City of Biddeford
Conservation Commission
December 18, 2023 6:00 PM City Hall
Council Chambers & Zoom
https://biddeford.zoom.us/j/92636503583?pwd=YVIxT24xMmVyUDB4ZjR3Qit6MjFEZz09
Webinar ID #926 3650 3583, Passcode 023144

Status: Conservation Commission, Monday, December 18, 2023, Second Floor Conference Room & Zoom, 6:00 PM

1. **Secretary Report- No Meeting Minutes Submitted**
2. **Adjustments to the Agenda**
3. **Discussion**
   - 3.1. Biddeford Beaver Policy
     Beaver Map.jpg
   - 3.2. EPA Public Endangerment Message
   - 3.3. November Meeting, Recording/Agenda for 11/16 not posted. (Agenda is posted in Archives under non televised meetings).
   - 3.4. Climate post-COP 28
   - 3.5. Working with Environmental Studies at UNE to come up with a community-based projects for students Senior Capstone Class, Spring 2024
   - 3.6. Discussion on Website Content
   - 3.7. Mobile Home Park Overlay implications
   - 3.8. River Monitoring Updates
     BCC SAP 2023.pdf
4. **Other Business**
5. **Adjourn-Next Meeting 1-22-24-Second Floor Conference Room**


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1.0 Title and Approval Page

Maine Volunteer River Monitoring Program (VRMP)
Quality Assurance Program Plan

SAMPLING and ANALYSIS PLAN (SAP)

Maine Department of Environmental Protection
Bureau of Water Quality
Division of Environmental Assessment

Title of SAP: Biddeford Streams

Volunteer Group Name: Biddeford Conservation Commission

Date of Latest Modification to SAP: August 9, 2023

Date of VRMP QAPP Being Referenced in this SAP: March 2020

<u>Review & Approval Signatures</u>:

Volunteer Group's Project Coordinator/: _____
Data Manager — Erik Heumiller — Date

Maine DEP-VRMP Coordinator: _____
Kristin Feindel — Date

Maine DEP-DEA Division Director (or designee): _____
Wendy Garland — Date

1.1 Table of Contents

1.2 List of Tables, Figures, and Appendices

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Acronyms Commonly Used in This Document

DEP	Department of Environmental Protection (also MDEP)
EGAD	Environmental and Geographic Analysis Database
Pre-EDD	Pre-Electronic Data Deliverable
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
VRMP	Volunteer River Monitoring Program

I. PROJECT MANAGEMENT (cont'd)

1.3 SAP Distribution List

Names & contact information for Maine DEP recipients: *(include name, title, phone number, and email address)*

1) Kristin Feindel, Division of Environmental Assessment, 207-215-3461, Kristin.b.feindel@maine.gov

2) Susanne Meidel, Division of Environmental Assessment, 207-441-3612, susanne.k.meidel@maine.gov

Names & contact information for volunteer group representatives: *(include name, title, organization, phone number, and email address) Co-coordinators (if applicable) and Data Managers*

1) Erik Heumiller, *Coordinator and Data Manager*, Biddeford Conservation Commission, 207-494-5556, Erik.Heumiller@biddefordmaine.org

2) Maya Atlas, Co-*Coordinator*, Biddeford Conservation Commission, Maya.Atlas@biddefordmaine.org

Names and contact information of external technical reviewer(s), if any: *(include name, title, organization, phone number, and email address)*

N/A

1.4 Project / Task Organization.

- Identify the individuals and organizations participating in your project and outline their specific roles and responsibilities (Table 1) other than those already included in the Maine DEP's Volunteer River Monitoring Program (VRMP) QAPP.
- Include group's coordinator(s), decision-makers, project data manager, principal data users, laboratories and any other persons critical to the implementation of the SAP.
- Each entry should include the following: name, title, organization, and a brief description of that person's or organization's responsibilities related to this specific project.
- Use or include an organizational chart (Figure 1) or table that identifies reporting relationships between and within organizations and between personnel participating in the project.

The Group's coordinator is Erik Heumiller. He will be responsible for coordinating volunteers and interfacing between the Town of Biddeford, the volunteers, and the MDEP. The project data manager is also Erik Heumiller who will be responsible for data review and entry. MDEP-VRMP will provide equipment, training, and act in an advisory capacity, as needed. MDEP-VRMP will also provide data management and an annual report. The Biddeford Conservation members and volunteers will perform the sampling.

Figure 1. Organizational Flow Chart

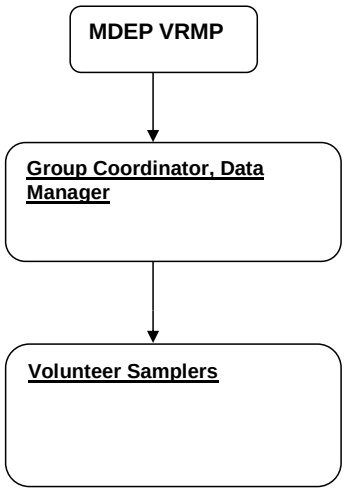


Table 1: Position and Responsibilities of Group's Volunteer Monitors

POSITION	RESPONSIBILITIES
Volunteer Group Coordinator:	● Oversees organization of group's Volunteer monitoring program ● Assists MDEP VRMP staff with sampling site location determinations and any changes to sites ● Develops and updates Sampling & Analysis Plan (SAP) ● Assists with volunteer training sessions ● Recruits and manages volunteers ● Ensures volunteers receive most up-to-date copy of the SAP, and that it is signed by the volunteers ● Acts as primary contact with recruited volunteers ● Coordinates with lab that provides analyses (if applicable)
Data Manager:	● Collects and reviews volunteer data sheets for quality assurance ● Inputs data into Survey123 app ● Looks at suspect data and contacts VRMP program with questions ● Sends completed field forms to VRMP ● Sends lab analysis forms to VRMP (if applicable)
Volunteer Samplers:	● Attend annual training session ● Collect water quality data and record observations

1.5 Problem Definition / Project Background.

- Provide sufficient background information to provide a historical, scientific, and regulatory perspective for the project.
- Describe any known water quality impact issues, studies, local ordinances, or watershed management plans which form the basis for the project. Information on Maine's water classification, assessment reports, and water quality data is available on Maine DEP's Rivers and Streams website: < http://www.maine.gov/dep/water/rivers-streams/index.html >.

West Brook:

West Brook is a Class B stream located on the eastern edge of the developed area of the City of Biddeford, Maine. The approximately 3-mile watershed includes urban and suburban residential development, small businesses, the Clifford Park trail system and undeveloped land. The brook flows into the tidal section of the Saco River. Development pressure in the area has increased local concerns about the brook and its water quality.

Macroinvertebrate sampling done in West Brook by DEP has shown a variety of results at different locations and years:

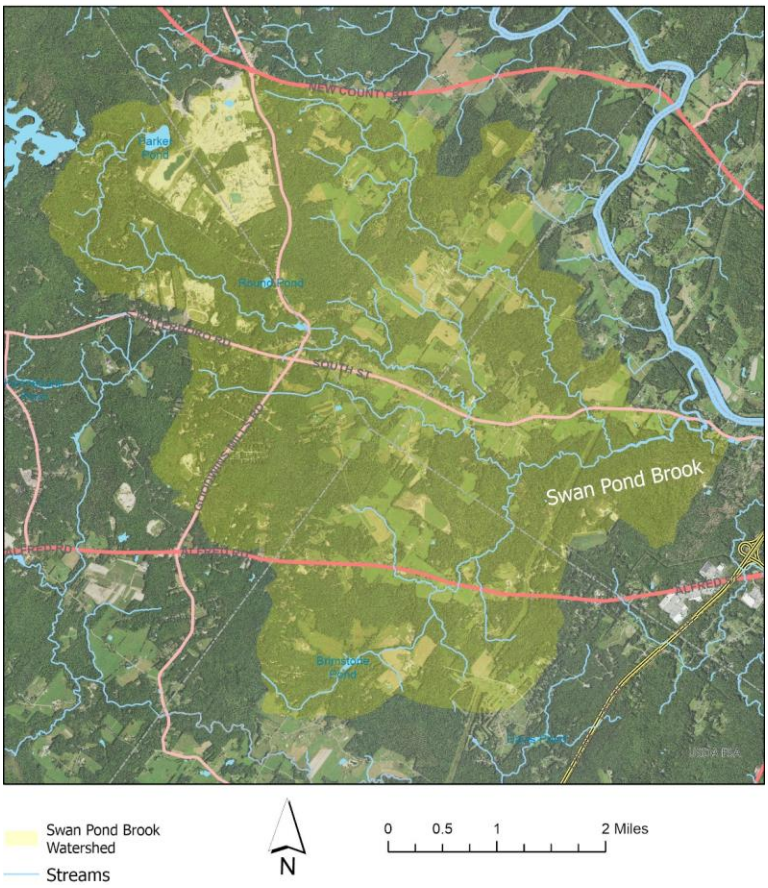
Station	Year	Attainment	Final Determination
S-452 (Downstream site)	2000	Yes	Class A
S-798 (East branch)	2005	Yes	Class A
S-797 (West Street)	2005	No	Class C
	2010	No	Class C
	2015	Yes	Class B
	2020	No	Non-attaining

DEP Macroinvertebrate Sampling Station Locations in West Brook:

Swan Pond Brook:

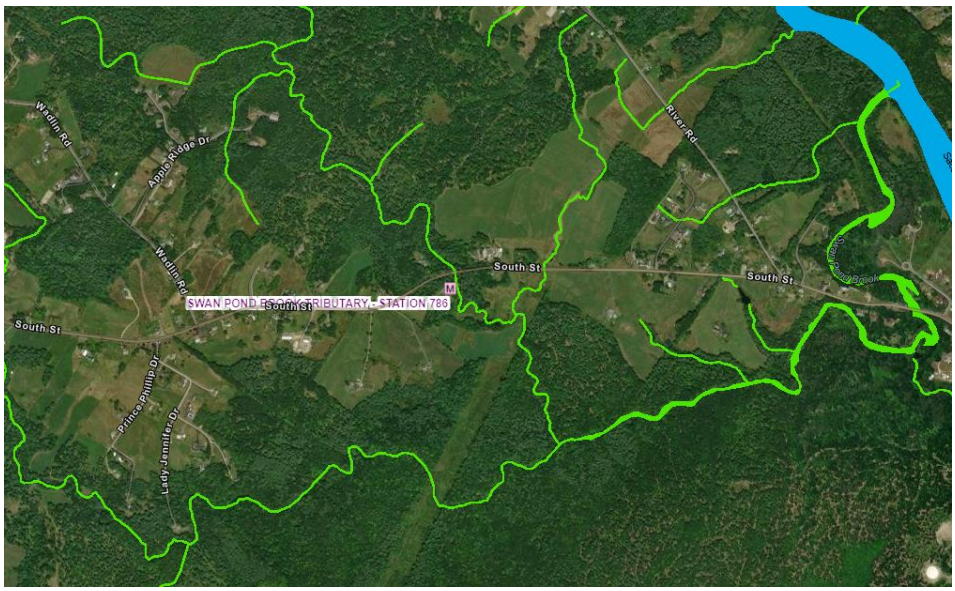
Swan Pond Brook is a Class B stream located in Biddeford, Dayton, Lyman and Arundel, Maine. The brook's headwaters include Roberts-Wadley Pond and Swan Pond Creek. The approximately 21-square mile watershed includes rural and suburban residential development, agriculture, sand and gravel pits, businesses and undeveloped land. The brook flows into the Saco River upstream of I-95.

Swan Pond Brook Watershed



The only DEP biomonitoring that has been conducted in the brook is the Swan Pond Brook tributary (Station 786) in 2005 and it met Class B standards.

DEP Macroinvertebrate Sampling Station Location in Swan Pond Brook:



1.6 Project / Task Description.

- Provide an overview of the project.
- Describe your group's expected goals for participating in the VRMP (e.g. baseline data, determine health of watershed, potential for re-classification). In addition to expected goals state the specific problem to be solved, decision to be made, or outcome to be achieved. In other words, describe the reason the monitoring is being done.
- This section must give an overall picture of how the project will resolve the problem, goal, or question described in the previous section. Provide a brief summary of the "who, what, where, when, why, and how" aspects of the project. Include a general description of the sampling region (detailed site locations are covered later in this SAP [section 2.0]).
- Summarize work to be performed, products to be produced, and the schedule/timeline.

The City of Biddeford has completed a watershed management plan and several grant-funded projects for the Urban Impaired Stream (per Chapter 502 Stormwater Management Rules) Thacher Brook. There has also been recent monitoring and interest in the water quality of Biddeford Pool. The Conservation Commission supports continuing these efforts and is interested in learning more about the other waterbodies in Biddeford.

There is strong development pressure in the area, particularly in the West Brook watershed. Given the historically good water quality of West Brook, the Conservation Commission is interested in further documenting the water quality with the goal of protecting it even with the development in the watershed. Swan Pond Brook is a large stream that outlets in Biddeford yet very little is known about its water quality. These two streams were chosen as starting points for

monitoring in Biddeford, with the goal of establishing baseline information on additional waterbodies in Biddeford.

Commented [FKB1]: Erik, please revise as appropriate! This was just a quick first pass and I don't want to speak for the City/CC and your reasoning for the monitoring.

Following training by, and under the guidance of the MDEP, the volunteer sampling team will conduct sampling generally from June to October. The sampling equipment will be provided by the MDEP. Volunteer monitors will take direct measurements of water temperature, dissolved oxygen, and specific conductance.

Standard operating procedures (SOPs) for monitoring dissolved oxygen and temperature using a YSI meter, monitoring specific conductance using a YSI meter or an Oakton EC11/11+ Testr and for monitoring bacteria are provided in Appendix A. Monitoring these parameters will provide further information on the water quality of the brooks. The results of the sampling will be forwarded to the data manager for input into the VRMP Survey123 app.

1. 7 Data Quality Objectives and Criteria.

- Discuss your targeted data quality objectives and measurement performance criteria for all parameters that include the following. Refer to Table 3a and Table 3c of the VRMP QAPP and list any deviations or additions.
  - *Precision*: in most cases, using the relative percent difference or "RPD" method
  - *Accuracy*: shows how close a sample result is to the actual value
  - *Measurement range*: the range of reliable measurements of an instrument or measuring device
  - *Quality control samples*: in most cases, 10% of samples should be quality control samples
- Discuss the representativeness of sampling design and monitoring schedule: collecting samples that represent actual stream conditions (example considerations: season, time of day, frequency of sampling).
- Discuss the completeness required (completeness is the measure of the number of samples you must take to be able to use the information as compared to the number of samples you plan to take).
- Discuss comparability (extend that data can be compared to past data from the project or data from another project).
- (*See Appendix 1 of the VRMP QAPP for more information*). Refer to section 4.4 of the VRMP QAPP for minimum VRMP standards. Insert or append a table summarizing plans, if necessary.

Volunteer monitors will measure the following parameters: temperature, dissolved oxygen, and specific conductance. They will follow the data quality objectives for precision, accuracy and measurement range as outlined in the VRMP QAPP Appendices A and B.

Representativeness

Water quality sampling sites represent spatial conditions on both streams. The samples will be representative of water quality during the warmer, drier months of the June through September Monitoring will occur before 8:00 am whenever possible, as this is the time of day when dissolved oxygen is lowest. All samples will be collected from sampling sites at locations and depths that are well-mixed.

Quality Control

All parameters are tested in the field using calibrated meters. Volunteers will undergo training and show proficiency with obtaining accurate and consistent measurements. See Section 2.4 for QA/QC details.

Completeness
The data will be considered complete for the purposes of showing the general health and conditions of the streams, and for showing trends in seasonal or year to year water quality changes. The goal is to collect/monitor a minimum of 90% of the expected total number of sampling events for the sampling season. It is recommended that volunteers will work in teams- if one is not available then the other will be able to monitor alone. Also, the Volunteer Coordinator will be able to fill in or help out if the assigned volunteer(s) has a conflict or cannot fulfill their duty that day.

Comparability
Data collected will be comparable to all other data collected under the VRMP since the volunteer monitors will be following SOPs and standards set forth in the VRMP QAPP. There will be consistency in training, equipment calibration and sampling locations throughout the duration of the program.

1.8 Training Requirements / Certification.

- Groups participating in the VRMP must be trained or recertified by VRMP/DEP staff on an annual basis.
- Identify and describe any specialized training or certifications needed by personnel in order to successfully complete the project or task.
- Refer to training and certification details included in the Volunteer River Monitoring Program QAPP (see section 4.5) as needed.
- List laboratories that will be part of the study design. Contact the VRMP Coordinator for a list of approved laboratories and the parameters for which they are approved.

Each year, all volunteers will be certified or re-certified through a training session provided by staff from the MDEP VRMP Program. The volunteers will receive training on the use of dissolved oxygen/temperature meters, conductivity meters, bacteria sampling bottles or whirlpaks (if applicable) and completing data sheets. Volunteers will also be trained in the calibration of meters and will check dissolved oxygen meters against a “zero” DO standard in mid sampling season. The MDEP trainer will use the Volunteer Certification Form to record volunteer information and checks.

Safety will also be covered during the training. Volunteers are strongly encouraged to work in teams allowing for increased reliability, coverage and safety during collection visits. If volunteers work alone, they should first contact a co-manager to see if they can get help, otherwise they are cautioned about the dangers of working around streams/rivers and advised on practices to increase safety (e.g. informing family/friends about sampling plans, carrying a cell phone).

1.9 Documentation and Records.

- Describe the process and responsibilities for ensuring the appropriate project personnel have the most current approved version of the QAPP and SAP, including necessary updates.
- Detail the types of data and other records that will be kept in this volunteer group’s archives (electronic or hardcopy) as well as how that information will be forwarded to the VRMP. If these details are exactly the same as those described in sections 4.6 and 5.10 of the VRMP QAPP, then a reference to

that document is sufficient. If this volunteer group plans any deviations from those protocols, then specify below. (Records can include raw data, data from other sources such as databases or literature, field logs, sample preparation and analysis logs, instrument printouts, model input and output files, reports, and results of calibration and QC checks.)

- Briefly identify any other records and documents applicable to the project that will be produced, such as annual reports and audit reports, if applicable. Specify or reference all applicable requirements for the management of records and documents, including location and length of retention period.

The SAP will be reviewed annually to determine if any changes are necessary (e.g. changes in SOPs, additions/deletions/re-location of sampling sites, additions/deletions of parameters that are sampled). Modifications may be made at the discretion of the group's Volunteer Coordinators with input and final approval from the VRMP Coordinator. The Volunteer Coordinator is responsible for ensuring that the volunteers receive a copy of the most current SAP. The volunteers will sign the "Project Oversight Certification" form (VRMP QAPP Appendix 3c) that states that they have received and understand the SAP.

Field Forms: Each monitor or team of monitors maintains the completed field forms for the sampling station(s) to which they are assigned. Completed field forms are given to the Data Manager, who will review the forms and enter the data into the Survey123 app. Copies of all field forms and the lab bench sheets or results will be sent either periodically throughout or at the end of the field season to the VRMP.

The results of field measurements are reviewed by MDEP and uploaded into DEP's EGAD database following protocols outlined in section 5.10 of the VRMP QAPP. The VRMP will analyze and summarize the results in an annual report. The intent is for the data to be uploaded as soon as possible, for the educational benefit of the volunteers and community.

II. DATA GENERATION AND ACQUISITION

2.0 Sampling Process (Experimental) Design.
Describe the experimental data generation or data collection design for the project including the following:

- *Design of the sampling network [Table 3] (i.e. sampling locations)*: Provide a list or table, or map that shows the geographic locations of sample stations (see Figure 2). Be sure to include the geographic coordinates UTM is strongly desired). The VRMP will assist with documenting locations of sampling sites (Appendix 6 {Sampling Site Location Form} of the VRMP contains the necessary form for documenting this information.)

- *Specific water quality, hydrology, habitat and biology parameters to be sampled or monitored [Table 2].*

- *Sampling methods (provide brief summaries here) [Tables 2 and 3].* The details regarding sampling methodologies, protocols and SOPs are saved for Section 2.1.

- *Sampling frequencies [Table 2]* including and sampling season(s) including numbers of samples and monitoring period.

- *Rationale for sampling design* (i.e., addressing the group's goals, representativeness, safety, landowner permission, etc.).

- Insert or append tables, as necessary (see examples below). Refer to sections 5.1 and 5.2 of the VRMP QAPP for guidance.

Per Table 2, volunteers will measure temperature, dissolved oxygen, and specific conductance. Monitoring will occur bimonthly from June to October at the water quality sampling sites (Table 3 and Figure 2) that have been established on West Brook and Swan Pond Brook.

Table 2: Sampling Parameters, Method and Frequency

Parameter	Method*	Frequency
Dissolved Oxygen	YSI meter	Monthly from June – October
Temperature	YSI meter	Monthly from June – October
Specific Conductance	YSI Meter	Monthly from June – October

* Standard Operating Procedures for these methods are in Appendix A

Table 3: Sampling Sites, Group's Site ID#, Coordinates, and Sampling Method

WATERBODY	SITE ID	SITE NAME	LAT	LONG	SAMPLING METHOD
West Brook	WB-001	Mainstem, top of falls	43.483056	-70.442222	Wading/Reach
West Brook	WB-002	Mainstem, upstream of east branch	43.481389	-70.443056	Wading/Reach
West Brook	WB-003	East branch at Parkside Dr	43.4794584	-70.4433372	Wading/Reach
Swan Pond Brook	SPB-001	South St	43.4981312	-70.508849	Bridge

Figure 2: Sampling Site Locations: Refer to Appendix B for Site Descriptions and Photographs

Figure 2A: Biddeford Conservation Commission Sampling Sites

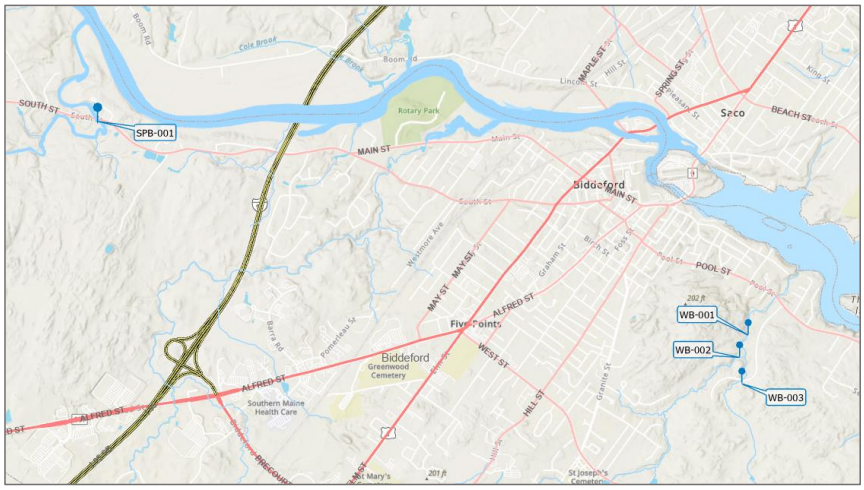
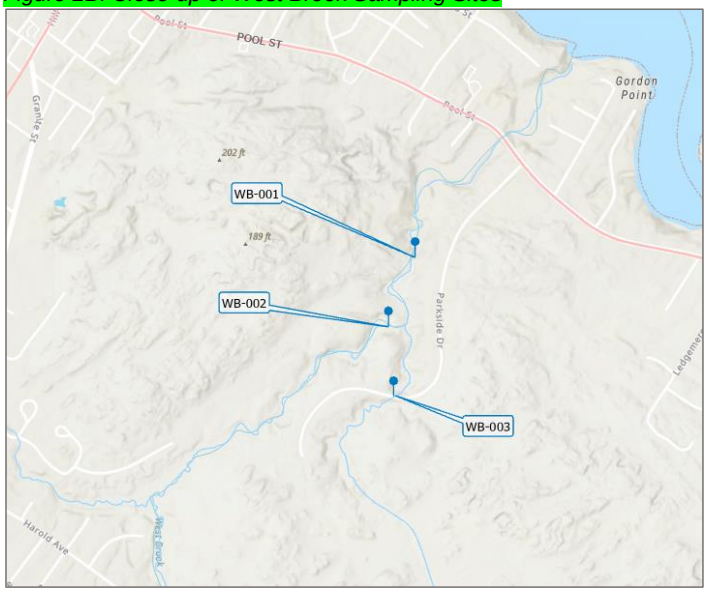


Figure 2B: Close-up of West Brook Sampling Sites



2.1 Sampling Methods.

- Describe the procedures for collecting samples.

- Identify the sampling methods and equipment, including any implementation requirements, sample preservation requirements, decontamination procedures, and materials needed for projects involving physical sampling.
- Insert or append tables and SOPs as necessary. Refer to sections 4.4, 5.1, and 5.2 of the VRMP QAPP for guidance as needed, as well as Appendix 2 (VRMP Standard Operating Procedures {SOPs} Cookbook).
- Refer to Table 3a of the VRMP QAPP for data quality objectives and Table 3d for typical preservation requirements for various parameters.

On each monitoring day and at each location, volunteer monitors will take direct measurements of water temperature, specific conductance and dissolved oxygen using a YSI meter. The SOPs for each of the parameters is in Appendix A.

VRMP QAPP Appendix 6 describes the required river/stream sampling and monitoring locations (i.e. longitudinal, vertical and horizontal position in the channel). The volunteers will have equipment including long water quality meter cables and samplers to allow sampling at required locations and depths as needed. For all sampling, volunteers will either wade, reach or use bridge/culvert locations to collect a representative measurement. All volunteer monitors will be equipped with a data sheet (VRMP QAPP Appendix 5) in which general field observations, quality assurance checks and water quality data are recorded.

2.2 Sample Handling and Custody.

- Describe the requirements for sample handling and custody in the field, laboratory, and transport; taking into account the nature of the samples, storage temperature requirements, the maximum allowable sample holding times before extraction or analysis, and available shipping options and schedules for projects involving physical sampling.
- Refer to the VRMP QAPP as needed (section 5.3 and Appendix 2 and 8). Please note any deviations from these VRMP recommended procedures so that they may be reviewed.
- Indicate which laboratory will be used to analyze your samples, if applicable. (See section 4.5 of the VRMP QAPP for information about laboratories that can be used by volunteer groups wanting to have their data in the VRMP database.)
- Examples of sample labels and chain-of-custody or sample submission forms/logs should be included when they differ from those in the VRMP QAPP (section 5.3, Appendix 10).

No samples will be collected as a part of this sampling and analysis plan.

2.3 Analytical Methods.

- Identify the analytical methods and equipment required, including sub-sampling or extraction methods, and any specific performance requirements for the method.
- Where appropriate, refer to section 5.4 of the VRMP QAPP and its SOPs (in Appendix 2) or to SOPs from other laboratories.
- Specify the laboratory turnaround time needed, if important to the project schedule. Discuss how problems are addressed in section 3.0 below.

Dissolved oxygen, specific conductance and temperature will be measured in the field with a YSI meter.

2.4 Quality Control.

- Identify any QC activities needed for each sampling, analysis, or measurement technique that differ from those listed in the VRMP QAPP (sections 4.4 and 5.5) and associated SOPs (Appendix 2). Include if any guidance on when the 10% duplicate should be taken (e.g. on the 10th sample and/or end of field season).
- For any additional QC activities, list the associated method or procedure, and acceptance criteria. Be sure to describe how sample bottles or containers, if used, will be appropriately prepared (rinsed, sterilized, etc.) prior to sampling (or if new containers shall be used), by either a laboratory or the volunteer group.
- Explain arrangements made with the analytical laboratory regarding delivery (i.e. format and timeline) of the results of their internal quality control procedures.

Monitors follow VRMP Program SOPs for each parameter monitored (Appendix A). A field duplicate will be obtained by volunteers for at least 10% (1 duplicate per 10 samples collected or monitored) of their own sampling efforts for all parameters. Additional details regarding QA/QC procedures are contained in Appendices A and B and the VRMP QAPP (section 4.4 and 5.5).

2.5 Instrument / Equipment Testing, Inspection and Maintenance.

- Identify any instrument/equipment testing, inspection and maintenance activities that differ from those listed in the VRMP QAPP (section 5.6) and associated SOPs (Appendix 2). For any different or additional procedures, describe how they will be implemented and documented to assure quality.
- Describe how deficiencies are to be resolved, when re-inspection will be performed, and how the effectiveness of the corrective action shall be determined and documented.
- Describe or reference how periodic preventive and corrective maintenance of measurement or test equipment and their components affecting quality shall be performed to ensure availability and satisfactory performance of the systems (refer to specific equipment manuals if necessary).
- Identify the equipment and/or systems requiring periodic maintenance. When appropriate, assemble such activities into SOP format to be appended to the SAP.

VRMP QAPP Table 5a provides equipment inspection and maintenance requirements.

2.6 Instrument / Equipment Calibration and Frequency.

- Identify all instruments and other equipment used for data generation/collection activities that must be controlled and, at specified periods, calibrated to maintain performance within specified limits. As stated in the VRMP QAPP (sections 4.4, 4.5, 5.5, and 5.7), instruments will be calibrated and checked against VRMP reference instruments and standards during annual VRMP volunteer certification/ recertification workshops.
- Refer to SOPs for use of each instrument/piece of equipment for specific details about additional calibrations (e.g., most dissolved oxygen meters need to be calibrated each day that they are used).

- For any procedures differing from those found in the VRMP QAPP Appendix 2 (SOPs), describe how each will be implemented and documented to assure quality including: the basis for the calibration, certified equipment and/or standards used for calibration and how records of calibration shall be maintained and be traceable to the instrument.

Refer to Table 5a from the VRMP QAPP for maintenance and calibration requirements. Refer to individual SOPs (Appendix A) for details.

2.7 Inspection / Acceptance of Supplies and Consumables.

- Describe how and by whom supplies and consumables (standard materials and solutions, sample bottles, reagents, hoses, deionized water, potable water, electronic data storage media, etc.) shall be inspected and accepted for use in the project.
- State the acceptance criteria for such supplies and consumables.
- Refer to the VRMP QAPP (section 5.8), associated SOPs, and equipment manuals as needed.

MDEP will provide zero dissolved oxygen solution packets and will ensure that they have an expiration date beyond the sampling season. Unused solution will be returned to MDEP.

2.8 Non-direct Measurements.

- Identify any types of data needed for project implementation or decision-making that is obtained from non-measurement sources such as computer databases, programs, literature files or publications, historical information, maps, data from other monitoring groups, or geographic information systems (GIS). Describe the intended use of the data. Define the acceptance criteria for the use of such data in the project, if applicable, and specify any limitations on the use of the data. Refer to the VRMP QAPP (section 5.9) and associated SOPs as needed.
- If collecting weather data refer to websites such as www.weather.com; www.weather.gov; https://www.maine.gov/mema/weather/general-information.

In some cases, the volunteers may rely on Internet-based weather data from NOAA (www.weather.gov) or Weather Underground (www.wunderground.com).

2.9 Data Management.

- Trace the path of the data from their collection/generation to their final use or storage (e.g. the field, the office, the laboratory, town conservation commission, report to watershed council, as well at the VRMP and its EGAD database).
- Describe or reference the standard record-keeping procedures, document control system, and the approach used for data storage and retrieval on electronic media, if different than that detailed in the VRMP QAPP (section 5.10).
- Discuss the control mechanism for detecting and correcting errors and for preventing loss of data during data entry to forms, reports, and databases.
- Provide examples of any forms or checklists to be used.

- Identify and describe all data handling equipment and procedures to process, compile, and analyze the data, including procedures for addressing data generated as part of the project as well as data from other sources, as they apply to your group.
- Describe any data management processes not addressed by the VRMP QAPP (see section 5.10).

Volunteers use standardized VRMP field forms (see VRMP QAPP Appendix 5). Volunteers are advised to carefully review and double check their forms, and ensure the forms are complete and legible. The Data Managers collect the forms and inputs the data into the VRMP Survey123 app. The field data sheets are checked against the data entry for accuracy. The Data Managers will also look for suspect data and contact the VRMP Program about questions or problems. The Survey123 data and field forms are submitted to the VRMP either periodically through the field season or at the end of the sampling season.

VRMP QAPP Section 5.10, Subsection B-1 outlines the data management, input and review steps taken in managing the VRMP data. Data not meeting the limits for the measured parameters will be discarded at the VRMP level prior to data uploads into the MDEP-EGAD database. Data may also not be uploaded at the discretion of VRMP (e.g. meter calibration value not recorded or high/low). Original complete records can still be maintained by the volunteer group at their discretion. VRMP QAPP Table 6 contains the criteria used to review/validate data.

III. ASSESSMENT AND OVERSIGHT

3.0 Assessment and Response Actions / Problem Resolution.

- Describe problem assessments and detection procedures specific to the project not addressed by the VRMP QAPP (section 6.1). Assessments can be done on data versus data quality objectives, sampling and analytical methods, data management, audits of test procedures and methods.
- Discuss the information expected from the problem assessments/detections and the success criteria (i.e., goals, performance objectives, acceptance criteria specifications) for each assessment proposed. Include information as to how any problems identified through these assessments will be corrected, who will carry this out and how the effectiveness of the corrective action(s) will be assessed.
- Describe how and to whom the results of each assessment shall be reported. Include details on how the corrective actions will be verified and documented.

All volunteers must attend a certification/re-certification course offered prior to the start of each sampling season. The group's Manager will supervise and coordinate all volunteer activities. The group's Data Manager will review all field forms and the DEP will provide a second review of the data. If problems are encountered, the group's Data Manager will communicate directly with the volunteer. Procedures and equipment may need to be examined to determine which steps are critical for resolving the problem If errors in sampling technique are consistently identified, re-training may be scheduled. All field and laboratory activities and records may be reviewed by State quality assurance officers upon request.

3.1 Reports to management.

- Describe reports to VRMP staff specific to the project not addressed by the VRMP QAPP (section 6.2).

- Identify the frequency and distribution of reports issued to inform VRMP staff of project status including periodic data quality assessments and significant quality assurance problems/recommended solutions or corrective actions.
- Identify the individual responsible for such reports, recipients of the reports, and any specific actions recipients are expected to take as a result of the reports.

The VRMP Program will keep track of volunteers trained at workshops. At the end of the sampling season, MDEP personnel will analyze the water quality data and write a report. The report will be on the VRMP webpage.

IV. DATA VALIDATION AND USABILITY

4.0 Data Review, Verification and Validation Requirements.

- State any criteria used to review and validate (accept, reject, or qualify) data, specific to the project not addressed by the VRMP QAPP (section 7.1), especially as they may apply to your group. Table format is preferred.

VRMP Program staff are responsible for final review of all field data and laboratory results. Data will be reviewed against VRMP QAPP Table 6, Criteria used to review/validate data. Field and lab duplicates may also be used to assist with decisions.

4.1 Verification and Validation Methods.

- Describe any data verification and validation methods not addressed by the VRMP QAPP (section 7.2), especially as they may apply to your group. These may occur at any step from initial data acquisition through the duration of the project.
- Discuss how issues shall be resolved and the system for resolving such issues. Describe how the results are conveyed to the VRMP and other data users. Provide examples of any forms or checklists to be used. Identify any project-specific calculations required.

VRMP Program staff reviews data submitted by volunteers for outliers and follows up with the Coordinator/Data Manager for any anomalies. Problematic data (as outlined in the above steps) if unresolved will either be flagged, or will not be included in the VRMP water quality database (i.e. EGAD). The data not included may, however, be kept by the SCC and in the VRMP files and archives.

4.2 Reconciliation with Data Quality Objectives.

- Describe how it will be determined if the actual data collected meets the data quality objectives described in Section 1.7. If the data does not meet outlined objectives, describe how it will be utilized.
- Describe how reconciliation with data quality objectives will be documented, issues will be resolved, and how limitations on the use of the data will be reported to decision-makers outside of those identified under the VRMP QAPP (section 7.3).

Data completeness, accuracy and precision will be evaluated by the VRMP Coordinator or staff. Sampling collection methods, equipment and procedures will be reviewed by the VRMP Coordinator or staff to identify the source of problems and correct as necessary. Data will also be periodically evaluated for representativeness and comparability.

IV. REFERENCES

Maine Department of Environmental Protection. “2016 Integrated Water Quality Monitoring and Assessment Report”. Available at < https://www.maine.gov/dep/water/monitoring/305b/ >.

Maine Volunteer River Monitoring Program / Maine Department Environmental Protection. March 2020. Maine Volunteer River Monitoring Program (VRMP) Quality Assurance Program Plan (QAPP). Updated by Mary Ellen Dennis and Kristin Feindel, Maine Department of Environmental Protection.

U. S. Environmental Protection Agency (USEPA), 1996. The Volunteer Monitor's Guide to Quality Assurance Project Plans. Office of Wetlands, Oceans and Watersheds; USEPA document # 841-B-96-003; Washington, D.C., 59 pp. < https://www.epa.gov/sites/production/files/2015-06/documents/vol_qapp.pdf > (as of 11/21/2019)

Appendices

Attach appendices as needed.