

OPERATIONAL PLAN

BUSINESS NAME

ADDRESS

Objective

BUSINESS NAME plans to grow premium oysters (*Crassostrea virginica*) for the half-shell market in the Mississippi Department of Marine Resources (MDMR) Commercial Aquaculture Park. Single seed oysters will be purchased from approved sources and grown in hanging/floating baskets or cages. *BUSINESS NAME* plans to install 10-20 runs with approximately 30 pilings/anchors and 100 cages that will grow out 100,000 oysters to market size per year in the designated area. The oysters will then be harvested for consumer market. A diagram for *BUSINESS NAME* layout will be submitted and approved upon final execution of lease agreement between the MDMR, the Secretary of State for Mississippi and the Saint Ella Oyster Farms.

BUSINESS NAME will adhere to and abide by all provisions of the Commercial Aquaculture Harvest Permit, Public Trust Tidelands sub lease between MDMR and SOS, and all other rules and regulations applicable to oyster harvesting, including management plan criteria for the shellfish growing waters containing the lease as outlined in Appendix A.

A. Location

All oysters will be grown in the MDMR Commercial Aquaculture Park. Lease plots will be assigned once all requirements from the Off-Bottom Oyster Aquaculture Training Program have been completed. Any reference to MDMR Commercial Aquaculture Park will correspond with coordinates shown in this section.

SE	30.359267	-88.837032
NE	30.363233	-88.834701
SW	30.372384	-88.868619
NW	30.377663	-88.86537

B. Record retention

Complete and accurate records shall be maintained for at least two years by *BUSINESS NAME*. These records shall include:

1. Source of shellfish, including seed
2. Dates of cultivation, transplanting or harvest

C. Obtaining seed and market size oysters

Oysters for farming may be obtained from several sources.

1. Hatchery produced seed oysters (≤ 25 mm) may be obtained from an approved source sanctioned by the MDMR Aquaculture Program or Mississippi Department of Agriculture and Commerce (MDAC).
2. Seed oysters (≤ 25 mm) may be obtained from MDMR sanctioned nursery seed operations located in water sources deemed acceptable under the National Shellfish Sanitation Program guidelines. Seed from water sources other than "approved" or "conditionally approved" will not be harvested for a minimum of six months after transfer. (Section II NSSP Model Ordinance – Chapter VI Section .03 Seed Shellstock)
3. Larger oysters (> 25 mm) may be obtained from MDMR sanctioned nurseries or permitted growers in "approved" or "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 and submitted monthly to the MDMR Aquaculture Program. The intent to move oysters will be communicated by e-mail or phone to MDMR to notify the intent and describe the action to be undertaken. Please reference section E. Time Out of Water Restrictions below.
4. If seedstock will be purchased from an out-of-state supplier, *BUSINESS NAME* must submit a transfer notice (in writing) that covers the transportation of out-of-state seedstock, making the purchase legal. Molluscan shellfish aquaculture operations must only culture species native to the Gulf of Mexico. Polyploid native species are permitted. Imported shellfish seed stock to be used for grow-out in Mississippi waters must be first generation descendants of broodstock who originated in the Gulf of

Mexico. The hatchery where the shellfish seed stock was produced must provide documentation of broodstock origin.

D. 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 (< 25mm). Oysters must be graded, and densities lowered, as they grow. Tumbling during the grading process also 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 by boat for grading, tumbling and density reduction. These cultivation actions may occur at:
 - a. The MDMR Commercial Aquaculture Park
 - b. The Biloxi Small Craft Harbor at the MDMR aquaculture tumbler
 - c. ADDRESS
2. If action takes place in the MDMR Commercial Aquaculture Park, oysters will be washed with seawater from the farm site. If action takes place at the Biloxi Small Craft Harbor in the MDMR aquaculture tumbler, oysters will be washed with potable fresh water during this process.
3. Please refer to section G. Time Out of Water Restrictions below.

E. Periodic desiccation of oysters 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 one of the most effective methods for this control.

1. For oysters more than 14 days from harvest, oysters and gear may be raised above the water level periodically (as frequent as weekly) to desiccate fouling organisms. Time out of growing waters will not exceed 30 hours. Please refer to section G. Time out of water restrictions below.
4. For oysters 14 days or less from harvest, oysters and gear may be raised above the water level periodically (as frequent as weekly) to desiccate fouling organisms. Please refer to section G. Time out of water restrictions below.

F. 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 waters. Fouling organisms will be removed from the shell.
3. Oysters will be graded for size and quality. Please refer to section G. Time out of water restrictions below.
4. Records of time out of water, minimum time to harvest and lot location on the farm will be maintained by the BUSINESS NAME.

G. Time Out of Water Restrictions

To ensure that there is no elevated risk of *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 by the BUSINESS NAME. Oysters that are out of the water for **less than or equal to** the "maximum time unrefrigerated" described in the time/temperature requirements in the current Mississippi oyster lease harvester permit will need to be re-submerged for a minimum of **7 days** before harvest. If the time out of water exceeds the time limits established in the time/temperature matrix, oysters will be re-submerged for a minimum of **14 days** before harvest.

H. Harvest

1. Oysters will only be harvested from the designated area (“approved” or “conditionally approved”) in the open status as declared by the MDMR.
2. Harvest of oysters will follow the time/temperature requirements in the current Mississippi oyster lease harvester permit and tagging requirements as established by MDMR Aquaculture Bureau.
3. Harvested oysters intended for the live shellstock market shall only be sold to MDMR certified seafood dealers.
4. Harvested oysters intended for the shucked or post-harvest treatment market shall only be sold to MDMR certified seafood dealers.
5. A daily harvest log will be maintained by *BUSINESS NAME* during harvest practices and provided to the certified seafood dealer.
6. Harvest records will be maintained by the *BUSINESS NAME* for two years and provided to MDMR and upon request. Section II NSSP – Chapter VI Section .02 G.
7. Harvested oysters may be transported to: *ADDRESS* for shipping.

I. Lease Layout

***Attach schematic of planned lease layout*

The MDMR recognizes that this operational plan applies to the aquaculture operation only. *BUSINESS NAME* recognizes that there are other requirements necessary to become a shellstock dealer or shipper.

Submitted by: _____
Name of Manager/Business Owner

Approved by: _____
MDMR Aquaculture Representative

Date Submitted _____

Date Approved: _____

Appendix A

Chapter 1: Introduction

This Part establishes the requirements for aquaculture activities in marine waters that require a permit under the provisions of the Coastal Wetlands Protection Act and the Mississippi Aquaculture Act of 1988, and said requirements are to be used in making permit decisions regarding regulated activities in marine waters and provide regulatory guidance for industry and resource agencies.

Source: MISS. CODE ANN. §§ 49-15-15, 49-27-1, 79-22-1

Chapter 2: Definitions

Rule 2.1 Definitions

- A. ISLANDS – All islands in the territorial waters of the State of Mississippi, which includes, but is not limited to, Petit Bois, Hom, East Ship, West Ship, Cat, Round and Deer Islands.
- B. MILE - For the purposes of this Title and Part, a mile shall be interpreted to mean one nautical mile.
- C. NET-PEN –A net-pen shall refer to any aquaculture system that uses nets or cages suspended in the water column to grow fish or invertebrates excluding molluscan shellfish.

Source: MISS. CODE ANN. §49-15-15

Chapter 3: Requirements Applicable to All Aquaculture Operations

Rule 3.1 The following requirements shall apply to all types of aquaculture activities in the marine waters of the State of Mississippi.

- A. Aquaculture operations must not discharge any waste materials into the surrounding waters. For purposes of this section, waste materials include solids, debris, sanitary and kitchen wastes, oil, and grease; but exclude fouling organisms, the excrement of the cultured species, and commercially prepared feeds fed to them.
- B. All aquaculture operations' structures must be properly marked and lighted in accordance with U.S. Coast Guard regulations. In order to minimize the impacts to sea turtles, the structure and any associated vessels moored adjacent to it shall use external lighting systems composed of low pressure sodium vapor lights with a maximum of 55 watts per bulb or any other light source proven and documented not to disturb sea turtles. Coast Guard required navigation lights are exempt from this guideline.
- C. Generally, only non-lethal methods of predator control shall be allowed. However, invertebrates are exempt from this guideline. To ensure that the applicant has taken measures to prevent the deaths or harm of potential predators, a predator control plan that details the type of predator controls being proposed (i.e. mesh size of netting, color of netting, height of netting, etc.) for each aquaculture operation shall be approved by the MDMR prior to the issuance of a permit.
- D. Aquaculture activities in State waters must be performed in a manner that would not cause substantial negative impacts to tidal marsh or coastal or marine habitats such as seagrass beds, naturally occurring oyster and clam beds, or endangered species such as sea turtles and Gulf Sturgeon.

- E. All applicants shall provide the MDMR with a plan for securing or moving, if necessary, the aquaculture facility in the event of a significant storm or hurricane. The permitted facility shall comply with the approved storm plan in the event of a significant storm or hurricane. The aquaculture operation must maintain nets and moorings in a whole and intact condition. No gear may be abandoned. Any net or gear accidentally dropped or lost during storm events that is not recovered immediately shall be tagged with a float, positioned using differential Global Positioning System, and reported to the MDMR within 24 hours. The lost net or gear must be recovered by the aquaculture operation within 30 days of the date lost. The aquaculture operation must notify the MDMR on the date the net or gear is recovered.
- F. All moorings and cages must have attached a corrosion resistant metal or plastic tag. The tag must be legibly and permanently stamped with letters containing the leaseholder's full name. The minimum height of the letters must be at least 3/16 of an inch.
- G. Nets, mooring and rigging lines, and anti-predator equipment must be stretched tight, held taut, and maintained in a manner to diminish the likelihood of entangling finfish, decapod crustaceans, sea birds, marine mammals, and sea turtles.
- H. The aquaculture operation is responsible for collection and proper disposal of all equipment used in the aquaculture operation on submerged lands or when such materials are removed during harvesting or become dislodged during storm events.
- I. All holding, transport, and culture systems of the aquaculture operation must be designed, operated and maintained to prevent the escape of cultured aquatic species into waters of the state.
- J. The use of biocidal chemicals is prohibited unless approved by the MDMR prior to use.
- K. All culture materials, cover nets, bags or other designated markers placed on or in the waters must be clean and free of pollutants including petroleum based products such as creosote, oils and greases, or other pollutants. Compounds used as preservatives must be used in accordance with the product label.
- L. Aquaculture operations on Public Trust Tidelands (state-owned) must obtain an aquaculture lease or other authorization from the Secretary of State's office and remain current with annual fees and conditions of that authorization agreement. This section does not apply to on-bottom molluscan shellfish operations.

Source: MISS. CODE ANN. §§49-15-15, 49-27-1, 79-22-1

Chapter 4: Requirements Specific to Finfish and Crustacean Aquaculture

Rule 4.1 Net-pen or other containment systems for culturing finfish, crustaceans or other non-molluscan marine organisms shall be located in waters of sufficient depth. A minimum clearance of ten (10) feet below the bottom of the net-pen system shall be maintained at all times. The distance shall be measured at mean low water. If monitoring indicates a serious problem with water quality or other environmental conditions at the site (i.e., when certain limits for specific parameters established in the monitoring program or by the Mississippi Department of Environmental Quality are exceeded), the operation must be adjusted to reduce impacts. Adjustments shall include, but are not limited to, modifying the feeding rate or feeding schedule, reducing the amount of fish in the net- pen system, or increasing or decreasing the clearance under the nets to allow for increased water circulation.

Source: MISS. CODE ANN. §§ 49-15-15, 49-27-1

Rule 4.2 Net-pen aquaculture operations shall not be located within two (2) miles of the shoreline.

Source: MISS. CODE ANN. §§ 49-15-15, 49-27-1

Rule 4.3 Variations to the requirements in this Chapter are allowed for cultivation of filterfeeder species without commercial feeds, with approval by the MCMR.

Source: MISS. CODE ANN. §§ 49-15-15, 49-27-1

Rule 4.4 All purchases of live fish, regardless of life stage, must be accompanied by a USDA accredited veterinarian signed "Certificate of Veterinary Inspection" attesting to the good health of the species.

Source: MISS. CODE ANN. §§ 49-15-15, 49-27-1, 79-22-1

Chapter 5: Monitoring Program Requirements

Rule 5.1 The aquaculture operation must maintain records and provide a monthly report of the following:

- A. A daily record of the number of incidental deaths of vertebrate coastal wildlife that occur within the leased area. Additionally, the aquaculture operation must notify the MDMR immediately upon the injury or death of any threatened or endangered species, marine mammal, or raptor within the leased area.
- B. An accounting of the stock added and harvested in a given month
- C. On shore culture operators must maintain records of any transfers of brood stock, seed, gametes, or larvae.
- D. All records must be maintained for a minimum of two years, and must be available to the MDMR for inspection.

Source: MISS. CODE ANN. §§ 49-15-15, 49-27-1, 79-22-1

Rule 5.2 The MDMR will maintain the following records provided by the permittee while the aquaculture operation continues:

- A. Construction and remodeling plans for any permitted aquaculture facility;
- B. Aquaculture operational plans; and
- C. Aquaculture permits.

Source: MISS. CODE ANN. §§ 49-15-15, 49-27-1, 79-22-1

Rule 5.3 The MDMR will inspect commercial land-based and float aquaculture systems at least every six months.

Source: MISS. CODE ANN. §§ 49-15-15, 49-27-1, 79-22-1

Appendix B

2023-2024 MDMR *Vibrio vulnificus* Risk Calculator

	Water Temp (°F) Average Max Monthly Water Temp (AMMWT)	Air (Oyster) Temperature During Harvest (°F)	Maximum Time Unrefrigerated (hrs)	Maximum Time to Cooldown (hrs)	Risk (Per 100,000 Servings)	Description
May '23	81	85	4	3	2.99	Vv Management
Jun '23	86	90	2.5	2	2.99	Vv Management
July '23	88	90	2.5	2	2.97	Vv Management
Aug '23	88	90	2.5	2	2.97	Vv Management
Sept '23	85	87	3	2	2.98	Vv Management
Oct '23	78	80	5	3	2.50	Vv Management
Nov '23	67	70	18	10	1.21	A3 Product Level 3
Dec '23	60	67	18	10	0.16	A3 Product Level 3
Jan '24	58	63	18	10	0.04	A3 Product Level 3
Feb '24	60	67	18	10	0.16	A3 Product Level 3
Mar '24	68	73	18	10	1.84	A3 Product Level 3
Apr '24	73	78	6.5	2.5	1.73	Vv Management

When the Average Monthly Maximum Water Temperature is **above 70°F**, the Vv management plan must be implemented to assess the risk of possible illnesses per 100,000 servings of oysters. The Vv time controls are described in the NSSP Model Ordinance, Section 2, Chapter 2, @.06E.(1)(b)(iii).

Average Maximum Monthly Water Temp	Risk of illness per 100,000 serving
>70°F – 75°F	Risk must be (less than) < 1.75
>75°F – 80°F	Risk must be (less than or equal to) ≤ 2.5
>80	Risk must be (less than) < 3.0

When the Average Monthly Water Temperature is less than or equal to **70°F**, the harvest becomes "A3 product" which refers to the table found in the NSSP Model Ordinance, Section 2, Chapter 8, @.02 A.(3).

However, once A3 product is determined to be suitable, you will then focus on the Average Monthly Maximum **AIR temperature** to determine maximum hours allowed from exposure to receipt at a dealers facility.

Action Level	Average Monthly Maximum AIR Temp	Maximum hours from exposure to receipt at a dealers facility
Level 1	<50°F	36 hrs
Level 2	50°F – 60°F	24 hrs
Level 3	>60°F – 80°F	18 hrs
Level 4	>80°F	12 hrs