCES OF EXCEEDING CERTAIN STAGES AT SPECIFIC LOCATIONS REFER TO TABLE 2.

TABLE 1. CHANCES OF EXCEEDING FLOOD STAGE AT SPECIFIC LOCATIONS IN THE BISMARCK HYDROLOGIC SERVICE AREA.

VALID FEBRUARY 28, 2005 THROUGH MAY 29, 2005

LOCATION -----	FS /FT/ -----	CHANCE EXCEEDING FS -----
LITTLE MUDDY RIVER		
WILLISTON 10NE	10	20%
LITTLE MISSOURI RIVER		
MARMARTH	18	LESS THAN 10%
MEDORA	15	LESS THAN 10%
WATFORD CITY	20	LESS THAN 10%
SPRING CREEK		
ZAP	14	10%
KNIFE RIVER		
MANNING	15	LESS THAN 10%
HAZEN 1S	21	10%
HEART RIVER		
MANDAN 3W	17	LESS THAN 10%
APPLE CREEK		
MENOKEN 6W	15	20%
JAMES RIVER		
GRACE CITY 3W	12	LESS THAN 10%
LAMOURE	14	LESS THAN 10%
LUDDEN 3W	12	20%
PIPESTEM CREEK		
PINGREE 3W	9	LESS THAN 10%

IN TABLE 2 BELOW, THE 90 THROUGH 10 PERCENT COLUMNS GIVE THE CHANCE THE RIVER AT THE GIVEN LOCATION WOULD RISE ABOVE THE INDICATED STAGE LEVELS WITHIN THE NEXT 90 DAYS.

EXAMPLE: THE KNIFE RIVER AT MANNING HAS A FLOOD STAGE OF 15 FEET. IN THE NEXT 90 DAYS THERE IS A 40 PERCENT CHANCE THAT THE RIVER WILL RISE ABOVE 8.6 FEET BUT ONLY A 10 PERCENT CHANCE THAT IT WILL RISE ABOVE 11.1 FEET.

TABLE 2. CHANCES OF EXCEEDING STAGES AT SPECIFIC LOCATIONS IN THE BISMARCK HYDROLOGIC SERVICE AREA.

CHANCE OF EXCEEDING STAGES AT SPECIFIC LOCATIONS  
ALL STAGES ARE IN FEET  
VALID 2/28/05 - 05/29/05

LOCATION -----	FS /FT/ -----	90%	80%	70%	60%	50%	40%	30%	20%	10%
LITTLE MUDDY RIVER										
WILLISTON 10NE	10	6.0	6.7	7.1	7.4	7.8	8.6	9.0	10.2	11.2
LITTLE MISSOURI RIVER										
MARMARTH ND	18	1.1	1.2	1.6	2.4	2.9	3.3	3.7	4.5	7.0
MEDORA ND	15	2.0	2.2	2.7	3.2	3.7	4.3	4.7	5.8	9.5
WATFORD CITY	20	1.1	1.9	2.6	3.3	3.6	4.2	4.4	5.0	8.2
SPRING CREEK										
ZAP ND	14	4.1	4.6	6.1	6.9	7.7	8.4	9.6	12.3	15.3

KNIFE RIVER										
MANNING	15	6.2	6.6	7.2	7.6	8.0	8.6	9.0	9.8	11.1
HAZEN ND 1S	21	2.8	3.9	5.1	6.2	8.3	10.2	13.4	17.6	23.1
HEART RIVER										
MANDAN 3W	17	0.5	0.9	1.1	1.7	2.1	3.0	4.7	6.0	9.3
APPLE CREEK										
MENOKEN 6W	15	4.7	5.3	5.6	6.4	7.8	11.0	12.6	15.1	15.8
JAMES RIVER										
GRACE CITY 3W	12	4.4	4.4	4.4	4.4	4.4	4.4	4.6	5.0	5.9
LAMOURE	14	7.3	7.3	7.3	7.3	7.4	7.5	7.6	7.7	8.6
LUDDEN 3W	12	9.6	9.6	9.6	9.7	9.9	10.1	10.4	11.4	13.2
PIPESTEM CREEK										
PINGREE 3W	9	4.8	4.8	4.8	4.8	4.8	5.0	5.1	5.4	5.6

THE NUMBERS CONTAINED IN THIS LONG-RANGE PROBABILISTIC OUTLOOK REPRESENT NATURAL FLOWS. THAT IS, FLOWS UNAFFECTED BY MAN-MADE STRUCTURES IN THE BASIN SUCH AS DIVERSION DAMS AND RESERVOIRS.

THIS LONG-RANGE PROBABILISTIC OUTLOOK CONTAINS FORECAST VALUES THAT ARE CALCULATED USING MULTIPLE SEASON SCENARIOS FROM 30 OR MORE YEARS OF CLIMATOLOGICAL DATA INCLUDING CURRENT CONDITIONS OF THE RIVER... SNOW COVER...SOIL MOISTURE...AND 30 TO 90 DAY LONG-RANGE OUTLOOKS OF TEMPERATURE AND PRECIPITATION. BY PROVIDING A COMPLETE RANGE OF PROBABILITIES...THE LEVEL OF RISK ASSOCIATED WITH LONG-RANGE PLANNING DECISIONS CAN BE DETERMINED. THESE PROBABILISTIC FORECASTS ARE PART OF THE NATIONAL WEATHER SERVICE'S ADVANCED HYDROLOGIC PREDICTION SERVICE.

THIS OUTLOOK IS ALSO PRESENTED AS GRAPHS OF STAGE, FLOW, AND VOLUME...AND AS WEEKLY PROBABILITIES OF THE 90-DAY PERIOD...AS WELL AS EXPLANATIONS THAT HELP IN INTERPRETATION. THESE OUTLOOKS ARE AVAILABLE FROM THE NWS BISMARCK AHPS PAGE ON THE INTERNET AT:

[WWW.CRH.NOAA.GOV/BIS/AHPS](http://WWW.CRH.NOAA.GOV/BIS/AHPS)

CURRENT RIVER CONDITIONS FOR ALL 13 RIVER FORECAST POINTS IN THE SOURIS RIVER BASIN ARE ALSO AVAILABLE ON OUR WEB SITE. 5-DAY FORECASTS WHEN THE RIVER AT A FORECAST POINT IS NEAR FLOOD ARE ALSO AVAILABLE FOR ALL BASINS.

THE NEXT SPRING FLOOD AND WATER RESOURCES OUTLOOK WILL BE ISSUED ON FRIDAY MARCH 11TH 2005.

IF YOU HAVE ANY QUESTIONS, CONTACT THE NWS AT 701-250-4495.

VISIT OUR HOME PAGE AT [HTTP://WWW.CRH.NOAA.GOV/BIS](http://WWW.CRH.NOAA.GOV/BIS) FOR MORE WEATHER AND FLOOD INFORMATION.

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PRINDIVILLE/FORS

**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 270000  
ESFAK  
AKZALL-092200-

HYDROLOGIC OUTLOOK

NWS ALASKA PACIFIC RIVER FORECAST CENTER ANCHORAGE AK  
300 PM AST FRI MAR 26 2004

...SPRING BREAKUP OUTLOOK FOR ALASKA...

THE FLOOD POTENTIAL FROM SNOWMELT AND ICE JAMS THIS SPRING BREAKUP SEASON THROUGHOUT ALASKA IS CURRENTLY RATED AS AVERAGE. THIS FORECAST IS BASED ON CURRENT BELOW NORMAL TO NORMAL SNOWPACK AND ICE THICKNESS BEING REPORTED OVER MOST OF ALASKA.

ICE - MARCH 1 ICE THICKNESS DATA ARE AVAILABLE FOR A LIMITED NUMBER OF OBSERVING SITES IN ALASKA. MEASUREMENTS INDICATE THAT ICE THICKNESS IS NEAR NORMAL OR THINNER THAN NORMAL IN MOST LOCATIONS. ALL YUKON RIVER ICE MEASUREMENTS ARE THINNER THAN NORMAL AND MEASUREMENTS ON THE KUSKOKWIM RIVER ARE AT OR BELOW NORMAL. AMONG A FEW SCATTERED LOCATIONS WITH THICKER THAN NORMAL ICE IS THE KOYUKUK RIVER AT BETTLES THAT HAS 4-FT THICK ICE WHICH REPRESENTS A INCREASE OF 30% OVER NORMAL CONDITIONS. FREEZING CONDITIONS DEVELOPED LATE OVER MUCH OF ALASKA FOLLOWED BY RELATIVELY NORMAL TEMPERATURES THROUGH JANUARY. THE RATE OF ICE GROWTH WAS INHIBITED BY THE INSULATION PROVIDED BY SNOWFALL SOON AFTER FREEZEUP. A FEW WARM PERIODS IN FEBRUARY SLOWED ICE GROWTH IN THE SOUTHERN HALF OF ALASKA. SNOW - AN ANALYSIS OF THE MARCH 1 SNOWPACK BY THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) INDICATES NEAR NORMAL TO BELOW NORMAL SNOWPACK THROUGH MOST OF ALASKA. MEASUREMENTS OF ABOVE NORMAL SNOWPACK WERE REPORTED AT LOW ELEVATIONS ON THE NORTHERN KENAI PENINSULA AND AT SCATTERED LOCATIONS IN THE LOWER AND UPPER YUKON BASINS...PORCUPINE BASIN...FORTYMILE BASIN...COPPER RIVER BASIN...AND THE NORTHERN PANHANDLE. AREAS OF BELOW NORMAL MEASUREMENTS INCLUDE THE UPPER KUSKOKWIM BASIN...SUSITNA BASIN...UPPER COPPER BASIN...LOWER TANANA BASIN...AND THE SOUTHERN PANHANDLE. ALTHOUGH THESE AREAS REPORTED BELOW NORMAL SNOWPACK...THERE IS STILL ENOUGH SNOW IN MOST AREAS TO PRODUCE SIGNIFICANT SNOWMELT RUNOFF PEAKS IF SUBJECTED TO A RAPID WARMING PATTERN. WARM WEATHER IN FEBRUARY CAUSED SOME LOSS OF SNOWPACK IN LOW ELEVATION LOCATIONS IN SOUTHERN COASTAL AREAS.

FOR MORE DETAILS ON THE MARCH 1 SNOWPACK...PLEASE REFER TO THE VARIOUS SNOW GRAPHS OPTIONS AT THE APRFC WEB SITE AT...  
[HTTP://APRFC.ARH.NOAA.GOV](http://APRFC.ARH.NOAA.GOV) OR ON THE NRCS WEB SITE AT...  
[HTTP://AMBCS.ORG](http://AMBCS.ORG) AND SELECTING SNOWPACK REPORTS OR SNOWPACK MAPS.

WEATHER - MOST OF ALASKA WAS WARMER THAN NORMAL DURING FEBRUARY BUT HAS RETURNED TO MORE SEASONAL TEMPERATURES DURING MARCH. THE GREATEST FACTOR IN DETERMINING THE SEVERITY OF BREAKUP REMAINS THE WEATHER DURING APRIL AND MAY. THE SPRING OUTLOOK FOR THE APRIL THROUGH JUNE PERIOD CALLS FOR A GREATER LIKELIHOOD OF ABOVE NORMAL TEMPERATURES FOR ALL OF ALASKA EXCEPT THE NORTH SLOPE. THE OUTLOOK FOR APRIL INDICATES NO TENDENCY FOR ABOVE OR BELOW NORMAL TEMPERATURES IN ALASKA. THUS IT SEEMS UNLIKELY THAT THE ANTICIPATED WARM WEATHER WILL DEVELOP EARLY IN THE APRIL TO JUNE PERIOD. IF THE WEATHER REMAINS RELATIVELY COOL IN APRIL AND EARLY MAY FOLLOWED BY RAPID WARMING DURING MAY...THE MAJORITY OF SNOWMELT VOLUME WILL REACH THE STREAMS OVER A SHORT TIME PERIOD INCREASING THE PEAK IN STREAMFLOW AND THEREFORE INCREASING THE CHANCE OF ICE JAMS. FOR MORE INFORMATION ON THE OUTLOOKS FOR THIS SPRING PLEASE REFER TO THE CLIMATE PREDICTION CENTER WEB SITE AT...

[HTTP://WWW.CPC.NCEP.NOAA.GOV/PRODUCTS/FORECASTS](http://WWW.CPC.NCEP.NOAA.GOV/PRODUCTS/FORECASTS)

THE FLOOD POTENTIAL IS DESCRIBED BELOW...

FLOOD POTENTIAL	DEFINITION
BELOW AVERAGE.....	COMMUNITIES THAT FLOOD NEARLY EVERY YEAR MAY EXPERIENCE MINOR FLOODING OF LOW LYING AREAS
AVERAGE.....	COMMUNITIES PRONE TO SNOWMELT OR ICE JAM FLOODS SHOULD EXPECT SIMILAR CONDITIONS THIS YEAR
ABOVE AVERAGE.....	SEVERAL COMMUNITIES ARE VERY LIKELY TO FLOOD AND THE EXTENT OF FLOODING MAY BE SUBSTANTIAL

FOR MORE DETAIL AND TO SEE A FLOOD POTENTIAL MAP...ICE THICKNESS MAP ...SNOWPACK MAP...AND OTHER BREAKUP INFORMATION...REFER TO OUR WEB SITE AT...

[HTTP://APRFC.ARH.NOAA.GOV/PRODUCTS/GBRKUP.PHP](http://APRFC.ARH.NOAA.GOV/PRODUCTS/GBRKUP.PHP)

IF YOU HAVE ANY COMMENTS OR QUESTIONS REGARDING THIS STATEMENT... PLEASE EMAIL US AT [BECKY.PERRY@NOAA.GOV](mailto:BECKY.PERRY@NOAA.GOV)

THE NEXT SPRING BREAKUP OUTLOOK IS SCHEDULED FOR APRIL 9 2004.

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

**3.1 Example #1 - Flood Watch.** Situation – A storm system is approaching the WFO Blacksburg, VA area from the south. Models and Hydrometeorological Prediction Center (HPC) guidance indicate that the storm could produce moderate to heavy rain over an extended period. Forecasters see the potential for flooding, but at this time they cannot predict with certainty which rivers and streams are threatened. The WFO issues a flood watch for zones in Virginia and North Carolina at 2:52 a.m. on Tuesday May 27, 2003.

WGUS61 KRNK 270652  
FFARNK

URGENT - IMMEDIATE BROADCAST REQUESTED  
FLOOD WATCH  
NATIONAL WEATHER SERVICE BLACKSBURG VA  
252 AM EDT TUE MAY 27 2003

NCZ003>006-019-020-VAZ022>024-032>035-043>047-058-059-271300-  
/O.NEW.KRNK.FA.A.0002.030527T1400Z-030528T0800Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
AMHERST-APPOMATTOX-BEDFORD-BOTETOURT-BUCKINGHAM-CAMPBELL-CASWELL-  
CHARLOTTE-FRANKLIN-HALIFAX-HENRY-PATRICK-PITTSYLVANIA-ROANOKE-  
ROCKBRIDGE-ROCKINGHAM-STOKES-SUNNY-WILKES-YADKIN-  
252 AM EDT TUE MAY 27 2003

...FLOOD WATCH IN EFFECT FROM 10 AM THIS MORNING THROUGH WEDNESDAY MORNING...

THE NATIONAL WEATHER SERVICE IN BLACKSBURG HAS ISSUED A

- \* FLOOD WATCH FOR PORTIONS OF SOUTHWESTERN VIRGINIA AND NORTHWEST NORTH CAROLINA...INCLUDING THE FOLLOWING COUNTIES IN VIRGINIA... AMHERST...APPOMATTOX...BEDFORD...BOTETOURT...BUCKINGHAM...CAMPBELL... CHARLOTTE...FRANKLIN...HALIFAX...HENRY...PATRICK...PITTSYLVANIA... ROANOKE AND ROCKBRIDGE. IN NORTH CAROLINA...CASWELL...ROCKINGHAM...STOKES...SURRY...WILKES AND YADKIN.
- \* FROM 10 AM THIS MORNING THROUGH WEDNESDAY MORNING.
- \* LOW PRESSURE IS EXPECTED TO STRENGTHEN OVER THE CAROLINAS AND MOVE EAST THIS AFTERNOON AS A POTENT UPPER DISTURBANCE OVER KENTUCKY MOVES OVER THE SOUTHERN APPALACHIANS. AS A RESULT RAIN IS EXPECTED TO REDEVELOP AND BECOME HEAVY AT TIMES ALONG AND EAST OF THE BLUE RIDGE LATER THIS MORNING AND THIS AFTERNOON.
- \* LOWER PORTIONS OF THE DAN AND ROANOKE RIVERS ARE ALREADY IN OR NEAR FLOOD DUE TO HEAVY RAINFALL SUNDAY...AND ADDITIONAL RAINFALL COULD EASILY CAUSE SHARP RISES ON THESE RIVERS. AREA CREEKS AND STREAMS ARE ALSO RUNNING HIGH AND COULD FLOOD WITH MORE HEAVY RAIN.

REMEMBER...A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT IN THE WATCH AREA.

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### Notes and Explanations -

(1) The forecaster believes the flood threat starts at 10 a.m. on Tuesday, May 27, 2003 (1400Z). Therefore, the Event Beginning Date/Time group is 030527T1400Z and the beginning time/day phrase used in the second bullet is "10 AM THIS MORNING."

(2) The forecaster wants the watch to be valid until 4 a.m. Wednesday, May 28, 2003 (800Z). Therefore, the Event Ending Date/Time group is 030528T0800Z and the ending time/day phrase used in the second bullet is the general phrase "WEDNESDAY MORNING."

**3.2 Example #2 - Flood Watch: Follow-up With Cancellation, Extension in Area, and Continuation Segments.** Situation - WFO Blacksburg issued a flood watch for zones in North Carolina and Virginia at 2:52 a.m. on Tuesday May 27, 2003 (section 3.1). Later in the morning, models and HPC guidance indicated a more westerly storm track, so at 8:00 a.m., new zones are added to the watch in North Carolina, Virginia, West Virginia and a few zones in the eastern part of the original watch area are cancelled. The product would have three segments as follows:

WGUS61 KRNK 271200  
FFARNK

URGENT - IMMEDIATE BROADCAST REQUESTED  
FLOOD WATCH  
NATIONAL WEATHER SERVICE BLACKSBURG VA  
800 AM EDT TUE MAY 27 2003

...FLOOD WATCH AREA SHIFTED WESTWARD WITH FLOODING NOW POSSIBLE IN SOUTHWESTERN VIRGINIA...EASTERN WEST VIRGINIA AND NORTHWEST NORTH CAROLINA UNTIL TOMORROW MORNING...

NCZ005-006-VAZ044>047-058-059-271300-  
/O.CAN.KRNK.FA.A.0002.030527T1400Z-030528T0800Z/

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
APPOMATTOX-BUCKINGHAM-CAMPBELL-CHARLOTTE-CASWELL-HALIFAX-  
PITTSYLVANIA-ROCKINGHAM-  
800 AM EDT TUE MAY 27 2003

...FLOOD WATCH IS CANCELLED...

THE FLOOD WATCH FOR PORTIONS OF SOUTHWESTERN VIRGINIA AND NORTHWEST NORTH CAROLINA HAS BEEN CANCELLED. LOW PRESSURE CONTINUES TO STRENGTHEN OVER THE CAROLINAS AS AN UPPER DISTURBANCE THAT TRIGGERED HEAVY RAIN OVER KENTUCKY IS STARTING TO MOVE IN OVER THE SOUTHERN APPALACHIANS. HOWEVER...THE HEAVIEST RAINFALL IS NOW EXPECTED TO OCCUR FURTHER WEST ALONG BOTH SIDES OF THE BLUE RIDGE THIS MORNING AND THIS AFTERNOON. THEREFORE...THE FLOOD WATCH IS BEING CANCELLED FOR THOSE COUNTIES FARTHER EAST FROM THE BLUE RIDGE.

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NCZ001-002-018-VAZ011>018-020-WVZ044-045-272000-  
/O.EXA.KRNK.FA.A.0002.030527T1400Z-030528T0800Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
ALLEGHANY-ASHE-BATH-CARROLL-CRAIG-FLOYD-GILES-GRAYSON-GREENBRIER-  
MONROE-MONTGOMERY-PULASKI-WATAUGA-WYTHE-  
800 AM EDT TUE MAY 27 2003

...FLOOD WATCH IN EFFECT THROUGH WEDNESDAY MORNING...

THE NATIONAL WEATHER SERVICE IN BLACKSBURG HAS EXPANDED THE

\* FLOOD WATCH TO INCLUDE PORTIONS OF THE APPALACHIAN REGIONS OF VIRGINIA...WEST VIRGINIA AND NORTH CAROLINA...INCLUDING THE FOLLOWING COUNTIES...IN VIRGINIA...BATH...CARROLL...CRAIG...FLOYD... GILES...GRAYSON...MONTGOMERY...PULASKI AND WYTHE. IN WEST VIRGINIA...GREENBRIER AND MONROE. IN NORTH CAROLINA...ALLEGHANY... ASHE AND WATAUGA.

\* THROUGH WEDNESDAY MORNING.

\* LOW PRESSURE CONTINUES TO STRENGTHEN OVER THE CAROLINAS AS A POTENT UPPER DISTURBANCE THAT TRIGGERED HEAVY RAIN OVER KENTUCKY IS STARTING TO MOVE OVER THE SOUTHERN APPALACHIANS. HOWEVER...THE HEAVIEST RAINFALL IS NOW EXPECTED TO OCCUR ALONG BOTH SIDES OF THE BLUE RIDGE THIS MORNING AND THIS AFTERNOON. THEREFORE...THE FLOOD WATCH IS BEING EXTENDED INTO AREAS ALONG AND WEST OF THE BLUE RIDGE.

\* AREA CREEKS AND STREAMS ARE RUNNING HIGH AND COULD FLOOD WITH MORE HEAVY RAIN.

REMEMBER...A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT IN THE WATCH AREA.

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NCZ003-004-019-020-VAZ022>024-032>035-043-272000-  
/O.CON.KRNK.FA.A.0002.030527T1400Z-030528T0800Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
AMHERST-BEDFORD-BOTETOURT-FRANKLIN-HENRY-PATRICK-ROANOKE-  
ROCKBRIDGE-STOKES-SUNNY-WILKES-YADKIN-  
800 AM EDT TUE MAY 27 2003

...FLOOD WATCH REMAINS IN EFFECT THROUGH WEDNESDAY MORNING...

THE FLOOD WATCH CONTINUES FOR

- \* PORTIONS OF SOUTHWESTERN VIRGINIA AND NORTHWEST NORTH CAROLINA... INCLUDING THE FOLLOWING COUNTIES...IN VIRGINIA...AMHERST... BEDFORD...BOTETOURT...FRANKLIN...HENRY...PATRICK...ROANOKE... ROCKBRIDGE AND STOKES. IN NORTH CAROLINA...SURRY...WILKES AND YADKIN.
- \* THROUGH WEDNESDAY MORNING.
- \* LOW PRESSURE CONTINUES TO STRENGTHEN OVER THE CAROLINAS AS A POTENT UPPER DISTURBANCE THAT TRIGGERED HEAVY RAIN OVER KENTUCKY IS STARTING TO MOVE OVER THE SOUTHERN APPALACHIANS. THE HEAVIEST RAINFALL IS NOW EXPECTED BE CENTERED OVER THE BLUE RIDGE THIS MORNING AND THIS AFTERNOON. THEREFORE...THE FLOOD WATCH CONTINUES ALONG THE WESTERN SLOPES OF THE BLUE RIDGE.
- \* ADDITIONAL RAINFALL COULD CAUSE RISES ON THE UPPER REACHES OF THE DAN AND ROANOKE RIVERS RIVERS. AREA CREEKS AND STREAMS ARE ALSO RUNNING HIGH AND COULD FLOOD WITH MORE HEAVY RAIN.

REMEMBER...A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT IN THE WATCH AREA.

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**Notes and Explanations:**

- (1) A cancellation segment (CAN) is used to remove the zones from the area for which a flood watch no longer applies.
- (2) An extension in area segment (EXA) is used for the new zones now being covered by the multi-segmented flood watch.
- (3) A continuation segment (CON) is used for the zones in the original watch that will continue to be covered in the multi-segmented flood watch.
- (4) All three segments in this product have the same event tracking number.
- (5) This product is being issued at 8:00 a.m. (1200Z), which is two hours before the event beginning time provided in this and the original product (10:00 a.m. or 1400Z). The Event Beginning Date/Time for all three segments remains the same as the initial flood watch (030527T1400Z), but since it is less than three hours from the issuance time, "THROUGH WEDNESDAY MORNING" is used in the second bullet of segments 2 and 3.
- (6) All three segments, including the cancellation segment, use the same date and time in the Event Ending Date/Time group - i.e., 4 a.m. on May 28<sup>th</sup> (030528T0800Z).

**3.3 Example #3 - Flash Flood Watch.** Situation: A storm system is moving into the WFO Springfield, MO area from the west. Using HPC 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 3:00 a.m. (900Z) on Wednesday, March 19, 2003, a flash flood watch is issued for seven zones in southwestern Missouri.

WGUS63 KFGF 190900  
FFASGF

URGENT - IMMEDIATE BROADCAST REQUESTED  
FLOOD WATCH  
NATIONAL WEATHER SERVICE SPRINGFIELD MO  
300 AM CST WED MAR 19 2003

MOZ066-077-088-093-094-101-102-191500-  
/O.NEW.KSGF.FF.A.0002.030319T1500Z-030320T2200Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
BARRY-BARTON-JASPER-LAWRENCE-MCDONALD-NEWTON-VERNON-  
300 AM CST WED MAR 19 2003

...FLASH FLOOD WATCH IN EFFECT FROM 9 AM THIS MORNING THROUGH  
THURSDAY AFTERNOON...

THE NATIONAL WEATHER SERVICE IN SPRINGFIELD HAS ISSUED A

- \* FLASH FLOOD WATCH FOR A PORTION OF SOUTHWESTERN MISSOURI...  
INCLUDING THE FOLLOWING COUNTIES...BARRY...BARTON...JASPER...  
LAWRENCE...MCDONALD...NEWTON AND VERNON.
- \* FROM 9 AM THIS MORNING THROUGH THURSDAY AFTERNOON.
- \* A STRONG STORM SYSTEM MOVING NORTHEAST ACROSS THE CENTRAL PLAINS  
WILL CONTINUE TO PUMP MOISTURE NORTHWARD FROM THE GULF OF MEXICO.  
A LARGE BAND OF RAIN AND THUNDERSTORMS WILL CONTINUE TO ROTATE  
NORTHWESTWARD AROUND THIS UPPER LOW. MODERATE TO HEAVY RAIN AND  
OCCASIONAL THUNDERSTORMS ASSOCIATED WITH THIS BAND WILL CONTINUE  
OVER THE WATCH AREA MUCH OF TODAY. WIDESPREAD RAINFALL AMOUNTS OF  
1 TO 2 INCHES ARE LIKELY IN THE WATCH AREA TODAY...WITH LOCALLY  
HEAVIER AMOUNTS OF 3 OR MORE INCHES POSSIBLE.

REMEMBER...A FLASH FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT  
IMMINENT IN THE WATCH AREA. PERSONS IN SOUTHWESTERN MISSOURI SHOULD  
BE AWARE OF THE POSSIBILITY FOR HEAVY RAINFALL AND FLASH FLOODING...  
CHECK YOUR PREPAREDNESS REQUIREMENTS...ESPECIALLY IF YOU HAVE  
INTERESTS ALONG RIVERS IN THE AREA. KEEP INFORMED...AND BE READY FOR  
ACTION IF FLOODING IS OBSERVED OR IF A FLASH FLOOD WARNING IS ISSUED.  
STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE  
TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS.

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### Notes and Explanations:

- (1) The forecaster believes the flood threat starts at 9:00 a.m. on Wednesday, March 19, 2003 (1500Z). Therefore, the Event Beginning Date/Time group is 030319T1500Z and the beginning time/day phrase used in the second bullet is "9 AM THIS MORNING."
- (2) The forecaster wants the watch to be valid until 4:00 p.m. Thursday, March 20 (2200Z). Therefore, the Event Ending Date/Time group is 030320T2200Z 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: Six hours after the initial flash flood watch was issued, forecasters at WFO Springfield, MO observe that the approaching storm will cover a wider area and have a longer duration than originally anticipated. At 9:00 a.m. on Wednesday, March 19, they issue a flash flood watch which expands coverage into three zones in southeastern Kansas and extends the event expiration time by eight hours from 4:00 p.m. Thursday afternoon to midnight.

WGUS63 KFGF 191500  
FFASGF

URGENT - IMMEDIATE BROADCAST REQUESTED  
FLOOD WATCH  
NATIONAL WEATHER SERVICE SPRINGFIELD MO  
900 AM CST WED MAR 19 2003

...AREA OF POSSIBLE FLASH FLOODING EXPANDED INTO FAR SOUTHEASTERN  
KANSAS AND PERIOD OF THREAT EXTENDED UNTIL LATE THURSDAY NIGHT...

MOZ066-077-088-093-094-101-102-192100-  
/O.EXT.KSGF.FF.A.0002.000000T0000Z-030321T0600Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
BARRY-BARTON-JASPER-LAWRENCE-MCDONALD-NEWTON-VERNON-  
900 AM CST WED MAR 19 2003

...FLASH FLOOD WATCH EXTENDED THROUGH LATE THURSDAY NIGHT...

THE NATIONAL WEATHER SERVICE IN SPRINGFIELD HAS EXTENDED THE

\* FLASH FLOOD WATCH FOR A PORTION OF SOUTHWESTERN MISSOURI...  
INCLUDING THE FOLLOWING COUNTIES...BARRY...BARTON...JASPER...  
LAWRENCE...MCDONALD...NEWTON AND VERNON.

\* THROUGH LATE THURSDAY NIGHT.

\* A STRONG STORM SYSTEM MOVING NORTHEAST ACROSS THE CENTRAL PLAINS  
CONTINUES TO DRAW MOISTURE NORTHWARD FROM THE GULF OF MEXICO. RAIN  
AND A FEW THUNDERSTORMS ARE BEGINNING TO MOVE INTO THE SOUTHERN  
PART OF THE WATCH AREA. HEAVY RAIN IS NOW POSSIBLE INTO TONIGHT...  
WITH LOCALIZED AMOUNTS OF 1 TO 2 INCHES POSSIBLE IN THE WATCH  
AREA. EVEN HEAVIER AMOUNTS OF 3 OR MORE INCHES COULD STILL OCCUR.

A FLASH FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT  
IN THE WATCH AREA. PERSONS IN SOUTHWESTERN MISSOURI SHOULD BE AWARE OF  
OF THE POSSIBILITY FOR HEAVY RAINFALL AND FLASH FLOODING...CHECK YOUR  
PREPAREDNESS REQUIREMENTS...ESPECIALLY IF YOU HAVE INTERESTS ALONG  
SMALL RIVERS AND STREAMS IN THE AREA. KEEP INFORMED...AND BE READY FOR  
ACTION IF FLOODING IS OBSERVED OR IF A FLASH FLOOD WARNING IS ISSUED.

STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE  
TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS.

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KSZ073-097-101-192100-  
/O.EXB.KSGF.FF.A.0002.000000T0000Z-030321T0600Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
BOURBON-CHEROKEE-CRAWFORD-  
900 AM CST WED MAR 19 2003

...FLASH FLOOD WATCH IN EFFECT THROUGH LATE THURSDAY NIGHT...

THE NATIONAL WEATHER SERVICE IN SPRINGFIELD HAS EXPANDED THE

\* FLASH FLOOD WATCH TO INCLUDE A PORTION OF FAR SOUTHEASTERN  
KANSAS...INCLUDING THE FOLLOWING COUNTIES...BOURBON...CHEROKEE  
AND CRAWFORD.

\* THROUGH LATE THURSDAY NIGHT.

\* A STRONG STORM SYSTEM MOVING NORTHEAST ACROSS THE CENTRAL PLAINS  
CONTINUES TO DRAW MOISTURE NORTHWARD FROM THE GULF OF MEXICO. RAIN  
AND A FEW THUNDERSTORMS ROTATING AROUND THIS LOW ARE BEGINNING TO

MOVE INTO THE SOUTHERN PART OF THE WATCH AREA. HEAVY RAIN MAY AFFECT AREAS FURTHER WEST INTO SOUTHEASTERN KANSAS AND LAST INTO TONIGHT. LOCAL AMOUNTS OF 1 TO 2 INCHES ARE POSSIBLE IN THE WATCH AREA...WITH 3 OR MORE INCHES STILL POSSIBLE IN SOME LOCATIONS.

A FLASH FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT IN THE WATCH AREA. BE AWARE OF THE POSSIBILITY FOR HEAVY RAINFALL AND FLASH FLOODING...CHECK YOUR PREPAREDNESS REQUIREMENTS... ESPECIALLY IF YOU HAVE INTERESTS ALONG SMALL RIVERS AND STREAMS IN THE AREA. KEEP INFORMED...AND BE READY FOR ACTION IF FLOODING IS OBSERVED OR IF A FLASH FLOOD WARNING IS ISSUED.

STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS.

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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 event beginning time in the original flash flood watch was 9:00 a.m. Since this follow-up product is being issued at 9:00 a.m., the event is considered to have already begun and the Event Beginning Date/Time groups for both segments is 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 eight hours to midnight (0600Z). Therefore, the Event Ending Date/Time group is 030321T0600Z and the ending time/day phrase used is "LATE THURSDAY NIGHT."

**3.5 Example #5 - Flash Flood Watch (Short and Long Zone Names).** Situation: A forecaster at WFO Albuquerque, NM notes a line of thunderstorms is moving across the state. Observations, models, and HPC 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, so a flash flood watch is issued for the day over a wide area.

WGUS65 KABQ 281555  
FFAABQ

URGENT - IMMEDIATE BROADCAST REQUESTED  
FLOOD WATCH  
NATIONAL WEATHER SERVICE ALBUQUERQUE NM  
955 AM MDT SAT OCT 28 2000

...FLASH FLOODING POSSIBLE IN THE EAST CENTRAL PLAINS AND SOUTHEAST NEW MEXICO TODAY...

NMZ006-012-013-018>021-282200-  
/O.NEW.KABQ.FF.A.0015.001028T1555Z-001028T2200Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
HARDING COUNTY-CONCHAS LAKE/GUADALUPE COUNTY-QUAY COUNTY-  
DE BACA COUNTY-CHAVES COUNTY PLAINS-ROOSEVELT COUNTY-CURRY COUNTY-  
955 AM MDT SAT OCT 28 2000

...FLASH FLOOD WATCH IN EFFECT UNTIL 4 PM THIS AFTERNOON...



THE NATIONAL WEATHER SERVICE IN ALBUQUERQUE HAS ISSUED A

\* FLASH FLOOD WATCH FOR A PORTION OF THE EAST CENTRAL PLAINS AND SOUTHEAST AREAS OF NEW MEXICO...INCLUDING THE FOLLOWING AREAS... HARDING COUNTY...CONCHAS LAKE/GUADALUPE COUNTY...QUAY COUNTY...

DE BACA COUNTY...CHAVES COUNTY PLAINS...ROOSEVELT COUNTY AND CURRY COUNTY.

\* UNTIL 4 PM THIS AFTERNOON.

\* AT 950 AM MDT...WELL DEFINED LINE OF STRONG THUNDERSTORMS WAS MOVING SLOWLY EASTWARD ACROSS PARTS OF EASTERN NEW MEXICO. THE LINE CURRENTLY EXTENDS FROM WESTERN CHAVES TO NORTHEAST DE BACA INTO EASTERN SAN MIGUEL AND HARDING COUNTIES. THE LINE OF THUNDERSTORMS WILL GRADUALLY MOVE EASTWARD AS THE UPPER LEVEL STORM SYSTEM BEGINS TO MOVE INTO NORTHEAST NEW MEXICO LATER TODAY.

\* SOUTHERLY WINDS...AT THE SURFACE AND ALOFT...ARE CREATING AN ENVIRONMENT FAVORABLE FOR TRAINING OF THUNDERSTORMS OVER THE EASTERN PORTIONS OF NEW MEXICO. SOME OF THE STRONGER STORMS COULD PRODUCE RAINFALL RATES BETWEEN 1 TO 2 INCHES AN HOUR.

A FLASH FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT IN THE WATCH AREA.

STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS.

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**Notes and Explanation:**

(1) The forecaster wants the watch to start immediately because the line of thunderstorms has already formed, so the Event Beginning Date/Time (001028T1555Z) is the same as the product issuance date/time (9:55 a.m. on Saturday, Oct 28, 2000).

(2) Note how terrain-oriented names are used for some zones such as "Chaves County Plains," 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 is moving 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 the night and next day over most of the county warning area.

WGUS66 KSGX 120342  
FFASGX

URGENT - IMMEDIATE BROADCAST REQUESTED  
FLOOD WATCH  
NATIONAL WEATHER SERVICE SAN DIEGO CA  
745 PM PST TUE FEB 11 2003

...FLASH FLOODING POSSIBLE OVER SOUTHERN CALIFORNIA UNTIL THURSDAY MORNING...

CAZ042-043-048-050-055>058-061-062-121200-  
/O.NEW.KSGX.FF.A.0003.030212T0345Z-030213T1200Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
ORANGE COUNTY COASTAL AREAS-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 ANY MOUNTAINS AND FOOTHILLS-SAN DIEGO COUNTY  
MOUNTAINS-COACHELLA VALLEY-SAN DIEGO COUNTY DESERTS-  
745 PM PST TUE FEB 11 2003

...FLASH FLOOD WATCH IN EFFECT THROUGH THURSDAY MORNING...

THE NATIONAL WEATHER SERVICE IN SAN DIEGO HAS ISSUED A

\* FLASH FLOOD WATCH FOR A PORTION OF SOUTHERN CALIFORNIA...  
INCLUDING THE FOLLOWING AREAS...ORANGE COUNTY COASTAL AREAS...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 ANY MOUNTAINS AND FOOTHILLS...SAN DIEGO COUNTY MOUNTAINS...  
COACHELLA VALLEY AND SAN DIEGO COUNTY DESERTS.

\* THROUGH THURSDAY MORNING.

\* A LARGE STORM SOUTHWEST OF SAN DIEGO WILL CONTINUE TO FEED  
MOISTURE INTO SOUTHERN CALIFORNIA TONIGHT AND WEDNESDAY. AS THE  
STORM MOVES NORTHEAST RAIN WILL INCREASE ACROSS THE AREA...WITH  
HEAVY RAIN LIKELY WEDNESDAY. RAINFALL RATES OF 1/2 INCH PER HOUR  
OR MORE WILL PRODUCE STREET FLOODING...AND MAY ALSO BRING SMALL  
CREEKS AND STREAMS TO BANKFULL.

A FLASH FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT  
IN THE WATCH AREA.

THE HEAVY RAINS WILL INCREASE THE THREAT OF MUDSLIDES AND FLOODING IN  
AND BELOW THE BURN AREAS. RESIDENTS IN THESE AREAS SHOULD MAKE  
PREPARATIONS FOR FLOODING AND BE PREPARED TO MOVE TO HIGHER GROUND IF  
HEAVY RAINS DEVELOP. STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL  
MEDIA OR CABLE TELEVISION FOR WATCH UPDATES AND POSSIBLE WARNINGS.

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### Notes and Explanations:

- (1) The forecaster wants the watch to start immediately because the storm system is already moving on shore, so the Event Beginning Date/Time (030212T0345Z) is the same as the product issuance date/time (7:45 p.m. on Tuesday, Feb 11, 2003).
- (2) 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: A large area of moderate rainfall is occurring over the coast range portion of the WFO Portland, OR county warning area. Under current antecedent conditions, RFC guidance indicates that this heavily forested area can absorb about two inches of rainfall without significant flooding. QPFs indicate that heavier rainfall could occur in a few areas, so the forecaster knows that there is some potential for flooding. Therefore, a flood watch is issued until 11:00 p.m. Saturday evening. The zones covered in this product are different from those common in the central, eastern, and southern U.S. – 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 220131  
FFAPQR

URGENT - IMMEDIATE BROADCAST REQUESTED  
FLOOD WATCH  
NATIONAL WEATHER SERVICE PORTLAND OR  
530 PM PST FRI MAR 21 2003

ORZ001>004-006>008-WAZ021-220700-  
/O.NEW.KPQR.FA.A.0007.030322T0130Z-030323T0700Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
NORTH OREGON COAST-CENTRAL OREGON COAST-COAST RANGE OF NORTHWEST  
OREGON-CENTRAL COAST RANGE OF WESTERN OREGON-GREATER PORTLAND  
METRO AREA-CENTRAL WILLAMETTE VALLEY-SOUTH WILLAMETTE VALLEY-  
SOUTH WASHINGTON COAST-  
530 PM PST FRI MAR 21 2003

...FLOOD WATCH IN EFFECT THROUGH SATURDAY NIGHT...

THE NATIONAL WEATHER SERVICE IN PORTLAND HAS ISSUED A

- \* FLOOD WATCH FOR THE WILLAMETTE TRIBUTARIES DRAINING THE NORTHWEST OREGON COAST RANGE AND THE COASTAL RIVERS AND STREAMS OF SOUTHWEST WASHINGTON AND NORTHWEST OREGON...INCLUDING THE FOLLOWING AREAS... NORTH OREGON COAST...CENTRAL OREGON COAST...COAST RANGE OF NORTHWEST OREGON...CENTRAL COAST RANGE OF WESTERN OREGON...GREATER PORTLAND METRO AREA...CENTRAL WILLAMETTE VALLEY...SOUTH WILLAMETTE VALLEY AND SOUTH WASHINGTON COAST.
- \* THROUGH SATURDAY NIGHT.
- \* RAIN CONTINUES TO FALL THIS EVENING OVER THE COAST AND COAST RANGE OF SOUTHWEST WASHINGTON AND NORTHWEST OREGON...AND WILL CONTINUE TO BE HEAVY AT TIMES TONIGHT.
- \* SEVERAL OF THE RIVERS AND STREAMS DRAINING THE COAST RANGE IN NORTHWEST OREGON AND SOUTHWEST WASHINGTON MAY RISE TO FLOOD STAGE TONIGHT OR SATURDAY. ALONG THE COASTAL SLOPES THE STREAMS MOST AT RISK FOR FLOODING INCLUDE THE NEHALEM...WILSON...SILETTE AND SIUSLAW RIVERS. STREAMS AT RISK FOR FLOODING DRAINING THE EAST SLOPES OF THE COAST RANGE INTO THE WILLAMETTE RIVER INCLUDE THE LUCKIAMUTE...MARYS AND UPPER TULATIN RIVERS.

A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT IN THE WATCH AREA.

STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS. STAGE FORECASTS FOR RIVERS IN THE WATCH AREA SHOULD BE MONITORED. THESE STAGE FORECASTS ARE BASED ON OBSERVED AND FORECAST RAINFALL AND TEMPERATURES. IF ACTUAL RAINFALL AND TEMPERATURES VARY FROM THE FORECAST VALUES...THE RIVER STAGE WILL VARY ACCORDINGLY. RIVER FORECASTS ALSO INCLUDE CURRENT AND PLANNED RESERVOIR RELEASES. FOR THE LATEST RIVER STAGES AND FORECASTS...VISIT OUR WEB PAGE AT [WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC\\_HYDRO](http://WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC_HYDRO).

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J. DOE

**Notes and Explanations:**

- (1) The forecaster wants the watch to start immediately because the rainfall has already started, so the Event Beginning Date/Time (030322T0130Z) is the same as the product issuance date/time (5:30 p.m. on Friday, Mar 21, 2003).
- (2) 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.
- (3) Note the highly specific description of the areas and streams with the potential for flooding.

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

WGUS66 KPQR 220700  
FFAPQR

FLOOD WATCH  
NATIONAL WEATHER SERVICE PORTLAND OR  
1100 PM PST FRI MAR 21 2003

ORZ001>004-006>008-WAZ021-221300-  
/O.CON.KPQR.FA.A.0007.000000T0000Z-030323T0700Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
NORTH OREGON COAST-CENTRAL OREGON COAST-COAST RANGE OF NORTHWEST  
OREGON-CENTRAL COAST RANGE OF WESTERN OREGON-GREATER PORTLAND METRO  
AREA-CENTRAL WILLAMETTE VALLEY-SOUTH WILLAMETTE VALLEY-SOUTH  
WASHINGTON COAST-  
1100 PM PST FRI MAR 21 2003

...FLOOD WATCH REMAINS IN EFFECT THROUGH SATURDAY NIGHT...

THE FLOOD WATCH CONTINUES FOR

- \* THE WILLAMETTE TRIBUTARIES DRAINING THE NORTHWEST OREGON COAST RANGE AND THE COASTAL RIVERS AND STREAMS OF SOUTHWEST WASHINGTON AND NORTHWEST OREGON...INCLUDING THE FOLLOWING AREAS...NORTH OREGON COAST...CENTRAL OREGON COAST...COAST RANGE OF NORTHWEST OREGON...CENTRAL COAST RANGE OF WESTERN OREGON...GREATER PORTLAND METRO AREA...CENTRAL WILLAMETTE VALLEY...SOUTH WILLAMETTE VALLEY AND SOUTH WASHINGTON COAST.
- \* THROUGH SATURDAY NIGHT.
- \* MODERATE RAIN CONTINUES TO FALL THIS EVENING OVER THE WATCH AREA WITH A FEW HEAVIER AREAS ON THE COASTAL SLOPES. SO FAR ALL MAJOR RIVERS AND STREAMS DRAINING THE COAST RANGE IN NORTHWEST OREGON AND SOUTHWEST WASHINGTON ARE BELOW FLOOD STAGE...BUT STILL SHOULD BE MONITORED CLOSELY FOR THE POSSIBILITY OF FLOODING SHOULD RAINFALL EXCEED THE CURRENTLY FORECAST VALUES.

A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT IN THE WATCH AREA.

STAY TUNED TO NOAA WEATHER RADIO...COMMERCIAL MEDIA OR YOUR CABLE TELEVISION PROVIDER FOR WATCH UPDATES AND POSSIBLE WARNINGS. THE LATEST RIVER STAGES AND FORECASTS CAN BE MONITORED AT [WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC\\_HYDRO](http://WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC_HYDRO).

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J. DOE

**3.9 Example #9 - Flood Watch: Expiration (Long Zone Names).** The rain has moved east of the WFO Portland area and rivers remained below flood stage, so forecasters issue a final product to announce expiration of the flood watch at 11:00 p.m. on Saturday, March 22.

WGUS66 KPQR 230700  
FFAPQR

FLOOD WATCH  
NATIONAL WEATHER SERVICE PORTLAND OR  
1100 PM PST SAT MAR 22 2003

ORZ001>004-006>008-WAZ021-230715-  
/O.EXP.KPQR.FA.A.0007.000000T0000Z-030323T0700Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
NORTH OREGON COAST-CENTRAL OREGON COAST-COAST RANGE OF NORTHWEST  
OREGON-CENTRAL COAST RANGE OF WESTERN OREGON-GREATER PORTLAND  
METRO AREA-CENTRAL WILLAMETTE VALLEY-SOUTH WILLAMETTE VALLEY-  
SOUTH WASHINGTON COAST-  
1100 PM PST SAT MAR 22 2003

...FLOOD WATCH HAS EXPIRED...

THE FLOOD WATCH FOR THE WILLAMETTE TRIBUTARIES DRAINING THE  
NORTHWEST OREGON COAST RANGE AND THE COASTAL RIVERS AND STREAMS OF  
SOUTHWEST WASHINGTON AND NORTHWEST OREGON HAS BEEN ALLOWED TO  
EXPIRE.

MODERATE TO HEAVY RAIN FELL OVERNIGHT ALONG THE COAST AND IN THE  
COAST RANGE OF SOUTHWEST WASHINGTON AND NORTHWEST OREGON...BUT  
REMAINED WITHIN THE RANGE OF FORECAST VALUES. THIS ALLOWED ALL RIVERS  
AND STREAMS IN THE WATCH AREA TO REMAIN BELOW FLOOD STAGE. RIVERS  
WILL STILL BE AT HIGH LEVELS FOR THE NEXT FEW DAYS BUT GRADUALLY  
RECEDE UNTIL THE NEXT STORM ARRIVES THIS TUESDAY.

THE LATEST STAGES AND FORECASTS FOR RIVERS AND STREAMS CAN BE FOUND  
AT OUR WEB PAGE AT [WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC\\_HYDRO](http://WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC_HYDRO).

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**3.10 Example #10 - Flash Flood Watch: Potential Dam Failure.** Situation – An operator of a dam on the Thornapple River in Michigan notices that a structural concern has developed on the dam and notifies WFO Grand Rapids. The WFO issues a short duration flash flood watch to cover the period while the operator investigates further to see if a dam failure is imminent.

WGUS63 KGRR 022036  
FFAGRR

URGENT - IMMEDIATE BROADCAST REQUESTED  
FLOOD WATCH  
NATIONAL WEATHER SERVICE GRAND RAPIDS MI  
336 PM EST FRI DEC 2 2005

MIZ057-022145-  
/O.NEW.KGRR.FF.A.0001.051202T2036Z-051202T2100Z/  
/00000.0.DM.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
KENT-  
336 PM EST FRI DEC 2 2005

...FLASH FLOOD WATCH FOR THE THORNAPPLE RIVER BELOW ADA DAM IN KENT  
COUNTY IN EFFECT UNTIL 4 PM EST THIS AFTERNOON...

THE NATIONAL WEATHER SERVICE IN GRAND RAPIDS HAS ISSUED A

- \* FLASH FLOOD WATCH FOR THE THORNAPPLE RIVER BELOW ADA DAM IN KENT COUNTY.
- \* UNTIL 4 PM EST THIS AFTERNOON
- \* AT 334 PM EST...THE DAM OPERATOR REPORTED THAT THE ADA DAM HAS A POTENTIAL STRUCTURAL CONCERN.
- \* THE NEAREST DOWNSTREAM TOWN IS ADA...LOCATED 1/4 MILE FROM THE DAM. PEOPLE IN THE LOW LYING AREAS BELOW ADA DAM SHOULD KEEP ABREAST OF THE SITUATION AND STAY ALERT TO CHANGING CONDITIONS... INCLUDING POSSIBLE EVACUATIONS.

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.

DAM SAFETY EXPERTS...WITH STATE AND LOCAL EMERGENCY SERVICES... ARE MONITORING THE DAM AND WILL ISSUE A PUBLIC STATEMENT AS CONDITIONS WARRANT. PLAN NOW SO YOU WILL KNOW WHAT TO DO IN AN EMERGENCY. KEEP INFORMED BY LISTENING TO LOCAL RADIO AND TELEVISION FOR STATEMENTS AND POSSIBLE WARNINGS. FOLLOW THE ADVICE OF PUBLIC SAFETY OFFICIALS.

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#### **4. Flood Watch for Forecast Points.**

**4.1 Example #1 - Flood Watch for Three Forecast Points (FFA).** NCEP models and HPC guidance indicate the possibility of three to four inches of rainfall over the southwest corner of Wisconsin. Local emergency managers have requested that WFO Milwaukee/Sullivan provide point-specific flood watches for the Milwaukee River when significant flooding is possible but not certain enough to meet the "imminent" criteria for issuance of flood warnings. At about 11:20 a.m. on January 25, forecasters issue a flood watch for three forecast points.

WGUS63 KMKE 251721  
FFAMKE

URGENT - IMMEDIATE BROADCAST REQUESTED  
FLOOD WATCH  
NATIONAL WEATHER SERVICE MILWAUKEE/SULLIVAN WI  
1121 AM CST TUE JAN 25 2005

...FLOOD WATCH IN EFFECT FOR THE FOLLOWING LOCATIONS ON THE MILWAUKEE RIVER IN SOUTHEAST WISCONSIN...

MILWAUKEE RIVER AT WAUBEKA AFFECTING OZAUKEE COUNTY.  
MILWAUKEE RIVER AT CEDARBURG AFFECTING OZAUKEE COUNTY.  
MILWAUKEE RIVER AT MILWAUKEE AFFECTING MILWAUKEE COUNTY.

.THE COMBINATION OF CURRENT CONDITIONS AND A POSSIBLE THREE TO FOUR INCHES OF RAINFALL LATE THIS AFTERNOON MAY SEND THE MILWAUKEE RIVER ABOVE ITS FLOOD STAGE WITHIN THE NEXT 48 HOURS. THESE WATCHES WILL BE IN EFFECT UNTIL THEY ARE CANCELLED OR REPLACED WITH A WARNING OR ADVISORY.

A FLOOD WATCH MEANS THAT FLOODING IS POSSIBLE BUT NOT IMMINENT.

THE LATEST STAGES AND FORECASTS FOR RIVERS AND STREAMS CAN BE FOUND AT OUR WEB PAGE AT [HTTP://WWW.CRH.NOAA.GOV/CGI-BIN/AHPS.CGI?MKX](http://www.crh.noaa.gov/cgi-bin/ahps.cgi?mkx).

WIZ060-252321-  
/O.NEW.KMKE.FL.A.0001.050125T1721Z-050127T1800Z/  
/WAUW3.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
1121 AM CST TUE JAN 25 2005

THE NATIONAL WEATHER SERVICE IN MILWAUKEE HAS ISSUED A  
\* FLOOD WATCH FOR  
THE MILWAUKEE RIVER AT WAUBEKA.  
\* UNTIL 1200 PM THURSDAY.  
\* AT 1000 AM CST THE STAGE WAS 4.5 FEET.  
\* MINOR FLOODING IS POSSIBLE.  
\* BANKFULL STAGE IS 8.5 FEET.  
\* FLOOD STAGE IS 9.5 FEET.  
\* FORECAST...IF CURRENT PRECIPITATION FORECASTS HOLD...FLOOD STAGE  
MAY BE REACHED AT ABOUT 800 PM TONIGHT AND THE RIVER MAY CREST AT  
ABOUT 10.0 FEET AT 200 AM WEDNESDAY.

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WIZ060-252321-  
/O.NEW.KMKE.FL.A.0002.050125T1721Z-050127T1800Z/  
/CEDW3.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
1121 AM CST TUE JAN 25 2005

THE NATIONAL WEATHER SERVICE IN MILWAUKEE HAS ISSUED A  
\* FLOOD WATCH FOR  
THE MILWAUKEE RIVER AT CEDARBURG.  
\* UNTIL 1200 PM THURSDAY.  
\* AT 1000 AM CST THE STAGE WAS 7.2 FEET.  
\* MINOR FLOODING IS POSSIBLE.  
\* BANKFULL STAGE IS 10.0 FEET.  
\* FLOOD STAGE IS 11.0 FEET.  
\* FORECAST...IF CURRENT PRECIPITATION FORECASTS HOLD...FLOOD STAGE  
MAY BE REACHED AT ABOUT 500 AM WEDNESDAY AND THE RIVER MAY CREST  
AT ABOUT 11.5 FEET AT ABOUT 900 AM WEDNESDAY.

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WIZ060-252321-  
/O.NEW.KMKE.FL.A.0003.050125T1721Z-050127T1800Z/  
/MEEW3.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
1121 AM CST TUE JAN 25 2005

THE NATIONAL WEATHER SERVICE IN MILWAUKEE HAS ISSUED A  
\* FLOOD WATCH FOR  
THE MILWAUKEE RIVER AT MILWAUKEE.  
\* UNTIL 1200 PM THURSDAY.  
\* AT 1000 AM CST THE STAGE WAS 2.5 FEET.  
\* MINOR FLOODING IS POSSIBLE.  
\* BANKFULL STAGE IS 6.0 FEET.  
\* FLOOD STAGE IS 7.0 FEET.  
\* FORECAST...IF CURRENT PRECIPITATION FORECASTS HOLD...FLOOD STAGE  
MAY BE REACHED AT ABOUT 500 PM WEDNESDAY AND THE RIVER MAY CREST  
AT ABOUT 7.2 FEET AT ABOUT 900 PM WEDNESDAY

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&&

RIVER FORECASTS ARE AVAILABLE FOR SOME BUT NOT ALL RIVER GAGING LOCATIONS. IN THIS AREA...A RIVER FORECAST COVERS 7 DAYS AND TAKES INTO ACCOUNT PREDICTED PRECIPITATION FOR THE FIRST 24 HOURS.

LOCATION	(STAGES IN FT.)		LATEST OBSERVED STAGE/TIME	FORECAST STAGES FOR 7 AM.....						
	FLOOD STAGE	BANK-FULL STAGE		WED	THU	FRI	SAT	SUN	MON	TUE
WAUBEKA	9.5	8.5	4.6 1000 AM	8.5	5.9	4.8	4.6	4.5	4.5	4.5
CEDARBURG	11.0	10.0	7.36 0615 AM	11.4	9.0	8.1	7.6	7.5	7.4	7.4
MILWAUKEE	7.0	6.5	2.5 1000 AM	2.6	6.9	5.8	5.0	4.3	3.7	3.2

...BELOW IS PREDICTED PRECIPITATION INFORMATION...

(CEDW3) PREDICTED 6-HOUR RAINFALL AMOUNTS  
 CEDARBURG: 7 AM-1 PM 0.00  
 CEDARBURG: 1 PM-7 PM 3.00  
 CEDARBURG: 7 PM-1 AM 0.50  
 CEDARBURG: 1 AM-7 AM 0.00

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**Note and Explanation:-**

(1) Note how the dependence of forecast stages on forecast precipitation is clearly indicated.

**5. Flash Flood Warning (FFW) and Associated Follow-up Products (FFS).**

**5.1 Example #1 - Flash Flood Warning (FFW).** Situation - radar shows thunderstorms with heavy rain moving northwest across central Long Island, NY. WFO New York City/Upton forecasters, using the flash flood monitoring and prediction system, note the likelihood of flash flooding in small streams in southwest Suffolk County and decide to issue a flash flood warning at 12:55 p.m. EDT (1655Z). The resulting product is the most common type of flash flood warning issued by the NWS - a flash flood warning for an area.

WGUS51 KOKX 141655  
 FFWOKX  
 NYC103-142000-  
 /O.NEW.KOKX.FF.W.0005.000814T1655Z-000814T2000Z/  
 /00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED  
 FLASH FLOOD WARNING  
 NATIONAL WEATHER SERVICE NEW YORK NY  
 1255 PM EDT MON AUG 14 2000

THE NATIONAL WEATHER SERVICE IN UPTON HAS ISSUED A

- \* FLASH FLOOD WARNING FOR...  
 SOUTHWEST SUFFOLK COUNTY IN SOUTHEASTERN NEW YORK STATE
- \* UNTIL 400 PM EDT
- \* AT 1254 PM NATIONAL WEATHER SERVICE DOPPLER RADAR INDICATED  
 THUNDERSTORMS MOVING NORTHWEST TOWARD THE WARNED AREA. RAINFALL  
 RATES FROM 2 TO 3 INCHES PER HOUR WILL CAUSE FLASH FLOODING OF



LOW LYING AND POOR DRAINAGE AREAS. THE HEAVY RAINS SHOULD END BY 200 PM EDT AND IT WILL TAKE ANOTHER HOUR OR TWO FOR THE FLOODING TO DISSIPATE.

DO NOT DRIVE YOUR VEHICLE INTO AREAS WHERE THE WATER COVERS THE ROADWAY. MOVE TO HIGHER GROUND IMMEDIATELY.

REPORT SEVERE WEATHER TO THE NEAREST LAW ENFORCEMENT AGENCY. THEY WILL RELAY YOUR REPORT TO THE NATIONAL WEATHER SERVICE FORECAST OFFICE IN UPTON.

LAT...LON 4153 7264 4131 7255 4138 7190 4159 7198

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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 (000814T1655Z) corresponds to 12:55 p.m. EDT on Monday, August 14, 2000.

(2) Note how that even though forecaster predicts the end of heavy rain by 2:00 p.m., she allows another two hours for the flash flooding to dissipate. Therefore, the Event Ending Date/Time is 000814T2000Z (4:00 p.m. on Monday, August 14 2000).

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

Situation - 35 minutes after the flash flood warning was issued for Suffolk County, the forecaster at WFO Upton issues a flash flood statement to provide updated information on the event.

WGUS71 KOKX 141730  
FFSOKX

FLASH FLOOD STATEMENT  
NATIONAL WEATHER SERVICE NEW YORK NY  
130 PM EDT MON AUG 14 2000

NYC103-142000-  
/O.CON.KOKX.FF.W.0005.000000T0000Z-000814T2000Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
SUFFOLK NY-  
130 PM EDT MON AUG 14 2000

...THE FLASH FLOOD WARNING REMAINS IN EFFECT FOR SOUTHWEST SUFFOLK COUNTY IN SOUTHEASTERN NEW YORK STATE UNTIL 400 PM EDT...

AT 130 PM EDT...WEATHER SERVICE DOPPLER RADAR INDICATED A CLUSTER OF THUNDERSTORMS PRODUCING VERY HEAVY RAIN IN AN AREA FROM BRENTWOOD WEST TO DEER PARK AND NORTH TO ABOUT INTERSTATE 495. THUNDERSTORMS ARE MOVING NORTH TOWARDS HUNTINGTON STATION AND LLOYD POINT. RADAR ESTIMATES INDICATE 2 INCHES HAVE FALLEN. LAW ENFORCEMENT OFFICERS IN THE AREA REPORT SEVERAL ROADS ARE COVERED WITH WATER AND ARE TEMPORARILY IMPASSIBLE.

DO NOT DRIVE YOUR VEHICLE INTO AREAS WHERE THE WATER COVERS THE ROADWAY. MOVE TO HIGHER GROUND IMMEDIATELY.

REPORT SEVERE WEATHER TO THE NEAREST LAW ENFORCEMENT AGENCY. THEY WILL RELAY YOUR REPORT TO THE NATIONAL WEATHER SERVICE IN UPTON.

LAT...LON 4153 7264 4131 7255 4138 7190 4159 7198

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

Situation – A half hour before the flash flood warning was scheduled to expire, WFO Upton issues a flash flood statement to cancel the warning and summarize reported impacts.

WGUS71 KOKX 141930  
FFSOKX

FLASH FLOOD STATEMENT  
NATIONAL WEATHER SERVICE NEW YORK NY  
330 PM EDT MON AUG 14 2000

NYC103-141945-  
/O.CAN.KOKX.FF.W.0005.000000T0000Z-000814T2000Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
SUFFOLK NY-  
330 PM EDT MON AUG 14 2000

...THE FLASH FLOOD WARNING HAS BEEN CANCELLED FOR SOUTHWEST SUFFOLK COUNTY IN NEW YORK...

NATIONAL WEATHER SERVICE DOPPLER RADAR INDICATES THAT THE THUNDERSTORMS HAVE MOVED WELL OUT OF THE AREA AND INTO THE LONG ISLAND SOUND. NO HEAVY RAINFALL HAS OCCURRED IN THE WARNING AREA FOR OVER AN HOUR. THE MOST SERIOUS FLOODING OCCURRED ON JEFFERSON AVENUE NEAR THE BRENTWOOD COUNTRY CLUB WHERE SEVERAL HOMES WERE FLOODED AND A BRIDGE WAS DAMAGED. WATER WAS REPORTED OVER THE ROADWAY AT SEVERAL LOCATIONS IN DEER PARK AND HUNTINGTON STATION. FLOODING HAS SUBSIDED AND THE FLOOD THREAT NO LONGER EXISTS... BUT PONDING OF WATER ON ROADWAYS MAY CONTINUE AT A FEW LOCATIONS AS FLOOD WATERS RECEDE.

REMAIN CAUTIOUS WHEN DRIVING IN LOW LYING AREAS...AND REPORT ANY FLOODED ROADWAYS TO THE NEAREST LAW ENFORCEMENT AGENCY. THEY WILL RELAY YOUR REPORT TO THE NATIONAL WEATHER SERVICE FORECAST OFFICE IN UPTON.

LAT...LON 4153 7264 4131 7255 4138 7190 4159 7198

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**Note and Explanation:**

(1) Note how even though the warning is being cancelled a half hour early at 3:30 p.m. (1930Z), the time indicated in the Event Ending Date/Time is still 2000Z.

**5.4 Example #4 - Flash Flood Warning for a Three-County Area (FFW).**

Situation - radar shows a slow moving band of heavy rainfall moving east across north central Ohio. WFO Cleveland forecasters note the likelihood of flash flooding in portions of Lorain, Medina, and Summit Counties and decide to issue a flash flood warning at 3:15 a.m. EDT (715Z).

WGUS51 KCLE 210715  
FFWCLE  
OHC093-103-153-211200-  
/O.NEW.KCLE.FF.W.0017.040521T0715Z-040521T1200Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED  
FLASH FLOOD WARNING  
NATIONAL WEATHER SERVICE CLEVELAND OH  
315 AM EDT FRI MAY 21 2004

THE NATIONAL WEATHER SERVICE IN CLEVELAND HAS ISSUED A

\* FLASH FLOOD WARNING FOR...

LORAIN COUNTY IN NORTH CENTRAL OHIO  
MEDINA COUNTY IN NORTHEAST OHIO  
SUMMIT COUNTY IN NORTHEAST OHIO

\* UNTIL 800 AM EDT

\* AT 304 AM EDT WEATHER SERVICE RADAR INDICATED THUNDERSTORMS WITH  
HEAVY RAINS IN THE AREA. WITH THE GROUND NEARLY SATURATED...FLOODING  
IS LIKELY.

NEVER DRIVE OR WALK INTO FLOODED AREAS.

LAT...LON 4113 8224 4130 8238 4117 8147 4097 8147

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**5.5 Example #5 - Flash Flood Statement: Follow up to Flash Flood Warning With Cancellation and Continuation Segments (FFS).** Situation – at 4:30 a.m., radar shows that the band of heavy rainfall has shifted eastward in north central Ohio. WFO Cleveland forecasters decide to cancel the flash flood warning in Lorain County and continue the flash flood warning in the two counties that are further east - Medina and Summit.

WGUS71 KCLE 210830  
FFSCLE

FLASH FLOOD STATEMENT  
NATIONAL WEATHER SERVICE CLEVELAND OH  
430 AM EDT FRI MAY 21 2004

OHC093-210845-  
/O.CAN.KCLE.FF.W.0017.000000T0000Z-040521T1200Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
LORAIN OH-  
430 AM EDT FRI MAY 21 2004

...THE FLASH FLOOD WARNING HAS BEEN CANCELLED FOR LORAIN COUNTY IN  
NORTH CENTRAL OHIO...

AT 425 AM EDT WEATHER SERVICE RADAR INDICATED THUNDERSTORMS HAVE  
MOVED EASTWARD OUT OF THE COUNTY AND FLASH FLOODING HAS SUBSIDED.  
SOME MINOR FLOODING WAS REPORTED ON HIGHWAY 18 JUST EAST OF  
WELLINGTON...BUT IT QUICKLY SUBSIDED.

DO NOT 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 4108 8198 4125 8198 4117 8147 4097 8147

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OHC103-153-211200-  
/O.CON.KCLE.FF.W.0017.000000T0000Z-030521T1200Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
MEDINA-SUMMIT OH-  
430 AM EDT FRI MAY 21 2004

...A FLASH FLOOD WARNING REMAINS IN EFFECT FOR MEDINA AND SUMMIT  
COUNTIES UNTIL 800 AM EDT...

THUNDERSTORMS WITH HEAVY RAIN HAVE CAUSED FLOODING IN PORTIONS OF MEDINA AND SUMMIT COUNTIES THIS MORNING. RADAR ESTIMATES INDICATED FROM 1 TO 2 INCHES HAD FALLEN FROM ABOUT 200 AM THROUGH 420 AM. THIS CAUSED FLOODING ON LAUREL ROAD IN BRUNSWICK WHERE TWO HOMES WERE FLOODED. FLOODING WAS ALSO REPORTED ON NORTH CARPENTER ROAD. ADDITIONAL FLOODING IS LIKELY IN OTHER LOCATIONS ACROSS THE AREA.

DO 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 4108 8198 4125 8198 4117 8147 4097 8147

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**Notes and Explanations:**

- (1) The first segment cancels the warning for one county (Lorain) and the second segment continues the warning for the other two counties in the original warning (Medina and Summit)
- (2) The product expiration time in the UGC line for the cancellation segment (845Z) indicates that it is to be purged 15 minutes after product issuance, while the product expiration time in the UGC line for the continuation segment is **the same as the Event Ending Time (1200Z)**.
- (3) Note the new Lat/Lon polygon coordinates for the revised warning area. These coordinates are repeated in both the cancellation and continuation segments.

**5.6 Example #6 - Flash Flood Warning: Dam Failure (FFW).** Situation - At 10 a.m. CDT, WFO Goodland receives a report from the U.S. Bureau of Reclamation that Bonny Dam is failing due to an expanding leak at the base of the dam. Bonny Dam is an earth fill structure on the South Fork Republican River, just upstream from the Colorado/Kansas state line. Because the river below the dam flows northeast, the warning must cover a town in eastern Colorado, a town in the northwest corner of Kansas, and two towns in southwest Nebraska.

WGUS53 KGLD 221508  
 FFWGLD  
 COC125-KSC023-NEC057-087-230015-  
 /O.NEW.KGLD.FF.W.0003.020422T1508Z-020423T0015Z/  
 /00000.U.DM.000000T0000Z.000000T0000Z.000000T0000Z.OO/

BULLETIN - EAS ACTIVATION REQUESTED  
 FLASH FLOOD WARNING  
 NATIONAL WEATHER SERVICE GOODLAND KS  
 1008 AM MDT MON APR 22 2002

THE NATIONAL WEATHER SERVICE IN GOODLAND HAS ISSUED A

\* FLASH FLOOD WARNING FOR...  
 THE SOUTH FORK REPUBLICAN RIVER BELOW FAILING BONNY DAM...  
 INCLUDING THE FOLLOWING DOWNSTREAM LOCATIONS...

SOUTHEASTERN YUMA COUNTY IN NORTHEAST COLORADO  
 THIS INCLUDES THE CITY OF HALE  
 CHEYENNE COUNTY IN NORTHWEST KANSAS  
 THIS INCLUDES THE CITY OF ST FRANCIS  
 SOUTHEASTERN DUNDY COUNTY IN SOUTHWEST NEBRASKA  
 THIS INCLUDES THE CITY OF BENKELMAN  
 WESTERN HITCHCOCK COUNTY IN SOUTHWEST NEBRASKA  
 THIS INCLUDES THE CITY OF STRATTON

\* UNTIL 615 PM MDT /715 PM CDT/

\* AT 1000 AM MDT /11 AM CDT/ NATIONAL WEATHER SERVICE AND THE UNITED STATES BUREAU OF RECLAMATION REPORTS THAT BONNY DAM HAS FAILED... MASSIVE FLASH FLOODING IS DEVELOPING BELOW THE DAM DUE TO RAPID EROSION OF THE STRUCTURE.

\* THE ESTIMATED TIME FOR THE LEADING EDGE OF THE FLOOD WAVE TO REACH HALE IS 1030 AM MDT...FOR ST. FRANCIS 1248 PM MDT... FOR BENKELMAN 338 PM MDT AND FOR STRATTON 6 PM MDT.

MOVE FAR AWAY FROM THE SOUTH FORK REPUBLICAN RIVER AND DO NOT STAY IN AREAS SUBJECT TO FLOODING WHEN WATER BEGINS RISING. THIS IS A VERY DANGEROUS SITUATION BELOW BONNY DAM. ALL PEOPLE LIVING ALONG OR LOCATED NEAR THE SOUTH FORK REPUBLICAN AND REPUBLICAN RIVERS SHOULD BEGIN EVACUATION...AND MOVE TO HIGHER GROUND IMMEDIATELY.

LAT...LON 3868 10233 3871 10187 3909 10187 3904 10209 3903 10234

\$\$

**Notes and Explanations:**

(1) In flash flood warnings which include point-specific hydrologic forecast information or provide information on flash flooding which is not the direct result of heavy precipitation (e.g., a dam failure), the flood severity code in the H-VTEC string is set to "U" if the flood severity is unknown.

**5.7 Example #7 - Flash Flood Statement: Follow up to Flash Flood Warning For A Dam Failure (FFS).** Situation - Bonny Dam failed 30 minutes ago and the WFO provides updated information on the downstream moving flood wave with a single-segment flash flood statement.

WGUS73 KGLD 221638  
FFSGLD

FLASH FLOOD STATEMENT  
NATIONAL WEATHER SERVICE GOODLAND KS  
1038 AM MDT MON APR 22 2002

COC125-KSC023-NEC057-087-230015-  
/O.CON.KGLD.FF.W.0003.000000T0000Z-020423T0015Z/  
/00000.U.DM.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
YUMA CO-CHEYENNE KS-DUNDY NE-HITCHCOCK NE-  
1038 AM MDT MON APR 22 2002

...THE FLASH FLOOD WARNING DUE TO FAILURE OF BONNY DAM REMAINS IN EFFECT ALONG THE SOUTH FORK REPUBLICAN RIVER IN NORTHEAST COLORADO NORTHWEST KANSAS AND SOUTHWEST NEBRASKA...

THE FLOOD WAVE CAUSED BY FAILURE OF BONNY DAM REACHED THE TOWN OF HALE COLORADO AT 1030 AM MDT. LOCAL POLICE REPORTED A 30 TO 40 FOOT HIGH FLOOD WAVE SWEEPING THROUGH THE TOWN...CAUSING NEAR TOTAL DAMAGE TO ALL STRUCTURES AT LOWER ELEVATIONS NEAR THE RIVER.

THE ESTIMATED TIME FOR THE LEADING EDGE OF THE FLOOD WAVE TO REACH ST. FRANCIS KS IS 1248 PM MDT...FOR BENKELMAN NE 338 PM MDT AND FOR STRATTON NE ABOUT 600 PM MDT.

THE NEXT DOWNSTREAM RESERVOIR...SWANSON RESERVOIR BEHIND TRENTON DAM IN HITCHCOCK COUNTY NEBRASKA...HAS BEEN VERY LOW DUE TO THE RECENT DROUGHT. AUTHORITIES BELIEVE THAT TRENTON DAM WILL BE ABLE TO CONTAIN THE FLOOD WATERS FROM FAILED BONNY DAM...SO FAILURE OF TRENTON DAM IS NOT A THREAT AT THIS TIME. HOWEVER...WATER RELEASES

HAVE BEEN STARTED FROM TRENTON DAM TO ENSURE THE SAFETY OF THE DAM. THEREFORE RIVER LEVELS WILL BE A FOOT OR SO HIGHER THAN THEY HAVE BEEN IN THE SOUTH FORK REPUBLICAN RIVER BELOW TRENTON DAM AND IN THE REPUBLICAN RIVER BELOW WHERE THE TWO RIVERS JOIN.

THIS IS A VERY DANGEROUS SITUATION BELOW BONNY DAM. MOVE FAR AWAY FROM THE SOUTH FORK REPUBLICAN RIVER AND DO NOT STAY IN AREAS SUBJECT TO FLOODING WHEN WATER BEGINS RISING. ALL PEOPLE LIVING ALONG OR LOCATED NEAR THE SOUTH FORK REPUBLICAN RIVER SHOULD EVACUATE... AND MOVE TO HIGHER GROUND IMMEDIATELY!

LAT...LON 3868 10233 3871 10187 3909 10187 3904 10209 3903 10234

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**5.8 Example #8 - 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 "areal" 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.
- \* 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.

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

\$\$

**5.9 Example #9 - 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.

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

\$\$

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

**6.1 Example #1 - Flood Warning for Forecast Points: Initial Issuance (FLW).** Situation - At 12:00 noon on Friday April 6, WFO Newport/Morehead City issues a new flood warning for three forecast points in its HSA.

WGUS42 KMHX 061600  
FLWMHX

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
FLOOD WARNING  
NATIONAL WEATHER SERVICE NEWPORT/MOREHEAD CITY NC  
1200 PM EDT FRI APR 6 2001

...THE NATIONAL WEATHER SERVICE IN NEWPORT HAS ISSUED A FLOOD WARNING  
FOR THE FOLLOWING RIVERS IN NORTH CAROLINA...

NEUSE RIVER AT KINSTON AFFECTING CRAVEN AND LENOIR COUNTIES.  
TAR RIVER AT GREENVILLE AFFECTING PITT COUNTY.  
ROANOKE RIVER NEAR WILLIAMSTON AFFECTING MARTIN COUNTY.

.HEAVY RAINFALL LAST NIGHT IN EASTERN NORTH CAROLINA HAS CAUSED THE  
ALREADY HIGH NEUSE...TAR...AND ROANOKE RIVERS TO RISE NEAR OR ABOVE  
FLOOD STAGE. THESE RIVERS RISE AND FALL VERY SLOWLY...SO THE EXACT  
DURATION OF THIS FLOOD IS DIFFICULT TO PREDICT AND MINOR FLOODING  
WILL PERSIST FOR SEVERAL DAYS.

SAFETY MESSAGE...NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES  
THROUGH FLOODED AREAS. THE WATER MAY BE TOO DEEP FOR SAFE PASSAGE.

ADDITIONAL INFORMATION IS AVAILABLE AT  
[HTTP://AHPS.ERH.NOAA.GOV/CGI-BIN/AHPS.CGI?MHX](http://ahps.erh.noaa.gov/cgi-bin/ahps.cgi?mhx).

THE NEXT STATEMENT WILL BE ISSUED THIS EVENING AT 1000 PM.

NCC049-107-070200-  
/O.NEW.KMHX.FL.W.0001.010407T1300Z-000000T0000Z/  
/KINN7.1.ER.010407T1300Z.010412T0100Z.000000T0000Z.NO/  
1200 PM EDT FRI APR 6 2001

...FLOOD WARNING IN EFFECT FROM SATURDAY MORNING UNTIL FURTHER  
NOTICE...

THE NATIONAL WEATHER SERVICE IN NEWPORT HAS ISSUED A  
\* FLOOD WARNING FOR  
THE NEUSE RIVER AT KINSTON.  
\* FROM SATURDAY MORNING UNTIL FURTHER NOTICE.  
\* AT 900 AM EDT FRIDAY THE STAGE WAS 13.5 FEET.  
\* MINOR FLOODING IS FORECAST.  
\* FLOOD STAGE IS 14.0 FEET.  
\* FORECAST...FLOOD STAGE WILL BE REACHED AT 900 AM SATURDAY. MAXIMUM  
STAGE WILL BE 15.0 FEET AT 900 PM EDT WEDNESDAY. THE RIVER MAY REMAIN  
ABOVE FLOOD STAGE FOR SEVERAL WEEKS.  
\* IMPACT...AT 14 FEET...WATER WILL BEGIN TO OVERFLOW INTO LOWLANDS  
ADJACENT TO THE NEUSE RIVER.

\$\$

NCC147-070200-  
/O.NEW.KMHX.FL.W.0002.010406T1600Z-010410T1000Z/  
/PGVN7.1.ER.010406T0400Z.010408T1200Z.010410T1000Z.NO/  
1200 PM EDT FRI APR 6 2001

...FLOOD WARNING IN EFFECT UNTIL TUESDAY MORNING...

THE NATIONAL WEATHER SERVICE IN NEWPORT HAS ISSUED A  
\* FLOOD WARNING FOR  
THE TAR RIVER AT GREENVILLE.  
\* UNTIL TUESDAY MORNING.  
\* AT 1100 AM EDT FRIDAY THE STAGE WAS 14.9 FEET.  
\* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST.



- \* FLOOD STAGE IS 13.0 FEET.
- \* FORECAST...MAXIMUM STAGE WILL BE 16.0 FEET AT 800 AM SUNDAY. THE RIVER WILL FALL BELOW FLOOD STAGE AT 600 AM TUESDAY.
- \* IMPACT...AT 16 FEET...WIDESPREAD LOW LAND FLOODING ADJACENT TO THE TAR RIVER OCCURS. FARMLAND WILL BEGIN TO FLOOD ACROSS PITT COUNTY.

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NCC117-070200-  
/O.NEW.KMHX.FL.W.0003.010407T0000Z-000000T0000Z/  
/WLLN7.1.ER.010407T0000Z.010410T0000Z.000000T0000Z.NO/  
1200 PM EDT FRI APR 6 2001

...FLOOD WARNING IN EFFECT FROM FRIDAY EVENING UNTIL FURTHER NOTICE...

THE NATIONAL WEATHER SERVICE IN NEWPORT HAS ISSUED A

- \* FLOOD WARNING FOR THE ROANOKE RIVER NEAR WILLIAMSTON.
- \* FROM FRIDAY EVENING UNTIL FURTHER NOTICE.
- \* AT 900 AM EDT FRIDAY THE STAGE WAS 9.8 FEET.
- \* MINOR FLOODING IS FORECAST.
- \* FLOOD STAGE IS 10.0 FEET.
- \* FORECAST...FLOOD STAGE WILL BE REACHED AT 800 PM FRIDAY. FORECAST MAXIMUM STAGE IS 10.6 FEET AT 800 PM MONDAY. THE RIVER MAY REMAIN ABOVE FLOOD STAGE FOR A WEEK OR MORE.
- \* IMPACT...AT 10 FEET...MINOR LOWLAND FLOODING ADJACENT TO THE ROANOKE RIVER WILL BEGIN.

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### 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.
- (2) Kinston was forecast to go above flood stage at 9 a.m. EDT Saturday April 7 and Williamston was forecast to go above flood stage at 8 p.m. EDT Friday April 6, so their respective Event Beginning Date/Times were (010407T1300Z) and (010407T0000Z). These same times were entered for the Flood Begin Date/Times in the H-VTEC string for each point.
- (3) For Greenville, the flood warning was issued after the fact – i.e., the river was already above flood stage at time of issuance – so the Event Beginning Date/Time in the P-VTEC string was set to the time of product issuance (010406T1600Z, see NWSI 10-1703, section 4.2.6). However, the Flood Begin Date/Time in the H-VTEC string was set to the actual time flooding started (assume gage showed it was 12 hours earlier at 12 a.m. midnight on April 6 = 010406T0400Z).
- (4) Maximum stages for Kinston, Greenville, and Williamston were forecast to occur at 9 p.m. Wednesday, 8 a.m. Sunday, and 8 p.m. Monday respectively, so the Flood Crest Date/Times in the corresponding H-VTEC strings were 010412T0100Z, 010408T1200Z, and 010410T0000Z.
- (5) For Kinston and Williamston, the end time of the flood (i.e., time below flood stage) was unknown at the time of product issuance. Therefore, the Event Ending Date/Time in the P-VTEC string and the Flood End Date/Time in the H-VTEC string were set to 000000T0000Z for both points and the second bullet for these points reads “UNTIL FURTHER NOTICE.”
- (6) The forecast for Greenville was to go below flood stage at 6 a.m. on Tues. April 10, 2001, so the Event Ending Date/Time in the P-VTEC string and the Flood End Date/Time in the H-VTEC string were set to 010410T1000Z and the second bullet reads “UNTIL TUESDAY MORNING.”
- (7) Note that optional headlines were included with each segment. However, also note that the headlines repeat what is stated in the first and second bullets, so they are probably unnecessary.

**6.2 Example #2 - Flood Statement: Follow-up to Flood Warning For Forecast Points**

**(FLS).** Situation - At 10 p.m. on April 6, WFO Newport/Morehead City issues a flood statement to follow up the flood warning issued ten hours earlier.

WGUS82 KMHX 070200  
FLSMHX

FLOOD STATEMENT  
NATIONAL WEATHER SERVICE NEWPORT/MOREHEAD CITY NC  
1000 PM EDT FRI APR 6 2001

...THE FLOOD WARNING CONTINUES FOR THE FOLLOWING RIVERS IN  
NORTH CAROLINA...

NEUSE RIVER AT KINSTON AFFECTING CRAVEN AND LENOIR COUNTIES.  
TAR RIVER AT GREENVILLE AFFECTING PITT COUNTY.  
ROANOKE RIVER NEAR WILLIAMSTON AFFECTING MARTIN COUNTY.

.LAST NIGHTS HEAVY RAINFALL HAS CAUSED THE NEUSE...TAR...AND ROANOKE  
RIVERS TO RISE SLIGHTLY ABOVE FLOOD STAGE. THESE RIVERS RISE AND FALL  
VERY SLOWLY...SO THE EXACT DURATION OF THIS FLOOD IS DIFFICULT TO  
PREDICT AND MINOR FLOODING WILL PERSIST FOR SEVERAL DAYS.

SAFETY MESSAGE...NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES  
THROUGH FLOODED AREAS. THE WATER MAY BE TOO DEEP FOR SAFE PASSAGE.

ADDITIONAL INFORMATION IS AVAILABLE AT  
[HTTP://AHPS.ERH.NOAA.GOV/CHI-BIN/AHPS.CGI?MHX](http://ahps.erh.noaa.gov/chi-bin/ahps.cgi?mhx).

THE NEXT STATEMENT WILL BE ISSUED SATURDAY MORNING AT 1000 AM EDT.

NCC049-107-071400-  
/O.CON.KMHX.FL.W.0001.010407T1300Z-000000T0000Z/  
/KINN7.1.ER.010407T1300Z.010412T0100Z.000000T0000Z.NO/  
1000 PM EDT FRI APR 6 2001

...FLOOD WARNING REMAINS IN EFFECT FROM SATURDAY MORNING UNTIL  
FURTHER NOTICE...

THE FLOOD WARNING CONTINUES FOR  
THE NEUSE RIVER AT KINSTON.  
\* FROM SATURDAY MORNING UNTIL FURTHER NOTICE.  
\* AT 900 PM EDT FRIDAY THE STAGE WAS 13.7 FEET.  
\* MINOR FLOODING IS FORECAST.  
\* FLOOD STAGE IS 14.0 FEET.  
\* FORECAST...FLOOD STAGE WILL BE REACHED AT 900 AM EDT SATURDAY.  
MAXIMUM STAGE WILL BE 15.0 FEET AT 900 PM EDT WEDNESDAY. THE RIVER  
MAY REMAIN ABOVE FLOOD STAGE FOR SEVERAL WEEKS.  
\* IMPACT...AT 14 FEET...WATER WILL BEGIN TO OVERFLOW INTO LOWLANDS  
ADJACENT TO THE NEUSE RIVER.

\$\$

NCC147-071400-  
/O.CON.KMHX.FL.W.0002.000000T0000Z-010410T1000Z/  
/PGVN7.1.ER.010406T0400Z.010408T1200Z.010410T1000Z.NO/  
1000 PM EDT FRI APR 6 2001

...FLOOD WARNING REMAINS IN EFFECT UNTIL TUESDAY MORNING...

THE FLOOD WARNING CONTINUES FOR  
THE TAR RIVER AT GREENVILLE.  
\* UNTIL TUESDAY MORNING.  
\* AT 900 PM EDT FRIDAY THE STAGE WAS 15.3 FEET.  
\* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST.

\* FLOOD STAGE IS 13.0 FEET.  
\* FORECAST...MAXIMUM STAGE WILL BE 16.0 FEET AT 800 AM EDT SUNDAY.  
THE RIVER WILL FALL BELOW FLOOD STAGE AT 600 AM EDT TUESDAY.  
\* IMPACT...AT 16 FEET...WIDESPREAD LOW LAND FLOODING ADJACENT TO THE  
TAR RIVER OCCURS. FARMLAND WILL BEGIN TO FLOOD ACROSS PITT COUNTY.

\$\$

NCC117-071400-  
/O.CON.KMHX.FL.W.0003.000000T0000Z-000000T0000Z/  
/WLLN7.1.ER.010407T0000Z.010410T0000Z.000000T0000Z.NO/  
1000 PM EDT FRI APR 6 2001

...FLOOD WARNING REMAINS IN EFFECT UNTIL FURTHER NOTICE...

THE FLOOD WARNING CONTINUES FOR  
THE ROANOKE RIVER NEAR WILLIAMSTON.  
\* UNTIL FURTHER NOTICE.  
\* AT 900 PM EDT FRIDAY THE STAGE WAS 10.0 FEET.  
\* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST.  
\* FLOOD STAGE IS 10.0 FEET.  
\* FORECAST...MAXIMUM STAGE WILL BE 10.6 FEET AT 800 PM EDT MONDAY. THE  
RIVER MAY REMAIN ABOVE FLOOD STAGE FOR A WEEK OR MORE.  
\* IMPACT...AT 10 FEET...MINOR LOWLAND FLOODING ADJACENT TO THE RIVER  
BEGINS.

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### Notes and Explanations:

- (1) For Kinston, the Event Beginning Date/Time in the P-VTEC string is still 010407T1300Z because flood stage has not yet been reached there. For Greenville and Williamston, the Event Beginning Date/Times in the P-VTEC strings are 000000T0000Z because the product is being issued to provide updated information after the event has already begun at these points.
- (2) Since the forecast times for the flood at all three forecast points have not changed, all other Date/Times are unchanged from the initial flood warning product.
- (3) For Williamston, "MINOR FLOODING IS OCCURRING" has been added to the third bullet because flood stage was reached there.

**6.3 Example #3 - Flood Statement: Continuation of Flood Warning for Two Forecast Points, Cancellation of Flood Warning for One Forecast Point (FLS).** Situation - At 10 p.m. Monday evening on April 9<sup>th</sup> (3 days since the initial flood warning), Greenville has fallen below flood stage a bit earlier than expected, and the full forecast for Williamston is now known (i.e., models now show the time when the river will fall below flood stage). However, the Event Ending Date/Time is still beyond the forecast period for Kinston. The following product cancels the flood warning for Greenville and continues the flood warning for Kinston and Williamston.

WGUS82 KMHX 100200  
FLSMHX

FLOOD STATEMENT  
NATIONAL WEATHER SERVICE NEWPORT/MOREHEAD CITY NC  
1000 PM EDT MON APR 9 2001

...THE FLOOD WARNING IS CANCELLED FOR THE FOLLOWING RIVER IN NORTH  
CAROLINA...

TAR RIVER AT GREENVILLE AFFECTING PITT COUNTY.

...THE FLOOD WARNING CONTINUES FOR THE FOLLOWING RIVERS IN  
NORTH CAROLINA...

NEUSE RIVER AT KINSTON AFFECTING CRAVEN AND LENOIR COUNTIES.  
ROANOKE RIVER NEAR WILLIAMSTON AFFECTING MARTIN COUNTY.

.THE TAR RIVER HAS DROPPED BELOW FLOOD STAGE WHILE THE NEUSE AND  
ROANOKE RIVERS ARE SLOWLY FALLING. THESE RIVERS RISE AND FALL VERY  
SLOWLY...SO THE EXACT DURATION OF THIS FLOOD IS DIFFICULT TO PREDICT  
AND MINOR FLOODING WILL PERSIST FOR SEVERAL DAYS.

SAFETY MESSAGE...NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES  
THROUGH FLOODED AREAS. THE WATER MAY BE TOO DEEP FOR SAFE PASSAGE.

ADDITIONAL INFORMATION IS AVAILABLE AT  
[HTTP://AHPS.ERH.NOAA.GOV/CHI-BIN/AHPS.CGI?MHX/](http://ahps.erh.noaa.gov/chi-bin/ahps.cgi?mhx/).

THE NEXT STATEMENT WILL BE ISSUED TUESDAY MORNING AT 1000 AM EDT.

NCC147-100215-  
/O.CAN.KMHX.FL.W.0002.000000T0000Z-010410T1000Z/  
/PGVN7.1.ER.010406T0500Z.010408T1300Z.010410T0000Z.NO/  
1000 PM EDT MON APR 9 2001

...FLOOD WARNING IS CANCELLED...

THE FLOOD WARNING IS CANCELLED FOR  
THE TAR RIVER AT GREENVILLE.

- \* AT 900 PM EDT MONDAY THE STAGE WAS 12.9 FEET.
- \* FLOOD STAGE IS 13.0 FEET.
- \* FELL BELOW FLOOD STAGE AT 800 PM MONDAY.
- \* FORECAST...A SLOW DECLINE SHOULD CONTINUE...WITH THE RIVER  
FALLING TO 12 FEET BY 800 PM WEDNESDAY.

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NCC049-107-101400-  
/O.CON.KMHX.FL.W.0001.000000T0000Z-000000T0000Z/  
/KINN7.1.ER.010407T1300Z.010412T0100Z.000000T0000Z.NO/  
1000 PM EDT MON APR 9 2001

...FLOOD WARNING REMAINS IN EFFECT FOR THE NEXT SEVERAL DAYS...

THE FLOOD WARNING CONTINUES FOR  
THE NEUSE RIVER AT KINSTON.

- \* FOR THE NEXT SEVERAL DAYS.
- \* AT 900 PM EDT MONDAY THE STAGE WAS 14.6 FEET.
- \* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST.
- \* FLOOD STAGE IS 14.0 FEET.
- \* FORECAST...MAXIMUM STAGE WILL BE 15.1 FEET AT 900 PM EDT WEDNESDAY.  
THE RIVER MAY REMAIN ABOVE FLOOD STAGE FOR 1 TO 2 WEEKS.
- \* IMPACT...AT 14 FEET...WATER OVERFLOWS INTO LOWLANDS ADJACENT TO THE  
NEUSE RIVER.

\$\$

NCC117-101400-  
/O.EXT.KMHX.FL.W.0003.000000T0000Z-010413T0200Z/  
/WLLN7.1.ER.010407T0000Z.010410T0000Z.010413T0200Z.NO/  
1000 PM EDT MON APR 9 2001

...FLOOD WARNING NOW EXPECTED TO END THURSDAY EVENING...

THE FLOOD WARNING CONTINUES FOR  
 THE ROANOKE RIVER NEAR WILLIAMSTON.  
 \* UNTIL THURSDAY EVENING.  
 \* AT 900 PM EDT MONDAY THE STAGE WAS 10.5 FEET.  
 \* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST.  
 \* FLOOD STAGE IS 10.0 FEET.  
 \* FORECAST...THE RIVER HAS PEAKED AND WILL BEGIN A SLOW FALL...  
 FALLING BELOW FLOOD STAGE THURSDAY EVENING.  
 \* IMPACT...AT 10 FEET...MINOR LOWLAND FLOODING ADJACENT TO THE  
 ROANOKE RIVER OCCURS.

\$\$

**Notes and Explanations:**

(1) For Greenville, the event had been forecast to end at 1000Z on April 10, but when this product was issued at 0200Z on April 10, the river had already fallen below flood stage two hours before product issuance. Therefore, the time the event was originally forecasted to end (010410T1000Z) is used in the Event Ending Date/Time of the P-VTEC string and the time that the river actually fell below flood stage (010410T0000Z) is used in the Flood End Date/Time of the H-VTEC string (see NWSI 10-1703, Section 4.2.7).

(2) In the second segment, "FOR THE NEXT SEVERAL DAYS" is used for the long-term duration phrase, because the forecaster now has a general idea that the flooding will end in a matter of days rather than a more distant time frame implied by "UNTIL FURTHER NOTICE."

(3) The third segment (Roanoke River at Williamston) illustrates a special case – an event ending time is being forecast for the first time for a long-duration flood at a location for which previous FLS products used ten zeros for the Event Ending Date/Time in the P-VTEC string. The river is now forecast to fall below flood stage at about 10 p.m. on Thursday evening April 12 (0200Z on April 13). Therefore, the third segment uses the EXT action code instead of CON and its format is otherwise the same as a continuation segment, except a special headline is used to announce that an ending time has been determined and the Event Ending Date/Time in the P-VTEC string and the Flood End Date/Time in the H-VTEC string now have an actual date and time instead of ten zeros. After this special EXT segment is issued, the next flood statement for this forecast point product would revert to using a CON segment until the flood ends, unless the event ending time changes again, which would require the process to be repeated.

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

Situation – unexpectedly heavy rainfall occurs overnight just to the east of Des Moines, IA. At 10:30 a.m. on Friday May 9, WFO Des Moines issues a new flood warning for three forecast points.

WUS43 KDMX 091530  
 FLWDMX

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
 FLOOD WARNING  
 NATIONAL WEATHER SERVICE DES MOINES IA  
 1030 AM CDT FRI MAY 9 2003

...THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A FLOOD  
 WARNING FOR THE FOLLOWING RIVERS IN CENTRAL IOWA...

SAFETY MESSAGE...NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES THROUGH FLOODED AREAS. STAY TUNED TO DEVELOPMENTS BY LISTENING TO NOAA WEATHER RADIO.

ADDITIONAL INFORMATION IS AVAILABLE AT [WWW.CRH.NOAA.GOV/DMX/AHPS](http://WWW.CRH.NOAA.GOV/DMX/AHPS).

THE NEXT STATEMENT WILL BE ISSUED BY 1000 PM FRIDAY EVENING.

IAC049-100300-  
/O.NEW.KDMX.FL.W.0011.030509T1530Z-030512T0300Z/  
/VNMI4.1.ER.030509T0400Z.030509T0900Z.030512T0300Z.NO/  
1030 AM CDT FRI MAY 9 2003

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A  
\* FLOOD WARNING FOR  
THE RACCOON RIVER AT VAN METER.  
\* UNTIL SUNDAY EVENING.  
\* AT 9 AM CDT FRIDAY THE STAGE WAS 16.4 FEET...AN INCREASE OF  
10.8 FEET SINCE 9 AM YESTERDAY MORNING.  
\* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST.  
\* RECENT ACTIVITY...FLOOD STAGE WAS REACHED AT 11 PM THURSDAY  
NIGHT AND THE RIVER CRESTED AT 16.5 FEET 4 AM FRIDAY MORNING.  
\* FLOOD STAGE IS 13.0 FEET.  
\* FORECAST...THE RIVER WILL FALL BELOW FLOOD STAGE SUNDAY EVENING.  
\* IMPACT...AT 16.0 FEET...THE UTICA TRAIL ROAD SOUTHWEST OF  
BOONVILLE AND SOUTH OF COUNTY ROAD F90 BEGINS TO FLOOD.

&&

LOCATION	FLD		OBSERVED		24 HR		FORECASTS (7 AM)		
	STG	STG	DAY/TIME	CHG	SAT	SUN	MON		
RACCOON RIVER BASIN									
VAN METER	13.0	16.4	9 AM	10.8	15.3	14.0	11.0		

\$\$

IAC153-100300-  
/O.NEW.KDMX.FL.W.0012.030509T1530Z-030512T0900Z/  
/DEMI4.2.ER.030509T0900Z.030510T0900Z.030512T0900Z.NO/  
1030 AM CDT FRI MAY 9 2003

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A  
\* FLOOD WARNING FOR  
THE RACCOON RIVER AT DES MOINES FLEUR DRIVE.  
\* UNTIL MONDAY MORNING.  
\* AT 9 AM CDT FRIDAY THE STAGE WAS 13.9 FEET...AN INCREASE OF  
12.8 FEET SINCE 9 AM YESTERDAY MORNING.  
\* MINOR FLOODING IS OCCURRING AND MODERATE FLOODING IS FORECAST.  
\* FLOOD STAGE IS 12.0 FEET.  
\* FORECAST...THE RIVER WILL CREST AT 15.1 FEET AT 4 AM SATURDAY  
MORNING AND FALL BELOW FLOOD STAGE AT 4 AM MONDAY MORNING.  
\* IMPACT...AT 15 FEET...FLOODING OCCURS OVER MUCH OF SOUTHWEST 28TH  
STREET BETWEEN VALLEY DRIVE AND THE RAILROAD TRACKS.

&&

LOCATION	FLD		OBSERVED		24 HR		FORECASTS (7 AM)		
	STG	STG	DAY/TIME	CHG	SAT	SUN	MON		
RACCOON RIVER BASIN									
DES MOINES FLEUR DRIVE	12.0	13.9	9 AM	12.8	14.8	13.2	11.5		

\$\$

IAC153-100300-  
 /O.NEW.KDMX.FL.W.0013.030509T2100Z-030510T2100Z/  
 /DESI4.1.ER.030509T2100Z.030510T0300Z.030510T2100Z.NO/  
 1030 AM CDT FRI MAY 9 2003

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A  
 \* FLOOD WARNING FOR  
 THE DES MOINES RIVER AT DES MOINES SE 6TH.  
 \* FROM THIS AFTERNOON UNTIL SATURDAY AFTERNOON.  
 \* AT 900 AM EDT FRIDAY THE STAGE WAS 23.7 FEET...AN INCREASE OF  
 13.2 FEET SINCE 900 AM YESTERDAY MORNING.  
 \* MINOR FLOODING IS FORECAST.  
 \* FLOOD STAGE IS 24.0 FEET.  
 \* FORECAST...FLOOD STAGE WILL BE REACHED AT 400 PM FRIDAY. THE RIVER  
 WILL REMAIN NEAR FLOOD STAGE UNTIL MID-AFTERNOON SATURDAY.  
 \* IMPACT...AT 24 FEET...WEST RIVERSIDE DRIVE IS FLOODED.

&&

LOCATION	FLD	OBSERVED	24 HR	FORECASTS (7 AM)		
	STG	STG DAY/TIME		CHG	SAT	SUN
DES MOINES RIVER BASIN						
DES MOINES SE 6TH	24.0	23.7 9 AM	13.2	24.1	23.9	22.5

\$\$

**Notes and Explanations:**

- (1) Note how the overview headline/synopsis section of this product omits the summary of forecast points and affected counties, with the goal of having only the text starting with SAFETY MESSAGE..., ADDITIONAL INFORMATION IS..., and THE NEXT STATEMENT... set to be read by NOAA Weather Radio - All Hazards after the end of the bullets in each segment.
- (2) Both Raccoon River forecast points were already in flood when the product was issued, so the Event Beginning Date/Time in the P-VTEC strings for each point is set to the current product issuance time – i.e., 030509T1530Z. However, the Event Beginning Date/Time in the H-VTEC strings is set to the actual time in the past that flooding started at each point (assume 11 p.m. May 8 = 030509T0400Z for Raccoon River at Van Meter and 4 a.m. May 9 = 030509T0900Z for Raccoon River at Des Moines Fleur Drive).
- (3) Note how optional descriptions of the change in stage since a previous reading are provided in the observed stage bullets for all three forecast points in this product.
- (4) The forecaster expects the flood warnings at Van Meter, Des Moines Fleur Drive, and Des Moines SE 6th to be in effect until 10 p.m. Sunday evening, 4 a.m. Monday morning, and 4 p.m. Saturday morning respectively. Therefore, the corresponding time/day phrase used for these points in the second bullet is “Sunday evening,” “Monday morning,” and “Saturday afternoon.”
- (5) Note how tabular observed/forecast values are provided in each segment, separated by &&.
- (6) Note how the second and third segments have the same UGC – they are in the same county.

**6.5 Example #5 - Flood Statement – Flood Statement: Continuation of Flood Warning for Two Forecast Points, Cancellation of Flood Warning for One Forecast Point (FLS).**

Situation - At 10:00 p.m. on Friday May 9, WFO Des Moines issues a flood statement to follow up the previously issued flood warning for three forecast points in its HSA.

WUS83 KDMX 100300  
FLSDMX

FLOOD STATEMENT  
NATIONAL WEATHER SERVICE DES MOINES IA  
1000 PM CDT FRI MAY 9 2003

...THE FLOOD WARNING CONTINUES FOR THE RACCOON RIVER AT VAN METER AND THE RACCOON RIVER AT DES MOINES FLEUR DRIVE. THE FLOOD WARNING IS CANCELLED FOR THE DES MOINES RIVER AT DES MOINES SE 6TH...

SAFETY MESSAGE...NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES THROUGH FLOODED AREAS. STAY TUNED TO DEVELOPMENTS BY LISTENING TO NOAA WEATHER RADIO.

ADDITIONAL INFORMATION IS AVAILABLE AT [WWW.CRH.NOAA.GOV/DMX/AHPS](http://WWW.CRH.NOAA.GOV/DMX/AHPS).

THE NEXT STATEMENT WILL BE ISSUED SATURDAY MORNING.

IAC049-101500-  
/O.CON.KDMX.FL.W.0011.000000T0000Z-030512T0300Z/  
/VNMI4.1.ER.030509T0400Z.030509T0900Z.030512T0300Z.NO/  
1000 PM CDT FRI MAY 9 2003

THE FLOOD WARNING CONTINUES FOR THE RACCOON RIVER AT VAN METER.  
\* UNTIL SUNDAY EVENING.  
\* AT 900 PM CDT FRIDAY THE STAGE WAS 15.9 FEET...A DECREASE OF 0.5 FOOT SINCE 900 AM THIS MORNING.  
\* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST.  
\* FLOOD STAGE IS 13.0 FEET.  
\* RECENT ACTIVITY...THE RIVER REACHED FLOOD STAGE AT 11 PM THURSDAY NIGHT AND CRESTED AT 16.5 FEET 400 AM FRIDAY MORNING.  
\* FORECAST...THE RIVER WILL CONTINUE TO RECEDE STEADILY AND FALL BELOW FLOOD STAGE SUNDAY EVENING.  
\* IMPACT...AT 16.0 FEET...THE UTICA TRAIL ROAD SOUTHWEST OF BOONVILLE AND SOUTH OF COUNTY ROAD F90 BEGINS TO FLOOD.

&&

LOCATION	FLD		OBSERVED STG DAY/TIME	24 HR CHG	FORECASTS (7 AM)		
	STG	STG			SAT	SUN	MON
RACCOON RIVER BASIN VAN METER	13.0	15.9	9 PM	9.1	15.2	13.9	11.0

\$\$

IAC153-101500-  
/O.CON.KDMX.FL.W.0012.000000T0000Z-030512T0900Z/  
/DEMI4.2.ER.030509T0900Z.030510T0900Z.030512T0900Z.NO/  
1000 PM CDT FRI MAY 9 2003

THE FLOOD WARNING CONTINUES FOR THE RACCOON RIVER AT DES MOINES FLEUR DRIVE.  
\* UNTIL MONDAY MORNING.  
\* AT 900 PM CDT FRIDAY THE STAGE WAS 14.3 FEET...AN INCREASE OF 0.4 FOOT SINCE 900 AM THIS MORNING.  
\* MINOR FLOODING IS OCCURRING AND MODERATE FLOODING IS FORECAST.  
\* FLOOD STAGE IS 12.0 FEET.  
\* FORECAST...THE RIVER WILL CREST AT 15.1 FEET AT 400 AM SATURDAY MORNING AND FALL BELOW FLOOD STAGE AT 400 AM MONDAY MORNING.  
\* IMPACT...AT 15 FEET...FLOODING OCCURS OVER MUCH OF SOUTHWEST 28TH STREET BETWEEN VALLEY DRIVE AND THE RAILROAD TRACKS.



&&

LOCATION	FLD	OBSERVED	24 HR	FORECASTS (7 AM)		
	STG	STG DAY/TIME	CHG	SAT	SUN	MON
RACON RIVER BASIN DES MOINES FLEUR DRIVE	12.0	14.3 9 PM	10.2	14.6	13.1	11.3

\$\$

IAC153-100400-  
/O.CAN.KDMX.FL.W.0013.000000T0000Z-030510T2100Z/  
/DESI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.NO/  
1000 PM EDT FRI MAY 9 2003

THE FLOOD WARNING IS CANCELLED FOR  
THE DES MOINES RIVER AT DES MOINES SE 6TH.  
\* AT 900 PM CDT FRIDAY THE STAGE WAS 23.8 FEET...AN INCREASE OF  
0.1 FOOT SINCE 900 AM THIS MORNING.  
\* FLOOD STAGE IS 24.0 FEET.  
\* FORECAST...THE RIVER WILL STAY BELOW FLOOD STAGE THROUGH THE  
CURRENT EVENT AND GRADUALLY RECEDE TO 23.5 FEET BY MONDAY MORNING  
\* IMPACT...AT 24 FEET...WEST RIVERSIDE DRIVE IS FLOODED.

&&

LOCATION	FLD	OBSERVED	24 HR	FORECASTS (7 AM)		
	STG	STG DAY/TIME	CHG	SAT	SUN	MON
DES MOINES RIVER BASIN DES MOINES SE 6TH	24.0	23.8 9 PM	11.2	23.9	23.7	23.5

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**Notes and Explanations:**

- (1) Even though VTEC rules call for cancellation segments to go before continuation segments, the segment canceling the flood warning for Des Moines SE 6<sup>th</sup> occurs after the continuation segments for Van Meter and Des Moines Fleur Drive. This is because Des Moines SE 6<sup>th</sup> is downstream from Van Meter and Des Moines Fleur Drive and the WFO wants its flood products to reflect this upstream to downstream hierarchy.
- (2) Note how an optional recent activity bullet was included for the Raccoon River at Van Meter indicating when flood stage was exceeded and when the crest was reached.
- (3) Note how the H-VTEC string has been zeroed out for Des Moines SE 6<sup>th</sup>. This is because the river never reached flood stage at that forecast point, so the forecaster decided to cancel the flood warning for that location.
- (4) Note how tabular observed/forecast values are provided in each segment, separated by &&.

**6.6 Example #6 - Flood Warning for Forecast Points: Initial Issuance (FLW).**

Situation – Overnight heavy rainfall in southwest Washington near the mouth of the Columbia River has elevated flows on the lower Cowlitz River. At the same time, the lower Columbia River is expected to slightly exceed flood stage due to high tides. At 10:00 a.m. on Tuesday, December 5, WFO Portland, Oregon issues a flood warning for three forecast points.

WGUS46 KPQR 051800  
FLWPQR

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
FLOOD WARNING  
NATIONAL WEATHER SERVICE PORTLAND OR  
1000 AM PST TUE DEC 5 2000

...THE NATIONAL WEATHER SERVICE IN PORTLAND HAS ISSUED A FLOOD  
WARNING FOR THE FOLLOWING RIVERS IN SOUTHWEST WASHINGTON...

COWLITZ RIVER AT CASTLE ROCK AFFECTING COWLITZ COUNTY.  
COWLITZ RIVER AT KELSO AFFECTING COWLITZ COUNTY.  
COLUMBIA RIVER AT LONGVIEW AFFECTING COWLITZ AND COLUMBIA COUNTIES.

.OVERNIGHT RAINS OF 2 TO 4 INCHES IN SOUTHWEST OREGON COUPLED WITH  
1 TO 2 INCHES FORECAST FOR TODAY WILL PRODUCE FLOODING ON THE LOWER  
COWLITZ RIVER. A SEPARATE MINOR FLOODING PROBLEM EXISTS ON THE TIDAL  
COLUMBIA DUE TO ALREADY HIGH FLOWS MOVING DOWN THE RIVER COUPLED  
WITH HIGH TIDES.

RIVER STAGE FORECASTS ARE BASED ON OBSERVED AND FORECAST RAINFALL  
AND TEMPERATURES. IF ACTUAL RAINFALL AND TEMPERATURES VARY FROM THE  
FORECAST VALUES...THE RIVER STAGE WILL VARY ACCORDINGLY. NATIONAL  
WEATHER SERVICE RIVER FORECASTS INCLUDE CURRENT AND PLANNED  
RESERVOIR RELEASES.

FOR THE LATEST RIVER STAGES AND FORECASTS VISIT OUR WEB  
PAGE AT [WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC\\_HYDRO/](http://WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC_HYDRO/).

THE NEXT STATEMENT WILL BE ISSUED BY 1000 PM THIS EVENING.

WAC015-060600-  
/O.NEW.KPQR.FL.W.0077.001207T1000Z-001208T1400Z/  
/CASW1.1.ER.001207T1000Z.001207T1800Z.001208T1400Z.NO/  
1000 AM PST TUE DEC 5 2000

THE NATIONAL WEATHER SERVICE IN PORTLAND HAS ISSUED A

- \* FLOOD WARNING FOR  
THE COWLITZ RIVER AT CASTLE ROCK.
- \* FROM LATE WEDNESDAY NIGHT UNTIL FRIDAY MORNING.
- \* AT 800 AM PST TUESDAY THE STAGE/FLOW WAS 46.8 FEET / 59000 CFS.
- \* MINOR FLOODING IS FORECAST.
- \* FLOOD STAGE/FLOW IS 48.0 FEET / 65000 CFS.
- \* FORECAST...THE RIVER IS EXPECTED TO RISE THROUGH THE NIGHT...  
REACHING FLOOD STAGE AROUND 200 AM THURSDAY. IT WILL CONTINUE TO  
RISE THROUGH THE MORNING HOURS AND CREST NEAR 51.5 FEET LATE  
THURSDAY MORNING AND REMAIN ABOVE FLOOD STAGE THROUGH THE DAY.
- \* IMPACT...ABOVE 51 FEET...EXPECT FLOODING OF BUILDINGS AND  
RESIDENTIAL AREAS WEST OF THE RIVER IN THE VICINITY OF CASTLE  
ROCK. ALSO...EXPECT WIDESPREAD FLOODING OF LOW LYING PASTURE AND  
FARMLAND.
- \* FLOOD HISTORY...THE FORECAST CREST COMPARES TO A CREST OF 50.6 FEET  
ON JANUARY 9 1990.

\$\$

WAC015-060600-  
/O.NEW.KPQR.FL.W.0078.001207T1400Z-001208T1800Z/  
/KELW1.1.ER.001207T1400Z.001207T2200Z.001208T1800Z.NO/  
1000 AM PST TUE DEC 5 2000

THE NATIONAL WEATHER SERVICE IN PORTLAND HAS ISSUED A

- \* FLOOD WARNING FOR  
THE COWLITZ RIVER AT KELSO.
- \* FROM THURSDAY MORNING UNTIL FRIDAY MORNING.
- \* AT 900 AM PST TUESDAY THE STAGE/FLOW WAS 20.2 FEET / 90000 CFS.
- \* MINOR FLOODING IS FORECAST.
- \* FLOOD STAGE/FLOW IS 21.5 FEET / 100000 CFS.
- \* FORECAST...THE RIVER IS EXPECTED TO RISE THROUGH THE NIGHT AND WEDNESDAY...REACHING FLOOD STAGE AROUND 600 AM THURSDAY. IT WILL CONTINUE TO RISE THROUGH THE MORNING HOURS AND CREST NEAR 25.0 FEET EARLY THURSDAY AFTERNOON AND REMAIN ABOVE FLOOD STAGE THROUGH THE DAY.
- \* IMPACT...ABOVE 24.5 FEET...FLOODING OF A FEW RESIDENTIAL AREAS IN THE KELSO VICINITY BEGINS. ALSO...EXPECT WIDESPREAD FLOODING OF PASTURE LAND AND LOW LYING ROADS.
- \* FLOOD HISTORY...THE FORECAST CREST COMPARES TO THE CRESTS OF 24.3 FEET ON JUNE 10 1948 AND 23.14 FEET ON NOVEMBER 19 1983.

\$\$

ORC009-WAC015-060600-  
/O.NEW.KPQR.FL.W.0079.001206T0300Z-001207T1600Z/  
/LOPW1.1.FT.001206T0300Z.001207T1400Z.001207T1600Z.NO/  
1000 AM PST TUE DEC 5 2000

THE NATIONAL WEATHER SERVICE IN PORTLAND HAS ISSUED A

- \* FLOOD WARNING FOR  
THE COLUMBIA RIVER AT LONGVIEW.
- \* FROM THIS EVENING UNTIL THURSDAY MORNING.
- \* AT 800 AM PST TUESDAY THE STAGE WAS 9.8 FEET.
- \* MINOR FLOODING IS FORECAST.
- \* FLOOD STAGE IS 12.0 FEET.
- \* FORECAST...THE RIVER IS EXPECTED TO CREST NEAR 12.0 FEET AROUND 700 PM THIS EVENING...AND AT 12.5 FEET AROUND 600 AM THURSDAY... CORRESPONDING WITH HIGH TIDES AT LONGVIEW.
- \* IMPACT...ABOVE 12.0 FEET...EXPECT MINOR FLOODING OF UN-LEVEED LOW LYING FARMLAND NEAR THE COLUMBIA.
- \* FLOOD HISTORY...FLOODING AT THE FORECAST CREST OF 12.5 FEET IS QUITE COMMON AND OCCURS ON THE AVERAGE ABOUT EVERY TWO YEARS.

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### Notes and Explanations:

- (1) Note that the observation and flood stage bullets include both stage and flow.
- (2) The Columbia River at Longview is expected to have two peaks above flood stage, coinciding with tidal maximums. The Event Beginning Date/Time and Flood Begin Date/Time for this segment correspond to when flood stage is exceeded before the first peak and the Event Ending Date/Time and Flood End Date/Time correspond to when the river is expected to drop below flood stage after the second peak.
- (3) Note how segments include the optional county/city name lines below the H-VTEC strings.
- (4) Note how flood history bullets describe past events comparable to the crest stage forecast.

### **6.7 Example #7 - Flood Warning for Forecast Points: Flood Category Increase (FLW).**

Situation – Very heavy rains over the southwest Washington during the morning of December 5 have greatly increased surface runoff in the lower Cowlitz basin. At 4:00 p.m. on December 5 (6 hours after the initial flood warning), a flood warning is issued for Castle Rock and Kelso to announce an increase in forecast flood severity from minor to major flooding.

WGUS46 KPQR 060000  
FLWPQR

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
FLOOD WARNING  
NATIONAL WEATHER SERVICE PORTLAND OR  
400 PM PST TUE DEC 5 2000

...FORECAST FLOODING CHANGED FROM MINOR TO MAJOR SEVERITY AND  
INCREASED IN DURATION FOR THE FOLLOWING LOCATIONS ON THE  
COWLITZ RIVER...

COWLITZ RIVER AT CASTLE ROCK AFFECTING COWLITZ COUNTY.  
COWLITZ RIVER AT KELSO AFFECTING COWLITZ COUNTY.

.VERY HEAVY RAINS OF 3 TO 4 INCHES SINCE EARLY THIS MORNING WILL  
INCREASE THE SEVERITY OF FLOODING ON THE LOWER COWLITZ RIVER.

RIVER STAGE FORECASTS ARE BASED ON OBSERVED AND FORECAST RAINFALL  
AND TEMPERATURES. IF ACTUAL RAINFALL AND TEMPERATURES VARY FROM THE  
FORECAST VALUES...THE RIVER STAGE WILL VARY ACCORDINGLY. NATIONAL  
WEATHER SERVICE RIVER FORECASTS INCLUDE CURRENT AND PLANNED  
RESERVOIR RELEASES.

FOR THE LATEST RIVER STAGES AND FORECASTS VISIT OUR WEB PAGE AT...  
[WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC\\_HYDRO/](http://WWW.WRH.NOAA.GOV/PORTLAND/PUBLIC_HYDRO/).

THE NEXT STATEMENT WILL BE ISSUED BY 1000 PM THIS EVENING...OR EARLIER  
IF FURTHER UPDATES ARE NEEDED.

WAC015-060600-  
/O.EXT.KPQR.FL.W.0077.001207T1000Z-001209T1400Z/  
/CASW1.3.ER.001207T1000Z.001207T1800Z.001209T1400Z.NO/  
400 PM PST TUE DEC 5 2000

...FORECAST FLOODING INCREASED FROM MINOR TO MAJOR AND FLOOD WARNING  
EXTENDED UNTIL SATURDAY MORNING...

THE FLOOD WARNING CONTINUES FOR  
THE COWLITZ RIVER AT CASTLE ROCK.

- \* FROM LATE WEDNESDAY NIGHT UNTIL SATURDAY MORNING.
- \* AT 300 PM PST TUESDAY THE STAGE/FLOW WAS 47.2 FEET / 61000 CFS.
- \* MAJOR FLOODING IS FORECAST.
- \* FLOOD STAGE/FLOW IS 48.0 FEET / 65000 CFS.
- \* FORECAST...THE RIVER IS EXPECTED TO RISE THROUGH THE NIGHT AND  
WEDNESDAY... REACHING FLOOD STAGE AROUND 200 AM THURSDAY. IT WILL  
CONTINUE TO RISE THROUGH THE MORNING HOURS AND CREST NEAR 54.0 FEET  
LATE MORNING THURSDAY AND REMAIN ABOVE FLOOD STAGE UNTIL SATURDAY  
MORNING.
- \* IMPACT...ABOVE 51 FEET...EXPECT FLOODING OF BUILDINGS AND  
RESIDENTIAL AREAS WEST OF THE RIVER IN THE VICINITY OF CASTLE ROCK.  
ALSO...EXPECT WIDESPREAD FLOODING OF LOW LYING PASTURE AND FARMLAND.  
AT 54 FEET...EXPECT WIDESPREAD FLOODING OF BUSINESS AND RESIDENTIAL  
AREAS...ESPECIALLY WEST OF THE RIVER IN THE FOUR CORNERS AREA AND  
ALONG HWY 411. ALSO EXPECT WIDESPREAD FLOODING OF FARM AND PASTURE  
LAND. LEVEES HAVE HISTORICALLY BEEN THREATENED OF OVERTOPPING AT  
THIS AND HIGHER LEVELS.
- \* FLOOD HISTORY...THE FORECAST CREST COMPARES TO THE CRESTS OF 52.95  
FEET ON MAY 18 1980 AND 55.16 FEET ON NOVEMBER 11 1995.

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WAC015-060600-  
/O.EXT.KPQR.FL.W.0078.001207T1400Z-001209T2200Z/  
/KELW1.3.ER.001207T1400Z.001207T2200Z.001209T2200Z.NO/  
400 PM PST TUE DEC 5 2000

...FORECAST FLOODING INCREASED FROM MINOR TO MAJOR SEVERITY AND  
FLOOD WARNING EXTENDED UNTIL SATURDAY AFTERNOON...

THE FLOOD WARNING CONTINUES FOR  
THE COWLITZ RIVER AT KELSO.

- \* FROM THURSDAY MORNING UNTIL SATURDAY MORNING.
- \* AT 300 PM PST TUESDAY THE STAGE/FLOW WAS 20.6 FEET / 93000 CFS.
- \* MAJOR FLOODING IS FORECAST.
- \* FLOOD STAGE/FLOW IS 21.5 FEET / 100000 CFS.
- \* FORECAST...THE RIVER IS EXPECTED TO RISE THROUGH THE NIGHT AND  
WEDNESDAY...REACHING FLOOD STAGE AROUND 600 AM THURSDAY. IT WILL  
CONTINUE TO RISE THROUGH THE MORNING HOURS AND CREST NEAR 27.0 FEET  
LATE AFTERNOON THURSDAY AND REMAIN ABOVE FLOOD STAGE UNTIL EARLY  
SATURDAY AFTERNOON.
- \* IMPACT...ABOVE 24.5 FEET...FLOODING OF A FEW RESIDENTIAL AREAS IN  
THE KELSO VICINITY BEGINS. ALSO...EXPECT WIDESPREAD FLOODING OF  
PASTURE LAND AND LOW LYING ROADS. ABOVE 26.5 FEET...SOME FLOODING  
OF BUSINESS AND RESIDENTIAL AREAS OCCURS IN KELSO. NUMEROUS ROAD  
CLOSURES CAN BE EXPECTED. THE TOPS OF LEVEES ARE APPROACHED AT THIS  
LEVEL.
- \* FLOOD HISTORY...THE FORECAST CREST COMPARES TO THE CREST OF 27.0  
FEET ON NOVEMBER 3 1995.

\$\$

### 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 numbers are the same as those in the previously issued product for both segments.
- (2) Note that the overview headline and individual segment headlines announce both an increase in forecast flood severity and an extension of the flood warning.
- (3) Note - EXT is used for the VTEC action code when a category increase also involves a warning extension.
- (4) Note how the text of the flood history bullets has been revised to reflect the higher stage forecasts.

### **6.8 Example #8 - Flood Warning for Forecast Points: Non-Flood Point Included (FLW).**

Situation – WFO Birmingham, AL issues a flood warning product covering a series of three forecast points on the Tombigbee River. However, only the first and third forecast points are 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 phenomena/significance code and would follow the same format if they were included in flood statements.

WGUS44 KBMX 221604  
FLWBMX

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
FLOOD WARNING  
NATIONAL WEATHER SERVICE BIRMINGHAM, AL  
1003 AM CST WED DEC 22 2004

...THE NATIONAL WEATHER SERVICE IN BIRMINGHAM HAS ISSUED A FLOOD WARNING FOR THE UPPER TOMBIGBEE RIVER ABOVE GAINESVILLE...

.HEAVY RAINFALL OF 1 TO 2 INCHES WITH LOCALLY HIGHER AMOUNTS IS FORECAST OVER THE TOMBIGBEE BASIN DURING THE NEXT 24 HOURS. THIS FORECAST RAINFALL IS EXPECTED TO SEND THE UPPER TOMBIGBEE RIVER INTO FLOOD AND A FLOOD WARNING IS IN EFFECT ABOVE THE GAINESVILLE DAM. HOWEVER...FROM GAINESVILLE DOWNSTREAM LEVELS ARE FORECAST TO ONLY RISE TO NEAR OR A LITTLE BELOW FLOOD STAGE... AND ANY OVERFLOW ALONG THIS PORTION IS EXPECTED TO BE MINOR.

IT IS EMPHASIZED THAT THESE FORECASTS ARE BASED ON THE EXPECTED RAINFALL THE NEXT 24 HOURS. IF MORE RAINFALL THAN WHAT IS FORECAST OCCURS...IT MAY BECOME NECESSARY TO REVISE THESE FORECAST UPWARD.

SAFETY MESSAGE...ALL PERSONS WITH INTERESTS ALONG THE RIVER SHOULD MONITOR THE LATEST FORECASTS...AND TAKE NECESSARY PRECAUTIONS TO PROTECT LIFE AND PROPERTY FROM RISING RIVER LEVELS.

A FLOOD STATEMENT WILL BE ISSUED BY THURSDAY MORNING...OR SOONER IF CONDITIONS WARRANT.

ALC107-230000-

/O.NEW.KBMX.FL.W.0097.041224T0300Z-041227T0300Z/  
/AVLA1.1.ER.041224T0300Z.041225T0900Z.041227T0300Z.NO/  
1003 AM CST WED DEC 22 2004

THE NATIONAL WEATHER SERVICE IN BIRMINGHAM HAS ISSUED A

\* FLOOD WARNING FOR

THE TOMBIGBEE RIVER AT THE LOWER BEVILL LOCK AND DAM.

\* FROM THURSDAY EVENING UNTIL SUNDAY EVENING.

\* AT 6 AM CST WEDNESDAY THE STAGE WAS 110 FEET.

\* MINOR FLOODING IS FORECAST.

\* BANKFULL STAGE IS 120 FEET.

\* FLOOD STAGE IS 122 FEET.

\* FORECAST...THE RIVER WILL RISE ABOVE FLOOD STAGE THURSDAY EVENING AND CREST AT 125.5 TO 126 FEET EARLY SATURDAY MORNING. THE RIVER WILL FALL BELOW FLOOD STAGE SUNDAY EVENING.

\* IMPACT...AT 122 FEET...CATTLE IN LOW-LYING AREAS OF SOUTHERN PICKENS COUNTY SHOULD BE MOVED TO HIGHER GROUND. CATTLE ARE CUTOFF IN LOWLANDS OF SOUTHERN PICKENS COUNTY AT STAGES ABOVE 122 FEET.

\$\$

ALC063-119-230000-

/O.ROU.KBMX.HY.S.0000.000000T0000Z-000000T0000Z/  
/GNSA1.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
1003 AM CST WED DEC 22 2004

FORECAST INFORMATION FOR

THE TOMBIGBEE RIVER AT THE LOWER GAINESVILLE LOCK AND DAM.

\* AT 6 AM WEDNESDAY THE STAGE WAS 78.6 FEET.

\* BANKFULL STAGE IS 101 FEET.

\* FLOOD STAGE IS 101 FEET.

\* FORECAST...NO SIGNIFICANT OVERFLOW IS EXPECTED. THE RIVER WILL CREST NEAR 98.5 FEET SATURDAY MORNING.

\* IMPACT...AT 101 FEET...FLOODING OF LOW LYING AGRICULTURAL AND WOODED LANDS IN THE AREA OCCURS.

\$\$

ALC065-091-119-230000-  
 /O.NEW.KBMX.FL.W.0098.041226T1800Z-041227T0000Z/  
 /DLDA1.1.ER.041226T1800Z.041226T1800Z.041227T0000Z.NO/  
 1003 AM CST WED DEC 22 2004

THE NATIONAL WEATHER SERVICE IN BIRMINGHAM HAS ISSUED A  
 \* FLOOD WARNING FOR  
 THE TOMBIGBEE RIVER AT THE LOWER DEMOPOLIS LOCK AND DAM.  
 \* FROM SUNDAY AFTERNOON UNTIL SUNDAY EVENING.  
 \* AT 7 AM WEDNESDAY THE STAGE WAS 43.6 FEET.  
 \* MINOR FLOODING IS FORECAST.  
 \* BANKFULL STAGE IS 68 FEET.  
 \* FLOOD STAGE IS 68 FEET.  
 \* FORECAST...THE RIVER WILL CREST NEAR 68 FEET MID DAY SUNDAY AND  
 FALL SLOWLY AFTER THAT TIME.  
 \* IMPACT...AT 68 FEET...FLOODING OF LOWLANDS IN THE AREA OCCURS AND  
 CATTLE SHOULD BE MOVED TO HIGHER GROUND.

\$\$

&&

LOCATION	FLD OBSERVED		24 HR CHG	FORECASTS (7 AM)			
	STG	STG DAY/TIME		THU	FRI	SAT	SUN
TOMBIGBEE RIVER BASIN							
LOWER BEVILL L&D	122	110.0 6 AM	7.1	117.0	122.0	126.0	124.0
LOWER GAINESVILLE L&D	101	78.6 6 AM	2.3	83.0	92.0	98.5	96.0
LOWER DEMOPOLIS L&D	68	43.6 7 AM	1.4	44.0	45.0	52.0	68.0

\$\$

**Notes and Explanations:**

(1) Note how observed/forecast values for all three segments are provided together at the end of the product. After the \$\$ terminating the last segment, a && appears to designate that a different data type follows, and another \$\$ appears at the end of the tabular data indicating the end of the product.

**6.9 Example #9 - Flood Warning for Forecast Points: Non-RFC Supported Point (FLW).**

Situation – a band of heavy rainfall affects a portion of southwest Michigan. The heaviest rainfall occurs over above a portion of the upper Grand River basin where no stream gages with automated telemetry exist and no support from RFCs is provided. Fortunately, the service hydrologist has established a forecast point where observations can be read manually from a bridge pier and forecasts can be interpolated from upstream and downstream forecasts from the RFC. A flood warning is issued with a few special features to help users understand that updates may not be as timely as they would be for other forecast points.

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
 FLOOD WARNING  
 NATIONAL WEATHER SERVICE GRAND RAPIDS MI  
 341 PM EST WED DEC 20 2006

...THE NATIONAL WEATHER SERVICE IN GRAND RAPIDS HAS ISSUED A FLOOD  
 WARNING FOR THE FOLLOWING RIVERS IN SOUTHWEST LOWER MICHIGAN...

GRAND RIVER AT JACKSON AFFECTING JACKSON COUNTY

.THE CURRENT WEATHER IS DOMINATED BY A SLOW MOVING COLD FRONT  
 THAT HAS RESULTED IN ABOUT AN INCH OF RAIN SINCE EARLY WEDNESDAY

AFTERNOON. ANOTHER HALF INCH OF RAIN IS POSSIBLE BEFORE THE RAIN ENDS THURSDAY AFTERNOON. THE EXTENDED OUTLOOK IS FOR A STORM FROM THE SOUTHERN PLAINS TO BRING ICE AND SNOW TO THE AREA FRIDAY MORNING. SIGNIFICANT ACCUMULATION OF ICE AND SNOW ARE POSSIBLE FROM THAT EVENT.

SAFETY MESSAGE...EVEN 6 INCHES OF FAST-MOVING FLOOD WATER CAN KNOCK YOU OFF YOUR FEET...AND A DEPTH OF 2 FEET WILL FLOAT YOUR CAR. NEVER TRY TO WALK...SWIM...OR DRIVE THROUGH SUCH SWIFT WATER. IF YOU COME UPON FLOOD WATERS...STOP...TURN AROUND AND GO ANOTHER WAY.

THIS WARNING WILL BE IN EFFECT UNTIL THE RIVER FALLS BELOW ITS FLOOD STAGE.

STAY TUNED TO FURTHER DEVELOPMENTS BY LISTENING TO YOUR LOCAL RADIO...TELEVISION...OR NOAA WEATHER RADIO FOR FURTHER INFORMATION.

ADDITIONAL WEATHER AND RIVER INFORMATION CAN BE FOUND ON OUR HOMEPAGE AT [WWW.WEATHER.GOV/GRR](http://WWW.WEATHER.GOV/GRR).

MIC075-212241-  
/O.NEW.KGRR.FL.W.0003.061221T1752Z-061223T0216Z/  
/JACM4.1.ER.061221T1752Z.061221T2200Z.061222T0216Z.NR/  
341 PM EST WED DEC 20 2006

THE NATIONAL WEATHER SERVICE IN GRAND RAPIDS HAS ISSUED A

- \* FLOOD WARNING FOR  
THE GRAND RIVER AT JACKSON.
- \* FROM THURSDAY AFTERNOON UNTIL FRIDAY EVENING OR UNTIL THE WARNING IS CANCELLED.
- \* AT 07 AM WEDNESDAY THE STAGE WAS 10.4 FEET.
- \* MINOR FLOODING IS FORECAST.
- \* FLOOD STAGE IS 14.0 FEET.
- \* FORECAST...THE RIVER WILL RISE ABOVE FLOOD STAGE BY EARLY TOMORROW AFTERNOON AND CONTINUE TO RISE TO NEAR 14.3 FEET BY TOMORROW AFTERNOON. THE RIVER WILL FALL BELOW FLOOD STAGE BY TOMORROW LATE EVENING.
- \* IMPACT...AT 14.0 FEET...EXPECT MINOR FLOODING OF LOW LYING AREAS.
- \* FLOOD HISTORY...THIS CREST COMPARES TO A PREVIOUS CREST OF 14.2 FEET ON SEP 25 1986.

\$\$

### Notes and Explanations:

Note (1) The statement “This warning will be in effect until the river falls below its flood stage” encourages local users to monitor the river for changes in flood status.

Note (2) The statement at the end of the second bullet: “or until the warning is cancelled” highlights the infrequent nature of observations for this forecast point, the uncertainty of forecast timing, and the possible resulting need to cancel the warning earlier than stated in this product.

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

7.1 Example #1 - Areal Flood Warning (FLW). Situation – over 3 inches of rain fell overnight in portions of Adams County in southern Ohio. Looking at the amount of overnight rainfall coupled with the strong possibility of an additional 1 to 2 inches, a forecaster at WFO Wilmington, OH determines that this is enough to cause widespread flooding throughout Adams County. There is one forecast point in this county, but numerous small streams will also flood, so the forecaster decides to issue an areal flood warning for the entire county at 8:00 a.m.



WGUS41 KILN 241202  
FLWILN

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
FLOOD WARNING  
NATIONAL WEATHER SERVICE WILMINGTON OH  
802 AM EDT THU AUG 24 2000

OHC001-241800-  
/O.NEW.KILN.FA.W.0011.000824T1202Z-000825T0000Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
ADAMS OH-  
802 AM EDT THU AUG 24 2000

THE NATIONAL WEATHER SERVICE IN WILMINGTON HAS ISSUED A

- \* FLOOD WARNING FOR SMALL STREAMS IN...  
ADAMS COUNTY IN SOUTHERN OHIO  
THIS INCLUDES THE CITIES OF WEST UNION...WRIGHTSVILLE AND BLUE CREEK
- \* UNTIL 800 PM THIS EVENING
- \* AT 800 AM EDT...WEATHER SERVICE DOPPLER RADAR INDICATED THAT OVER  
3 INCHES OF RAIN HAD FALLEN OVER PARTS OF THE COUNTY. AN ADDITIONAL  
ONE OR TWO INCHES ARE POSSIBLE THROUGHOUT THE DAY. AS A RESULT...  
HIGH WATER LEVELS CAN BE EXPECTED INTO THE EVENING HOURS. SOME  
LOCATIONS IN THE WARNING AREA INCLUDE WEST UNION AND BLUE CREEK.

A FLOOD WARNING MEANS THAT FLOODING IS IMMINENT OR HAS BEEN REPORTED.  
IF FLOODING IS OBSERVED...ACT QUICKLY. DO NOT STAY IN AREAS SUBJECT  
TO FLOODING WHEN WATER BEGINS RISING. NEVER DRIVE CARS...TRUCKS OR  
SPORT UTILITY VEHICLES THROUGH FLOODED AREAS. THE WATER MAY BE TOO  
DEEP TO ALLOW FOR SAFE PASSAGE.

LAT...LON 3900 8327 3904 8330 3905 8338 3901 8360 3901 8368  
3863 8370 3869 8365 3866 8362 3868 8352 3866 8345 3864 8337  
3863 8332 3858 8328 3860 8327

\$\$

**7.2 Example #2 - Flood Statement: Follow-up to an Areal Warning: (FLS).** Situation –  
the previous flood warning issued for Adams County had a product expiration time six hours  
after issuance and an Event Ending Date/Time twelve hours after issuance. Heavy rain and  
flooding is continuing, so just before 2:00 p.m., WFO Wilmington, OH issues a flood statement  
to continue the areal flood warning and provide updated flood information.

WGUS81 KILN 241755  
FLSILN

FLOOD STATEMENT  
NATIONAL WEATHER SERVICE WILMINGTON OH  
155 PM EDT THU AUG 24 2000

OHC001-250000-  
/O.CON.KILN.FA.W.0011.000000T0000Z-000825T0000Z/  
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
ADAMS OH-  
155 PM EDT THU AUG 24 2000

...THE FLOOD WARNING REMAINS IN EFFECT UNTIL 800 PM EDT THIS EVENING  
FOR SMALL STREAMS IN ADAMS COUNTY...

AT 150 PM EDT...WEATHER SERVICE DOPPLER RADAR INDICATED A SECOND AREA OF HEAVY RAINFALL APPROACHING THE COUNTY AND SURROUNDING AREAS. AN ADDITIONAL HALF INCH TO INCH OF RAIN IS POSSIBLE OVER PARTS OF ADAMS COUNTY...CAUSING SMALL STREAMS TO RISE AGAIN AFTER THIS MORNINGS FLOODS. FLOODING HAS BEEN REPORTED AT SEVERAL LOCATIONS ALONG WEST UNION AND BLUE CREEKS...BUT THE STREAMS ARE CRESTING AND FLOODING SHOULD BEGIN TO DECREASE IN THE NEXT FEW HOURS AFTER THE SECOND AREA OF HEAVY RAINFALL PASSES THROUGH.

A FLOOD WARNING MEANS THAT FLOODING IS IMMINENT OR HAS BEEN REPORTED. IF FLOODING IS OBSERVED...ACT QUICKLY. DO NOT STAY IN AREAS SUBJECT TO FLOODING WHEN WATER BEGINS RISING. NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES THROUGH FLOODED AREAS. THE WATER MAY BE TOO DEEP TO ALLOW FOR SAFE PASSAGE.

LAT...LON 3900 8327 3904 8330 3905 8338 3901 8360 3901 8368  
 3863 8370 3869 8365 3866 8362 3868 8352 3866 8345 3864 8337  
 3863 8332 3858 8328 3860 8327

\$\$

**7.3 Example #3 - Flood Statement: Cancellation of an Areal Flood Warning (FLS).**

Situation – in the previous flood statement continuing the flood warning for Adams County, the product expiration time was set to six hours after issuance – i.e., 0000Z or 8:00 pm. However, the flooding ended earlier than expected and the threat for more rain had ended, so at 2200Z (6:00 p.m.), WFO Wilmington, OH issues a flood statement to cancel the areal flood warning.

WGUS81 KILN 242200  
 FLSILN

FLOOD STATEMENT  
 NATIONAL WEATHER SERVICE WILMINGTON OH  
 600 PM EDT THU AUG 24 2000

OHC001-242300-  
 /O.CAN.KILN.FA.W.0011.000000T0000Z-000825T0000Z/  
 /00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
 ADAMS OH-  
 600 PM EDT THU AUG 24 2000

...THE FLOOD WARNING HAS BEEN CANCELLED FOR SMALL STREAMS IN ADAMS COUNTY...

AT 600 PM EDT...WEATHER SERVICE DOPPLER RADAR INDICATED THE SECOND AREA OF HEAVY RAINFALL HAS MOVED OUT OF THE COUNTY AND SURROUNDING AREAS. SMALL STREAMS HAVE DROPPED FROM FLOOD LEVELS...BUT HIGHER THAN NORMAL FLOWS MAY CONTINUE THROUGH EARLY THIS EVENING.

NEVER DRIVE CARS...TRUCKS OR SPORT UTILITY VEHICLES THROUGH FLOODED AREAS. THE WATER MAY BE TOO DEEP TO ALLOW FOR SAFE PASSAGE.

LAT...LON 3900 8327 3904 8330 3905 8338 3901 8360 3901 8368  
 3863 8370 3869 8365 3866 8362 3868 8352 3866 8345 3864 8337  
 3863 8332 3858 8328 3860 8327

\$\$

**Notes and Explanations:**

(1) Even though the flood warning is being cancelled at 2200Z (6 p.m.) on August 24, the Event Ending Date/Time remains 0000Z on August 25, per VTEC rules (NWSI 10-1703, sect. 2.2.2, CAN portion).

**7.4 Example #4 - Areal Flood Warning for a River Reach (FLW).** Situation – Releases from Albeni Falls Dam have kept flows along the Pend Oreille River close to flood level for several days. During the morning on June 5, a forecaster at WFO Spokane, OR receives information indicating that several factors are coming together to push the river above flood level along an extended reach. At 11:00 a.m., the forecaster decides to issue an areal flood warning covering an entire reach of the Pend Oreille River in Pend Oreille County from Albeni Falls Dam downstream (northward) to the Canadian border.

WGUS46 KOTX 051800  
FLWOTX

BULLETIN - IMMEDIATE BROADCAST REQUESTED  
FLOOD WARNING  
NATIONAL WEATHER SERVICE SPOKANE WA  
1100 AM PDT WED JUN 5 2002

WAC051-060600-  
/O.NEW.KOTX.FA.W.0003.020605T1800Z-020607T0600Z/  
/00000.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
PEND OREILLE WA-  
1100 AM PDT WED JUN 5 2002

THE NATIONAL WEATHER SERVICE IN SPOKANE HAS ISSUED A

- \* FLOOD WARNING FOR...  
THE PEND OREILLE RIVER IN PEND OREILLE COUNTY  
THIS INCLUDES THE CITIES OF NEWPORT...IONE...METALINE AND METALINE  
FALLS
- \* UNTIL 1100 PM PDT THURSDAY EVENING
- \* ON THE PEND OREILLE RIVER BELOW ALBENI FALLS DAM...RELEASES FROM  
ALBENI FALLS DAM HAVE INCREASED TO 98000 CFS AT 1000 AM WEDNESDAY.  
THE FLOOD FLOW IS 100000 CFS. THE OUTFLOW FROM ALBENI FALLS DAM  
WILL DECREASE SLIGHTLY THIS EVENING TO 92000 CFS.
- \* THOUGH THE RIVER IS CURRENTLY BELOW FLOOD FLOW IMMEDIATELY BELOW  
THE DAM...MINOR FLOODING WILL OCCUR ALONG THE RIVER FURTHER  
DOWNSTREAM FROM NEWPORT TO THE CANADIAN BORDER DUE TO INFLOW FROM  
TRIBUTARIES AND LOCAL RAINFALL. SEVERAL STRUCTURES WILL BE FLOODED  
IN NEWPORT. THE RAINFALL EXPECTED TODAY WILL ADD TO THE EXISTING  
HIGH FLOW.

BOATERS AND PERSONS WITH INTERESTS ALONG THE PEND OREILLE RIVER ARE  
URGED TO USE EXTREME CAUTION WHEN NEAR OR ON THE RIVER. STAY TUNED  
TO FURTHER DEVELOPMENTS BY LISTENING TO NOAA WEATHER RADIO OR YOUR  
LOCAL TV OR RADIO STATIONS.

LAT...LON 4895 11728 4877 11742 4825 11723 4817 11700 4821 11700  
4828 11720 4845 11722 4876 11736 4895 11725

\$\$

**7.5 Example #5 - Areal Flood Warning: Extension In Time (FLW).** Situation – At 11:00 p.m. on Thursday evening, the forecaster realizes that the river did not recede as much as originally expected and decides to extend the areal flood warning for the Pend Oreille River in Pend Oreille County by 24 hours.

WGUS41 KOTX 070545  
FLWOTX

FLOOD WARNING  
NATIONAL WEATHER SERVICE SPOKANE WA  
1045 PM PDT THU JUN 6 2002

WAC051-071800-  
/O.EXT.KOTX.FA.W.0003.000000T0000Z-020608T0600Z/  
/00000.0.RS.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
PEND OREILLE WA-  
1045 PM PDT THU JUN 6 2002

THE NATIONAL WEATHER SERVICE IN SPOKANE HAS EXTENDED THE

- \* FLOOD WARNING FOR...  
THE PEND OREILLE RIVER IN PEND OREILLE COUNTY  
THIS INCLUDES THE CITIES OF NEWPORT...IONE...METALINE AND METALINE FALLS
- \* UNTIL 1100 PM PDT FRIDAY EVENING
- \* ON THE PEND OREILLE RIVER BELOW ALBENI FALLS DAM...THE MOST RECENTLY REPORTED DAM RELEASE WAS 92800 CFS AT 1000 PM THURSDAY. TRIBUTARIES AND LOCAL RAINFALL HAVE ADDED TO THE DAM OUTFLOW TO RAISE THE RIVER ABOVE FLOOD FLOW OF 100000 CFS. THE OUTFLOW FROM ALBENI FALLS DAM IS FORECAST TO GRADUALLY DECREASE TO 92000 CFS BY SATURDAY MORNING AND THE RAINFALL IS EXPECTED TO END EARLY FRIDAY MORNING...SO MINOR FLOODING WILL CONTINUE UNTIL FRIDAY EVENING.
- \* MINOR FLOODING CONTINUES ALONG THE RIVER DOWNSTREAM FROM NEWPORT TO THE CANADIAN BORDER. SEVERAL STRUCTURES ARE FLOODED AND SOME SAND BAGGING OPERATIONS ARE CONTINUING. ANY ADDITIONAL RAINFALL WOULD ADD TO THE EXISTING HIGH FLOW.

BOATERS AND PERSONS WITH INTERESTS ALONG THE PEND OREILLE RIVER ARE URGED TO USE EXTREME CAUTION WHEN NEAR OR ON THE RIVER. STAY TUNED TO FURTHER DEVELOPMENTS BY LISTENING TO NOAA WEATHER RADIO OR YOUR LOCAL TV OR RADIO STATIONS.

LAT...LON 4895 11728 4877 11742 4825 11723 4817 11700 4821 11700  
4828 11720 4845 11722 4876 11736 4895 11725

\$\$

## **8. Areal Advisories (FLS).**

**8.1 Example #1 - Urban and Small Stream Flood Advisory.** Situation – A forecaster at WFO San Angelo notes an area of thunderstorms across central and northern Taylor 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 281256  
FLSSJT

FLOOD ADVISORY  
NATIONAL WEATHER SERVICE SAN ANGELO TX  
755 AM CDT TUE MAY 28 2002

TXC441-281500-  
/O.NEW.KSJT.FA.Y.0005.020528T1255Z-020528T1500Z/  
/00000.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
TAYLOR TX-  
755 AM CDT TUE MAY 28 2002

THE NATIONAL WEATHER SERVICE IN SAN ANGELO HAS ISSUED AN

\* URBAN AND SMALL STREAM FLOOD ADVISORY FOR...  
TAYLOR COUNTY AND THE CITY OF ABILENE  
THIS INCLUDES THE CITY OF ABILENE

\* UNTIL 1000 AM CDT TUESDAY

\* AT 750 AM CDT...WEATHER SERVICE RADAR INDICATED THUNDERSTORMS WITH  
LOCALLY HEAVY RAINFALL ACROSS CENTRAL AND NORTHERN TAYLOR COUNTY.  
RAINFALL BETWEEN 1 TO 2 INCHES HAS FALLEN IN ABILENE SINCE 700 AM  
WITH ANOTHER ONE HALF INCH POSSIBLE THROUGH MID MORNING.

\* LOW LYING AND POOR DRAINAGE AREAS ACROSS THE CITY OF ABILENE MAY  
BECOME FLOODED AND IMPASSABLE.

MOTORISTS ACROSS ABILENE SHOULD USE EXTREME CAUTION WHEN TRAVELING  
ACROSS THE CITY. DO NOT ATTEMPT TO CROSS AREAS WHERE WATER OF UNKNOWN  
DEPTH COVERS THE ROAD.

LAT...LON 3253 10014 3208 10014 3208 9960 3253 9960

\$\$

**8.2 Example #2 - Arroyo and Small Stream Advisory.** Situation - A forecaster at WFO Albuquerque observes an area of thunderstorms moving into Sandoval County 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 streams 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 072300  
FLSABQ

FLOOD ADVISORY  
NATIONAL WEATHER SERVICE ALBUQUERQUE NM  
500 PM MDT TUE OCT 7 2003

NMC043-080100-  
/O.NEW.KABQ.FA.Y.0014.031007T2300Z-031008T0100Z/  
/00000.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
SANDOVAL NM-  
500 PM MDT TUE OCT 7 2003

THE NATIONAL WEATHER SERVICE IN ALBUQUERQUE HAS ISSUED AN

\* ARROYO AND SMALL STREAM FLOOD ADVISORY FOR...  
SOUTHERN SANDOVAL COUNTY IN NORTH CENTRAL NEW MEXICO

\* UNTIL 700 PM MDT TUESDAY

\* AT 453 PM MDT WEATHER SERVICE RADAR INDICATED WIDESPREAD MODERATE RAIN OVER SOUTHERN SANDOVAL COUNTY WITH POCKETS OF HEAVY RAIN FROM SAN YSIDRO EXTENDING SOUTHWEST INTO BERNALILLO AND CIBOLA COUNTIES. THIS LARGE AREA OF RAIN IS MOVING NORTH TO NORTHEAST AT 15 TO 20 MPH AND WILL OVERSPREAD MUCH OF SANDOVAL COUNTY THROUGH 700 PM.

\* ADDITIONAL RAINFALL AMOUNTS UP TO ONE HALF INCH WILL CONTINUE TO CAUSE RISES IN SMALL STREAMS AND NORMALLY DRY ARROYOS...AND COULD CREATE DANGEROUS FLOWS OVER LOW WATER CROSSINGS.

HEAVY RAINFALL MAY CAUSE ARROYOS AND SMALL STREAMS TO SPILL OVER THEIR BANKS...RESULTING IN FLOODING OF LOW LYING AREAS AND ROAD INTERSECTIONS. DO NOT ATTEMPT TO DRIVE THROUGH THESE WATERS. WATER IN ARROYOS MAY TRAVEL MANY MILES AND TAKE HOURS TO REACH YOUR LOCATION FROM UPSTREAM RAIN AREAS.

LAT...LON 3555 10728 3530 10728 3530 10723 3521 10718 3521 10625  
3555 10625

\$\$

### **8.3 Example #3 - Flood Statement: Follow-up to a Small Stream Flood Advisory.**

Situation – This product is the seventh in a series of flood watches, flood warnings, flood advisories, and flood statements that was issued for a hydrologic event in the WFO Portland, OR hydrologic service area. This product is a follow-up to a small stream flood advisory covering a portion of the area where waters were reported over several roadways, but didn't reach a level warranting issuance of a flood warning.

WGUS86 KPQR 150315  
FLSPQR

FLOOD ADVISORY  
NATIONAL WEATHER SERVICE PORTLAND OR  
715 PM PST WED NOV 14 2001

...NW OREGON/SW WASHINGTON COASTAL BASINS BULLETIN NO. 7...

WAC049-069-150700-  
/O.CON.KPQR.FA.Y.0054.000000T0000Z-011115T1400Z/  
/00000.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
PACIFIC WA-WAHKIAKUM WA-  
715 PM PST WED NOV 14 2001

...THE SMALL STREAM FLOOD ADVISORY REMAINS IN EFFECT UNTIL 600 AM  
CDT THURSDAY FOR PACIFIC AND WAHAKIAKUM COUNTIES IN SOUTHWEST  
WASHINGTON...

AT 715 PM PST...EMERGENCY OFFICIALS INDICATE WATER IS STILL OVER  
SEVERAL ROADWAYS IN PACIFIC AND WAHAKIAKUM COUNTIES. RUNOFF FROM  
PREVIOUS HEAVY RAINFALL OVER THE AREA WILL CONTINUE TO POSE FLOODING  
PROBLEMS ON SMALL STREAMS...CREEKS AND RIVERS IN THESE AREAS.

MOTORISTS SHOULD USE EXTREME CAUTION WHEN TRAVELING IN THESE AREAS.  
DO NOT ATTEMPT TO CROSS AREAS WHERE WATER OF UNKNOWN DEPTH COVERS  
THE ROAD.

LAT...LON 4680 12328 4680 12400 4627 12398 4623 12380 4630 12360  
4627 12358 4628 12342 4612 12323 4615 12317 4640 12317 4640 12328

\$\$

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

Situation – A forecaster receives a report of ice jams on two rivers. 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.

WGUS81 KCAR 212115  
FLSCAR

FLOOD ADVISORY  
NATIONAL WEATHER SERVICE CARIBOU ME  
515 PM EDT MON APR 21 2003

MEC003-222100-  
/O.NEW.KCAR.FA.Y.0004.030421T2115Z-030424T2100Z/  
/00000.N.IJ.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
AROOSTOOK ME-  
515 PM EDT MON APR 21 2003

THE NATIONAL WEATHER SERVICE IN CARIBOU HAS ISSUED A

\* HYDROLOGIC ADVISORY FOR...

ICE JAMS ON THE AROOSTOOK AND SAINT JOHN RIVERS

\* UNTIL 500 PM THURSDAY

\* TWO ICE JAMS WERE OBSERVED ON THE AROOSTOOK RIVER...AND ONE ICE JAM WAS REPORTED ON THE SAINT JOHN RIVER IN NORTHEAST AROOSTOOK COUNTY MONDAY.

ON THE AROOSTOOK RIVER...THE FIRST JAM WAS DOWNSTREAM OF THE VILLAGE OF CROUSEVILLE ON STATE ROUTE 164 BETWEEN THE TOWNS OF WASHBURN AND PRESQUE ISLE. THIS JAM APPEARED TO HAVE BROKEN IN HALF OVER THE PAST 24 HOURS...SENDING THE DOWNSTREAM FLOW OF ICE SOUTHEAST THROUGH THE TOWN OF PRESQUE ISLE LATE MONDAY AFTERNOON. THIS JAM...COMBINED WITH THE SNOWMELT RUNOFF...IS CAUSING THE RIVER TO BACKUP INTO LOW LYING AREAS OF THE FLOODPLAIN...BUT DOES NOT SEEM TO BE THREATENING ANY ROADS OR PROPERTY AT THIS TIME.

ON THE AROOSTOOK RIVER...NEAR THE TOWN OF FORT FAIRFIELD...AN ICE JAM HAS FORMED IN THE RUSSELL FLATS AREA APPROXIMATELY TWO MILES DOWNSTREAM OF THE FORT FAIRFIELD BRIDGE...WHERE THE AROOSTOOK RIVER FLOWS INTO NEW BRUNSWICK. THIS JAM IS CAUSING THE RIVER TO RISE BEHIND THE JAM...BUT DOES NOT SEEM TO BE THREATENING AT THIS TIME.

ON THE SAINT JOHN RIVER...A RIVER SPOTTER HAS REPORTED AN ICE JAM FIVE TO SIX MILES DOWNSTREAM OF THE INTERNATIONAL BRIDGE IN VAN BUREN...WHERE THE ICE FLOE HAS RUN INTO THE STILL STRONG SHEET OF RIVER ICE. THIS RIVER SPOTTER ALSO NOTED THAT DOWNSTREAM OF THIS JAM THE SAINT JOHN RIVER APPEARED TO BE FREE OF ICE.

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 THE RIVER AT OR BEHIND THE JAM TO ELEVATE. STAY CLEAR OF LOW LYING AREAS NEAR ICE AFFECTED RIVERS AND MONITOR CONDITIONS CLOSELY.

LAT...LON 4708 6780 4732 3825 4725 6877 4645 6840 4646 6836 4720  
6865 4727 6830 4703 6785

\$\$

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

**9.1 Example #1 - Flood Advisory for Multiple Forecast Points.** Situation: locally heavy rainfall occurs over the Cedar River basin which is sufficient to bring the river and key tributaries close to flood stage but not high enough to warrant a flood warning. WFO Des Moines issues a flood advisory for forecast points covering the next two and a half days to notify local residents of elevated flow situation and let them know that flooding is not expected at this time.

WGUS83 KDMX 142211  
FLSDMX

FLOOD ADVISORY  
NATIONAL WEATHER SERVICE DES MOINES IA  
511 PM CDT TUE SEP 14 2004

...THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A FLOOD ADVISORY FOR THE WINNEBAGO RIVER AT MASON CITY...SHELL ROCK RIVER AT MARBLE ROCK...CEDAR RIVER AT JANESVILLE...CEDAR RIVER AT CEDAR FALLS...AND CEDAR RIVER AT WATERLOO...

.SEVERE WEATHER WITH LOCALLY HEAVY RAINFALL OF TWO TO THREE INCHES PASSED OVER NORTHERN AND CENTRAL IOWA THIS AFTERNOON. SOME ADDITIONAL RAINFALL MAY FALL ON WEDNESDAY BUT AMOUNTS ARE EXPECTED TO BE SMALL. THE LOCATION OF THIS RAINFALL AND HOW MUCH FALLS WILL CONTROL WHETHER FUTURE RIVER FORECASTS WILL NEED TO BE CHANGED AND WARNINGS WILL NEED TO BE ISSUED.

IAC023-067-151000-  
/O.NEW.KDMX.FL.Y.0006.040914T2211Z-040917T1000Z/  
/MLBI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
511 PM CDT TUE SEP 14 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A

- \* FLOOD ADVISORY FOR  
SHELL ROCK RIVER AT MARBLE ROCK.
- \* UNTIL 500 AM CDT FRIDAY MORNING.
- \* AT 400 PM TUESDAY THE STAGE WAS 3.0 FT /ESTIMATED/.
- \* FLOOD STAGE IS 4.0 FEET.
- \* FORECAST...THE RIVER WILL CREST AT 3.8 FEET AT 600 PM THIS EVENING AND THEN FALL TO 2.0 FEET BY THURSDAY MORNING.
- \* IMPACT...AT 5.0 FEET...GATES RIVER BRIDGE TRAILER PARK IS AFFECTED AND EVACUATIONS ARE ORDERED BY MARBLE ROCK POLICE. SOME RESIDENCES MAY BE THREATENED FURTHER DOWNSTREAM TOWARD GREENE.

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IAC033-067-195-151000-  
/O.NEW.KDMX.FL.Y.0007.040914T2211Z-040917T1000Z/  
/MCWI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
511 PM CDT TUE SEP 14 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A

- \* FLOOD ADVISORY FOR  
WINNEBAGO RIVER AT MASON CITY.
- \* UNTIL 500 AM CDT FRIDAY MORNING.
- \* AT 400 PM TUESDAY THE STAGE WAS 3.5 FEET.
- \* FLOOD STAGE IS 7.0 FEET.
- \* FORECAST...THE RIVER WILL CREST AT 6.6 FEET AT 600 PM THIS EVENING AND THEN FALL TO 4.0 FEET BY THURSDAY EVENING.



\* IMPACT...AT 8.0 FEET...EAST AND WEST CITY PARKS ARE AFFECTED  
DOWNSTREAM FROM THE GAGE SITE.

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IAC013-017-151000-  
/O.NEW.KDMX.FL.Y.0008.040914T2211Z-040917T1000Z/  
/JANI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
511 PM CDT TUE SEP 14 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A  
\* FLOOD ADVISORY FOR  
CEDAR RIVER AT JANESVILLE.  
\* UNTIL 500 AM CDT FRIDAY MORNING.  
\* AT 400 PM TUESDAY THE STAGE WAS 1.5 FEET.  
\* FLOOD STAGE IS 11.0 FEET.  
\* FORECAST...THE RIVER WILL CREST AT 10.5 FEET AT 200 PM THURSDAY  
EVENING AND THEN FALL RAPIDLY TO 5.0 FEET BY FRIDAY MORNING.  
\* IMPACT...AT 11.0 FEET...LOWLAND FLOODING OF THE CITY PARK OCCURS.

\$\$

IAC013-151000-  
/O.NEW.KDMX.FL.Y.0009.040914T2211Z-040917T1000Z/  
/CEDI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
511 PM CDT TUE SEP 14 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A  
\* FLOOD ADVISORY FOR  
CEDAR RIVER AT CEDAR FALLS.  
\* UNTIL 500 AM CDT FRIDAY MORNING.  
\* AT 1200 PM TUESDAY THE STAGE WAS 83.1 FEET.  
\* FLOOD STAGE IS 88.0 FEET.  
\* FORECAST...THE RIVER WILL CREST AT 86.5 FEET AT 100 AM EARLY FRIDAY  
MORNING AND THEN FALL TO 85.5 FEET BY 500 AM FRIDAY.  
\* IMPACT...AT 89 FEET...COTTAGE ROW BECOMES COMPLETELY COVERED IN  
SOME PLACES.

\$\$

IAC013-151000-  
/O.NEW.KDMX.FL.Y.0010.040914T2211Z-040917T1000Z/  
/ALOI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
511 PM CDT TUE SEP 14 2004

THE NATIONAL WEATHER SERVICE IN DES MOINES HAS ISSUED A  
\* FLOOD ADVISORY FOR  
CEDAR RIVER AT WATERLOO.  
\* UNTIL 500 AM CDT FRIDAY MORNING.  
\* AT 400 PM TUESDAY THE STAGE WAS 5.6 FEET.  
\* FLOOD STAGE IS 12.0 FEET.  
\* FORECAST...THE RIVER WILL CREST AT 10.5 FEET AT 300 AM EARLY FRIDAY  
MORNING AND THEN FALL TO 10.0 FEET BY 500 AM FRIDAY.  
\* IMPACT...AT 13.0 FEET...THERE IS MINOR STREET FLOODING IN  
EVANSDALE ALONG WITH ABOUT 22000 ACRES FLOODED.

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**9.2 Example #2 - Flood Advisory for Multiple Forecast Points - Follow-up.** Situation:  
elevated flow continues to move down the Cedar River basin in response to heavy rain occurring  
on the previous day. Flows have decreased sufficiently at the two upstream points covered in the

original advisory to allow the advisory to be cancelled for those locations, but the advisory continues for the three downstream forecast points.

WGUS83 KDMX 141000-  
FLSDMX

FLOOD ADVISORY  
NATIONAL WEATHER SERVICE DES MOINES IA  
500 AM CDT WED SEP 15 2004

...THE NATIONAL WEATHER SERVICE IN DES MOINES IS CONTINUING THE FLOOD ADVISORY FOR THE CEDAR RIVER AT JANESVILLE...CEDAR RIVER AT CEDAR FALLS...AND CEDAR RIVER AT WATERLOO. THE FLOOD ADVISORY IS CANCELLED FOR THE WINNEBAGO RIVER AT MASON CITY AND SHELL ROCK RIVER AT MARBLE ROCK...

.ELEVATED STREAMFLOW IS MOVING DOWN THE CEDAR RIVER IN RESPONSE TO YESTERDAY AFTERNOONS RAINFALL. SOME ADDITIONAL RAINFALL MAY FALL THIS AFTERNOON BUT AMOUNTS ARE EXPECTED TO BE SMALL. THE LOCATION OF THIS RAINFALL AND HOW MUCH FALLS WILL CONTROL WHETHER FUTURE RIVER FORECASTS NEED TO BE CHANGED AND WARNINGS NEED TO BE ISSUED. HOWEVER...THE RIVER IS NOT CURRENTLY EXPECTED TO EXCEED FLOOD STAGE.

IAC023-067-151100-  
/O.CAN.KDMX.FL.Y.0006.000000T0000Z-040917T1000Z/  
/MLBI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY IS CANCELLED FOR  
SHELL ROCK RIVER AT MARBLE ROCK.  
\* AT 400 AM WEDNESDAY THE STAGE WAS 2.5 FT /ESTIMATED/.  
\* FLOOD STAGE IS 4.0 FEET.  
\* FORECAST...THE RIVER WILL FALL TO 2.0 FEET BY THURSDAY MORNING.

\$\$

IAC033-067-195-151100-  
/O.CAN.KDMX.FL.Y.0007.000000T0000Z-040917T1000Z/  
/MCWI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY IS CANCELLED FOR  
WINNEBAGO RIVER AT MASON CITY.  
\* AT 400 AM TUESDAY THE STAGE WAS 5.0 FEET.  
\* FLOOD STAGE IS 7.0 FEET.  
\* FORECAST...THE RIVER WILL FALL TO 4.0 FEET BY THURSDAY EVENING.

\$\$

IAC013-017-152200-  
/O.CON.KDMX.FL.Y.0008.000000T0000Z-040917T1000Z/  
/JANI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY CONTINUES FOR  
CEDAR RIVER AT JANESVILLE.  
\* UNTIL 500 AM CDT FRIDAY MORNING.  
\* AT 400 AM WEDNESDAY THE STAGE WAS 3.7 FEET.  
\* FLOOD STAGE IS 11.0 FEET.  
\* FORECAST...THE RIVER WILL CREST AT 10.5 FEET AT 200 PM THURSDAY EVENING AND THEN FALL RAPIDLY TO 5.0 FEET BY FRIDAY MORNING.  
\* IMPACT...AT 11.0 FEET...LOWLAND FLOODING OF THE CITY PARK OCCURS.

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IAC013-152200-  
/O.CON.KDMX.FL.Y.0009.000000T0000Z-040917T1000Z/  
/CEDI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY CONTINUES FOR  
CEDAR RIVER AT CEDAR FALLS.  
\* UNTIL 500 AM CDT FRIDAY MORNING.  
\* AT 400 AM WEDNESDAY THE STAGE WAS 84.0 FEET.  
\* FLOOD STAGE IS 88.0 FEET.  
\* FORECAST...THE RIVER WILL CREST AT 86.5 FEET AT 100 AM EARLY FRIDAY  
MORNING AND THEN FALL TO 85.5 FEET BY 500 AM FRIDAY.  
\* IMPACT...AT 89 FEET...COTTAGE ROW BECOMES COMPLETELY COVERED IN  
SOME PLACES.

\$\$

IAC013-152200-  
/O.CON.KDMX.FL.Y.0010.000000T0000Z-040917T1000Z/  
/ALOI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY CONTINUES FOR  
CEDAR RIVER AT WATERLOO.  
\* UNTIL 500 AM CDT FRIDAY MORNING.  
\* AT 400 AM WEDNESDAY THE STAGE WAS 6.7 FEET.  
\* FLOOD STAGE IS 12.0 FEET.  
\* FORECAST...THE RIVER WILL CREST AT 10.5 FEET AT 300 AM EARLY FRIDAY  
MORNING AND THEN FALL TO 10.0 FEET BY 500 AM FRIDAY.  
\* IMPACT...AT 13.0 FEET...THERE IS MINOR STREET FLOODING IN  
EVANSDALE ALONG WITH ABOUT 22000 ACRES FLOODED.

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**9.3 Example #3 - Flood Advisory for Multiple Forecast Points - Extension.** Situation  
Situation: the Cedar River in the vicinity of Waterloo and Cedar Falls is staying near flood stage  
longer than originally expected. The forecaster decides to extend the flood advisory at the three  
remaining forecast points for another 12 hours to give the river time to recede a little more.

WGUS83 KDMX 141000  
FLSDMX

FLOOD ADVISORY  
NATIONAL WEATHER SERVICE DES MOINES IA  
500 AM CDT WED SEP 15 2004

...THE NATIONAL WEATHER SERVICE IN DES MOINES IS EXTENDING THE FLOOD  
ADVISORY FOR THE CEDAR RIVER AT JANESVILLE...CEDAR RIVER AT CEDAR  
FALLS...AND CEDAR RIVER AT WATERLOO...

.ELEVATED RIVER FLOW PERSISTS IN THE CEDAR FALLS AND WATERLOO AREA  
DUE TO SOME MODERATE RAINFALL THURSDAY NIGHT JUST TO THE NORTH AND  
WEST OF CEDAR FALLS. THIS IS KEEPING WATER LEVELS THE CEDAR RIVER UP  
A LITTLE LONGER THAN ORIGINALLY EXPECTED...SO THE FLOOD ADVISORY IS  
BEING EXTENDED 12 HOURS.

IAC013-017-152200-  
/O.EXT.KDMX.FL.Y.0008.000000T0000Z-040917T2200Z/  
/JANI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY CONTINUES FOR

CEDAR RIVER AT JANESVILLE.

- \* UNTIL 500 PM CDT FRIDAY EVENING.
- \* AT 400 AM FRIDAY THE STAGE WAS 9.2 FEET.
- \* FLOOD STAGE IS 11.0 FEET.
- \* FORECAST...THE RIVER CRESTED AT 10.5 FEET THURSDAY EVENING AND IS SLOWLY FALLING. IT WILL FALL TO 7.0 FEET BY SATURDAY MORNING.
- \* IMPACT...AT 11.0 FEET...LOWLAND FLOODING OF THE CITY PARK OCCURS.

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IAC013-152200-

/O.EXT.KDMX.FL.Y.0009.000000T0000Z-040917T2200Z/  
/CEDI4.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY CONTINUES FOR

CEDAR RIVER AT CEDAR FALLS.

- \* UNTIL 500 PM CDT FRIDAY EVENING.
- \* AT 400 AM FRIDAY THE STAGE WAS 87.0 FEET.
- \* FLOOD STAGE IS 88.0 FEET.
- \* FORECAST...THE RIVER IS CRESTING NOW AND WILL FALL TO 85.5 FEET BY SATURDAY MORNING.
- \* IMPACT...AT 89 FEET...COTTAGE ROW BECOMES COMPLETELY COVERED IN SOME PLACES.

\$\$

IAC013-152200-

/O.EXT.KDMX.FL.Y.0010.000000T0000Z-040917T2200Z/  
/ALO14.N.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/  
500 AM CDT WED SEP 15 2004

THE FLOOD ADVISORY CONTINUES FOR

CEDAR RIVER AT WATERLOO.

- \* UNTIL 500 PM CDT FRIDAY EVENING.
- \* AT 400 AM FRIDAY THE STAGE WAS 11.4 FEET.
- \* FLOOD STAGE IS 12.0 FEET.
- \* FORECAST...THE RIVER IS CRESTING AND WILL FALL TO 10.0 FEET BY SATURDAY MORNING.
- \* IMPACT...AT 13.0 FEET...THERE IS MINOR STREET FLOODING IN EVANSDALE ALONG WITH ABOUT 22000 ACRES FLOODED.

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## 10. Hydrologic Statement (RVS).

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

Situation: flow on the Sulphur River has been holding steady below flood level for several days.

The forecaster issues a hydrologic statement to update the current and near-term forecast for the river at the town of Cooper. 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 has been holding steady for several days 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.

FGUS84 KFWD 110117  
 RVSFWD  
 TXC119-223-120100-

HYDROLOGIC STATEMENT  
 NATIONAL WEATHER SERVICE FORT WORTH TX  
 817 PM CDT WED APR 10 2002

THIS STATEMENT UPDATES INFORMATION FOR THE FOLLOWING LOCATIONS ON THE  
 SULPHUR RIVER...COOPER

FOR THE SOUTH SULPHUR RIVER NEAR COOPER...THE STAGE AT 715 PM  
 WEDNESDAY WAS 15.7 FEET. FLOOD STAGE IS 16.0 FEET. THE RIVER IS  
 FORECAST TO HOLD AROUND 15.7 FEET...JUST BELOW FLOOD STAGE FOR THE  
 NEXT SEVERAL DAYS. IF THE RIVER REACHES OR EXCEEDS 16.0 FEET...MINOR  
 OUT OF BANK FLOODING WILL OCCUR AND A FEW RURAL ROADS WILL BEGIN TO  
 FLOOD. MINOR FLOODING WILL ALSO OCCUR TO FARM AND RANCH LAND  
 ADJACENT TO THE RIVER.

&&

LOCATION	FLD STG	OBSERVED			FORECAST 7 PM		
		STG	DAY	TIME	THU	FRI	SAT
SULPHUR RIVER COOPER	16	15.7	WED	7 PM	15.7	15.6	15.5

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**10.2 Example #2 - Elevated River Levels Caused By Ice Jam.** This example illustrates how the information shown in the product in section 7.4 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 KCAR 212111  
 RVSCAR  
 MEC003-222100-

HYDROLOGIC STATEMENT  
 NATIONAL WEATHER SERVICE CARIBOU ME  
 515 PM EDT MON APR 21 2003

...ICE JAMS PERSIST ON THE AROOSTOOK AND SAINT JOHN RIVERS...

TWO ICE JAMS WERE OBSERVED ON THE AROOSTOOK RIVER...AND ONE ICE JAM  
 WAS REPORTED ON THE SAINT JOHN RIVER IN NORTHEAST AROOSTOOK COUNTY  
 MONDAY.

ON THE AROOSTOOK RIVER...THE FIRST JAM WAS DOWNSTREAM OF THE VILLAGE  
 OF CROUSEVILLE ON STATE ROUTE 164 BETWEEN THE TOWNS OF WASHBURN AND  
 PRESQUE ISLE. THIS JAM APPEARED TO HAVE BROKEN IN HALF OVER THE PAST  
 24 HOURS...SENDING THE DOWNSTREAM FLOW OF ICE SOUTHEAST THROUGH THE  
 TOWN OF PRESQUE ISLE LATE MONDAY AFTERNOON. THIS JAM...COMBINED WITH  
 THE SNOWMELT RUNOFF...IS CAUSING THE RIVER TO BACKUP INTO LOW LYING  
 AREAS OF THE FLOODPLAIN...BUT DOES NOT SEEM TO BE THREATENING ANY  
 ROADS OR PROPERTY AT THIS TIME.

ON THE AROOSTOOK RIVER...NEAR THE TOWN OF FORT FAIRFIELD...AN ICE JAM HAS FORMED IN THE RUSSELL FLATS AREA APPROXIMATELY TWO MILES DOWNSTREAM OF THE FORT FAIRFIELD BRIDGE...WHERE THE AROOSTOOK RIVER FLOWS INTO NEW BRUNSWICK. THIS JAM IS CAUSING THE RIVER TO RISE BEHIND THE JAM...BUT DOES NOT SEEM TO BE THREATENING AT THIS TIME.

ON THE SAINT JOHN RIVER...A RIVER SPOTTER HAS REPORTED AN ICE JAM FIVE TO SIX MILES DOWNSTREAM OF THE INTERNATIONAL BRIDGE IN VAN BUREN...WHERE THE ICE FLOE HAS RUN INTO THE STILL STRONG SHEET OF RIVER ICE. THIS RIVER SPOTTER ALSO NOTED THAT DOWNSTREAM OF THIS JAM THE SAINT JOHN RIVER APPEARED TO BE FREE OF ICE.

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 THE RIVER AT OR BEHIND THE JAM TO ELEVATE. STAY CLEAR OF LOW LYING AREAS NEAR ICE AFFECTED RIVERS AND MONITOR CONDITIONS CLOSELY.

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

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

SRUS43 KDDC 201351  
RVADDC  
KSC007-025-045-047-051-055-057-075-129-151-195-OKC007-211400-

HYDROLOGIC SUMMARY  
NATIONAL WEATHER SERVICE DODGE CITY KS  
850 AM CDT MON MAY 20 2002

LOCATION	FS	STAGE HEIGHT	24-HR CHANGE	POOL HEIGHT	24-HR CHANGE
ARKANSAS RIVER					
COOLIDGE 1S	8	2.45	0.00		
SYRACUSE	10	3.11	0.00		
GARDEN CITY	10	5.04	0.01		
DODGE CITY	11	5.82	0.01		
KINSLEY	12	3.75	-0.02		
BUCKNER CREEK					
BURDETT 6W	16	3.73	0.00		
CIMARRON RIVER					
ELKHART 8N	8	4.01	0.00		
FORGAN 8N	7	2.44	-0.02		
CROOKED CREEK					
ENGLEWOOD	5	1.64	M		
MEDICINE LODGE RIVER					
KIOWA 2NE	10	1.36	-0.06		
PAWNEE RIVER					
BURDETT 7WNW	23	2.53	0.00		
ROZEL 1N	31	5.86	0.00		
SALINE RIVER					
WAKEENEY 5N	13	2.07	-0.01		
S.FK NINNESCAH RIVER					
PRATT 1E	8	2.78	-0.02		

```
SMOKY HILL RIVER
  ARNOLD 12N          7      0.69   -0.01
CEDAR BLUFF RSVR
  SCHOENCHEN 3W     11      2.55   -0.02   2143.21   M
  SCHOENCHEN 2E     11      2.23    0.00    M
```

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

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

```
FGUS54 KLUB 081306
RVDLUB
TXC045-075-169-263-091300-
```

```
DAILY RIVER AND LAKE SUMMARY
NATIONAL WEATHER SERVICE LUBBOCK TX
805 AM CDT FRI JUN 08 2001
```

```
.B LUB 0608 DC0106080805 DH12/HP/
:
:RESERVOIR/LAKE SITES
:
:          STATION          NORMAL      7AM
ID      NAME              POOL      POOL      ELEV.    24-HR:
:          :              :          :
MKZT2 :MCKENZIE LAKE      3100:    3031.69/: -0.03:
CWRT2 :WHITE RIVER LAKE  2370:    2354.38/: -0.02:
LHPT2 :LAKE ALAN HENRY   2220:    2206.35/: -0.07:
:
.END
```

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

```
FGUS51 KLWX 011706
RVDLWX
MDC001>002-009-DCC001-021700-
```

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DAILY RIVER AND LAKE SUMMARY
NATIONAL WEATHER SERVICE BALTIMORE MD/WASHINGTON DC
1206 PM EST THU MAR 01 2001
```

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.B WBC 0301 DC01030112
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RH+19240/HG/DRH+19264/HG/DRH+19288/HG/DRH+19312/HG/DRH+19336/HG/DRH+19360/HG/DRH+19384/HG/DRH+19408/HG/DRH+19432/HG/DRH+19456/HG/DRH+19480/HG/DRH+19504/HG/DRH+19528/HG/DRH+19552/HG/DRH+19576/HG/DRH+19600/HG/DRH+19624/HG/DRH+19648/HG/DRH+19672/HG/DRH+19696/HG/DRH+19720/HG/DRH+19744/HG/DRH+19768/HG/DRH+19792/HG/DRH+19816/HG/DRH+19840/HG/DRH+19864/HG/DRH+19888/HG/DRH+19912/HG/DRH+19936/HG/DRH+19960/HG/DRH+19984/HG/DRH+20000/HG/DRH+20024/HG/DRH+20048/HG/DRH+20072/HG/DRH+20096/HG/DRH+20120/HG/DRH+20144/HG/DRH+20168/HG/DRH+20192/HG/DRH+20216/HG/DRH+20240/HG/DRH+20264/HG/DRH+20288/HG/DRH+20312/HG/DRH+20336/HG/DRH+20360/HG/DRH+20384/HG/DRH+20408/HG/DRH+20432/HG/DRH+20456/HG/DRH+20480/HG/DRH+20504/HG/DRH+20528/HG/DRH+20552/HG/DRH+20576/HG/DRH+20600/HG/DRH+20624/HG/DRH+20648/HG/DRH+20672/HG/DRH+20696/HG/DRH+20720/HG/DRH+20744/HG/DRH+20768/HG/DRH+20792/HG/DRH+20816/HG/DRH+20840/HG/DRH+20864/HG/DRH+20888/HG/DRH+20912/HG/DRH+20936/HG/DRH+20960/HG/DRH+20984/HG/DRH+21000/HG/DRH+21024/HG/DRH+21048/HG/DRH+21072/HG/DRH+21096/HG/DRH+21120/HG/DRH+21144/HG/DRH+21168/HG/DRH+21192/HG/DRH+21216/HG/DRH+21240/HG/DRH+21264/HG/DRH+21288/HG/DRH+21312/HG/DRH+21336/HG/DRH+21360/HG/DRH+21384/HG/DRH+21408/HG/DRH+21432/HG/DRH+21456/HG/DRH+21480/HG/DRH+21504/HG/DRH+21528/HG/DRH+21552/HG/DRH+21576/HG/DRH+21600/HG/DRH+21624/HG/DRH+21648/HG/DRH+21672/HG/DRH+21696/HG/DRH+21720/HG/DRH+21744/HG/DRH+21768/HG/DRH+21792/HG/DRH+21816/HG/DRH+21840/HG/DRH+21864/HG/DRH+21888/HG/DRH+21912/HG/DRH+21936/HG/DRH+21960/HG/DRH+21984/HG/DRH+22000/HG/DRH+22024/HG/DRH+22048/HG/DRH+22072/HG/DRH+22096/HG/DRH+22120/HG/DRH+22144/HG/DRH+22168/HG/DRH+22192/HG/DRH+22216/HG/DRH+22240/HG/DRH+22264/HG/DRH+22288/HG/DRH+22312/HG/DRH+22336/HG/DRH+22360/HG/DRH+22384/HG/DRH+22408/HG/DRH+22432/HG/DRH+22456/HG/DRH+22480/HG/DRH+22504/HG/DRH+22528/HG/DRH+22552/HG/DRH+22576/HG/DRH+22600/HG/DRH+22624/HG/DRH+22648/HG/DRH+22672/HG/DRH+22696/HG/DRH+22720/HG/DRH+22744/HG/DRH+22768/HG/DRH+22792/HG/DRH+22816/HG/DRH+22840/HG/DRH+22864/HG/DRH+22888/HG/DRH+22912/HG/DRH+22936/HG/DRH+22960/HG/DRH+22984/HG/DRH+23000/HG/DRH+23024/HG/DRH+23048/HG/DRH+23072/HG/DRH+23096/HG/DRH+23120/HG/DRH+23144/HG/DRH+23168/HG/DRH+23192/HG/DRH+23216/HG/DRH+23240/HG/DRH+23264/HG/DRH+23288/HG/DRH+23312/HG/DRH+23336/HG/DRH+23360/HG/DRH+23384/HG/DRH+23408/HG/DRH+23432/HG/DRH+23456/HG/DRH+23480/HG/DRH+23504/HG/DRH+23528/HG/DRH+23552/HG/DRH+23576/HG/DRH+23600/HG/DRH+23624/HG/DRH+23648/HG/DRH+23672/HG/DRH+23696/HG/DRH+23720/HG/DRH+23744/HG/DRH+23768/HG/DRH+23792/HG/DRH+23816/HG/DRH+23840/HG/DRH+23864/HG/DRH+23888/HG/DRH+23912/HG/DRH+23936/HG/DRH+23960/HG/DRH+23984/HG/DRH+24000/HG/DRH+24024/HG/DRH+24048/HG/DRH+24072/HG/DRH+24096/HG/DRH+24120/HG/DRH+24144/HG/DRH+24168/HG/DRH+24192/HG/DRH+24216/HG/DRH+24240/HG/DRH+24264/HG/DRH+24288/HG/DRH+24312/HG/DRH+24336/HG/DRH+24360/HG/DRH+24384/HG/DRH+24408/HG/DRH+24432/HG/DRH+24456/HG/DRH+24480/HG/DRH+24504/HG/DRH+24528/HG/DRH+24552/HG/DRH+24576/HG/DRH+24600/HG/DRH+24624/HG/DRH+24648/HG/DRH+24672/HG/DRH+24696/HG/DRH+24720/HG/DRH+24744/HG/DRH+24768/HG/DRH+24792/HG/DRH+24816/HG/DRH+24840/HG/DRH+24864/HG/DRH+24888/HG/DRH+24912/HG/DRH+24936/HG/DRH+24960/HG/DRH+24984/HG/DRH+25000/HG/DRH+25024/HG/DRH+25048/HG/DRH+25072/HG/DRH+25096/HG/DRH+25120/HG/DRH+25144/HG/DRH+25168/HG/DRH+25192/HG/DRH+25216/HG/DRH+25240/HG/DRH+25264/HG/DRH+25288/HG/DRH+25312/HG/DRH+25336/HG/DRH+25360/HG/DRH+25384/HG/DRH+25408/HG/DRH+25432/HG/DRH+25456/HG/DRH+25480/HG/DRH+25504/HG/DRH+25528/HG/DRH+25552/HG/DRH+25576/HG/DRH+25600/HG/DRH+25624/HG/
```

```
.B WBC 0301 DH12/HP
:
: ID LAKE NAME FULL WATER OBSERVED 24-HR
: KERV2: JOHN H. KERR POOL ELEV. DAY TIME CHANGE
: 320 : 295.6 : THU 7 AM -0.2
:
.END
$$
```

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

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

```
SXUS52 KCHS 301437
HYDCHS
GAC031-043-051-103-165-179-183-191-251-267-SCC005-013-015-019-029-
035-049-052-011400-
```

```
DAILY HYDROMETEOROLOGICAL DATA SUMMARY
NATIONAL WEATHER SERVICE CHARLESTON SC
1036 AM EDT TUE APR 30 2002
```

```
.B CHS 0430 E DH07/TX/TN/TA/PPP/TSIRZX/TSIRZN/TSIRZ
:
: CHARLESTON AREA TEMPERATURES AND PRECIPITATION
:
: MAX...HIGH TEMPERATURE LAST 24 HRS MIN...LOW TEMPERATURE LAST 24 HRS
: CUR...CURRENT TEMPERATURE PCPN...PRECIPITATION LAST 24 HRS
:
:
: STATION AIR TEMP SOIL TEMP
: MAX MIN CUR PCPN MAX MIN CUR
:
: ...SOUTH COASTAL...
: CHARLESTON ARPT :CHS 92/ 56/ 63/ 0.01/ 77/ 68/
: CHARLESTON CITY :CHLS1 92/ 64/ 64/ 0.03/ 79/ 66/
: BEAUFORT :BEAS1 92/ 62/ 62/ 0.01/ 80/ 67/
: SUMMERVILLE :SMVS1 93/ 52/ 52/ 0.00/ / /
: JAMESTOWN :JAMS1 91/ 55/ 57/ 0.02/ / /
:
: ...SOUTHEAST GEORGIA...
: SAVANNAH ARPT :SAV 93/ 56/ 66/ 0.00/ / / 74
: SPRINGFIELD :SRFG1 93/ 57/ 57/ 0.11/ / /
: EDEN :EDEG1 93/ 55/ 66/ 0.00/ / /
: ROCKY FORD :RCFG1 91/ 53/ 53/ M / /
:
.END
```

\$\$

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

```
CSUS46 KMTR 051725
HYMMTR
CAC053-055-069-075-085-087-097-061800-
```

```
MONTHLY HYDROMETEOROLOGICAL DATA SUMMARY
NATIONAL WEATHER SERVICE SAN FRANCISCO CA
925 AM PST FRI APR 5 2002
```



```
.B MTR 0331 P DH24/PPM
:
: MONTHLY PRECIPITATION FOR SF BAY AREA AND CENTRAL COAST
:
ANGC1  3.69   :ANGWIN PACIFIC UNION COLLEGE
BISC1  4.62   :BIG SUR STATE PARK
FORC1  3.32   :FORT ROSS
HLDC1  3.46   :HEALDSBURG FIRE DEPT
KICC1  0.58   :KING CITY
MHMC1  3.86   :MOUNT HAMILTON
NSHC1  2.63   :NAPA STATE HOSPITAL
PANC1  0.90   :PANOCHE 2W
PRSC1  0.80   :PRIEST VALLEY
SFOC1  2.27   :SAN FRANCISCO DOWNTOWN
SCRC1  3.52   :SANTA CRUZ
STSC1  2.43   :SANTA ROSA
WVIC1  1.51   :WATSONVILLE WATERWORKS
.END
$$
```