

# CHESAPEAKE WATER WATCH AND CHLOROPHYLL DATA

March 26, 2026

# CMC TIER REQUIREMENTS

---

## Tier 1

- Monitoring Program - Methods Manual following standard EPA methods.

## Tier 2

- Monitoring Program – program manual or approved QAPP
- Equipment – calibration / standardization
- Lab – State or EPA approved QAPP

## Tier 3

- Monitoring Program – CBP/EPA approved QAPP and Field Audit
- Equipment – calibration / standardization
- Lab – Certified (VELAP/NELAP) or CBP Approved

# CHLOROPHYLL

---

Method	Equipment	Filtered/unfiltered	Units	Tier
In Vivo Chl	Aquafluor fluorometer	Unfiltered	ug/L RE	2
Chl a,b,c EPA 445.0	Lab Analysis Fluorometer	Filtered	ug/L	2, 3
Chl a EPA 446.0	Lab Analysis Spectrophotometer	Filtered	ug/L	2, 3

# TURBIDITY

---

Method	Equipment	Units	Tier
Turbidity	HydroColor Phone App	NTU	1
Turbidity (EPA 180.1)	Field Colorimeter (HACH DR 900)	FAU	2
Turbidity (EPA 180.1)	Turbidimeter (HACH 2100P)	NTU	2 and 3
Turbidity (EPA 180.1)	Multiprobe Sonde	NTU	2 and 3

# CHLOROPHYLL A - TIER III

---

- CMC partners collect filtered Chlorophyll a data that they send to CBL NASL.
- These data are analyzed in the lab using the fluorometry or spectrophotometry method.
- Fluorometry method: EPA 445.0
  - A fluorometer equipped with the proper light source and filters for chlorophyll analysis. This laboratory uses a Turner Designs Trilogy fluorometer equipped with either the non-acid or the acid optical module
  - Filtered water samples: 11.5.1.1 Total chl<sub>a</sub>:  $(RB * FS * 10 * \text{dil.}) / \text{vol. filtered (ml)} = \text{conc. g/L}$  11.5.1.2 Active chl<sub>a</sub>:  $((RB - RA) * FS * (r / (r - 1)) * 10 * \text{dil.}) / \text{vol. filtered (ml)} = \text{g/L}$
  - \$23.01 per sample
- Spectrophotometry method: EPA 446.0
  - A scanning spectrophotometer capable of measuring wavelengths within the visible range. This laboratory uses Shimadzu UV2600i spectrophotometers
  - Chlorophyll corrected for phaeophytin ( $\mu\text{g/L}$ ): Chlorophyll  $\alpha$  corrected ( $\mu\text{g/L}$ ) =  $26.7(664B - 665A) \times V1 / V2 \times L$
  - \$26.28 per sample

# CHLOROPHYLL A - TIER III

---

- Can lab methods for Chlorophyll *a* be both fluorometry and spectrophotometry as Tier III for CBP purposes?
- Can we come up with and agree to numeric chlorophyll-a criteria for the Chesapeake Bay?
- Virginia/DEQ conducts an assessment of chlorophyll-a in the tidal James
- Based on ICPRB analysis
- [https://www.potomacriver.org/wp-content/uploads/2016/02/ICP16-1\\_Buchanan.pdf](https://www.potomacriver.org/wp-content/uploads/2016/02/ICP16-1_Buchanan.pdf)
-

# CHLOROPHYLL A REFERENCES

---

- [https://www.chesapeakebay.net/files/2010\\_addendum\\_ambient\\_water\\_quality\\_criteria.pdf](https://www.chesapeakebay.net/files/2010_addendum_ambient_water_quality_criteria.pdf)
- <https://www.umces.edu/sites/default/files/NASLDOC-035%20Chlorophyll%20Fluorometric%20Method%202025-1.pdf>
- <https://www.umces.edu/sites/default/files/NASLDOC-034%20Chlorophyll%20Spectrophotometric%20Method%202025-1.pdf>
- <https://nepis.epa.gov/Exe/ZyNET.exe/P100PH99.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1995+Thru+1999&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C95thru99%5CTxt%5C00000038%5CP100PH99.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL>
- <https://nepis.epa.gov/Exe/ZyNET.exe/P100PMTG.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1995+Thru+1999&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C95thru99%5CTxt%5C00000038%5CP100PMTG.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL>