

Docko, Inc. *Serving the waterfront community since 1987*

P.O. Box 421, Mystic, CT 06355 (860) 572-8939 Fax: (860) 572-7569, email: office@docko.com

May 28, 2019

Mr. Dennis Goderre
City of Groton Planning & Zoning Commission
295 Meridian Avenue
Groton, CT 06340

Re: Norman Bloom and Sons, LLC
Site Modifications, 107 Thames St.

Dear Mr. Goderre,

We are transmitting herewith 8 copies of the Application for Site Plan Approval for site modifications for Norman Bloom and Sons, LLC at 107 Thames Street. Enclosed, is the application fee in the amount of \$60 for the State fee allow with the following items:

- Coastal site Plan Application Drawing including details of proposed building modifications suitable for Zoning Permit purposes
- Application for Review of Coastal Site Plans
- DEEP Resource Maps
- Location Map
- Photographs of the site of the proposed work

I trust that you will find the application complete and acceptable. I look forward to the opportunity to discuss this with you further in a plan review should you so desire, or at the earliest Zoning Commission Meeting.

Yours truly,
DOCKO, INC.

Keith B. Neilson, P.E.

KBN: cl
Enclosure
CC: Mr. Norman Bloom, Aeros
Mr. Jim Markow, Aeros
File: 19-02-3006 AEROS, 107 THAMES ST

RECEIVED

MAY 29 2019

CITY OF GROTON CONNECTICUT
ZONING AND BUILDING DEPARTMENT



City of Groton
Department of Planning & Economic Development

Site Plan and Coastal Area Management Checklist

Minimum Information to be Provided on Plans – See Zoning Regulations Appendices for Additional Requirements

The following lists the anticipated information required at time of application submission. The sequence presented below is the preferred sequence drawings should be presented in the plan set. Each box shall be checked to ensure the information is provided correctly and submitted with the application.

Property Address: 107 Thames Street Applicant Name: Norman Bloom and Sons, LLC

Acknowledgement:

I am the individual responsible for coordinating the preparation of the plans and I acknowledge that the following plans have been prepared in conformance with the *Site Plan & Coastal Area Management Plan Preparation Requirements* and those listed below.

Signature:  Printed Name: Mr. Keith B. Neilson, P.E.

- 1. **Cover Sheet** containing:
 - a. Site Location Map
 - b. Project Name
 - c. Date of Submission
 - d. Name of all professionals with a responsibility in the development of the plans
- 2. **Notes sheet(s)** as may be applicable
- 3. **Survey Plat** (Conforming to A-2 Standards and signed & sealed by a licensed site surveyor registered to do business in the State of Connecticut). Include the name of abutting property owners and location of intersecting property lines. Separate from existing conditions plan below.
- 4. **Topographic Survey** (Conforming to T-2 Standards and may be combined with item 6 below and signed & sealed by a licensed site surveyor registered to do business in the State of Connecticut)
- 5. **Site Demolition Plan** showing all existing improvements and vegetation to be removed including limits of sawcut lines and construction fencing.
- 6. **Sedimentation and Erosion Control Plan** containing:
 - a. Silt fence, hay bales, etc
 - b. Temporary sedimentation trap (with supporting calculations)
 - c. Stockpile areas
 - d. Staging and storage of equipment
 - e. Erosion control narrative and sequence of construction
 - f. Inspection requirements and schedule
 - g. Contact information for individual responsible for ES measures

RECEIVED

MAY 29 2019

CITY OF GROTON CONNECTICUT
ZONING AND BUILDING DEPARTMENT

7. **Site Layout Plan** depicting all proposed improvements and clearly labeled and corresponding to the applicable construction detail provided; critical dimensions provided for such items as walks, drives, setbacks, parking spaces, etc. to demonstrate code requirements (building and zoning). Plan shall depict the following minimum information:
- a. Building locations and decks (including roof overhangs),
 - b. Walks
 - c. Fences and Bollards
 - d. Pavement materials and markings
 - e. Curbing
 - f. Parking
 - g. Handicap parking
 - h. Handicap ramps
 - i. Signage (including those used for traffic control)

NOTE: Information depicted on the Site Layout Plan shall be carried forward on each of the subsequent plans listed below.

8. **Stormwater Management Plan** prepared by a CT licensed Professional Engineer; In addition to information requested in the Zoning Regulations, include the following:
- a. **Grading and Drainage Plan(s)** depicting at minimum:
 - i. existing and proposed contours at a minimum of 2' intervals;
 - ii. spot elevations at high and low points, top and bottom of stairs and ramps, intermediate landings of ramps, top and bottom of all site walls (retaining and free standing);
 - iii. all drainage structures, piping (including inverts, size, slope and material), stormwater facilities (above and below ground)
 - iv. Finished floor elevations of all structures
 - v. Location and base flood elevation of all Special Flood Hazard Areas
 - b. **Stormwater report** with supporting calculations (pre and post: quantity and quality)
 - c. **Construction details** of all materials and techniques used to control stormwater.
9. **Utility Plan** showing all proposed electrical, telecommunications, fiber optics, sanitary sewer, water, transformers, and other above and below grade utilities, including those to remain.
10. **Landscape Plan, Tree Survey, Tree Protection Plan** depicting location of all plant material and protection measures and shall include all proposed and existing features to remain, below and above grade utility improvements, signage and lighting in order to confirm no conflicts exist with proposed landscape materials. Plan shall also include a Landscape Schedule, provide on each landscape plan when more than one is needed, and contain the following information:
- a. Plant Code or Symbol
 - b. Scientific Name
 - c. Common Name
 - d. Size at time of planting using American Nursery & Landscape Association standard size nomenclature
 - e. Method of planting (i.e. container grown, balled and burlapped, etc)
 - f. Notes as may be applicable to plant species
11. **Lighting Plan** depicting the location of all exterior lighting, including those mounted on the exterior of a building. Provide lighting details and product cuts to demonstrate compliance with the zoning regulations. Lighting may be combined with the Site Layout Plan or Landscape Plan

as long as legibility is not affected.

- 12. **Photometric Plan** prepared by a licensed professional engineer depicting foot candles on the ground and demonstrating conformance with the zoning regulations. This plan must be separate from all other plans.
- 13. **Building Floor Plans** with clearly labeled space/room uses, provide critical dimensions, location of windows, exterior and interior doorways, utility and storage rooms, location of utilities entering the building.
- 14. **Building Elevations** (Including existing buildings with additions) depicting all exterior improvements and accurately illustrating roof lines and wall height.
- 15. **Construction details** depicting the methods and means of installation of major site improvements
- 16. **Additional items** that may be required by staff include:
 - a. Traffic report
 - b. Environmental reports
 - c. Architectural product samples
 - d. Noise study
 - e. Structural analysis
 - f. Geotechnical reports
 - g. Illustrative renderings
 - h. Other supporting information found necessary by staff or the commission



City of Groton
Planning and Zoning Commission

Municipal Building
295 Meridian Street
Groton, CT 06340
(860) 446-4169
(860) 446-4109 FAX

APPLICATION FOR SITE PLAN APPROVAL

This application must be accompanied by eight (8) copies of the proposed site plan conforming to the City of Groton Zoning Regulations, appropriate fee, supporting documents and other applications and fees as required at least fourteen (14) days prior to a regularly scheduled meeting of the Planning and Zoning Commission in order to be received at that meeting.

Note: In order for this application to be accepted, it must be complete, signed by all appropriate parties and accompanied by all necessary fees and maps and plans

SITE PLAN #

1. Property Location: 107 Thames Street

2. Current Use: Marinas Zoning District: WBR Parcel Size: 0.287

3. Tax Map: 168919 Block: 22 Lot: 7417 PIN: 168919227417 (property ID #)

4. Applicant/Agent: Norman Bloom & Sons, LLC (Name)

Address: 7 Edgewater Place, Norwalk, CT 06855

Phone #: 860-460-4558

5. Owner of Property: Norman Bloom & Sons, LLC (Name)

Address: 7 Edgewater Place, Norwalk, CT 06855

Phone #: 860-460-4558

6. Surveyor/Engineer Information: Docko, Inc. (Name)

Address: 14 Holmes Street, Mystic, CT 06355

Phone #: 860-572-8939

It is hereby requested that Site Plan Approval be granted under the provisions of Section 3.14 of the City of Groton Zoning Regulations that will permit the following: (provide a brief project description including proposed use.)

This project is to restore and cap an existing, longstanding stone seawall, re-grade the existing site to restore a boat yard an access driveway, place 100 CY of crushed stone over 10,000 (+/-) SF for a new yard and driveway surface, install a gabion, concrete block or granite block retaining wall 200 (+/-) CY over 600 (+/-) SF install new water and electrical service utilities, and rebuild a wood pile and timber pier including new breasting dolphins and install a floating dock barge with a hinged ramp to shore for berthing aquaculture facilities.

Has an Inland Wetland Application been submitted? Y _____ N N/A _____
 Has a Coastal Site Plan Application been submitted? Y N _____ N/A _____
 Is any portion of the site within a Flood Hazard Area? Y N _____
 Is the site within 500 feet of the City line? Y _____ N
 Does the site derive access from a State Road? Y _____ N (if yes, contact CTDOT)
 Has any application been filed previously with any Commission in connection with this parcel?
 Y _____ (if yes, please complete following) N _____

Type of application(s): Special Permit Application
 Date of application(s): April 18, 2019

The following items are required to be submitted in support of this application:

1. Fee: see fee schedule plus \$60.00 State fee paid in full Payable to the City of Groton.
2. Site Plan prepared in accordance with Section 6.6 of the City of Groton Zoning Regulations (8 copies).
3. Floor plans and elevation for proposed or existing structures.

The submission of this application constitutes the property owner's permission for the Commission or its staff to enter the property for the purpose of inspection. I certify to the best of my knowledge that the above information is true and correct and conforms to the Zoning Regulations of the City of Groton.

Applicant Name printed Norman Bloom

Applicant Signature *Norman Bloom*

Date 5.29.19

Owner Name printed Norman Bloom

Owner Signature *Norman Bloom*

Date 5.29.19

Planner: _____

Date: _____

CITY OF GROTON
APPLICATION FOR REVIEW OF COASTAL SITE PLANS

Model Coastal Site Plan Review Application

Supplemental Information for Projects Located within the Coastal Boundary*

Refer to Coastal Site Plan application instruction sheet (attached) for sources of information, and general comments pertinent to filling out this application.

NAME OF APPLICANT: Norman Bloom & Sons, LLC

DATE: April 22, 2019

PROJECT ADDRESS OR LOCATION: 107 Thames St.

The following information must be supplied by the applicant, and submitted in addition to, and long with, any application, plans, and data required for approval of the proposed project under the Zoning and/or Subdivision Regulations of this municipality. Attach additional sheets if more space is required.

I. PLANS

A. Project Plan(s)

This application must be accompanied by a plan (or plans) of the entire project indicating:

1. Project location
2. Design of all existing and proposed buildings, structures, and uses
3. All proposed site improvements or alterations
4. Ownership and type of use on adjacent properties

B. Coastal Resources

This application must be accompanied by a plan showing the location of all coastal resources (as defined in C.G.S. Section 22a-93)

The project site is located at 107 Thames Street in Groton Connecticut. This site is approximately 1/2 mile south of the I-95 Goldstar Highway bridge which runs between Groton and New London. The coastal resources at this site include the Thames River which is an Estuarine Embayment, subject to coastal flood hazards of inundation and storm driven waves. The site itself is a fully developed shorefront, a modified bluff, with a full-length stone seawall which has existed for decades, if not more than a century

II. WRITTEN INFORMATION

A. Description of the Proposed Project

Describe the entire project including types of buildings and structures, uses, methods and timing of construction, type and extent of development adjacent to the site. This information should supplement and/or clarify plans in I. – A. above.

This project is to restore and cap an existing, longstanding stone seawall, re-grade the existing site to restore a boat yard and access driveway, place 100 CY of crushed stone over 10,000 (+/-) SF for a new yard and driveway surface, install a gabion, concrete block or granite block retaining wall, 200 (+/-) CY over 600 (+/-) SF, install new water and electrical service utilities, and rebuild a wood pile and timber pier including new breasting dolphins, and install a floating dock barge with a hinged ramp to shore for berthing aquaculture vessels.

*Coastal Boundary maps are on file at the Town Clerk's Office and/or Planning and Zoning Office.
B. Description of Coastal Resources

Identify the coastal resources on and contiguous to the site (as shown on the coastal resources map) and describe their condition. This information should supplement and/or clarify the plan in I. B. above.

The site is a modified bluff located on an estuarine embayment exposed to coastal hazards of flood and waves.

C. Assessments of the Suitability of the Project for the Proposed Site and the Capability of the Resources to Accommodate the Proposed Use.

1. Identify any and all coastal resource policies (in C.G.S. Section 22a-92 (b) (2) and printed in CAM Planning Report #30) applicable to the proposed project.

General Resource: A, B and C This site is developed and is being modified to remain a high priority water dependent use. Resource Policies applicable to the site are address in greater detail below.

Coastal Hazard Area: A: The site is exposed to coastal flooding and storm waves.

Developed Shorefront: A: The site is completely developed with a seawall and boat yard facilities.

Shellfish Concentration Area: Parts of New London Harbor are designated as shellfish concentration areas although this site would hardly seem to qualify because of the rock nature of the shallow subtidal shoreline benthos.

Coastal Waters: A: The Thames River and New London Harbor are classified at Estuarine Embayment's.

2. Identify any and all coastal use policies (in C.G.S. Section 22a-92 (b) (1) and printed in CAM Planning Report #30) applicable to the proposed project.

General Development: A: This site has been developed and historically used as a boat yard of high priority water dependent use until the last 15 years during which it has sat idle. That is about to change for the better.

Water Dependent Uses: A, B: The boat yard, and now aquaculture support facilities are high priority water dependent uses.

Ports and Harbors A, B and National Interest Facilities and Resources Policy: B: The Port and Harbors uses and National Interest Facilities issues are commonly addressed in this project. The strategic importance of New London is well known with defense plants and a military base nearly and integrally connected to the economy and world stability. New London is also a regional shipping terminal and hosts two regional ferry transportation facilities. Fishing and shell fishing facilities and operations have been lacking for decades and the project, even as small as it is by comparison will be a vital and much needed step in diversification.

3. Describe how the proposed project is consistent with all of the coastal policies identified in C (1), and (2) above (i.e., describe the extent to which the project complies or conflicts with each policy). Note: If a project conflicts with any policy, the project should be modified to reduce or eliminate the conflict.

This project is fully consistent with the Coastal Area Management plan of the state. The project involves replacing a long-standing recreational boating dock facility with an aquaculture support facility. This project makes use of an existing, long-standing, high-priority water dependent use site, converting the geographical features to accommodate safer and more efficient vehicle access to the work yard bounded by the sea wall along the Thames River. This site, once restored, will provide docking facilities for aquaculture vessels and a means for the crew and support vehicles to reach the site, man the vessels and secure them safely, even during coastal storm conditions, in close proximity to the shellfish beds which they work on a daily basis.

D. Evaluation of the Potential Beneficial and Adverse Impacts of the Project and Description of Proposed Methods to Mitigate Adverse Effects.

1. Identify and describe the potential adverse impacts (as defined C.G.S. Section 22a-93 (15)) and potential beneficial impacts of the project on coastal resources.

Erosion and possible collapse of the sea wall is a potential adverse effect of this project not moving forward. The design of the docking facilities and the upland access yard has been undertaken in accordance with the City of Groton Zoning regulations, best management practices set forth by the State of Connecticut Soil Conservation Service guidelines, and current construction industry standards, in an effort to avoid adverse impacts to the environment and coastal resources at the site or nearby in the Thames River. The beneficial aspects to this project are the reduction of erosion and loss of soils at the site and the stabilization of the existing seawall and dock facilities to be utilized in this high priority, water dependent use.

FOR WATERFRONT PROPERTY ONLY:

2. Is the project a water dependent use as defined in C.G.S. Section 22a-93 (16)? If so, explain why.

This priority project is a high priority water dependent use as defined in CGS Section 22a – 93 (16). The facilities will support landing and berthing of aquaculture vessels at a protected site in the immediate proximity to the shellfish beds located throughout the Thames River and provides enough parking to accommodate the crews.

3. Describe the impacts or effects (either positive or negative) that the project will have on future water dependent uses or development on, and adjacent to this site. (Adverse impacts on future water dependent development opportunities are described in C.G.S. Section 22a-93 (17)).

This project will have no adverse impact on future water dependent uses. The project itself is a high priority water dependent use which will be conducted from a very small site, practically unusable for any other purpose except residential accommodations or a boat yard with limited maintenance facilities for small boat repair and engine work. If, however, a higher priority water dependent use would require this site in the future, the site grading proposed herein, and possibly the rebuilt docking facility, would probably prove beneficial for such a use.

4. Describe the proposed measures to mitigate (reduce or eliminate) any adverse impacts on coastal resources described in D (1) and, if applicable, on future water dependent developments opportunities described in D (3).

The mitigative measures utilized in the design for this project include safer access accommodations, re-grading the site to provide a larger and more usable work area, and ceiling and stabilizing the seawall to make more secure. All of this work can be done without adversely affecting existing coastal resources. The project therefore should also not have any adverse effect on future water dependent uses which might be able to utilize such a limited site.

E. Demonstration of the Acceptability of Remaining or Unmitigated Adverse Impacts on Coastal Resources and Future Water Dependent Uses and Development

1. Describe any adverse impacts that remain after employing all reasonable mitigation measures.

It is not envisioned that there will be any adverse environmental impacts remaining after the completion of the proposed site improvements and these improvements do not appear to require mitigation measures.

2. Explain why these other remaining adverse impacts were not mitigated.

It is not envisioned that there will be any adverse environmental impacts remaining after the completion of the proposed site improvements and these improvements do not appear to require mitigation measures.

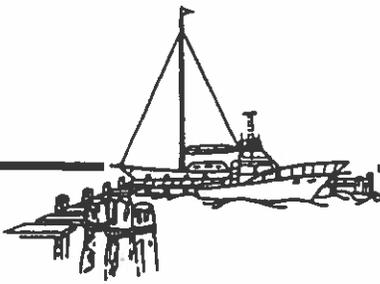
3. Explain why the Commission reviewing this application should find these remaining adverse impacts to be acceptable.

This is a good project, not only consistent with Groton Zoning Regulations, and the City's Plan of Development, and the Thames Street study, but it also makes exceptionally good use of a very limited site, utilizing the area efficiently, retaining and restoring existing degraded features, including the seawall and dock facilities, and supporting a growing aquaculture industry which benefits the community, and the local economy. The project is consistent with the special permit requirements set forth in the zoning regulations and has been welcomed by several members of the neighborhood. This project appears to meet the spirit and the letter of the permitting requirements of the US Army Corps of Engineers, State of Connecticut DEEP and the City of Groton.

III. SUPPORTING MATERIALS/DOCUMENTATION

- A. The Commission or Board may request the submission of such additional information that it deems necessary in order to reach a decision on the application.

Include any additional information required by the Commission, and list any supplemental materials (plans, reports, etc.) that are being submitted in support of this application.



Docko, Inc. *Serving the waterfront community since 1987*

P.O. Box 421, Mystic, CT 06355 (860) 572-8939 Fax: (860) 572-7569, email: office@docko.com

May 28, 2019

Mr. Dennis Goderre
City of Groton Planning & Zoning Commission
295 Meridian Avenue
Groton, CT 06340

Re: Norman Bloom and Sons, LLC
Site Modifications, 107 Thames St.

Dear Mr. Goderre,

We are transmitting herewith 8 copies of the Application for a Special Permit for site modifications at 107 Thames Street. Enclosed, with the application are 8 copies of the Coastal site plan and the application fee in the amount of \$310.00 (\$250 fee plus \$60 State fee).

I trust that you will find the application complete and acceptable. I look forward to the opportunity to discuss this with you further in a plan review should you so desire, or at the earliest Zoning Commission Meeting.

Yours truly,
DOCKO, INC.


Keith B. Neilson, P.E.

KBN: cl
Enclosures
CC: Mr. Norman Bloom, Aeros
Mr. Jim Markow, Aeros
File: 19-02-3006 AEROS, 107 THAMES ST

Application No.: _____

FOR OFFICE USE ONLY Fee Paid: _____ Date of Submission: _____

Final Action: Approved: _____ Denied: _____ Withdrawn: _____ Date of Action: _____
Approved w/ Conditions: _____ Action By: _____



City of Groton, CT
Department of Planning & Economic Development

Form 1 - Planning and Zoning Application

*Submit all applications and fees in person at the
Building and Zoning Department, 295 Meridian St, Groton, CT 06340
M-F between 8:00AM – 4:30PM.*

*For more information please visit us at the above address or call to schedule an appointment:
City Planner: 860-446-4169, Dennis Goderre, ASLA, AICP CUD*

Important Considerations

Applications that require Planning and Zoning Commission review must be submitted three (3) weeks in advance of a regularly scheduled meeting date. See the Planning and Zoning webpage for schedules. Eight copies of all application materials shall be submitted unless otherwise directed by staff. PDF of all application material shall accompany the submission and all fees paid at time of application.

The application will be received at the next regularly scheduled meeting that follows the date of submission. If the meeting is canceled, the date of receipt will remain the date the meeting would have occurred. The Commission will not review the application at this meeting. The Commission will review the application, and if appropriate, take action to approve or deny the application at the following meeting (approximately six (6) weeks following the date of submission). This will allow time for staff review and the applicant to respond to staff comments. More time may be warranted. If a public hearing is required, the hearing may not occur until the second meeting following the date of receipt.

NOTE: Prior to making application a Pre-application meeting is recommended as outlined in Section 9.1 of the Zoning Regulations.

Application Type

Select all application(s) required and attach the completed form(s) as referenced:

- | | |
|--|---|
| <input type="checkbox"/> Zoning Permit (Form A) | <input type="checkbox"/> Subdivision/Lot Line Revision (Form D) |
| <input type="checkbox"/> Site Plan (Form A & Zoning Table) | <input type="checkbox"/> Lot Combination (Form D) |
| <input type="checkbox"/> Site Plan: Major Mod. (Form A & Zoning Table) | <input type="checkbox"/> Zoning Amendment (Map) (Form E) |
| <input checked="" type="checkbox"/> Special Permit (Form A) | <input type="checkbox"/> Zoning Amendment (Text) (Form E) |
| <input checked="" type="checkbox"/> Coastal Area Management (Form A & B) | <input type="checkbox"/> Subdivision – Major Mod. |
| <input checked="" type="checkbox"/> Floodplain Development (Form A & C) | |

Property Information

Property Address¹:
107 Thames Street

Property Size: _____ Acres 13,600 SF In flood zone: Yes² No In CAM Zone: Yes³ No

Zoning District(s): Waterfront Business Residential WBR

Parcel ID 168919227417 Information can be obtained at <http://maps.groton-ct.gov/apps/GrotonViewer/>

If more than one property is part of the project, separate application forms and fees must be submitted for each property.

Property Owner Information

Name(s): Norman Bloom & Sons, LLC

Street Address: 7 Edgewater Place

City: Norwalk State: CT Zip Code: 06855

Phone: 860-460-4558 Mobile: _____ Email: office@docko.com

Stormwater Management Design

Does the stormwater management plan meet the requirements of Section 7.7? Yes No

If no, what section of the regulations are you requesting relief by Special Permit? _____

Explain (below or attach separate sheets):

Note: A stormwater management report with supporting calculations must be provided and signed and sealed by the design engineer licensed in the State of Connecticut.

¹ Address shall correspond to the address identified on the Assessors Property Information <http://maps.groton-ct.gov/apps/GrotonViewer/>
² If within a Flood Protection Overlay Zone Form C must accompany this application. See Section 5.3 FP Overlay Zone
³ If in a CAM area Form B must accompany this application. See Section 5.2 CAM Zone

Applicant Information

Note: Designer/representative/architect/engineer is NOT the applicant (see Agent contact information below).

Please check if Applicant is the same as Property Owner

Name: _____ Company: _____

Address: _____ City: _____ State: _____ Zip Code: _____

Phone: _____ Mobile: _____ Email: _____

Agent/Primary Point of Contact (may be designer/representative/architect/engineer)

Name: Keith Neilson, P.E. Company: Docko, Inc.

Address: 14 Holmes Street City: Mystic State: CT Zip Code: 06355

Phone: 860-572-8939 Mobile: _____ Email: office@docko.com

Signatures (all owners)

By signing below I acknowledge the following:

1. This entire application must be completed, signed, and submitted with the required fee(s) and map(s) prepared in accordance with the applicable regulations or the application may be deemed incomplete or denied;
2. This application constitutes the property owner's permission for the commission or its staff to enter the property for the purpose of inspection;
3. The applicant agrees to pay all additional fees and/or address such costs deemed necessary by the Department of Planning and Economic Development as described in the City Fee Ordinance #169; and
4. That the information provided herein and any supplemental information that may be provided in support of the application is accurate to the best of my knowledge and truthfully represents the information it is intended to support, including but not limited to, property descriptions, use descriptions, calculations, and methods and means of construction.

Applicant: 

Date: 5-29-19

Printed Name: Mr. Norman Bloom

Agent: _____

Date: _____

Printed Name: Mr. Keith B. Neilson, P.E.

Property Owner (1): 

Date: 5-29-19

Printed Name: Mr. Norman Bloom

Property Owner (2): _____

Date: _____

Printed Name: _____

If held in a Trust, name of Trust: _____



City of Groton
Planning and Zoning Commission

Municipal Building
295 Meridian Street
Groton, CT 06340
(860) 446-4169
(860) 446-4109 FAX

APPLICATION FOR SPECIAL PERMIT

This application including the proposed site plan in conformance with the City of Groton Zoning Regulations, appropriate fee and supporting documents and other applications as required must be submitted in triplicate at least fourteen (14) days prior to a regularly scheduled meeting of the Planning and Zoning Commission in order to be received at that meeting.

Note: In order for this application to be accepted, it must be complete, signed by all appropriate parties and accompanied by all necessary fees and maps and plans.

SPECIAL PERMIT #

- 1. Property Location: 107 Thames Street
2. Current Use: Marinas Zoning District: WBR Parcel Size: 0.287
3. Tax Map: 168919 Block: 22 Lot: 7417 PIN: 168919227417 (property ID #)
4. Applicant/Agent: Norman Bloom & Sons, LLC (Name)
Address: 7 Edgewater Place, Norwalk, CT 06855
Phone #: 860-460-4558 FAX#:
5. Owner of Property: Norman Bloom & Sons, LLC (Name)
Address: 7 Edgewater Place, Norwalk, CT 06855
Phone #: 860-460-4558 FAX#:
6. Surveyor/Engineer Information: Docko, Inc. (Name)
Address: 14 Holmes Street, Mystic, CT 06355
Phone #: 860-572-8939

It is hereby requested that a Special Permit be granted under the provisions of Section 3.14 of the City of Groton Zoning Regulations that will permit the following: (provide a brief project description including the proposed use, impact on traffic patterns, the environment and neighboring properties)

This project is to restore and cap an existing, longstanding stone seawall, re-grade the existing site to restore a boat yard an access driveway, place 100 CY of crushed stone over 10,000 (+/-) SF for a new yard and driveway surface, install a gabion, concrete block or granite block retaining wall 200 (+/-) CY over 600 (+/-) SF install new water and electrical service utilities, and rebuild a wood pile and timber pier including new breasting dolphins and install a floating dock barge with a hinged ramp to shore for berthing aquaculture vessels.

For fill/excavation applications: Fill 300 Cubic Yds. Excavation Cubic Yds.

Has an Inland Wetland Application been submitted? Y _____ N N/A _____
 Has a Coastal Site Plan Application been submitted? Y N _____ N/A _____
 Is any portion of the site within a Flood Hazard Area? Y N _____
 Is the site within 500 feet of the City line? Y _____ N
 Has any application been filed previously with any Commission in connection with this parcel?
 Y _____ (if yes, please complete following) N

Type of application(s): Special Permit Application
 Date of application(s): April 22, 2018

The following items are required to be submitted in support of this application:

1. Fee: \$250.00 plus \$60.00 State fee. Payable to the City of Groton.
2. Site Plan and Site Plan application prepared in accordance with Section 6.6 of the City of Groton Zoning Regulations (8 copies).
3. Floor plans and elevation for proposed or existing structures.
4. A list of all property owners within 200 feet of the parcel, signed and dated by the Applicant.

The submission of this application constitutes the property owner's permission for the Commission or its staff to enter the property for the purpose of inspection. I certify to the best of my knowledge that the above information is true and correct and conforms to the Zoning Regulations of the City of Groton.

Applicant Name printed Norman Bloom

Applicant Signature *Norman Bloom*

Date 5 29 19

Owner Name printed Norman Bloom

Owner Signature *Norman Bloom*

Date 5 29 19

Planner: _____

Date: _____



**City of Groton
Department of Planning & Economic Development**

Form A: Zoning Permit, Site Plan and Special Permit

Refer to Section 9 Administrative Provisions of the Zoning Regulations for all application procedures in addition to those listed upon this form.

The Form A - Zoning Table must be attached to this form.

District

Zoning District(s): 1. WBR 2. _____

Proposed Use

List the Principal Use(s) you are requesting permits for (See applicable district regulation):

- 1. Docks for Shellfisheries 3. _____
- 2. Yard for aquaculture boat service and repair 4. _____

List the Accessory Use(s) you are requesting permits for (See applicable district regulation):

- 1. Tanks for algae growth 3. _____
- 2. _____ 4. _____

Project Narrative

On the following page describe the proposed project/request being as detailed as possible. The Project narrative helps to establish the use(s) listed above for which the permit will be issued. At minimum, it shall include the following information:

- a. Describe the nature of use(s) and associated activities. Be as detailed as possible.
- b. Describe all natural resources including but not limited to inland wetlands, flood areas and coastal resources as defined in C.G.S. Section 22a-93
- c. Methods, timing, schedule, sequence of construction and staging
- d. SF of existing and proposed buildings; Number of stories of buildings/additions
- e. Number of employees
- f. Description of utilities
- g. Number of parcels upon which improvements are proposed
- h. Quantity of parking required and proposed and itemized by principal use
- i. Hours of operation
- j. Number of residential units
- k. For mixed use, breakdown by SF of each use and number of residential units
- l. *For Special Permits, provide a separate narrative explaining how the application addresses each Special Permit Criteria explained in Section 9.4.D.*

Project Narrative (see instructions on previous page)

Please see attached.

(attach additional pages if required)

ZONING DATA TABLE-WBR ZONE

	<u>REQUIRED</u>	<u>PROVIDED</u>
Lot Area (Sec.3.162)	4,000	13,949 SF
Lot Width/Frontage	40 Feet	141(+/-) Existing
Lot Coverage (Sec.3.17d)	50(+/-) Max	0% No Building
Front (Sec.3.17a)	10 Feet	10 Feet
Side (Sec.3.17c)	10 Feet	10 Feet
Rear Yard from MHW	20 Feet	20 Feet
And Sec.3.19-2a(1)	35 Feet	No Building
Building Width as Percentage of Lot	N/A	No Building
Parking: On site and on Street	4 total	6 on site
Parking Area Landscaping		Variance Requested
Sign (Sec.3.19-3 and 4.4)		See note 12
Accessway/ Intersection Offset	50 Feet	50 Feet Existing



City of Groton, CT
Department of Planning & Economic Development
Form A - Zoning Table

NOTE: Attach this form to the end of Form A Application and provide upon submitted site plan.

Item	Required	Proposed
Lot Area	4,000 SF	13,600 SF
Lot Width	40 FT	141 FT (+/-)
Front Yard Setback (Min)	10 FT	No Building
Front Yard Setback (Max)		
Side Yard Setback N/S	10 FT	No Building
Side Yard Setback E/W		
Rear Yard Setback	20 FT	No Building
Building Coverage	50%	No Building
Building Height	25 FT	No Building
Building Width	40% of Width	No Building
Total Impervious Coverage		10%
Existing Impervious Coverage	20% (+/-)	
Parking Provided (mixed uses complete below)	2 Existing	6
Use 1:		
Use 2:		
Use 3:		

**PROJECT NARRATIVE FOR
WATERFRONT PROPERTY RESTORATION
SITE PLAN/COASTAL SITE PLAN & SPECIAL PERMIT APPLICATION**

**AEROS CULTURED OYSTERS
OWNER: NORMAN BLOOM AND SONS, LLC
107 THAMES STREET
GROTON, CONNECTICUT**

**APRIL 12, 2019
REVISED May 24, 2019**

GENERAL INFORMATION

In accordance with Section 6.62.1, by reference from Section 6.51 and Section 3.0 of the Zoning Regulations, the applicant, Aeros Cultured Oysters, and Norman Bloom & Sons, LLC, owner of the site, submits this written statement of the proposed use for the restoration of facilities on property at 107 Thames Street. The site is shown as Lot #7417 on Map #1689 (18) on Thames Street in the Waterfront Business Residence Zone (WBR).

This project is to restore and cap an existing, longstanding stone seawall, regrade the existing site to restore a boat yard and access driveway, place 100 CY of crushed stone over 10,000 (+/-) SF for a new yard and driveway surface, install a gabion, concrete block or granite block retaining wall, 200 (+/-) CY over 600 (+/-) SF, install new water and electrical service utilities, and rebuild a wood pile and timber pier including new breasting dolphins and install a floating dock barge with a hinged ramp to shore for berthing aquaculture vessels.

The purpose of the Waterfront Business Residence District is to encourage a mixture of land uses that will enhance the unique qualities of the Thames Street area with emphasis on waterfront access and water-dependent and related uses and retention of the historic character and scale of the "Groton Bank". This site was a boat yard uniquely fitted with a marine railway for hauling boats and a fixed wood pile and timber pier to accommodate up to 20 boats of up to 50-foot lengths.

Orientation of development toward the Thames River is a primary consideration in the Zone District with preservation of views from public access to the riverfront. Water-dependent uses are specifically encouraged to be located along the river as primary uses. This is not an open space or recreation zone and no such development is proposed. It will be a working aquaculture yard support facility. That notwithstanding, the views from the sidewalk behind the seawall will be preserved.

Zoning regulations section 3.14 set forth special permit uses in the WBR Zone, which include:

F: Boat docks, slips, piers and wharves for vessels engaged in ... fishery or shell fishery activities

G: A yard for building, storing, repairing, selling, or servicing boats which may included the following as an accessory use: office for the sale of marine equipment or products, dockside facilities for dispensing fuel, restroom and laundry facilities to serve overnight patrons. Furthermore, adequate lanes must be provided to allow access and egress throughout the yard for fire trucks.

Aeros seeks to regrade the site to improve access to and use of the property. Aeros plans to rebuild the dock facility to adapt and make it usable for aquaculture vessels and purposes. DEEP and US ACOE permits are being pursued for this work. A copy of the A-2 Boundary Survey and topographic survey for the site is attached. The proposed use is authorized by Section 3.14 of the Zoning Regulations. There are no planned occupiable structures (buildings) in this project, only a fence at the north edge of the property, a gate, and an interior retaining wall of gabions, or blocks (concrete or granite). There will be some accessory uses and activities on the site to include operation of tanks to grow algae. The 6-12 tanks have been depicted to be on the ground immediately behind the seawall. The tanks are approximately 8 feet in diameter and 6 feet high with PVC piping to provide fresh water flow from the river and discharge the circulated water back in to the river. This algae growth function is currently in use at the Noank Shellfish Cooperative and is being coordinated with the CT DEEP at this time. Attached are water quality analysis data sheets compiled for the Noank operation which the DEEP has reviewed and were found to be acceptable as demonstrating minimal or negligible changes to river water quality in Noank. This site development plan represents a balance between existing site characteristics and planned accommodation of aquaculture vessels and equipment, even including some shore side algae growth tanks (six to twelve). The upper site parking area will have a 10-foot buffer with a fence and dune type grass or bayberry bush plantings. The site is tight but will allow for parking of a half dozen vehicles on the site, which is more than enough, historically, for demand of aquaculture vessel manning.

SIGNIFICANT PHYSICAL FEATURES

This site consists of urban land (udorthent soil characteristics) where 85% of the surface is covered by streets, parking lots, and/or buildings (formerly). Most of the original soils underlying this property have been altered by excavation or covered by fill. There are no wooded areas and no recognizable landmarks or geological features with the exception of the Thames River. Dock changes are proposed in the river and into the lift well. There are no inland wetlands on the site nor are there visible inland wetlands within 100 feet of the property boundary as indicated on the plan. The tidal wetlands boundary in this case would be the watercourse, the face of the seawalls

and the ordinary high-water line, and soil scientist Richard Snarski has conducted a site evaluation to verify the absence of wetlands.

The most significant feature of this site is the vista and the waterfront seawall and dock facility. The sidewalk view of the Thames River and the port facilities of New London are uncommon at this site and will not be altered. Of the 14(+/-) LF of site frontage on the river, the upper parking area uses up only 25 feet. This leaves more than 80% of the site open for the public to enjoy the view from the sidewalk along Thames Street.

The site has open exposure to the southwest and waves, storm-driven or otherwise, which travel up the harbor. Even the normal fetch for wind-driven waves will generate wave heights of two feet, and thus, there is a constant threat of wave damage to the seawall requiring repair of the seawall and its base. As a means of protecting the site while making the best use of work yard area, the yard will be covered with crushed stone, sloping slightly to the west for sheet flow drainage, and a cap will be placed along the top of the stone wall to bolster the protection and minimize erosion or sedimentation of this waterfront site. The back side of the seawall will be revealed, joints mounted, sealed with geotextile fabric and then back filled. The seawall will be capped with concrete or granite and pinned to the existing seawall structure to provide lateral support.

PARKING AND TRAFFIC DESIGN- SECTION 4.3

There will be only one driveway access point. The parking requirements for the site are based on the number of slips, which is 4 or the actual number of employees or staff which will board and operate vessels from this site and that number will be six at most and they will generally arrive by van rather than individual cars.

The driveway and the vehicle operations area will be surfaced with crushed stone. Only the entryway apron will be paved.

It is anticipated that only two to four parking spaces will be utilized by employees and crew at nominal demand.

No truck loading bays are required, and six parking spaces are laid out on the site. Two parking places are on the north side of the lot at the upper entrance area and four along the gabion/block wall, below street level, on the west side of the gabion wall. The parking spaces are 9-FT by 20-FT.

The spaces have been laid out to be 25 feet from the Mean High-Water line. The parking spaces are delineated with dashed lines because they will not be marked on the crushed stone yard surface.

No handicapped parking spaces are required, however, one of the four spaces on the lower level will be for handicapped access with an 8-foot-wide space and an 8-foot-wide access area, both 20 feet long.

No truck loading bays are required, and none are provided.

SIGNS SECTION 4

There will be no signs installed for this operation. There will be one information sign prepared for the site and it will be provided to the City for attachment to the sidewalk rail for viewing from the sidewalk near the southerly end.

DRAINAGE

Virtually all drainage on and adjacent to the site is sheet flow and is absorbed into the ground or runs off the west edge of the site into the Thames River. Construction of the improvements will decrease the area of impervious surface on the site slightly and flatten the yard gradients. Runoff will still be directed into the west edge of this site. It is planned that the site will have a surface of crushed stone (or grass or vegetation on the northerly edge and terrace) to diminish runoff velocities, minimize the chance of erosion and maximize the potential for infiltration of rainfall into the ground. No detention is considered necessary or appropriate due to the site's proximity to the river, and no impact on existing or adjacent municipal facilities or properties is expected as a result of this development. Drainage calculations have been prepared for the proposed site modifications.

FLOOD ZONE CONSIDERATIONS SECTION 4.7

The site is located in and adjacent to the Coastal Flood Hazard Zone identified in the FIRM (Flood Insurance Rate Map) for the City of Groton. The site is in Zone VE and the Flood Zone elevation is 14. As a result of this determination, the electrical and water service utility pedestal will require special flood construction techniques. The walls of the pedestal will be designed to withstand hydrostatic and dynamic flooding forces, and the finished top elevation will be 15 feet NAVD. In addition, the grounds will be surfaced with crush stone to minimize erosive forces on the surface due to rainfall runoff or wave splash-over. Trade permit applications will demonstrate compliance with building code provisions appropriate to construction in the VE zone so as to minimize the possibility of flood damage. Utilities will enter the site above flood elevation northeasterly corner and serve the lower level of the yard from above so as to maintain minimum susceptibility to damage due to flooding. In addition, a backflow prevention device will be incorporated into the water service for the docks to assure that saltwater cannot backflow through the municipal water system from this site. New utilities construction will be anchored to a slab and/or a concrete pedestal with spread footing to prevent under mining from wave scour or floatation, collapse, or lateral movement of the structure due to flooding conditions. An application for modifications to shorefront protection structures and the modified docks will be

submitted to the Department of Energy and Environmental Protection Land and Water Resources Division as necessary for construction of proposed improvements to the stone seawall and construct a replacement dock facility.

The project site is not a Flood Plain Area and is not a Floodway. As demonstrated in the U. S. Army Corps of Engineers Tidal Flood Profile 4, Plate C9 and C10 attached, it is clear that flooding in New London Harbor is attributed to the source of flooding which is Long Island Sound. This is evident by comparing Plates C9 and C10 showing the uniform flood elevations out in Long Island Sound and consistently all the way north to Winthrop Point beneath the Gold Star Highway bridge. It is therefore clear that no matter how much regrading in the floodplain is changed by new construction, the elevation of water level in the harbor would not be affected. The volume of the site regrading represents less than 300cy in the flood plain compared to the volume of the Thames River at its normal tide elevations and south of Winthrop Point to the New London Ledge Lighthouse, which is about 3 miles long by 1 mile wide. This represents less than 0.015 percent. In view of these considerations, this project will have no impact on the flood characteristics of the Thames River and will not represent an obstruction to river flows during flooding conditions. Clearly the site regrading does not constitute a flood or erosion control structure. The seawall or the site internal retaining walls do not alter the flow of flood waters or correct any erosion problems; there are none at the site. Flood elevations will not be raised because of this development.

UTILITIES

The property previously accommodated a small office/residential structure with a ¾-inch water line, 6-inch gravity sewer, and electrical utilities. While a new 600-amp electrical service will be provided ultimately, the interim electrical service will be 120 volt single phase or three phase 200 amps, a new 2-inch water line and the existing connection into the municipal system are not to be abandoned, though they will be rebuilt to meet current separation standards. All utilities will come into the site at the northeasterly corner as shown on the plan. This project is being coordinated with Groton Utilities for initial review and design considerations and modified per their recommendations.

Utilities will come into the site underground. The finished elevation on the pedestal is about 23 feet (+/-), whereas the flood elevation is 14 feet NAVD. There will be a new Groton Utility disconnect adjacent to the electrical distribution panel. Utility services and hose spigots will be therefore flood-proofed as stipulated in the zoning regulations. Details for a positive backflow prevention device are included in the details.

COASTAL ZONE CONSIDERATION

This site is located in a Coastal Zone dictated by the Coastal Management Act of 1980 and under the purview of review of the CT DEEP Land and Water Resources Division. The site is characterized as a modified bluff located along an estuarine embayment (New London

Harbor/Thames River) subject to coastal hazard of flooding and waves. There are no shellfish resources right at the site and no tidal wetland or submerged aquatic vegetation along the shoreline in the shallow subtidal waters. The features of the site which warrant consideration in this project are covered in detail in the attached Coastal Zone Management Review Worksheet.

The purpose of this project is basically redevelopment of an underutilized and neglected site. The proposed functions are to utilize the rebuilt docks to support access for aquaculture vessels, a water-dependent use. This project is compliant with Coastal Zone policies, as well as the zoning regulations, because it makes use of existing developed shorefront for water-dependent use and non-water-dependent uses do not restrict future water-dependent uses or opportunities from being utilized on the site. There is no new encroachment on navigation, and there is no impact on sensitive environmental features associated with New London Harbor.

The shoreline is subject to flood hazards associated with New London Harbor, including both water elevation and waves. No special flood proofing or structural requirements are incumbent for a building since there is no building on the site. No fill per se has been added to the site as preparation for the yard work area. The only fill required will be crushed stone surface material for the access drive, work area, and parking spaces and the blocks for the retaining wall.

The project will neaten up the site and the neighborhood consistent with various plans for the development of the City of Groton and the Zoning Regulations. In the review of the project conducted over the past few weeks, there was support for the project by most of the neighbors and the municipal agencies and staff reviewing the project.

There will be no adverse impact on water flow and circulation or sediment transport, and there will be no impact on boating in the river or navigational issues. The proposed dock facilities will replace existing dock structures in a similar configuration, utilizing slightly different shaped and sized piers to provide berthing for the aquaculture vessels.

The marine railway well will serve as the point of origin for the pier in order to allow for the dock access. This scheme has been discussed with the DEEP Land and Water Resources staff, and a Structures and Dredging permit application is in the final stages of preparation. The proposed scope of work has been considered generally consistent with standards and criteria utilized by the Land and Water Resources Division under a Certificate of Permission. It is anticipated that this permit application will be issued in the very near future.

This shoreline is located approximately 650 feet from the municipal boundary with the City of New London, however, the north end of the pier will be approximately 500 feet from the municipal boundary and may require simultaneous coordination with the City's planning and

development agencies. Similar coordination will be accomplished with the DEEP Certificate of Permission and the USACE permitting process.

In summary, this project has been developed in close coordination with municipal staff and state agencies to assure compliance with published standards and criteria for development approval. It makes use of an existing run-down site and will restore it to functional stature with minimal improvements and reduce the blemish of aesthetics of the neighborhood. The proposed site modifications therefore comply with pertinent criteria without any known or foreseeable significant or adverse impacts. Coastal Resource Maps published by the DEEP are included as attachments to this narrative.

CONSTRUCTION METHODOLOGY

The existing pavement will be pulverized and along with miscellaneous fill and rocks onsite will be used to fill in the hole left by the basement of the building which formerly stood at this site.

The existing grades on the site will be altered to the extent necessary to match the proposed grades. No fill will be place in the lift well.

As the grade is altered to conform to the proposed driveway gradients leading to the south easterly corner of the yard gabions, concrete blocks or stone, backed by geotextile fabric will be placed, angled back into the slop progressively with height, for soil retention. The ground behind the seawall will be excavated, the wall will be packed with mortar from behind, geo textile fabric placed, concrete or preferable 3/8 inch crushed stone will be placed and rammed to fill crevices and cavities and then a covering of gravel and 1 ¼ inch (DOT spec) crushed stone filled up to the top of the new seawall cap. This crushed stone will be basically dustless after the first rainfall.

The utilities will be rerun to the utility pedestal underground and in conduit to facilitate access in the event that maintenance is required. There will be a disconnect on the pedestal or in an electrical service hand hole or vault and an isolation valve for water service onsite near the street. Service lines will run underground from these disconnect points to the utility pedestal in the upper yard.

Grading and block walls will continue progressively to reach finished grades and gradients.

There will be no plantings.

The dock facility will be demolished and removed by barge.

The new dock facility will be built from a barge, starting with driving new piles in bents spaced roughly at 10-foot intervals with bracing piles within the pier framing. A cap, probably 10 x 10 or similar timbers will be placed across the top of piles in each bent, pinned and

trimmed. New deck stringers will be attached, utility conduits placed in between and attached to the stringers, and the capped piles awaiting utility installation. Finally, the decking will be attached. All of these timbers will be heavy duty.

Rails, and toe rails will be added as finishing touches. The remote utility panel will be installed at the pier angle point fillet and conduits in between stringers below the deck as shown in the drawing. This bend in the pier will also be where the deck width changes. The forklift will still be able to reach the far northerly end of the pier but such access will generally terminate at the bend.

Wave boards for chop attenuation will be built onto the south side of the pier. These boards will have a bottom tip elevation of 1 foot below MLW. The boards will top out at 3 feet above MLW.

Lights and power posts will be installed at intervals throughout the pier. There will be pile or post mounted louvered lights aimed down to illuminate the deck. Site lighting will be basically ground level bollard lights near the seawall and the retaining wall and along the entry drive at the back side of the retaining wall.

The new dolphins will be built on the west face of the pier for accommodating the vessels. Two dolphins will also be installed on the inside of the pier. A barge will be installed just off the face of the seawall with a hinged ramp to shore to accommodate the smaller vessels.

SEDIMENTATION AND EROSION CONTROLS

For the most part the project will be a cut and fill job. Materials excavated from the middle of the property will be redistributed to the driveway regrading and raising the grade behind the seawall slightly.

The hole left by the demolition of the old building on this site will also be filled in. The old pavement may have to be pulverized, then hauled or buried in the basement hole of the old building.

The staging and stock piling area will be the main yard with E&S silt fencing, sandbags or haybales around the down hill (westerly, northerly and southerly) edges and around the railway well.

The equipment staging area will be toward the southerly edge of the lower yard.

VARIANCES

This project has been designed in accordance with provisions of the Zoning Regulations without exception. It is believed that there is no variance required for this project to be built as depicted on the attached drawings.

SPECIAL PERMIT PERFORMANCE STANDARDS

The proposed yard regrading, retaining walls and rebuilt boat dock facilities will not create any danger; injurious, noxious or otherwise objectionable, fire, explosive or other hazards, noise or vibrations, smoke, dust, odor or other form of air pollution, heat, cold, dampness, electromagnetic or other substance condition or element in such a manner or such amount to adversely affect reasonable use of the surrounding area or adjoining premises.

In accordance with Section 4.56 of the Performance Standard Regulations the following should be considered:

- a) This site and use will not generate smoke, flash or other dust, gases, odors, fumes, and dust-producing substances nor will any such substances be discharged or emitted into the open air;
- b) There will be no storage of explosive materials and the storage space will be built in accordance with all building codes;
- c) There will be no significant generation of heat at this site due to proposed use. No heat will be generated, there is no manufacturing process planned. Heat emitted at lot lines by this facility will not exceed the temperatures tolerable to plant or animal life.
- d) No activities which emit radioactivity or electromagnetic disturbance will be conducted at this site.
- e) The maximum sound pressure levels radiated at this site due to the use as an aquaculture facility will not exceed typical marina values, tolerable for a residential neighborhood. This development will generate less noise than normal traffic on Thames Street.
- f) Vibrations will not be generated as a result of the use of this site as an aquaculture facility.
- g) The lights will be post mounted on the pier and two fixtures located on the pier and on the ground of the toe of the gabion/block wall and will be recessed features aimed down so as not to shed glare on adjacent properties.
- h) No discharge of any material of such quantity, nature, or temperature so as to contaminate water or land or otherwise cause the emission of dangerous or objectionable elements will result from this use as an aquaculture facility. The sewage connections will be capped. Storm water runoff will be in accordance with stipulations for drainage previously addressed.

With regard to the special permit criteria set forth in section 9.4 point D of the zoning regulations, the following considerations are offered: one

1. The proposed activity is to create a site capable of accommodating vessel operations associated with aquaculture. This is a high priority water dependent to use set forth in the coastal management act and supported by the zoning regulations. The driveway is not designed for two-way traffic because of the limited amount of vehicular operations.

Two-way traffic is in fact not required for this very small operation. This operation will generate a nominal average of one trip per hour.

2. Each aspect of the design of this site has considered carefully the protection and conservation of environmental features on the site. The natural scenic vantage of the side will not be changed as a result of the proposed improvements nor will the historic use of the site changed. It is felt that there is no necessary conservation restrictions to protect or preserve natural features of the site which are so limited on this fully developed shorefront. The proposed re-grading and re-surfacing of the lot, and the restoration of the dock facility for aquaculture vessels are unique features of the site which will maintain the long- standing character of the neighborhood.
3. The proposed restoration of the dock facility and site characteristics will not have a detrimental effect on neighboring properties or development in this district. This is this project is a restoration of a long-standing waterfront boating related usage of the site , although now related to agriculture rather than fishing as the previous development on the site was oriented. The proposed development will clean up the site and should be a benefit to the ambience of the neighborhood.
4. The proposed site improvements are fisheries related as this site has been utilized in the past. This is a continuation of an historical use of the site and will be consistent with the appropriate and orderly development in the district.
5. Design elements the regrading of the driveway and the lower yard. There are no proposed building improvements for the site and the site will be completely utilize for access to the aquaculture vessels which complies with section 7.4 of these regulations and is below street grade, located so as not to shed light on adjacent properties while maintaining adequate illumination for security of the site . The new site surface treatment is crushed stone in order to provide suitable drainage characteristics and minimum maintenance. Because of the small size of this site the entire grounds must be utilized for access of the vehicles utilized by the crew members of the vessels.
6. The existing driveway and access to the site are not being changed from the long-standing configuration and proximity to the intersection between Broad Street and Themes Street. There is a 50-foot offset between the driveway and that intersection as required by the zoning regulations. This is a privately-owned side and it will be operated as a privately-owned site. The crew members will take care entering and exiting the site because of the geometry and grade changes at the entrance so as not to produce or create traffic problems. Certainly, the activities of the site and the crew boat operating schedules will not be a significant traffic generator.
7. The proposed use and docking of aquaculture vessels at this site does not create any unusual or significant demand for utilities and services.

8. The design of this site has been aimed at simplicity and ease of maintenance in order to accommodate the long-term viability and resilience of the site to usage for aquaculture vessel access. The improved site will be a two-level crushed stone vehicle access yard with an interconnecting driveway. There will be no building.
9. The design of the site improvements and the anticipated hours of operation are aimed at avoidance of any nuisance to the community. The operations will control noise, light, parking visibility, rectify the unsightly appearance of the site, improve erosion protection characteristics of the site and avoid or illuminate water contamination and stormwater runoff issues that may have been associated with this site. There will be no odors created by the vessel operations or the access provided to those vessels by site improvements.
10. This project has been reviewed on different occasions with the city Planner and Zoning Official in order to make sure that the proposed development on the site is consistent with the City of Groton plan of conservation and development.
11. The proposed usage of this site and the associated aspects of development are all low impact. It appears that there are no factors associated with this development that require mitigation.

SUMMARY

Aquaculture vessel accommodation is an ideal use of this site with its existing dock facilities which are to be rebuilt as a part of their project. The site has been designed to be in keeping with the historical significance of this waterfront parcel as a boatyard and has been minimized in height and size to the practical area requirements of the boat access operations, lighting and site access. The proposed improvements will be in harmony with the purposes and intentions of the regulations and consistent with the coastal zone management program of the State. The use is consistent with zoning requirements and adjacent uses abutting the parcel and represents reasonable development of the site which has been underutilized and neglected for many years. Its development is not perceived to be detrimental to the public welfare or the public use of public land trust lands and the water, but rather will be an asset to the community, diverse and yet consistent with the historic nature of shoreline communities.

Due consideration has been given to priorities and goals set forth in the City Plan of Development as well as the 1982 Thames Street Study. The dock and site restoration of this project is a water-dependent use with relatively little traffic generation potential and utilizes historically

appropriate aesthetics to promote the seacoast village theme. Based on these factors, this project is consistent with zoning regulations and approval is respectfully requested.

Submitted By,
DOCKO, INC.

A handwritten signature in black ink, appearing to read "Keith B. Neilson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Keith B. Neilson, P.E.

DRAINAGE ANALYSIS

**DRAINAGE ANALYSIS
PROPERTY OF AEROS CULTURED OYSTERS
107 THAMES STREET, GROTON, CT**

The existing site, Parcel 7417, is approximately 1/3 acre in size, a partially paved parking area with a terraced, moderate to steeply sloped cross-section. It starts at Thames Street with a sidewalk and vertical stone wall, paved driveway with a variable width transition embankment of compacted, partially vegetated soil, pavement, and unpaved but highly compacted bare and turfed gravel, sloping at 10% to the west to a stone seawall. The actual transverse distance across the proposed development site is only 100 feet, more or less, although the drainage distance can be twice that on the existing pavement. Velocities on the compacted gravel and asphalt pavements are relatively quick. Rivulets on the pavement are frequent because of the grass intrusion, but the longest time of concentration (TC) is on the south property line overgrown area. Analysis of several different water runoff routings indicate that a time of concentration is approximately 5 minutes. The drainage for the site to be developed represents a relatively small area, less than 2 acres, and therefore use of the Rational Method is appropriate.

The weighted runoff coefficient C for existing conditions is based on the following approximations obtained from the CDT SCS Erosion and Sediment Control Handbook.

Large paved area 25 to 30 years of age, 3,600 (+/-) SF	C=0.7
Existing bare to lightly turfed compacted gravel, moderately sloped, 6,000 (+/-) SF	C=0.6
Steeply sloped, vegetated bank and landscaping 3,000 (+/-) SF	C=0.2
Slightly to moderately crushed stone 1,000 (+/-) SF	C=0.3

The total area of the site is approximately 13,600 SF or 0.31 acres with the following areas allotted to the above categories of land. Not including northernmost which will not be altered in this project.

Crushed Stone	1,000 (+/-) SF
Pavement	3,600 (+/-) SF
Bare to lightly-turfed compacted gravel	6,000 (+/-) SF
Steeply sloped vegetated bank	<u>3,000 (+/-) SF</u>
	13,600 (+/-) SF

The weighted runoff coefficient is then:

Crushed Stone	1,000 (+/-) SF x 0.30 =	300 SF
Pavement	3,600 (+/-) SF x 0.7 =	2,520 SF
Compact Gravel	6,000 (+/-) SF x 0.60 =	3,600 SF
Vegetated Bank	<u>3,000 (+/-) SF x 0.20 =</u>	<u>600 SF</u>
 Total Area	 13,600	 7,020 SF

Effective Runoff Coefficient $C_{EF} = 7,020/13,600 = 0.516$. Say C_{EF} 0.52.

The rainfall intensity for the time of concentration T_c of less than 5 minutes, using Figure 9-4 for a 5-minute duration and a 25-year storm, is 8.7 inches per hour. Thus, the rate of rainfall runoff Q_{25} for this undeveloped site is:

$$\begin{aligned} Q_{25} &= C_{EF} \times I \times A \\ &= 0.52 \times 8.7 \times 0.31 \\ &= 1.402 \text{ CFS} \quad \text{Say } 1.4 \text{ CFS} \end{aligned}$$

The best management practice for developing small sites along the shore is frequently to encourage sheet flow through a buffer; the historical condition has been to allow surface runoff directly overboard. To minimize pollution by sediments or ground contaminants, thus keeping the discharge as clean as possible and slow down the flow velocities, the site will be surfaced with crushed stone and have an infiltration point behind the seawall. This site development plan utilizes both of these approaches.

The longest time of concentration for the developed site is the same as the existing site and it appears that this path will still take less than five minutes, although it will be difficult to judge since the water will be flowing through the uniform crushed stone surface but it will not be as likely to focus in rivulets. The 25-year storm rainfall intensity for Figure 9-4 for a 5-minute duration is still approximately 8.7 inches per hour.

The weighted runoff coefficient for the developed site is based on the following:

New Crushed Stone Surface	12,000 (+/-) SF x 0.3 = 3,600 SF
Landscaping	1,600 (+/-) SF x 0.2 = 320 SF
	<hr/>
	13,600
	<hr/>
	3,920 SF

$$C_{EF} = 3,920 \text{ SF} / 13,600 \text{ SF} = 0.0288 \quad \text{Say } 0.3$$

Based on these factors, the anticipated rainfall runoff for the developed site will be:

$$\begin{aligned} Q_{25} &= C_{EF} \times i_{25} \times A \\ &= 0.30 \times 8.7 \times 0.31 \\ &= 0.809 \text{ Say } 0.81 \text{ CFS} \end{aligned}$$

This is roughly 2/3 of the current site runoff rate and should result in a reduction in total runoff from the site and all of it filtered through the crushed stone and finally the ground behind the seawall.

This runoff will follow sheet flow across the site for the most part and percolate into the harbor. Water flowing off the site is filtered through crushed stones. This should promote improved water quality in the harbor and, although of admittedly small consequence, it should be considered as a favorable factor in the Site Plan review. Flood elevations in the river will not be affected by these flows because the flood elevations are based on tidal flooding conditions in Long Island Sound as shown in the U. S. ACOE Tidal Flood Profile (attached).

In accordance to the Water Quality Volume Analysis (CSQM Section 7.4.1) approximately 10 to 12 CF of stormwater runoff was projected. In view of the site, it will be accessed by aqua culture crew members and their vehicles. The potential for pollutant is to a minimal, if even measurable. There is no direct impervious coverage attributed to buildings or pavement in this project.

The criterion for the Groundwater Recharge Volume will be increased, because the current pavement will be replaced with crushed stone. The rainfall on the site will now be complete, with a reduction of volume in stormwater runoff and an increase in permeable area on the site. With a minimal total water quality volume, the groundwater recharge volume will have no loss with the reduction in impervious coverage.

CONCLUSION

The decrease in runoff is approximately 0.4 CFS, an almost indistinguishable decrease in an already small amount of runoff. No detention is appropriate because of the relatively small flows and the site's proximity to the harbor. The first inch of rainfall is supposed to be retained on the site and will be in the crushed stone infiltration strip between the proposed worksite and the seawall. No on-site drainage structures are recommended.

Submitted By,
DOCKO, INC.



Keith B. Neilson, P.E



**City of Groton
Department of Planning & Economic Development**

Form B: Coastal Area Management

Refer to Section 5.2 CAM of the Zoning Regulations and CGS Sections 22a-90- through 22a-115

The CAM Boundary is depicted upon the Groton City Zoning Map

a. Coastal Resources Narrative

Provide a narrative describing all coastal resources as defined in C.G.S. Section 22a-93 with an accompanying site plan depicting the location of all resources.

The project site is located at 107 Thames Street in Groton Connecticut. This site is approximately 1/2 mile south of the 1-95 Goldstar Highway bridge which runs between Groton and New London. The coastal resources at this site include the Thames River which is an estuarine embayment, subject to coastal flood hazards of inundation and storm driven waves. The site itself is a fully developed shoreline, a modified bluff, with a full-length stone seawall which has existed for decades, if not more than a century.

B. Assessment of Project Suitability: Capability of Resources to Accommodate the Proposed Use

1. Identify any and all coastal resource policies applicable to the proposed project as identified in C.G.S. Section 22a-92 (b) (2) and the *CT Coastal Management Manual*.

General Resource: A, B, and C: This site is developed and is being modified to remain a high priority water dependent use.

Coastal Hazard Area A: The site is exposed to coastal flooding and storm waves.

Developed Shorefront A: The site is completely developed with a seawall and boat yard facilities.

Shellfish Concentration Area: Parts of New London Harbor are designated as shellfish concentration areas although this site would hardly seem to qualify because of the rock nature of the shallow subtidal shoreline benthos.

Coastal Waters A: The Thames River and New London Harbor are classified as estuarine embayments.

2. Identify any and all coastal use policies applicable to the proposed project as identified in C.G.S. Section 22a-92 (b) (1) and the *CT Coastal Management Manual*.

General Development A: This site has been developed and historically used as a boat yard of high priority water dependent use until the last 15 years during which it has sat idle. That is about to change for the better.

Water Dependent Uses A,B: The boat yard, and now aquaculture support facility are high priority water dependent uses.

Ports and Harbors A, B and National Interest Facilities and Resources Policy B: The Port and Harbor uses and National Interest Facilities

issues are commonly addressed in this project. The strategic importance of New London is well known with defense plants and a military

base nearly and integrally connected to the economy and world stability. New London is also a regional shipping terminal and host two

regional ferry transportation facilities. Fishing and shell fishing facilities and operations have been lacking for decades and the project, even as small as it is by comparison will be a vital and much needed step in diversification.

3. Describe how the proposed project is consistent with all of the coastal policies identified above (i.e., describe the extent to which the project complies or conflicts with each policy). Note: If a project conflicts with any policy, the project should be modified to reduce or eliminate the conflict.

This project is fully consistent with the Coastal Area Management plan of the State. The project involves replacing a long-standing, recreational boating dock facility with an aquaculture support facility. This project makes use of an existing, long-standing, high-priority water dependent use site, converting the geographical features to accommodate safer and more efficient vehicle access to the work yard bounded by the seawall along the Thames River. This site, once restored, will provide docking facilities for aquaculture vessels and a means for the crew and support vehicles to reach the site, man the vessels and secure them safely, even during coastal storm conditions, in close proximity to the shellfish beds which they work on a daily basis.

c. Potential Beneficial and Adverse Impacts and Methods of Mitigation

1. Identify and describe the potential adverse impacts (as defined C.G.S. Section 22a-93 (15)) and potential beneficial impacts of the project on coastal resources.

Erosion and possible collapse of the seawall is a potential adverse effect of this project not moving forward. The design of the docking facilities and the upland access yard has been undertaken in accordance with the City of Groton Zoning Regulations, Best Management Practices set forth by the State of Connecticut Soil Conservation guidelines, and current construction industry standards, in an effort to avoid adverse impacts to the environment and coastal resources at the site or nearby in the Thames River. The beneficial aspects to this project are the reduction of erosion and loss of soils at the site and the stabilization of the existing seawall and dock facilities to be utilized in this high priority, water dependent use.

ITEM 2 and 3 BELOW FOR WATERFRONT PROPERTY ONLY:

2. Is the project a water dependent use as defined in C.G.S. Section 22a-93 (16)? If so, explain why.
Yes, this project is a high priority water dependent use as defined in C.G.S. Section 22a-93 (16). The facilities will support landing and

berthing of aquaculture vessels at a protected site in the immediate proximity to the shellfish beds located throughout the Thames River and provides enough parking to accomodate the crews.

3. Describe the impacts or effects (either positive or negative) that the project will have on future water dependent uses or development on, and adjacent to this site. (Adverse impacts on future water dependent development opportunities are described in C.G.S. Section 22a-93 (17)).

This project will have no adverse impact on future water dependent uses. The project itself is a high priority water dependent use which will be conducted from a very small site, practically unusable for any other purpose except residential accomodations or a boat yard with limited maintenance facilities for small boat repair and engine work. If, however, a higher priority water dependent use would require this site in the future, the site grading proposed herein, and possible the rebuilt docking facility, would probably prove beneficial for such a use.

4. Describe the proposed measures to mitigate (reduce or eliminate) any adverse impacts on coastal resources described in c.1 and, if applicable, on future water dependent developments opportunities described in c.3.

The mitigative measures utilized in the design for this project include safer access accomodations, re-grading the site to provide a larger and more useable work area, and ceiling and stabilizing the seawall to make it more secure. All of htis work can be done without adversely effecting existing coastal resources. The project therefore, should also not have any adverse effect on future water dependent uses which might be able to utilize such a limited site.

D. Demonstration of the Acceptability of Remaining or Unmitigated Adverse Impacts on Coastal Resources and Future Water Dependent Uses and Development

1. Describe any adverse impacts that remain after employing all reasonable mitigation measures.

It is not envisioned that there will be any adverse environmental impacts remaining after the completion of the proposed site improvements and these improvements do not appear to require mitigation measures.

2. Explain why these other remaining adverse impacts were not mitigated.

It is not envisioned that there will be any adverse environmental impacts remaining after the completion of the proposed site improvements and these improvements do not appear to require mitigation measures.

3. Explain why the Commission reviewing this application should find these remaining adverse impacts to be acceptable.

This is a good project, not only consistent with Groton Zoning Regulations, and the City's Plan of Development, and the Thames Street Study, but it also makes exceptionally good use of a very limited site, utilizing the area efficiently, retaining and restoring existing degraded features, including the seawall and dock facilities, and supporting a growing aquaculture industry which benefits the community, and the local economy. The project is consistent with the special permit requirements set forth in the Zoning Regulations and has been welcomed by several members of the neighborhood. This project appears to meet the spirit and letter of the permitting requirements of the U.S. Army Corps of Engineers, State of CT DEEP and the City of Groton.

SUPPORTING MATERIALS/DOCUMENTATION

The Commission or Board may request the submission of such additional information that it deems necessary in order to reach a decision on the application. Include any additional information required by the Commission, and list any supplemental materials (plans, reports, etc.) that are being submitted in support of this application.



City of Groton
Department of Planning & Economic Development

Form C: Flood Development Permit Application

Refer to Section 5.3 of the Zoning Regulations for specific requirements

General Information

1. Has the limit and designation of the Special Flood Hazard Area (SFHA) been clearly depicted and labeled on the plan?

Yes No

2. Which SFHA(s) exists on the property? Note the corresponding base flood elevation(s) and select all that apply.

<u>SFHA</u>	<u>Base Flood Elev.</u>	<u>SFHA</u>	<u>Base Flood Elev.</u>
<input type="checkbox"/> A	_____	<input type="checkbox"/> AR	_____
<input type="checkbox"/> AE	_____	<input type="checkbox"/> A99	_____
<input type="checkbox"/> AH	_____	<input type="checkbox"/> V	_____
<input type="checkbox"/> AO	_____	<input checked="" type="checkbox"/> VE	14
		<input type="checkbox"/> Floodway	_____

3. If a structure is proposed within the SFHA what is its finished floor elevation? If more than one structure distinguish each finished floor area.

Finished Floor Elevation N/A

Narrative: General

4. Describe, in detail, the work that will be performed within the SFHA. If more than one SFHA exists on the property clearly differentiate the work occurring in each zone.

This project is to restore and cap an existing, longstanding stone seawall, re-grade the existing site to restore a boat yard and access

driveway, place 100 CY of crushed stone over 10,000 (+/-) SF for a new yard and driveway surface, install a gabion, concrete block

or granite block retaining wall, 200 (+/-) CY over 600 (+/-) SF, install new water and electrical service utilities, and re-build a wood pile

and timber pier including new breasting dolphins, and install a floating dock (barge) with a hinged ramp to shore for berthing aquaculture

vessels.



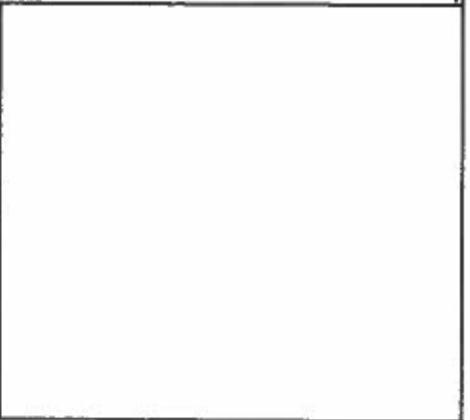
Property Information	
Property ID	59-168918227417
Location	107 THAMES ST
Owner	LIBBY RICHARD M

SCCOG

**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

SCCOG makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

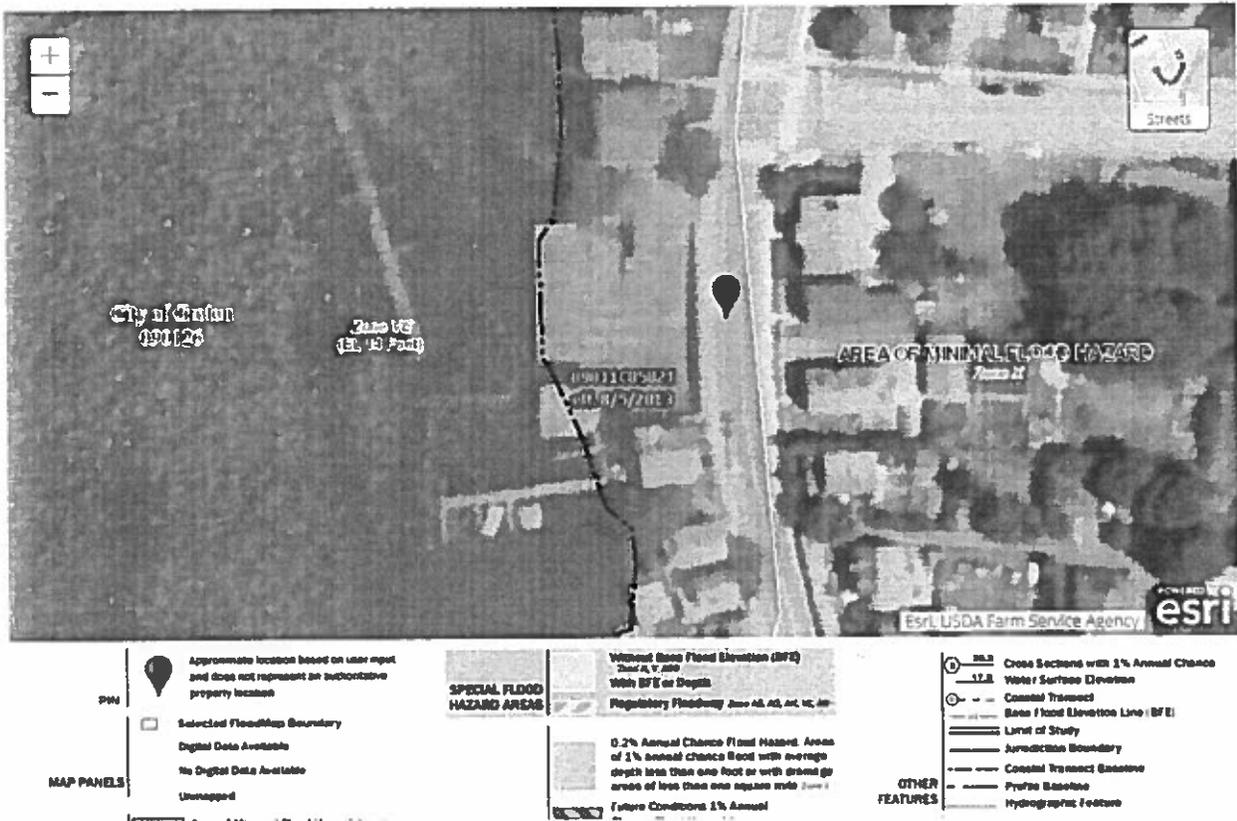
Geometry updated 05/31/2017
Data updated 10/1/2013



Norm Bloom & Son, LLC

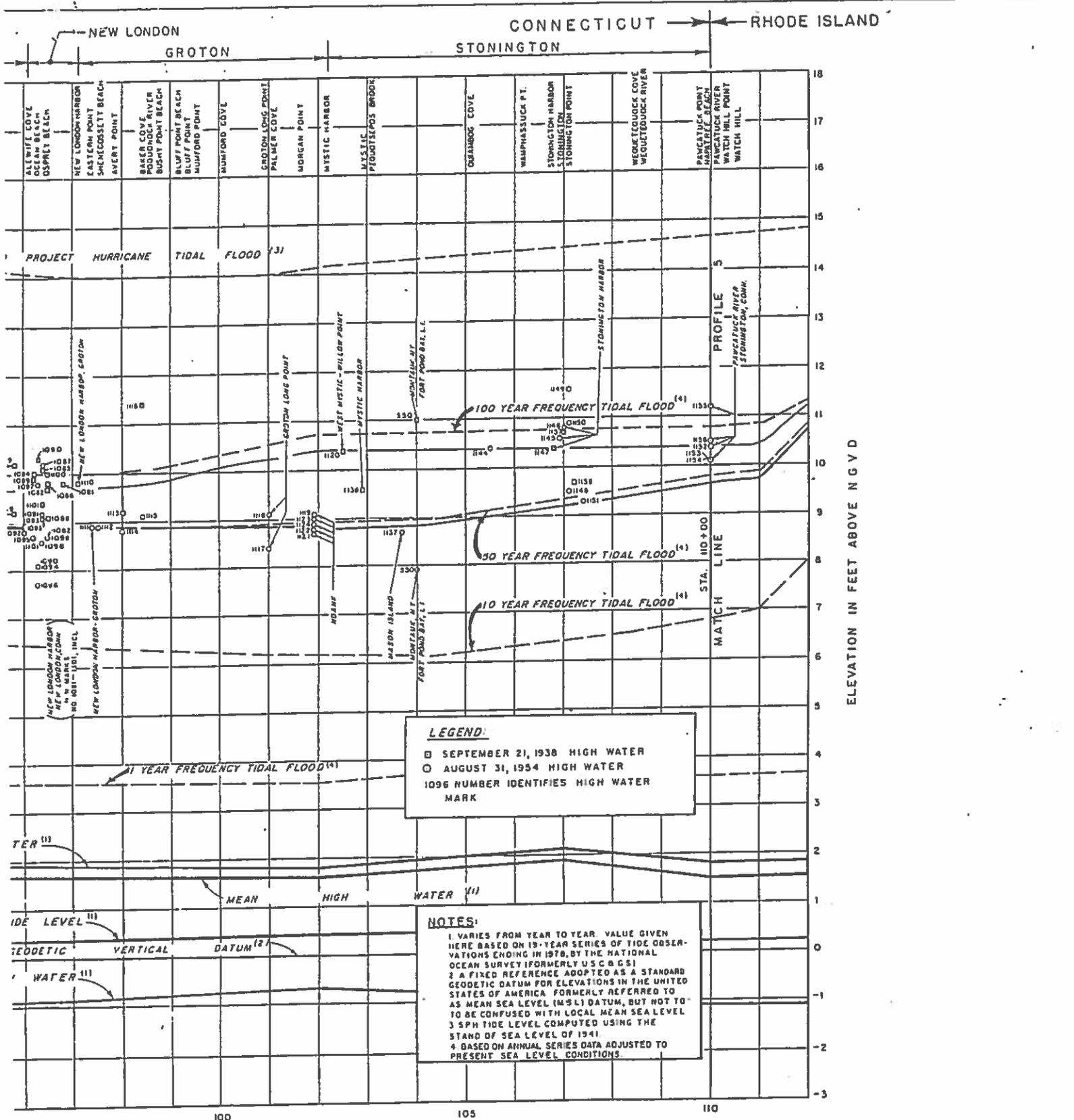
Aeros Oysters

107 Thames Street, Groton, Connecticut



TIDAL FLOOD PROFILE

CITY OF GROTON



— LONG ISLAND SOUND AND BLOCK ISLAND SOUND

NEW ENGLAND COASTLINE
 TIDAL FLOOD SURVEY
 TIDAL FLOOD PROFILE NO.
 OLD LYME, CONN., TO
 STONINGTON, CONN.
 DEPARTMENT OF THE ARMY
 NEW ENGLAND DIVISION, CORPS OF ENGINEERS
 WALTHAM, MASS
 SEPTEMBER 1988

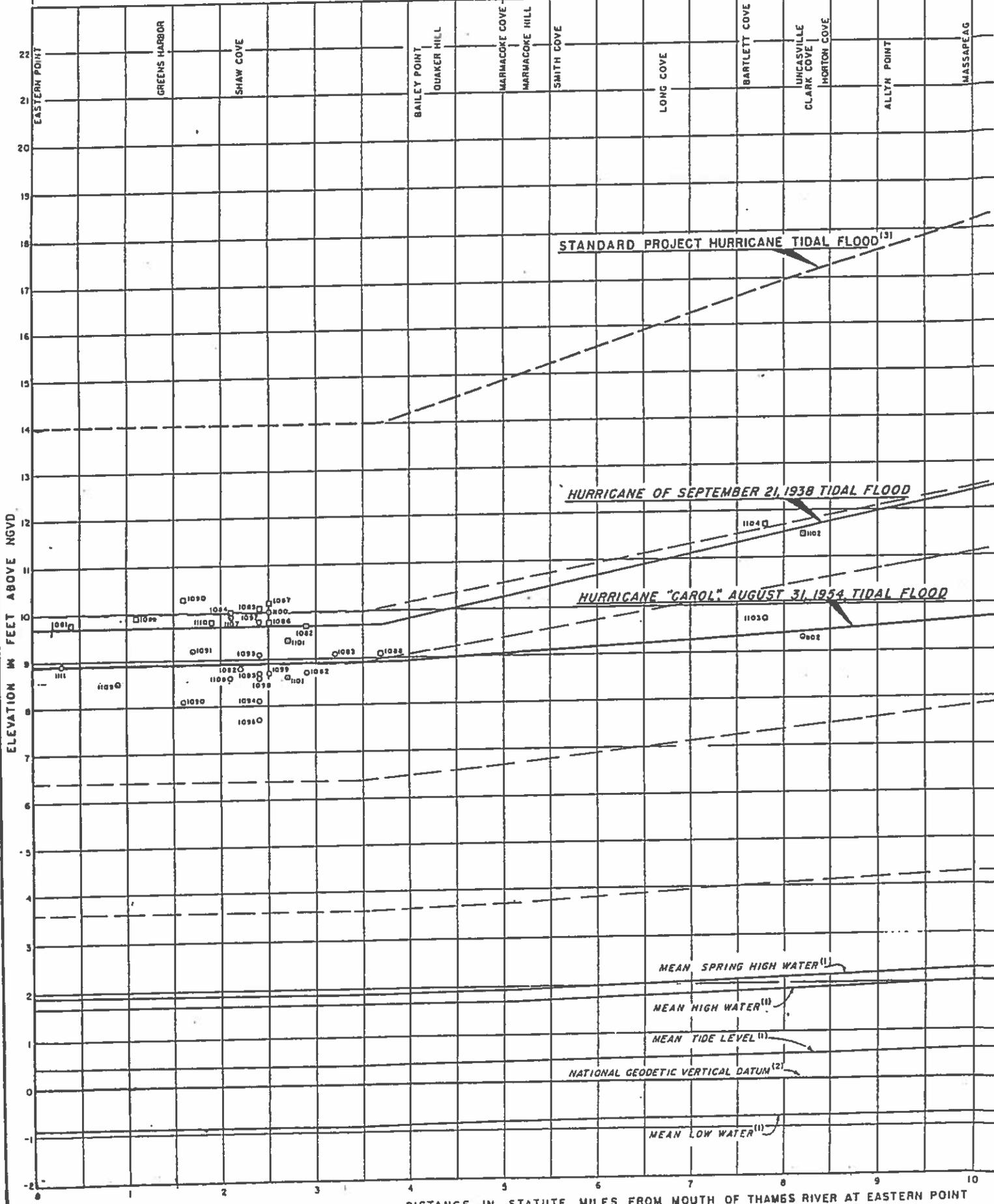
NEW LONDON

WATERFORD

MON

GROTON

LEDYARD



DISTANCE IN STATUTE MILES FROM MOUTH OF THAMES RIVER AT EASTERN POINT

1. This map is a reproduction of the original map prepared by the U.S. Army Corps of Engineers, Vicksburg District, Mississippi. It is not to be used for any purpose other than that for which it was prepared.

2. The map is a reproduction of the original map prepared by the U.S. Army Corps of Engineers, Vicksburg District, Mississippi. It is not to be used for any purpose other than that for which it was prepared.

3. The map is a reproduction of the original map prepared by the U.S. Army Corps of Engineers, Vicksburg District, Mississippi. It is not to be used for any purpose other than that for which it was prepared.

4. The map is a reproduction of the original map prepared by the U.S. Army Corps of Engineers, Vicksburg District, Mississippi. It is not to be used for any purpose other than that for which it was prepared.

5. The map is a reproduction of the original map prepared by the U.S. Army Corps of Engineers, Vicksburg District, Mississippi. It is not to be used for any purpose other than that for which it was prepared.

6. The map is a reproduction of the original map prepared by the U.S. Army Corps of Engineers, Vicksburg District, Mississippi. It is not to be used for any purpose other than that for which it was prepared.

7. The map is a reproduction of the original map prepared by the U.S. Army Corps of Engineers, Vicksburg District, Mississippi. It is not to be used for any purpose other than that for which it was prepared.

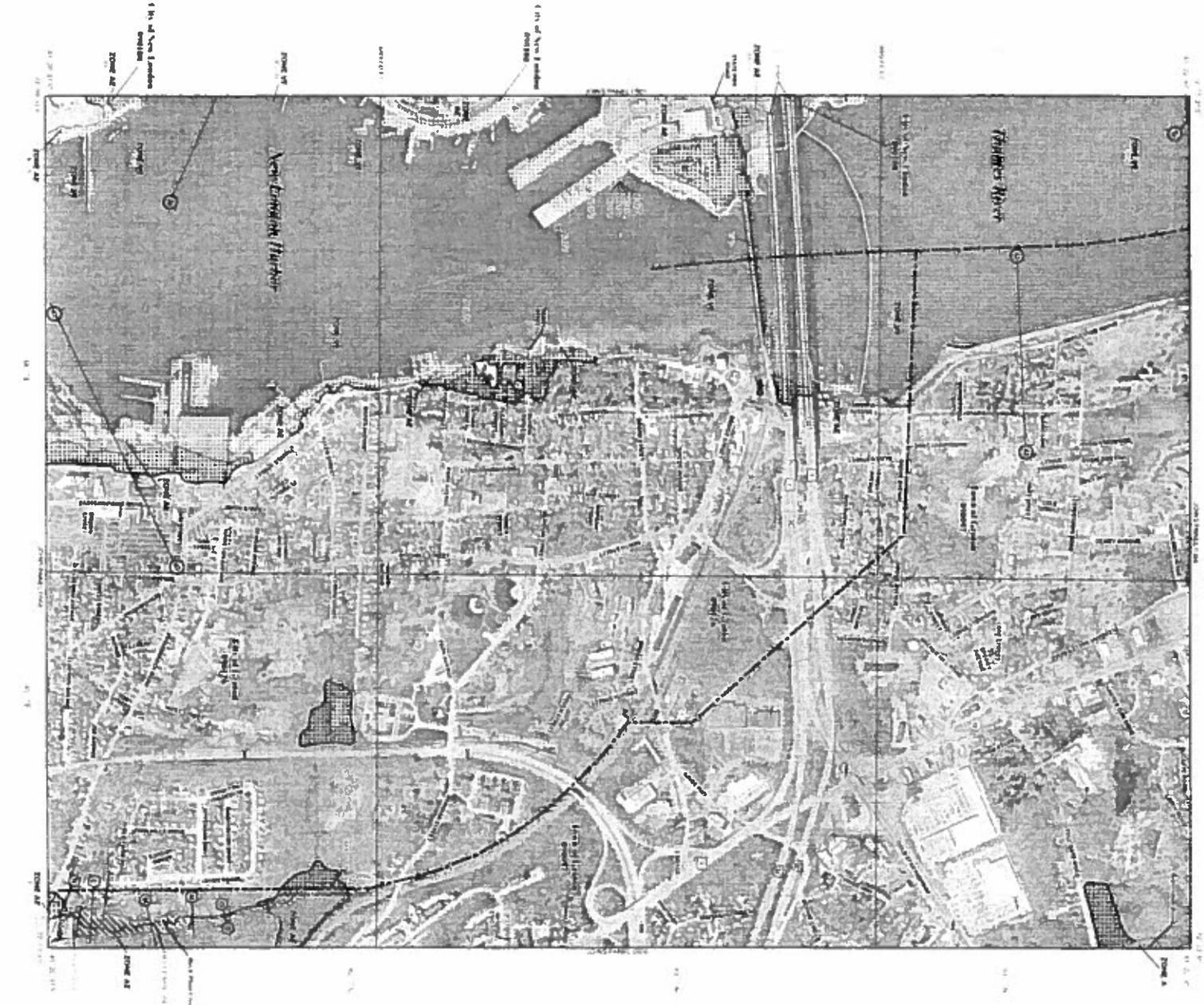
8. The map is a reproduction of the original map prepared by the U.S. Army Corps of Engineers, Vicksburg District, Mississippi. It is not to be used for any purpose other than that for which it was prepared.

9. The map is a reproduction of the original map prepared by the U.S. Army Corps of Engineers, Vicksburg District, Mississippi. It is not to be used for any purpose other than that for which it was prepared.

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11. The map is a reproduction of the original map prepared by the U.S. Army Corps of Engineers, Vicksburg District, Mississippi. It is not to be used for any purpose other than that for which it was prepared.

12. The map is a reproduction of the original map prepared by the U.S. Army Corps of Engineers, Vicksburg District, Mississippi. It is not to be used for any purpose other than that for which it was prepared.



1. This legend describes the symbols and colors used on the map to indicate various features and flood zones. It includes a list of symbols and their corresponding descriptions.

2. This legend describes the symbols and colors used on the map to indicate various features and flood zones. It includes a list of symbols and their corresponding descriptions.

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NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE #A

NEW LONDON, CT

GENERAL FLOOD

ALL FLOODING RISKS

PANEL 502 OF 550

DATE: 10/1/77

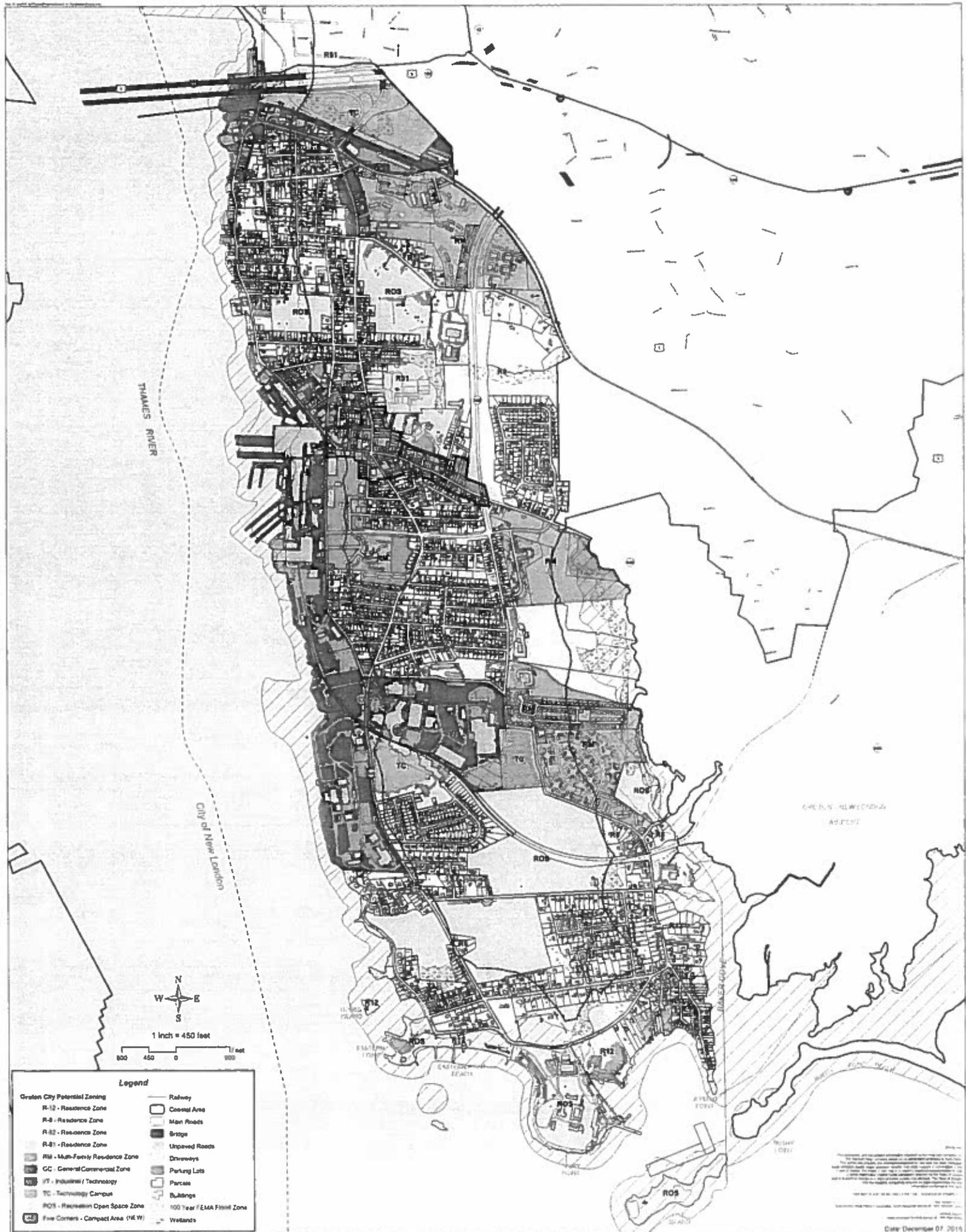
SCALE: 1" = 1 MILE

MAU

MS

MAU

AUG81



THAMES RIVER

CITY of New London

GREENWICH AVENUE



1 Inch = 450 feet
 0 450 900 feet

Legend

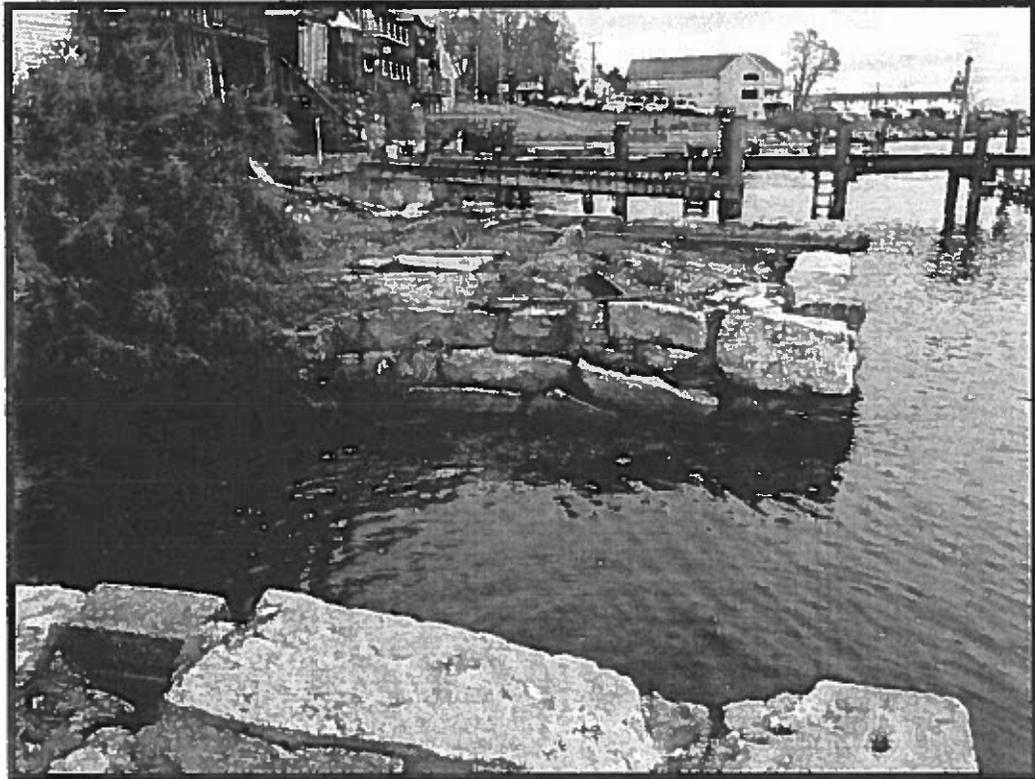
- | | |
|---|---------------------------|
| Groton City Potential Zoning | Railway |
| R-12 - Residence Zone | Convent Area |
| R-8 - Residence Zone | Man Ponds |
| R-10 - Residence Zone | Bridge |
| R-81 - Residence Zone | Unpaved Roads |
| RM - Multi-Family Residence Zone | Driveways |
| GC - General Commercial Zone | Parking Lots |
| IT - Industrial / Technology | Parcels |
| TC - Technology Campus | Buildings |
| ROS - Recreation Open Space Zone | 100 Year / EMA Flood Zone |
| CA - Free Corridor - Compact Area (NEW) | Wetlands |

This map is a representation of the current zoning in Groton, Connecticut. It is not intended to be used as a legal document. For more information, please contact the Groton Planning Department. Date: December 07, 2014



Current Groton City Zoning

Date: December 07, 2014













Monday, November 26, 2018

Attn: Keith B. Neilson, P.E.
Docko, Inc.
14 Holmes Street, P.O. Box 421
Mystic, CT 06355

Project ID: NOANK COOP, AEROS OYSTERS
Sample ID#s: CB99653 - CB99654

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in cursive script that reads "Phyllis Shiller".

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
UT Lab Registration #CT00007
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 845-1102 Fax (860) 845-0823

Analysis Report
 November 26, 2018

FOR: Attn: Keith B. Neilson, P.E.
 Docko, Inc.
 14 Holmes Street, P.O. Box 421
 Mystic, CT 06355

Sample Information

Matrix: WASTE WATER
 Location Code: DOCKO
 Rush Request: Standard
 P.O.#:

Custody Information

Collected by:
 Received by: SW
 Analyzed by: see "By" below

Date Time
 11/15/18 14:35
 11/16/18 16:00

Laboratory Data

SDG ID: GCB99653
 Phoenix ID: CB99653

Project ID: NOANK COOP, AEROS OYSTERS
 Client ID: NC/AO 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Copper	< 0.013	0.013	mg/L	5	11/20/18	EK	E200.7
Lead	< 0.005	0.005	mg/L	5	11/20/18	EK	E200.7
Zinc	0.016	0.010	mg/L	5	11/20/18	EK	E200.7
B.O.D./5 day	14	3.9	mg/L	3	11/16/18 16:30	RVM/RM	SM5210B-11
Chlorine Residual	< 0.02	0.02	mg/L	1	11/16/18 18:17	O	SM4500CI-G-00
C.O.D.	542	20	mg/L	2	11/19/18	MSF	SM5220D-11
Ammonia as Nitrogen	0.36	0.25	mg/L	5	11/21/18	KDB	E350.1
Nitrite-N	0.012	0.010	mg/L	1	11/16/18 21:36	TB	E353.2
Nitrate-N	0.14	0.02	mg/L	1	11/16/18 21:36	TB	E353.2
Oil and Grease by EPA 1664A	< 1.4	1.4	mg/L	1	11/19/18	MSF	E1664A
pH	7.69	1.00	pH Units	1	11/16/18 22:50	RR/EG	SM4500-H B-11
Nitrogen Tot Kjeldahl	1.71	0.50	mg/L	5	11/21/18	KDB	E351.1
Total Phosphate as PO4	1.32	0.03	mg/L	1	11/19/18	MI	SM4500PE-11
O&G, Non-polar Material	< 1.4	1.4	mg/L	1	11/19/18	MSF	E1664A
Total Suspended Solids	15	5.0	mg/L	1	11/19/18	MM/KDB	SM2540D-11
Total Metals Digestion	Completed				11/19/18	AG	

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The regulatory hold time for Chlorine is immediately. This Chlorine was performed in the laboratory and may be considered outside of hold-time.

If there are any questions regarding this data, please call Phoenix Client Services.
This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

November 28, 2018

Reviewed and Released by: Helen Geoghegan, Project Manager



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report
 November 26, 2018

FOR: Attn: Keith B. Neilson, P.E.
 Docko, Inc.
 14 Holmes Street, P.O. Box 421
 Mystic, CT 06355

Sample Information

Matrix: WASTE WATER
 Location Code: DOCKO
 Rush Request: Standard
 P.O.#:

Custody Information

Collected by:
 Received by: SW
 Analyzed by: see "By" below

Date

11/15/18
 11/16/18

Time

14:40
 16:00

Laboratory Data

SDG ID: GCB99653
 Phoenix ID: CB99654

Project ID: NOANK COOP, AEROS OYSTERS
 Client ID: NC/AO 2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Copper	< 0.013	0.013	mg/L	5	11/20/18	EK	E200.7
Lead	< 0.005	0.005	mg/L	5	11/20/18	EK	E200.7
Zinc	0.033	0.010	mg/L	5	11/20/18	EK	E200.7
B.O.D./5 day	< 4.0	4.0	mg/L	2	11/16/18 18:30	RVM/RM	SM5210B-11
Chlorine Residual	< 0.02	0.02	mg/L	1	11/16/18 18:18	O	SM4500CI-G-00
C.O.D.	559	20	mg/L	2	11/19/18	MSF	SM5220D-11
Ammonia as Nitrogen	0.12	0.10	mg/L	2	11/21/18	KDB	E350.1
Nitrite-N	0.013	0.010	mg/L	1	11/16/18 21:44	TB	E353.2
Nitrate-N	0.10	0.02	mg/L	1	11/16/18 21:44	TB	E353.2
Oil and Grease by EPA 1664A	< 1.4	1.4	mg/L	1	11/19/18	MSF	E1684A
pH	7.77	1.00	pH Units	1	11/16/18 22:52	RF/EG	SM4500-H B-11
Nitrogen Tot Kjeldahl	0.34	0.20	mg/L	2	11/21/18	KDB	E351.1
Total Phosphate as PO4	0.10	0.03	mg/L	1	11/19/18	MI	SM4500PE-11
O&G, Non-polar Material	< 1.4	1.4	mg/L	1	11/19/18	MSF	E1684A
Total Suspended Solids	< 5.0	5.0	mg/L	1	11/19/18	MM/KDB	SM2540D-11
Total Metals Digestion	Completed				11/19/18	AG	

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The regulatory hold time for Chlorine is immediately. This Chlorine was performed in the laboratory and may be considered outside of hold-time.

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Phyllis Shiller, Laboratory Director

November 26, 2018

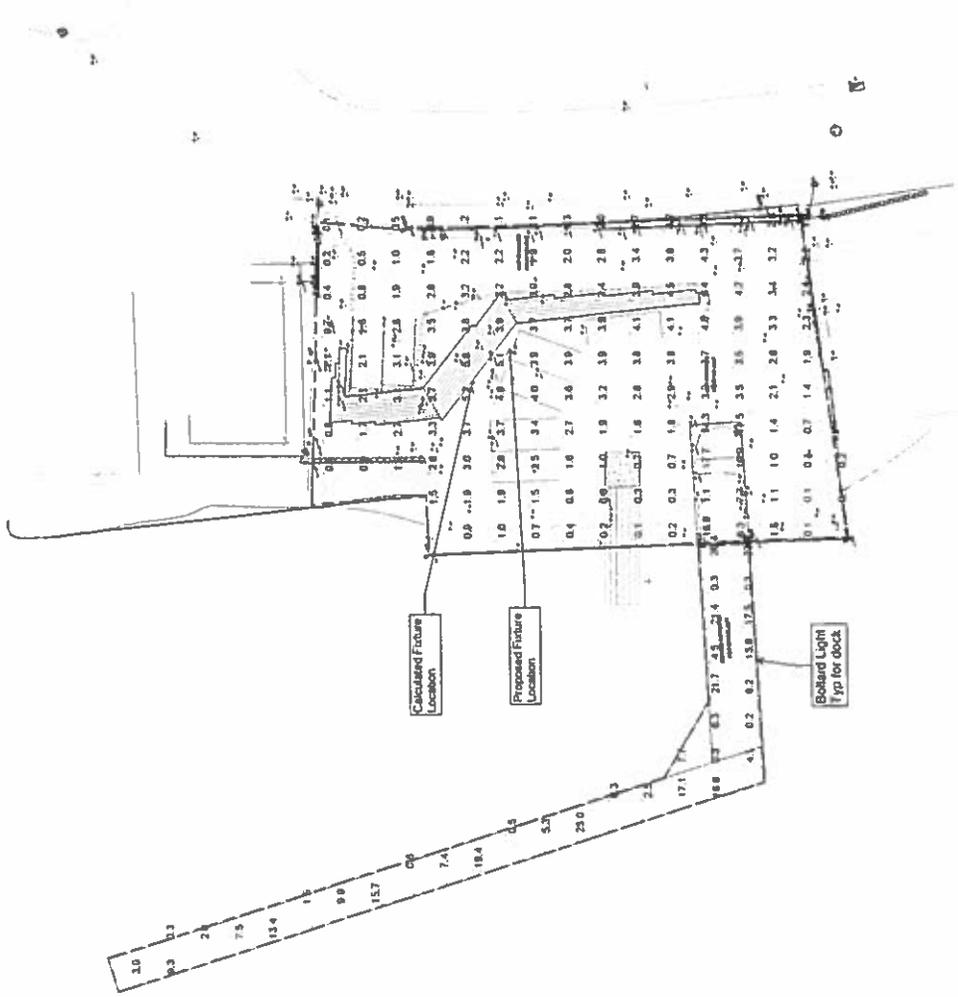
Reviewed and Released by: Helen Geoghegan, Project Manager



:

Designer
 Date 5/29/2019
 Scale As Noted
 Drawing No.

Summary
 1 of 1



Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Dock Ltg	+	9.2 ft	25.0 ft	0.2 ft	125.0:1	46.0:1
Exterior Ltg	+	2.8 ft	17.7 ft	0.1 ft	177.0:1	28.0:1

Item	Quantity	Description	Unit	Material	Notes
B	1	REINFORCED CONCRETE	1000	15'-0" x 7'-0"	
E	1	STEEL LIGHTING	1000	15'-0" x 7'-0"	

Plan View
 Scale: 1" = 35'



D-Series LED Bollard



d^{series}

Specifications

Diameter: 8" Round
(20.3 cm)

Height: 42"
(106.7 cm)

Weight (max): 27 lbs
(12.25 kg)



Catalog
Number

Notes

Type

Introduction

The D-Series LED Bollard is a stylish, energy-saving, long-life solution designed to perform the way a bollard should—with zero uplight. An optical leap forward, this full cut-off luminaire will meet the most stringent of lighting codes. The D-Series LED Bollard's rugged construction, durable finish and long-lasting LEDs will provide years of maintenance-free service.

Ordering Information

EXAMPLE: DSXB LED 16C 700 40K SYM MVOLT DDBXD

DSXB LED

Series	LEDs	Drive current	Color temperature	Distribution	Voltage	Control options	Other options	Finish (optional)
DSXB LED	Asymmetric 12C 12 LEDs ¹	350 350 mA	30K 3000 K	ASY Asymmetric ¹ SYM Symmetric ²	MVOLT ³	Shipped installed PE Photoelectric cell, button type DMG 00-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) ELCW Emergency battery backup ⁶	Shipped installed SF Single fuse (120, 277, 347V) ⁴ DF Double fuse (208, 240V) ⁷ H24 24" overall height H30 30" overall height H36 36" overall height FG Ground-fault festoon outlet L/AB Without anchor bolts L/AB4 4-bolt retrofit base without anchor bolts ⁸	DWHXD White
		450 450 mA ^{1,4}	40K 4000 K		120 ⁵			DNAXD Natural aluminum
		530 530 mA	50K 5000 K		208 ⁵			DDBXD Dark bronze
	Symmetric 16C 16 LEDs ¹	700 700 mA	AMBPC Amber phosphor converted	240 ⁵	DBLXD Black			
			AMBLW Amber limited wavelength ^{1,4}	277 ⁵	DOBTXD Textured dark bronze			
				347 ⁴	DBLBXD Textured black			
				DNATXD Textured natural aluminum				
					DWHGXD Textured white			

Accessories

Ordered and shipped separately.

MRAB U Anchor bolts for DSXB⁸

NOTES

- 1 Only available in the 12C, ASY version.
- 2 Only available in the 16C, SYM version.
- 3 Only available with 450 AMBLW version.
- 4 Not available with ELCW.
- 5 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120, 208, 240 or 277 options only when ordering with fusing (SF, DF options), or photocontrol (PE option).
- 6 Not available with 347V. Not available with fusing. Not available with 450 AMBLW.
- 7 Single fuse (SF) requires 120, 277, or 347 voltage option. Double fuse (DF) requires 208 or 240 voltage option.
- 8 MRAB U not available with L/AB4 option.



RATIO LED SERIES AREA/SITE LIGHTER

Cat.#

Job

Type



HUBBELL
Outdoor Lighting

Approvals

SPECIFICATIONS

Intended Use:

Low profile LED area/site luminaire with a variety of IES distributions for lighting applications such as retail, commercial and campus parking lots.

Construction:

- Rectilinear form mimics the traditional shoebox form factor keeping a similar but updated style and appearance, ideal for retrofit applications
- Die-cast housing with hidden vertical heat fins that are optimal for heat dissipation while keeping a clean smooth outer surface
- Corrosion resistant, die-cast aluminum housing with powder coat paint finish

Optics/LED:

- 80, 160, 320 or 480 midpower LEDs
- Entire optical aperture illuminates to create a larger luminous surface area resulting in a low glare appearance without sacrificing optical performance
- 3000K, 4000K, or 5000K (70 CRI) CCT
- Zero uplight at 0 degrees of tilt
- Field rotatable optics

Electrical:

- Universal 120-277 VAC or 347-480 VAC input voltage, 50/60 Hz
- Ambient operating temperature -40°C to 40°C
- Drivers have greater than 90% power factor and less than 20% THD
- LED drivers have output power over-voltage, over-current protection and short circuit protection with auto recovery
- Field replaceable surge protection device provides 20KA protection meeting ANSI/IEEE C62.41.2 Category C High and Surge Location Category C3; Automatically takes fixture off-line for protection when device is consumed

Controls:

- Photo control, occupancy sensor and wireless available for complete on/off and dimming control
- 7-pin ANSI C136.41-2013 photocontrol receptacle option available for twist lock photocontrols or wireless control modules (control accessories sold separately)
- 0-10V dimming leads available for use with control devices (provided by others, must specify lead length)
- SiteSync™ wireless control system is available via 7-pin and can be ordered separately. See ordering information and details at: www.hubbellighting.com/sitesync

Installation:

- Standard square arm mounts
- Optional universal mounting block and round pole adapter also available as accessories
- Knuckle arm fitter option available for 2-3/8" OD tenon. Max tilt of 60 degrees with 4 degree adjustable increments. (Restrictions apply for 7-pin options)

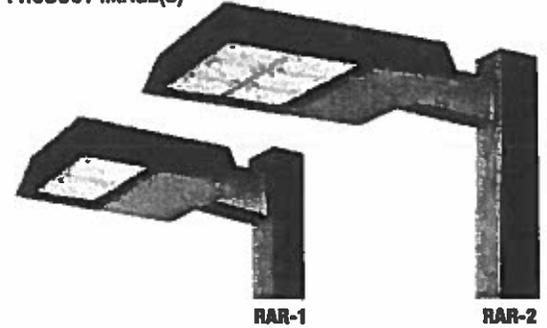
Listings:

- Listed to UL1598 and CSA C22.2#250.0-24 for wet locations and 40°C ambient temperatures
- 3G rated for ANSI C136.31 high vibration applications
- Fixture is IP66 rated
- Meets IDA recommendations using 3K CCT configuration at 0 degrees of tilt

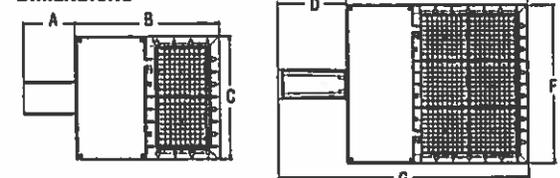
Warranty:

Five year limited warranty (for more information visit: <http://www.hubbellighting.com/resources/warranty/>)

PRODUCT IMAGE(S)



DIMENSIONS



A	B	C	D	E	F
5.0"	14.0"	12.0"	7.5"	19.5"	17.39"
127mm	355.6mm	304.8mm	190.5mm	495.3mm	441.7mm

G	H	I	Weight	
27.0"	18.2"	3.25"	RAR-1	13.5 lbs (6.12 kgs)
685.8mm	462.8mm	82.5mm	RAR-2	24.0 lbs (10.8 kgs)

RAR-1 EPA@0°	RAR-2 EPA@0°	RAR-1 EPA@30°	RAR-2 EPA@30°
.45 ft ²	.55 ft ²	.56 ft ²	1.48 ft ²
.13 m ²	.17 m ²	.17 m ²	.45 m ²

SHIPPING INFORMATION

Catalog Number	G.W(kg)/ CTH	Carton Dimensions		
		Length (Inch (cm))	Width (Inch (cm))	Height (Inch (cm))
RAR1	15 (6.8)	20.75 (52.7)	15.125 (38.4)	6.9375 (17.6)
RAR2	19 (8.6)	25 (63.5)	15.125 (38.4)	6.9375 (17.6)

CERTIFICATIONS/LISTINGS



ORDERING INFORMATION - STOCK CONFIGURATIONS

CATALOG NUMBER	LUMENS	WATTAGE	LED COUNT	CCT/CRI	VOLTAGE	DISTRIBUTION	MOUNTING	FINISH
RAR1-100-4K-3	12,000	100W	160L	4000K/70CRI	120-277V	Type 3	Square Arm	Bronze
RAR1-100-4K-4	12,000	100W	160L	4000K/70CRI	120-277V	Type 4W	Square Arm	Bronze
RAR2-140-4K-3	18,000	140W	320L	4000K/70CRI	120-277V	Type 3	Square Arm	Bronze
RAR2-140-4K-4	18,000	140W	320L	4000K/70CRI	120-277V	Type 4W	Square Arm	Bronze
RAR2-165-4K-3	21,000	165W	320L	4000K/70CRI	120-277V	Type 3	Square Arm	Bronze
RAR2-165-4K-4	21,000	165W	320L	4000K/70CRI	120-277V	Type 4W	Square Arm	Bronze

CONFIGURABLE ORDERING INFORMATION NEXT PAGE



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ORDERING INFORMATION

ORDERING EXAMPLE: RAR1-80L-25-3K7-2-UNV-ASQ-BL-NXWE-BC

SERIES	# LEDS WATTAGE	OPTICS ROTATION	COLOR	CONTROL OPTIONS NETWORK	OPTIONS
RAR1 Ratio Area Size 1	80L-25 25W - 3,000 Lumens 80L-50 50W - 6,000 Lumens 160L-70 70W - 9,000 Lumens 160L-100 100W - 12,000 Lumens	Blank for no rotation L Optic rotation left R Optic rotation right	BL Black textured DB Dark bronze textured GT Graphite textured GYS Light gray smooth PS Platinum silver smooth WH White textured CC Custom Color	NXWE NX Wireless Enabled (module + radio) NXSPW_F NX Wireless, PIR Occ. Sensor, Daylight Harvesting NXSP_F NX, PIR Occ. Sensor, Daylight Harvesting	BC Backlight Control* CD Continuous Dimming F Fusing TB Terminal Block 2PF 2 power feed with 2 drivers
RAR2 Ratio Area Size 2	320L-110 110W - 15,000 Lumens 320L-140 145W - 18,000 Lumens 320L-165 165W - 21,000 Lumens 480L-185 185W - 24,000 Lumens 480L-210 210W - 27,000 Lumens 480L-240 240W - 30,000 Lumens	DISTRIBUTION 2 IES TYPE II 3 IES TYPE III 4W IES TYPE IV 5QW IES TYPE V	VOLTAGE UNV Universal 120-277V 120 120V 208 208V 240 240V 277 277V 347 347V 480 480V	CONTROL OPTIONS OTHER SCP-F Programmable occupancy sensor 7PR 7-Pin twist lock receptacle 7PR-SC 7-Pin receptacle with shorting cap 7PR-MD_F Low voltage sensor for 7PR 7PR-TL 7-Pin PCR with photocontrol	
	CCT/CRI 3K7 3000K, 70 CRI 4K7 4000K, 70 CRI 5K7 5000K, 70 CRI		MOUNTING ASQ Arm mount for square pole/flat surface ASQU Universal Arm mount for square pole/flat surface		
			MOUNTING ROUND POLES A_ Arm mount for round pole A_U Universal arm mount for round point		
			MOUNTING OTHER WB Wall Bracket MAF Mast Arm Fitter for 2-3/8" OD horizontal arm K Knuckle		

¹ Replace " " with "3" for 3.5"-4.13" OD pole, "4" for 4.18"-5.25" OD pole, "5" for 5.5"-6.5" OD pole
² Replace " " with "14" for up to 14' mounting height, "30F" for 15-30' mounting height
³ Replace " " with "8" for up to 8' mounting height, "40F" for 9-40' mounting height
 * Summer 2019 Availability

STOCK - ACCESSORIES/REPLACEMENT PARTS - Order Separately

Catalog Number	Description
RARRPA3DB	Round pole adapter 3.5" TO 4.13"
RARA3UDB	Universal mount for square pole or round pole 3.5" to 4.13"
RARBC80L	Ratio backlight control 80L*
RARBC160L	Ratio backlight control 160L*
RARBC320L	Ratio backlight control 320L*
RARBC480L	Ratio backlight control 320L*

* Summer 2019 Availability

CONTROLS ACCESSORIES - Order Separately

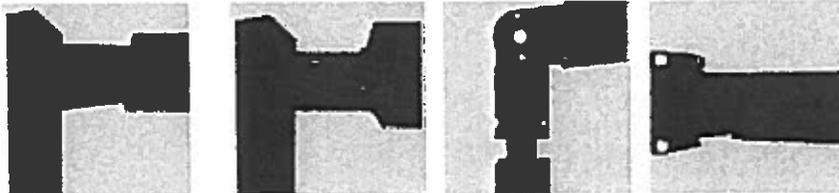
Catalog Number	Description
SW7PR	SiteSync™ on fixture module via 7PR
SWUSB	SiteSync™ Software on USB
SWTAB	SiteSync™ Windows Tablet
SWBRG	SiteSync™ Wireless Bridge Node
SWFC	SiteSync™ Field Commission Serv
SCPREMOTE	Order at least one per project location to program and control
WIR-RME-L	wISCAPET™ external control node; use with 7PR
NXDFM-1R1D-UNV	NX external control node; use with 7PR

ACCESSORIES/REPLACEMENT PARTS - Order Separately

Catalog Number	Description
RAR-ASQU-XX	Universal arm mount for square pole/flat surface
RAR-A_U-XX	Universal arm mount for round poles
RAR-RPA_-XX	Round pole adapter
SETAVP	4" square pole top tenon adapter; 2 3/8" OD slipfitter
RETAVP	4" round pole top tenon adapter; 2 3/8" OD slipfitter for max. Four fixtures (90°); order 4" round pole adapters separately
SPIKE	Bird Deterent
RARWB-XX	Wall Bracket - use with Mast Arm Fitter or Knuckle

¹ Replace " " with "3" for 3.5"-4.13" OD pole, "4" for 4.18"-5.25" OD pole, "5" for 5.5"-6.5" OD pole
² Replace " " with "14" for up to 14' mounting height, "30F" for 15-30' mounting height
³ Replace " " with "8" for up to 8' mounting height, "40F" for 9-40' mounting height
 * Summer 2019 Availability

MOUNTING



Arm Mount - Fixture ships with integral arm for ease of installation. Compatible with Hubbell Outdoor B3 drill pattern.

MAF - Fits 2-3/8" OD arms Roadway applications.

Knuckle - Knuckle mount 15° aiming angle increments for precise aiming and control, fits 2-3/8" tenons or pipes.

Wall Mount - Wall mount bracket designed for building mount applications.



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PERFORMANCE DATA

FAMILY	NOMINAL WATTAGE	SYSTEM WATTAGE	DIST. TYPE	5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
				LUMENS	LPW ¹	B	U	G	LUMENS	LPW ¹	B	U	G	LUMENS	LPW ¹	B	U	G
RAR1	25	25.4	2	3438	135	1	0	1	3445	136	1	0	1	3240	128	1	0	1
			3	3460	136	1	0	1	3467	136	1	0	1	3260	128	1	0	1
			4W	3406	134	1	0	1	3412	134	1	0	1	3209	126	1	0	1
	50	49.8	50W	3483	137	2	0	1	3490	137	2	0	1	3282	129	2	0	1
			2	6310	127	1	0	2	6323	127	1	0	2	5946	120	1	0	2
			3	6349	128	1	0	2	6362	128	1	0	2	5983	120	1	0	2
	70	68.4	4W	6233	125	1	0	2	6245	126	1	0	2	5873	118	1	0	2
			50W	6392	129	3	0	1	6405	129	3	0	1	6023	121	3	0	1
			2	9486	139	1	0	2	9505	139	1	0	2	8938	131	1	0	2
	100	90.0	3	9544	140	1	0	2	9563	140	1	0	2	8993	131	1	0	2
			4W	9395	137	1	0	2	9414	138	1	0	2	8853	129	1	0	2
			50W	9608	140	4	0	2	9628	141	4	0	2	9054	132	4	0	2
RAR2	110	100.3	2	11976	133	2	0	2	12000	133	2	0	2	11285	125	2	0	2
			3	12050	134	2	0	2	12074	134	2	0	2	11354	126	2	0	2
			4W	11861	132	2	0	2	11885	132	2	0	2	11177	124	2	0	2
	140	133.2	50W	12131	135	4	0	2	12155	135	4	0	2	11431	127	4	0	2
			2	15326	153	2	0	3	15357	153	2	0	3	14442	144	2	0	3
			3	15421	154	2	0	3	15452	154	2	0	3	14531	145	2	0	3
	165	153.6	4W	15180	151	2	0	2	15210	152	2	0	2	14304	143	2	0	2
			50W	15525	155	4	0	2	15556	155	4	0	2	14629	146	4	0	2
			2	19395	146	2	0	3	19434	146	2	0	3	18276	137	2	0	3
	185	174.5	3	19515	147	2	0	3	19554	147	2	0	3	18389	138	2	0	3
			4W	19210	144	2	0	3	19248	145	2	0	3	18101	136	2	0	3
			50W	19647	148	5	0	3	19686	148	5	0	3	18513	139	5	0	3
210	198.3	2	21651	141	3	0	3	21695	141	3	0	3	20402	133	3	0	3	
		3	21785	142	3	0	3	21828	142	3	0	3	20527	134	3	0	3	
		4W	21444	140	3	0	3	21487	140	3	0	3	20206	132	3	0	3	
240	226.9	50W	21932	143	5	0	3	21976	143	5	0	3	20666	135	5	0	3	
		2	26046	149	3	0	3	26098	150	3	0	3	24543	141	3	0	3	
		3	26207	150	3	0	3	26259	150	3	0	3	24694	142	3	0	3	
240	226.9	4W	25797	148	3	0	4	25849	148	3	0	4	24308	139	3	0	4	
		50W	26384	151	5	0	3	26437	152	5	0	3	24861	143	5	0	3	
		2	28848	145	3	0	4	28906	146	3	0	4	27184	137	3	0	4	
240	226.9	3	29027	146	3	0	4	29085	147	3	0	4	27351	138	3	0	4	
		4W	28572	144	3	0	4	28630	144	3	0	4	26924	136	3	0	4	
		50W	29222	147	5	0	4	29281	148	5	0	4	27536	139	5	0	4	
240	226.9	2	32087	141	3	0	4	32151	142	3	0	4	30235	133	3	0	4	
		3	32285	142	3	0	4	32350	143	3	0	4	30422	134	3	0	4	
		4W	31780	140	3	0	4	31844	140	3	0	4	29946	132	3	0	4	
50W	32503	143	5	0	4	32568	144	5	0	4	30627	135	5	0	4			

¹ - Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.



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ELECTRICAL DATA

# OF LEDS	Nominal Wattage	Input Voltage	Oper. Current (Amps)	System Power (Watts)
RAR1	25	120	0.21	25.4
		208	0.12	
		240	0.11	
		277	0.09	
	50	120	0.42	49.8
		208	0.24	
		240	0.21	
		277	0.18	
	70	120	0.57	68.4
		208	0.33	
		240	0.29	
		277	0.25	
100	120	0.75	90.0	
	208	0.43		
	240	0.38		
	277	0.32		
RAR2	110	120	0.84	100.3
		208	0.48	
		240	0.42	
		277	0.36	
	140	120	1.11	133.2
		208	0.64	
		240	0.56	
		277	0.48	
	165	120	1.28	153.6
		208	0.74	
		240	0.64	
		277	0.55	
	185	120	1.45	174.5
		208	0.84	
		240	0.73	
		277	0.63	
	210	120	1.65	198.3
		208	0.95	
		240	0.83	
		277	0.72	
240	120	1.89	226.9	
	208	1.09		
	240	0.95		
	277	0.82		

LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

AMBIENT TEMPERATURE		LUMEN MULTIPLIER
0°C	32°F	1.03
10°C	50°F	1.01
20°C	68°F	1.00
25°C	77°F	1.00
30°C	86°F	0.99
40°C	104°F	0.98
50°C	122°F	0.97

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

PROJECTED LUMEN MAINTENANCE

Ambient Temp.	OPERATING HOURS					L70 (hours)
	0	25,000	TM-21-11 L90 36,000	50,000	100,000	
25°C / 77°F	1.00	0.97	0.95	0.93	0.86	238,000
40°C / 104°F	0.99	0.96	0.95	0.93	0.85	225,000



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