



GUIDANCE FOR SHELL RECOVERY OPERATIONS IN CONNECTICUT

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1. INTRODUCTION

1.1. Purpose and regulatory authorities

This document provides guidance for developing a proposal for the collection, transportation, storage, and reuse of shells in Connecticut. It contains required state administrative policies as well as additional considerations for developing a viable and sustainable shell recovery program.

The Department of Agriculture, Bureau of Aquaculture (DOAG) has statutory responsibility to support oyster shell recovery programs and partnerships. A key action was the establishment of [Connecticut Public Act 21-24](#), which allows the state to accept and facilitate funding to support oyster shell recovery and restoration. State officials are encouraging the recovery or “recycling” of shells to help the state rebuild critical oyster habitat. DOAG also has statutory authority over the deposit of cultch material on state shellfish beds (CGS sections 22-11d, 26-237a and 26-237b). DOAG considers oyster shell a key component of aquaculture development.

To implement this program, DOAG plans to assist in establishing a collection system with state restaurants, and regionalized shell processing/shell cure pile locations for the recovered shells. Once cured, the shells will be placed in the approved shell planting locations. DOAG will refine and expand the program as needed to potentially include collection sites at municipal locations, such as transfer stations and leaf collection sites.

DOAG has created a series of certificates which will grant permission to the certificate holders to engage in the various portions of the shell recovery program. The certificates that can be applied for are:

Shell Recovery Certificate

<https://portal.ct.gov/-/media/doag/aquaculture/shell-recovery/shell-recovery-application.pdf>

This certificate authorizes the holder to maintain and operate a shell collection, and/or processing/curing at a site in accordance with the requirements and guidance required to maintain the facility.

Oyster Habitat Restoration Certificate

<https://portal.ct.gov/-/media/doag/aquaculture/shell-recovery/oyster-habitat-restoration-application.pdf>

This certificate authorizes the holder to maintain and operate an oyster shell restoration project and the specific parameters of planting shell for restoration in designated locations, and in accordance with the requirements and guidance required to maintain the operation.

Prior to the issuance of a Shell Recovery Certificate, DOAG will review and provide comments on shell recovery proposals to facilitate the applicant in locating an appropriate site for their operation and successful project implementation. Local land use boards and/or regional/local health departments have a role in approving shell recovery as it pertains to local regulations. Please note that there may be additional local and state requirements imposed upon the approval and issuance of your Shell

Recovery Certificate.

Shell collection, or shell processing, at sites that are otherwise regulated by the Department of Energy and Environmental Protection (DEEP) as a solid waste facility, will have to operate in conformity with this shell recovery guidance where applicable (see Section 2). Certificate holders will need to comply with applicable regulations of DEEP, and applicants are encouraged to contact DEEP to discuss potential impacts from shell recovery operations.

Placing shell in the water will require an Oyster Habitat Restoration Certificate and must meet the requirements of CGS sections 22-11f through 22-11g (or 22-11h (c) if applicable) prohibiting the release of any material from an aquaculture site without prior written approval from the Commissioner of Agriculture.

1.2. Background

The oyster beds of Long Island Sound (LIS) are unique in that they are among the few remaining sustainable oyster habitats in the world. These populations provide important ecosystem services that benefit the state's environment, economy, and culture. Oyster shell recovery was identified as a priority action to support restoration of oyster habitats in the [*Connecticut Shellfish Restoration Guide*](#).

Using shells specifically for this one purpose is important because:

- Oysters improve water quality by filtration and nutrient mitigation, provide habitat for a myriad of marine organisms, serve as protection against coastal erosion, increase capture fisheries production, and the farming of oysters provides important maritime jobs and food.
- Oyster shell is the preferred substrate for oyster settlement.
- Oyster shell is in short supply due to years of discarding it or using it for other purposes.
- Shell recovery reduces waste and returns it to LIS to restore oyster populations.
- Oyster restoration results in improved ecosystem services for numerous organisms.

While recovering shells is critical to oyster bed sustainability, there are inherent risks including the potential for public nuisances. Some shell recovered from the public, or food service industry, might be sourced from locations outside Connecticut. Shells may carry organisms that are invasive, pests, predators, or vectors of disease. Collecting and replanting shell without proper treatment to eliminate these organisms presents a major threat to the marine environment.

2. Process Criteria and additional considerations

2.1. Submit draft proposal to DOAG for initial review

The applicant will be responsible for developing and submitting a written proposal for their planned shell recovery program to DOAG.

DOAG will provide an initial review of the draft proposal, and if necessary, provide suggestions to confirm if the proposal meets all DOAG requirements. Each proposal will be evaluated on a case-by-case basis. The applicant's experience with the shell recovery process, the complexity and location of

the proposed activities, and other components will dictate the length and complexity of the review process.

Applicants should meet all of the applicable criteria outlined in Section 2. Additional considerations are provided to assist applicants in developing a thorough proposal. Applicants who are proposing shell collection at municipal transfer stations, leaf composting sites or a landfill; or shell processing at a leaf composting site or landfill must meet the regulatory requirements outlined in the facilities applicable permits administered by DEEP and should also comply with this guidance. If any of the proposed shell recovery activities will be co-located at a regulated solid waste facility, the applicant will be required to contact DEEP and fill out a pre-application questionnaire. Further, activities may require permitting under DEEP's Industrial Stormwater Program, therefore it is best practice for all proposals within DEEP permitted sites to fill out a pre-application questionnaire. See link to [Pre-Application Assistance Fact Sheet](#).

2.1.1. Shell sources

Identify the source of shell.

- A. Requirements: Shells should be sourced from shellfish harvested within the United States due to concerns about Oyster herpesvirus being introduced from shellfish imported from the European Union. Restaurants that sell imported shellfish are currently not allowed to participate in shell recovery programs.
- B. Additional considerations: While restaurants are the primary source of shell in Connecticut, there are also many other sources including travelling raw bars and caterers, shellfish festivals, retail seafood markets, farmers' markets, and institutional cafeterias. Applicants should start their shell recovery programs small, and reasonably scale up as their infrastructure and staff capacity allow.

2.1.2 Shell collection

Proposals should describe the standard operating protocol for all aspects of shell collection (this includes temporary storage before moving shell to a processing site), and include a preliminary schedule and detailed procedures for the sanitary operation of the program.

- A. Requirements:
 - I. Ensure that all shells received at any collection or storage site are immediately placed in the appropriate collection container(s) upon receipt. Ensure that no shells are deposited on the ground or outside an appropriate collection container.
 - II. Provide signage at drop off locations to ensure that only shell be placed in collection container(s). Signage should be multilingual and include pictures to ensure that only shell is placed in collection container(s). Provide a trash receptacle for other garbage.
 - III. All equipment used to hold and transport shell (containers, vehicles, trailers, etc.) should be constructed with materials that can be easily cleaned, sanitized, maintained, or replaced. Wash and sanitize such equipment after each use and air dry in a sanitary manner and location before storage or reuse. Equipment/vehicle wash and sanitization wastewaters must not be discharged to surface waters, wetlands or to the ground. Such wastewaters must be collected and hauled and/or disposed in accordance with CGS

sections 22a-430 or 22a-430(b).

- IV. Label shell recovery containers to indicate that the contents are recovered shell, not a food item or trash. For restaurants, the intent is to avoid the placement of collection containers in walk in coolers, or other inappropriate locations in the food service establishment. For all collection locations, signage is necessary to ensure that no food scraps or non-shell material(s) are placed in the collection container(s).
 - V. Equip all containers with a fully sealable lid that remains sealed during transport.
 - VI. Store shell recovery containers away from any food in a designated recovery or garbage area. Cross contamination between food and the shells shall be prohibited.
 - VII. At DEEP permitted facilities, the duration of shell storage within collection bins will be **7 days** from November 1 to April 30, and **48 hours** from May 1 to October 31.
 - VIII. All other facilities must operate and maintain all areas and containers used for the storage of shells to maintain a safe and sanitary environment, and to prevent nuisances (e.g., odors, the attraction, harborage, or the breeding of insects and creating a food source for vermin feral animal food source). Empty and clean shell collection containers and container areas at a frequency that ensures they do not become a nuisance. You must be prepared to modify your collection schedule to avoid creating a nuisance condition.
 - IX. Ensure a cleaning schedule is developed, maintained, and updated as necessary.
 - X. Establish a dedicated area for the return of cleaned and sanitized containers that is separate from garbage and food storage areas at each collection site where provided containers are utilized.
 - XI. Create a recordkeeping system that tracks the volume of shell collected (weight, pieces, or bushels) from each location participating in your program to be submitted annually to DOAG.
- B. Additional considerations:
- I. Determine the number of containers necessary for each of the participating restaurants, or collection sites, within the shell recovery program.
 - II. Ensure that there is a sufficient inventory of cleaned, sanitized, and dried containers to provide clean containers to restaurants or collection sites, if applicable, when picking up filled containers.
 - III. Create a pick-up schedule based on estimated volume of shell, *or maximum holding timeframes*. NOTE: Shell volume may change with seasons, holidays, special events, etc. There must be a procedure in place to adequately cover the need for requested pickups and deliveries outside of the normal schedule.
 - IV. As necessary, provide a container to discard non-shell materials and trash (e.g., napkins, gloves, utensils, etc.). Inadvertently received residue must be segregated from shell material immediately upon discovery.
 - V. For any shell collection activity that is proposed at a regulated solid waste facility (e.g., municipal transfer station, leaf composting site, landfill) schedule a pre-application meeting with DEEP (<https://portal.ct.gov/DEEP/Permits-and-Licenses/Pre-Application-Assistance>).
 - VI. Operate the shell collection site without interference to the operations of the municipal

- transfer station, leaf composting site, landfill, or with any other use of the property.
- VII. Ensure that an individual with knowledge of the standard operation protocol for shell recovery has unrestricted access to the shell collection site to immediately address any problems.

2.1.3 Shell transportation

The proposal shall identify the primary means of transportation to be used to carry containers, or loose shell, to and from shell collection and storage areas, and describe the standard operating protocol for transporting shell. If the proposal includes the transportation of loose shell, the trailer, or conveyance, must be watertight and composed of a sanitizable material.

A. Requirements:

- I. The applicant should have unrestricted access to the transportation vehicle(s).
- II. All equipment used to transport shell (e.g., containers, vehicles, trailers, etc.) should be constructed with materials that can be easily cleaned, sanitized, maintained, or replaced. Wash and sanitize such equipment after each use and air dry in a sanitary manner and location before storage or reuse. Equipment/vehicle wash and sanitization wastewaters must not be discharged to surface waters, wetlands or to the ground. Such wastewaters must be collected and hauled and/or disposed in accordance with CGS sections 22a-430 or 22a-430(b).
- III. Shell must be transported in sealed containers or within a trailer that does not allow leakage.
- IV. Identify what steps will be taken to ensure that no leakage of fluids occurs from the vehicle or trailer.

- B. Additional considerations: To prevent nuisances (e.g., odors, flies, vermin), minimize shell transport times from pick-up to placement on the shell cure pile. This may include holding shell in sealed containers after pick-up.

2.1.4 Locations of shell processing and shell cure pile maintenance

The proposal shall identify the location where shells will be sorted, stored, and cured (collectively, “shell processing”). Proposals shall describe a protocol for the maintenance of curing piles to avoid nuisances.

A. Requirements:

- I. No shell processing or shell cure piles are permitted at municipal transfer stations.
- II. Provide a detailed plan for all aspects of shell processing and the maintenance of shell curing piles.
- III. Cure shells at the designated shell cure pile for a minimum of 6 months.
- IV. Post signage at shell curing areas stating that only shell material may be placed in the designated shell pile(s). Signage should be multilingual and include pictures to ensure that only shell is placed in collection container(s). The shell curing site should include a container to allow for discarding non-shell materials and trash (e.g., napkins, gloves, utensils, etc.). Inadvertently received residue must be segregated from shell material immediately upon discovery.

- V. Locate shell curing and storage sites on an appropriately prepared surface such as a pad constructed of woodchips or compacted rock or gravel to promote infiltration. Consider stormwater impacts, drainage areas, and location of receiving waterbodies. (<https://portal.ct.gov/DEEP/Water-Regulating-and-Discharges/Stormwater/Stormwater-Management>)
 - VI. Runoff from shell processing sites and cure piles must not enter the waters of Long Island Sound or its tributaries. If located within close proximity to water, construct barriers to prevent runoff. Where possible, redirect uncontaminated stormwater run-off from upgradient areas around shell curing and storage sites to minimize contact.
 - VII. Locate shell processing operations at least 100 feet away from any surface water as defined at RCSA § 22a-246-1.
 - VIII. Locate shell processing operations at least 250 feet away from any drinking water supply well.
 - IX. Establish a shell recovery site that is large enough to maintain at least two separate, labeled, and easily identified shell cure piles. This allows for the removal of fully cured shell (e.g., entire pile has been cured for six months) while continuing to collect and cure new shell.
 - X. Include the material safety data sheet for the use of any commercial product to be used on the shell cure pile to the DOAG.
 - XI. Detail how the operation will control and prevent nuisances including odors, the attraction, harborage, or the breeding of insects and vermin, and prevent the attraction of animals (RCSA § 22a-174-29).
- B. Additional considerations:
- I. Consider possible effects to adjacent property owners when designating a shell processing and cure site locations. Situate your operation to avoid any negative impacts.
 - II. Consider the use of lime to manage odor and flies. If using, add lime to piles in layers as you add shell, rather than applying to the surface only.
 - III. If applicable, establish a contract with a waste management company for regularly scheduled trash removal. If the applicant is assuming this responsibility, provide a detailed plan for waste removal.
 - IV. If the applicant proposes to operate shell collection, or shell processing, at sites that are otherwise regulated by DEEP as a solid waste facility a pre-application questionnaire should be prepared and submitted to DEEP's Office of Innovation, Planning and Partnerships (<https://portal.ct.gov/DEEP/Permits-and-Licenses/Pre-Application-Assistance>).
 - V. Shell processing sites shall operate without interference to the operations of a regulated solid waste facility (e.g., leaf composting site or landfill).

2.1.5 Sanitation station and maintenance

The proposal must identify and describe the location for equipment sanitation (containers and vehicles). The applicant shall develop a standard operating protocol for sanitation that includes a schedule.

A. Requirements:

- I. The shell recovery program must always have a supply of approved sanitizer on hand that is adequate to ensure that all containers can be sanitized in the case of unexpected increases in shell volume from your partners.
- II. There must be a designated sanitary location with access to potable water for the cleaning and drying of equipment and supplies.
- III. Equipment/vehicle wash and sanitization wastewaters must not be discharged to surface waters, wetlands or to the ground. Such wastewaters must be collected and hauled and/or disposed in accordance with CGS sections 22a-430 or 22a-430(b).
- IV. If located within close proximity to the water, barriers must be constructed to prevent runoff.
- V. Cleaning activities for equipment used to hold and transport shell must be conducted following each use to prevent contamination of shellfish and food contact surfaces.

2.1.6 Reuse of shells

The proposal should describe how shells will be reused and identify the end user if it is not the applicant. If the applicant does not have an initial end user, shell can be donated to a local shellfish commission or DOAG for restoration of the natural beds.

A. Requirements:

- I. No shell may be placed back into the waters of Long Island Sound without written authorization from the DOAG.
- II. If the applicant is also an end user, they must get approval from DOAG to plant recovered shell within Long Island Sound and its tributaries by obtaining a Oyster Habitat Restoration Certificate.
- III. If an end user is not identified, the applicant must consult with DOAG to coordinate the transfer of the shell to an end user.

2.1.7 Agreements with partners and subcontractors

A written agreement must be developed by the applicant and EACH partner and subcontractor involved in shell collection, shell transportation, shell curing, and sanitation.

A. Requirements:

- I. Each agreement must identify the role of each partner; detail the schedule of activities; and be signed by each party. The agreement shall name one individual who has authority over all aspects of the project and all project partners.
- B. Additional considerations:** Prepare and maintain a step-by-step manual for the shell recovery program that covers all aspects of the recovery program and is shared with all partners and volunteers.

2.1.8 Emergency contact(s)

All proposals shall have a contingency plan, including backup emergency contact(s), to be available to carry out the responsibilities of the certificate holder if the primary contact is not available.

A. Requirements:

- I. The emergency contact(s) must have knowledge of all aspects of the program, and

unlimited access to all equipment and supplies, including transportation, necessary to maintain program operations in a timely manner. Not conducting routine maintenance activities at a shell collection site or cure pile for even a short period of time; leaving shell containers overflowing at restaurants; not promptly washing, sanitizing, and properly drying collection containers or conveyances; and/or not promptly handling nuisance insect or vermin issues could be catastrophic to the shell recovery program. All project proposals must include contingencies to accommodate for members having emergencies preventing them from completing their outlined responsibilities on schedule.

- II. DOAG will require a copy of the written agreement with each hauler or organization responsible for the removal of shell to an off-site pre- approved curing location.

3.0 Submit final proposal to DOAG and seek authorization(s)

Upon completion of the review process, DOAG will make any necessary recommendations for revisions to the proposal. In order to accomplish the objective of Public Act 21-24 to support development of shell recovery partners, once the proposal is finalized, DOAG will coordinate with the applicant, the applicable local officials, and the Sea Grant Shell Recycling Coordinator to conduct a site visit to the location of the cure pile, and any other locations where activities associated with the proposal will occur. Should there be any concerns raised by local officials, DOAG and the Shell Recycling Coordinator will work with the applicant to bring the proposal in line with local recommendations. Please note that your final authorization may include additional requirements not outlined in this guidance.