NOAA GLRI Habitat Restoration Quality Assurance Project Plan Guidance

The Quality Assurance Project Plan (QAPP) describes the general quality assurance (QA) procedures and quality control (QC) specifications that will be implemented to ensure that data collected for the project are of sufficient quality to meet the project objectives. QAPPs are needed for all types of environmental information to be collected under the project, including biological monitoring, topographic and bathymetric survey, sediment testing, and geotechnical investigation.

The following sections outline a general scope for the sampling design of a monitoring program for a typical NOAA GLRI habitat restoration project. These are general guidelines and may not apply to all projects; use your best judgment to determine which areas need to be addressed in your QAPP and consult with your assigned NOAA technical monitor if you have any questions.

Reminder: The QAPP is a detailed procedural document for data collection, assessment, and use. It is not a project work plan, and should not include specific information on all of the on the ground restoration activities related to the project. This QAPP should be consistent with and elaborate upon the monitoring plan that was developed with your proposal.

*Please note that all projects, in addition to a QAPP, will need to comply with a NOAA requirement to create a Data Management Plan (guidance related to creation of the Data Management Plan will be in the Notice of Funding Opportunity (NOFO)).

SECTION 1: BACKGROUND/OVERVIEW

Title & Approval Sheet

- Project title
- Organization's name
- Effective date and/or version identifier
- Dated signature of Organization's project manager
- Dated signature of Organization's QA manager
- Other signatures, as needed

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Distribution List

- Includes all individuals who are to implement or otherwise receive the QAPP and identifies their organization (can be summarized in a table)

Project/Task Organization

- Identifies key individuals with their responsibilities (e.g., data users, decision makers, project QA manager, Subcontractors, etc.)

Problem Definition/Background

- Clearly states problem the proposed restoration action aims to address

- Indicates intended use of the data
- Historical & background information
- Includes appropriate technical and regulatory specifications about the project site(s)
- Describes previous work or data collected, as they relate to this project

Project/Task Description

- Lists measurements to be made/data to be obtained. Coordinate with technical monitor to ensure appropriate measures are considered, including Tier 1 parameters.
    - Applications that include one of the Restoration Center's primary restoration methods (fish passage barrier removal, hydrologic reconnection of wetlands) must incorporate the monitoring parameters found in the NOAA RC Implementation Monitoring (Tier 1) Guidance. If there are tier 1 parameters that do not require data collection, please note that.
- Notes special personnel, training, or equipment requirements
- Provides work schedule
- Includes maps of project areas

SECTION 2: DATA COLLECTION & QUALITY STANDARDS

Field Data Collection Requirements

- Describes how and why sampling design will accomplish goals, (*justify design rationale*), and connect with problem definition
- Describes sampling frequency and schedule, and how spatial and temporal variability will be accounted for (tables and maps may be of assistance - may reference them elsewhere in QAPP, as appropriate).
- Discusses how locations will be determined/obtained (*e.g.,* GPS).
- Fully describes all sampling methods (including field measurements (in situ), continuous monitoring, remote sensing). Referencing or attaching SOPs is recommended.
- Lists equipment needs
- Identifies support facilities
- Notes sample handling requirements (*e.g.,* Chain of Custody procedures and example forms if available)

Quality Objectives & Criteria for Measurement Data

- States project objectives and limits, both qualitatively & quantitatively
    - Includes a brief description of traditional data quality objective parameters or QC statistics (i.e., precision, accuracy, representativeness, comparability, and completeness)
    - Outlines how those standards/objectives will be achieved (*e.g..,* standardized sampling methods, properly calibrated equipment)
    - References procedures used to calculate QC statistics
- States & characterizes measurement quality objectives as to applicable action levels or criteria (*see example table below*)

- Identifies QC procedures & frequency for each sampling, analysis, or measurement technique, as well as associated acceptance criteria and corrective action

Example of quantitative data quality objectives

Parameter	Precision	Accuracy	Completeness
Temperature	Within 2 standard deviations of mean	95% -- Logger accuracy: ±0.38°F from 32° to 122°F	90%
Macroinvertebrates	Within 2 standard deviations of mean	90% correctly identified insects	90%
Riparian Vegetation	n/a	95% correctly identified plants	90%
Wildlife (see Section B.1 for more detail)	n/a	n/a	100%
Digital Bank Condition Survey	n/a	n/a	100%

Instrument/Equipment Testing, Inspection, Calibration, & Maintenance

- Provides a description of equipment calibration and maintenance needs (*e.g.,* battery replacements) and the schedule/frequency of routine calibrations and inspections.
- Provides a plan for corrective actions should any specialized equipment fail or malfunction in the field. For instance, an additional unit could be taken into the field as a backup provided it meets the minimum performance criteria.

Analytical Methods Requirements

- Identifies analytical methods to be followed (with all options) & required equipment
- Specifies any specific method performance criteria

SECTION 3: DATA MANAGEMENT & REPORTING

Data Handling/Storage

- Describes standard record keeping & data storage and retrieval requirements
    - Attach checklist or standard forms to QAPP
- Describes data handling equipment & procedures used to process, compile and analyze data (e.g., required computer hardware & software)
- Identifies the preparer and recipients of reports
- References data management plan. Either incorporate data management plan language directly or reference it in the text and include the separate data management plan document as an appendix to the QAPP. Mention NOAA disclaimer* that should be incorporated in each report and/or on the website where data are shared.

    *Disclaimer: Data produced under this award and made available to the public must be accompanied by the following statement: "These data and related items of information have not been formally disseminated by NOAA, and do not represent any agency determination, view, or policy."

Data Review, Validation, & Verification

- States criteria for accepting, rejecting, or qualifying data
- Includes project-specific calculations or algorithms

Validation and Verification Methods

- Describes process for data validation and verification
- Identifies issue resolution procedure and responsible individuals
- Identifies method for conveying these results to data users

Reconciliation with User Requirements

- Describes process for reconciling with Data Quality Objections and reporting limitations

Documentation & Records

- Lists information & records to be included in data report (e.g., raw data, field logs, results of QC checks, problems encountered). Including samples of blank data sheets (as appendices) is recommended.