**[Insert Project Name, NFWF ID No., Grant Type. Complete Information in Document Header] Example: “Shell Recycling Planning to Restore Long Island Sound Oyster Reefs and Shorelines (CT)”, NFWF Project No. 73270, Project Type: Planning/Design.**

 **QUALITY ASSURANCE PROJECT PLAN**

COMPLETED PLAN PREPARED BY:

**[Insert name here]**

**[Date]**

Refer correspondence to:

**[Name, organization, address, telephone, and email]**

*(Note to All Grantees: Instructions in this QAPP Template are given in bold, highlighted type. Make sure to complete or revise all sections and remove any underlining. Also, ERASE the instructions, including this one, as you complete the QAPP for your specific project. Make sure to define acronyms/abbreviations when they initially appear in the text (i.e., mg/L, NTU, etc.). Make changes in other places as necessary.* *If a section is not applicable to your project, delete the template text, replace with “N/A”, and include an explanation regarding why the section is not applicable. Template instructions should be addressed in narrative form, not Q&A)*

Please read the entirety of this document. Do not fill in information without reading the whole document. It is necessary to fully understand the contents of this Quality Assurance Project Plan (QAPP) in order to complete the required components successfully. Every QAPP will be unique and responsive to the proposal approved by NFWF. Please note that the QAPP is to be a stand-alone document.

qapp Approvals PAGE

Approval Signatures (required prior to project start):

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**[Insert Name]**

Project Lead, **[Insert Organization]**

**[Insert Title]**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**[Insert Name]**

**[Insert Role and Organization.** **Delete if not applicable. Copy and add additional signatories as appropriate. Delete extra spacing so that signatories fit on this single page. This expedites the signatory process]**

**[Insert Title]**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Carrie Clingan

Program Director, Northeast Coastal
National Fish & Wildlife Foundation

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**[EPA Signatory – to be inserted by NFWF upon QAPP Approval]**

**[U.S. Environmental Protection Agency]**

**[Insert Title]**

**(WHEN DOCUMENT IS COMPLETE \_ RIGHT CLICK ON Table of Contents and ‘UPDATE FIELD” then “UPDATE ENTIRE TABLE”)**

1 PROJECT MANAGEMENT 5

1.1 Contact Information 5

1.2 Project Objectives and Approach 6

1.3 Data Quality Objectives 8

1.4 Quality Assurance Objective Criteria 10

1.5 Documentation and Records 12

2 DATA ACQUISITION 12

3 QUALITY CONTROL REQUIREMENTS 15

3.1 Measurement Performance Criteria 15

3.2 Internal Quality Control 15

4 INSTRUMENTATION AND EQUIPMENT PREVENTIVE MAINTENANCE 16

4.1 Data Collection Equipment Cleaning Procedures 16

4.2 Instrument and Equipment Testing Procedures and Corrective Actions 17

5 DATA MANAGEMENT 17

5.1 Data Assessment Procedures 18

5.2 Data to be Included in QA Summary Reports 19

5.3 Reporting Format 20

6 DATA VERIFICATION AND USABILITY 20

6.1 Self-Assessment, Data System Audits 20

7 REFERENCES 20

Appendices 21

**[Verify numbering here and against text at completion of QAPP]**

# 1 PROJECT MANAGEMENT

## 1.1 Contact Information

[Please provide the name and phone number of project personnel as applicable. Include an Organization Chart if your project team is comprised of multiple project partners and/or more than five (5) team members. Only include project partners if they are involved in project activities discussed in the QAPP.]

All personnel listed below in Table 1 will receive copies of this Quality Assurance Project Plan (QAPP), and any approved revisions of this plan. Once approved, this QAPP will be available to any interested party by requesting a copy from the project management.

**Table 1: Project Team Contact Information**

|  |  |  |
| --- | --- | --- |
| **Title** | **Name (Affiliation)** | **Phone Number/E-mail** |
| Project Manager |  |  |
| Primary Field Sampler |  |  |
| Environmental Scientist |  |  |
| National Fish and Wildlife Foundation (NFWF) Program Manager  | Carrie Clingan, NFWF | Carrie.Clingan@NFWF.org |
| QA Officer **[This person should not be involved in data collection. If title does not apply to anyone on the Project Team then add “ / QA Officer” after the Project Manager Title and delete this line]**  |  |  |

**[Describe the roles and responsibilities of key project team members. Key project team members would actively work on one or more phases of your project, including data quality review. If volunteers or students are part of the project team, summarize their role and reference to later sections of the QAPP that discuss training details (i.e., Section 1.5, 2.0). Include the names, duties, and responsibilities of all parties and/or groups involved in the key aspects of your project. Clarify the intended data user(s) for each data collection activity as applicable**.]

**[EXAMPLE ONLY – EDIT AS APPLICABLE TO YOUR PROJECT**

PROJECT MANAGER (Name) has the overall responsibility for ensuring that the project meets the project objectives and quality standards. The Project Manager will be the responsible for overseeing all activities conducted on this project including schedule adherence, budgeting, and oversight of all scope-related activities. Scope-related activities include assigning project tasks to personnel, data collection, data analysis, interpretation, communication, and final reporting. The Project Manager will also coordinate all program/project needs related to project personnel and convene periodic project-planning meetings.

## Project Objectives and Approach

**[FOR HYBRID QAPPs: Create subsections as applicable to discuss all data collection activities. Guidance is provided for both secondary data collection/modeling AND stakeholder workshops/interviews/surveys. If you are not collecting one of these categories of data, you may disregard instructions for that category]**

**[Insert your condensed proposal narrative here. Modify according to your project specific objective and address the following in this section:**

* Clearly state or list the objectives of your project and what the project is intended to accomplish.
* What methods/surveys/data collection activities will be implemented to achieve these objectives?
* What is the geographic scope for your project? Add a map of the project area as an Appendix and reference in this section.
* Provide background to support the project objectives, including previous work/grants, team experience, and relevant context for your project.
* Discuss whether the project must comply with agency legislation, permits, comprehensive management plans, or organizational goals
* If applicable, discuss actions under different grants or regional programs that may have provided supporting framework or strategy for your project objectives**.**

**Secondary Data Collection/Modeling/Geospatial**

* Why are secondary data collection, modeling, or geospatial assessment the best approach for achieving the project objective?
* Discuss what type of secondary data collection, modeling, or geospatial assessment is being implemented for this project.
* If conducting a modeling assessment, describe the model, provide a reference (if applicable), and a version number. Discuss why this model is the best fit for the project, and who selected it for use

**Stakeholder Surveys/Interviews/Workshops**

* Discuss what type of interview, survey, workshop or meeting is being implemented for this project and why.
* Who are the targeted interviewees, stakeholders or survey recipients, who selects them, and how are they selected?
* How many interviews, meetings, or surveys will occur?

The objective of this document is to identify the quality assurance components that are necessary to implement the project activities under the **[Insert project name]**. This objective will be achieved by using the following methodology [**Specify methodology, survey type, or any other data collection activities associated with the project. This can include visual assessments, density estimates, and photographic documentation]** to collect and/or measure, assess and/or interpret **[Insert measurement type. i.e.: BMP installation]** information collected at the project site.

**[Briefly list/discuss the sites or project area to be evaluated as part of this project. Explain the process for site selection here or in section 1.3 if certain decision criteria were or will be applied to select sites for data collection or assessment. If sites are not selected yet, discuss the criteria you will use to choose sampling sites and why]**

The overall project timeline is [**Insert dates**]. Required assessments or measurements will begin **[Insert dates, data or measurements that will be taken, start/stop dates for this activity, etc.** **If timeline is not determined yet, discuss the potential timeline or that it will be determined at a later date.]** Table 2a lists the constituents that are required to be measured, evaluated, or assessed.

**[EXAMPLE ONLY – EDIT AS APPLICABLE TO YOUR PROJECT]**

Table 2a: Constituents to be Measured or Evaluated

| **Constituent** | **Unit** |
| --- | --- |
| Vegetation | % cover |
| BMP Installation | Success/Failure |
|  Buffer Installation | Present/not present |
| Temperature | 0F |
| Oyster Count | # per ft2 |
| Location | lat/long |

**[Note: If you are collecting secondary data (ex. literature review), conducting a GIS analysis, public opinion assessment, or modeling assessment then please create sub-sections describing non-field data collection activities and metrics and use a separate table for each data collection activity as applicable. If you are collecting secondary data, including GIS layers, and know the sources please include them in Table 2b or 2c below or provide as an appendix. If utilizing a geospatial application or model for data assessment, list the constituents to be evaluated in Table 2b or 2c. Remove example Table 2b or 2c that is not applicable to your project and re-number tables as needed]**

**Geospatial/Modeling/Secondary Data**

Data collection for [**Geospatial/Modeling/Secondary Data**] will begin **[Insert start/stop dates for this activity. If timeline is not determined yet, discuss the potential timeline or that it will be determined at a later date].** Table 2b/c lists the constituents/data sources that are required to be evaluated or assessed through the project data collection for [**specify project component**].

Table 2b Constituents to be Evaluated [For Geospatial/Modeling Projects]

| **Constituent** | **Unit** |
| --- | --- |
| Vegetation | Type preference |
| Fencing | Color preference |
| Site Access | Private/Public/Limited |

Table 2c: Constituents to be Evaluated [For Secondary Data Assessment]

| **Constituent** | **Unit** | **Data Reference [Add full citation and weblink for data source]** |
| --- | --- | --- |
| Vegetation | %cover |  |
| Population Density | # of persons/mi2 |  |
| Wetland | type of wetland |  |

**[If secondary data sources are not known, discuss or list potential sources of information (e.x. NOAA precipitation data or county-level population data). Explain parameters to be researched, why these are the appropriate parameters for your project, and who selected them.]**

**Survey mailers/Workshops/Interviews**

[**Survey mailers/workshops/interviews**] will begin **[Insert start/stop dates for this activity. If timeline is not determined yet, discuss the potential timeline or that it will be determined at a later date.]**  Table 2d lists the constituents that are required to be evaluated or assessed through the project survey.

**[If you are conducting a survey or focusing on specific constituents or parameters for the stakeholder interviews/workshops, please include them in Table 2d below. Otherwise, remove Table 2d and discuss or list the topics to be addressed by the interviews, workshops or surveys**]

Table 2d Constituents to be Evaluated

| **Constituent** | **Unit** |
| --- | --- |
| Vegetation | Type preference |
| Fencing | Color preference |
| Site Access | Private/Public/Limited |
| # of responses to survey |  |

**[Clarify whether volunteers, students, or other individuals that require training would be involved in data collection activities. Describe training for these individuals, as applicable, including methodology, timing, and primary responsibility for training.]**

## 1.3 Data Quality Objectives

**[READ THROUGH HIGHLIGHTED INSTRUCTIONS BEFORE COMPLETING]**

Data quality objectives (DQOs) will define project data collection design, including

1) when and where to collect environmental data (if identified in section 1.2, state here and reference section 1.2),

2) the acceptable level of data uncertainty and decision errors for the study (also discussed in section 1.4),

3) number of assessments or evaluations, why is this the appropriate study design to meet project objectives

4) why the data type you are collecting is appropriate to meet your project objectives, and

5) who is making these decisions, how, and when were they made?

Questions to consider when completing this section:

* How is the quality of your data being ensured? Examples may include
	+ an explanation of the experience of the project team,
	+ proper training and oversight of data collectors,
	+ adherence to accepted methods and protocols to achieve project objectives, including citations for methods and protocols, or
	+ using lessons learned from successful past projects that were similar to this project design, providing a summary of past projects.
* How were sites selected for this project? (May be discussed in section 1.2 and referenced to here or vice versa – but MUST be discussed in one of the sections and reference to in the other)
	+ Why are the sites selected for evaluation or assessment appropriate to achieve the project objectives?
	+ What was the decision criteria to select sites for evaluation or assessment (if discussed in section 1.2, reference to that here or vice versa – but MUST be discussed in one of the sections and reference to in the other)? Who made these decisions and when?
* Why was the data being collected chosen to address the project objectives and what information will it be providing?
* If the data is not collected as planned, how will that affect the project/project objectives?

**For modeling projects**

* What assumptions will need to be made to use the model?
* Is any calibration required?
* Will any specialized equipment or training be required to utilize the model?
* What is the source for data inputs (see criteria above if using secondary data)?
* If applicable, describe approach for analyzing data including formulas, calculations, units, definitions of terms, and statistical analysis, will be included and defined.
* Identify key data inputs and any data processing elements that allow for evaluation and assessment of the model outputs to meet project objectives.

**For secondary data collection and geospatial analysis**:

* Define the temporal boundaries for sources. How recent does it need to be? Will you use the most recent available data? Why or why not?
* If data layers or sources represent a varying time scale, will data be comparable?
* If data layers or sources represent varying geography, will data be comparable?
* What it is the process for determining secondary data or geospatial data is accurate, reliable, and complete? Where did the data come from? How was it collected? What is the margin of error on the source data?

**For Stakeholder Surveys/Interviews/Workshops**

* Describe approach for analyzing survey data if applicable, including formulas, calculations, units, definitions of terms, and statistical analysis, will be included and defined
* What was the decision criteria to select interviewees, workshop attendees or survey recipients?
* Decision criteria for software/application used for surveys or respondent evaluation, if applicable.
* What is the acceptable number of interviews or attendees to a workshop to meet the project objectives?
* Why is the interview, workshop or survey format (structure, length, type of questions, etc.) the most appropriate to meet project objectives?
* Who is making these decisions, how, and when were they made?
* What types of questions will be asked during the interview, workshop, or as part of the survey? Attach questions as an appendix and reference here or provide examples of potential questions

**MAIN THEME FOR THIS SECTION and SECTION 1.4: When completed, these sections will identify the required information and criteria which will support developing quality data collection designs or processes. These sections should discuss how the project will ensure that the type, quantity, and quality of environmental data/information used in decision-making will be appropriate for the intended application. It should help the reader understand why this data/information provides the material necessary to answer study questions and meet project objectives.]**

## 1.4 Quality Assurance Objective Criteria

The Quality Assurance Objectives (QAOs) define a tolerable level of potential decision error for data collected on a project. They help to define the DQOs and clarify the project objectives further. The QAOs are then used as comparison criteria during data quality review by [explain the group that is responsible for collecting data] to determine if the minimum requirements have been met and the data may be used as planned.

* How will the project team know information collected in the field is “fit for use” on the project and not an error or unacceptable for reporting? This section must support text in sections 1.3, 3.0 and 5.0
* What are the decision criteria in place to determine data collected for this project meets the project objectives? What/who is the source for these criteria?
* Identify key indicators of data quality associated with your data: PARCC Precision, Accuracy/bias, Representativeness (may be identified in section 1.2 or 1.3, please reference to it here), Comparability and Completeness**. NOTE: Not all data will have every indicator represented, this should be specific and relative to your project data.**
* **Identify data quality indicators for your dataset as follows:**
	+ Precision: Precision is an expression of agreement between two measurements. It provides a measure of reproducibility of sample results/measurements.
	+ Accuracy: Accuracy is used to identify the agreement between an observed value and a reference or true value.
	+ Representativeness: Refers to how well the data collected is representing the area of interest. This may be a discussion of why sampling points were chosen as a representing for your study.
	+ Comparability: A qualitative discussion and refers to the equivalency of data sets.
	+ Completeness: Completeness is a project/study level metric. It identifies the measure of the amount of valid data collected as compared to the amount of data planned. Comparability is typically a qualitative discussion on how data being collected will be comparable to other datasets.
	+ Sensitivity: Sensitivity identifies the capability of a method or an instrument to detect a given parameter at that concentration. (this will not apply if field equipment is not being used on your project)

**Typical ways that these indicators may be presented in Assessment data and should be discussed in this section:**

* Precision: If GPS or photographs are used precision in image resolution may be relevant
* Accuracy/bias: Accuracy in assessment may be identified by following assessment protocols and procedures, or staff training and experience. If using GPS there is typically information available on accuracy.
* Comparability: The use of standard or similar techniques. This may be identification of data quality aspects that allow for comparison.
* Completeness: Completeness represents the amount of valid data/information acceptable to the project/study for a usable dataset.

The quality assurance objectives are listed in Table 3**. [This section and Table 3 specifically outline the range of information would be acceptable for use on your project. If all data collected in the field will be accepted for use on the project, then add an explanation regarding why this is appropriate. Otherwise, add more discussion as applicable to explain the source for the QAOs outlined in Table 3, which should include the project measurement metrics for field assessment**.]

Table 3: QAOs for Field Measurements [EXAMPLE ONLY – edit as needed]

| **Parameter** | **Method** | **Precision** | **Accuracy** | **Completeness** |
| --- | --- | --- | --- | --- |
| Oyster Spat Settlement | Visual Observation and using a ruler to determine growth (cm) | 100% | Adherence to sampling protocols | 90% |
| Location | GPS [Insert project-specific method] | [INSERT INFORMATION | [INSERT INFORMATION] | [INSERT INFORMATION |
|  |  |  |  |  |

[**All columns may not apply to all parameters. The term “N/A” may be added for certain parameters; however, reasoning for use of the term “N/A” must be clarified with an explanation after Table 3.** **Accuracy and completeness should apply to all parameters. When completing Table 3, make sure to identify all acronyms in a footnote and make sure that values in the table are clearly identified as to what they represent. This can be identified in the cell of the table or footnoted at the bottom of the table.]**

**For Modeling or Geospatial analysis**

* Identify resolution and accuracy required for data input
* Who will review the outputs or results to make sure they are clear, unbiased, and objective?
* What margin of error would be acceptable for outputs/analysis and why?

What data quality indicators will be used to qualify the data? (Consider accuracy, precision, consistency, any validation or processing metrics key to your data)

* How will it be determined that the results satisfy the purpose of the project? Clarify if there a specific range of data outputs that are acceptable?
* Identify specifications regarding geospatial coordinate data and data accuracy
* Identification any topology, labeling, attribute accuracy, and other processing quality indicators for map digitizing (data gap identification etc.), if required •
* Identify criteria to be met in ground-truthing satellite imagery, as required for your project
* Identify any metadata requirements to ensure consistency, this can be project-defined or a reference to a standard (append documents if applicable).

**For Secondary Data Assessment**

* What are the qualifiers for accepting information to support the project objectives? Does information need to be
	+ geographically relevant to a specific area
	+ a specific type of information (e.g. federal government agency resource) or developed by a specific author
	+ inclusive of a certain level of quality
	+ in compliance with a management plan or legislative requirements
	+ representative of a specific timeframe
	+ other requirements for using information?

What data quality indicators will be used to qualify the data?

If this information is already described in section 1.3, then just reference discussion here.

**For Stakeholder Surveys/Interviews/Workshops**

* What is the decision criteria to select data collected frominterviews, surveys, or during workshops for use based on the project objectives?

What are the potential limitations of data being used for this project? If applicable, specify acceptance criteria for survey results

What data quality indicators will be used to qualify the survey, workshop or interview data as acceptable or not?

* Who will review the survey/interview questions to make sure they are clear, unbiased, and objective?
* What is the acceptable/expected rate of return for surveys and why?
* Is there a contingency plan if the surveys have a low response rate?
* What margin of error would be acceptable for survey responses and why?
* What information will participants be given ahead of the workshop or interview?
* What are the qualifiers for accepting information to support the project objectives from interviews or workshop participants? Does information need to be
	+ geographically relevant to a specific area?
	+ in compliance with a management plan or legislative requirements?
	+ representative of a specific timeframe?
	+ other requirements for using information gathered from workshop participants?

## 1.5 Documentation and Records

**[Include the following in this section:**

* Description of Staff/Volunteer/Intern/Student Training documentation and records as applicable.
* Explain how data and information will be transferred between project partners (ex. secure file share).
* Describe or list permits or reports to be prepared as part of this project, including information to media outlets or government agencies, and how reports or media would be distributed. If no reports or media will be developed as part of this project, then clarify here.]

All records generated by this project will be stored at **[Insert name here**] main office. Copies of this QAPP will be distributed to all parties involved with the project, including signatories and field sampling personnel. Any future changes or amendments to the QAPP will be held and distributed in the same fashion. Copies of previous versions of the QAPP will be clearly marked as “superseded by Revision #” so as not to create confusion.

The records of all project information and data used to complete the activities of the project will be retained for at least seven years from the date of sampling, measurement, report, or application.

# 2 DATA ACQUISITION

[**Edit as applicable to your project. Describe data collection/assessment staff and staff training if not described in Section 1]**

Information on site visit locations for data collection can be found in Appendix A. Methods for data collection during site visits will be done according to \_\_\_\_\_\_ procedures **[list methods/procedures or refer to discussion in section 1.2]**

**[****Expand on this discussion and address the following:**

* Discuss any preparation required by the sampling team before the data collection event, including weather checks, equipment preparation, site determination, or team meetings.
* Clarify which team members will participate in sampling events and who provides sampling equipment to team members.
* Explain how site locations are selected for each sampling event, when the sites are selected, and who on the project makes this decision (reference previous QAPP section if already discussed).
* If photo documentation will occur on your project, then note the procedure for taking photos here**.]**

FIELD INSTRUMENT CALIBRATION

[**Complete and revise text below as applicable for any instruments used on-site for data collection, including smartphones and binoculars. Specify field instruments to be used and who provides them. Attach or provide a reference for the manufacturer’s instructions. Note who on the project team will perform calibration and whether a calibration log or records will be kept.**]

Routine field instrument calibration will be performed [**how often and by whom?**] prior to instrument use to ensure instruments are operating properly and producing accurate and reliable data. Calibration will be performed at a frequency recommended by the manufacturer [**Specify frequency if known or remove statement if no field equipment calibration required.].**

SITE VISIT DOCUMENTATION

**[If photos are taken on site, describe protocols (e.g., 1 north facing photo will be taken per site visit). Also discuss protocols for collecting location information**]

All site visit activities will be adequately and consistently documented [**describe how adequacy and consistency in documentation will be assured**] to ensure defensibility of any data used for decision-making, as described in section **[insert section where this is discussed**] and to support data interpretation.

Pertinent field information, including (as applicable), the **[Insert field project-specific sampling/measurement parameters, such as width, depth, flow rate of the stream, location of the tributaries]** will be recorded on the field sheets. [**Describe how datasheets will be labeled to track site visits. Provide field sheets as an appendix and reference here.]**

DOCUMENTATION PROCEDURES

[**Insert title of appropriate person from Table 1**] will be responsible for ensuring that the field sampling team adheres to proper documentation procedures. Field datasheets will be maintained for all data and information collected during each site visit. [**Elaborate on this process as appropriate. Discuss whether field datasheets are in hard copy or electronic. Describe how and when data is transferred to an office, post-fieldwork, and who will do this.]**

**[Please attach the field data sheets to the end of this document, if appropriate.]**

DATA COLLECTION PROCEDURES FOR NON-FIELDWORK PROJECT ACTIVITIES

**Secondary Data Collection/Modeling/Geospatial Assessment**

* Discuss which team members participate in secondary data collection/geospatial analysis/modeling and what the process is for data collection or analysis.
* If conducting a secondary data search, list and explain search criteria. Who selects the search criteria and what is the process for determining search criteria?
* How will the data collection or assessment be recorded and by whom?
* Reasoning for any electronic data collection devices.
* If a specific data log or record-keeping system will be used to track data collection, attach as an Appendix and reference here]
* **Modeling/Geospatial -** Identify data collection devices, how you will handle alternative collection if needed, and data processing requirements (any requirements around speed, sequencing, or calibration).
* **Modeling/Geospatial -** Identify key meta data and valid values (assuming these were discussed in terms of consistency in Section 1.3 – expand upon details or requirements here as needed. Reference to any standards or developed protocols)

**Stakeholder Surveys/Interviews/Workshops**

**[Discuss which team members participate in interview or survey design/mailing/assessment or workshops. Explain source of contact information for interviewees, workshop participants, or survey recipients and who mails surveys or invites interview/workshop participants. Append interview protocol, survey or meeting agenda and reference here.]**

**For surveys**

* Explain how surveys are prepared for sending and how they are sent (email, hard copy, etc.) Is any information provided to recipients other than the survey? Explain source of information and reason for inclusion.
* If surveys are sent, accessed, or processed using a specific program, state the program and version used for this project.
* Who receives completed/returned surveys and how are they stored for analysis? Are the surveys labeled in a project-specific manner upon receipt?
* What is the timeframe for receiving surveys (e.g., surveys received 2 months after mailer will not be accepted)?

**For workshops/interviews**

* Discuss and append or reference any information given to interviewees/workshop participants ahead of time. Explain the purpose of providing this information.
* Describe interview/workshop structure, facilitators/lead interviewers, and how long the interview/workshop will be.
* Discuss any post-workshop/interview data collection activities (e.g. follow-up surveys, individual interviews, etc.]

DOCUMENTATION PROCEDURES FOR NON-FIELDWORK PROJECT ACTIVITIES

All data collection and assessment activities will be adequately and consistently documented [**describe how adequacy and consistency in documentation will be confirmed**] to ensure defensibility of any data used for decision-making, as described in section **[insert section where this is discussed**] and to support data interpretation.

**Secondary Data Collection/Modeling/Geospatial Assessment**

* How will information be filed or organized for data analysis and QA review?
* Will secondary data be organized into a database or summarized in a synopsis? Who would do this?
* When will this occur?
* Who is responsible for filing and documenting data and/or analysis results?
* To ensure transparency and defensibility in the decision-making process, how will the project team document why certain models, project reports and/or existing data were not used?
* Describe the data format (e.g., electronic, hardcopy) and how data will be maintained for the project. If data are obtained from databases, include as much accompanying quality control, temporal, locational data, etc. as needed to document and verify the quality of the data.

**Stakeholder Surveys/Interviews/Workshops**

**For survey projects, address the following:**

* What will happen to completed surveys when received, either through the mail or online? If mailer surveys would be transferred to an electronic form, please clarify here.
* How will information be filed for data analysis and QA review?
* When will this occur post-survey receipt?
* Who is responsible for filing and documenting surveys upon receipt?
* Discuss use of software/applications for survey response processing, if applicable.

**For stakeholder workshops/interviews address the following:**

* Will a professional transcriber be hired to record meeting minutes/interviews, or will members of the project team be assigned to take notes? What are the procedures for taking notes, if any?
* How many note-takers will be involved in the workshop or interview and why is this number adequate to ensure quality for this process?
* If the interview/workshop will take place over several hours, or will include a large number of participants, how will the project team ensure notetaking is accurate and all relevant information (as discussed in sections 1.3 and 1.4) is captured?
* Is any training required for project team members to take notes?
* Will notes be recorded by hand, on white boards by the facilitator, or electronically?
* Will the workshop/interview be recorded? If so, when will the recording be viewed and notes transcribed?
* What happens to the notes after the workshop/interview is over? How are the meeting notes processed for data analysis and QA review? When does this occur and who is responsible for this activity?]

# 3 QUALITY CONTROL REQUIREMENTS

**[Edit as Needed to be project-specific]**

## 3.1 Measurement Performance Criteria

**[Text should be adjusted to meet project specific requirements]**

The overall QA objective for this project is to develop and implement procedures for data collection and reporting that will provide results that are scientifically defensible. Specific procedures for reporting of data, internal QC, audits, preventive maintenance of field equipment, and corrective action are described in the other sections of this QAPP.

## 3.2 Internal Quality Control

**Field Assessment**

Internal QC is achieved by review of the field assessment data sheets and/or records by the QA/QC Specialist **[Or insert title from Section 1.0.]** to ensure that results are within the specified QC objectives discussed in sections 1.3 and 1.4 [**be sure QC objectives are defined in sections 1.3 and 1.4**]. The internal QC components of a data collection and analyses program will ensure that the data of known quality are produced and documented. **[Discuss timing and process for QA/QC review of field datasheets and review of information once it is transferred from the field to a database or other online filing system****. Who from the project team would do this and when? Describe how problems will be resolved, including chain-of-command, and documentation process. Include examples of types of corrective actions that might be implemented**.**]**

**Secondary Data Collection/Modeling/Geospatial Assessment**

Internal QC is achieved by review of the [**model results/secondary data records**] by the QA/QC Specialist **[or insert title from Section 1.0.]** to ensure that results are within the specified QC objectives discussed in sections 1.3 and 1.4 [**be sure QC objectives are defined in sections 1.3 and 1.4**].. The internal QC components of a data collection and analyses program will ensure that the data of known quality are produced and documented. **[Discuss timing and process for QA/QC review of information once it is input to a database or other online filing system. Who from the project team would do this and when?** **Describe how problems will be resolved, including chain-of-command, and documentation process. Include examples of types of corrective actions that might be implemented (e.g., access other data sources, loosen or tighten acceptance criteria).]**

**Stakeholder Surveys/Interviews/Workshops**

Internal QC is achieved by review of the [**Interview notes/synopsis/survey results**] by the QA/QC Specialist **[or insert title from Section 1.0.]** to ensure that results are within the specified QC objectives discussed in sections 1.3 and 1.4 [**be sure QC objectives are defined in sections 1.3 and 1.4**]. The internal QC components of a data collection and analyses program will ensure that the data of known quality are produced and documented. **[Discuss timing and process for QA/QC review of information once it is transcribed from the surveys or interview/workshop notes to a database or other online filing system. Who from the project team would do this and when? How will interview/workshop notes or survey results be evaluated and tallied? What is the process for ensuring accuracy of notes? Describe how problems will be resolved, including chain-of-command, and documentation process. Include examples of types of corrective actions that might be implemented (e.g., access other data sources, loosen or tighten acceptance criteria**)]

# 4 INSTRUMENTATION AND EQUIPMENT PREVENTIVE MAINTENANCE

**[If no instrumentation is being used for your project, then please clarify that the sections below are not applicable and explain why]**

## 4.1 Data Collection Equipment Cleaning Procedures

Equipment used for data collection must be cleaned and maintained in accordance with proper field practices. [**Explain what these field practices are and reference other sections of the QAPP and SOPs as appropriate.]**

## 4.2 Instrument and Equipment Testing Procedures and Corrective Actions

All instrument and equipment testing will be performed according to manufacturer recommendations and documented in the [**Specify how the project team will document testing and where these records will be located. Explain what instruments and equipment will be used for this project, or reference section where this is already discussed in the QAPP. How often will equipment be tested and when? What will happen to equipment that fails testing procedures – what are the corrective actions?**]

# 5 DATA MANAGEMENT

[**Elaborate on this process or revise as appropriate]**

Copies of field assessment data collection sheets, original preliminary and final reports, and electronic media reports will be kept for review by the **[Insert organization name].** The field crew will retain original field assessment data sheets.

Field assessment data sheets are checked and signed in the field by the project **[Insert “leader”, “manager”, etc.]**. They will identify any results where information is incorrect, missing, or inadequate. Such data will be marked as unacceptable by and will not be entered into the electronic data base and/or otherwise used for project analysis, reporting or other purpose. **[Clarify the timeframe for completing this check, post-fieldwork and whether there would be a need to repeat fieldwork and/or re-train data collectors if results are unacceptable.** **If consensus is required by the project team for decision-making, explain the consensus process here**]

The data generated will be **[****Identify how data will be stored and used, uploaded into a database, entry into a spreadsheet, etc.**] maintained by **[who will be responsible for data entry and management?]** and available for NFWF staff review when requested. This review is for QA/QC purposes only and will not be used for any other purpose. All project information will remain confidential. See Section 5.2 for additional information on this data reporting requirement.

After data entry or data transfer procedures are completed for each data collection event, data will be inspected for data transcription errors [**how long after data collection and by whom? How are errors determined (reference sections 1.3-1.4)? What happens to data found to have errors?]** and corrected as appropriate**.** After the final QA checks for errors are completed, the assessment data will be added to the project database. [**Specify who would do this and the timeframe, post-data collection. Describe how data will be used for reporting as applicable]**.

**Secondary Data Collection/Modeling/Geospatial Assessment**

Copies of **[model results/secondary data records]**, original preliminary and final reports, and electronic media reports will be kept for review by the **[Insert organization name].**.

**[Model results/secondary data records]** are checked and signed by the project **[Insert “leader”, “manager”, etc.]**. They will identify any results where information is incorrect, missing, or inadequate [**what would identify a response as “inadequate”?**]. Such data will be marked as unacceptable by and will not be entered into the electronic data base and/or otherwise used for project analysis, reporting or other purpose. **[Clarify if this process applies to your project. Include the timeframe for completing this check, post-data collection and whether there would be a need to repeat data collection or modeling assessment and/or re-train data collectors if results are unacceptable.** **If consensus is required by the project team for decision-making, explain the consensus process here. If project data or information is being used for data sharing purposes (such as data sharing to a public site or into another system external to the project team) then discuss how quality control will be ensured for data processing requirements and validation external to the project team.]**

The data generated will be converted to a standard database format [**revise to be accurate to your projec**t] maintained by **[who will be responsible for data entry and management?]** and available for NFWF staff review when requested. This review is for QA/QC purposes only and will not be used for any other purpose. All project information will remain confidential. See Section 5.2 for additional information on this data reporting requirement.

After data entry or data transfer procedures are completed for each [**insert type of data collection/assessment event**], data will be inspected for data transcription errors [**how long after data collection and by whom? How are errors determined (reference sections 1.3-1.4)? What happens to data found to have errors?],** After the final QA checks for errors are completed, the data will be added to the project database. [**Specify who would do this and the timeframe, post-data collection. Describe how data will be used for reporting as applicable]**

**Stakeholder Survey/Interviews/Workshops**

Copies of **[meeting notes/survey responses]**, original preliminary and final reports, and electronic media reports will be kept for review by the **[Insert organization name].**

**[Meeting notes/survey responses/assessments/synopsis]** are checked and signed by the project **[Insert “leader”, “manager”, etc.]**. They will identify any results where information is incorrect, missing, or inadequate [**what would identify a response as “inadequate”?**]. Such data will be marked as unacceptable by and will not be entered into the electronic data base and/or otherwise used for project analysis, reporting or other purpose. **[Clarify if this process applies to your project. Include the timeframe for completing this check, post-data collection and whether there would be a need to repeat surveys/meetings/interviews and/or re-train data collectors if results are unacceptable. For interview or workshop notes, would the notes be sent to interviewees/workshop attendees for review? Why or why not? If consensus is required by the project team for decision-making, explain the consensus process here]**

The data generated will be converted to a standard database format [**revise to be accurate to your projec**t] maintained by **[who will be responsible for data entry and management?]** and available for NFWF staff review when requested. This review is for QA/QC purposes only and will not be used for any other purpose. All project information will remain confidential. See Section 5.2 for additional information on this data reporting requirement.

After data entry or data transfer procedures are completed for each [**insert type of data collection event**], data will be inspected for data transcription errors [**how long after data collection and by whom? How are errors determined (reference sections 1.3-1.4)? What happens to data found to have errors?],** After the final QA checks for errors are completed, the data will be added to the project database. [**Specify who would do this and the timeframe, post-data collection. Describe how data will be used for reporting as applicable]**.

## 5.1 Data Assessment Procedures

Data must be consistently assessed and documented to determine whether project QAOs discussed in section 1.4 have been met, quantitatively assess data quality and identify potential limitations on data use. Assessment and compliance with quality control procedures will be undertaken during the data collection phase of the project. [**Reiterate, describe or reference the QC procedures for this project]**.

## 5.2 Data to be Included in QA Summary Reports

During the project, NFWF may require periodic reporting, as noted below. Table 5 summarizes the types of data to be reported and the method in which that information will be delivered to NFWF staff.

**[Remove lines not applicable to your project (e.g., remove the line for BMPs if you are not using). Please be sure this table matches the table in Appendix D]**

|  |
| --- |
| **Table 5: QA Summary Reporting Data** |
| Data | Data Description | Reporting Method | Frequency |
| Best Management Practice (BMP) Data | Raw data from project reports in units of miles, linear feet, acres, individuals, etc. | Metrics uploaded to NFWF online system. | Annually and at NFWF Request during the closeout procedure |
| Monitoring Data | Raw data on project effectiveness, ambient water quality in priority watershed, stormwater flow, project conclusion data, etc. | Raw data, reports, and/or spreadsheets submitted through NFWF online system through the Final Programmatic Report. | At NFWF Request during the closeout procedure |
| Geospatial Data | Google polygon maps, latitude/longitude info, watershed segment | Uploaded via NFWF online system map page | At NFWF Request at application, during any Map Update Tasks, and during the closeout procedure |

At project completion, the field team will provide copies of the field data sheets (or relevant pages of field logs) as a representative sample subset submittal of analysis as discussed in section 5.0 [**Be sure to discuss data verification here or in the beginning of section 5**]. At a minimum, information must be provided to NFWF staff according to the QA Summary Report template, included as Appendix D.

## 5.3 Reporting Format

All results meeting data quality objectives and results having satisfactory explanations for deviations from objectives will be reported in the QA Summary Report. Results will be reported to NFWF at project completion as noted in Section 5.2 above. Reports may be submitted electronically along with the final programmatic report.

# 6 DATA VERIFICATION AND USABILITY

**[Discuss here how the project team will determine that data is fit for use. Address how all data will be reviewed following the processes outlined in this QAPP and any changes, qualifiers, and notations recorded based on the decision rules/criteria appropriate for the data set, also outlined in the QAPP. For instance, data sets may have missing or unclear entries that can be filled in or modified based on other available records such as photographs or other documentation. Reference previous section(s) if applicable.]**

## 6.1 Self-Assessment, Data System Audits

**[Explain how project will ensure the data is collected consistently. EPA asks that you describe how the project will periodically assess consistency of data collection during project delivery. Write a short paragraph or synopsis on how this will be accomplished by the project team.**

**Examples of self-assessments are things like periodic training updates comparing how volunteers or others are collecting data for the same project question, spot checks on data to document consistency, comparisons of photos taken to make sure they are the same type of photo, blind double data collection etc. Don’t create anything new, just describe what you will be doing as it works within project.]**

# 7 REFERENCES

**[EXAMPLE ONLY] [Edit as applicable to your project and remove example references below not used for this project. Be sure all references listed in this section are cited in the main body text of the QAPP]**

U.S. EPA 1983. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-020, third edition

U.S. EPA 1988. Methods for Determination of Organic Compounds in Drinking Water (EPA-600/4-88/039)

EPA/600/R-99/080 2000. Guidance on Technical Audits and Related Assessments for Environmental Data Operations

# Appendices

A) Project Site Map(s)

1. Standard Operating Procedures
2. Field Data Sheet
3. QA Summary Report

**[Attach all SOPs and methods mentioned in your QAPP]**

APPENDIX D – At Project Close Out

[Insert Project Name]

QA Summary Report - Components

This project resulted in **[Insert deliverable description]**. This work product received the required nature and scope of QAPP oversight appropriate for the intended use of the data.

The data sets, data products and other supporting QA documentation is/are maintained on file with the assigned research staff as noted in the QAPP until **[Insert date].**

All QAPP elements were met and completed according to the procedures and methods outlined therein.

**NFWF QA Summary Reports will be submitted to NFWF annually and at project completion as requested. The QA Summary reports will include the following information, as appropriate –**

1. QA Summary Closeout reports include the extent to which projects are implemented according to the stated scope of work and the methodologies specified in this QAPP in their final programmatic reports.
2. Significant changes to the objective, scope, or methodology of environmental data collection or use of environmental technology require the review and approval of the NFWF Program Manager and the NFWF QA reviewer. Therefore, if needed, appropriate revisions to this QAPP will be completed and submitted to the NFWF Program Manager for review and approval prior to implementation of changes.
3. Additionally, periodic QA Summary Reports will be submitted to NFWF annually, if requested, according to the table, below.

**The following table summarizes the types of data to be reported and the method in which that information will be delivered to NFWF staff.**

|  |  |  |  |
| --- | --- | --- | --- |
| Data | Data Description | Reporting Method | Frequency |
| Best Management Practice (BMP) Data | Raw data from project reports in units of miles, linear feet, acres, individuals, etc. | Metrics uploaded to NFWF online system. | Annually and at NFWF Request during the closeout procedure |
| Monitoring Data | Raw data on project effectiveness, ambient water quality in priority watershed, stormwater flow, project conclusion data, etc. | Raw data, reports, and/or spreadsheets submitted through NFWF online system through the Final Programmatic Report. | At NFWF Request during the closeout procedure |
| Geospatial Data | Google polygon maps, latitude/longitude info, watershed segment | Uploaded via NFWF online system map page | At NFWF Request at application, during any Map Update Tasks, and during the closeout procedure |