

# Canadian Environmental Technology Verification (ETV) Information Bulletin

**Bulletin Number:** CETV 2022-01-0001

**Subject:** Use of sediment removal data generated through the *New Jersey Department of Environmental Protection Laboratory Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device, January 1, 2021* for ISO 14034 verification of Oil Grit Separators tested in accordance with the TRCA's *Procedure for Laboratory Testing of Oil Grit Separators*"

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The 2021 update to the *New Jersey Department of Environmental Protection Laboratory Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device January 1, 2021* is now more closely aligned with the TRCA *Procedure for Laboratory Testing of Oil Grit Separators* than was previously the case. Both protocols specify similar test parameters (e.g. pipe size limits, injection point location, background sediment concentrations), require 7 flow rates and mass recovery testing for determining sediment removal performance. Although the protocols still have key differences, the recent alignments open up the possibility of using some sediment removal test data for both verifications.

Given that all MTDs will need to be re-tested to the new NJDEP protocol by the end of 2024, there will be significant testing activity in the next few years. Hence, there is value to the industry in allowing some flexibility for using the same test data for NJDEP and ISO 14034 verification, which in Canada follows the TRCA *Procedure for Laboratory Testing of Oil Grit Separators*. This bulletin provides details on (i) minor changes to the TRCA *Procedure* to promote better alignment between protocols and (ii) the requirements for using NJDEP sediment removal test data for meeting ISO 14034 verification approval criteria in Canada (hereafter referred to as Canadian Environmental Technology Verification or CETV).

The following minor changes to the TRCA *Procedure* will be accepted to help bring the protocols into alignment:

1. Change the analytical method for PSD from ASTM D422-63 to ASTM D6913 & D7928
  - a. Rationale: D422 included the sieve and hydrometer methods. It was allowed to lapse and was split into two standards, D6913 & D7982, one each for the sieve and hydrometer portion. The analytical requirement ends up being the same.
2. Sediment feed sample weighing: Change precision from 1 mg to 10 mg.
  - a. Rationale: 1 mg precision requires an analytical balance and these balances typically cannot handle the mass of samples obtained from the higher flow runs. Going to 10 mg allows the use of top loading balances while maintaining 3 significant figures for *even the smallest samples*.

3. Flow rate recording: Flow rate recordings from calibrated flow instruments for the determination of Sediment Removal shall be recorded at intervals no longer than 1 minute instead of 30 seconds for all runs with flow durations greater than 2 hours (The recording interval for the TRCA *Procedure* Scour Test shall remain at 30 s).
  - a. Rationale: Recording flow rates at one-minute intervals for sediment removal testing provides sufficient confirmation of maintaining the target flow rate. The less frequent data recording allows for the reduction in the amount of data that needs to be recorded which can be substantial for some of the longer runs.

While both protocols require testing 7 flow rates, the NJDEP protocol determines flow rates as a percent of the Manufacturers Treatment Flow Rate (MTFR) while the TRCA *Procedure* requires testing to specific surface loading rates (SLRs). Therefore, the flow rates for the two protocols are different.

The manufacturer has 3 options for using NJDEP laboratory test data to satisfy CETV test requirements:

1. Claim the removal for the nearest larger NJDEP flow rate, as long as the nearest flow rate is within 30% of the CETV target rate. This will be conservative since a larger flow normally yields a lower removal. Flow rate divergence greater than 30% requires re-testing.
2. Linearly interpolate between the nearest two NJDEP flow rates, with a percentage point penalty of 0.6% (absolute) on the resulting removal number, as long as the two target flows are within 2 to 12% of each other. If the CETV flow rate is lower than the target NJDEP flow rate, the NJDEP removal efficiency may be claimed without penalty. CETV flow rates less than 2% greater than NJDEP flow rates can be linearly interpolated without a penalty.<sup>1</sup>
3. Re-test and claim the result from the second number. If re-testing is done, the manufacturer must use this result for CETV.

Option one or two may not be used if the removal efficiencies on either side of the target CETV flow rate either increased with flow rate or showed a decline of 2.5 percentage points or less. Normally the verifier would apply this rule only in instances where a clear trend reversal has occurred. If the spread between all NJDEP flow rates is 2 to 3 percent, an exception to this rule could be considered by the verifier.

The example in Table 1 will use an MTFR of 28.3 L/s (1cfs, 449 gpm) for a unit with a 1.22 m (4 ft) diameter.

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<sup>1</sup> While it is recognized that the current OGS *Procedure* allows for a 10% divergence in flow rates from the target flow rate without penalty, test labs attempt to minimize this error to the extent possible. They are often successful in these attempts. Accepting NJDEP test RE data corresponding to flow rates 2 to 10% lower than the target CETV rate without penalty undermines the intent of the lab effort to avoid errors, which may confer a potential advantage to vendors using external data to satisfy CETV requirements.

Table 1: Hypothetical NJDEP test results and options for claiming removal rates for CETV

Run #	NJDEP			CETV			Claimed removal rate for CETV
	%MTR	Flow Rate (GPM)	Hypothetical NJDEP Removal rate	Loading Rate (L/min/m <sup>2</sup> )	Flow Rate (GPM)	(NJDEP-CETV)/CETV % Diff	
1	-	-	-	40	12	275%	Difference between next highest NJDEP rate is too great. Re-test
2	-	-	-	80	25	80%	Same as one
3	10	45	60	200	62	-27%	Accept the 112 gpm results (55%) or re-test
4	25	112	55	400	123	-9%	Linear interpolation of REs between 112 and 225 gpm to get the 123 gpm removal rate, minus 0.6% = 53.9%, or re-test
5	50	225	50	600	185	22%	Accept the 225 gpm result (50%) or re-test
6	75	337	45	1000	308	9%	Accept the 337 gpm result (45%) or re-test. Linear interpolation between 225 and 337 gpm to get 308 gpm removal rate, minus 0.6% = 45.7%
7	100	449	40	1400	432	4%	Accept the 449 gpm result (40%) or re-test. RE Linear interpolation between 337 and 449 gpm to get 432 gpm removal rate, minus 0.6% = 40.2%
8	125	561	38	-	-	NA	Not needed
9	150	674	35	-	-	NA	Not needed

This example allows up to 5 runs to be used twice and would require 2 additional runs on top of the NJDEP 7 runs: 40 & 80 L/min/m<sup>2</sup>. The net result would be 9 runs, instead of 14, for both verifications, assuming the manufacturer does not choose any re-tests.

If vendors are planning to use NJDEP data for ISO 14034 verification in Canada, they should carefully review the *Procedure* prior to NJDEP testing to ensure full compliance as there are key differences that will require additional testing during the NJDEP testing. The verifier will have the right to allow or reject use of NJDEP data at his/her discretion. Proposals to use NJDEP data to satisfy CETV testing should be reviewed and approved by the verifier prior to the start of testing.