

**Kent Taylor**

**From:** Natalie A Umphlett [numphlett2@unlnotes.unl.edu]  
**Sent:** Tuesday, March 23, 2010 1:42 PM  
**To:** Kent Taylor  
**Subject:** HDD data

Hi Kent,

Here are the data we discussed earlier. I hope this is what you are looking for! Please let me know if you have any questions.

Dillon 1 E, CO

30-year: 84 HDD accumulated 02/02/1985

10-year: 77 HDD accumulated 12/08/2005

Pueblo Reservoir, CO

30-year: 79 HDD accumulated 12/22/1990

10-year: 64 HDD accumulated 12/16/2008

Evergreen, CO

30-year: 82 HDD accumulated 12/22/1990

10-year: 72 HDD accumulated 12/09/2009

Coal Creek, CO - data for this location only goes back to 1994 - the closest station with at least 30 years of data is Boulder, CO

30-year: 80 HDD accumulated 02/04/1989

10-year: 69 HDD accumulated 12/15/2008

Lake George 8 SW, CO

30-year: 90 HDD accumulated 02/08/1989

10-year: 81 HDD accumulated 02/13/2004

Lakeside, MO

30-year: 73 HDD accumulated 12/22/1989

10-year: 62 HDD accumulated 01/23/2003

Saint Joseph Rosecrans AP, MO

30-year: 79 HDD accumulated 12/22/1989 

10-year: 66 HDD accumulated 01/19/2008, 01/23/2003

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3/23/2010

## Appendix 2

**Degree Day Summary****Station:** ST JOSEPH ROSECRANS AP**State:** MO**ID:** 237440**Latitude:** 39.77 degrees **Longitude:** -94.92 degrees **Elevation:** 818 feet**Station period of record:** 03/01/1908 - 08/04/2013**CLIMOD Product:** Degree Day Summary**Creation Time:** 08/05/2013 14:03 CDT**Element:** Heating Degree Days**Temperature Units:** degrees Fahrenheit**Base Temperature:** 65.0

| <u>Date</u> | <u>Max Temp</u> | <u>Min Temp</u> | <u>HDD</u> | <u>Accumulation<br/>since Dec 1</u> | <u>Accumulation<br/>since Jul 1</u> | <u>Accumulation<br/>since Oct 1</u> |
|-------------|-----------------|-----------------|------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 12/1/1989   | 64              | 19              | 23         | 23                                  | 1109                                | 985                                 |
| 12/2/1989   | 41              | 19              | 35         | 58                                  | 1144                                | 1020                                |
| 12/3/1989   | 37              | 9               | 42         | 100                                 | 1186                                | 1062                                |
| 12/4/1989   | 67              | 28              | 17         | 117                                 | 1203                                | 1079                                |
| 12/5/1989   | 68              | 34              | 14         | 131                                 | 1217                                | 1093                                |
| 12/6/1989   | 47              | 24              | 29         | 160                                 | 1246                                | 1122                                |
| 12/7/1989   | 28              | 18              | 42         | 202                                 | 1288                                | 1164                                |
| 12/8/1989   | 36              | 10              | 42         | 244                                 | 1330                                | 1206                                |
| 12/9/1989   | 50              | 25              | 27         | 271                                 | 1357                                | 1233                                |
| 12/10/1989  | 34              | 16              | 40         | 311                                 | 1397                                | 1273                                |
| 12/11/1989  | 16              | 0               | 57         | 368                                 | 1454                                | 1330                                |
| 12/12/1989  | 26              | 0               | 52         | 420                                 | 1506                                | 1382                                |
| 12/13/1989  | 31              | 3               | 48         | 468                                 | 1554                                | 1430                                |
| 12/14/1989  | 10              | -6              | 63         | 531                                 | 1617                                | 1493                                |
| 12/15/1989  | 6               | -15             | 70         | 601                                 | 1687                                | 1563                                |
| 12/16/1989  | 12              | -11             | 64         | 665                                 | 1751                                | 1627                                |
| 12/17/1989  | 21              | -4              | 56         | 721                                 | 1807                                | 1683                                |
| 12/18/1989  | 18              | -4              | 58         | 779                                 | 1865                                | 1741                                |
| 12/19/1989  | 15              | -8              | 61         | 840                                 | 1926                                | 1802                                |
| 12/20/1989  | 25              | -5              | 55         | 895                                 | 1981                                | 1857                                |
| 12/21/1989  | 1               | -17             | 73         | 968                                 | 2054                                | 1930                                |
| 12/22/1989  | -6              | -21             | 79         | 1047                                | 2133                                | 2009                                |
| 12/23/1989  | 11              | -24             | 72         | 1119                                | 2205                                | 2081                                |
| 12/24/1989  | 34              | 11              | 42         | 1161                                | 2247                                | 2123                                |
| 12/25/1989  | 45              | 26              | 29         | 1190                                | 2276                                | 2152                                |

**Flags:**

m = for daily value: missing value

m = for accumulated value: missing one or more days in accumulation period

**Notes:**

Average temperatures are rounded away from zero prior to computing degree days.

## Degree Day Summary

**Station:** ST JOSEPH ROSECRANS AP

**State:** MO

**ID:** 237440

**Latitude:** 39.77 degrees **Longitude:** -94.92 degrees **Elevation:** 818 feet

**Station period of record:** 03/01/1908 - 07/30/2013

**CLIMOD Product:** Degree Day Summary

**Creation Time:** 07/31/2013 16:11 CDT

**Element:** Heating Degree Days

**Temperature Units:** degrees Fahrenheit

**Base Temperature:** 65.0

| <u>Date</u> | <u>Max Temp</u> | <u>Min Temp</u> | <u>HDD</u> | <u>Accumulation<br/>since Dec 1</u> | <u>Accumulation<br/>since Jul 1</u> | <u>Accumulation<br/>since Oct 1</u> |
|-------------|-----------------|-----------------|------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 12/1/1983   | 35              | 18              | 38         | 38                                  | 1017                                | 950                                 |
| 12/2/1983   | 36              | 24              | 35         | 73                                  | 1052                                | 985                                 |
| 12/3/1983   | 29              | 24              | 38         | 111                                 | 1090                                | 1023                                |
| 12/4/1983   | 38              | 28              | 32         | 143                                 | 1122                                | 1055                                |
| 12/5/1983   | 34              | 22              | 37         | 180                                 | 1159                                | 1092                                |
| 12/6/1983   | 25              | 7               | 49         | 229                                 | 1208                                | 1141                                |
| 12/7/1983   | 35              | 7               | 44         | 273                                 | 1252                                | 1185                                |
| 12/8/1983   | 36              | 9               | 42         | 315                                 | 1294                                | 1227                                |
| 12/9/1983   | 33              | 13              | 42         | 357                                 | 1336                                | 1269                                |
| 12/10/1983  | 32              | 19              | 39         | 396                                 | 1375                                | 1308                                |
| 12/11/1983  | 33              | 26              | 35         | 431                                 | 1410                                | 1343                                |
| 12/12/1983  | 30              | 22              | 39         | 470                                 | 1449                                | 1382                                |
| 12/13/1983  | 32              | 16              | 41         | 511                                 | 1490                                | 1423                                |
| 12/14/1983  | 24              | 13              | 46         | 557                                 | 1536                                | 1469                                |
| 12/15/1983  | 24              | 10              | 48         | 605                                 | 1584                                | 1517                                |
| 12/16/1983  | 15              | 0               | 57         | 662                                 | 1641                                | 1574                                |
| 12/17/1983  | 15              | 3               | 56         | 718                                 | 1697                                | 1630                                |
| 12/18/1983  | 3               | -19             | 73         | 791                                 | 1770                                | 1703                                |
| 12/19/1983  | -6              | -17             | 77         | 868                                 | 1847                                | 1780                                |
| 12/20/1983  | 10              | -9              | 64         | 932                                 | 1911                                | 1844                                |
| 12/21/1983  | 8               | -5              | 63         | 995                                 | 1974                                | 1907                                |
| 12/22/1983  | -4              | -19             | 77         | 1072                                | 2051                                | 1984                                |
| 12/23/1983  | -4              | -7              | 71         | 1143                                | 2122                                | 2055                                |
| 12/24/1983  | -6              | -14             | 75         | 1218                                | 2197                                | 2130                                |
| 12/25/1983  | 7               | -15             | 69         | 1287                                | 2266                                | 2199                                |
| 12/26/1983  | 19              | -5              | 58         | 1345                                | 2324                                | 2257                                |
| 12/27/1983  | 23              | 19              | 44         | 1389                                | 2368                                | 2301                                |
| 12/28/1983  | 20              | -2              | 56         | 1445                                | 2424                                | 2357                                |
| 12/29/1983  | 10              | -8              | 64         | 1509                                | 2488                                | 2421                                |
| 12/30/1983  | 20              | -9              | 59         | 1568                                | 2547                                | 2480                                |
| 12/31/1983  | 30              | 17              | 41         | 1609                                | 2588                                | 2521                                |

### Flags:

m = for daily value: missing value

m = for accumulated value: missing one or more days in accumulation period

### Notes:

Average temperatures are rounded away from zero prior to computing degree days.

## Appendix 3

### Kent Taylor

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**From:** Natalie Umphlett [numphlett2@unl.edu]  
**Sent:** Wednesday, July 31, 2013 3:10 PM  
**To:** Kent Taylor  
**Subject:** St. Joseph Original Form

Here's the original COOP form for the station.

<http://www1.ncdc.noaa.gov/pub/orders/IPS-4F2A6682-27A5-4E36-95AA-CF485462D881.pdf>

ST JOSEPH ROSECRANS AP (KSTJ)  
Daily Data for a Month  
Month: Dec 1983

| Day  | MaxT | MinT | AvgT  | HDD  | CDD | Pcpn | Snow | Snwg |
|------|------|------|-------|------|-----|------|------|------|
| 1    | 35   | 18   | 26.5  | 38   | 0   | 0.00 | 0.0  |      |
| 2    | 36   | 24   | 30.0  | 35   | 0   | 0.00 | 0.0  |      |
| 3    | 29   | 24   | 26.5  | 38   | 0   | 0.30 | 0.0  |      |
| 4    | 38   | 28   | 33.0  | 32   | 0   | T    | 0.0  |      |
| 5    | 34   | 22   | 28.0  | 37   | 0   | T    | T    |      |
| 6    | 25   | 7    | 16.0  | 49   | 0   | 0.12 | 0.5  |      |
| 7    | 35   | 7    | 21.0  | 44   | 0   | 0.00 | 0.0  |      |
| 8    | 36   | 9    | 22.5  | 42   | 0   | 0.00 | 0.0  |      |
| 9    | 33   | 13   | 23.0  | 42   | 0   | 0.00 | 0.0  |      |
| 10   | 32   | 19   | 25.5  | 39   | 0   | 0.15 | 0.0  |      |
| 11   | 33   | 26   | 29.5  | 35   | 0   | 0.03 | 0.0  |      |
| 12   | 30   | 22   | 26.0  | 39   | 0   | 0.00 | 0.0  |      |
| 13   | 32   | 16   | 24.0  | 41   | 0   | T    | 0.0  |      |
| 14   | 24   | 13   | 18.5  | 46   | 0   | 0.06 | 3.5  |      |
| 15   | 24   | 10   | 17.0  | 48   | 0   | T    | T    |      |
| 16   | 15   | 0    | 7.5   | 57   | 0   | 0.00 | 0.0  |      |
| 17   | 15   | 3    | 9.0   | 56   | 0   | 0.12 | 1.0  |      |
| 18   | 3    | -19  | -8.0  | 73   | 0   | 0.11 | 1.8  |      |
| 19   | -6   | -17  | -11.5 | 77   | 0   | 0.00 | 0.0  |      |
| 20   | 10   | -9   | 0.5   | 64   | 0   | 0.17 | 3.0  |      |
| 21   | 8    | -5   | 1.5   | 63   | 0   | T    | M    |      |
| 22   | -4   | -19  | -11.5 | 77   | 0   | 0.01 | M    |      |
| 23   | -4   | -7   | -5.5  | 71   | 0   | 0.01 | M    |      |
| 24   | -6   | -14  | -10.0 | 75   | 0   | 0.00 | 0.0  |      |
| 25   | 7    | -15  | -4.0  | 69   | 0   | 0.00 | 0.0  |      |
| 26   | 19   | -5   | 7.0   | 58   | 0   | 0.00 | 0.0  |      |
| 27   | 23   | 19   | 21.0  | 44   | 0   | 0.07 | 1.0  |      |
| 28   | 20   | -2   | 9.0   | 56   | 0   | 0.06 | 1.0  |      |
| 29   | 10   | -8   | 1.0   | 64   | 0   | 0.00 | 0.0  |      |
| 30   | 20   | -9   | 5.5   | 59   | 0   | 0.00 | 0.0  |      |
| 31   | 30   | 17   | 23.5  | 41   | 0   | 0.00 | 0.0  |      |
| Smry | 20.5 | 5.4  | 13.0  | 1609 | 0   | 1.21 | 11.8 |      |

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### Appendix 3

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## Appendix 4

KEYED BY 08216

| STATION (Climatological)        |      | (River Station, if different)   |               | MONTH                                         |                                           | WS FORM E-15<br>(7-79)                        |                                                                                                                                                     | U.S. DEPARTMENT OF COMMERCE<br>NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION<br>NATIONAL WEATHER SERVICE |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|---------------------------------|------|---------------------------------|---------------|-----------------------------------------------|-------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---|------|---|-----|---|----------|---|-------|----|--------|---|------------------------|---|-------------|---|--------------------------------------------|---|-------------|----|------------------------------------------|--|-----|-------------|-------|---------|------|----------------|---------------------------------------------|-----------|-----------------|----------|--|
| ST JOSEPH                       |      | 4UNNW                           |               | DEC                                           |                                           | 19 83                                         |                                                                                                                                                     | RECORD OF RIVER AND CLIMATOLOGICAL OBSERVATIONS                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| STATE                           |      | COUNTY                          |               | RIVER                                         |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| MISSOURI                        |      | BUCH                            |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| TIME (local) OF OBSERVATION     |      | TEMP.                           |               | PRECIPITATION                                 |                                           | STANDARD TIME IN USE                          |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      | MID                             |               | MID                                           |                                           | CST                                           |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| TYPE OF RIVER GAGE              |      | ELEVATION OF RIVER<br>GAGE ZERO |               | FLOOD STAGE                                   |                                           | NORMAL POOL STAGE                             |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      | Ft.                             |               | Ft.                                           |                                           | Ft.                                           |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| TEMPERATURE F.                  |      |                                 | PRECIPITATION |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   | WEATHER (Calendar Day) |   |             |   |                                            |   | RIVER STAGE |    | REMARKS<br>(Special observations, etc.,) |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 24 HRS. ENDING AT OBSERVATION   |      |                                 | 24-HR AMOUNTS |                                               | At Ob.                                    |                                               | Draw a straight line (—) through hours precipitation was observed, and a wavy line (~~~~) through hours precipitation probably occurred unobserved. |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   | Mark 'X' for all types occurring each day. |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| DATE                            | MAX. | MIN.                            | AT OBS.       | Rain, melted snow, hail (ins. and hundredths) | Snow, ice pellets, hail (ins. and tenths) | Snow, ice pellets, hail, ice on ground (ins.) | A.M.                                                                                                                                                |                                                                                                            |   |      |   |     |   |          |   |       |    | NOON   |   |                        |   |             |   | P.M.                                       |   |             |    |                                          |  | Fog | Ice Pellets | Glaze | Thunder | Hail | Damaging Winds | Time of observation if different from above | CONDITION | GAGE READING AT | TENDENCY |  |
|                                 |      |                                 |               |                                               |                                           |                                               | 1                                                                                                                                                   | 2                                                                                                          | 3 | 4    | 5 | 6   | 7 | 8        | 9 | 10    | 11 | 1      | 2 | 3                      | 4 | 5           | 6 | 7                                          | 8 | 9           | 10 | 11                                       |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 1                               | 35   | 18                              | 32            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 2                               | 36   | 24                              | 25            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 3                               | 29   | 24                              | 28            | .30                                           |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 4                               | 36   | 28                              | 34            | T                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 5                               | 34   | 22                              | 22            | T                                             | T                                         |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 6                               | 25   | 7                               | 2             | .12                                           | 1/2"                                      |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 7                               | 35   | 7                               | 15            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 8                               | 36   | 9                               | 33            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 9                               | 33   | 13                              | 20            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 10                              | 32   | 19                              | 32            | .15                                           |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 11                              | 33   | 24                              | 26            | .03                                           |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 12                              | 30   | 22                              | 30            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 13                              | 32   | 16                              | 16            | T                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 14                              | 24   | 13                              | 23            | .06                                           | 3/8"                                      |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 15                              | 24   | 10                              | 16            | T                                             | T                                         |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 16                              | 15   | 0                               | 15            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 17                              | 15   | 3                               | 3             | .12                                           | 1"                                        |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 18                              | 3    | -19                             | 16            | .11                                           | 1/4"                                      |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 19                              | -6   | -17                             | 6             | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 20                              | 10   | -9                              | 10            | .17                                           | 3/4"                                      |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 21                              | 8    | -5                              | 5             | T                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 22                              | -4   | -19                             | -4            | .01                                           | M                                         |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 23                              | -4   | -7                              | -6            | .01                                           | M                                         |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 24                              | -6   | -14                             | -12           | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 25                              | 7    | -15                             | -2            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 26                              | 19   | -5                              | 19            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 27                              | 23   | 19                              | 20            | .07                                           | 1"                                        |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 28                              | 20   | -2                              | -2            | .06                                           | 1"                                        |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 29                              | 10   | -8                              | -8            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 30                              | 20   | -9                              | 20            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| 31                              | 30   | 22                              | 30            | 0                                             |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| SUM                             |      |                                 | SUM           | 1.21                                          | 11/8                                      |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| CONDITION OF RIVER AT GAGE      |      |                                 |               | Greatest                                      |                                           | CHECK BAR (For wire-weight) NORMAL CK. BAR    |                                                                                                                                                     | READING                                                                                                    |   | DATE |   | Fog |   | Ice Pel. |   | Glaze |    | Thund. |   | Hail                   |   | Damg. Winds |   | SUM                                        |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| A. Obstructed by rough ice.     |      |                                 |               | E. Ice gorge below gage.                      |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| B. Frozen, but open at gage.    |      |                                 |               | F. Shore ice.                                 |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| C. Upper surface of smooth ice. |      |                                 |               | G. Floating ice.                              |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
| D. Ice gorge above gage.        |      |                                 |               | H. Pool stage.                                |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   |      |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |
|                                 |      |                                 |               |                                               |                                           |                                               |                                                                                                                                                     |                                                                                                            |   | </   |   |     |   |          |   |       |    |        |   |                        |   |             |   |                                            |   |             |    |                                          |  |     |             |       |         |      |                |                                             |           |                 |          |  |