



# Department of Environmental Protection

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## 2021 ADDENDUM

to the

Massachusetts Department of Environmental Protection

Division of Watershed Management, Watershed Planning Program

### **Quality Assurance Program Plan for Surface Water Quality Monitoring and Assessment, 2020-2024**

Significant changes and additions to the 2020 EPA-approved MassDEP-DWM-WPP QAPP are as follows (by QAPP element). Sections containing significant changes are highlighted. Supporting documents for the 2021 update have been provided to EPA through the Commonwealth of Massachusetts Interchange System and/or via email.

#### **A1) Title Page**

Laura Blake is no longer the Director of the Bureau of Water Resources. MassDEP is currently working to backfill this position; Richard Carey is Acting Director.

#### **A2) Contents**

No changes.

#### **A3) Distribution List**

No changes.

#### **A4) Program Description and Organization**

The following changes to Figure 1 (Organization Chart) and Table 1 (Role and Responsibilities) have been made:

- Addition of Richard Carey as Acting Director
- Addition of Robert Smith to the Data and Assessment Section (as External Monitoring and Data Coordinator)
- Addition of Mason Saleeb to the TMDL Section
- Retirement of Nina Duston from the Wall Experimental Laboratory

#### **A5) Program Goals and Objectives**

No changes.

## A6) Project Scheduling and Coordination

No changes.

## A7) Data Quality Objectives

Changes to **Table 2 Data Quality Objectives** related to the use of a contract laboratory (Alpha Analytical) for TN and TP analysis for the 2021 season and a new analysis/method for dissolved organic carbon being implemented at the Wall Experimental Laboratory, and the assistance of the EPA New England Regional Lab for analysis of TN, TP, ortho-P, NH<sub>3</sub>, NO<sub>3</sub>/NO<sub>2</sub>, TSS, and *E. coli*. Note that the DQOs have NOT changed.

| Analyte  | Analytical Method(s)                      | Units | Expected Range (appx.) | Method Detection Limit (MDL) | Minimum Reporting Limit (MRL) | Accuracy (+/-)  | Overall Precision (RPD or other) | Resolution |
|--|---|-------|------------------------|------------------------------|-------------------------------|---|----------------------------------|------------|
| Total Phosphorus (Alpha Analytical)  | SM 4500 P-E                               | mg/L  | 0 – 150 ug/L           | 4 ug/mL                      | 4 ug/L                        | 80-120% recovery of QC standard and LFM<br><50 ppb, 5 ppb<br>>50 ppb, 10% | <50 ppb, 5 ppb<br>>50 ppb, 10%   | NA         |
| Total Phosphorus (EPA)   | EPA 365.1 by EIASOP-INGTP11               | mg/L  | 0-0.15 mg/L            | 1.0 ug/L                     | 5.0 ug/L                      | 80-120% recovery of QC standard and LFM<br><50 ppb, 5 ppb<br>>50 ppb, 10% | <50 ppb, 5 ppb<br>>50 ppb, 10%   | NA         |
| Total Nitrogen (N) (EPA)   | QuikChem 10-107-04-1-C by LSBSOP-NO2-NO30 | mg/L  | 0-2 mg/L               | 12.4 ug/L                    | 45 ug/L                       | 80-120 % recovery for QC std. and LFM                                     | 0.02 mg/L or 25%                 | NA         |
| Ammonia (N) (EPA)  | QuikChem 10-107-06-X by EIASOP-AMMO0      | mg/L  | 0-0.5 mg/L             | 45.6 ug/L                    | 66 ug/L                       | 80-120% recovery for QC standard and LFM                                  | 0.01 mg/L or 20%                 | NA         |
| Nitrate-Nitrite-N (NO <sub>3</sub> -NO <sub>2</sub> -N) (Alpha Analytical) | EPA 353.2                                 | mg/L  | 0-1 mg/L               | 0.0228 mg/L                  | 0.0228 mg/L                   | 80-120 % recovery for QC std. and LFM                                     | 0.02 mg/L or 25%                 | NA         |
| Nitrate-Nitrite-N (NO <sub>3</sub> -NO <sub>2</sub> -N) (EPA)              | QuikChem 10-107-04-1-C by LSBSOP-NO2-NO30 | mg/L  | 0-1 mg/L               | 0.0068 mg/L                  | 0.023 mg/L                    | 80-120 % recovery for QC std. and LFM                                     | 0.02 mg/L or 25%                 | NA         |
| Total Kjeldahl Nitrogen (TKN) (Alpha Analytical)                           | 4500NH3-BH                                | mg/L  | 0- 1 mg/L              | 0.066 mg/L                   | 0.066 mg/L                    | 80-120 % recovery for QC std. and LFM                                     | 0.02 mg/L or 25%                 | NA         |
| Total Suspended Solids (TSS) (EPA)   | SM 2540-D by EIASOP-TSS-TDSVRES6          | mg/L  | 0 – 100 mg/L           | —                            | 2.5 mg/L                      | 80-120 % recovery for QC std. and/or LFM                                  | 1.5 mg/L or 40%                  | NA         |

| Analyte              | Analytical Method(s)    | Units      | Expected Range (appx.)  | Method Detection Limit (MDL) | Minimum Reporting Limit (MRL) | Accuracy (+/-)   | Overall Precision (RPD or other)   | Resolution |
|----------------------|-------------------------|------------|-------------------------|------------------------------|-------------------------------|--|--|------------|
| <i>E. coli</i> (EPA) | ECASOP-ENTEROLERT Rev 3 | MPN/100 ml | 0-2420 (max. undiluted) | MPN of 1/100 ml              | MPN of 1/100 ml               | Presence or >2420 MPN on positive control and absence or 0 (<RDL) for negative control | Within 50 CFUs, OR For Log <sub>10</sub> duplicate data:<br><30% (<50 CFU)<br><20% (50-500 CFU)<br><10% (500-5000 CFU)<br>< 5% (>5000 CFU) | NA         |

#### A8) Training

No changes.

#### A9) Documentation and Records

No changes. (See attachments for examples of paper field sheets updated to comply with the needs and formatting of the EDGE electronic field sheets being implemented in 2021.)

#### B1) Sampling Process Design

In 2021, DWM-WPP will resume the parts of its monitoring program delayed in 2020 by the COVID-19 pandemic, including: a seven-year rotating watershed targeted assessment monitoring program (focusing the Concord, Merrimack, Nashua, and Shawsheen Watersheds in 2021); targeted monitoring on the Mystic Lakes in collaboration with EPA; and Regional Monitoring Network as part of an inter-agency project assessing least-disturbed sites. In addition, in 2021, DWM-WPP is collaborating with EPA to conduct TMDL / 604b effectiveness monitoring on two brooks in the Nashua watershed (James and Unkety Brooks).

All lab and field work planned for 2021 is being carried out in accordance with Safety Guidance for DWM-WPP Field & Laboratory Operations During the COVID-19 Pandemic (CN 535.2).

DWM-WPP's ongoing monitoring includes: fish toxics monitoring by public request; chloride monitoring; and cyanobacteria monitoring as requested. Ongoing collaborative projects include: the Massachusetts Coastal Condition Assessment probabilistic monitoring and assessment program (MAP2) of coastal waters; Massachusetts Estuaries Project (MEP) marine benthic monitoring; continuous marine monitoring in Mount Hope Bay as part of the Narragansett Bay Fixed-Site Monitoring Network; nutrient loading in the Merrimack River; and PFAS sampling throughout the state with USGS.

The following project Sampling and Analysis Plans (SAPs) or Quality Assurance Program Plans for 2021 are provided:

- Sampling & Analysis Plan 2021 Targeted Assessment Monitoring in Northeastern Massachusetts Watershed Cohort A1 (CN# 525.0)

- Massachusetts Coastal Condition Assessment QAPP for the Massachusetts Probabilistic Monitoring and Assessment Program (MAP2): Coastal Waters (CN# 539.0)
- Sampling & Analysis Plan 2021 Mystic Lakes Monitoring (CN# 546.0)
- Sampling & Analysis Plan 2021 Monitoring Regional Monitoring Network (CN# 548.0)
- Quality Assurance Program Plan Chloride Monitoring & Assessment (CN# 540.0)
  - Sampling & Analysis Plan 2020-2021 Chloride Project Nashua (CN# 540.5)
  - Sampling & Analysis Plan 2020 – 2021 Chloride Project Concord (CN# 541.0)
- Sampling & Analysis Plan 2020 Monitoring Biocriteria Development Monitoring (CN# 531.0)
- Sampling & Analysis Plan 2021 Monitoring Project James and Unkety Brooks (CN# 545.0)

In April 2021, DWM-WPP filled a new staff position, External Monitoring and Data Coordinator, dedicated to fostering partnerships, managing external data, and analyzing external data for greater use in §305b/303d decisions.

## **B2) Sampling Methods**

No changes.

## **B3) Sample Handling and Tracking**

No changes.

## **B4) Analytical Methods**

Revised methods for 2021 as described in Table 12 include:

| LAB              | DOCUMENT TITLE  |
|------------------|---|
| Alpha Analytical | Total Phosphorus, Dissolved Phosphorus – Colorimetric, Combined reagent -2226-11 (Ref: SM 4500 P-E) |
| Alpha Analytical | Nitrogen, Total Kjeldahl-2207-9 (Ref. SM 4500 N org-C)  |
| Alpha Analytical | Nitrate, Nitrite and Nitrate_Nitrite Nitrogen-2217-11 (Ref. SM 4500 NO3-F, 4500 NO2-B_)             |
| EPA NERL         | EPA 365.1 by EIASOP-INGTP11   |
| EPA NERL         | QuikChem 10-107-04-1-C by LSBSOP-NO2-NO30   |
| EPA NERL         | QuikChem 10-107-06-X by EIASOP-AMMO0  |
| EPA NERL         | QuikChem 10-107-04-1-C by LSBSOP-NO2-NO30   |
| EPA NERL         | SM 2540-D by EIASOP-TSS-TDSVRES6  |
| EPA NERL         | ECASOP-ENTEROLERT Rev 3   |

## **B5) Quality Control**

No changes.

## **B6) Equipment Inspection, Testing and Maintenance**

No changes.

## **B7) Instrument Calibration**

No changes.

**B8) Inspection of Supplies**

No changes.

**B9) Non-Direct Measurements**

No changes.

**B10) Data Management**

No changes.

**C1) Corrective Actions**

No changes.

**C2) Quality Assurance Reports**

No changes.

**D1) Data Review and Validation**

No changes.

**D2) Data Validation Methodology**

No changes.

**D3) Data Usability**

No changes.