

WIN: 26630.11  
 Town: Perry  
 Route No. US1  
 Asset ID: 88081  
 Lat: 44.95044 Long: -67.10946

Project Name:  
 Stream Name:  
 Bridge Name:  
 Analysis by: pl/csh  
 Date: 3/5/25 6/18/24

## Peak Flow Calculations by USGS Regression Equations (Lombard/Hodgkins, 2021; Hodgkins, 1999 & Lombard/Hodgkins, 2015)

*Enter data in blue cells only!*

	km <sup>2</sup>	mi <sup>2</sup>	ac
A	1.50	0.58	371.2
W	0.12	0.0	29.3
P <sub>c</sub>	648046	4980216	
County	Washington		

*Enter data in [mi<sup>2</sup>]*  
 Watershed Area *DRNAREA*  
 Wetlands area (by NWI)

watershed centroid (E, N; UTM 19N; meters)  
 choose county from drop-down menu

*ver. 2021 Jan 01*

**Worksheet prepared by:**  
 Charles S. Hebson, PE  
 Environmental Office  
 Maine Dept. Transportation  
 Augusta, ME 04333-0016  
 207-557-1052  
[Charles.Hebson@maine.gov](mailto:Charles.Hebson@maine.gov)

### Watershed Characteristics from StreamStats

STORAGE	7.27	
STORNWI	7.88	NWI Wetlands %
SANDGRAV	0.00	sand & gravel aquifer as decimal fraction of watershed A
ELEV	158.7	mean basin elevation (ft)
BSLDEM10M	13.4	mean basin slope (%)
COASTDIST	35.50	distance from the coast (mi)
ELEVMAX	286.4	maximum basin elevation (ft)
LC06WATER	0	percent of drainage basin land cover as open water
PRECIP	43.4	mean annual precipitation
STATSGOA	11	mean basin percentage of hydrological soil group A

### References:

Hodgkins, G.A., 1999.  
 Estimating the magnitude of peak flows for streams in Maine  
 for Selected Recurrence Intervals  
*WRIR 99-4008*, USGS Augusta, ME

Lombard, P.J. & G.A. Hodgkins, 2015.  
 Peak flow regression equations for small, ungaged streams:  
 in Maine: Comparing Map-Based to Field-Based Variables  
*SIR 2015-4059*, USGS, Augusta, ME

Lombard, P.J. & G.A. Hodgkins, 2020.  
 Estimating Flood Magnitude and Frequency on Gaged and  
 Ungaged Streams in Maine  
*SIR 2020-5092*, USGS, Augusta, ME.

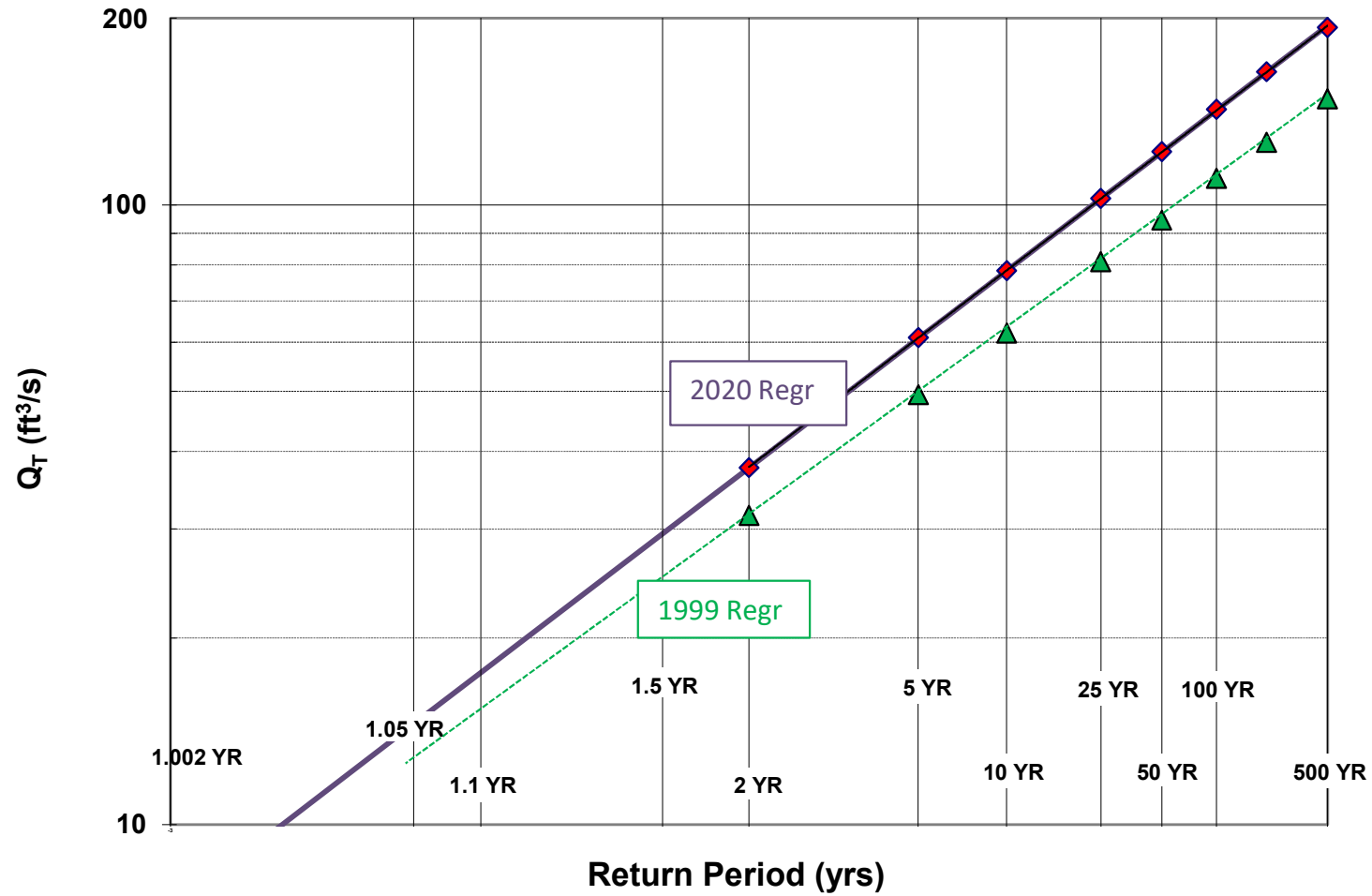
Ret Pd	I24	Q <sub>T</sub> (ft <sup>3</sup> /s)		Q <sub>T</sub> (ft <sup>3</sup> /s)
T (yr)		1999 / 2015	2020	Design
1.1			18	20
2	3.13	32	38	40
5	3.84	49	61	60
10	4.42	62	78	80
25	5.22	81	102	100
50	5.83	94	122	120
100	6.46	110	143	145
200	7.13	126	164	165
500	8.10	148	193	195

Calculated Bankfull Width: 8.4 ft

### Instructions:

*Enter values in blue cells only, watershed data from StreamStats*  
 Copy I24 values from Stream Stats  
 Use results under "Design"  
 Check against gage data and FEMA studies if available  
 Questions? Check with ENV / Hydrology Section

## Log-Normal Probability Plot



WIN: 26630.11  
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Project Name: 0  
 Stream Name: 0  
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**DO NOT ENTER ANY DATA ON THIS PAGE; EVERYTHING IS CALCULATED**

**MAINE MONTHLY MEDIAN FLOWS and HYDRAULIC GEOMETRY BY USGS REGRESSION EQUATIONS (2004, 2013, 2015)**

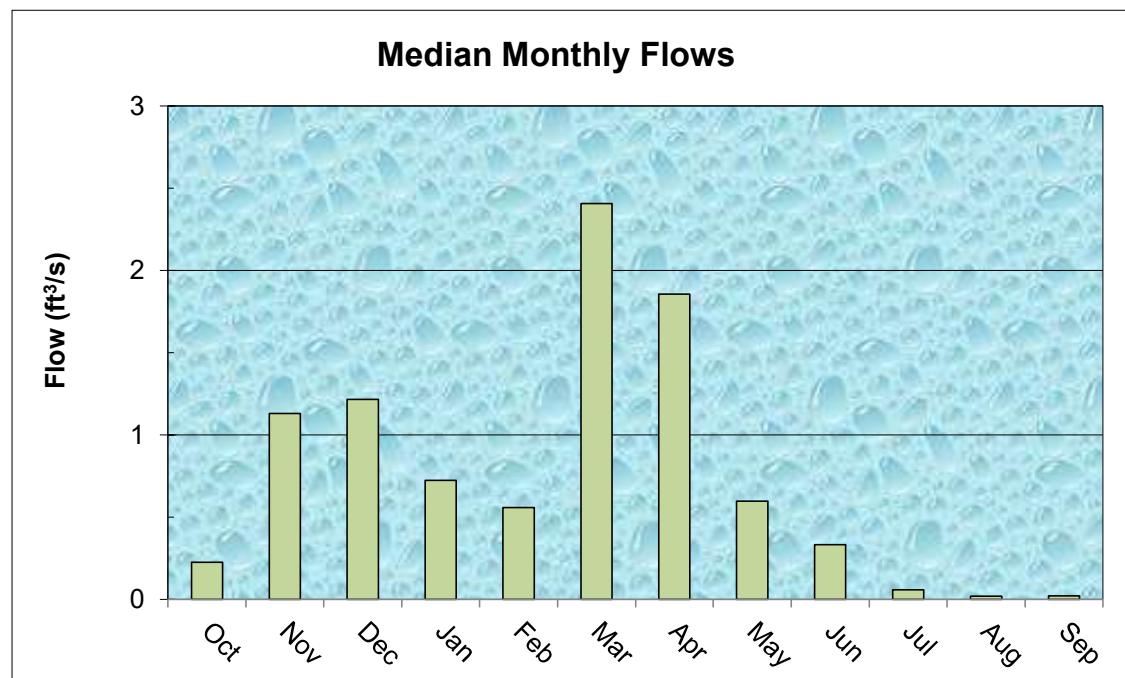
Value	Variable	Explanation
0.58	A	Area (mi <sup>2</sup> )
648046	P <sub>c</sub>	Watershed centroid (E,N; UTM; Zone 19; meters)
35.50	DIST	Distance from Coastal reference line (mi)
43.4	pptA	Mean Annual Precipitation (inches)
0.00	SG	Sand & Gravel Aquifer (decimal fraction of watershed area)

Month	Q <sub>median</sub> (ft <sup>3</sup> /s)	(m <sup>3</sup> /s)
Jan	0.72	0.0205
Feb	0.56	0.0158
Mar	2.41	0.0682
Apr	1.85	0.0526
May	0.60	0.0169
Jun	0.33	0.0094
Jul	0.06	0.0017
Aug	0.02	0.0005
Sep	0.02	0.0006
Oct	0.23	0.0064
Nov	1.13	0.0320
Dec	1.22	0.0345

Q <sub>bf</sub>	2.9
ann avg	1.3
ann med	0.5
Q <sub>1.002</sub>	7.3
Q <sub>1.01</sub>	10.0
Q <sub>1.05</sub>	14.5
Q <sub>1.1</sub>	17.6
Q <sub>bf</sub>	11.4

assume v = 4ft/s

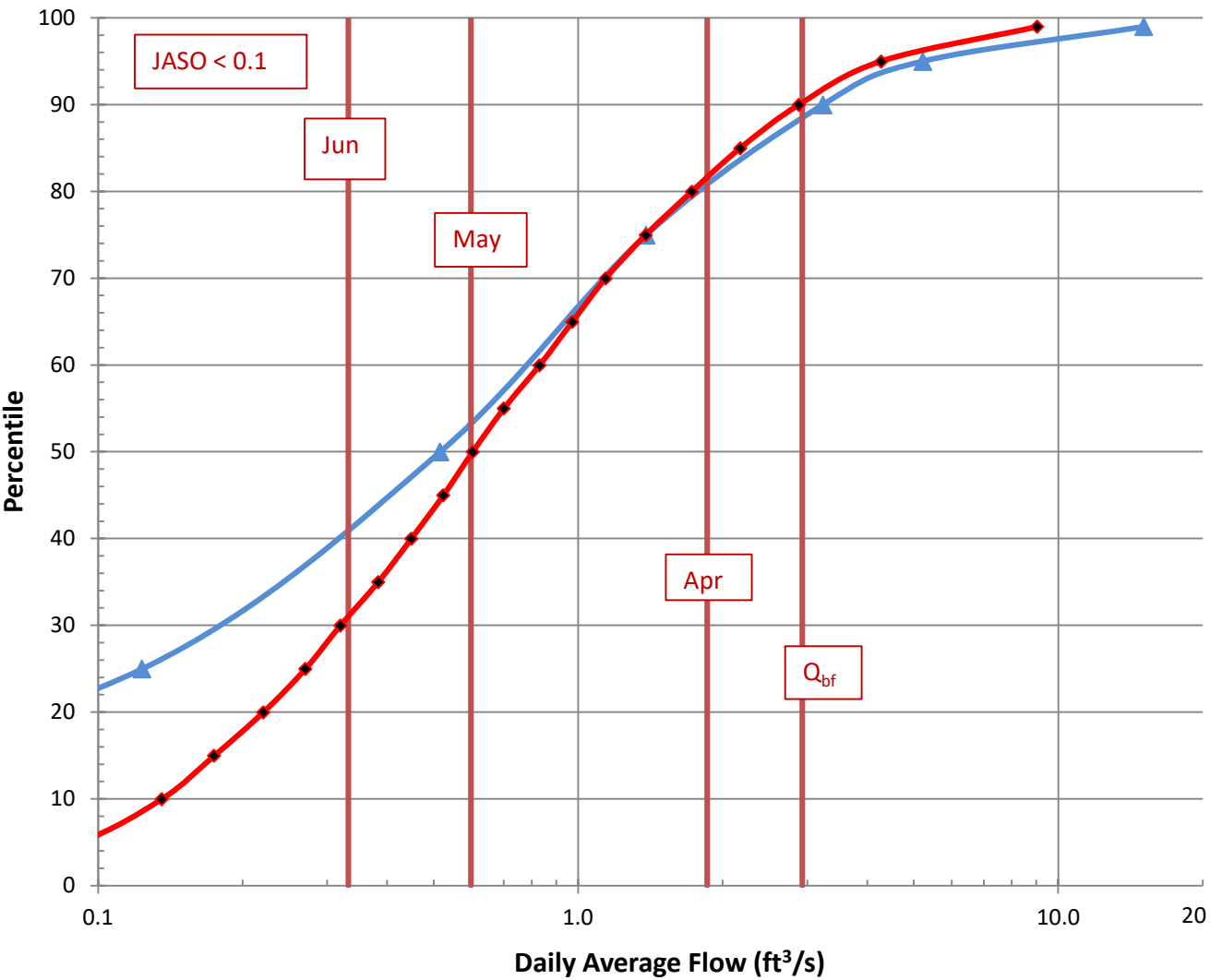
W <sub>bf</sub>	8.4	estimated bankfull width (ft)
d <sub>bf</sub>	0.5	estimated bankfull depth (ft)
A <sub>bf</sub>	2.8	estimated bankfull flow area (ft <sup>2</sup> )



**References**

Dudley, 2013. FY2013 Progress Report - Phase 1 ..., USFWS QRP Project  
 Dudley, 2004. Estimating Monthly Streamflows ..., SIR 2004-5026  
 Dudley, 2015. Regression Equations for Monthly & Annual Mean..., USGS SIR 2015-5151

# Daily Average Flow Distribution



## Daily Avg Flow Dist

$A_{ws} = (\text{mi}^2)$  0.58

$Q (\text{ft}^3/\text{s})$

Pctl	Median	84 <sup>th</sup> pctl
1.00E-06	0.00	0.00
1	0.05	0.09
5	0.09	0.15
10	0.14	0.20
15	0.17	0.25
20	0.22	0.31
25	0.27	0.36
30	0.32	0.41
35	0.38	0.47
40	0.45	0.54
45	0.52	0.61
50	0.60	0.72
55	0.70	0.84
60	0.83	0.99
65	0.97	1.15
70	1.14	1.34
75	1.38	1.62
80	1.72	1.93
85	2.18	2.47
90	2.88	3.32
95	4.28	5.16
99	9.04	11.90

$Q_{bf}$	2.9
$Q_{1.002}$	7.3
$Q_{1.1}$	17.6
$Q_2$	37.7

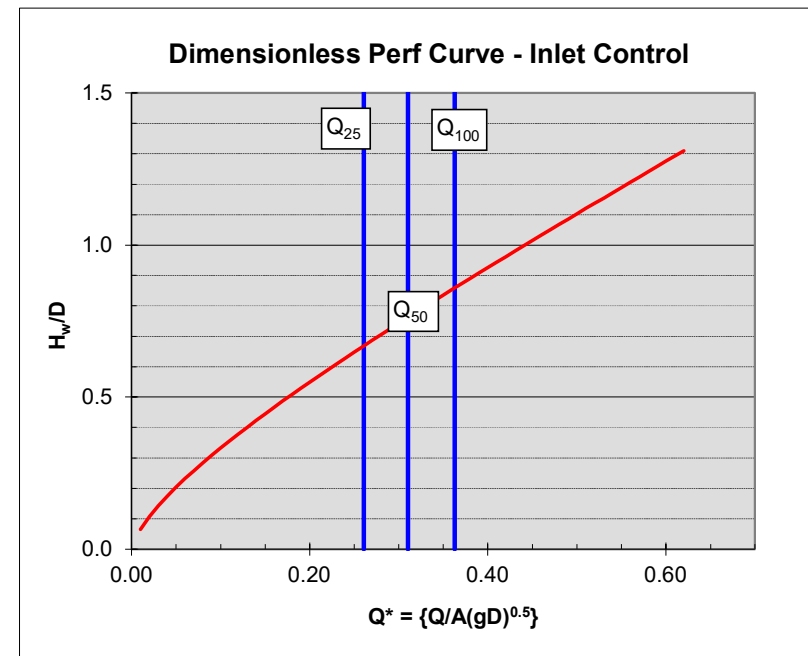
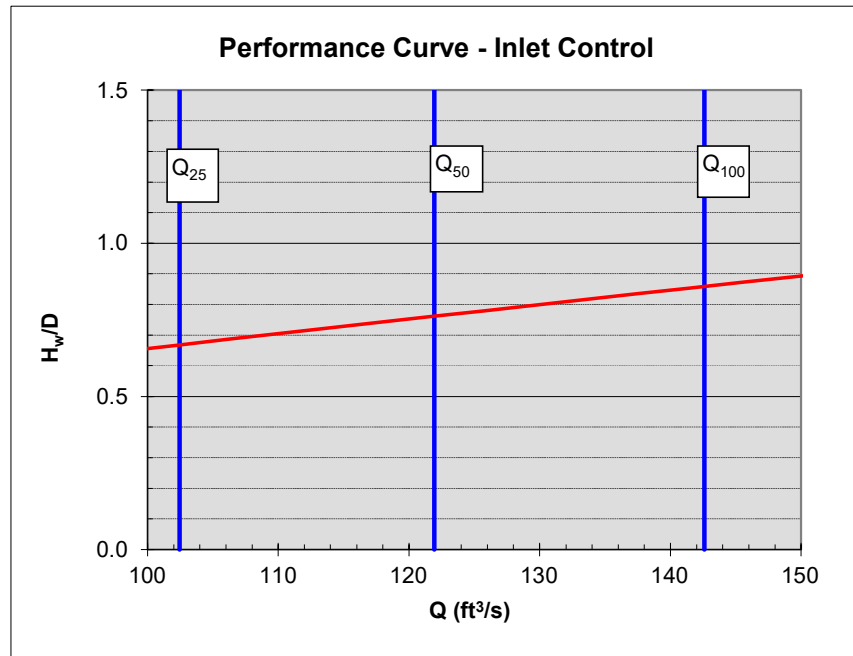
**NOTE:** This page is for preliminary sizing only.  
Final design should be done with HY8 or HDS-5

**Note:**  
culvert dimensions are for open flow area; adjust for lost capacity  
due to embedding / backfilling (min {2' / 25% rise} embedment)  
Finish analysis with HY-8

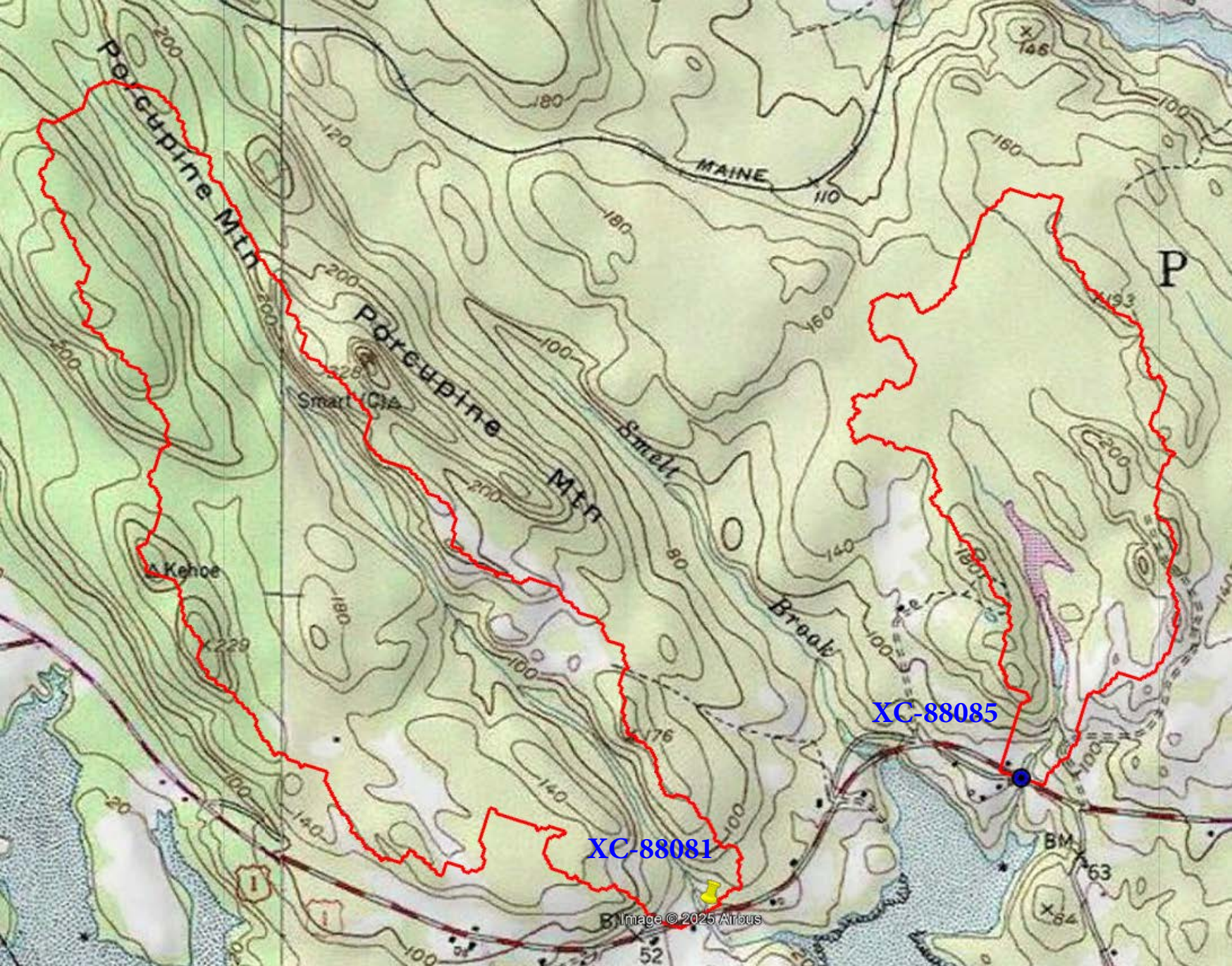
## Preliminary Culvert Sizing - Round & Box Culverts

Shape:	Round			
Inlet Type:	Circ CMP Proj			
D or R (ft)	6	diam / rise	Q <sub>25</sub>	102.5
w (ft)	11	box span	Q <sub>50</sub>	121.9
Slope (ft/ft)	0.01		Q <sub>100</sub>	142.6
A (ft <sup>2</sup> )	28.27		trial D / R =	5.7
g (ft/s <sup>2</sup> )	32.2		trial w: BFW =	8.4

Choose shape and inlet type by pull-down menu in green cells





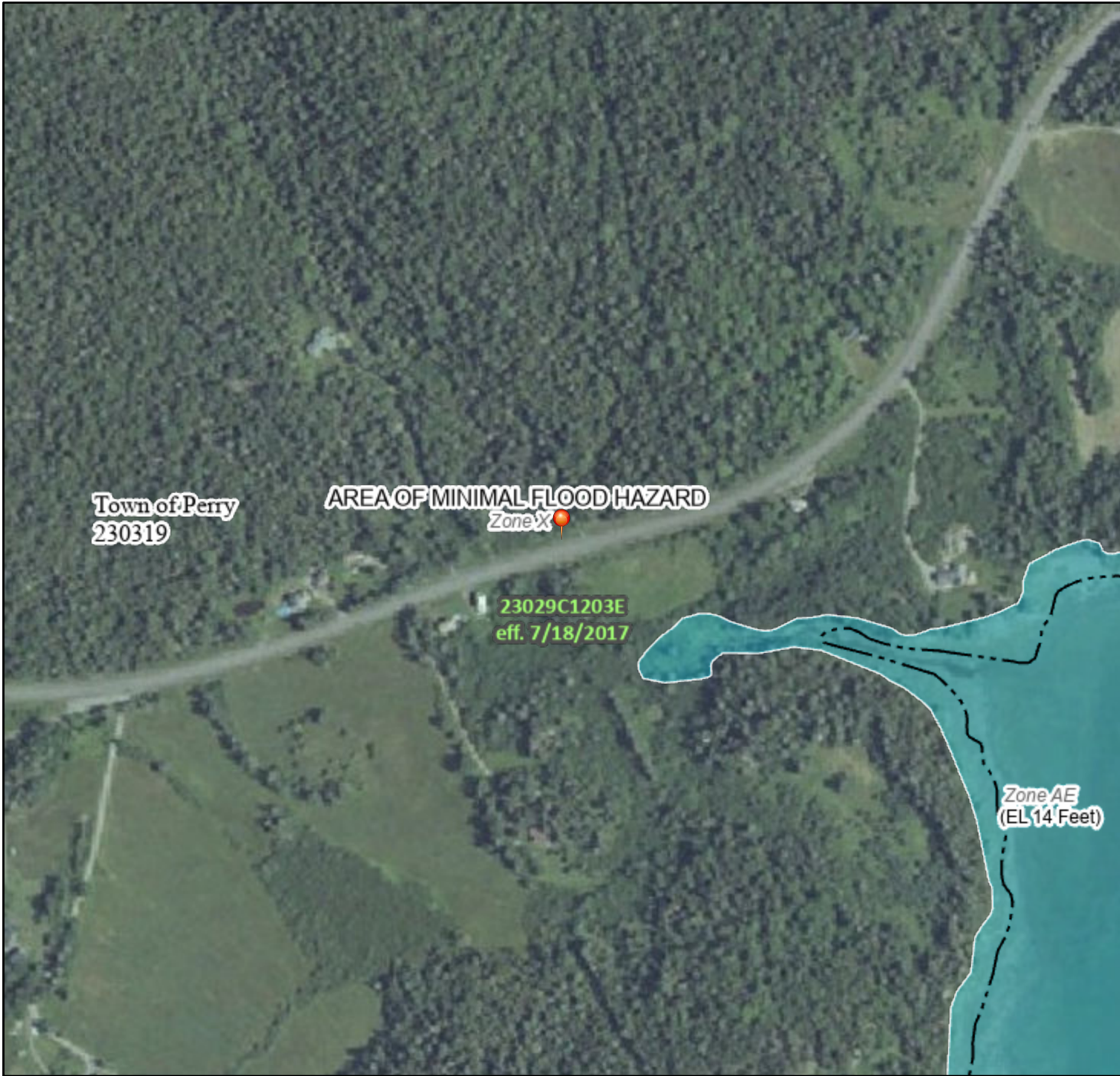




# National Flood Hazard Layer FIRMMette



67°6'52"W 44°57'15"N



1:6,000

67°6'14"W 44°56'49"N

Basemap Imagery Source: USGS National Map 2023

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **3/4/2025 at 7:30 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

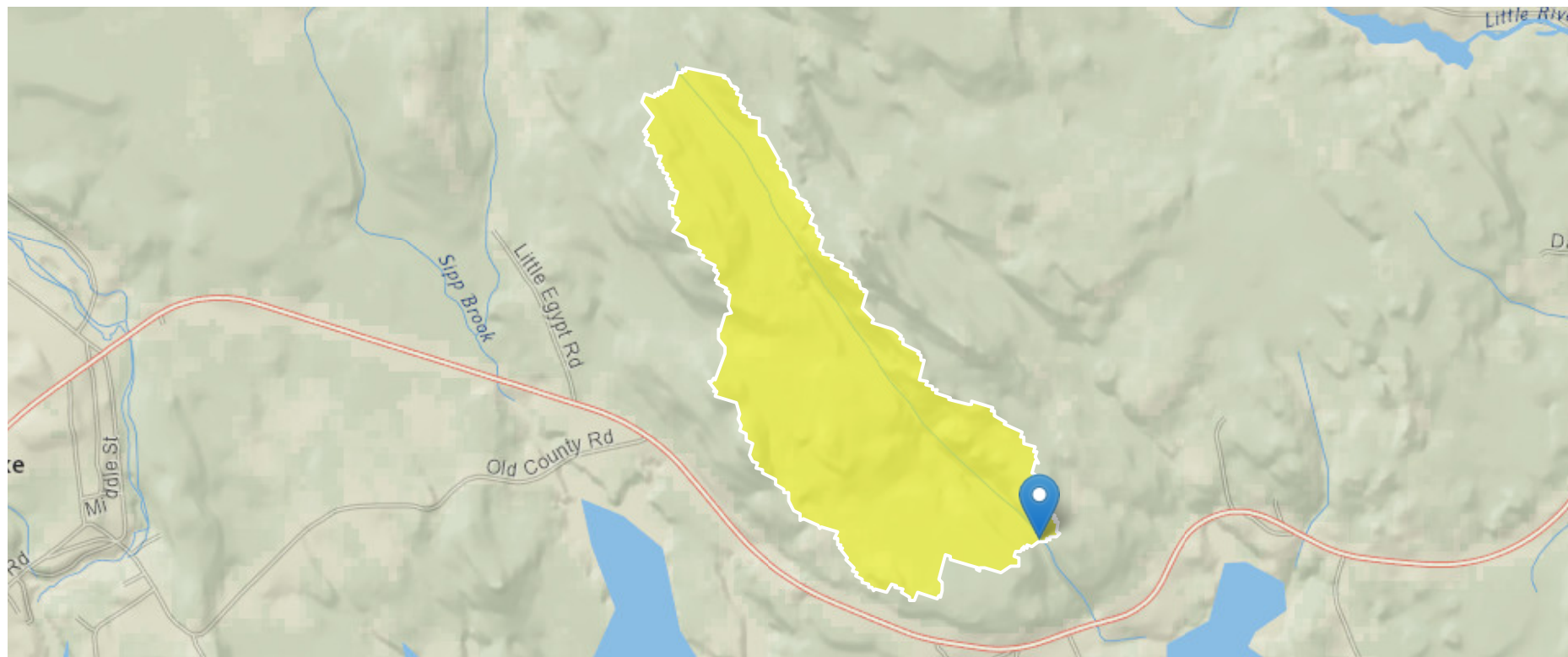
## Perry-26630p11-XC88081 stream basin

**Region ID:** ME

**Workspace ID:** ME20240618140333171000

**Clicked Point (Latitude, Longitude):** 44.95361, -67.11222

**Time:** 2024-06-18 10:03:57 -0400



drainage area = 0.58 square miles

[+ Collapse All](#)



## ➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	13.4	percent
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	648046.4	meters
CENTROIDY	Basin centroid vertical (y) location in state plane units	4980215.92	meters
COASTDIST	Shortest distance from the coastline to the basin centroid	35.5	miles
DRNAREA	Area that drains to a point on a stream	0.58	square miles
ELEV	Mean Basin Elevation	158.7	feet
ELEVMAX	Maximum basin elevation	286.4	feet
I24H100Y	Maximum 24-hour precipitation that occurs on average once in 100 years	6.46	inches
I24H10Y	Maximum 24-hour precipitation that occurs on average once in 10 years	4.42	inches
I24H200Y	Maximum 24-hour precipitation that occurs on average once in 200 years	7.13	inches
I24H25Y	Maximum 24-hour precipitation that occurs on average once in 25 years	5.22	inches
I24H2Y	Maximum 24-hour precipitation that occurs on average once in 2 years - Equivalent to precipitation intensity index	3.13	inches
I24H500Y	Maximum 24-hour precipitation that occurs on average once in 500 years	8.1	inches
I24H50Y	Maximum 24-hour precipitation that occurs on average once in 50 years	5.83	inches
I24H5Y	Maximum 24-hour precipitation that occurs on average once in 5 years	3.84	inches
JULAVPRE	Mean July Precipitation	3.05	inches
LC06WATER	Percent of open water, class 11, from NLCD 2006	0	percent
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	0	percent
PRDEC FEB90	Basin average mean precipitation for December to February from PRISM 1961-1990	11.6	inches

Parameter Code	Parameter Description	Value	Unit
PRECIP	Mean Annual Precipitation	43.4	inches
SANDGRAVAF	Fraction of land surface underlain by sand and gravel aquifers	0	dimensionless
SANDGRAVAP	Percentage of land surface underlain by sand and gravel aquifers	0	percent
STATSGOA	Percentage of area of Hydrologic Soil Type A from STATSGO	11	percent
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	7.274	percent
STORNWI	Percentage of storage (combined water bodies and wetlands) from the Nationa Wetlands Inventory	7.88	percent

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [Statewide multiparameter peakflows SIR 2020 5092]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.58	square miles	0.26	5680
I24H2Y	24 Hour 2 Year Precipitation	3.13	inches	1.92	4.17
STORAGE	Percent Storage	7.274	percent	0	29.4
I24H5Y	24 Hour 5 Year Precipitation	3.84	inches	2.48	5.38
I24H10Y	24 Hour 10 Year Precipitation	4.42	inches	2.84	6.38
I24H25Y	24 Hour 25 Year Precipitation	5.22	inches	3.3	7.75
I24H50Y	24 Hour 50 Year Precipitation	5.83	inches	3.65	8.79
I24H100Y	24 Hour 100 Year Precipitation	6.46	inches	3.99	9.88
I24H200Y	24 Hour 200 YearPrecipitation	7.13	inches	5.26	11.1
I24H500Y	24 Hour 500 Year Precipitation	8.1	inches	5.95	13.1

## Peak-Flow Statistics Flow Report [Statewide multiparameter peakflows SIR 2020 5092]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	37.7	ft <sup>3</sup> /s	20.1	70.8	39.1
20-percent AEP flood	61.1	ft <sup>3</sup> /s	33	113	38.1
10-percent AEP flood	78.3	ft <sup>3</sup> /s	41.7	147	38.9
4-percent AEP flood	102	ft <sup>3</sup> /s	53.6	194	39.9
2-percent AEP flood	122	ft <sup>3</sup> /s	63	236	39.7
1-percent AEP flood	143	ft <sup>3</sup> /s	74.2	276	40.7
0.5-percent AEP flood	164	ft <sup>3</sup> /s	82.2	327	42.8
0.2-percent AEP flood	193	ft <sup>3</sup> /s	95.3	391	43.8

### Peak-Flow Statistics Citations

**Lombard, P.J., and Hodgkins, G.A.,2020, Estimating flood magnitude and frequency on gaged and ungaged streams in Maine: U.S. Geological Survey Scientific Investigations Report 2020–5092, 56 p. (<https://doi.org/10.3133/sir20205092>)**

## ➤ Annual Flow Statistics

### Annual Flow Statistics Parameters [Statewide Annual SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.58	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0	dimensionless	0	0.212
ELEV	Mean Basin Elevation	158.7	feet	239	2120



## Annual Flow Statistics Disclaimers [Statewide Annual SIR 2015 5151]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

## Annual Flow Statistics Flow Report [Statewide Annual SIR 2015 5151]

Statistic	Value	Unit
Mean Annual Flow	1.34	ft <sup>3</sup> /s

### *Annual Flow Statistics Citations*

**Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p.**  
(<http://dx.doi.org/10.3133/sir20155151>)

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Application Version: 4.20.1

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1