November 21, 2016

Littleton Planning Board
Town of Littleton
27 Shattuck Street
Littleton, MA 01460

Re: Revised Subdivision plans for Couper Farm Estates

Dear Members of the Board:

Below is a list of comments prepared by the peer review consultant, along with responses on plan revisions which are being prepared. The plans have been revised, but will not be submitted to the board until after the waiver requests have been discussed as it may result in additional minor plan revisions.

**Plan Comments:**

1. Per § 249-32.B, the Definitive Plans shall be at 1”=20’ scale. The plans are at 1”=40’ scale. Green finds the drawing scale to be adequate for the site; however, we respectfully defer to the Planning Board for a determination on this item. Per § 249-32.C.1, a North arrow is required on the plans. The Applicant should revise the plans to include this information on the relevant sheets.

   **Response:** We agree with the adequacy of the 40 scale detail, and have added additional north arrows to the plans as requested.

2. Per § 249-32.D.5, all drainage facilities, including stormwater mitigation practices, shall be shown on plan and on profiles showing sizes, invert elevations and slopes. The Applicant should revise the plans and profiles to include all structures and inverts, including those which are outside of the roadway. Several pipe sizes and inverts are not included in either the plan or profiles.

   **Response:** We have added additional profiles of cross country drains as requested.

3. Per § 249-32.D.6, water line locations shall be shown on profile sheets where they cross drainage facilities. The Applicant should revise the profile sheets to show water line locations at CB 1, CB 10, CB 12, CB 21, CB 31, CB 34, CB 38, CB 42, DMH 43, DMH 57, CB 55, DMH 53, CB 50, and CB 61.

   **Response:** We have modified the profile sheets to show the location of the proposed water main and have updated the notes on the detail for the water/sewer/drain crossing detail to include the locations of the crossings.

4. Per § 249-32.D.7, the location of all subsurface utilities shall be shown on the plans. No gas utility is shown on the plans. If gas is proposed, the Applicant should revise the plans to show the location of the proposed gas utility.

   **Response:** No natural gas is proposed. The proposed dwellings will either be heated with oil or propane.
5. Per § 249-32.E.1.b.iii, the narrative statement shall document the effects upon priority and estimated habitat for rare and endangered species. Seventeen houses are currently proposed within NHESP-listed Priority Habitat (PH 1159). The Applicant should provide their correspondence with NHESP to document that impacts to rare and endangered species are limited.

Response: Attached herewith is a letter of “No Take” issued by the Division of Fisheries and Wildlife dated January 20, 2017.

6. Per § 249-32.E.3, the Applicant shall submit calculations showing that any proposed sanitary sewer system has been designed according to Town standards, and that sewage estimates shall be based on the Massachusetts Department of Environmental Protection’s Title V. While the review of this information is outside of the scope of this review, the Applicant should provide documentation that the calculations for the two proposed septic treatment areas have been reviewed and approved by the Littleton Board of Health.

Response: The septic system designs for the 2 shared systems are currently being designed. The Conventional 3 Bedroom dwelling system has been designed and submitted to the Littleton Board of Health for their review, and the Over 55 system will be submitted shortly. The areas shown on the plans for the septic system have been designed for the soil testing performed in the area and will be the actual size and elevation of the system.

7. Per § 249-32.E.4, the Applicant shall submit a water study certified by a Professional Engineer with demonstrated qualifications as a water consultant. The Applicant should submit their correspondence with the Town of Littleton Water Department to document that the proposed water system will provide the development with adequate fire and water flows.

Response: The water system has been designed and reviewed by the Littleton Water Department. A Flow test for the existing main is scheduled for Wednesday February 22, 2017. LWD anticipates there will be ample flow for the proposed development.

8. Per § 249-32.E.5, the Applicant shall provide additional costs for future plowing, sanding, and sweeping per lane mile, including maintenance of the stormwater system. The Applicant reported this value based on the 2014 Annual Town Report. As the 2015 Annual Town Report is now available, the Applicant should provide the additional costs for Public Works based on this more recent data.

Response: The Impact statement has been revised with the updated numbers as requested.

9. Per § 249-32.E.6, the Applicant shall provide estimates of municipal service costs. The Applicant Reported the value based on the 2012-2013 Pupil Expenditure Report. As the 2014-2015 Pupil Expenditure Report is now available, the Applicant should provide estimates of municipal service costs based upon this more recent data.

Response: The Impact statement has been revised with the updated numbers as requested.

10. Per § 249-43.A.2, dead-end streets shall be no longer than 750 feet, measured from the end of the turnaround to the sideline of the first intersecting street not part of the dead end system. Field Lane is 750-feet long and the addition of Dean Lane off Field Lane creates a dead end that is longer than 750-feet. The Applicant should revise the roadway layout so that no dead end street is longer than 750-feet.
Response: this has been discussed with the planning board at the previous hearing. It is the interpretation of this office that Dean Lane is not a road, and will not be accepted by the town as a road. The permit filed for is actually a shared residential drive special permit which is allowable under the Over 55 bylaw. Additionally, the Fire Chief was consulted on February 21, 2017 and had no issues regarding access to the development.

11. Per § 249-43.A.3, dead-end streets shall be provided at the closed end with a turnaround having dimensions confirming to AASHTO Exhibit 5-BD. The cul-de-sac appears to meet the requirements of AASHTO Exhibit 5-8C, which is a circular type rather than a circular offset type. We take no exception to the substitution; however, the Applicant should verify the Fire Department and Highway Department approve of the cul-de-sac configuration and revise the plans to provide dimensions of the cul-de-sac. Additionally, the Applicant should provide turning movements demonstrating that a fire truck of dimensions specified by the Fire Department can be accommodated.

Response: The dimension of the cul-de-sacs were designed per the fire department’s ladder truck, and have been reviewed with the Chief on February 21, 2017.

12. Per § 249-43.A.6, the minimum width of right-of-way for off-street paths or easements shall be ten (10) feet. The Applicant should revise plans to include a minimum of ten (10) feet of right-of-way for all proposed paths.

Response: An easement has been added to the over 55 portion of the path, however, it is not necessary to have an easement for the walking path in the open space.

13. Per § 249-43.B.1, Horizontal alignment shall be designed in accordance with Section 4.2 of the MassDOT PD&DG. Minimum centerline alignment radii for Minor Roads should be based on a design speed of 30 MPH using MassDOT PD&DG for non-superelevated roadways in Exhibit 4-9. The Applicant should revise all horizontal curves to meet Section 4.2 of the MassDOT PD&DG.

Response: The horizontal alignment design has been based on a speed of 24mphm and have a corresponding speed limit of 20MPH. Vint and Dean lane have a corresponding speed limit of 15mph. The horizontal alignments are met for these design speeds. Additional signage has been added to the landscape and signage sheet to reflect the proposed speed limits.

14. Per § 249-43.B.3, Vertical curves shall be designed in accordance with Section 4.3.3 Vertical Curves and 4.4 Combination of Horizontal and Vertical Alignments of the MassDOT PD&DG and with the AASHTO Green Book. The Applicant should revise the vertical curves at station 2+06.66 on Couper Farm Lane and station 1+50.00 on Dean Lane to meet the required k-values for Minor Streets. The Applicant should verify that all vertical curves are designed in accordance to the sections stated above. Also, the Applicant should revise Couper Farm Lane Profile to include proper grade break through the intersection of Couper Farm lane and Field Lane.

Per comment above, The vertical alignment design has been based on a speed of 24mphm and have a corresponding speed limit of 20MPH. Vint and Dean lane have a corresponding speed limit of 15mph. The vertical alignment k values are met for these design speeds. The intersection grade breaks are also met. Additional signage has been added to the landscape and signage sheet to reflect the proposed speed limits.

15. Per § 249-43.C.1, street cross sections shall be designed in accordance with the minimum design requirements of the Typical Sections provided in the appendices for the respective street
classification. The Applicant should revise the Roadway Sections to include additional dimensions and labels to better reflect Figures 1, 2 & 3 in the Subdivision Rules and Regulations. For example, include a dimensions and label denoting both the sidewalk and the grass strip within the sections.

Response: Roadway cross sections in areas of a differential grade change of over 5 feet have been added to the plans.

16. Per § 249-43.C.2, all subdivisions with ten (10) or more lots located in an area where school busing is provided or is likely to be provided in the future must provide at least one bituminous or cement concrete paved bus waiting area. The Applicant should provide a bus waiting area.

A school bus turn out area has been added to the plans in the vicinity of Station 4+25 on Couper Farm Lane. This location has been chosen for safety with respect to grades, housing on only one side of the road, and visibility.

17. Per § 249-43.D.8, any group of twenty (20) or more lots shall be provided with two (2) means of egress. It is our understanding that the spirit of this regulation is to have no more than 20 dwellings without two (2) means of egress. There is a total of 37 dwellings on Field Lane and Dean Lane with only one (1) means of egress. Should access be blocked near the corner of Field Lane and Couper Farm Lane by a fallen tree or other obstruction, emergency vehicles will not have emergency access to these lots. The Applicant should revise the plans to include two (2) means of egress for Dean Lane and Field Lane.

Response: this has been discussed with the planning board at the previous hearing. It is the interpretation of this office and the board that the 2 forms of egress are met with the proposed layout of the development. Additionally, the Fire Chief was consulted on February 21, 2017 and had no issues regarding access to the development.

18. Per § 249-43.D.12, the nearest line of any driveway shall not be closer than fifty (50) feet from the intersection of any two (2) streets. The Applicant should revise the plans so that no driveways are within fifty (50) feet of an intersection.

Unfortunately, given the nature of the open space development and the lot sizes/configuration, this cannot be met for a couple of the lots. We have revised the waiver request letter to allow driveways within 50’ of the intersections.

19. Per § 249-43.E.1, cul-de-sac center island shall be landscaped. If, based on the turning movements to be provided by the Applicant, the Fire Department determines that the cul-de-sac can adequately accommodate fire apparatus while maintaining landscaped center islands, the Applicant should revise the plans to call out and detail the landscaped center islands.

After meeting with the fire department, it is the wish of the Fire Chief to have the centers of the islands landscaped as long as the curbing is either bituminous berm or sloped granite curbing.

20. Per § 249-43.E.3, trees shall be planted on both sides of the street. The Applicant should revise the Landscape and Signage Plan to include trees on both sides of the roadway for all streets throughout the project. If the Applicant proposes to retain existing trees in lieu of new trees, the Applicant should add that information to the plans.

Response: The plans have been revised to depict the locations where existing vegetation is to remain for the purpose of meeting the street tree requirements.

21. Per § 249-43.E.5, street tree locations shall be coordinated with all existing and proposed below grade and above grade utilities. The Landscape Plan does not show all proposed utilities. The
Applicant should revise the Landscape Plan to show all utilities to determine if there are any conflicts between street tree locations and proposed utilities.

Response: We have added the location of the proposed underground utilities on the landscape plan to show conflict areas.

22. Per § 249-43.E.9, street tree locations shall be 3” caliper minimum. The Landscape Plan proposes 2.5” minimum. The Applicant should revise the Landscape Plan to require 3” minimum caliper street trees.

Response: The detail on the Landscape plan has been revised to show 3” caliper specimen trees.

23. Per § 249-47.A, easements are required for all utilities within lots lines. Easements of at least 20 feet in width shall be provided where necessary within the lot lines. The Applicant should revise the sewer easement bordering Lot 20 and 55+ Age Restricted Development House 16 to be at least 20 feet in width and provide easements for all closed drainage within open space lots.

Response: the total width of the proposed easement between the Over 55 Parcel and Lot 16 is 35’ which will suffice for the 3 subsurface utilities.

24. Per § 249-52.D, water resources shall be protected, including but not limited to floodplains, wetlands, aquifer recharge areas, and Town well fields. The Applicant should avoid all work within a wetland. This includes, but not limited to, widening an existing walking path to 6-feet.

Response: The plan has been revised to show the existing path as 8’ wide as it exists as a drivable farm equipment path between the properties. No widening of the existing path within the wetland area needs to be performed.

25. Per § 249-59.A, all wiring, appurtenances of electric power, telephone, cable and fire alarm systems, and other utilities shall be placed underground within the limits of the street right-of-way. The plans indicate that electric power and communications will be placed underground. The Applicant should confirm all other wired utilities will be placed underground, along the same route as the underground electric or spare conduits will be provided, per § 249-59.B.

Response: this detail is provided on Detail Sheet 3.

26. Per § 249-66.J, the Applicant should indicate on the plans that all proposed work shall conform to MassDOT Standard Specifications.

Response: A note has been added (note 18) to Sheet S2 that all work proposed shall conform to MassDOT Standard Specifications.

27. Per § 249-73.A, MassDOT Granite Curb Type VA-4 is required. The Applicant has requested a waiver to provide bituminous berm in lieu of granite curb. Wheelchair ramps should be constructed with granite transition curbs. Should the Planning Board approve the waiver request, the Applicant should also provide a detail to transition from the bituminous berm to the granite curb required at the wheelchair ramps.

Response: We take no exception to this comment, and will revised the plans if necessary after the board renders it’s decision on the requested waivers.

28. Per § 249-77.A, footpaths shall meet ADA and MAAB requirements. The Applicant should provide cross slopes and longitudinal slopes for the proposed footpaths, and should provide the relocated route of the existing walking path near infiltration Basin 4.
The intended use of the paths is for a nature trail, and have been revised on the plan to be called “Nature Trails” to eliminate the confusion of the requirement to meet ADA and MAAB requirements.

29. Per § 249-81.A, there shall be sidewalks five (5) feet in width on both sides of all collector streets and on one (1) side of all minor streets. As indicated in Figures 1, 2 & 3, cement concrete is required for all sidewalks unless a written waiver is obtained by the Applicant. The Applicant should revise the plans to show a five (5) foot cement concrete sidewalk throughout the project, including between Vint Lane and Great Road. If a waiver is obtained by the Applicant for the install asphalt sidewalks, cement concrete shall still be used for all wheelchair ramps.

Response: We take no exception to this comment, and will revised the plans if necessary after the board renders its decision on the requested waivers.

30. Per § 249-81.D, sidewalks shall be five (5) feet in width exclusive of the curb clear width requirements and shall have a maximum cross slope of 1.5% and a longitudinal slope of 4.5% to reflect construction tolerances. In addition, ramps shall have a maximum cross slope of 1.5% and a longitudinal slope of 7.5% to reflect construction tolerances. The Applicant should revise the profiles on Couper Farm Lane and Vint Lane so that the longitudinal slope does not exceed 4.5%.

The Wheelchair Ramp Detail shall be revised to match the maximum slopes listed above and to show detectable warning panels.

Response: The profiles have been revised to show a maximum slope of 4.5% on Couper Farm Land and Vint lane to meet the requirement.

31. Per § 249-85.A.1, fire hydrants shall be spaced no further than 500 feet apart. The Fire Department should comment on the acceptability of the proposed hydrant spacing within the proposed development, as the proposed spacing exceeds 500 feet.

Response: The original placement of the proposed hydrants were specified by the LWD. We met with the Fire Chief on February 21, 2017. The Chief finds the locations of the proposed fire hydrants acceptable.

32. Per § 249-85.C, underground installation. All utilities shall be installed underground. Depth of cover shall be as indicated in Figure 4. The Applicant should revise the Typical Section for Utilities to show 36” minimum cover for the storm drain.

Response: The detail for the storm drain pipe has been revised as requested.

33. Per § 249-85.D, streetlights are not required; however, the Board reserves the right to require developers install street lights. The Applicant has not proposed street lighting. We recommend street lights be installed at any pedestrian crossings and at all intersections, including both intersections of Great Road and Couper Farm Lane. We respectfully defer to the Planning Board for determination on this item.

Response: The planning board has determined that street lights are not necessary for the proposed development.

34. The Water Department should confirm the acceptability of the proposed 8″x8″ tapping sleeve and valve at the intersection of Great Road and Couper Farm Lane. Water Departments often will not allow tapping sleeves in situations where the trunk line is the same size as the proposed spur.

Response: The water system as proposed has been designed and commented on by the water department. The location of the taps and valves are of their specification.
35. The proposed water mains are depicted on the plans with arcs. The maximum deflection angles for 8" ductile iron pipe will require bends be used on these lines. In order to identify locations where the storm drain pipe is within 5 feet of the proposed water line, the water main should be depicted with bends and straight sections with only minor deflection, as this is how the system will be constructed.

Response: The proposed water main has been re-drawn with a maximum deflection of 17" for 18' of pipe. Where the deflection cannot meet the curvature of the roads, bends have been specified and shown on the plans.

36. Per § 249-85.E.3, if a storm drain is within 5 feet of water line, the storm drain pipe shall be encased in concrete per Figure 5 of the Subdivision of Land Regulations. The Applicant should identify locations where this is the case and revise the plans to require concrete encasement, referring to the detail.

Response: We have modified the profile sheets to show the location of the proposed water main and have updated the notes on the detail for the water/sewer/drain crossing detail to include the locations of the crossings.

37. The proposed connection of the relocated catch basin at the intersection of Couper Farm Lane and Great Road is not shown. The Applicant should indicate where this structure will be connected.

Response: The existing pipe has been added to the plans as well as the proposed new connection point.

38. Gate valves shall be as required by the Town of Littleton Water Department. We recommend that a note stating this requirement be added to the Water Main, Hydrant and Gate Valve Detail on Sheet D2.

Response: The note has been added to the hydrant detail.

39. The hydrant detail on Sheet D2 indicates that the proposed hydrants will connect to a 6-inch diameter water main, while the plan indicates that the water main on all proposed streets except for Vint Lane are 8-inch diameter pipes. The Applicant should revise the plans to indicate the locations of the presumed 8"x6" reducers.

Response: The connection does not utilize 8"to6" reducer, it utilizes an 8"x8"x6" tee. It has been clarified on the detail.

40. Proposed grading within the infiltration basins is limited and poorly labeled. The Applicant should revise the plans to better depict the proposed information to clarify the design intent.

Response: Additional grading and elevation data has been added to the basins for clarification.

41. As currently proposed, stormwater will be redirected away from a portion of the wetland system on the eastern side of the site, approximately between Wetland Flag 23 and Wetland Flag 51. The resultant reduction in flow would negatively impact this portion of the wetland, as insufficient flow would likely be provided to maintain habitat and vegetation. The Applicant should revise the outlet of Infiltration Basin 2 to discharge near the up gradient end of the wetland system, near Wetland Flag 32 and Wetland Flag 35, in order to maintain regular flow.

Response: A new culvert has been added to the plans which intercepts the large area of Open Space A and directs it to the vicinity of flag number 43. This flow approximates existing conditions...
flows to protect the vegetation of the existing wetland. The drainage calculations have been revised accordingly.
Record Plan of Land Comments

42. Per §249-32.C.(10), the subdivision shall be tied to the Massachusetts State Plane Coordinate System and NAVD 88. The Applicant should add the north arrow to Sheets R1 through R4 and revise the north arrow on the Existing Conditions plan to reflect Massachusetts State Plane Coordinate System. Additionally, coordinates tied to Massachusetts State Plane should be shown.

Response: The Geodetic disk at 495 is based on NGVD29, and has been used as the benchmark for the project. The difference for the NGVD29 and NAVD88 is shown on note 2 on sheet S2. Coordinates for Mass State Plan have been added to the MHW bounds.

43. Per §249-32.A.(1)[a].ii, the existing conditions plan should show the entire site to be subdivided, with existing lot lines, rights-of-way, easements, stone walls, major trees, etc. The Applicant should revise and add stone walls and trees.

Response: The linetype for the existing walls and trees have been modified for clarity.

44. Per §249-32.C.(4), the location, names and present widths of ways bounding within 200 feet of the subdivision should be shown. The Applicant should revise and add names and present widths of ways bounding within 200 feet of the subdivision.

Response: The widths, locations, and names of all rights of way within 200’ have been added to the existing conditions plan.

45. Per §249-32.A.(1)[a].iv, easement plans may be required for clarity. The Applicant should comment on whether or not a separate easement plan being submitted.

Response: A separate easement plan will be prepared on a lot by lot basis for clarity.

46. Per §249-32.C.(10), sufficient data should be included to determine readily the location, direction and length of every street or way, easement, lot line and boundary line and to establish those lines on the ground. If separate easement plan is not being submitted, the Applicant should revise the plans and add bearings and distances to all proposed easements.

Response: for clarity, separate easements plans will be prepared for each lot.

47. The rear lot line of Lot 24 shows two distances. In addition, there are several redundant bearings and overwrites throughout the recordable plans. The Applicant should revise the plans and minimize redundant bearings and eliminate overwrites.

Response: The redundant bearings and overwrites have been eliminated from the Record Plans.

Stormwater Drainage Report Comments:

48. Per MassDOT PD&DG, pipe network calculations should be performed using the Rational Method. The Applicant performed these calculations using the NRCS Method, which is less conservative. The Applicant should revise the proposed catch basin calculations to utilize the Rational Method.

Response: We have added another section to the drainage calculations using the rational method for the pipe sizing.

49. The total volumes reported in Section 1.5 of the Stormwater Drainage Report are invalid, as the tie span used starts at 5 hours and ends at 20 hours. The Applicant should revise the time span used in existing and proposed HydroCAD models to begin at 0 hours and end after the flow rate at the design point drops to zero. This will ensure that the reported existing and proposed total volumes include the entire storm event.
Response: The time span in the calculations have been revised to include the entire storm event, and the summary table has been revised accordingly.

50. Per § 249-51.D, catch basins are required on both sides of the roadway at all low points, sags, and near the upstream corners of the roadway at intersecting streets. The Applicant should revise the plans to include an additional catch basin at the upstream corner of the intersection of Couper Farm Lane and Great Road.

Response: after discussing this item with the Peer review engineer, it was determined that the location in question is actually the intersection at the end of Couper Farm Lane and Great Road. This intersection has been re-designed to allow the flow from the state highway to remain on the state highway, and therefore does not require a catch basin at this location.

51. Several discrepancies exist between those listed in the HydroCAD calculations and the table provided in Section 2 of the Stormwater Drainage Report. These flows are used to calculate gutterline spread. The Applicant should reconcile these values.

Response: The table has been updated with the correct data.

52. The gutterline spread calculation appears to incorrectly categorize CB11 as on grade, rather than at a low point. The Applicant should revise the gutterline spread calculation accordingly.

Response: The gutterline spread for the sag VC CB11 has been revised.

53. Per § 249-51.D, an inlet analysis shall be provided demonstrating that gutterline spreads at all inlets meet the requirements of MassDOT PD&DG. For local roads, the Design Guide requires a gutterline spread of not more than half of a through traffic lane, or 6 feet (whichever is larger). As a result, the allowable gutterline spread is 6 feet on all streets within the project area. As currently shown, ten catch basins exceed the maximum allowable spread. While the Applicant appears to have used the 10-year design storm event for this calculation, we believe that a 5-year design storm event is more appropriate for the local roads within the project area.

In addition, the gutterline spread calculations also do not take into account bypass flow to downgradient inlet structures. As indicated in the grate efficiency table provided by the Applicant, it is anticipated that a substantial portion of the flow to each catch basin will bypass the inlet structure and be directed to the next downgradient inlet structure. The calculations do not appear to take this additional flow into account at the downgradient structure.

The Applicant should revise the calculations and design, if necessary, to demonstrate that gutterline spreads do not exceed 6 feet for the 5-year storm event, using flows calculated using the Rational Method. The Applicant should provide revised calculations to include bypass flow and reduce the proposed spread below the allowable value.

Response: The gutterline flow spread calculations have been revised as requested.

54. While the Applicant has provided flow depths for catch basins at the low points, gutterline spreads should also be provided at these locations.

Response: Gutterline spreads have been added for the low point catch basins as requested.

55. Per Vol. 2, Ch. 2 of the Massachusetts Stormwater Handbook, infiltration basins require sediment forebays for pretreatment of stormwater to achieve the claimed 80% TSS removal rate. As the Applicant is proposing water quality structures (Stormceptors) in lieu of sediment forebays prior to discharge into infiltration basins, sizing calculations should be provided demonstrating that the appropriate structure has been selected to accommodate the anticipated flow rates.
Response: We have added a section to the drainage calculations showing the sizing of the stormceptor units.

56. Per Vol. 2, Ch. 2 of the Massachusetts Stormwater Handbook, infiltration basins require a minimum of two feet of separation to seasonal high groundwater elevation. Test pits are required where the infiltration basins are proposed to demonstrate the minimum separation is provided. The nearest existing test pits indicate depth to groundwater of only 20 and 36 inches, which is likely insufficient for the proposed infiltration basins. The Applicant should provide test pit information in the proposed locations of infiltration basins demonstrating that the required separation to seasonal high groundwater is provided at these proposed BMP locations.

Response: The infiltration ponds are designed with the bottom of the pond at existing grade elevation, which meets the requisite offset based on soil testing performed in the vicinity.

57. Per Vol. 3, Ch. 1, pp. 27-28 of the Massachusetts Stormwater Handbook, sufficient runoff must be directed to the infiltration BMPs to ensure infiltration of the required recharge volume. The Applicant provided the equation for required recharge volume, but only calculated the values for the areas flowing directly into infiltration basins, not the value for the entire site. The Applicant should include the area which does not flow into one of the infiltration basins in this calculation. Following this change to the calculation, the Applicant should revise the required recharge volume based on the ratio of total site area to site area draining to recharge facilities (per Vol. 3, Ch. 1, pp. 27-28 of the Massachusetts Stormwater Handbook).

Response: The calculation has been revised to show the required and the provided recharge volumes.

58. Per the Massachusetts Stormwater Handbook, Standard 3, infiltration basins shall draw down within 72 hours. The Applicant should provide calculations demonstrating that the proposed infiltration basins will completely empty within 72 hours.

Response: The timeframe for the hydroCAD model has been increased to show that the ponds completely empty within 72 hours.

59. As indicated in the Massachusetts Stormwater Handbook, since the basins are being used for peak rate attenuation during the 100-year storm event, one foot of freeboard should be provided above the 100-year ponding elevation. This required freeboard is not provided at any of the four proposed infiltration basins. The Applicant should revise the plans to provide the required.

Response: The ponds have been re-designed with outlet controls and now provide freeboard over the 100 year elevation.

60. The infiltration basins appear to have been modeled in HydroCAD with a flow-rate base exfiltration component. The Applicant should revise the models to assume a constant velocity (in/hr) infiltration rate based on the Rawls Rates shown in Table 2.3.3 in Vol. 3, Ch. 1 of the Massachusetts Stormwater Handbook. The Applicant should perform test pits to confirm the soil texture used from the Rawls Rates Table to establish an infiltration rate.

Response: The rates have been revised in the drainage calculations and have been based on soil testing performed on the site. Although the test pits do not lie inside the basin, the worst case soil encountered on the site has been used for the calculation to be conservative.

61. Per Vol. 2, Ch. 2 of the Massachusetts Stormwater Handbook, an access area at the top of the basin must provide unimpeded vehicular access to the entire basin perimeter and that this access area
shall be no less than 15 feet wide. The Applicant should revise the basin design to incorporate this required access.

Response: With the use of the outlet controls, we were able to decrease the volume of the ponds to accommodate an 8’ wide top to the proposed berms for access. The Stormwater management requirements are based on large ponds. These ponds are extremely small in scale and such have been designed to meet stormwater management within reasonable practicality. For example, the depth of Pond 1 is only 3’ deep, and the depth of pond 2 is only 2’ deep. The reach of a small excavator (which will fit on an 8’ berm) is enough to allow the machine to reach the other side of the pond with ease. It would be excessive to have a 15’ wide berm for a 2’ deep pond.

62. Per Vol. 2, Ch. 2 of the Massachusetts Stormwater Handbook, infiltration basins must include an overflow outlet in addition to an emergency spillway. The current designs of the Infiltration Basins 1 and 2 utilize the emergency spillways as the primary outlets. The emergency spillway should be designed at the 100-year flood elevation, not as the primary outlet. Infiltration Basin 3 has not been designed with an emergency spillway. The Applicant should revise the basin designs to incorporate an overflow outlet, as well as an emergency spillway set at the 100-year flood elevation.

Response: We have added outlet control structures in the ponds to eliminate need of the weir for lower frequency storms.

63. The proposed grading for Infiltration Basin 2 does not match the stage storage or spillway data provided in the HydroCAD model.

Response: the hydroCAD and plans have been revised to correctly show the spillway parameters.

64. Per the Massachusetts Stormwater Handbook, Standard 4, stormwater management systems shall be designed to remove 80% of the average annual post-construction load of TSS. The Applicant should include the area which does not flow into one of the infiltration basins in the TSS calculations. While the TSS removal value for this area will be less than the required 80% TSS removal, it may be sufficient for the overall site composite TSS removal to achieve the required 80% TSS removal.

Response: With the creation of the new storm culvert, and with no proposed changes or construction activity within open space A, the need for TSS removal is not needed. The TSS removal of the structures themselves meet the stormwater management requirements.

65. Per the Massachusetts Stormwater Handbook, Standard 8, projects that disturb one or more acres of land are required to obtain coverage under the NPDES Construction General Permit issued by the EPA and prepare a Stormwater Pollution Plan (SWPPP). This document must be submitted prior to construction. We recommend that the Planning Board include this requirement as a condition to any approval.

Response: Upon approval of the Planning Board and Conservation Commission, we will prepare a complete EPA CGP NOI including a SWPPP prior to construction.

66. Per the Massachusetts Stormwater Handbook, Standard 10, illicit discharges to the stormwater management systems are prohibited. This is addressed in the Operations & Management Plan, but we recommend that a signed Illicit Discharge Compliance Statement be submitted to the Planning Board prior to the discharge of any stormwater to post-construction BMPs. We recommend that the Planning Board include this requirement as a condition to any approval.

Response: We take no exception to the need for a signed document.

Chapter 173, Zoning Bylaws:
67. Per § 173-151.A and § 173-98.A, development statements describing the development programs for Over 55 Housing Developments and Open Space Developments, respectively, are required. The Applicant should include development statements with the required information.

Response: Additional information has been added to the developer’s statement section of the application.

68. Per § 173-98.C.4, perspective drawings illustrating views from existing public roads abutting the site after the completion of the Open Space Development are required. The Applicant should provide these drawings.

Response: The host community agreement was specific in its language regarding the location of the open space areas specifically as they pertain to Great Road and abutting parcels. The development will not be visible from Great Road or abutting parcels due to the existing vegetative screening which is to remain, therefore these types of illustrations cannot be prepared.

69. Per § 173-98.C.5-6, typical elevations and typical floor plans of proposed structures within the Open Space Development should be provided. The Applicant should include these items in the submission.

Response: There are no proposed structures with in the Open Space.

70. Per § 173-151.F and § 173-98.E, marketing programs, including anticipated price schedule of units, target market sectors, and anticipating timing of development and sales, are required for Over 55 Housing Development and Open Space Development submissions, respectively. The Applicant should provide these items.

Response: Additional Information has been added to the developer’s impact statement section of the application.

71. Per § 173-151.G and § 173-98.F, construction schedules, including staging program if applicable, with estimated start and finish dates of each stage, anticipated completion dates of community facilities serving the development, and planned completion dates of the entire developments shall be included in the Over 55 Housing Development and Open Space Development submissions, respectively. The Applicant should provide these schedules.

Response: this additional information has been added to the developer’s impact statement section of the application.

72. Per § 173-151.I and § 173-98.H, the Over 55 Housing Development and Open Space Development submissions, respectively, should include development team qualifications, including names, addresses and resumes of the development company, development managers, architects, engineers, landscape architects, land planners, other consultants and participants, and all general partners. Resumes must include lists of all developments in progress or completed within five years by each participant. The Applicant should supply this information.

Response: Resumes of the development team have been added to the developer’s impact statement section of the application.

73. Per § 173-116, Limitations on Further Division, Land shown on a plan for which a permit is granted under this article may not be further divided and a notation to this effect shall be shown on the plan and shall be a condition of any approvals granted. There does not appear to be a notation to this effect; therefore, the Applicant should revise the plans to include this content satisfactory to the Planning Board.
Response: A note regarding the prohibition of further subdivision has been added to sheet 3.

74. Per § 173-151.C.11, the landscape plan for Over 55 Housing Developments shall indicate the number and type of vegetation being utilized to buffer the disturbed portion of the development. The Applicant has provided a landscape plan and list, but the proposed vegetation is screened to the same degree as the existing conditions. The Applicant should revise the Landscape Plan to show the trees as proposed vegetation.

Response: The proposed vegetation has been drafted with a darker pen to clearly show the proposed trees location and species.

75. Per § 173-153.B, the maximum height of principal and accessory structures within the Over 55 Housing Development area is 32 feet. The Applicant should indicate the maximum height of the proposed structures on the Elevation Plans.

Response: The architectural plans are to scale. The proposed maximum height of the Over 55 dwelling units is proposed at xx’.

We look forward to presenting these changes at the continuation of the public hearing.

Sincerely,

Markey & Rubin, Inc.

[Signature]

Jonathan J. Markey, PE
Principal