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July 19, 2021

Town of Pembroke Zoning Board of Appeals  
Town Hall  
100 Center Street  
Pembroke, Massachusetts 02359

Attn: Sabrina Chilcott, Assistant Town Manager  
[schilcott@townofpembrokmass.org](mailto:schilcott@townofpembrokmass.org)

**RE: Comprehensive Permit  
Peer Review Comments River Marsh Village  
Water Street Pembroke, Massachusetts**

Dear Ms. Chilcott and Members of the Board,

This letter is in response to questions and comments in a review letter dated April 12, 2021, from Merrill Engineers and Land Surveyors (Merrill) for the above referenced project.

The following were submitted to the Town on June 7, 2021:

- Two (2) full size plans of River Marsh Village - Comprehensive Permit Plan, Water Street, Pembroke, Massachusetts, prepared by McKenzie Engineering Group, 8 sheets, dated September 22, 2016, revised June 7, 2021.
- Two (2) copies of the Drainage Calculations and Stormwater Management Plan, Comprehensive Permit Plan, River Marsh Village, Pembroke, MA, prepared by McKenzie Engineering Group, dated November 27, 2018, revised June 7, 2021.

The following are responses to the comments that were highlighted in the Merrill review letter that warrant further clarification (MEG prior response in gray italics, current responses in blue italics).

### **COMPREHENSIVE PERMIT RULES AND REGULATIONS**

#### **3.1 The application for a Comprehensive Permit shall consist of:**

The following is a listing of the items required by the Zoning Board of Appeals shown in *italic print* with our comments noted below.

- a) *Site Control: Evidence that the developer has control over the property in question; a copy of the deed, purchase and sale agreement or option agreement.*

This information has been submitted as part of the Application material referenced above. Since much of the information in the Application is dated 2018, we recommend that it be updated or documentation provided that the information in the Application is still valid.

**MEG 3/24/21 Response:** *Please refer to the letter prepared by Baker, Braverman & Barbadoro, P.C., dated March 8, 2021, enclosed.*

**Merrill 4/12/21 Response:** *The Applicant's attorney, Baker, Braverman & Barbadoro, P.C. has submitted a letter on March 8, 2021, which updated the information. Comment satisfactorily addressed.*

**MEG 7/19/21 Response:** *No response required.*

- b) *Preliminary site development plans showing the locations and outlines of proposed buildings, the proposed locations, general dimensions and materials for streets, drives, parking areas, walks and paved areas; and proposed landscaping improvements and open areas within the site. An applicant proposing to construct or rehabilitate four (4) or fewer units may submit a sketch of the matters in 760 CMR 56.05(2)(a) and 31.02 (2)(c) which need not have an architect's signature. All projects of five or more units must have site development plans prepared by a registered architect or engineer.*

A Comprehensive Permit Plan prepared by a registered professional engineer has been submitted for this project as required. The plan set consists of eight (8) sheets: Existing Conditions Plan, Preliminary Site Layout Plan, Preliminary Grading & Drainage Plan, Preliminary Utilities Layout Plan and Construction Details Sheets 1-4. The dimensions and materials for the roadway are shown on the Detail Sheet. The plan shows that the existing dwelling is to be retained. If this is the case, this is extremely close to the proposed Building 2 and additional information should be provided.

**MEG 3/24/21 Response:** *Yes, the existing dwelling located at 274 Water Street is to be retained. Building #2 has been changed from a five-unit structure to a three-unit structure and the distance from the existing dwelling has been increased from 2 feet to 45.3 feet.*

**Merrill 4/12/21 Response:** *The existing dwelling at 274 Water Street is to remain and the plan has been revised to reduce the number of units proposed for Building 2 from five units to three units. The McKenzie Engineering Group (MEG) 4/06/21 Response Letter states that this distance has been increased to 45.3 feet. We recommend that this dimension be checked in as much as the dimensional arrow or the distance appears to be incorrect.*

**MEG 7/19/21 Response:** *On April 7, 2021, Environmental Consulting & Restoration, LLC delineated the limit of the mean annual high water line of offsite Certified Vernal Pool CVP#8150.*

*The wastewater treatment plant (WWTP), soil absorption system (SAS), infiltration basin, and buildings have been reconfigured resulting in the following positive changes to the project:*

- Elimination of the wetland crossing resulting in no wetland and vernal pool habitat alteration.*

- ***No work within the 300-foot scenic river corridor.***

***Revisions to the overall building configurations resulted in 36.4 feet from Building 2 to the existing deck at 274 Water Street.***

Grading is proposed immediately adjacent to abutting properties at a number of locations. We recommend that a vegetated buffer be provided for those areas of the project abutting residential dwellings. As shown on the plan, no sidewalks are proposed. In order to provide for pedestrian safety along the roadway system, we recommend that sidewalks be provided within the project area and possibly extend off-site. The deck for the northern most unit of Building 10 is extremely close to the roadway. Additional setback distance should be provided from the roadway.

***MEG 3/24/21 Response: Vegetated buffers and a 6-foot-high privacy fence are proposed along the side and back property lines of 248, 260 and 268 Water Street where the project abuts those areas, see Landscape Plan L-1.***

***Building #10 has been reconfigured and the distance from the roadway to the deck has been increased from 2 feet to 9.5 feet.***

***Merrill 4/12/21 Response: A Preliminary Landscaping Plan, Sheet L-1, has been added to the plans set and the plan has been revised to provide for a 10 foot wide natural buffer in some areas. No specific sizes, number or type of plants are specified; however, Note 1 on the sheet specifies that the landscaping shown is for preliminary purposes only and that the final plan is to be designed and stamped by a Landscape Architect. The Board of Appeals should determine whether this is acceptable. No additional information has been provided relative to sidewalks. As previously stated, in order to provide for pedestrian safety along the roadway system, we recommend that sidewalks be provided within the project area and possibly extend off-site. The location of Building 10 has been revised to increase the setback distance from the roadway from 2 feet to 10 feet.***

***MEG 7/19/21 Response: Based on the anticipated demographics a sidewalk within the development will not be provided.***

***Building 10 has been renumbered to Building 12 and is 9.5 feet from the roadway.***

We recommend that the following additional information be shown on the plans:

- Distance between buildings

***MEG 3/24/21 Response: Please refer to the Preliminary Site Layout Plan, Sheet C-1 for the requested information.***

***Merrill 4/12/21 Response: This information has been added to Sheet C-1 of the plan. The Fire Department should review this information and determine if this is acceptable.***

***MEG 7/19/21 Response: Please refer to the Preliminary Site Layout Plan, Sheet C-1 for revised distances between buildings.***

- Distance along driveway from edge of pavement to garages

***MEG 3/34/21 Response: Please refer to the Preliminary Site Layout Plan, Sheet C-1 for the requested information.***

***Merrill 4/12/21 Response: This information has been added to Sheet C-1 of the plan.***

***MEG 7/19/21 Response: Please refer to the Preliminary Site Layout Plan, Sheet C-1 for revised distances along the driveways to the edge of pavement.***

- Distance from the stormwater basin to units and property line

***MEG 3/24/21 Response: Please refer to the Preliminary Site Layout Plan, Sheet C-1 for the requested information.***

***Merrill 4/12/21 Response: This information has been added to Sheet C-1 of the plan.***

***MEG 7/19/21 Response: The stormwater management system has been revised to include a subsurface infiltration system and an extended dry detention basin. Please refer to the Preliminary Site Layout Plan, Sheet C-1 for revised locations and the distance to the property line from the extended dry detention basin.***

- Roof Drains

***MEG 3/24/21 Response: Roof drains will be submitted in conjunction with the development of final construction plans. All roof runoff has been accounted for in the post-development HydroCAD model and the proposed infiltration basin has been sized accordingly.***

***Merrill 4/12/21 Response: This information has not been added to the plan; however, as stated in 04/06/21 MEG Response Letter the stormwater system has been correctly sized assuming all roof runoff will be directed into the infiltration basin. This will need to be confirmed by review of the final construction plans and if approved and acceptable to the Board of Appeals could be made a Condition of Approval.***

***MEG 7/19/21 Response: The stormwater management system has been revised to include a subsurface infiltration system and an extended dry detention basin. All roof runoff will be directed to the subsurface infiltration system and the proposed subsurface infiltration system has been sized accordingly.***

- Designated Open Areas

***MEG 3/24/21 Response: Please refer to the Preliminary Site Layout Plan, Sheet C-1 for the requested information.***

***Merrill 4/12/21 Response: This information has been added to Sheet C-1 of the plan.***

***MEG 7/19/21 Response: Please refer to the Preliminary Site Layout Plan, Sheet C-1 for revised designated open areas.***

- Landscaping, in particular for the areas in close proximity to abutting property and around the stormwater basin

***MEG 3/24/21 Response: A preliminary landscape plan is included in the plan set, refer to Sheet L-1. A robust landscape plan will be prepared by a Landscape Architect with the development of final construction plans.***

***Merrill 4/12/21 Response: A Preliminary Landscaping Plan, Sheet L-1, has been added to the plans set and the plan has been revised to provide for a 10 foot wide natural buffer in some areas. No specific sizes, number or type of plants are specified; however, Note 1 on the sheet specifies that the landscaping shown is for preliminary purposes only and that the final plan is to be designed and stamped by a Landscape Architect. The Board of Appeals should determine whether this is acceptable.***

***MEG 7/19/21 Response: No response required.***

- Estimated earthwork quantities

***MEG 3/24/21 Response: Please refer to the Preliminary Grading and Drainage Plan, Sheet C-2 for the preliminary earthwork quantities.***

***Merrill 4/12/21 Response: This information has been added to Sheet C-2 of the plan. As shown the preliminary Estimated Earthwork Quantities the project proposes an excess volume of 28,506 cubic yards which will need to be trucked off site. We recommend that if this project is approved and if acceptable to the Board of Appeals that the submittal of a Construction Traffic Management Plan be made a Condition of Approval.***

***MEG 7/19/21 Response: No response required.***

- Preliminary proposed roadway profiles should be presented to demonstrate that adequate sight distances are provided.

***MEG 3/34/21 Response: Preliminary roadway profiles for Road "A", "B" and "C" are included in the plan set, refer to Sheet C-4.***

***Merrill 4/12/21 Response: This information has been added to Sheet C-4 of the plan.***

***MEG 7/19/21 Response: No response required.***

- The type of curbing and all curb radii specified

***MEG 3/24/21 Response: Please refer to the Preliminary Site Layout Plan, Sheet C-1 for the requested information.***

***Merrill 4/12/21 Response: This information has been added to Sheet C-1 of the plan.***

***MEG 7/19/21 Response: No response required.***

- The perimeter of the subject property shown in darker/thicker line type.

***MEG Response 3/24/21: The plans have been updated to show the perimeter of the subject property in a darker/thicker line type.***

***Merrill 4/12/21 Response: This information has been added to the plan.***

***MEG 7/19/21 Response: No response required.***

- Topographic and utility information on Water Street adjacent to the site

***MEG 3/24/21 Response: The plans have been updated to include the requested information.***

***Merrill 4/12/21 Response: This information has been added to the***

**plan.**

**MEG 7/19/21 Response: No response required.**

- Additional topography between the site and Water Street.

**MEG 3/24/21 Response: The plans have been updated to include the requested information.**

**Merrill 4/12/21 Response: This information has been added to the plan.**

**MEG 7/19/21 Response: No response required.**

- Sight Distance triangles at both project driveways

**MEG 3/24/21 Response: Preliminary sight distance triangles based on the American Association of State Highways and Streets (AASHTO) 85<sup>th</sup> percentile travel speed for 30 mph is included in the plan set for both drives, refer to Sheet C-7. Once actual speed data is obtained, the sight distance triangles will be updated accordingly.**

**Merrill 4/12/21 Response: This information has been added to the plan.**

**MEG 7/19/21 Response: No response required.**

- Provisions for Accessible Parking Spaces including details.

**MEG 3/24/21 Response: Please refer to the Preliminary Site Layout Plan and details, Sheets C-1 and D-3 for the requested information.**

**Merrill 4/12/21 Response: This information has been added to the plan.**

**MEG 7/19/21 Response: No response required.**

- A Fire Truck Access Plan should be added to the plan set.

**MEG 3/24/21 Response: Fire Truck Access Plans using the Town of Pembroke Ladder Truck are included in the plan set, refer to Sheets C-5 and C-6.**

**Merrill 4/12/21 Response: Fire Truck Access Plans have been added to the plan set and are shown on Sheets C-5 and C-6. This information should be reviewed and approved by the Fire Department.**

**MEG 7/19/21 Response: No response required.**

- c) A report on existing site conditions and a summary of conditions in the surrounding areas, showing the location and nature of existing buildings, existing street elevations, traffic patterns and character of open areas, if any, in the neighborhood. This submission may be combined with that required in 760 CMR 56.05(2)(a).

Information on the Existing Conditions has been provided. An Overall Map at a scale of 1 inch = 250 feet is presented on the Comprehensive Permit Plan and a USGS Locus Map is provided in the Drainage Calculations and Stormwater Management Plan showing the location and nature of existing buildings and existing streets. As required, a detailed Transportation Impact Assessment



prepared by Vanasse & Associates Inc. discussing both existing and future conditions has been submitted for this project. A peer review of the Transportation Impact Assessment is being performed by Ron Muller & Associates and is being submitted as a separate document.

Soil Logs for soil testing performed in 1992 were included in the submittal. We recommend that the plan be revised to label all test pits and that additional updated soil testing be performed regarding the existing soil conditions and depth to estimated seasonal high groundwater (ESHGW) since these conditions have a significant impact on the design of the proposed stormwater management system and proposed subsurface sewage disposal system. We recommend that the soil testing results be shown on the plan. The depth to groundwater as well as the infiltration capabilities of the soil will have a significant impact on the size and elevation of these systems. This may impact the building placement as well as the elevation of the roadway and consequently the total amount of fill which may be necessary for construction.

*MEG 3/24/21 Response: Additional soil testing was performed on March 16, 2021 at the specific location of the infiltration basin. Please refer to Appendix E of the Drainage Calculations and Stormwater Management Plan.*

*The design of the wastewater treatment plant (WWTP) will require a permit under the MassDEP Groundwater Discharge Permitting Program, 314 CMR 5.0. As such DEP is required to witness the soil testing within the limits of the proposed soil absorption system during the permitting process. Preliminary calculations for the soil absorption system are based on 157 bedrooms and a perc rate of 0 to 5 minutes per inch.*

*Merrill 4/12/21 Response: Additional updated soil testing has been performed within the limits of the proposed stormwater infiltration basin as recommended. The soil testing indicated that the ESHGW ranges from elevation 7.5 to elevation 9.4. The proposed bottom elevation of the Stormwater Infiltration Basin is 11.5 which provides a groundwater separation of 2.1 feet. A mounding analysis is required when the separation from the bottom of an infiltration basin to ESHGW is less than four (4) feet and the basin is used to attenuate peak discharges from the 10 year or higher 24-hour storm. The HydroCAD calculations do not take into account infiltration for the 10 year or higher 24-hour storms and consequently the separation to ESHGW meets the MassDEP minimum criteria of 2.0 feet.*

*No additional soil testing has been performed in the location of the proposed subsurface sewage disposal system since the soil testing must also be witnessed by MassDEP and will be addressed during the Groundwater Discharge Permitting Process. As proposed the sanitary sewer system will be a pump system and any grading associated with the subsurface sewage disposal system will not impact building elevation placement or the elevation of the roadway.*

*MEG 7/19/21 Response: Additional soil testing was performed on May 17 and 18, 2021, at the specific locations of the subsurface infiltration system and extended dry detention basin. Please refer to Appendix E of the Drainage Calculations and Stormwater Management Plan.*

*The stormwater management system has been revised to provide 4-feet of*

***separation to groundwater for the subsurface infiltration system.***

***The design of the wastewater treatment plant (WWTP) will require a permit under the MassDEP Groundwater Discharge Permitting Program, 314 CMR 5.0. As such DEP is required to witness the soil testing within the limits of the proposed soil absorption system during the permitting process. Preliminary calculations for the soil absorption system are based on 157 bedrooms and a perc rate of 0 to 5 minutes per inch.***

- d) *Preliminary, scaled, architectural drawings. For each building the drawings shall be prepared by a registered architect, and shall include typical floor plans, typical elevations, and sections, and shall identify construction type and exterior finishes.*

Preliminary, scaled, architectural drawings showing typical floor plans, typical elevations, and typical sections are contained in the Comprehensive Permit Application document. Due to the scale of the plans, 8-1/2" X 11", it is unclear whether the construction type and exterior finishes were provided. We recommend that full scale preliminary, scaled, architectural drawings be submitted.

***Merrill 4/12/21 Response: No additional information has been submitted.***

***MEG 7/19/21 Response: This information will be submitted under separate cover.***

- e) *A tabulation of proposed buildings by type, size (number of bedrooms, floor area) and ground coverage, and a summary showing the percentage of the tract to be occupied by buildings, by parking and other paved vehicular areas, and by open areas.*

A tabulation of proposed buildings is contained in Section 6. of the Comprehensive Permit Application document.

***MEG 3/24/21 Comment: No comment required.***

***Merrill 4/12/21 Comment: No additional comment required.***

***MEG 7/19/21 Response: No response required.***

- f) *Where a subdivision of land is involved, a preliminary subdivision plan is required.*

Not Applicable.

***MEG 3/24/21 Comment: No comment required.***

***Merrill 4/12/21 Comment: No additional comment required.***

***MEG 7/19/21 Response: No response required.***

- g) *A preliminary utilities plan showing the proposed location and types of sewage, drainage, and water facilities, including hydrants. Adequate supporting information, including pre- construction and post-construction drainage calculations and soil test results (which result shall have been witnessed by an appropriate and qualified Town Official or a qualified Town consultant) shall be provided to demonstrate that the proposed drainage system shall meet all Stormwater Management Guidelines promulgated by the Massachusetts Department of Environmental Protection, or best management practices,*



*whichever is more stringent and shall result in no net increase in the rate or volume of stormwater runoff;*

A preliminary utilities plan showing the proposed location of the subsurface sewage disposal system as well as the stormwater management system and water facilities, including hydrants, is shown on the plans.

We recommend that additional design information be provided to demonstrate that the size of the subsurface sewage disposal system has been adequately designed to meet the state and local regulations. This additional information should include soil testing results and a mounding analysis.

*MEG 3/24/21 Response: Please refer to the letter prepared by Baker, Braverman & Barbadoro, P.C., dated March 8, 2021, enclosed.*

*The design of the wastewater treatment plant (WWTP) will require a permit under the MassDEP Groundwater Discharge Permitting Program, 314 CMR 5.0. As such DEP is required to witness the soil testing within the limits of the proposed soil absorption system during the permitting process. Preliminary calculations for the soil absorption system are based on 157 bedrooms and a perc rate of 0 to 5 minutes per inch.*

***Merrill 4/12/21 Response: No additional soil testing has been performed in the location of the proposed subsurface sewage disposal system since the soil testing must also be witnessed by MassDEP and will be addressed during the Groundwater Discharge Permitting Process. As proposed the sanitary sewer system will be a pump system and any grading associated with the subsurface sewage disposal system will not impact building elevation placement or the elevation of the roadway. Satisfactory preliminary Subsurface Sewage Disposal System Sizing Calculations, prepared by McKenzie Engineering Group, dated April 5, 2021, have been submitted.***

***MEG 7/19/21 Response: Additional soil testing was performed on May 17 and 18, 2021 at the specific locations of the subsurface infiltration system and the extended dry detention basin. Please refer to Appendix E of the Drainage Calculations and Stormwater Management Plan.***

***The design of the wastewater treatment plant (WWTP) will require a permit under the MassDEP Groundwater Discharge Permitting Program, 314 CMR 5.0. As such DEP is required to witness the soil testing within the limits of the proposed soil absorption system during the permitting process. Preliminary calculations for the soil absorption system are based on 157 bedrooms and a perc rate of 0 to 5 minutes per inch.***

A stormwater management report entitled "Drainage Calculations and Stormwater Management Plan" has been submitted and indicates that the overall stormwater management system will attenuate the post development stormwater flows to a level not exceeding the existing conditions. The stormwater management report should provide the information to demonstrate that the project is capable of meeting the 10 Standards for Compliance with the Massachusetts DEP Stormwater Management Regulations.

***MEG 3/24/21 Response: The Drainage Calculations and Stormwater Management Plan has been updated to demonstrate that the project can meet all 10 Standards for Compliance with the MassDEP Stormwater Management Regulations.***

*Although the project is exempt from Standard 2 of the Massachusetts DEP Stormwater Management Regulations for land subject to coastal storm flowage as defined in 310 CMR 10.04, the project complies with Standard 2.*

We offer the following comments regarding the stormwater management system design and analysis:

- We recommend that a MassDEP “Checklist for Stormwater Report” be submitted for this project.

*MEG 3/24/21 Response: Please refer to Appendix C of the Drainage Calculations and Stormwater Management Plan for the MassDEP “Checklist for Stormwater Report”.*

***Merrill 4/12/21 Response: A MassDEP “Checklist for Stormwater Report” has been submitted for this project. Comment satisfactorily addressed.***

***MEG 7/19/21 Response: No response required.***

- As previously stated, we recommend that updated additional soil testing be performed within the limits of the proposed stormwater infiltration basin to confirm the soil conditions and depth to the Estimated Seasonal High Groundwater Elevation (ESHGW) used for the design and to demonstrate that the design meets the criteria specified in the Mass DEP Stormwater Management Handbook.

*MEG 3/24/21 Response: Additional soil testing was performed on March 16, 2021, at the specific location of the infiltration basin. Refer to Appendix E of the Drainage Calculations and Stormwater Management Plan.*

***Merrill 4/12/21 Response: Additional updated soil testing has been performed within the limits of the proposed stormwater infiltration basin as recommended. See above. Comment satisfactorily addressed.***

***MEG 7/19/21 Response: Additional soil testing was performed on May 17 and 18, 2021, at the specific locations of the subsurface infiltration system and the extended dry detention basin. Please refer to Appendix E of the Drainage Calculations and Stormwater Management Plan.***

- Watershed Plans for both the Existing and Post-Development Conditions have been included in the Drainage Calculations and Stormwater Management Plan. We recommend that the Post-Development Watershed Plan be revised to account for the offsite areas which will be flowing onto the proposed roadway and consequently into the proposed stormwater basin. Additional topographic contours should be shown between the site and Water Street.

*MEG 3/24/21Response: Offsite areas flowing to the site have been developed using contour information download form MassGIS Lidar.*

*The Pre- and Post-Development Watershed Plan has been revised accordingly. Please refer to Appendix A and B of the Drainage Calculations and Stormwater Management Plan.*

***Merrill 4/12/21 Response: Additional topographic contours have been shown between the site and Water Street and revised Watershed Plans for both the Existing and Post- Development Conditions have been submitted which take into consideration those offsite areas which will be flowing into the project site. The stormwater calculations have also been revised as necessary. Comment satisfactorily addressed***

***MEG 7/19/21 Response: No response required.***

- The post development watershed plan indicates that all roof runoff will be directed into the proposed stormwater infiltration basin. We recommend that the roof drains be shown on the plan. The size and material of the roof drains should be specified.

*MEG 3/24/21 Response: Roof drains will be submitted in conjunction with the development of final construction plans. All roof runoff has been accounted for in the post-development HydroCAD model and the proposed infiltration basin has been sized accordingly.*

***Merrill 4/12/21 Response: This information has not been added to the plan; however, as stated in 04/06/21 MEG Response Letter, the stormwater infiltration basin has been correctly sized assuming all runoff will be directed into the infiltration basin. This will need to be confirmed by the final construction plans and if approved and acceptable to the Board of Appeals this could be made a Condition of Approval.***

***MEG 7/19/21 Response: The stormwater management system has been revised to include a subsurface infiltration system and an extended dry detention basin. All roof runoff will be directed to the subsurface infiltration system and the proposed subsurface infiltration system has been sized accordingly.***

- We recommend capacity calculation for the roadway stormwater system be provided and that the Preliminary Grading & Drainage Plan be revised to show the pipe size, material, slope and flow arrows for all drain lines.

*MEG 3/24/21 Response: Capacity calculations for the roadway stormwater system will submitted in conjunction with the development of final construction plans.*

***Merrill 4/12/21 Response: This information has not been provided; however, as stated in 04/06/21 MEG Response Letter will be submitted with the development of the final construction plans. Due to the elevations of the proposed roadways and the outlets for the stormwater basin this would be satisfactory and if approved and acceptable to the Board of Appeals this could be made a Condition of Approval.***

***MEG 7/19/21 Response: No response required.***

- Capacity calculation should be provided for the proposed arch culvert at STA 10+42 Road B.

*MEG 3/24/21 Response: The pre- and post-development HydroCAD analysis has been updated to include the proposed open bottom box culvert. As shown in the analysis, the proposed 12'W X 6'H x 17.99'L open box culvert has sufficient capacity to handle all storm events including the 100-year storm.*

***Merrill 4/12/21 Response: Additional acceptable capacity calculations have been included in the HydroCAD Calculations. Comment satisfactorily addressed.***

***MEG 7/19/21 Response: The wastewater treatment plant (WWTP), and soil absorption system (SAS) have been reconfigured resulting in the elimination of the open bottom box culvert.***

- Calculations should be submitted to demonstrate that the sediment forebay for stormwater infiltration basin contains the required volume.

*MEG 3/24/21 Response: Please refer to Appendix D of the Drainage Calculations and Stormwater Management Plan for the sediment forebay sizing calculations.*

***Merrill 4/12/21 Response: Calculations have been submitted that demonstrate that the sediment forebay for stormwater infiltration basin has been properly designed contains the required volume. Comment satisfactorily addressed.***

***MEG 7/19/21 Response: Please refer to Appendix D of the Drainage Calculations and Stormwater Management Plan for the sediment forebay sizing calculations for the extended dry detention basin.***

- The Hydro CAD analysis for the stormwater infiltration basin (Pond 1P) lists an outlet “Special and User Defined”. Additional information should be provided to clarify the specific type of outlet, it appears that it may be infiltration and if so, the backup calculations should be submitted.

***MEG 3/24/21 Response: Per the DEP stormwater management handbook, if less than 4 feet of separation to groundwater is provided, infiltration (special exfiltration in HydroCAD) is required to be shut-off for the 10-yr and higher 24-hour storm events.***

***Rawls Rate = 2.41 in/hr***

***Bottom Basin Area = 12,792 sq.ft. (Area does not include the sediment forebay).***

***$Q = 2.41 \text{ in/hr} * 1/12 \text{ in/ft} * 1/3600 \text{ sec/hr} * 12,792 \text{ sq.ft.} = 0.714 \text{ cfs}$***

***For infiltration basin 1P, a user defined infiltration rate of 0.714 cubic feet per second was provided up to the 10-year storm, for higher 24-hour storms, an infiltration rate of 0.00 cubic feet per second was provided. Please refer to Appendix B of the Drainage Calculations and Stormwater Management Plan.***

***Merrill 4/12/21 Response: Additional information has been provided. Comment satisfactorily addressed.***

***MEG 7/19/21 Response: The stormwater management system has been revised to include a subsurface infiltration system and an extended dry detention basin. 4-feet of separation to groundwater is provided for the subsurface infiltration system.***

- As specified in the Mass DEP Stormwater Management Handbook, stormwater infiltration basins shall be designed to exfiltrate in no less than 72 hours. Calculations should be provided to show that the basin meets this requirement.

***MEG 3/24/21 Response: Please refer to Appendix D of the Drainage Calculations and Stormwater Management Plan for the infiltration basin drawdown calculation.***

***Merrill 4/12/21 Response: Calculations have been submitted showing that the stormwater basin will drain in 11 hours. Comment satisfactorily addressed.***

***MEG 7/19/21 Response: Please refer to Appendix D of the Drainage Calculations and Stormwater Management Plan for the drawdown calculation for the subsurface infiltration system.***

- A cross-section of the stormwater infiltration basin is shown on sheet C-5 of the plants. We recommend that the elevation of the estimated seasonal high groundwater (ESHGW) be provided to demonstrate that the minimum separation to groundwater is provided. A mounding analysis is required when the separation from the bottom of an infiltration basin to ESHGW is less than four (4) feet and the basin is used to attenuate peak discharges from the 10 year or higher 24 hour storm.

***MEG 3/24/21 Response: The detail of the stormwater infiltration basin has been***

*revised to provide the elevation of the estimated seasonal high groundwater (ESHGW), refer to Sheet D-2.*

**Merrill 4/12/21 Response: The elevation of the ESHGW has been shown on the plan to demonstrate that the minimum separation to groundwater is provided. Comment satisfactorily addressed.**

**MEG 7/19/21 Response: The stormwater infiltration basin detail has been revised to an extended dry detention basin, refer to Sheet D-5.**

- We recommend that all flared end sections (FES) be made of reinforced concrete and equipped with trash racks/safety grates and erosion control pads and that these erosion control pads be presented on the Grading and Utility Sheets.

*MEG 3/24/21 Response: The Preliminary Grading and Drainage Plan and the details have been revised accordingly, refer to Sheets C-2 and D-2.*

**Merrill 4/12/21 Response: The plan has been revised to show that all flared end sections (FES) are reinforced concrete and equipped with trash racks/safety grates and erosion control pads. Comment satisfactorily addressed.**

**MEG 7/19/21 Response: No response required.**

It is general practice to design sites to comply with Massachusetts DEP Stormwater Management Regulations. The following section describes the 10 Standards for Compliance with Stormwater Management Regulations and the status of the submittal relative to each standard.

#### Standard 1 – Untreated Stormwater

This standard requires that no new untreated point source discharges are created and that point source or sheet flow discharges do not result in erosion into or scour of wetlands.

A new point source discharge is proposed from the stormwater basin, calculations and details should be provided for the design of the plunge pool and outlet at the basin. In addition as previously stated, we recommend that updated additional soil testing be performed within the limits of the proposed stormwater infiltration basin.

*MEG 3/24/21 Response: Additional soil testing was performed on March 16, 2021, at the specific location of the infiltration basin. Refer to Appendix E of the Drainage Calculations and Stormwater Management Plan.*

*Please refer to Appendix D of the Drainage and Stormwater Management Plan for scour protection calculations.*

**Merrill 4/12/21 Response: Additional calculations and details have been provided. Also, as previously stated, updated additional soil testing has been performed within the limits of the proposed stormwater infiltration basin. This Standard has been met.**

**MEG 7/19/21 Response: No response required.**

#### Standard 2 – Post Development Peak Discharge Rates

This standard requires that the peak rate of discharge does not exceed pre-development conditions and that the design would not result in off-site flooding during the 100-year storm.

A stormwater management report entitled “Drainage Calculations and Stormwater Management Plan” has been submitted and indicates that the overall stormwater management system will attenuate the post development stormwater flows to a level not



exceeding the existing conditions. Additional information as noted above is necessary.

*MEG 3/24/21 Response: Additional soil testing was performed on March 16, 2021 at the specific location of the infiltration basin. Refer to Appendix E of the Drainage Calculations and Stormwater Management Plan.*

*Although the project is exempt from Standard 2 of the Massachusetts DEP Stormwater Management Regulations for land subject to coastal storm flowage as defined in 310 CMR 10.04, the project complies with Standard 2.*

***Merrill 4/12/21 Response: The recommended additional information has been submitted and since the project discharges to Land Subject to Coastal Storm Flowage attenuation of any increase in the peak rate of stormwater runoff is not required. This Standard has been met.***

*MEG 7/19/21 Response: Although the project is exempt from Standard 2 of the Massachusetts DEP Stormwater Management Regulations for land subject to coastal storm flowage as defined in 310 CMR 10.04, the revised project still complies with Standard 2 for peaks rates of runoff.*

#### Standard 3 – Recharge to Groundwater

This standard requires that designs provide on-site recharge to mimic pre-development conditions.

Calculations should be submitted to demonstrate compliance with this Standard.

*MEG 3/24/21 Response: Please refer to Appendix D of the Drainage and Stormwater Management Plan for recharge to groundwater calculations.*

***Merrill 4/12/21 Response: Acceptable Recharge Calculations have been submitted demonstrating compliance. This Standard has been met.***

*MEG 7/19/21 Response: Please refer to Appendix D of the Drainage Calculations and Stormwater Management Plan for recharge calculations for the subsurface infiltration system.*

#### Standard 4 – 80% Total Suspended Solids (TSS) Removal

This standard requires runoff be treated to remove suspended solids (TSS) to at least 80% removal. In areas with a rapid infiltration, pretreatment of 44% is required prior to infiltration systems.

No Total Suspended Solids (TSS) calculations have been submitted. A TSS Removal Calculation Worksheet for each of the treatment trains should be submitted.

*MEG 3/24/21 Response: Please refer to Appendix D of the Drainage and Stormwater Management Plan for TSS calculations.*

***Merrill 4/12/21 Response: Acceptable TSS Calculation Worksheets have been submitted for the treatment train directed to the Stormwater Infiltration Basin. TSS Calculation Worksheets should be provided for those areas of the proposed roadway not directed to the Stormwater Infiltration Basin. Additional information required.***

*MEG 7/19/21 Response: All runoff from the proposed roadway will be directed to the extended dry detention basin or the subsurface infiltration system. Please refer to Appended D of the Drainage and Stormwater management Plan for updated TSS calculations.*



Standard 5 – Higher Potential Pollutant Loads

This project is not considered a source of higher pollutant loads. This Standard is not applicable.

*MEG 3/24/21 Response: No response required.*

**Merrill 4/12/21 Response: No additional comment required.**

**MEG 7/19/21 Response: No response required.**

Standard 6 – Protection of Critical Areas

The project is not located in a Critical Area based on DEP requirements. This standard is not applicable under DEP requirements;

*MEG 3/24/21 Response: No response required.*

**Merrill 4/12/21 Response: No additional comment required.**

**MEG 7/19/21 Response: No response required.**

Standard 7 – Redevelopment Projects

This project is not considered a redevelopment project and consequently this Standard is not applicable.

*MEG 3/24/21 Response: No response required.*

**Merrill 4/12/21 Response: No additional comment required.**

**MEG 7/19/21 Response: No response required.**

Standard 8 – Erosion/Sediment Control

This standard requires construction phase erosion controls.

No construction phase plan has been provided. The limits of erosion controls are indicated on the Grading and Drainage Plan. A filter sock erosion control device is provided at the limit of construction and a detail is presented on the plans. We recommend that a detailed construction sequencing be provided and that the location of the construction entrance, stockpile areas and temporary sedimentation basins be included. Calculations should be submitted for sizing of the basins and details of the sedimentation basins be provided including the proposed grading as well as the type of outlet control structures. An EPA Notice of Intent and Stormwater Pollution Prevention Plan (SWPPP) will be required since the project proposes more than 1 acre of disturbance. If this project is approved and if acceptable to the Board of Appeals the submittal of this additional information could be made a Condition of Approval.

*MEG 3/24/21 Response: An Erosion and Sedimentation Control Plan will be submitted in conjunction with the development of final construction plans and the SWPPP.*

**Merrill 4/12/21 Response: No additional comment required.**

**MEG 7/19/21 Response: No response required.**

Standard 9 – Operation and Maintenance Plan

This standard requires long term maintenance of non-structural and structural BMP's and requires a specific inspection schedule, etc.

A Post-Construction Best Management Practices Operation and Maintenance Plan (O&M) has not been submitted. This information should be submitted and we recommend that the O&M be a standalone document with a plan that identifies BMP locations, snow storage areas, locations for landscape debris disposal if proposed, etc.

**MEG 3/24/21 Response:** Please refer to Appendix F of the Drainage and Stormwater Management Plan for Operation and Maintenance Plan. The standalone Operation and Maintenance Plan will be submitted in conjunction with the development of final construction plans and the SWPPP.

**Merrill 4/12/21 Response:** A “Construction Phase Pollution Prevention and Erosion and Sedimentation Control Plan” as well as a “Post-Development Best Management Practice Operation and Maintenance Plan & Long-Term Pollution Prevention Plan” is included in the Drainage Calculations and Stormwater Management Plan. If this project is approved and once construction plans have been finalized these documents should be submitted as standalone document.

**MEG 7/19/21 Response:** No response required.

Standard 10 – Illicit Discharges

In order to meet this standard, an “Illicit Discharge Compliance Statement” meeting the requirements specified in the Stormwater Management Regulations has been submitted.

This statement requires a signature. Additional Information required.

**MEG 3/24/21 Response:** Please refer to Appendix C of the Drainage and Stormwater Management Plan for the “Illicit Discharge Compliance Statement.”

**Merrill 4/12/21 Response:** The “Illicit Discharge Compliance Statement” has been signed as required. This Standard has been met as required.

**MEG 7/19/21 Response:** No response required.

- h) A Project Eligibility Letter that satisfies all of the requirements of 760 CMR 56.

A Project Eligibility Letter/Site Approval Letter from Mass Housing dated February 15, 2018 is included in Section 7 of the Comprehensive Permit Application. This Approval is valid for two (2) years unless extended by Mass Housing.

**MEG 3/24/21 Response:** Please refer to the letter prepared by Baker, Braverman & Barbadoro, P.C., dated March 8, 2021, enclosed.

**Merrill 4/12/21 Response:** The Applicant’s attorney, Baker, Braverman & Barbadoro, P.C. has submitted a letter on March 8, 2021 which updated the information. Comment satisfactorily addressed.

**MEG 7/19/21Response:** No response required.

- i) A list of requested exemptions to local requirements and regulations, including local codes, ordinances, bylaws or regulations.

A List of Waivers and Other Exemptions dated August 29, 2018 is included in Section 8 of the Comprehensive Permit Application.

**MEG 3/24/21 Response:** Please refer to the letter prepared by Baker, Braverman & Barbadoro, P.C., dated March 8, 2021, enclosed.

**Merrill 4/12/21 Response:** No additional comment required.

**MEG 7/19/21Response:** No response required.

- j) A complete copy of any and all materials and applications submitted by the applicant to any prospect subsidizing agency or source, including, but not limited to applications for site approval.

It appears that copies of any and all materials and applications submitted by the applicant to any prospect subsidizing agency or source, including, but not limited to applications for site approval are included in the Comprehensive Permit Application. This should be confirmed by the Applicant.

**MEG 3/24/21 Response: No response required.**

**Merrill 4/12/21 Response: The Applicant's attorney, Baker, Braverman & Barbadoro, P.C. has submitted a letter on March 8, 2021 which updated the information. Comment satisfactorily addressed.**

**MEG 7/19/21 Response: No response required.**

- k) *A list of each member of the development and marketing team, including all contractors and subcontractors, to the extent known at the time of application. The Applicant shall also be required to disclose its relationship to all such entities.*

A List of River Marsh Development Team is included in Section 10 of the Comprehensive Permit Application.

**MEG 3/24/21 Response: No response required.**

**Merrill 4/12/21 Response: No additional comment required.**

**MEG 7/19/21 Response: No response required.**

- l) *A list of all prior development project completed by the Applicant, along with a brief description of each such project.*

A statement regarding the applicant's prior development projects is included in Section 11 of the Comprehensive Permit Application. The statement states that "The applicant is an entity created for the sole purpose of developing River Marsh, a multi-family housing development in accordance with M.G.L. 40B, S 20-23, and therefore it has not completed any projects.

The Development Team behind the Applicant has successfully constructed commercial developments and residential developments that are similar in nature, such as Washington Woods that consist of seven residential buildings and associated site work on approximately 10 acres off of Washington Street (Route 53) in Norwell, Massachusetts."

**MEG 3/24/21 Response: No response required.**

**Merrill 4/12/21 Response: No additional comment required.**

**MEG 7/19/21 Response: No response required.**

We believe that we have sufficiently addressed the comments in the April 12, 2021, Merrill letter. Please do not hesitate to contact us should you have any questions or require additional information.

Very truly yours,

MCKENZIE ENGINEERING GROUP, INC.



Susan Spratt, P.E.  
Project Manager

Bradley C. McKenzie, P.E.  
President

Cc: Matthew Heins, Pembroke Planning Board  
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