Environmental Quality

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

WILLIAM F. LANE
General Counsel

TO: The Coastal Resources Commission

FROM: Christine A. Goebel, DEQ Assistant General Counsel

DATE: February 12, 2019 (for the February 27-28, 2019 CRC Meeting)

RE: **Variance Request by Thomas S. and Judith A. Lampley (CRC-VR-18-05)**

Petitioners Thomas S. and Judith A. Lampley ("Petitioners") own property at 108 Virginia Court (the "Site") in Hertford, North Carolina. The property is located within the Commission's Public Trust Shoreline sub-category of the Coastal Shorelines Area of Environmental Concern ("AEC").

After having received CAMA permits for the bulkhead in 2007 and for the docking facility in 2017, DCM discovered an unauthorized paver patio and fire pit within the Commission's 30' Buffer, and initiated enforcement proceedings. Petitioners asked Director Davis to reconsider the enforcement and met with Director Davis and Representative Steinberg to discuss options in moving forward. Petitioners ultimately chose to proceed with the variance process, seeking both a procedural variance from the regular enforcement process as well as a variance from the 30' Buffer in order to allow the patio and fire pit to remain.

In July 2018, Petitioners applied for a CAMA Minor Permit in order to keep the patio and fire pit, and received the expected denial on July 30, 2018. On August 8, 2018, Petitioners, through counsel, filed a variance request seeking both the procedural variance and the substantive variance in order to allow the existing patio and fire pit to remain. Petitioners have since received professional reports included in the stipulated exhibits, and revised their written positions in January of 2019.

The following additional information is attached to this memorandum:

Attachment A:	Relevant Rules
Attachment B:	Stipulated Facts
Attachment C:	Petitioner's Positions and Staff's Responses to Variance Criteria
Attachment D:	Petitioner's Variance Request Materials
Attachment E:	Stipulated Exhibits including powerpoint

cc(w/enc.): Charles Evans, Esq., Petitioners' counsel, electronically
Mary Lucasse, Special Deputy AG and CRC Counsel, electronically

RELEVANT STATUTES OR RULES **APPENDIX A**

15A NCAC 07H .0209 COASTAL SHORELINES

(a) Description. The Coastal Shorelines category includes estuarine shorelines and public trust shorelines. Estuarine shorelines AEC are those non-ocean shorelines extending from the normal high water level or normal water level along the estuarine waters, estuaries, sounds, bays, fresh and brackish waters, and public trust areas as set forth in an agreement adopted by the Wildlife Resources Commission and the Department of Environment and Natural Resources [described in Rule .0206(a) of this Section] for a distance of 75 feet landward. For those estuarine shorelines immediately contiguous to waters classified as Outstanding Resource Waters by the Environmental Management Commission, the estuarine shoreline AEC shall extend to 575 feet landward from the normal high water level or normal water level, unless the Coastal Resources Commission establishes the boundary at a greater or lesser extent following required public hearing(s) within the affected county or counties. **Public trust shorelines AEC are those non-ocean shorelines immediately contiguous to public trust areas, as defined in Rule 07H .0207(a) of this Section, located inland of the dividing line between coastal fishing waters and inland fishing waters as set forth in that agreement and extending 30 feet landward of the normal high water level or normal water level.**

(b) Significance. Development within coastal shorelines influences the quality of estuarine and ocean life and is subject to the damaging processes of shore front erosion and flooding. The coastal shorelines and wetlands contained within them serve as barriers against flood damage and control erosion between the estuary and the uplands. Coastal shorelines are the intersection of the upland and aquatic elements of the estuarine and ocean system, often integrating influences from both the land and the sea in wetland areas. Some of these wetlands are among the most productive natural environments of North Carolina and they support the functions of and habitat for many valuable commercial and sport fisheries of the coastal area. Many land-based activities influence the quality and productivity of estuarine waters. Some important features of the coastal shoreline include wetlands, flood plains, bluff shorelines, mud and sand flats, forested shorelines and other important habitat areas for fish and wildlife.

(c) Management Objective. The management objective is to ensure that shoreline development is compatible with the dynamic nature of coastal shorelines as well as the values and the management objectives of the estuarine and ocean system. Other objectives are to conserve and manage the important natural features of the estuarine and ocean system so as to safeguard and perpetuate their biological, social, aesthetic, and economic values; to coordinate and establish a management system capable of conserving and utilizing these shorelines so as to maximize their benefits to the estuarine and ocean system and the people of North Carolina.

(d) Use Standards. Acceptable uses shall be those consistent with the management objectives in Paragraph (c) of this Rule. These uses shall be limited to those types of development activities that will not be detrimental to the public trust rights and the biological and physical functions of the estuarine and ocean system. Every effort shall be made by the permit applicant to avoid, mitigate or reduce adverse impacts of development to estuarine and coastal systems through the planning and design of the development project. In every instance, the particular location, use, and design characteristics shall comply with the general use and specific use standards for coastal shorelines, and where applicable, the general use and specific use standards for coastal wetlands, estuarine waters, and public trust areas described in Rule .0208 of this Section. Development shall be compatible with the following standards:

(1) All development projects, proposals, and designs shall preserve and not weaken or eliminate natural barriers to erosion including peat marshland, resistant clay shorelines, and cypress gum protective fringe areas adjacent to vulnerable shorelines.

(2) All development projects, proposals, and designs shall limit the construction of impervious surfaces and areas not allowing natural drainage to only so much as is necessary to adequately service the major purpose or use for which the lot is to be developed. Impervious surfaces shall not exceed 30 percent of the AEC area of the lot, unless the applicant can effectively demonstrate, through innovative design, that the protection provided by the design would be equal to or exceed the protection by the 30 percent limitation. Redevelopment of areas exceeding the 30 percent impervious surface limitation may be permitted if impervious areas are not increased and the applicant designs the project to comply with the intent of the rule to the maximum extent feasible.

(3) All development projects, proposals, and designs shall comply with the following mandatory standards of the North Carolina Sedimentation Pollution Control Act of 1973:

(A) All development projects, proposals, and designs shall provide for a buffer zone along the margin of the estuarine water which is sufficient to confine visible siltation within 25 percent of the buffer zone nearest the land disturbing development.

(B) No development project proposal or design shall permit an angle for graded slopes or fill which is greater than an angle which can be retained by vegetative cover or other erosion control devices or structures.

(C) All development projects, proposals, and designs which involve uncovering more than one acre of land shall plant a ground cover sufficient to restrain erosion within 30 working days of completion of the grading; provided that this shall not apply to clearing land for the purpose of forming a reservoir later to be inundated.

(4) Development shall not have a significant adverse impact on estuarine and ocean resources. Significant adverse impacts include development that would directly or indirectly impair water quality standards, increase shoreline erosion, alter coastal wetlands or Submerged Aquatic Vegetation (SAV), deposit spoils waterward of normal water level or normal high water, or cause degradation of shellfish beds.

(5) Development shall not interfere with existing public rights of access to, or use of, navigable waters or public resources.

(6) No public facility shall be permitted if such a facility is likely to require public expenditures for maintenance and continued use, unless it can be shown that the public purpose served by the facility outweighs the required public expenditures for construction, maintenance, and continued use. For the purpose of this standard, "public facility" means a project that is paid for in any part by public funds.

(7) Development shall not cause irreversible damage to valuable, historic architectural or archaeological resources as documented by the local historic commission or the North Carolina Department of Cultural Resources.

(8) Established common law and statutory public rights of access to the public trust lands and waters in estuarine areas shall not be eliminated or restricted. Development shall not encroach upon public accessways nor shall it limit the intended use of the accessways.

(9) Within the AECs for shorelines contiguous to waters classified as Outstanding Resource Waters by the EMC, no CAMA permit shall be approved for any project which would be inconsistent with applicable use standards adopted by the CRC, EMC or MFC for estuarine waters, public trust areas, or coastal wetlands. For development activities not covered by specific use standards, no permit shall be issued if the activity would, based on site-specific information, degrade the water quality or outstanding resource values.

(10) Within the Coastal Shorelines category (estuarine and public trust shoreline AECs), new development shall be located a distance of 30 feet landward of the normal water level or normal high water level, with the exception of the following:

(A) Water-dependent uses as described in Rule 07H .0208(a)(1) of this Section;
(B) Pile-supported signs (in accordance with local regulations);
(C) Post- or pile-supported fences;
(D) Elevated, slatted, wooden boardwalks exclusively for pedestrian use and six feet in width or less. The boardwalk may be greater than six feet in width if it is to serve a public use or need;
(E) Crab Shedders, if uncovered with elevated trays and no associated impervious surfaces except those necessary to protect the pump;
(F) Decks/Observation Decks limited to slatted, wooden, elevated and unroofed decks that shall not singularly or collectively exceed 200 square feet;
(G) Grading, excavation and landscaping with no wetland fill except when required by a permitted shoreline stabilization project. Projects shall not increase stormwater runoff to adjacent estuarine and public trust waters;
(H) Development over existing impervious surfaces, provided that the existing impervious surface is not increased and the applicant designs the project to comply with the intent of the rules to the maximum extent feasible;

(I) Where application of the buffer requirement would preclude placement of a residential structure with a footprint of 1,200 square feet or less on lots, parcels and tracts platted prior to June 1, 1999, development may be permitted within the buffer as required in Subparagraph (d)(10) of this Rule, providing the following criteria are met:

(i) Development shall minimize the impacts to the buffer and reduce runoff by limiting land disturbance to only so much as is necessary to construct and provide access to the residence and to allow installation or connection of utilities such as water and sewer; and

(ii) The residential structure development shall be located a distance landward of the normal high water or normal water level equal to 20 percent of the greatest depth of the lot. Existing structures that encroach into the applicable buffer area may be replaced or repaired consistent with the criteria set out in Rules .0201 and .0211 in Subchapter 07J of this Chapter; and

(J) Where application of the buffer requirement set out in 15A NCAC 07H .0209(d)(10) would preclude placement of a residential structure on an undeveloped lot platted prior to June 1, 1999 that are 5,000 square feet or less that does not require an on-site septic system, or on an undeveloped lot that is 7,500 square feet or less that requires an on-site septic system, development may be permitted within the buffer if all the following criteria are met:

(i) The lot on which the proposed residential structure is to be located, is located between:

(I) Two existing waterfront residential structures, both of which are within 100 feet of the center of the lot and at least one of which encroaches into the buffer; or

(II) An existing waterfront residential structure that encroaches into the buffer and a road, canal, or other open body of water, both of which are within 100 feet of the center of the lot;

(ii) Development of the lot shall minimize the impacts to the buffer and reduce runoff by limiting land disturbance to only so much as is necessary to construct and provide access to the residence and to allow installation or connection of utilities;

(iii) Placement of the residential structure and pervious decking may be aligned no further into the buffer than the existing residential structures and existing pervious decking on adjoining lots;

(iv) The first one and one-half inches of rainfall from all impervious surfaces on the lot shall be collected and contained on-site in accordance with the design standards for stormwater management for coastal counties as specified in 15A NCAC 02H .1005. The stormwater management system shall be designed by an individual who meets applicable State occupational licensing requirements for the type of system proposed and approved during the permit application process. If the residential structure encroaches into the buffer, then no other impervious surfaces will be allowed within the buffer; and

(v) The lots must not be adjacent to waters designated as approved or conditionally approved shellfish waters by the Shellfish Sanitation Section of the Division of Environmental Health of the Department of Environment and Natural Resources.

STIPULATED FACTS **ATTACHMENT B**

1. Petitioners Thomas S. Lampley and his wife Judith A. Lampley ("Petitioners") own property at 108 Virginia Court, Hertford, Perquimans County, North Carolina (the "Site"). Petitioner is represented on this variance by Charles D. Evans, Esq. of Kellogg and Evans, PA.

2. Petitioner obtained the Site, also known as Lot 19, Section EE, Bosher's Point, Phase 3 of Albemarle Plantation by deed dated August 17, 2007 and recorded in Book 333, Page 641 of the Perquimans County Public Registry, a copy of which is attached.

3. The Site is adjacent to Yeopim Creek, which is designated as "inland waters" by the NC Wildlife Resources Commission", is classified as SC waters by the Environmental Management Commission, and is closed to the harvest of shellfish by the Marine Fisheries Commission.

4. The Site is within the Public Trust Shorelines sub-category of the Coastal Shorelines Area of Environmental Concern ("AEC"), which includes uplands within 30' landward of normal water level.

5. After acquiring the property in 2007, Petitioners were granted CAMA General Permit #49979A on December 3, 2007 authorizing the development of a bulkhead along the shoreline. A copy of this CAMA GP is attached. The bulkhead was built several months later at the approximate normal water line.

6. Construction on the current residence began in October of 2015 and was completed in November of 2016. No CAMA Minor Permit was needed as all proposed development was landward of the 30' wide Public Trust AEC. Petitioners moved into the house in November of 2016. A copy of Petitioners' house plans is attached as a stipulated exhibit.

7. In April 2017, Petitioners developed an approximately 450 square foot paver brick patio and fire pit along a portion of their bulkhead adjacent to Yeopim Creek, a sketch of which is attached in the Stipulated Exhibits. The pavers used to construct the patio and fire pit were not pervious pavers. Petitioners did not contact DCM Staff to discuss this proposed development and whether it required a CAMA permit. Petitioners used three separate contractors for the construction of the patio and fire pit; Lazy Weekends Yard Care Services, LLC (NC Landscaping Contractors License #CL1002); Crossroads Fuel Service, Inc. (NC License #20920); and KCI Associates of NC (NC License #0267644.) Petitioners were not aware of any requirement to obtain a permit. A copy of Petitioners' Affidavit is attached as a stipulated exhibit.

8. In September 2017, Petitioner applied to DCM for a CAMA General Permit to construct a pier, platform, boathouse with lift and a PWC lift. CAMA General Permit #68701A was issued on September 12, 2017 for the pier facility. As part of the permit issuance, DCM Field Representative Lynn Mathis visited the Site on September 12, 2017 and after issuing the permit, observed the

unpermitted patio and fire pit within the 30' buffer area of the Public Trust Shorelines sub-category of the Coastal Shorelines AEC. Ms. Mathis advised Petitioners that it constituted "development," which is not allowed within the 30-foot wide Public Trust Shorelines AEC, as set out in 15A NCAC 7H.0209 (d) (10).

9. On September 25, 2017, DCM issued a Notice of Violation #17-15A for the unauthorized development of the patio and fire pit, a copy of which is attached. With this NOV, DCM also included a restoration plan, directing the Petitioners to remove the patio and fire pit which was within the 30' Buffer area.

10. On November 9, 2017, DCM issued a Notice of Continuing Violation #17-15A, which noted that DCM looked into Petitioners' request to be able to keep the development in place while seeking a variance or an appeal and verified that such variances and appeals may be submitted upon the denial of a permit and not subsequent to the undertaking of unauthorized development absent restoration. A copy of the CNOV is attached.

11. On December 15, 2017, Petitioners wrote to DCM Director Braxton Davis, requesting that he reconsider the issuance of NOV #17-15A and CNOV #17-15A and the associated restoration plan. A copy of this letter is attached.

12. On March 5, 2018, DCM Director Braxton Davis responded to Petitioners' letter of December 15, 2017. He notified Petitioners that he did not find sufficient ground to overturn the NOV or change the restoration plan. He explained that paver patios and other hardscaping are "development" which is not allowed within the 30' Buffer. A copy of this letter is attached.

13. On May 17, 2018, Petitioners sent a letter to Mr. Jennings, requesting that they wished to keep the patio and fire pit in place and also seeking a hearing to dispute the violation. A copy of this letter is attached and Petitioners copied the letter to Director Davis and then-Representative Bob Steinburg (now a state senator).

14. Petitioners contacted Representative Bob Steinberg about their NOVs, and asked Representative Steinberg to meet with them and DCM staff. On April 5, 2018, Petitioners and Representative Steinberg met with DCM District Manager Frank Jennings in the DCM Elizabeth City office. At this meeting, DCM explained the CAMA permit process and possible routes forward. A second meeting was held at the DCM Washington Regional office on May 25, 2018 with Petitioners, Representative Steinberg and DCM Director Braxton Davis. At or following the meeting, Director Davis indicated that Petitioners could (1) remove the patio and fire pit before seeking a permit and variance, (2) leave the development and seek a permit along with variances for both not undertaking restoration before applying for a permit/seeking a variance, as well as the buffer variance, or (3) to seek a declaratory ruling.

15. Following the meetings with DCM, Petitioners indicated that they wished to leave the development in place while they would apply for and get a denial for a CAMA permit, then seek

a variance from both the Commission's rules requiring that: a) restoration take place before a CAMA permit application is accepted and processed, a permit is denied, and a variance is sought; and b) non water-dependent structures be set back at least 30 feet from the normal water level.

16. DCM also advised Petitioners that they could seek a declaratory ruling from the Commission arguing that, while the Division does not agree, the installation of paver patios and paver fire pits was not "development' as defined by G.S. 113A-103 (5)a., but instead was "landscaping" which is generally determined to not be "development" by DCM. Petitioners have not decided to pursue a declaratory ruling.

17. On July 24, 2018, Petitioners filed their CAMA Minor Permit application with the DCM Elizabeth City office, seeking authorization for the paver patio and fire pit which had been previously constructed by Petitioners. A copy of the CAMA Minor Permit application and associated materials is attached, as well as the invoices for the materials used to develop the patio and fire pit.

18. As part of the CAMA Minor Permit process, notice of the development was sent to the adjacent riparian owners, the Wilcoxes and the Cassidys. Copies of these notices are attached, and both neighbors indicated they had no objections to the development of the patio and fire pit.

19. On July 30, 2018, DCM denied Petitioners' CAMA Minor Permit application as it was inconsistent with several provisions, including the Commission's rule requiring restoration be completed before a permit, permit denial and variance is sought from the Commission, and from the provisions requiring that development such as the paver patio and fire pit be set back further than the 30' buffer of the Public Trust Shoreline AEC per 15 NCAC 7H.0209 (d)(10). A copy of the denial letter is attached.

20. Petitioner was further advised in the denial letter that at that time, the paver brick patio and fire pit did not fall within the exception set forth in 15 NCAC 7H.0209 (d)(10)(G) which allows "Grading, excavation and landscaping with no wetland fill …" within the 30' buffer.

21. On August 8, 2018, Petitioner through counsel, Charles D. Evans, Esq. submitted a Variance Petition, seeking a variance from the Commission, firstly to consider and to confirm allowing the variance to proceed without first requiring the restoration of the affected area as required by 15A NCAC 7J.0204(e), and then secondly to seek a variance from the 30' Buffer in order to allow the paver patio and fire pit to remain.

22. Notice to the Adjacent riparian property owners about this Variance Request was sent on August 8, 2018. Copies of the notice and the certified mailing information are attached as stipulated exhibits. If any comments are received by the time of the commission meeting, they will be shared with the Commission prior to or at that time.

23. For purposes of this Variance Request, Petitioner stipulates that the development and construction of the paver brick patio and fire pit on Petitioner's property at 108 Virginia Court, adjacent to Yeopim Creek in Perquimans County is inconsistent with the Coastal Area Management Act (CAMA) and the Commission's rules noted in the July 30, 2018 denial letter.

24. Petitioners have attached affidavits which describe their choice in purchasing this Site and that they were unaware that a CAMA permit was needed for construction of the patio and fire pit. Copies of these affidavits are attached.

25. Petitioners engaged two engineering firms to provide engineering studies to support Petitioners' assertion that the construction of the paver patio and fire pit allows sufficient drainage and prevents any runoff into the adjacent waterway, Yeopim Creek.

26. On October 9, 2018, Hal Goodman, P.E., SECB submitted a sealed opinion letter regarding the paver patio and fire pit, following his inspection of the Site, a copy of which is attached. He concludes that "there will be no stormwater runoff into Yeopim Creek."

27. Samir Dumpor, P.E., a Regional Supervisor with DEQ's Division of Energy, Mineral, and Land Resources ("DEMLR") reviewed the written description of how the patio and fire pit were constructed, as well as the October 9, 2018 statement of Hal Goodman, P.E., SECB. In correspondence with DCM on October 30, 2018, He noted that while the design will infiltrate some stormwater, it was not designed pursuant to the DEQ Stormwater Design Manual's chapter on Permeable Pavement, a copy of which is attached as a stipulated exhibit. In the manual, only the infiltrating permeable pavement that is designed per the MDC (Minimum Design Criteria) may be considered as 100% pervious. In this particular case, the MDC 1, 2 and 5, as listed below, are not met.

- MDC 1 – site-specific soil investigation - not provided;
- MDC 2 – The minimum separation between the lowest point of the subgrade surface and the Seasonal High Water table (1 or 2 feet, depend on type of system used) - not provided;
- MDC 5 - Washed aggregate base materials shall be used. "Crush n' run" does not meet that criteria."

For these reasons, Mr. Dumpor believes that the patio and fire pit do not meet the requirements of 15A NCAC 2H .1055.

28. Under a subsequent sealed opinion letter, submitted January 14, 2019, to the Coastal Resources Commission, Hal Goodman, P.E., SECB, supplemented his initial opinion letter of October 9, 2018, in response to the comments received from NCDENR and DEQ stating the following:

- MDC 1 – GET Solutions has been scheduled to come to the site and conduct a subsurface investigation to determine the infiltration rate for the on-site soils;
- MDC 2 – The seasonal high water table has been measured to be approximately four feet (4') below the patio surface;

- MDC 5 - The four inch (4") crushed stone base layer was placed and not compacted so it will remain free draining and will not impede the infiltration of stormwater or cause any runoff.

In addition, the finished grade of the patio slopes away from the bulkhead and Yeopim Creek to a low point on the pavers so that any potential runoff that might not immediately drain through the gaps in the pavers is temporarily contained on the low area of the patio as it infiltrates through the gaps in the pavers, the non-compacted crushed stone base and into the pervious subgrade soil. A copy of the sealed opinion letter is included in the Stipulated Exhibits.

29. By sealed report dated January 14, 2019, signed by Gerald W. Stalls, Jr., P.E., GET Solutions, Inc. concludes the following based upon GET's shallow subsurface exploration and hydraulic conductivity testing conducted in and around the site of the paver patio and fire pit on January 7, 2019:

a. Testing indicated that the soil had a Unified Soil Classification System (USCS) of silty sands and sand mixtures with some clay;

b. Permeability testing indicated a Ksat Value of 2.1977 inches of water drainage per hour and a Ksat Classification of "Moderately High," meaning the soil is fairly well-drained; and

c. The report did not identify any restrictive clay layer that would cause water not to drain properly.

A copy of the sealed report is included in the Stipulated Exhibits.

30. Samir Dumpor, P.E. of DEMLR reviewed the additional reports of Hal Goodman dated January 14, 2019 and Gerald Stalls dated January 14, 2019, which were submitted to DCM. Based on his review, he commented to DCM on January 28, 2019, that "Based on the report by GET Solutions, it appears that MDC 1 and MDC 2 requirements are met, however; MDC 5 comment remains the same – Washed aggregate base materials shall be used. "Crush n' run" does not meet that criteria." Mr. Dumpor added as a reminder that "only the infiltrating permeable pavement that is designed per the MDC (Minimum Design Criteria) may be considered as 100% pervious."

Stipulated Exhibits:

1. Deed to property at Book 333, Page 641
2. CAMA General Permit #49979A authorizing the bulkhead
3. Plans for Petitioners' residence and building permit application
4. CAMA General Permit #68701A authorizing the pier and associated structures
5. September 25, 2017 NOV #17-15A with restoration plan
6. November 9, 2017 CNOV from DCM
7. December 15, 2017 letter from Petitioners to Director Davis
8. March 5, 2018 letter from Director Davis to Petitioners
9. May 17, 2018 letter from Petitioners to District Manager Jennings
10. July 24, 2018 CAMA Minor Permit Application with associated drawings and invoice for work completed
11. Notice to adjacent riparian owners of permit application
12. July 30, 2018 DCM Denial Letter
13. Notice to adjacent riparian owners of variance petition
14. Affidavits of Petitioners
15. Goodman opinion letter dated October 9, 2018
16. DEQ Stormwater Design Manual's Permeable Pavement chapter
17. Goodman opinion letter dated January 14, 2019
18. Stalls opinion letter dated January 14, 2019
19. PowerPoint with aerial and ground level photos of Site and surrounding area

PETITIONERS' and STAFF'S POSITIONS **ATTACHMENT C**

Initial Procedural Variance Request-

Petitioners seek a procedural variance from the Commission's rule at 15A NCAC 7J .0204(e) which requires the restoration of the affected area before the Commission proceed with the substantive variance. Before proceeding with processing a CAMA permit application and denial so Petitioners could then seek a variance, DCM staff and counsel formally consulted with CRC Counsel. CRC Counsel noted that there is some discretion in how DCM can respond to someone who undertakes development in an AEC without first obtaining a CAMA permit, which is a prerequisite for a variance. 15A NCAC 7H .0204(e) authorizes DCM to proceed with enforcement and to require restoration "[i]f the violation substantially altered the proposed project site, and restoration is deemed necessary" so that DCM staff can assess the impacts before concluding enforcement and can suspend the application during restoration and enforcement. However, in situations where DCM staff can assess impacts without first requiring restoration, DCM could issue a permit denial allowing the applicant to petition for a variance from both the rules describing the usual restoration and enforcement process, and from the substantive variance. In this case, Staff believes it can fairly assess impacts of the unpermitted development without restoration. Accordingly, Staff do not object to the Commission deciding to proceed with the substantive variance request before DCM requires the removal of the patio and fire pit and the restoration of the affected area. DCM also acknowledges that if the variance were granted, Petitioners would not have to pay for both the removal and the redevelopment of the features.

I. Will strict application of the applicable development rules, standards, or orders issued by the Commission cause the petitioner unnecessary hardships? If so, the petitioner must identify the hardships.

Petitioners' Position: Yes.

Without the patio and fire pit, Petitioners would be unable to have reasonable enjoyment of their property. When they purchased the property in 2007, they specifically selected this lot because of the expansive view it has from this particular point of land. From the beginning, they planned a patio and fire pit at this exact location so as to be able to congregate around it and enjoy the sights and sounds of the water and its proximity. The patio and fire pit also were positioned at this location so as not to obstruct views from the house. From the patio and fire pit area, the Petitioners have a 270-degree view of the waterway and are able to see both the sunrise and the sunset. Not many residential lots, if any, at Albemarle Plantation have this unique feature, which was a major reason for Petitioners' purchasing the lot they did. This amenity provides the most commanding view on the property and is one of the most notable and attractive aspects of their home. Denying this variance request will significantly impact the value of this uniquely structured property and greatly negate one of the primary reasons the Petitioners purchased the property in the first place.

Staff's Position: No.

Staff does not agree that strict application of the Public Trust Shoreline 30' Buffer rule will cause Petitioner unnecessary hardships. While Petitioners selected this lot based on the expansive views from the proposed house and patio locations, these expectations did not take into account the long-standing 30' Buffer rule (adopted by this Commission in 1999). Before purchasing the lot, siting the house, patio and fire pit, and/or before construction of the patio and fire pit, Petitioners should have researched land use and other regulations or restrictions that applied to the lot. If they had researched applicable regualtions, they could have opted not to buy this lot, or they could have potentially shifted the house location or the patio and fire pit locations so as to avoid the 30' Buffer area. The buffer rule applies to all non-oceanfront coastal shorelines in North Carolina and does not appear to cause any additional or unusual hardship in this case.

II. Do such hardships result from conditions peculiar to the Petitioner's property, such as location, size, or topography of the property? Explain.

Petitioner's Position: Yes.

The hardship of Petitioners not being able to enjoy their property to its fullest is being created because it is waterfront property. If it were not waterfront property, they would be able to enjoy fully their property with a patio and fire pit without requiring permission from the State to build same.

Staff's Position: No.

Staff cannot identify any peculiar location, size, topography, or other site conditions that cause a hardship for this property. Petitioners argue that their waterfront location causes the hardship, but the Division contends that this variance criterion requires peculiar conditions in comparison with other waterfront properties subject to Coastal Area Management Act regulations along the thousands of miles of coastal and oceanfront shorelines in North Carolina.

III. Do the hardships result from the actions taken by the Petitioner? Explain.

Petitioner's Position: No.

This hardship was not created by Petitioners. They did not build or develop anything that changes this location and the hardship of not being able to have this patio and fire pit was not created by them. The patio and fire pit is an entirely reasonable and foreseeable use to be made of the property. The hardship is created by strict application of the current rules and regulations.

Staff's Position: Yes.

Petitioners took title to this property in 2007, eight years after the Commission's 30' Buffer rule was promulgated. Before buying the lot, Petitioners could have investigated what land-use and other regulations or restrictions would apply to the waterfront lot, limiting its development. In 2007, when Petitioner applied for and received a CAMA permit for a bulkhead, Petitioners could have discussed what limitations applied to development of the lot with the CAMA representative onsite. In 2010, when Petitioners had the lot surveyed, the surveyor had the "30' CAMA Setback" shown on the survey and Petitioners could have inquired about the 30' setback then (See Stipulated Exhibit # 10, part of their CAMA Minor Permit Application). In 2015, when the house was constructed, Petitioners could have asked what development restrictions applied to the waterfront lot. In the spring of 2017, when Petitioners constructed the patio and fire pit, they could have contacted local or CAMA officials to ask if a permit was needed for the project and if there were any development restrictions that would apply to their plan. There was a series of missed opportunities where Petitioners could ask questions of local and state officials about what development restrictions applied to their lot and redesigned accordingly. If Petitioners had made these inquiries as part of their due diligence before installing the patio and fire pit, they would have understood that the patio and fire place were not allowed within the established 30' Buffer. Staff contend that the Petitioners' stated lack of awareness of the 30' Buffer is not a reason to grant a variance.

The Commission's 30' Buffer Rule already allows an exception for the development of "slatted, wooden, elevated and unroofed decks that shall not singularly or collectively exceed 200 square feet." Such a deck, coupled with a movable fire pit would offer a similar amenity within the buffer area on the lot without a variance. Staff also note that this is a large lot at three-quarters of an acre

(33,105 square feet), and affords Petitioners room outside the 30' Buffer to develop a similar-sized patio and fire pit.

IV. Will the variance requested by the petitioner (1) be consistent with the spirit, purpose, and intent of the rules, standards or orders issued by the Commission; (2) secure the public safety and welfare; and (3) preserve substantial justice? Explain.

Petitioner's Position: Yes.

Contrary to harming the environment, Petitioners believe that this patio and fire pit have enhanced a safe, healthy, and pleasant environment in which to enjoy one of NC's waterways. Petitioner use of the patio and fire pit greatly extend the benefits they gain from being on the water and enjoying a unique environment, without causing any degradation or risk to health or safety – all key objectives of the NC EPA. (See § 113A-2. Purposes; § 113A-3. Declaration of State environmental policy; and 15A NCAC 01C.0101 Statement of Purpose, Policy, and Scope.)

Because of the way in which the patio and fire pit are constructed (to be permeable), no contamination of water, increase in run-off, impediments to drainage, erosion, or damage to wildlife will occur. In actuality, Petitioners have reduced the run-off of fertilizer, herbicides, and other contaminates from the chemically-treated lawn that existed prior to the installation of the pavers and fire pit. Furthermore, infiltration and permeability testing of the soil immediately surrounding the patio by geotechnical engineers (GET Solutions, Inc.) found that the rate of drainage for the soil upon which the patio was developed was "Moderately High."

Petitioners also believe that CAMA's interpretation of "landscaping" is too restrictive and severe. Patios and fire pits like the ones in question here are becoming ubiquitous and not atypical of landscaping projects overall. Because the Petitioners did no damage to the environment, land, and water, and meet the spirit, purpose, and intent of the law, this type of project should be included in the interpretation of "landscaping". Continued interpretation of "landscaping" to not allow environmentally friendly "softscaping" paver brick creates an unnecessary hardship. To do otherwise is an excessively narrow interpretation of the guidelines and does not support the primary intent of the law – to minimize harm to the NC waterways and allow for their enjoyment.

Staff's Position: No.

As an initial matter, Staff contend that Petitioners' arguments regarding the Division's definition of "landscaping," which is allowed by the Commission as an exception to the 30' Buffer rule, are inappropriate in the consideration of a variance. For reference, the landscaping exception to the 30' buffer rule cited by the Petitioners reads, in part (citation):

> *"(G) Grading, excavation and landscaping with no wetland fill except when required by a permitted shoreline stabilization project. Projects shall not increase stormwater runoff to adjacent estuarine and public trust waters."*

If a Petitioner contends that the Division is misinterpreting the Commission's rules, they may seek a Declaratory Ruling from the Commission under 15A NCAC 7J .0601 - .0603 or appeal the permit denial to the Office of Administrative Hearings in accordance with 15A NCAC 7J .0300 et seq.

As noted in the Stipulated Facts above, Petitioners were made aware that the declaratory ruling process was available to them (SF 16), but they opted to proceed with this variance process instead. The CAMA Permit Denial letter noted that what they proposed was not "landscaping" (SF 20), and Petitioners, as part of this variance process, have stipulated that "the development and construction of the paver brick patio and fire pit on Petitioner's property at 108 Virginia Court, adjacent to Yeopim Creek in Perquimans County is inconsistent with the Coastal Area Management Act (CAMA) and the Commission's rules noted in the July 30, 2018 denial letter." (SF 23) For these reasons, Staff recommend that the Commission disregard the arguments made by Petitioners related to the interpretation of "landscaping."

As to Petitioners' other arguments on this factor, Staff believe that the variance requested by Petitioners is not consistent with the spirit, purpose, and intent of the Commission's 30' Buffer rule.

The stated significance of the Commission's 30' Buffer rule includes limiting development on the shorelines which "serve as barriers against flood damage and control erosion between the estuary and the uplands." (15A NCAC 7H .0209(b)) The Commission's 30' Buffer rule is intended "to ensure that shoreline development is compatible with the dynamic nature of coastal shorelines as well as the values and the management objectives of the estuarine and ocean system." The buffer reduces the development footprint along coastal shorelines, reduces impervious surfaces, restricts impacts to viewsheds, retains habitat value, and keeps structures set back a minimum distance from hazards associated with coastal storms, erosion, and flooding. While the Commission's rules include an exception for up to two hundred square feet of elevated, wood, slatted decking (15A NCAC 7H .0209(10)(F)), the overall size of the patio and firepit exceeds this allowance by 250 square feet, and pavers were used rather than wood decking.

Petitioners contend that the patio was designed and constructed to be permeable; that is, to allow rainwater to infiltrate sufficiently so as not to interfere with sheet flow across the property and/or

result in increased volumes or rates of stormwater discharges into the adjacent waterbody. If the patio is permeable, it may meet at least part of the spirit, purpose, and intent of the rule to reduce impervious surfaces in the buffer area. However, staff's review of the reports submitted by the Petitioners (Stipulated Exhibits 15, 17, 18) with assistance from the NC DEQ Division of Energy, Mineral, and Land Resource's (DEMLR) Mr. Dumpor, fail to resolve concerns about the permeable nature of the patio and fire pit. While no DEMLR or other state stormwater requirements apply to this patio, Staff requested that DEMLR review the design and materials to inform DCM's position on this variance. Petitioners used impervious pavers (as opposed to specially designed "pervious pavers") and laid these over a "crush n' run" (also known as crusher run and is comprised of pulverized stone and stone dust) foundation rather than over "washed aggregate base materials." For these reasons, according to Mr. Dumpor, the patio does not meet all design standards considered by DEMLR in evaluating permeable pavement for stormwater permitting (See 15A NCAC 02H .1055).

For these reasons, Staff believes that Petitioners' request fails to meet the spirit, purpose and intent of the 30' Buffer rule, and fails to protect public safety and welfare, specifically regarding the potential for reduced water quality and stormwater runoff. Finally, Staff believes that Petitioners' request for a 450 square foot patio and fire pit does not preserve substantial justice, where the area is more than double the existing exception in the Commission's rules allowing up to 250 square feet of wooden decking. Staff recommends, if the Commission approves this variance request, that the permit should be conditioned to allow only 200 square foot of patio area to better conform with the rule.

ATTACHMENT D:

PETITIONERS' VARIANCE REQUEST MATERIALS

(minus documents which are now stipulated exhibits in Attachment E)

KELLOGG AND EVANS, P.A.
ATTORNEYS AT LAW

CHARLES D. EVANS

MARTIN KELLOGG, JR.
1908-2001

P.O. BOX 189
MANTEO, NC 27954

DELIVERY ADDRESS:
201 ANANIAS DARE STREET
MANTEO, N.C. 27954

TELEPHONE: (252) 473-2171
FACSIMILE: (252) 473-1214

EMAIL ADDRESS:
charlese@kelloggandevans.com
janv@kelloggandevans.com
becky@kelloggandevans.com

August 8, 2018

To: Division of Coastal Management Director
400 Commerce Avenue
Morehead City, NC 28557
Attn: Angela Willis, Assistant to the Director
(transmitted via email only: angela.willis@ncdenr.gov)

Re: CAMA Variance Request Form
September 19-20, 2018 CRC Meeting

Dear Ms. Willis:

Attached with this letter please find the completed CAMA Variance Request Form, signed and dated by Charles D. Evans, as the Petitioner's Attorney. Also attached, please find the additional information required for submission with the said Form.

On behalf of the Petitioner, I am respectfully requesting that the enclosed Request Form and attachments and exhibits be considered at the CRC Meeting scheduled to be held on September 19 – 20, 2018 in Wilmington, NC.

After your review of the enclosed documents, if you determine that any supplemental materials are necessary, please let me know and I will provide them promptly. I greatly appreciate your continued assistance and guidance with this matter. Thank you for your acceptance of the enclosed Form on behalf of the Director of the Division of Coastal Management and for forwarding a copy to Christine A. Goebel, DEQ Assistant General Counsel.

Best regards,

Charles D. Evans

Charles D. Evans
CDE/rae
Attachments

CAMA VARIANCE REQUEST FORM

DCM FORM 11
DCM FILE No.:_____

PETITIONER'S NAME **Thomas S. Lampley and wife Judith A. Lampley**
COUNTY WHERE THE DEVELOPMENT IS PROPOSED **Perquimans**

Pursuant to N.C.G.S. § 113A-120.1 and 15A N.C.A.C. 07J .0700 *et seq.*, the above named Petitioner hereby applies to the Coastal Resources Commission (CRC) for a variance.

VARIANCE HEARING PROCEDURES

A variance petition will be considered by the CRC at a regularly scheduled meeting, heard in chronological order based upon the date of receipt of a complete petition. 15A N.C.A.C. 07J .0701(e). A complete variance petition, as described below, must be *received* by the Division of Coastal Management (DCM) a minimum of six (6) weeks in advance of the first day of a regularly scheduled CRC meeting to be eligible for consideration by the CRC at that meeting. 15A N.C.A.C. 07J .0701(e). The final set of stipulated facts must be agreed to at least four (4) weeks prior to the first day of a regularly scheduled meeting. 15A N.C.A.C. 07J .0701(e). The dates of CRC meetings can be found at DCM's website: **www.nccoastalmanagement.net**

If there are controverted facts that are significant in determining the propriety of a variance, or if the Commission determines that more facts are necessary, the facts will be determined in an administrative hearing. 15A N.C.A.C. 07J .0701(b).

VARIANCE CRITERIA

The petitioner has the burden of convincing the CRC that it meets the following criteria:

(a) Will strict application of the applicable development rules, standards, or orders issued by the Commission cause the petitioner unnecessary hardships? Explain the hardships.

(b) Do such hardships result from conditions peculiar to the petitioner's property such as the location, size, or topography of the property? Explain.

(c) Do the hardships result from actions taken by the petitioner? Explain.

(d) Will the variance requested by the petitioner (1) be consistent with the spirit, purpose, and intent of the rules, standards or orders issued by the Commission; (2) secure the public safety and welfare; and (3) preserve substantial justice? Explain.

Please make your written arguments that Petitioner meets these criteria on a separate piece of paper. The Commission notes that there are some opinions of the State Bar which indicate that non-attorneys may not represent others at quasi-judicial proceedings such as a variance hearing before the Commission. These opinions note that the practice of professionals, such as engineers, surveyors or contractors, representing others in quasi-judicial proceedings through written or oral argument, may be considered the practice of law. Before you proceed with this variance request, you may wish to seek the advice of counsel before having a non-lawyer represent your interests through preparation of this Petition.

For this variance request to be complete, the petitioner must provide the information listed below. The undersigned petitioner verifies that this variance request is complete and includes:

✓ The name and location of the development as identified on the permit application;

✓ A copy of the permit decision for the development in question;

✓ A copy of the deed to the property on which the proposed development would be located;

✓ A complete description of the proposed development including a site plan;

✓ A stipulation that the proposed development is inconsistent with the rule at issue;

✓ Proof that notice of Variance Petition was sent to adjacent owners and objectors*, as required by 15A N.C.A.C. 07J .0701(c)(7);

✓ Proof that a variance was sought from the local government per 15A N.C.A.C. 07J .0701(a), if applicable; DCM and Kellogg and Evans, PA to send notice of Variance Petition

✓ Petitioner's written reasons and arguments about why the Petitioner meets the four variance criteria, listed above;

✓ A draft set of proposed stipulated facts and stipulated exhibits. Please make these verifiable facts free from argument. Arguments or characterizations about the facts should be included in the written responses to the four variance criteria instead of being included in the facts.

✓ This form completed, dated, and signed by the Petitioner or Petitioner's Attorney.

**Please contact DCM or the local permit officer for a full list of comments received on your permit application. Please note, for CAMA Major Permits, the complete permit file is kept in the DCM Morehead City Office.*

Due to the above information and pursuant to statute, the undersigned hereby requests a variance.

Charles D. Evans — August 8, 2018

Signature of Petitioner or Attorney — Date

Charles D. Evans
Printed Name of Petitioner or Attorney

charlese@kelloggandevans.com
Email address of Petitioner or Attorney

PO Box 189
Mailing Address

(252) 473-2171
Telephone Number of Petitioner or Attorney

Manteo — City
NC — State
27954 — Zip

(252) 473-1214
Fax Number of Petitioner or Attorney

DELIVERY OF THIS HEARING REQUEST

This variance petition must be received by the Division of Coastal Management at least six (6) weeks before the first day of the regularly scheduled Commission meeting at which it is heard. A copy of this request must also be sent to the Attorney General's Office, Environmental Division. 15A N.C.A.C. 07J .0701(e).

Contact Information for DCM:

By mail, express mail or hand delivery:
Director
Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557

By Fax:
(252) 247-3330

By Email:
Check DCM website for the email address of the current DCM Director
www.nccoastalmanagement.net

Contact Information for Attorney General's Office:

By mail:
Environmental Division
9001 Mail Service Center
Raleigh, NC 27699-9001

By express mail:
Environmental Division
114 W. Edenton Street
Raleigh, NC 27603

By Fax:
(919) 716-6767

Revised: July 2014

Variance Request

Application Number:

Name: Thomas S. Lampley and Judith A. Lampley

Location: 108 Virginia Court, Hertford, NC 27944
(Yeopim Creek – Perquimans County)
Albemarle Plantation

CAMA Variance Request

Petitioner's Responses to Four Variance Criteria:

(a) Will strict application of the applicable development rules, standards, or orders issued by the Commission cause the Petitioner unnecessary hardships?

Yes. Without the patio and fire pit, Petitioner would be unable to have reasonable enjoyment of Petitioner's property. When Petitioner purchased the property in 2007, Petitioner specifically selected this lot because of the expansive view it has from this particular point of land. From the beginning, Petitioner planned a patio and fire pit at this exact location so as to be able to congregate around it and enjoy the sights and sounds of the water and its proximity. The patio and fire pit also were positioned at this location so as not to obstruct views from the house. From the patio and fire pit area, Petitioner has a 270 degree view of the waterway and are able to see both the sunrise and the sunset. Not many residential lots, if any, at Albemarle Plantation have this unique feature, which was a major reason for Petitioner's purchasing the lot. This amenity provides the most commanding view on the property and is one of the most notable and attractive aspects of Petitioner's home. Denying this variance request will significantly impact the value of this uniquely structured property and greatly negate one of the primary reasons the petitioners purchased the property in the first place.

(b) Do such hardships result from conditions peculiar to the Petitioner's property such as the location, size, or topography of the property?

Yes. The hardship of Petitioner not being able to enjoy Petitioner's property to its fullest is being created because it is waterfront property. If it were not waterfront property, Petitioner would be able to enjoy fully the

property with a patio and fire pit without requiring permission from the State to build same. The existing definitions and their interpretation and application create a hardship as to the desired use of Petitioner's property as Petitioner proposes in order to make the best use of the location and surroundings. Continued interpretation of "landscaping" to not allow environmentally friendly "softscaping" paver bricks creates an unnecessary hardship.

(c) Do the hardships result from actions taken by the Petitioner's?

No. This hardship was not created by Petitioner's. Petitioner did not build or develop anything that changes this location and the hardship of not being able to have this patio and fire pit was not created by Petitioner. The development that was added is a natural and desired use of their property and the hardships result from interpretation and application of the existing rules.

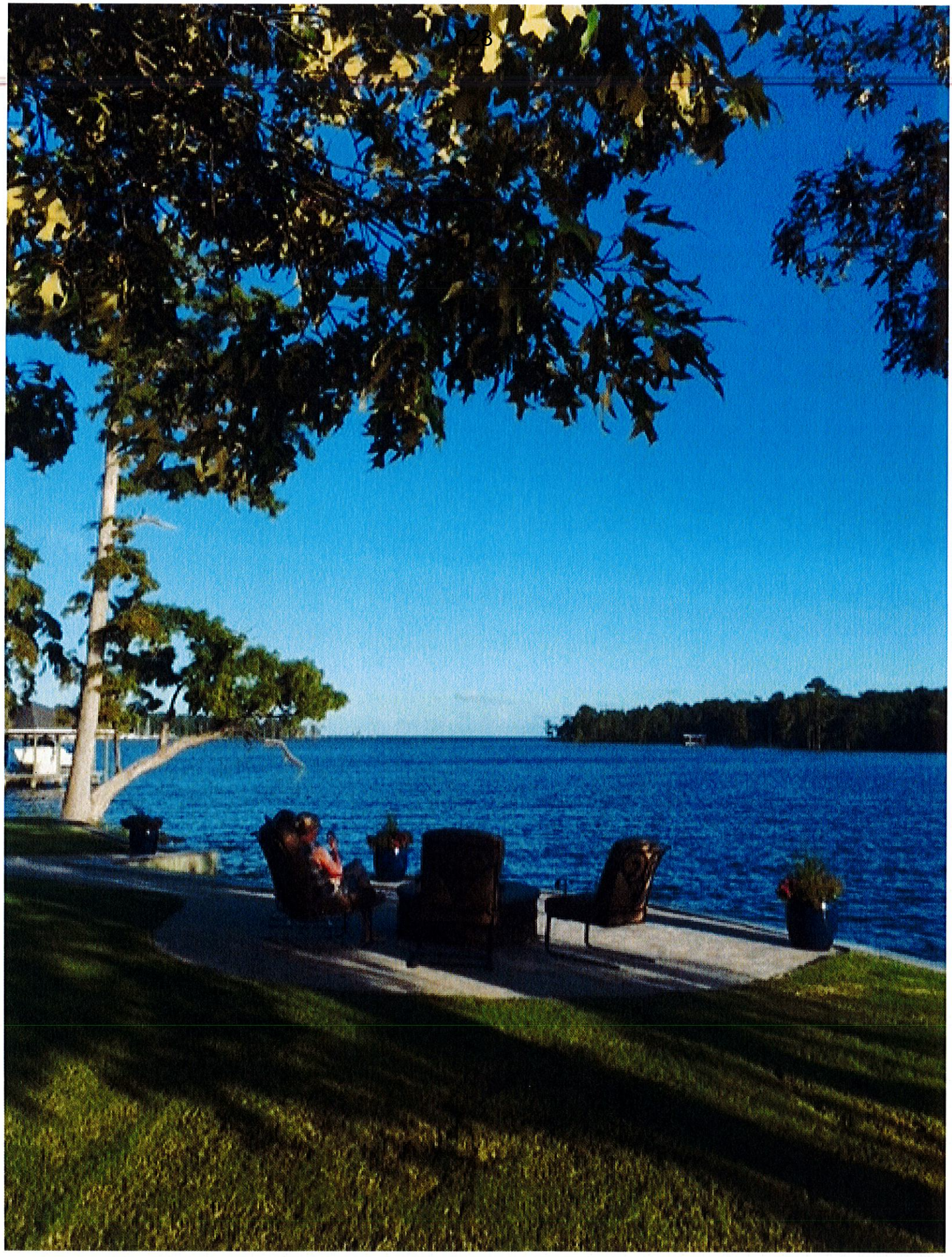
(d) Will the variance requested by the Petitioner's (1) be consistent with the spirit, purpose, and intent of the rules, standards or orders issued by the Commission; (2) secure the public safety and welfare; and (3) preserve substantial justice?

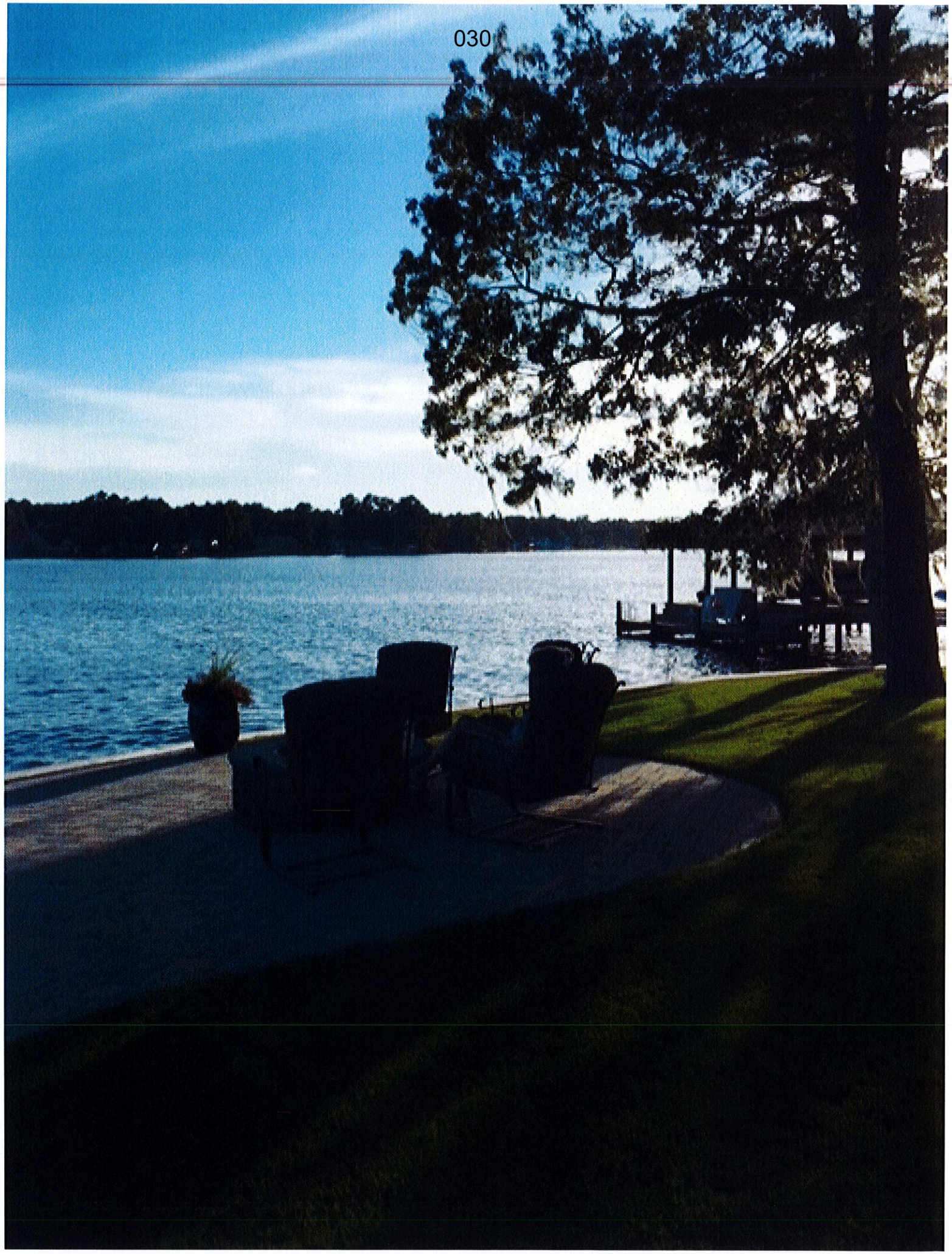
Yes. Contrary to harming the environment, Petitioner believes that this patio and fire pit have enhanced a safe, healthy, and pleasant environment in which to enjoy one of North Carolina's waterways. Petitioner's use of the patio and fire pit greatly extend the benefits Petitioner gains from being on the water and enjoying a unique environment, without causing any degradation or risk to health or safety - all key objectives of the NC EPA. (See Sec. 113A-2. Purposes; Sec.113A-3. Declaration of State environmental policy; and 15A NCAC 01C.0101 Statement of Purpose, Policy and Scope.)

Because of the way in which the patio and fire pit are constructed, no contamination of water, increase in run-off, impediments to drainage, erosion, or damage to wildlife will occur. In actuality, Petitioner has

reduced the fun-off of fertilizer, herbicides, and other contaminants from the chemically-treated lawn that existed prior to the installation of the pavers and fire pit.

Petitioner also believes that CAMA's interpretation of "landscaping" is too restrictive and severe. Patios and fire pits like the ones in question here are becoming ubiquitous and not atypical of landscaping projects overall. Because Petitioner did no damage to the environment, land and water; and meet the spirit, purpose and intent of the law, this type of project should be included in the interpretation of "landscaping" and should be allowed. To do otherwise is an excessively narrow interpretation of the guidelines and does not support the primary intent of the law - to minimize harm to the North Carolina waterways and estuaries and allow for their enjoyment in an environmentally friendly manner with no degradation of our wonderful surroundings.





CAMA Variance Request – Application Number – 20180725

Petitioners' Responses to Four Variance Criteria:

(a) Will strict application of the applicable development rules, standards, or orders issued by the Commission cause the petitioners unnecessary hardships?

Yes. Without the patio and fire pit, Petitioners would be unable to have reasonable enjoyment of their property. When they purchased the property in 2007, they specifically selected this lot because of the expansive view it has from this *particular* point of land. From the beginning, they planned a patio and fire pit at this exact location so as to be able to congregate around it and enjoy the sights and sounds of the water and its proximity. The patio and fire pit also were positioned at this location so as not to obstruct views from the house. From the patio and fire pit area, the Petitioners have a 270 degree view of the waterway and are able to see both the sunrise and the sunset. Not many residential lots, if any, at Albemarle Plantation have this unique feature, which was a major reason for Petitioners' purchasing the lot they did. This amenity provides the most commanding view on the property and is one of the most notable and attractive aspects of their home. Denying this variance request will significantly impact the value of this uniquely structured property and greatly negate one of the primary reasons the Petitioners purchased the property in the first place.

(b) Do such hardships result from conditions peculiar to the Petitioners' property such as the location, size, or topography of the property?

Yes. The hardship of Petitioners not being able to enjoy their property to its fullest is being created because it is waterfront property. If it were not waterfront property, they would be able to enjoy fully their property with a patio and fire pit without requiring permission from the State to build same.

(c) *Do the hardships result from actions taken by the Petitioners?*

No. This hardship was not created by Petitioners. They did not build or develop anything that changes this location and the hardship of not being able to have this patio and fire pit was not created by them. The patio and fire pit is an entirely reasonable and forseeable use to be made of the property. The hardship is created by strict application of the current rules and regulations.

(d) *Will the variance requested by the Petitioners (1) be consistent with the spirit, purpose, and intent of the rules, standards or orders issued by the Commission; (2) secure the public safety and welfare; and (3) preserve substantial justice?*

Yes. Contrary to harming the environment, Petitioners believe that this patio and fire pit have enhanced a safe, healthy, and pleasant environment in which to enjoy one of NC's waterways. Petitioner use of the patio and fire pit greatly extend the benefits they gain from being on the water and enjoying a unique environment, without causing any degradation or risk to health or safety – all key objectives of the NC EPA. (See *§ 113A-2. Purposes; § 113A-3. Declaration of State environmental policy;* and *15A NCAC 01C.0101 Statement of Purpose, Policy, and Scope*.)

Because of the way in which the patio and fire pit are constructed (to be permeable), no contamination of water, increase in run-off, impediments to drainage, erosion, or damage to wildlife will occur. In actuality, Petitioners have reduced the run-off of fertilizer, herbicides, and other contaminates from the chemically-treated lawn that existed prior to the installation of the pavers and fire pit. Furthermore, infiltration and permeability testing of the soil immediately surrounding the patio by geotechnical engineers (GET Solutions, Inc.) found that the rate of drainage for the soil upon which the patio was developed was "Moderately High."

Petitioners also believe that CAMA's interpretation of "landscaping" is too restrictive and severe. Patios and fire pits like the ones in question here are

becoming ubiquitous and not atypical of landscaping projects overall. Because the Petitioners did no damage to the environment, land, and water, and meet the spirit, purpose, and intent of the law, this type of project should be included in the interpretation of “landscaping”. Continued interpretation of “landscaping” to not allow environmentally friendly “softscaping” paver brick creates an unnecessary hardship. To do otherwise is an excessively narrow interpretation of the guidelines and does not support the primary intent of the law – to minimize harm to the NC waterways and allow for their enjoyment.

ATTACHMENT E:

STIPULATED EXHIBITS INCLUDING POWERPOINT

1. Deed to property at Book 333, Page 641
2. CAMA General Permit #49979A authorizing the bulkhead
3. Plans for Petitioners' residence and building permit application
4. CAMA General Permit #68701A authorizing the pier and associated structures
5. September 25, 2017 NOV #17-15A with restoration plan
6. November 9, 2017 CNOV from DCM
7. December 15, 2017 letter from Petitioners to Director Davis
8. March 5, 2018 letter from Director Davis to Petitioners
9. May 17, 2018 letter from Petitioners to District Manager Jennings
10. July 24, 2018 CAMA Minor Permit Application with associated drawings and invoice for work completed
11. Notice to adjacent riparian owners of permit application
12. July 30, 2018 DCM Denial Letter
13. Notice to adjacent riparian owners of variance petition
14. Affidavits of Petitioners
15. Goodman opinion letter dated October 9, 2018
16. DEQ Stormwater Design Manual's Permeable Pavement chapter
17. Goodman opinion letter dated January 14, 2019
18. Stalls opinion letter dated January 14, 2019
19. PowerPoint with aerial and ground level photos of Site and surrounding area

FILED in PERQUIMANS County, NC
on Aug 17 2007 at 04:03:44 PM
by: DEBORAH S. REED
REGISTER OF DEEDS
BOOK 333 PAGE 641

07-562

PERQUIMANS COUNTY
LAND TRANSFER TAX
AMOUNT $ 6400.00 FH
PAID $ 6400.00 P

105925 Issued Aug 17 2007
$1,280.00
State of North Carolina PERQUIMANS County
Real Estate Excise Tax

Excise Tax | Recording Time, Book and Page

Tax Lot No._____ Parcel Identifier No. 2-D082-EE19-AP
Verified by_____ County on the ____ day of _____, _____.
by

Mail after recording to: **Dixon & Thompson Law, PLLC Attorneys at Law. P.O. Box 24, Edenton, NC 27932**

This instrument was prepared by: Samuel B. Dixon, Attorney at Law, P.O. Box 24, Edenton NC 27932

ALBEMARLE PLANTATION
Lot 19, Section EE – Bosher's Point

NORTH CAROLINA GENERAL WARRANTY DEED

THIS DEED made this 17th day of August, 2007, by and between

GRANTOR	GRANTEE
HPB ENTERPRISES, a North Carolina Partnership One Plantation Drive Hertford, NC 27944	**THOMAS S. LAMPLEY and wife, JUDITH A. LAMPLEY** 708 Day Lane Alexandria, VA 22314

Enter in appropriate block for each party: name, address, and, if appropriate, character of entity, e.g. corporation or partnership

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that the Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledge, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land situated in **Bethel** Township, Perquimans County, North Carolina and more particularly described as follows:

Being Lot 19, Section EE, Bosher's Point, Phase 3 of Albemarle Plantation, as shown on plat entitled "ALBEMARLE PLANTATION - BOSHER'S POINT, PHASE 3 - SECTION EE, LOTS 7-13" AND LOTS 15-32, which said plat is recorded in **Plat Cabinet 2, Slide 108, Map No. 9 and Plat Cabinet 2, Slide 109, Map No. 1**, Perquimans County Public Registry.

The property hereinabove described was acquired by Grantor by instrument recorded in Book 123, Page 102, Perquimans County Registry.

A map showing the above described property is recorded in Plat Cabinet 2, Slide 108, Map Nos. 9, and in Plat Cabinet 2, Slide 109, Map No. 1.

TO HAVE AND TO HOLD the aforesaid lot or parcel of land and all privileges and appurtenances thereto belonging to the Grantee in fee simple.

And the Grantor covenants with the Grantee, that Grantor is seized of the premises in fee simple, has the right to convey the same in fee simple, that title is marketable and free and clear of all encumbrances, and that Grantor will warrant and defend the title against the lawful claims of all persons whomsoever except for the exceptions hereinafter stated.

Title to the property hereinabove described is subject to the following exceptions:

The above described tract is subject to any easements, rights of way, declarations and restrictions that appear of record, including but not limited to the restrictive covenants recorded in Book 130, Page 593, and as amended and supplemented in Book 151, Page 752, Book 171, Page 773, Book 225, Page 908, in Book 241, Page 366, Book 270, Page 241, Book 282, Pages 329 & 756, Book 517, Book 312, Page 501, Book, 319, Page 641 and in Book 244, Page 19.

IN WITNESS WHEREOF, the Grantor has hereunto set his hand and seal, or if corporate, has caused this instrument to be signed in its corporate name by its duly authorized officers and its seal to be hereunto affixed by authority of its Board of Directors, the day and year first above written.

HPB ENTERPRISES, a NC General Partnership

By: Robert M. Bosher (SEAL)
Robert M. Bosher, Managing Partner

SEAL STAMP

STATE OF NORTH CAROLINA - COUNTY OF PERQUIMANS

I, DOROTHY K. HODGES, a Notary Public of the County and State aforesaid, certify that **ROBERT M. BOSHER, Managing Partner for HPB Enterprises**, a NC General Partnership Grantor, personally appeared before me this day and acknowledged the execution of the foregoing instrument.

Witness my hand and official stamp or seal, this 17th day of August, 2007.

My commission expires: Nov. 27, 2010

Dorothy K. Hodges
Notary Public

046

☒ CAMA / ~~☐ DREDGE~~ & FILL

GENERAL PERMIT

☐ New ☐ Modification ☐ Complete Reissue ☐ Partial Reissue

No. A49979

Previous permit # _____

Date previous permit issued _____

As authorized by the State of North Carolina, Department of Environment and Natural Resources and the Coastal Resources Commission in an area of environmental concern pursuant to 15A NCAC 7H .1100.

☐ Rules attached.

Applicant Name Thomas Lampley

Address 708 Day Lane

City Alexandria State VA ZIP 22314

Phone # (202) 641-0027 Fax # (___) _____

Authorized Agent JR Milligan / Oceanside Contractors

Project Location: County Perquimans

Street Address/ State Road/ Lot #(s) off of SR- 1429 Lot 19 Boshers Point Virginia Crt.

Subdivision Albemarle Plantation

City Hertford ZIP 27944

Phone # (___) _____ River Basin Pasquotank

Adj. Wtr. Body Yeopim Creek (nat /man /unkn)

Closest Maj. Wtr. Body Albemarle Sound

Affected AEC(s): ☐ CW ☐ EW ☒ PTA ☐ ES ☒ PTS ☐ OEA ☐ HHF ☐ IH ☐ UBA ☐ N/A ☐ PWS: _____ ☐ FC: _____

ORW: yes / no **PNA** yes / no **Crit.Hab.** yes / no

Type of Project/ Activity Construct new wooden bulkhead 196' and 107' wooden bulkhead around wetland area (Scale: NTS)

Pier (dock) length _____

Platform(s) _____

Finger pier(s) _____

Groin length _____

number _____

Bulkhead/ Riprap length 196'

avg distance offshore 3'

max distance offshore 5'

Basin, channel _____

cubic yards _____

Boat ramp _____

Boathouse/ Boatlift _____

Beach Bulldozing _____

Other _____

Shoreline Length 196'

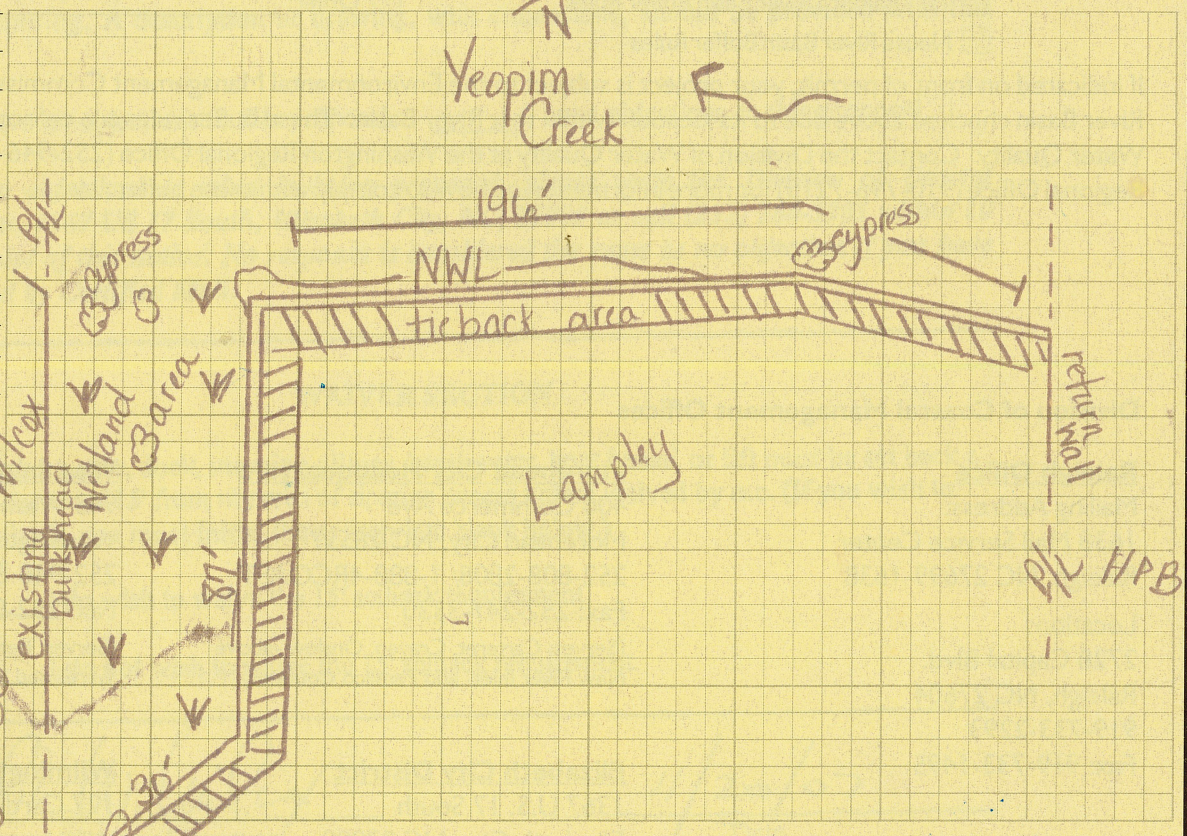
SAV: not sure yes no

Sandbags: not sure yes no

Moratorium: n/a yes no

Photos: yes no

Waiver Attached: yes no



A building permit may be required by: Perquimans.

☐ See note on back regarding River Basin rules.

Notes/ Special Conditions 7H 0.1100

JR Milligan
Agent or Applicant Printed Name

JR Milligan
Signature ** Please read compliance statement on back of permit **

$400.00
Application Fee(s)

12581
Check #

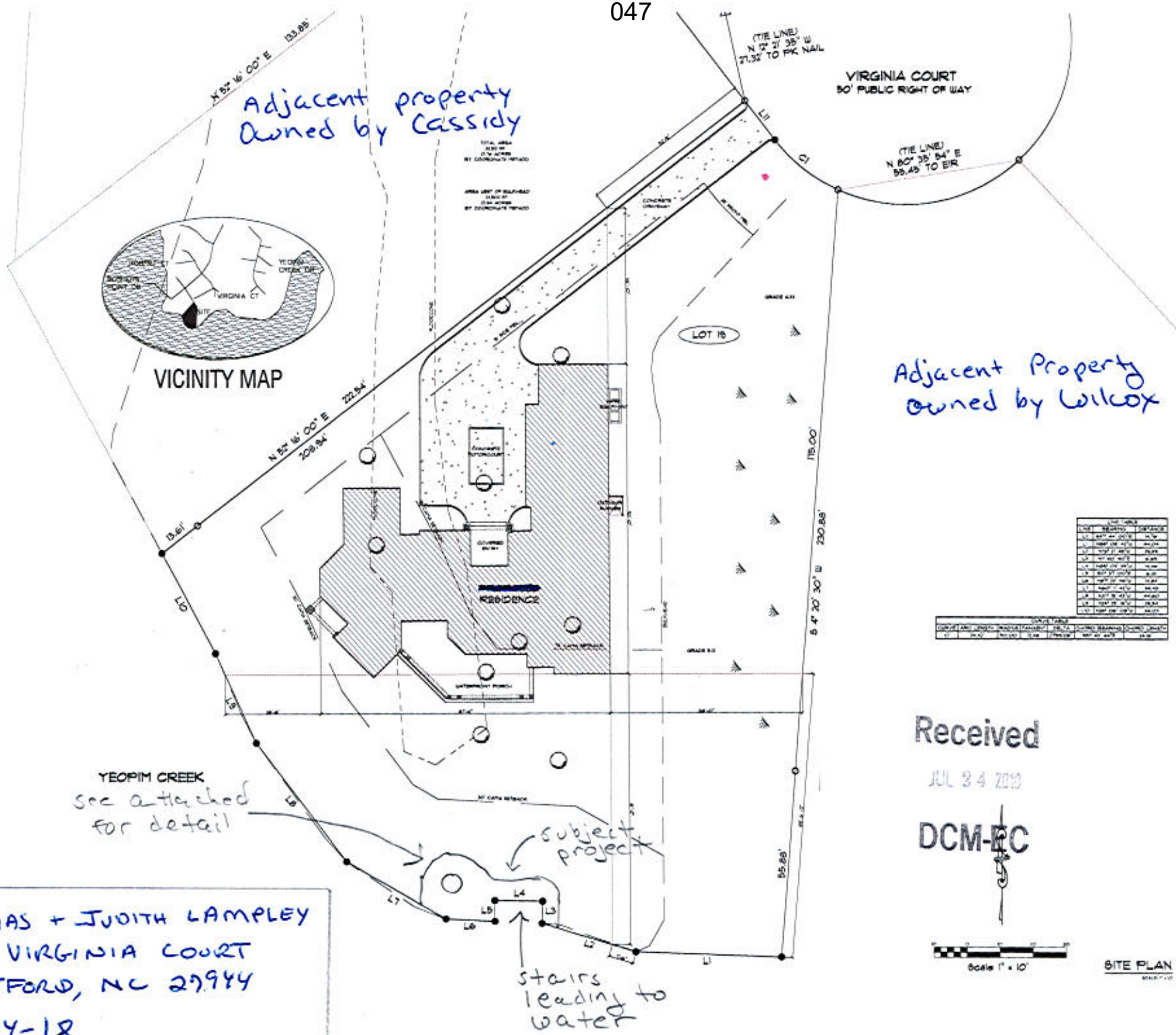
Kelly Russell
Permit Officer's Signature

12/3/07
Issuing Date

12/5/08
Expiration Date

Perquimans
Local Planning Jurisdiction

D120310A
Rover File Name



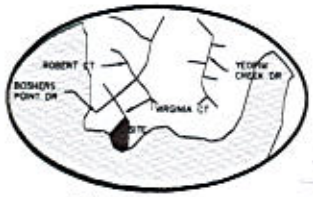
Received
JUL 24 2018
DCM-EC

THOMAS + JUDITH LAMPLEY
108 VIRGINIA COURT
HERTFORD, NC 27944
7-24-18

THE LAMPLEY RESIDENCE
LOT 19 VIRGINIA COURT
IN
BETHEL TOWNSHIP, NORTH CAROLINA

K&H RESIDENTIAL DESIGN

SHEET 02 / 16



VICINITY MAP

YEOPIM CREEK

HYMAN ROBEY
SOLUTIONS FROM THE GROUND UP
150 US Hwy 158 E.
PO Box 339
Camden, NC 27921
(252) 338-2913
(252) 338-5552 fax
www.hymanrobey.com
License C-0598

SURVEY FOR THOMAS S. & JUDITH A. LAMPLEY

BETHEL TOWNSHIP
PERQUIMANS COUNTY
NORTH CAROLINA

KEY PLAN:

LINE TABLE		
LINE	BEARING	DISTANCE
L11	S37° 44' 00"E	14.76
L1	N88° 08' 42"W	44.04
L2	N73° 21' 49"W	29.59
L5	N87° 23' 46"W	14.84
L10	N28° 06' 08"W	34.03

CURVE TABLE						
CURVE	ARC LENGTH	RADIUS	TANGENT	DELTA	CHORD BEARING	CHORD LENGTH
C1	24.42'	50.00'	12.46	27°58'08"	S51° 43' 44"E	24.18'

TOTAL AREA 33,912 SF 0.78 ACRES BY COORDINATE METHOD

AREA WEST OF BULKHEAD 23,302 SF 0.54 ACRES BY COORDINATE METHOD

NOTE:
BEING LOT 19 OF PHASE 3 OF SECTION EE, "BOSHER'S POINT", OF ALBEMARLE PLANTATION SUBDIVISION AS RECORDED IN P.C. 2, SLD. 108, MAP 8.

SUBJECT PARCEL IS FOUND IN FLOOD ZONES AS SHOWN, SCALED FROM FIRM PANEL 3270786600J, DATED OCTOBER 5, 2004.

GRADES SHOWN APPROXIMATE

I, EDWARD T. HYMAN, JR. CERTIFY THAT THIS PLAT WAS DRAWN FROM AN ACTUAL FIELD LAND SURVEY MADE UNDER MY SUPERVISION; THAT THE DEED DESCRIPTION FOR SAID PROPERTY IS RECORDED IN D.B. 333, P. 641; THAT THE ERROR OF CLOSURE IS 1:10,000+ ; THAT ALL AREA CALCULATIONS ARE BY D.M.D; THAT THIS MAP WAS PREPARED IN ACCORDANCE WITH GS 47-30; WITNESS MY ORIGINAL SIGNATURE, REG. NUMBER, AND SEAL THIS 17 DAY OF MARCH, 2010.

NORTH CAROLINA PROFESSIONAL SEAL L-2690 LAND SURVEYOR EDWARD T. HYMAN, JR.

EDWARD T. HYMAN, JR.
P.L.S. L-2690

VIRGINIA COURT (50' R/W)

LEGEND
EXISTING IRON PIN
CALCULATED CORNER
PROPERTY LINE
R/W LINE
PROPERTY EXTENSION
EASEMENT SETBACK
EASEMENT CAMA
BULKHEAD
FLOODZONE

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

Received
JUL 2 4 2010
DCM-EC

Project #:	100057
Drawing #:	100057
Drawn:	TWR
Checked:	ETH
Approved:	ETH
Date:	03/17/10
Sheet #:	01/01
Scale:	1:20

REVISIONS:
NUM. DATE DESCRIPTION

SHEET TITLE:
SURVEY

SHEET NUMBER:
1

☒ CAMA / ☐ DREDGE & FILL

GENERAL PERMIT

☒ New ☐ Modification ☐ Complete Reissue ☐ Partial Reissue

No. 68701 A B C D

Previous permit # _____

Date previous permit issued _____

As authorized by the State of North Carolina, Department of Environment and Natural Resources and the Coastal Resources Commission in an area of environmental concern pursuant to 15A NCAC 07H.1200.

☒ Rules attached.

Applicant Name TOM & JUDITH LAMPLEY

Address 108 VIRGINIA COURT

City HERTFORD State NC ZIP 27944

Phone # (252) 232-8677 E-Mail _____

Authorized Agent N/A

Affected AEC(s): ☐ CW ☐ EW ☒ PTA ☐ ES ☐ PTS ☐ OEA ☐ HHF ☐ IH ☐ UBA ☐ N/A ☐ PWS: _____

ORW: yes / (no) PNA yes / (no)

Project Location: County PERQUIMANS

Street Address/ State Road/ Lot #(s) 108 VIRGINIA COURT

Subdivision ALBEMARLE PLANTATION

City HERTFORD ZIP 27944

Phone # (252) 232 8677 River Basin PASQUOTANK

Adj. Wtr. Body YEOPIM CREEK (nat) /man /unkn)

Closest Maj. Wtr. Body YEOPIM RIVER → ALBEMARLE SOUND

Type of Project/ Activity 1) PIER: 6'X64 2) PLATFORM: 12'X24' 3) BOATHOUSE: 15'X24' W LIFT 4) 2ND LIFT (PWC) 5) 7'X24' STEP DOWN 6) STAIRS 14'X6' (RAFTED)

(Scale:)

Pier (dock)-length 64'

Fixed Platform(s) 12'X24'

Floating Platform(s) _____

Finger pier(s) _____

Groin length _____

number _____

Bulkhead/ Riprap length _____

avg distance offshore _____

max distance offshore _____

Basin, channel _____

cubic yards _____

Boat ramp _____

Boathouse/ Boatlift 15'X24' W LIFT & 2ND LIFT

Beach Bulldozing _____

Other STEP DOWN: 7'X24' STAIRS: 14'X6'

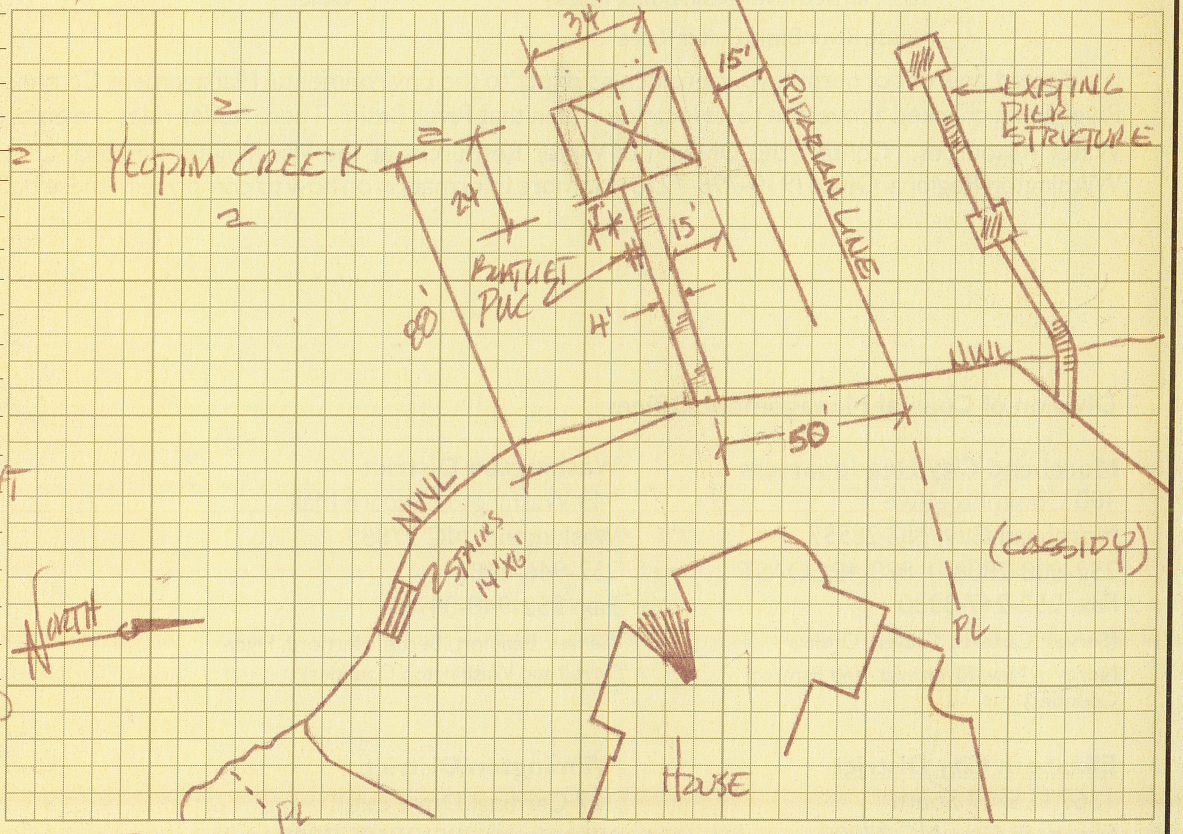
Shoreline Length 240

SAV: not sure yes (no)

Moratorium: (n/a) yes no

Photos: (yes) no

Waiver Attached: yes (no)



A building permit may be required by: PERQUIMANS COUNTY. ☐ See note on back regarding River Basin rules.

(Note Local Planning Jurisdiction)

Notes/ Special Conditions TOTAL LENGTH OF STRUCTURE = 88' FROM NWL

THOMAS LAMPLEY
Agent or Applicant Printed Name

Signature ** Please read compliance statement on back of permit **

$200.00 721
Application Fee(s) Check #

LYNN MATTHIS
Permit Officer's Printed Name

Signature

SEPT 12, 2017 JAN, 12, 2018
Issuing Date Expiration Date

Coastal Management
ENVIRONMENTAL QUALITY

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON DAVIS
Director

CERTIFIED MAIL: 7013 2250 0000 6213 5344
RETURN RECEIPT REQUESTED

NOTICE OF VIOLATION
September 25, 2017

Thomas and Judith Lampley
108 Virginia Court
Hertford, North Carolina 27944

RE: NOTICE OF VIOLATION AND REQUEST TO CEASE UNAUTHORIZED DEVELOPMENT CAMA MINOR VIOLATION #17-15A

Dear Mr. and Mrs. Lampley:

This letter confirms that on September 12, 2017, I was onsite at your property located at 108 Virginia Court, adjacent to Yeopim Creek, in Albemarle Plantation, Perquimans County, North Carolina. The purpose of the visit was to issue a General Permit for a pier, platform, lifts, and a boathouse. While onsite additional development was discovered involving the installation of a block patio and fire pit ~450sf in area within the Coastal Shoreline Area of Environmental Concern (AEC), more specifically the Public Trust Shoreline. During my site visit we discussed the placement of the impervious area and the rules governing the 30' buffer.

Based on my site visit it has been determined you have undertaken minor development in violation of the Coastal Area Management Act. No person may undertake minor development in a designated Area of Environmental Concern without first obtaining a permit from the North Carolina Department of Environment and Natural Resources, North Carolina General Statutes (N.C.G.S.) 113A-118.

I have information that you have undertaken, or are legally responsible for, unauthorized minor development by having a ~450sf patio installed along normal water level at an existing bulkhead on the aforementioned property. This activity took place in the Public Trust Shoreline that is contiguous with Yeopim Creek. Public Trust Shorelines are designated as Areas of Environmental Concern (AEC), and no permit was issued to you for work in this area. Based on these findings, I am initiating an enforcement action by issuing this ***Notice of Violation*** for violating the Coastal Area Management Act

I request that you immediately **CEASE AND DESIST** any further unauthorized development. A civil assessment of up to $1,000 may be assessed against any violator. Each day that the development described in this Notice is continued or repeated may constitute a separate violation that is subject to an additional assessment of $1,000. An injunction or criminal penalty may also be sought to enforce any violation in accordance with N.C.G.S. 113A-126.

It is the policy of the Coastal Resources Commission to assess a minimum civil penalty against all violations of this type. Investigative costs may also be assessed in addition to the civil penalty. This is done to recoup some of the costs of investigating the violation and/or to compensate the public for any damage to its natural

resources. Whether a higher amount will be assessed will depend on several factors, including the nature and area of the resources affected and the extent of the damage to them. If restoration of the affected resources is requested, but is not undertaken or completed satisfactorily, a substantially higher civil penalty will be assessed and a court injunction will be sought ordering restoration.

Based upon the North Carolina Administrative Code, Title 15A, Subchapter 07H. State Guidelines for Areas of Environmental Concern, the activity you have undertaken, the installation of a block patio and fire pit within the 30' buffer along the Public Trust Shoreline is not consistent with Section 07H .0209 Coastal Shorelines (d)(10), which states:

> *Within the Coastal Shorelines category (estuarine and public trust shoreline AECs), new development shall be located a distance of 30 feet landward of the normal water level or normal high water level, with the exception of the following:*
>
> *(A) Water-dependent uses as described in Rule 07H .0208(a)(1) of this Section;*
> *(B) Pile-supported signs (in accordance with local regulations);*
> *(C) Post- or pile-supported fences;*
> *(D) Elevated, slatted, wooden boardwalks exclusively for pedestrian use and six feet in width or less. The boardwalk may be greater than six feet in width if it is to serve a public use or need;*
> *(E) Crab Shedders, if uncovered with elevated trays and no associated impervious surfaces except those necessary to protect the pump;*
> *(F) Decks/Observation Decks limited to slatted, wooden, elevated and unroofed decks that shall not singularly or collectively exceed 200 square feet;*
> *(G) Grading, excavation and landscaping with no wetland fill except when required by a permitted shoreline stabilization project. Projects shall not increase stormwater runoff to adjacent estuarine and public trust waters;*
> *(H) Development over existing impervious surfaces, provided that the existing impervious surface is not increased and the applicant designs the project to comply with the intent of the rules to the maximum extent feasible;*
> *(I) Where application of the buffer requirement would preclude placement of a residential structure with a footprint of 1,200 square feet …*
> *(J) Where application of the buffer requirement set out in 15A NCAC 07H .0209(d)(10) would preclude placement of a residential structure on an undeveloped lot platted prior to June 1, 1999…*

The activity undertaken does not fall within the exceptions noted above; therefore, I am requesting that the block patio be removed from within the 30' buffer. Please refer to the enclosed Restoration Agreement. If you intend to cooperate with my request, please sign one of the attached Restoration Agreements and return it to me in the enclosed, self-addressed envelope within ten (10) days of receipt of this letter. Failure to comply with this request or respond back to this office prior to the requested deadline with an acceptable schedule for compliance will be interpreted as a refusal to cooperate and will result in a Notice of Continuing Violation, as well as a court injunction being sought ordering compliance.

Upon completion of the restoration as requested in the Restoration Plan Agreement to the satisfaction of the NC Division of Coastal Management, you will be notified by the Division of Coastal Management as to the amount of a civil assessment for undertaking development without first obtaining the proper permit.

The relevant statutes and regulations are available from this office, and I am willing to assist you in complying with the requirements of these laws. Do not hesitate to contact me if you have any questions.

Sincerely,

Lynn W. Mathis
Field Specialist

Cc: Frank Jennings, District Manager, DCM
Roy Brownlow, Compliance Coordinator, DCM

ENCLOSURES

RESTORATION PLAN
For
Thomas and Judith Lampley
CAMA Minor Violation #17-15A

Property located at 108 Virginia Court, Perquimans County

Remove all impervious surface created by the block patio constructed along the existing bulkhead within the 30' buffer. Reconstruction of the patio 30' landward of normal water level, measured from anywhere along the existing bulkhead, will not require authorization from this agency as long as all associated land disturbance is landward of the 30' buffer.

See attached aerial photograph of the site, and area to be removed or relocated.

We, **Thomas and Judith Lampley**, agree to complete this restoration to the satisfaction of the NC Division of Coastal Management by October 30, 2017, or provide an explanation for non-compliance and a reasonable request for time extension. When corrective actions are complete, I will notify the Elizabeth City Office of the Division of Coastal Management so the work can be inspected.

SIGNATURE: _____
(Signature of one or both of the property owners is required)

DATE: _____

It is the policy of the Coastal Resources Commission to levy a minimum civil assessment against all violations of this type depending upon the damage to the resources. If restoration is not undertaken or satisfactorily completed, a substantially higher civil assessment will be levied and an injunction sought to require restoration.


Thomas & Judith Lampley
108 Virginia Court
Hertford, NC 27944
30' Buffer Line
~450SF
Remove Block Patio With Fire Pit From The 30' Buffer
Google earth
© 2017 Google
N
100 ft

Coastal Management
ENVIRONMENTAL QUALITY

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON DAVIS
Director

CERTIFIED MAIL: 7013 2250 0000 6213 5313
RETURN RECEIPT REQUESTED

NOTICE OF VIOLATION
November 9, 2017

Thomas and Judith Lampley
108 Virginia Court
Hertford, North Carolina 27944

RE: NOTICE OF CONTINUING VIOLATION AND REQUEST TO CEASE UNAUTHORIZED DEVELOPMENT – CAMA MINOR VIOLATION #17-15A

Dear Mr. and Mrs. Lampley:

This letter is in reference to the Notice of Violation that was issued to you on September 25, 2017, by the North Carolina Division of Coastal Management for unauthorized development in violation of the Coastal Area Management Act (CAMA). The violation occurred onsite your property located at 108 Virginia Court, adjacent to Yeopim Creek, in Albemarle Plantation, Perquimans County, North Carolina.

Information gathered by me for the Division of Coastal Management revealed that a block patio with a fire pit was constructed immediately adjacent to the bulkhead at normal water level (NWL), along Yeopim Creek. You were notified that no person may undertake development within a designated Area of Environmental Concern (AEC) without first obtaining a permit from the North Carolina Department of Environmental Quality, as imposed by North Carolina General Statute (herein abbreviated N.C.G.S.) 113A-118. Had an application been submitted to this office for the patio and fire pit, you would have been informed that such development could not be permitted within 30' of NWL.

Per your request I have looked into your requests for relief under the Variance and Third-Party Appeal process, and it has been verified that such requests may be submitted upon the denial of a permit, and not subsequent to the undertaking of unauthorized development that is inconsistent with the Division's rules. Base on this finding restoration of the affected area the Violation issued on September 25, 2017, stands.

In accordance with the N.C. Administrative Code, Subchapter 7J.0409(g)(4)(F)(ii), should you fail to restore the affected area you may be subject to an additional daily penalty starting from the date specified in this Continuing Notice of Violation and may continue until the Division's order is satisfied; or you contest the Division's order in a judicial proceeding by raising a justifiable issue of law or fact.

Thomas S. Lampley
108 Virginia Court
Hertford, NC 27944
(H) 252-232-8677 (C) 202-641-0027
thomas.lampley@kbr.com

December 15, 2017

Mr. Braxton Davis
Director
North Carolina Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557

Dear Mr. Davis,

We are writing to request reconsideration of the Notice of Violation cited in the attached letters dated September 25, 2017, and November 9, 2017.

In response to this NOV, on December 4, we had a very positive meeting with Mr. Frank Jennings and Ms. Lynn Mathis in the Elizabeth City office to discuss this issue. They were very understanding of our dilemma, but did not feel they were in a position to grant an exception to the existing regulations. Mr. Jennings suggested we present our case to you for further consideration in that he believed there was merit in our case. This is an extremely important issue to us and we would very much appreciate the opportunity to discuss this with you in person, if you would be willing to meet with us.

Prior to receiving the NOV, we were totally unaware of any requirement to obtain a permit to install a block (paver) patio and fire pit on our property. We had just moved from Alexandria, VA and had never been involved with construction permitting. There was never any attempt on our part to subvert or ignore any environmental laws or regulations. On the contrary, to ensure we properly designed and installed this project, we hired three well-known and highly-recommended contractors based on the extensive amount of work they have done in our gated community: (1) a landscape designer, (2) a licensed landscape contractor to scale down the original design and construct a fully permeable patio and fire pit, and (3) a licensed gas company in Hertford to install a propane gas line to the fire pit. None of these licensed contractors, that we relied on, advised us of any restrictions or permitting requirements with regard to performing this work.

We therefore were shocked to learn from the NOV that the work done on our property required a permit and that it would need to be removed as it was not in compliance with North Carolina's environmental laws. While the need for a permit was surprising, the idea that we could possibly be causing harm to the environment was inconceivable. The pervious paver patio and fire pit were specifically designed to have zero negative impact on the environment – the pavers are spaced apart and laid in sand, not concrete, allowing water to drain directly into the soil beneath. Contrary to

harming the environment, we believe that the work done on our property has enhanced a healthy and pleasant environment (a key objective of the NCEPA), while significantly reducing the run-off of fertilizer, herbicides, and other contaminates from the chemically-treated lawn that existed prior to the installation of the patio and fire pit. We further believe that these enhancements do not conflict in any way with the spirt or intent of North Carolina's environmental laws as we have read them and that we have not in any way caused damage to the environment on or around our property.

Having researched the NCEPA and its accompanying Administrative Code, we believe both provide CAMA full authority to use its discretion in making these types of environmental decisions. As such, we are appealing to you for an equitable resolution of this issue, short of removal of the patio and fire pit. Full removal and replacement of this project would be costly and result in a de facto penalty to us totally disproportionate to the lack of any potential environmental damage. Furthermore, removal of the patio and replacing it with grass actually would have a negative impact on the surrounding environment.

We believe that there is sufficient latitude in Section 07H.0209 Coastal Shorelines (d) (10), to apply exemption (G) (noted below) to our particular situation. Our landscaping complies with this exception, and does not increase storm water runoff—in fact it minimizes it.

> (G) Grading, excavation and landscaping with no wetland fill except when required by a permitted shoreline stabilization project. Projects shall not increase stormwater runoff to adjacent estuarine and public trust waters.

We request your consideration in applying the above section (G) exception to our situation in order to mitigate further damage to the environment and more rationally apply the spirit and intent of the law to these particular circumstances.

We sincerely appreciate your, Mr. Jennings', and Ms. Mathis's efforts in assisting us in this matter, considering our request, and hopefully finding an equitable solution to this issue.

Again, we would appreciate the opportunity to speak to you about this in person at your convenience.

We look forward to hearing back from you.

Sincerely,

Thomas S. Lampley

Attachments (2)

cc: Mr. Frank Jennings
Ms. Lynn Mathis

Coastal Management
ENVIRONMENTAL QUALITY

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

March 5, 2018

Thomas and Judith Lampley
108 Virginia Court
Hertford, NC 27944

Re: CAMA Minor Violation #17-15A / Restoration Plan

Dear Mr. and Mrs. Lampley:

I want to first apologize for the lengthy delay in responding to your letter addressed to my attention and dated December 15, 2017. Your letter was somehow misplaced, likely due to my relocation from my former office at the N.C. Division of Marine Fisheries in January.

You requested that I reconsider CAMA Minor Violation #17-15A (NOV) and the letters you received from our Elizabeth City office, dated September 25, 2017 and November 9, 2017. I have reviewed all of the materials and photographs associated with your case. While I am sensitive to your situation and believe that you never intended to violate state rules, I cannot find sufficient grounds to overturn the NOV or change the required restoration plan. Patios and hardscaping are not included in the specific exceptions to the 30-foot buffer established 15A NCAC 07H.0209, which include slatted, wooden, elevated and unroofed decks of up to 200 square feet, among other specific exceptions. The N.C. Division of Coastal Management has consistently disallowed brick and paver patios in the Public Trust Shoreline and Estuarine Shoreline Areas of Environmental Concern.

For these reasons, you will need to follow the Restoration Plan associated with the NOV, as outlined in the letters you received in September and November 2017. Upon satisfactory completion of the restoration, you will be notified as to the amount of a civil assessment for undertaking development activity without first obtaining the proper permit.

You will be notified of your legal appeal rights if you are issued a formal civil penalty. In addition, once restoration is complete, you could apply for a permit for a similar patio or deck area in the shoreline buffer area. If your permit application is denied, you can then either file an appeal with the N.C. Office of Administrative Hearings or seek a variance from the N.C. Coastal

Resources Commission. We would be happy to provide additional information on those appeal rights and procedures at your request, but some introductory information can be found here: https://deq.nc.gov/about/divisions/coastal-management/coastal-management-permits/variances-appeals.

Sincerely,

Braxton Davis
Director, N.C. Division of Coastal Management

Cc: Frank Jennings, DCM District Manager, Elizabeth City

Thomas S. Lampley
108 Virginia Court
Hertford, NC 27944
(H) 252-232-8677 (C) 202-641-0027
thomas.lampley@kbr.com

May 17, 2018

Mr. Frank Jennings

Re: NOV No.

Dear Mr. Jennings:

With regard to the above-reference Notice of Violation (NOV), we are requesting a formal hearing on the issues involved therein. We believe that our fire pit and surrounding pavers are not so egregious as to require their full removal and restoration of the site to its original state (dirt and weeds.) Both the fire pit and pavers were designed in a way as to allow water to drain readily from the surface into the ground and have absolutely no negative impact to the surrounding water or land. While, we may have inadvertently not complied with the permitting process for installation of the fire pit and pavers, again, no harm was done to the environment by this omission on our part. Furthermore, what we have done is in line with the spirit and intent of the North Carolina Environmental Protection Act (NC EPA) and as such, we do not intend to remove the fire pit and pavers. We therefore request a formal hearing on this issue.

Prior to receiving the NOV, we were totally unaware of any requirement to obtain a permit to install a paver patio and fire pit on our property. We had just moved from Alexandria, VA and had never been involved with construction permitting. There was never any attempt on our part to subvert or ignore any environmental laws or regulations. On the contrary, to ensure we properly designed and installed this project, we hired three well-known and highly-recommended contractors based on the extensive amount of work they have done in our gated community: (1) a landscape designer, (2) a licensed landscape contractor to scale down the original design and construct a fully permeable patio and fire pit, and (3) a licensed gas company in Hertford to install a propane gas line to the fire pit. None of these licensed contractors, that we relied on, advised us of any restrictions or permitting requirements with regard to performing this work.

We therefore were shocked to learn from the NOV that the work done on our property required a permit and that it would need to be removed as it was not in compliance with North Carolina's environmental laws. While the need for a permit was surprising, the idea that we could possibly be causing harm to the environment was inconceivable. The pervious pavers and fire pit were specifically designed to have zero negative impact on the environment – the pavers are spaced apart and laid in sand and gravel, not concrete, allowing water to drain directly into the soil beneath. The fire pit is open and likewise, drains into sand.

Contrary to harming the environment, we believe that this work has enhanced a healthy and pleasant environment – a key objective of the NC EPA. According to the NC EPA:

> *§ 113A-2. Purposes.* The purposes of this Article are: to declare a State policy which will encourage the wise, productive, and beneficial use of the natural resources of the State without damage to the environment, maintain a healthy and pleasant environment, and preserve the natural beauty of the State
>
> *§ 113A-3. Declaration of State environmental policy.* The General Assembly of North Carolina . . . declares that it shall be the continuing policy of the State of North Carolina to conserve and protect its natural resources and to create and maintain conditions under which man and nature can exist in productive harmony. Further, it shall be the policy of the State to seek, for all of its citizens, safe, healthful, productive and aesthetically pleasing surroundings; to attain the widest range of beneficial uses of the environment without degradation, risk to health or safety

No contamination of water, impediments to drainage, erosion, or damage to wildlife has resulted from our fire pit and pavers. In actuality, we have reduced the run-off of fertilizer, herbicides, and other contaminates from the chemically-treated lawn that existed prior to the installation of the pavers and fire pit. We further believe that these enhancements do not conflict in any way with the spirt or intent of North Carolina's environmental laws or directives and that we have not in any way caused damage to the environment on or around our property.

While thus far we have been told that there is no exception that specifically addresses a paver surface and fire pit, we believe that there is sufficient latitude in Section 07H.0209 Coastal Shorelines (d) (10), to apply exemption (G) (noted below) to our particular situation. Our fire pit and pavers comply with this exception, and do not increase storm water runoff – in fact they minimize it.

> (G) Grading, excavation and landscaping with no wetland fill except when required by a permitted shoreline stabilization project. Projects shall not increase storm water runoff to adjacent estuarine and public trust waters.

Furthermore, we believe the NC EPA and accompanying Administrative Code provide CAMA full authority to use its discretion in making these types of environmental decisions.

> *15A NCAC 01C .0104 AGENCY COMPLIANCE*
>
> (a) Each DENR agency shall interpret the provisions of the NC EPA as a supplement to its existing authority and as a mandate to view its policies and programs in the light of the NC EPA's comprehensive environmental objectives, except where existing law applicable to the DENR agency's operations expressly prohibits compliance or makes compliance impossible.
>
> (b) As part of making a decision on a project for which an environmental document has been prepared, the DENR agency decision-maker shall review the document and incorporate it as part of continuing deliberations. The resulting decision shall be made after weighing all of the impacts and mitigation measures presented in the environmental document, which shall become part of the decision-making record.

15A NCAC 01C .0101 STATEMENT OF PURPOSE, POLICY, AND SCOPE

(e) The provisions of the rules in this Subchapter, the state rules (01 NCAC 25), and the NC EPA shall be read together as a whole in order to comply with the spirit and letter of the law.

Not taking all of the above into consideration in reaching a reasonable solution to this issue would result in an excessively narrow interpretation of the guidelines and would not support the primary intent of the law – to minimize harm to the NC waterways.

In the contrary, the cost of complying with requested restoration (estimated at $10,000) far exceeds any potential harm to the environment and would not benefit CAMA, the State of North Carolina, or its citizens. In fact, it could harm all while serving no practical purpose. We only seek an equitable solution to this problem that would benefit all concerned, including interpretation of (or perhaps even revision to) the current rules to allow for projects such as ours that cause no harm to the environment and allow for the enjoyment of the waterways by the citizens of the state.

As our discussions with CAMA have thus far been beneficial, in our view, they have not resulted in a satisfactory solution to our situation. It is for that reason, we request a formal hearing before the appropriate state entity so that we may present our case along with all of the mitigating factors and options available to the relevant NC authorities.

Thank you for your assistance in this regard and we look forward to hearing back from you.

Sincerely,

Thomas S. Lampley

cc: Rep. Bob Steinburg
Mr. Braxton Davis

Coastal Management
ENVIRONMENTAL QUALITY

APPLICATION FOR

CAMA MINOR DEVELOPMENT PERMIT

In 1974, the North Carolina General Assembly passed the Coastal Area Management Act (CAMA) and set the stage for guiding development in fragile and productive areas that border the state's sounds and oceanfront. Along with requiring special care by those who build and develop, the General Assembly directed the Coastal Resources Commission (CRC) to implement clear regulations that minimize the burden on the applicant.

This application for a minor development permit under CAMA is part of the Commission's effort to meet the spirit and intent of the General Assembly. It has been designed to be straightforward and require no more time or effort than necessary from the applicant. Please go over this folder with the Local Permit Officer (LPO) for the locality in which you plan to build to be certain that you understand what information he or she needs before you apply.

Under CAMA regulations, the minor permit is to be issued within 25 days once a complete application is in hand. Often less time is needed if the project is simple. The process generally takes about 18 days. You can speed the approval process by making certain that your application is complete and signed, that your drawing meets the specifications given inside and that your application fee is attached.

Other permits are sometimes required for development in the coastal area. While these are not CAMA-related, we urge you to check with the Local Permit Officer to determine which of these you may need. A list is included on page two of this folder.

We appreciate your cooperation with the North Carolina Coastal Management Program and your willingness to build in a way that protects the resources of our beautiful and productive coast.

Coastal Resources Commission
Division of Coastal Management

APPLICATION: Langley, Thomas + Judith LOCALITY: Pasquotank County E. City Offices

PERMIT ISSUED USING STATIC LINE EXCEPTION?
YES ☐ NO ☐
N/A

Locality PERQUIMANS COUNTY/E. City, Office Permit Number 20180725

Ocean Hazard _____ Estuarine Shoreline _____ ORW Shoreline _____ Public Trust Shoreline ✓ Other _____

(For official use only)

GENERAL INFORMATION

LAND OWNER - MAILING ADDRESS

Name Thomas S. + Judith A. Lampley

Address 108 VIRGINIA CT

City Hertford State NC Zip 27944 Phone 252-232-8677

Email jlampley1227@gmail.com

AUTHORIZED AGENT

Name N/A

Address _____

City _____ State _____ Zip _____ Phone _____

Email _____

LOCATION OF PROJECT: (Address, street name and/or directions to site; name of the adjacent waterbody.)

108 VIRGINIA Ct., Hertford, NC 27944

Yeopim Creek

DESCRIPTION OF PROJECT: (List all proposed construction and land disturbance.) See attached.

SIZE OF LOT/PARCEL: _____ square feet .76 acres

PROPOSED USE: Residential ☒ (Single-family ☒ Multi-family ☐) Commercial/Industrial ☐ Other ☐

COMPLETE EITHER (1) OR (2) BELOW (***Contact your Local Permit Officer if you are not sure which AEC applies to your property***)**:**

(1) OCEAN HAZARD AECs: TOTAL FLOOR AREA OF PROPOSED STRUCTURE: _____ square feet (includes air conditioned living space, parking elevated above ground level, non-conditioned space elevated above ground level but excluding non-load-bearing attic space)

(2) COASTAL SHORELINE AECs: SIZE OF BUILDING FOOTPRINT AND OTHER IMPERVIOUS OR BUILT UPON SURFACES: 450 square feet (includes the area of the foundation of all buildings, driveways, covered decks, concrete or masonry patios, etc. that are within the applicable AEC. Attach your calculations with the project drawing.) permeable surface of pavers + sand

STATE STORMWATER MANAGEMENT PERMIT: Is the project located in an area subject to a State Stormwater Management Permit issued by the NC Division of Energy, Mineral and Land Resources (DEMLR)?
YES _____ NO ✓

If yes, list the total built upon area/impervious surface allowed for your lot or parcel: _____ square feet.

OTHER PERMITS MAY BE REQUIRED: The activity you are planning may require permits other than the CAMA minor development permit, including, but not limited to: Drinking Water Well, Septic Tank (or other sanitary waste treatment system), Building, Electrical, Plumbing, Heating and Air Conditioning, Insulation and Energy Conservation, FIA Certification, Sand Dune, Sediment Control, Subdivision Approval, Mobile Home Park Approval, Highway Connection, and others. Check with your Local Permit Officer for more information.

STATEMENT OF OWNERSHIP:

I, the undersigned, an applicant for a CAMA minor development permit, being either the owner of property in an AEC or a person authorized to act as an agent for purposes of applying for a CAMA minor development permit, certify that the person listed as landowner on this application has a significant interest in the real property described therein. This interest can be described as: (check one)

✓ an owner or record title, Title is vested in name of Thomas S. + Judith A. Lampley see Deed Book 333 page 641 in the Perquimans County Registry of Deeds.

____ an owner by virtue of inheritance. Applicant is an heir to the estate of _____ ; probate was in _____ County.

____ if other interest, such as written contract or lease, explain below or use a separate sheet & attach to this application.

NOTIFICATION OF ADJACENT RIPARIAN PROPERTY OWNERS:

I furthermore certify that the following persons are owners of properties adjoining this property. I affirm that I have given **ACTUAL NOTICE** to each of them concerning my intent to develop this property and to apply for a CAMA permit.

	(Name)	(Address)
(1)	William + Helen Wilcox	110 Virginia Ct, Hertford, NC 27944
(2)	Michael + Mary Anne Cassidy	106 Virginia Ct, Hertford, NC 27944
(3)		
(4)		

ACKNOWLEDGEMENTS:

I, the undersigned, acknowledge that the land owner is aware that the proposed development is planned for an area which may be susceptible to erosion and/or flooding. I acknowledge that the Local Permit Officer has explained to me the particular hazard problems associated with this lot. This explanation was accompanied by recommendations concerning stabilization and floodproofing techniques.

I furthermore certify that I am authorized to grant, and do in fact grant, permission to Division of Coastal Management staff, the Local Permit Officer and their agents to enter on the aforementioned lands in connection with evaluating information related to this permit application.

This the 24th day of July, 2018

Judith A. Lampley Thomas S. Lampley

Landowner or person authorized to act as his/her agent for purpose of filing a CAMA permit application

This application includes: *general information (this form), a site drawing as described on the back of this application, the ownership statement, the Ocean Hazard AEC Notice where necessary, a check for $100.00 made payable to the locality, and any information as may be provided orally by the applicant. The details of the application as described by these sources are incorporated without reference in any permit which may be issued. Deviation from these details will constitute a violation of any permit. Any person developing in an AEC without permit is subject to civil, criminal and administrative action.*

SITE DRAWING/APPLICATION CHECKLIST

Please make sure your site drawing includes the following information required for a CAMA minor development permit. The Local Permit Officer will help you, if requested.

PHYSICAL DIMENSIONS

- ✓ Label roads
- – Label highways right-of-ways
- ✓ Label local setback lines
- ✓ Label any and all structures and driveways currently existing on property
- ✓ Label adjacent waterbody

PHYSICAL CHARACTERISTICS

- N/A Draw and label normal high water line (contact LPO for assistance)
- N/A Draw location of on-site wastewater system

N/A If you will be working in the ocean hazard area:

- _____ Draw and label dune ridges (include spot elevations)
- _____ Draw and label toe of dunes
- _____ Identify and locate first line of stable vegetation (contact LPO for assistance)
- _____ Draw and label erosion setback line (contact LPO for assistance)
- _____ Draw and label topographical features (optional)

If you will be working in a coastal shoreline area:

- N/A Show the roof overhang as a dotted line around the structure
- ✓ Draw and label landward limit of AEC
- ✓ Draw and label all wetland lines (contact LPO for assistance)
- ✓ Draw and label the 30-foot buffer line

DEVELOPMENT PLANS

- ✓ Draw and label all proposed structures
- ✓ Draw and label areas that will be disturbed and/or landscaped
- N/A Note size of piling and depth to be placed in ground
- ✓ Draw and label all areas to be paved or graveled
- ✓ Show all areas to be disturbed
- ✓ Show landscaping

NOTE TO APPLICANT

Have you:

- completed all blanks and/or indicated if not applicable?
- notified and listed adjacent property owners?
- included your site drawing?
- signed and dated the application?
- enclosed the $100.00 fee?
- completed an AEC Hazard Notice, if necessary? (Must be signed by the property owner)

FOR STAFF USE

Site Notice Posted _____ Final Inspection _____ Fee Received $100 ck # 7434 7/24/18

Site Inspections

_____ _____

_____ _____

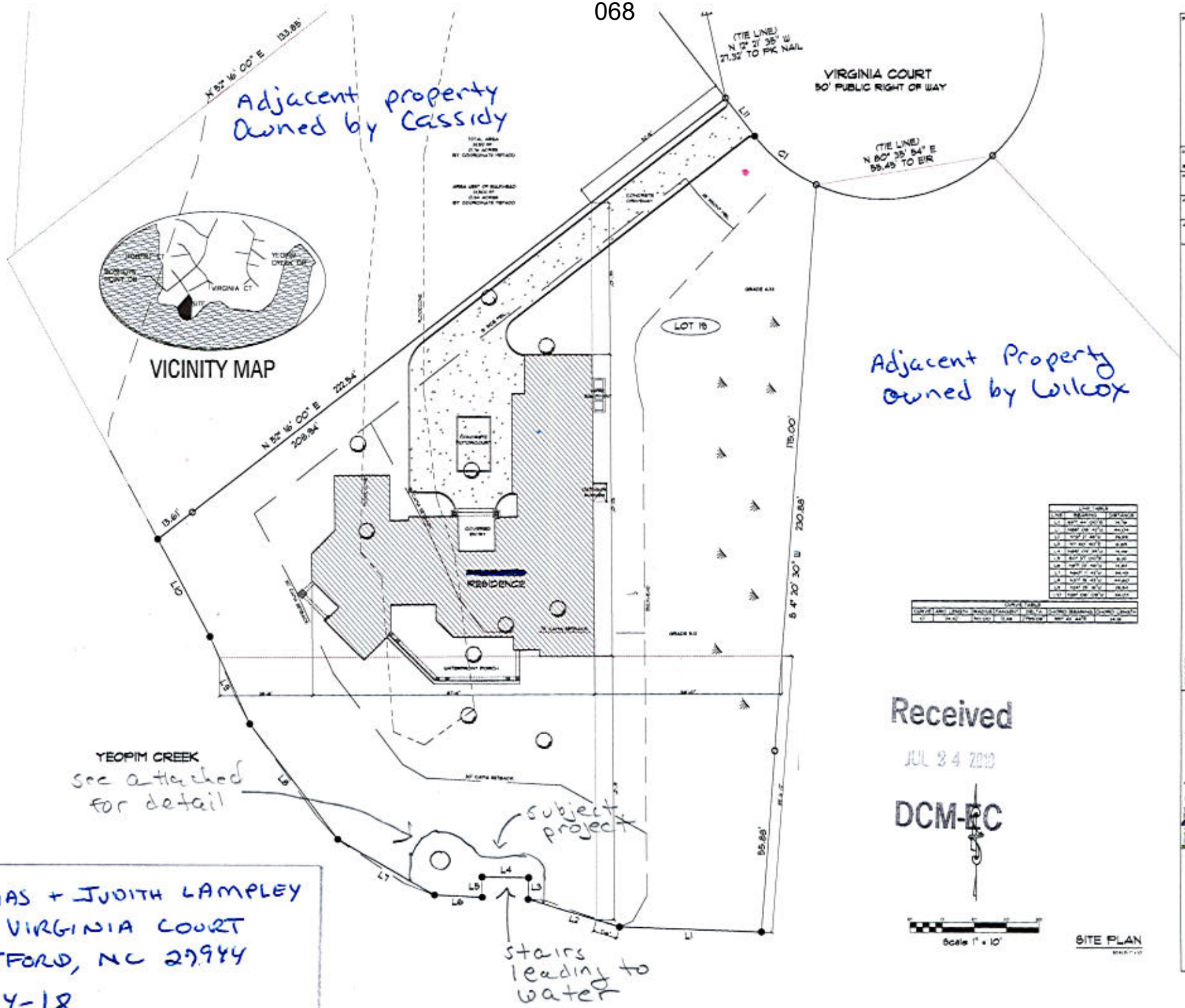
_____ _____

Date of Action: Issued _____ Exempted _____ Denied _____ Appeal Deadline (20 days from permit action) _____

Application for CAMA Minor Development Permit

DESCRIPTION OF PROJECT: Excavation of approximately 450 square feet of lawn (grass, dirt, and sand) for installation of paver patio and fire pit. Depth of excavation approximately 7" with back fill of 4" of permeable ABC aggregate gravel (Crush n' Run) for the base and 1" of porous bedding sand on top of the aggregate. Pavers, which are 2.3" thick and range in size from 3" x 6" to 6" x 9," are randomly placed directly in the sand with ¼" to ½" spacing between pavers. No other filler between pavers. Bulkhead edge of patio seated approximately 1-2" below lip of bulkhead cap to prevent run-off. Patio includes permeable stone fire pit (52" in diameter and 15" high) placed in middle of paver patio and set in same base as patio.

Thomas & Judith Lampley
108 Virginia Ct
Hertford, NC 27944
7-24-18



THE LAMPLEY RESIDENCE
LOT 19 VIRGINIA COURT
IN
BETHEL TOWNSHIP, NORTH CAROLINA

JULY 8, 2014
REVISED: SEPTEMBER 23, 2014

K. WILSON

201-266

K&H RESIDENTIAL DESIGN
PHONE 704-728-0509
WWW.KHRESIDENTIALDESIGN.COM

HomeBuilders MEMBER A B D

SHEET
02
16

Received
JUL 24 2018
DCM-EC

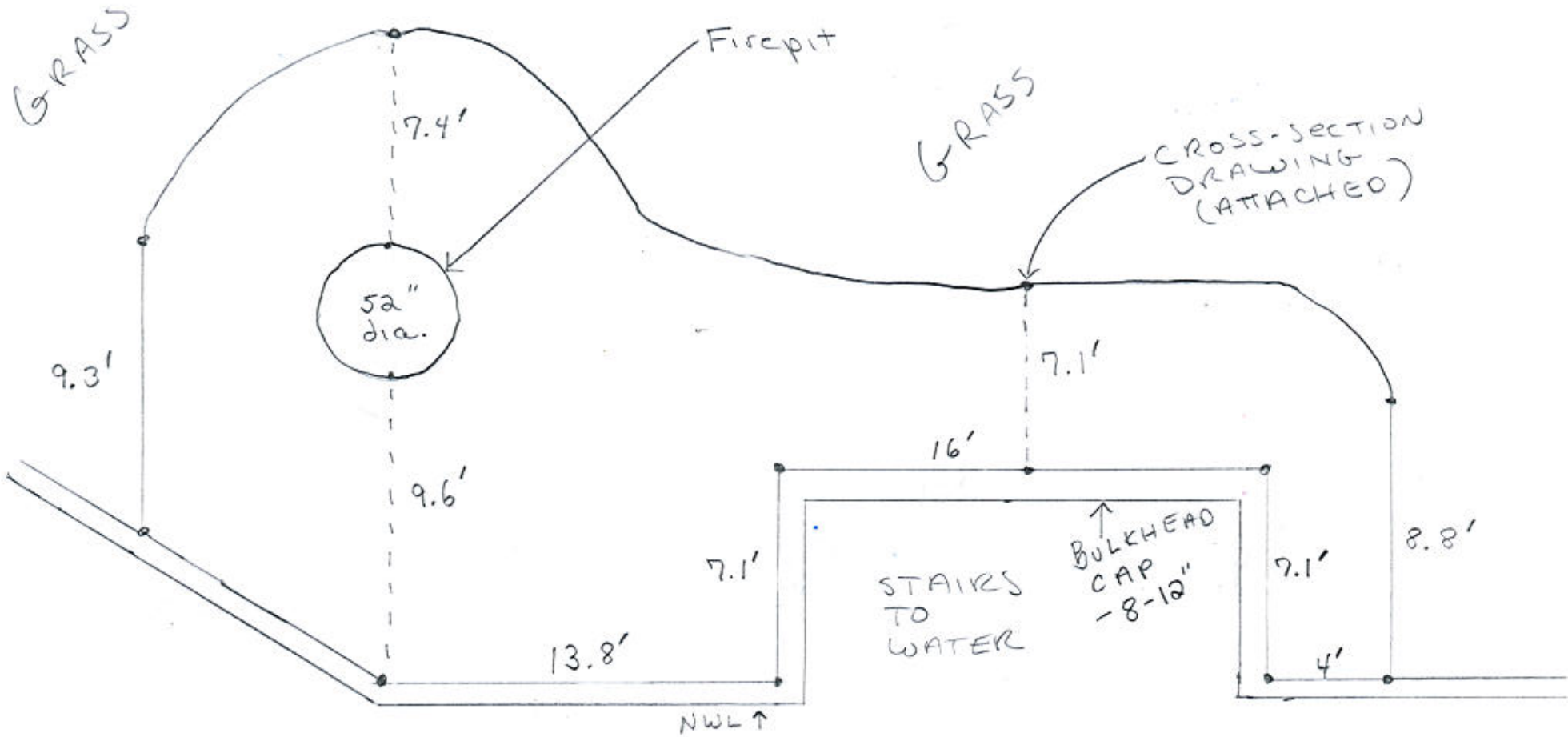
Scale 1" = 10'

SITE PLAN

THOMAS + JUDITH LAMPLEY
108 VIRGINIA COURT
HERTFORD, NC 27944

7-24-18

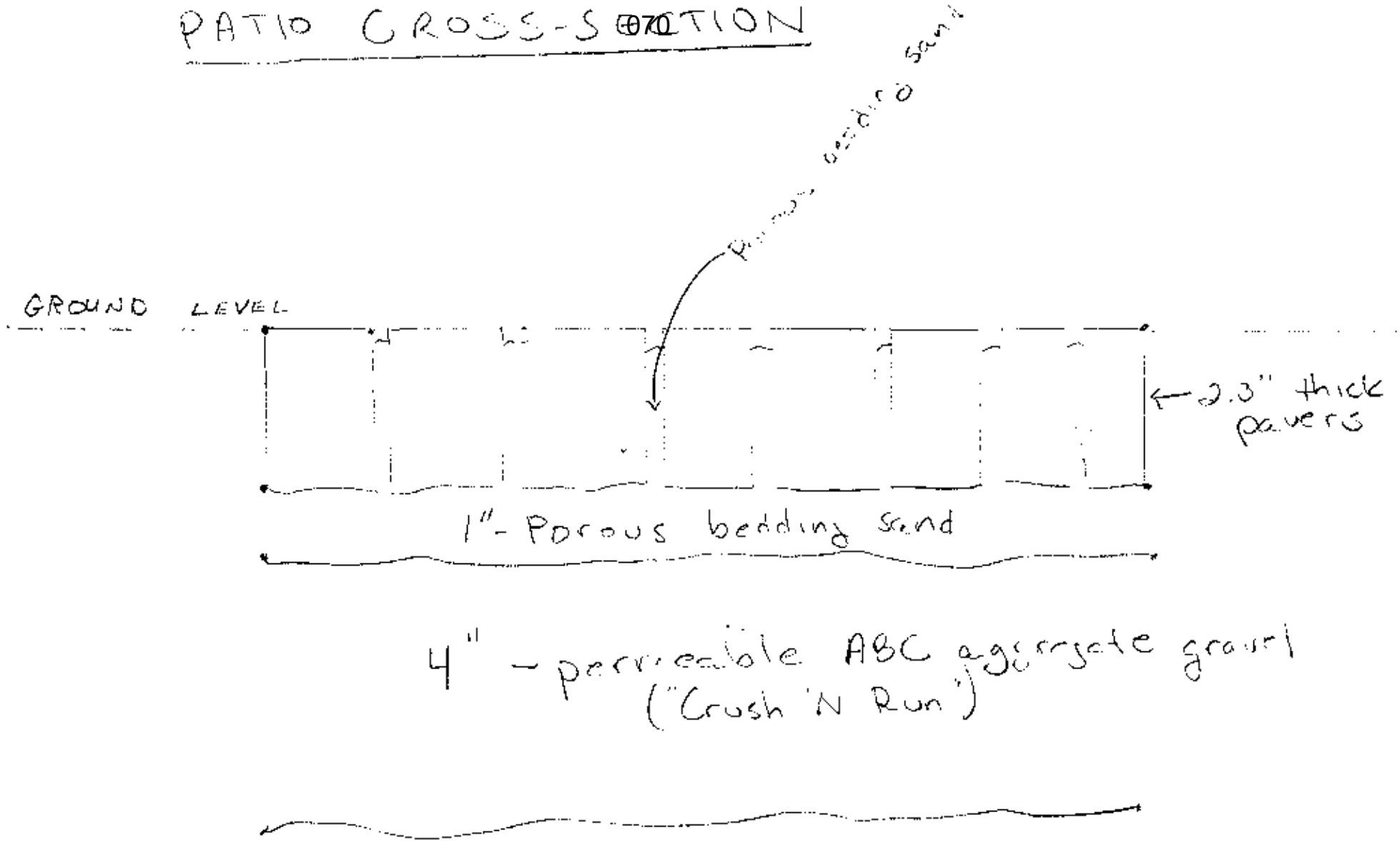
Paver Patio + Fire Pit



Thomas + Judith Lampley
108 VIRGINIA CT
HERTFORD, NC 27944
7-24-18

SCALE
1" = 5'

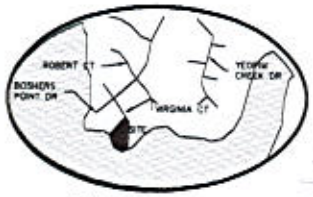
PATIO CROSS-SECTION



Thomas + Judith Lampley
108 VIRGINIA CT
HERTFORD, NC 27944
7-24-18

Received

DCM-EC



VICINITY MAP

YEOPIM CREEK

LINE TABLE		
LINE	BEARING	DISTANCE
L11	S37° 44' 00"E	14.76
L1	N88° 08' 42"W	44.04
L2	N73° 21' 49"W	29.59
L6	N87° 23' 46"W	14.84
L10	N28° 06' 08"W	34.03

CURVE TABLE						
CURVE	ARC LENGTH	RADIUS	TANGENT	DELTA	CHORD BEARING	CHORD LENGTH
C1	24.42'	50.00'	12.46	27°58'08"	S51° 43' 44"E	24.18'

NOTE:
BEING LOT 19 OF PHASE 3 OF SECTION EE, "BOSHER'S POINT", OF ALBEMARLE PLANTATION SUBDIVISION AS RECORDED IN P.C. 2, SLD. 108, MAP 8.

SUBJECT PARCEL IS FOUND IN FLOOD ZONES AS SHOWN, SCALED FROM FIRM PANEL 3270786600J, DATED OCTOBER 5, 2004.

GRADES SHOWN APPROXIMATE

I, EDWARD T. HYMAN, JR. CERTIFY THAT THIS PLAT WAS DRAWN FROM AN ACTUAL FIELD LAND SURVEY MADE UNDER MY SUPERVISION; THAT THE DEED DESCRIPTION FOR SAID PROPERTY IS RECORDED IN D.B. 333, P. 641; THAT THE ERROR OF CLOSURE IS 1:10,000+ ; THAT ALL AREA CALCULATIONS ARE BY D.M.D; THAT THIS MAP WAS PREPARED IN ACCORDANCE WITH GS 47-30; WITNESS MY ORIGINAL SIGNATURE, REG. NUMBER, AND SEAL THIS 17 DAY OF MARCH, 2010.

NORTH CAROLINA PROFESSIONAL SEAL L-2690 LAND SURVEYOR EDWARD T. HYMAN, JR.

EDWARD T. HYMAN, JR.
P.L.S. L-2690

TOTAL AREA 33,912 SF 0.78 ACRES BY COORDINATE METHOD

AREA WEST OF BULKHEAD 23,302 SF 0.54 ACRES BY COORDINATE METHOD

VIRGINIA COURT (50' R/W)

LEGEND
EXISTING IRON PIN
CALCULATED CORNER
PROPERTY LINE
R/W LINE
PROPERTY EXTENSION
EASEMENT SETBACK
EASEMENT CAMA
BULKHEAD
FLOODZONE

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

Received
JUL 2 4 2010
DCM-EC

HYMAN ROBEY
SOLUTIONS FROM THE GROUND UP
150 US Hwy 158 E.
PO Box 339
Camden, NC 27921
(252) 338-2913
(252) 338-5552 fax
www.hymanrobey.com
License C-0598

SURVEY FOR THOMAS S. & JUDITH A. LAMPLEY

BETHEL TOWNSHIP
PERQUIMANS COUNTY
NORTH CAROLINA

KEY PLAN:

Project #: 100057
Drawing #: 100057
Drawn: TWR
Checked: ETH
Approved: ETH
Date: 03/17/10
Sheet #: 01/01
Scale: 1:20

REVISIONS:
NUM. DATE DESCRIPTION

SHEET TITLE:
SURVEY

SHEET NUMBER:
1

NC Division of Coastal Management
Cashier's Official Receipt

6651 (A) B C D

Date: 7/24 2018

Received From: Judith Langley

$ 100.00

Permit No.: Minor Permit

Check No.: 7434

Applicant's Name: Judith Langley

County: Perquimans

Project Address: 108 Virginia Ct.

Please retain receipt for your records as proof of payment for permit issued.

Signature of Agent or Applicant: _____ Date: _____

Signature of Field Representative: Ella Godfrey for Frank Jennings Date: 7/24/18

CERTIFIED MAIL, RETURN RECEIPT REQUESTED or HAND DELIVERED

7/24/18
Date

Mike + MARY ANNE Cassidy
Name of Adjacent Riparian Property Owner

106 VIRGINIA CT
Address

HERTFORD, NC 27944
City, State Zip

Received
JUL 24 2018
DCM-EC

To Whom It May Concern:

This correspondence is to notify you as a riparian property owner that I am applying for a CAMA Minor permit to install a pervious paver patio + fire pit on my property at 108 Virginia Ct, Hertford, NC 27944, in Perquimans County, which is adjacent to your property. A copy of the application and project drawing is attached/enclosed for your review.

If you have no objections to the proposed activity, please mark the appropriate statement below and return to me as soon as possible. If no comments are received within 10 days of receipt of this notice, it will be considered that you have no comments or objections regarding this project. If you have any questions about the project, please do not hesitate to contact me at my address/number listed below.

If you have objections or concerns about the project, please mark the appropriate statement below and send your correspondence to the NC Division of Coastal Management (DCM) at 401 S. Griffin St., Ste 300, Elizabeth City, NC 27909. The staff at DCM can be reached at 252-264-3901

Sincerely,

Judith A. Lampley
Property Owner's Name

252-232-8677
Telephone Number

Judith A. Lampley

Address City State Zip

✓ I have no objection to the project described in this correspondence.
____ I have objection(s) to the project described in this correspondence.

Mary A Cassidy
Adjacent Riparian Signature

7/23/18
Date

MARY A. CASSIDY
Print or Type Name

252 426 1819
Telephone Number

Address City State Zip

CERTIFIED MAIL, RETURN RECEIPT REQUESTED or HAND DELIVERED

7/24/18
Date

William + Helen Wilcox
Name of Adjacent Riparian Property Owner
110 VIRGINIA CT
Address
Hertford, NC 27944
City, State Zip

To Whom It May Concern:

This correspondence is to notify you as a riparian property owner that I am applying for a CAMA Minor permit to install a permeable paver patio and fire pit on my property at 108 VIRGINIA CT, HERTFORD, NC 27944, in Perquimans County, which is adjacent to your property. A copy of the application and project drawing is attached/enclosed for your review.

If you have no objections to the proposed activity, please mark the appropriate statement below and return to me as soon as possible. If no comments are received within 10 days of receipt of this notice, it will be considered that you have no comments or objections regarding this project. If you have any questions about the project, please do not hesitate to contact me at my address/number listed below.

If you have objections or concerns about the project, please mark the appropriate statement below and send your correspondence to the NC Division of Coastal Management (DCM) at 401 S. Griffin St., Ste 300, Elizabeth City, NC 27909. The staff at DCM can be reached at 252-264-3901

Sincerely,

Judith A. Lampley
Property Owner's Name

252-232-8677
Telephone Number

Judith A. Lampley

Address City State Zip

X I have no objection to the project described in this correspondence.
____ I have objection(s) to the project described in this correspondence.

Helen H Wilcox
Adjacent Riparian Signature

7/23/18
Date

Helen H Wilcox
Print or Type Name

252-426-3356
Telephone Number

Address City State Zip

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
BRAXTON C. DAVIS
Director

NORTH CAROLINA
Environmental Quality

July 30, 2018

CERTIFIED MAIL - #7017 2680 0000 7708 8911 & Electronically
RETURN RECEIPT REQUESTED

Thomas S. & Judith A. Lampley
108 Virginia Court
Hertford, NC 27944

RE: DENIAL OF CAMA MINOR DEVELOPMENT PERMIT
APPLICATION NUMBER- 20180725
PROJECT ADDRESS- 108 Virginia Court, Hertford, Yeopim Creek

Dear Mr. & Mrs. Lampley:

After reviewing your application in conjunction with the development standards required by the Coastal Area Management Act (CAMA) and the Perquimans County Land Use Plan, it is my determination that no CAMA permit may be granted for the project which you have proposed.

This decision is based on my findings that:

(1) Your request violates NCGS 113A-120(a)(8) which requires that all applications be denied which are inconsistent with CAMA guidelines and Local Land Use Plans. You have applied for approval of an approximately 450 sq. ft. brick paver patio and fire pit constructed adjacent to Yeopim Creek and within the Public Trust Shoreline Area of Environmental Concern which is inconsistent with 15 NCAC 7H.0209 (d)(10), which states in relevant part:

> "(10) Within the Coastal Shoreline category (estuarine and public trust shoreline AECs), new development shall be located a distance of 30 feet landward of the normal water level or normal high water level, with the exception of the following:"

Further, DCM finds that the brick paver patio and fire pit do not fall within the exception at 15A NCAC 7H.0209(d)(10)(G), which allows

> "(G) Grading, excavation and landscaping with no wetland fill except when required by a permitted shoreline stabilization project. Projects shall not increase stormwater runoff to adjacent estuarine and public trust waters."

(2) Your request violates 15A NCAC 7J.0204(e), which states:

> "Any violation occurring at a proposed project site for which an application is being reviewed shall be processed according to the procedures in 15A NCAC 7J.0408 – 0410 (DCM's enforcement process). If the violation substantially altered the proposed project site, and restoration is deemed necessary, the applicant shall be notified that processing of the application will be suspended pending compliance with the notice of required restoration. Satisfactory restoration of any unauthorized development that has substantially altered a project site is deemed necessary to allow a complete review of the application and an accurate assessment of the project's potential impacts. The applicant shall be notified that permit processing has resumed, and that a new processing deadline has been established once the required restoration has been deemed satisfactory by the Division of Coastal Management or Local Permit Officer."

Notice of Violation #17-15A was issued to you, from our office, on September 25, 2017 for the unauthorized construction of this project.

(3) Your request also violates NCGS 113A-120(a)(8), which requires that all applications be denied which are inconsistent with the Perquimans County Land Use Plan, specifically those portions which support the CAMA permitting process and standards.

Should you wish to appeal my decision to the Office of Administrative Hearings (OAH) or request a variance from the Coastal Resources Commission, please contact me so I can provide you with the proper forms and any other information you may require. The Division of Coastal Management central office in Morehead City must receive OAH appeal notices within twenty (20) days of the date of this letter in order to be considered. The deadline for submitting a petition for a variance from the CRC at their September meeting is August 8.

Respectfully yours,

Frank Jennings

Frank Jennings, District Manager
Northeastern District
Division of Coastal Management

cc: Braxton Davis, Director DCM, Morehead City
Christine Goebel, Assistant General Counsel, NCDEQ
Charles Evans, Esq.

KELLOGG AND EVANS, P.A.
ATTORNEYS AT LAW

CHARLES D. EVANS

MARTIN KELLOGG, JR.
1908-2001

P.O. BOX 189
MANTEO, NC 27954

DELIVERY ADDRESS:
201 ANANIAS DARE STREET
MANTEO, N.C. 27954

TELEPHONE: (252) 473-2171
FACSIMILE: (252) 473-1214

EMAIL ADDRESS:
charlese@kelloggandevans.com
becky@kelloggandevans.com

August 8, 2018

Mike and Mary Anne Cassidy
106 Virginia Court
Hertford, NC 27944

Re: Lampley Variance Petition for Project Approval

Dear Mr. and Mrs. Cassidy:

I am writing to you today on behalf of my clients, Thomas and Judith Lampley, the record owner of the property located at 108 Virginia Court, Hertford, North Carolina 27944; the same subject property being that which is located adjacent to the property you own.

As you may know, the Lampleys are requesting a CAMA Variance in order to gain approval of their paver brick patio and fire pit installed without permit.

If you have any questions or comments regarding this letter, please do not hesitate to contact attorney Charles D. Evans or a member of the Division of Coastal Management with comments or concerns (DCM, 401 S. Griffin St., Suite 300, Elizabeth City, 27909).

Best regards,

Charles D. Evans

Charles D. Evans

CDE/rae
CC: Thomas and Judith Lampley (transmitted via email only)

SENDER: COMPLETE THIS SECTION

- Complete items 1 item 4 if Restricte
- Print your name a so that we can re
- Attach this card t or on the front if s

1. Article Addressed to

Mike + M
106 Virgi
Hertford

2. Article Number (Transfer from servic

PS Form 3811, July

078

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

OFFICIAL USE

Certified Mail Fee	$ 3.45
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ 2.75
☐ Return Receipt (electronic)	$
☐ Certified Mail Restricted Delivery	$
☐ Adult Signature Required	$
☐ Adult Signature Restricted Delivery	$
Postage	$ .47
Total Postage and Fees	$ 6.67

Postmark Here
MANTEO NC 27954-9998
AUG - 8 2018
USPS

Sent To: Mike + Mary Ann Cassidy
Street and Apt. No., or PO Box No.: 106 Virginia Ct.
City, State, ZIP+4®: Hertford NC 27944

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1370 0002 2519 4389

☐ Agent
☐ Addressee
Date of Delivery
☐ Yes
☒ No
ress™
or Merchandise
ry
☐ Yes

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

OFFICIAL USE

Certified Mail Fee $ 3.45
Extra Services & Fees (check box, add fee as appropriate)
Return Receipt (hardcopy) $ 2.75
Return Receipt (electronic) $
Certified Mail Restricted Delivery $
Adult Signature Required $
Adult Signature Restricted Delivery $
Postage $
Total Postage and Fees $

Postmark Here

Sent To: Mike + Mary Ann Cassidy
Street and Apt. No., or PO Box No.: 106 Virginia Ct.
City, State, ZIP+4®: Hertford NC 27944

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7016 1370 0002 2519 4389

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mike + MaryAnn Cassidy
106 Virginia Ct.
Hertford, NC 27944

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Mary A Cassidy ☐ Agent ☒ Addressee

B. Received by (Printed Name) MARY A. CASSIDY C. Date of Delivery 8/13/18

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail® ☐ Priority Mail Express™
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7016 1370 0002 2519 4389

PS Form 3811, July 2013 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

William + Helen Wilcox
110 Virginia Ct.
Hertford, NC 27944

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X William Wilcox ☐ Agent ☐ Addressee

B. Received by (Printed Name) WILLIAM WILCOX C. Date of Delivery

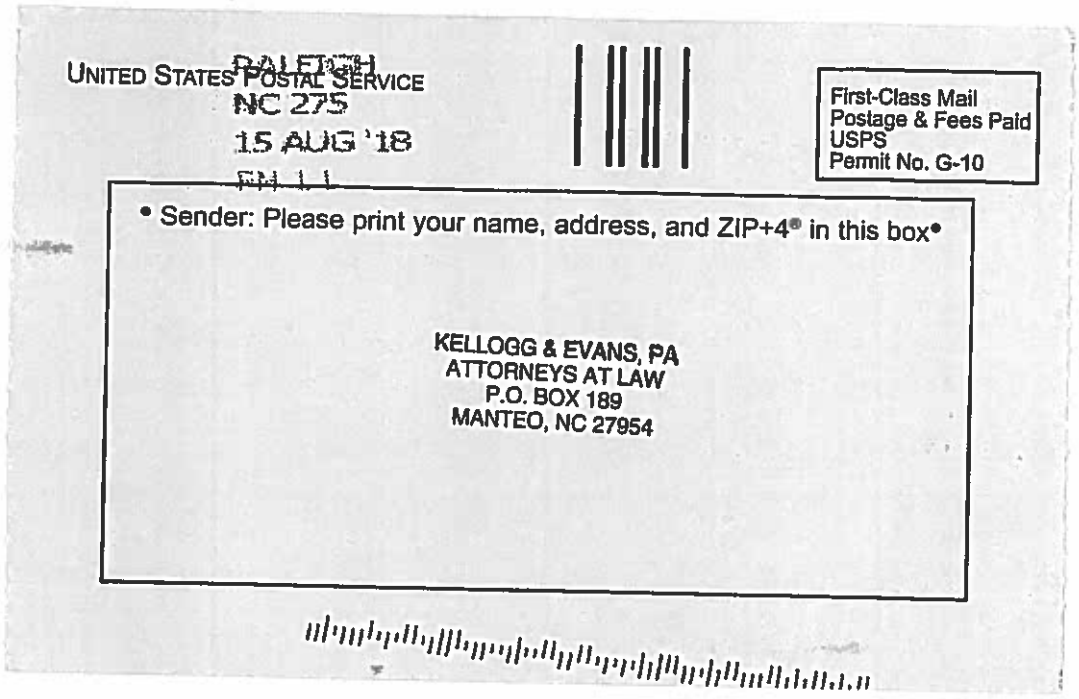
D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

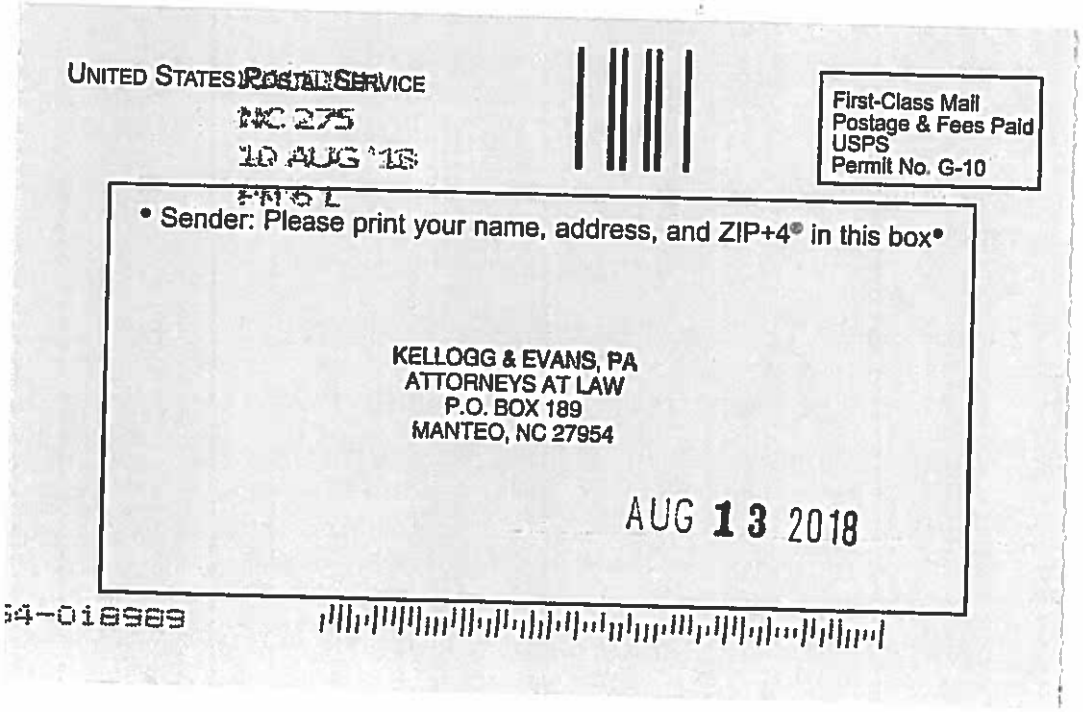
3. Service Type
☒ Certified Mail® ☐ Priority Mail Express™
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7016 1370 0002 2519 4372

PS Form 3811, July 2013 Domestic Return Receipt


UNITED STATES POSTAL SERVICE
RALEIGH
NC 275
15 AUG '18
First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10
• Sender: Please print your name, address, and ZIP+4® in this box•
KELLOGG & EVANS, PA
ATTORNEYS AT LAW
P.O. BOX 189
MANTEO, NC 27954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MANTEO, NC 27954
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KELLOGG AND EVANS, P.A.

ATTORNEYS AT LAW

P.O. BOX 189
MANTEO, NC 27954

CHARLES D. EVANS

MARTIN KELLOGG, JR.
1908-2001

DELIVERY ADDRESS:
201 ANANIAS DARE STREET
MANTEO, N.C. 27954

TELEPHONE: (252) 473-2171
FACSIMILE: (252) 473-1214

EMAIL ADDRESS:
charlese@kelloggandevans.com
becky@kelloggandevans.com

August 8, 2018

William and Helen Wilcox
110 Virginia Court
Hertford, NC 27944

Re: Lampley Variance Petition for Project Approval

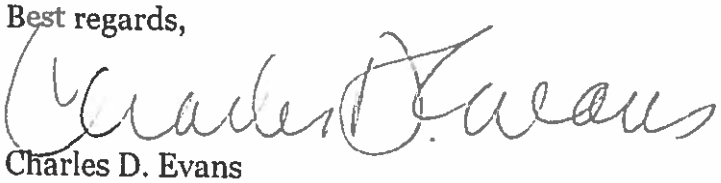
Dear Mr. and Mrs. Wilcox:

I am writing to you today on behalf of my clients, Thomas and Judith Lampley, the record owner of the property located at 108 Virginia Court, Hertford, North Carolina 27944; the same subject property being that which is located adjacent to the property you own.

As you may know, the Lampleys are requesting a CAMA Variance in order to gain approval of their paver brick patio and fire pit installed without permit.

If you have any questions or comments regarding this letter, please do not hesitate to contact attorney Charles D. Evans or a member of the Division of Coastal Management with comments or concerns (DCM, 401 S. Griffin St., Suite 300, Elizabeth City, 27909).

Best regards,



Charles D. Evans

CDE/rae
CC: Thomas and Judith Lampley (transmitted via email only)

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- Complete items 1, 2, and 3. Also co
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- Attach this card to the back of the r
  or on the front if space permits.

1. Article Addressed to:

William + Helen Wilco
110 Virginia Ct.
Hertford, NC 279

2. Article Number
(Transfer from service label)

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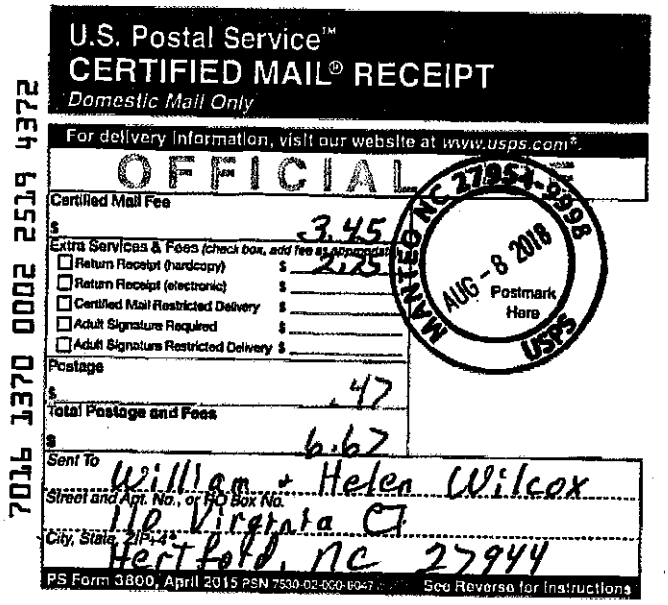
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AFFIDAVIT

STATE OF NORTH CAROLINA:

COUNTY OF PERQUIMANS:

The undersigned being duly sworn, hereby deposes and says:

1. I purchased the property specifically because of its location and ability to enjoy this particular amenity – a patio and fire pit from which to enjoy the water proximity and view.
2. Since purchasing the property, I have envisioned a patio and fire pit at the exact location currently at issue for the purpose of enjoying the view.
3. At no time prior to installation of the fire pit and patio was I aware that a permit of any kind was needed in order to install and maintain same.

I declare that to the best of my knowledge and belief, the information herein is true, correct, and complete.

Executed this 21st day of August 2018.

Judith A. Lampley

Judith A. Lampley

NOTARY PUBLIC ACKNOWLEDGMENT

STATE OF NORTH CAROLINA, COUNTY OF PERQUIMANS, ss:

Subscribed and sworn to before me on the 21st day of August, 2018, by JUDITH A. LAMPLEY.

Notary Public for North Carolina

My Commission Expires: 4/2/21

SHAYNE C. BYRUM NOTARY PUBLIC CHOWAN COUNTY, NC

AFFIDAVIT

STATE OF NORTH CAROLINA:

COUNTY OF PERQUIMANS:

The undersigned being duly sworn, hereby deposes and says:

1. I purchased the property specifically because of its location and ability to enjoy this particular amenity – a patio and fire pit from which to enjoy the water proximity and view.
2. Since purchasing the property, I have envisioned a patio and fire pit at the exact location currently at issue for the purpose of enjoying the view.
3. At no time prior to installation of the fire pit and patio was I aware that a permit of any kind was needed in order to install and maintain same.

I declare that to the best of my knowledge and belief, the information herein is true, correct, and complete.

Executed this 21st day of August 2018.

Thomas S. Lampley

NOTARY PUBLIC ACKNOWLEDGMENT

STATE OF VIRGINIA:

Subscribed and sworn to before me on the 21st day of August, 2018, by THOMAS S. LAMPLEY.

Notary Public for Virginia

My Commission Expires: 7/31/2022

VANESSA Y THOMPKINS
Notary Public
Commonwealth of Virginia
Registration No. 322984
My Commission Expires Jul 31, 2022

AFFIDAVIT

STATE OF NORTH CAROLINA:

COUNTY OF CHOWAN:

The undersigned being duly sworn, hereby deposes and says:

1) I am a North Carolina Licensed Landscape Contractor (License #0739).

2) My company, Lazy Weekends Landscaping and Yard Care, located in Edenton, NC, installed the patio and fire pit in question at 108 Virginia Court, Hertford, NC.

3) The patio and fire pit were constructed by excavating approximately 7 inches down and lining the bed with landscaping fabric. The bed was then filled with 4 inches of ABC aggregate (also called Crush 'n Run) for the base and then 1 inch of bedding sand and the pavers on top of that. The pavers, which are 2.3 inches thick, are laid in a random pattern. (See Attachment A.)

4) As a result of the materials used and the method of installation, the patio and fire pit are permeable and run off, if any, is reduced.

5) Should the fire pit and patio be moved back 30' from the water, they would be installed within a couple of feet of several full-size oak trees. Such installation could disturb the roots of the trees possibly causing irreversible damage to the trees. (See Attachments B and C.)

6) Should the fire pit and patio be removed and replaced with lawn, the fertilizer and herbicides used on the lawn would be more detrimental to the environment than the current patio and fire pit.

I declare that to the best of my knowledge and belief, the information herein is true, correct, and complete.

Executed this 27th day of August 2018.

Sean Tunney

NOTARY PUBLIC ACKNOWLEDGMENT

STATE OF NORTH CAROLINA, COUNTY OF PERQUIMANS, ss:

Subscribed and sworn to before me on the 27th day of August, 2018, by SEAN TUNNEY.

Logan Overton

Notary Public for North Carolina

My Commission Expires: 12/31/22

LOGAN OVERTON
Notary Public
State of North Carolina
Perquimans County
My Commission Expires 12/31/2022

CONSTRUCTION ENGINEERING SERVICES, INC.

P.O. BOX 665
MANTEO, NC 27954
PHONE: (252) 473-9733

OFFICE: 33 HAMMOCK DRIVE
MANTEO, NC 27954
FAX: (252) 473-4191

October 9, 2018

Thomas and Judith Lampley
108 Virginia Court
Hertford, NC 27944

Reference: Patio and fire pit at 108 Virginia Court, Hertford, NC

Thomas and Judith:

On October 3, 2018, we inspected the installation of the concrete paver patio and fire pit at the above referenced residence. The patio and fire pit are located along the southwest side of the property just behind and abutting the existing timber bulkhead along the Yeopim Creek shoreline. The patio runs for approximately 42 LF along the bulkhead line and extends approximately 21 LF back toward the house at its widest point. The 52 inch diameter fire pit is located near the center of this widest area. Both the patio and the fire pit have an underlying layer of pervious material that was placed during the patio construction. The pavers were laid over a 4" thick layer of crushed stone which was topped with a 1 inch thick layer of porous bearing sand. The 2.3 inch thick pavers were then set with an 1/8 inch gap between each paver. These 1/8 inch gaps were also filled with the porous bearing sand. The finished grade of the pavers is slightly below that of the bulkhead cap so that if there was any runoff it would be retained on the patio and not flow into the creek water. However, the gaps between the pavers provide sufficient pervious surface so that there is no ponding or runoff on the patio surface. Additionally, the 4 inch crushed stone base along with the 1 inch bedding sand layer provides a detention area to allow for temporary storage of any accumulated stormwater until it percolates into the ground.

The fire pit has a small gas burner just below the top edge and the remainder of the 52 inch diameter pit is filled with glass pebbles over porous bearing sand and is free draining into the crushed stone base layer.

In conclusion, the way this patio and fire pit have been designed and constructed there will be no stormwater runoff into Yeopim Creek. The stormwater will be contained on and under the patio surface as it filters into the ground. If you have any questions or if you need any additional information please contact us.

Very truly yours,
CONSTRUCTION ENGINEERING SERVICES, INC.

Hal Goodman

Hal Goodman, P.E., SECB
President

NORTH CAROLINA PROFESSIONAL SEAL 20446 ENGINEER HAROLD JAY GOODMAN

Harold Jay Goodman 10-9-18

C-5. Permeable Pavement

Design Objective

Permeable pavement captures stormwater through voids in the pavement surface and filters water through an underlying aggregate reservoir. The reservoir typically allows the water to infiltrate into the soil subgrade. The reservoir can also be designed to detain and release the water to a surface conveyance system if the underlying soil is not suitable for infiltration.

The purpose of permeable pavement is to control the quality and quantity of stormwater runoff while accommodating pedestrians, parking and possibly traffic (if adequate structural support is provided). Permeable pavement is especially useful in existing urban development where the need to expand parking areas is hindered by lack of space needed for stormwater management. Permeable pavement is also useful in new developments with limited space where land costs are high, and when nutrient reductions or green building certification program are desired.

Design Volume

The design volume for an infiltrating pavement system is equivalent to the volume that is stored in the aggregate and infiltrated into the ground within a 72-hour period. The design volume for a detention pavement system is the volume that is release slowly from the aggregate for a two to five-day period.

Important Links

Rule 15A NCAC 2H .1055. MDC for Permeable Pavement

SCM Credit Document, C-5. Credit for Permeable Pavement

Table of Contents

Built-upon Area Credit for Infiltrating Pavement

Infiltrating permeable pavement that is designed per the MDC may be considered as 100% pervious for the following purposes:

1. On new projects: As a tool to keep a project below the BUA threshold for high density or to reduce the volume of the SCM that is treating the balance of the project.

2. On existing projects: As a tool to add a driveway, parking area, road, patio or other paved area while still adhering to a BUA restriction imposed by development covenants, SCM design or permit conditions.

The BUA credit for infiltrating permeable pavement cannot be used to create an exemption from the permit requirements in 15A NCAC 02H .1019(2)(c) [Coastal Stormwater Requirements], because the permeable pavement must be reviewed to determine whether it meets the MDC.

Figure 1. Permeable Pavement Example: Cross-Section (NCSU-BAE)

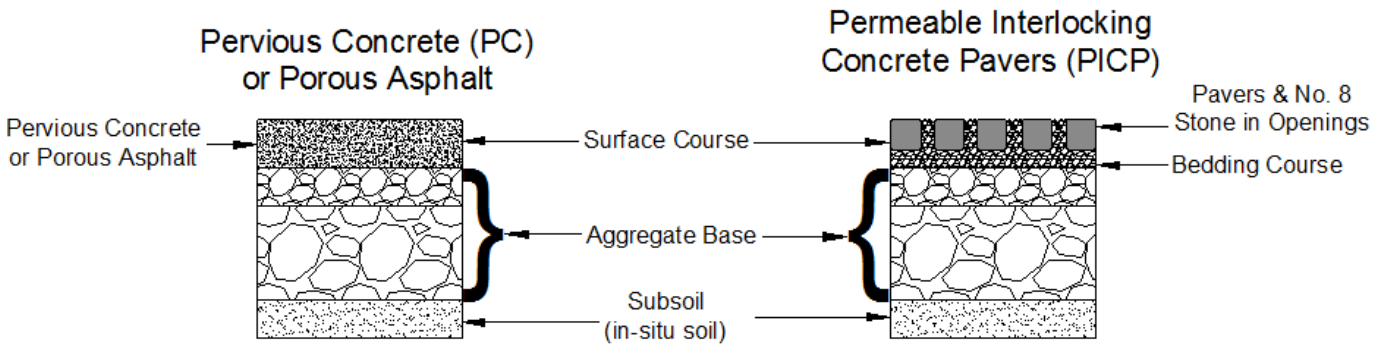
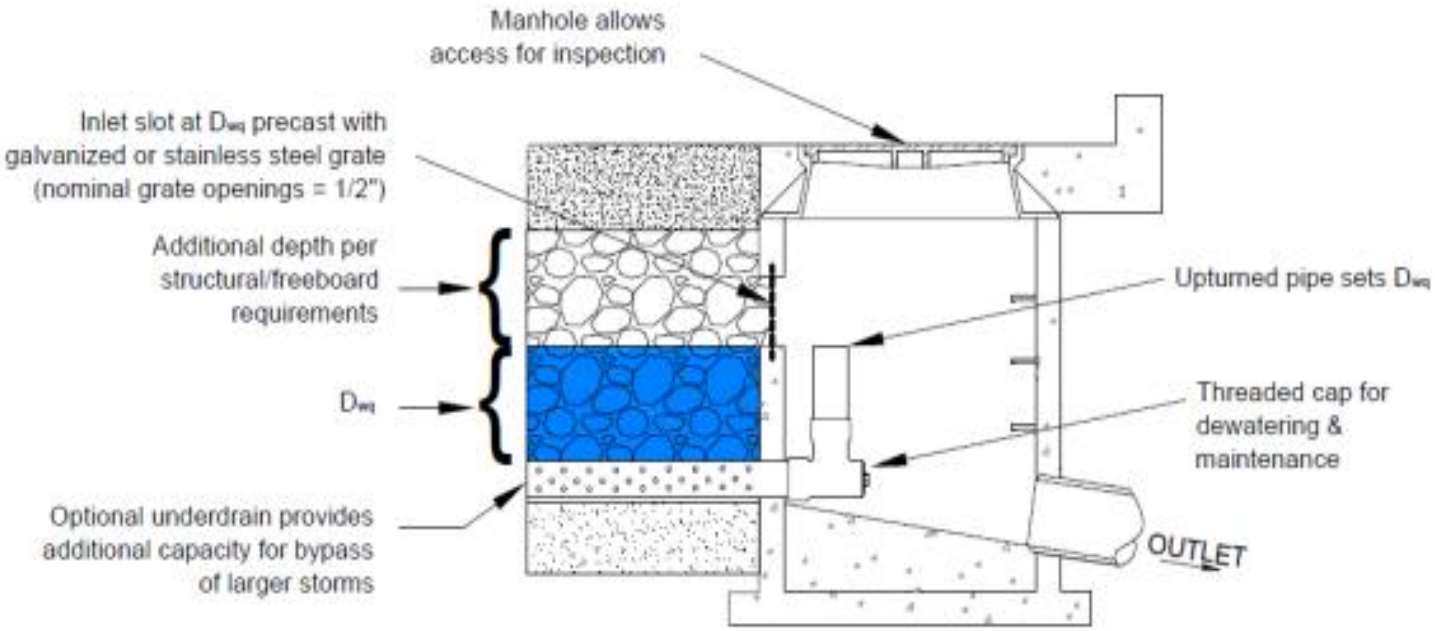


Figure 2. Permeable Pavement Example: Outlet for Infiltration System (NCSU-BAE)



Guidance on the MDC

PERMEABLE PAVEMENT MDC 1: SOIL INVESTIGATION
For infiltrating pavement systems, site-specific soil investigation shall be performed to establish the hydraulic properties and characteristics within the proposed footprint and at the proposed elevation of the permeable pavement system.

Guidance on soil testing is provided in Chapter A-2.

PERMEABLE PAVEMENT MDC 2: SHWT REQUIREMENTS
The minimum separation between the lowest point of the subgrade surface and the SHWT shall be:

(a) two feet for infiltrating pavement systems; however, the separation may be reduced to no less than one foot if the applicant provides a hydrogeologic evaluation that demonstrates that the water table will subside to its pre-storm elevation within five days or less; and
(b) one foot for detention pavement systems.

Guidance on soil testing and hydrogeologic evaluation is provided in Chapter A-2.

PERMEABLE PAVEMENT MDC 3: SITING
Permeable pavement shall not be installed in areas where toxic pollutants are stored or handled.

Permeable pavement shall not be used in areas where concentrations of oils and grease, heavy metals and toxic chemicals are likely to be significantly higher than in typical stormwater runoff. Installing permeable pavement in these areas increases the risk of these pollutants entering the groundwater. Examples of development types that often include stormwater hotspots are listed below. However, this is not a comprehensive list. Only the portion of the site where toxic pollutants are stored or handled is considered a hotspot. For example, the parking lot of an airport would not be a hotspot but the airplane hangar and maintenance areas are hotspots.

Table 1: Hot Spots Where Permeable Pavement may not be Appropriate

Fueling facilities	SIC code “heavy” industries	Commercial car washes
Fleet storage	Airport maintenance areas	Public works yards
Trucking & distribution centers	Wastewater treatment plants	Road maintenance areas
Vehicle maintenance areas	Racetracks	Scrap yards
Solid waste facilities	Railroads and bulk shipping	Landfills

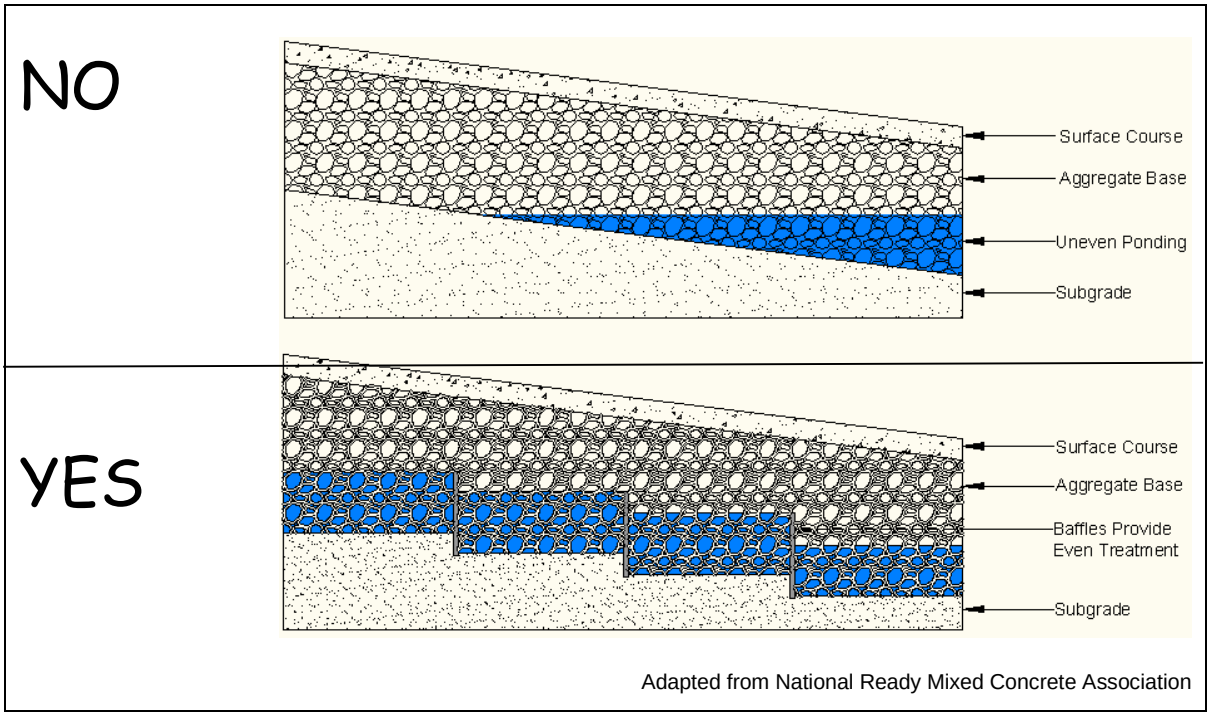
Care should be taken when implementing permeable pavement at redevelopment sites. Stormwater shall not be infiltrated into contaminated soils because this can cause dispersion of toxic substances to other sites and to groundwater. However, a permeable pavement system designed for detention may work on a contaminated site. If the site history includes land uses listed above, it shall be assumed that contaminated soils are present until detailed investigation determines otherwise. If contaminated soils are present or suspected, the DEQ recommends that the designer consult with an appropriately licensed NC professional.

PERMEABLE PAVEMENT MDC 4: SOIL SUBGRADE SLOPE
The soil subgrade surface shall have a slope of less than or equal to two percent.

Whether is the pavement is designed for infiltration or detention, it is crucial that the subgrade be almost flat, i.e., less than or equal to a 2% slope. Besides maximizing infiltration, a flat subgrade provides the most storage capacity within the aggregate base.

Terraces and baffles or graded berms can be used in the subgrade design to store stormwater at different elevations for treatment. See Figure 3 below for a schematic configuration of terraces and baffles in the subgrade. The plan drawing set shall include a separate subsurface (subgrade) grading plan, especially for sites with baffles, berms or terraces.

Figure 3. Terraces and Baffles under Permeable Pavement. (NCSU-BAE)



PERMEABLE PAVEMENT MDC 5: STONE BASE
Washed aggregate base materials shall be used.

In addition to supporting the pavement system, the aggregate base stores the design storm within its void spaces for infiltration or detention and release. The size of the aggregate base stone is selected by the designer based on the needs for structural strength and porosity. The aggregate shall be washed and have 2% or less passing the ASTM No. 200 sieve. If the aggregate is not washed, then the fines that are interspersed with it will eventually was to the top of the subgrade and possibly clog the in-situ soils, preventing infiltration. The aggregate supplier can likely provide the percentage of voids using ASTM C29 *Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate*. **The only way to be certain that the aggregate has been washed is to be present on the site when it is delivered.**

Equation 1 can be used to determine the depth of aggregate needed for the design volume. Please note that the bedding layer of aggregated in a PICP system may not be used to provide storage for the water quality storm.

Equation 1: Aggregate Depth for the Design Storm (D_{wq})

$$D_{wq} = \frac{P(1+R)}{n}$$

where:
- D_{wq} = Depth of aggregate needed to treat the water quality storm (inches)
- P = Rainfall depth for the water quality storm (inches)
- R = A_a/A_p, ratio of the additional BUA to permeable pavement area
- N = Percent voids, unitless decimal (from ASTM C29)

PERMEABLE PAVEMENT MDC 6: PAVEMENT SURFACE
The proposed pavement surface shall have a demonstrated infiltration rate of at least 50 inches per hour using a head less than or equal to 4 inches.

The pavement surface should be selected based on the desired appearance and the types of applied loads on the permeable pavement. Currently, the most widely used types of pavement courses applied in North Carolina are Permeable Interlocking Concrete Pavers (PICP), Pervious Concrete (PC) and Porous Asphalt (PA). Please note that PA and PICP are flexible pavement and rely on structural support from the aggregate base.

Designers may propose other types of pavement surface and base courses but shall demonstrate that the proposed design functions adequately hydraulically and structurally in the long term. See Table 2 below for a summary of the most commonly used pavement courses and some pros and cons of each.

Table 2: Permeable Pavement Types

Type of Pavement	DEQ Guidance
Permeable Interlocking Concrete Pavers (PICP) 	PICPs are a type of unit paving system that drains water through joints between the pavers filled with small, highly permeable aggregates. The pavers are placed on a thin aggregate bedding layer over a thicker choker course and base beneath. The choker course and aggregate base provide uniform support, water storage and drainage. **Pros:** Well suited for plazas, patios, small parking areas and stalls, parking lots and residential streets. PICP can be designed for a significant load of heavy vehicles and does not require curing time. As compared to PC and PA, PICP is easier and less costly to renovate if it becomes clogged. The Interlocking Concrete Pavement Institute offers a design guide, construction specifications, design software, and a Certified PICP Specialist Course for contractors. **Cons:** PICP often has the highest initial cost for materials and installation. Regular maintenance of PICP may be higher than PC and PA because of the need to refill the joints with aggregate after cleaning and the greater occurrence of weeds.
Pervious Concrete (PC) 	PC is produced by reducing the fines in a conventional concrete mix with other changes to create interconnected void spaces for drainage. Pervious concrete has a coarser appearance than standard concrete although mixtures can be designed to provide a denser, smoother surface profile than traditional pervious concrete mixtures. **Pros:** While not as strong as conventional concrete pavement, PC provides adequate structural support, making it a good choice for travel lanes or heavier vehicles in addition to parking areas and residential streets. The National Ready Mixed Concrete Association provides a contractor training and certification program. The American Concrete Institute publishes a construction specification and a report which provides guidance on structural, hydrological and hydraulic system and component design in addition to mix proportioning and maintenance. **Cons:** Mixing and installation must be done correctly or PC will not function properly. PC can be subject to surface raveling and deicing salt degradation if not designed and constructed properly. Restoring surface permeability after a significant loss of initial permeability may be difficult without removing and replacing the surface course for the affected area.

Porous Asphalt (PA)

PA is like conventional (impervious) asphalt except that less fine material is used in the mixture to provide for drainage, resulting in has a coarser appearance than conventional asphalt. A modified asphalt binder as specified by the Carolina Asphalt Pavement Association (CAPA) shall be used to ensure long term durability and permeability.

Pros: While not as strong as conventional asphalt pavement, PA offers sufficient structural strength for parking lots and streets. The National Asphalt Pavement Association (NAPA) provides a design, construction and maintenance guide for porous asphalt titled *Porous Asphalt Pavement for Stormwater Management*. CAPA provides a *Porous Asphalt Guide Specification* for the Carolinas. Training on PA for engineers and contractors is available through CAPA. For information regarding the use of PA and to obtain a list of qualified contractors, contact CAPA at: www.carolinaasphalt.org.

Cons: Mixing and installation must be done correctly or PA will not function properly. The owner, contractor and designer shall ensure that PA is not confused with standard asphalt. Asphalt sealants or overlays that eliminate surface permeability shall not be used. Restoring surface permeability after a significant loss of initial permeability may be difficult without removing and installing a portion of the surface course.

Concrete Grid Pavers (CGP)

CGPs are an "older cousin" to PICPs and have significantly larger openings filled with aggregates, sand, or topsoil and turf grass for infiltration. CGPs are intended for limited vehicular traffic such as overflow parking (e.g., intermittent stadium parking), emergency access fire lanes around buildings, and median crossovers. CGP is not recommended for regularly used parking areas and for roads intended for PICP or PC.

Pros: CGP is less expensive than PICP and CGP can provide a grassed surface. Design, construction and maintenance guidance is available from the Interlocking Concrete Pavement Institute.

Cons: CGP is intended for limited vehicular traffic and overloaded pavements often experience differential settlement and paving unit damage. CGP with grass requires mowing and may require watering, fertilizing and re-seeding.

Plastic Turf Reinforcing Grid (PTRG)

PTRG, also called geocells, consists of flexible plastic interlocking units that infiltrate water through large openings filled with aggregate or topsoil and turf grass. PTRG is well suited for emergency vehicle access over lawn areas or overflow parking. PTRG is not approved for regularly used vehicular areas such as parking lots or roadways where PICP or PC should be used.

Pros: Reduces expenses and maximizes lawn area.

Cons: PTRG has less structural strength than the other pavement course options, especially when used under saturated conditions. Like CGP with grass, it shall be mowed, sometimes fertilized and watered. Overuse can kill the turf grass or create ruts from displaced aggregates. Also, sediment from adjacent sources can damage the grass and accelerate clogging.

For PC and PA, it is crucial to specify the proper mix design. For PC, the mix design shall be in accordance with the latest version of ACI 522.1 *Specification for Pervious Concrete*. For PA, the mix design shall be in accordance with NAPA's *Porous Asphalt Pavements for Stormwater Management* and CAPA's *Porous Asphalt Guide Specification*. For PICP, PA and PC, the use of certified and qualified contractors in accordance with industry standard documents shall be required and noted on both project plans and specifications.

For all types of permeable pavement, follow manufacturer recommendations, product standards, and industry guidelines to help ensure lasting installations. Manufacturer requirements and industry standards shall be implemented in addition to (and not instead of) the design requirements in this manual. Designers who propose to use a pavement surface other than PICP, PC or PA shall demonstrate that the pavement will function adequately hydraulically and structurally in the long term.

PERMEABLE PAVEMENT MDC 7: RUNOFF FROM ADJACENT AREAS

Runoff to the permeable pavement from adjacent areas shall meet these requirements:

(a) The maximum ratio of additional built-upon area that may drain to permeable pavement is 1:1. Screened rooftop runoff shall not be subject to the 1:1 loading limitation.

(b) Runoff from adjacent pervious areas shall be prevented from reaching the permeable pavement except for incidental, unavoidable runoff from stable vegetated areas.

Whether designed for infiltration or detention, permeable pavement systems may be designed to treat additional BUA up to a 1:1 ratio (additional BUA to pavement area). For example, in the parking lot shown below, the design could include parking stalls with permeable pavement (shaded in light green) and the travel lanes (not shaded) with conventional pavement. The design of the subgrade, aggregate base and underdrain would be tailored to handle the additional stormwater runoff. Impervious areas may drain to the permeable pavement with proper design of the pavement system per this chapter. Examples of areas that may be easily diverted onto the permeable pavement include: travel lanes in parking lots, sidewalks, and roof drains.

Roof downspouts may be directed to the permeable pavement surface, but it is the designer's responsibility to ensure that downspouts are of a sufficient number and spacing to prevent nuisance flooding. The downspouts may also drain directly into the permeable pavement base. Downspout outlets or ground level impervious surfaces shall not drain more than 1,000 sf to a single point onto the permeable pavement. The area of additional BUA draining to the pavement shall not exceed the area of the pavement itself (in other words, a maximum 1:1 ratio of additional BUA to pavement area).

To avoid pavement clogging, pervious areas such as lawns and landscaping shall not drain to permeable pavement. Exceptions such as site restrictions on redevelopment projects will be reviewed on a case-by-case basis. The site plan shall show pervious areas graded to flow away from the pavement or include conveyances to route pervious surface runoff elsewhere.

PERMEABLE PAVEMENT MDC 8: DRAWDOWN TIME
Infiltrating permeable pavement systems shall be designed to dewater the design volume to the bottom of the subgrade surface within 72 hours. In-situ soils may be removed and replaced with infiltration media or infiltration media may be placed on top of in-situ soils if the applicant provides a soils report demonstrates that the modified soil profile allows for infiltration of the design volume within 72 hours.

Before determining drawdown time, the designer should first determine if the site is appropriate for infiltration. In areas where in-situ soils become unstable when saturated, have high shrink-swell tendencies or there is contamination of groundwater or soils, a detention system should be used.

For infiltrating pavement, the designer may use the soil test results to calculate the drawdown time for the depth of stormwater that will be conveyed to the pavement system using Equation 2 below.

Equation 2: Drawdown Time

$$T = \frac{P(1+R)}{24*SF*i}$$

where:

T	=	Drawdown time (days)
P	=	Depth of the design storm (inches)
R	=	A_a/A_p, the ratio of additional BUA to permeable pavement area
SF	=	Safety factor (0.2)
i	=	Measured in-situ soil infiltration rate (in/hr)

If the drawdown time exceeds three days, then the designer can reduce the amount of additional BUA (if any) that drains to the permeable pavement and see if this decreases ponding time to less than five days. Otherwise, the site will require a detention pavement system that detains the stormwater for two to five days. For any site where the stormwater is not predicted to infiltrate within 48 hours, the DEQ advises consulting a geotechnical engineer to ensure that structural pavement design issues are properly addressed.

PERMEABLE PAVEMENT MDC 9: OBSERVATION WELL
Permeable pavement shall be equipped with a minimum of one observation well placed at the low point in the system. If the subgrade is terraced, then there shall be one observation well for each terrace. Observation wells shall be capped.

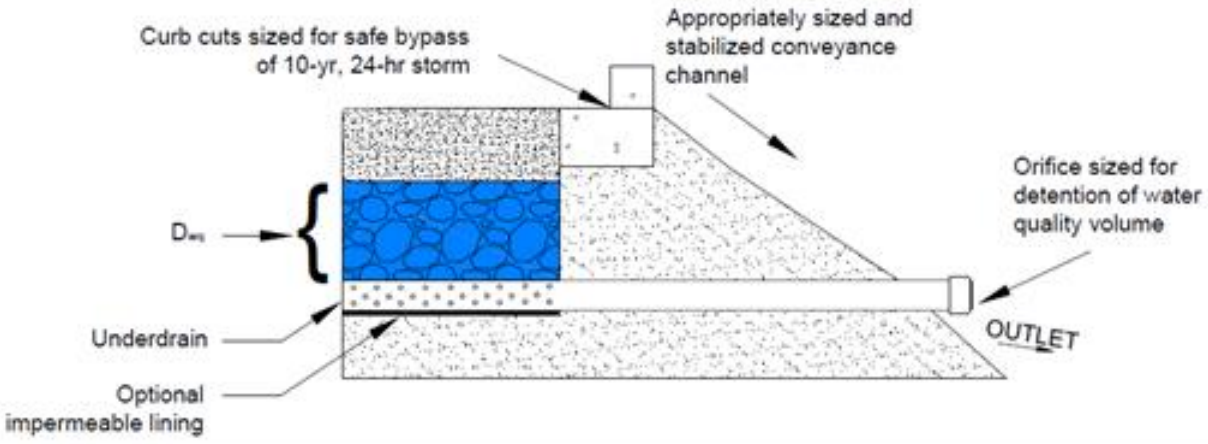
An observation well enables the owner to measure the depth of standing water in the permeable pavement system. Observation wells shall be fitted with a lockable cap installed placed even with the pavement surface to facilitate quarterly inspection.
Observations of the water depth throughout the estimated ponding time (T) indicate the rate of water infiltration. The observation well shall consist of a rigid 4 to 6-inch diameter perforated PVC pipe. The lower end of the PVC pipe should be placed below the elevations of the subgrade surface; therefore, the elevation of water within the pipe will match the elevation of water within the stone base.

Figure 4. Observation Well

PERMEABLE PAVEMENT MDC 10: DETENTION SYSTEMS
Pavement systems may be designed to detain stormwater in the Updated July 19, 2016 aggregate for a period of two to five days.

There are some compelling reasons to design a permeable pavement system for infiltration; it will receive credit for BUA reduction plus a higher pollutant removal credit than a comparably sized detention system. In addition, infiltrating systems are more compatible with a Low Impact Development (LID) approach to stormwater because they can help maintain pre-development hydrology. However, an infiltrating system will not work in all situations.

Figure 4. Permeable Pavement Example: Outlet for Detention System (NCSU-BAE)



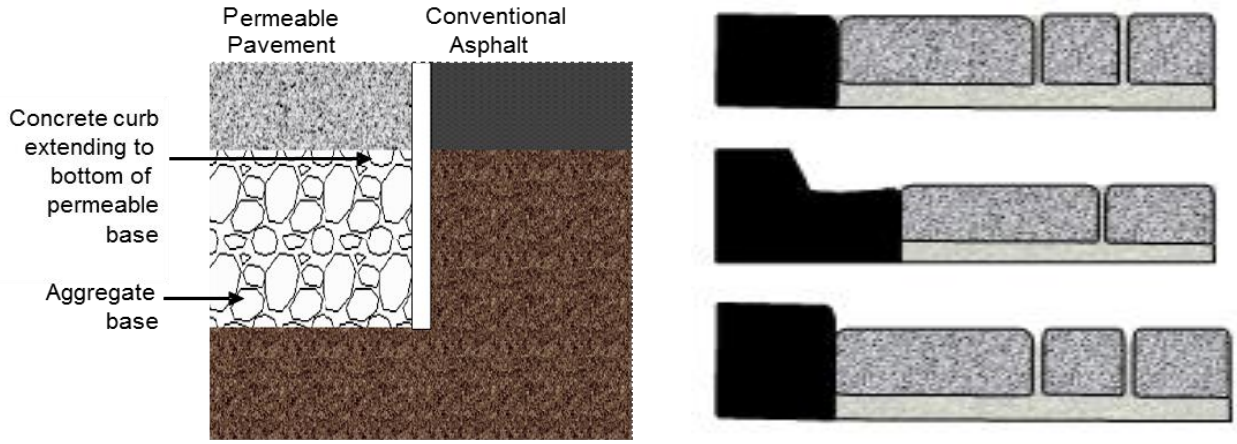
PERMEABLE PAVEMENT MDC 11: EDGE RESTRAINTS
Edge restraints shall be provided around the perimeter of permeable interlocking concrete pavers (PICP) and grid pavers.

Edge restraints are essential to the structural longevity of a PICP pavement system. Without edge restraints, pavers can move over time and reduce the surface's structural integrity. As pavers move, the joints open and pavers can be damaged. PC pavement systems provide adequate structural edge support and do not require perimeter edge restraints. The structural edge of PA systems can be enhanced by an edge restraint; they are recommended for PA, but not required.

Figure 5. Edge Restraints on PICP

Edge restraints shall be flush with the pavement or somewhat higher than the pavement surface. Edge restraints higher than the pavement surface help keep the stormwater on the pavement and prevent stormwater run-on from clogging the permeable pavement. In addition to providing structural support, the PICP can provide an attractive edge. See Figure 6 below for examples of acceptable edge restraints.

Figure 6. Edge Restraints: Example Cross-Sections



In addition to concrete edge restraints, an important consideration is the boundary between permeable and conventional pavement. At intersections between permeable pavement and conventional concrete, a geomembrane barrier should be provided to contain the stormwater under the permeable pavement and protect the base and subgrade under the conventional concrete. There should be a joint between the pavement surfaces for maintenance purposes.

At intersections between permeable pavement and conventional asphalt, a concrete curb that extends below the permeable base should be provided to protect the subgrade under the conventional asphalt. Concrete curbs provide more separation between the pavement courses, which is helpful when the conventional asphalt is resurfaced. An alternative design option uses a concrete curb to protect the asphalt and then an impermeable liner to separate the bases under the asphalt and permeable pavement.

PERMEABLE PAVEMENT MDC 12: GRADE WHEN DRY
The soil subgrade for infiltrating permeable pavement shall be graded when there is no precipitation.

Grading soils when they are wet is almost certain to cause a severe decrease in the soil infiltration rate and might result in a failure of the permeable pavement system.

PERMEABLE PAVEMENT MDC 13: INSPECTIONS AND CERTIFICATIONS
After installation, permeable pavement shall be protected from sediment deposition until the site is completed and stabilized. An in-situ infiltration permeability test shall be conducted and certified on the pavement after site stabilization.

After installation, a final as-built inspection and certification should be performed that includes:

- Ensuring that the pavement is installed per the plans and specifications.
- Ensuring that the surface is not damaged, free from fines and sediment.
- Checking that all pervious surfaces drain away from the pavement and that soil around the pavement is stabilized with vegetation
- Preparing the as-built plans that include any changes to the underdrains, observation well locations, terrace layouts, aggregate depth or storage structures, any revised calculations, etc.
- Testing the pavement surface permeability using the NCSU Simple Infiltration Test (see Maintenance Section 18.6.4) or other appropriate test such as ASTM C1701 *Standard Test Method for Infiltration Rate of In-Place Pervious Concrete*.

Any deficiencies that are discovered shall be promptly addressed and corrected.

Recommendations

PERMEABLE PAVEMENT RECOMMENDATION 1: SIGNAGE
Provide signage to encourage proper maintenance of permeable pavement.

Signage at permeable pavement installations is required because they are maintained and managed differently than traditional pavements. This promotes prolonged effectiveness and helps prevent damage from conventional pavement management.

Figure 8 illustrates an example of a sign for a permeable pavement location. The design is based on a 24 by 18 in. standard size for sign production.

The DEQ can provide this image in a high-resolution file for owners who would like to use it for their signs. This graphic is in color but color signs are not required. Large permeable pavement applications may require several signs.

The owner should consider whether this sign should also be provided in Spanish.

Figure 9. Example Sign Layout

***PERMEABLE PAVEMENT RECOMMENDATION* 2: GEOGRIDS, GEOTEXTILES, AND GEOMEMBRANES**
Geogrids and geotextiles may be used in accordance with manufacturer and designer recommendations. Geomembranes are not recommended on infiltration designs but may be used on detention designs.

Not all permeable pavement applications include geogrids, geotextiles and geomembranes, but some circumstances require their use. The advice of a licensed NC design professional with experience in geotechnical design is a valuable resource in addition to the guidance provided below.

Geogrids may be used at the top of the soil subgrade to provide additional structural support especially in very weak, saturated soils. All manufacturer requirements shall be followed in the design and installation.

Geotextiles (permeable) should line the sides of the aggregate base to prevent migration of adjacent soils into it and subsequent permeability and storage capacity reduction. This problem is more likely in sandy or loamy soils. Geotextiles are not recommended under the aggregate base in an infiltration design because they can accumulate fines and inhibit infiltration.

Geomembranes (impermeable) should be used to accomplish the following:

- Provide a barrier on the sides and bottom of the aggregate base in a detention design to prevent infiltration into the subgrade typically due to soil instability, the presence of

stormwater hotspots, or potential for groundwater contamination. Geomembrane barriers reduce the credit for TSS removal from 85% to 70%.

- Line the sides of the aggregate base whenever structure foundations or conventional pavement are 20 feet or less from the permeable pavement (to avoid the risk of structural damage due to seepage). The isolated use of geomembranes for this purpose will not reduce the credit for TSS removal in the system.

PERMEABLE PAVEMENT RECOMMENDATION 3: DISCUSSION WITH OWNER
Before pursuing a permeable pavement design beyond the conceptual stage, the designer shall verify site feasibility and meet with the owner to explain the installation, construction and maintenance requirements of the proposed permeable pavement system.

The pavement's maintenance needs may require the owner to purchase new equipment or contract with a new service provider. The required frequency of the maintenance may be greater than conventional pavement in the same location. These costs are likely the same or lower than other BMPs, but it is important to integrate maintenance requirements into the owner's planning for site operations.

During the discussion with the owner, the designer shall confirm assumptions about the site use and vehicle loading. For example, a parking lot primarily used by passenger cars may also see bus traffic or a pedestrian area may also be driven on by service vehicles. These situations require attention to structural design, specifically base, materials, thicknesses, soil strengths, axle loads and repetitions.

PERMEABLE PAVEMENT RECOMMENDATION 4: CONSIDER STRUCTURAL STRENGTH
The manual and rules do not provide structural design guidance of permeable pavements subject to vehicular traffic. The designer shall ensure that the pavement meets its hydrologic and structural goals by involving an NC licensed design professional with appropriate expertise in pavement design.

Construction

A preconstruction meeting is highly recommended to ensure contractors understand the need to prevent subgrade compaction and clogging of the pavement surface. The following should be discussed at the meeting:

- Walk through site with builder/contractor/subcontractor to review erosion and sediment control plan/stormwater pollution prevention plan
- Determine when permeable pavement is built in the project construction sequence; before or after building construction, and measures for protection and surface cleaning
- Aggregate material storage locations identified (hard surface or on geotextile)
- Access routes for delivery and construction vehicles identified

- Mock-up location, materials testing and reporting

A preconstruction meeting is also an opportunity to discuss other unique construction considerations for permeable pavement. Construction oversight by a design professional familiar with permeable pavement installation can help ensure that the investment results in adequate long-term performance.

Contractors not familiar with permeable pavement are accustomed to compacting pavement soil subgrades to increase structural strength. However, this is in direct opposition to the correct treatment of soil beneath permeable pavement for an infiltrating design.

Construction Step 1: Ensure Acceptable Conditions for Construction

Do not begin construction on permeable pavement until acceptable conditions are present. This includes the following items:

- Pervious surfaces are graded so that they do not discharge to the permeable pavement, except for instances when this is unavoidable, such as redevelopment projects.
- Impervious areas that will drain to the permeable pavement are completed.
- Areas of the site adjacent to the permeable pavement are stabilized with vegetation, mulch, straw, seed, sod, fiber blankets or other appropriate cover in order to prevent erosion and possible contamination with sediments.
- Construction access to other portions of the site is established so that no construction traffic passes through the permeable pavement site during installation. Install barriers or fences as needed.
- The forecast calls for a window of dry weather to prevent excess compaction or smearing of the soil subgrade while it is exposed.
- All permeable pavement areas are clearly marked on the site.

Construction Step 2: Excavate the Pavement Area and Prepare Subgrade Surface

Clear and excavate the area for pavement and base courses while protecting and maintaining subgrade infiltration rates using following these steps:

- Excavate in dry subgrade conditions and avoid excavating immediately after storms without a sufficient drying period.
- Do not allow equipment to cross the pavement area after excavation has begun. Operate excavation equipment from outside the pavement area or from unexcavated portions of the area using an excavation staging plan.
  See Figure 18-15.
- Use equipment with tracks rather than tires to minimize soil compaction when equipment on the subgrade surface is unavoidable.
- Dig the final 9 to 12 in. by using the teeth of the excavator bucket to loosen soil and do not smear the subgrade soil surface. Final grading or smoothing of the subgrade should be done by hand if possible.
- Minimize the time between excavation and placement of the aggregate.

The final subgrade slope shall not exceed 0.5%. The slope of the subgrade shall be checked before proceeding. **Where possible, excavate soil from the sides of the pavement area to minimize subgrade compaction from equipment.** After verifying the subgrade slope, scarify, rip or trench the soil subgrade surface of infiltrating pavement systems to maintain the soil's pre-disturbance infiltration rate. These treatments must occur while the soil is dry. To scarify the

pavement, use backhoe bucket's teeth to rake the surface of the subgrade. To rip the subgrade, use a subsoil ripper to make parallel rips 6 to 9 in. deep spaced 3 feet apart along the length of the permeable pavement excavation as shown in Figure 18-16. In silty or clayey soils, clean coarse sand must be placed over the ripped surface to keep it free-flowing (Brown and Hunt 2009). The sand layer should be adequate to fill the rips.

An alternative to scarification and ripping is trenching. See Figure 18-17. If trenching, then parallel trenches 12 in. wide by 12 in. deep shall be made along the length of the permeable pavement excavation. Excavate trenches every 6 ft (measured from center to center of each trench) and fill with ½ in. of clean course sand and 11½ in. of ASTM No. 67 aggregate (Brown and Hunt 2009).

Ripped or trenched (uncompacted) soil subgrade can settle after aggregate base and surface course installation and compaction. Therefore, base compaction requires special attention to means and methods in the construction specifications and during construction inspection to minimize future settlement from ripped or trenched soil subgrades.

Figure 10. Good Construction Practices, from left to right: Grading from the Side (NCSU), Scarifying the Subgrade (Tyner), Trenching the Subgrade (Tyner)

Construction Step 3: Test the Subgrade Soil Infiltration Rate (Infiltration Systems Only)

Conduct a direct measurement of the soil's infiltration rate immediately after excavation and before the aggregate is placed. Infiltration rate testing shall be conducted by an appropriately-qualified professional. If the soil infiltration rate has diminished so that a 72-hour drawdown time is no longer possible, then rip or trench the subgrade further to restore the original infiltration rate.

Construction Step 5: Place Geotextiles and Geomembrane (If Applicable)

If using geotextiles or geomembranes, then follow the manufacturer's recommendations so for the appropriate overlap between rolls of material. Secure geotextile or geomembrane so that it will not move or wrinkle when placing aggregate.

Construction Step 6: Place Catch Basins, Observation Well(s) and Underdrain System

Place the catch basins and observation wells per the design plans and verify that the elevations are correct.
If an upturned elbow design is used, then the underdrains are placed first. See Figure 11.

In such case, verify the following:

- Elevations of the underdrains and upturned elbows are correct.
- Dead ends of pipe underdrains are closed with a suitable cap placed over the end and held firmly in place.
- Portions of the underdrain system within one foot of the outlet structure are solid and not perforated.

Figure 11. Upturned Elbow (NCSU-BAE)

Construction Step 7: Place and Compact Aggregate Base

Inspect all aggregates to insure they are free of fines and conform to design specifications. If aggregates delivered to the site cannot be immediately placed, then they should be stockpiled on an impervious surface or geotextile to keep the aggregate free of sediment.

Before placing the aggregate base, remove any accumulation of sediments on the finished soil subgrade using light, tracked equipment. If the excavated subgrade surface is subjected to rainfall before placement of the aggregate base, the resulting surface crust must be excavated to at least an additional 2-inch depth, raked or scarified to break up the crust. For sites with an impermeable liner or geotextiles, remove any accumulated sediments and check placement. Slopes and elevations shall be checked on the soil subgrade and the finished elevation of base (after compaction) or bedding materials to assure they conform to the plans and specifications.

Figure 12. Aggregate Placement and Compaction (NCSU-BAE)

All aggregate shall be spread (not dumped) by a front-end loader or from dump trucks depositing from near the edge of the excavated area or resting directly on deposited aggregate piles. Moisten and spread the washed stone without driving on the soil subgrade. Be careful not to damage underdrains and their fittings, catch basins, or observation wells during compaction. Follow compaction recommendations by the permeable pavement manufacturer or that from industry guidelines. See Figure 12. Be sure that corners, areas around utility structures and observation wells, and transition areas to other pavements are adequately compacted. Do not crush aggregates during compaction as this generates additional fines that may clog the soil subgrade.

Construction Step 8: Install Curb Restraints and Pavement Barriers

Edge restraints and barriers between permeable and impervious pavement shall be installed per design. Before moving on to Construction Step 9, be certain that the design and installation are consistent.

Construction Step 9: Install Bedding and Pavement Courses

The bedding and pavement course installation procedures depend on the permeable pavement surface. It is important to follow the specifications and manufacturer's installation instructions. For PICP, a 4 in. thick choker course over the base transitions to a 2 in. thick bedding layer that provides a smooth surface for the pavers. See Figure 13. The bedding course shall be installed in accordance with manufacturer or industry guide specifications. Improper bedding materials or installation can cause significant problems in the performance of the pavers and stone jointing materials between them.

Figure 13. Upturned Elbow (NCSU-BAE)

If constructing a PICP pavement, use a contractor that holds a PICP Specialist Certificate from the Interlocking Concrete Pavement Institute. A list of contractors can be obtained from the Interlocking Concrete Pavement Institute.

PC pavements shall be constructed in accordance with the latest version of ACI 522.1 *Specification for Pervious Concrete*. Installation of PC may be accomplished using the One-Step or the Two-Step method. The Two-Step method is more commonly used and it separates the steps of strike-off from pervious concrete compaction. In this method, the pervious concrete usually requires a more traditional, stiffer mix. The One-Step method uses a counter-rotating roller screed to simultaneously strike-off and compact the pervious concrete. This method requires pervious concrete with a more flowable mix so that the screed can more adequately compact the mixture. Both methods require dense-paste pervious concrete mixtures. These mixes are defined by chemical admixtures that reduce the viscosity of the cement paste so that it will stick to and not run off the aggregates. The mixes provide greater cohesion that increases strength and durability.

Figure 14. Compacting Pervious Concrete (NCSU-BAE)

If constructing a PA pavement, use a contractor that is qualified per Carolina Asphalt Paving Institute (CAPA). In addition, be certain that the contractor follows the Design, Construction and Maintenance Guide for Porous Asphalt (by the National Asphalt Pavement Association) in conjunction with CAPA's *Porous Asphalt Guide Specification,* which will ensure that the binder mix is appropriate for the North Carolina climate.

Construction Step 10: Protect the Pavement through Project Completion

If is preferable to have the permeable pavement installed at the end of the site construction timeline. If that is not possible, protect the permeable pavement until project completion. This shall be done by:

- Route construction access through other portions of the site so that no construction traffic passes through the permeable pavement site. Install barriers or fences as needed.
- If this is not possible, protect the pavement per the construction documents. Protection techniques that may be specified include mats, plastic sheeting, barriers to limit access, or moving the stabilized construction entrance
- Schedule street sweeping during and after construction to prevent sediment from accumulating on the pavement.

Maintenance

Like all other SCMs, permeable pavements require maintenance to provide long-term stormwater benefits.

As shown in Figure 15, the majority of maintenance efforts are keeping the surface from clogging as well as avoiding pollutants such as deicing salts that might affect groundwater quality. Regular inspection will determine whether the pavement surface and reservoir are functioning as intended.

Figure 15. Clogged Pavement

Directions for Maintenance Staff

Communication with maintenance staff is crucial regarding permeable pavement locations and required management practices for keeping pavement unclogged. Maintenance staff must:

- Clean the surface with portable blowers frequently, especially during the fall and spring to remove leaves and pollen before they irreversibly reduce the pavement's surface permeability.
- Not stockpile soil, sand, mulch or other materials on the permeable pavement. Not wash vehicles parked on the permeable pavement.
- Place tarps to collect any spillage from soil, mulch, sand or other materials transported over the pavement.
- Cover stockpiles of same near the permeable pavement.
- Bag grass clippings or direct them away from the permeable pavement.
- Not blow materials onto the permeable pavement from adjacent areas.
- Not apply sand during winter storms.
- Immediately remove any material deposited onto the permeable pavement during maintenance activities. Remove large materials by hand. Remove smaller organic material using a hand-held blower machine.
- Remove weeds growing in the joints of PICPs by spraying them with a systemic herbicide such as glyphosate and then return within the week to pull them by hand.

After the weeds are removed from paver joints, the pavement shall be swept (with a vacuum sweeper if possible) to remove the sediment and discourage future weed growth.

Future Construction Projects

If not properly managed, future construction projects on a permeable pavement site can convey sediment to its surface. To prevent pavement clogging from future construction projects, the owner or prime contractor shall insure that the contractors on the site:

- Route construction traffic away from the permeable pavement. Sediment from muddy tire tracks can be deposited on the pavement and sometimes the equipment may exceed the loading pavement loading capacity.
- Install and frequently inspect erosion and sediment controls.
- Inspect the site to insure new grading patterns do not result in the pavement receiving run-on from landscaped areas especially with bare soil. If this occurs, then the site requires regrading. After re-grading, disturbed areas shall be promptly stabilized with vegetation.
- Schedule cleaning with a regenerative air or vacuum street sweeper during and after construction.

Snow and Ice Management

Permeable pavement can be more effective at melting snow and ice than conventional pavements. When snow and ice melts, the water infiltrates into the aggregate base rather than staying on the pavement surface and refreezing. Therefore, light snow and ice accumulation generally do not require removal. The base and soil act as a heat sink which helps drain water before it freezes and slows the rate of surface freezing.

For larger accumulations of snowfall, sand shall never be applied on or adjacent to permeable pavement to avoid surface clogging. In addition, pollutants such as deicing materials and fertilizer shall not be applied to (non-grassed) pavement surfaces because these chemicals infiltrate through the aggregate base to the subgrade and possibly to the groundwater.

PICP, PC and PA can be plowed like conventional pavements. For CGP and PTRG, the blade should be set about 1 in. higher than usual to avoid damaging them. A rubber strip can also be applied to the blade to protect them. Piles of plowed snow shall not be placed upon permeable pavement surfaces to avoid concentrations of dirt and sediment when the snow eventually melts.

Testing the Pavement Surface Infiltration Rate

The simplest way to see if permeable pavement is infiltrating rain is to look for puddles during and after a storm. Permeable pavement should not have puddles; puddles are a sure sign of surface clogging.

Because inspection and maintenance activities may not always coincide with rain events, NCSU developed a simple infiltration test to evaluate pavement surface clogging severity and extent. Simple Infiltration Test procedures are available at NCSU's Stormwater Group Web Site.

The Simple Infiltration Test shall be done on all permeable pavement applications at least one time a year, except for single family residential lots with a total permeable pavement area of under 2,000 sf. Whenever the Simple Infiltration Test indicates that maintenance is needed, the design professional shall work with the owner to:

- Determine the cause of the permeable pavement clogging and correct it. Previous sections with instructions for maintenance staff, future construction projects, and snow and ice management may assist in evaluating the cause of clogging. Efforts to renovate the clogged pavement are short lived unless the underlying problems are addressed.
- Vacuum the pavement in accordance with the next section.
- Check the observation wells to ensure that the pavement is not clogging beneath the surface.

Surface Cleaning

Surface cleaning is required whenever puddles are present or surface infiltration testing indicates that one or more areas on a permeable pavement application are clogged. DEQ recommends vacuum cleaning the entire pavement area rather than only the clogged portion since most of the expense is equipment mobilization. Owners are encouraged to clean PC and PA on an annual, or more frequent basis, because surface infiltration is very difficult to restore after it has become clogged, and the surface replacement is expensive.

The three main types of street cleaners are described below: mechanical, regenerative air and vacuum. Vacuum or regenerative air street sweepers are required because they are effective at cleaning the pore spaces in the pavement surface.

Figure 16. Mechanical Sweeper (NCSU-BAE)

Mechanical sweepers are the most common. They come in various sizes for cleaning pedestrian or vehicular pavements, and they generally do not use a vacuum. See Figure 16. They employ brushes that initially move litter toward the machine center and lift trash onto a conveyor belt for temporary storage inside the machine. The brush bristles can penetrate CGP, but not other types of permeable pavement. For other pavement types, mechanical sweepers may be used for removing trash, leaves, and other organic material, but the mechanical sweeper is not likely to be effective in removing sediment.

Figure 17. Regenerative Air Cleaner (TYMCO, Inc.)

Regenerative air cleaners are the second most common. They work by directing air at a high velocity within a confined box the rides across the pavement. The uplift from the high velocity effectively loosens dust and other fine particles on and near the pavement surface and lifts them into a hopper at the back of the truck. This equipment removes surface-deposited sediments from all pavement types. This equipment is recommended for regular preventive maintenance.

Figure 18. Vacuum Truck (NCSU-BAE)

Vacuum street cleaners are the least common and most expensive. They apply a strong vacuum to a relatively narrow area that lifts particles both at and below the surface of the pavement. Vacuum sweepers have demonstrated their ability to suction 3 to 4 inches of gravel from PICP and can restore infiltration to some types of pavements that have been grossly neglected. (Hunt, NCSU-BAE)

Regular PICP cleaning requires operator adjustment of the vacuum force from regenerative air equipment to minimize uptake of aggregate jointing materials. In some cases, the paver joints may require refilling. In contrast, vacuum street cleaners have demonstrated their ability in removing as much as 3 to 4 in. of aggregates from clogged PICP joints that have not received any cleaning for years. This cleaning can restore surface infiltration for PICP as well for other grossly neglected permeable pavement surfaces (Hunt NCSU-BAE).

Inspecting Observation Wells

The observation well allows the owner to determine how well the aggregate base and underdrains are functioning. Follow these steps to inspect the observation wells:

- Wait five days after a rainfall exceeding 1 in. or 1.5 in. if in a Coastal County. If no additional rain occurs in the five days, open each observation well.
- Visually assess whether water is present. If visual assessment isn't possible, use a yard stick or other water-level measurement method.
- If water is present, the soil subgrade is clogged and/or underdrains are not functioning. Note the locations of the observation wells with water present.
- The owner (or site manager) should consult the designer or other appropriate professional regarding possible remedies.

The designer or other appropriate design professional determines the actions needed to restore the BMP so that it functions and achieves regulatory credit. For a detention system, this may require repair of underdrains or other infrastructure. For an infiltration system, this shall require subgrade infiltration rate investigation and may lead to redesign or replacement.

Pavement Cracking

Cracked areas shall be repaired using the same materials as the original permeable pavement or, in the case of PC and PA small areas can be replaced with standard (impermeable) materials. The impervious repaired area shall not to exceed 5% of the total surface area. Figure 19 shows a small concrete patch in a PC area. Larger repaired areas shall be made from materials that infiltrate rain water in a similar manner as the original surface. Pavement that has buckled or shown major instability may require a major renovation or replacement. In this case, consult a pavement professional. Asphalt sealcoats or overlays that eliminate surface permeability shall not be used.

Figure 19. Pavement Patch

Required Operation and Maintenance Provisions

After permeable pavement is constructed, it shall be inspected **once a quarter.** The inspector shall check each BMP component and address any deficiencies in accordance with Table 18-4 below. The person responsible for maintaining the permeable pavement shall keep a signed and notarized Operation and Maintenance Agreement and inspection records. These records shall be available upon request.

Once a year, the Simple Infiltration Test shall be performed and any deficiencies in surface permeability shall be addressed.

At all times, the pavement shall be kept free of:

- Debris and particulate matter through frequent blowing that removes such debris, particularly during the fall and spring.
- Piles of soil, sand, mulch, building materials or other materials that could deposit particulates on the pavement.
- Piles of snow and ice.
- Chemicals of all kinds, including deicers.

Table 3: Inspection Process and Required Remedies

BMP element:	Potential problem:	How to remediate the problem:
The perimeter of the permeable pavement	Areas of bare soil and/or erosive gullies	Regrade the soil if necessary to remove the gully, then plant ground cover and water until established.
	A vegetated area drains toward the pavement.	Regrade the area so that it drains away from the pavement, then plant ground cover and water until established.
The surface of the permeable pavement	Trash/debris present	Remove the trash/debris.
	Weeds	Do not pull the weeds (may pull out media as well). Spray them with a systemic herbicide such as glyphosate and then return within the week to remove them by hand. (Another option is to pour boiling water on them or steam them.)
	Sediment	Vacuum sweep the pavement.
	Rutting, cracking or slumping or damaged structure	Consult an appropriate professional.
Observation well	Water present more than five days after a storm event	Clean out clogged underdrain pipes. Consult an appropriate professional for clogged soil subgrade.
Educational sign	Missing or is damaged.	Replace the sign.

Old Versus New Design Standards

The following is a summary of some of the changes in permeable pavement design standards between the archived version of the BMP Manual and the current MDC for permeable pavement. It is intended to capture the highlights only; any permeable pavement MDC that are not captured in this table are still required per 15A NCAC 02H .1055.

	Old manual requirements	New MDC
Additional BUA directed to permeable pavement	1:1 maximum ratio between pavement area and contributing drainage area. Runoff from pervious areas may not be directed to pavement.	1:1 maximum ratio; however, screened rooftop runoff is not subject to the 1:1 loading limitation. Runoff from pervious areas may not be directed to pavement except for small, unavoidable areas.
BUA credit	Infiltrating permeable pavement in A and B soils considered to be 75% pervious, 25% impervious. In C and D soils, considered to be 50% pervious, 50% impervious	Infiltrating permeable pavement considered to be 100% pervious in all soils
Slope of the subgrade surface	May not be greater than 0.5%	May not be greater than 2%
Minimum pavement surface infiltration rate for maintenance	Not specified	50 inches/hour must be maintained.
Signage	Required	Recommended

Resources

ACI Committee 522, *Report on Pervious Concrete*, American Concrete Institute, Farmington Hills, MI, ACI 522R-10, March 2010.

Brown, R.A., Hunt, W.F., *Urban Waterways: Improving Exfiltration from BMPs*, North Carolina Cooperative Extension, AG-588-17W, 2009

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CONSTRUCTION ENGINEERING SERVICES, INC.

P.O. BOX 665
MANTEO, NC 27954
PHONE: (252) 473-9733

OFFICE: 33 HAMMOCK DRIVE
MANTEO, NC 27954
FAX: (252) 473-4191

January 14, 2019

Coastal Resources Commission
NC Department of Environmental Quality
21 West Jones Street
Raleigh, NC 27603

Reference: Patio and fire pit at 108 Virginia Court, Hertford, NC

Members of the Commission:

In response to the comments received from NCDENR and DEQ we offer the following to support our conclusion that there will be no stormwater runoff into Yeopim Creek.

MDC1– GET Solutions has been scheduled to come to the site and conduct a sub-surface investigation and determine the infiltration rate for the on site soils.

MDC2– The seasonal high water table has been measured to be approximately 4 feet below the patio surface.

MDC5– The 4" crushed stone base layer was placed and not compacted so it will remain free draining and will not impede the infiltration of stormwater or cause any runoff.

Additionally, the finished grade of the patio slopes away from the bulkhead and Yeopim Creek to a low point on the pavers so that any runoff that might not immediately drain through the gaps in the pavers is temporarily contained on the low area of the patio as it infiltrates through the gaps in the pavers, the non compacted crushed stone base and into the pervious subgrade soil.

As we stated in our previous letter of October 9, 2018 to the Lampleys, the way this patio and fire pit have been designed and constructed there will be no stormwater runoff into Yeopim Creek. The stormwater will be contained on and under the patio surface as it filters into the ground. If you have any questions or if you need any additional information please contact us.

Very truly yours,
CONSTRUCTION ENGINEERING SERVICES, INC.

Hal Goodman

Hal Goodman, P.E., SECB
President

NORTH CAROLINA PROFESSIONAL SEAL 20446 ENGINEER HAROLD JAY GOODMAN

Harold Jay Goodman 1-14-19

DESIGN **CONSULTING** **UNDERWATER INSPECTIONS**

GET Solutions, Inc.
Geotechnical • Environmental • Testing

January 14, 2019

TO: **Mr. Thomas Lampley**
108 Virginia Court
Hertford, NC 27944

RE: Report of Shallow Subsurface Exploration and Geotechnical Engineering Services
Lampley Residence – 108 Virginia Court
Hertford, North Carolina
GET Project No: EC18-288G

Dear Mr. Lampley:

As requested, a representative of **G E T Solutions, Inc.** visited the above stated site on the date of January 7, 2019. The purpose of our site visit was to perform shallow subsurface exploration and saturated hydraulic conductivity testing of the encountered near surface soils, which was indicated to be required by CAMA and specifically requested by the client. It is our understanding that due to CAMA regulations, a site specific soil evaluation was required in the immediate vicinity of the paver system previously installed to construct an exterior patio area along the Perquimans River at this previously developed single family residential parcel. Furthermore, it has been indicated that the subject portion of this parcel required in excess of about 5 feet of fill in order to establish the current site grade elevations during the original development of this site. It is noted that the, requested scope of services did not include a permeability evaluation of the pavers that were installed within the subject area.

Field Exploration and Shallow Subsurface Soils

In order to explore the general and near surface soil types and to aid in developing associated saturated hydraulic conductivity parameters, the following field exploration and testing program was performed:

- One (1) 4.5-foot deep hand auger boring was performed at approximately 1-foot east of the paver edge at the river access. The boring location was established in the field by the client and a representative of **G E T Solutions, Inc.** The hand auger boring depth was limited to that noted above due to a cave-in occurring as a result of the encountered groundwater level of approximately 4 feet below the existing site grade elevations.

The surficial and shallow subsurface soils encountered at the explored location at the site were noted to consist of Topsoil and SAND (SP-SM, SM, SC-SM) having varying amounts of Silt and/or Clay). As previously reported by the client, the original development at this site prior to the construction of the patio area required in excess of 5 feet of fill to establish the current surface grade elevations. As such, the encountered soils noted above were further identified as FILL. A summary of the subsurface soils conditions encountered at the boring location is presented in Table I.

Table I – Shallow Subsurface Soil Conditions

Average Depth (ft)	Stratum	Description	Ranges of SPT N-Values
0 to 0.3	FILL	Ø Topsoil	-
0.3 to 4.5(1)	FILL	Ø Tan, SAND (SP-SM, SM, SC-SM) with varying amounts of Silt and Clay	-
Note(s): (1) Boring HA-1 terminated in this strata			

The subsurface descriptions are of a generalized nature provided to highlight the major soil strata encountered. The records of the subsurface exploration are included on the attached Boring Log sheet which should be reviewed for specific information. The stratifications shown on the records of the subsurface exploration represent the conditions only at the actual boring location. Variations may occur at other locations. The stratifications represent the approximate boundary between subsurface materials and the transition may be gradual. It is noted that the “Topsoil” designation references the presence of surficial organic laden soil, and does not represent any particular quality specification.

Field and Laboratory Testing

Soil testing provided by **G E T Solutions, Inc.** was performed in accordance with American Society for Testing and Materials (ASTM) standards. All laboratory soils tests were performed in our AASHTO re:source (formally AMRL) certified Elizabeth City laboratory.

Soil Classification and Index Testing

A representative portion of the soil samples collected during drilling operations were labeled, preserved, and transferred to our laboratory in accordance with ASTM D4220 for classification and analysis. Soil descriptions on the boring log are provided using visual-manual methods in general accordance with ASTM D2488 using the Unified Soil Classification System (USCS). Soil samples that were selected for index testing were classified in general accordance with ASTM D2487. It should be noted that some variation can be expected between samples classified using the visual-manual procedure (ASTM D2488) and the USCS (ASTM D2487). A summary of the soil classification system is attached.

A representative soil sample was selected and subjected to natural moisture and #200 sieve wash testing in order to corroborate the visual classification. These test results are presented in Table II below and on the soil test boring log attached to this report.

Table II – Laboratory Test Results

Boring ID	Sample Depth (ft) (1)	Moisture Content (%)	Percent Fines (Silt and/or Clay)	USCS Classification
HA-1	0.5 – 1.3	16.8	28.8	SM with Clay

Note(s): (1) Sample depth refers to depth below the existing grade at the boring location.

In-situ Permeability Testing

Constant-Head Borehole Permeameter Testing was performed on the near surface soils adjacent to boring location HA-1. The borehole was prepared utilizing a hand auger to remove soil clippings from the base. Permeability testing was then conducted within the vadose zone utilizing a Johnson Permeameter™ and the following testing procedures:

A support stand was assembled and placed adjacent to the boreholes. This stand holds a calibrated reservoir and a cable used to raise and lower the water control unit (WCU). The WCU establishes a constant water head within the borehole during testing by use of a precision valve and float assembly. The WCU was attached to the flow reservoir with a braided PVC hose and then lowered by cable into the borehole to the test depth elevation. As required by the Glover solution, the WCU was suspended above the bottom of the borehole. The shut-off valve was then opened allowing water to pass through the WCU to fill the borehole to the constant water level elevation. The absorption rate slowed as the soil voids became filled and an equilibrium developed as a wetting bulb developed around the borehole. Water was continuously added until the flow rate stabilized. The reservoir was then re-filled in order to begin testing. During testing, as the water drained into the borehole and surrounding soils, the water level within the calibrated reservoir was recorded as well as the elapsed time during each interval. The test was continued until relatively consistent flow rates were documented. During testing the quick release connections and shutoff valve were monitored to ensure that no leakage occurred. The flow rate (Q), height of the constant water level (H), and borehole diameter (D) were used to calculate Ks utilizing the Glover Solution.

Based on the field testing, the hydraulic conductivities of the soils are presented in Table III. The comprehensive hydraulic conductivity worksheet is attached to this report.

Table III – Infiltration Test Results

Boring ID	Test Depth (ft) (1)	Percent Fines (Silt and/or Clay)	K_{sat} Value (in/hr)	K_{sat} Class	USCS Classification
HA-1	1.3	28.8	2.197	Moderately High	SM with Clay

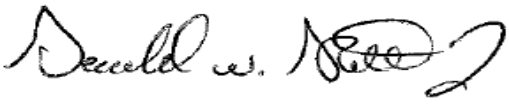
Note(s): (1) Test depth refers to depth below the existing grade at the test location.

The permeability test result of the near surface soils provided in this report is the result of permeability testing at the location and depth indicated. Varying site conditions, including soil composition, soil density, stratum depth, and stratum thickness may occur at other various locations throughout the residential parcel. As such, the permeability test result should not be assumed for all locations and depths across the residential parcel.

The Geotechnical Engineer warrants that the findings contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

We appreciate the opportunity to offer our services to you, and trust that you will call our Elizabeth City office with any questions that you may have.

Respectfully Submitted,
G E T Solutions, Inc.



Gerald W. Stalls Jr., P.E.
Senior Project Engineer
NC Lic. #034336

Attachments: Hand Auger Boring Log (Boring ID: HA-1)
Key to Soil Symbols and Terms
Soil Classification Chart and Key to Test Data
Constant-Head Borehole Permeameter Test

RECORD OF SUBSURFACE EXPLORATION

GET Solutions, Inc.
Geotechnical • Environmental • Testing

Virginia Beach
5465 Greenwich Road
Virginia Beach, VA 23642
757-518-1703

Williamsburg
1592-E Penniman Road
Williamsburg, VA 23185
757-564-6452

Elizabeth City
106 Capital Trace Unit E
Elizabeth City, NC 27909
252-335-9765

Jacksonville
415-A Western Blvd
Jacksonville, NC 28546
910-478-9915

HAND AUGER BORING ID HA-1

PROJECT NAME: **Lampley Residence**
CLIENT: **Mr. Thomas Lampley**
PROJECT LOCATION: **Hertford, North Carolilna**
BORING LOCATION: **Approximately 1-foot East of Paver Edge at River Access**
DRILLING METHOD(S): **Hand Auger**
GROUNDWATER*: INITIAL (ft) ▽: **4** AFTER ____ HOURS (ft) ▼: ____ CAVE-IN (ft) ◌: **5**
The initial groundwater readings are not intended to indicate the static groundwater level.

PROJECT NUMBER: **EC18-288G**
SURFACE ELEVATION (MSL) (ft): **INA**
LOGGED BY: **J. Mead**
DATE STARTED: **1/7/2019**
DATE COMPLETED: **1/1/1987**
DRILLER: **GET Solutions, Inc.**

Elevation (ft)	Depth (ft)	STRATA DESCRIPTION	Strata Legend	Sample ID	Sample Type	Sample Recovery (in.)	%<#200	TEST RESULTS
		0.3 4 Inches Topsoil (FILL)						
		0.7 Tan, moist, poorly graded SAND (SP-SM) with Silt to Silty SAND (SM) with trace Clay (FILL)		1		12		
	1	Tan, moist to very moist, Silty SAND (SM) with Clay to Silty Clayey SAND (SC-SM): (FILL)		2		12	29	
	2	2.0 Tan, very moist to wet, poorly graded SAND (SP-SM) with Silt to Silty SAND (SM): (FILL)		3		12		
	3			4		12		
▽	4	Wet from 4 feet		5		6		
◌		4.5 Cave In at 4.5 Feet Boring terminated at 4.5 feet below existing grade.						

Plastic Limit X——X Liquid Limit
Water Content - ●
Penetration - ▨
10 20 30 40 50 60 70

Sample Type(s):
AUGER - Auger Sample

Notes:

Project: Lampley Residence
Project Location: Hertford, North Carolilna
Project Number: EC18-288G

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Key to Soil Symbols and Terms

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 4
Loose	15 to 35 %	4 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength kPa	SPT Blow Count
Very soft	< 25	< 2
Soft	25 to 50	2 to 4
Medium stiff	50 to 100	4 to 8
Stiff	100 to 200	8 to 15
Very stiff	200 to 400	15 to 30
Hard	> 400	> 30

GENERAL NOTES

1. Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

2. Surface elevations are based on topographic maps and estimated locations.

3. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not guaranteed to be representative of subsurface conditions at other locations or times.

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravel (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravel with fines (Appreciable amount of fines)	GM* d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4
			GC	Clayey gravels, gravel-sand-silt mixtures	Atterberg limits above "A" line or P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly-graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM* d / u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or P.I. greater than 7
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	Silts and Clays (Liquid limit less than 60)		ML	Inorganic silts and very fine sands, rock floor, silty or clayey fine sands or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and Clays (Liquid limit greater than 60)		MH	Inorganic silts, micaceous or disto-maceous fine sandy or silty soils, organic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly Organic Soils		Pt	Peat and other highly organic soils	

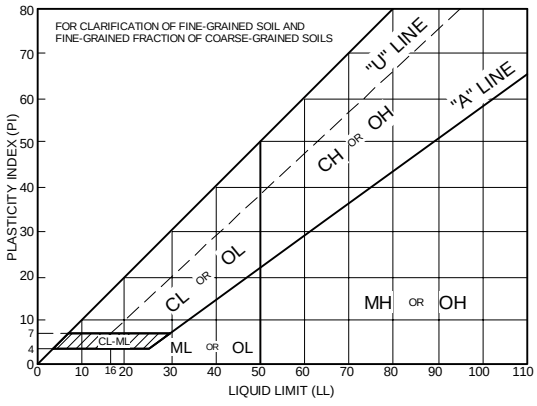
Determine percentages of sand and gravel from grain size curve, Depending on percentage of fines (fraction smaller than No. 200 sieve) coarse-grained soils are classified as follows:
Less than 5 percent..... GW, GP, SW, SP
More than 12 percent..... GM, GC, SM, SC
6 to 12 percent..... Borderline case4s requiring dual symbols**

Atterberg limits above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols

Atterberg limits below "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols

Particle Size	Sieve sizes	mm
Material	< #200	< 0.074
Silt or clay		
Sand	#200 to #40	0.074 to 0.42
Fine	#40 to #10	0.42 to 2.00
Medium	#10 to #4	2.00 to 4.76
Coarse		

Particle Size	Sieve	mm
Material		
Gravel	#4 to 3/4 in.	4.76 to 19.1
Fine		
Coarse	3/4 in. to 3 in.	19.1 to 76.2
Cobble	3 in. to 12 in.	76.2 to 304.8
Boulders	12 in. to 36 in.	304.8 to 914.4



Plasticity Chart

* Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg Limits: suffix d used when L.L. is 23 or less and the P.I. is 6 or less; the suffix is used when L.L. is greater than 26.

** Borderline classifications used for soils possessing characteristics of two groups are designated by combinations of groups symbols. For example; GW-GC, well-graded gravel-sand mixture with clay binder.

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS More than Half > #200 sieve	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 15% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 15% FINES	SM	SILTY SANDS, POOORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS More than Half < #200 sieve	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

	Modified California	RV	R-Value
	Split Spoon	SA	Sieve Analysis
	Pushed Shelby Tube	SW	Swell Test
	Auger Cuttings	TC	Cyclic Triaxial
	Grab Sample	TX	Unconsolidated Undrained Triaxial
	Sample Attempt with No Recovery	TV	Torvane Shear
CA	Chemical Analysis	UC	Unconfined Compression
CN	Consolidation	(1.2)	(Shear Strength, ksf)
CP	Compaction	WA	Wash Analysis
DS	Direct Shear	(20)	(with % Passing No. 200 Sieve)
PM	Permeability		Water Level at Time of Drilling
PP	Pocket Penetrometer		Water Level after Drilling(with date measured)

SOIL CLASSIFICATION CHART AND KEY TO TEST DATA

Lampley Residence
Hertford, North Carolilna

GET Solutions, Inc.
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Constant-Head Borehole Permeameter Test

Analytical Method: Glover Solution

GET Solutions, Inc.

Project Name.....:	Lampley Residence - 108 Virginia Ct.	Project No.....:	EC18-288G	Terminology and Solution (R. E. Glover Solution)*	
Boring No.....:	HA-1	Proj. Location...:	Hertford, NC	$Ksat_B$: (Coefficient of Permeability) @ Base Tmp. T_B (°C)	14
Investigators.....:	J. Meads	Date.....:	1/7/19	Q: Rate of flow of water from the borehole	
Boring Depth.....:	1.3 ft (m, cm, ft, in)	WCU Base Ht. h:	15.0 cm	H: Constant height of water in the borehole	
Boring Diameter..:	8.3 cm	WCU Susp. Ht. S:	5.1 cm	r: Radius of the cylindrical borehole	
Boring Radius r...:	4.15 cm	Const. Wtr. Ht. H:	20.1 cm	V: Dyn. Visc. of water @ Tmp. T °C/Dyn. Visc. of water @ T_B	
Soil/Water Tmp. T:	11 °C	H/r **.....:	4.8	$Ksat = Q[\sinh^{-1}(H/r) - (r^2/H^2+1)^{.5} + r/H]/(2\pi H^2)$ [Basic Glover Solu.]	
Dyn. Visc. @ T °C.:	0.001271 kg/m·s	Dyn. Visc. @ T_B °C.:	0.001170 kg/m·s	$Ksat_B = QV[\sinh^{-1}(H/r) - (r^2/H^2+1)^{.5} + r/H]/(2\pi H^2)$ [Tmp. Correction]	

VOLUME (ml)	Volume Out (ml)	TIME (h:mm:ss A/P)	Interval Elapsed Time (hr:min:sec)	Interval Elapsed Time (min)	Flow Rate Q (ml/min)	$Ksat_B$ Equivalent Values (cm/min)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
1,700		9:45:00 AM								
1,650	50	9:45:19 AM	0:00:19	0.32	157.89	0.099	1.65E-03	142.909	2.344	4.689
1,600	50	9:45:38 AM	0:00:19	0.32	157.89	0.099	1.65E-03	142.909	2.344	4.689
1,550	50	9:45:58 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.764	2.227	4.454
1,500	50	9:46:18 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.764	2.227	4.454
1,450	50	9:46:38 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.764	2.227	4.454
1,400	50	9:46:58 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.764	2.227	4.454
1,350	50	9:47:18 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.764	2.227	4.454
1,300	50	9:47:39 AM	0:00:21	0.35	142.86	0.090	1.50E-03	129.299	2.121	4.242
1,250	50	9:47:59 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.764	2.227	4.454
1,200	50	9:48:19 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.764	2.227	4.454
1,150	50	9:48:39 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.764	2.227	4.454
1,100	50	9:49:00 AM	0:00:21	0.35	142.86	0.090	1.50E-03	129.299	2.121	4.242
1,050	50	9:49:20 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.764	2.227	4.454
1,000	50	9:49:40 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.764	2.227	4.454
950	50	9:50:00 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.764	2.227	4.454
900	50	9:50:21 AM	0:00:21	0.35	142.86	0.090	1.50E-03	129.299	2.121	4.242
850	50	9:50:42 AM	0:00:21	0.35	142.86	0.090	1.50E-03	129.3	2.121	4.24
800	50	9:51:03 AM	0:00:21	0.35	142.86	0.090	1.50E-03	129.3	2.121	4.24
750	50	9:51:23 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.8	2.227	4.45
700	50	9:51:43 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.8	2.227	4.45
650	50	9:52:03 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.8	2.227	4.45
600	50	9:52:23 AM	0:00:20	0.33	150.00	0.094	1.57E-03	135.8	2.227	4.45
				Field-Estimated Ksat:		0.093	1.55E-03	133.917	2.197	4.394

Natural Moisture.....:	16.8	Consistency.....:	Loose
USDA Txt./USCS Class:	SM	Water Table Depth...:	4'
Struct./% Pass. #200.:	28.8	Init. Saturation Time.:	9:00:00 AM

Notes: Estimated field Ksat is determined by averaging and/or rounding of test results for the final three or four stabilized values and analyzing the graph.

*Glover, R. E. I953. Flow from a test-hole located above groundwater level, pp. 69-7I. in: Theory and Problems of Water Percolation. (C. N. Zanger. ed.). USBR. The condition for this solution exists when the distance from the bottom of the borehole to the water table or an impervious layer is at least twice the depth of the water in the well. **H/r>5 to >10 Johnson Permeameter, LLC Revised 11/29/13

Division of Coastal Management

NC COASTAL RESOURCES COMMISSION MEETING

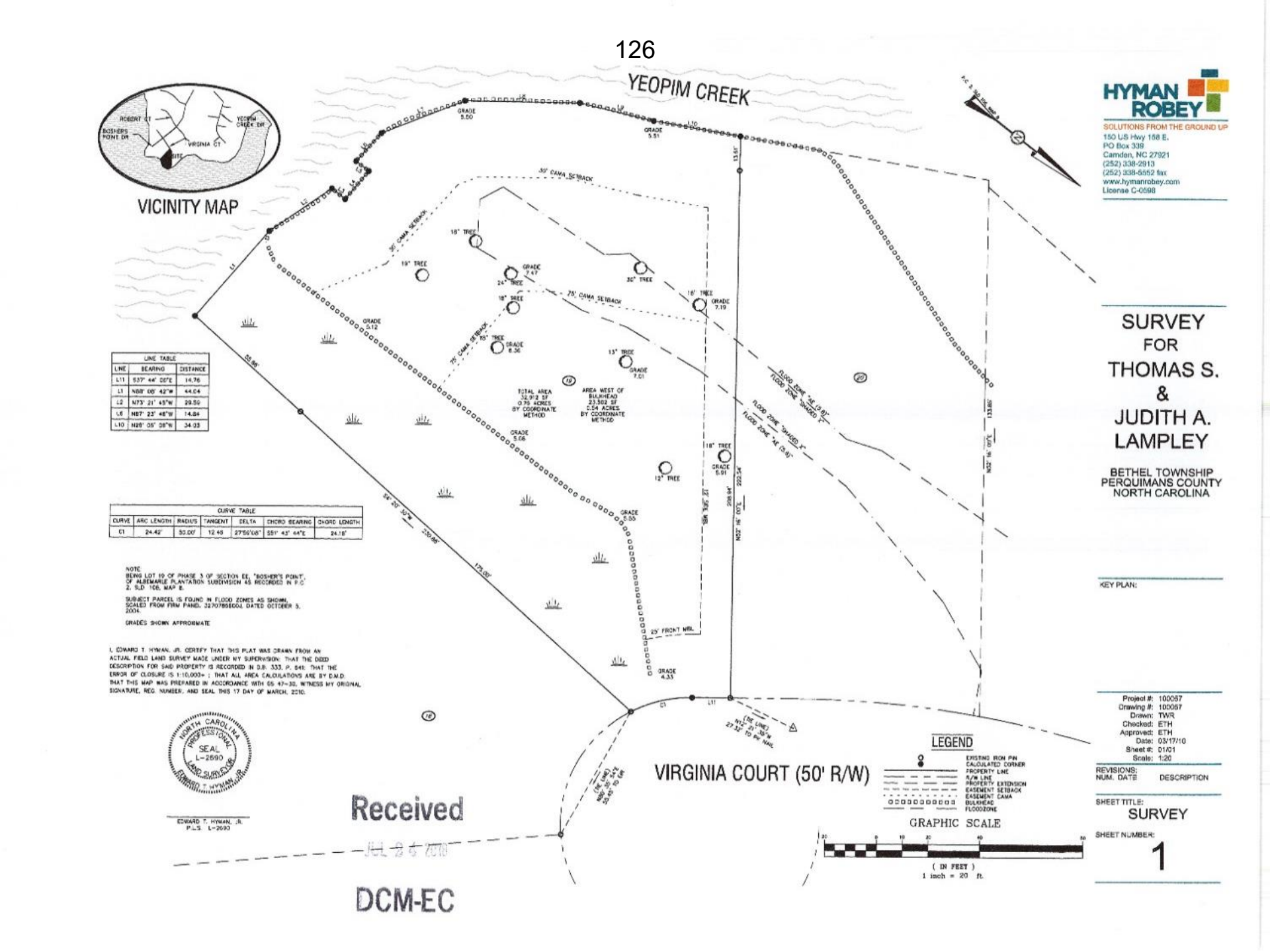
February 27-28, 2019

THOMAS & JUDITH LAMPLEY (CRC-VR-18-05)
PERQUIMANS COUNTY, 30' BUFFER VARIANCE

Frank Jennings, District Manager
Lynn Mathis, Environmental Specialist II
Northeastern District Office
Elizabeth City, NC

Nothing Compares
NORTH CAROLINA

Department of Environmental Quality



NOTE:
BEING LOT 19 OF PHASE 3 OF SECTION EE, "BOSHER'S POINT", OF ALBEMARLE PLANTATION SUBDIVISION AS RECORDED IN P.C. 2, SLD 106, MAP E.

SUBJECT PARCEL IS FOUND IN FLOOD ZONES AS SHOWN, SCALED FROM FIRM PANEL 3270788800J DATED OCTOBER 5, 2004.

GRADES SHOWN APPROXIMATE

I, EDWARD T. HYMAN, JR. CERTIFY THAT THIS PLAT WAS DRAWN FROM AN ACTUAL FIELD LAND SURVEY MADE UNDER MY SUPERVISION; THAT THE DEED DESCRIPTION FOR SAID PROPERTY IS RECORDED IN D.B. 333, P. 641; THAT THE ERROR OF CLOSURE IS 1:10,000+ ; THAT ALL AREA CALCULATIONS ARE BY D.M.D; THAT THIS MAP WAS PREPARED IN ACCORDANCE WITH GS 47-30. WITNESS MY ORIGINAL SIGNATURE, REG. NUMBER, AND SEAL THIS 17 DAY OF MARCH, 2010.

NORTH CAROLINA PROFESSIONAL SEAL L-2690 LAND SURVEYOR EDWARD T. HYMAN JR.

EDWARD T. HYMAN, JR.
P.L.S. L-2690

Received
JUL 26 2010
DCM-EC

HYMAN ROBEY
SOLUTIONS FROM THE GROUND UP
150 US Hwy 158 E.
PO Box 339
Camden, NC 27921
(252) 338-2913
(252) 338-5552 fax
www.hymanrobey.com
License C-0698

SURVEY FOR THOMAS S. & JUDITH A. LAMPLEY

BETHEL TOWNSHIP
PERQUIMANS COUNTY
NORTH CAROLINA

KEY PLAN:

Project #: 100057
Drawing #: 100057
Drawn: TWR
Checked: ETH
Approved: ETH
Date: 03/17/10
Sheet #: 01/01
Scale: 1:20

REVISIONS:
NUM. DATE DESCRIPTION

SHEET TITLE:
SURVEY

SHEET NUMBER:
1


Hertford
Crow Point Island
Durants Neck
New Hope
Perquimans
Bethel
108 Virginia Court, Albemarle Plantation
LOCATION
Albemarle Sound
Haughton Rd
Edenton
Yeopim Rd
Poplar Neck Rd
32
37

Bulkhead General Permit #49979A
issued 12/03/2007

Aerial Photo Date: 03/02/2008

Perquimans GIS 2012

29/2018 10:14:57 AM

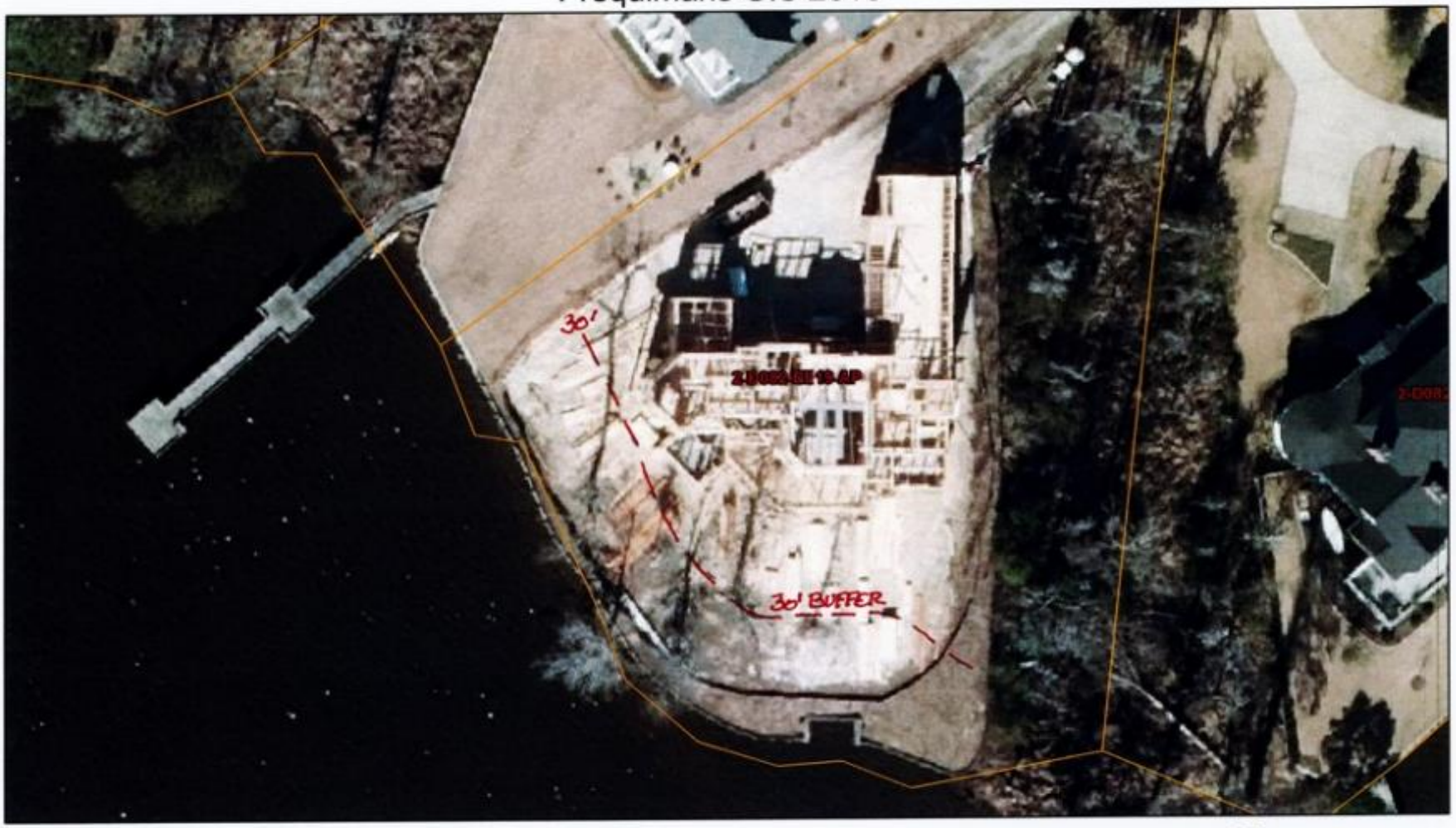
1:564

0 0 0.01 0.01 mi

0 0.01 0.01 0.02 km

Perquimans

Prequimans GIS 2016



8/29/2018 11:32:46 AM

Imagery2016

During construction of dwelling.

1:564

0 0 0.01 0.01 mi

0 0.01 0.01 0.02 km

Aerial Photo Date: 03/22/2017

STAFF PHOTOS

Facing west along Yeopim Creek
September 12, 2017

Facing east along Yeopim Creek
September 12, 2017

Facing south along Yeopim Creek
September 12, 2017

Facing southwest along Yeopim Creek
September 12, 2017

Photo provided by Petitioners

Photo provided by Petitioners

Photo provided by Petitioners

15A NCAC 07J .0703 PROCEDURES FOR DECIDING VARIANCE PETITIONS

(f) To grant a variance, the Commission must affirmatively find each of the four factors listed in G.S. 113A-120.1(a).

(1) that unnecessary hardships would result from strict application of the development rules, standards, or orders issued by the Commission;

(2) that such hardships result from conditions peculiar to the petitioner's property such as location, size, or topography;

(3) that such hardships did not result from actions taken by the petitioner; and

(4) that the requested variance is consistent with the spirit, purpose and intent of the Commission's rules, standards or orders; will secure the public safety and welfare; and will preserve substantial justice.