

EW-90 MONTHLY OPERATIONAL REPORT DATA INSTRUCTION SHEET

- 1.) The spreadsheet is protected and only provides certain areas accessible to the user. Restricted areas consist of "ppm", "flow rate," "average," and "total" cells where formulas and calculations are stored.
- 2.) The user will need to input the PWSID number, month/year, system name, telephone number and county on the first sheet. The PWSID number and month/year will automatically carry over to the other pages.
- 3.) The flowrate (gpm) is automatically calculated after the user inputs operational hours and gallons of filtered water. Additionally, the chemical feedrate (ppm) is calculated when the pounds of chemical is added. Chemical names may be changed or rearranged, as long as they are reported in pounds.
- 4.) All columns are totaled and averaged automatically.

*If the plant is not operated, chemicals not fed, turbidity and/or chlorine not analyzed, leave these spaces blank--DO NOT input a zero (0). A zero (0) will change the average for the monthly totals.

For the EW-90A turbidity sheet, a zero (0) will be counted as a reading. If the user's actual analysis indicates a 0.00 NTU turbidity, report the reading on the spreadsheet as 0.001 NTU.

- 5.) The average filter run (hours) and percent backwash water (%) are calculated automatically. Note: The percent backwash water calculation assumption is that the backwash water is from the distribution system after the plant master meter. The calculation is the
$$\frac{\text{total backwash water (gallons)}}{\text{total filtered water (gallons)}} \times 100 = \% \text{ backwash water.}$$
- 6.) Additional blank paper copies of the EW-90 spreadsheets may be useful for users to fill in information daily, until the information can be entered in the computer spreadsheets. It is advised to maintain these paper copies to provide documentation of daily analyses. Always maintain a paper copy of the EW-90 spreadsheets at the end of each month!

PWSID NUMBER: **WV** _____

MONTH/YEAR: _____

ANALYTICAL RESULTS											MONTHLY OPERATIONAL REPORT REMARKS
Date	Chlorine Residual (mg/L)				Turbidity (NTU)			pH (S.U.)			
	Plant (Free)	System (Total)	Sampling Location of System Total Chlorine Residual	Sampler Initials	Raw	Settled	Finished	Raw	Settled	Finished	
1											
2											
3											
4											
5											
6											
7											
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25											
26											
27											
28											
29											
30											
31											
TOTAL											
AVG											

I certify the values recorded above are true and accurate to the best of my knowledge.

Certified by: _____
(Certified Operator Printed Name Required)

(Certified Operator Signature Required)

Date: _____

Number of Filters Used: _____ (filters)

Total Filter Surface Area: _____ (sq. ft.)

Average Filter Run/Each Filter: _____ (hrs.)

% Backwash Water: _____ (%)

Certification #: _____ Exp. Date: _____ Certification Class _____

Complete and return within 10 days after the end of the month to:
WV Office of Environmental Health Services - Data Management
Capitol and Washington Streets, 1 Davis Square, Suite 200, Charleston, WV 25301-1798
Phone: (304) 558-2981 FAX: (304) 558-0139

INDIVIDUAL FILTER TURBIDITY MONITORING REPORT INSTRUCTIONS

If you have two filters, a continuous turbidity monitor can be installed on the combined filter effluent. Otherwise, a continuous turbidity monitor must be installed on each individual filter. The questions on EW-90A must be answered for the combined filter continuous monitor. If a combined filter effluent problem appears, the "filter number" should be listed as "both." Follow-up action outlined in items 6 & 7 must then be completed on both filters.

- 1. Was each filter monitored continuously?** If continuous monitoring equipment is installed and if it functioned continuously throughout the month, the correct answer is "yes." If continuous monitoring equipment is not installed or did not function continuously throughout the month, the correct answer is "no."
- 2. Were measurements recorded every 15 minutes?** If measurements on each filter were performed throughout the month and the measurements were recorded every 15 minutes when water was being filtered, the correct answer is "yes." If there was a failure in any continuous monitor, the correct answer is "no."
- 3. Was there a failure of continuous turbidity monitoring equipment?** Occasionally, a malfunction occurs which prevents a filter from being monitored continuously. Public water systems which serve a **population of at least 10,000** may collect grab samples every four hours for up to five working days in lieu of continuous monitoring. Systems which serve a **population of less than 10,000** may use grab samples every four hours for up to 14 working days. These results can be reported on form EW-90A, but it must be noted that the report is in lieu of continuous monitoring. If grab samples were obtained due to an equipment failure, the correct answer is "yes." If there was no equipment failure during the month, the correct answer is "no."
- 4. Were individual filter levels greater than 1.0 NTU in two consecutive measurements?** If you answer yes, systems serving a population of **at least 10,000** must produce a filter profile within 7 days of the exceedance or report the obvious reason for the exceedance and notify us with the submission of the monthly operational report (10 days after the end of the month). The filter profile is not required to be submitted, only report that the filter profile has been done. The box on form EW-90A should be completed. Systems that serve a population of **less than 10,000** are only required to complete the box on form EW-90A. If there is only one continuous monitor but two filters, list "both" for the filter numbers.
- 5. Were individual filter levels greater than 0.5 NTU in two consecutive measurements after the filter has been online for more than four hours?** If you answer yes, a system which serves a population of **at least 10,000** must produce a filter

profile within 7 days of the exceedance or report the obvious reason for the exceedance and notify us with the submission of the monthly operational report (10 days after the end of the month). The filter profile is not required to be submitted. Only report that the filter profile has been done. The box on form EW-90A should be completed. Systems that serve a *population of less than 10,000* have no required action.

6. Were individual filter levels greater than 1.0 NTU in two consecutive measurements in three consecutive months? If you answer yes, the system must conduct a self assessment of the filter within 14 days of the exceedance. The system is to report that a self assessment has been completed (or will be completed by a given date, if the exceedance occurred in the last four days of the month). A self assessment must consist of an assessment of the filter performance, development of a filter profile, identification

MONTHLY COMBINED FILTER EFFLUENT TURBIDITY REPORT

Required for Surface/GWUDI Systems

PWSID NUMBER: WV _____

MONTH/YEAR: _____

SYSTEM TYPE:(Check One) _____ Surface _____ GWUDI

SYSTEM NAME: _____ PHONE NUMBER _____ COUNTY _____

Please report NTU values to two decimal places (0.00)

DATE	TIME	NTU	TIME	NTU	TIME	NTU	TIME	NTU	TIME	NTU	TIME	NTU	#<=0.3	#>0.3	REMARKS
1															
2															
3															
4															
5															
6															
7															
8															
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31															

*Slow sand: use 1 NTU in lieu of 0.3 NTU & diatomaceous earth: other filtration technologies as directed by agency

**Slow sand and diatomaceous earth: use 5 NTU in lieu of 1 NTU; other filtration technologies as directed

Total # of Samples

$\frac{\% < = 0.3 \text{ NTU} \times 100^*}{\text{GRAND TOTAL}} =$

Readings over 1 NTU** _____

Highest single turbidity reading _____

Lowest single turbidity reading _____

I certify the values recorded above are true and accurate to the best of my knowledge.

CERTIFIED BY: _____
(Certified Operator Printed Name Required)

(Certified Operator Signature Required)

Date: _____

Certification #: _____ Exp. Date _____

Certification Class _____

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INDIVIDUAL FILTERS

If filter method is other than direct or conventional, please specify

(Please note, direct or conventional methods are required to complete the form below)

_____ (diatomaceous earth, slow sand, other)

1. Was each filter monitored continuously?

Yes

No

2. Were measurements recorded every 15 minutes?

Yes

No

3. Was there a failure of continuously turbidity monitoring equipment?

Yes

No

4. Were individual filter levels greater than 1.0 NTU in two consecutive measurements?

Yes

No

5. Were individual filter levels greater than 0.5 NTU in two consecutive measurements after online for more than four hours?

Yes

No

6. Were individual filter levels greater than 1.0 NTU in two consecutive measurements in three consecutive months?

Yes

No

7. Were individual filter levels greater than 2.0 NTU in two consecutive measurements in two consecutive months?

Yes

No

FILTER NUMBER	
TURBIDITY MEASUREMENTS	
DATE(S) AND TIME(S)	

I certify the information recorded above is true and accurate to the best of my knowledge.

CERTIFIED BY: _____
Operator Printed Name Required

CERTIFIED BY: _____
Operator Signature Required

Date: _____

Certification # _____

Exp. Date _____

Certification Class _____

MONTHLY CHLORINE RESIDUAL REPORT - Required Surface and GUDI Sources

Required for Surface/GWUDI Systems

PWSID NUMBER: WV _____

MONTH/YEAR: _____

SYSTEM TYPE:(Check One) _____ Surface

_____ GWUDI

SYSTEM NAME _____ PHONE NUMBER _____ COUNTY _____

Please report Chlorine Residual values to one decimal places (0.0)

DATE	TIME	CL. RES.	TIME	CL. RES.	TIME	CL. RES.	TIME	CL. RES.	TIME	CL. RES.	TIME	CL. RES.	TOTAL	
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
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22														
23														
24														
25														
26														
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29														
30														
31														
# of Samples under 0.2 mg/l(free chlorine residual)													Total # of Samples Taken	

I certify the values recorded above are true and accurate to the best of my knowledge.

CERTIFIED BY: _____
(Certified Operator Signature required)

(Certified Operator Signature required)

Date: _____

Certification #: _____ Exp. Date _____ Certification Class _____

**Complete and return within 10 days after the end of the month to:
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INSTRUCTIONS FOR EW-90B

EW-90 B is to be used for systems serving up to 3,300 population in lieu of continuous chlorine monitoring.

For systems using continuous monitoring, you will still need to submit the form but only need to indicate across the form that you monitor for chlorine continuously. If your continuous monitoring equipment would fail, you would be required to begin obtaining grab samples once every four hours.

The results would need to be recorded on EW-90B on the days the equipment was inoperative.

POPULATION	SAMPLES REQUIRED PER DAY
0 - 500	1
501 - 1,000	2
1,001 - 2,500	3
2,501 - 3,300	4
ABOVE 3,300	CONTINUOUS

All systems are required to record the lowest chlorine residual leaving the treatment plant each day. This value is recorded in the chlorine residual plant (free) column on form EW-90.

INSTRUCTIONS FOR FORM NO. EW-90C QUARTERLY OPERATIONAL REPORT

1. Monitor, on a monthly basis, samples of treated and source water for treated water TOC, source water TOC, and source water Alkalinity. Record the results on the form to the nearest tenth (for example; 3.4mg.l) for TOC.
2. Determine if alternative criteria are met (A1-A8), based on 12 months of data. If alternative criteria are met, indicate the "basis for required % removal" with the appropriate alternative number (i.e. A1), and attach documentation, if indicated. Alternative A3 and A4 cannot be used as meeting the removal criteria on a monthly basis.
3. If alternative criteria are not met on a running annual average, computations are to be made on a monthly basis.
4. Submit this report on a quarterly basis (due January 10, April 10, July 10, and October 10)

Monthly Computation:

Column A: $1 - (\text{treated water TOC}/\text{source water TOC}) \times 100 = \text{Actual \% TOC Removal}$

Column B: Insert required TOC removal from chart; based on source water alkalinity and TOC results.

MEETING THE REQUIRED % TOC REMOVAL IN COLUMN B OF CHART

Required % TOC removal		
Source Water Alkalinity Between	Source Water TOC Between	Required % TOC Removal
0 - 60 mg/L*	2.0 - 4.0 mg/L	35.0%
0 - 60 mg/L	4.1 - 8.0 mg/L	45.0%
0 - 60 mg/L	8.1 and above mg/L	50.0%
61 - 120 mg/L*	2.0 - 4.0 mg/L	25.0%
61 - 120 mg/L	4.1 - 8.0 mg/L	35.0%
61 - 120 mg/L	8.1 and above mg/L	40.0%
Over 120*	2.0 - 4.0 mg/L	15.0%
Over 120	4.1 - 8.0 mg/L	25.0%
Over 120	8.1 and above mg/L	30.0%

* If source water is less than 2.0, % removal can be computed based on the appropriate source water alkalinity. If the removal ratio is >1.0, this value should be used. If the value is below the detection limit, 1/2 the value of the detection limit is to be used in the computations.

Column C: Column (A) / (B)

For monthly computations, if A/B is > 1.0, then the enhanced coagulation TOC removal required has been met and the system is in compliance. If A/B is < 1.0, the system must evaluate alternative A1, A2, A5, and A6 to determine compliance. If the system softens water, the system must evaluate alternative A7 and A8 also. If any alternative criteria are met for that month, a value of 1.0 can be placed in column C. If none are met, place the value of A/B in column C.

Basis for Required % Removal: There are 8 different values that can be inserted in this column:

- A1 = Source Water TOC is less than 2.0 mg/L on annual running average.
- A2 = Treated Water TOC is less than 2.0 mg/L on annual running average.
- A3 = Source Water TOC is less than 4.0 mg/L, Source Water Alkalinity is greater than 60 mg/L, and the TTHM or HAA5 running annual averages are no greater than .040 and .030 mg/L respectively. (ATTACH DOCUMENTATION)
- A4 = Both TTHM and HAA5 running annual averages are no greater than .040 and .030 mg/L respectively. (ATTACH DOCUMENTATION)
- A5 = SUVA prior to any treatment is ≤ 2.0 L/mg-m calculated quarterly as the running annual average. (ATTACH DOCUMENTATION)
- A6 = SUVA treated water is ≤ 2.0 L/mg-m calculated quarterly as a running annual average. (ATTACH DOCUMENTATION)

Additional Alternative Compliance Criteria available for ***softening systems only:***

- A7 = Softening that results in lowering the alkalinity to less than 60 mg/L measured monthly and calculated quarterly as a running annual average (ATTACH DOCUMENTATION).
- A8 = Softening that results in removing at least 10 mg/L of magnesium hardness (as CaCO₃), measured monthly and calculated quarterly as a running annual average (ATTACH DOCUMENTATION).

Even if your system meets alternative criteria, this does not relieve your system from monitoring and analyzing TOC/alkalinity on a routine basis.

TO DETERMINE THE YEARLY AVERAGE RATIO, SUM THE VALUES IN COLUMN C AND DIVIDE BY 12. IF THE RATIO IS ≥ 1.00 , YOUR SYSTEM IS IN COMPLIANCE.

STATE DEFINED REMOVALS.

If you cannot demonstrate compliance with the above methods, contact your DISTRICT OFFICE for instructions on establishing alternative minimum TOC removal requirements.

NOTES

Conventional filtration - must have coagulation, flocculation and sedimentation processes before filtration.

TOC = Total Organic Carbon

ALK = Alkalinity as (CaCO₃)

SUVA = UV₂₅₄/DOC

where:

UV₂₅₄ = Ultraviolet Absorption at 254 nanometers (-m) (must be measured prior to disinfectant being added)

DOC = Dissolved Organic Carbon (mg/L)