


COMMONWEALTH OF VIRGINIA
Department of Environmental Quality

Subject: Guidance Memo No. 24-2004 – Reduced Monitoring

To: Regional Directors, Central Office, Office of VPDES Permits

From: Scott Morris, DBA, P.E., Director, Division of Water 

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Summary:

This memorandum contains DEQ's recommendations for implementation of reduced monitoring frequencies for certain Virginia Permit Discharge Elimination System (VPDES) permitted facilities. This guidance document replaces 98-2005.

Once effective, an electronic copy of this guidance will be available on:

- The Virginia Regulatory Town Hall under the Department of Environmental Quality (<https://townhall.virginia.gov/l/gdocs.cfm?agencynumber=440>)
- The Department's website at www.deq.virginia.gov.

Contact Information:

Please contact Azra Bilalagic, Office of VPDES Permits at (804) 584-6674 or azra.bilalagic@deq.virginia.gov, with any questions regarding the application of this guidance.

Certification:

As required by Subsection B of § 2.2-4002.1 of the Administrative Process Act (APA), the agency certifies that this guidance document conforms to the definition of a guidance document in § 2.2-4101 of the Code of Virginia.

Disclaimer:

This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate or prohibit any particular action not otherwise required or prohibited by law or regulation. It does not establish or affect legal rights or obligations. It does not establish a binding norm and is not finally determinative of the issues addressed. If alternative proposals are made, such proposals will be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.

Introduction:

To evaluate compliance with individual VPDES permits, the Virginia Department of Environmental Quality (DEQ) "VPDES Permit Writers' Manual" contains recommended minimum frequencies for monitoring effluent quality and quantity.

The goal of this initiative is to reduce the cost of environmental compliance and to provide incentives to facilities that demonstrate compliance with their permits. DEQ will use a three-step protocol in evaluating opportunities for reduced compliance monitoring:

- 1) Following receipt of an application for each permit reissuance, evaluate the facility's compliance history and determine if the facility qualifies for reduced monitoring.
- 2) Determine the degree of monitoring reduction that should be allowed.
- 3) Make provisions in the permit to require a return to baseline monitoring if the facility fails to maintain its past compliance record.

There may be cases where circumstances do not align with this guidance, but reduced monitoring may still be appropriate (e.g., a limit may not be needed, but antibacksliding prevents its removal, or ammonia limitations are added to a permit that already contains Total Kjeldahl Nitrogen (TKN) limitations). In such cases, the permit writer should fully document in the Fact Sheet the basis for the minimal monitoring frequency used in the fact sheet.

Implementation:

This guidance should be applied for all VPDES individual permit reissuance applications received after the effective date of this guidance.

Qualification Criteria:

Permit writers should evaluate with each permit reissuance whether a facility qualifies for reduced monitoring, even if a reduction was granted during the previous reissuance. Monitoring frequency reductions are not considered effluent limitations under section 402(o) of the Clean Water Act, and therefore anti-backsliding prohibitions would not be triggered by reductions in monitoring frequencies. No facilities are specifically excluded from the evaluation; however, to ensure protection of aquatic life and human health, the following should be considered when facilities are evaluated for reduced monitoring:

- 1) Seasonal limits should not be considered for reduced monitoring. Seasonally tiered limits already reflect relief from an annual limit.
- 2) Chlorination and dechlorination parameters (e.g., Cl₂ – Total, Cl₂ – Total Contact, Cl₂ – Instantaneous Minimum Technology Limitation) should not be considered for reduced monitoring.
- 3) To qualify for consideration of reduced monitoring requirements, the facility should not have been issued three or more Warning Letters (WLs), two or more Notices of Violations (NOVs) or be under any Consent Orders, Consent Decrees, or related enforcement actions during the past three years (from either DEQ or the US Environmental Protection Agency). If a facility has multiple and independent outfalls, and one outfall was subject to compliance or action(s) specified above, the remainder of the outfalls are *not* eligible for reduced monitoring. If the facility has received fewer than three WLs or two NOVs during the past three years, and has not been subject to a formal enforcement action, reduced monitoring may be considered *only* for parameters that did not incur effluent violations specified in the WLs or NOVs.

- 4) If the facility reports a Whole Effluent Toxicity (WET) effluent limitation violation during the past two years, none of the parameters monitored in the permit should be considered for reduced monitoring.
- 5) Parameters sampled once per month or less frequently should not be considered for additional monitoring reductions.
- 6) If any part of the sewerage system owned and operated by the permittee has been subject to two or more NOVs, or three or more WLs in the past three years, the facility is not eligible for reduced monitoring.
- 7) If a facility was under an enforcement action, but the facility is replaced or upgraded, it may be considered for monitoring reduction after it produces three years of effluent data.
- 8) If the facility has had other operational excursions, such as exceeding the 95% of the design capacity, but has not yet been issued an enforcement action, it may still qualify for monitoring reduction.
- 9) For a Publicly Owned Treatment Works (POTW) that has just added large significant industrial users, data collected before the new connections may no longer be representative of the facility's effluent. In this case, three years of data after the new user connects would need to be assessed before reduced monitoring could be considered. Similarly, if a significant user closed two years ago only the last two years of data should be considered.

Special Considerations:

- Discontinuous data: Monitoring cannot be reduced using the methodology described above if effluent data have not been continuously reported over the period of time being considered. Effluent averages from interrupted or discontinuous data sets may not be representative of long-term performance. Monitoring frequencies for discharges that are intermittent or short-term, such as seasonal discharges, and highly variable batch processes cannot be assessed or reduced using the methods described in these procedures.
- Exceptions: It may be appropriate to maintain higher monitoring levels in individual situations where there may be a particular interest in human health, endangered species, or a sensitive aquatic environment. An example would be a water body that has water quality problems, and it has been determined which point and nonpoint sources are particularly critical from the standpoint of protection of aquatic resources (e.g., endangered species) or human health (e.g., drinking water source). Discharges that involve addition of chemicals such as polymers for flocculation may change character rapidly and might not continue to reflect the quality demonstrated in earlier monitoring. The permit writer may decide not to reduce monitoring of critical point sources in these instances. The permit writer should always apply Professional Judgement in setting monitoring frequencies.
- Limits below Levels of Detection: We do not recommend reductions in monitoring frequencies in cases where stringent water-quality based effluent limits (WQBELs) are below levels of quantitation (e.g., TRC) (the level at which a constituent present in a wastewater sample can be reliably detected and quantified). Permittees with these types of limits will normally be deemed to be in compliance when monitored levels are below the level of quantitation; however, by definition, it is not scientifically possible (until analytical methods improve) to certify that the WQBELs are actually being achieved. Thus, it would be inappropriate to develop procedures recommending reductions from established monitoring frequencies for these types of limits.

- Use of Daily Maximum Values: These procedures do not provide a specific methodology for considering daily maximum permit values when considering monitoring/reporting reductions. Consider such situations on a case-by-case basis. There may be concerns over instances where, for example, there are acutely toxic conditions in a receiving water due to violations of daily maximum permit limitations. In such cases, higher monitoring frequencies may be required. In addition, it is important to recognize that dischargers who frequently violate daily maximum permit limitations will likely be unable to achieve high levels of performance in monthly average limits and effectively would not be eligible to participate in this program on that basis. In addition, such facilities may also trigger enforcement criteria.

Water Reclamation and Reuse:

If a VPDES permitted municipal wastewater treatment facility (WWTF) will also be authorized for water reclamation reuse, reclaimed water produced by the WWTF may be eligible for limited monitoring reductions at reissuance depending on (i) the type of reclaimed water to be produced (e.g., Level 1 or Level 2), or (ii) the relationship of the reclamation system to the WWTF that provides source to the reclamation system. For example, the reclamation system and WWTF may be one in the same with no difference in treatment (referred to as a conjunctive system), the reclamation system may share one more unit treatment process with the WWTF but provides other additional treatment independent of the WWTF, or the reclamation system does not share any unit treatment processes with the WWTF (referred to as an independent system).

There are no provisions to allow monitoring reductions for most reclaimed water standards in 9VAC25-740-10 et seq. with the exception of bacterial sampling frequency reductions for Level 1 reclaimed water specified in 9VAC25-740-80.A.4 and established per Subdivision III.G.6.d (1) of GM10-2001, Rev. 1 (9/10/18). Because the procedures in GM10-2001 to evaluate bacteria monitoring frequency reductions did not go into effect until 9/10/18, similar monitoring frequency reductions for Level 1 reclaimed water granted prior to 9/10/18 should remain valid unless there is cause, such as but not limited to, compliance and enforcement issues related to the reclamation system, to warrant re-evaluation. Bacteria sampling frequency reductions requested after 9/10/18 must be evaluated per Subdivision III.G.6.d (1) of GM10-2001, Rev. 1 and cannot go below the minimum frequency specified in 9VAC25-740-80.A.4.a.

For a VPDES permitted reclamation systems that will produce Level 2 reclaimed water, partially or completely independent of the WWTF that will provide source water to the reclamation system, there are procedures to allow only bacteria monitoring waivers for the Level 2 reclaimed water in Subdivision III.G.6.d (2) of GM10-2001, Rev. 1.

For a VPDES permitted conjunctive system that will produce Level 2 reclaimed water and provide the same treatment to both the effluent and the reclaimed water, monitoring frequency reductions determined according to this section (MN-1) of the VPDES Permit Manual for the effluent may also be applied to the Level 2 reclaimed water for the same monitoring parameters. This is based on the fact there is no difference between the treatment, composition and character of the effluent and the Level 2 reclaimed water, and neither are intended for public contact.

For a VPDES permitted conjunctive system that will produce Level 1 reclaimed water and provide the same treatment to both the effluent and the reclaimed water, most monitoring for the reclaimed water, excluding bacterial sampling frequency, cannot be reduced for reuses listed in 9VAC25-740-90.A of that water.

For a VPDES permitted conjunctive system that will reclaim wastewater (municipal or industrial) for unlisted reuses that are approved on a case-by-case basis in accordance with 9VAC25-740-90.B or C, and the reclaimed water produced by the conjunctive system must comply with Level 1 reclaimed water

standards and monitoring requirements, or other standards and monitoring requirements developed in accordance with 9VAC25-740-70.D and E; the Regional Office (RO) may allow monitoring reductions for the reclaimed water, excluding bacterial sampling frequency for Level 1 reclaimed water, where the RO in consultation with the Virginia Department of Health (VDH) has determined that a monitoring reduction of one or more reclaimed water standards will not increase the risk of the proposed reuse to public health and the environment. Where the conjunctive system, in this case, will have Level 1 bacteria standards and monitoring requirements, bacterial sampling frequency reductions must be evaluated per Subdivision III.G.6.d (1) of GM10-2001, Rev. 1 and cannot go below the minimum frequency specified in 9VAC25-740-80.A.4.a.

Monitoring Reductions Evaluation:

- For each eligible parameter, calculate the three-year composite average of representative monthly average data at each outfall. (Note: Dissolved Oxygen (D.O.), pH, temperature and bacteria are evaluated differently, as described at the end of this section). Permit writers should avoid using long periods of record to reduce or increase the value of the past three years of effluent data. The ratio of the composite long-term average divided by the permit limit (X100), and the resulting percentage provides the potential monitoring frequency reduction. Table 1 contains the recommended reductions in monitoring frequency based on that ratio.
- **Monitoring Frequency "Floor":** Current federal National Pollutant Discharge Elimination System (NPDES) regulations do not establish a monitoring frequency "floor" but do establish a reporting frequency floor of once per year. The monitoring frequency from which reductions could be made per this guidance are those established in the VPDES Permit Writers' Manual. **If the permittee received reduced monitoring during last reissuance, the baseline monitoring frequency to be evaluated, as specified in Table 1 below, should be the baseline monitoring frequency listed in the VPDES Permit Writers' Manual, not the reduced monitoring frequency in the current VPDES permit.** It is important to recognize that the EPA guidance from which Table 1 was taken asserts that there is no loss of statistical confidence in determining whether a permit limit is being violated at reduced monitoring frequencies. Also, the EPA guidance does not advocate for any reductions for parameters that are currently monitored only once per quarter.

It is important to recognize that permittees who receive monitoring frequency reductions are still expected to take all appropriate measures to control both the average level of pollutants of concern in their discharge (mean) as well as the variability of such parameters in the discharge (variance), regardless of any reductions in monitoring frequencies granted from the baseline levels.

Table 1. Recommended monitoring reductions

Baseline Monitoring Frequency	75-66%	65-50%	49-25%	<25%
7/wk	5/wk	4/wk	3/wk	1/wk
6/wk	4/wk	3/wk	2/wk	1/wk
5/wk	4/wk	3/wk	2/wk	1/wk
4/wk	3/wk	2/wk	1/wk	1/wk
3/wk	3/wk	2/wk	1/wk	1/wk
2/wk	2/wk	1/wk	2/mo	1/mo
1/wk	1/wk	1/wk	2/mo	1/2mo

- New permittees and upgraded treatment facilities should generate three years of data before being eligible for consideration for reduced monitoring. Existing permittees’ data submitted during the permit term should be evaluated at permit reissuance to determine if the level of reduced monitoring is still appropriate.
- Dissolved Oxygen: Where the post-aeration system is passive (i.e., cascade steps), reduction of monitoring frequency may be considered. Reduced monitoring should not be allowed when minimum or average D.O.s fall within 0.5 mg/L or 1.0 mg/L, respectively, of the permit limit.
- pH: Where pH is not directly adjusted by chemical addition, reduction of monitoring frequency may be considered. Reduced monitoring should not be allowed where minimum or maximum pHs fall within 0.5 units of the permit limits.
- Temperature: Reduction of monitoring frequency may be considered on a case-by-case basis.
- Bacteria: Reduction of monitoring frequency when using chlorine disinfection may be considered, but it shall not be less than 4 weekly samples in one calendar month per quarter for majors and less than 4 weekly samples in one calendar month per year or one sample quarterly (single sample maximum NOT geometric mean) for minors. All bacteria sampling should be conducted between the hours of 10:00 a.m. and 4:00 p.m.

Table 2. Example reduced monitoring schedule for bacteria

Example Reduced Monitoring Schedule for Bacteria												
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Major			4 Weekly Samples Quarterly			4 weekly samples Quarterly			4 weekly samples Quarterly			4 weekly samples Quarterly
Minor Reduced Monitoring Scenario #1			Quarterly Use Single Sample Max as Limit Not Geometric Mean			Quarterly Use Single Sample Max as Limit Not Geometric Mean			Quarterly Use Single Sample Max as Limit Not Geometric Mean			Quarterly Use Single Sample Max as Limit Not Geometric Mean
Minor Reduced Monitoring Scenario #2	4 Weekly Samples/month annually (Any month during the year)											

Monitoring reductions for bacteria for facilities using alternate disinfection (everything except chlorination) may be granted on a case-by-case basis in non-public water supply and non-shellfish waters depending on past performance and if the UV system utilizes dose pacing with appropriate alarms and redundancies to provide assurance that the design dose, and subsequent disinfection, is being achieved. The Operation and Maintenance (O&M) Manual should be modified to include a schedule for recording pertinent UV operational data. All reduced monitoring for alternate disinfection should be coordinated with Central Office (VPDES Manager) and documented in the Fact Sheet.

The permit writer should obtain the following information from the permittee or DEQ records:

- Does the facility Ultraviolet (UV) system use dose pacing with appropriate alarms?
- Does the facility have any of the following alarms: failure to achieve dose alarm, high/low flow alarm, low UV intensity alarm, transmittance alarm, and flow out of range alarms? Monitoring and recording (e.g. a SCADA) may be considered.
- Does the facility have any performance issues or concerns with the UV treatment system?
- How often is the facility UV system maintained?
- Does the facility have an O&M protocol in place for the UV system?

Reinstating Higher (Baseline) Monitoring:

Permittees are expected to maintain high performance levels after being granted reduced monitoring. If the permittee receives a Notice of Violation (NOV) related to any effluent limitations for which reduced monitoring was granted, the baseline frequencies for the specific parameter(s) listed in the NOV shall be reinstated. If a facility receives a Notice of Violation for a parameter not subject to reduced monitoring, the baseline monitoring for other reduced parameters should not be reinstated.

Permit recommendations:

- 1) List only the reduced monitoring requirements in the Part I.A. section of the permit, adding a footnote reference number following the "Frequency" column heading.
- 2) Add the following footnote to the Part I.A. page: "See [Part I.X.X*] for additional instructions regarding effluent monitoring frequencies."
- 3) Add the following permit special condition in [Part I.X.X*]:

Effluent Monitoring Frequencies

If the facility permitted herein reports a Whole Effluent Toxicity effluent violation, all effluent monitoring frequencies listed below shall become effective upon written notice from DEQ and remain in effect until permit expiration. If the facility is issued a Notice of Violation for any of the parameters listed below, the following effluent monitoring frequencies for the specified parameter(s) shall become effective upon written notice from DEQ and remain in effect until permit expiration.

<u>Parameter</u>	<u>Monitoring Frequency</u>
[List Parameter]	[Specify frequency]
[List Parameter]	[Specify frequency]
[List Parameter]	[Specify frequency]

No other effluent limitations or monitoring requirements are affected by this special condition.

Effluent Monitoring Frequencies (For permits that are being reissued with reduced monitoring frequency for multiple outfalls with different treatment systems)

If the facility permitted herein reports a Whole Effluent Toxicity effluent violation, all effluent monitoring frequencies listed below for the specific outfall shall become effective upon written notice from DEQ and remain in effect until permit expiration. If the facility is issued a Notice of Violation (NOV) for any of the parameters listed below, then the following effluent monitoring frequencies for the specified parameter(s) shall become effective upon written notice from DEQ for the outfall(s) subject to the NOV and remain in effect until permit expiration.

<u>Parameter</u>	<u>Monitoring Frequency</u>	<u>Outfall(s)</u>
[List Parameter]	[Specify frequency]	[List Outfall(s)]
[List Parameter]	[Specify frequency]	[List Outfall(s)]
[List Parameter]	[Specify frequency]	[List Outfall(s)]
[List Parameter]	[Specify frequency]	[List Outfall(s)]

No other effluent limitations or monitoring requirements are affected by this special condition.