



DISCHARGE MONITORING REPORT MANUAL

REVISED SEPTEMBER 2025

This manual was produced by The Kentucky Department for Environmental Protection. This manual provides instructions for summarizing monitoring results to be reported on Discharge Monitoring Reports (DMRs) and is not a substitute for reading and understanding your Kentucky Pollutant Discharge Elimination System (KPDES) permit. For questions regarding this manual, please contact the Department for Environmental Protection at 502-782-6854 or envhelp@ky.gov

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CHAPTER 1: OVERVIEW

KPDES

The Clean Water Act (CWA) established the National Pollutant Discharge Elimination System (NPDES). It requires every facility discharging into receiving waters of the U.S. to possess a permit. NPDES permits set limitations on how much of a given pollutant can be released into a body of water. The permit holder is required by the NPDES permit to monitor the effluent discharge. They record the monitoring data on a Discharge Monitoring Report (DMR). In Kentucky, the Department for Environmental Protection (DEP) administers the NPDES program with U.S. Environmental Protection Agency (U.S.EPA) oversight. The permit holder must submit the DMR to the state. DEP uses this data to determine compliance with permit conditions. DEP administers the NPDES program with U.S. Environmental Protection Agency (U.S. EPA) oversight. DEP requires permit holders to enter and submit their DMR data through U.S. EPA's **NetDMR** system. U.S. EPA migrates the NetDMR data to its **ICIS-NPDES** database. U.S. EPA uses the NetDMR and ICIS- NPDES to evaluate Kentucky's NPDES program. In Kentucky, the NPDES program is called the Kentucky Pollutant Discharge Elimination System (KPDES).

This document explains best practices to summarize NPDES monitoring data on DMRs, including required calculations, rounding, parameter specific reporting, and DMR submission using NetDMR. Each permit contains limits and information specific to the discharge point(s). Responsible persons completing DMRs must verify that NetDMR accurately matches the monitoring and reporting requirements in the permit. They must also verify they are entering the correct data for the correct parameter, outfall, and monitoring period **before** submitting the DMR. The examples provided in this document will be similar to DMRs in NetDMR but differ in the limits for each parameter as these are specific to each facility.

HOW TO USE THIS DOCUMENT

Throughout this document, you will see references to circles and boxes containing numbers and/or letters like the ones shown here:   The circles appear in Chapter 2 and the boxes are in Appendices B and C. They link the explanation or definition to an example. Appendix A shows the calculations. Appendix B shows the data and calculations sheet used to complete the DMR example in Appendix C. Reference Appendix B to see the source of the data in the example and reference Appendix C to see how the data would be entered though NetDMR.

CHAPTER 2: DMR INSTRUCTIONS.

All DMRs shall be submitted to DEP using NetDMR. The DMRs available in NetDMR must correspond to the permit requirements. **Check to make sure that the parameters, limits, and monitoring requirements displayed in NetDMR match your KPDES permit.** The permit is a legally binding document, and the DMR in NetDMR must reflect the permit conditions. If there are discrepancies, contact the Surface Water Permits Branch, Permit Support Section, within the Division of Water (DOW) at netdmr@ky.gov with the issue so corrections can be made as warranted.

Step by step instructions, FAQs and website addresses for the NetDMR program are available at:

<https://eec.ky.gov/Environmental-Protection/Water/SubmitReport/Pages/NetDMR.aspx>

Certified laboratories must perform all sample analysis used in KPDES reporting.

DEP's laboratory certification program in its Division of Water establishes standards for the operation of laboratories. The certification program performs competency evaluations of laboratories.

Parts of a DMR

In Chapter 2, the numbers below correspond to the numbers found in these circles on the NetDMR screenshot examples on the following pages. Reference circles containing letters and numbers appear within the explanations of these various parts. These correspond with the NetDMR example. For example, "11. Sample Measurements" corresponds with  on the example NetDMR. Q1 in the explanation of number 11 corresponds with  on the example NetDMR.

- 1. KPDES Permit ID, Permittee and Facility Information** – Verify that the correct name and mailing address are shown in NetDMR. For corrections, email netdmr@ky.gov with the permit number and required corrections.
- 2. Permitted Feature** – The permitted feature refers to a particular pipe, outfall, or other feature. Each DMR corresponds to a specific monitoring location. Make sure you are recording data for the correct monitoring location on your DMR.
- 3. Discharge** – The discharge of pollutants from the identified and permitted outfall. Each DMR corresponds to a specific outfall and its associate discharge and effluent limit set. Make sure you are recording data for the correct outfall and limit set on your DMR.

4. **Monitoring Period** – The first and last days of the monitoring period are displayed in MM/DD/YYYY format. Since the monitoring period for each permit is different, the permittee should check to be certain that the monitoring period specified on the DMR corresponds to the permit requirement.
5. **DMR Due Date** – Displays the date by which the DMR submission must be completed to avoid violation of the permit requirements.
6. **Status** – Displays the status of the DMR submission (Not Saved, NetDMR Validated, Submitted, etc.).
7. **A principal executive officer or ranking elected official, a general partner or proprietor, or an authorized representative** – The name, title and phone number of the responsible person must be filled out in the header section of the DMR.
8. **No Data Indicator (NODI)** – If there is no discharge for the entire monitoring period or data available for a specific parameter, select the appropriate NODI code from the dropdown box. No other entries for parts 9-17 are required. Refer to Appendix I, Table I for a description of NODI Codes.
9. **Parameters** – Verify that each parameter specified in the permit is listed one per box in the far-left column of the form. For corrections, please contact the DOW Surface Water Permitting Branch, Permit Support Section at netdmr@ky.gov.
10. **DMR Value Qualifier** – Equals (=) will pre-populate in the qualifier dropdown box. You may manually choose a different option. Select the appropriate DMR value qualifier from the dropdown list based on the values reported by your laboratory.

For example, the less than qualifier “<” is often used in conjunction with a detection value to show that the analysis was below the laboratory’s Method Detection Limit (MDL) or Quantification level. See separate guidance on NODI Code B.
11. **Sample Measurement** – Enter the analytical data for each parameter under “Quantity or Loading” and “Quality or Concentration” in the appropriate box result in NetDMR. “Quantity or Loading” values are referred to as Q1 and Q2 and “Quality or Concentration” values are referred to as C1, C2 and C3 in NetDMR.

- Average is normally the arithmetic average (geometric mean for bacterial parameters) of all sample measurements for each parameter obtained during the monitoring period. **Never average pH data.**
- Maximum and minimum are the high and low measurements obtained during the monitoring period.

- If the result of only one measurement is being reported, enter the same value in EVERY column for which limitations or reporting requirements are specified in the permit.
- ALL sample measurement spaces available must be completed. A value box cannot be left blank (see 18. Edit Check Errors below).
- You cannot enter both a value and a NODI code for a required parameter and value type (see 18. Edit Check Errors below).

12. Permit Requirement –Verify each permit requirement for each parameter under Concentration and Quantity as specified in the permit. For corrections, please contact the DOW Surface Water Permitting Branch, Permit Support Section Permit Support Section at netdmr@ky.gov.

13. Units – The parameter units are prepopulated based on your permit requirement. If your laboratory report shows different units than listed on your permit, the permittee **MUST** communicate with their laboratory to report the permit-required units.

Note: The permittee should NOT change the units; therefore, if the units on the NetDMR differ from that of the permit, a permit modification may be needed to resolve this issue, and the permittee should contact the Division of Water.

14. Number of Exceptions (NO. EX) – The “NO. EX” field indicates how many times a limit was not met during the monitoring period. To complete this field, count and then **enter the number of sample measurements that does not conform to the maximum (or minimum) limit for the parameter for both “Quantity or Loading” and “Quality or Concentration”**. Do not count the results for the average “Quantity or Loading” and “Quality or Concentration” as exceptions.

Some permits and parameters specify the maximum (or minimum) results as “weekly averages” instead of a “daily maximum”. **In these instances, count and report the number of “weekly averages” that did not conform to the permit limit, not the number of individual sample results.**

15. Frequency of Analysis – The frequency of analysis is prepopulated based on your permit requirement. Unless samples were analyzed more frequently or less frequently than required by the permit, there is no need to fill in this column. If you did not analyze the permit required number of samples, select the actual frequency of analysis during the monitoring period from the dropdown list. For example, enter “99/99” for continuous monitoring, “1/7” for once per week, “1/30” for once per month and “1/90” for once per quarter. See the Appendix D, p 26 for frequency of analysis codes and explanations.

- This is the actual number of samples taken and analyzed, not the number of attempts to collect a sample.
- All sampling and analysis done above the permit minimum must be reported. *(The only exception to this would be if a coal facility is requesting alternative limits based upon rainfall)*
- For coal facilities requesting alternative limits, only include the number of samples used to calculate the average/max.
See APPENDIX J for Coal APELs chart.

16. Sample Type – The sample type is prepopulated based on your permit requirement. Unless the sample type differs from the permit, there is no need to fill in this column. If a different sampling method was used, select the method used to collect the actual sample from the dropdown list. See Appendix E page 31 for sample type codes and explanations.

17. Parameter Specific NODI Code - – If there is no data available for the specific parameter for the monitoring period, select the appropriate NODI code from the dropdown box. See Table I Appendix I, NODI Codes.

18. Edit Check Errors – If any “errors” are listed, they must be either corrected or acknowledged by clicking the checkbox under acknowledge. Examples of errors are a DMR value exceeding the permit limit, entering both a value and a no discharge code for a required parameter, or leaving a required parameter blank. The error listing will provide the parameter and specific value (Q1, Q2, C1, C2, C3) on which the error occurred.

19. Comments and Explanation of Any Violations – This block is required to explain and discuss any permit violations that occurred during the monitoring period. If you require additional space, please attach a brief explanation. The explanation in both the comment box and any attachments must detail the cause and corrective actions taken in addition to referencing each violation by date.

- *Use of some NODI codes REQUIRE a comment – See NODI Code list in Appendix I Table 1, and NODI code descriptions for further information.*

20. Add Attachment – This feature is used to attach additional files that may be relevant to your DMR such as special reports, laboratory reports, data, letters of explanation, etc. Most document formats (PDF, MS WORD, MS EXCEL, JPG) are acceptable.

21. Report Last Saved By – This information shows who last edited and saved information on the DMR. It will not update when the DMR is submitted if no edits are made prior to DMR submission.

22. Save Options – When you have finished making changes to the DMR, you must save your edits. Click Save and Continue if you want to remain on the current DMR screen or Save and Exit if you want to return to the available DMR listing screen. Once the DMR is saved, the DMR Status (6) and Edit Check Errors (18) will update to display the current status and potential required edits. Saving the DMR does not complete your permit required DMR submission.

23. Sign and Submit – After the DMR has been saved, if all edit check errors (18) have been cleared or acknowledged and the DMR status (6) shows NetDMR validated, the DMR can be submitted. Submitting the DMR completes your permit required DMR submission.

IMAGE 2.1 EXAMPLE NETDMR

DMR/COR Search Results

DMRs 1 through 3 of 3

Next Step(s)	Permit ID	Facility	Permitted Feature	Discharge #	Discharge Description	Monitoring Period End Date	DMR Due Date	Status	COR Received Date	Include in Batch Submit	Include in Batch COR Download	Update NODI
Correct DMR Go	KY0001400	EXAMPLE PERMITTEE	001	001-1	FILTER BACKWASH WATER	01/31/14	02/28/14	Signed & Submitted	02/27/14	Check All/On Page Clear All	Check All/On Page Clear All	Check All/On Page Clear All
Correct DMR Go	KY0001400	EXAMPLE PERMITTEE	001	001-1	FILTER BACKWASH WATER	02/28/14	03/28/14	NetDMR Validated	03/05/14	☐	☐	☐
Edit DMR Go	KY0001400	EXAMPLE PERMITTEE	001	001-1	FILTER BACKWASH WATER	03/31/14	04/28/14	Ready for Data Entry				☐

Permit

Permit ID: **1** KY0001400
 Permittee: Example Permittee
 Facility: **1** EXAMPLE PERMITTEE
 Permitted Feature: **2** 001 - External Outfall
 Report Dates & Status
 Monitoring Period: **4** From 01/01/14 to 01/31/14
 Status: **6** Not Saved
 Major: ☐
 Permittee Address: **1** 123 Main St
 Facility Location: **1** Anytown, KY 00000
 Discharge: **3** 1 - FILTER BACKWASH WATER
 DMR Due Date: **5** 02/28/14

Considerations for Form Completion

0011-MONITORING FOR TOTAL RECOVERABLE ALUMINUM IS ONLY REQUIRED IF ALUMINUM-BASED COAGULANTS ARE USED; TOTAL RECOVERABLE IRON REQUIRED ONLY IF IRON-BASED COAGULANTS ARE USED; PHOSPHORUS REQUIRED ONLY IF PHOSPHATES ARE USED IN THE DISTRIBUTION SYSTEM, AND IF DISTRIBUTION SYSTEM WATER IS PRESENT IN THE DISCHARGE.

Principal Executive Officer

First Name: **7** John
 Title: President
 Last Name: **7** Smith
 Telephone: 123-456-7890

No Data Indicator (NODI)

Form NODI: **8**

IMAGE 2.2 EXAMPLE NETDMR

Parameter		NODI	Quantity or Loading			Quality or Concentration				# of Ex.	Freq. of Analysis	Smpl. Type
Code	Name	List	Value 1	Value 2	Units	Value 1	Value 2	Value 3	Units		List	List
00400	pH	Smpl.				= 7.8		= 7.8	SU		01/30	GR
1 - Effluent Gross									List			
Season: 0		Req.				>= 6 Minimum		<= 9 Maximum	Standard Units		Monthly	GRAB
NODI: 17		NODI										
00530	Solids, total suspended	Smpl.					= 29	= 29	mg/L		01/30	GR
1 - Effluent Gross									List			
Season: 0		Req.					<= 30 30 Day Average	<= 50 Daily Maximum	Milligrams per Liter		Monthly	GRAB
NODI:		NODI										

Parameter		NODI	Quantity or Loading			Quality or Concentration				# of Ex.	Freq. of Analysis	Smpl. Type
Code	Name		Value 1	Value 2	Units	Value 1	Value 2	Value 3	Units			
00300	Oxygen, dissolved [DO]	Smpl.				=4.2			19 - mg/L	0	01/01 - Daily	GR - Grab
1 - Effluent Gross												
Season: 0		Req.				>=2.0 INST MIN			19 - mg/L		01/01 - Daily	GR - Grab
NODI: -		NODI										
00310	BOD, 5-day, 20 deg. C	Smpl.	=15628.0	=20896.0	26 - lb/d	=25.0	=34.0		19 - mg/L	0	01/01 - Daily	CP - Composite
E - Secondary/Biological Process Complete												
Season: 0		Req.	Req Mon MO AVG	Req Mon MX WK AV	26 - lb/d	<=30.0 MO AVG	<=45.0 MX WK AV		19 - mg/L		01/01 - Daily	CP - Composite
NODI: -		NODI										
00310	BOD, 5-day, 20 deg. C	Smpl.	=122576.0	=135916.0	26 - lb/d	=214.0	=251.0		19 - mg/L	0	01/01 - Daily	CP - Composite
G - Raw Sewage Influent												
Season: 0		Req.	Req Mon MO AVG	Req Mon MX WK AV	26 - lb/d	Req Mon MO AVG	Req Mon MX WK AV		19 - mg/L		01/01 - Daily	CP - Composite
NODI: -		NODI										

IMAGE 2.3 EXAMPLE NETDMR

50060	Chlorine, total residual	Smpl.				=	0.018	=	0.018
1 - Effluent Gross									
Season: 0		Req.				<= .011 30 Day Average		<= .019 Daily Maxi	
NODI:		NODI							

Edit Check Errors

Code	Name	Monitoring Location	Field	Type	Description	Acknowledge
50060	Chlorine, total residual	Effluent Gross	Quality or Concentration Sample Value 2	Soft	The provided sample value is outside the permit limit.	☒ 18

Comments

19

Attachments

Add Attachment 20

No results.

Report Last Saved By

User: shawnhokanson00@gmail.com

Name: shawn hokanson

E-Mail: 21 shawnhokanson00@gmail.com

Date/Time: 03/05/14 11:08 EST

22
 22
 23

CHAPTER 3: FREQUENTLY ASKED QUESTIONS (FAQ)

1. **What if the person responsible for filling out the DMR has changed, or the facility has changed ownership? Should this be corrected on the DMR form itself?** If the person responsible for the DMR has changed, you must notify DOW's Surface Water Permits Branch, Permit Support Section, so that person's NetDMR account can be disabled. The new party must create an account in NetDMR and request the Signatory or Edit role as appropriate.

If the facility has changed ownership, you must complete and submit a "Transfer of Ownership" form to DOW's Surface Water Permits Branch, Permit Support Section, listed in the back of this document. The Transfer of Permit Request Form can be found at

<https://eec.ky.gov/Environmental-Protection/Water/PermitCert/KPDES/Pages/default.aspx>

2. **How do I report total residual chlorine if my analyzer's minimum reporting level is 0.02 mg/l?** For Total Residual Chlorine (TRC), enter the NODI code "B" in the appropriate boxes if all samples are below minimum reporting level (MRL). Where multiple samples contain a mixture of values, some of which are below MRL, substitute the value of 0.00 mg/l sample measurements below the 0.02 mg/l MDL when averaging the analytical results. DOW accepts the use of TRC analyzers with a reporting limit of 0.02 mg/l. Please note the instrument must be capable of measuring down to 0.02 mg/l for this practice to be acceptable. If the MRL is any value > 0.02 mg/l then the MRL would then become a detect and that value used in calculating the average. Please see examples 1 and 2 below.

Example 1

Sample Number	Analysis Results	Avg. Calculation	DMR Values
1	<0.02 mg/l	0.00	
2	0.10 mg/l	0.10	
3	0.20 mg/l	0.20	
4	<0.04 mg/l	0.04	
Maximum			0.20 mg/l Maximum
Average		0.09 mg/l	0.09 mg/l Average

Example 2

Sample Number	Analysis Results	DMR Values
1	<0.02 mg/l	
2	<0.02 mg/l	
3	<0.02 mg/l	
4	<0.02 mg/l	
Maximum		B for Maximum
Average		B for Average

3. How do I report for bacteriological analysis (fecal coliform and *E. coli*)?

Report the nearest whole number multiplied by the dilution factor. If a sample contains colonies that are too numerous to count, it is your responsibility to conduct enough dilutions in these tests to obtain a discrete (“real number”) value. Reporting a non-numerical value, such as TNTC, on individual samples is unacceptable because one cannot perform mathematical calculations on non-numerical values. For samples in which subsequent dilutions do not produce a discrete value and are too numerous to count, report sample results as > 60,000. You would use 60,000 in the geometric mean calculation.

- For *E. coli* and fecal coliform, never use the less than (<) inequality symbols when reporting a result. The MRL for these pollutants is zero. A numeric value or NODI codes, must be reported in the appropriate sample measurement boxes.
- A larger than (>) inequality shall be reported/explained in the comments section.
- Report a whole number always for bacteriological analysis and NEVER USE DECIMALS.
- In the geometric mean calculations, the colony count cannot be 0. Use the whole number value of 1 in place of any 0 because mathematical laws prevent 0 in geometric mean calculations.

4. What are monthly and weekly averages?

- **Monthly Averages:** The average of all sample measurements taken during the calendar month.
- **Weekly Averages:** The average of all sample measurements taken during the weeks as described below.
 - Week 1: Calendar days 1-7
 - Week 2: Calendar days 8-14
 - Week 3: Calendar days 15-21
 - Week 4: Calendar days 22-28

- Extra days beyond day 28 are eliminated from the weekly average calculation, but any samples analyzed must be included in the monthly average calculation.
5. **How do I calculate percent removal for BOD and TSS?** The monthly average percent removal is calculated using the monthly average influent concentration and the monthly average effluent concentration. See Appendix A for a calculation example.
6. **What is the difference between arithmetic and geometric average?**
- **Arithmetic average:** An arithmetic average is calculated by adding numbers and then dividing by the total number of figures. For example, the average of numbers 2, 3, 4 is 9 divided by 3, with the result of 3.
 - **Geometric average:** The geometric average, also known as the geometric mean, is a very different calculation than the arithmetic average. Geometric averages are used to calculate bacteriological averages. A calculator capable of performing logarithmic or exponential functions is recommended.
 - See Appendix A, p. 19 for calculation examples.
7. **What are the guidelines for significant digits?**
Refer to Appendix G, TABLE H.1 for details on determining significant digits.
8. **What are the guidelines for rounding numbers?** All rounding must be performed at the end of the calculation. Results must be reported using the same number of significant digits as the permit limit except for instances where the approved methodology cannot support those limits. However, this must be used consistently throughout the laboratory for all analytical results. Additionally, the rounding technique must be documented in the Quality Assurance Plan and/or task specific Standard Operating Procedure (SOP). Refer to Appendix – for rounding procedures recommended by Kentucky.
9. **What results do I report if I sample more frequently than required by my permit?** Your permit lists the minimum frequency for taking and analyzing samples. If you take additional samples using correct methodology and analytical procedures and they are from places specified on your permit, they must be included in the calculation of DMR values. You must report this change in sampling frequency in the “Frequency of Analysis” block on the DMR form.

10. **How do I correct an error on a DMR that I have submitted?** To correct an error prior to submitting the DMR, simply edit and save the information, then complete submission. If you have already submitted the DMR, go to that DMR in NetDMR, and select GO next to the Correct DMR action. Make only the required changes to correct the error(s), save the changes, and resubmit the DMR. Once submitted, only the changed information is updated, and you will see two dates listed in the COR Received Date Submission Date column on the DMR/COR Search Results Screen.
11. **Who can sign a DMR form?** The description of the categories of individuals who can act as a signatory official on the DMR form is found in your permit and also in regulations at [40 CFR 122.22](#), [40 CFR 403.6\(a\)\(2\)\(ii\)](#), and [401 KAR 5:060 Section 4](#). A responsible corporate official (for example, an officer of the corporation), partner, sole proprietor, or a government principal executive officer or government ranking elected official. See your permit for a complete description. Only specific individuals with signatory authority AND NetDMR authorization for signature can sign.
12. **Can signatory authority be delegated?** Yes, a duly authorized signatory official may also sign DMR forms. Permission must be given in writing from an authorized signatory official using the NetDMR Subscriber Agreement.
13. **What is the difference between a grab, composite, and 24-hour composite sample?**
- **Grab sample:** A grab sample is a single sample collected over a period of time not exceeding 15 minutes and composed of an individual aliquot of at least 100 milliliters. The period of time during which the sample is collected must be representative of daily operations and comply with permit sampling requirements.
 - **Composite sample:** A composite sample is a sample composed of or derived from two or more discrete aliquots of at least 100 milliliters each collected over a compositing period. Aliquots must be taken in a manner and at a frequency such that the resulting composited sample is representative of the actual discharge during the compositing period.
 - **Twenty-four-hour (24) composite sample:** A twenty-four-hour composite is a sample collected using an automated sampler set to collect equal volume aliquots of at least 100 milliliters each, every 15 minutes over a twenty-four-hour period. The goal is for the composite sample to be representative of the actual discharge during the 24-hour period.

Notes: Sample aliquots must be at least 100 ml each to avoid sediment bias. The Cabinet recommends setting samplers 120-140 ml per aliquot to ensure that the minimum of 100 ml per aliquot is achieved. Most samples must be maintained at a temperature between 0° C and 6° C at all times. Sample techniques are typically included as requirements within a permit and within analytical methods. Sample techniques vary based on site and effluent-specific characteristics. Refer to your permit. The clock for the holding time requirement starts when the last aliquot has been added to the sample.

14. **Who can perform the analysis required on my KPDES permit?** Each analysis **MUST** be performed by a Kentucky certified laboratory, including field analysis certifications.

15. **How do I calculate flow if I do not have a flow meter?** In the event a facility does not have a flow meter, a weir, or other dedicated flow measurement device, a scientifically defensible method must be used to measure flow. These methods, though less accurate than a flow meter, can include the use of a bucket and timer or volumetric calculations. Visit https://www.epa.gov/sites/default/files/2015-10/documents/wastewater_flow_measurement109_af.r4.pdf for more information. If you are not sure if the flow measurement method you would like to use is scientifically defensible, you can submit a description of your proposed method to DOW for their review and approval. If your KPDES permit requires the use of a flow meter, you may be in violation of the permit even if you use an acceptable alternative method for measuring flow. Water meter readings cannot be used to estimate flow.

Note: Flow **MUST** be reported in million gallons per day unless your permit requires other units.

16. Must I use erroneous or unrepresentative sample results in my DMR calculations and DMR reporting?

You are required to use all analytical results from samples collected at a permitted outfall in DMR calculations and DMR reporting. According to U.S. EPA, "...the results of all analyses are to be reported...Permittees must not "shop" for results. If data is omitted, such "sins of omission" are just as prosecutable as if the violators had falsified the results." (U.S. EPA, "NPDES Self-Monitoring Data and Data Audit Inspections" (Fall 1994), p.39)

- Should you encounter a situation where you believe a sample result is erroneous or unrepresentative, you may make a request to the Kentucky Department for Environmental Protection to omit the erroneous or unrepresentative result. These are the steps to make a request:
- You must submit a DMR through NetDMR with all analytical results included in the DMR calculations.
- You may submit a request to omit analytical results you believe are erroneous or unrepresentative of the discharge. Please submit this request to: Manager, Compliance and Operations Branch, Division of Enforcement, Kentucky Department for Environmental Protection, 300 Sower Boulevard, Frankfort, KY 40601. Please include any documentation you have to support the claim of erroneous or unrepresentative analytical results with your request.
- The Division of Enforcement and the Division of Water (Field Operations Branch and Surface Water Permits Branch) will review the submission and determine whether or not to accept the request.
- The Division of Enforcement will notify you about whether your request was accepted or denied.
- If your request is accepted, you may submit a revised DMR through NetDMR with the erroneous or unrepresentative analytical results omitted from DMR calculations. Please scan and attach the request, supporting documentation, correspondence, and final determination to the DMR in NetDMR.

1. How do I report analytical results on my DMR when the laboratory analysis is either unquantifiable or below the detection level?

Unless your permit requires otherwise, you will report or use data according to the following chart:

Laboratory Analysis Sheet Indicates	Analytical Result Reported Directly On DMR	Analytical Result Used in Calculations
Estimated Value (Detected but not quantifiable)	NODI = Q (Not Quantifiable)	Unless it will create a false violation against a numeric limit, use the minimum reporting level (MRL) value in calculations and report using an appropriate qualifier indicator. Use "NODI = Q" if it will create a false violation. NEVER USE an estimated ("j") value in a DMR calculation or for a DMR reported value.
Not Detected	NODI = B (Below Detection Limit/No Detection)	Unless it will create a false violation against a numeric limit, use the method detection level (MDL) in calculations. Use a qualifier indicator such as "<". If it will create a false violation, use the value "0" in DMR calculations. If it is a geometric mean, use a sample value of "1" in the calculation.
All Other Results	Analytical Value	Result analytical value stated on the laboratory analysis sheet.

Permit holders must use an "EPA approved" analytical method that is "sufficiently sensitive" to demonstrate compliance with the permit limit. The KPDES permit requires this. The method must be able to test a pollutant to the limit in the permit limit or below.

DOW conducts "Reasonable Potential Analysis" (RPA) to develop KPDES permit requirements. The "Minimal Reporting Level" (MRL) must be less than or equal to 70% of the Water Quality Criteria. Permit applicants must use a "sufficiently sensitive" analytical method for each parameter in order to meet the 70% threshold for the Water Quality Criteria. The "most sensitive" 40 CFR 136 analytical method is always "sufficiently sensitive". Parameters may be "Report Only" instead of having a KPDES limit.

Some pollutants have limits so low that there is not an "EPA approved", "sufficiently sensitive" analytical method. In those instances, (1) the permit will either specify an analytical method or (2) the permittee must use the "EPA approved" method that comes closest to the limit in the permit. The permittee will report NODI = Q if

the analysis detects the pollutant as an estimated value or NODI = B if the analysis does not detect the pollutant.

- **These definitions are important to determine how to report a parameter that is either present, but not quantifiable, or not detected during the laboratory analysis:**
- **Minimum Reporting Level (MRL):** This is the lowest concentration that can be reliably quantified using a specific analytical method for a parameter. The parameter may still be detected at a lower level (Method Detection Limit) but cannot be reliably quantified below this concentration. MRL is synonymous with 'quantitation limit,' 'reporting limit,' 'level of quantitation,' and 'minimum level.'
- **Method Detection Limit (MDL):** This is the lowest concentration at which a parameter can be detected using a specific analytical method. We can be 99% confident (99% confidence interval) that the parameter is present in the sample.

17. When do I submit my DMR? It is important to submit your DMR on time. DMRs must be submitted in NetDMR on or before the 28th day of the month following the monitoring period end date. Ex: Monthly DMR 01/01/24-01/31/24, due by February 28th; Quarterly DMR 01/01/24-03/31/24, due by April 28th; Annual DMR 01/01/24-12-31-2024, due by January 28, 2025.

18. Need Additional Information?

- Please contact the following DEP programs for more information:
- Environmental Compliance Assistance Program
Telephone: 502-782-6189; E-mail: envhelp@ky.gov
Webpage: <https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/Pages/Environmental-Compliance-Assistance-Program.aspx>
- Operator Certification Program
Telephone: 502-564-0323; E-mail: envhelp@ky.gov
Webpage: <https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/operator-certification-program/Pages/default.aspx>
- Laboratory Certification Program
Telephone: 502-564-3410; E-mail: DowLabCertification@ky.gov
Webpage: <https://eec.ky.gov/Environmental-Protection/Water/PermitCert/LabCert/Pages/Wastewater-Lab-Certification-Program.aspx>

APPENDIX A: CALCULATIONS

1. BOD and TSS Percent Removal and Example

$$\% \text{ Removal} = \frac{\text{Monthly Avg. Influent Conc.} - \text{Monthly Avg. Effluent Conc.}}{\text{Monthly Avg. Influent Conc.}} \times 100$$

$$\begin{aligned}\% \text{ Removal} &= \frac{194 - 2}{194} \times 100 \\ &= 0.99 \times 100 \\ &= 99 \%\end{aligned}$$

2. Geometric Mean Calculations and Example

Formula for Calculating a Geometric Average

$$\sqrt[n]{a_1 a_2 \cdots a_n}$$

Where n equals the number of samples. Use a scientific calculator, an online geometric mean calculator, or the EXCEL Function "GEOMEAN."

30-Day Geometric Average for *E. coli* (30-day data taken from Appendix B)

$$\text{GEOMEAN} [184, 25, 10, 14, 3, 6, 10, 7, 3, 3, 3, 3, 12] = 8.2252$$

7-Day Geometric Average for *Escherichia coli* (weekly data taken from Appendix B)

Period	Calculation	Geometric Average
July 1-7	GEOMEAN [184,25,10]	35.83048
July 8-14	GEOMEAN [14,3,6]	6.31636
July 15-21	GEOMEAN [10,7,3]	5.943922
July 22-28	GEOMEAN [3,3,3]	3

3

3

Also
See
FAQ
3.7

Also
See
FAQ
3.3

- 3. Five-day Carbonaceous Biochemical Oxygen Demand (CBOD₅)** – The monthly average concentration is the arithmetic mean of all sample values measured throughout the month. Similarly, the weekly average concentration is the arithmetic mean of all samples recorded throughout a calendar week. The highest weekly average for the calendar month must be recorded on the DMR. See Appendices B and C for the monthly average.

4

Also
See
FAQ
3.5

In this case, the weekly Raw CBOD₅ averages were calculated as follows using data from Appendix B:

Period	Calculation	Weekly Average (mg/l)
July 1-7	(144+184+123)/3	150.3
July 8-14	(135+205+142)/3	160.7
July 15-21	(146+180+129)/3	151.7
July 22-28	(138+153+153)/3	148.0

4

- 4. Calculating CBOD₅ Loading** – Calculating average weekly and monthly loading is done by dividing the total load (week or month) by the number of days in the week or month in which the sample was taken. These values are to be reported in pounds/day (lbs/day). The following equations may be used to make this conversion:

$$\text{Quantity (lbs/day)} = \text{Flow (MGD)} \times \text{conc. (mg/l)} \times 8.34$$

Monthly Average CBOD₅ Loading (RAW)

$$= ((3.17 \times 144 \times 8.34) + (3.21 \times 184 \times 8.34) + (2.89 \times 123 \times 8.34) + (2.87 \times 135 \times 8.34) + (2.97 \times 205 \times 8.34) + (2.78 \times 142 \times 8.34) + (2.73 \times 146 \times 8.34) + (2.96 \times 180 \times 8.34) + (2.77 \times 129 \times 8.34) + (3.35 \times 138 \times 8.34) + (3.17 \times 153 \times 8.34) + (3.11 \times 153 \times 8.34)) / 12$$

$$= 3826.3 \text{ lbs/day}$$

Period	Calculation	Weekly Average BOD ₅ Loading (RAW) (lbs/day)
July 1-7	$=((3.17*144*8.34)+(3.21*184*8.34)+(2.89*123*8.34))/3$	3899.2
July 8-14	$=((2.87*135*8.34)+(2.97*205*8.34)+(2.78*142*8.34))/3$	3867.1
July 15-21	$=((2.73*146*8.34)+(2.96*180*8.34)+(2.77*129*8.34))/3$	3582.6
July 22-28	$=((3.35*138*8.34)+(3.17*153*8.34)+(3.11*153*8.34))/3$	3956.3

Total Suspended Solids (TSS), Ammonia and Nitrogen quality and quantity calculations should follow the same procedures as above.

5. Calculating Flow

- 15 • The **average monthly flow** is an arithmetic mean that includes all the daily flows in a given month.
- 15 • The **maximum daily flow** that occurs during the month must also be recorded on the DMR.

APPENDIX B. EXAMPLE DMR DATA AND CALCULATION SHEET

[illegible]

APPENDIX C. EXAMPLE COMPLETED DMR

IMAGE C.1 EXAMPLE COMPLETED DMR

No Data Indicator (NODI)
Form NODI:

Use FORM NODI if all parameters have the same no discharge code

Showing Parameters 1 - 10 of 14

Note the DMR has more than one screen to fill out

Parameter	NODI	Quantity or Loading			Quality or Concentration				# of Ex.	Freq. of Analysis	Smpl. Type
Code	Name	Value 1	Value 2	Units	Value 1	Value 2	Value 3	Units			
00300	Oxygen, dissolved [DO]				= 7.2			mg/L		03/07	GR
1 - Effluent Gross											
Season: 0	Req.				>= 7 Instantaneous Minimum			Milligrams per Liter		Three Per Week	GRAB
NODI:	NODI										
00300	Oxygen, dissolved [DO]				= 7.2			mg/L		03/07	GR
Z - Instream Monitoring											
Season: 0	Req.				Req Mon Instantaneous Minimum			Milligrams per Liter		Three Per Week	GRAB
NODI:	NODI										
00400	pH				= 7.6		= 7.9			03/07	GR
1 - Effluent Gross											
Season: 0	Req.				>= 6 Minimum		<= 9 Maximum	Standard Units		Three Per Week	GRAB
NODI:	NODI										
00530	Solids, total suspended	= 58	= 77	lb/d		= 2	= 3	mg/L		03/07	CP
1 - Effluent Gross											
Season: 0	Req.	<= 1126 Monthly Average	<= 1689 Maximum Weekly Average	Pounds per Day		<= 30 Monthly Average	<= 45 Maximum Weekly Average	Milligrams per Liter		Three Per Week	COMPOS
NODI:	NODI										
00530	Solids, total suspended	= 4,853	= 5,184	lb/d		= 194	= 204	mg/L		03/07	CP
G - Raw Sewage Influent											
Season: 0	Req.	Req Mon Monthly Average	Req Mon Maximum Weekly Average	Pounds per Day		Req Mon Monthly Average	Req Mon Maximum Weekly Average	Milligrams per Liter		Three Per Week	COMPOS
NODI:	NODI										

IMAGE C.2 EXAMPLE COMPLETED DMR

00610	Nitrogen, ammonia total [as N]	Smpl.	= 3	= 8	lb/d		= 0.14	= 0.18	mg/L		03/07	CP
1 - Effluent Gross					List				List			
Season: 2		Req.	<= 188 Monthly Average	<= 263 Maximum Weekly Average	Pounds per Day		<= 5 Monthly Average	<= 7 Maximum Weekly Average	Milligrams per Liter		Three Per Week	COMPOS
NODI: [v]		NODI	[v]	[v]			[v]	[v]				
00610	Nitrogen, ammonia total [as N]	Smpl.	= 502	= 522	lb/d		= 20	= 22	mg/L		03/07	CP
G - Raw Sewage Influent					List				List			
Season: 0		Req.	Req Mon Monthly Average	Req Mon Maximum Weekly Average	Pounds per Day		Req Mon Monthly Average	Req Mon Maximum Weekly Average	Milligrams per Liter		Three Per Week	COMPOS
NODI: [v]		NODI	[v]	[v]			[v]	[v]				
50050	Flow, in conduit or thru treatment plant	Smpl.	= 3.055	= 4.48	MGD						09/90	CN
1 - Effluent Gross			15	15	List							
Season: 0		Req.	Req Mon 30 Day Average	Req Mon Daily Maximum	Million Gallons per Day						Continuous	CONTIN
NODI: [v]		NODI	[v]	[v]								
50060	Chlorine, total residual	Smpl.							mg/L		03/07	GR
1 - Effluent Gross									List			
Season: 0		Req.					<= .012 Monthly Average	<= .019 Daily Maximum	Milligrams per Liter		Three Per Week	GRAB
NODI: [v]		NODI					[B]	[B]				
74055	Coliform, fecal general	Smpl.					= 8	= 36	#/100mL		03/07	GR
1 - Effluent Gross							3	3	List			
Season: 0		Req.					<= 200 30 Day Geometric	<= 400 7 Day Geometric	Number per 100 Milliliters		Three Per Week	GRAB
NODI: [v]		NODI					[v]	[v]				

Edit Check Errors

No results.

Comments

Attachments

Add Attachment

No results.

IMAGE C.3 EXAMPLE COMPLETED DMR

Showing Parameters 11 - 14 of 14

Parameter		NODI List	Quantity or Loading			Quality or Concentration				# of Ex.	Freq. of Analysis List	Smpl. Type List
Code	Name		Value 1	Value 2	Units	Value 1	Value 2	Value 3	Units			
80082	BOD, carbonaceous, 05 day, 20 C	Smpl.	= 75	= 80	lb/d List		= 3	= 3	mg/L List		03/07	CP
1 - Effluent Gross												
Season: 0		Req.	<= 375 Monthly Average	<= 563 Maximum Weekly Average	Pounds per Day		<= 10 Monthly Average	<= 15 Maximum Weekly Average	Milligrams per Liter		Three Per Week	COMPOS
NODI:		NODI										
80082	BOD, carbonaceous, 05 day, 20 C	Smpl.	= 3,828 5	= 3,956 5	lb/d List		= 153 5	= 161 5	mg/L List		03/07	CP
G - Raw Sewage Influent												
Season: 0		Req.	Req Mon Monthly Average	Req Mon Maximum Weekly Average	Pounds per Day		Req Mon Monthly Average	Req Mon Maximum Weekly Average	Milligrams per Liter		Three Per Week	COMPOS
NODI:		NODI										
80091	BOD, carb-5 day, 20 deg C, percent removal	Smpl.				= 98			% List		01/30	CA
K - Percent Removal												
Season: 0		Req.				>= 85 Monthly Minimum			Percent		Monthly	CALCTD
NODI:		NODI										
81011	Solids, suspended percent removal	Smpl.				= 99 5			% List		01/30	CA
K - Percent Removal												
Season: 0		Req.				>= 85 Monthly Minimum			Percent		Monthly	CALCTD
NODI:		NODI										

Review and acknowledge errors and over limit values here if needed.

Edit Check Errors
No results.

Comments

Enter comments here, if needed.

Attachments

Add Attachment

No results.

Attach document files (lab reports, letters of explanation, monthly operating reports) here, if desired.

Report Last Saved By

User: shawnhokanson00@gmail.com

Name: shawn hokanson

E-Mail: shawnhokanson00@gmail.com

Date/Time: 03/28/14 8:28 EDT

Save & Continue |
 Save & Exit |
 Sign & Submit |
 Cancel/Back to Search Results

APPENDIX D. FREQUENCY OF ANALYSIS CODE AND DESCRIPTION

Frequency Of Analysis Code (183 Distinct Codes)	Frequency Of Analysis Desc	Frequency Of Analysis Code (183 Distinct Codes)	Frequency Of Analysis Desc	Frequency Of Analysis Code (183 Distinct Codes)	Frequency Of Analysis Desc	Frequency Of Analysis Code (183 Distinct Codes)	Frequency Of Analysis Desc
01/01	Daily	01/SN	Once per Season	04/RP	Four per Report Period	24/30	24 per Month
01/02	Once per 2 Days	01/US	Once per Use	04/SN	Four per Season	24/HR	24 per Hour
01/03	Once per 3 Days	01/WL	Once per Weekday	04/YR	Four per Year	25/30	25 per Month
01/04	Once per 4 Days	01/WL	Once per 'Well	05/01	Five per Day	26/30	26 per Month
01/05	Once per 5 Days	01/YR	Annual	05/07	Weekdays	27/30	27 per Month
01/06	Once per 6 Days	02/01	Twice per Day	05/08	Five per 8 Days	28/30	28 per Month
01/07	Weekly	02/07	Twice per Week	05/30	Five per Month	29/30	29 per Month
01/08	Once per 8 Days	02/12	Twice per 12 Days	05/90	Five per Quarter	48/01	Every 1/2 Hour
01/09	Once per 9 Days	02/30	Twice per Month	05/BA	Five per Batch	60/HR	60 per Hour
01/10	Once per 10 Days	02/5M	Twice per 5 Months	05/DS	Five per Discharge	66/66	WPC Plan
01/11	Once per 11 Days	02/5Y	Twice per 5 Years	05/DW	Five Days per Week	77/77	Contingent
01/12	Once per 12 Days	02/6M	Twice per 6 Months	05/WK	Five per Week	88/88	Cleaning
01/13	Once per 13 Days	02/7M	Twice per 7 Months	06/01	Six per Day	999	See Comments
01/14	Once per 2 Weeks	02/90	Twice per Quarter	06/07	Six per Week	99/99	Continuous
01/21	Once per 3 Weeks	02/BA	Twice per Batch	06/30	Six per Month	AL/EV	All Events
01/28	Once per 4 Weeks	02/DA	Two Days per Week	06/90	Six per Quarter	AL/RN	Alternating Run
01/2Y	Once per 2 Years	02/DD	Twice per Drawdown	06/SH	Six per Operating Shift	ATDS	At First Discharge
01/30	Monthly	02/DM	Twice per Month	06/YR	Six per Year	BI/WK	Biweekly
01/3H	Once per 3 Hours	02/DS	Twice per Discharge	07/01	Seven per Day	CL/OC	Chlorination/Occurances
01/3Y	Once per 3 Years	02/DW	Twice per Discharge Week	07/14	Seven per 2 Weeks	DL/DS	Daily when Discharging
01/4M	Once per 4 Months	02/HR	Twice per Hour	07/30	Seven per Month	ED/WL	End Of Well
01/4Y	Once per 4 Years	02/PT	Twice per Permit Term	07/WL	Weekly when Discharging	ESTMT	Estimate
01/5M	Once per 5 Months	02/RP	Twice per Report Period	07/WK	Seven per Week	EV/2H	Every 2 Hours
01/5Y	Once per 5 Years	02/SH	Twice per Shift	08/01	Eight per Day	HR/DS	Hourly when Discharging
01/60	Once per 2 Months	02/SN	Twice per Season	08/30	Eight per Month	LF/PT	Life of The Permit
01/6M	Once per 6 Months	02/YR	Twice per Year	08/BA	Eight per Batch	MEASD	Measured
01/7M	Once per 7 Months	03/01	Three per Day	09/01	Nine per Day	MM/WL	Monthly when Discharging
01/8H	Once per 8 Hours	03/05	Three per 5 Days	09/30	Nine per Month	N/A	Not Applicable
01/90	Quarterly	03/07	Three per Week	09/99	See Permit	N/R	Not Reported
01/99	Instantaneous	03/08	Three per 8 Days	10/30	10 per Month	REPR	Report
01/9M	Once per 9 Months	03/12	Three per 12 Hours	11/0M	Once per 10 Months	UPREQ	Upon Request
01/BA	Once per Batch	03/30	Three per Month	11/2H	Once per 12 Hours	W/DS	When Discharging
01/BD	Once before Discharge	03/5Y	Three per 5 Years	11/30	11 per Month	W/MN	Measured when Monitoring
01/DD	Once per Daily Discharge	03/6M	Three per 6 Months	11/5M	Once per 15 Months	XX/XX	Frequency as Reported
01/DM	Once per Monthly Discharge	03/90	Three per Quarter	12/01	12 per Day		
01/DQ	Once per Discharge Quarter	03/BA	Three per Batch	12/30	12 per Month		
01/DS	Once per Discharge	03/DS	Three per Discharge	13/30	13 per Month		
01/DW	Once per Weekly Discharge	03/DW	Three Days per Week	14/30	14 per Month		
01/EP	Once per Permit Cycle	03/PT	Three per Permit Term	15/30	15 per Month		
01/EV	Once per Event	03/RP	Three per Report Period	16/01	16 per Day		
01/FA	Once per Facility	03/SN	Three per Season	16/30	16 per Month		
01/FY	Once per First Year of Permit	03/YR	Three per Year	17/30	17 per Month		
01/HR	Once per Hour	04/01	Four per Day	18/01	18 per Day		
01/HV	Once per Harvest	04/07	Four per Week	18/30	18 per Month		
01/OC	Once per Occurance	04/30	Four per Month	19/30	19 per Month		
01/PT	Once per Permit Term	04/90	Four per Quarter	20/30	20 per Month		
01/RN	Once per Rain Event	04/BA	Four per Batch	21/30	21 per Month		
01/RP	Once per Report Period	04/DS	Four per Discharge	22/30	22 per Month		
01/SH	Once per Shift	04/HR	Four per Hour	23/30	23 per Month		
		04/PT	Four per Permit Term	24/01	Hourly		

APPENDIX E. SAMPLE TYPE CODES

Sample Type Code	Sample Type Description	Sample Type Code	Sample Type Description	Sample Type Code	Sample Type Description
1	COMP-1	CR	CK REQ	RE	RECORD
2	COMP-2	CS	CORSAM	RF	RCDFLO
3	COMP-3	CT	CERTIF	RG	RANG-C
4	COMP-4	CU	CURVE	RM	Real Time Monitoring (RTM)
5	COMP-5	DA	DAILAV	RP	REPRES
6	COMP-6	DS	DISCRT	RT	RCOTOT
8	COMP-8	ES	ESTIMA	S1	SQBTH1
10	COMP10	FI	FLOIND	S2	SQBTH2
12	COMP12	G2	GRAB-2	S3	SQBTH3
16	COMP16	G3	GRAB-3	SB	Sequencing Batch Reactor
1H	AVG-1H	G4	GRAB-4	SC	SC0-15
20	COMP20	G5	GRAB-5	SD	SURFSP
22	BATCH	G6	GRAB-6	SE	SNGLES
24	COMP24	G7	GRAB-7	SM	SUMATN
28	COMP28	G8	GRAB-8	SR	SGLRDG
2H	AVG-2H	G9	GRAB-9	SS	STAT-SH
2Y	2YRAVG	GA	GRAB AVG	ST	STATIC
3G	3GR/HR	GC	CNTGRB	TI	TIMEMT
3R	3GR24H	GH	5GR24H	TM	TOTALZ
4C	4DA24C	GM	GRAB10	UN	UNKNOWN
4G	4GR24H	GR	GRAB	VI	VISUAL
4H	AVG-4H	IM	Immersion	WE	WEIR
4R	4 Grabs/8 Hours	IN	INSTAN		
5G	5GR45M	IS	INSITU		
72	COMP72	IT	Immersion Stabilization		
8R	8 Grabs/24 Hours	MC	MATHCL		
96	COMP96	MF	MAGFLO		
99	COMPWK	MP	MATHCP		
999	See Comments	MS	MEASRD		
AH	HRDALL	MT	METER		
BA	BAILED	NA	NOT AP		
C3	CS0-3	NR	NOTRPT		
C6	CS0-60	OC	OCCURS		
C9	CS0-90	PC	PMPCRV		
CA	CALCTD	PF	PARFLU		
CG	CMPGRB	PL	PMPLOG		
CN	CONTIN	R4	RNG-4A		
CP	COMPOS	RA	RAGUAGE		
		RC	RCORDR		
		RD	RNG-DA		

APPENDIX F. FIELD TESTING PROCEDURES

For the following Parameters please utilize the SOP from the Wastewater Lab Certification Program SOP: pH & Temperature, Conductivity, Turbidity, Dissolved Oxygen.

This can be found at the below website in the “Templates” option.

- <https://eec.ky.gov/Environmental-Protection/Water/PermitCert/LabCert/Pages/Wastewater-Lab-Certification-Program.aspx>

APPENDIX G. SUFFICIENTLY SENSITIVE METHODS

SUMMARY

EPA finalized minor amendments to its Clean Water Act (CWA) regulations to require "sufficiently sensitive" analytical test methods under the National Pollutant Discharge Elimination System (NPDES) effective September 18, 2014. The rulemaking clarified that NPDES applicants and permittees must use EPA-approved analytical methods capable of detecting and measuring pollutants at or below applicable water quality criteria or permit limits. This final rule was based on CWA requirements and clarifies existing EPA regulations 40 CFR 122.21 (e)(3)(i) and 40 CFR 122.44 (l)(1)(iv). The amendments in this rulemaking affected only chemical-specific methods. The amendments did not apply to Whole Effluent Toxicity methods or their use.

Sufficiently Sensitive Method for applications is defined by EPA and promulgated under 40 CFR 122.21 (e)(3)(i). Below is a summary version edited for readability.

- The method minimum level [Kentucky defined as minimum reporting level - MRL] is at or below the level of the applicable water quality criterion or permit limitation for the measured pollutant or pollutant parameter; or
- The method minimum level [MRL] is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge; or
- The method has the lowest minimum level [MRL] of the EPA-approved analytical methods.

Sufficiently Sensitive Method for Permit Monitoring Requirements is defined by EPA and promulgated under 40 CFR 122.44 i (1) (iv). Below is a summary version edited for readability.

- The method minimum level (ML) is at or below the level of the effluent limit established in the permit for the measured pollutant or pollutant parameter; or
- The method has the lowest minimum level [MRL] of the EPA-approved analytical methods.

Impact To Kentucky KPDES Permittees

Required Reporting Limits (RRL)

Permitted (KPDES) facilities in Kentucky must ensure that their laboratory, or contracted laboratory, is utilizing an EPA approved method that is sufficiently sensitive to detect and measure at or below the permit required reporting limit (RRL):

$$\text{MRL} \leq \text{RRL}$$

Selection of an EPA Approved Method that is sufficiently Sensitive

If a permitted facility's laboratory, or contracted laboratory, is not utilizing an EPA approved method that is sufficiently sensitive to meet the KPDES permit RRL, where the

$$\text{RRL} \leq \text{MRL}$$

In this situation, where the laboratory's MRL is above the permit's required reporting level, the facility is required to either: 1) use another EPA approved method with a demonstrated MRL that is equal to or less than the permit RRL; 2) submit a request to Kentucky Wastewater Laboratory Certification Program (KWLCPP) for a matrix specific reporting limit (MSRL, see below); or 3) contract with a Kentucky wastewater certified laboratory utilizing an EPA approved method and can demonstrate an MRL that is sufficiently sensitive (unless the facilities discharge is high enough that the method detects/quantifies the level of the pollutant parameter in the discharge). When utilizing sufficiently sensitive method approach in accordance with the CWA, the entire procedure must be considered. Additionally, reporting results to Kentucky must be in accordance with the most recent revision of the Kentucky DMR Manual.

Selection of a method if the MRL of every approved method is above the RRL

In the situation when there is no EPA approved method capable of meeting a permit RRL, the permitted facility's laboratory must select an EPA approved method with the lowest available MDL/MRL. This requirement is in accordance with EPA's Sufficiently Sensitive Rule.

Note: See FAQ #16 for definitions of MDL & MRL.

Matrix effect and its' impact on sufficiently sensitive method(s)

If a permitted facility's laboratory, or contracted laboratory, experiences an elevated MRL due to the effect of a particular matrix (matrix effect) – then the facility may submit a written request to DOW for a matrix specific reporting limit (MSRL) [4]. Such that:

$$\text{RRL} \leq \text{MSRL} \text{ (must be approved by DOW)}$$

The permitted facility must provide all of the required documentation to allow DOW to make an informed decision regarding the impact of matrix effect. Matrix Interference (i.e. matrix effect) in a specific sample matrix - is defined as a sample matrix which possesses properties that affect the detection of a particular analyte or group of analytes [5]. A matrix interference can cause either a high bias or a low bias.

In order for a laboratory to demonstrate that a specific sample matrix is creating a matrix interference, the laboratory must document the interference using the method of standard additions (MSA) or utilize a combination of the following quality assurance / quality control parameter result options:

QA/QC Parameters Which Demonstrate Matrix Effect:

1. Blank(s) – analytical results for all associated blanks (e.g. reagent, method, etc.)
2. Laboratory Control Sample (LCS) – primary or second source analytical standard
3. Sample result (which contains the subject matrix)
4. Sample Duplicate (DUP)
5. Laboratory Fortified Blank (LFB)
6. Laboratory Fortified Blank Duplicate (LFBD)
7. Matrix Spike (MS) – aliquot of sample spiked with a known amount of analyte of concern
8. Matrix Spike Duplicate (MSD) – a second aliquot of sample spiked with the same amount of analyte of concern

APPENDIX H. PROCEDURE FOR DETERMINING FINAL LABORATORY RESULTS FOR COMPLIANCE PURPOSES

A general overview for determining analytical results is presented along with “things to keep in mind” when calculating and reporting analytical results for compliance purposes. This is intended for informational purposes only.

There are five major steps in the determination (often called data reduction) of laboratory results. Laboratory must document a procedure that takes the following steps into consideration:

1. Document all procedural measurements (including range of use, associated units, etc.) for each step within a method;
2. Determine significant digits (or significant digits) for each measurement (or observation) based on accuracy of the instrument (measurement device) for use in calculations;
3. Utilize dimensional analysis (to ensure correct units are being determined) and include any dilution factors utilized in the procedure;
4. Calculation of final results using method calculations, significant digits and dimensional analysis procedures;
5. Round procedure calculated result(s) for final result(s) to be submitted to permitting agency.

1. Procedural measurements – KY certified laboratory must utilize an EPA-approved method. Record all procedural measurements and observations using a field notebook, laboratory notebook, bench sheet or electronic file. Each procedural step measurement or observation will include a magnitude (number or result) and unit of measure, both must be recorded.

2. Significant digits – Refer to your KPDES permit to determine significant digits to be used for calculating sample results. Personnel must use the following criteria:

a) Determine the accuracy (significance) of a measured or observed value. For example, a four place analytical balance measures weight down to 0.0001 g and is accurate to ± 0.0001 g whereas a top-loading balance for the same material only measures weight down to 0.1 g and is accurate to ± 0.1 g. The choice of balance types effects the significance of the measurement used in the final calculation.

b) Rules for determining significant digits are:

- 1) All non-zero digits (1, 2, 3, 4, 5, 6, 7, 8, 9) are significant.

For example:

•123.678 has 6 significant digits.

- 2) Zeros between non-zero digits are significant.
For example:
 - 12.507 has 5 significant digits.
 - 1.02 has 3 significant digits.
- 3) Zeros to the left of the first non-zero digit are not significant.
For example:
 - 0.12 has 2 significant digits.
 - 0.012 has 2 significant digits.
- 4) If a number ends in zeros to the right of the decimal point, those zeros are significant.
For example:
 - 2.0 has 2 significant digits.
 - 2.00 has 3 significant digits. (This signifies greater accuracy.)
- 5) Zeroes that do nothing but set a decimal point are not significant.
 - The number 100 has 1 significant digit.
 - The number 0.001 has 1 significant digit.

Note: In NetDMR, if the final significant digit is zero, NetDMR will not retain the final digit.

- 3.200 will be displayed as 3.2; 0.010 will be displayed as 0.01.

TABLE H.1 SIGNIFICANT DIGITS

Parameter	Significant Digits	Example Measurements
Flow, MGD	4	0.2660; 9.587; 45.23; 123.8
Biochemical Oxygen Demand (BOD) mg/l	Nearest whole number	6; 18; 258
Total Suspended Solids (TSS) mg/l	Nearest whole number	7; 22; 859
Ammonia Nitrogen, mg/l	3	0.233; 1.25; 24.8
Dissolved Oxygen, mg/l	2	0.99; 6.8; 12
pH, standard units	3	6.80; 7.22; 10.5
Fecal Coliform/ <i>E. coli</i> , colonies/100ml	Nearest whole number multiplied by the dilution factor	3; 243; 1200; 27,000
Total Residual Chlorine, mg/l	Nearest thousandth mg/l	0.008; 0.010; 0.277; 1.002
Metals, often mg/l or µg/l, but units may vary	Case-by-case basis (but no less than the digits in the permit).	0.004; 0.062; 0.186; 2.348
Organic Chemicals	Case-by-case basis (but no less than the digits in the permit).	Organic Chemicals

3. Dimensional analysis – is a tool used to calculate laboratory test results (magnitude of the measured value) and also verifies that the correct units have been applied. Calculations must always include the value determined along with the associated units. For example: Convert 42.3 cm to inches.

42.3 cm X (1 inch / 2.54 cm) $\approx$ 16.6535 inches (cm has been converted to inches, using the published conversion factor of 1 inch = 2.54 cm). However, the result returned using a calculator does not utilize the correct number of significant digits. **For this example, the result would be 16.7 inches (since the original measurement of 42.3 cm contains 3 significant digits.** [The conversion factor 2.54 has an unlimited number of significant digits because one inch is defined as exactly 2.54 cm.]

4. Calculation of final results - The calculation to determine the final result must include the proper number of significant digits, based on the accuracy of each procedural step within the method. [The calculated result must not exceed the least precise measurement.] Also, make sure to include all dilutions performed during the specific procedure

Note: Laboratories must ensure that they are reporting results that include the correct associated units if specific units are requested in the compliance permit or submittal form.

5. The final procedure for laboratory results being reported to the permitting agency may require rounding the value (magnitude) of the result to the proper number of significant digits (or digits to be reported based on an agency's requirements). Laboratories shall use the rounding technique below. This procedure must be used consistently throughout the laboratory for all reported analytical results.

Rounding procedure:

Select the digit you want to round and look to the right side of it. If the digit is 0,1,2,3 or 4, do not change the rounding digit. When rounding whole numbers, all digits that are on the right-hand side of the requested rounding digit will become 0. When rounding numbers involving decimals, all digits to the right of the rounded number are dropped.

Example 1: Rounding to 2 significant digits.

$$4.0399 \rightarrow 4.0399 \rightarrow 4.0$$

Diagram illustrating the rounding process for Example 1. The number 4.0399 is shown. A red bracket under the first two digits (4.0) is labeled "2 significant digits". A green line is drawn under the third digit (3). A purple arrow points up to the green line, labeled "4 and below, round down". The final result is 4.0.

Example 2: Rounding to 3 significant digits.

$$10251 \rightarrow 10251 \rightarrow 10300$$

Diagram illustrating the rounding process for Example 2. The number 10251 is shown. A red bracket under the first three digits (102) is labeled "3 significant digits". A green line is drawn under the fourth digit (5). A purple arrow points up to the green line, labeled "5 and above, round up". The final result is 10300.

Note: The final result cannot be more accurate (e.g. contain more significant digits or digits) than the least accurate measurement.

APPENDIX I. NODI CODE USE

TABLE I. 1 NODI CODES

This is the list of NODI codes the Kentucky Department for Environmental Protection allows to be used instead of summarized analytical results. Although other NODI Code may exist, the below table have been authorized by DEP for use in in KPDES reporting. Refer to your permit for any additional Authorized NODI Codes.

NODI Code	NODI Description
2	Operation Shutdown / Outfall Removed (<i>removal date required</i>)
7	No Influent
9	Conditional Monitoring – Not Required This Period
A	General Permit Exemption
B	Below Detection Limit/No Detection
C	No Discharge (<i>for the entire monitoring period</i>)
E	Failed to Sample/Required Analysis Not Conducted
F	Insufficient Flow for Sampling
I	Land Applied
N	Not Constructed
P	Laboratory Error or Invalid Test
Q	Not Quantifiable
T	Environmental Conditions – Monitoring Not Possible

It is important to note that you should never force a discharge or dip the containment structure, unless authorized by the permit, in order to take a sample during the monitoring period. The intent of the monitoring program is to be representative of the operations of the wastewater treatment system or stormwater discharge.

Detailed Description for NODIs for Permittee use – Listed in alphabetical order by NODI code.

NODI 2: Operation Shutdown / Outfall Removed

Appropriate if permittee was not operational for the entire monitoring period. Examples may include:

- Temporary shutdown during change in ownership,
- Remediation general permit when there was a treatment system interruption,
- For KY coal and non-coal mining facilities, use this code when the operation has been shutdown as a result of enforcement action or bond forfeiture and the permittee is denied access to the site, or when the outfall has been physically removed. DMR comments section **MUST INCLUDE** the outfall removal date.

NODI 7: No Influent

Appropriate if permitted feature has influent monitoring requirements and had no influent for the entire monitoring period. This NODI should only be used for parameters at influent monitoring locations.

NODI 9: Conditional Monitoring – Not Required This Period

Appropriate if monitoring of the parameter (not entire DMR) was not required for the entire monitoring period. Examples may include:

- Conditional parameters that only need to be monitored and reported when the parameter was used during the treatment process (e.g., chlorine).
- Parameter that has seasonal limit requirements or conditional limits (e.g., based on flow) and monitoring was not required during the entire monitoring period.
- Parameter did not require monitoring during reporting period but appeared “due” because of database restriction (e.g., permit requires monitoring every other year, but database system requires entering value annually).
- Dry lysimeter or well.
- Permitted feature discharged to recycled water distribution system, land and did not flow to surface water (e.g., wastewater land disposal), lagoon, or groundwater.
- In WET testing, used after the most sensitive species was identified and testing other species (parameters) was no longer required.
- In WET testing, permit requires testing one of multiple WET species each month and used to report the species not tested during that month.

- WET retests were not required for the monitoring period.
- Parameter not required monitoring due to use of **“alternative limits”** for some type of permits.
- Parameter not required monitoring due to fish tissue analysis for selenium residue is not triggered.
- For KY coal mining facilities that share an outfall but not receiving contributing inflow from shared facility. DMR comments section shall describe the situation.
- For KY coal mining facilities, Biology is not required this year due to no disturbance on site (prior approval must be obtained from the DOW).

Not to be used if monitoring was required and requirements were not met or only partially met for the monitoring period (e.g., fewer samples were taken than the required frequency).

NODI A: General Permit Exemption

Appropriate if required parameters met applicable general permit monitoring requirements and the permittee was no longer required to monitor and report data for the parameter **for the remainder of the permit term**. Examples may include:

- Permittees operating under a general permit can cease monitoring for a parameter after the collection of a certain number of samples, if allowed in the permit. In situations where some, but not all, of the monitored parameters identified at a permitted feature meet this criterion, the permittee can use the NODI A for the parameters that no longer have to be monitored.
- Note that at the issuance of this guidance, Kentucky had no general permits that allow for the use of NODI A.

NODI B: Below Detection Limit/No Detection

Appropriate usage varies by state. Examples for Kentucky may include:

- Laboratory reported a result that was below the method detection limit, or the permit limit is less than the method detection limit, and a sufficiently sensitive method was used, or
- Field analysis of total residual chlorine where the permittee established their own method or instrument detection limit of no more than 0.02 mg/l.
- Do not use for “report only” parameters, which have nonnumeric limit.

NODI C: No Discharge

A NODI C is appropriate **only** if there was no discharge from the permitted outfall for the **entire** monitoring period.

*Examples DO **NOT** include:*

- Insufficient flow
- Any reason other than the permitted outfall had no discharge

Examples DO include:

- KY coal mining facilities if the water from slurry disposal areas or sediment control structures associated with a coal preparation plant is utilized as make up water, i.e., the water is recycled within the washer circuitry
- A WWTP with a hydrographic control release permit held all effluent from discharge during the entirety of the monitoring period

Do NOT report NODI C before the end of the monitoring period.

NODI E: Failed to Sample/Required Analysis Not Conducted

Appropriate if there was no DMR value to report because of failure to take a sample or if **required** analysis was not being conducted for the entire monitoring period. Examples may include:

- A discharge occurred, but permittee failed to take required samples,
- Sample lost or container broken in transport to the laboratory, or
- Improper sample collection made analysis not possible.

Not to be used if monitoring and reporting of the parameter were not required during the monitoring period.

Reporting NODI E does not excuse the violation for failing to sample/analyze.

NODI F: Insufficient Flow for Sampling

Appropriate if permitted feature had a discharge during the monitoring period but a sample was not taken because the flow was insufficient to meet sample requirements (e.g. volume) for the analytical method.

- For WET testing to be used when the discharge ceases prior to completion of the sample requirements authorized in the permit.

NODI I: Land Applied

Appropriate if the sediment control structure does not discharge during a monitoring period due to the land application of the effluent as authorized by the permit

NODI N: Not Constructed

Appropriate if permitted feature has not been constructed and therefore monitoring and reporting requirements are not yet required. Examples may include:

- The discharge has been authorized but a construction permit is required before construction can begin.
- The discharge has been authorized but construction is incomplete, and no discharge has occurred.
- The outfall has not been certified by the Division of Mine Reclamation and Enforcement (DMRE).

NODI P: Laboratory Error or Invalid Test

Appropriate if there was no DMR value to report due to sampling equipment failure, invalid test, or laboratory error. Examples may include:

- Sample was taken but did not meet the [40 CFR 136](#) approved method,
- Use of uncertified laboratory or laboratory performed field of testing or specific analysis for which it was not certified,
- Sample was improperly preserved or exceeded maximum holding time,
- Sample was taken but lost after receipt by laboratory,
- Sampling or monitoring equipment failure,
- Invalid WET or another test, or
- Laboratory error (e.g., quality assurance failure, cross contamination, procedural error, calculation error, etc.) resulted in no DMR value to report.

NODI Q: Not Quantifiable

Appropriate usage varies by state. Examples for Kentucky for authorized use of NODI Q may include:

- Laboratory reported an estimated result between the method detection limit and the minimum reporting level (MRL), and a sufficiently sensitive method was used, or
- WET test results where no linear interpolation could be determined.

NODI T: Environmental Conditions – Monitoring Not Possible

Appropriate if conditions of a severe/extreme weather event prevented sampling for the entire monitoring period. Not to be used for seasonal heavy rain event. Examples may include:

- Frozen conditions that prevented access to the monitoring location or sampling point (equipment, well caps, etc.) was sufficiently frozen that it prevents an operator from collecting a sample,
- Severe flooding,
- Wildfires,
- Environmental conditions that resulted in unsafe working conditions and a sample could not be taken.

Appendix J. Coal APELs Chart

TABLE 3 - ALTERNATE PRECIPITATION EFFLUENT LIMITATIONS (APELs)

APELs may be substituted, on a case-by-case basis, for Technology-Based Effluent Limitations (TBELs) for the monthly average of Total Recoverable Iron (TRFe), Total Recoverable Manganese (TRM), Total Suspended Solids (TSS), and Settleable Solids (SS) only. All other parameters are required as shown in the permits.

TYPE OF DISCHARGE	PRECIPITATION EVENT	TSS (mg/l)		SS (mg/l)		TRFe (mg/l)		TRM (mg/l)	
		Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.
Underground workings of mines not comingled	1-yr, 24-hr ≤ 10-yr, 24 hr.	35	70			3.0	4.0	2.0	4.0
	>10-yr, 24 hr								
Underground workings of mines comingled	1-yr, 24-hr ≤ 10-yr, 24 hr	35	70			3.0	4.0	2.0	4.0
	>10-yr, 24 hr					3.5	4.0		
Controlled surface mine drainage (except steep slope and mountaintop removal)	1-yr, 24-hr ≤ 10-yr, 24 hr	35	70			3.0	4.0	2.0	4.0
	>10-yr, 24 hr					3.5	4.0		
Non-controlled surface mine drainage (except steep slope and mountaintop removal)	1-yr, 24-hr ≤ 10-yr, 24 hr				0.5	3.0	4.0		
	>10-yr, 24 hr					3.5	4.0		
Steep slope and mountaintop removal areas	1-yr, 24-hr ≤ 10-yr, 24 hr				0.5	3.5	4.0		
	>10-yr, 24 hr								
Preparation Plant and Preparation Plant associated areas (excluding coal refuse disposal piles)	1-yr, 24-hr ≤ 10-yr, 24 hr				0.5	3.5	4.0		
	>10-yr, 24 hr								
Reclamation areas	1-yr, 24-hr ≤ 10-yr, 24 hr				0.5				
	>10-yr, 24 hr								

