**EXAMPLE TEMPLATE**

**QUALITY ASSURANCE PROJECT PLAN (QAPP)**

**[Insert Project Name, Hurricane Sandy Coastal Resiliency Competitive Grants Program Grant ID No., Grant Title]**

**(QAPP Subpart name if you have multiple QAPP subparts)**

COMPLETED PLAN PREPARED BY:

**[Insert name here]**

**[Date]**

Refer correspondence to:

**(Name, organization, address, telephone, and email)**

(Note: Instructions are given in bold type. Make sure to complete or revise all underlined sections and remove the underlining upon completion. Also, erase the instructions 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)

**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.**

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# 1.0 PROJECT MANAGEMENT

**1.1**  **Title and Approval Sheet**

Project Title:

Prepared by:

Approvals:

National Fish and Wildlife Foundation, Candace Leong, Hurricane Sandy Coastal Resiliency Program Coordinator

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

[Add names and signatures from Principal Investigator and other key project participants]

## 1.2 Contact Information

[Please provide the name and phone number of project personnel.]

All personnel listed below will receive copies of this Quality Assurance Project Plan (QAPP), and any approved revisions of this plan.

|  |  |  |
| --- | --- | --- |
| **Title** | **Name (Affiliation)** | **Phone Number/E-mail** |
| Operation Manager |  |  |
| Primary Field Sampler |  |  |
| Laboratory Manager |  |  |
| Laboratory Quality Assurance/Quality Control (QA/QC) Officer |  |  |
| Environmental Scientist |  |  |
| National Fish and Wildlife Foundation (NFWF), Hurricane Sandy Coastal Resiliency Program Coordinator | Candace Leong, NFWF | (202) 857-0166Candace.Leong@NFWF.org |
| QA Specialist |  |  |

Laboratory Information

**[Please provide the name, contact information and documentation of state certification for the laboratory employed to conduct sample analysis.]**

|  |
| --- |
| Name |
| Address |
|  |
| Phone  | Contact Name |
| DHS Laboratory Certification No.  | Expiration Date  |

## 1.3 Project Objectives and Approach

**[Insert your condensed proposal Narrative here]**

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 accepted methodology (e.g., U.S. Environmental Protection Agency (US EPA)) to collect and/or measure, analyze and/or interpret **[Insert measurement type. i.e.: water and biota]** samples.

Required monitoring or measurements will begin **[Insert dates data or measurements will be taken, start/stop dates for this activity, etc.]**  Table 1 lists the constituents that are required to be monitored.

**[EXAMPLE ONLY –EDIT AS NEEDED]**

Table 1 Constituents to be monitored

| **Constituent** | **Unit** |
| --- | --- |
| Flow | CFS (Ft3/Sec) |
| PH | pH units |
| Temperature | 0F |
| Dissolved Oxygen | mg/L |
| Turbidity | NTU |
| Total Dissolved Solids | mg/L |
| Total Suspended Solids | mg/L |
| Chloride  | mg/L |
| Ammonia | mg/L |
| Nitrate-Nitrogen | mg/L |
| Phosphate | mg/L |
| Sulfate | mg/L |
| Organophosphate Suite[[1]](#footnote-1) | μg/L |
| Organochlorines Suite[[2]](#footnote-2) | μg/L |

## 1.4 Data Quality Objectives

The data quality objectives are listed in Table 2.

[Please complete the measurement metrics for field sampling in Table 2. Please request this information from the laboratory, if applicable.]

**[EXAMPLE ONLY – EDIT AS NEEDED]**

Table 2 Quality Assurance Objectives for Individual Measurements

| **Parameter** | **Method** | **Detection Limit** | **Sensitivity** | **Precision** | **Accuracy** | **Completeness** |
| --- | --- | --- | --- | --- | --- | --- |
| Flow |  |  |  |  |  | 80% |
| Temperature | e.g. Thermometer(-5 to 50) |  |  |  |  | 80% |
| Dissolved Oxygen |  |  |  |  |  | 80% |
| pH |  |  |  |  |  | 80% |
| Turbidity |  |  |  |  |  | 80% |
| Total Dissolved Solids |  |  |  |  |  | 80% |
| Total Suspended Solids |  |  |  |  |  | 80% |
| Chloride |  |  |  |  |  | 80% |
| Ammonia |  |  |  |  |  | 80% |
| Nitrate |  |  |  |  |  | 80% |
| Phosphate |  |  |  |  |  | 80% |
| Sulfate |  |  |  |  |  | 80% |
| Toxicity |  |  |  |  |  | 80% |
| Toxaphene |  |  |  |  |  | 80% |
| Pyrethroids |  |  |  |  |  | 80% |

## 1.5 Documentation and Records

*All records generated by this project will be stored at* ***[Insert name here****] main office. Records stored for this project will include all laboratory records pertinent to this project. Copies of records held by the laboratory will be provided to project manager and maintained in the project file.*

*Copies of this QAPP will be distributed to all parties involved with the project, including signatories and field sampling and laboratory 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.

# 2.0 DATA ACQUISITION

## 2.1 Sampling Information

Information on sample locations can be found in Appendix A. Surface water samples will be collected for chemical analyses and biological toxicity testing. Methods for sample collection in the field will be done according to standard procedures. Proper sampling techniques will be used to ensure that a representative sample is collected.

## Sample Storage, Preservation and Holding Times

Sample containers will be pre-cleaned and certified to be free of contamination according to the United States Environmental Protection Agency (U.S. EPA) specification for the appropriate methods.

Sampling devices and sample bottles (that are not pre-sterilized and do not contain preservatives/fixing agents) will be rinsed three times with sample water prior to collecting each sample. For sterile bottles, whirl-paks, and sample bottles which do contain preservatives/fixing agents (e.g., acids, etc.) never rinse with sample water prior to collecting the sample. Also, never use a sample bottle containing preservatives/fixing agents for sampling; in these cases always use a sampling device to collect the sample prior to transferring the sample into the bottle.

The following table describes sample holding container, sample preservation method and maximum holding time for each parameter.

All samples should be refrigerated or stored on ice (do not freeze) and sent to the laboratory IMMEDIATELY for proper storage and preservation.

[EXAMPLE ONLY – EDIT AS NEEDED]

Table 3 Sampling Method Requirements

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter** | **Sample Bottle** | **Typical Sample Volume** | **Preferred / Maximum Holding Times** |
| Temperature | Plastic Bottle | 150 mL | Immediately |
| Dissolved oxygen | Glass bottle and device to enable sampling without contact with air | 150 mL | Immediately / for wet chemistry fix per protocol instructions, continue analysis within 8 hr. |
| pH | Plastic Bottle or sample directly | 150 mL | Immediately |
| Turbidity | Plastic Bottle | 150 mL | Immediately / store in dark for up to 24 hr. |
| Total Dissolved Solids | Plastic Bottle | 1000 mL | 7 days at 4°C, dark |
| Total Suspended Solids | Plastic Bottle | 1000 mL (two jars) | 7 days at 4°C, dark |
| Chloride, Sulfate | Plastic Bottle | 300 mL | 28 days at 4°C, dark |
| Ammonia | Plastic Bottle | 500 mL | Immediately/8 hours if sample acidified with sulfuric acid to less than 3.0 pH |
| Nitrate | Plastic Bottle | 150 mL | 48 hours at 4°C, dark |
| Phosphate | Plastic Bottle | 150 mL | 8 hours at 4°C, dark |
| Pesticides and other synthetic organic compounds | 1-L I-Chem 200-series amber glass bottle, with Teflon lid-liner (per each sample type) | 1000 mL (one container)\*Each sample type requires 1000 mL in a separate container | Keep at 4°C, dark, up to 7 days. Extraction must be performed within the 7 days; analysis must |
| Toxicity | Four 2.25 L amber glass bottles with Teflon lid liner | 9000 mL | Refrigerate at 4°C send to lab immediately |

SAMPLE IDENTIFICATION

All samples will be identified with a unique number and samples labeled with the following information.

* Sample ID
* Location ID
* Date
* Time
* Initials of sample collector
* Sample type (normal or QC)
* Preservative method (if any)

**[EXAMPLES ONLY – EDIT AS NEEDED]**

Field Measurements

If possible (if equipment is available), water quality parameters including **[Insert project-specific information, such as flow rate, pH, dissolved oxygen, and temperature]** will be measured prior to collecting samples for laboratory analyses.

QC SAMPLE COLLECTION

Equipment blanks, field duplicates, and matrix spikes will be collected at a frequency of about 1 per 20 normal samples, or 1 per sampling event, whichever is greater. Matrix spikes will be collected as normal samples and will be spiked at the laboratory prior to sample preparation.

FIELD INSTRUMENT CALIBRATION

Routine field instrument calibration will be performed at least once per day 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.

DECONTAMINATION PROCEDURES

All field and sampling equipment that will contact samples will be decontaminated after each use in a designated area.

FIELD DOCUMENTATION

All field activities will be adequately and consistently documented to ensure defensibility of any data used for decision-making and to support data interpretation. In particular if during dry season sampling if there is no irrigation run off available for sampling this needs to be documented and supported in the annual monitoring report.

Pertinent field information, including (as applicable), the **[Insert field project-specific sampling/measurement parameters, such as width, depth, flow rate of the stream, the surface water condition, crop and cultivation practices and evidence of pesticide/fertilizer or sediment management, and location of the tributaries]** will be recorded on the field sheets.

## 2.3 Sample Custody and Documentation

Sample Custody will be traceable from the time of sample collection until results are reported.

DOCUMENTATION PROCEDURES

The primary field sampler will be responsible for ensuring that the field sampling team adheres to proper custody and documentation procedures. A master sample logbook or field datasheets will be maintained for all samples collected during each sampling event.

CHAIN-OF-CUSTODY FORM

When samples are transferred from one sampler to another member of the same organization or from the monitoring group to an outside professional laboratory, then a Chain of Custody (COC) form should be used. This form identifies the site name, sample location, sample number, matrix, date and time of collection, sampler’s name, sampling equipment and sample type (i.e., normal field or QC sample), and method used to preserve sample (if any). It also indicates the date and time of transfer, and the name and signature of the sampler and the sample recipient. It is recommended that when a sample leaves the custody of the monitoring group, then the Chain of Custody (COC) form used be the one provided by the outside professional laboratory. Similarly, when QC checks are performed by a professional lab, their samples will be processed under their COC procedures with their labels and documentation procedures.

**[Please attach the lab chain of custody form to the end of this document, if appropriate.]**

SAMPLE SHIPMENTS AND HANDLING

All sample shipments are accompanied with the COC form, which identifies the contents. The original COC form accompanies the shipment and a copy is retained in the project file.

All shipping containers will be secured with COC seals for transportation to the laboratory. The samples will be placed with ice to maintain the temperature between 2-4 degrees C. The ice packed with samples will be sealed in zip lock bags and contact each sample and be approximately 2 inches deep at the top and bottom of the cooler. Samples will be shipped to the contract laboratories according to U.S. Department of Transportation (US DOT) standard.

LABORATORY CUSTODY PROCEDURES

The following sample control activities will be conducted at the laboratory:

* Initial sample login and verification of samples received with the COC form
* Document any discrepancies noted during login on the COC
* Initiate internal laboratory custody procedure
* Verify sample preservation (e.g., temperature)
* Notify the project coordinator if any problems or discrepancies are identified
* Proper samples storage, including daily refrigerator temperature monitoring and sample security.

# 3.0 ANALYTICAL REQUIREMENTS

**[Retain or Delete as Needed]**

## 3.1 Chemistry Analyses

Prior to the analyses of any environmental samples, the laboratory must have demonstrated the ability to meet the minimum performance requirements for each analytical method. Initial demonstration of laboratory capabilities includes the ability to meet the project specified quantitation limits (QL), the ability to generate acceptable precision and recoveries, and other analytical and quality control parameters as stated in this Guide. Analytical Methods used for chemistry analyses must follow a published method (US EPA or Standard Method for the Examination of Water and Wastewater) and document the procedure for sample analyses in a laboratory Standard Operating Procedure (SOP) for review and approval. This applies to project and field personnel conducting field sampling/measurements/analysis of media not analyzed by the laboratory. Training records for field staff should be maintained under the documentation requirements noted in Section 1.4 of this QAPP.

## 3.2 Toxicity Testing

The ambient water toxicity test results must provide a reliable qualitative prediction of impacts in stream biota. At a minimum the toxicity testing will need to include the 4-day static renewal procedures described in Method for Measuring Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (US EPA, 2002).

## 3.3 Laboratory Standards and Reagents

All stock standards and reagents used for extraction and standard solutions will be tracked through the laboratory or the field sampling/measurement manager. Date of preparation, analyte or mixture, concentration, name of preparer, lot or cylinder number, and expiration date, if applicable, must be recorded on each working standard.

## 3.4 Sample Preparation Methods

Surface water samples will be prepared in solvent or via other extraction techniques prior to sample analyses as noted in Table 3. All procedures must follow a published method.

Ground water samples will be prepared according to published methods as noted in Table 3.

# 4.0 QUALITY CONTROL REQUIREMENTS

The types of quality control assessments required for this project are discussed below. Detailed procedures for preparation and analysis of quality control samples are provided in the SOPs for the sample type.

## 4.1 Quality Assurance Objectives (QAOs)

Quality assurance objectives are the detailed QC specifications for precision, accuracy, representativeness, comparability, and completeness (PARC). The QAOs are then used as comparison criteria during data quality review by 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.

## 4.2 Development of Precision and Accuracy Objectives

Laboratory control spikes (LCSs) are used to determine the precision and accuracy objectives. The laboratory fortifies the LCSs with target compounds to monitor the laboratory precision and accuracy. Field duplicates measure sampling precision and variability for comparison of project data. Acceptable relative percent difference (RPD) is less than 25 for field duplicate analyses. If field duplicate sample results vary beyond these objectives, the results will be qualified.

## 4.3 Internal Quality Control

Internal QC is achieved by collecting and/or analyzing a series of duplicate, blank, spike, and spike duplicate samples to ensure that analytical results are within the specified QC objectives. The QC sample results are used to quantify precision and accuracy and identify any problem or limitation in the associated sample results. The internal QC components of a sampling and analyses program will ensure that the data of known quality are produced and documented. The internal QC samples, frequency, acceptance criteria, and corrective action must meet the minimum requirements presented in the following sections.

## 4.4 Field Quality Control

Field QC samples are used to assess the influence of sampling procedures and equipment used in sampling. They are also used to characterize matrix heterogeneity.

For basic water quality analyses, quality control samples to be prepared in the field will consist of equipment blanks, field duplicates, and matrix spikes (when applicable).

Equipment Blanks

Equipment blanks will be collected and analyzed for all analytes of interest along with the associated environmental samples. Equipment blanks will consist of laboratory-prepared blank water (certified contaminate free) processed through the sampling equipment using the same procedures used for environmental samples.

Field Duplicates

Field duplicates will be collected at the rate of 1 per 20 normal samples, or 1 per sampling event, whichever is greater. Field duplicates will be collected at the same time as environmental samples or of two grab samples collected in rapid succession, and will be analyzed along with the associated environmental samples. If the relative percent difference (RPD) of field duplicate results in greater than 25% and the absolute difference is greater than the reporting limit (RL), both samples should be reanalyzed.

 Matrix Spikes and Matrix Spike Duplicates

 Matrix spikes and matrix spike duplicates will be analyzed at the rate of one pair per sample batch. Matrix spike samples are collected at the same time as the environmental samples and are spiked at the laboratory.

## 4.5 Laboratory Quality Control

For basic water quality analyses, quality control samples prepared in the contract laboratory will typically consist of method blanks, laboratory control samples, laboratory duplicates, and surrogate added to each sample (organic analysis).

Method Blanks

Method blanks will be prepared and analyzed by the contract laboratory with each batch of samples. If any analyte is detected in the blank, the blank and the associated samples must be re-extracted and re-analyzed.

Laboratory Control Samples and Surrogate

Laboratory control samples (LCS) will be analyzed at the rate of one per sample batch. Surrogate may be added to samples for organic analyses.

Overall, laboratory acceptance criteria are shown below.

 [**Please request this information from the laboratory and complete the table.]**

Table 4 Analytical Quality Control

| ***Laboratory QC*** | ***Frequency/Number*** | ***Acceptance Limits*** |
| --- | --- | --- |
| *Method Blank* |  |  |
| *Reagent Blank* |  |  |
| *Storage Blank* |  |  |
| *Instrument Blank* |  |  |
| *Lab. Duplicate* |  |  |
| *Lab. Matrix Spike* |  |  |
| *Matrix Spike Duplicate* |  |  |
| *Lab. Control sample* |  |  |
| *Surrogates* |  |  |
| *Internal Standards* |  |  |
| *Others:* |  |  |

# 5.0 INSTRUMENTATION AND EQUIPMENT PREVENTIVE MAINTENANCE

## 5.1 Sample Equipment Cleaning Procedures

Equipment used for sample collection must be cleaned and maintained in accordance with proper field practices.

## 5.2 Analytical Instrument and Equipment Testing Procedures and Corrective Actions

All instrument and equipment testing will be performed according to manufacturer recommendations and documented in the associated equipment calibration logbook.

Laboratory instrument and equipment testing will be as prescribed under the laboratory operating manual.

## 5.3 Instrument Calibrations and Frequency

**[Retain, Edit or Delete as Needed]**

Analytical Procedures and Calibration

This section briefly describes analytical methods and calibration procedures for samples that will be collected under this project.

Analytical methods that will be used in this program will need to follow the general guidance of any of the following methods:

* *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA-600/4-85 054)
* *U.S. EPA Methods for Chemical Analysis of Water and Wastes* (EPA-600/4-79-020, third edition, 1983)
* *Methods for Determination of Organic Compounds in Drinking Water* (EPA-600/4-88/039)
* *Standard Methods for the Examination of Water and Wastewater* (APHA 1998)
* *USEPA. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. Office of Water, Washington, D.C. EPA-821-R-02-012*
* *USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition. Office of Water, Washington, D.C. EPA-821-R-02-013.*
* *USEPA. 1994. Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates. Office of Research and Development, Washington, D.C. EPA-600-R-94-024.*

For this program, only linear calibration with either an average response factor or a linear regression is acceptable for organic analyses. Non-linear calibration is not allowed since using this calibration option creates a potential for poor quantitation or biased concentration of compounds at low or high concentrations (near the high and low ends of the calibration range).

Laboratories shall prepare an initial 5-point calibration curve, where the low level standard concentrations is less than or equal to the analyte quantitation limits.

# 6.0 DATA MANAGEMENT

Copies of field logs, a copy of COC forms, original preliminary and final lab reports, and electronic media reports will be kept for review by the **[Insert organization name].** The field crew will retain original field logs. The contract laboratory will retain COC forms. The contract laboratory will retain copies of the preliminary and final data reports.

Field data sheets are checked and signed in the field by the project **[Insert “leader”, “manager”, etc.]**. They will identify any results where holding times have been exceeded, sample identification information is incorrect, samples were inappropriately handled, or calibration information is 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.

Independent laboratories will report their results to the project [“leader”, “manager”, etc.]. The leader will verify sample identification information, review the chain-of-custody forms, and identify the data appropriately in the database.

Concentrations of chemicals and toxicity endpoints, and all numerical biological parameters will be calculated as described in the referenced method document for each analyte or parameter, or a laboratory operating procedure. The data generated will be converted to a standard database format maintained by the responsible party 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 6.2 for additional information on this data reporting requirement.

After data entry or data transfer procedures are completed for each sample event, data will be inspected for data transcription errors, and corrected as appropriate. After the final QA checks for errors are completed, the data will be added to the final database.

## 6.1 Data Assessment Procedures

Data must be consistently assessed and documented to determine whether project QAOs 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.

## 6.2 Data to be Included in QA Summary Reports

During the project, NFWF may require periodic reporting, as noted 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 |
| 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 electronically on Easygrants. | Include all monitoring data when submitting the final programmatic report on Easygrants. |
| Geospatial Data | Google polygon maps, latitude/longitude info, watershed segment | Easygrants | Update the geospatial data and project area worked when submitting the final programmatic report on Easygrants. |

At project completion, the field team will provide copies of the field data sheets (relevant pages of field logs) and copies of the COC forms as a representative sample subset submittal of analysis. At a minimum, sample-specific information must be provided for each sampling type to NFWF staff according to the QA Summary Report template, included as Attachment D.

## 6.3 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. The final results will include the results of all field and laboratory quality control samples. Results will be reported to NFWF at project completion as noted in Section 6.2 above. Reports may be submitted electronically along with the final programmatic report.

# 7.0 DATA VALIDATION AND USABILITY

## 7.1 Laboratory Data Review, Verification, and Reporting

The laboratory quality assurance manual will be used to accept, reject or qualify the data generated by the laboratory. The laboratory management will be responsible for validating the data generated by the laboratory.

The laboratory personnel will verify that the measurement process was “in control” (i.e., all specified data quality objectives were met or acceptable deviations explained) for each batch of samples before proceeding with analysis of a subsequent batch. In addition, each laboratory will establish a system for detecting and reducing transcription and/or calculation errors prior to reporting data.

Only data, which have met data quality objectives, or data, which have acceptable deviations clearly noted, will be submitted by the laboratory. When QA requirements have not been met, the samples will be reanalyzed when possible and only the results of the reanalysis will be submitted, provided they are acceptable.

## 7.2 Self-Assessment, Data System Audits

Periodic self-assessments and/or data system audits are implemented based on the nature and scope of project-specific data collection activities. For data users, these technical audits and assessments provide project personnel with a tool to determine whether data collection activities are being or have been implemented as planned. They also provide the basis for taking action to correct any deficiencies that are discovered. For QAPP Categories 1-2, NFWF may request periodic self-assessments or a data system audit. For QAPP Categories 3-4, NFWF requires the implementation of one of these tools. The decision is made by the project manager and based on the frequency of project-specific data activities.

# 8.0 REFERENCES

**[EXAMPLE ONLY]**

**[Edit to meet your project]**

U.S. EPA 2001. Laboratory Documentation Requirements for Data Evaluation (R9QA/004.1)

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)

USEPA.2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. Office of Water, Washington, D.C.

EPA-821-R-02-012

USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition. Office of Water, Washington, D.C.

EPA-821-R-02-01

USEPA. 1994. Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates. Office of Research and Development, Washington, D.C. EPA-600-R94-024.

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, methods, and laboratory procedures mentioned in your QAPP. Contact your lab and have them provide a copy of the certifications they possess (e.g., U.S. EPA, State Department of Environmental Protection (DEP)/Department of Environmental Quality (DEQ), etc.)]

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.

**QA Summary Reports will be submitted to NFWF annually and at project completion. 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. The grantee will sign and submit a QA Summary Closeout certificate statement certifying that they followed the QAPP scope and methodologies submitted and approved by NFWF.
2. Significant variations to the objective, scope, or methodology of environmental data collection or use of environmental technology require the review and approval of the NFWF Director and the NFWF QA reviewer. If there are significant variations, the grantee will provide a justification statement per each significant variation point.
3. Additionally, periodic QA Summary Reports will be submitted to NFWF annually with their October 31st programmatic reports. If the files are too large, then the grantee will upload it to NFWF’s Sharefile.

**[EXAMPLE ONLY]**

**[Edit to meet your project]**

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

|  |  |  |  |
| --- | --- | --- | --- |
| Data | Data Description | Reporting Method | Frequency |
| 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 electronically on Easygrants. | Include all monitoring data when submitting the final programmatic report on Easygrants. |
| Geospatial Data | Google polygon maps, latitude/longitude info, watershed segment | Easygrants | Update the geospatial data and project area worked when submitting the final programmatic report on Easygrants. |

**[Insert Project Name] Site Sampling Map**

**[Insert geospatial map showing sampling locations by GPS location, Site Name and any other identifier.]**

**[EXAMPLES ONLY FOLLOW]**

**[Edit to meet your project]**

1. Field Sample Log

2. Field Data Log

|  |  |  |
| --- | --- | --- |
|  **[Insert Project Name]** |   | **Field/Sample Log**  |
|   |  |  |  |  |  |   |
| Operation Name:  |   |   | Sampling Event:  | DRY WET (circle one) |
|   |  |  |  |  |  |   |
| Date:  |   | Sampling Personnel (print and sign):  |   |   |
|   |  |  |  |  |  |   |
| Weather Conditions:  |   | Organization: |   |   |   |
|   |  |  |   |   |   |   |
| Sample Number | Sample Collected (mark) | Sample Type | Time | Sampling Device | Sample Container |
| Field Measurements | Lab Sample | (Normal/QC) | (hhmm) | (grab/other) | (glass/plastic) |
|   |   |   |   |   |   |   |
|   |   |   |   |   |   |   |
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|   |  |  |  |  |  |   |
|   |   |   |   |   |   |   |
| If this is a dry weather sampling event and there was no irrigation discharges available for sampling please provide the information below as documentation. Please note that dry weather sampling is required to be conducted on the same day as irrigation near the end of the irrigation cycle. |  |   |
|   |  |  |  |  |  |   |
| Date of Irrigation |   |  |  |   |
| Time of Irrigation |   |  |  |   |
| Length of irrigation cycle |   |  |  |   |
| Time of Sample Investigation |   |  |  |   |
|   |  |  |  |  |  |   |
|   |   |   |   |   |   |   |

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| --- | --- | --- | --- | --- | --- | --- |
|   |   |   |   |   |   |   |
| **[Insert Project Name]** | **Field Data Sheet** |
| Operation Name:  |   | Address: |   |   |   |   |
| Date:  |   | Weather Conditions:  | Crop Type: |   |   |
| Type of Irrigation: |   | Stream Width: |   | Stream Depth: |   |   |
| Pesticide Application Time/Type: |   |   |   |   |   |
| Fertilizer Application Time/Type |   |   |   |   |   |
| Location of Tributaries: |   |   |   | Sampling Event: | DRY / WET | (Circle one) |
|   |   |   |   |   |   |   |
| Sample Number | Location | Flow Rate | Temperature | pH | Dissolved Oxygen | Turbidity |
| cfs | oF |   | mg/L | NTU |
|   |   |   |   |   |   |   |
|   |   |   |   |   |   |   |
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|   |   |   |   |   |   |   |
|   |   |   |   |   |   |   |
| Sampling Personnel:  |   |   |   |   |   |   |
|   |  | (Print) | (Sign) |  |  |   |
| Organization: |   |   |   |   |   |   |

1. Organophosphate Suite: Bolstar, Chlorpyrifos, Demeton, Diazinon, Dichlorvos, Dimethoate, Disulfoton, Ethoprop, Fenchlorophos, Fensulfothion, Fenthion, Malathion, Merphos, Methyl Parathion, Mevinphos, Phorate, Tetrachlorvinphos, Tokuthion, Trichloronate [↑](#footnote-ref-1)
2. Organochlorine Suite: 2,4’ – DDD, 2,4’ – DDE, 2,4’DDT, 4,4’-DDD, 4,4’-DDE, 4,4’-DDT, Aldrin, BHC-alpha, BHC-beta, BHC-delta, BHC-gamma, Chlordane-alpha, Chlordane-gamma, Dieldrin, Endosulfan sulfate, Endosulfan-I, Endosulfan-II, Endrin, Endrin Aldehyde, Endrin Ketone [↑](#footnote-ref-2)