

**NATIONAL WEATHER SERVICE CENTRAL REGION SUPPLEMENT 02-2002
APPLICABLE TO NWSI 10-922**

December 8, 2009

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Hydrologic Services Program, NWSPD 10-9
Weather Forecast Office Hydrologic Products Specification, NWSI 10-922*

WEATHER FORECAST OFFICE HYDROLOGIC PRODUCTS

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SUMMARY OF REVISIONS: This supplement supersedes NWS Central Region Supplement 02-2002, dated August 8, 2005. The following revisions were made to this supplement:

1. Updated references to the Hydrologic Outlook (ESF) to reflect new MND product types: HYDROLOGIC OUTLOOK for the possibility of near-term flooding and PROBABILISTIC HYDROLOGIC OUTLOOK for longer-term probabilistic forecast information.
2. Deleted Table 1, UGC for Hydrologic Products, as it is covered in the directive.
3. Changed percentage chance criteria reference to HWO from any time to 30% or greater.
4. Added policy regarding use of abbreviations and acronyms.
5. Added relationship between the HYDROLOGIC OUTLOOK and the DROUGHT INFORMATION STATEMENT
6. Added additional examples of ESFs.
7. Discontinued inclusion of the phrase "...OR UNTIL THE WARNING IS CANCELLED" in long-term duration phrases.

(signed by)

Lynn P. Maximuk
Director, Central Region

11/24/09

Date

Weather Forecast Office Hydrologic Products

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1. Introduction. The purpose of this supplement is to provide additional instructions pertaining to Central Region Weather Forecast Office hydrologic products, which are not addressed in NWSI 10-922; and to provide guidance on the types of hydrologic products to issue under various circumstances.

1.1 Use of Abbreviations in Products. Abbreviations or acronyms in text product tables, such as FS for Flood Stage, will be defined within the product. Commonly known abbreviations such as FT (feet) do not need to be defined within the product. The location of the placement of the abbreviation definition will typically be at the bottom of the table or product, however, local discretion to meet customer needs is allowed. Examples of defined abbreviations include:

FS - FLOOD STAGE
7AM STG - OBSERVED STAGE AT 7 AM LOCAL TIME
24HR CHG - CHANGE IN STAGE OVER LAST 24 HOURS /7AM-7AM/

2. Outlooks, Watches, Warnings and Advisories Defined. The National Weather Service uses outlooks, watches, warnings and advisories to convey the severity and timing of a forecast hazard, as well as impart a certain level of confidence to the occurrence of that hazard. Flood and Flash Flood Warnings and Advisories convey a high degree of confidence, Flood Watches a medium degree of confidence and Hydrologic Outlooks a lower level of confidence. The level of confidence typically decreases the further in time a forecast is projected. This is reflected in the suggested time periods for which to issue some of the products (e.g., Hydrologic Outlooks generally beyond 24 hours of the event occurring, Flood Watches typically 12 - 48 hours prior to the event).

Using the “Ready, Set, Go” concept, WFO staff should strive to issue products in the outlook, watch, warning order. Since the possibility for flooding as stated in Hazardous Weather Outlooks, Hydrologic Outlooks, and/or Flood Watches is lower than for Flood and Flash Flood Warnings and Advisories, it is not certain that a warning or advisory will always follow an outlook and/or a watch. When issuing hydrologic products, the use of confidence levels should be similar to those used in other NWS Outlook/Watch/Warning products. The following are guidelines to assist the forecaster in the decision making process:

- Include flood potential information in the Hazardous Weather Outlook (HWO) for 30 % or greater chance of hazardous flooding in the 1 to 7-day time frame.
- Issue a Hydrologic Outlook for a 30 %-50% chance of flooding and/or where more detail is deemed necessary than what is stated in the HWO. The ESF is not mandatory if the information is adequately presented in the HWO.
- Issue a Flood Watch for a 50-80% chance of flooding.
- Issue a Flood or Flash Flood Warning for an 80% or greater chance of flooding that is expected to reach warning criteria (e.g., flood stage or fast-flowing water at least six inches in depth).
- Issue a Flood Advisory for an 80% or greater chance of flooding that is not expected to reach warning criteria but could cause significant inconvenience, and if caution is not exercised, could lead to situations that may threaten life and/or property.

A warning may be issued at any time without a prior outlook or watch when a high level of confidence exists, or flooding is already occurring.

3. Call to Action Statements (CTAs) and Flood Safety Rules. NOAA General Counsel advised against the use of CTAs or safety rules that suggest certain courses of action for persons caught in flood waters. Therefore, CR WFO flood and flash flood warnings, statements and safety rules will not suggest action if a person is already caught in high water. Rather, warnings and statements should continue to emphasize not entering the water at all, using phrases such as, "Turn around, Don't Drown" or "Move to higher ground immediately." Per NOAA General Counsel, suggesting a course of action only “seems to undermine our original advice to avoid the situation all together.”

4. Low Water Crossings. Low water crossings are typically low dips in the road that cross a dry creek bed. During times of intense rainfall, these crossings may fill with rapidly rising, fast-flowing water and become life-threatening. Warnings may be issued and verified for known low water crossings containing swiftly flowing water of six inches or more in depth (per [NWSI 10-1605](#)). For low water crossings that are flooded with water that does not pose a threat to life if caution is used (less than three feet of depth per [NWSI 10-1605](#)), a Flood Advisory may be issued. Each WFO should work closely with their Emergency Managers to assess whether there is a need to warn for known low water crossings.5. Outlooks.

5.1 Hydrologic Outlook (ESF) and Hazardous Weather Outlook (HWO). Hydrologic Outlooks (ESF) are issued to provide information on hydrometeorological conditions which could cause flooding in the near term, generally within 1-7 days. River Forecast Center (RFC) forecast guidance may be included in the ESF if available. Hazardous Weather Outlooks will also include information regarding a 30% or greater chance of hazardous flooding through a 7-day period, but would be more general in nature (ref. [NWSI 10-517](#) and accompanying Central Region Supplement). A Hydrologic Outlook (ESF) is not necessary if flood potential is adequately covered in the HWO, unless it is a known customer need.

5.2 Hydrologic Outlook (ESF) and Drought Information Statement (DGT)
A Hydrologic Outlook may contain drought information but does not replace the Drought Information Statement. If drought information is included in the ESF, there should be a reference to the DGT, if one exists.

5.3 Probabilistic Hydrologic Outlook (ESF). When long range probabilistic forecasts are provided by the servicing RFC as a SHEF-encoded ESG product, the WFO will issue the information as a plain text product using the Probabilistic Hydrologic Outlook (ESF) product identifier and MND header. This product is typically issued once monthly following issuance of the Climate Prediction Center's monthly outlooks and subsequent River Forecast Center guidance.

Event-driven updates may be issued depending on customer needs as well as RFC workload and concurrence. Certain antecedent conditions do not work well with probabilistic updates. WFOs and RFCs should coordinate with the best service to the public in mind. An example of a needed update would be if hydrologic conditions changed enough to alter the outlook's probability values for risk levels that would cause customers and partners to modify flood response according to their mitigation plans.

The following paragraph, or something similar, was included at the implementation of AHPS probabilistic products and is no longer needed:

THE XXX OFFICE OF THE NATIONAL WEATHER SERVICE HAS IMPLEMENTED
ADVANCED HYDROLOGIC PREDICTION SERVICE (AHPS) FOR ALL LOCATIONS
IN THE X...Y... AND Z BASINS. AHPS ENABLES THE NATIONAL WEATHER
SERVICE TO PROVIDE LONG-RANGE PROBABILISTIC RIVER OUTLOOKS. THIS
SERVICE IS ALSO AVAILABLE ON THE INTERNET.

For those sites that implement new probabilistic river forecasts in the future, the standard notification of service can be done (ref. [CR Supplement](#) for new or expanded hydrologic services)

5.4 Spring Flood and Water Resources Outlook (ESF). Prior to the annual national press briefing for spring floods and drought, all WFOs will issue an ESF with product name, Probabilistic Hydrologic Outlook or Water Supply Outlook, depending on applicable RFC guidance. This ESF will have the following headline:

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

This outlook may contain drought information but does not replace a Drought Information Statement. If drought information is included in the ESF, there should be a reference to the DGT, if one exists. Format and content guidelines for the SPRING FLOOD AND WATER RESOURCES OUTLOOK can be found in Appendix D.

6. Flood Watch (FFA) and NWR-SAME codes. There are two NWR-SAME codes available for Flood Watches: FFA and FLA (reference [NWSI 10-1710](#)). Use of SAME codes for flood watches is at WFO discretion. If SAME codes are used, the FFA code should be used for Flood Watches with headlines that state a Flash Flood Watch is in effect, and the FLA code should be used for all other flood watches.

7. Flood Advisories (FLS). Flood Advisories may be issued in the near-term situation where confidence is high that flooding will occur but will not meet warning criteria. Flood Advisories are typically issued for urban areas and rural roads where the public should exercise caution. Similar to various winter weather advisories, Flood Advisories are issued for conditions that could cause significant inconvenience and could lead to situations that may threaten life and/or property if caution is not exercised. Flood Advisories may be upgraded to a Flood Warning per instructions in NWSI 10-922.

7.1 Flood Advisory (FLS) for River Forecast Points and Hydrologic Statement (RVS).

For river forecast points (including headwater or local river forecast points), a Flood Advisory (FLS) may be issued when the stream is above or forecast to rise above bankfull or some other locally designated "Advisory Level," but remain below flood stage, and conditions warrant that the public should use caution to avoid risk to life and/or property. Flood Advisories for river forecast points may also be issued when the river has fallen below flood stage but will remain above bankfull or some other designated advisory level. This would typically be done in cases where a slow recession causes prolonged flooding below flood stage. Not all river forecast points may warrant the need for Flood Advisories to be issued; this should be determined locally.

For significant rises below flood stage that warrant public notification but do not pose a hazard, a Hydrologic Statement (RVS) may be issued.

8. Long-term Duration Phrases in Flood Warnings (FLW) and Flood Statements (FLS)

When the event ending date/time group and the flood end date/time group are coded with ten zeros (000000T0000Z), a long-term duration phrase such as "UNTIL FURTHER NOTICE" is used for the effective time of the warning. To avoid confusion with the warning being in effect or cancelled, the phrase "...OR UNTIL THE WARNING IS CANCELLED" will not be used. Other long-term phrase examples include: "FOR THE NEXT WEEK," "AT LEAST THROUGH THE END OF THE WEEK" and "FOR SEVERAL WEEKS."

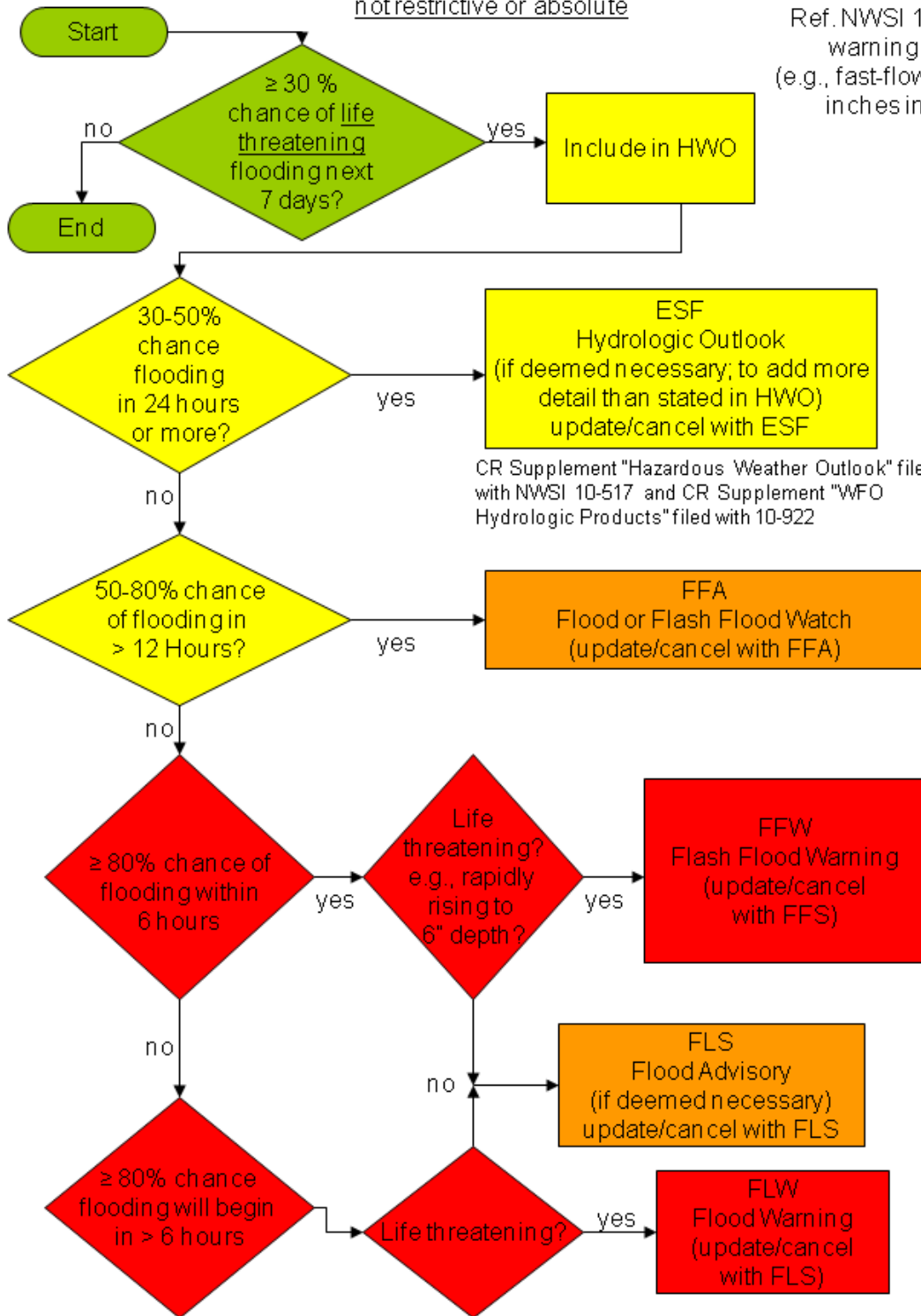
A-1 Appendix A

Decision Flowchart for Areal Flooding

Time frames stated are those for typical situations and are not restrictive or absolute

Ref. NWSI 10-922 and CR supplement

Ref. NWSI 10-1605 for warning criteria (e.g., fast-flowing water, 6 inches in depth)

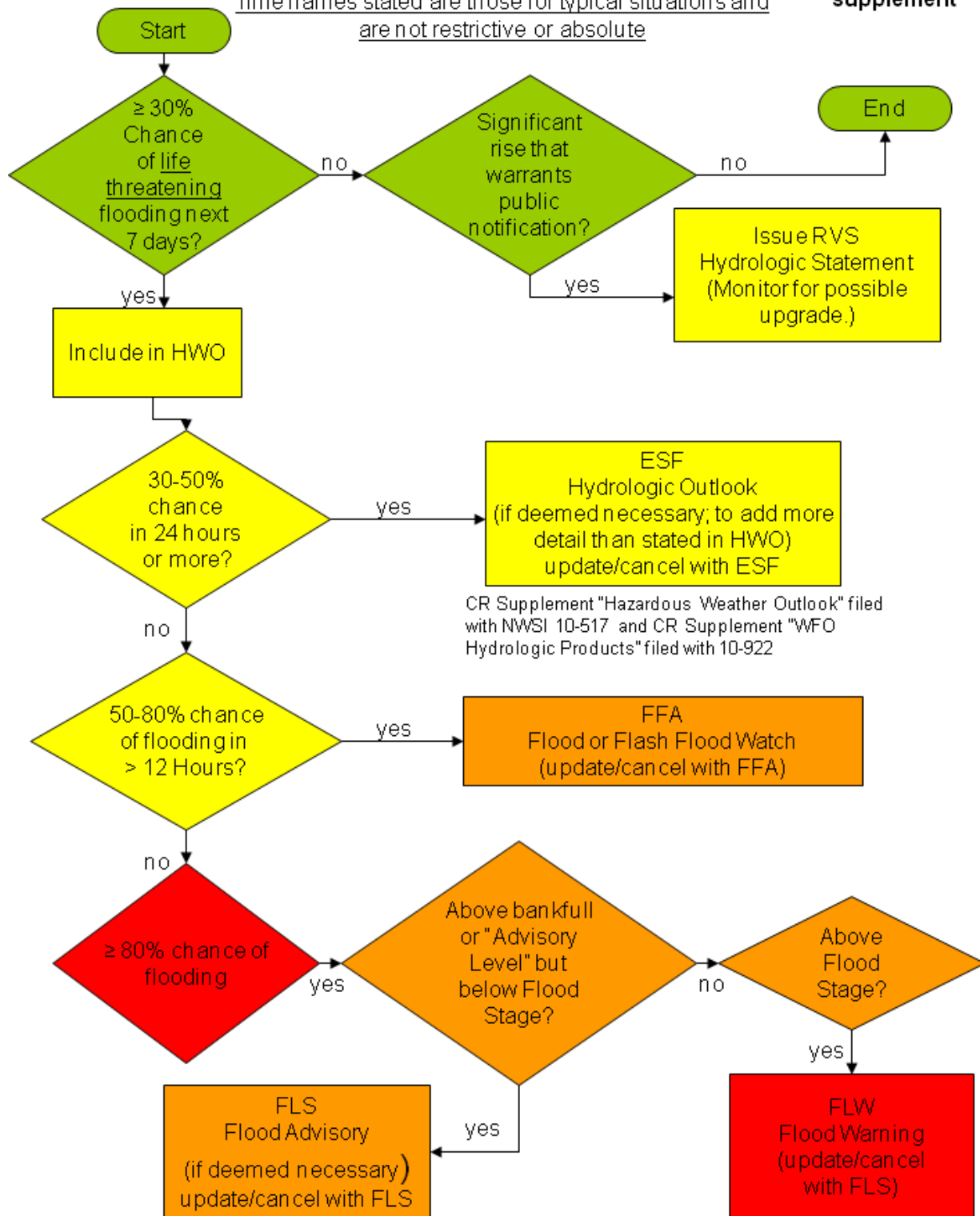


B-1 Appendix B

Decision Flowchart for River Flooding

Time frames stated are those for typical situations and are not restrictive or absolute

Ref. NWSI 10-922 and CR supplement



C-1 Appendix C - Examples of Hydrologic Outlooks

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1. Examples of Hydrologic Outlooks. The following examples have been taken from actual products. Repetitive sections were omitted while still preserving the overall format.

1.1 Probabilistic Hydrologic Outlook. This example includes the chances to reach flood categories.

FGUS73 KFSD 251550
 ESFFSD
 SDC005-011-027-035-061-067-079-083-087-099-101-111-125-127-135-
 MNC033-063-081-083-101-105-117-133-NEC013-014-
 IAC021-035-041-059-093-119-141-143-149-167-193-241800-

PROBABILISTIC HYDROLOGIC OUTLOOK
 NATIONAL WEATHER SERVICE SIOUX FALLS SD
 1050 AM CDT THU JUN 25 2009

THIS OUTLOOK IS VALID FROM JUN 29 2009 - SEP 27 2009

THE FOLLOWING TABLE GIVES THE CHANCE OF REACHING DIFFERENT FLOOD LEVELS AT THE GAGES DURING THE VALID PERIOD.

LOCATION	FLOOD LEVELS (FT)			APPROXIMATE CHANCE OF REACHING FLOOD LEVELS		
	MINOR	MOD	MAJOR	MINOR	MOD	MAJOR
JAMES RIVER						
HURON SD	11.0	13.0	15.0	> 90%	25%	15%
MITCHELL SD	17.0	20.0	22.0	> 90%	20%	< 10%
SCOTLAND SD	13.0	14.0	16.0	40%	30%	15%
BIG SIOUX RIVER						
BROOKINGS SD	9.0	10.5	12.0	15%	< 10%	< 10%
DELL RAPIDS SD	12.0	14.0	15.0	< 10%	< 10%	< 10%
LITTLE SIOUX RIVER						
SPENCER IA	10.0	14.0	16.0	30%	< 10%	< 10%
LINN GROVE IA	18.0	19.5	21.0	25%	15%	< 10%
CHEROKEE IA	17.0	21.0	24.0	15%	< 10%	< 10%

IN THE TABLE BELOW...THE 90 THROUGH 10 PERCENT COLUMNS INDICATE THE CHANCE THE RIVER COULD RISE ABOVE THE LISTED STAGE LEVELS IN THE NEXT 90 DAYS. EXAMPLE: THE JAMES RIVER NEAR SCOTLAND HAS A FLOOD STAGE OF 13 FEET. THERE IS A 30 PERCENT CHANCE THAT THE RIVER WILL

RISE ABOVE 14.0 FEET IN THE NEXT 90 DAYS.

LOCATION	FS(FT)	90%	80%	70%	60%	50%	40%	30%	20%	10%
JAMES RIVER										
HURON	11.0	12.1	12.1	12.1	12.1	12.1	12.1	12.4	14.0	17.1
MITCHELL	17.0	18.6	18.6	18.6	18.7	18.7	18.9	19.6	20.0	21.3
SCOTLAND	13.0	12.4	12.4	12.4	12.4	12.5	13.1	14.0	14.9	16.3
BIG SIOUX RIVER										
BROOKINGS	9.0	3.1	3.1	3.5	3.9	4.6	5.3	6.6	8.3	9.8
DELL RAPIDS	12.0	4.2	4.2	4.4	4.8	5.4	6.1	7.7	9.3	10.9
LITTLE SIOUX RIVER										
SPENCER	10.0	3.1	3.3	4.1	4.5	6.7	8.1	10.0	11.2	13.4
LINN GROVE	18.0	16.0	16.0	16.2	16.5	16.7	17.1	17.4	18.2	20.0
CHEROKEE	17.0	6.0	6.0	6.6	7.8	8.7	10.2	11.9	13.7	19.6

THE NUMBERS CONTAINED IN THIS LONG-RANGE PROBABILISTIC HYDROLOGIC 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...AND SOIL MOISTURE...AND THE 30 TO 90 DAY LONG-RANGE OUTLOOKS OF TEMPERATURE AND PRECIPITATION. BY PROVIDING THE 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 SERVICES (AHPS).

LONG-RANGE PROBABILISTIC OUTLOOKS WILL BE ISSUED TOWARD THE END OF THE MONTH THROUGHOUT THE YEAR. THE NEXT SCHEDULED OUTLOOK FOR THESE SITES WILL BE ISSUED TOWARD THE END OF JULY 2009.

VISIT OUR WEB SITE AT WWW.WEATHER.GOV/FSD FOR MORE WEATHER AND RIVER INFORMATION INCLUDING GRAPHS OF PROBABILISTIC RIVER OUTLOOKS.

MOD - MODERATE
FS - FLOOD STAGE

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1.2 Hydrologic Outlook for Possible Heavy Rain Event

FGUS73 KFSD 011510
ESFFSD
HYDROLOGIC OUTLOOK
NATIONAL WEATHER SERVICE SIOUX FALLS SD
1010 AM CDT THU MAY 01 2008

...HEAVY RAIN COULD CAUSE RIVER FLOODING IN THE NEXT FEW DAYS...

.THE FOLLOWING RIVER INFORMATION IS BASED ON FUTURE PREDICTED RAINFALL. THE EXACT AMOUNT...INTENSITY...TIMING...AND LOCATION OF THE RAIN THAT WILL OCCUR IS STILL UNCERTAIN. THESE OUTLOOK STAGES ARE PROVIDED TO SHOW WHAT MAY BE EXPECTED IF THE FORECAST PRECIPITATION OCCURS. ONCE THERE IS MORE CERTAINTY ABOUT THE RIVER FORECASTS...A FLOOD WARNING OR STATEMENT WILL BE ISSUED IF THE THREAT MATERIALIZES.

A STRONG SPRING STORM SYSTEM WILL BE MOVING ACROSS SOUTH DAKOTA TODAY THROUGH FRIDAY NIGHT. WIDESPREAD HEAVY RAINFALL IS EXPECTED ACROSS MOST OF EASTERN SOUTH DAKOTA TONIGHT THROUGH FRIDAY NIGHT. RAINFALL FROM THIS SYSTEM COULD RANGE FROM AS LITTLE AS 0.50 INCH TO AS MUCH AS 3 INCHES. CURRENTLY...THE MOST LIKELY RAINFALL WILL BE AROUND 1 TO 2 INCHES IN SOUTHEASTERN SOUTH DAKOTA.

ADDITIONAL INFORMATION IS AVAILABLE AT

[HTTP://WWW.CRH.NOAA.GOV/AHPS2/INDEX.PHP?WFO=FSD](http://www.crh.noaa.gov/ahps2/index.php?wfo=fsd)

STAY TUNED FOR FURTHER UPDATES BY LISTENING TO NOAA WEATHER RADIO... OR YOUR LOCAL RADIO AND TV STATIONS.

SDC005-021510-

1010 AM CDT THU MAY 01 2008

...FOR THE JAMES RIVER AT HURON...

- * THE STAGE AT 9 AM THURSDAY WAS 9.3 FEET...
- * FLOOD STAGE IS 11.0 FEET...
- * BASED ON THE RANGE OF PRECIPITATION FORECAST TO FALL IN THE NEXT 60 HOURS...THE RIVER IS FORECAST TO CREST BETWEEN 9.3 FEET AND 14.8 FEET. AT THIS TIME...THE MOST LIKELY CREST IS FORECAST TO BE NEAR 10.2 FEET.
- * THIS OUTLOOK IS BASED SOLELY ON MODEL GUIDANCE AND SHOULD ONLY BE USED TO APPROXIMATE THE POTENTIAL RANGE OF RIVER LEVELS BASED ON VARIOUS PRECIPITATION TOTALS.

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SDC111-021510-

1010 AM CDT THU MAY 01 2008

...FOR THE JAMES RIVER NEAR FORESTBURG...

- * THE STAGE AT 7 AM THURSDAY WAS 5.1 FEET...
- * FLOOD STAGE IS 12.0 FEET...
- * BASED ON THE RANGE OF PRECIPITATION FORECAST TO FALL IN THE NEXT 60 HOURS...THE RIVER IS FORECAST TO CREST BETWEEN 5.4 FEET AND 16.4 FEET. AT THIS TIME...THE MOST LIKELY CREST IS FORECAST TO BE NEAR 9.4 FEET.
- * THIS OUTLOOK IS BASED SOLELY ON MODEL GUIDANCE AND SHOULD ONLY BE USED TO APPROXIMATE THE POTENTIAL RANGE OF RIVER LEVELS BASED ON

VARIOUS PRECIPITATION TOTALS.

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[additional segments omitted]

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LOCATION	FLOOD STAGE	LATEST STAGE	OBSERVED TIME	RANGE OF LOWEST	POSSIBLE MEDIAN	CRESTS HIGHEST
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JAMES RIVER

HURS2	11.0	9.26	THU 9 AM	9.27	10.20	14.77
FORS2	12.0	5.14	THU 7 AM	5.41	9.40	16.38
JRMS2	17.0	12.38	THU 10 AM	12.52	14.35	22.29
SCOS2	13.0	7.12	THU 10 AM	8.15	8.15	18.28

BIG SIOUX RIVER

BRKS2	9.0	5.89	THU 6 AM	7.62	11.29	13.34
DERS2	12.0	6.97	THU 9 AM	8.48	12.42	15.25
SFLS2	12.0	10.70	THU 7 AM	11.64	13.46	16.49
SXFS2	16.0	9.23	THU 8 AM	10.12	15.07	22.23
HAWI4	15.0	M		12.12	17.01	23.33
AKRI4	16.0	12.69	THU 10 AM	13.05	17.93	23.50

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1.3. Probabilistic Hydrologic Outlook - Spring Flood and Water Resources Outlook. This example includes the chances to reach flood categories as well as the chances to fall below certain levels for low flow forecasts. It also includes the departure from normal of reaching flood stage.

FGUS73 KDVN 131721
ESFDVN

PROBABILISTIC HYDROLOGIC OUTLOOK
NATIONAL WEATHER SERVICE QUAD CITIES IA IL
1220 PM CST FRI MAR 13 2009

...SPRING FLOOD AND WATER RESOURCES OUTLOOK NUMBER 2...

THIS FLOOD OUTLOOK IS FOR THE QUAD CITIES HYDROLOGIC SERVICE AREA...WHICH INCLUDES PORTIONS OF EASTERN IOWA...NORTHWESTERN ILLINOIS...AND EXTREME NORTHEASTERN MISSOURI. THIS AREA ENCOMPASSES THE MISSISSIPPI RIVER AND ITS TRIBUTARIES FROM BELOW GUTTENBERG LD10 IOWA TO BELOW GREGORY LANDING MISSOURI. THE OUTLOOK IS FOR THE TIME PERIOD FROM TODAY THROUGH MID JUNE.

THIS OUTLOOK ASSUMES THAT NEAR NORMAL TEMPERATURES AND PRECIPITATION WILL OCCUR DURING THE OUTLOOK TIME PERIOD. IF TEMPERATURES AND

PRECIPITATION ARE NOT NEAR NORMAL...THEN THE ACTUAL RISK OF FLOODING MAY DIFFER FROM WHAT THE OUTLOOK CURRENTLY INDICATES.

...THERE IS A NEAR NORMAL RISK TO SLIGHTLY GREATER THAN NORMAL RISK OF FLOODING ACROSS MUCH OF EASTERN IOWA AND FAR NORTHEASTERN MISSOURI. THERE IS AN INCREASED RISK OF FLOODING ACROSS NORTHWESTERN ILLINOIS...WHILE A SLIGHTLY BELOW NORMAL RISK EXISTS FOR PORTIONS OF THE MAINSTEM MISSISSIPPI RIVER NORTH OF NEW BOSTON...

...TABLE 1--PROBABILITIES FOR MINOR...MODERATE AND MAJOR FLOODING...AND DEPARTURES FROM NORMAL OF REACHING FLOOD STAGE...

	FLOOD STAGE						DEPARTURE FROM NORMAL OF REACHING FLOOD STAGE
	MINOR STG	PCT	MODERATE STG	PCT	MAJOR STG	PCT	
MISSISSIPPI RIVER							
DUBUQUE LD11	16	20%	17.0	13%	20.5	3%	32% LESS
DUBUQUE	17	27%	18.0	16%	21.5	5%	25% LESS
BELLEVUE LD12	17	15%	18.0	8%	20.0	3%	30% LESS
FULTON LD13	16	28%	18.0	11%	20.0	5%	22% LESS
CAMANCHE	17	20%	18.5	10%	20.5	3%	28% LESS
LE CLAIRE LD14	11	25%	12.0	16%	13.5	5%	25% LESS
ROCK ISLAND LD15	15	44%	16.0	33%	18.0	13%	10% LESS
ILL. CITY LD16	15	44%	16.0	37%	18.0	22%	12% LESS
MUSCATINE	16	44%	18.0	30%	20.0	13%	10% LESS
NEW BOSTON LD17	15	62%	16.5	44%	18.5	27%	NEAR NORMAL
GREGORY LANDING	15	76%	18.0	30%	25.0	---	16% GREATER

...IOWA RIVERS...

CEDAR RIVER							
VINTON	15	3%	18.0	---	19.0	---	NEAR NORMAL
CEDAR RAPIDS	12	10%	14.0	3%	16.0	1%	12% LESS
CONESVILLE	13	33%	15.0	8%	16.5	1%	NEAR NORMAL

IOWA RIVER							
MARENGO	14	84%	15.5	71%	18.5	3%	12% GREATER
IOWA CITY	22	1%	23.0	1%	25.0	---	NEAR NORMAL
LONE TREE	15	28%	16.5	11%	18.0	5%	NEAR NORMAL
COLUMBUS JCT	19	47%	22.0	10%	23.0	8%	NEAR NORMAL
WAPELLO	20	79%	22.0	23%	25.0	6%	27% GREATER

...MISSOURI RIVERS...

FOX RIVER							
WAYLAND	15	23%	18.0	5%	20.0	---	NEAR NORMAL

STG - STAGE
PCT - PERCENT

THE FOLLOWING TABLES ARE THE LONG-RANGE PROBABILISTIC RIVER OUTLOOKS FOR RIVER BASINS IN IOWA...ILLINOIS...AND NORTHEAST MISSOURI. THE

OUTLOOK IS DIVIDED INTO TWO PARTS...ONE FOR THE PERCENTAGE CHANCES OF AREA RIVERS RISING ABOVE VARIOUS STAGES...AND ONE FOR THE PERCENTAGE CHANCES OF AREA RIVERS FALLING BELOW VARIOUS STAGES OVER THE NEXT 90 DAYS. THESE PROBABILISTIC OUTLOOKS ARE NORMALLY ISSUED ONCE EACH MONTH NEAR THE END OF THE MONTH.

THESE LONG-RANGE PROBABILISTIC OUTLOOKS CONTAIN FORECAST VALUES THAT ARE CALCULATED USING MULTIPLE SEASON SCENARIOS FROM 30 OR MORE YEARS OF CLIMATOLOGICAL DATA...INCLUDING CURRENT CONDITIONS OF THE RIVER...SOIL MOISTURE...SNOW COVER...AND 30 TO 90 DAY LONG-RANGE OUTLOOKS OF TEMPERATURE AND PRECIPITATION. BY PROVIDING THE 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.

IN TABLE 2 BELOW FOR HIGH WATER...THE 90 THROUGH 10 PERCENT COLUMNS INDICATE THE CHANCE THE RIVER COULD RISE ABOVE THE LISTED STAGE LEVELS IN THE NEXT 90 DAYS.

FOR EXAMPLE...MISSISSIPPI RIVER LOCK AND DAM 15 AT ROCK ISLAND HAS A FLOOD STAGE OF 15 FEET. IN THE NEXT 90 DAYS THERE IS A 10 PERCENT CHANCE OF THE STAGE REACHING 18.5 FEET.

...TABLE 2--EXCEEDANCE PROBABILITIES...

CHANCE OF EXCEEDING STAGES AT SPECIFIC LOCATIONS
VALID 3/17/2009 - 6/15/2009

LOCATION	FS(FT)	90%	80%	70%	60%	50%	40%	30%	20%	10%
MISSISSIPPI RIVER										
DUBUQUE LD11	16	10.0	11.2	12.0	13.2	14.0	14.7	15.1	16.3	18.4
DUBUQUE	17	11.8	12.9	13.5	14.6	15.4	16.2	16.7	17.9	20.0
BELLEVUE LD12	17	10.6	11.5	12.1	13.0	13.9	14.7	15.4	16.5	18.0
FULTON LD13	16	10.5	11.3	12.6	13.3	14.2	14.8	15.9	16.8	18.5
CAMANCHE	17	12.1	12.7	13.6	14.1	14.9	15.4	16.3	17.1	18.8

FS - FLOOD STAGE

IN TABLE 3 BELOW FOR LOW WATER...THE 90 THROUGH 10 PERCENT COLUMNS INDICATE THE CHANCE THE RIVER WILL FALL BELOW THE LISTED STAGE LEVELS IN THE NEXT 90 DAYS.

FOR EXAMPLE...THE CEDAR RIVER AT CEDAR RAPIDS HAS A FLOOD STAGE OF 12 FEET. IN THE NEXT 90 DAYS THERE IS A 10 PERCENT CHANCE OF THE STAGE FALLING TO 3.8 FEET.

...TABLE 3--NONEXCEEDANCE PROBABILITIES...

CHANCE OF FALLING BELOW STAGES AT SPECIFIC LOCATIONS
VALID 3/17/2009 - 6/15/2009

LOCATION	FS(FT)	90%	80%	70%	60%	50%	40%	30%	20%	10%
MISSISSIPPI RIVER										
DUBUQUE LD11	16	6.4	6.2	6.1	6.0	5.5	5.4	5.0	4.8	4.4
DUBUQUE	17	8.8	8.6	8.5	8.5	8.2	8.1	7.9	7.8	7.5
BELLEVUE LD12	17	7.0	6.7	6.4	6.2	5.6	5.3	4.8	4.6	4.0
FULTON LD13	16	7.1	6.7	6.3	6.0	5.5	5.2	4.9	4.8	4.5
CAMANCHE	17	9.8	9.6	9.5	9.3	9.2	9.1	8.9	8.8	8.6

FS - FLOOD STAGE

...OUTLOOK SUMMARY...

THE RISK OF SPRING FLOODING HAS INCREASED SLIGHTLY DUE TO RECENT HEAVY RAINFALL AND ABOVE NORMAL SOIL MOISTURE ACROSS EASTERN IOWA...NORTHWESTERN ILLINOIS...AND FAR NORTHEASTERN MISSOURI. GREATER THAN NORMAL CHANCES OF EXCEEDING FLOOD STAGE NOW EXIST FOR RIVERS IN NORTHWESTERN ILLINOIS...INCLUDING PORTIONS OF THE ROCK...PECATONICA...GREEN...AND LA MOINE RIVERS. THE CHANCES FOR FLOODING ARE GENERALLY NEAR NORMAL FOR MUCH OF EASTERN IOWA...WITH SLIGHTLY GREATER THAN NORMAL CHANCES ON DOWNSTREAM PORTIONS OF THE RIVER BASINS TOWARD FAR EASTERN AND SOUTHEASTERN IOWA. THERE IS A SLIGHTLY BELOW NORMAL RISK FLOOD RISK FOR PORTIONS OF THE MAINSTEM MISSISSIPPI RIVER GENERALLY NORTH OF NEW BOSTON...AND NEAR NORMAL TO SLIGHTLY GREATER THAN NORMAL CHANCES FROM NEW BOSTON SOUTH.

MISSISSIPPI RIVER...THE MEDIAN OUTLOOK VALUES /THE 50 PERCENT LEVEL/ SUGGEST NO FLOODING FROM DUBUQUE DOWNSTREAM TOWARD NEW BOSTON...AND SUGGESTING MINOR FLOODING FROM NEW BOSTON DOWNSTREAM TO GREGORY LANDING. THE RISK OF REACHING FLOOD STAGE IS NEAR NORMAL TO ABOUT 15 PERCENT GREATER THAN NORMAL FROM NEW BOSTON DOWNSTREAM TO GREGORY LANDING...AND 10 TO 30 PERCENT BELOW NORMAL CHANCES UPSTREAM OF NEW BOSTON TO DUBUQUE.

IOWA TRIBUTARIES...THE MEDIAN OUTLOOK VALUES SUGGEST A RANGE FROM NO FLOODING TO MINOR OR MODERATE FLOODING. THE CHANCES FOR FLOODING ARE 10 TO 30 PERCENT GREATER THAN NORMAL FOR SOME OF THE FURTHER DOWNSTREAM SEGMENTS OF THE EASTERN IOWA RIVER BASINS...INCLUDING DOWNSTREAM PORTIONS OF THE WAPSIPINICON...IOWA...NORTH SKUNK...SKUNK...AND DES MOINES RIVERS. FURTHER UPSTREAM PORTIONS OF THESE RIVER BASINS...IN ADDITION TO THE MAQUOKETA AND CEDAR RIVER BASINS...GENERALLY HAVE A NEAR NORMAL FLOOD RISK.

ILLINOIS TRIBUTARIES...THE MEDIAN OUTLOOK VALUES SUGGEST MINOR FLOODING IN MOST LOCATIONS...WITH MODERATE TO MAJOR FLOODING FOR THE DOWNSTREAM PORTIONS OF THE ROCK RIVER. THE RISK OF REACHING FLOOD STAGE RANGES FROM 10 TO 15 PERCENT ABOVE NORMAL ON THE PECATONICA...GREEN AND LA MOINE RIVERS. THERE ARE INCREASED CHANCES FOR FLOODING ON THE ROCK RIVER...WITH ABOUT 30 TO 50 PERCENT ABOVE NORMAL CHANCES OF EXCEEDING FLOOD STAGE.

MISSOURI TRIBUTARIES...THE MEDIAN OUTLOOK VALUES SUGGEST NO

FLOODING ON THE FOX RIVER. THE RISK OF FLOODING ON THIS RIVER IS NEAR NORMAL.

...RECENT CONDITIONS...

PRECIPITATION HAS AGAIN BEEN ABOVE NORMAL OVER THE PAST 90 DAYS. PRECIPITATION ACROSS EASTERN IOWA...NORTHWESTERN ILLINOIS...AND FAR NORTHEASTERN MISSOURI HAS BEEN GENERALLY 150 TO 200 PERCENT OF NORMAL. OVERALL TEMPERATURES OVER THE PAST 90 DAYS HAVE BEEN GENERALLY 2 TO 4 DEGREES BELOW NORMAL.

...CURRENT CONDITIONS...

SNOW COVER AND LIQUID WATER EQUIVALENT...SIGNIFICANT SNOWMELT THAT OCCURRED IN FEBRUARY HAS RESULTED IN LITTLE TO NO SNOW COVER OR ASSOCIATED LIQUID WATER EQUIVALENT REMAINING ACROSS THE HYDROLOGIC SERVICE AREA. THE SOUTHERN EXTENT OF THE SNOW COVER IS GENERALLY NORTH OF THE EASTERN IOWA AND NORTHWESTERN ILLINOIS RIVER BASINS.

SOIL MOISTURE...THE SOIL MOISTURE REMAINS ABOVE NORMAL ACROSS EASTERN IOWA...NORTHWESTERN ILLINOIS AND FAR NORTHEASTERN MISSOURI. WIDESPREAD MODERATE TO HEAVY RAIN FELL ACROSS MUCH OF THE HYDROLOGIC SERVICE AREA AT THE SECOND WEEK IN MARCH. THE HEAVIEST BAND OF 4 TO 6 INCHES OF RAIN FELL FROM SOUTHEASTERN IOWA ACROSS NORTHERN ILLINOIS. THIS RAINFALL WAS SOME 3 TO 5 INCHES ABOVE NORMAL. THE RAINFALL EARLIER IN MARCH HAS CONTRIBUTED TO INCREASED SOIL MOISTURE WHERE THE GROUND WAS AT LEAST PARTIALLY THAWED.

STREAM LEVELS...AVERAGE STREAMFLOW CONDITIONS OVER THE PAST 7 DAYS GENERALLY RANGED FROM MUCH ABOVE NORMAL TO HIGH. THE INCREASED STREAMFLOWS FOR AREA RIVERS WERE IN RESPONSE TO THE EXCESSIVE RUNOFF FROM WIDESPREAD MODERATE TO HEAVY RAINFALL ON NEARLY SATURATED OR FROZEN GROUND EARLIER IN MARCH. AREA RIVERS HAVE CRESTED AND ARE EXPECTED TO RECEDE OVER THE NEXT WEEK OR SO...WITH LIMITED CHANCES FOR ADDITIONAL RAINFALL.

...WEATHER OUTLOOK...

THE 8 TO 14 DAY OUTLOOK INDICATES SLIGHTLY INCREASED CHANCES OF BELOW NORMAL PRECIPITATION ACROSS EASTERN IOWA AND NORTHWESTERN ILLINOIS. THERE ARE SLIGHTLY INCREASED CHANCES OF ABOVE NORMAL TEMPERATURES FROM SOUTHERN IOWA AND FROM CENTRAL ILLINOIS SOUTHWARD. THERE IS SOME INDICATION THAT PRECIPITATION CHANCES MAY INCREASE SLIGHTLY AT THE END OF MARCH...AND TEMPERATURES CHANCES MAY RETURN TOWARD NORMAL.

THE THREE MONTH OUTLOOK FOR THE PERIOD THROUGH MID MAY CALLS FOR EQUAL CHANCES OF ABOVE...BELOW...OR NEAR NORMAL CONDITIONS FOR BOTH TEMPERATURE AND PRECIPITATION ACROSS THE AREA.

...ADDITIONAL INFORMATION...

THE NEXT SPRING FLOOD AND WATER RESOURCES OUTLOOK WILL BE ISSUED ON FRIDAY...MARCH 27 2009.

VISIT OUR WEB SITE WWW.WEATHER.GOV/QUADCITIES FOR MORE WEATHER AND
FLOOD INFORMATION.

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MAS

D-1 Appendix D - Guidelines for the Annual Spring Flood and Water Resources Outlook

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1. Introduction. The Spring Flood and Water Resources Outlook is divided into the sections described in this appendix. The order of items in sections 6-10 may be changed at local discretion and text within those sections is free format.

2. WMO Heading, AWIPS Identifier, UGC, product expiration time and MND header block*

FGA ₁ A ₂ ii Kccc ddhhmm (BBB)	<i>(WMO heading)</i>
ESFxxx	<i>(AWIPS identifier)</i>
st<C>XXX-XXX>XXX-ddhhmm-	<i>(UGC Type: county)</i>
The product expiration time, ddhhmm, may be up to 30 days from issuance.	

PROBABILISTIC HYDROLOGIC OUTLOOK [or WATER SUPPLY OUTLOOK if applicable]	<i>(MND Product Type Line)</i>
NATIONAL WEATHER SERVICE <WFO location>	<i>(Issuing Office)</i>
Time am/pm time_zone mon dd yyyy	<i>(Issuance time/date)</i>

3. Primary Headline (Mandatory) – may include an identifying number

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

or

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

4. Description of Hydrologic Service Area

Example:

THIS FLOOD OUTLOOK IS FOR THE QUAD CITIES HYDROLOGIC SERVICE AREA...WHICH INCLUDES PORTIONS OF EASTERN IOWA...NORTHWESTERN ILLINOIS...AND EXTREME NORTHEASTERN MISSOURI. THIS AREA ENCOMPASSES THE MISSISSIPPI RIVER AND ITS TRIBUTARIES FROM BELOW GUTTENBERG LD10 IOWA TO BELOW GREGORY LANDING MISSOURI. THE OUTLOOK IS FOR THE TIME PERIOD FROM TODAY THROUGH MID JUNE.

5. Secondary Headline(s) (Optional) Define the type of flooding and category (if available) or water resources issue being addressed.

Examples of secondary headlines:

- ...MINOR SPRING SNOWMELT FLOODING POSSIBLE IN THE MAUMEE RIVER BASIN...
- ...NO FLOODING EXPECTED THROUGH MID-APRIL BASED ON CURRENT CLIMATOLOGICAL CONDITIONS...
- ...MODERATE DROUGHT TO CONTINUE...

6. Valid time of Outlook

7. Outlook Table of Forecasts (if available) with description to help interpret table

Example:

IN THE TABLE BELOW...THE 90 THROUGH 10 PERCENT COLUMNS INDICATE THE CHANCE THAT A LOCATION ON A RIVER COULD RISE ABOVE THE LISTED STAGE LEVELS IN THE NEXT 90 DAYS. FOR EXAMPLE: THE MISSISSIPPI RIVER AT ST CLOUD SCSU HAS A FLOOD STAGE OF 9.0 FEET. THERE IS A 90 PERCENT CHANCE THE RIVER WILL RISE TO OR ABOVE 4.5 FEET AND LESS THAN A 10% CHANCE OF REACHING OR EXCEEDING FLOOD STAGE IN THE NEXT 90 DAYS. A COMPARISON OF THE CURRENT OUTLOOK PROBABILITIES TO HISTORICAL PROBABILITIES CAN BE FOUND AT OUR WEB SITE AT WWW.CRH.NOAA.GOV/MPX/AHPS.

CHANCE OF EXCEEDING STAGES AT SPECIFIC LOCATIONS
VALID DECEMBER 24, 2003 - MARCH 23, 2004.

LOCATION	90%	80%	70%	60%	50%	40%	30%	20%	10%
MISSISSIPPI RIVER									
ST CLOUD SCSU (DATUM = 958.49) FLOOD STAGE = 9.0	4.5	4.5	4.5	4.6	4.6	4.6	4.6	4.6	4.6
MINNEAPOLIS	4.3	4.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4

(DATUM = 784.0) FLOOD STAGE = 16.0

8. Outlook Summary and definition of Flood Categories. If flood categories are used, include only those definitions for categories listed in the outlook. Ref. NWSI 10-950 at <http://www.nws.noaa.gov/directives/010/pd01009050a.pdf> .

Example 1:

THIS OUTLOOK CALLS FOR MINOR FLOODING DUE TO THE COMBINATION OF THE CURRENT SNOW PACK...ABOVE NORMAL TEMPERATURES TO ENHANCE SNOW MELT AND EXPECTED PRECIPITATION THROUGH APRIL. MINOR FLOODING MEANS MINIMAL OR NO PROPERTY DAMAGE...BUT POSSIBLY SOME PUBLIC THREAT OR INCONVENIENCE.

Example 2:

THE RELATIVE ABSENCE OF SNOW OVER CENTRAL AND SOUTHERN MINNESOTA AND WEST CENTRAL WISCONSIN COUPLED WITH THE VERY DRY FALL PERIOD ARE RESULTING IN REDUCED CHANCES FOR FLOODING ON RIVERS THIS SPRING.

9. Current Hydrologic and Climatological Conditions. Whether or not conditions favor flooding, drought or something in between; address aspects which may have impacts during the outlook period. Provide pertinent climate information concerning past temperatures and precipitation compared to normal (percentages of normal if available), and how those contributed to current hydrologic conditions. Hydrologic conditions may include: soil moisture, soil temperature/frost depth, ground water (if applicable), snow pack (depth and water equivalency), current drought conditions, reservoir levels, ice and river conditions. This information can be gathered from RFC guidance, CPC products, NOHRSC, regional climate center data, and from cooperators such as the Natural Resources Conservation Service (SNOTEL observations) and Bureau of Reclamations. The Hydrologic Program Manager, Climate Focal Point or others as designated, should collaborate on information to include in the outlook. Links may be added to the product if desired. Some sources are:

<http://www.nohrsc.nws.gov/>
<http://mcc.sws.uiuc.edu/>
<http://www.hprcc.unl.edu/maps/current/>
<http://water.usgs.gov/>
<http://waterdata.usgs.gov/nwis/rt/>
<http://www.nrcs.usda.gov/feature/highlights/snoserv.html>
<http://www.usbr.gov/uc/water/index.html>

Example 1:

ABOVE NORMAL TEMPERATURES AND BELOW NORMAL PRECIPITATION FROM NOVEMBER THROUGH JANUARY AS WELL AS LINGERING DRYNESS THROUGH 2003 HAVE LED TO DROUGHT CONDITIONS ACROSS THE AREA. THE DROUGHT MONITOR HAS DESIGNATED MOST OF THE AREA AS D2. THIS IS A SEVERE

DROUGHT THAT HAS IMPACTED STREAM FLOWS...RESERVOIRS LEVELS AND STORAGE...AND AGRICULTURE IN THE AREA. ACCORDING TO THE JANUARY USDA CROP BULLETIN...RANGE LAND REMAINS SEVERELY DEPLETED AND SOIL MOISTURE POOR TO VERY POOR FOR 74% OF THE AREA. FOR ADDITIONAL INFORMATION GO TO
[HTTP://WWW.CPC.NCEP.NOAA.GOV/PRODUCTS/EXPERT_ASSASSEMENT/DROUGHT_ASSASSEMENT.HTML](http://www.cpc.ncep.noaa.gov/products/expert_assessment/drought_assessment.html) .

Example 2:

THE MISSISSIPPI RIVER NORTH OF CLINTON...IOWA...IS 3 TO 5 FEET BELOW NORMAL. THE AMOUNT OF WATER IN THE CURRENT SNOW PACK OF THE QUAD CITIES SERVICE AREA RANGES FROM A MAXIMUM OF 0.5 TO 0.8 INCHES NORTH OF U.S. HIGHWAY 30 TO ZERO ACROSS THE SOUTH. SOIL MOISTURE LAST FALL WAS WELL BELOW NORMAL AND REMAINS WELL BELOW NORMAL. PRECIPITATION CONTINUES BELOW NORMAL FOR MUCH OF THE REGION. AS OF FEB 15, PRECIPITATION TOTALS SINCE JANUARY 1 WERE 50% OF NORMAL. TEMPERATURES HAVE BEEN NEAR NORMAL SINCE JANUARY 1. SOIL IS FROZEN EXCEPT FOR SOUTH OF U.S. HIGHWAY 34 WHERE MINOR THAWING HAS OCCURRED. THE MISSISSIPPI RIVER NORTH OF CLINTON IS ALMOST ENTIRELY ICE COVERED WITH AROUND 30 PERCENT ICE COVERAGE FROM CLINTON TO MUSCATINE AND LESS THAN 30 PERCENT ICE COVERAGE FROM MUSCATINE SOUTH.

10. Climatological Outlook and Forecast Conditions. There are many information sources and quite a lot of data to ingest for the outlook period. The key point is to determine what outlook information most impacts the people in your local area. Include a summary of the present forecast (days 1-5), the 6 to 10/8-14 day outlook, either the 30 day or 90 day outlook, river forecasts and outlooks (ESGs and RVFs), water supply outlooks (mainly for the western states) and the Drought Outlook. Include any significant upstream information that is likely to impact the local area. Again, links may be added to explain where this information came from and/or where one could go to get more information. Some links include:

<http://www.cpc.ncep.noaa.gov/products/forecasts/>
<http://www.drought.unl.edu/dm/monitor.html>
<http://www.usbr.gov/uc/water/index.html>

Example 1:

BASED UPON FORECAST INFORMATION FOR THE NEXT TWO WEEKS...TEMPERATURE AND PRECIPITATION SHOULD REMAIN NEAR NORMAL. NORMAL HIGH TEMPERATURES FOR THIS TIME OF YEAR ARE AROUND 40 DEGREES WITH LOWS NEAR 20. PRECIPITATION FROM ONE HALF TO THREE QUARTERS OF AN INCH IS ALSO CONSIDERED NORMAL. THE 90 DAY EXTENDED OUTLOOK CALLS FOR TEMPERATURES TO BE ABOVE NORMAL (ABOUT A 50% CHANCE OF ABOVE, 33% CHANCE OF NEAR NORMAL AND 17% CHANCE OF BEING BELOW NORMAL) AND PRECIPITATION TO FALL BELOW NORMAL OVER THE 90

DAY PERIOD (ABOUT A 40% CHANCE OF ABOVE... 33% CHANCE OR NEAR NORMAL AND A 27% CHANCE OF BELOW NORMAL. FOR ADDITIONAL INFORMATION GO TO [HTTP://WWW.CPC.NCEP.NOAA.GOV/PRODUCTS/FORECASTS/](http://www.cpc.ncep.noaa.gov/products/forecasts/)

SNOW PACK AND WATER SUPPLY CONDITIONS FOR THE MISSOURI RIVER DRAINAGE BASIN SHOW BELOW NORMAL TOTALS FOR THE YEAR SO FAR. (add link for SNOTEL and reservoir levels or water supply report, etc.). WITH THE PRESENT CONDITIONS UPSTREAM AND THE CURRENT SITUATION IN THIS AREA...CONTINUING DROUGHT IMPACTS ARE LIKELY TO CONTINUE OR WORSEN. THEREFORE...A [monthly, weekly, every other week] SYNOPSIS OF HYDROLOGIC AND CLIMATOLOGICAL CONDITIONS WILL CONTINUE FOR THE FORESEEABLE FUTURE.

Example 2:

THE 6 TO 10 DAY OUTLOOK INDICATES ABOVE NORMAL TEMPERATURES (link) AND NEAR NORMAL PRECIPITATION (link) ACROSS THE QUAD CITIES SERVICE AREA. DURING THIS TIME...NORMAL AVERAGE TEMPERATURES ARE IN THE LOW TO MID 40S AND NORMAL PRECIPITATION IS AROUND 0.50 TO 0.75 INCHES.

THE 30-DAY OUTLOOK INDICATES NEAR NORMAL TEMPERATURES (link) AND NEAR NORMAL PRECIPITATION (link). DURING THIS TIME...NORMAL AVERAGE TEMPERATURES ARE AROUND 45 TO 50 DEGREES AND NORMAL PRECIPITATION IS AROUND 1.00 TO 1.50 INCHES.

GIVEN THE CURRENT AMOUNT OF WATER IN THE SNOW PACK (link)...BELOW NORMAL RIVER LEVELS AND SOIL MOISTURE COMBINED WITH NORMAL PRECIPITATION THROUGH THE NEXT 30 DAYS...NO FLOODING IS FORECAST. ABOVE NORMAL TEMPERATURES MAY CAUSE A MORE RAPID MELT OF THE SNOW PACK...HOWEVER THE AMOUNT OF WATER IN THE SNOW PACK COMBINED WITH A NORMAL AMOUNT OF PRECIPITATION WILL NOT RESULT IN FLOODING.

11. Closing statement indicating when additional information will be provided. Give date of next outlook or state this is the final one planned for this year.

Example:

A [monthly, weekly, biweekly] SYNOPSIS OF HYDROLOGIC AND CLIMATOLOGICAL CONDITIONS WILL CONTINUE FOR THE FORESEEABLE FUTURE. THE NEXT SPRING FLOOD AND WATER RESOURCES OUTLOOK WILL BE ISSUED ON [date].

12. Reference to WFO homepage.

Include the sentence, VISIT OUR WEB SITE AT [WWW.CRH.NOAA.GOV](http://www.crh.noaa.gov)/LOCAL OFFICE/ FOR MORE WEATHER AND FLOOD INFORMATION.

13. Sample Products.

Example 1:

FGUS73 KIWX 111825 CCA

ESFIWX

INC001-003-009-017-033-039-049-053-069-075-085-087-091-099-103-113-
131-141-149-151-169-179-181-183-MIC021-023-027-059-149-OHC003-039-
051-069-125-137-161-171-181500-

PROBABILISTIC HYDROLOGIC OUTLOOK
NATIONAL WEATHER SERVICE NORTHERN INDIANA
1225 AM EST FRI MAR 11 2005

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

THIS SPRING FLOOD AND WATER RESOURCES OUTLOOK IS FOR THE RIVERS IN THE SAINT JOSEPH RIVER BASIN IN NORTHERN INDIANA AND SOUTHERN LOWER MICHIGAN...THE UPPER WABASH RIVER BASIN UPSTREAM OF LAFAYETTE INDIANA IN NORTHERN INDIANA... THE KANKAKEE RIVER BASIN UPSTREAM OF DUNNS BRIDGE IN NORTHERN INDIANA AND THE MAUMEE RIVER BASIN IN NORTHEAST INDIANA AND NORTHWEST OHIO UPSTREAM OF GRAND RAPIDS OHIO AND SOUTHERN LOWER MICHIGAN ALONG WITH THEIR ASSOCIATED TRIBUTARIES.

THIS OUTLOOK IS ISSUED IN ADDITION TO THE 5 DAY RIVER FORECASTS THAT ARE ISSUED WHEN RIVER FORECAST LOCATIONS ARE IN FLOOD OR FORECAST TO RISE ABOVE FLOOD STAGE.

THERE IS ONE TABLE FOR THE SAINT JOSEPH AND KANKAKEE RIVER BASINS IN NORTHERN INDIANA SOUTHERN LOWER MICHIGAN. PROBABILISTIC NUMBERS ARE NOT AVAILABLE FOR THE MAUMEE AND UPPER WABASH RIVER BASINS. THE TABLES DISPLAY THE CHANCE OF EXCEEDING STAGES AT SPECIFIC LOCATIONS.

CHANCE OF EXCEEDING STAGES AT SPECIFIC LOCATIONS
... VALID MARCH 15 2005 - JUNE 13 2005 ...

LOCATION	FS(FT)	90%	80%	70%	60%	50%	40%	30%	20%	10%
KANKAKEE RIVER...										
DAVIS IN	10.0	10.4	11.0	11.3	11.7	11.9	12.1	12.6	12.8	13.2
YELLOW RIVER...										
PLYMOUTH IN	13.0	8.3	9.0	9.8	10.4	11.0	11.2	12.0	12.6	13.0
KNOX IN	10.0	7.2	7.7	8.2	8.3	8.5	8.8	9.1	9.5	9.9
ST. JOSEPH RIVER...										
THREE RVRS MI	7.0	5.9	6.2	6.4	6.7	6.8	7.1	7.4	7.6	8.1
MOTTVILLE MI	8.0	5.4	5.8	5.9	6.3	6.5	6.7	7.1	7.3	7.7
ELKHART IN	24.0	21.4	21.7	22.0	22.2	22.4	22.8	23.1	23.6	24.0
SOUTH BEND IN	5.5	3.2	3.5	3.9	4.2	4.5	4.8	5.2	5.9	6.4
NILES MI	11.0	7.9	8.3	8.7	9.0	9.4	9.7	10.0	10.8	11.2
ELKHART RIVER...										
GOSHEN IN	7.0	3.7	4.0	4.6	4.9	5.1	5.3	5.6	6.4	7.1

FS - FLOOD STAGE

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... SOIL MOISTURE... AND 30 TO 90 DAY LONG-RANGE OUTLOOKS OF TEMPERATURE AND PRECIPITATION. BY PROVIDING THE COMPLETE RANGE OF PROBABILITIES... THE LEVEL OF RISK ASSOCIATED WITH LONG-RANGE PLANNING DECISIONS CAN BE DETERMINED. THESE PROBABILISTIC FORECASTS ARE A PART OF THE NATIONAL WEATHER SERVICES ADVANCED HYDROLOGIC PREDICTION SERVICE.

RIVER FLOWS IN THE MAUMEE AND UPPER WABASH RIVER BASINS ARE RUNNING FROM 70 PERCENT TO AS MUCH AS 200 PERCENT OF NORMAL.

...SNOW COVER AND LIQUID WATER CONTENT...

NEW SNOW HAS FALLEN ACROSS THE ENTIRE HYDROLOGIC SERVICE AREA OVER THE PAST 24 HOURS. SNOWFALL AMOUNTS RANGED FROM ONE INCH ACROSS PARTS OF NORTHWEST OHIO TO AS HIGH AS 6 INCHES OVER FAR NORTHWEST INDIANA AND EXTREME SOUTHWEST LOWER MICHIGAN. TWO TO AS MUCH AS 4 INCHES COVER MOST OF NORTHWEST AND NORTH CENTRAL INDIANA AND SOUTHWEST AND SOUTH CENTRAL MICHIGAN. SNOW WATER EQUIVALENT AMOUNTS OF LESS THAN A TENTH OF AN INCH TO AS MUCH 0.3 INCHES WITH THE HIGHEST AMOUNTS IN A 50 MILE WIDE BAND EXTENDING FROM MICHIGAN CITY INDIANA TO FORT WAYNE INDIANA. THE GROUND WAS SNOW FREE BEFORE THURSDAY.

...SOIL CONDITIONS AND FROST DEPTHS...

SOIL MOISTURE CONTINUES TO BE EXTREMELY HIGH ACROSS THE AREA WITH PALMER DROUGHT SEVERITY INDEX CALCULATED MARCH 5 2005 RANGING FROM PLUS 3.5 TO PLUS 5.3 WITH ALL AREAS EXCEPT SOUTHWEST LOWER MICHIGAN ABOVE PLUS 4. PLUS 3 INDICATES VERY MOIST SOIL CONDITIONS WITH PLUS 4 OR GREATER INDICATING EXTREMELY MOIST SOIL CONDITIONS. SOIL CONTINUES TO BE FROZEN TO AS MUCH AS 20 INCHES IN SOME LOCATIONS.

...RIVER CONDITIONS...

RIVER FLOWS ARE IN THE NORMAL TO ABOVE NORMAL RANGE ACROSS THE AREA. AS STATED ABOVE...RIVER FLOWS IN THE MAUMEE AND UPPER WABASH RIVER BASINS RANGE FROM 70 PERCENT TO 200 PERCENT OF NORMAL RANGE. MINOR FLOODING CONTINUES ALONG THE TIFFIN RIVER IN NORTHWEST OHIO. FLOODING HAS RECENTLY SUBSIDED ALONG THE KANKAKEE RIVER.

...WEATHER OUTLOOKS...

THE 6 TO 10 DAY FORECAST VALID FROM WEDNESDAY MARCH 16 TO SUNDAY MARCH 20 CALLS FOR BETWEEN A 60 AND 70 PERCENT CHANCE OF BELOW NORMAL TEMPERATURES AND A GREATER THAN 33 PERCENT CHANCE OF BELOW NORMAL PRECIPITATION. NORMAL TEMPERATURES FOR THIS TIME PERIOD HAVE HIGHS IN THE UPPER 40S AND LOWS IN THE UPPER 20S. NORMAL PRECIPITATION IS AROUND 0.5 INCHES.

THE 30 DAY OUTLOOK FOR THE REST OF MARCH 2005 INDICATE A GREATER THAN 33 PERCENT CHANCE OF BELOW NORMAL TEMPERATURES AND EQUAL CHANCES OF ABOVE/BELOW NORMAL PRECIPITATION.

...FLOOD OUTLOOK SUMMARY...

FLOOD POTENTIAL CONTINUE TO BE ABOVE NORMAL ACROSS THE ENTIRE AREA DUE TO THE VERY WET SOIL MOISTURE...FROZEN SOILS AND NORMAL TO ABOVE NORMAL RIVER FLOWS. MORE SNOW HAS FALLEN AS WELL OVER THE PAST 24 HOURS PUTTING DOWN 2 TO 4 INCHES OVER MUCH OF THE AREA. THERE IS A 10 PERCENT CHANCE OF MAJOR FLOODING ALONG THE

KANKAKEE RIVER...WITH A 100 PERCENT CHANCE OF MINOR FLOODING. THERE IS A 10 PERCENT CHANCE OF MINOR FLOODING ALONG THE ST.JOSEPH RIVER (MICHIGAN)...THE YELLOW AND ELKHART RIVERS OVER THE NEXT 90 DAYS. MINOR FLOODING IS OCCURRING ALONG THE TIFFIN RIVER AT THE PRESENT TIME.

EVEN THOUGH THE PRESENT WEATHER PATTERN INDICATES BELOW NORMAL PRECIPITATION...THE PRESENT SOIL CONDITIONS AND RIVER FLOW CONDITIONS HEAVILY FAVOR FLOODING.

...FLOOD TERMINOLOGY...

THE TERM MINOR FLOODING IS USED TO INDICATE MINIMAL OR NO PROPERTY DAMAGE. HOWEVER SOME PUBLIC INCONVENIENCE IS POSSIBLE.

THE TERM MODERATE FLOODING IS USED TO INDICATE THE INUNDATION OF SECONDARY ROADS. TRANSFER TO A HIGHER ELEVATION MAY BE NECESSARY TO SAVE PROPERTY. SOME EVACUATIONS MAY BE REQUIRED.

THE TERM MAJOR FLOODING IS USED TO INDICATE EXTENSIVE INUNDATION AND PROPERTY DAMAGE USUALLY CHARACTERIZED BY THE EVACUATION OF PEOPLE AND LIVESTOCK AND CLOSURE OF BOTH PRIMARY AND SECONDARY ROADS.

ADDITIONAL SUPPORTIVE DATA AND EXPLANATIONS ARE AVAILABLE ON THE INTERNET AT:WWW.CRH.NOAA.GOV/IWX/(INTERNET ADDRESSES ARE ALL LOWER CASE).

THE NEXT SCHEDULED SPRING FLOOD AND WATER RESOURCES OUTLOOK WILL BE ISSUED ON FRIDAY...MARCH 18 2005. THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) WILL BE ISSUING ITS 2005 SPRING OUTLOOK ON THURSDAY...MARCH 17. VISIT: WWW.NOAA.GOV TO OBTAIN MORE INFORMATION ABOUT THIS NATIONAL OUTLOOK.

ADDITIONAL SUPPORTIVE DATA AND EXPLANATIONS ARE AVAILABLE ON THE INTERNET AT:WWW.CRH.NOAA.GOV/IWX... INTERNET ADDRESSES ARE ALL IN LOWER CASE. AHPS CAN BE FOUND UNDER... CURRENT CONDITIONS/LAKES AND RIVERS AHPS.

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Example 2:

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FGUS73 KOAX 111907
ESFOAX
NEC003-011-021-023-025-027-037-039-053-055-067-095-097-107-109-119-
127-131-133-139-141-147-151-153-155-159-167-173-177-179-IAC071-085-
129-133-137-145-155-165-101800-

PROBABILISTIC HYDROLOGIC OUTLOOK
NATIONAL WEATHER SERVICE OMAHA/VALLEY NE
106 PM CST FRI MAR 11 2005

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

THIS OUTLOOK COVERS THE OMAHA HYDROLOGIC SERVICE AREA (HSA) WHICH ENCOMPASSES 30 COUNTIES ACROSS EASTERN NEBRASKA AND 8 COUNTIES

ACROSS SOUTHWEST IOWA. THE MAIN RIVERS ACROSS EASTERN NEBRASKA INCLUDE THE ELKHORN...PLATTE AND MISSOURI AND ALL THEIR RESPECTIVE TRIBUTARIES WHILE SOUTHWEST IOWA CONSISTS OF THE MAPLE...NODAWAY...LITTLE SIOUX AND ALL TRIBUTARIES ASSOCIATED WITH THE NISHNABOTNA.

...DROUGHT CONDITIONS REMAIN A SLIGHT PROBLEM ACROSS SOUTHEAST NEBRASKA AND SOUTHWEST IOWA...

ABNORMALLY DRY CONDITIONS CONTINUE ACROSS SOUTHEAST NEBRASKA AND SOUTHWEST IOWA AS HAS BEEN THE CASE THROUGH THE WINTER MONTHS.

THERE IS NO POTENTIAL FOR FLOODING DUE TO SNOWMELT THIS SEASON ACROSS THE OMAHA HSA.

TEMPERATURES FROM NOVEMBER TO FEBRUARY AVERAGED ABOVE NORMAL WITH THE EXCEPTION OF JANUARY WHERE THEY WERE RUNNING BELOW NORMAL ACROSS THE OMAHA HSA. PRECIPITATION ACROSS THE HSA WAS ABOVE NORMAL IN NOVEMBER AND FEBRUARY WHILE ONLY ABOVE NORMAL IN JANUARY ACROSS PORTIONS OF EAST-CENTRAL NEBRASKA. DECEMBER WAS A MONTH OF BELOW NORMAL PRECIPITATION ACROSS THE ENTIRE HSA WHILE JANUARY WAS BELOW NORMAL ALSO FOR THE NORTHERN HALF OF THE HSA INCLUDING THE OMAHA AREA AS WELL AS NORFOLK.

IN THE TABLE BELOW, THE 90 THROUGH 10 PERCENT COLUMNS INDICATE THE CHANCE THE RIVER COULD RISE ABOVE THE LISTED STAGE LEVELS IN THE NEXT 90 DAYS. EXAMPLE: THE WEEPING WATER CREEK AT UNION...NEBRASKA HAS A FLOOD STAGE OF 25.0 FEET. IN THE NEXT 90 DAYS THERE IS A 20 PERCENT CHANCE THE RIVER WILL RISE ABOVE 20.3 FEET.

CHANCE OF EXCEEDING STAGES IN FEET AT SPECIFIC LOCATIONS
VALID MARCH 15, 2005 - JUNE 13, 2005

LOCATION	FS(FT)	90%	80%	70%	60%	50%	40%	30%	20%	10%
MAPLE RIVER MAPLETON IA	21.0	6.2	7.2	8.7	9.2	9.6	10.1	10.5	12.1	15.2
LITTLE SIOUX R TURIN IA 4S	20.0	9.6	11.3	12.5	14.5	16.9	18.1	18.8	19.8	22.3
SOLDIER RIVER PISGAH IA 1E	28.0	5.5	7.6	8.2	9.2	10.4	11.2	11.9	14.5	17.5
BOYER RIVER LOGAN IA	19.0	8.1	8.9	9.6	10.5	11.6	12.8	15.2	17.4	20.2
WEEPING WATER C UNION NE	25.0	2.8	5.1	6.5	7.7	8.7	11.8	15.4	20.3	25.5
E. NISHNABOTNA R RED OAK IA	18.0	7.5	10.1	11.4	12.4	14.0	15.6	17.9	20.5	22.2
W. NISHNABOTNA R HANCOCK IA	14.0	5.7	6.6	7.6	8.4	9.0	11.4	13.9	18.6	21.5
RANDOLPH IA	19.0	10.3	11.9	13.7	14.6	16.0	18.0	20.0	22.0	23.4

NISHNABOTNA R											
HAMBURG IA	23.0	13.8	18.1	21.5	21.9	23.6	25.6	28.1	29.8	31.3	
LITTLE NEMAHA R											
AUBURN NE 1E	22.0	5.2	6.9	8.6	9.9	10.6	12.1	16.0	18.5	22.4	
N FK BIG NEMAHA R											
HUMBOLDT NE	28.0	4.0	5.9	6.9	7.5	8.3	9.5	12.1	13.1	15.2	
BIG NEMAHA R											
FALLS CITY NE	23.0	6.6	9.9	11.2	12.6	13.9	15.9	19.0	20.0	23.0	
NODAWAY RIVER											
CLARINDA IA 1E	19.0	8.7	9.4	10.7	11.3	12.0	13.9	14.9	17.3	20.4	

FS - FLOOD STAGE

THE ABSENCE OF SNOW COVER COUPLED WITH PRESENT CONDITIONS INDICATE REDUCED CHANCES FOR FLOODING ON RIVERS THIS SPRING. EXCEPTIONS TO THIS ARE THE LITTLE SIOUX RIVER BASIN ACROSS THE NORTHERN TIER OF SOUTHWEST IOWA AND THE NISHNABOTNA RIVER BASIN ACROSS SOUTHWEST IOWA. DUE TO VERY WET SOIL CONDITIONS IN THESE AREAS...THERE IS A POSSIBILITY FOR MINOR FLOODING IF NORMAL PRECIPITATION OCCURS THIS SPRING. CURRENT RIVER CONDITIONS GENERALLY INDICATE NORMAL TO BELOW NORMAL FLOWS ACROSS EASTERN NEBRASKA AND SOUTHWEST IOWA. A SUMMARY OF RIVER CONDITIONS FOR SELECTED RIVER STATIONS AS OF MARCH 9 IS AS FOLLOWS:

	LONG TERM MEDIAN (CFS)	CURRENT (CFS)
PLATTE RIVER - LOUISVILLE...NE	8080	4930
MISSOURI RIVER - OMAHA...NE	19100	12600
MISSOURI RIVER - RULO...NE	29200	19000

BELOW NORMAL TEMPERATURES ARE EXPECTED OVER THE NEXT COUPLE OF WEEKS ACROSS EASTERN NEBRASKA AND SOUTHWEST IOWA WHILE PRECIPITATION IS EXPECTED TO BE ABOVE NORMAL ACROSS EASTERN NEBRASKA WHILE SOUTHWEST IOWA IS EXPECTED TO BE NEAR NORMAL.

FOR ADDITIONAL INFORMATION GO TO
[HTTP://WWW.CPC.NCEP.NOAA.GOV/PRODUCTS/EXPERT_ASSESSMENT/DROUGHT_ASSSESSMENT.HTML](http://www.cpc.ncep.noaa.gov/products/expert_assessment/drought_assessment.html)

AND

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

THIS IS THE LAST SPRING FLOOD AND WATER RESOURCES OUTLOOK FOR THIS SNOWMELT SEASON. THE NEXT LONG-RANGE PROBABILISTIC OUTLOOK WILL BE ISSUED THE WEEK OF APRIL 25.

VISIT OUR HOME PAGE AT [WWW.CRH.NOAA.GOV/OAX/](http://www.crh.noaa.gov/oax/) FOR MORE WEATHER AND FLOOD INFORMATION.

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