

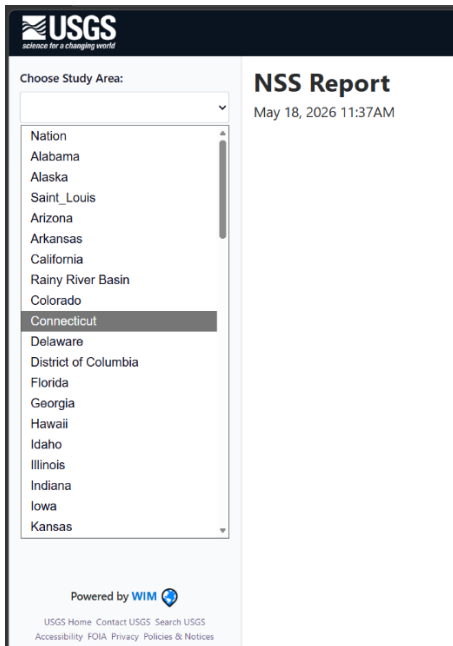
## Instructions for Calculating Flow Statistics using the USGS National Streamflow Statistics (NSS) website and USGS StreamStats application

Use these instructions to calculate release flows in accordance with the United States Geological Survey Scientific Investigations report 2010-5052 entitled “Regional Regression Equations to Estimate Flow-duration Statistics at ungagged stream sites in Connecticut”. You will use two different sites to calculate the values. You will start in NSS to determine the variables necessary to calculate flow statistics, go to StreamStats to get basin characteristic values, then go back to NSS to compute release values. Please attach copies of the reports NSS and StreamStats generate and summarize the applicable release volumes in your plan.

1. Open the NSS Site here: [NSS | National Streamflow Statistics](#)



2. Select “Connecticut” in the Study Area dropdown menu on the lefthand side



3. Go to the Limit by Regression Region dropdown menu on the lefthand side of the screen (third dropdown menu) and select “Duration\_Flow\_2010\_5052”

Choose State/Region: Select this SIR 2010:5052 report

Connecticut

Limit by Statistic Group(s):

Select

Limit by Regression Region(s):

Duration\_Flow\_2010\_5052

CT\_Statewide\_HarmonicMeanFlow\_SIR

CT\_Statewide\_July\_through\_October\_S

CT\_Statewide\_June\_Duration\_SIR\_2025

CT\_Statewide\_LowFlows\_SIR\_2025\_502

CT\_Statewide\_MarchApril\_Duration\_SIR

CT\_Statewide\_May\_Duration\_SIR\_2025

CT\_Statewide\_MeanFlow\_SIR\_2025\_50

CT\_Statewide\_November\_Duration\_SIR


CT\_Statewide\_Spring\_MeanFlow\_SIR\_20


**Duration\_Flow\_2010\_5052**


Statewide\_DA\_only\_SIR\_2020\_5054


Statewide\_Multiparameter\_SIR\_2020\_5

4. Go to the Limit by Statistic dropdown menu (fourth dropdown menu). If your dam is required to release the Rearing and Growth Q80 all year, select '80 Percent Duration July to October'. If your dam is required to make a multi-level release (releases change throughout the year), select the following statistics:
  - a. May 95 Percent Duration = "*Clupeid Spawning (May) Q95*"
  - b. June 90 Percent Duration = "*Resident Spawning (June) Q90*"
  - c. November 90 Percent Duration = "*Salmonid Spawning (Nov) Q90*"
  - d. 99 Percent Duration December to February = "*Overwinter (Dec-Feb) Q99*"
  - e. 99 Percent Duration March to April = "*Habitat Forming (Mar-Apr) Q99*"
  - f. 50 Percent Duration July to October = "*Rearing & Growth (July-Oct) Q50*"
  - g. 80 Percent Duration July to October = "*Rearing & Growth (July-Oct) Q80*"

Choose State/Region:  
 Connecticut 

Limit by Statistic Group(s):  
 Select 

Limit by Regression Region(s):  
 Duration\_Flow\_2010\_5052 

Limit by Statistic(s):  
 7 checked 

- May 75 Percent Duration
- May 95 Percent Duration
- May 99 Percent Duration
- June 25 Percent Duration
- June 50 Percent Duration
- June 75 Percent Duration
- June 90 Percent Duration
- June 99 Percent Duration
- November 25 Percent Duration
- November 50 Percent Duration
- November 75 Percent Duration
- November 90 Percent Duration
- November 99 Percent Duration

Check the flow statistics you want in this list

Abbreviations to look for in the list of Basin Characteristics on the public StreamStats website

5. Values needed to calculate flow statistics will show up under “Explanatory Variables” on the main screen of the webpage – these values can be found in StreamStats

Choose State/Region:  
 Connecticut

Limit by Statistic Group(s):  
 Select

Limit by Regression Region(s):  
 Duration\_Flow\_2010\_5052

Limit by Statistic(s):  
 7 checked

Calculate Statistics:  
 Compute

**NSS Report**  
 April 7, 2020 10:16 AM

State/Region:  
 Connecticut

Regression Region(s):  
 Duration\_Flow\_2010\_5052

View Regression Region Map

**Equation Variables**  
 Seasonal Flow Statistics Regions:  
 Duration\_Flow\_2010\_5052

May Flow-Duration Statistics Regions:  
 Duration\_Flow\_2010\_5052

June Flow-Duration Statistics Regions:  
 Duration\_Flow\_2010\_5052

November Flow-Duration Statistics Regions:  
 Duration\_Flow\_2010\_5052

Explanatory Variable	Code	Value	Min Limit	Max Limit
Drainage Area	DRAREA		0.02 (sq)	100 (sq)
Year Annual Winter Precipitation	FWCHWTR	3.19 (in)		44.9 (in)
Percent Closed Drifted Ditch	CRDIFT	0.1 (in)		51.7 (in)
Year November Precipitation	NOVWPRE	3.48 (in)		43.9 (in)

**Citations**  
 Seasonal Flow Statistics Citations  
 Abarno, S.A., 2010. Regional regression equations to estimate flow-duration statistics in Connecticut. U. S. Geological Survey Scientific Investigations Report 2010-5052, 41 p.

May Flow-Duration Statistics Citations  
 Abarno, S.A., 2010. Regional regression equations to estimate flow-duration statistics in Connecticut. U. S. Geological Survey Scientific Investigations Report 2010-5052, 48 p.

June Flow-Duration Statistics Citations  
 Abarno, S.A., 2010. Regional regression equations to estimate flow-duration statistics in Connecticut. U. S. Geological Survey Scientific Investigations Report 2010-5052, 41 p.

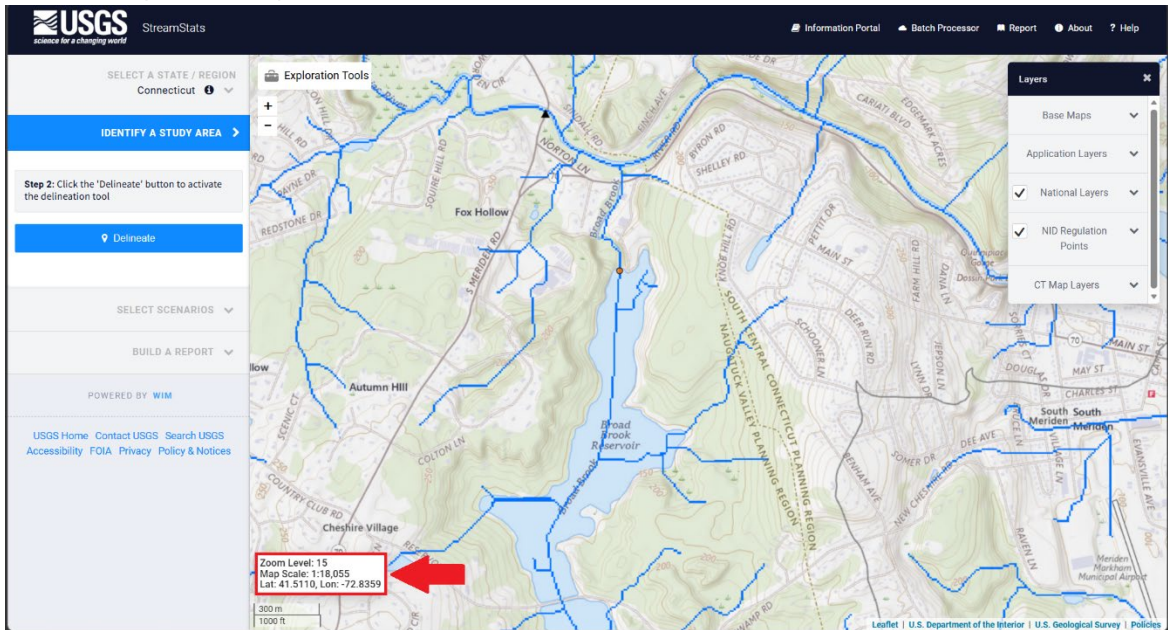
November Flow-Duration Statistics Citations  
 Abarno, S.A., 2010. Regional regression equations to estimate flow-duration statistics in Connecticut. U. S. Geological Survey Scientific Investigations Report 2010-5052, 41 p.

Explanatory Variable		Code
Drainage Area	?	DRNAREA
Mean Annual Winter Precipitation	?	PRCWINTER
Percent Coarse Stratified Drift	?	CRSDFT
Mean November Precipitation	?	NOVAPRE

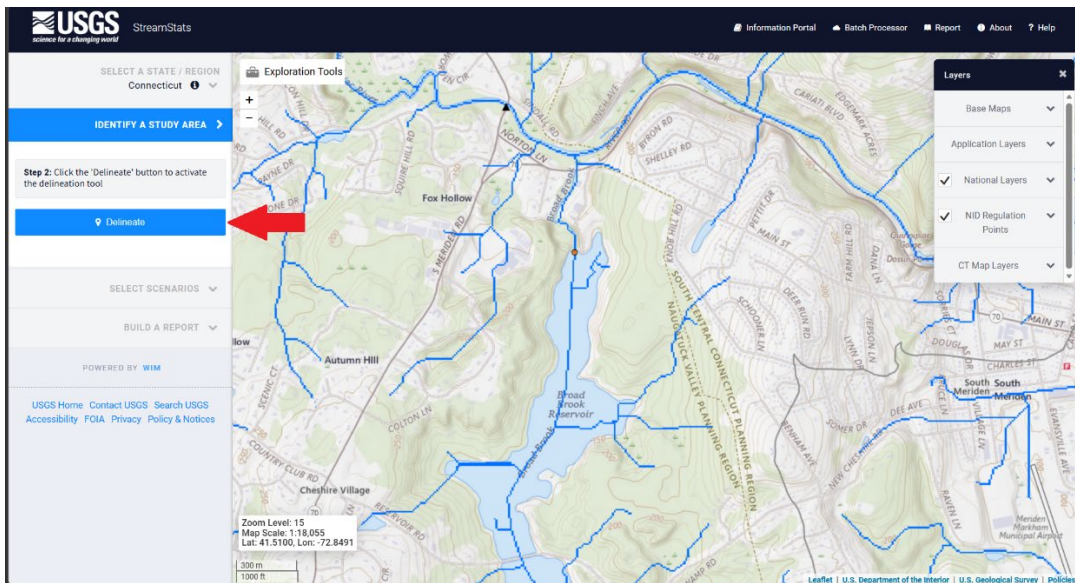
6. In NSS, you can see you need these four basin characteristics from StreamStats for the seven low flow equations you are interested in:
  - a. DRNAREA – drainage area
  - b. PRCWINTER – mean annual winter precipitation
  - c. CRSDFT – percent coarse stratified drift
  - d. NOVAPRE – mean November precipitation
7. Open the StreamStats application in a new tab. StreamStats can be accessed here: [StreamStats](#)
8. Enter the coordinates of your dam in the ‘Find a place’ search bar. Alternatively, you can zoom in to Connecticut on the map to locate your dam.
9. Click to select Connecticut under “Click to select a State or Regional Study Area”

The screenshot displays the USGS StreamStats web application. On the left, a sidebar contains a 'SELECT A STATE / REGION' dropdown menu. The 'Connecticut' option is selected and highlighted in blue, with a red arrow pointing to it. Below this menu is a search bar labeled 'Find a place' and a 'Help' button. The main area of the application is a map of Connecticut, showing various planning regions such as 'NORTHWEST HILLS PLANNING REGION', 'CAPITOL PLANNING REGION', and 'LOWER CONNECTICUT RIVER VALLEY PLANNING REGION'. The map is overlaid with numerous data points represented by colored triangles. At the bottom of the map, a scale bar and coordinates are visible: 'Zoom Level: 10', 'Map Scale: 1:577,790', 'Lat: 41.7088, Lon: -73.2733'. The top of the application features a dark navigation bar with the USGS logo and the text 'StreamStats', along with links for 'Information Portal', 'Batch Processor', 'Report', 'About', and 'Help'.

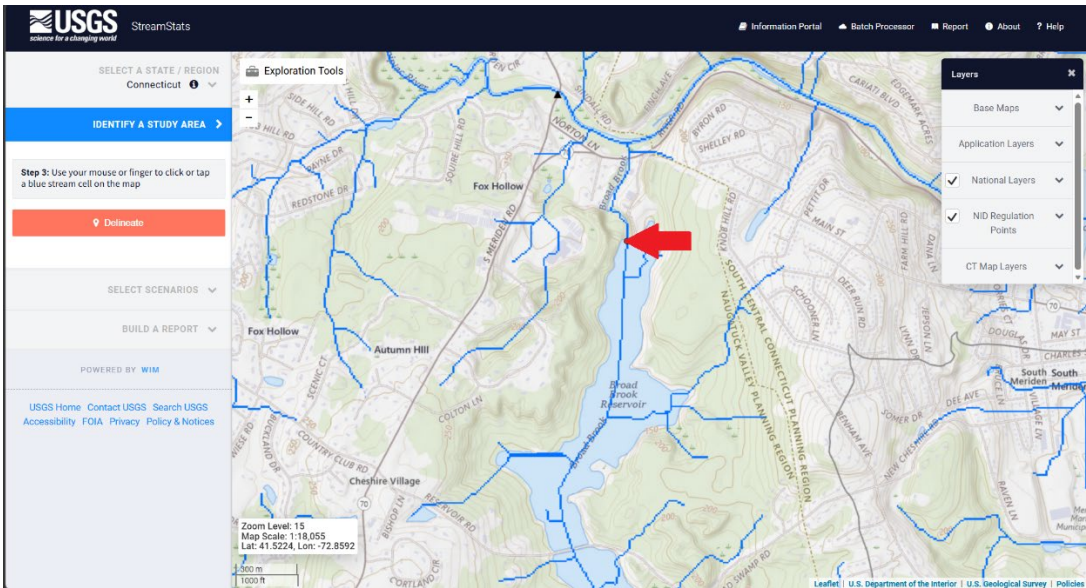
10. Zoom in to your dam, you will need to zoom in to level 15 in order to delineate the basin.



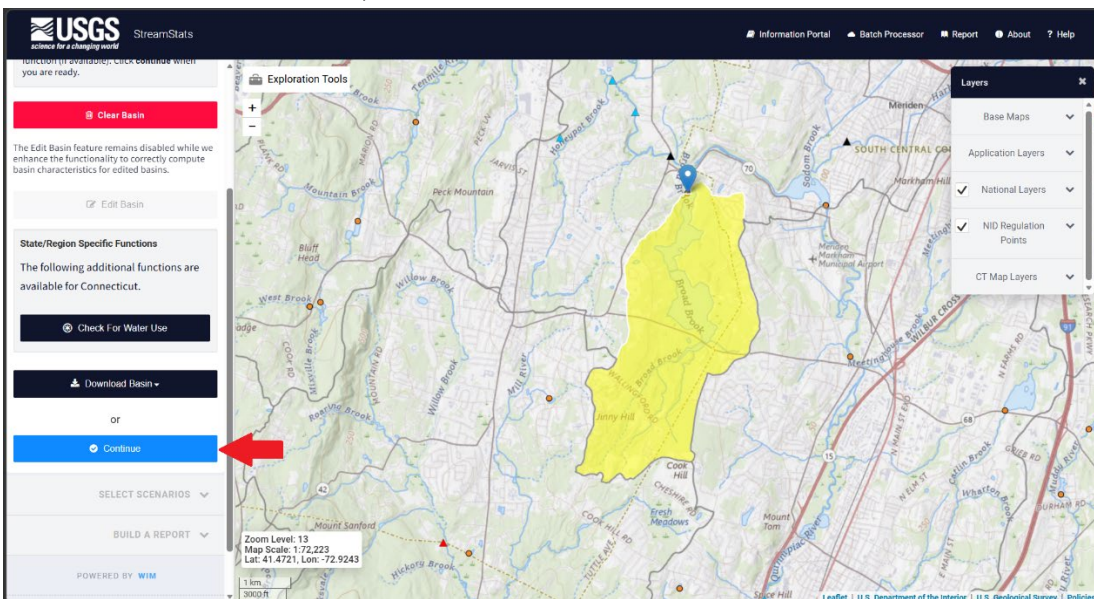
11. Click the “delineate” button on the left side of the screen



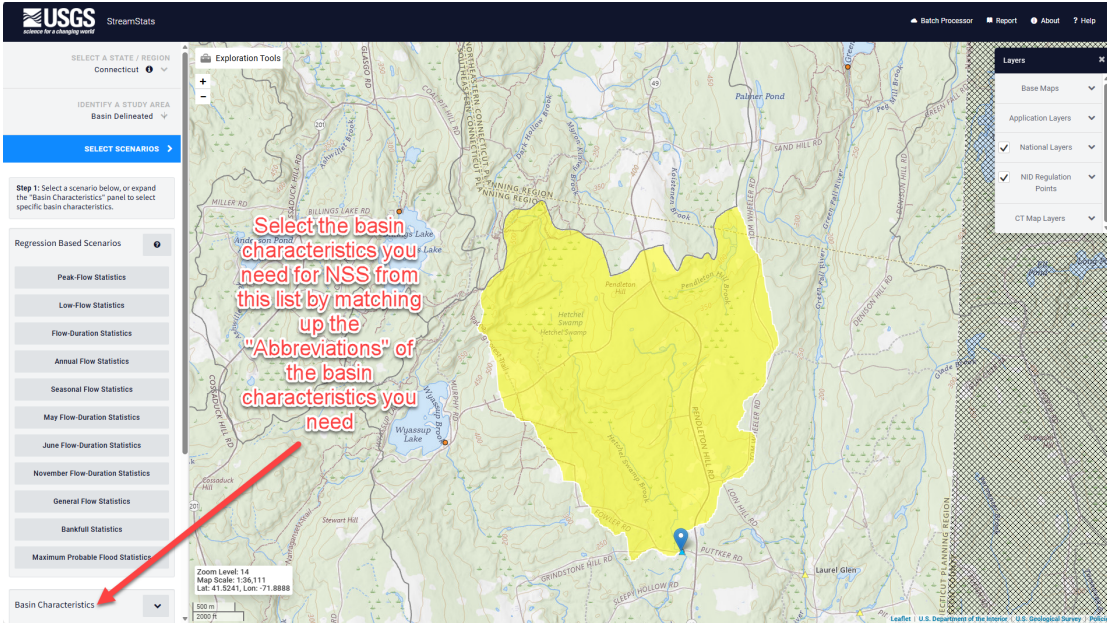
12. Click the blue flow line where the streamflow release point is on the dam



13. Once the basin is delineated, click the “continue” button on the lower left side of the screen

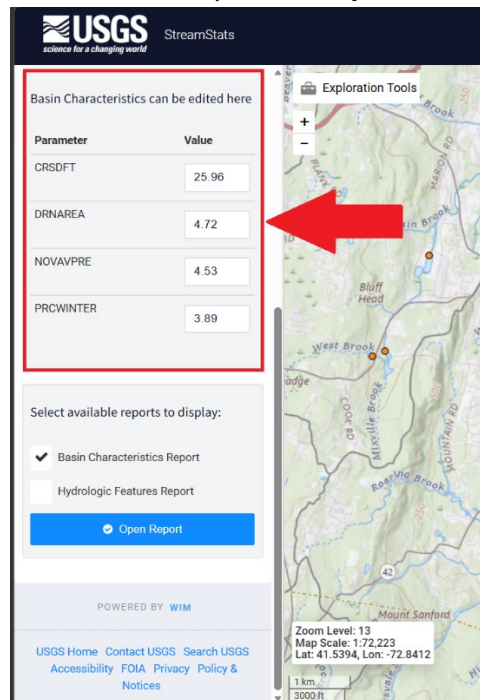
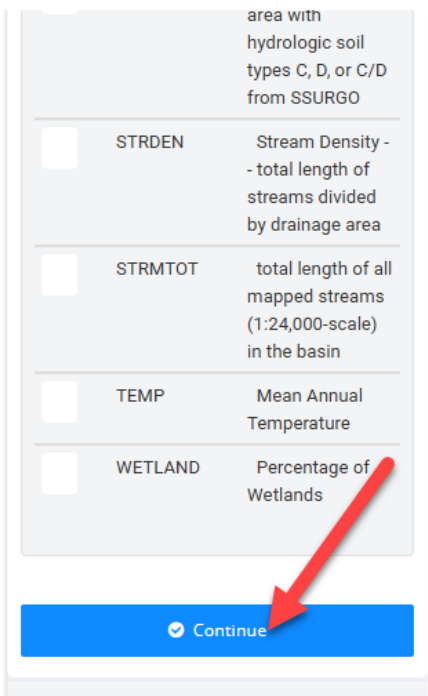


14. Scroll down on the lefthand menu to “basin characteristics” and click the arrow. Select the parameters outlined in the “Equation variables” on the NSS page (For the Rearing and Growth Q80 releases, these parameters are DRNAREA and CRSDF. For the multi-level releases, these parameters are CRNAREA, PRCWINTER, CRSDF, and NOVAVPRE).

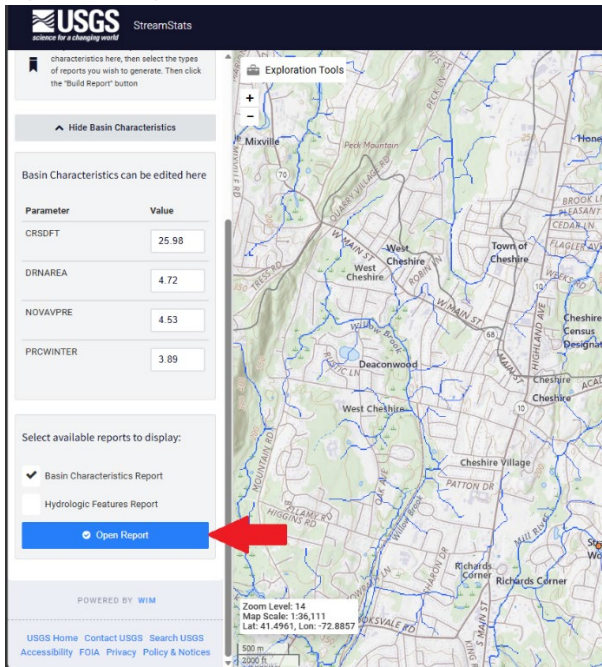


- a. The parameters are listed in the table under “Equation variables” on the NSS page
- b. The “code” for each variable matches the parameters that should be selected in StreamStats
  - i. Make sure the code on the NSS page matches exactly with the parameter you choose in StreamStats

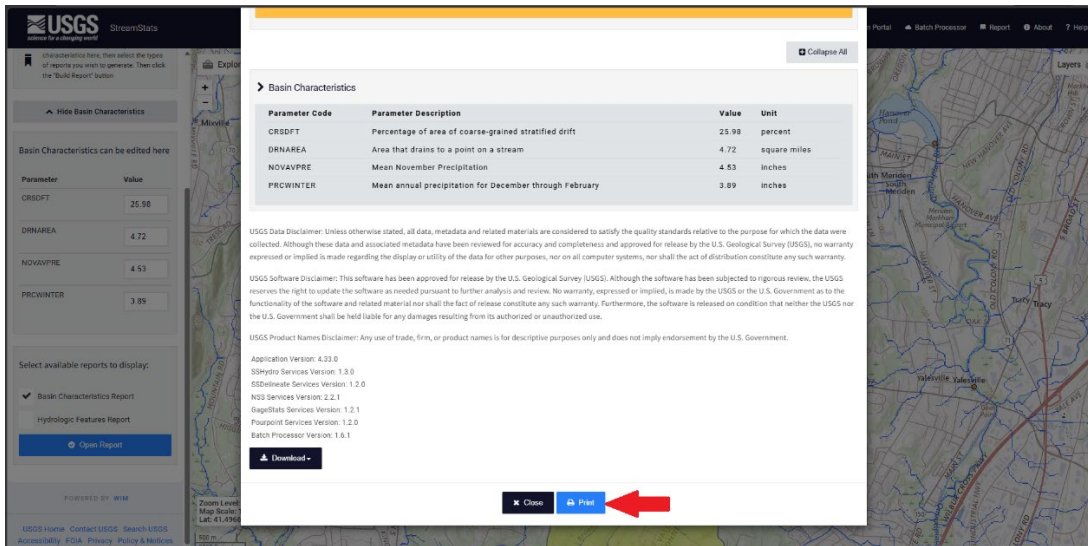
15. Click “continue” – you will then see values listed for each parameter you selected



16. Open the report in StreamStats



17. Print and save the StreamStats report as a pdf. This report must be submitted to DEEP as part of your Streamflow Release Plan.



18. Copy and paste the values for each parameter from StreamStats to NSS

19. Click “compute” on the left-hand side of the NSS page under “Calculate Statistic”

Calculate Statistics:  Compute  Download Statistics  Download

**Equation Variables**

Seasonal Flow Statistics Regions:  
Duration\_Flow\_2010\_2052

May Flow-Duration Statistics Regions:  
Duration\_Flow\_2010\_2052

June Flow-Duration Statistics Regions:  
Duration\_Flow\_2010\_2052

November Flow-Duration Statistics Regions:  
Duration\_Flow\_2010\_2052

Explanatory Variable	Code	Value	Min Limit	Max Limit
Drainage Area	DRNAREA	4.01	3.82 (m <sup>2</sup> )	152 (m <sup>2</sup> )
Mean Annual Winter Precipitation	PRCWINTER	4.16	1.9 (in)	4.4 (in)
Percent Coarse Stratified Drift	CRSDPT	8.64	1.1 (%)	55.1 (%)
Mean November Precipitation	NOVNUPRE	4.68	1.48 (in)	4.93 (in)

20. Seasonal flow statistics will be calculated and appear in tables on the main screen of the webpage

21. Download each of the statistics calculations using the “Download” button on the screen

**NSS Report**  
April 1, 2023 10:14PM

State/Region:  
Connecticut

Regression Region(s):  
Duration\_Flow\_2010\_2052

**Seasonal Flow Statistics**

Download

Duration\_Flow\_2010\_2052 Region  
Duration Area = 4.01 km<sup>2</sup>  
Mean Annual Winter Precipitation = 4.16 (in)  
Percent Coarse Stratified Drift = 8.64 (%)

Description	Value
Duration Flow exceeded 50 percent of the time during December to February (DRN_12_03)	1.64
Duration Flow exceeded 50 percent of the time during March to April (DRN_3_04)	1.17
July to October flow exceeded 75 percent of the time (DRN_7_10)	1.12
July to October flow exceeded 50 percent of the time (DRN_7_10)	0.427

**May Flow-Duration Statistics**

Download

Duration\_Flow\_2010\_2052 Region  
Duration Area = 4.01 km<sup>2</sup>  
Percent Coarse Stratified Drift = 8.64 (%)

Description	Value
May precipitation exceeded 50 percent of the time (MAY_P50)	1.27

**June Flow-Duration Statistics**

Download

22. Downloads of the NSS and StreamStats reports must be submitted to DEEP as part of your Streamflow Release Plan

If you need assistance with these instructions, please contact [Melissa.Fahnestock@ct.gov](mailto:Melissa.Fahnestock@ct.gov)