

## RIPDES 7Q10 Policy

When determining the 7Q10 for calculating water quality-based effluent limits in RIPDES permit, the following order of operations is required:

1. Determine if the discharge is to a stream with an active, inactive, or partial record USGS gauge station. This includes streams with impoundments or that are affected by groundwater pumping.
  - a. If the stream has an active, inactive, or partial record gauge, use the list below to find the 7Q10.

USGS station no.	Station name	Water Year	7Q10 (cfs)	Drainage Area (sq. miles)
<b>ACTIVE STATIONS</b>				
01109403	Ten Mile River @ East Providence	1988-2018	9.7	53.1
01111300	Nipmuc River Near Harrisville	1965-2018	0.05	16
01111500	Branch River @ Forestdale	1941-2018	11.48	91.2
01112500	Blackstone River @ Woonsocket	1930-2018	83.9	416
01113895	Blackstone River at Roosevelt Street @ Pawtucket, RI	2004-2018	84.3	474
01114000	Moshassuck River @ Providence	1965-2018	4.1	23.1
01114500	Woonasquatucket River @ Centerdale	1943-2018	6.1	38.3
01115098	Peeptoad Brook at Elmdale Rd. near North Scituate, RI	1995-2018	0.039	4.96
01115170	Moswansicut Stream near North Scituate, RI	2009-2018	0.08	3.25
01115187	Ponaganset River at South Foster, RI	1994-2018	0.062	14.4
01115265	Hemlock Brook at King Road near Foster, RI	2009-2018	0.04	8.72
01115276	Westconnaug Stream at Plainfield Pike, RI	2009-2018	1.2	5.18
01115630	Nooseneck River @ Nooseneck	2007-2018	1.3	8.23
01116000	South Branch Pawtuxet River @ Washington	1942-2018	16.1	63.8
01116500	Pawtuxet River @ Cranston	1941-2018	59.9	200
01116905	Hunt River, 250 ft downstream of Fry Brook at Frenchtown, RI	2007-2018	1.5	16
01117000	Hunt River Near East Greenwich	1942-2018	1.5	23
01117350	Chipuxet River @ West Kingston	1973-2018	0.82	9.99
01117370	Queen River at Liberty Rd. at Liberty, RI	2007-2018	2.5	19.6
01117420	Usquepaug River Near Usquepaug	1975-2018	5.8	36.1
01117430	Pawcatuck River at Rt. 2 at Kenyon, RI	2007-2018	7.9	72.7

01117468	Beaver River Near Usquepaug	1976-2018	1.8	8.87
01117500	Pawcatuck River @ Wood River Junction	1942-2018	21.9	100
01117800	Wood River Near Arcadia	1965-2018	6.7	35.2
01118000	Wood River @ Hope Valley	1942-2018	17.8	72.4
01118500	Pawcatuck River @ Westerly	1942-2018	58	295
<b>DISCONTINUED STATIONS</b>				
01106000	Adamsville Brook at Adamsville, RI	1941-1978	0.06	8.01
01111400	Chepachet River at Chepachet, RI	1966-1972	2.28	17.4
01115630	Nooseneck River @ Nooseneck	1965-1981	1.32	8.23
01115770	Carr River Near Nooseneck	1965-1979	1.32	6.73
01117600	Meadow Brook Near Carolina	1967-1974	0.11	5.53
01126200	Bucks Horn Brook @ Greene	1967-1974	0.5	5.52
<b>PARTIAL GAUGE STATIONS</b>				
01111330	Clear River at Oakland, RI (Burrillville WWTF)	1993-2003	2.4	45.4

- b. Use the 7Q10 from the list and the drainage area ratios between the gauge station and the point of discharge to determine the 7Q10 for WQBEL calculations (to get the dilution factor).

This would be done with the following equation:

$$7Q10_{At\ your\ facility} = \left( \frac{Drainage\ Area_{At\ your\ facility}}{Drainage\ Area_{At\ the\ gauge}} \right) \cdot 7Q10_{At\ the\ gauge}$$

For example, if your facility was located on the Woonasquatucket River near Centerdale, and the drainage area for your facility was found to be 30 square miles, the 7Q10 would be calculated as follows:

$$7Q10_{At\ your\ facility} = \left( \frac{30\ Sq.\ Mi.}{38.3\ Sq.\ Mi.} \right) \cdot 6.1\ cfs$$

Which is equal to 4.8 cfs.

- c. If a facility is upstream of the gauging station, subtract the average flow from the facility from the 7Q10 value calculated in Step 1.b.

For example, the Smithfield WWTF is located on the Woonasquatucket River, just upstream of the Centerdale gauge. Therefore, the average WWTF flow is subtracted from the value at the gauge. In this case, the average WWTF flow is 3.2 cfs, making the 7Q10 flow at your facility 1.6 cfs.

If there is no facility impacting the 7Q10 of the gauge, then the 7Q10 value from step 1.b does not need to be adjusted to account for this, and step 1.c is skipped.

2. If the stream is ungauged and/or not included on the list above, use StreamStats to determine the 7Q10 flow.
3. The above active gauge station 7Q10s are current including data through water year 2018. RIPDES policy states these values shall be updated every 10 years. Therefore, this list must be updated for more recent 7Q10 values in 2029, when data through water year 2028 becomes available.
  - a. In addition to updating the list for 7Q10 values, the USGS website should be consulted for the most up-to-date list of continuous active gauges in Rhode Island. Some gauges may now have at least 10 years of data to be included in this list that had been excluded previously.