NEW HAVEN CITY PLAN COMMISSION
FLOOD DAMAGE PREVENTION ORDINANCE VARIANCE

RE: **576, 560, and 530 QUINNIPIAC AVENUE.** Flood Damage Prevention Ordinance Variance to construct an Oyster Hatchery with wet floodproofing for a functionally dependent acquaculture use below the Base Flood Elevation. (Owner: JB Aquaculture LLC.; Applicant/Agent: Bernard Pellegrino, Esq. of Pellegrino Law Firm.)

REPORT: 1592-03
FLOOD DAMAGE PREVENTION ORDINANCE VARIANCE: Approval with Notations

Submission:
Flood Damage Prevention Ordinance Variance Application, application fee, list of required permits, description of requested variance with FEMA Floodplain Management Bulletin P-2140 (excerpt pp. 14-15), received August 24, 2021. Plans for walls used to enclose space below the base flood elevation submitted by Patriquin Architects September 2, 2021: *Sheets AHB 100 and AHB 103*

Other Materials considered:
Site Plan Review Building and Process Development Documents prepared by Patriquin Architects and Centek Engineering, Dated June 17th, 2021 including:
AS-100 Photometric Site Plan
AS-101 Setting Tank Plan
AHB-100, 101, 102, 103 -Architectural-Hatchery
Site Plan Review Regulatory Submission Drawings from SLR Dated June 17th, Revised June 28th, July 15th, August 11, 2021:
NO. NAME TITLE
01 – Title Sheet
02 EX - Existing Conditions Plan
03 SP-1 - SITE PLAN – Layout and Materials
Elevation Certificate for the Oyster Hatchery Building; Expiration Date: November 30, 2018
FEMA FIRM Map/Panel 09009C0442J
Coastal Site Plan Review Comments Checklist from CT Department of Energy & Environmental Protection. Dated July 16, 2021
Coastal Site Plan Review Comments Checklist – Response – from Patriquin Architects. Dated July 26, 2021
Revised Coastal Site Plan Review Comments Checklist from CT Department of Energy & Environmental Protection. Dated August 3, 2021
Correspondance with FEMA Boston Regional Office and CT Department of Energy & Environmental Protection National Flood Insurance Program Coordinator. Dated August 11, 2021
FEMA Policy #104-008-03: Floodplain Management Requirements for Agricultural Structures and Accessory Structures. Specifically Section C.2. Date Issued; February 2020

PROJECT SUMMARY:
Project: Quinnipiac River Oyster Farm
Address: 576,560,536 and 530 Quinnipiac Avenue, New Haven, CT
Site Size: 176,610 SF (4.05 acres) total. Zoning Lot Area is 148,646 SF (3.4 acres)
Zone: Marine Commercial (BC)
Parking: 23 Spaces

Owner: JB Aquaculture, LLC	**Phone:** 203-866-7546
Applicant: Same as Owner	**Phone:**
Agent: Bernard Pelligrino, Esq. of Pellegrino Law Firm	**Phone:** 203-787-2225
Architect: Paolo Campos of Patriquin Architects	**Phone:** 203-535-1688
Site Engineer: Tom Daly of SLR Consulting	**Phone:** 203-271-1773

City Lead: City Plan Department **Phone:** 203-946-6379

BACKGROUND

Per the City of New Haven Flood Damage Prevention Ordinance, Section 7.5, JB Aquaculture LLC., has applied for a variance to construct an Oyster Hatchery with wet floodproofing for a functionally dependent acquaculture use below the base flood elevation. Additional applications include a Special Permit to operate an oyster farm within the Marine Commercial (BC) Zone (CPC Report 1589-06) and Site Plan Review including Coastal Site Plan Review for the same site. (CPC Report 1589-03).

Pursuant to Section 41, the Marine Commercial district "exists to separate out certain waterfront areas which have - and are encouraged to be - a mix of water dependent public access, recreational boating, public and private marinas, commercial and recreational fishing, community based, water related activities and waterfront residential environments. The applicant wishes to utilize the abovementioned parcels in the operation of an Oyster Farm as categorized in Section 42, Table 3 Paragraph N. Marine; Fishing and Fish Sales (including shellfish) and storage of associated materials. 560 and 576 Quinnipiac Avenue are currently home to the Copp's Island shell storage operation. This use will continue along with additional proposed activities on site.

During Site Plan Review, the application was submitted to CT Department of Energy & Environmental Protection's Land & Water Resources Division for Coastal Site Plan Review Comment and a National Flood Insurance Program Compliance Review. The Coastal Site Plan Review comments found the application to be in compliance with and meeting the definition of a water dependent use per the Connecticut Coastal Management Act, detailed in the associated *revised CSP review checklist* dated August 3, 2021. However, said Review did document an area of concern being whether the proposed project meets FEMA's definition of a functionally-depenedent use which impacts whether the location and elevation of the conditioning and culturing tanks of the Hatchery building are FEMA compliant. Subsequently, upon referral from the CT National Flood Insurance Program Coordinator, the regional FEMA Office reviewed the application and recommended the applicant seek a Flood Plain Variance from the New Haven Ciy Plan Commission to allow the structures under consideration to be permitted as a functionally dependent use due to their agricultural function. As noted in FEMA Floodplain Management Bulletin P-2140; FEMA considers aquaculture to be farming that is conducted in water. Therefore, the definition for agricultural structures includes aquaculture structures. Furthermore, aquaculture taking place on land with culturing tanks and related equipment in a walled and roofed structure, meets the FEMA definition of an agricultural structure. Under this use classification, agriculture/aquaculture, the proposed action and thus the location and elevation of the proposed oyster culturing tanks meet FEMA's definition of a functionally-dependent use. Lastly, the City of New Haven's Flood Damage Prevention Ordinance is silent on variances for agricultural uses. However there is a Functionally Dependent Use Variance (Section 7.4.3) which is predicated on FEMA's definition of a functionally dependent use

Current site conditions: The western boundary of this site is the Quinnipiac River. The site falls within FEMA's special flood hazard zone, the City of New Haven's Coastal Area Management Boundary and a portion of the site (seaward of 4.6-feet NAVD88) lies within the coastal jurisdiction line for the State. The Mean High Water elevation at the mid point of the Site is 2.8'. Of the four parcels in this application, 536 and 530 Quinnipiac Avenue are currently vacant. 576 and 560 Quinnipiac Avenue presently serve the water dependent use of the Copp's Island shell storage operation, with the unloading of shells via boats at the pier on the north end of the property. The current shell operation includes four existing 1 and 2-story buildings, an operational pier, an outdoor oyster shell storage pile and an access driveway from Quinnipiac Avenue. The bank of the Quinnipiac River at this site is armored/reinforced with a wooden bulkhead however, the southern portion of the

bulkhead is in disrepair. Tidal wetlands exist at the southern portion of the site between two areas of armored shoreline. The shell storage pile is located east of the tidal wetlands and is separated from the wetland by jersey barriers. There is also a 30" storm sewer outlet in this portion of the shoreline.

Proposed Activity: The proposed activity is to expand the current oyster shell storage operation to include a aquaculture fishery operation. As detailed in the associated Site Plan Review, future operations will include a two story Oyster House at the north end of the property and a three story Oyster Hatchery at the midpoint of the property. The Oyster House will include a refrigerated storage area at ground level for cleaned, shelled and packaged product with an upper level for office/visitor center, employee lockers, meeting rooms and dry good storage. The three-story Oyster Hatchery at the midpoint of the property, will include a ground level with eight oyster culture tanks, a second floor/ mezzanine consisting of brood stock conditioning tanks, maintenance access to the first floor tanks and associated pumps and equipment, and a third level with algae growth tanks (for feeding the oyster stock on the floors below) and a water quality monitoring lab.
A full Coastal Site Plan review will be conducted with review of Detailed Plans. See companion report CPC 1589-03

Public Hearing: A public hearing was held on September 22, 2021. Minutes of the hearing, CPC meeting 1592, are available from the City Plan Department.

Project Schedule: Activity will begin immediately upon approval and be mindful of surrounding coastal resources. The project is expected to take between 24 and 36 months.

List of Permits required for the Project:

- DOT/DEEP Flood Management Certification
- DEEP OLISP Certificate of Permission
- DEEP Structures Dredging & Fill Permit
- USACE Individual Permit Modification
- City of New Haven, Historic District Commission, Final Certificate of Appropriateness
- Site Plan Review
- Coastal Site Plan Review
- Special Permit
- Flood Plain Development Permit

FLOOD PLAIN DEVELOPMENT VARIANCE

Authority: In Section 7-148(c)(7) of the CT General Statutes, the Legislature of the State of Connecticut delegates to local governmental units the responsibility of adopting regulations designed to promote the public health, safety, and general welfare of its citizenry. The City of New Haven adopted a revised Section 56 of its Zoning Ordinance and a *Flood Damage Prevention Ordinance* (hereafter FDP Ordinance) on October 4, 2010.

New Haven FDP Ordinance, Section 7.1 - Variance Procedures: The New Haven City Plan Commission as established by the City of New Haven shall hear and decide appeals and requests for FDP Ordinance Variances from the requirements of this ordinance.

New Haven FDP Ordinance, Section 7.4.3 – Fundtionally Dependent Uses: FDP Variances may be issued for new construction and substantial improvementsand other development necessary for the conduct of a functionally dependent use provided the structure or other development is protected by methods that minimize flood damage, creates no additional threat to public safety and meets the requirements of Section 7.5.3.1 – 7.5.3.4.

The site is located within the Special Flood Hazard Area, Zone AE (EL 12) on Flood Insurance Rate Map 09009C0442J dated May 16, 2017. The AE Zone, according to FEMA, is an area subject to inundation by the

1% annual chance flood event, where the base flood elevation (or elevation of surface water resulting from a flood) has been determined at 12'.

The proposed structure under consideration in this variance is the Oyster Hatchery Building which is within the Special Flood Hazard Area, Zone AE (EL 12). The lowest floor of enclosed area of the Hatchery Building will be constructed at elevation 8.8'. The elevation to which the Hatchery building will be wet floodproofed in relation to Mean Sea Level is 14.5 feet. The Oyster Hatchery will include a ground level field of eight oyster larva culture tanks and associated pumps, a mezzanine of brood stock conditioning tanks with associated pumps and equipment as well as maintenance access to the ground floor tanks. Lastly the third floor of the Hatchery will include algae growth tanks (for feeding the oyster stocks on the floors below) and a water quality monitoring lab. Tanks within the Oyster Hatchery will be supplied by and operated with water from the Quinnipiac River and therefore must be situated as close to the River as possible.

Flood Damage Prevention Variance Request: The applicant has requested the following variances from the flood regulations and submits that the structures under consideration be permitted as designed due to their fundtionally dependent use classification:

Section 5.3.2.2 *"Electrical, plumbing and other utility connections are prohibited below the base flood elevation."*
Section 5.3.4.01 *"All new construction or substantial improvement shall be located 25 feet landward of the reach of the mean high tide."*
Section 5.3.4.02 *"All new construction or substantial improvement shall be elevated so that the bottom of the lowest supporting horizontal member (excluding pilings or columns) is located no lower than the base flood level with all space below the lowest supporting member open so as not to impede the flow of water."*

The building will require new electric, plumbing and other utility services to support the uses inside. The lowest floor of enclosed area of the Hatchery building will be constructed at elevation 8.8'. The elevation to which the Hatchery building will be wet floodproofed in relation to Mean Sea Level is 14.5 feet. Electrical power, lighting along with mechanical systems and services will be elevated above the base flood elevation (BFE) which is determined to be 12'.

The proposed field of oyster culturing tanks will be constructed longitudinally to the eastern bank of the Quinnipiac River, coincident with the site's existing sea wall and the mean high water line. The distance of the Hatchery's field of oyster culture tanks from the seawall is less than 10 feet landward. The practice of oyster culture/aqualculture requires proximity to water for both the delivery of product and materials as well as the essential ingredient for cultivation. The process involves pumping large volumes of river water through the spawning and growth tanks in order to simulate the oyster's natural growing environment. By necessity, the proposed aquaculture use must be positioned as close to the River as possible for purposes of efficient water use and energy consumption, as such it is a functionally dependent use which cannot occur if situated otherwise.

Structural portions of the Hatchery Building located below the BFE will be constructed with water proof and flood resistant materials including cast-in-place concrete with epoxy coated steel reinforcement, while tanks and supporting armature will be made of fiberglass, high-density plastics and stainless steel. The structural system and fixtures below the BFE are anchored to resist flotation, collapse, and lateral movement suring flood events.

The Hatchery Building below the base flood elevation is wet floodproofed to protect the structure from hydrostatic pressure. The design meets the NFIP design and performance standards for openings per 44 C.F.R. Section 60.3(c)(5) and allows for the automatic entry and exit of floodwaters without manual operation or the presence of a person (or persons) through an engineered flood vent system.

The proposed elevations of the oyster culturing tanks and Hatchery Building were governed by the adjacent grades within the site as well as the heights of the existing timber pier and seawall. Additionally the dependency

of the tanks to the River for their supply of water and the necessary, adjoining services within the Hatchery Building all render the proposed use functionally dependent on proximity to the Quinnipiac River.

Oysters are filter feeders adapted to live in brackish estuaries like rivers and similar tidal habitats. They draw in water and trap algae, plankton and other naturally occurring particles and sediments, which are eaten, digested and expelled, thereby cleansing the water. An oyster hatchery operationally mimics the native biological processes of oysters, from spawning to larval growth to attachment to shells and maturation.

The intake of unfiltered river water into the broodstock conditioning and larval culturing tanks is a key part of this aquacultural activity, as it recreates the oyster's natural growth environment. Unfiltered river water is pumped into the tanks, with a variable flow rate which mimics the natural ebbs and flows of tidal cycles. Because the water is unfiltered, clogs and blockages within the pipes can occur, and entire crops can be lost as a result of the interruption in flow. Methods of combating the potential for blockages include redundancy of pipe and pump systems allowing bypass of blockages, frequent maintenance and cleaning, and reducing the length of piping systems as much as possible.

All of these factors pose a unique hardship upon the applicant in meeting the regulatory standards with regards to the site, the hatchery building and the base flood elevation. Pumping unfiltered river water over greater distances through pipes to reach the tanks risks operational failures which could result in the destruction of the entire oyster crop. Elevating the tanks above the base flood elevation increases the pipe distances required between the river intake and the tanks and creates an operational hardship, whereas locating the tanks as close as possible to the water reduces the piping distances required and improves the operational success rate. Upon close review and examination of the proposed project, all of these unique qualities render the proposed use functionally dependent on proximity to the Quinnipiac River.

In order to grant a Flood Damage Prevention Ordinance Variance the Commission must consider the following factors in Section 7.5.1 of the FDP Ordinance:

- The danger that materials may be swept onto other lands to the injury of others;
- The danger to life and property due to flooding or erosion damage;
- The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
- The importance of the services provided by the proposed facility to the community;
- The necessity of the facility of a waterfront location, in the case of a functionally dependent facility;
- The availability of alternative locations which are not subject to flooding or erosion damage for the proposed use;
- The compatibility of the proposed use with existing and anticipated development;
- The relationship of the proposed use to the comprehensive plan and floodplain management program for that area;
- The safety of access to the property in times of flood for ordinary and emergency vehicles;
- The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site; and
- The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, and streets and bridges.

Granting of the variances will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create a nuisance, cause fraud on or victimization of the public, or conflict with existing laws or ordinances. In advance of a storm event the proposed operation would be cleared of occupancy and any material at risk of becoming waterborne would be secured.

FLOOD PLAIN VARIANCE FINDINGS

The Commission hereby grants the requested variances with the following notations:

1. The Oyster Hatchery is a functionally dependent use in which the use of the building is absolutely dependent on its close proximity to the water, and therefore is excluded from the elevation requirement. Acceptable methods of wet floodproofing have been incorporated into the design.

2. As the lowest floor of the proposed Hatchery is below the base flood elevation, the Commission in granting the requested variances notifies the applicant of the potential of high flood insurance premiums and increased risk to life and property.
3. The applicant shall record on the City land records an original copy of this Flood Damage Prevention Variance report (to be provided by the City Plan Department) and shall furnish written evidence to the City Plan Department that the document has been so recorded (showing volume and page number), prior to City Plan signoff on detailed plans for issuance of building permit.
4. A separate application for a State Building Code modification may be required.

At the time of application for a building permit, a FEMA Elevation Certificate shall be filed with the building official.

ADOPTED: September 22, 2021
Leslie Radcliffe
Chair

ATTEST: Aicha Woods
Aicha Woods
Executive Director, City Plan Department

Review of the Flood Damage Preventon Variance, based upon the application and materials submitted by the applicant, was conducted at hearing by the City Plan Commission of the City of New Haven in accordance with the Connecticut General Statutes (Section 7-148(c)(7) The Building Official hereby receives the above written findings and any conditions thereof are made conditions of the building permit.

ADOPTED: September 22, 2021

ATTEST: _____
Jim Turcio
Building Official