Final Coastal Site Plan

PLPZ #202000377

Koch residence

Demolish existing house and construct new 4469 sf house, plus 507 sf detached studio, patios, pool, pool terracing, new driveway, HVAC units, sewer lateral, new dock with pier, ramp and float, landscaping and storm water management systems.

| Location:       | 10 South Crossway |
| Zone:           | R-20              |
| Parcel Size:    | 22,147 sf ( ½ acre) |
| Flood Zone:     | AE-13 / VE-16     |

<table>
<thead>
<tr>
<th>Zoning Statistics</th>
<th>EXISTING</th>
<th>PERMITTED</th>
<th>PROPOSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROSS SQUARE FEET:</td>
<td>4494 sf</td>
<td>4983 sf</td>
<td>4975.9 sf</td>
</tr>
<tr>
<td>FLOOR AREA RATIO:</td>
<td>0.203</td>
<td>0.225</td>
<td>0.2246</td>
</tr>
<tr>
<td>GREEN AREA:</td>
<td>n/a</td>
<td>62 %</td>
<td>62 %</td>
</tr>
<tr>
<td>BUILDING COVERAGE:</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>HEIGHT:</td>
<td>37.5’</td>
<td>36’ 8.625’</td>
<td></td>
</tr>
<tr>
<td>BUILDING SETBACKS *</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Front Yard Setback:</td>
<td>35’ (52.5’)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Side Yard Setback:</td>
<td>10’ (no less than 25’ total)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Rear Yard Setback:</td>
<td>35’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Accessory:</td>
<td>5’ side / 5’ rear</td>
<td>5.25’ (pool)</td>
<td></td>
</tr>
</tbody>
</table>

*R-12 setbacks used due to deficient frontage

UPDATE

The Commission opened and continued this application at their 2-17-21 meeting. At that time comments provided by DPW Engineering, CT DEEP, and Conservation indicated outstanding issues in need of resolution. Further, the Commission had concerns about the proposed pool being located in the VE-16 flood zone. The Commission also discussed the need for appropriate buffer planting based on the newly amended Regulation Section 6-111(D)(6). In response to comments, the applicant subsequently submitted revised engineering plans and documentation, a revised development plan showing the limit of tidal wetlands, and a revised landscaping plan based on a meeting held with Conservation Analyst Aleksandra Moch. Updated comments have since been received from DPW Engineering, CT DEEP and Conservation indicating no outstanding issues remain and no revisions are required prior to a P+Z decision. The pool has not been relocated to
outside of the VE zone. The following are the recommendations made by Conservation which were agreed to by the applicant:

1. Enhance the planting bed along the pool by replacing Butterfly Milkweed perennials, Canadian Anemone ground covers, Bunny Blue Spreading Sedge ground covers and White Turtlehead perennials with Prairie Dropseed grass and Virginia Sweetspire shrubs;
2. Convert the lawn area south of the pool to planting beds;
3. Call for post-construction soil remediation;
4. Install Gourd Purple Martin Complex or Other Large Bird House near driveway entrance; and
5. Provide a plan to maintain the lawn organically.

Comments received from Zoning, Sewer and the Harbor Management Commission indicate no issues in need of resolution prior to Site Plan approval. The Commission can review the updated documentation provided by the applicant and determine if the application meets Coastal Site Plan standards.

APPLICATION SUMMARY
A final coastal site plan application was submitted to demolish an existing house and construct a new 4469 sf house, plus 507 sf detached studio, patios, pool, pool terracing, new driveway, HVAC units, sewer lateral, new dock with pier, ramp and float, landscaping and storm water management systems on a ½ acre property located in the R-20 zone and AE-13 and VE-16 flood zones. The applicant seeks Planning & Zoning Commission approval under Sections 6-5, 6-9, 6-13, 6-14, 6-15, 6-93, 6-111, 6-139.1, and 6-205 of the Town of Greenwich Building Zone Regulations.

RECOMMENDATIONS/ ISSUES TO BE RESOLVED
1. DPW-Engineering comments updated on 3-4-21 indicate that a review shall be done prior to Zoning Permit sign off but that no revisions are required prior to Site Plan approval.
2. John Gaucher of CT DEEP submitted comments via email dated 3-5-21 indicating that the applicant has satisfactorily addressed his original comments.
3. Harbor Management Commission has submitted comments indicating that they reviewed a pre-application for the proposed dock with pier ramp and float and have no objection to the DEEP application for the referenced dock.
4. Zoning comments dated 2-10-21 indicate compliance with applicable regulations. A diagram of the building envelope is included with the staff report.
5. Conservation comments have been updated via email by Aleksandra Moch dated 3-11-21 which indicates support for the project based on the new landscaping plan.
6. The site does not contain inland wetlands. The applicant received signoff from IWWA on 12/30/2020.
7. Sewer comments dated 2-21-21 indicate requirements for the Building Permit phase but no actions are required prior to Site Plan approval.
8. Work in the VE zone must be consistent with Section 6-139.1(12)(F) and DEEP guidelines.
DEPARTMENT COMMENTS
ZEO- Attached
ENG- Attached
CONS- Attached
SEWER – Attached
DEEP- Attached

SITE DESCRIPTION
The property is located at the terminus of South Crossway, also shown as Van Loon Lane on certain maps. The site is a direct waterfront property on Greenwich Cove within the Coastal and Flood Hazard Overlay Zones. The property is in the R-20 zone and contains a total of 22,147 sq. ft. to the Mean High Waterline (MHW) which is located at elevation 3.4’. The entire property is within flood overlay hazard zones AE-13 and VE-16. The coastal jurisdiction line is located at elevation 5.5’. No inland wetlands are present on site.

The property currently contains an existing house with patios, decks, walkways, and driveway. A seawall (stone masonry retaining wall) runs the length of the western boundary. Existing vegetation on site includes rows of hemlocks and arborvitae, a stand of forsythia and a number of trees, such as sycamore and maple, interspersed throughout the property.

There is a triangular area encumbered by a view easement in the southern quadrant of the property. There is a 3’ wide pedestrian easement and a 5’ right of way along the eastern boundary. These appear to be in relation to the abutting Lucas Point Association property to the south. It does not appear that the Town is a party to these deed restrictions.

The site is served by public water and sewer.

Coastal Subdivision PLPZ201600205 was reviewed and approved for an equal area exchange with 3 Cove Road. No other site plans or subdivisions were found for this address in the P+Z files.

PROPOSAL
A final coastal site plan application was submitted to demolish an existing house and construct a new 4469 sf house, plus a 507 sf detached studio, patios, pool, pool terracing, new driveway, HVAC units, sewer lateral, new dock with pier, ramp and float, landscaping and storm water management systems on a ½ acre property located in the R-20 zone and AE-13 and VE-16 flood zones. The stone masonry retaining seawall is shown to remain in place. Some smaller walls near the driveway entrance will be removed. A net cut of 22 cubic yards is required.

It appears that the rows of 12 arborvitae, 12 hemlocks and the stand of forsythia will be removed for placement of the new driveway. Eight (8) more trees throughout the property are proposed to be removed. A planting plan dated 1-27-21 shows a variety of trees, shrubs, grasses, groundcover and
perennials to be planted throughout the property including between the new driveway edge and the
adjacent property (English Laurel shrubs) and between the pool and the seawall (grasses and
shrubs). A total of 55 trees including Juniper, Shadblow, River Birch and Magnolia are proposed to
be planted.

Conservation comments dated 2-7-21 recommend pulling the pool back to maintain at least a 15 foot
buffer to the seawall / tidal wetlands, to reduce the size of the new driveway, to keep mature trees
and to add larger trees to the planting plan. Updated comments dated 3-11-21 based on the revised
landscaping plan which includes a variety of conservation measures indicate support for the project.

The following are the recommendations made by Conservation which were agreed to by the
applicant:

1. Enhance the planting bed along the pool by replacing Butterfly Milkweed perennials, Canadian
Anemone ground covers, Bunny Blue Spreading Sedge ground covers and White Turtlehead
perennials with Prairie Dropseed grass and Virginia Sweetspire shrubs;
2. Convert the lawn area south of the pool to planting beds;
3. Call for post-construction soil remediation;
4. Install Gourd Purple Martin Complex or Other Large Bird House near driveway entrance; and
5. Provide a plan to maintain the lawn organically.

The development increases impervious areas by 2221 sq. ft. over pre-construction conditions. Three
points of concern have been identified. Porous asphalt, permeable pavers and catch basins will direct
water to underground laterals. The use of storm water BMP’s will reduce peak flow rates and runoff
volume according to the drainage summary report. DPW has reviewed the most recent plans and
drainage summary report and has indicated that no revisions are required prior to a Site Plan
decision.

It appears that the new construction does not encroach into the 3’ pedestrian easement nor 5’ right of
way. A wood shed, portion of a wall and HVAC units appear to be within the view easement. The
language of these easements should be reviewed to confirm that the Town is not a party to such deed
restrictions.

RACE submitted a Flood Zone Compliance Review letter which summarizes the analyses performed
and confirms the pool and associated terracing, as proposed, comply with VE standards.

**ZONING**
The FAR worksheets show 2284.9 sq. ft. on the first floor, and 2184 sq. ft. on the second floor. The
lower level and the attic area, which is less than 40% of the floor below it, are not counted toward
FAR. The gross floor area (GFA) of the house equals 4468.9 sq. ft., and the accessory studio is 507
sq. ft. resulting in 4975.9 GFA on site, or 0.2246 FAR, in the R-20 zone.
The average grade plane is 10.34’ as calculated by the engineer. Based on a BFE of 13’, the flood zone grade plane is 11’, which is greater than the average grade plane, therefore the flood zone grade plane is utilized. The first floor elevation is 15.83’ and the resulting differential is 4.83’.

Zoning comments dated 2-10-21 indicate compliance with applicable regulations. A diagram outlining the required setbacks for the property is included with this staff report.

SEDIMENTATION AND EROSION CONTROL
The sedimentation and erosion control plan (D’Andrea) proposes installation of silt fencing and around the entire site. A construction entrance with an anti-tracking entrance is proposed in the area of the driveway entrance and street sweeping will be used to minimize tracking of mud. Tree protection is shown around one 4” diameter tree and one 8” diameter tree in the northwest corner. Catch basins will be protected with silt sacks and hay bales and threes stockpile areas have been indicated on site to be enclosed by silt fencing. Sedimentation and erosion controls as shown on plans, and any other measures required to stabilize the site, should be installed and maintained during the duration of construction until the site is permanently stabilized.

COASTAL AREA MANAGEMENT
The coastal resources on site include Greenwich Cove and coastal flood hazard areas. The Mean High Water line is located at elevation 3.4’.

Work in the VE zone should be consistent with Section 6-139.1(12)(F) and DEEP guidelines.

Vegetation will be removed from site for the new construction and a planting plan proposes 55 trees along with shrubs, ground cover and perennials.

APPLICABLE REGULATIONS
Sections 6-5, 6-9, 6-13, 6-14, 6-15, 6-93, 6-111, 6-139.1, and 6-205

“6-111(D)…”
(6) Include a naturalized vegetated buffer to protect environmentally sensitive and/or ecologically valuable natural resources such as tidal wetlands, open water, slopes in excess of 25%, coastal bluffs and escarpments, beaches, and dunes. Plantings shall be predominantly native species and salt-tolerant. Where appropriate, the Commission may waive this requirement upon a finding that by virtue of the lot size, use, or relationship to and/or character of the coastal resources, the buffer will have no impact on mitigating adverse impacts...”
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION
SITE DEVELOPMENT REVIEW

Engineering Project No. 21-5(6)  Department Project No. PLPZ202000377
Submittal Received Date: 2/26/2021

Submittal Reviewed For: Planning and Zoning
Traffic Review Requested: No
Review Type: Final Site Plan

PLAN SET INFORMATION

Plan Title: Heath Koch
Project Address: 10 South Crossway
Engineering Firm: Rocco V. D’Andrea, Inc.
Original Plan Date: 12/6/2020
Latest Plan Revision Date: 2/22/2021

DRAINAGE SUMMARY REPORT INFORMATION

Engineering Firm: Rocco V. D’Andrea, Inc.
Original Report Date: 12/21/2020
Latest Report Revision Date: 2/22/2021

Reviews provided by the Engineering Division are for compliance with the Town’s “Roadway Design Manual and Standard Construction Details” and “Drainage Manual” as amended. Reviews are based upon the information and plans provided. Comments pertaining to the Town’s manuals are not all encompassing. Other reviewing entities may provide additional comments regarding consistency with these manuals in accordance with their jurisdictions. Review of sanitary sewer and septic systems are not reviewed by the Engineering Division.

All New Submittals for Commission Meetings must be received by the Engineering Division four weeks before scheduled Commission Meeting.

All Revised Submittals for Commission Meetings must be received by the Engineering Division three weeks before scheduled Commission Meeting.

Reviewed and Approved by: Scott Marucci - Senior Civil Engineer
Date: 3/4/21

COMMENTS AND CONDITIONS OF APPROVAL:

1. A revised Form SC-107 needs to be submitted.
2. The Drainage Summary Report is acceptable.
3. The construction plan set needs to be revised as follows:
   a. Site Plan Sheets
      i. The top of stone for the level spreader must be revised to 8.00 in the callout to match the report.
4. The draft Operations and Maintenance Plan Report shall be revised as follows:

Standard Conditions of Approval

1. The Operations and Maintenance Plan Report must include the following for the Certificate of Occupancy:
   b. The final completed Exhibit A, and B
c. The Maintenance Declaration needs to be filed on the Town of Greenwich Land Records prior to a Certificate of Occupancy. A review of the documents above must be completed before filing on the Town of Greenwich Land Records.

2. The Town of Greenwich – Standard Construction Notes for Site and Subdivision Plans are conditions that must be met.

3. All requests for a Temporary Certificate of Occupancy (T.C.O.) or a Certificate of Occupancy (C.O.) shall be submitted one month before the T.C.O. or C.O. is required.

4. The submittal for a Temporary or Final Certificate of Occupancy must include the following:
   c. Field Inspection Record (All required photos) – Form SC-106 – Sealed and Signed by a Connecticut Licensed Professional Engineer.
   d. Bioretention Soil Testing Certification Sign-Off (as applicable with the bioretention soil gradation test and the phosphorous test for the mixed soil) – Form SC-104 – Sealed and Signed by a Connecticut Licensed Professional Engineer.
   h. A Letter discussing all the work that remains to be completed (Only for a Temporary Certificate of Occupancy Submittal).
Anastasio, Marisa

From: Gaucher, John <John.Gaucher@ct.gov>
Sent: Tuesday, March 2, 2021 1:59 PM
To: Dygert, Bianca
Cc: Anastasio, Marisa; Matthew Kivijarv
Subject: RE: ROUTING - 10 South Crossway - PLPZ 2020 00377 - Revisions
Attachments: Gaucher Transmittal Letter.pdf

Importance: Low

[EXTERNAL]

Bianca,

The applicant has addressed the preliminary email comments that I submitted on February 16, 2021 via the attached response by Rocco V. D’Andrea. Additionally, the applicant has adequately demonstrated that the stormwater drainage system has been designed to retain the runoff generated by the first inch of precipitation as required when discharging within 500' of non-fresh water tidal wetlands. Accordingly, we have no further comments for the Planning & Zoning Commission's consideration. Please let me know if you have any questions or if you need any additional information.

John Gaucher
Environmental Analyst III
Land & Water Resources Division
Bureau of Water Protection and Land Reuse
79 Elm Street
Hartford, CT 06106

Phone 860.424.3660
fax 860.424.4054

From: Dygert, Bianca <bianca.dygert@greenwichct.org>
Sent: Friday, February 26, 2021 11:43 AM
To: Gaucher, John <John.Gaucher@ct.gov>
Cc: Anastasio, Marisa <Marisa.Anastasio@greenwichct.org>
Subject: ROUTING - 10 South Crossway - PLPZ 2020 00377 - Revisions

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Hi John,
Please find attached routing sheet and revised documents at the link below.

https://greenwichct-my.sharepoint.com/:f:/g/personal/katie_deluca_greenwichct_org/EIHYl9dgLU5KiNEbFbLPkBQiP90dSiq-O5Jmf8eBktMw?e=bnSq1P

This is scheduled for the March 16th meeting.
Thank you,

Bianca Dygert
Planner II

Town of Greenwich
Land Use - Planning & Zoning
101 Field Point Road
Greenwich, CT 06830-6463
Ph. (203) 622-7894
Office Fax. (203) 622-3795
Direct Fax. (203) 861-6113
Bianca.Dygert@greenwichct.org

www.greenwichct.gov

CAUTION: This email originated from outside the Town email system. Do not click links or open attachments unless you have verified the sender and know the content is safe.
Dear Marissa

I hope all is well. I met with the applicant last week. We have discussed all the elements stated below to be added to the plan to enhance the site's environmental values and provide proper mitigation for the pool intrusion into the buffer area. The revised plan incorporates all the elements; therefore, the Conservation Commission staff is supporting the project and the new planting plan.

Please let me know if you have any questions.

Regards,

Aleksandra Moch
Environmental Analyst
Conservation Commission
Town of Greenwich
101 Field Point Road
Greenwich, CT 06830
Tel: 203 622 3822

Hi Marisa and Aleks,

Attached is the revised planting plan following our meeting.

The plan has been updated to:
1. Enhance the planting bed along the pool by replacing Butterfly Milkweed perennials, Canadian Anemone ground covers, Bunny Blue Spreading Sedge ground covers and White Turtlehead perennials with Prairie Dropseed grass and Virginia Sweetspire shrubs;
2. Convert the lawn area south of the pool to planting beds;
3. Call for post-construction soil remediation;
4. Install Gourd Purple Martin Complex or Other Large Bird House near driveway entrance; and
5. Provide a plan to maintain the lawn organically.

Please let me know if you have any questions or comments.

Thanks,

John
This electronic message contains information which may be privileged, confidential or otherwise protected from disclosure. The information in this message is intended for the addressee only. If you are not the addressee, any disclosure or copying of the contents of this message, and any attachments, is prohibited. If you have received this message in error, please notify the sender immediately and destroy the original message, attachments and all copies in your possession.

CAUTION: This email originated from outside the Town email system. Do not click links or open attachments unless you have verified the sender and know the content is safe.
ZONING ENFORCEMENT

Project No. PLPZ202000377  Preliminary  Final  X

Reviewed for Planning and Zoning Commission.

TITLE OF PLAN REVIEWED: Koch

LOCATION: 10 South Crossway

PLAN DATE:

ZONE: R-20

☐ Ok for Zoning Permit Sign-off with the following revisions:

☐ Resubmit the following prior to Site Plan/ Subdivision approval:

☒ The subject site plan/subdivision meets the requirements of the Building Zone Regulations, excluding sections 6-15 and 6-17, and is Ok for Zoning Permit Sign-off.

Reviewed by: Jodi Couture  Date: 2/10/2021

Note: These comments do not represent Building Inspection Division approval. Plans subject to review by ZEO at time of building permit application.
Date: February 12, 2021

To: Katie Deluca, Director, Planning & Zoning

From: Richard C. Feminella, Wastewater Division Manager

Copy: Chris Mandras, Maintenance Manager - Sewer Division
      Al Romano, Environmental Asset Engineer – Sewer Division

Re: PLPZ202000377: 10 South Crossway, Heath Koch

We have prepared the following comments and questions regarding the proposed application.

Project Summary:
- Demolish existing residence and construct new single-family dwelling.

Sewer Division Comments:

Comments to be addressed during P&Z phase:
- None.

Comments to be addressed during Sewer and Building Permit phase:
- The applicant/owner will be required to obtain all necessary Sewer Permits. Please coordinate directly with the Sewer Division for permitting.
- The applicant/owner shall comply with the findings of the CCTV inspection performed as part of the Sewer Disconnect Permit PRSD202000266 with Sewer Final issued on January 6, 2021. This includes replacing the sewer lateral to the sewer main, including the lateral's connection on the sewer main. Coordinate with the Environmental Asset Engineer/ Sewer Inspector accordingly. The proposed applicant/owner's engineer should contact the Environmental Asset Engineer to discuss and make sure the appropriate notes/clarification are added to the site development drawing submitted for the Sewer Reconnect Permit.
- Since the proposed development is in a flood zone and includes flood vents, there shall be NO plumbing fixtures installed below the AE and VE elevations. Please provide written confirmation during the Sewer Permitting process that there will not be any proposed plumbing fixtures in the flood (AE or VE) zone elevations for the proposed residence.
- The proposed pool must include a closed loop filtration system. No discharge to sanitary sewer will be permitted. Written confirmation is required during the Sewer Permitting process.
- Please provide written statements/clarification during Sewer Permitting regarding any proposed outdoor plumbing fixtures (such as outdoor showers, sinks for grill/patio areas, etc.). Any such fixtures will require direction from the Sewer Division for how to discharge, etc.
- Please note, sanitary sewers are designed for first floor elevations. Therefore, any plumbing fixtures in lower levels (basements) could be subject to sanitary sewer
backups/overflows. The property owner is strongly recommended to consider and review this and plan accordingly to protect themselves in those situations. The Town is not responsible for damages as a result of these connections/installations. Please consider this and revise accordingly.

- Please note, in accordance with Town regulations and standard practice, all clear water sources cannot discharge to sanitary sewer. This includes air conditioning and high efficiency heating system condensate lines. Please confirm that the new development will not discharge any clear water sources to sanitary sewer.

- Please note, any portion of sanitary sewer lateral that crosses under drainage areas, permeable paver or pervious pavement areas, or within 10-feet of storm drainage systems (such as culverts) are required to be encased in concrete to the nearest upstream and downstream joints to inhibit infiltration. Please coordinate with the Sewer Division for details. The submitted plans have included the necessary concrete encasement.

Please NOTE: These comments are intended for P&Z review only. These comments do not take the place of Sewer Permit(s). Any Sewer Permit Applications receive thorough reviews and may result in additional comments/requirements at that time. In addition, please be reminded that in order to receive Building Permits, the applicant must have secured all other necessary permits, including, but not limited to, Sewer Permits PRIOR to obtaining their Building Permits.

Also, please note, the applicant should NOT submit for Sewer Permits until the project has received approval from P&Z.
VIA EMAIL

February 3, 2021

Mr. James J. Bajek
4570 Bowen Bayou Road
Sanibel, Florida 33957

Subject: Pre-application plans for construction of a private dock for recreational boating in Greenwich Cove in the Greenwich Harbors Area (GHA) at 10 South Crossway

Dear Mr. Bajek:

The Greenwich Harbor Management Commission (HMC) has reviewed the pre-application plans submitted by you to the HMC on behalf of Heath Koch (the Applicant), 98 Peartree Point Road, Darien, Connecticut. As described in the submitted materials, the Applicant proposes to construct a pile-supported pier, ramp, floating dock, and other improvements for recreational boating use at 10 South Crossway, Old Greenwich, Connecticut.

In accordance with the coastal permitting process and requirements of the Connecticut Department of Energy and Environmental Protection’s Land and Water Resources Division (DEEP LWRD), the Applicant’s pre-application plans were submitted to the HMC for review. That review is conducted for the purpose of considering the consistency of the plans with the Greenwich Harbor Management Plan (the Plan).

The HMC considered the pre-application plans, dated December 7, 2020 and January 4, 2021, during its meeting on January 20, 2021. At that time, and with the understanding that the Shellfish Commission has expressed no objection to the proposed project, the HMC approved a motion to inform the Applicant and DEEP LWRD that the HMC has: 1) reviewed the Applicant’s pre-
application plans and has no objection to their inclusion in an application submitted to the DEEP LWRD; and 2) reserves its right to continue to review the Applicant’s proposed project and provide additional comments, including a determination of consistency with the Plan, at such time as additional information may be provided, the proposal may be modified, or the proposal is the subject of a DEEP LWRD Public Notice or Public Hearing.

At such time as the pre-application plans reviewed by the HMC may be included in an application submitted to the DEEP LWRD, please provide a copy of that application to the HMC.

Please contact me at (203) 550-7839 or bernard.armstrong@att.net if you have any questions.

Sincerely,

Bernard Armstrong
Chairman, HMC Application Review Committee

Enclosure
cc:
Mr. Roger Bowgen, Chair, Greenwich Shellfish Commission
Ms. Katie DeLuca, Director of Planning and Zoning
Ms. Beth Forbes, HMC Application Review Committee
Ms. Susan Jacobson, CT DEEP LWRD
Mr. Casey McKee, HMC Application Review Committee
Ms. Diane Ray, U.S. Army Corps of Engineers
Mr. Mike Van Oss, Chair, HMC
PERMIT NEED DETERMINATION QUESTIONNAIRE
[This form is NOT an IWWA Application]

PROJECT: Street Address 10 South Crossway

PARCEL ID: 06 2225 Has there ever been an IWWA application for this site? YES NO Appl. A

ACTIVITY: (Circle) Addition Demolition Deck Garage Interior renovations New residence Pool Tennis court Generator Site Work/Landscaping Septic Other (please specify)

Will this activity require an addition to the septic system or Brooks? YES NO

FEE: $65 for reviews requiring a site visit or further in office analysis

Owner's full name [please print] Heath Koch Phone (_______)

Mailing address 98 Pear Tree Point Road Town Darien Zip 06820

Authorized Agent's name [please print] Rocco V. D'Andrea, Inc. Phone (203) 637-1779

Mailing address 6 Neil Lane Town Riverside Zip 06878

A PLOT PLAN IS REQUIRED SHOWING THE PROPOSED ACTIVITY IN RED.
Staff cannot review your proposal without a plan.

IWWA staff will review this questionnaire to determine if regulated activities are associated with the proposal and whether an IWWA permit is required. Do not apply for a Building Permit until this review is complete.

If your project does not require an IWWA permit, we will sign off on this questionnaire, which you will need if you are obtaining permits from other departments.

If an IWWA permit is required, we will supply you with a permit application packet. You must obtain an IWWA permit prior to the commencement of your project. No work may begin until you receive an IWWA permit. The issuance of a building permit alone does not constitute an authorization to proceed.

If you do not receive notice regarding your questionnaire within two weeks of submission, please contact the IWWA office.

As the property owner or, authorized agent [check one] I believe that the information I have submitted is correct.

Signature Matthew Kupfer for Rocco V. D'Andrea, Inc Date 12/21/2020

If mailing, return completed form.

If a site visit is required, you will be notified and asked to remit a $65 fee (payable to "Town of Greenwich") to the Greenwich Inland Wetlands & Watercourses Agency. The site visit will not take place until this fee is received.

STAFF NOTES

Office Rev Date 12/30/20 Field Inv Date / / WET/WCT YES NO TIDAL

Action Required? YES NO If yes, DR AA AR SIA Staff

Soils Report Date / / Author Soil

Comments:

Fee Received: YES NO Comment:

Inland Wetlands & Watercourses Agency
Received Date Stamp DEC 30 2020

IWWA Questionnaire Revised 9/21/17
NARRATIVE
Applicant proposes to demolish the existing residence and construct a 4,468.9sf new single-family dwelling at 10 South Crossway.

Pursuant to BZR Section 6-111(c)(4), Applicant requests coastal site plan approval to construct the new home within 100’ of coastal resources; as well as a 507sf accessory studio and pool. The area to be developed is separated from the coastal jurisdiction line and mean high water line by an existing seawall. A majority of the development will occur in the AE-13 flood zone on the property, with only the pool being located in the VE-15 flood zone. The new home will roughly occupy the same footprint of the existing home to be removed and will not encroach on the deeded view line easement on the property. The project features a stormwater management system that will treat and improve the quality of runoff. There will be no adverse impacts to coastal resources.

RACE Coastal Engineering has reviewed the project for flood zone compliance with respect to the FEMA guidelines and BZR Section 6-139.1. Their review concluded that the proposed home, terrace and studio will meet the design requirements for structures located in the AE-13 zone; and the pool and proposed minor grading will comply with the standards of the VE-15 zone. The proposed site improvements will not create adverse impacts with respect to flooding at the site or adjacent properties.

The project will comply with the zoning criteria for the R-20 zone, including green area, FAR, and building height. Applicant reviewed the required yards and setbacks with the Zoning Enforcement Officer prior to filing the application.

The new home and studio will be connected to the sewer line in South Crossway. If required by the Sewer Department, Applicant shall provide acknowledgment that ownership of the structures cannot be separated without recording of a sewer maintenance agreement.
An administrative green sheet sign off has been requested from the Inland Wetlands and Watercourses Agency staff.

Applicant notes that an application has or will be filed with the Department of Energy and Environmental Protection to repair the existing pier and install a new dock.

Applicant requests that the Planning and Zoning Commission grant final coastal site plan approval to construct a new single-family dwelling, studio, and pool at 10 South Crossway.

Respectfully Submitted,
John J. Heagney
Dated: December 30, 2020
Site Plan Application

Property Address: 10 South Crossway, Old Greenwich, CT 06870
Property Owner: Heath Koch
Address: 98 Pear Tree Point Road, Darien, CT 06820
Email: ___________________________ Cell Phone: ___________________________ Other Phone: ___________________________
Applicant: Heath Koch
Address: 98 Pear Tree Point Road, Darien, CT 06820
Email: ___________________________ Cell Phone: ___________________________ Other Phone: ___________________________
Authorized Agent: Heagney, Lennon & Slane, LLP
Address: 248 Greenwich Avenue, Greenwich, CT 06830
Email: Theagney@HLS248.com
Cell Phone: (203) 661-8400
Other Phone: ___________________________

Select One: □ Pre-Application □ Final
Zone(s): R-20 Lot Area: 22,147 sf

Please select all relevant items below:

□ Special Permit – Complete special permit application form
□ Coastal Overlay Zone
□ Property is within 500 feet of a Municipal Boundary of ________________ (for notification)
□ Amendment to Building Zone Regulations – Section(s) ___________________________
□ Amendment to Building Zone Map – Zone(s) affected ___________________________
□ Health Department review needed
□ Sewer Department review needed
□ Architectural Review Committee Application attached or Review needed
□ Planning & Zoning Board of Appeals review needed
□ Inland Wetlands and Watercourses Agency Review / Approval Required
□ Scenic Road Designation

To be completed by P&Z staff only:
Check # ___________________________ Check Amount: $ _______________
Application # ___________________________ pzSitePlanApp 2020
<table>
<thead>
<tr>
<th></th>
<th>EXISTING</th>
<th>PROPOSED</th>
<th>PERMITTED/REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMMERCIAL/OFFICE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Floor Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usable Floor Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parking Spaces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COMMERCIAL RETAIL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Floor Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usable Floor Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parking Spaces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OTHER USES</strong></td>
<td></td>
<td>507 sf</td>
<td></td>
</tr>
<tr>
<td>/Accessory Structure - Studio</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Floor Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usable Floor Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parking Spaces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RESIDENTIAL</strong></td>
<td>5</td>
<td>6</td>
<td>4983 sf</td>
</tr>
<tr>
<td>Number of Units</td>
<td>4494 sf</td>
<td>4468.9 sf</td>
<td></td>
</tr>
<tr>
<td>Number of Bedrooms</td>
<td></td>
<td></td>
<td>2 Garage</td>
</tr>
<tr>
<td>Gross Floor Area</td>
<td></td>
<td></td>
<td>4975.9 sf</td>
</tr>
<tr>
<td>Parking Spaces</td>
<td></td>
<td></td>
<td>36' 8.625&quot;</td>
</tr>
<tr>
<td><strong>TOTAL SQUARE FOOTAGE</strong></td>
<td>4494 sf</td>
<td>4975.9 sf</td>
<td>4983 sf</td>
</tr>
<tr>
<td><strong>BUILDING HEIGHT</strong></td>
<td>0.203</td>
<td>0.2246</td>
<td>0.225</td>
</tr>
<tr>
<td><strong>FLOOR AREA RATIO</strong></td>
<td>(4491/22147)</td>
<td>(4975.9/23147)</td>
<td></td>
</tr>
<tr>
<td><strong>BUILDING COVERAGE</strong></td>
<td>14.4% - 3183 sf</td>
<td>37.8% - 8381 sf</td>
<td></td>
</tr>
<tr>
<td><strong>LOT COVERAGE</strong></td>
<td>2 Garage</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL PARKING SPACES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GREEN AREA</strong></td>
<td>1953</td>
<td>2 Garage</td>
<td></td>
</tr>
<tr>
<td><strong>AGE OF STRUCTURE</strong></td>
<td>62.2% - 13776 sf</td>
<td>62%</td>
<td></td>
</tr>
<tr>
<td><strong>THIS SITE PLAN INVOLVES:</strong></td>
<td>□ Additions</td>
<td>□ Alterations</td>
<td>□ Demolition</td>
</tr>
</tbody>
</table>

pzSitePlanApp 2020
Application Signature Page

Property Address: 10 South Crossway, Old Greenwich, CT 06870
Tax ID: 06-2225/S

Property Owner 1: Heath Koch
Address: 98 Pear Tree Point Road, Darien, CT 06820
Email: ___________________________ Cell Phone: __________ Other Phone: ________________
Signature: ______________________ Date: ________________

Property Owner 2: ____________________________________________ Address: ___________________________
Email: ___________________________ Cell Phone: __________ Other Phone: ________________
Signature: ______________________ Date: ________________

Property Owner 3: ____________________________________________ Address: ___________________________
Email: ___________________________ Cell Phone: __________ Other Phone: ________________
Signature: ______________________ Date: ________________

Property Owner 4: ____________________________________________ Address: ___________________________
Email: ___________________________ Cell Phone: __________ Other Phone: ________________
Signature: ______________________ Date: ________________

Applicant: Heath Koch
Address: 98 Pear Tree Point Road, Darien, CT 06820
Email: ___________________________ Cell Phone: __________ Other Phone: ________________
Signature: ______________________ Date: ________________

Authorized Agent: Heagney, Lennon & Slane, LLP
Address: 248 Greenwich Avenue, Greenwich, CT 06830
Email: Theagney@HLSS248.com Cell Phone: (203) 661-8400 Other Phone: ______________________
Signature: ______________________ Date: 12/09/2020

pzSignaturePage 2020
APPLICATION FOR REVIEW OF COASTAL SITE PLAN

Applicant’s Name: Heath Koch

Address: 98 Pear Tree Point Road, Darien CT, 06820

Project Address or Locations: 10 South Crossway, Greenwich

Date: 12-21-20

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

1. 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, and 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 Section 22a-93(7) of the Connecticut Coastal Management Act) on and contiguous to the site.

2. 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 extend of development adjacent to the site. This information should supplement and/or clarify plans in 1(A) above.

      The subject property is located within the "R-20" zone at the terminus of South Crossway, and is bordered on the north and east sides by residential properties, by the Lucas Point Association on the south side, and by the Long Island Sound to the west.

      The proposed project includes the demolition of the existing dwelling and driveway, as well as the construction of a new dwelling, driveway, accessory structure, a pool, and associated drainage and landscaping. Sedimentation and erosion control measures will be implemented around the development area. Excavation and filling shall be done with mechanical equipment, with work limited to the subject parcel.
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 1(B) above.

The subject parcel is located within coastal flood hazard zone "VE" (EL=16') and "AE" (EL=13').

C. Assessment 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 use policies (in Section 22a-92(10)(b)(1) of Connecticut Coastal Management Act) applicable to the proposed project.

(A) to manage uses in the coastal boundary through existing municipal planning, zoning and other local regulatory authorities.

(2) Identify and all coastal resource policies (in Section 22a-92(10)(b)(2) of Connecticut Coastal Management Act) applicable to the proposed project.

(I) to regulate shoreland use and development in a manner which minimizes adverse impacts upon adjacent coastal systems and resources.

(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, the project should be modified to reduce or eliminate the conflict.

The project conforms to all applicable Greenwich P&Z regulations with respect to development in a CAM area. By conforming to these regulations, the project seeks to minimize adverse impacts to the site and surrounding area.

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 in Section 22a-93(15) of Connecticut Coastal Management Act and potential beneficial impacts of the project on coastal resources.

Runoff from the proposed improvements will be discharged to and treated by the proposed stormwater systems. No negative impacts are expected. Beneficial impacts include the development of the site within the guidelines of CAM regulations.

FOR WATERFRONT PROPERTY ONLY:

(2) Is the project a water dependent use as defined in Section 22a-93(16) OF THE CONNECTICUT Coastal management Act? If, so, explain why.

The project is not a "water dependent use" as defined in Section 22a-93(16).
FOR WATERFRONT PROPERTY ONLY:

(3) Describe the impacts of effects (either positive or negative) that the project will have on future water dependent uses or development on and adjacent to this site as defined in Section 22a-93(17).

As the site will be developed within the guidelines of CAM regulations, it will have no impact or effect on "future water dependent uses or development" as defined in Section 22a-93(17).

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

Measures to mitigate adverse impacts include the installation of sedimentation & erosion control measures to minimize impacts from construction activities on the 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.

No adverse impacts remain after employing the proposed mitigation measures.

(2) Explain why these remaining adverse impacts were not mitigated.

N/A

(3) Explain why the commission reviewing this application should find these remaining adverse impacts to acceptable.

N/A
DRAINAGE SUMMARY REPORT

For

10 South Crossway
Greenwich, Connecticut

Prepared For

Heath Koch

December 21, 2020
Revised: February 22, 2021
Introduction & LID Techniques

1.1. Project Narrative

The applicant is proposing improvements to the subject property. The proposed improvements will include the construction of a single-family dwelling and a new driveway and parking area. Improvements also include the installation of a storm drainage system, site grading, and associated landscaping.

For a depiction of existing conditions and the proposed development refer to a development plan set entitled “Final Site Plan Review Set, Residential Development, Location 10 South Crossway, Greenwich, Connecticut, prepared for Heath Koch” as prepared by Rocco V. D’Andrea, Inc.

The subject parcel is 22,147 square feet in size and is located at the terminus of South Crossway. The proposed redevelopment of the parcel will increase the impervious coverage by approximately 2,221 square feet. Refer to Appendix “C” for a depiction of the proposed stormwater BMPs and drainage calculations.

This proposed project will conform to all applicable Town stormwater management standards to the maximum extent practicable. Refer to Appendix “A” for a narrative detailing the projects compliance with each stormwater management standard.

1.2. Land Use Regulations

The subject parcel is located in the “R-20” zone. All applicable zoning setbacks and regulations will be adhered to. There are no inland wetlands or watercourses located on the property.

1.3. Site Inventory & Evaluation

The site consists of an existing asphalt driveway, a dwelling, and various hardscapes. The topography of the site exhibits slopes in all directions from the dwelling with flows discharging onto adjacent properties and ultimately into the Long Island Sound. Existing drainage patterns will generally be maintained under post-construction conditions.

Refer to Exhibit “C” for the USDA soil delineation map and hydraulic soil group ratings for the site. Refer to the Development Plan for the test pit locations and Appendix “G” for the soil test results forms.

1.4. Development Envelope

Due to the size, layout, topography of the property and scope of work proposed, the development envelope will encompass approximately 80% of the site. Sediment and erosion controls will be installed around the proposed development envelope prior to the start of construction to minimize the impact to the surrounding areas.
1.5. LID Control Strategies

In the watershed analysis of existing and proposed conditions, the site has been divided into various sub-drainage areas discharging to various POCs, "points of concern." The analysis is limited to the subject parcel. Refer to Exhibits "A" and "B" for a depiction of the existing and proposed conditions drainage areas and flow paths. Refer to Appendices "D" and "E" for the existing and proposed HydroCAD Analysis.

Conformance to the standards for water quality, TSS removal, and runoff volume reduction will be achieved through the construction of the proposed BMPs. The runoff peak flow reduction standard has been met for all storms up to the 25-year storm to all points of concern. Refer to the HydroCAD Summary Table at the end of this introduction for a comparison of existing and proposed condition stormwater runoff volumes and flow rates to all points of concern.

2. Structural BMPs

2.1. Water Quality Volume and TSS Removal

Refer to Appendix "C" for Water Quality Volume calculations. The proposed BMPs will provide adequate storage to retain and infiltrate the water quality volume of the contributing runoff from the proposed impervious improvements.

Retention of the Water Quality Volume from newly constructed impervious areas will provide the minimum 80% removal of total suspended solids (TSS), which exceeds Town standards. Refer to Appendix "C" for TSS removal calculations.

This volume will be retained and infiltrated by the proposed stormwater systems. Refer to Appendix "C" for 72-Hour Drawdown Calculations.

2.2. Runoff Reduction Volume

The proposed development will not result in an increase in runoff volume from the site for the 1-year storm event towards all points of concern, as compared to existing conditions. Refer to Appendix "C" for Runoff Reduction Volume Calculations.

2.3. Groundwater Recharge Volume

The groundwater recharge standard has been satisfied through the stormwater infiltration capabilities of the proposed systems. Refer to Appendix "C" for Groundwater Recharge Volume Calculations.

2.4. Peak Runoff Attenuation

The proposed development will decrease peak runoff flow rates to less than pre-construction conditions to all points of concern. Refer to Appendices "D" and "E". The decrease in peak runoff flow rates meets the standard of reduction for all storms up to the 25-year storm.
3. Conclusion

The proposed improvements to the subject parcel will increase the impervious coverage on the site and thus increase the volume and peak rate of runoff generated during a storm event. However, with the use of the proposed BMPs and site grading there will be a reduction in stormwater runoff volume and flow rates to all points of concern.

The proposed development will meet the water quality volume, TSS removal, runoff reduction volume, and groundwater recharge volume standards of the Town of Greenwich Drainage Manual to the maximum extent practicable. The proposed development incorporates pre-treatment and attenuation of runoff to the maximum extent practicable. If the development is constructed as depicted on the proposed plans, there will be no adverse impacts to adjoining properties, the subject parcel, or the town drainage system, due to the proposed improvements.
FIRST FLOOR F.F.

SECOND FLOOR F.F.

ATTIC FLOOR F.F.

FLOOD PLANE

GRADE PLANE

GRADE

TOP OF RIDGE

MAX HEIGHT

NAVD 0

T.O.W.

B.F.E.

TERRACE

Date:

Project:

Revision:

Scale: 1/4" = 1'-0"

EXTERNAL ELEVATION: WEST

EXTERIOR ELEVATION: WEST

CAH

OLD GREENWICH, CT 06870

PRELIMINARY

NOT FOR CONSTRUCTION
FIRST FLOOR F.F. 0'-0" (15.83' SITE)
SECOND FLOOR F.F. 11'-4" (27.16' SITE)
ATTIC FLOOR F.F. 20'-8" (36.5' SITE)
TOP OF SLAB -8'-4" (7.5' SITE)
FLOOD PLANE -2'-4" (13.0' SITE)
GRADE PLANE -4'-4" (11.0' SITE)
GRADE -7'-10" (8.0' SITE)
TOP OF RIDGE 32'-4 5/8" (48.29' SITE)
MAX HEIGHT 33'-2" (49.0' SITE)

Date: 12.22.2020
Project: PRELIMINARY
Revision: NOT FOR CONSTRUCTION

Scale: 1/4" = 1'-0"

EXTERIOR ELEVATION: SOUTH
December 22, 2020

Bianca Dygert
Planning and Zoning Department
Greenwich Town Hall
101 Field Point Road
Greenwich, CT 06830

C/O: Leonard C. D’Andrea
LCD@rvdi.com

Reference: Flood Zone Compliance Review
10 South Crossway – Old Greenwich
RACE Project No. 2020138

Dear Ms. Dygert:

RACE COASTAL ENGINEERING (“RACE”) has been retained by Ms. Heath Koch to review the proposed site improvements at 10 South Crossway in Old Greenwich, Connecticut. Specifically, RACE reviewed the project elements for flood zone compliance with respect to FEMA guidelines and Town of Greenwich Section 6-139.1 requirement that the proposed work would not result in an increase in the Base Flood Elevation (BFE) at the site or on adjacent properties. These improvements include a proposed dwelling, pool, terrace and walls, grading and other site improvements and are depicted on the following project plans:


The site, as well as the adjacent properties, are located in the Special Flood Hazard Area (SFHA) on FEMA Flood Insurance Rate Map (FIRM) No.09001C0514G effective July 8th, 2013. The flood zone designations include a Zone VE with a BFE of +16 feet (NAVD 88) and Zone AE with a BFE of +13 feet (NAVD 88). The Zone VE designation represents a Coastal High Hazard Area. The proposed pool and a minor amount of grading will be located in the Zone VE and the dwelling, terrace and retaining walls are to be located in the Zone AE. RACE has performed the following analyses to determine the potential flooding impacts of these structures at 10 South Crossway:

1. A wave crest analysis of existing and proposed site conditions.
2. A wave runup analysis of existing and proposed site conditions.
3. A wave reflection analysis of existing and proposed site conditions.
RACE employed the USACE’s Automated Coastal Engineering System’s (ACES) Windspeed Adjustment and Wave Growth application to calculate the wave heights on site. Equations in FEMA’s Coastal Construction Manual (2011) were used to determine the maximum wave crest at the site. The analysis showed the proposed work does not increase the wave crest elevation on the site or adjacent properties.

Wave runup was analyzed for the existing and proposed conditions using ACES’s Irregular Wave Runup on Beaches and Wave Runup and Overtopping on Impermeable Structures Application. The analysis demonstrated that there would be no increase in wave runup elevations on the site or adjacent properties under varying water level conditions that could cause runup on the structures.

The ACES Combined Reflection and Diffraction by a Vertical Wedge application was used to analyze wave reflection under varying water level conditions. An incident wave traveling perpendicular to shore was analyzed. The reflection analysis showed the BFE will not be increased at the site or adjacent sites due to reflected waves.

Based on our review, it is RACE’s professional opinion that the proposed site improvements will not create adverse impacts with respect to flooding at the site or adjacent properties. RACE certifies that the proposed work will:

1. Not increase wave crest elevations on the site or adjacent properties.
2. Not increase wave runup elevations on the site or adjacent properties.
3. Not increase wave crest elevations on the site or adjacent properties due to reflected waves.

As such, RACE certifies that the proposed work will not cause an increase in the FEMA designated BFE at the site.

Should you have any questions, please contact the undersigned at 203-377-0663.

Very truly yours,

RACE COASTAL ENGINEERING

Jill Pietropaolo, PE
Senior Coastal Engineer
CT PE License No. 31773
January 22, 2021

Bianca Dygert
Planning and Zoning Department
Greenwich Town Hall
101 Field Point Road
Greenwich, CT 06830

C/O: Leonard C. D’Andrea
LCD@rvdi.com

Reference: Flood Zone Compliance Review
10 South Crossway – Old Greenwich
RACE Project No. 2020138

Dear Ms. Dygert:

RACE COASTAL ENGINEERING (“RACE”) has been retained by Ms. Heath Koch to review the proposed site improvements at 10 South Crossway in Old Greenwich, Connecticut. RACE reviewed the proposed site improvements for flood zone compliance with respect to FEMA guidelines and requirements, analyzed the proposed pool structure to determine flood loads for proper design, and reviewed that the proposed work would not result in an increase in the Base Flood Elevation (BFE) at the site or on adjacent properties, in compliance with the Town of Greenwich Section 6-139.1. These improvements include a proposed dwelling, pool, terrace and walls, grading and other site improvements and are depicted on the following project plans:


The site, as well as the adjacent properties, are located in the Special Flood Hazard Area (SFHA) on FEMA Flood Insurance Rate Map (FIRM) No.09001C0514G effective July 8th, 2013. The flood zone designations include a Zone VE with a BFE of +16 feet (NAVD 88) and Zone AE with a BFE of +13 feet (NAVD 88). The Zone VE designation represents a Coastal High Hazard Area. The proposed pool and a minor amount of grading will be located in the Zone VE and the dwelling, terrace and retaining walls are to be located in the Zone AE.

RACE has been contracted to design the pool shell such that it will remain in the ground during the base flood event in accordance with ASCE 24-14 Section 9.6 and FEMA Technical Bulletin 5, Free of Obstruction Section 7.9, which include the following:
• The pool can be elevated so the bottom of the lowest horizontal structural member supporting the pool (and the pool itself) is at or above the required flood elevation, or
• The pool can be designed and constructed to break away without producing debris capable of damaging nearby buildings, or
• The pool can be designed and constructed to remain in the ground and not divert flow or waves that can damage nearby buildings.

In order to document that the pool would not divert flow or waves that could increase the BFE, and therefore not increase the potential for nearby damage, RACE has performed the following analyses:

1. A wave crest analysis of existing and proposed site conditions.
2. A wave runup analysis of existing and proposed site conditions.
3. A wave reflection analysis of existing and proposed site conditions.

As such, it is the professional opinion of RACE that the proposed pool is consistent with FEMA guidelines for pools in the VE Zone. These analyses were also performed on the proposed terraces, patio, and fill as described below.

RACE employed the USACE’s Automated Coastal Engineering System’s (ACES) Windspeed Adjustment and Wave Growth application to calculate the wave heights on site. Equations in FEMA’s Coastal Construction Manual (2011) were used to determine the maximum wave crest at the site. The analysis showed the proposed work does not increase the wave crest elevation on the site or adjacent properties.

Wave runup was analyzed for the existing and proposed conditions using ACES’s Irregular Wave Runup on Beaches and Wave Runup and Overtopping on Impermeable Structures Application. The analysis demonstrated that there would be no increase in wave runup elevations on the site or adjacent properties under varying water level conditions that could cause runup on the structures.

The ACES Combined Reflection and Diffraction by a Vertical Wedge application was used to analyze wave reflection under varying water level conditions. An incident wave traveling perpendicular to shore was analyzed. The reflection analysis showed the BFE will not be increased at the site or adjacent sites due to reflected waves.

Based on our review, it is RACE’s professional opinion that the proposed site improvements will not create adverse impacts with respect to flooding at the site or adjacent properties. RACE certifies that the proposed work will:

1. Not increase wave crest elevations on the site or adjacent properties.
2. Not increase wave runup elevations on the site or adjacent properties.
3. Not increase wave crest elevations on the site or adjacent properties due to reflected waves.

As such, RACE certifies that the proposed work will not cause an increase in the FEMA designated BFE at the site.
Should you have any questions, please contact the undersigned at 203-377-0663.

Very truly yours,

RACE COASTAL ENGINEERING

Jill Pietropaolo, PE
Senior Coastal Engineer
CT PE License No. 31773

Enclosure: Wave Calculation Package
10 South Crossway – Wave Calculation Package
Old Greenwich, CT

Contents
1. Purpose...................................................................................................................... ............................ 1
2. Existing FEMA Mapping.......................................................................................... ............................ 1
3. Water Surface Elevations......................................................................................... ............................ 1
4. Wind Speed................................................................................................................... ................. 2
5. Design Wave................................................................................................................... ................. 2
6. Wave Runup................................................................................................................... ................. 3
7. Wave Reflection.......................................................................................................... ................. 5
8. Wave Crest................................................................................................................... ................. 8
9. Summary...................................................................................................................... ................. 9

Prepared by:
1. **Purpose:** To perform a flood hazard zone impact and FEMA compliance analysis on the proposed improvements including the proposed dwelling, pool, terrace and walls, grading and other site improvements as shown on the drawing titled, “Development Plan,” prepared by Rocco V. D’Andrea, Inc. for Heath Koch and dated January 19, 2021

2. **Existing FEMA Mapping:** The existing site is located in a Zone VE El. +16’/Zone AE El. +13’ on FEMA Flood Insurance Rate Map (FIRM) No. 09001C0514G.

![Fig. 1: Snap Shot of FIRM NO. 09001C0514G](image)

The pool and some of the grading will be located in the Zone VE +16’ and the proposed dwelling, terrace and walls will be located in the Zone AE +13’.

3. **Water Surface Elevations:** NAVD88 is the reference datum unless otherwise noted

<table>
<thead>
<tr>
<th>Return Period (Yrs)</th>
<th>SWL from FIS No. 09001CV001C (Transect 11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>+12.4’</td>
</tr>
<tr>
<td>100</td>
<td>+10.9’</td>
</tr>
<tr>
<td>50</td>
<td>+10.2’</td>
</tr>
<tr>
<td>10</td>
<td>+8.5’</td>
</tr>
</tbody>
</table>

**100-yr TWL** (100-yr SWL + Wave Setup) = +13.8’ (FIS No. 09001CV001C, Transect 11)
4. **Wind Speed**: The 100-yr, 3 second windspeed at 33 feet above was taken from ASCE 7.

<table>
<thead>
<tr>
<th>Wind</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind Speed</td>
<td>117 Vmph</td>
</tr>
<tr>
<td>10-year MRI</td>
<td>75 Vmph</td>
</tr>
<tr>
<td>25-year MRI</td>
<td>85 Vmph</td>
</tr>
<tr>
<td>50-year MRI</td>
<td>90 Vmph</td>
</tr>
<tr>
<td>100-year MRI</td>
<td>97 Vmph</td>
</tr>
</tbody>
</table>

\[ U_{100-yr, 3\ sec} = 97 \text{ mph} \]

5. **Design Wave**: The design wave was computed using a restricted fetch analysis based on the windspeed. The restricted fetch wave was analyzed using ACES. One representative transect was taken across the site.

\[ H_{m0} = 3.23 \text{ feet} \]
\[ T_p = 3.31 \text{sec} \]
6. **Wave Runup:** Wave Runup was computed using the *Irregular Wave Runup on Beaches* and *Wave Runup and Overtopping on Impermeable Structures* application of ACES to determine if the pool, terrace and walls, or grading would impact to the BFE due to runup.

**Fill:** The proposed fill will not alter the slope between the wave breaking depth and the total water level elevation (El. +13.8’), as such, it will not impact wave runup.

**Proposed Pool:** The proposed pool is located in the Zone VE El. +16’. Top of pool/pool patio wall = El. +10.1’ Grade = El. +1.7’ (Since the pool wall is so close to the seawall, conservatively assume toe of seawall is toe of pool wall).

The wave will not be depth limited
The proposed pool will be overtopped by the 100-yr flood event, therefore the water level was changed to the max water level (El. +10.1’) that runup could manifest itself on the pool wall.

<table>
<thead>
<tr>
<th>Wave type: Irregular</th>
<th>Slope type: Smooth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate estimate: Runup</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.706</td>
</tr>
<tr>
<td>Incident wave h (ft)</td>
<td>3.236 ft</td>
</tr>
<tr>
<td>Peak wave period (s)</td>
<td>3.316</td>
</tr>
<tr>
<td>COTAn of beach slope (cot phi)</td>
<td>20.900</td>
</tr>
<tr>
<td>Water depth at structure toe (da)</td>
<td>6.400 ft</td>
</tr>
<tr>
<td>COTAn of structure slope (cot theta)</td>
<td>0.000</td>
</tr>
<tr>
<td>Structure height above toe (ha)</td>
<td>6.500 ft</td>
</tr>
</tbody>
</table>

\[
R = 4.0' \\
R_{2%} = R*1.38 = 5.5' \\
\text{Runup EL} = 10.1' + 5.5' = \text{El.} +15.6' < \text{El.} +16' \checkmark
\]
Proposed Planter Terrace: The proposed planter is located in the Zone AE El. +13’
Top of planter wall = El. +10.1’
Toe of planter wall = EL. +8.2’
SWL = El. +10.9’
The proposed planter terrace will be overtopped by the 100-yr flood event, therefore the water level was changed to the max water level (El. +10.1’) that runup could manifest itself on the on the terrace.
Depth Limited Wave, $H_{dl} = 0.78 \times (10.1’-8.2’) = 1.48’$

<table>
<thead>
<tr>
<th>Wave type: Irregular</th>
<th>Slope type: Smooth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate estimate: Ramp</td>
<td>Wave Ramp (ft)</td>
</tr>
<tr>
<td></td>
<td>2.38 ft</td>
</tr>
</tbody>
</table>

R = 2.38’
$R_{2\%} = R \times 1.38 = 3.3’$
Runup EL = 10.1’+3.3’ = El. +13.4’ NAVD -> BFE =13’ ✓

Proposed Terrace/Patio: The proposed terrace and patio are located in the Zone AE El. +13’
Top of terrace/patio wall = El. varies from +13.75’ to El. +15.5’
Toe of planter wall = EL. +10.1’
SWL = El. +10.9’
Depth Limited Wave, $H_{dl} = 0.78 \times (10.9’-10.1’) = 0.62’$

<table>
<thead>
<tr>
<th>Wave type: Irregular</th>
<th>Slope type: Smooth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate estimate: Ramp</td>
<td>Wave Ramp (ft)</td>
</tr>
<tr>
<td></td>
<td>1.37’ ft</td>
</tr>
</tbody>
</table>

R = 1.37’
$R_{2\%} = R \times 1.38 = 1.9’$
Runup EL = 10.9’+1.9’ = El. +12.8’ NAVD -> BFE =13’ ✓
7. **Wave Reflection:** Wave Reflection was computed using the *Combined Reflection and Diffraction* application of ACES to determine if the pool, terrace and walls, or grading would impact to the BFE due to reflected waves.

**Fill:** The proposed fill will not alter the slope between the wave breaking depth and the total water level elevation (El. +13.8’), as such, it will not impact wave reflection.

**Proposed Pool:** The proposed pool is located in the Zone VE El. +16’.
Top of pool/pool patio wall = El. +10.1’
Grade = El. +1.7’ (Since the pool wall is so close to the seawall, conservatively assume toe of seawall is toe of pool wall).
The wave will not be depth limited
The proposed pool will be overtopped by the 100-yr flood event, therefore the water level was changed to the max water level (El. +10.1’) that runup could manifest itself on the pool wall.

![Modified Wave Heights](image)

Wave crest based on reflection = 0.7*(Max Modified Wave Height) + SWL ->
Wave crest = 0.7*7.35+10.1’ = El. +15.2’ NAVD < El. +16’ ✓
**Proposed Planter Terrace:** The proposed planter is located in the Zone AE El. +13’
- Top of planter wall = El. +10.1’
- Toe of planter wall = EL. +8.2’
- SWL = El. +10.9’

The proposed planter terrace will be overtopped by the 100-yr flood event, therefore the water level was changed to the max water level (El. +10.1’) that runup could manifest itself on the terrace.

Depth Limited Wave, \( H_{dl} = 0.78 \times (10.1’ - 8.2’) = 1.48’ \)

---

**Modified Wave Heights**

Wave crest = 0.7*3.16+10.1’ = 12.3’ -> BFE = 12’ ✓
**Proposed Terrace/Patio:** The proposed terrace and patio are located in the Zone AE El. +13’
Top of terrace/patio wall = El. varies from +13.75’ to El. +15.5’
Toe of planter wall = EL. +10.1’
SWL = El. +10.9’
Depth Limited Wave, \( H_d = 0.78 \times (10.9’ - 10.1’) = 0.62’ \)

\[
\text{Wave crest} = 0.7 \times 1.45 + 10.9’ = 11.9’ \Rightarrow \text{BFE} = 12’ \checkmark
\]
8. **Wave Crest:** Equations in FEMA’s *Coastal Construction Manual* (2011) were used to determine the maximum wave crest at the site. The analysis showed the proposed work does not increase the wave crest elevation on the site or adjacent properties.

As can be seen in the *Coastal Construction Manual* Figure 5-5, wave crest decreases as grade increases. Therefore, the proposed work will not adversely impact the wave crest elevation.
9. Summary:

RACE has performed the following analyses to determine the potential flooding impacts of these structures at 10 South Crossway:

1. A wave crest analysis of existing and proposed site conditions.
2. A wave runup analysis of existing and proposed site conditions.
3. A wave reflection analysis of existing and proposed site conditions.

Based on our review, it is RACE’s professional opinion that the proposed site improvements will not create adverse impacts with respect to flooding at the site or adjacent properties. RACE certifies that the proposed work will:

1. Not increase wave crest elevations on the site or adjacent properties.
2. Not increase wave runup elevations on the site or adjacent properties.
3. Not increase wave crest elevations on the site or adjacent properties due to reflected waves.