

Turbidity Insert (Surface Water Only)

2024 Turbidity Reporting Requirements for Your CCR

For Turbidity, which is a Treatment Technique (TT) for **Surface Water Systems** that filter and use turbidity as an indicator of filtration performance, the CCR must report the **highest** single monthly measurement (see **Item No. 1 of the Calculations Examples below**) for the year the CCR covers. Additionally, the CCR must report the **lowest** monthly percentage of samples meeting the turbidity limits specified for the relevant Filtration Technology used (see **Item No. 2 of the Calculations Examples below**). The CCR must also provide an explanation of the reason for measuring turbidity (see **Item No. 3 of the Calculations Examples below**) and possibly some health effects language. Provided below are the **Calculations Examples** and a **CCR Appearance Example**. Below that are the established **Regulations on Turbidity Limits** for each of the different Filtration Technologies.

CALCULATIONS EXAMPLES

ITEM NO. 1 - Your system should have the following data available from its Monthly Operating Reports (MORs):

Month **Highest Finished/Combined Effluent Turbidity (for the month)** – This is example data. Your system’s data should be pulled from the MORs.

January	0.21
February	0.07
March	0.50
April	0.09
May	0.097
June	0.06
July	0.05
August	0.02
September	0.045
October	0.11
November	0.085
December	0.075

In this example, the **Highest** Single Monthly Finished/Combined Turbidity Measurement occurred in March with a reading of 0.50 NTU. Therefore, you would have to include this result (0.50 NTU) in the Contaminant Listing Table of your CCR.

Regulated Contaminants	Collection Date	Highest Value	Range	Unit	MCL	MCLG	Typical Source
TURBIDITY	3/7/2024	0.50	0.07 - 0.50	NTU	0.3		Soil runoff

[Note: Turbidity values may be pre-populated under the heading “Regulated Contaminants” in the base CCR as shown below. These values show data from the point of entry and need to be corrected to show the appropriate turbidity limits of the combined effluent.]

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ITEM NO. 2 -

For each month of data (see your system’s Monthly Operating Reports), take each day’s Finished/Combined turbidity sampling results and determine the total number of those samples collected each month (if finished water turbidity samples are collected 6 times a day, everyday of a 31-day month, then you would have a monthly total of $6 \times 31 = 186$ samples collected). Next count the number of samples that exceeded the turbidity limit each month for your particular Filtration Technology (see **Regulations Section** below for turbidity limits). For the example, assume the water system uses Conventional Filtration and serves a population of 9,999 people. Therefore, the turbidity limit is 0.3 NTU 95% of the time (from **Item B** in the **Regulations on Turbidity Limits** section below). After figuring out the number of samples that exceeded the turbidity limit for each month, subtract that number from the total number of samples collected for each month. This will give you the number of samples that were within the Turbidity Limits for each month. Divide this number for each month by the total number of samples collected for each month and multiply by 100 to get your Monthly Percentage of Samples Meeting the Turbidity Limits. In the table below, is an example summary of this.

<u>Month</u>	<u>Total # of Samples</u>	<u>Turb. Limit</u>	<u># of Samples Above Turb. Limit</u>	<u>Monthly % of Samples Meeting the Turb. Limit</u>
January	186	0.3	6	$\{(186 - 6)/186\} \times 100 = 96.8\%$
February	186	0.3	3	$\{(186 - 3)/186\} \times 100 = 98.4\%$
March	186	0.3	0	$\{(186 - 0)/186\} \times 100 = 100\%$
April	186	0.3	10	$\{(186 - 10)/186\} \times 100 = 94.6\%$
May	186	0.3	6	$\{(186 - 6)/186\} \times 100 = 96.8\%$
June	186	0.3	15	$\{(186 - 15)/186\} \times 100 = \mathbf{91.9\%}$
July	186	0.3	4	$\{(186 - 4)/186\} \times 100 = 97.8\%$
August	186	0.3	5	$\{(186 - 5)/186\} \times 100 = 97.3\%$
September	186	0.3	5	$\{(186 - 5)/186\} \times 100 = 97.3\%$
October	186	0.3	1	$\{(186 - 1)/186\} \times 100 = 99.5\%$
November	186	0.3	2	$\{(186 - 2)/186\} \times 100 = 98.9\%$
December	186	0.3	3	$\{(186 - 3)/186\} \times 100 = 98.4\%$

For the CCR, you must report the Lowest Monthly Percentage of Samples Meeting the Turbidity Limits. According to the data above, the result for the month of June had the Lowest Percentage of Samples Meeting the Turbidity Limits = 91.9%. Therefore, you would have to include this result (91.9%) in the Contaminant Listing Table of your CCR (see **CCR Appearance Example**).

ITEM NO 3 – Mandatory Turbidity Statements – The first statement listed below is required to be stated in the CCR near your Turbidity Results (see **CCR Appearance Example**):

“Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. The major sources of turbidity include soil runoff.”

The following statement is additionally required, only if you did not meet your turbidity limits (TT values) for the Highest Monthly Finished/Combined Sample and/or the Lowest Monthly Percentage of Samples Meeting the Turbidity Limit (see the **Regulations Section** on the last page to determine your systems TT Values):

“Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.”

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CCR APPEARANCE EXAMPLE (Contaminant Listing Table)

Below is an example of how the above Calculation Example would appear in the CCR. The Turbidity Results calculated above should appear in your CCRs Contaminant Listing Table, which looks similar to the table below (the Copper result in the table below is just an example of any other contaminant that could appear in your table). Your results should appear in this format. Please note the informational language at the bottom. The first three sentences of the “NOTE:” are required in all CCRs that must present Turbidity results. The rest of the “NOTE:” is required only if a Treatment Technique (TT) Value was not met. In the Example below, the Lowest Monthly Percentage of Samples Meeting the Turbidity Limit (of 0.3 NTU) was 91.9% during the month of June, which is less than the required 95% of the samples. Thus, the TT Value was not met, which required the extra Turbidity language as shown.

EXAMPLE:

Regulated Contaminants	Collection Date	Lowest Percentage Value	Range	Unit	MC L	MCL G	Typical Source
TURBIDITY	6/2024	91.9	91.9 - 100	NTU	0.3		Soil runoff

NOTE: Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. Its major sources include soil runoff. Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

REGULATIONS ON TURBIDITY LIMITS

*From 40 CFR, Part 141.73 and 141.173 – Turbidity Requirements for Surface Water Systems that Filter by:

A. Conventional Filtration Treatment or Direct Filtration (For all size systems on or after January 14, 2005):

- The turbidity level of representative samples of a system’s filtered water must be less than or equal to 0.3 NTU in at least 95 percent of the measurements taken each month (The Treatment Technique (TT) Value for the Lowest Monthly Percentage of Samples Meeting the Turbidity Limit is 0.3 NTU in 95% of the samples).
- The turbidity level of representative samples of a system’s filtered water must at no time exceed 1 NTU (The TT Value for the Highest Monthly Finished/Combined Sample is 1 NTU).

B. Slow Sand Filtration (For all size systems):

- The turbidity level of representative samples of a system’s filtered water must be less than or equal to 1 NTU in at least 95 percent of the measurements taken each month (The TT Value for the Lowest Monthly Percentage of Samples Meeting the Turbidity Limit is 1 NTU in 95% of the samples).

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- The turbidity level of representative samples of a system's filtered water must at no time exceed 5 NTU (The TT Value for the Highest Monthly Finished/Combined Sample is 5 NTU).

C. Diatomaceous Earth Filtration (For all size systems):

- The turbidity level of representative samples of a system's filtered water must be less than or equal to 1 NTU in at least 95 percent of the measurements taken each month (The TT Value for the Lowest Monthly Percentage of Samples Meeting the Turbidity Limit is 1 NTU in 95% of the samples).
- The turbidity level of representative samples of a system's filtered water must at no time exceed 5 NTU (The TT Value for the Highest Monthly Finished/Combined Sample is 5 NTU).

D. Other Filtration Technologies (For all size systems):

- The turbidity level of representative samples of a system's filtered water must be less than or equal to 1 NTU in at least 95 percent of the measurements taken each month (The TT Value for the Lowest Monthly Percentage of Samples Meeting the Turbidity Limit is 1 NTU in 95% of the samples).
- The turbidity level of representative samples of a system's filtered water must at no time exceed 5 NTU (The TT Value for the Highest Monthly Finished/Combined Sample is 5 NTU).

NEED HELP? FEEL FREE TO CONTACT THE LDHH/OPH CCR PROGRAM MANAGER
@ 225-342-0272 FOR ASSISTANCE WITH YOUR TURBIDITY CALCULATIONS.