The following document is a step by step process on how to download the IDF curves from the NOAAs Precipitation Frequency Data Server, Atlas 14 (http://hdsc.nws.noaa.gov/hdsc/pfds/) and implement them in HydroCAD.

1. Navigate to the atlas 14 server using your favorite browser (http://hdsc.nws.noaa.gov/hdsc/pfds/)
2. Choose the state that you need data from (for this example I will use Minnesota)
3. The default screen once you select your state has a map with a cross hair in the middle of the state

4. Use the map to navigate to your specific location (for this example I will leave the cross hair in the center of the map)
5. Once you have your location on the map scroll down below the map to the Point Precipitation Frequency Estimates data table (note the format of the table)

6. I like to print the page at this point to a PDF. Do this by selecting print page at the top left side of the table. Save your HydroCad folder under inputs (you may need this for documentation in an appendix later).

7. At the bottom of the table, there is a button that you can press to obtain the IDF curve in *.csv format.

Duration									
12-hr	2.01 (1.64-2.47)	2.35 (1.91-2.89)	2.95 (2.39-3.63)	3.48 (2.81-4.31)	4.28 (3.37-5.49)	4.94 (3.79-6.39)	5.64 (4.18-7.44)	6.40 (4.55-8.61)	7.46 (5.10-10.3)
24-hr	2.29 (1.89-2.78)	2.65 (2.18-3.22)	3.29 (2.70-4.01)	3.88 (3.16-4.73)	4.75 (3.78-6.03)	5.48 (4.25-7.01)	6.26 (4.69-8.17)	7.11 (5.11-9.47)	8.30 (5.74-11.3)
2-day	2.54 (2.12-3.04)	3.01 (2.50-3.60)	3.81 (3.16-4.57)	4.51 (3.72-5.44)	5.53 (4.44-6.90)	6.36 (4.98-8.01)	7.23 (5.47-9.28)	8.15 (5.91-10.7)	9.42 (6.57-12.6)
3-day	2.79 (2.34-3.31)	3.28 (2.75-3.90)	4.13 (3.45-4.92)	4.88 (4.05-5.83)	5.97 (4.82-7.39)	6.86 (5.40-8.57)	7.79 (5.93-9.93)	8.78 (6.41-11.4)	10.2 (7.14-13.5)
4-day	3.03 (2.55-3.58)	3.52 (2.96-4.16)	4.37 (3.67-5.18)	5.13 (4.29-6.10)	6.26 (5.08-7.71)	7.18 (5.69-8.93)	8.15 (6.24-10.3)	9.19 (6.75-11.9)	10.6 (7.52-14.1)
7-day	3.63 (3.10-4.25)	4.12 (3.50-4.82)	4.97 (4.22-5.83)	5.74 (4.84-6.75)	6.89 (5.66-8.41)	7.84 (6.28-9.66)	8.86 (6.85-11.1)	9.95 (7.38-12.8)	11.5 (8.19-15.1)
10-day	4.17 (3.58-4.84)	4.67 (4.00-5.43)	5.56 (4.74-6.47)	6.35 (5.39-7.42)	7.52 (6.21-9.10)	8.49 (6.84-10.4)	9.52 (7.40-11.9)	10.6 (7.92-13.6)	12.2 (8.72-15.9)
20-day	5.69 (4.94-6.52)	6.36 (5.52-7.29)	7.47 (6.46-8.58)	8.41 (7.23-9.70)	9.74 (8.10-11.5)	10.8 (8.76-12.9)	11.8 (9.29-14.5)	12.9 (9.73-16.2)	14.4 (10.4-18.5)
30-day	6.97 (6.10-7.92)	7.81 (6.83-8.88)	9.16 (7.98-10.4)	10.3 (8.88-11.7)	11.8 (9.81-13.7)	12.9 (10.5-15.3)	14.0 (11.0-16.9)	15.1 (11.4-18.7)	16.5 (12.0-21.0)
45-day	8.62 (7.59-9.71)	9.68 (8.52-10.9)	11.3 (9.95-12.8)	12.7 (11.0-14.3)	14.4 (12.0-16.6)	15.6 (12.8-18.3)	16.8 (13.3-20.1)	17.9 (13.6-22.0)	19.3 (14.1-24.3)
60-day	10.0 (8.89-11.2)	11.3 (9.98-12.6)	13.2 (11.6-14.8)	14.7 (12.9-16.6)	16.6 (14.0-19.0)	18.0 (14.8-20.9)	19.3 (15.3-22.9)	20.4 (15.6-24.9)	21.8 (16.0-27.3)
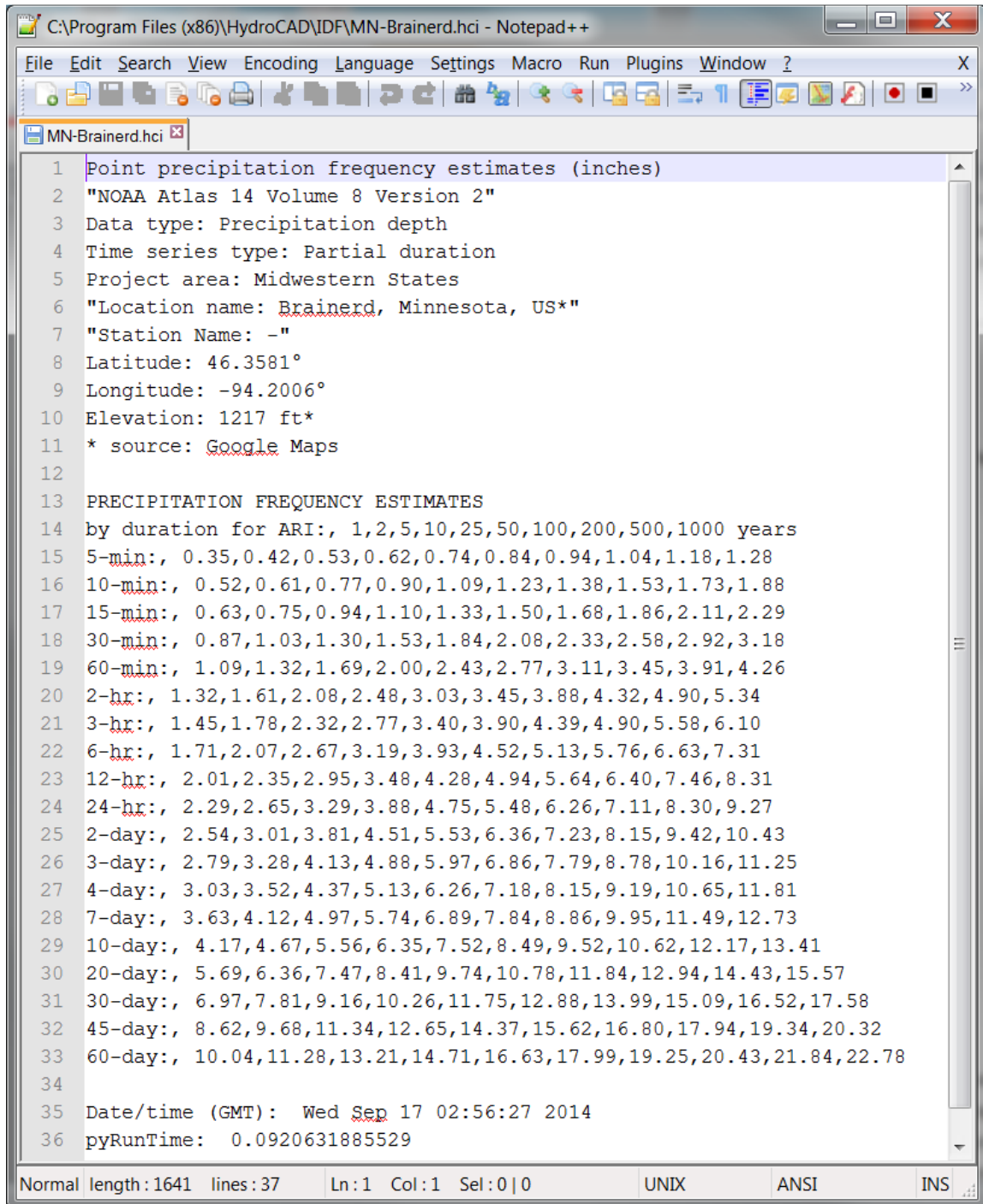
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.
Please refer to NOAA Atlas 14 document for more information.

Estimates from the table in csv format: [precipitation frequency estimates ▾] [Submit]

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8. Download the file. Then navigate to the downloaded files folder and open the file in a text editor. This process is easier if you are using a text editor that can handle formatting. For modeling and other data analysis tasks I have found notepad++ to be a usefull addition to the programs that I use on a regular basis. If you have ever used Text Pad (another awesome text

editor, but not free), I would say that Notepad++ is comparable. Download the latest free version here: (http://notepad-plus-plus.org/download/v6.6.9.html). I will use Notepad++ in this example.

9. Once you navigate to the file in the downloads folder open with Notepad++. Analyze the data for completeness. It should look like the following:

```
C:\Program Files (x86)\HydroCAD\IDF\MN-Brainerd.hci - Notepad++

File  Edit  Search  View  Encoding  Language  Settings  Macro  Run  Plugins  Window  ?                    X

MN-Brainerd.hci

  1  Point precipitation frequency estimates (inches)
  2  "NOAA Atlas 14 Volume 8 Version 2"
  3  Data type: Precipitation depth
  4  Time series type: Partial duration
  5  Project area: Midwestern States
  6  "Location name: Brainerd, Minnesota, US*"
  7  "Station Name: -"
  8  Latitude: 46.3581°
  9  Longitude: -94.2006°
 10  Elevation: 1217 ft*
 11  * source: Google Maps
 12
 13  PRECIPITATION FREQUENCY ESTIMATES
 14  by duration for ARI:, 1,2,5,10,25,50,100,200,500,1000 years
 15  5-min:, 0.35,0.42,0.53,0.62,0.74,0.84,0.94,1.04,1.18,1.28
 16  10-min:, 0.52,0.61,0.77,0.90,1.09,1.23,1.38,1.53,1.73,1.88
 17  15-min:, 0.63,0.75,0.94,1.10,1.33,1.50,1.68,1.86,2.11,2.29
 18  30-min:, 0.87,1.03,1.30,1.53,1.84,2.08,2.33,2.58,2.92,3.18
 19  60-min:, 1.09,1.32,1.69,2.00,2.43,2.77,3.11,3.45,3.91,4.26
 20  2-hr:, 1.32,1.61,2.08,2.48,3.03,3.45,3.88,4.32,4.90,5.34
 21  3-hr:, 1.45,1.78,2.32,2.77,3.40,3.90,4.39,4.90,5.58,6.10
 22  6-hr:, 1.71,2.07,2.67,3.19,3.93,4.52,5.13,5.76,6.63,7.31
 23  12-hr:, 2.01,2.35,2.95,3.48,4.28,4.94,5.64,6.40,7.46,8.31
 24  24-hr:, 2.29,2.65,3.29,3.88,4.75,5.48,6.26,7.11,8.30,9.27
 25  2-day:, 2.54,3.01,3.81,4.51,5.53,6.36,7.23,8.15,9.42,10.43
 26  3-day:, 2.79,3.28,4.13,4.88,5.97,6.86,7.79,8.78,10.16,11.25
 27  4-day:, 3.03,3.52,4.37,5.13,6.26,7.18,8.15,9.19,10.65,11.81
 28  7-day:, 3.63,4.12,4.97,5.74,6.89,7.84,8.86,9.95,11.49,12.73
 29  10-day:, 4.17,4.67,5.56,6.35,7.52,8.49,9.52,10.62,12.17,13.41
 30  20-day:, 5.69,6.36,7.47,8.41,9.74,10.78,11.84,12.94,14.43,15.57
 31  30-day:, 6.97,7.81,9.16,10.26,11.75,12.88,13.99,15.09,16.52,17.58
 32  45-day:, 8.62,9.68,11.34,12.65,14.37,15.62,16.80,17.94,19.34,20.32
 33  60-day:, 10.04,11.28,13.21,14.71,16.63,17.99,19.25,20.43,21.84,22.78
 34
 35  Date/time (GMT):  Wed Sep 17 02:56:27 2014
 36  pyRunTime:  0.0920631885529

Normal  length : 1641   lines : 37      Ln : 1  Col : 1  Sel : 0 | 0         UNIX        ANSI        INS
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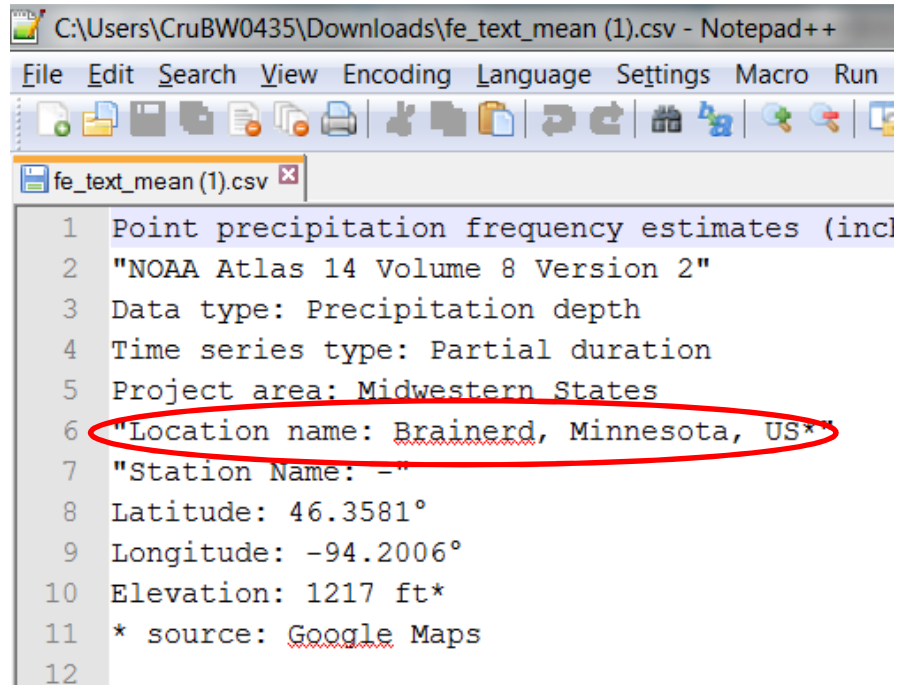
10. Notice the location on the fourth line of the file. I use this to name the file something more meaningful.


11. Save the file as a *.hci file format in the root folder of you HydroCAD installation and under the IDF filder. (Mine looks like this: C:\Program Files (x86)\HydroCAD\IDF). When naming the file start with the state initial, then include the location (or some other unique identifier) like the following: **MN-Brainerd.hci** . The reason for this will be for organization that will come to light later.

12. Open HydroCAD

13. Open your project or start a new one.

14. Select the Settings drop down menu at the top and then select calculation.

15. The following calculation window will appear
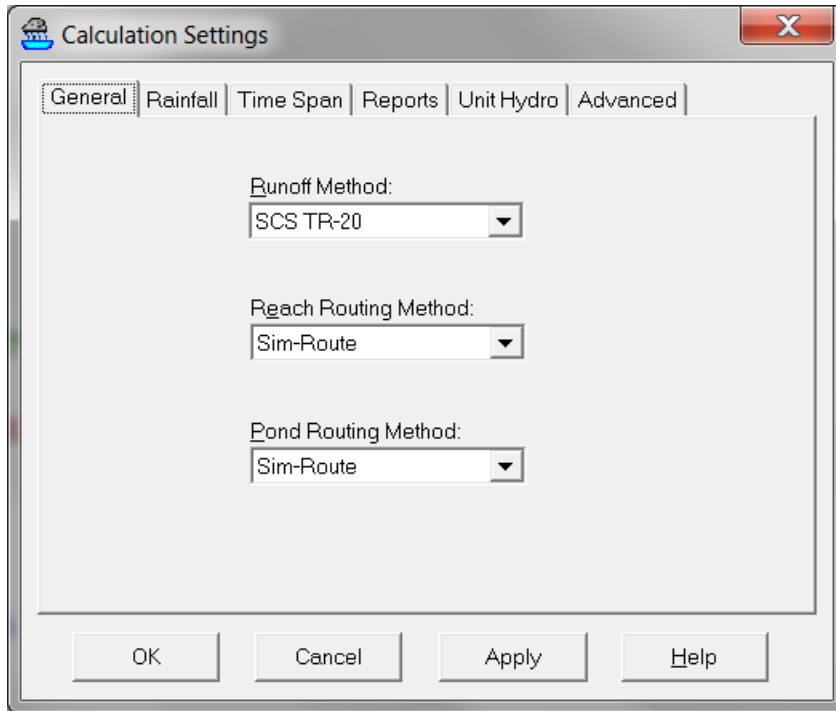
16. Next select the Rainfall TAB then hit the "more storms" button
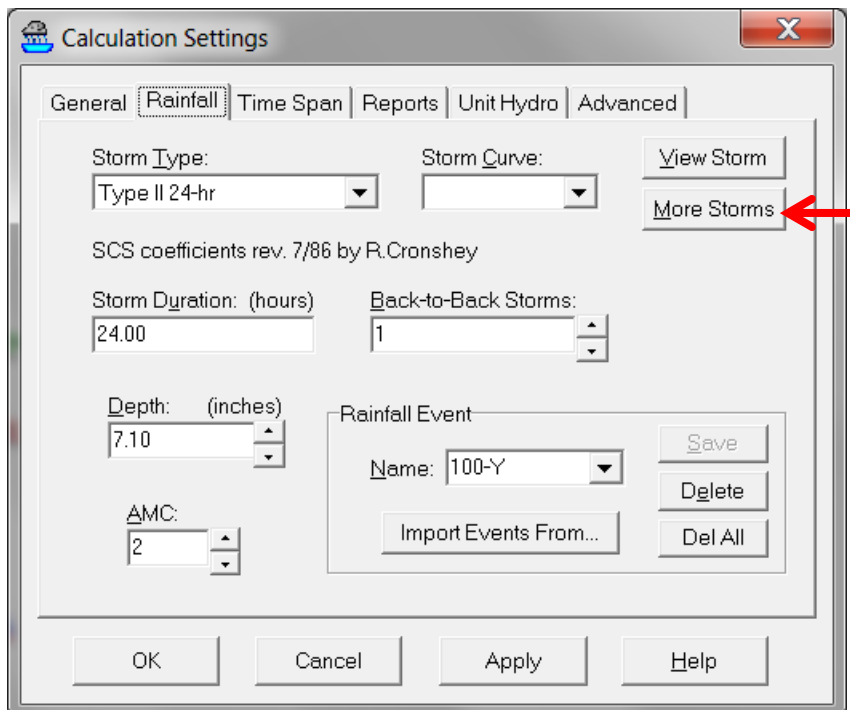
17. This will open up the Download and convert rainfall data editor. From this editor switch to the convert Tab and pull down the dropdown menu for Rainfall IDF file (see below). Notice that by naming the file earlier starting with MN the file is stored under MN in the dropdown menu. This is the organizational piece I discussed earlier. Select your location.
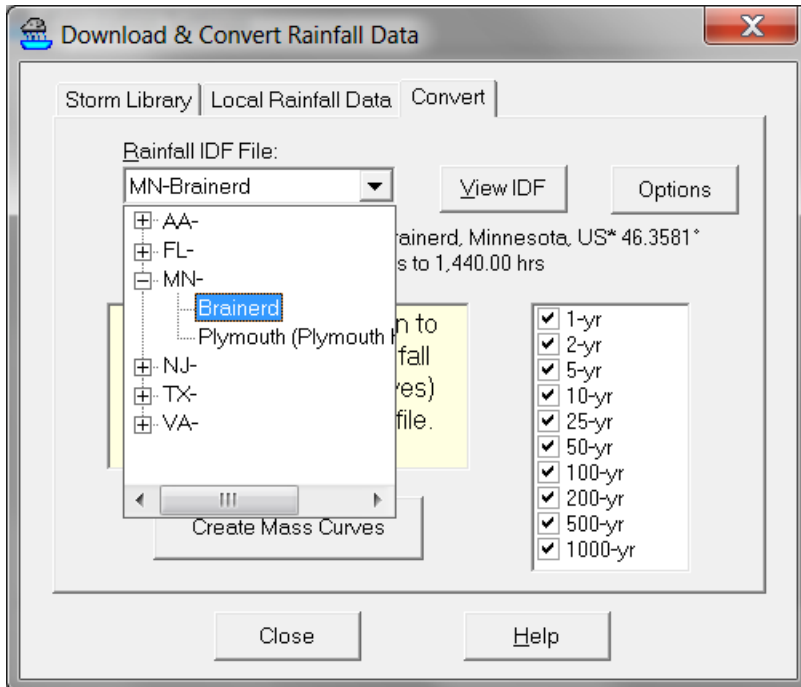
18. Notice that there are a list of curves on the right to be generated from 1-yr to 1000-yr.
19. Now select "Create Mass Curves".
20. Notice that the pop up window indicates that the mass curve file *.hcr file is stored in your project folder. Navigate to the project folder in windows explorer to verify.
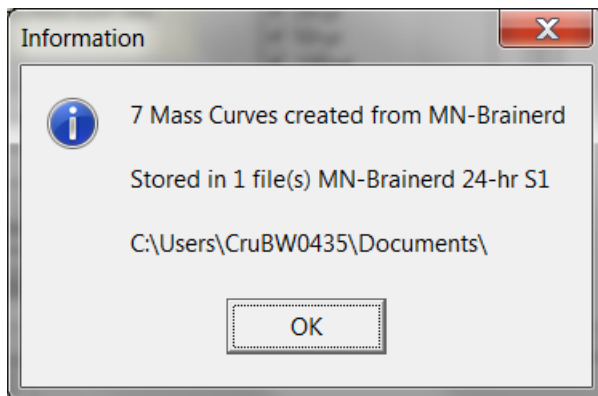
21. Select OK
22. Now the curves are stored in your model and ready to use.
23. Hit OK and then save you model.