

HYDROLOGY REPORT

Please see Appendix C for the *Preliminary Hydrology and Hydraulics Report, September 18, 2024*.

SUMMARY

Drainage Area	3.12	mi ²
Q1.1	75	ft ³ /s
Q10	335	ft ³ /s
Q50	525	ft ³ /s
Q100	615	ft ³ /s
Q500	845	ft ³ /s

Reported by: Abigail Dempsey

Date: September 18, 2024

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

HYDRAULIC REPORT

In summary, the culvert opening was increased due to hydraulic capacity and accommodation 1.2 x bankfull width. The existing bridge does not meet the 2' freeboard suggested in the Bridge Design Guide at the Q50 water elevations and does not pass Q100. The increased span provides adequate hydraulic clearances.

SUMMARY

		Existing Structure	Recommended Structure
		12'-6" Span x 7'-11" Rise Pipe Arch	20' Span x 10'-0" Rise Precast Box Culvert
Total Area of Waterway Opening	ft ²	81	160
Headwater Elevation @ Q _{1.1}	ft	148.6	148.6
Headwater Elevation @ Q ₁₀	ft	151.8	150.9
Headwater Elevation @ Q ₂₅	ft	152.9	151.5
Headwater Elevation @ Q ₅₀	ft	153.8	152.0
Headwater Elevation @ Q ₁₀₀	ft	154.7	152.4
Headwater Elevation @ Q ₅₀₀	ft	157.8	153.6
Freeboard @ Q ₅₀	ft	0.1	2.6
Freeboard @ Q ₁₀₀	ft	-0.8	2.2
Outlet Velocity @ Q _{1.1}	ft/s	4.40	4.40
Outlet Velocity @ Q ₁₀	ft/s	6.40	6.40
Outlet Velocity @ Q ₂₅	ft/s	7.20	7.20
Outlet Velocity @ Q ₅₀	ft/s	7.88	7.88
Outlet Velocity @ Q ₁₀₀	ft/s	8.57	8.57
Outlet Velocity @ Q ₅₀₀	ft/s	10.05	10.05

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