Generic Quality Assurance Project Plan (QAPP) for Lake Monitoring by RIDEM OWR

Prepared by: State of Rhode Island Department of Environmental Management (RIDEM), Office of Water Resources (OWR), 235 Promenade Street, Providence RI, 02908

Prepared for: U.S. Environmental Protection Agency Region 1

Version Date: 04/21/2026
Revision: 1
Period of Applicability: May 2026 – May 2031

EPA Grant/Contract/Task Order: FY24 – 27 PPG 99125709
EPA QA Tracking #: 26089

Approval Page (A2)

Project Name: Generic Quality Assurance Project Plan (QAPP) for Lake Monitoring by RIDEM OWR

Version Date: 02/16/2026

Plan prepared by: Sarah Frazar, RIDEM OWR

Jane Sawyers Digitally signed by Jane Sawyers Date: 2026.04.23 10:20:04 -04'00' _____

RIDEM Program Manager Jane Sawyers, Environmental Scientist IV, RIDEM OWR Date

Brian Zalewsky Digitally signed by Brian Zalewsky Date: 2026.04.23 10:32:08 -04'00' _____

RIDEM Project Manager Brian Zalewsky, Environmental Scientist III, RIDEM OWR Date

Colin Millar Digitally signed by Colin Millar Date: 2026.04.27 10:54:53 -04'00' _____

RIDEM Project Quality Assurance Manager Colin Millar Date
Environmental Scientist II, RIDEM OWR

Michele McCaughey Digitally signed by Michele McCaughey Date: 2026.04.27 11:13:09 -04'00' _____

RIDEM Quality Assurance Manager Michele McCaughey Date
Environmental Scientist IV, RIDEM Office of Customer and Technical Assistance

Brady R. Cunningham Digitally signed by Brady R. Cunningham Date: 2026.04.27 12:02:23 -04'00' _____

Chemical Analysis Project Lead Brady Cunningham, PhD Date
Program Manager, Rhode Island Department of Health

CARLY BOYD Digitally signed by CARLY BOYD Date: 2026.04.29 06:20:22 -04'00' _____

EPA Region 1 Quality Assurance Reviewer Carly Boyd Date

ZACHARY DEGLER Digitally signed by ZACHARY DEGLER Date: 2026.04.29 08:40:40 -04'00' _____

EPA PPG Project Officer Zachary Degler Date

Contents

Generic Quality Assurance Project Plan (QAPP) for Lake Monitoring by RIDEM OWR..... 1

Tables 3
Figures 4
List of Acronyms 5
A. Project Management and Data Quality Objectives 6
1. Project Organization and Personnel (A7 - A10) 6
2. Personnel Training and Certifications (A11) 9
3. Project Purpose, Problem Definition, and Background (A4) 9
4. Project Task Description and Schedule (A5) 10
5. Data Quality Objectives (A6) 11
6. Documentation and Records Management (A12) 14
B. Environmental Information Operations 14
1. Project/Sampling Design and Rationale (B1) 14
2. Methods (B2) 15
3. Integrity of Environmental Information (B3) 18
4. Environmental Information Management (B7) 19
5. Quality Control (B4) 19
6. Equipment/Instrument Calibration, Testing, Inspection, and Maintenance (B5) 20
7. Inspection/Acceptance of Supplies and Services (B6) 21
C. Assessment, Response Actions, and Oversight 21
1. Assessments, Oversight, and Response Actions (C1 & C2) 21
2. Reports to Management (C2) 22
D. Data Review and Usability 23
1. Data Review (D1) 23
2. Project Evaluation – Usability Determination (D2) 24
References 24

Tables

Table 1. Distribution List 6
Table 2. Project Data Quality Indicators 12
Table 3. Project field and data review sampling standard operating procedures reference table. 16
Table 4 Project Laboratory Analysis Standard Operating Procedures Reference Table 17
Table 5 Quality Objectives for Commonly Measured lake parameters 19

Figures

Figure 1. Project Organizational Chart 6

Appendices

Appendix A. Field Documentation

- *A-1 Example chain of custody form*
- *A-2 Training Documentation Form*

List of Acronyms

CALM – Consolidated Assessment and Listing Methodology
CWA – Clean Water Act
DQI – Data quality indicators
DQO – Data quality objective
EI – Environmental information
EIO – Environmental information operations
EPA – Environmental Protection Agency
PARCCS – Precision, accuracy, representativeness, comparability, completeness, sensitivity
PO – Project Officer
QA – Quality assurance
QAM – Quality assurance manager
QAPP – Quality Assurance Project Plan
QL – Quantitation Limit
QC – Quality control
RIDEM OCTA – Rhode Island Department of Environmental Management Office of Customer and Technical Assistance
RIDEM OWR – Rhode Island Department of Environmental Management Office of Water Resources
RIDOH – Rhode Island Department of Health
RPD – Relative percent difference
RSD – Relative standard deviation
SOP – Standard Operating Procedure
TMDL – Total Maximum Daily Load
URIWW – University of Rhode Island Watershed Watch

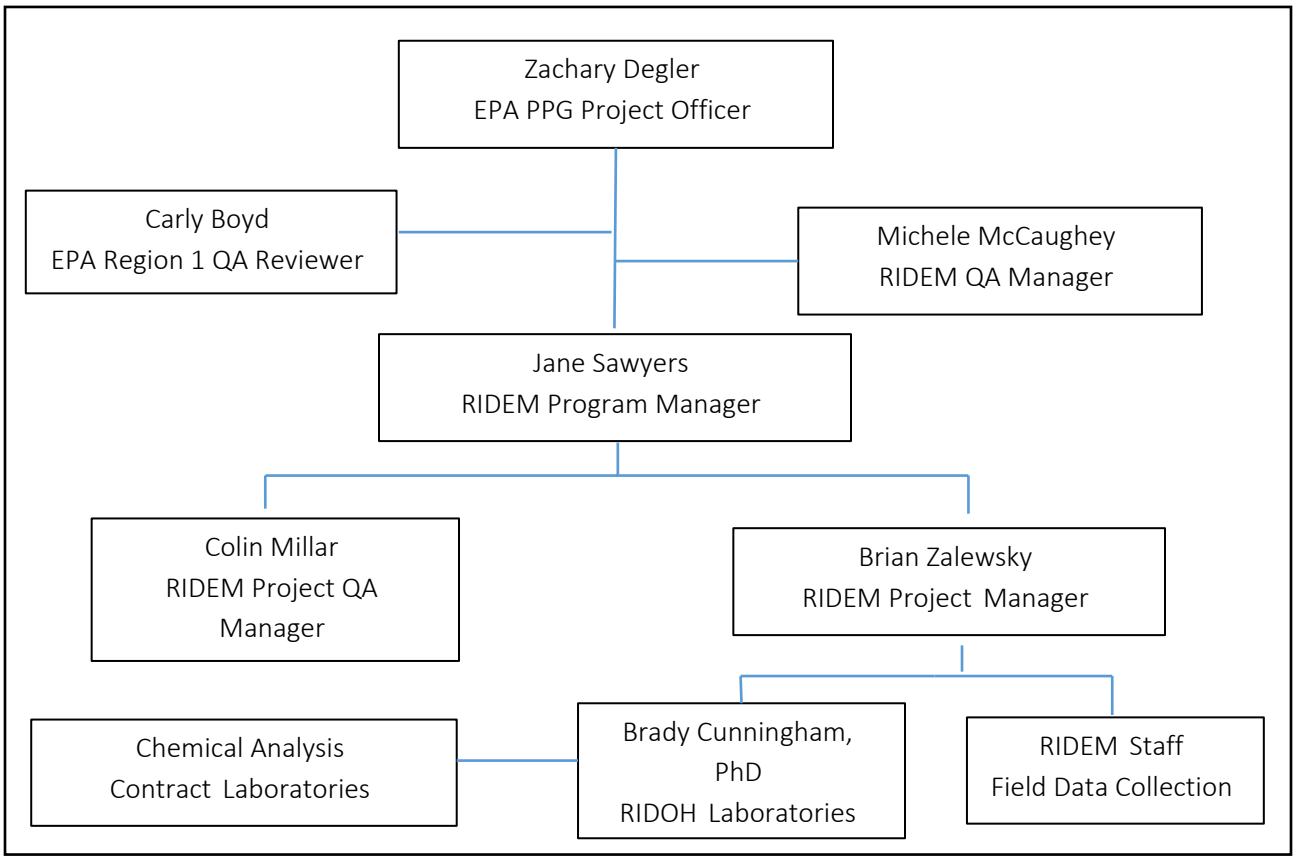
A. Project Management and Data Quality Objectives

1. Project Organization and Personnel (A7 - A10)

TABLE 1. DISTRIBUTION LIST

QAPP Recipient	Responsibilities	Organization
Carly Boyd	EPA Region 1 Quality Assurance Reviewer	US EPA Region 1 Laboratory Services & Applied Science Division Phone: 617-918-8307 Boyd.Carly@epa.gov
Zachary Degler	EPA PPG Project Officer	US EPA Region 1 Phone: 617-918-1630 Degler.Zachary@epa.gov
Jane Sawyers	RIDEM Program Manager	RIDEM OWR 235 Promenade Street Providence RI, 02908 Phone: 401-537-4160 Jane.sawyers@dem.ri.gov
Brian Zalewsky	RIDEM Project Manager	RIDEM OWR 235 Promenade Street Providence RI, 02908 Phone: 401-537-4195 Brian.zalewsky@dem.ri.gov
Colin Millar	RIDEM Project Quality Assurance Manager	RIDEM OWR 235 Promenade Street Providence RI, 02908 Phone: 401-537-4256 Colin.millar@dem.ri.gov
Michele McCaughey	RIDEM Quality Assurance Manager	RIDEM OCTA 235 Promenade Street Providence RI, 02908 Phone: 401-537-4016 Michele.mccaughey@dem.ri.gov
Brady Cunningham, PhD	Chemical Analysis Project Lead	RI State Health Laboratories 150 Richmond Street, Suite 100 Providence RI, 02903 Phone: 401-222-5578 Brady.Cunningham@health.ri.gov

FIGURE 1. PROJECT ORGANIZATIONAL CHART


Zachary Degler
EPA PPG Project Officer
Carly Boyd
EPA Region 1 QA Reviewer
Michele McCaughey
RIDEM QA Manager
Jane Sawyers
RIDEM Program Manager
Colin Millar
RIDEM Project QA Manager
Brian Zalewsky
RIDEM Project Manager
Chemical Analysis
Contract Laboratories
Brady Cunningham, PhD
RIDOH Laboratories
RIDEM Staff
Field Data Collection

Jane Sawyers of RIDEM OWR will serve as the RIDEM Program Manager and will:

- Fulfill the role of Senior Manager and have overall responsibility for the program.
- Develop cost estimates for contractual agreements between RIDEM OWR and project contractors, including RIDOH.
- Provide guidance on program direction.
- Make the final determination to reject data and remove any unusable data.
- Supervise general progress of the program.

Brian Zalewsky of RIDEM OWR will serve as the RIDEM Project Manager and will:

- Fulfill the role of Operations Manager and is responsible for managing the environmental operations of projects, unless otherwise specified in the QAPP addenda.
- Act as the primary point of contact for the program.
- Organize, design, and oversee field data collection.
- Contact private landowners when necessary for site access.
- Ensure that field personnel are properly trained and keep training records on file.
- Serve as decision point for field safety and accessibility questions.
- Ensure that equipment is in good working order, and that supplies are ordered.
- Ensure that the correct laboratory analyses are performed.
- Provide written or verbal updates to the RIDEM Program Manager.
- Review and update the generic QAPP annually.
- Distribute the QAPP to project personnel.
- Ensure that the QAPP outlined procedures are followed and resolve any problems that arise.
- Ensure that field SOPs meet DQO stated in this QAPP.
- Formulate and submit any new SOPs required for a project for approval.
- Review field and laboratory data.
- Determine if data collected meets the measurement performance criteria for the project and verify that all relevant SOPs have been followed.

Colin Millar of RIDEM OWR will serve as the RIDEM Project Quality Assurance Manager (RIDEM Project QA Manager) and will:

- Assess project compliance with the QAPP and effectiveness of the QAPP.
- Ensure that procedures and protocols outlined in the QAPP are followed.
- Ensure that data are correctly reported and are finalized and delivered on time by self or by designee.
- Keep a list of all field personnel appropriately trained to perform fieldwork.
- Review field and analytical results to identify data that do not meet the DQOs.
- Have an independent line of communication to the Program Manager (Senior Manager) via email and phone.

Seasonal technicians and other personnel from RIDEM OWR will:

- Assist the RIDEM Project Manager with the collection of field data and samples as needed.

Brady Cunningham, PhD of (RIDOH) will serve as the Chemical Analysis Project Lead and will ensure that:

- All involved RIDOH State Health Laboratories personnel are properly trained in protocols associated with the laboratory analyses.
- State Health Laboratories and contract laboratory SOPs meet the Data Quality Objectives (DQOs) stated in this QAPP as communicated by the RIDEM Project Manager.

2. Personnel Training and Certifications (A11)

Field data collection will be overseen by a qualified environmental scientist, or similarly qualified individual as the RIDEM Project Manager. The RIDEM Project Manager will be trained in lake collection techniques, analysis, and interpretation. All field personnel will be familiar with project fieldwork and SOPs necessary for project execution. The RIDEM Project Manager will train RIDEM field personnel performing any lake sampling fieldwork in the data collection methods stated in SOPs associated with the sampling activities listed in the site-specific project addendum. Field analysts will have a training record form filled out and retained by the RIDEM Project Manager to document that the field analyst has read and understands each SOP (Appendix A-2). The RIDEM QA Project Manager will keep a list of all field personnel appropriately trained to perform fieldwork. Field personnel should have previous academic study or work experience in an environmental science field. Field personnel should also be familiar with basic water and boating safety and first aid guidelines.

Laboratory work performed at Rhode Island Department of Health (RIDOH) State Health Laboratories will be conducted under the supervision of the Chemical Analysis Project Lead. Laboratory workers will receive training supervised by the Chemical Analysis Project Lead or a qualified trainer prior to work being performed. A qualification record is kept on site to track the training and performance of those personnel assigned to laboratory tasks.

Special training and certification for parameters measured by a contractual designee will be the responsibility of the contracted party. A qualification record will be available from the contractual designee to track the training and performance of those personnel.

3. Project Purpose, Problem Definition, and Background (A4)

RIDEM OWR is charged by the Federal Clean Water Act (CWA) with comprehensively monitoring and assessing the water quality of the State of Rhode Island's waters. RIDEM OWR also implements the state's Water Quality Standards and Total Maximum Daily Load (TMDL) Programs. The purpose of these programs is to restore, preserve, and enhance the water quality of Rhode Island waters through development and implementation of water quality criteria and water quality restoration studies. Lake water quality monitoring is an integral element to implementation of these programs through the collection and use of high-quality data reflecting the status of Rhode Island lakes.

Lakes in RI can be characterized as small and shallow (excluding the kettle holes that dot the state) and a number of lakes are actually reservoirs or impoundments of riverine systems. Most of the impoundments were formed with the development of man-made dams. There are no major WWTF discharges into lakes in RI.

The primary source of monitoring data for Rhode Island ponds and lakes is the University of Rhode Island Watershed Watch Program (URIWW). Initiated in 1987, the program is a professionally supervised volunteer monitoring program with an EPA-approved field and laboratory QAPP. The data generated through the URIWW program supports lake assessments, criteria development, and TMDLs by RIDEM. However, the duties of the RIDEM OWR may necessitate conducting extended monitoring on lakes sampled by URIWW or special projects on lakes not routinely monitored by URIWW.

The general goal of lake monitoring by RIDEM OWR is to obtain high quality data to accurately characterize the water quality of lakes in Rhode Island and to facilitate implementation of regulatory programs. Monitoring data can be used to make management, restoration, and implementation decisions by RIDEM OWR and other State of Rhode Island governmental bodies. Data may be used to refine or develop water quality criteria, report the water quality status of lakes in the Integrated Water Quality Monitoring and Assessment Report (Integrated Report) for the 305(b) and 303(d) requirements under the Clean Water Act (CWA), support permitting programs, assess progress to water quality restoration, and develop TMDL studies.

This QAPP is designed as a generic QAPP applicable to lake water quality monitoring activities conducted by the RIDEM OWR. A data collection effort under this QAPP may include physical, chemical, and biological sampling and analysis. Addenda to this QAPP will be developed for specific projects and will include information on data collection methods, sampling locations, parameters of interest, laboratory methods, Standard Operating Procedures (SOP), and data review processes beyond those included in this generic QAPP. The personnel named in this QAPP are the primary personnel engaged in lake waters quality monitoring conducted by RIDEM OWR. If other RIDEM or contractual personnel utilize this generic QAPP, they will be named in the addenda and any deviation from the assigned project roles documented (e.g. QA Manager collects training forms in place of the Project Manager). The decisions and outcomes rendered under each addendum will be project-specific in nature. The type of assessment undertaken in each project will be determined by the RIDEM OWR goals and responsibilities, and any potential decisions and outcomes will be decided independently for each project. This generic QAPP will be reviewed annually to confirm that it remains current and accurate and is effective at meeting the stated project and data quality objectives.

4. Project Task Description and Schedule (A5)

This QAPP is designed for the generic application to all lake monitoring activities conducted by the RIDEM OWR. Project-specific addenda will be developed for the projects undertaken under this QAPP. The addenda will include:

- Site-specific information including
    - Project goal and purpose
    - Map of station locations
    - Waterbody names and WBID#
    - Sampling dates /proposed sampling dates
    - Number of samples
    - Parameters to be analyzed
    - Sample collection methods (i.e. integrated, discrete, continuous)

  - Method(s) for recording field data (i.e. electronic, field sheet, field book)
  - Analytical methods
- Schedules for field work, laboratory analysis and reporting
- Data records location and organization
- Project personnel and lines of communication beyond those included in this generic QAPP
- Additional or updated field and/or laboratory SOPs beyond those included in this generic QAPP
- Final products to be produced
- Data review, verification and validation procedures
- Project-specific data quality items, including:
  - Data quality objectives beyond those included in this generic QAPP
  - Number and frequency of QA reports
  - Specific sources of variability related to the project goals (i.e. deep spot vs. near-shore sampling location, weather considerations, seasonality)

The addendum may be in table or narrative format, depending on the goals and requirements of the project. Resource and time constraints will be project-specific in nature. The funding, personnel, and equipment resources needed for the fieldwork will change depending on goals and budget of each project. The RIDEM Project Manager will determine and communicate to field staff whether a certain season (i.e. spring, summer, fall), weather-related period (dry or heavy precipitation) or environmental phenomenon (i.e. phytoplankton blooms) must be captured by the fieldwork.

5. Data Quality Objectives (A6)

Data Quality Objectives (DQOs) are qualitative and quantitative statements that clarify the intended use of the data, define which purposes the data may be used for, and specify tolerable levels of potential decision errors that will be used as the basis for establishing the quality, type, and quantity of data needed to support decisions. DQOs identify the conditions under which the data should be collected, and state what requirements must be met in order to use the data for its intended purpose. If applicable, the DQOs should specify the tolerable limits of the probability of making a decision error because of uncertainty in the data. The RIDEM Project QA Manager, or their designee, will review field and analytical results to identify data that do not meet the DQOs.

The intended purpose of the data collection and analysis for RIDEM OWR lake monitoring projects is to characterize water quality conditions and provide information to support criteria development, water quality assessments, TMDLs, and other management decisions. This QAPP and associated SOP documents outline the proper data collection methods, procedures, and measurements to be utilized to reduce sources, magnitude, and frequency of errors during data generation. By outlining and following these steps, uncertainties in the data will be reduced and data quality will be assured for proper use and interpretation of the data. To meet the data quality objectives, the following quality assurance measures will be employed to verify the use of proper, consistent field procedures, handling measures, and laboratory analyses.

- Standard Operating Procedures (SOPs) will be implemented during sampling and field data collection.
- EPA-approved, standardized methods will be adhered to for all chemical analysis procedures.
- Qualified, trained scientists will perform the sample collection and laboratory analyses.
- Chain of custody forms (Appendix A-1) will be completed when handling samples and transferring custody from field crew to the State Health Laboratories as well as contractual laboratories.

- One field blank for each sampling day will be collected by each field crew to ensure there is not contamination introduced during field sampling procedures. Field blanks will be collected at 10% or more of the sampling stations or as specified in the applicable SOP/QAPP Addendum.
- Field duplicate samples will be collected for each sampling day at 10% of sampling stations to ensure precise, reproducible results, or as specified in the applicable SOP/QAPP Addendum. Sampling stations for duplicate sample collections will be chosen randomly. Sequential field duplicates (sample is taken and then the duplicate is taken from the same water immediately after) will be utilized unless otherwise specified in the applicable SOP/QAPP Addendum.

TABLE 2. PROJECT DATA QUALITY INDICATORS

Data quality indicator	Quality control activities and checks	Goal
Precision	• Field duplicates are collected at 10% of sampling stations each sampling day or as specified in the applicable SOP /QAPP Addendum. • Laboratory duplicates will be run in accordance with applicable laboratory SOPs.	• Field duplicates achieve ≤ 20% relative percent difference (RPD) or as specified in the applicable SOP/QAPP Addendum. • Laboratory duplicates: As specified in the applicable laboratory SOP.
Bias	• Field analysts are trained prior to sample collection. • Field duplicates are collected at 10% of sampling stations each sampling day or as specified in the applicable SOP/QAPP addendum. • Field blanks are collected at 10% of sampling stations each sampling day or as specified in the applicable SOP/QAPP addendum. • Laboratory calibrations, blanks, matrix spikes, and/or control samples will be run in accordance with the applicable laboratory SOPs.	• All field analysts receive training and review applicable SOP/QAPPs prior to sample collection. • Field blanks are non-detect or as specified in the applicable SOP/QAPP addendum. • Field duplicates achieve • ≤ 20% relative percent difference (RPD) or as specified in the applicable SOP/QAPP Addendum. • Laboratory parameters are within limits as specified in the applicable laboratory SOPs.

Data quality indicator	Quality control activities and checks	Goal
Accuracy	• Field equipment is checked and calibrated prior to use. • EPA-approved, standardized, repeatable chemical analysis procedures are used. • Standard sample collection methods following an established SOP and/or manufacturer's recommendations are used. • Laboratory Method Detection Limits (MDL), Quantitation Limits (QL) and calibrations are established in accordance with laboratory SOPs.	• Field equipment meets manufacturers' specifications to known values or standards. • Laboratory MDLs, QLs and calibrations are within limits as specified in applicable laboratory SOPs.
Representativeness	• Evaluate whether the data accurately represents the water quality conditions the project is intended to examine in the QAPP addendum.	• Sampling design adequately represents the water quality conditions the project is intended to examine (season, system, weather condition, etc.). • A minimum of 90% of samples meet the water quality conditions the project is intended to examine, or as specified in the applicable SOP/QAPP addendum.
Comparability	• If appropriate, compare collected data to data previously collected on the waterbody of interest, to a range of historical data from other lakes sampled or to values typical of a similar lake (i.e. deep, highly turbid, colored, etc.).	• Data is reasonably comparable or there is a reasonable explanation for differences.
Completeness	• Compare the amount of valid data to the total amount of data that was planned to be collected.	• A minimum of 90% of the planned samples are collected, analyzed and deemed valid, or as specified in applicable QAPP addendum.
Sensitivity	• Compare laboratory QLs to desired data collection range.	• Laboratory QLs are adequate to capture the desired range of data.

Data quality indicator	Quality control activities and checks	Goal
Measurement range	• Compare the measurement range of field equipment and laboratory instruments/methods to the desired range of data for each parameter.	• Measurement range is appropriate for the parameter of interest and is adequate to meet project goals. • Field equipment is appropriately calibrated to measure the desired data range (i.e., pH meter). • Laboratory instruments are appropriately calibrated to capture the desired range of data, in accordance with the applicable laboratory SOP. • Laboratory methods are appropriate to capture the desired data range.

6. Documentation and Records Management (A12)

The retention of all project files will follow the policy of the State of Rhode Island General Records Retention Schedule for DEM (Available at: https://sosri.access.preservica.com/uncategorized/IO_4129aa63-d8a6-416e-b066-7b7131fe2b29/). The RIDEM Project Manager will be responsible for the maintenance and distribution of the finalized QAPP, as well as any approved revisions and applicable QAPP addenda. The finalized QAPP, any QAPP revisions, applicable QAPP addenda, SOPs, and other documents for field collection will be distributed to all project members listed in the organizational chart (Figure 1). The finalized QAPP, QAPP addenda, and any project-specific final reports will be maintained in RIDEM's Office of Water Resources (OWR) in hard-copy and/or electronically according to the DEM Records Retention Schedule. Project-specific QAPP addenda will specify the location and manner of project storage. All electronic documents are saved in folders on a digital storage drive which is backed up by the Rhode Island Department of Information Technology (RI DOIT) department.

B. Environmental Information Operations

1. Project/Sampling Design and Rationale (B1)

This generic QAPP is designed for all lake monitoring projects undertaken by RIDEM OWR. The project scope and tasks will vary with each project's goals and will be described in the project-specific addendum. Sampling locations, sampling frequency, parameters of interest, number of samples, sampling methods, and sample

schedule will also vary with each project and will be described in the project-specific addendum. Conditions applicable to most projects are described below:

- If any site becomes inaccessible during the project (i.e. drawn down, unsafe launching site), the RIDEM Project Manager will be responsible for deciding to proceed without the site or postponing the sampling effort on the site until conditions are acceptable for safe and accurate data collection.
- If it is necessary to access a waterbody via private property, the RIDEM Project Manager will receive permission from the landowner for access prior to project initiation. If a landowner denies access to the field analyst, the field analyst should contact the RIDEM Project Manager to determine further action.
- The treatment of samples during collection and transport will be determined by the holding time and necessary conditions (i.e. ice, acid preservation) of the parameter(s) chosen for the project.
- The RIDEM Project Manager will be responsible for deciding any seasonal factors to either avoid or capture through the sampling effort (i.e. phytoplankton growing season, spawning, high or low precipitation).
- No sampling will take place during dangerous weather conditions (i.e. lightning, high wind advisories). Most lake sampling efforts take place outside of winter conditions but if necessary appropriate winter safety measures will be taken.

2. Methods (B2)

Sampling methods for all projects undertaken through this QAPP will use established SOPs. Any SOP not included as an appendix to this QAPP will be included in the project specific addendum. Any new SOPs will be formulated and submitted for approval by the RIDEM Project Manager under the SOP RIDEM QD-QM-1 Procedures for Developing and Approving Standard Operating Procedures (Appendix A-3). Applicable SOPs are listed in Table 3.

Lake sampling efforts may include the collection of physical, chemical, and biological data. The type, duration, and number of efforts will be identified in the project-specific addendum. The field data collection will be performed by RIDEM OWR permanent, seasonal, and contractual staff.

Sampling is typically conducted at the deepest spot in the lake from a canoe or other small watercraft, but additional locations may be specified in the project-specific addendum. A sampling visit usually includes collection of water samples for laboratory analysis, a water clarity measurement with a Secchi disk or similar equipment, and a water column profile to collect dissolved oxygen, temperature, or other field parameters at various depths. Water samples for laboratory analysis are collected with a water sampling device such as a Van Dorn or integrated sampler or using a bottle-direct method. Water column profile measurements are typically collected with a single or multi-probe electronic sonde for a single, instantaneous measurement. The decision between discrete, composite or continuous water collection will be the responsibility of the RIDEM Project Manager based on the goals of the project. The SOPs for bottle-direct sampling, sampling with a Van Dorn, use of the YSI for profile measurements, and use of the Secchi disk will be followed and are listed in Table 3.

To minimize contamination or carry-over between sites, sample collection equipment will be rinsed with resident lake water in accordance with the applicable SOP. In order to minimize the spread of aquatic invasive species, all

monitoring equipment, including hip boots and waders, will be rinsed with tap water or a 3% bleach solution onshore following collection and prior to departure. Watercraft and trailers will also be visually inspected for chemical and/or biological contamination, which will be removed by hand or rinsed off with lake water when best professional judgment indicates that the material is not a human health risk. If the material appears to be a human health risk, the field staff will contact the RIDEM Project Manager to decide the best course of action for removal and disposal.

The amount of water collected for each parameter will be determined by the analytical requirements of the contractual laboratory. Most water samples are collected in clean, clear plastic containers, which are typically sent to RIDEM OWR by the contractual laboratory, including the Rhode Island State Health Laboratories. Any analyte requiring a different container (i.e. amber, glass) will be identified in the SOP associated with the sample collection. The limitations of sample analysis performed in contractual laboratories will be identified in the laboratory's SOPs. Commonly used laboratory SOPs are listed in Table 4. Project-specific laboratory SOPs will be included as an appendix in the project-specific QAPP addendum. Frequently analyzed parameters include nutrients, conventional water quality parameters (e.g. pH), and bacteria. The RIDEM Project Manager is responsible for updating and maintaining field SOPs and the Chemical Analysis Project lead is responsible for updating and maintaining laboratory SOPs.

Data collection limitations include monitoring equipment, vehicle, watercraft, weather, or site-specific limitations. Potential equipment failure will be addressed through the stated data quality objectives in this QAPP and manufacturer-specific, routine maintenance. RIDEM OWR will adhere to prescribed maintenance schedules for monitoring equipment, vehicles, and watercrafts required for fieldwork. All monitoring equipment, vehicles and watercrafts will be inspected before use, and if they are found to not be functioning properly, a suitable replacement will be used or field work will be postponed until a suitable replacement can be found. Weather limitations will be identified by website, radio, television, or best professional judgment of field staff or RIDEM Project Manager, preferably prior to departure for field collection. Should weather conditions deteriorate in route or on site, the collection effort will be postponed until conditions improve. Limitations of the sampling site will be addressed by collection of historical information, verbal or written, and available maps. The RIDEM Project Manager may also decide to perform, or designate field staff to perform, reconnaissance of onsite conditions prior to the field collection effort.

TABLE 3. PROJECT FIELD AND DATA REVIEW SAMPLING STANDARD OPERATING PROCEDURES REFERENCE TABLE.

SOP Reference ID	Title, Revision Date and/or Number	Originating Organization
SOP-OD-QM-1	Procedure for Developing and Approving SOPs, 6/14/2022	RIDEM
SOP-OD-QM-4	Digital Photograph Record Collection and Storage SOP, 6/14/2022	RIDEM
SOP-WR-W-7	SOP for Secchi Disk Measurements, 5/28/2021	RIDEM
SOP-WR-W-31	SOP for Macrophyte Cover Lakes, Ponds, and Reservoirs, 6/15/2021	RIDEM
SOP-WR-W-30	SOP for Water Column Profile Lakes, Ponds, and Reservoirs, 6/15/2021	RIDEM

SOP Reference ID	Title, Revision Date and/or Number	Originating Organization
SOP-WR-W-32	SOP for Bottle Direct Water Samples Lakes, Ponds and Reservoirs, 5/28/2021	RIDEM
SOP-WR-W-34	SOP for the Measurement of Dissolved Oxygen, Temperature, Specific Conductance, pH and Nitrate Using a Handheld YSI Professional Plus Instrument, 5/28/2021	RIDEM
SOP-WR-W-48	SOP for the Measurement of Dissolved Oxygen, Temperature, Specific Conductance, and Salinity Using a Handheld YSI Model Pro2030 Instrument, 03/2024	RIDEM
SOP-WR-W-46	SOP for Collection of Water Samples from Lakes, Ponds, and Reservoirs using a Van Dorn Sampler, 5/28/2021	RIDEM
BEP-WR-1	Summary Guidance for Reviewing Environmental Monitoring Data, 06/14/2022	RIDEM

TABLE 4 PROJECT LABORATORY ANALYSIS STANDARD OPERATING PROCEDURES REFERENCE TABLE

Parameter	Method	SOP Document
Chloride	SM4500CL-E Chloride by SEAL AQ400	RIDOH SOP WL20 Chloride ID No. 18311 rev. 8
Hardness	SM2340B Hardness by Calculation	RIDOH SOP WL22 Hardness ID No.1331 rev. 9
pH	EPA 150.1 pH by Electrometric Method	RIDOH SOP WL13 pH ID No.: 4421 rev.10
Sodium	EPA 200.8 ICP-MS	RIDOH SOP WL71 ICPMS ID No. 7364 rev.16
Total Suspended Solids	SM2540 D Gravimetric	RIDOH SOP WL 7 TSS ID No. 2450 rev.10
True Color	SM2120B Observation relative to standard	RIDOH SOP WL04 Color ID No. 1317 rev. 8
Turbidity	EPA 180.1 Nephelometric Turbidimeter	RIDOH SOP WL1 Turbidity ID No. 1316 rev. 15
Nitrate-Nitrite as Nitrogen, Dissolved	EPA 353.2 Rev. 2.0 Autoanalyzer-Lachet	RIDOH SOP WL16 Nitrate ID No.: 1322 rev. 11 & RIDOH SOP WL56 Nitrite rev. 8
Total Phosphorus	EPA 365.1 Total and Dissolved Phosphorus by SEAL AQ400	RIDOH SOP WL12 Total Phosphorus ID No. 21623 rev. 3
Enterococci	EPA/821/R-97-004	RIDOH SOP SM 37 Enterolert ID No. 1832 rev. 11
Fecal	EPA/821/R-97-004	RIDOH SOP SM48 Modified mTEC ID No. 1838 rev. 10

3. Integrity of Environmental Information (B3)

All water collection bottles will be labeled using a permanent marker or preprinted waterproof label with at least the sampling-site name, collector, project affiliation (RIDEM OWR), date, and time. A contractual laboratory may require further documentation on the bottles, such as a client name. Water collection bottles will be kept out of direct sunlight prior to and after collecting them to keep the contents from becoming too hot in summer weather. Temperature of the water sample can affect the results of parameters tested in lakes. The temperature required upon receipt for specific chemical parameters will be determined by the contracted laboratory. Laboratories typically require 4^{o}C or less without freezing to accept samples as meeting the required receipt temperature. If the sample was delivered to the laboratory close to collection time and did not have time to reach <4^{o}C, the laboratory will typically allow the sample to be delivered as meeting receipt requirements.

Biological parameters (i.e. phytoplankton identification) do not typically require a minimum temperature for transport or receipt, but the sample should not exceed room temperature or be in direct sunlight for extended periods of time to prevent deterioration. Biological parameters are typically preserved on-site. Samples requiring phytoplankton or chlorophyll analysis should be kept in low light to prevent degradation.

Parameters requiring preservation methods (i.e. acid, ethanol, Lugol's) will have the correct amount or concentration of preservative added to the collected sample according to the SOP. Parameters not requiring direct preservation or pre-preserved bottle will be kept on ice during transport to the appropriate contractual laboratory or RIDEM OWR sampling center. Holding times will be dictated by the analyte of interest and indicated in the SOP. All water samples will be accompanied by a chain of custody form, which will be signed by the collector upon delivery to the contractual laboratory or RIDEM OWR sampling center.

Samples brought to the State Health Laboratories for analysis will follow established Rhode Island State Health Laboratories protocol. A signed chain of custody form (Appendix A-1) will accompany all samples delivered to State Health Laboratories. Samples will be assigned a unique alphanumerical identified code from the State Health Laboratories Laboratory Information Management System (LIMS). A sticker with the LIMS code will be applied to the bottle(s) from each sampling site and chain of custody. RIDEM OWR and State Health Laboratories personnel will sign the chain of custody to verify delivery and receipt of the samples. State Health Laboratories retain the original copies of the chains of custody forms and provide copies for RIDEM OWR records.

The analytical methods used for each data collection effort will depend upon the nature and goals of the project and will be specified in the project-specific QAPP addendum. The field parameters typically measured in a lake monitoring program are listed in Table 4 with the data quality objectives and appropriate SOPs. Any parameters and associated SOPs beyond those listed in Table 4 will be listed in the project-specific addendum. The SOP(s) will identify the methods and equipment to be used. Specific method performance criteria and the individual(s) responsible for corrective action and documentation will be addressed in the SOP. Any parameter analyzed in a laboratory will follow the protocols and methods listed in the laboratory QAPP and SOP for sample disposal, laboratory turn-around-time, and method validation information. State Health Laboratories follow standard EPA-approved methods and maintain SOPs and an EPA-approved QAPP.

TABLE 5 QUALITY OBJECTIVES FOR COMMONLY MEASURED LAKE PARAMETERS

Parameter	Measurement Range	Accuracy	Precision	SOP
Temperature	-5 – 65°C	+/-0.1°C	+/-1.0°C	SOP-WR-W-48, SOP-WR-W-34
Dissolved Oxygen – % Saturation	0 – 200 %*	+/-2%*	N/A	SOP-WR-W-48, SOP-WR-W-34
Dissolved Oxygen – Concentration	0 – 20 mg/L	+/-0.3mg/L	+/-5%	SOP-WR-W-48, SOP-WR-W-34
Secchi Disk Depth	0.1 – 25.0m	N/A	+/-5%	SOP-WR-W-7
pH	1.0 – 14.0	+/-0.1	+/-5%	SOP-WR-W-34
Conductivity**	0 – 499.9 µS/cm 0 – 4999.9 µS/cm	+/-0.5%FS*** +/-0.5%FS***	+/-5%	SOP-WR-W-48, SOP-WR-W-34

*Air Saturation
**Derived parameter- Specific conductivity
***FS - Full Scale

4. Environmental Information Management (B7)

The field analyst will maintain field notebooks, datasheets, and chains of custody throughout the sample collection effort. At the conclusion of the project, the RIDEM Project Manager will retain project field notebooks and datasheets in the physical location listed in the project-specific addendum. Copies of chain of custody forms and certificates of analysis will be retained electronically.

All hard-copy and electronic data generated from lake monitoring will be organized and stored according to the specifications in the project-specific addendum. Information downloaded from an electronic sampling device will be verified as stored on a computer or other electronic storage device before deletion from the instrument. The retention of all records follows the State of Rhode Island Records Retention Schedule for DEM GRS6 (Available at: https://sosri.access.preservica.com/uncategorized/IO_4129aa63-d8a6-416e-b066-7b7131fe2b29/). Electronic water quality data from lake monitoring data may also be stored in RIDEM OWR's water quality database, SWIMS.

5. Quality Control (B4)

Quality control for field collection will adhere to the data quality objectives listed in Table 2. Field blanks and duplicate measurements will be used to assess the amount of error introduced into the sampling effort. Field blanks should be below the QL for all analytes of interest and field duplicates should achieve RPD of ≤ 20%, unless otherwise specified in the applicable SOP/QAPP addendum.

Field measurements will follow guidance in the measurement performance criteria (Table 4) and applicable SOPs. Quality control analysis for field measurements will follow procedures and formulas for calculating applicable QC statistics in field sampling SOPs. Quality control for field measurements will also include comparison with historical information and ecological knowledge of the water body.

Laboratory quality control will follow established laboratory SOP and QAPP guidance on the analytes' requirements for standards, blanks, splits, and spikes. Formulas for calculating applicable laboratory QC statistics are included in the laboratory SOP and QAPP guidance. Laboratory SOPs/QAPPs will be included in project-specific addenda.

If quality control analysis indicates that a large amount of error is being introduced into the project, the RIDEM Project Manager will identify whether retraining of RIDEM field collectors or equipment maintenance is necessary. The RIDEM Project Manager will also follow-up in verbal or written communication, with any contractual designee if the quality control analysis indicates that the contractual personnel or laboratory quality control is introducing error into the project.

6. Equipment/Instrument Calibration, Testing, Inspection, and Maintenance (B5)

RIDEM OWR equipment and supplies are located in the sampling center at 235 Promenade Street, Providence, RI. All routine field instrumentation and equipment testing, inspection, and maintenance will adhere to the requirements listed in the data quality objectives (Table 2) and measurement performance criteria (Table 4). Instruments and equipment will be regularly tested, inspected, and maintained according to manufacturer specifications. The YSI instruments require regular maintenance throughout the field season, as described in the applicable SOPs. Maintenance, calibration and testing of the YSI instruments will be performed by the RIDEM Project Manager. The RIDEM Project Manager may delegate the responsibility for calibration and maintenance of the instrument to the field analyst during the field season. Other equipment, such as canoes, Secchi disks, anchors, etc., will only need an annual maintenance check conducted by the RIDEM Project Manager or delegated field analyst to ensure parts are present and working properly following the field season, unless equipment are not functioning properly. The field analyst will verify that the equipment is in proper working condition prior to each sampling event.

When best professional judgment indicates equipment or instruments are not functioning properly, the field analyst will perform any manufacturer guidance on troubleshooting to assess the potential problem. If the field analyst finds that the instrument or equipment is not readily repairable, then they will arrange for further testing, inspection, and/or maintenance with the manufacturer or other authorized inspection and repair entity. All laboratory equipment will be tested, inspected, and maintained according to the laboratory's SOP and QAPP guidelines.

The single and multi-probe YSI meters need to be calibrated prior to use in the field as described in the applicable SOP. The SOP documents how to perform the calibration, including required documentation, test criteria, and standards. The SOP also indicates how deficiencies will be resolved and documented. Any future acquisition of field measurement instruments will follow the manufacturer's guidelines for calibration and frequency, and SOPs will be developed. All laboratory equipment will be calibrated according to the laboratory's SOP and QAPP guidelines.

7. Inspection/Acceptance of Supplies and Services (B6)

Any supplies and consumables received by RIDEM OWR will be checked against the shipping and order information to ensure an accurate and complete order was received. All equipment, instruments, and supplies will be visually checked for obvious defects or damage. Any shipments with leaking contents or damage will not be accepted by the RIDEM Project Manager or designated field staff. The RIDEM Project Manager or designated field staff will notify the appropriate RIDEM staff member responsible for supply ordering and/or purchase requests or the company to determine suitable order replacement or reshipping. Prior to and at the conclusion of the field season, the RIDEM Project Manager or designated field staff will assess the supply inventory and arrange for restocking as necessary. Field equipment will also be evaluated during the inventory for any necessary repairs or part replacements to be arranged in the off-season.

All inspection and acceptance of supplies and consumables necessary for laboratory analysis of water samples is the responsibility of the contractual laboratory. State Health Laboratories maintain certificates of analysis for reagents and standards, which are reviewed by the Chemical Analysis Project Lead or qualified designee. The Chemical Hygiene Plan is maintained by State Health Laboratories and is available on the premises.

All sample bottles with preservative received from State Health Laboratories or other contractual laboratories will be checked by members of the Field Data Collection Team to verify if the bottle cap is securely fastened to prevent leaking of the preservative prior to sample collection. To ensure retainment of the appropriate amount of preservative, sample bottles that have lost preservative will not be used. Acceptable sample bottles will be stored in the OWR Sampling Center until required for fieldwork. Field supplies stored in the OWR Sampling Center will be inventoried before the start of each sampling day, and problems will be reported to the RIDEM Project Manager. At the end of each field day, supplies and gear will be rinsed or washed as needed, allowed to dry, and stored in the OWR Sampling Center.

C. Assessment, Response Actions, and Oversight

1. Assessments, Oversight, and Response Actions (C1 & C2)

The RIDEM Project Manager will assess field data collection efforts, field notes, laboratory data, and maps generated as part of the project to ensure that data collected is useable for the purposes of the study. They will also provide oversight for each field data collection effort to ensure that protocols described in the QAPP are being followed. The RIDEM Project Manager will be free from conflicts of interest. Field data will be reviewed after each sampling event and lab results will be reviewed upon receipt.

Oversight will include ensuring that:

- Field equipment is routinely and properly calibrated.
- Calibrations are properly documented.
- Data are recorded in a consistent manner.
- Samples are collected as directed in applicable SOPs.

- Samples are properly stored and transferred to custody of State Health Laboratories or contractual laboratories.
- Documentation records are properly stored.

The RIDEM Project Manager or designee will review field and laboratory data, including data collected on site, water quality parameter measurements, quality assurance sample measurements, and other data quality indicators to ensure that data are within the accepted range for each parameter. If inconsistencies are noted, the RIDEM Project Manager will discuss field instrument calibration and data collection procedures with field personnel, and chemical analysis with the Chemical Analysis Project Lead. Any questionable data will be reported and may be re-collected or re-analyzed if possible and necessary. Potential sources of error will be considered, described, and carefully documented in order to flag results for data users or decision makers. The RIDEM Project Manager is responsible for any necessary corrective actions. Corrective actions will be implemented prior to subsequent sampling or data collection efforts. Corrective actions will be documented in the project folder and tracked by the RIDEM Project Manager to ensure completion.

2. Reports to Management (C2)

The number of QA reports and the frequency of submittal to management will be determined by individual project goals and requirements of the funding source(s), which will be documented in the project-specific addendum. As needed, the RIDEM Project Manager will meet and communicate with the RIDEM Program Manager and Project QA Manager to compose a schedule and identify the outcomes to be reported in management reports. The RIDEM Project Manager will coordinate electronic or verbal communications on the project progress and updates to the RIDEM Program Manager and Project QA Manager. The contents of reports will depend on project goals and funding source requirements, but the reports may include the following:

- Updates on data collection efforts and schedule,
- Training status of field staff,
- Summary of project actions-to-date,
- Interim assessments of attainment of goals,
- Final summary of the project and conclusions,
- Summary of QA problems and recommended solutions.

The person responsible for generating the reports to management is the RIDEM Project Manager, but other personnel may be delegated to fill this task by the RIDEM Project Manager. Outside of the agreed upon report schedule, the RIDEM Project Manager will communicate, as needed, verbal or written updates to other RIDEM OWR personnel and management.

D. Data Review and Usability

1. Data Review (D1)

The data review, verification, and validation methods for data used in water quality assessments are addressed in Consolidated Assessment and Listing Methodology (CALM) (RIDEM, 2025). Projects undertaken under this QAPP will fulfill the minimum data quality and quantity requirements for use in decision making process. Projects undertaken through this QAPP will follow the schedule and extent of data review, verification, and validation specified in the project-specific addendum. Final data review will follow the basic procedures as outlined in the Summary Guidance for Reviewing Environmental Monitoring Data SOP (Appendix B-1). At a minimum, final review of data will consist of the following:

- Checking the consistency and range of parameters across sampling dates,
- Checking the completeness and appropriateness of the sampling and analytical testing,
- Verifying that the correct sampling and laboratory methods were used,
- Checking for and correcting transcription errors,
- Verifying that the work was done in accordance with the plan, or if changes were necessary, that changes were adequately documented.

The RIDEM Project Manager will routinely review all field data throughout the project and address any data quality concerns that are identified. Data from field sheets will be reviewed to ensure it meets data quality objectives (Table 2) as it is entered into the project's specific data storage format. Data manually entered or downloaded from a field instrument will be reviewed to ensure it meets data quality objectives (Table 2) before deletion from the instrument.

Verification of field data will evaluate completeness, correctness, and conformance of data to the method standard, or SOP associated with each field parameter. The validation of the data will pertain specifically to the goals and needs of each project and the level of detail will be specified in the project-specific addendum. The RIDEM Project Manager will follow up on any data issues, with verbal or written communication, to the field staff or equipment manufacturer.

All data from a contractual laboratory entity will adhere to the contractor's internal data review, verification, and validation processes before being submitted to RIDEM OWR. State Health Laboratories maintains a laboratory QAPP that outlines data review, verification, and validation procedures for laboratory samples. Laboratory results will be reviewed internally in accordance with State Health Laboratories procedures to verify that values and data quality indicators meet criteria and are within the acceptable ranges for each parameter. RIDEM OWR will supplement the contractor's data review process with internal review prior to use in any project. Best professional judgment and ecological knowledge of conditions appropriate for Rhode Island lakes will be used to identify potentially erroneous data. The RIDEM Project Manager will contact, with verbal or written communication, the contractor to address data issues and resolve whether the data is suitable for use in the project.

The RIDEM Project Manager will be responsible for final review, validation and verification of the field and laboratory reports and data packages, as well as data entries and transmittals. Along with the procedures set forth

in the Summary Guidance for Reviewing Environmental Monitoring Data SOP (Appendix B-1), which contains a checklist for review of environmental data and reports, data quality will be assessed by comparing data with the data quality indicators listed in Table 2. Decisions to qualify, accept or reject data will be discussed by the RIDEM OWR Program and Project Managers and the RIDEM Project QA Manager. The RIDEM Program Manager will make the final determination to reject data and remove any unusable data. Assumptions and/or limitations in the data set will be documented for future communication to data users and water quality managers. The RIDEM Project Manager or other RIDEM OWR personnel may solicit internal or external review of data and methods for each project to assess whether the data meets the objectives and goals of the project.

2. Project Evaluation – Usability Determination (D2)

In coordination with the RIDEM Project QA Manager, the RIDEM Project Manager and Program Manager will determine if data collected meet the measurement performance criteria for the project and verify that all relevant SOPs have been followed. Data that meets the DQOs for the project will be accepted. Data that does not comply with DQOs and can be reconciled will be qualified data and data that does not comply with DQOs and cannot be reconciled will be rejected. If the project team determines that the criteria for the project have not been met, the team will determine if additional data needs to be collected or specify limitations on data use for the project and data users.

References

Rhode Island Department of Environmental Management. 2021. Standard Operating Procedure for Bottle-Direct Water Samples Lakes, Ponds, and Reservoirs. RIDEM SOP-WR-W-32. Providence, RI. https://dem.ri.gov/sites/g/files/xkgbur861/files/pubs/sops/wrw32.pdf

Rhode Island Department of Environmental Management. 2021. Standard Operating Procedure for Collection of Water Samples from Lakes, Ponds, and Reservoirs Using a Van Dorn Sampler. RIDEM SOP-WR-W-46. Providence, RI. https://dem.ri.gov/sites/g/files/xkgbur861/files/pubs/sops/wrw46.pdf

Rhode Island Department of Environmental Management. 2021. Standard Operating Procedure for Macrophyte Cover Lakes, Ponds, and Reservoirs. RIDEM SOP-WR-W-31. Providence, RI. https://dem.ri.gov/sites/g/files/xkgbur861/files/pubs/sops/wrw31.pdf

Rhode Island Department of Environmental Management. 2021. Standard Operating Procedure for the Measurement of Dissolved Oxygen, Temperature, Specific Conductance, pH, and Nitrate Using a Handheld YSI Professional Plus Instrument. RIDEM SOP-WR-W-34. Providence, RI. https://dem.ri.gov/sites/g/files/xkgbur861/files/pubs/sops/wrw34.pdf

Rhode Island Department of Environmental Management. 2021. Standard Operating Procedure for Secchi Disk Measurements. RIDEM SOP-WR-W-7. Providence, RI. https://dem.ri.gov/sites/g/files/xkgbur861/files/pubs/sops/wrw7.pdf

Rhode Island Department of Environmental Management. 2021. Standard Operating Procedure for Water Column Profile Lakes, Ponds, and Reservoirs. RIDEM SOP-WR-W-30. Providence, RI. https://dem.ri.gov/sites/g/files/xkgbur861/files/pubs/sops/wrw30.pdf

Rhode Island Department of Environmental Management. 2022. Procedure for Developing and Approving Standard Operating Procedures. RIDEM SOP OD-QM-1. Providence, RI. https://dem.ri.gov/sites/g/files/xkgbur861/files/pubs/sops/qm1.pdf

Rhode Island Department of Environmental Management. 2022. Digital Photograph Record Collection and Storage SOP. RIDEM SOP OD-QM-4. Providence, RI. https://dem.ri.gov/sites/g/files/xkgbur861/files/pubs/sops/photocol.pdf

Rhode Island Department of Environmental Management. 2022. Summary Guidance for Reviewing Environmental Monitoring Data. Standard Operating Procedure. RIDEM SOP BEP-WR-1. Providence, RI. https://dem.ri.gov/sites/g/files/xkgbur861/files/pubs/sops/datarevw.pdf

Rhode Island Department of Environmental Management. 2024. Standard Operating Procedure for the Measurement of Dissolved Oxygen, Temperature, Specific Conductance, and Salinity Using a Handheld YSI Model Pro2030 Instrument. RIDEM SOP-WR-W-48. Providence, RI. https://dem.ri.gov/sites/g/files/xkgbur861/files/2024-03/sop-ysi.pdf

Rhode Island Department of Environmental Management. 2025. Consolidated Assessment and Listing Methodology (2025) for Section 305(B) and 303(D). Providence, RI. https://dem.ri.gov/environmental-protection-bureau/water-resources/research-monitoring/water-quality-resources/integrated-reports

Rhode Island Department of State. 2024. Records Retention Schedule. State Agencies. DEM Series Department of Environmental Management. GRS6 Office of Water Resources. Providence, RI. https://sosri.access.preservica.com/uncategorized/IO_4129aa63-d8a6-416e-b066-7b7131fe2b29/

APPENDIX A. FIELD DOCUMENTATION

APPENDIX A-1
EXAMPLE CHAIN OF CUSTODY FORM

X ICED FOR TRANSPORT

Legal Sample | |

Sample Submission Form/Chain of Custody
Rhode Island Department of Health Laboratories
150 Richmond Street Suite 100, Providence, RI 02903

Sample Submission Number

Client: DEM - _____ □ Collected by DEM _____

KEY for Sample Submission
A: Client ID #:
B: Water System Name
C: Station ID
D: Type = Grab / Composite

A. Client ID#: << ---------- >> Run #: <<RUN>>
<<CONTACT>>

Mail Report To: _____
Street: _____
City: _____
Report To (Agency/Person):

Collected By: _____ Collected Date: _____ Time: _____ Matrix: Water **X** Other

Source# **C.** Station ID **D.** Type Grab
Collection Point Address:

Name **Street** **City**

FIELD TESTS:

(Circle One)
Sample Type: **(GRAB / COMPOSITE)** Orig#: _____ pH: _____ Temp: _____ CL Residual: _____

Inorganics Lab	DUP
Inorganic Tests	
___WL1 Turbidity	
___WL4 True Color	
___WL7 Total Suspended Solids	
___WL11 Cyanide (335.4)	
___WL12 Total Phosphorus	
___WL13 pH	
___WL16 Nitrate+Nitrite as N (353.2)	
___WL24 Nitrate only as N (353.2)	
___WL56 Nitrite (353.2)	
___WL17 ortho-phosphate	
___WL18 Alkalinity (2320B)	
___WL20 Chloride (SM4500-Cl-E)	
___WL21 Fluoride (SM4500-F-C)	
___WL22 Hardness (2340B)	
___WL41 Specific Conductance	
___WLUFC Chlorine	
___WL19 DOC *subcontract*	
___WL Ammonia - N *subcontract*	
___WL Total Kjeldahl-N *subcontract*	
DEM Total Metals	
___WL62Al Total Aluminum	
___WL62Fe Total Iron - DEM	
___WL62 Total Metals (Cu,Cd,Pb&Zn)	
For individual metals check below	
Total Copper ___WL62 TOT Cu	
Total Cadmium ___WL62 TOT Cd	
Total Lead ___WL62 TOT Pb	
Total Zinc ___WL62 TOT Zn	
DEM Dissolved Metals	
___ WL62Fe Dissolved Iron	
___WL62Al Dissolved Aluminum	
___WL62 Metals Diss (Cu,Cd,Pb&Zn)	
For individual metals check below	
Diss Copper ___WL62 DISS Cu	
Diss Cadmium ___WL62DISS Cd	
Diss Lead ___WL62 DISS Pb	
Diss Zinc ___WL62 DISS Zn	

Metals and Minerals	DUP
Metals for New Systems	
___WL66 Full Set (200.8)	
___WL75 Antimony	
___WL76 Arsenic	
___WL77 Barium	
___WL78 Beryllium	
___WL79 Cadmium	
___WL81 Chromium	
___WL64 Copper	
___WL82 Iron	
___WL63 Lead	
___WL83 Manganese	
___WL84 Nickel	
___WL85 Selenium	
___WL86 Silver	
___WL87 Thallium	
___WL88 Zinc	
Metals Routine Set	
____WL68 Full Set (200.8)	
___WL78 Beryllium	
___WL81 Chromium	
___WL84 Nickel	
___WL76 Arsenic	
___WL85 Selenium	
___WL79 Cadmium	
___WL75 Antimony	
___WL77 Barium	
___WL87 Thallium	
____WL36 Mercury (245.1)	
____WL65 Lead & Copper(200.8)	
Minerals	
___WL67 Minerals Full Set(200.8)	
___WL69 Magnesium	
___WL70 Potassium	
___WL71 Sodium	
___WL72 Calcium	
___WL73 Sodium Composite (200.8)	

Organics Lab	FB
___PE04–CARB (531.1)	
___PE14–EBD/DBCP (504)	
___PE21–HERB/ (515.3)	
___PE27-Haloacetic Acids	
___PE31–Pest/PCB+ (505)	
___PE40–Endrin (505)	
___PE_____	
___TO04–PET HCS & TO12	
___TO12–VOC (524.2)	
___TO10-PFAS (537.1)	
___TO30-SOC, Pest/Endrin	
___TO40-SOC, Pest no Endrin	
___TO_____	
___FC48 (pest_____)	

Sanitary Microbiology
____SM3 SPC
____SM13 (Colilert-18)
____SM34 (Colilert)
____SM53 (Colisure)
____SM36 E.Coli MPN/100mL
____SM37 Freshwater- Enterolert
____SM37 Enterolert
____SM38 A-1 MPN
____SM43 Male Sp. Coliphage
____SM48 MTEC (1603)
____SM1 MPN
# of Tubes __ Dil.__ Thru___
____SMQT Fecal Coliform MPN using Colilert-18 Quantitray
Harmful Algal Blooms
___SM28 Cyanobacteria Count
Cyanotoxins
___HAB01 TOXIN LCMS DEM

	Container		Preservative Added		
Test Code	Number	Type	By Lab	By Collector	Special Instructions
					submit to:
					submit to:

Chain of Custody

Relinquished By	Date	Time	Received By	Date	Time	Comments

APPENDIX A-2
TRAINING DOCUMENTATION FORM

TRAINING DOCUMENTATION FORM

Signatures below indicate _____ has received a copy of the Generic Quality Assurance Project Plan for Lake Monitoring by RIDEM OWR from the RIDEM Project Manager. _____ has read and understands the document and has been given the opportunity to ask any questions pertaining to policies and procedures described herein. The undersigned has received appropriate training in these QAPP procedures and has also read the associated Standard Operating Procedures. This original training documentation form will be kept on file with the RIDEM Project Manager and personnel may be provided with a copy if requested. Subsequent field assessments will be recorded below to document that the Project Manager periodically evaluates said personnel in the field to ensure conformance with this QAPP.

_____ _____ _____

Printed Name Signature Date

_____ _____ _____

RIDEM Project Manager Signature Date

Personnel Field Assessment for Lake Data Collection

To ensure field operations are in compliance with the project data quality objectives indicated in the Generic QAPP Plan for Lake Monitoring by RIDEM OWR, the RIDEM Project Manager will train and periodically conduct a Personnel Field Assessment.

Results of the Field Assessments will be documented below to indicate conformance or non-conformance (or if not evaluated, indicate N/A). Should the undersigned fail to comply with procedures outlined herein the RIDEM Project Manager will consult with the RIDEM Project Quality Assurance Manager and take corrective action to retrain personnel in proper procedures.

FOR TRAINING PURPOSES

Name of Trained Field Personnel: RIDEM Project Manager Initials:

Evaluation Date	Task Evaluated	Performance Assessment Result: -Conforms to QAPP -Non-conformance -Not evaluated (N/A)	Corrective Actions Taken or other comments
	Calibration Procedures and Documentation		
	Field Data Recording		
	Sampling Methodology		
	Sample handling, storage and labeling		
	Chain of Custody Procedures and Documentation		