HYDROLOGY REPORT

The Drainage Basin Characteristics for Route 2 over Gray Farm Stream were provided by the Maine Department of Transportation Office of the Environment-Hydrology Section. The flows were computed using the 1999 USGS full regression equation. No other flow data is available such as gage data, existing studies, or reports from local residents. Therefore the hydrology data was used as provided and as follows.

SUMMARY

Drainage Area	2.75	mi^2
Q1.1	56.5	ft^3/s
Q10	238.5	ft^3/s
Q25	312.5	ft^3/s
Q50	367.2	ft^3/s
Q100	429.9	ft^3/s
Q500	583.3	ft^3/s

Reported by: Ahmed R Shkara
Date: March 27, 2017

Note: All elevations based on North American Vertical Datum (NAVD) of 1988.

HYDRAULIC REPORT

Gray Farm Bridge is located in the town of New Sharon on U.S. Route 2 over Gray Farm Stream. The existing pipe culvert is a 6' diameter by 88' long corrugated steel round pipe culvert and the ends of the culvert are cut to match the side slope of 2:1. Gray Farm Stream flows from north to south and empties into the Sandy River approximately 1000 ft downstream from the bridge. A large scour hole is located downstream of the main channel culvert, measuring approximately 50 ft long, 30 ft wide, and 6 ft deep. Photos show that the culvert is hanging on the downstream end by 1'. Downstream of the culvert the stream is windy with unstable banks. The banks of the stream have limited vegetation and in many areas exposed roots and leaning trees (see Appendix B). There are very few grade control features in the stream. The grade controls that were found are unstable and consist of gravel bars and downed trees. Upstream of the culvert is an active cow pasture. The banks have been flattened and eroded by the cattle. The stream returns to a more natural state above the pasture. The flood plain downstream is lightly wooded with brush on either side. The streambed is sandy/silty material with areas of exposed clay.

The existing and the proposed culverts were analyzed using HY 8 version 7.50 that is distributed by the Federal Highway Administration.

Assumptions for existing 6' corrugated metal pipe culvert HY-8 Model

Tailwater Condition: Downstream Cross Section from Survey Data

Channel Slope: 0.003 ft/ft

Manning's n Channel: 0.04

Manning's n Overbank: 0.06

Inlet Configuration: Mitered to Conform to Slope

Inlet Elevation: 317.250 ft

Outlet Elevation: 316.169 ft

The waterway opening area for the existing culvert is 28.3 square feet. At Q50 the Hw/D is 2.2 and at Q100 the Hw/D is 2.5, so the culvert is clearly undersized. The headwater elevation is approximately 2' below the road elevation at Q50 and the road is close to overtopping or is overtopped at Q100. The model's headwater elevation seems to match a flood insurance study for Gray Farm Stream found on the FEMA website and included in Appendix D. The study shows the flood water footprint at Q100 and seems to follow the 333' elevation contour line. At Q50,

the outlet velocity is 14.2 ft/s and the tailwater velocity is 4.0 ft/s, while at Q100 the outlet velocity is 15.0 ft/s and the tailwater velocity is 3.8 ft/s, which explains the large scour pool downstream of the bridge.

Assumptions for 15'x8' concrete box HY-8 Model

Tail water Condition: Downstream Cross Section with Proposed Channel Reconstruction

Channel Slope: 0.003 ft/ft

Manning's n Channel: 0.04

Manning's n Overbank: 0.06

Manning's n for rip rap: 0.07

Inlet Configuration: Mitered to Conform to Slope

Inlet Elevation: 316.27 ft

Outlet Elevation: 314.11 ft

The proposed culvert is a 1.2 bankfull width 15' span by 8' rise by 108' long precast concrete box culvert with ends mitered to match the 2:1 side slope. The box culvert will be embedded 2'. The special fill will be granular material with rock band features to reduce the water velocities through the culvert.

The waterway opening area at the proposed culvert is 75 square feet, an increase of 165% from existing culvert. At Q50 the Hw/D is 0.75 and at Q100 the Hw/D is 0.84. The headwater elevation is 12' below the road elevation at Q50 and 11' below the road elevation at Q100. At Q50, the outlet velocity is 6.4 ft/s and the tailwater velocity is 3.1 ft/s, while at Q100 the outlet velocity is 7.0 ft/s and the tailwater velocity is 3.1 ft/s. Since the Q100 outlet velocity is lower than 10.0 ft/s, plain riprap is sufficient to armor the channel downstream of the culvert for this site.

A single span NEXT beam bridge alternative was also considered for design. The single span NEXT beam bridge alternative would have the same reconstructed channel limits as the box culvert option with the same slope, engineered special fill, alignment, and a larger hydraulic opening. Therefore, its hydraulic performance would be equal to or better than the box culvert alternative, and it was not modeled.

The proposed box culvert was determined to be hydraulically sufficient. It offers a significant improvement over the existing culvert during all flows and would prevent the road from overtopping, which would provide protection for Route 2. The water velocities were

significantly slower with the proposed alternative compared to the existing, which would stabilize the stream and prevent further erosion.

SUMMARY

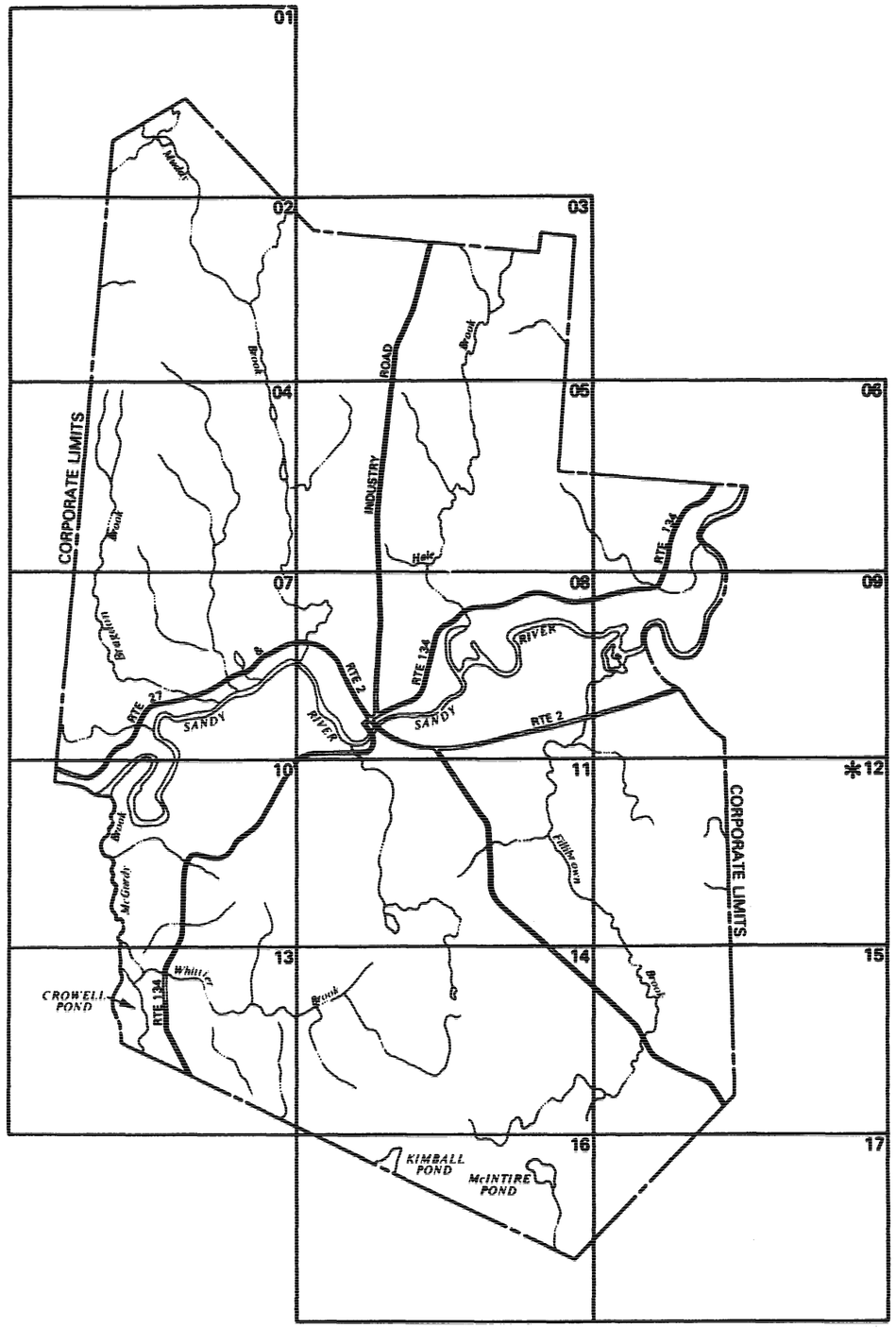
		Existing Structure 6’ x 88' Metal pipe culvert	Recommended Structure 15’ x 8’ x 108' Precast concrete box culvert
Total Area of Waterway Opening	ft^2	28.3	75.0
Headwater elevation @ $Q_{1.1}$	ft	320.2	318.5
Headwater elevation @ Q_{10}	ft	324.5	319.7
Headwater elevation @ Q_{25}	ft	327.9	320.3
Headwater elevation @ Q_{50}	ft	330.5	320.8
Headwater elevation @ Q_{100}	ft	332.1	321.3
Headwater elevation @ Q_{500}	ft	332.2	322.6
Hw/D @ Q_{50}	ft	2.20	0.75
Hw/D @ Q_{100}	ft	2.47	0.84
Outlet Velocity @ $Q_{1.1}$	ft/s	6.6	3.3
Outlet Velocity @ Q_{10}	ft/s	10.9	5.0
Outlet Velocity @ Q_{25}	ft/s	12.8	5.8
Outlet Velocity @ Q_{50}	ft/s	14.2	6.4
Outlet Velocity @ Q_{100}	ft/s	15.0	7.0

Reported by: Ahmed R Shkara
Date: February 8, 2018

Note: All elevations based on North American Vertical Datum (NAVD) of 1988.

Appendix D

Hydraulics Data



* NOT PRINTED - AREA IN ZONE C

KEY TO SYMBOLS

ZONE DESIGNATIONS*

ZONE C

ZONE A

ZONE C

Base Flood Elevation Line with elevation in feet	~~513~~
Base Flood Elevation where uniform within zone	(EL 987)
Elevation Reference Mark	$RM7_X$
River Mile	• M1.5

*EXPLANATION OF ZONE DESIGNATIONS

A flood insurance map displays the zone designations for a community according to areas of designated flood hazards. The zone designations used by FEMA are:

Zone	Explanation
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding; flood depth 1 to 3 feet; product of flood depth (feet) and velocity (feet per second) less than 15.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by a flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Area between limits of 100-year flood and 500-year flood, areas of 100-year shallow flooding where depths less than 1 foot.
C	Areas outside 500-year flood.
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factor determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when acturial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

INITIAL IDENTIFICATION: **JUNE 21, 1974**

FLOOD HAZARD BOUNDARY MAP REVISIONS: **NOVEMBER 12, 1976**

FLOOD INSURANCE RATE MAP EFFECTIVE: **AUGUST 19, 1985**

FLOOD INSURANCE RATE MAP REVISIONS:

federal emergency management agency

FIRM

FLOOD INSURANCE RATE MAP 01 - 17

MAP INDEX

TOWN OF NEW SHARON, ME

(FRANKLIN CO)

COMMUNITY NUMBER 230059 B

07

federal emergency management agency

TOWN OF NEW SHARON, ME

(FRANKLIN CO.)

FLOOD INSURANCE RATE MAP

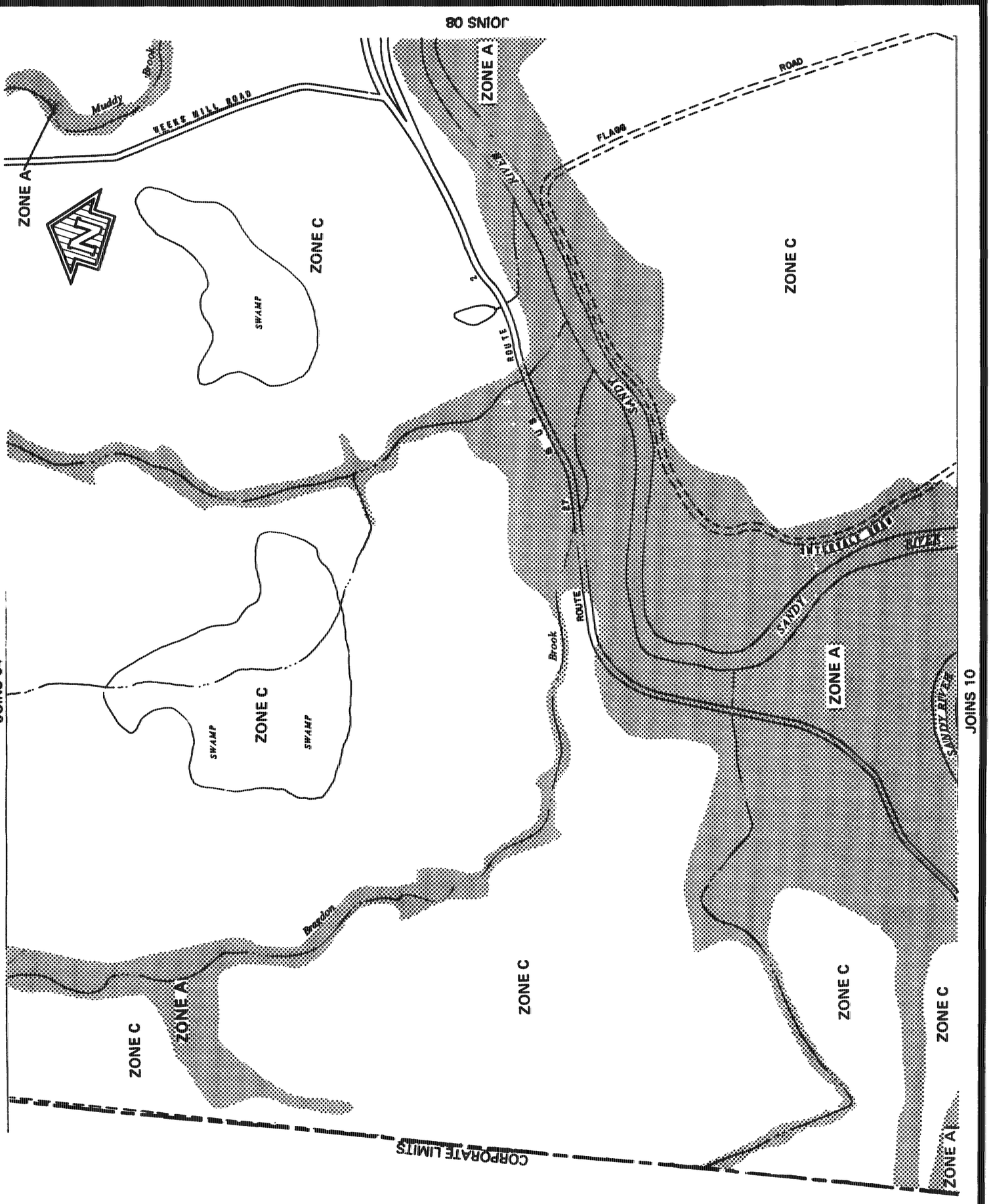
COMMUNITY NUMBER 230059 B

EFFECTIVE DATE

AUGUST 19, 1985

APPROXIMATE SCALE

1000 0 1000 2000 3000 FEET



HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: User Defined

Table 1 - Summary of Culvert Flows at Crossing: Gray Farm Brook Proposed

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Proposed Culvert Discharge (cfs)	Roadway Discharge (cfs)	Iterations
318.51	Q1.1	56.50	56.50	0.00	1
319.69	Q10	238.50	238.50	0.00	1
320.31	Q25	312.50	312.50	0.00	1
320.78	Q50	367.20	367.20	0.00	1
321.30	Q100	429.90	429.90	0.00	1
322.56	Q500	583.30	583.30	0.00	1
332.00	Overtopping	1254.36	1254.36	0.00	Overtopping

Rating Curve Plot for Crossing: Gray Farm Brook, Proposed

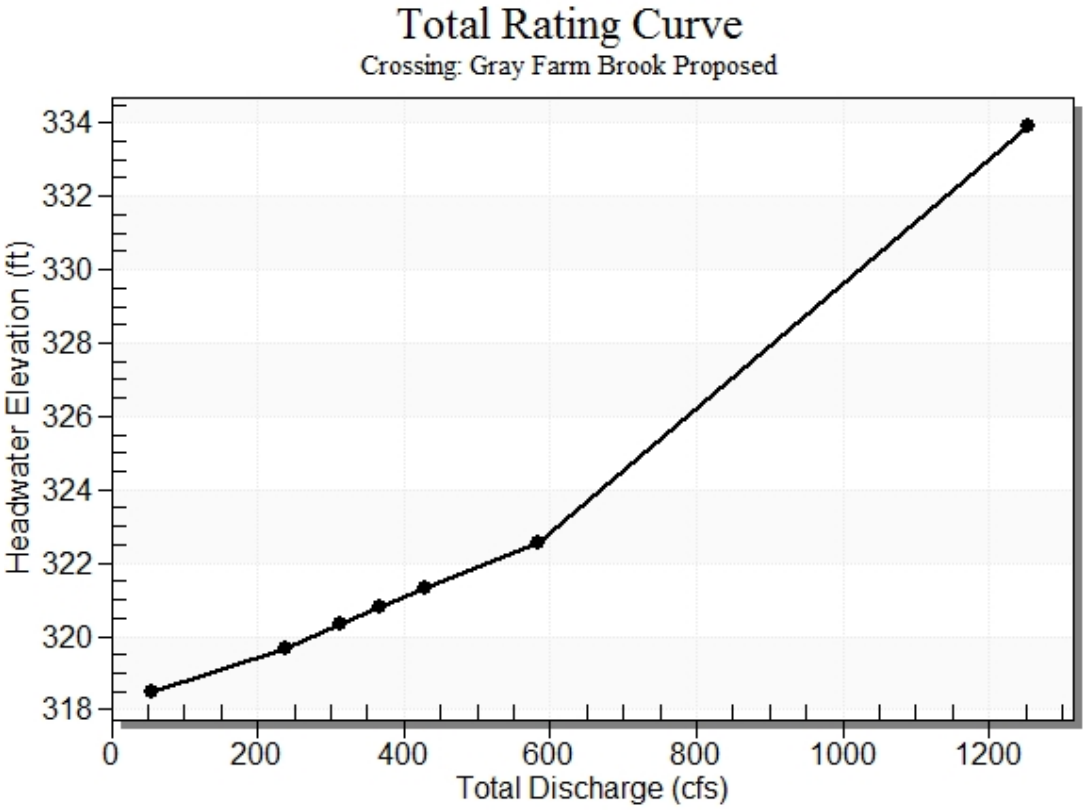


Table 2 - Culvert Summary Table: Proposed Culvert

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
Q1.1	56.50	56.50	318.51	2.240	0.0*	6-FFt	1.334	1.269	1.833	1.833	3.245	2.442
Q10	238.50	238.50	319.69	3.416	2.023	6-FFt	2.721	2.726	3.831	3.831	4.984	3.512
Q25	312.50	312.50	320.31	4.043	2.598	6-FFt	3.079	3.122	4.233	4.233	5.783	3.129
Q50	367.20	367.20	320.78	4.506	2.997	6-FFt	3.324	3.389	4.473	4.473	6.360	3.084
Q100	429.90	429.90	321.30	5.033	3.454	6-FFt	3.588	3.682	4.718	4.718	6.990	3.099
Q500	583.30	583.30	322.56	6.286	4.633	6-FFt	4.181	4.346	5.236	5.236	8.395	3.231

* Full Flow Headwater elevation is below inlet invert.

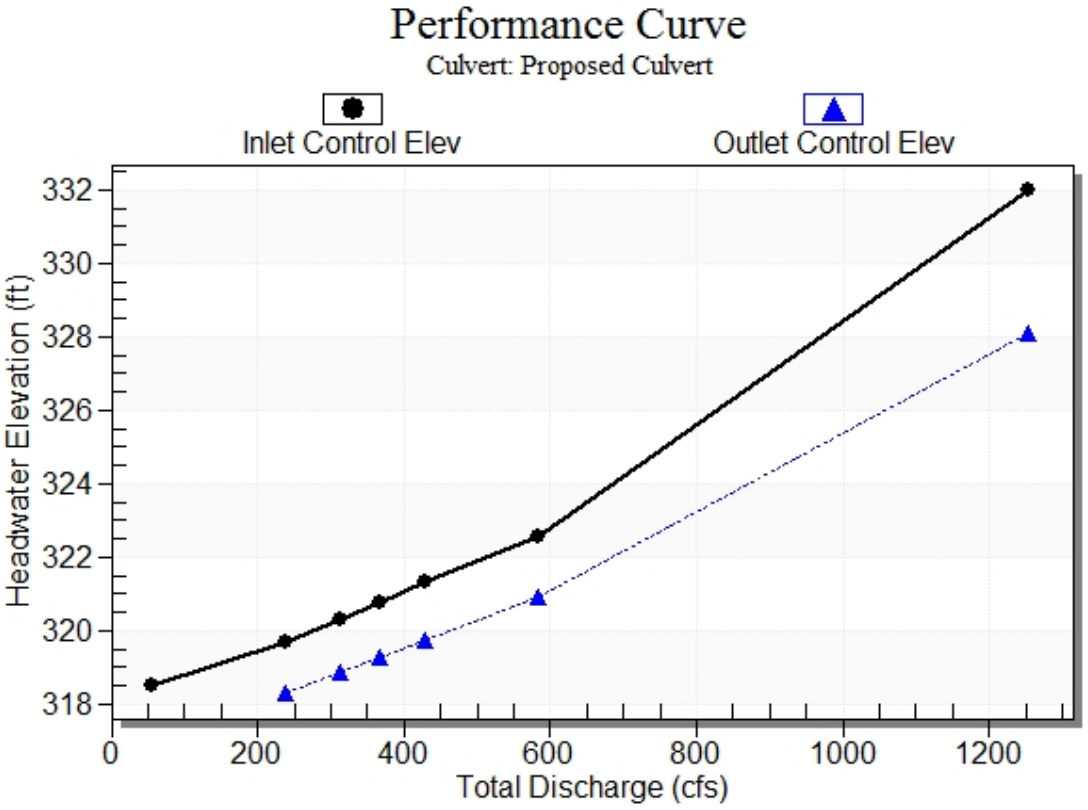
****

Straight Culvert

Inlet Elevation (invert): 316.27 ft, Outlet Elevation (invert): 314.22 ft

Culvert Length: 108.02 ft, Culvert Slope: 0.0190

Culvert Performance Curve Plot: Proposed Culvert



Water Surface Profile Plot for Culvert: Proposed Culvert

Site Data - Proposed Culvert

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 316.27 ft

Outlet Station: 108.00 ft

Outlet Elevation: 314.22 ft

Number of Barrels: 1

Culvert Data Summary - Proposed Culvert

Barrel Shape: User Defined

Barrel Span: 15.00 ft

Barrel Rise: 6.25 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120 (top and sides)

Manning's n: 0.0400 (bottom)

Culvert Type: Straight

Inlet Configuration: Mitered to Conform to Slope

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: Gray Farm Brook, Proposed)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
56.50	316.05	1.83	2.44	0.34	0.37
238.50	318.05	3.83	3.51	0.72	0.67
312.50	318.45	4.23	3.13	0.79	0.49
367.20	318.69	4.47	3.08	0.84	0.45
429.90	318.94	4.72	3.10	0.88	0.42
583.30	319.46	5.24	3.23	0.98	0.38

Tailwater Channel Data - Gray Farm Brook Proposed

Tailwater Channel Option: Irregular Channel

Channel Slope: 0.0030

User Defined Channel Cross-Section:

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	0.00	325.41	0.0600
2	1.00	317.92	0.0600
3	55.56	317.92	0.0700
4	59.81	317.92	0.0700
5	62.16	315.57	0.0400
6	63.58	315.57	0.0400
7	65.08	314.22	0.0400
8	74.92	314.22	0.0400
9	76.42	315.57	0.0400
10	77.84	315.57	0.0400
11	84.00	321.73	0.0700
12	88.24	321.73	0.0600
13	140.00	322.00	0.0600
14	141.00	325.00	0.0000

Roadway Data for Crossing: Gray Farm Brook Proposed

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 1000.00 ft

Crest Elevation: 332.00 ft

Roadway Surface: Paved

Roadway Top Width: 40.00 ft

Crossing Discharge Data

Discharge Selection Method: User Defined

Table 4 - Summary of Culvert Flows at Crossing: Gray Farm Brook, Existing

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Existing Culvert Discharge (cfs)	Roadway Discharge (cfs)	Iterations
320.15	Q1.1	56.50	56.50	0.00	1
324.53	Q10	238.50	238.50	0.00	1
327.88	Q25	312.50	312.50	0.00	1
330.46	Q50	367.20	367.20	0.00	1
332.05	Q100	429.90	397.85	30.15	22
332.16	Q500	583.30	399.87	182.94	5
332.00	Overtopping	396.96	396.96	0.00	Overtopping

Rating Curve Plot for Crossing: Gray Farm Brook Existimg

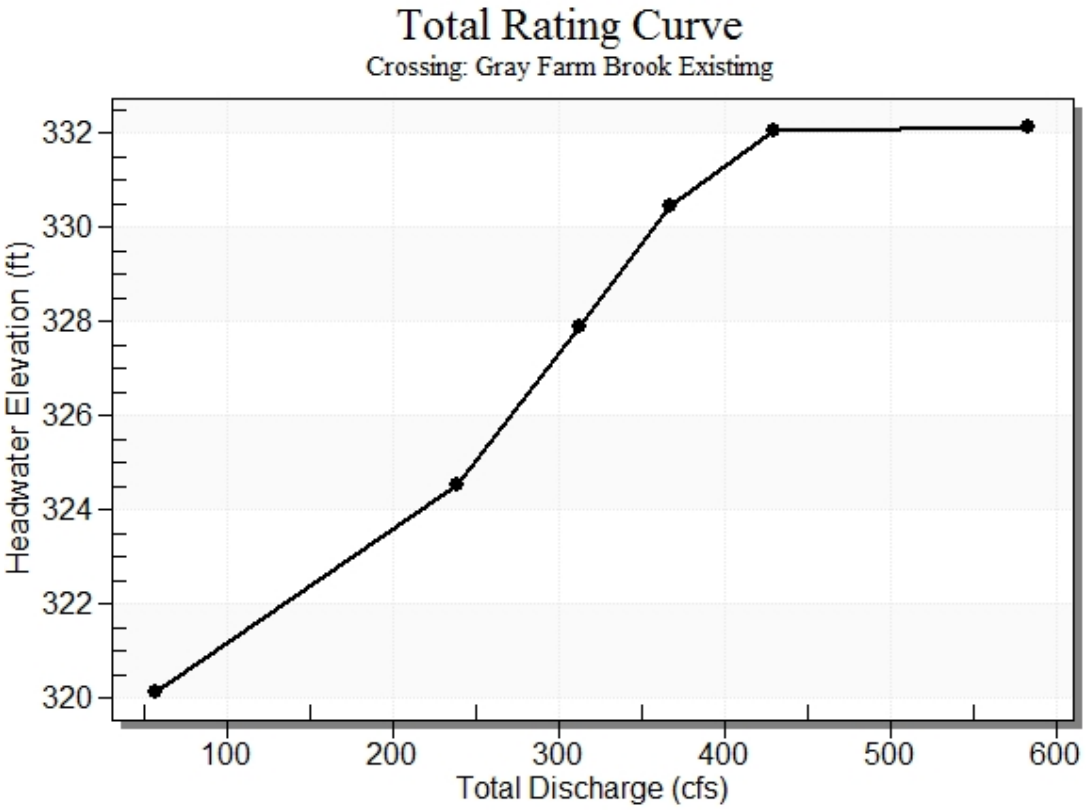


Table 5 - Culvert Summary Table: Existing Culvert

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
Q1.1	56.50	56.50	320.15	2.896	1.122	6-FFc	2.216	1.997	1.997	1.023	6.621	2.214
Q10	238.50	238.50	324.53	7.277	6.816	6-FFc	6.000	4.225	4.225	2.347	10.901	3.650
Q25	312.50	312.50	327.88	9.886	10.633	6-FFc	6.000	4.822	4.822	2.721	12.833	3.934
Q50	367.20	367.20	330.46	12.258	13.205	6-FFc	6.000	5.166	5.166	2.978	14.182	4.000
Q100	429.90	397.85	332.05	13.719	14.798	6-FFc	6.000	5.324	5.324	3.223	15.002	3.796
Q500	583.30	399.87	332.16	13.818	14.907	6-FFc	6.000	5.333	5.333	3.666	15.058	3.264

****

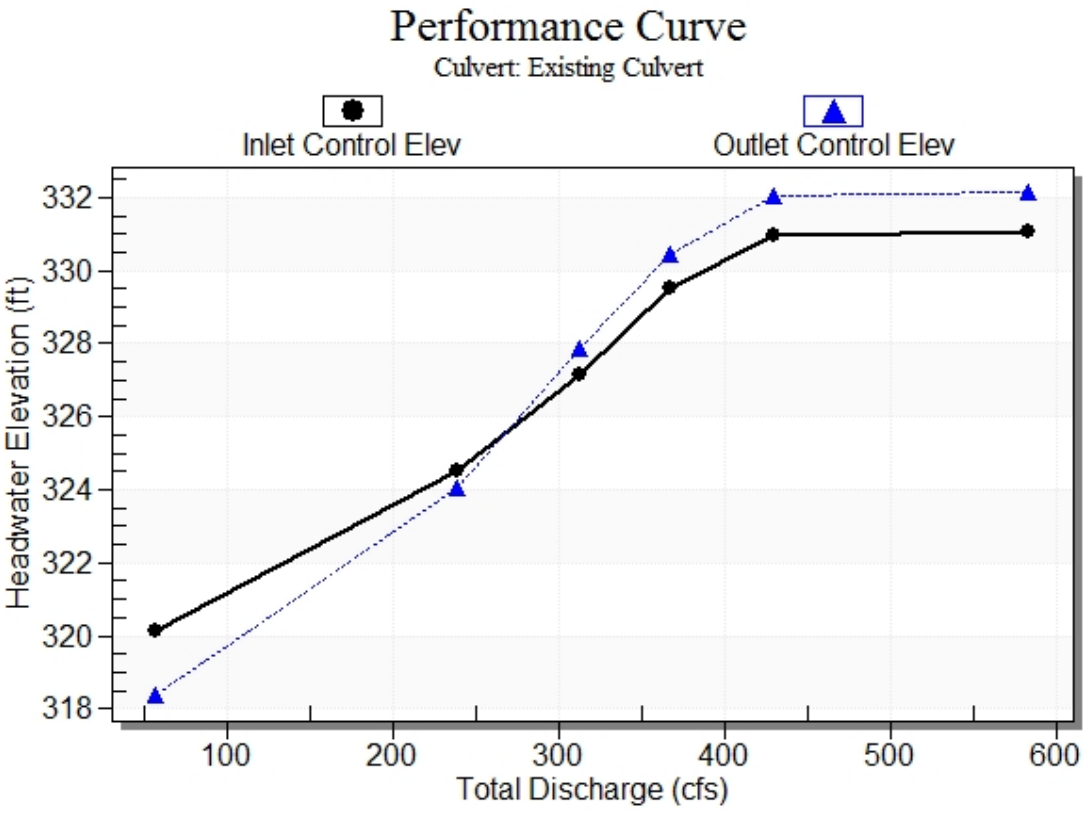
Straight Culvert

Inlet Elevation (invert): 317.25 ft, Outlet Elevation (invert): 316.17 ft

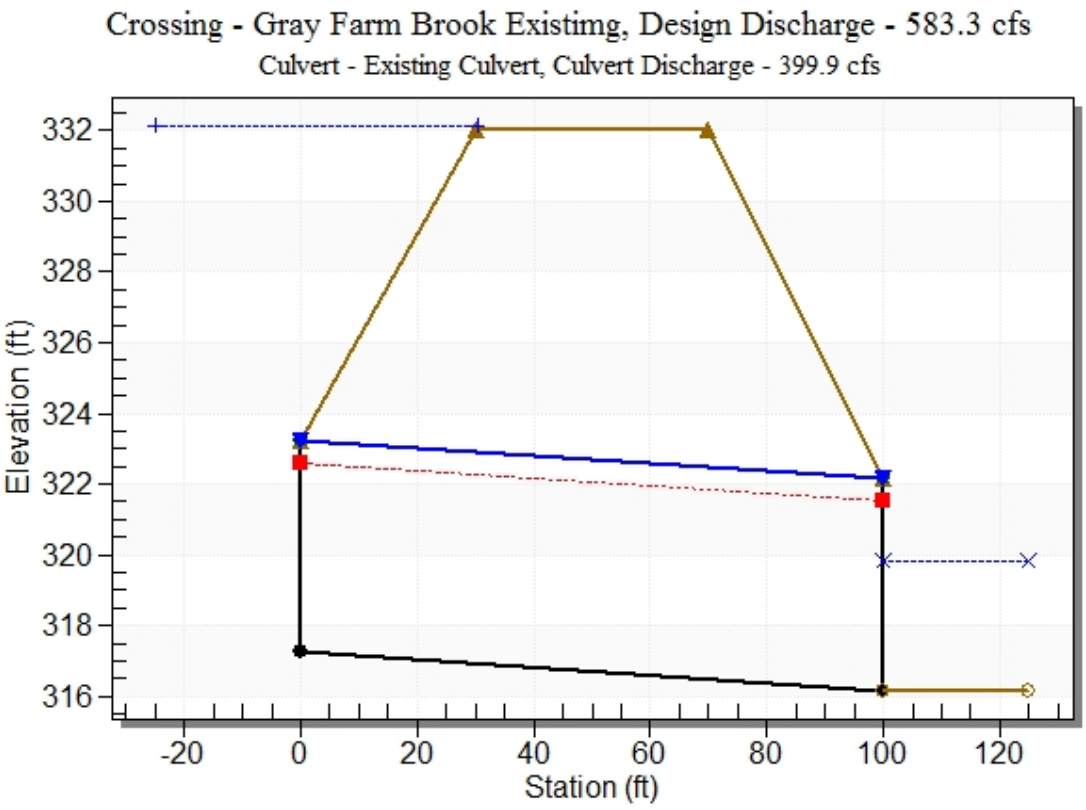
Culvert Length: 100.01 ft, Culvert Slope: 0.0108

****

Culvert Performance Curve Plot: Existing Culvert



Water Surface Profile Plot for Culvert: Existing Culvert



Site Data - Existing Culvert

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 317.25 ft

Outlet Station: 100.00 ft

Outlet Elevation: 316.17 ft

Number of Barrels: 1

Culvert Data Summary - Existing Culvert

Barrel Shape: Circular

Barrel Diameter: 6.00 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0310

Culvert Type: Straight

Inlet Configuration: Mitered to Conform to Slope

Inlet Depression: None

Table 6 - Downstream Channel Rating Curve (Crossing: Gray Farm Brook, Existing)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
56.50	317.19	1.02	2.21	0.19	0.40
238.50	318.52	2.35	3.65	0.44	0.47
312.50	318.89	2.72	3.93	0.51	0.49
367.20	319.15	2.98	4.00	0.56	0.60
429.90	319.39	3.22	3.80	0.60	0.66
583.30	319.83	3.67	3.26	0.69	0.59

Tailwater Channel Data - Gray Farm Brook Existimg

Tailwater Channel Option: Irregular Channel

Channel Slope: 0.0030

User Defined Channel Cross-Section:

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	0.00	322.00	0.0600
2	30.00	320.00	0.0600
3	144.00	319.00	0.0600
4	179.00	320.00	0.0600
5	203.00	319.00	0.0600
6	213.00	318.00	0.0350
7	218.00	316.17	0.0350
8	222.00	316.17	0.0350
9	226.00	316.17	0.0350
10	234.00	316.17	0.0350
11	241.00	316.17	0.0350
12	245.00	320.00	0.0600
13	265.00	325.00	0.0000

Roadway Data for Crossing: Gray Farm Brook, Existing

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 1000.00 ft

Crest Elevation: 332.00 ft

Roadway Surface: Paved

Roadway Top Width: 40.00 f

WIN:	19178.00	**Project Name:**	
Town:	New Sharon	**Stream Name:**	unnamed trip to Sandy Rvr
Route No.	US 2	**Bridge Name:**	
Asset ID:	898720	**Analysis by:**	CSH
Lat:	44.6400 **Long:** -70.04100	**Date:**	12/7/2016

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

Enter data in blue cells only!

	km²	mi²	ac	*Enter data in [mi²]*
A	7.12	2.75	1760.0	Watershed Area
W	0.41	0.2	101.6	Wetlands area (by NWI)
P_c	416510	4945820		watershed centroid (E, N; UTM 19N; meters)
County	Franklin			*choose county from drop-down menu*
pptA	45.6			mean annual precipitation (inches; by look-up)
SG	0.00			sand & gravel aquifer as decimal fraction of watershed A

A (km²)	7.12	**Conf Lvl**	0.67
W (%)	5.77		Wetlands area (by NWI)

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

ver. 2016 Feb 05

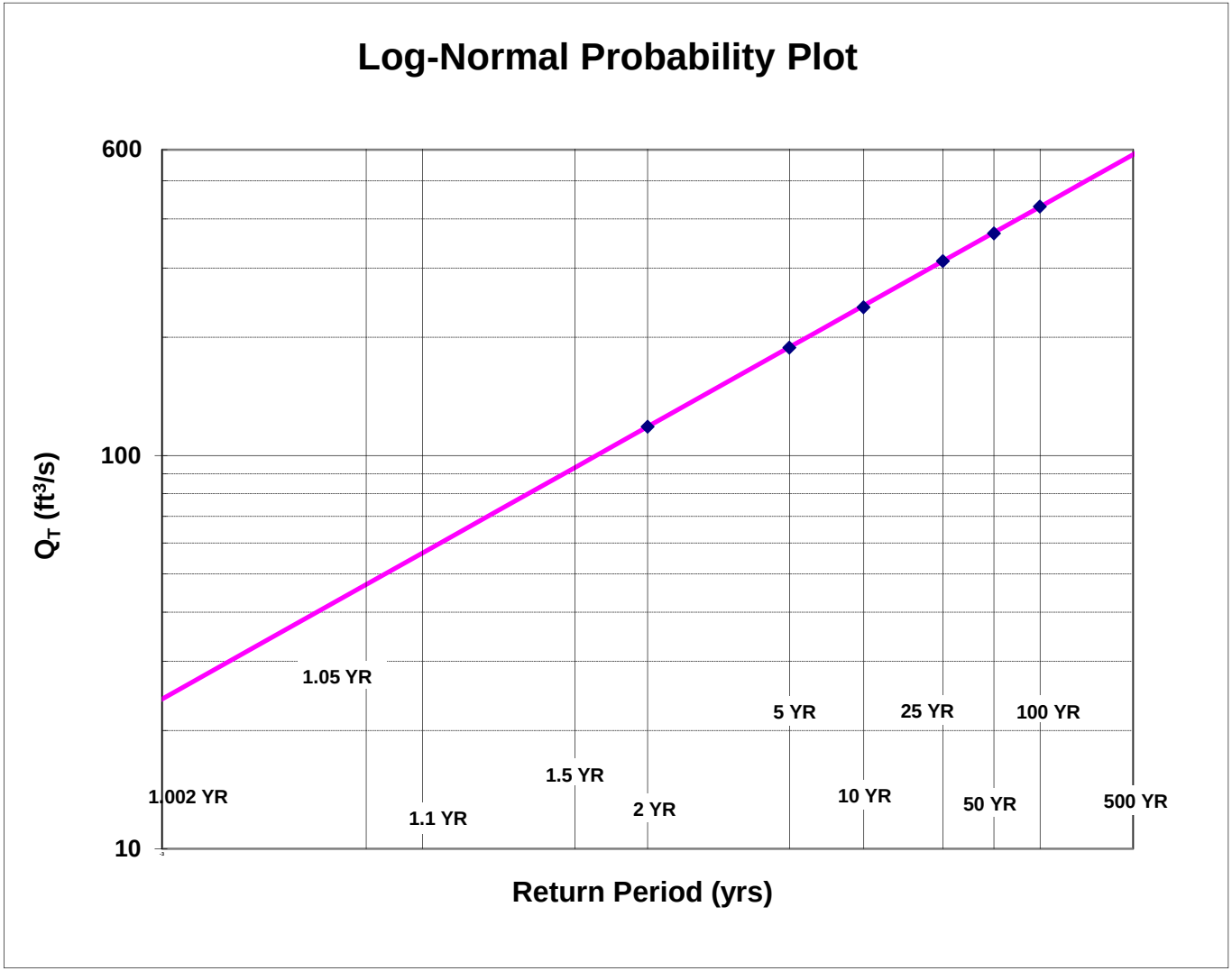
Ret Pd T (yr)	Peak Flow Estimate Lower	Q_T (m³/s)	Upper	Q_T (ft³/s)
1.1		1.60		56.5
2		3.35		118.4
5		5.33		188.1
10		6.75		238.5
25		8.85		312.5
50		10.40		367.2
100		12.17		429.9
500		16.52		583.3

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

$Q_T = b \times A^a \times 10^{-wW}$


Log-Normal Probability Plot
600
100
10
Q_T (ft³/s)
1.05 YR
1.002 YR
1.1 YR
1.5 YR
2 YR
5 YR
10 YR
25 YR
50 YR
100 YR
500 YR
Return Period (yrs)

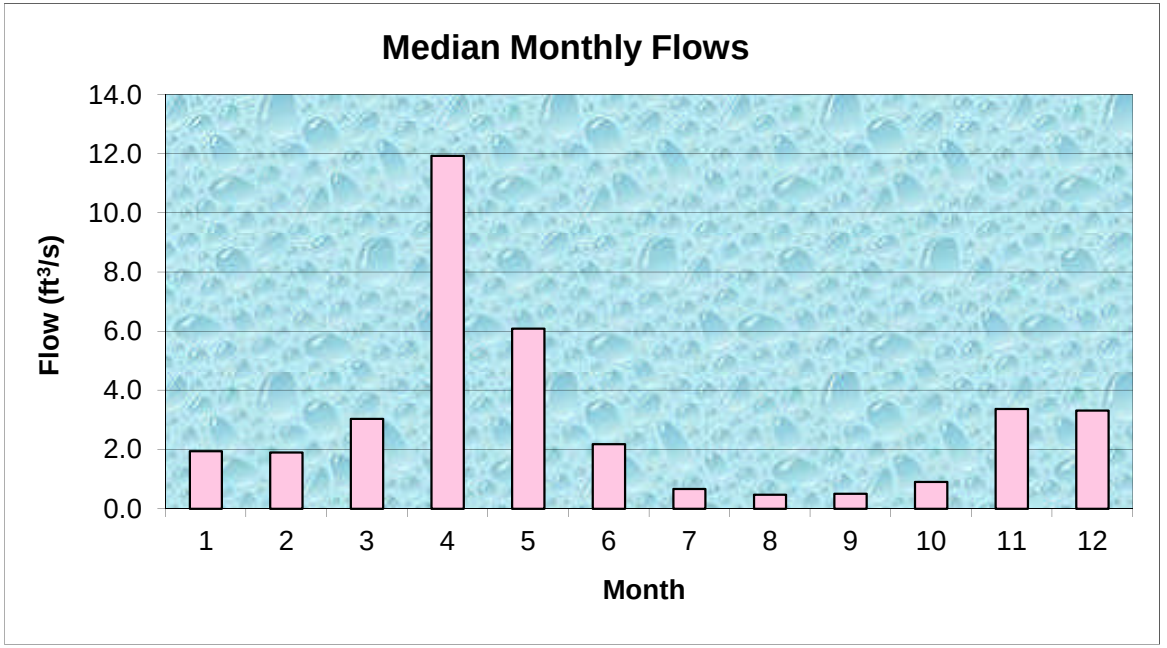
WIN:	19178.00	**Project Name:**	0.00
Town:	New Sharon	**Stream Name:**	unnamed trip to Sandy Rvr
Route No.	US 2	**Bridge Name:**	0.00
Asset ID:	898720	**Analysis by:**	CSH
Lat:	44.640000 **Long:** -70.04100	**Date:**	12/7/2016

DO NOT ENTER ANY DATA ON THIS PAGE; EVERYTHING IS CALCULATED

MAINE MONTHLY MEDIAN FLOWS and HYDRAULIC GEOMETRY BY USGS REGRESSION EQUATIONS (2004)

	Value	Variable	Explanation
	2.75	*A*	Area (mi^2)
416510	4945820	P_c	Watershed centroid (E,N; UTM; Zone 19; meters)
	87.93	*DIST*	Distance from Coastal reference line (mi)
	45.6	*pptA*	Mean Annual Precipitation (inches)
	0.00	*SG*	Sand & Gravel Aquifer (decimal fraction of watershed area)

Month	Q_{median} (ft3/s)	(m^3/s)
Jan	**1.95**	0.0552
Feb	**1.90**	0.0539
Mar	**3.04**	0.0861
Apr	**11.93**	0.3380
May	**6.09**	0.1726
Jun	**2.18**	0.0618
Jul	**0.67**	0.0190
Aug	**0.47**	0.0134
Sep	**0.51**	0.0145
Oct	**0.91**	0.0258
Nov	**3.37**	0.0956
Dec	**3.32**	0.0941



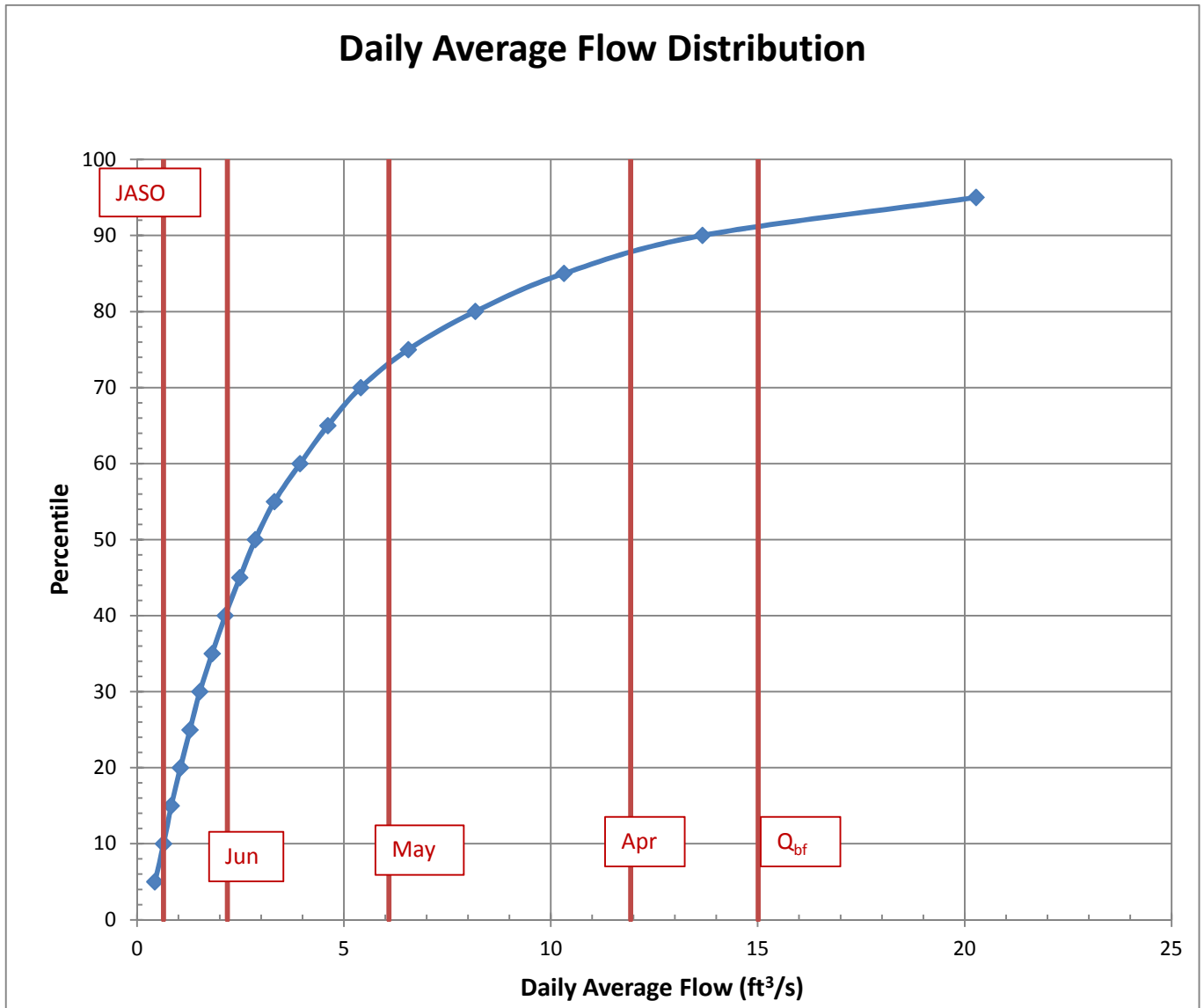
Q_{bf}	**15.0**	
ann avg	**5.7**	
ann med	**3.0**	
$Q_{1.002}$	**24.0**	
$Q_{1.01}$	**32.6**	
$Q_{1.05}$	**47.0**	
Q_{bf}	**52.2**	assume v = 4ft/s

W_{bf}	**13.0**	estimated bankfull width
d_{bf}	**1.0**	estimated bankfull depth

References

Dudley, R.W., 2004. Hydraulic Geometry Relations ..., SIR 2004-5042

Dudley, R.W., 2004. Estimating Monthly Streamflows … , SIR 2004-5026



Daily Avg Flow Dist	
A_{ws} = (mi^2)	2.8
Q (ft^3/s)	

Pctl	Median	84th pctl
5	0.43	0.70
10	0.64	0.97
15	0.83	1.21
20	1.05	1.46
25	1.28	1.72
30	1.52	1.95
35	1.82	2.23
40	2.13	2.57
45	2.48	2.90
50	2.86	3.43
55	3.32	3.99
60	3.94	4.68
65	4.61	5.46
70	5.41	6.37
75	6.55	7.66
80	8.17	9.14
85	10.31	11.72
90	13.66	15.73
95	20.28	24.47

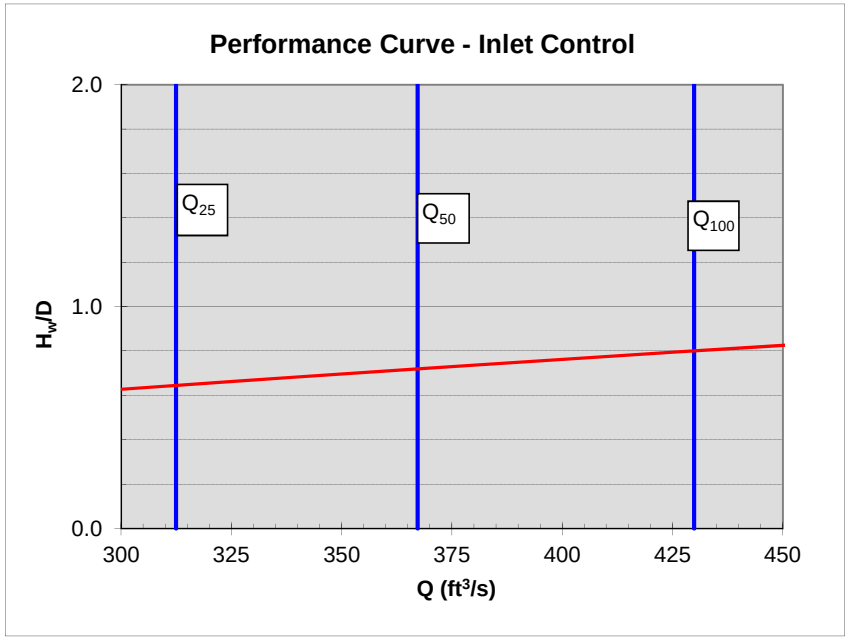
Q_{bf}	15.0
$Q_{1.002}$	24.0
$Q_{1.1}$	56.5
Q_2	118.4

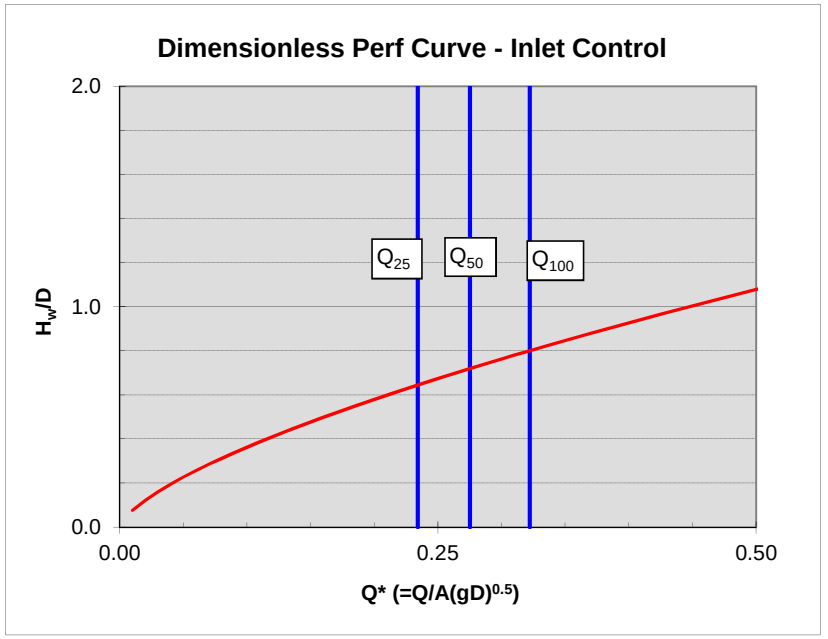
NOTE: ***This page is for preliminary sizing only.***
Final design should be done with HY8 or HDS-5

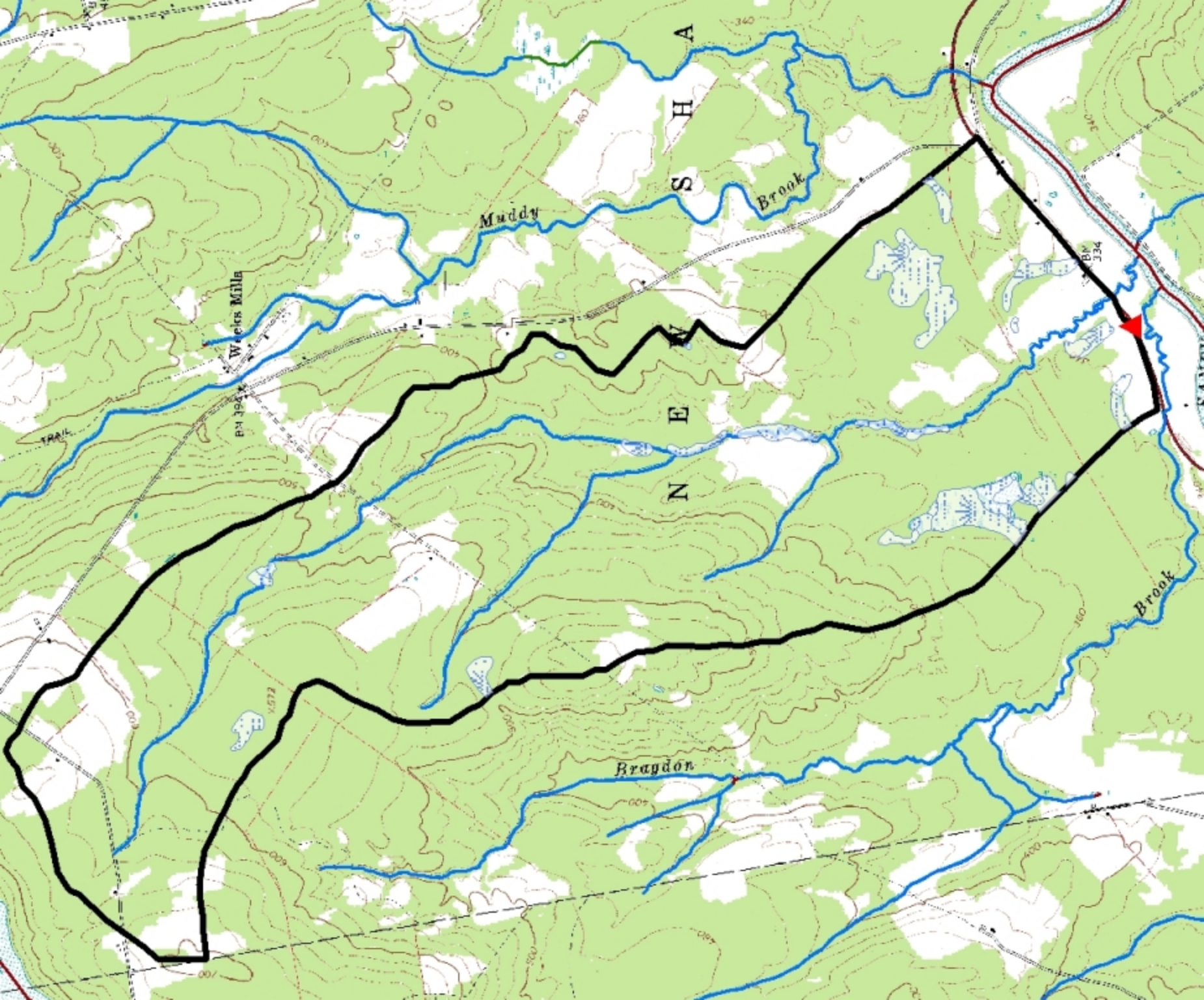
Preliminary Culvert Sizing - Round & Box Culverts

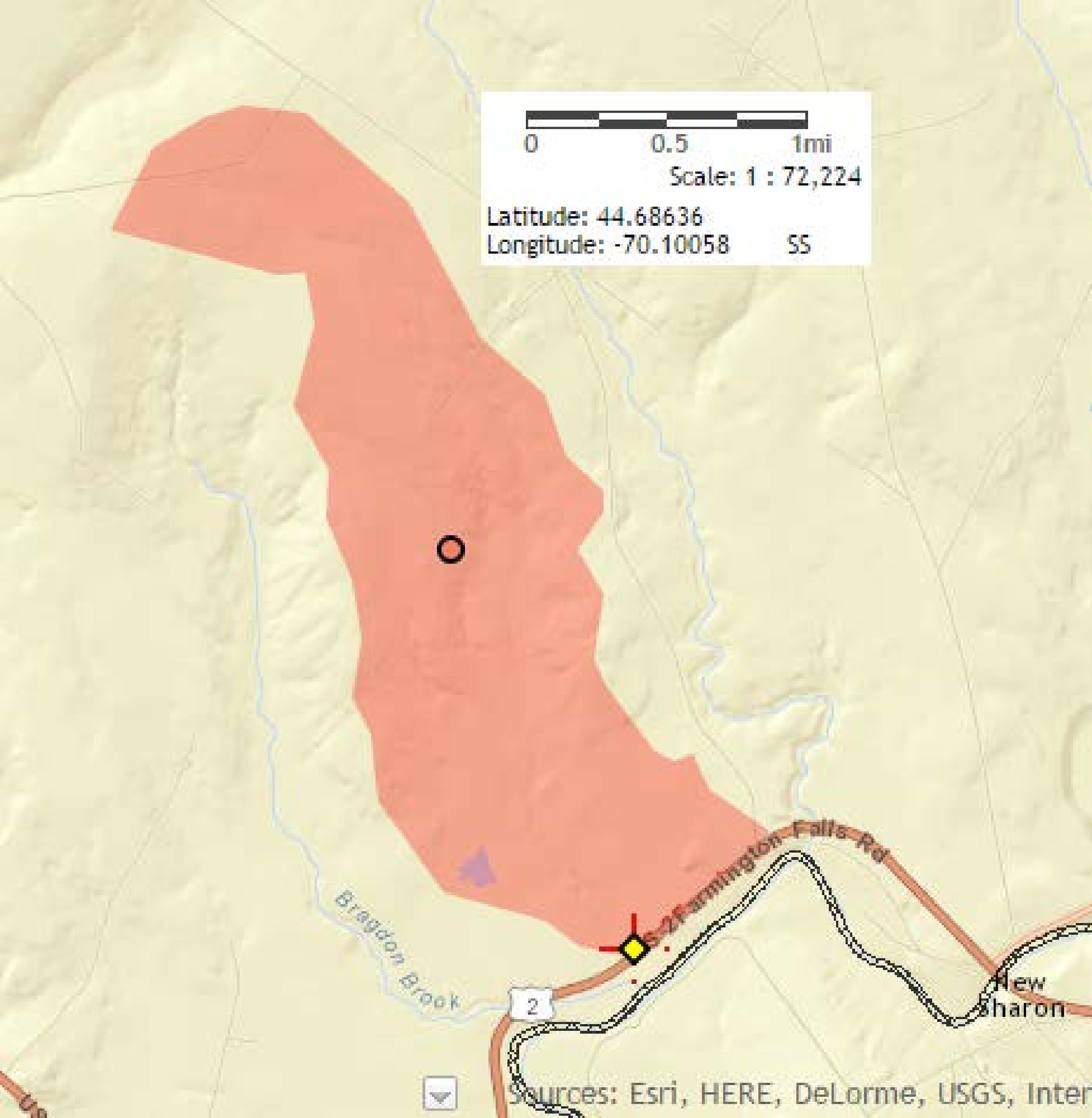
Shape:	Box						
Type:	Box 0 ww		Q_{25}	312.5			
D or R (ft)	6		Q_{50}	367.2	trial D / R =	8.9	
w (ft)	*16*	*box width*	Q_{100}	429.9	trial w: BFW =	13.0	
Slope (ft/ft)							
A (ft^2)	96.00						
g	32.2						

Note: culvert dimensions for open flow area; adjust for lost capacity due to embedding / backfilling (min {2' / 25% rise} embedment)






SHENANDOAH
Muddy Brook
Weeks Mills
TRAIL
Bm 334
Bm 394
Brook
Bragdon


0
0.5
1mi
Scale: 1 : 72,224
Latitude: 44.68636
Longitude: -70.10058
SS
Braydon Brook
2
New
Sharon
Sources: Esri, HERE, DeLorme, USGS, Inter

StreamStats Version 3 Beta

Basin Characteristics Ungaged Site Report

Date: Tues June 16, 2015 9:36:55 PM GMT-4
NAD 1983 Latitude: 44.6395 (44 38 22)
NAD 1983 Longitude: -70.0413 (-70 02 29)

Label	Value	Units	Definition
CENTROIDX	416367.06	State plane coordinates	Basin centroid horizontal (x) location in state plane coordinates
CENTROIDY	4945766.78	State plane coordinates	Basin centroid vertical (y) location in state plane units
DRNAREA	2.6	square miles	Area that drains to a point on a stream
STORNWI	5.87	percent	Percentage of strorage (combined water bodies and wetlands) from the Nationa Wetlands Inventory
ELEV	449.7	feet	Mean Basin Elevation
PRECIP	44.4	inches	Mean Annual Precipitation
PRDECFEB90	10.3	inches	Basin average mean precipitation for December to February from PRISM 1961-1990
SANDGRAVAP	1.37	percent	Percentage of land surface underlain by sand and gravel aquifers
COASTDIST	89	miles	Shortest distance from the coastline to the basin centroid
SANDGRAVAF	0.01	dimensionless	Fraction of land surface underlain by sand and gravel aquifers
LC11IMP	0.31	percent	Percentage of impervious area determined from NLCD 2011 impervious dataset
LC11DEV	1.5	percent	Percentage of developed (urban) land from NLCD 2011 classes 21-24