



Alaska Department of Environmental Conservation
Division of Water



Module 6A

QAPP for In House and Offsite Testing

2012 SEAFOOD PROCESSING WASTE PERMITTING & COMPLIANCE WORKSHOP

Anchorage, Alaska • February 28-29, 2012

Module 6A – QAPP for In House and Offsite Testing

MODULE 6A



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Compliance Program Manager

Module 6A – OBJECTIVES

MODULE 6A



- Review specific QAPP resource websites and documents.
- Outline quality assurance project elements and data requirements.
- Discuss implementation of the QAPP

Module 6A – What You Will Learn

MODULE 6A



- How and where to find QAPP resources and examples on the DEC/EPA websites.
- Writing QAPP that meets DEC standards and ensure quality data
- Implementation of the QAPP

QAPP



Sampling Methods Resource List:

The list of approved methods for water and wastewater was published in the Federal Register

40CFR Part 122, 136 March 12, 2007. The Standard Methods edition listed in this document is the 20th.

<http://www.standardmethods.org/pdf/fr3-12-07.pdf>

An additional list of approved methods from the 21st Edition SM is available at the following webpage.

<http://www.standardmethods.org/pdf/FinalSM21Edition41207.pdf>

QAPP



QAPP Resource List:

Quality Assurance Project Plan should be based on the EPA guidance documents on the general webpage link:

<http://www.epa.gov/quality/qapps.html>

The Requirements can be obtain in the following link:

<http://www.epa.gov/quality/qs-docs/r5-final.pdf>

The guidance for preparation of the QAPP can be obtained on this link:

<http://www.epa.gov/quality/qs-docs/g5-final.pdf>

QAPP

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QAPP Resource List:

The generic requirements for data quality submittals from wastewater testing may be found at the following link. This is a Tier 2 quality assurance requirements.

http://www.dec.state.ak.us/water/wqapp/Documents/Generic_Tier_2_WQ_QAPP_Rev1.doc

DEC has created a generic QAPP template for preparing the QA plan for bacteriological testing and the template is available at the following website.

[http://www.dec.state.ak.us/water/wqapp/Documents/Generic BEACH Water Quality Monitoring QAPP Rev1.docx](http://www.dec.state.ak.us/water/wqapp/Documents/Generic_BEACH_Water_Quality_Monitoring_QAPP_Rev1.docx)

State Quality Assurance Data Requirements



Water Program QAPP Sampling Plan Checklist

199a-16190001AWQ-App
Metric/QAPPSPChals
May 16, 2003 Rev. 1.1

This document is meant to be used as a checklist for the required quality assurance and quality control protocols to produce defensible data, as set forth in ADEC's *Generic Quality Assurance Project Plan, Water Program Staff Sampling and Analysis Activities*, May 16, 2003 Rev. 1.1.

For information on sampling protocols (sample container type, sample volumes, & holding times), analytical protocols (analytical minimum detection limits -MDLs, minimum or practicable quantitative limits - MRLs or PQLs, etc.); use the EPA-approved methods listed in the generic QAPP above (Table 1), or use other approved EPA methods, as per 40 CFR 136.6.

Sampling site information:

Site/Facil name: Water Body: DEC sampler(s):
 Site Address: River Reach:
 Site City, St Zip: Site Lat/Lon:
 WW Permit #: Physical Description: Site Contact:
 Folder Name: Site Contact Phone:
 Sampling Date:

Sample info:

| sample location | test | QC |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <input type="text"/> |
| <input type="text"/> |
| <input type="text"/> |
| <input type="text"/> |
| <input type="text"/> |
| <input type="text"/> |

Laboratory: **Data reviewer:** **Holding Times met ?:**

QA/QC for field measurements:

Instrument	Calib. Date	Current Standard Reference Materials ?	Staff
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Describe departures from the generic QAPP: e.g. non-approved methods. Give rationale for the change.

Describe QA/QC problems in the field and/or at the laboratory, and describe QA/QC corrective actions taken.

Final Report to:

Signature of WP staff in charge: **Date:**

This is an example of the DEC Water QAPP Sampling Plan Checklist found on the website. http://dec.alaska.gov/water/wqapp/wqapp_index.htm

Quality Assurance Project Commitment

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Project Objectives and Overall Goals

Lists the overall goals of the QAPP in reducing the waste discharged and documenting those efforts. A narrative describing the various aspects of the project that are included in the QAPP.

Elements of a QAPP

MODULE 6A



Elements of a QAPP

1. Title and Approval Sheet
2. Table of Contents
3. Distribution List
4. Organization Chart and Responsibilities Narrative
5. Project Objectives and Description
6. Sampling and Analysis Processes
7. Criteria for Measurement Data
8. Training and Certifications
9. Documents and Records

State Quality Assurance Plan Requirements

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Elements of a Quality Assurance Project Plan:

1. Title and Approval Sheet
2. Table of Contents
3. Distribution List
4. Project Organization including and Organization Chart
5. Problem Definition/Background
6. Project/Task Description (Including Objectives, Descriptions, Sampling and Analysis Plans)
 - A. List of measurements and Standard Operating Procedures (SOP)
 - B. List of sample locations, schedules and lists SOPs

Testing Methods and Quality Assurance



Generic BEACH Water Quality Monitoring QAPP, Rev. 1

Date 13 June 2011

A.2 DISTRIBUTION LIST

This list includes the names and addresses of those who receive copies of the approved QAPP and subsequent revisions.

Table 1: Distribution List

NAME	POSITION	AGENCY/ Company	DIVISION/BRANCH/SECTION	CONTACT INFORMATION
Brock Tabor Tim Stevens	Project Managers	ADEC	Division of Water/ Water Quality Standards/Beach Grant	907-465-5023 brock.tabor@alaska.gov 907-269-7515 tim.stevens@alaska.gov
Richard Heffern	QA Officer	ADEC	Division of Water/ WQSAR/QA	907-465-5305 richard.heffern@alaska.gov
Shera Hickman	EH Lab QA Manager	ADEC	Division of Environmental Health/Laboratory Services	907-375-7799 shera.hickman@alaska.gov
Sherri Trask	EH Lab DW Micro Certification Officer	ADEC	Division of Environmental Health/Laboratory Services	907-375-8209 sherri.trask@alaska.gov
xxxxx	Grantee Project Manager	xxxxx	Grantee Info	xxx-xxx-xxxx email@domain
xxxxx	Grantee Project QA Officer	xxxxx	Project QA Officer Info	xxx-xxx-xxxx email@domain
xxxxx	Lab Manager	xxxxx	Contracted Lab Info	xxx-xxx-xxxx email@domain
xxxxx	Grantee/Beach Water Samplers	xxxxx	Sampler Contact Info	xxx-xxx-xxxx email@domain
Rob Pedersen	EPA Beach Grant Oversight	EPA	EPA Region 10	206-553-1646 pedersen.rob@epamail.epa.gov



Elements of a QAPP

- Title and Approval Sheet
- Table of Contents
- Distribution List
- Organization Chart and Responsibilities Narrative
- Project Objectives and Description
- Sampling and Analysis Processes
- Criteria for Measurement Data
- Training and Certifications
- Data Assessment Validation and Usability

A.3 PROJECT TASK/ORGANIZATION

Duties and responsibilities of key individuals are listed below:

A.3.1 Project Grantee

- **Lead Field Sampler/Project Manager** – Responsible for sampling preparation, sample collection, sample preservation, transportation of samples to commercial air carrier for shipping, receipt of data and transmittal of data to Project Manager. The individual will procure personal equipment of field personnel, coordinate with laboratories in planning sampling equipment needs, obtain supplies for and prepare daily sampling kits prior to departure for

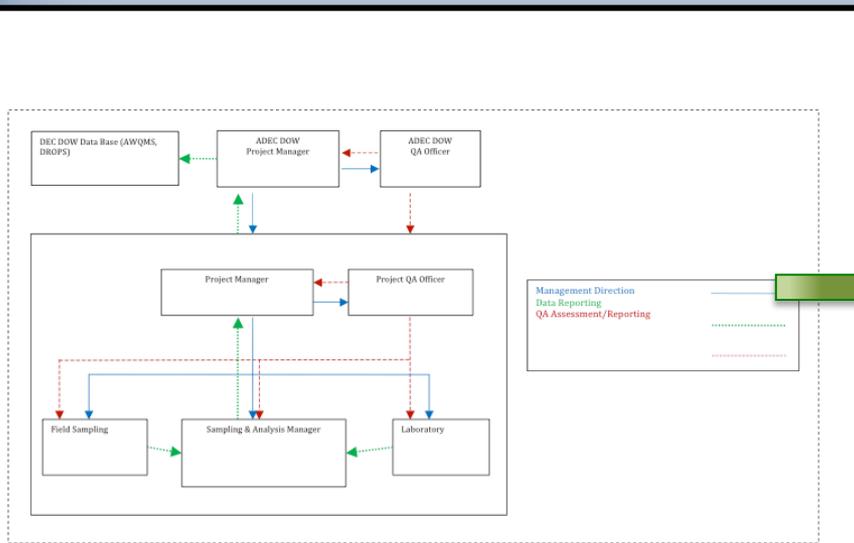
Testing Methods and Quality Assurance

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State Quality Assurance Plan Requirements

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Elements of a Quality Assurance Project Plan:

6. Project/Task Description (continued)
 - C. Personnel assigned to required tasks
 - D. List reports and other outputs required by the project/task description including, sample logs, observation logs, quality assurance reviews, analytical reports.
7. Define Data Quality Objectives (DQO)

State Quality Assurance Plan Requirements



Table Defining Measurement Quality Objectives:

Generic BEACH Water Quality Monitoring QAPP, Rev. 1 Date 13 June 2011

Table 3: Project Measurement Quality Objectives (MQOs)									
Group	Analyte	Method	MDL	PQL	Alaska Water Quality Standards			Precision (RPD)	Accuracy
					Aquatic Life	Recreation Water	Harvesting for Consumption of Raw Mollusks or Other Raw Aquatic Life		
	Temperature	In situ (electronic probe) EPA 170.1	NA	0.1°C	<20°C Migration routes < 15°C Spawning areas < 13°C Rearing areas < 15°C Egg /fry incubation < 13°C	<30°C		±0.2°C	±0.2°C
Fecal Indicator Organisms	Fecal coliforms	SM 9222D, membrane filtration (MF)	1cfu/100mL	1cfu/100mL	NA	Geometric Mean: 100 cfu/100 mL Single Sample: 200 cfu/100mL	NA	+/- 60%	NA
	Fecal Coliforms	SM9221 E (2) with A-1 media, MPN, marine growing waters method	2-1600 MPN/100mL	2-1600 MPN/100mL	NA	NA	14MPN fc/100mL and not more than 10% samples may exceed 43 MPN cf/100mL	+/- 60%	NA
	Enterococci	D6503-99 (Enterococci by Enterolert)	10cfu/100mL	10cfu/100mL	NA	Geometric Mean: 35 cfu/100mL Single Sample: 276 cfu/100mL	NA	+/- 60%	NA

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Elements of a Quality Assurance Project Plan:

8. Special Training Requirements and Certifications

A. Create a table to list duties and any training or certification needed to perform the task.

B. List subcontractors including laboratories or other organizations that will be performing work associated with the project and define the certifications that are needed.

State Quality Assurance Plan Requirements

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Elements of a Quality Assurance Project Plan:

9. Documentation and Records

A. Itemize the documents and reports needed to support the QAPP.

State Quality Assurance Plan Requirements

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The following is a list specific reports to include in the QAPP:

- 1.Surface monitoring
- 2.Seafloor survey
- 3.Laboratory Reports(Including Results of DMRQA)
- 4.Sample collection reports
- 5.Data review and approval reports
- 6.DMR Reports
- 7.Annual Reports
- 8.Corrective Action Reports

Quality Assurance Requirements

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Implementation of a Quality Assurance Project Plan:

Measurement and Data Acquisition

- A. Sampling and Analysis SOPs
- B. Sample handling, tracking, preservation, chain of custody, and transportation process must be documented and trained.
- C. Method, holding times, detection limits, precision requirements for duplicates, calibration check accuracy limits
- D. Instrument calibration, checking requirements, and frequency
- E. Inspections and audits required by your QA plan
- F. Project oversight, data review, and validation

In House Testing and Sampling SOPs



APDES Required On-Site Sampling Tests

Table 2: Outfall 001 Seafood Processing Waste Outfall Monitoring

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow	Million Gallons per Day (MGD)	effluent	Daily	Measured or Estimated
Amount of waste discharged ¹	lbs/day	n/a	Daily	calculated
Hours of Seafood Processing	Hours/day	n/a	Daily	calculated
Total Residual Chlorine	mg/L	effluent	1/Quarterly when Discharging	Grab
pH	S.U.	effluent	1/Quarterly when Discharging	Grab
Temperature	°F	effluent	1/Quarterly when Discharging	Grab
Color	Color unit	effluent	1/Quarterly when Discharging	Grab
Dissolved Oxygen	mg/L	effluent	1/Quarterly when Discharging	Grab
Salinity	parts per thousand	effluent	1/Quarterly when Discharging	Grab

Note

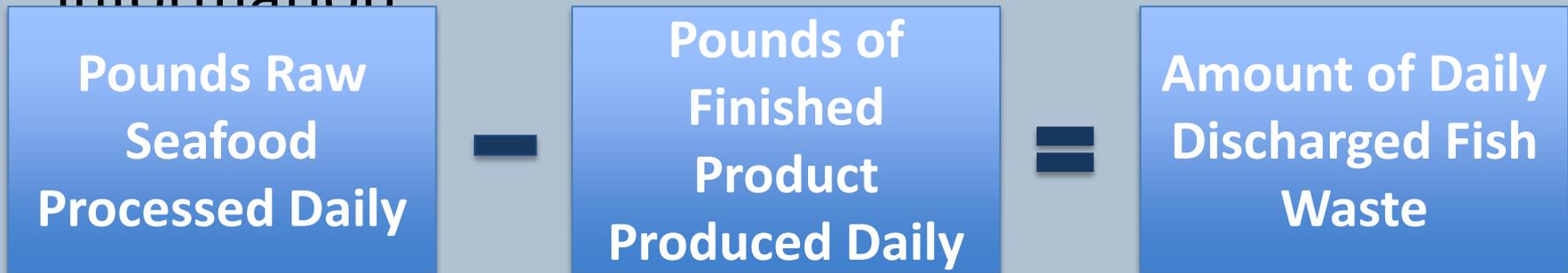
1. Amount of waste discharged = raw product minus finished product

In House Testing and Sampling SOPs



Amount of Fish Waste Discharged

SOP and log are required to record daily information



Parameter	Units	Sample Location	Sample Frequency	Sample Type
Amount of waste discharged	lbs/day	n/a	Daily	calculated

In House Testing and Sampling SOPs

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Hours of Seafood Processing

Vessels must track how long they are in one location while processing seafood and discharging waste.

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Hours of Seafood Processing	Hours/day	Lat/long of the location	Daily	calculated

In House Testing and Sampling SOPs

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Hours of Seafood Processing

SOP must define how the number of hours per discharge site are tracked and include a log recording daily fish processing and waste discharge start and stop times.

In House Testing and Sampling SOPs

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Wastewater pH, Temperature, and Color

An SOP must define testing:

- Equipment
- Calibration Requirements
- Quality Assurance Data Requirements
- Sample Collection Method

Parameter	Units	Sample Location	Sample Frequency	Sample Type
pH	S.U.	effluent	1/Quarterly when Discharging	Grab
Temperature	°F	effluent	1/Quarterly when Discharging	Grab
Color	Color unit	effluent	1/Quarterly when Discharging	Grab

In House Testing and Sampling SOPs

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Wastewater pH, Temperature, and Color

Since these are time sensitive analyses, sample collection method must include duplicates and other pre-sample collection activities that are performed to ensure timely testing.

The SOP should address *how* the amount of time between sample collection and sample analysis will be minimized.

SOP Analytical Testing

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Table 3: Outfall 001
Seafood processing waste monitoring at an off-site laboratory

Parameter	Units	Sample Location	Parameter	Units
Oil and grease	mg/L	effluent	1/Quarterly when Discharging	Grab
BOD ₅	mg/L	effluent	1/Quarterly when Discharging	Grab
Total Suspended Solids	mg/L	effluent	1/Quarterly when Discharging	Grab

SOP Shore side Analytical Testing



**Table 4: Outfall 002
Sanitary Wastewater Treatment System Effluent Monitoring**

Parameter	Units	Sample Location	Parameter	Units
Flow	gallons per day (gpd)	effluent	1/Quarterly when Discharging	Measured or Estimated
Total Residual Chlorine, BOD ₅ , TSS	mg/L	effluent	1/Quarterly when Discharging	Grab
Fecal Coliform (FC) Bacteria/	FC/100 mL	effluent	1/Quarterly when Discharging	Grab
Enterococci Bacteria	#/100 mL	effluent	1/Quarterly when Discharging	Grab

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B.3 SAMPLE HANDLING AND CUSTODY REQUIREMENTS

B.3.1 Sampling Procedures

See Section B.2 of this QAPP – Sampling Method Requirements SOP.

B.3.2 Sample Custody Procedures

Samples and sample containers will be maintained in a secure environment from the time the bottles leave the laboratory until the samples are received at the laboratory. The laboratories will maintain custody of bottles and samples using their normal custody procedures.

Samples must be in the sampler's possession or in a cooler sealed with signed and dated friable evidence tape on opposing sides of the cooler. When the cooler is sealed, the method of securing the samples must be such that tampering with samples or bottles is not possible. The cooler must be secured so that the lid cannot be removed without breaking the evidence tape or cutting the lock.

Transfer of samples will be accomplished using the laboratory's Chain-of-Custody (COC) form. When samples are transferred between personnel, such transfer will be indicated on the COC form with signature, date, and time of transfer. The COC will remain with the samples, sealed inside the cooler, until received by the laboratory. **Grantees should provide a copy of the contracted lab COC at the end of this QAPP.**

If custody is broken at any time during sample transfer, a note must be made on the COC form accompanying the sample. Upon receipt at the laboratory, the laboratory sample custodian will make note if a breach of custody has occurred (for example, if a custody seal has broken during transport).

B.3.3 Shipping Requirements

Packaging, marking, labeling, and shipping of samples will comply with all regulations promulgated by the U. S. Department of Transportation in 49 CFR 171-177. Staff should receive the necessary training for shipping samples or consult with the contracted laboratory for shipping instructions.

Samples will be individually packaged in sealed plastic bags. The sealed plastic bags will be placed into a bag-lined cooler with ice sealed in plastic bags or "blue-ice" to maintain a temperature of less than four degrees C. A temperature blank, 250 or 500 mL in size, will be placed in the cooler. Temperature will be measured prior to shipment and upon receipt at the lab. The chain of custody (COC) form will be placed in a plastic bag within the cooler. The cooler will be taped closed securely using packing tape at the last sampling site.

The six hour holding time limitation for the samples must be met. To accomplish this, this project will use a combination of transportation to get the samples from beach to laboratory within the specified hold time. For those projects without laboratories in their communities, samples will be packaged at

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Testing Methods and Quality Assurance

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Measurement/Data Acquisition

Critical Elements for Implementation of the QAPP:

1. Sampling Method and Documented Processes
2. Sample Handling and Chain of Custody
3. Analytical Methods Requirements
4. Quality Control Requirements
5. Instrument/Equipment Testing, Inspection, and Maintenance
6. Instrument Calibration and Frequency
7. Inspections/Acceptance Requirements for Supplies and Consumables
8. Data Management and Communications

Testing Methods and Quality Assurance

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Assessment/Oversight

Critical Elements:

1. Assessments and Response Actions
2. Reports to Management
3. Data Validation and Usability
4. Define Systems to Manage and Evaluate Outputs from Subcontractor Data Providers

End of Module 6A

MODULE 6A

