

**SAMPLING PLAN
FOR
WATER QUALITY MONITORING
BY
HUMBOLDT BAY OYSTER COMPANY**

INTRODUCTION

This sampling plan is for use by Humboldt Bay Oyster Company (the Company), a certified commercial shellfish harvester operating in Humboldt Bay, Humboldt County, California. Compliance with the provisions of this plan is a requirement of the Shellfish Growing Area Certificate issued by the California Department of Public Health (CDPH).

For the purposes of this plan, "shellfish" means all species of bivalve molluscan shellfish, including oysters, mussels, clams, and scallops.

The purpose of the plan is to provide the sampling data needed to support the sanitary survey of Humboldt Bay, and the classification and certification of the shellfish growing areas therein, in accordance with the standards and guidelines in the National Shellfish Sanitation Program (NSSP) Model Ordinance (2007).

Water quality monitoring by the Company will be conducted only by persons designated by the Company and who have been trained by CDPH concerning the procedures outlined in the sampling protocol contained in Appendix A of this plan. CDPH staff will conduct routine inspections of growing areas and will evaluate sample collection techniques, sampling protocol, and handling procedures.

Nothing in this plan restricts CDPH or any agency assisting CDPH from engaging in sampling or any other activities pertaining to sanitation of shellfish. Nothing in this plan precludes CDPH from taking any other necessary actions it is otherwise legally authorized to take to ensure sanitation of shellfish and to prevent human illness due to consumption of shellfish.

SAMPLING PLAN PROVISIONS

1. The Company will arrange for the collection, transportation, and analysis of all samples necessary for classification and monitoring of its shellfish growing area in accordance with the standards and guidelines in the current edition of the NSSP Model Ordinance (2007), and for all associated costs.
2. The Company will follow the water sampling procedures outlined in Appendix A to this plan.

3. The Company will provide its sampling personnel with all equipment and supplies needed for sample collection, preservation, and transportation to the laboratory named below. A list of equipment and supplies needed is included in the sampling protocol provided as Appendix A to this plan.
4. Laboratory analyses will be primarily microbiological analyses of water samples for fecal coliform bacteria, but may include microbiological assays of a limited number of shellfish meat samples when requested by CDPH shellfish program staff for a stated purpose, such as to investigate and/or confirm shellfish safety following a suspected pollution event or illness.
5. Any laboratory utilized by the Company to perform analysis of shellfish and shellfish growing waters must be accredited by the CDPH Environmental Laboratory Accreditation Program (ELAP) for shellfish and shellfish growing waters. The Company currently uses Humboldt County Public Health Laboratory (529 "I" Street, Eureka, CA 95501) to analyze samples. The Company shall direct the laboratory to analyze samples for fecal coliform and salinity; the latter may be omitted if the Company can provide reliable field measurements for salinity.
6. Upon completion of the analysis of each set of samples submitted by the Company, the Company shall direct Humboldt County Public Health Laboratory to transmit a report of the fecal coliform results directly to CDPH as soon as possible following completion of the assay: Results should be faxed to (916) 449-5665 or emailed to Eric.Trevena@cdph.ca.gov and mailed to California Department of Public Health, Environmental Management Branch, ATTN: Eric Trevena, 1616 Capitol Ave., 2nd Floor, MS 7404, P.O. Box 997377, Sacramento, CA 95899-7377.
7. The company shall instruct the laboratory to notify CDPH and the Company immediately whenever the fecal coliform results exceed 43 MPN. Following this notification the Company shall resample the growing area as soon as possible to determine if there is a persistent impact to water quality. If Sample results are greater than 43 MPN/100mL the Company must follow *Sampling Plan Provision number 13 through 16 of this Plan*. Following this notification the Company shall resample the growing area as soon as possible to determine if there is a persistent impact to water quality.
8. The Company will transport samples to the laboratory, packed in an insulated cooler with frozen gel packs to maintain proper temperature control at all times (1°-10° C). Samples must arrive at the laboratory within 24 hours of collection. It is highly preferable to have samples arrive at the laboratory within four (4) hours

of collection.

9. CDPH staff will provide training assistance to persons designated by the Company in the correct collection and handling techniques for shellfish and shellfish growing water samples, as outlined in Appendix A. CDPH will conduct periodic site visits to verify that the grower is complying with the requirements of this sampling plan. A list of Company staff currently trained to collect the required samples is provided in Table 1.
10. The Company shall collect samples according to the sample schedule in Appendix B unless the sampling date occurs during a rainfall closure. If the sample date occurs during a rainfall closure, the compliance sampling shall be conducted on the first open day after the rainfall closure. In these cases, the Company shall coordinate with the laboratory to determine the soonest possible day the samples can be collected.
11. The Company shall notify CDPH/PSU in writing prior to the scheduled sampling date when sampling will not occur on the scheduled date (and the area is in an open status) and shall request an alternative date. If CDPH/Preharvest Shellfish Unit (PSU) approves the request, a new date will be assigned. If the request is not approved, the grower will be required to sample on the original date specified in the schedule. Monthly samples not collected on the scheduled or approved alternate date, are still required to be collected but will not be identified as compliance samples.
12. This plan may be revised by CDPH at any time because of changing conditions or other new information that it shall state in writing to the Company.
13. Any sample collected from an open area that contains fecal coliform concentrations greater than 43 MPN/100 mL but less than 107 MPN/100 mL¹ must be re-sampled immediately at the certified grower's expense. Re-sampling must be conducted within 24 hours of notification of initial sample results². If re-sampling is not conducted within the specified time frame, the portion of the lease or growing area represented by the sampling station in question shall be closed

¹ The 99th percentile of a population with a geometric mean of 14 MPN/100 mL and an 90th percentile of 43 MPN/100 mL.

² This requirement is contingent on laboratory support and growing area status. CDPH recognizes that re-sampling cannot be conducted when the lab is not accepting samples (e.g., on weekends and holidays), but must be conducted as soon as possible when the lab reopens. If the growing area closes due to rainfall, re-sampling should be

closed for harvest until re-sampling is conducted and results demonstrate that fecal coliform concentrations have returned to acceptable levels. The grower should refrain from harvesting from the area represented by the sampling station until re-sample results are received and determined acceptable relative to the growing area standards.

14. If re-sampling results are greater than 43 MPN/100 mL fecal coliform, the represented portion of the lease or growing area shall immediately be closed to harvest. The area will be considered for reopening when further re-sampling produces a result below 14 MPN/100 mL fecal coliform. In certain cases, CDPH staff may consider reopening based on a re-sample result below 43 MPN/100 mL *combined with a declining trend in fecal coliform levels at the compliance sampling station and surrounding areas*. In order to establish fecal coliform trends in surrounding areas it is recommended that re-sampling be conducted both at the primary compliance station(s) and other surrounding stations. CDPH will advise grower on what stations should be sampled.
15. A sample collected from an open area that contains greater than 107 MPN/100 mL fecal coliform shall result in immediate closure of the portion of the growing area represented by the sampling station from which the elevated sample was collected. The area will be considered for reopening when re-sampling produces a result below 14 MPN/100 mL fecal coliform or a result below 43 MPN/100 mL *combined with a declining trend in fecal coliform levels at the compliance sampling station and surrounding areas*. Reopening criteria are as described above.
16. If re-sampling continues to yield elevated fecal coliform levels CDPH/PSU will conduct an investigation, which may include additional sampling, to confirm the elevated indicator levels and determine the source, and will notify all relevant agencies. If a source is identified, CDPH/PSU will refer the matter to the appropriate regulatory agency for corrective action. The shellfish growing area will remain closed until the pollution problem is corrected, and the growing area is determined to be free of pathogens and to meet NSSP standards, or until the area is correctly reclassified by CDPH/PSU. CDPH will analyze the most recent water quality data and determine if the current classification is correct or if the growing area needs to be closed or reclassified.

Any questions regarding this sampling plan should be directed to Eric Trevena at

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(916) 449-5695 or Gregg Langlois at (510) 412-4635 or in writing to: California
Department of Public Health, Environmental Management Branch, ATTN: Eric Trevena,
1616 Capitol Ave., 2nd Floor, MS 7404, P.O. Box 997377, Sacramento, CA 95899-7377
(FAX (916) 449-5665).

APPENDIX A
SAMPLING PROTOCOL
FOR
SHELLFISH GROWING AREA WATER QUALITY MONITORING
BY
HUMBOLDT BAY OYSTER COMPANY

A. EQUIPMENT AND SUPPLIES NEEDED BY SAMPLER:

1. Sterile water sample bottles (approximately 110 mL or larger size), with numbered labels, 1 per sample plus several extras.
2. Sample examination forms (i.e., lab slips, see Figure 2), 1 per sample, or other appropriate form. [NOTE: Appropriate sample bottles and lab slips may be obtained from the certified shellfish laboratory at which the Company has established an account.]
3. Water sampling pole (a broom handle with a radiator hose clamp bolted to one end to hold a sample bottle is sufficient).
4. Water thermometer, Celsius, capable of reading to nearest 1/2 degree.
5. Water bucket (optional).
6. Cooler or insulated shipping container with frozen gel packs.
7. Clipboard or other writing surface.
8. Pen or pencil.
9. Watch.
10. Sample station map (Figure 1).
11. Appropriate data field sheet (Figure 2).
12. Utility boat in safe operating condition with required safety and personal flotation equipment.

B. WATER SAMPLING PROCEDURES (INSTRUCTIONS TO SAMPLER)

1. General Requirements
 - a. Under a systematic random sampling design for compliance monitoring of growing area water quality, collect samples at the primary sampling stations under adverse conditions according to the schedule in Appendix B.

- b. Collect one sample from the following primary sampling stations (Figure 1):

STATION #	LOCATION
20	Mad River Channel at 90 degree bend
25	West side of Mad River Channel, at southern side channel
26	West side of Mad River Channel, at larger, forked side channel
27	Mad River Slough, HBOC wet storage

- c. If a scheduled sampling date occurs during a harvest closure, the first available day (i.e., the day of reopening) shall be sampled instead.
- d. Samples are to be collected on an outgoing tide.
- e. Provide ample notification to Humboldt County Public Health Laboratory, tel. (707) 268-2179, to ensure that the scheduled sample(s) will be analyzed. Provide the following information: type (shellfish growing water) and number of samples you will send, date, and approximate time of delivery to lab.
- f. Ensure that enough sterile sample bottles and laboratory sample submission forms (lab slips) are on hand. [NOTE: Any sample bottles on hand must be stored in a clean, dry place free of vermin or other possible source of contamination.]
- g. If weather or other conditions are hazardous, postpone sampling until the next safe opportunity (appropriate tide when growing area is open). If a sampling is postponed, notify the laboratory as soon as possible by telephone. CDPH **must be notified of any changes to the sampling schedule (Appendix B) prior to the scheduled sampling date.**

2. Sample Collection Procedures

- a. Insert empty sample bottle into holder of sampling wand.
- b. Carefully remove cap and hold in one hand so inside surfaces of cap and bottle are not touched or otherwise contaminated.
- c. Avoiding visible debris or floating material, dip bottle underwater, mouth down, and with a slow sweeping motion to one side, turn bottle right side up

- to fill. Take sample beneath the surface about six inches and no deeper than one foot.
- d. Bring bottle to surface and tip out a little water to produce a small, about one-quarter inch, air space.
 - e. Carefully replace cap, without contaminating the sample, and screw on tight. [NOTE: If a sample bottle accidentally becomes contaminated, do not use; sample with another bottle and return contaminated bottle to lab to be re-sterilized.]
 - f. Record on data field sheet and sample submission sheet (Figure 2) the station number, sampling time, bottle cap number, water temperature, and salinity.
 - g. Place sample bottle in cooler. [NOTE: Use frozen gel packs in cooler, not wet ice, to avoid possible contamination of sample from contact with melt water.]
 - h. Collect an additional sample at the first station and label it "Temperature Blank". The temperature blank shall be handled identically to all other water samples. Immediately upon receipt of the samples the laboratory will check the temperature of the temperature blank to document that samples arrived within the proper temperature range (see 2.I. for discussion of holding temperature exceptions).
 - i. Record water temperature at each station, to the nearest 1/2 degree Celsius. Take temperature of water collected in a bucket or alongside boat; do not insert thermometer or anything else into sterile sample bottle.
 - j. Complete one lab slip for each sample. Request fecal coliform and salinity; the latter may be omitted if the Company can provide reliable field measurements for salinity.
 - k. Transport or ship samples so they are delivered to the laboratory as soon as possible, and no more than 24 hours after first sample was collected. Samples delivered to the laboratory must be accompanied by a completed field data and sample submission sheet. Samples should be kept in a cooler with frozen gel packs or placed in a refrigerator adjusted to a temperature of 4° Celsius (39° F). Do not use wet ice or dry ice. Samples must be held at 1° - 10° C.

- l. In cases where the elapsed time between sample collection and delivery to the laboratory is minimal, the sample temperature must be at or below the ambient water temperature measured in step 2.i. Under this circumstance there is inadequate time for the sample to chill to the proper temperature range. However, the sample(s) must be handled in accordance with step 2.g. such that an increase in temperature does not occur.
- m. Mail or fax a copy of completed field data and sample submission sheet to California Department of Public Health, Environmental Management Branch, ATTN: Eric Trevena, 1616 Capitol Ave., 2nd Floor, MS 7404, P.O. Box 997377, Sacramento, CA 95899-7377 (FAX (916) 449-5665; email: Eric.Trevena@cdph.ca.gov)).

TABLE 1 - Company Personnel Currently Certified to Collect Samples	
NAME	DATE OF CERTIFICATION
Todd Van Herpe	June 24, 2008
Conor Eckholm	June 24, 2008

APPENDIX B
SAMPLING SCHEDULE
FOR
SYSTEMATIC RANDOM SAMPLING
BY
HUMBOLDT BAY OYSTER COMPANY

Under the requirements of the NSSP Model Ordinance (2007) regarding systematic random sampling, Humboldt Bay Oyster Company (HBOC) shall collect water samples from the primary stations on the first Tuesday of *every month*. The primary stations are listed in Appendix A. The appropriate sampling dates are listed below. It is the responsibility of HBOC to ensure that this sampling schedule is met. The water samples are necessary to generate data to verify that the growing waters meet the shellfish growing water criteria given in the NSSP Model Ordinance. Any deviation from this schedule must be approved by CDPH prior to the scheduled sampling date. Any deviations from this schedule that is not approved by CDPH shall be grounds for reclassification of the growing area and for suspension or revocation of the Shellfish Growing Area Certificate. If the sampling date occurs during a rainfall closure, the first available day (i.e., the day of reopening) shall be sampled instead.

SAMPLING DATES:

January 5, 2010
February 2, 2010
March 2, 2010
April 6, 2010
May 4, 2010
June 1, 2010
July 6, 2010
August 3, 2010
September 7, 2010
October 5, 2010
November 2, 2010
December 7, 2010
January 4, 2011
February 1, 2011

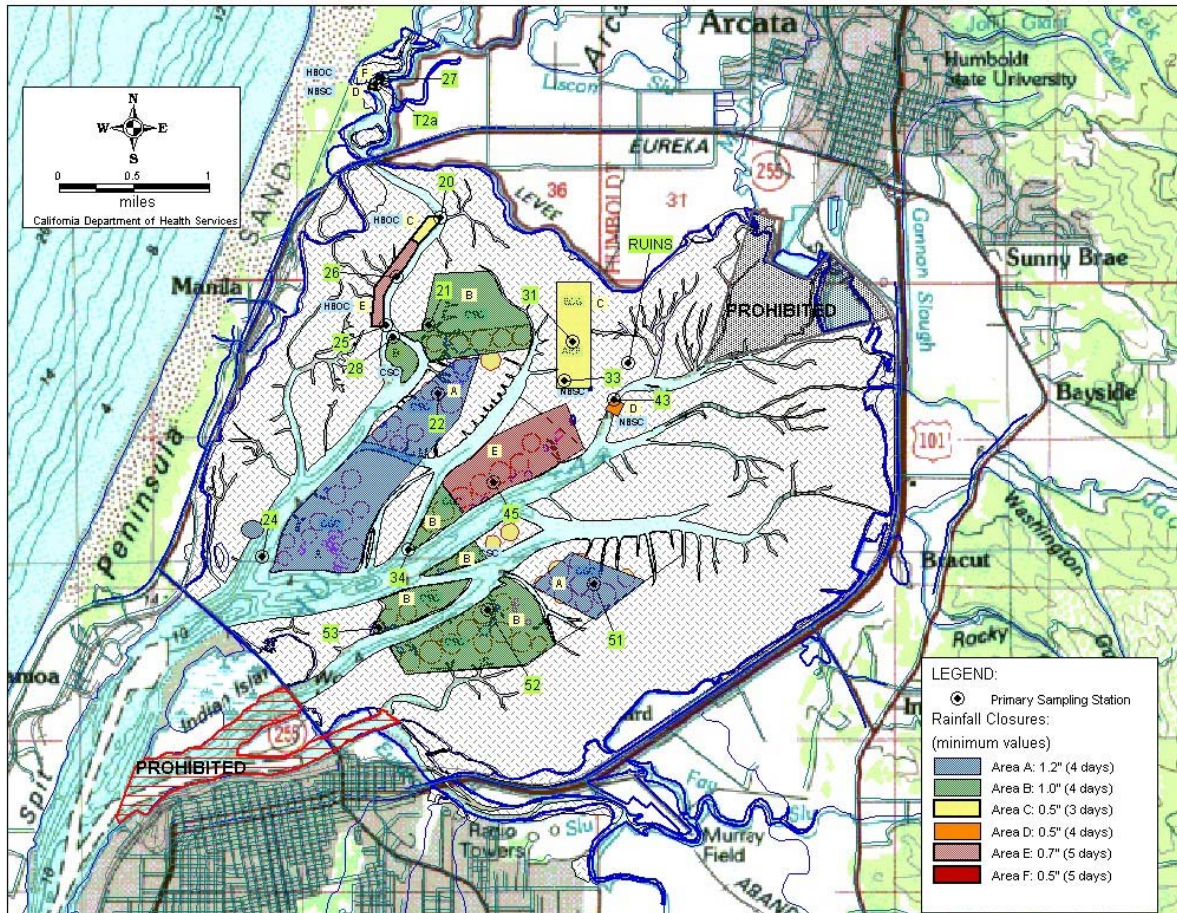


Figure 1. Location of primary water sampling stations for required monthly water quality monitoring of shellfish growing areas in Humboldt Bay, Humboldt County, California.

Water Chain of Custody for **Humboldt Bay Oyster Company**

Collected by:	*****LAB USE ONLY*****
Date/Time Delivered:	Date/Time Received:
Delivered By:	Received By:

Lab #	Client Name & Site	Date/Time Collected	Sal.	temp	Bottle #	Type of Sample	Test	Comments	Flag
	HBOC Site: 20					Bay Water	15-MPN		CDPH
	HBOC Site: 25					Bay Water	15-MPN		CDPH
	HBOC Site: 26					Bay Water	15-MPN		CDPH
	HBOC Site: 27					Bay Water	15-MPN		CDPH
	Site: Temp. Control					Bay Water	Temp		CDPH

Figure 2. Example of a data field sheet and sample submission sheet.