Template for Alabama Department of Public Health Oyster Farm Operational Plan

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Anyone wishing to operate a commercial oyster farm in Alabama is required to have an approved operational plan and an aquaculture permit issued by the Alabama Department of Public Health (in addition to any other required permits and permissions).

To assist applicants, a template of an operational plan for a commercial oyster farm is provided here. This operational plan is intended for operations that intend to raise and harvest shellstock that is greater than 25 mm (approximately 1 inch). This template also allows the applicant to possess and handle smaller oysters ($\leq$ 25 mm), which are designated as seed oysters. This template would not apply for operations that intend to handle solely seed oysters, often called nursery operations. Applicants interested in solely nursery operations can contact specialists at Alabama Cooperative Extension System and the Alabama Department of Public Health.

To use the template, applicants should, at a minimum, replace highlighted blocks of text with information specific to the operation being proposed. This modified plan should be submitted to the Alabama Department of Public Health for approval. Upon submission, the applicant should schedule a time to meet with Public Health officials to review harvest rules and guidelines that pertain to public health. Once the operational plan is approved and any other requirements are met for the permit, the applicant should be issued an aquaculture permit.

Operational Plan
APPLICANT NAME
BUSINESS NAME
APPLICATION DATE

Objective

I plan to grow premium oysters to be sold on the half-shell market. Single seed oysters will be purchased from sanctioned sources and grown in hanging or floating baskets or cages. I plan on establishing (insert number) runs with approximately (insert number) pilings/anchors and (insert number) hanging baskets/cages/unit that will grow out (insert number) oysters to market size per year in the designated area.

Operational Plan

A. Obtaining seed and market size oysters

Oysters for farming may be obtained from several sources.

1. Hatchery produced seed oyster (≤ 25 mm) may be obtained from either Auburn University Shellfish Laboratory, Louisiana Oyster Growers & Dealers Association, or any other source sanctioned by Alabama Department of Public Health (ADPH) and the Marine Resources Division of Alabama Department of Conservation and Natural Resources (MRD).
2. Seed oysters (≤ 25 mm) may be obtained from ADPH sanctioned nursery seed operations located in "conditionally approved" waters or from other water sources deemed acceptable under the National Shellfish Sanitation Program guidelines. Seed from water sources other than "conditionally approved" will not be harvested for a minimum of 6 months after transfer. Possible suppliers include Auburn University Shellfish Laboratory and any other ADPH sanctioned oyster seed supplier.
3. Larger oysters (> 25 mm) may be obtained from ADPH sanctioned nurseries or permitted growers in "conditionally approved" waters. A record of the time out of the water, originating location, means of conveyance to the farm, and lot location on farm will be kept. The intent to move oysters should be communicated by e-mail or phone call to ADPH and MRD to notify these agencies of the intent to move oysters and describe the action to be undertaken. See section on Time Out of Water Restrictions.

B. Grading, tumbling, and thinning of oyster seed and oysters for optimal growth.

Oysters may initially be stocked into grow-out units (bags or baskets) at high densities while they are small. Oysters must be graded and densities lowered as they grow. Also tumbling during the grading process improves shell consistency and shell thickness.

These processes will require removal of the oysters from the water for short periods of time.

1. Oysters may be removed from the growing waters for grading tumbling, and density reduction. This action will take place on the oyster farm site or will be transported in grow-out containers by boat or truck to DESTINATION.
2. If action takes place at the oyster farm site, oyster will be washed with seawater from the "conditionally approved" farm site. If action takes place at DESTINATION, seed may be washed with potable fresh water during this process. Seed will not be washed or submerged in any other water than that described in this section.
3. See section on Time Out of Water Restrictions.

C. Periodic desiccation of oyster for fouling control.

Fouling of oysters and gear by other organisms such as barnacles, mussels, oyster spat, bryozoans, and algae are common and must be controlled to maintain a premium product. Desiccation is the most effective method for this control.

1. For oysters more than 30 days from harvest, oysters and gear may be raised above the water level periodically (as frequently as weekly) to desiccate fouling organisms when they are at a small (fresh set) size. Time out of growing waters will not exceed 30 hours. See section on Time Out of Water Restrictions.
2. For oysters less than 30 days from harvest, oysters and gear may be raised above the water level periodically (as frequently as weekly) to desiccate fouling organisms when they are at a small (fresh set) size. See section on Time Out of Water Restrictions.

D. Pre-harvest cleaning and grading.

To maintain a consistent and appealing product, oysters may be cleaned and graded for quality and size prior to harvest.

1. Oysters may be removed from growing waters for cleaning and grading prior to harvest.
2. Oysters will be rinsed with fresh potable water or seawater from the farm site in conditionally approved water. Fouling organisms will be removed from the shell.
3. Oysters will be graded for size and quality.
4. See section on Time Out of Water Restrictions.
5. Records of time out of water, minimum time to harvest, and lot location on the farm will be maintained.

E. **Time Out of Water Restrictions**

To ensure that there is no elevated risk from *Vibrio* bacteria from any aquaculture activities, the following restrictions on time out of water and required days of re-submersion will be observed based on calendar month for any action that removes the oysters from the water. Records of time out of water, minimum time to harvest, and lot location on the farm will be maintained.

a. April through October
    i. During this period, oysters that are out of the water for **less than or equal to** the "maximum time allowed on harvest reef" described in the time/temperature matrix described in Appendix A during the months of April through October will be re-submerged for a minimum of **7 days** before harvest. If the time out of water exceeds time limits established in time/temperature matrix described in Appendix A for the months of April through October, the oysters will be re-submerged for a minimum of **30 days** before harvest.
b. November through March
    i. During this period, oysters that are out of the water for **less than or equal to** the "maximum time allowed on harvest reef" (14 hours for November and 18 hours for December through March as indicated in Appendix B) will be re-submerged for a minimum of **7 days** before harvest. If the time out of water exceeds these time limits described in Appendix B, the oysters will be re-submerged for a minimum of **30 days** before harvest.

F. Harvest

1. Oysters will only be harvested from the designated area, which is in conditionally approved waters, in the open status as declared by the Alabama Department of Public Health.
2. Harvest of oysters will follow the time/temperature (Appendix A) and tagging requirements as established by ADPH and MRD.
3. Harvested oysters intended for the live shell-stock market will be sold to ADPH approved seafood dealers permitted to handle live shell-stock oysters.
4. Harvested oysters intended for the shucked or post-harvest treatment market will be sold only to ADPH licensed seafood dealers permitted to handle shucked oysters.
5. A daily harvest log will be maintained during harvest practices and provided to the seafood dealer.
6. Harvest records will be maintained for two years and provided to Marine Resources Division of ADCNR and ADPH upon request.

The 30 day restrictions in this plan will become 14 days if proposed changes are approved by the ISSC or possibly lower thereafter if other study results accepted by FDA show lower re-submergence requirements.

We understand that this operational plan is only for the aquaculture operation only. We understand that there are other requirements if we choose to become a shell-stock dealer or shipper.

Appendix A

Time limits for harvest and refrigeration of shellfish to be sold to the final consumer as shellstock or for half-shell service.

MONTH	DAILY MAXIMUM WATER TEMPERATURE	MAXIMUM TIME ALLOWED ON HARVEST REEF FOR ONE TRIP	MAXIMUM TIME ALLOWED FROM LANDING TO DELIVERY TO PERMITTED PROCESSOR	*MAXIMUM TIME TO COOL OYSTERS TO 55°F,from time of receiving	
JANUARY	56°F	Set by ADCNR – MRD**	1.5 hours	6 hours	
FEBRUARY	57°F	Set by ADCNR – MRD**	1.5 hours	6 hours	
MARCH	63°F	Set by ADCNR – MRD**	1.5 hours	6 hours	
APRIL	70°F	Set by ADCNR – MRD**	1.5 hours	6 hours	
MAY	78°F	4 hours	1.5 hours	6 hours	
JUNE	85°F	1 hours	1.5 hours	6 hours	10 hours to 50°F
JULY	86°F	1 hours	1.5 hours	6 hours	10 hours to 50°F
AUGUST	86°F	1 hours	1.5 hours	6 hours	10 hours to 50°F
SEPTEMBER	83°F	2 hours	1.5 hours	6 hours	10 hours to 50°F
OCTOBER	74°F	5 hours	1.5 hours	6 hours	
NOVEMBER	66°F	Set by ADCNR – MRD**	1.5 hours	6 hours	
DECEMBER	56°F	Set by ADCNR – MRD**	1.5 hours	6 hours	

"Maximum time allowed on harvest reef for one trip" based on National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish, 2007 Revision, Section II, Parts .04 and .05, and allows 1.5 hours for transport time from harvest area to approved refrigeration. This delivery time is noted in "Maximum time allowed from landing to delivery to permitted processor".

"Daily maximum water temperature" source is Middle Bay Light weather station, maintained by Dauphin Island Sea Lab and is the monthly average (mean) for the years 2007 – 2012.

*Time limits apply to permitted shellfish processing facilities (dealers) receiving shellstock and shall be included in the permitted shellfish processing facilities' HACCP plan.

Appendix B

V. Vulnificus Risk Calculator (mean water/air temperatures are for 2012 Middle Bay Light, Mobile Bay, AL)

month	water temperature (F)	Baseline air temperature during harvest (F)	Baseline: maximum time unrefrigerated (hr)	Baseline: maximum time to cooldown (hrs)	Baseline: # of servings	air (oyster) temperature during harvest (F)	maximum time unrefrigerated (hr)	maximum time to cooldown (hrs)	# of servings	mean log10 Vv/g at retail	risk (per 100,000 servings)	expected number of cases	# of cases for the baseline scenario	expected % reduction from baseline
Jan	59	62	18	10	128,000	62	8	10	108,800	0.78	0.03	0.04	0.06	41.1%
Feb	59	62	18	10	132,000	62	8	10	112,200	0.78	0.03	0.04	0.07	41.1%
Mar	60	71	18	10	151,000	71	8	10	128,350	1.4	0.13	0.16	0.42	61.1%
Apr	72	74	12	10	131,000	74	8	6	100,215	3	1.64	1.65	3.22	48.8%
May	75	82	12	10	110,000	82	4	6	84,150	3.2	2.24	1.88	4.75	60.4%
Jun	86	85	12	10	105,000	85	1	6	80,325	3.6	2.89	2.32	5.24	55.7%
July	87	87	10	10	97,000	87	1	6	74,205	3.7	2.96	2.20	4.73	53.5%
Aug	86	86	10	10	88,000	86	1	6	67,320	3.6	2.93	1.97	4.24	53.5%
Sep	82	84	12	10	99,000	84	2	6	75,735	3.6	2.88	2.18	4.84	54.9%
Oct	75	78	12	10	127,000	78	5	8	97,155	3.3	2.28	2.21	4.66	52.5%
Nov	63	67	14	10	146,000	67	8	10	124,100	1.6	0.22	0.27	0.51	47.0%
Dec	61	64	18	10	149,000	64	8	10	126,650	1.2	0.09	0.11	0.21	46.2%
					1,463,000				1,179,205			**15.03**	32.94	54.4%

NEED 15 or 16

Ten Percent Reduction # Servings

Apr	111350
May	100215
Jun	93500
Jul	84150
Aug	89250
Sep	80325
Oct	82450
	74205
	74800
	67320
	84150
	75735
	107950
	97155