

NWS FORM E-5

U.S. DEPARTMENT OF COMMERCE
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:
North Webster, IN

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:

REPORT FOR (MONTH & YEAR):
January 2001

February 8th, 2001

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
HYDROMETEOROLOGICAL INFO CENTER
1325 EAST-WEST HIGHWAY, RM 7116
SILVER SPRING, MD 20910

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (WSOM E-41).

An X inside this box indicates that no flooding occurred within this Hydrologic Service Area.



General Overview: January, 2001 was warmer and drier than normal across Northern Indiana, Southern Michigan and Northwest Ohio. January, 2001 was the 4th driest and 3rd least snowiest January at South Bend on record. At Fort Wayne, January, 2001 was the 11th driest and 12th least snowiest January on record. The average high temperature was in the lower 30s. The average low temperature was in the upper teens and the average temperature was in the middle 20s. The average temperature was around 2 °F above normal, a marked contrast from the previous December which had record to near record cold temperatures. There were very few measurable snow events in January, 2001 across the area. Only 2.9 inches of snow fell at South Bend and only 2.4 inches of snow fell at Fort Wayne. January started with snow depths ranging from near 20 inches near Lake Michigan to 17 inches at Waterloo in Northeast Indiana and 14 inches at Niles Michigan to only 6 inches at Napoleon Ohio. Precipitation was well below normal across the HSA based on South Bend and Fort Wayne precipitation. Only around three quarters of an inch of precipitation fell across the area, around 1.25 inches below normal.

The most significant precipitation event occurred from the 29th through the 31st when an average (including COOP observations) of over 0.6 inches of precipitation fell, most of it rain, across the HSA. This event led to the only flooding event of the month. The flooding was minor and was caused by an ice jam in a bend of the Salamonie River upstream from Warren on the afternoon of January 30th, well after most of the rain fell. A river flood warning was issued for the flooding near Warren. Calls to the Warren Police Department revealed that roads near the river were flooded. The river crested at 14.11 feet at about 5 pm EST, just over 2 feet above the 12 foot flood stage. The event quickly ended when the ice jam broke. The river level fell below flood stage by 7 pm on the 30th.

There was some snow melt which added to the runoff into the rivers. Calls were made to EM's in the threatened areas. Rivers that were largely free of ice were the Wabash, the Tiffin and the Tippecanoe. The Eel River was ice free to just above its mouth where it empties into the Wabash River. There was ice jamming at a dam near the mouth of the Eel River. This became a problem for a while, but the ice jam broke with the river at Adamsboro, near Logansport, remaining below flood stage. The St. Marys was free of ice all the way into the Fort Wayne city limits about a mile from the confluence where it was

ice jammed. The St. Joseph River (Ohio) was also ice free into Fort Wayne where, again ice was jammed from a mile and a quarter to the confluence with the St. Marys. The Maumee was ice jammed from the confluence of the St. Marys and St. Joseph to the Hosey Dam. Beyond that to the Ohio border the Maumee was ice free. However, very thick ice was on the Maumee from Defiance to Grand Rapids Ohio with thickness reported to be 15 inches in places. No ice jamming was reported on the Maumee though. Levels from Defiance to Napoleon rose several feet in response to the increased flow upstream but remained below flood stage. On the following day, an RVS statement was sent out highlighting the threat of ice jamming and rapidly changing river levels. The danger posed by flying ice associated with ice jam breakups was also emphasized.

Area rivers and streams elsewhere across the HSA approached flood stage in response to the rainfall and snow melt. Most remained well below flood stage. Points with the most significant rises included Decatur on the St. Marys River where the river crested at 14.55 feet on the 31st. Flood stage is 15 feet. The Tippecanoe River at Ora crested at 8.80 feet on February 2nd. Flood stage is 10 feet. It was rising slowly as January ended. Stryker on the Tiffin River crested at 10.58 feet on February on February 3rd. Flood stage is 11 feet. The Tiffin was rising slowly too as January closed.

Temperature: For Fort Wayne, the average high temperature in January, 2001 was 31.5 °F and the average low was 18.9 °F. This gave an average temperature of 25.2 °F which was 2.4 °F above normal. At South Bend, the average high was 31.3 °F and the average low was 18.0 °F. The average temperature at South Bend was 24.6 °F which was 1.4 °F above normal for January.

Precipitation: January, 2001 was much drier than normal across the HSA. At Fort Wayne, only 0.74 inches of precipitation fell which was 1.13 inches below normal, the 11th driest January on record. At South Bend only 0.83 inches of precipitation fell in January which was 1.40 inches below normal, the 4th driest January on record. Snowfall in January at Fort Wayne totaled only 2.4 inches, the 12th least snowiest January on record. At South Bend, only 2.9 inches of snow fell, the 3rd least snowiest on record for a January.

January, 2001 started with a significant snowpack ranging from near 20 inches near Lake Michigan to parts of Northeast Indiana to only 6 inches over the southern part of Northwest Ohio. The month closed with no snow over the southeast half of the HSA to a maximum of 6 inches over Northwest Indiana. Much of the snow melted slowly and evaporated through the month as a result of below normal precipitation and above normal temperatures. More disappeared in the rain event of January 29th through the 31st.

Weather: There was a marked change in airmass dominance in early January. The first three days had well below normal temperatures, averaging around 10 °F below normal, but the next 4 days had above normal temperatures with the thermometer finally breaking above freezing on the 5th. The latest arctic high had slid off to the east bringing warmer air to the area by the 4th. There was another cold airmass that moved in from the northwest on the 8th bringing a 2 to 3 day break in the warmer weather with temperatures

falling to 5.5 °F below normal. This cold air mass moved east on the 10th ushering in a prolonged period of above normal temperatures that lasted over the next 9 days. Temperatures averaged over 6 °F above normal. Another cold air mass moved in on the 19th with a 2 day cold snap before warmer air returned for the remainder of the month. Temperatures from the 22nd through the end of January averaged about 5 °F above normal. Even with above normal temperatures, the high temperature broke the 40 °F mark only twice at both Fort Wayne and South Bend. Climatologically, January is the coldest month of the year. Normal highs remain in the lower 30s and the normal lows in the middle to upper teens with the coldest week being the last week of the month.

Few strong storm systems affected the area until the end of the month resulting in a record setting pace for driest January ever for both Fort Wayne and South Bend. Then from the 29th to the end of the month, an average of over a half of an inch fell across the area, most of it rain, breaking that race for the record book. A strong storm system that passed to our northwest put our area into the warm sector resulting in mostly a rain event. The rain plus some snowmelt resulted in rises of levels in area rivers and streams along with ice jamming as ice broke up because of the increased flow.

As January ended, river levels were well above normal. This was due to the end of month rain and snow melt and some ice jamming. Most rivers were receding as the month ended, but the Tiffin and the Tippecanoe continued to rise slowly.

Only one river flood warning was issued in January, 2001. It was in response to ice jam flooding on the Salamonie River. An RVS was issued the following day to make people aware of possible ice jam flooding and dangers caused by flying ice as ice jams break up. There were no further problems caused by river ice as the month ended. So only one FLW (River Flood Warning), one FLS (River Flood Statement) ending the FLW warning and one RVS (River Statement) were issued by WFO IWX to alert the public to flooding problems in Northern Indiana, Northwest Ohio and Extreme Southern Michigan, in January, 2001 in addition to the daily Hydrology products.

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U.S. DEPARTMENT OF COMMERCE
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:
North Webster, IN

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:

REPORT FOR (MONTH & YEAR):
February 2001

March 10th, 2001

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
HYDROMETEOROLOGICAL INFO CENTER
1325 EAST-WEST HIGHWAY, RM 7116
SILVER SPRING, MD 20910

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

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An X inside this box indicates that no flooding occurred within this Hydrologic Service Area.



General Overview: February, 2001 was warmer and wetter than normal across Northern Indiana, Southern Michigan and Northwest Ohio. February, 2001 was the 4th least snowiest in South Bend and 8th least snowiest in Fort Wayne on record. At South Bend February 2001 was the 8th wettest February on record. The average high temperature across the area was in the middle 30s. The average low temperature was in the lower 20s. The average temperature was in the upper 20s. The average temperature was around 3.3 °F above normal. Continuing the trend of January 2001, little snow fell across the area in February, 2001 Only 5.4 inches of snow fell at South Bend, 4th least snowiest on record. At Fort Wayne, only 1.8 inches of snow fell, 8th least snowiest on record. The snowpack that accumulated mostly in December, 2000 disappeared in February. The month started out with no snow over the southeast half of the HSA to a maximum of 6 inches over Northwest Indiana. Precipitation was about 1.2 inches above normal across the area with the heaviest precipitation occurring over the northwest half of the HSA. (Data used was NWS Fort Wayne and South Bend only)

There were 2 significant precipitation events in February, 2001, both caused flooding on area rivers and streams. The first one was a combination snowmelt and rain event that occurred from February 8th through the 10th. An average of 1.1 (COOP data) inches of rain fell across the HSA. This combined with snowmelt across the northwest half of the area caused many rivers and streams to overflow their banks. Flooding was minor to moderate in nature and caused little structural damage. The flooding started early on the 9th and lasted until the 21st. Another mostly rain event swept across the area, on the 24th and lasted into the morning of the 25th. An average of 1.3 inches of rain (COOP data) fell across the HSA with the highest totals occurring over the northwest half of the area. This rain caused renewed flooding, but it was not as severe as the first event. Flooding was continuing along the Yellow, Kankakee, St. Joseph Michigan, St. Joseph Ohio, Tiffin and Tippecanoe Rivers as February closed. All of the flooding was minor in nature.

Temperature: For Fort Wayne, the average high temperature in February, 2001 was 37.8 °F and the average low was 23.9 °F. This gave an average temperature of 30.8 °F which was 4.9 °F above normal. At South Bend, the average high was 34.8 °F and the average

low was 21.4 °F. The average temperature at South Bend was 28.1 °F which was 1.7 °F above normal for February. A record high temperature of 59 °F was reported in Fort Wayne on the 9th and a record high temperature of 56 °F was reported at South Bend, also on the 9th.

Precipitation: February, 2001 was wetter than normal across the HSA. At Fort Wayne, 2.73 inches of precipitation fell which was 0.82 inches above normal. At South Bend 3.47 inches of precipitation fell in February which was 1.57 inches above normal, the 8th wettest February on record. Snowfall in February at Fort Wayne totaled only 1.8 inches, the 8th least snowiest February on record. At South Bend, only 5.4 inches of snow fell, the 4th least snowiest on record for a February.

February, 2001 started with a greatly reduced snowpack from what existed as January began. February began with no snow over the southeast half of the HSA to a maximum of 6 inches over Northwest Indiana. This snow completely melted from the 8th through the 10th of the month. Temperatures soared into the middle to upper 50s by the 9th. These warm temperatures combined with dense fog on the evening of the 8th and rainfall later on the 8th and into the 9th caused the snow to melt rapidly. There were some minor snow events as the month progressed, but the little accumulation that did occur melted quickly. As result, February left leaving virtually no snow on the ground.

Weather: February started as January ended with temperatures above normal. Temperatures slipped below normal across the area on the 2nd and 3rd when a shallow Maritime Polar cold airmass spread in from the north. This airmass quickly move out being replaced by warmer air on the 4th. This started a warmup which built in strength finally catapulting temperatures to record levels by the 9th as Maritime Tropical air spread north. Temperatures on the 8th and 9th averaged about 19 °F above normal. All of this was occurring ahead of a strong storm system that moved toward the area from the southwest from the 7th through the 10th. Warm moist Gulf of Mexico air streamed ahead of the storm bringing record warmth to the area. Along with the warmth there was much snowmelt and rain which fell most heavily from the evening of the 8th through the 9th. The snowmelt and rainfall caused minor to moderate flooding along most of the area major rivers and streams which lasted until the 21st. Colder air returned on the 10th pushing temperatures closer to normal, but remaining slightly above normal. A brief warmup on the 14th ahead of another storm system helped to drop between 0.2 and 0.6 inches of rain on the area. This caused the St. Marys at Decatur, the Maumee at Fort Wayne and the Wabash at Wabash to briefly rise above flood stage on the 15th. They were above flood stage for less than a day before falling below flood stage. Colder air then moved in keeping temperatures slightly below normal through the 23rd. Another bout of Maritime Tropical air invaded ahead of another storm system developing in the Southern Plains caused temperatures to surge back into the 50s on the 24th and 25th. Heavy rain and thunderstorms occurred during the evening and night of the 24th and into the early morning of the 25th. Several locations reported over 2 inches (COOP observations) of rain with this system. These rainfall totals occurred over the western third of the HSA. Other areas received between 0.3 and 1.9 inches of rain with the lessor totals over the eastern third of the HSA. As in previous events, the heaviest rainfall

occurred over the northwest half of the area. This heavy rain caused renewed flooding along the St. Joseph Ohio and St Joseph Michigan Rivers. Other rivers that flooded were the Tippecanoe, Tiffin, Kankakee, Eel and the Yellow. Several rivers remained in flood as February ended. Colder Maritime Polar air returned to the region later on the 25th and remained as February closed pushing temperatures slightly below normal. Normal temperatures begin their rise in February. In the beginning of the month, normal high temperatures are in the lower 30s and normal low temperatures are in the middle teens. At the end of the month, normal high temperatures are in the upper 30s and normal low temperatures are in the lower 20s.

In February and early March, 19 river flood warnings (FLWs) and 122 river flood statements (FLSs) were issued by WFO IWX to alert the public to flooding that began in February in Northern Indiana, Northwest Ohio and Extreme Southern Michigan. 2 additional (RVSs) river statements were issued to communicate updated river forecasts during flooding events. Daily products issued are RVAs (Rain/Snow Reports and River Stages) and RVSs (River Forecasts).

NWS FORM E-5

U.S. DEPARTMENT OF COMMERCE
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:
North Webster, IN

REPORT FOR (MONTH & YEAR):
March 2001

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:
April 8th, 2001

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
HYDROMETEOROLOGICAL INFO CENTER
1325 EAST-WEST HIGHWAY, RM 7116
SILVER SPRING, MD 20910

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

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An X inside this box indicates that no flooding occurred within this Hydrologic Service Area.



General Overview: March, 2001 was colder and much drier than normal across Northern Indiana, Southern Michigan and Northwest Ohio. March, 2001 was the driest March on record at Fort Wayne and the 4th driest on record at South Bend. The average high temperature across the area was in the lower 40s. The average low temperature was in the middle 20s. The average temperature was in the middle 30s, about 2.8 °F below normal. This was the opposite of the temperature trend which prevailed in February. There was more snowfall in March than in February. 10.6 inches fell at South Bend and 4 inches at Fort Wayne. There was no snowpack across the area as March ended with all snowfall melting quickly. Precipitation was well below normal across the HSA, about 2.2 inches below normal. (Data used was NWS Fort Wayne and South Bend only)

There was only one significant precipitation event in March, 2001, and it was a mostly snow event and it occurred on the 16th and 17th. Precipitation totals averaged nearly a third of an inch (COOP data). Snowfall totals averaged around 3 inches across the HSA in this event (COOP data). There was no flooding associated with this event. March began with the Yellow, Kankakee, St. Joseph Michigan, St. Joseph Ohio, Tiffin and Tippecanoe Rivers in flood. This was due to the rain event that occurred near the end of February. All rivers were receding and went into their banks by March 5th. The receding trend continued through the end of the month. Resultant flows were well below normal by the beginning of April.

Temperature: For Fort Wayne, the average high temperature in March, 2001 was 44.4 °F and the average low was 26.4 °F. This gave an average temperature of 35.4 °F which was 2.2 °F below normal. At South Bend, the average high was 42.7 °F and the average low was 25.5 °F. The average temperature at South Bend was 34.1 °F which was 3.3 °F below normal for March. A record low minimum temperature of 5 °F was reported in Fort Wayne on the 26th.

Precipitation: March, 2001 was very dry across the area. At Fort Wayne it was the driest March on record and 4th driest March on record at South Bend. At Fort Wayne, 0.48 inches of precipitation fell which was 2.42 inches below normal. At South Bend 1.11

inches of precipitation fell in March which was 1.99 inches below normal. Snowfall in March at Fort Wayne totaled 4.0 inches which was below normal for a March. At South Bend, 10.6 inches of snow fell which was above normal for a March.

March, 2001 had no lasting snowpack. Mid and late March snows quickly melted causing no significant river or stream rises.

Weather: March started out with temperatures around the normals for early March. There was little precipitation for the first few days. Temperatures began to slip by the 5th of the month as cold arctic air moved into the area. High temperatures were only in the middle to upper 20s on the 5th as a result. High temperatures remained in a range from the 30s to the 40s through the 11th area wide as the warm late winter/early spring sun helped to modify each reinforcing push of cold air from Canada. Temperatures finally reached the 50 degree mark on the 12th at Fort Wayne and the 14th at South Bend. Several storm systems crossed the area from the west bringing periods of light precipitation with much of it in the form of snow. Some of the snow was lake enhanced near Lake Michigan. The most widespread snow occurred on the 16th and 17th with some locations receiving over 6 inches of snow over the two days. The snow melted quickly in the late winter sun. Somewhat warmer temperatures followed this system as high temperatures rose into the middle to upper 50s from the 20th through the 22nd. Another shot of cold air moved into the area on the 24th bringing another bout of light snow to the HSA. High temperatures fell into the upper 20s on the 25th. At Fort Wayne, a record low temperature of 5 °F was set on the 26th. A warmup ensued through the end of the month with highs again reaching the 50s on the 30th and 31st. Total March precipitation based on COOP data was less than two thirds of an inch across the area. An average of 5.9 inches of snow fell across the area in March. This information was also based on COOP data.

In March, 2001 18 FLS statements were issued by WFO IWX to cover early March flooding. 3 ESF's were issued to alert the public of the potential for flooding in March with emphasis on flooding due to snowmelt.

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HSA OFFICE:
North Webster, IN

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:

REPORT FOR (MONTH & YEAR):
April 2001

May 8th, 2001

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
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General Overview: April, 2001 had warmer than normal temperatures across Northern Indiana, Southern Michigan and Northwest Ohio. April, 2001 was the 5th warmest on record at South Bend and the 8th warmest at Fort Wayne. The average high temperature was in the middle 60s, the average low temperature was in the lower 40s giving an average temperature in the lower 50s. This was about 4.5 °F above normal. This was the opposite of the temperature trend that prevailed in March. There was snowfall in April, 2001 with most of it falling on the 16th and 17th. This snowfall had no effect on area rivers and streams. Precipitation averaged right around normal in April, 2001. (Data used was NWS Fort Wayne and South Bend only)

There were two most significant precipitation event in April, 2001. The first one occurred on the 5th and 6th of the month when an average of over one inch of rain fell across the area (COOP Data). The second event occurred from the 9th through the 12th where again an average of over one inch of rain fell (COOP Data) across the area. There was a lot of hail mixed with the rainfall on the evening of the 9th. There was one significant snow event in April and it occurred on the 16th and the 17th with some locations reporting almost 3 inches of snow.

The rainfall on the 5th and 6th caused significant rises on area rivers and streams. 2 river flood warnings (FLWs) were issued on the 6th, one for the Tippecanoe River at Ora Indiana and the other for the St. Joseph River (Ohio) at Newville Indiana. However both rivers stayed within their banks. In response to the rain on the 9th through the 12th two more river flood warnings (FLWs) were issued, one for the Salamonie River at Warren and the other for the Tippecanoe River at Ora, both issued on the 11th. Only the Salamonie River at Warren went into flood. Another river flood warning was issued for the Tippecanoe River at Ora on the 21st in response to expected heavy rain on the 20th and 21st. However, the river did not get to flood stage. In April, 2001, a total of 5 river flood warnings (FLWs) and 12 flood statements (FLSs) were issued to cover the flooding.

Temperature: For Fort Wayne, the average high temperature in April, 2001 was 65.2 °F

and the average low was 41.1 °F. This gave an average temperature of 53.2 °F which was 4.0 °F above normal. At South Bend, the average high was 64.8 °F and the average low was 42.5 °F. The average temperature at South Bend was 53.6 °F which was 4.9 °F above normal for April. A record low minimum temperature of 25 °F was reported at South Bend on the 17th and a record low minimum of 26 °F was reported at Fort Wayne on the 17th as well. A record high temperature of 79 °F was set at Fort Wayne on the 8th and 80 °F on the 9th tied the previous record high temperature for that date. At South Bend a record high temperature of 77 °F was set on the 8th.

Precipitation: Precipitation was nearly normal at both Fort Wayne and South Bend in April, 2001. At Fort Wayne 3.59 inches of precipitation fell, 0.21 inches above normal. At South Bend 3.65 inches of precipitation fell, 0.17 inches below normal. There was snowfall in April, 2001. At Fort Wayne, 1.8 inches of snow fell in April, 2001 which was 0.3 inches above the 1.5 inch normal. At South Bend, 2.7 inches fell in April, 2001 which is normal for April.

All the snow melted quickly with no hydrologic effects.

Weather: April, 2001 was marked by typical ups and downs temperature wise. Cold Canadian air masses dominated from the 15th through the 19th. Maritime tropical air masses ruled the area's weather from the 5th through the 14th and again from 20th through the 23rd.

April, 2001 began with temperatures slightly below normal. There was a trace of snowfall on the 1st at both Fort Wayne and at South Bend. High temperatures started out in the middle to upper 40s on the 1st and warmed into the 50s by the 2nd. There was little precipitation through the 4th.

A rapid warmup began on the 5th as showers and thunderstorms crossed the region, dropping an average of over an inch through the 6th. High temperatures shot up into the upper 60s and lower 70s on the 5th. The rain tapered off by the 7th, but high temperatures continued their rise, reaching record levels on the 8th and 9th. High temperatures were upper 70s at both South Bend and Fort Wayne on the 8th.

More showers and thunderstorms, some severe, moved through the area from the 9th through the 12th. There were many reports of large hail from storms that moved through on the evening of the 9th. The hail fell across parts of Northern Indiana with reports of 4.5 inch hail in some locations. Average rainfall totals were around an inch with this system. Following the storm, high temperatures began a slow fall through the 12th, then plummeted into the upper 50s and 60s on the 13th and 14th.

High temperatures took a bigger dive on the 15th and 16th as a cold Canadian airmass made its way south behind the warm dry airmass that previously dominated the area's weather. From record highs on the 8th and 9th to record lows on the 17th was the weather trend for the 2nd and 3rd weeks of April, 2001. Both Fort Wayne and South Bend set record lows for the 17th with low temperatures dropping into the middle 20s. Measurable

snow fell on the 16th and 17th with some locations receiving nearly 3 inches.

More showers and thunderstorms moved into the area on the 20th through the 22nd as warm air returned to the region. High temperatures moved back up into the 70s by the 20th. Weak cold fronts followed the warm air mass on the 23rd and 28th pushing high temperatures down into the 50s and 60s respectively. April closed out on a warm dry note as returning warm air pushed high temperatures into the lower 80s on the 30th.

In April, 2001 5 river flood warnings (FLWs) and 12 River Flood Statements (FLSs) were issued by WFO IWX to cover April flooding.

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U.S. DEPARTMENT OF COMMERCE
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:
North Webster, IN

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:

REPORT FOR (MONTH & YEAR):
May 2001

June 8th, 2001

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
HYDROMETEOROLOGICAL INFO CENTER
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General Overview: May, 2001 was warmer than normal across Northern Indiana, Northwest Ohio and Extreme Southern Michigan and wetter than normal over of the area except Fort Wayne where the weather was drier than normal. The average high temperature was in the lower 70s , the average low temperature was in the lower 50s giving an average temperature in the lower 60s. This was about 2.0 °F above normal. There was no snowfall in May. Precipitation averaged slightly above normal across the HSA in May, 2001. (Data used was NWS Fort Wayne and South Bend only)

There was no, one big single day, rainfall event in May, 2001 but many smaller ones. Over two-thirds of the days in May has some rain fall over some part of Northern Indiana, Southern Michigan and Northwest Ohio. Rainfall occurred over several day periods at a time. The period with the most rainfall extended from May 14th through May 19th when an average of 2.1 inches of rain fell across the HSA (COOP Data). This rain caused significant rises on some area rivers beginning on the 15th in response to the rain. Strong rises were recorded along the Maumee, St. Marys, Auglaize, Blanchard, the St. Joseph (Ohio) and the Tiffin Rivers. This rain prompted the issuance of River Flood Warnings (FLWs) for the St Joseph (Ohio), Auglaize, St. Marys and the Tiffin Rivers, with the Tiffin River producing flooding. Much of the last week in April and the first week in May were dry producing dry soils. Also much runoff was intercepted by rapidly growing trees, grasses and crops. This coupled with increased evaporation greatly reduced the flood threat.

The 2nd most significant rain event occurred from 21st through the 27th of May. An average of around 1.9 inches of rain fell across the HSA during this time (COOP Data). This rain event prompted the issuance of another River Flood Warning (FLW) the St. Joseph River (Ohio) near Newville. There was some minor flooding along the St. Joseph River on the 28th and 29th of May. River levels across the HSA ran from normal to well above normal into early June.

These rain events also produced localized flooding of streets and basements during the

month. A total of 15 Urban and Small Streams Flood Advisories (FFSs) for 12 counties, including updates were issued to cover these events. Most of these events occurred with the May 14th through the 19th event. These were issued in addition to the 6 River Flood Warnings (FLWs) and 11 River Flood Statements (FLSs) that were issued in May to cover the river flooding threat.

Temperature: For Fort Wayne, the average high temperature in May, 2001 was 73.1 °F and the average low was 51.4 °F. This gave an average temperature of 62.3 °F which was 2.1 °F above normal. At South Bend, the average high was 71.7 °F and the average low was 50.6 °F. The average temperature at South Bend was 61.2 °F which was 1.8 °F above normal for May. There were no record highs or lows set in May, 2001.

Precipitation: Precipitation was above normal at South Bend and below normal at Fort Wayne in May, 2001. At Fort Wayne 2.56 inches of rain fell, 0.88 inches below normal. At South Bend 4.31 inches of rain fell, 1.09 inches above normal for May.

Weather: May, 2001 was one of contrasts. May started out with temperatures running well above normal. High temperatures for the first 21 days were in the 70s and 80s, with a couple of cool days where highs only reached the 50s and 60s. Temperatures averaged about 7 °F above normal through the 21st as Maritime Tropical air masses dominated. On the 22nd, Continental Polar air dominated with high temperatures only reaching the 50s and 60s resulting in temperatures averaging 8.5 °F below normal.

Over two thirds of the days in May had rainfall somewhere in our HSA. While the warm air dominated, weak storm systems moved across the area periodically producing rain. From the 14th through the 19th average rainfall totals reached around 2.1 inches (COOP Data). When the cool air moved in, however the rain did not end. From the 21st through the 27th, rain continued on and off with the final average total around 1.9 inches. This was caused by a strong upper level storm system which developed to the west and moved across Northern Indiana, Southern Michigan and Northwest Ohio. The system finally moved out by the 27th but the wet cool weather continued as May, 2001 closed.

In May, 2001 6 river flood warnings (FLWs) and 11 River Flood Statements (FLSs) were issued by WFO IWX to cover April flooding. 15 Urban and Small Stream Advisories (FFSs) covering 12 counties were also written to cover short term flooding.

NWS FORM E-5

U.S. DEPARTMENT OF COMMERCE
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:
North Webster, IN

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:

REPORT FOR (MONTH & YEAR):
June 2001

July 8th, 2001

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
HYDROMETEOROLOGICAL INFO CENTER
1325 EAST-WEST HIGHWAY, RM 7116
SILVER SPRING, MD 20910

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (WSOM E-41).

An X inside this box indicates that no flooding occurred within this Hydrologic Service Area.



General Overview: June, 2001 was cooler and wetter than normal across Northern Indiana, Northwest Ohio and Extreme Southern Michigan. The average high temperature was in the upper 70s, the average low temperature was in the upper 50s giving an average temperature in the upper 60s. This was about 1.9 °F below normal. Precipitation averaged about 0.4 inches above normal in June, 2001. (Data used was NWS Fort Wayne and South Bend only)

Over half of the days in June, 2001 had some rainfall. The biggest rain days were the 5th through the 6th when an average of over an inch of rain fell across Northern Indiana, Northwest Ohio and Southern Michigan (COOP Data). The first 6 days were wet in June with between 1.75 and 2 inches average rainfall occurring across the area (COOP Data). Other significant rain events occurred from May 31st through June 2nd (average 0.7 inches, June only (COOP Data)), the 14th and 15th (average of a half inch (COOP Data)) and again on the 19th and 20th (average of around a third of an inch (COOP Data)). The rain event that occurred on the 6th caused significant rises on the rivers and streams in the Maumee River Basin with minor flooding occurring on the St. Joseph River (Ohio) at Newville with the stage at Newville reaching 11.24 feet late on the 6th. Flood stage is 11 feet. Water levels on the Maumee and St. Marys Rivers approached, but never reached flood stage. This rainfall event led to moderate rises on the Wabash and some minor flooding on the Eel River as well. There were rises on other rivers with this event, water levels did not approach flood stage. The other rain events led to rises on area rivers and streams, but none were significant. However, the high flows caused by the May 31st through June 2nd rainfall set up the minor flooding event that followed the rains which fell on the 5th and 6th.

The response of the larger rivers and streams to the June rains was less than that which occurred earlier in the year. Late Spring and Early Summer plant and tree growth was in full swing which greatly reduced runoff. Warmer temperatures of Late Spring and Early Summer also led to more evaporation which was another factor in reducing runoff.

Being Spring and Early Summer, much of the rain was convective in nature. This led to the issuance of Urban and Small Stream Flood Advisories on the 5th and 13th and again on

the 19th as localized heavy rains caused small streams and creeks as well as streets to flood. The Urban and Small Streams Flood Advisories were issued on the morning of the 5th for White, Miami, Cass, and Wabash Counties in Northern Indiana. This advisory was extended into that afternoon. With the heavy rains on the 5th and the threat of more over the same area, a flash flood watch was issued early on the 6th for White, Miami, Cass, Pulaski, Wabash and Fulton counties in Northern Indiana. In response to localized heavy rains on the 13th an Urban and Small Streams Flood Advisory was issued for Southwest Wells County in Northern Indiana. Scattered thunderstorms on the afternoon and evening of the 19th prompted the issuance of Urban and Small Streams Flood Advisories for Miami, Cass, Southern Kosciusko, Wabash, Allen and Whitley Counties in Northern Indiana. The Allen County Sheriff's Department reported street flooding along and near Spy Run Creek which overflowed its banks that night.

Drier weather took control of the area over the last week of June. This caused area rivers to fall to their base flows as June closed.

A total of 9 (FFS) statements covering 15 counties were written to cover the urban and small stream flooding and the flash flood threat. 1 Flash Flood Watch (FFA) statement was issued covering 6 counties to cover the flash flood threat. 1 (FLW) and 3 (FLSs) were issued to cover the river flooding along the St. Joseph River (Ohio).

Temperature: For Fort Wayne, the average high temperature in June, 2001 was 78.4 °F and the average low was 57.9 °F. This gave an average temperature of 68.2 °F which was 2.0 °F below normal. At South Bend, the average high was 77.3 °F and the average low was 57.3 °F. The average temperature at South Bend was 67.3 °F which was 1.8 °F below normal for June. There was one record set in June and that was a record high minimum temperature of 73 °F which occurred at South Bend on the 14th.

Precipitation: Precipitation was above normal at both Fort Wayne and South Bend in June 2001. At Fort Wayne 4.26 inches of rain fell, 0.67 inches above normal. At South Bend 4.25 inches of rain fell, 0.14 inches above normal for June.

Weather: June, 2001 started out very cold with temperatures averaging nearly 10 °F below normal over the first 9 days. High temperatures were only in the 50s on the 3rd. High temperatures were only in the 60s through the 6th. The weather was quite wet as well with nearly half of the monthly rainfall reported at some locations over the first 10 days. Canadian Maritime Polar air masses dominated the region's weather during this time. Temperatures finally broke above normal on the 10th as Maritime Tropical air made its way back over the area. This was caused by a switch in the jet stream from northwest to southwest. High temperatures finally broke into the 80s on the 10th and into the 90s by the 13th at both Fort Wayne and South Bend. This was the first day that the temperature reached 90 °F this year at both locations. There were scattered hit/miss thunderstorms that occurred from the 10th through the 15th with South Bend receiving 1.4 inches of rain on the 11th. Cooler air filtered into the region by the 16th dropping high temperatures back into the 80s. Warmer air returned by the 18th driving high temperatures back into the 90 degree range. High temperatures fell into the 70s again as a strong cold

front crossed the region on the 20th bringing strong thunderstorms across the area. Some locations received over an inch of rain during this event. High temperatures were driven down into the 60s at South Bend on the 21st and 22nd and into the lower 70s at Fort Wayne.

Temperatures then began to recover into the 80s as a high pressure ridge built over the area from the east beginning on the 24th. Temperatures remained in the 80s as June closed.

In June, 2001 1 river flood warning (FLW) and 3 River Flood Statements (FLSs) were issued by WFO IWX to cover June river flooding. 5 Urban and Small Stream Advisories (FFSs) covering 15 counties were also written to cover urban and small streams flooding.

1 Flash Flood Watch (FFA) was issued for 6 counties to cover the threat of flash flooding in June. 4 (FFSs) flash flood statements were written to follow up Urban and Small Stream Advisories and Flash Flood Watches.

NWS FORM E-5

U.S. DEPARTMENT OF COMMERCE
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:
North Webster, IN

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:

REPORT FOR (MONTH & YEAR):
July 2001

Aug 8th, 2001

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
HYDROMETEOROLOGICAL INFO CENTER
1325 EAST-WEST HIGHWAY, RM 7116
SILVER SPRING, MD 20910

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (WSOM E-41).

An X inside this box indicates that no flooding occurred within this Hydrologic Service Area.



General Overview: July, 2001 was cooler and wetter than normal for rainfall across Northern Indiana, Northwest Ohio and Extreme Southern Michigan. The average high temperature was in the lower 80s, the average low temperature was in the lower 60s giving an average temperature in the lower 70s. This was about 1.0 °F below normal. Precipitation averaged about 1.2 inches above normal in July, 2001. (Data used was NWS Fort Wayne and South Bend only)

Fort Wayne had a very wet July with 3 days having more than one inch of rainfall. Much of the rainfall was quite spotty across the rest of the area due to its convective nature. The most widespread rain event occurred from the 23rd through the 25th when an average of nearly three quarters of an inch fell (COOP Data). Some locations received nearly 2 inches on a single day during this time period. However, 4 inches fell at Rochester Indiana on the 6th of the month. Much of the monthly rainfall fell during the time periods of the 2nd through the 8th (Average 1.46 inches(COOP Data)) and the 21st through the 25th (Average 1.86 inches (COOP Data)). The rains that fell on the 7th and 8th led to flooding along the Tippecanoe River near Ora and an FLW was issued on the 9th to cover the flooding which was minor in nature. 3 FLSs were also issued to cover the flooding event. There were several localized flooding events in July which prompted the issuance of 6 FFS which included 5 Urban and Small Stream Flood Advisories. Most of the advisories were issued on the 7th. All of the statements covered a total of 9 counties in Northern Indiana in July. Some of the rains during the month led to minor rises on area rivers and streams, but none, with the exception of the Tippecanoe River approached flood stage.

Temperature: For Fort Wayne, the average high temperature in July, 2001 was 83.1 °F and the average low was 61.7 °F. This gave an average temperature of 72.4 °F which was 1.5 °F below normal. At South Bend, the average high was 83.1 °F and the average low was 61.6 °F. The average temperature at South Bend was 72.3 °F which was 0.6 °F below normal for July. There were four records set in July, all record lows for their respective dates. At South Bend a record low of 42 °F was set on the 2nd and a record low of 43 °F was set on the 6th. At Fort Wayne, a record low of 46 °F was set on the 2nd and a record low of 45 °F was set on the 6th.

Precipitation: Precipitation was above normal at Fort Wayne and below normal at South Bend in July 2001. At Fort Wayne 6.70 inches of rain fell, 3.25 inches above normal. July, 2001 was the 4th wettest on record at Fort Wayne. At South Bend 2.97 inches of rain fell, 0.85 inches below normal for July.

Weather: July, 2001 started out much like June, cool. Temperatures averaged nearly 8 °F below normal over the first 7 days. Record low temperatures were set on the 2nd and the 6th at both South Bend and Fort Wayne. High temperatures were in the 70s and lower 80s through the 7th. It was quite wet with nearly 1.5 inches of rain falling, on average across Northern Indiana, Northwest Ohio and Extreme Southern Michigan (COOP Data). High temperatures then warmed into the upper 80s by the 8th and remained in that range through the 10th when a dry cold front passed across the area. Temperatures fell below normal from the 11 through the 15th with high temperatures in the 70s rising to the middle 80s by the 15th and low temperatures in the 50s rising to near 60 by the 15th. Temperatures then went above normal with highs reaching the upper 80s to the lower 90s by 20th. The hottest day occurred on the 23rd when the high temperature at South Bend reached 95 °F and at Fort Wayne the temperature topped out at 90 °F. Numerous showers and thunderstorms crossed the area from the 21st through the 25th when nearly 1.9 inches of rain fell, on average, across the area (COOP Data). Temperatures then retreated below normal from the 25th through the 28th before rising above normal again. Little rainfall occurred from the 25th through the end of the month.

In July, 2001 1 river flood warning (FLW) and 3 River Flood Statements (FLSs) were issued by WFO IWX to cover July river flooding. 6 Urban and Small Stream Advisories (FFSs) and following up statements (FFSs) covering 9 counties were also written to cover urban and small streams flooding in response to heavy downpours in individual convective storms.

NWS FORM E-5

U.S. DEPARTMENT OF COMMERCE
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:

North Webster, IN

REPORT FOR (MONTH & YEAR):

August 2001

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:

Sep 8th, 2001

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
HYDROMETEOROLOGICAL INFO CENTER
1325 EAST-WEST HIGHWAY, RM 7116
SILVER SPRING, MD 20910

SIGNATURE:

Michael Sabones, MIC

Greg Lamberty, Service Hydrologist

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (WSOM E-41).

An X inside this box indicates that no flooding occurred within this Hydrologic Service Area.



General Overview: August, 2001 was warmer and wetter than normal across Northern Indiana, Northwest Ohio and Extreme Southern Michigan. The average high temperature was in the lower 80s, the average low temperature was in the lower 60s giving an average temperature in the lower 70s. This was about 1.4 °F above normal. Precipitation averaged about 0.6 inches above normal in August, 2001. (Data used was NWS Fort Wayne and South Bend only)

Fort Wayne had a wet August, but one day was very wet, the 22nd with over 2 inches being reported. 2 other days had rainfall approach one inch, the 9th and the 18th. Less rain fell in the South Bend area with only one day having more than three quarters of an inch of rainfall, the 21st. Most of the rain across the area came from thunderstorms.

Since the rainfall was convective in nature, there were wide variations in rainfall amounts across the area. The most significant rain event occurred from the 21st through the 23rd. Most of the rain fell on the 22nd in 2 thunderstorm complexes. Some areas received over 6 inches of rain before the day was over. The NWS office in Northern Indiana received an unofficial 6.26 inches of rain on the 22nd. The average rainfall across the area for this event (COOP Data) totaled just over 2.25 inches.

All of this convective rain led to the issuance of several Urban and Small Streams Flood Advisories in August and one Flash Flood Warning. A total of 10 Flash Flood Statements were issued, 7 Urban and Small Streams Flood Advisories covering 26 counties in Northern Indiana, Southern Michigan and Northwest Ohio. A Flash Flood Warning was issued for Southern Grant County in Indiana on the 9th. The Flash Flood Warning followed the issuance of an Urban and Small Streams Flood Advisory for the same area. The other 6 Urban and Small Streams Flood Advisories were issued on the 22nd in response to very heavy rains caused by thunderstorms. These advisories covered 25 counties.

There was a threat of some river flooding following the heavy rain event of the 21st through the 23rd. A River Flood Warning FLW was issued on the 23rd for the Eel River

at North Manchester. However the river crested below the 8 foot flood stage on the same day. A Flood Statement (FLS) was issued canceling the warning. One reason for the lack of river flooding after such heavy rain was the presence of thick vegetation in the area.

Thus a total of 1 River Flood Warning (FLW) and one Flood Statement (FLS) were issued to cover the river flooding threat. 1 Flash Flood Warning (FFW) and 2 Flash Flood Statements (FFS) covering one county was issued to cover flash flooding. 8 Flash Flood Statements (FFS) including 7 Urban and Small Streams Flood Advisories covering 26 counties were issued to cover urban and small streams flooding in August, 2001.

Temperature: For Fort Wayne, the average high temperature in August, 2001 was 82.7 °F and the average low was 62.0 °F. This gave an average temperature of 72.4 °F which was 0.8 °F above normal. At South Bend, the average high was 83.1 °F and the average low was 62.6 °F. The average temperature at South Bend was 72.8 °F which was 1.9 °F above normal for August. There was only one temperature record set in August. The high temperatures reached 95 °F on the 9th at South Bend. This was a new record high temperature for that date.

Precipitation: Precipitation was above normal at both Fort Wayne and South Bend in August 2001. At Fort Wayne 4.56 inches of rain fell, 1.19 inches above normal. At South Bend 3.75 inches of rain fell, 0.08 inches above normal for August.

Weather: August, 2001 started like July ended, warmer than normal. This warm spell lasted until through the 12th of the month. During this time period, temperatures averaged over 4 degrees above normal. The period was quite dry with only 2 days with significant rainfall. One of those dates was the 9th when stagnant thunderstorms caused flash flooding in Southern Grant County in Northern Indiana. However the HSA average rainfall (COOP Data) totaled only around a half inch. High temperatures were mostly in the upper 80s and the lower to middle 90s. The warmest temperatures for the month occurred on the 8th at Fort Wayne when the high temperatures reached 93 °F and on the 9th at South Bend when the temperature reached 95 °F, a new record for the date. A cold front passed through the area on the 10th, lowering high temperatures into the lower to middle 80s with South Bend and Fort Wayne hovering around normal temperatures for the 11th and 12th. The trend toward cooler than normal temperatures began on the 13th and lasted through the 21st. Temperatures during this time period ran about 3 °F below normal. High temperatures ranged from the lower 70s to the lower 80s. The coolest high temperature occurred on the 16th at South Bend at 73 °F and on the 19th at Fort Wayne at 71 °F. Warm air trying to return brought scattered showers and thunderstorms to the area on the 15th, 16th, 18th and 19th giving Northern Indiana, Southern Michigan and Northwest Ohio an average rainfall of just over an inch (COOP Data). Warmer air continued to advance toward the area which led to more significant rainfall starting on the 21st. Very heavy rain fell on the 22nd and 23rd. An average of just over 2.25 inches (COOP Data) fell across the area in less than 2 days with the bulk of the rain falling on the 22nd. 6 Urban and Small Streams Flood Advisories were issued to cover the flooding that day. Warmer air finally moved into the area by the 22nd with temperatures slightly above normal through to the end of the month. Temperatures averaged a little more than 2 °F above normal for the last

10 days

In August, 2001, 1 river flood warning (FLW) and 1 River Flood Statement (FLS) were issued by WFO IWX to cover August river flooding. 1 Flash Flood Warning (FFW) and 2 Flash Flood Statements (FFSs) were issued covering one county to cover flash flooding. 7 Urban and Small Stream Advisories (FFSs) and 1 following up statement (FFSs) covering 26 counties were also written to cover urban and small streams flooding in response to heavy downpours in individual convective storms.

NWS FORM E-5

U.S. DEPARTMENT OF COMMERCE
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:
North Webster, IN

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:

REPORT FOR (MONTH & YEAR):
September 2001

October 4th, 2001

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
HYDROMETEOROLOGICAL INFO CENTER
1325 EAST-WEST HIGHWAY, RM 7116
SILVER SPRING, MD 20910

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (WSOM E-41).

X An X inside this box indicates that no flooding occurred within this Hydrologic Service Area.



General Overview: September, 2001 was cooler and wetter than normal across Northern Indiana, Northwest Ohio and Extreme Southern Michigan. The average high temperature was in the lower 70s, the average low temperature was in the lower 50s giving an average temperature in the lower 60s. Temperatures were about 2.4 °F below normal. Precipitation averaged about 0.7 inches above normal in September, 2001. (Data used was NWS Fort Wayne and South Bend only)

There was no flooding in September, 2001. September, 2001 was the first month since December, 2000 in which no flooding occurred in some part of Northern Indiana, Northwest Ohio and Extreme Southern Michigan.

The most significant rain event occurred from the 7th through the 9th of the month. An average of about 1.75 inches of rain (COOP Data) fell across the area. The heaviest rain fell on the 9th with about one inch average (COOP Data) amounts reported. The next most significant rainfall occurred on the 17th through the 19th when an average of nearly one and a quarter inches of rain (COOP Data) fell across the area. More gentle rains occurred from the 20th through the 26th with totals of just under a half of an inch of rainfall. Most of the rainfall was convective in nature.

There were some minor rises of area river levels during the rain events, but all rises crested well below flood stage.

Temperature: For Fort Wayne, the average high temperature in September, 2001 was 73.5 °F and the average low was 51.0 °F. This gave an average temperature of 62.3 °F which was 2.7 °F below normal. At South Bend, the average high was 71.8 °F and the average low was 51.8 °F. The average temperature at South Bend was 61.8 °F which was 2.1 °F below normal for September. There were no temperature records set in September, 2001.

Precipitation: Precipitation was above normal at both Fort Wayne and South Bend in September 2001. At Fort Wayne 4.04 inches of rain fell, 1.37 inches above normal for a

September. At South Bend 3.65 inches of rain fell, 0.03 inches above normal for a September.

Weather: September, 2001 began with temperatures below normal. However, a quick warmup pushed temperatures to normal and above by the 3rd at both Fort Wayne and South Bend. High temperatures were in the lower 70s on the 1st and rose to the 80 to 85 °F range by the 3rd. High temperatures continued a slow warmup till they reached the middle to upper 80s by the 7th. A strong storm system then moved into the area late on the 6th and swept across the area by the 10th. This system brought a lot of rain. At Fort Wayne 1.27 inches fell on the 9th and at South Bend 1.33 inches of rain fell on the 8th and 9th. With the continued presence of thick vegetation, there was little response from area rivers and streams. From the 3rd through the 9th temperatures averaged over 4 °F above normal.

Once the cold front trailing the system passed through, high temperatures fell into the middle to upper 70s on the 10th and 11th. A brief warmup into the lower 80s occurred on the 12th before a cold front with a few scattered showers passed through on the 13th dropping highs into the middle to upper 60s for the following 3 days. Warm air tried to return on the 16th and 17th pushing high temperatures back into the low to middle 70s. From the 13th through the 16th, temperatures averaged over 7 °F below normal.

A strong storm system approached from the northwest on the 16th bringing wet weather on the 17th. Nearly one and a quarter inch of rain fell from the 17th through the 19th (COOP Data). High temperatures ranged from the upper 60s to upper 70s during that time. Temperatures remained in the lower to middle 70s from the 20th through the 23rd across the area. A stronger storm system then brought a bout of rain on the 23rd with about a quarter inch average falling across the area (COOP Data). Much colder air moved in behind this storm system dropping high temperatures into the middle to upper 50s on the 24th and the 25th. Lake effect rain showers were common across extreme Southwest Michigan and Northwest Indiana.

From the 26th through the 28th, high temperatures wandered from the upper 50s to the lower 60s. There continued to be spotty rain showers across the area through the 27th. Skies finally cleared on the 29th bringing warmer weather to the region with high temperatures rising into the lower 70s on the 30th. Temperatures from the 24th through the end of the month averaged about 7.5 °F below normal.

In September, 2001, with no flooding occurring, no flood/flash flood warnings or statements were issued. No flood/flash flood watches were issued as well.

NWS FORM E-5

U.S. DEPARTMENT OF COMMERCE
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:
North Webster, IN

REPORT FOR (MONTH & YEAR):
October 2001

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:
November 2nd, 2001

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
HYDROMETEOROLOGICAL INFO CENTER
1325 EAST-WEST HIGHWAY, RM 7116
SILVER SPRING, MD 20910

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (WSOM E-41).

Corrected Temperature Information

An X inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: October, 2001 was much wetter and temperatures were around normal across Northern Indiana, Northwest Ohio and Extreme Southern Michigan. The average high temperature was in the lower 60s, the average low temperature was in the middle 40s giving an average temperature in the lower 50s. Precipitation averaged almost 4.5 inches above normal in October, 2001. October, 2001 was the 5th wettest on record at both Fort Wayne and South Bend. (Data used was NWS Fort Wayne and South Bend only)

There were several heavy rainfall episodes across the area in October. The first one occurred from the 4th into the 6th when an average of one and a third inches fell across the area. River levels rose, but remained well below flood stage. The most significant rainfall occurred from the 10th into the 14th of the month when a average of over three inches fell. Another heavy rain event occurred from the 15th into the 17th with an additional one and a third inch average rain fell. These two heavy rain events resulted in minor flooding along the Maumee, St. Joseph (Ohio), St. Marys, Tiffin, Eel, Tippecanoe and the Kankakee Rivers. There was also some very minor flooding near Three Rivers Michigan along the St. Joseph River (Michigan), but that was due to a dam operator releasing water to maintain proper levels behind their structure. The river channel is also being constricted by bridge construction. A third rain event occurred from the 21st through the 25th which produced an average of around one and three quarters inches of rainfall. As a result, there was renewed minor flooding along the Eel, Tippecanoe, St. Marys, St. Joseph (Ohio), Tiffin and Kankakee Rivers. All flooding was over by the end of the month. No significant damage was reported as a result of the flooding in October over Northern Indiana, Northwest Ohio and Extreme Southern Michigan. (All rainfall data was taken from COOP Data).

October was the 9th of the 10 months in 2001 to have some type of flooding. Defiance, Ohio COOP Station received over 8.5 inches of rain in October. Using COOP data, an average of nearly 7.5 inches of rain fell across the area in October. Rainfall was nearly 3 times normal at Fort Wayne in October. (NWS Data)

There was still some vegetation growth in the area in October, but there was a freeze on



the night of the 6th which served to end the growing season. Vegetation in the form of unharvested crops, helped to reduce the degree of flooding by slowing down runoff.

To handle the flooding, a total of 20 River Flood Warnings (FLWs) and 56 River Flood Statement (FLSs) were issued to cover river flooding. 1 Flood Potential Outlook (ESF), 2 Flood Watches (FFAs) 3 Flood Statements (FFSs) were issued to cover the widespread flood threat on the 13th. The Flood Watch covered the entire HSA.

Temperature: For Fort Wayne, the average high temperature in October, 2001 was 62.2 °F and the average low was 43.1 °F. This gave an average temperature of 52.6 °F which was 0.2 °F below normal. At South Bend, the average high was 60.8 °F and the average low was 44.6 °F. The average temperature at South Bend was 52.7 °F which was 0.1 °F above normal for October. No temperature records were set this October.

Precipitation: Precipitation was much above normal at both Fort Wayne and South Bend in October 2001. At Fort Wayne 7.40 inches of rain fell, 4.91 inches above normal for October, almost 3 times normal. At South Bend 7.06 inches of rain fell, 3.98 inches above normal for October.

Weather: October, 2001 started out warm and dry with high temperatures in the 70s and lower 80s. Average temperatures were around 6 °F above normal. However the dry weather was short lived. By the 4th, heavy rain moved into the area dropping an average of nearly one and a third inches (COOP Data). This caused very minor rises on area rivers, with all remaining well below flood stage. A cold front moved through ending the rain with much cooler temperatures. High temperatures fell into the low to middle 50s by the 5th. Warmer temperatures finally returned by the 8th as high temperatures pushed into the middle 60s. From the 4th through the 8th, temperatures averaged about 10 °F below normal.

A pattern shift to wet weather became anchored across the area as the 10th approached. Rain fell from the 10th through 18th with the heaviest rainfall occurring from the 11th through the 14th and again from the 15th through the 17th. Around three inches (COOP Data) fell across the area from the 11th through the 14th. Around one and a third inches fell from the 15th through the 17th (COOP Data). It was these two events that pushed many of the rivers in Northern Indiana, Northwest Ohio and Extreme Southern Michigan into flood. Flooding was minor though with no serious flood damage reported. Temperatures averaged about 5 °F above normal from the 9th through the 14th, and 5.1 °F below normal from the 15th through the 19th. Some very light snow fell at South Bend late on the 16th and the 17th as cold air moved over Lake Michigan following the first rain event with no accumulation.

Temperatures warmed into the upper 60s by the 20th. Another storm system approached the area from the west on the 22nd. More rain fell keeping river levels high and causing renewed flooding along the St. Joseph (Ohio), St. Marys, Tiffin, Tippecanoe, Eel and the Kankakee Rivers in Northern Indiana, Southern Michigan and Northwest Ohio. Again the flooding was minor. The big story though was the tornado outbreak which swept

across the area on the 24th. 10 tornadoes ripped through Northern Indiana, Southern Michigan and Northwest Ohio, a couple of them were placed in the strong category (F3). One person died in the tornadoes, and that occurred in LaPorte County in Northwest Indiana. Very cold air followed the tornado outbreak causing some more light snow across parts of Northern Indiana, Northwest Ohio and Southern Michigan. Again there was no accumulation. High temperatures were driven into the lower 40s on 26th and 27th.

Temperatures moderated as October ended reaching highs in the upper 60s on Halloween. Just trace amounts of precipitation occurred from the 27th through the end of October in light rain and snow showers. There was no snow accumulation.

In October, 2001, 20 River Flood Warnings (FLWs) and 56 River Flood Statement (FLSs) were issued by WFO IWX to cover October river flooding. 1 Flood Potential Outlook (ESF), 2 Flood Watches (FFAs) and 3 Flood Statements (FFSs) were issued to cover the threat of widespread flooding across the entire HSA (October 13th).

NWS FORM E-5

U.S. DEPARTMENT OF COMMERCE
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:
North Webster, IN

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

REPORT FOR (MONTH & YEAR):
November 2001

DATE:

December 7th, 2001

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
HYDROMETEOROLOGICAL INFO CENTER
1325 EAST-WEST HIGHWAY, RM 7116
SILVER SPRING, MD 20910

SIGNATURE:
Michael Sabones, MIC
Greg Lamberty, Service Hydrologist

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (WSOM E-41).

X An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.

General Overview: Record and near record warmth characterized November, 2001 across Northern Indiana, Northwest Ohio and Extreme Southern Michigan. November, 2001 was dryer than normal with rainfall averaging about a half inch below normal. The average high temperature was in the upper 50s, the average low temperature was in the upper 30s giving an average temperature in the upper 40s. November, 2001 was the warmest on record at South Bend and 2nd warmest on record in Fort Wayne. No snow fell at either station in November, 2001. (Only NWS Fort Wayne and South Bend data were used)

Much of the rain in November fell in the last week of the month. There were 3 significant rain events: November 1st -3rd with an average of 0.42 inches (COOP Data.), November 24th -25th with an average of 0.44 inches (COOP Data.), and November 28th -30th with an average of 1.62 inches (COOP Data.). The event of November 28th -30th caused the greatest rise on area rivers and triggered a Flood Warning for the Eel at North Manchester Indiana on November 30th. The river crested just below the 8 foot flood stage that afternoon. 1 Flood warning (FLW) and one Flood Statement (FLS) were issued to cover that flooding threat. These were the only event driven hydrological products issued by WFO Northern Indiana (IWX) to cover flooding in November, 2001.

The Palmer Drought Severity Index for the period ending December 1st showed unusually moist to extremely moist conditions across Northern Indiana, Northwest Ohio and Southern Michigan. Palmer Indices ranged from +2.76 (Unusually Moist) for Northwest Indiana to +4.04 (Extremely Moist) for Southeast Michigan.

Temperature: For Fort Wayne, the average high temperature in November, 2001 was 57.6 °F the average low was 37.1 °F. This gave an average temperature of 47.3 °F which was 6.0 °F above normal. At South Bend, the average high temperature was 57.2 °F and the average low was 39.9 °F. The average temperature at South Bend was 48.5 °F which was 7.6 °F above normal for November. The record high for the 24th of November of 63 °F was tied at Fort Wayne. The record high for November 7th was broken at South Bend

when the mercury reached 69 °F. November, 2001 was the warmest on record at South Bend and the 2nd warmest at Fort Wayne.

Precipitation: Rainfall was below normal at both Fort Wayne and South Bend in November 2001. At Fort Wayne 2.30 inches of rain fell, 0.49 inches below normal for November. At South Bend 2.66 inches of rain fell, 0.61 inches below normal for November. No snow was recorded at either station in November, 2001 which was a record at South Bend and tied the record at Fort Wayne for the least snowy November.

Weather: November, 2001 started and ended very warm. There were only 6 days of below normal temperatures at Fort Wayne and only 3 days of below normal temperatures at South Bend. A persistent upper level ridge continued to pump warm air into the region from the southwest. One storm system passed through from the 1st through the 3rd dropping an average of just under a half inch of rain (COOP Data) causing no rise on area rivers and streams. In fact most of the rivers continued to fall from the October crests. From the 3rd through the 24th the weather was mostly dry with a few scattered showers occurring around 14th and 15th and again about the 18th and 19th as weak cold fronts passed through. Average amounts were less than a tenth of an inch in both events (COOP Data).

Wetter weather began on the 24th and continued through the end of the month with 2 significant rain events. The first occurred on the 24th and 25th with an average rainfall amount of around a half inch (COOP Data). The other occurred from the 28th through the 30th with an average rainfall amount of over one and a half inches (COOP Data). It was this event that caused significant rises on area rivers with river levels nearing flood stage on the Eel, Tiffin St. Joseph, St. Marys and the Maumee Rivers. All crested below flood stage in late November and early December.

No snow fell in November across the area which is a record for South Bend and tied a record for the least snowiest November at Fort Wayne.

In November, 2001, 1 Flood Warning (FLW) and 1 Flood Statement (FLS) were issued by WFO IWX to cover November river flooding.

NWS FORM E-5

U.S. DEPARTMENT OF COMMERCE
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:
North Webster, IN

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

REPORT FOR (MONTH & YEAR):
December 2001

DATE:

January 3rd, 2002

TO: NATIONAL WEATHER SERVICE (W/OH12X1)
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An **X** inside this box indicates that no flooding occurred within this Hydrologic Service Area.



General Overview: December, 2001 across Northern Indiana, Northwest Ohio and Extreme Southern Michigan was drier and much warmer than normal. Precipitation totals averaged about three quarters of an inch below normal. Temperatures averaged nearly 7 °F above normal. The warm weather carried over from the record and near record warmth of November. The average high temperature was in the lower 40s, the average low temperature was in the upper 20s giving an average temperature in the middle 30s. 1.9 inches of snow fell at Fort Wayne and 19.5 inches of snow fell at South Bend in December 2001. (Only NWS Fort Wayne and South Bend data were used)

There were no significant precipitation events through the first 11 days of December. From the 12th through the 17th the most significant rainfall took place across the area. Rainfall totals averaging over one and three quarters inches fell across the area (COOP Data.). With nearly saturated soils and dormant vegetation, rivers and streams in Northeast Indiana and Northwest Ohio spilled over their banks as a result. Flood Warnings (FLWs) were issued for the St. Marys, Tiffin, St. Joseph (Ohio), Wabash and Maumee Rivers in response to the flood threat. All of the flooding was minor in nature with no damage reported.

One flood warning for the Tiffin River was issued very late on 30th of November in response to heavy rainfall of the 28th and 29th of November. The river crested just below the 11 foot flood stage late on the 2nd of December.

The Palmer Drought Severity Index for the period ending December 29th continued to show unusually moist to very moist soil conditions across Northern Indiana, Northwest Ohio and Southern Michigan. Palmer Indices ranged from +2.43 (Unusually Moist) for Northwest Indiana to +3.96 (Very Moist) for Southeast Michigan. North Central (+3.52) and Northeast Indiana (+3.68) as well as South Central (+3.58) and Southwest Lower Michigan (+3.60) along with Northwest Ohio (+3.03) had very moist soils.

7 Flood Warnings (FLWs) and 13 Flood Statements (FLSs) were issued to cover the

December, 2001 flooding threat.

Temperature: For Fort Wayne, the average high temperature in December, 2001 was 42.7 °F the average low was 29.2 °F. This gave an average temperature of 36.0 °F which was 7.4 °F above normal. At South Bend, the average high temperature was 41.4 °F and the average low was 28.7 °F giving an average temperature of 35.1 °F which was 6.2 °F above normal for December. The record high for December 5th was broken at South Bend when the mercury reached 70 °F. The record high temperature on December 5th was also broken at Fort Wayne when the temperature reached 67 °F.

Precipitation: Precipitation was below normal at both Fort Wayne and South Bend in December 2001. At Fort Wayne 2.40 inches of precipitation fell, 0.49 inches below normal for December. At South Bend 2.25 inches of precipitation fell, 1.05 inches below normal for December. 19.5 inches of snow fell at South Bend while only 1.9 inches of snow fell at Fort Wayne in December, 2001. Most of the precipitation fell as rain across the area with the exception of areas near Lake Michigan, including South Bend, where there was significant snowfall. Even in Southwest Michigan and Northwest Indiana, the majority of December precipitation was rain.

Weather: December, 2001 started very warm and ended cold. Temperatures averaged about 11.7 °F above normal for the first 23 days of December and around 6.4 °F below normal for the last 8 days of the month. The persistent upper level ridge which was responsible for the warm November weather held on strong through the first 3 weeks of December. Then there was a major pattern change when an upper level trough settled in over the eastern half of the country bringing Maritime Polar air into the region.

A series of weak storm systems brought quite a bit of rain across the area from the 12th through the 17th producing average totals of over one and three quarters inches (COOP Data). This led to minor flooding in Northeast Indiana and Northwest Ohio. These storm systems led to the final breakdown of the ridge by the 23rd ending the dominance of our weather by Maritime Tropical air.

With the invasion of cold Canadian Maritime Polar air, any remaining precipitation through the end of December was snow with the bulk of it falling near the southwest shores of Lake Michigan over Northwest Indiana and Southwest Lower Michigan. The rest of the area received much less with most areas receiving an inch or less. By the end of December snow depths ranged from a trace over most of the area to an estimated 4 to 10 inches in Southwest Michigan and parts of extreme Northwest and North Central Indiana. Parts of Northern Indiana south and east of the main snow belt had 1 to 2 inches on the ground.

In December, 2001, 7 Flood Warnings (FLWs) and 13 Flood Statements (FLSs) were issued by WFO IWX to cover December river flooding.