



February 22, 2021

Paul Foley
Director
Planning & Economic Development.
40 Center Street
Fairhaven, MA 02719

Re: 46 Sconticut Neck Road (Residence by Girls Creek)

Dear Mr. Foley,

Nesra Engineering LLC., (Nesra) is in receipt of the latest peer review from GCG associates. We would like to note that many of the comments provided in this round of peer review were already addressed in the last round. Please see our responses in green.



GCG ASSOCIATES, INC.

CIVIL ENGINEERING AND LAND SURVEYING
84 Main Street
Wilmington, Massachusetts 01887
Phone: (978) 657-9714

February 16, 2021

Mr. Paul Foley, Director of Planning and Economic Development
Planning & Economic Development
Ms. Whitney McClees, Conservation Agent and Sustainability Coordinator
Conservation Commission
Town of Fairhaven
40 Center Street
Fairhaven, MA 02719

Re: Residence by the Girls Creek
Definitive Subdivision Plan, 46 Sconticut Neck Road, Fairhaven, MA.

Dear Mr. Foley and Ms. McClees:

GCG Associates, Inc. has reviewed the following information for the Residence by the Girls Creek, Definitive Subdivision Plan, 46 Sconticut Neck Road in Fairhaven, MA with respect to Chapter 322 Subdivision of Land and Chapter 192 Wetlands related requirements.

GCG had reviewed this in 2019 for the conservation commission and this is the first review for the planning board. The stormwater design and plan as submitted is substantially different from the previous plans submitted. The change in the design places the applicant at the same point as our initial review in 2019.



We disagree with this statement. It was our understanding that the plans and documents were being reviewed for the Conservation Commission as well as for general Planning Board Requirements. As such, there have been 3 rounds of peer review. Secondly, the changes provided throughout the design have been the result of recommendations during those peer reviews. The resultant product should not be considered a new submission.

Plan References:

“Residence by the Girls Creek”, Definitive Subdivision Plan, in Fairhaven, MA prepared by NESRA Engineering, LLC dated 04/10/2019, Last revised 12/16/2020 consists of:

- Sheet 1 - Cover Sheet
- Sheet 2 – Existing Conditions Plan
- Sheet 3 – Existing Boundary Plan
- Sheet 4 – Demolition & Erosion Control Plan
- Sheet 5 – Lotting Plan
- Sheet 6 – Layout and Materials Plan
- Sheet 7 – Grading Plan
- Sheet 8 – Drainage and Utility Plan
- Sheet 9 – BMP Access and Details
- Sheet 10 – Infiltration Basin, Cross Section and Details
- Sheet 11 – Roadway and Utility Layout and Profile Plan
- Sheet 12 – Planting Plan
- Sheet 13 – Construction Details 1 of 3
- Sheet 14 – Construction Details 2 of 3
- Sheet 15 – Construction Details 3 of 3

Documents:

Definitive Subdivision letter prepared by NESRA dated 12/07/2020.

Stormwater Management Report and Wetland Permit Application, 46 Scoticut Neck Road, Fairhaven, MA Prepared by NESRA, dated September 2020.

Certificate of the Secretary of Energy and Environmental Affairs (EOEEA) on the Environmental Notification Form (ENF), prepared by EOEEA, Bureau of Water Resources dated 06/24/2020.

Massachusetts Department of Environmental Protection (MassDEP), ENF review letter dated 07/10/2020.

U.S. Army Corps of Engineers (USACE), Application for Department of Army Permit, prepared by 5 Wetlands (Kenneth Thomson), dated 10/04/2019.

EOEEA, Massachusetts Environment Policy Act (MEPA), ENF filing package, prepared by 5 Wetlands (Kenneth Thomson), dated 10/06/2019.

Soil Investigation Map, SK-1, prepared by NESRA, dated 12/15/2019.



Project Narrative for 46 Sconticut Neck Road Project.

Stormwater Operations and Maintenance Plan not dated; file dated 6-15-2020.

Based upon our review of the above information, we offer the following general comments and comments with respect to compliance with Town Bylaws: Chapters 192 – Wetlands; 194 - Stormwater Management, Illicit Discharge, Soil Erosion, Sediment Control By-Law; 198-31.1 – Zoning - Stormwater Management; Chapter 322, Subdivision of Land and Chapter 322.26 – Stormwater Management. The numerical section of the regulations is referenced at the beginning of each comment unless it is a general comment.

GENERAL PLAN AND DEVELOPMENT COMMENTS

The following are general comments with respect to the plans and development of the project.

1. This is a single-family residential definitive subdivision project on a two-family home occupied parcel, Assessors Map 28, Lot 24 consists of 28.14+/- acres (Tax record 28.13 acres). The project is required to meet the Town of Fairhaven Subdivision Regulations, Stormwater Management standards.

We agree. This was resolved in the last round of peer review. (See attached prior peer review.)

2. 194-4(A)(1)(b) - this development requires a Land Disturbance Permit with the Fairhaven Board of Public Works. Permit could be exempted per 194-4. A.3.

This was resolved in the last round of peer review. (See attached prior peer review.)

3. This project requires an US-EPA National Pollutant Discharge Elimination System (NPDES) permit and associated Stormwater Pollutant Prevention Plan (SWPPP) filing.

Completed. See attachment.

4. There is wetland resource area delineated on the property. The easterly portion of the parcel is within the flood zone. Estimated habitat of rare wildlife or priority habitat were shown on the MassGIS NHESP layer.

This was resolved in the last round of peer review. (See attached prior peer review.)

5. A portion of the on-site wetland resource area had been filled in year 2005 (estimated). Hence a restoration has been proposed through and USACE General Permit filing.

We are aware and have worked with all governing bodies to address the issue.



Plan Sheet 1 – Cover 1.

Identify property Zoning District on plan, the parcel is in Single Residence Districts (RA). Multiple sheets were identified as (RC) district.

We agree. They are noted as Single Residential Districts. We will revise any mention of RC to RA.

Plan Sheet 2 – Existing Conditions Plan

1. 322-14(C)(6) – existing Zoning District should be RA.

We agree. See above.

2. 322-14(C)(7), (12), & (20) – (7), The Plan should show all wetland resource areas, NHESP boundary and location of the FIRM flood boundary. Show base flood elevation (elevation 13) as required by 322-14(C)(20) or stated that the subject parcel is outside of the regulated zone or district. (12), show lot line and boundary lines, the existing property boundary as shown did not include the southeast portion of the parcel (approximately 22.13+/- acres, where to be proposed to donate to the Town. Since the donated parcel would transfer all rights as well as liabilities. The Town should require a suitable form of identifying the donating parcels, in a form of plan, map or legal parcel descriptions, acceptable by the Town and Conservation Commission.

This was resolved in the last round of peer review. (See attached prior peer review.)

All Remaining Land not utilized by the subdivision will be donated. Attorneys are drafting the documents.

3. 322-14(C)(16) – show present streets within 300’ of the property boundary, showing both roadway and right-of-way widths. Sconticut Neck Road, Marilaine place and Timothy Street appear to be in the vicinity.

The last round of peer review for this item stated as follows:

1. 322-16(4) – the proposed roadway is within 150’ of Marilaine Place intersection. The proposed roadway location requires Planning Board approval, relocation of the proposed roadway may affect the drainage design. Nesra: 322-16(4) states that streets entering opposite sides of another street shall be laid out either directly opposite each other or with a minimum offset of 150 feet between their center lines. According to our calculations, the center lines between Marilane Place and our proposed road will be 150.16 ft. Design subject to Planning Board approval.

4. Show existing hydrant on Sconticut Neck Road across from project site.

The hydrant was shown on the existing conditions plan. Nesra has made the symbol larger and call out the hydrant to be more visible.



Plan Sheet 3 – Existing Boundary Plan 1. 322-14(C)(12) – The southeast existing lot line and boundary lines are not shown.

The property line at this location is the Girls Creek and Tideline. This will all be part of the land donated to the town. The agreement drafted by the Attorneys will detail the particulars of the parcel to be donated.

See Sheet 2 comment 2 above. Correct Zoning District to RA.

Already addressed.

Plan Sheet 4 – Demolition and Erosion Control Plan

1. The two trees to be removed at the proposed street intersection are town trees. Applicant should follow public tree removal procedures with the Town Tree Warden.

Nesra has contacted the Town's Tree Warden, who has informed us that those are not street tree's and may be removed without any further notice.

Plan Sheet 5 – Lotting Plan

1. Correct RC Zoning District to RA.

Already addressed.

2. 322-14(C) (6 & 11) – Mete and bound, lot closures calculations for the proposed Right-of-Ways, Easements, and Lots should be submitted to show meeting zoning requirements. Closures calculations should include the right-of-way. Lot 11 mete and bound and property boundary not provided. Lots and right-of-way closures calculations should be certified by the project surveyor.

There is a lotting plan provided, stamped by both a Professional Land Surveyor and Professional Engineers. The professional stamps Certify that the Lots meet all requirements of a subdivision. The parcel being donated, (Lot 11) will be all of the remaining land.

3. 322-14(C)(12) – Street numbers should be shown enclosed in squares, when available.

Not available at this time.

4. 322-14(C)(15) – At least two permanent concrete or granite monuments must be placed on site and shown in the plans prior to construction. Vertical Benchmarks (TBM) may be provided.

Two of the roadway bounds shown on the lotting plans will be provided prior to construction. A note has been added to the Lotting Plan.



5. 332-15(E)(1) or (2) – add non-buildable lot note.

Note added to Lots 9, 10 and 11 on Lotting plan.

6. 322-15(G) – Street Design should comply of Appendix C. Proposed cul-de-sac transitional curve to turn around circle right-of-way radius should be 30 feet (Appendix C drawing # C-13), 25' proposed.

Revised.

7. 332-26(D) – BMP Common Lot should be conveyed to the Town at the time of Street Acceptance.

We agree. Note added on plan.

8. Lot 9 (wetland restoration parcel) should not be transferred to the Town prior to the 5- year monitoring period completed and satisfied by the Conservation Commission.

Per Army Corps we are providing 10 years of monitoring.

Plan Sheet 6 – Layout and Materials Plan

1. 322-14(C)(9) – show subdivision monument and/or subdivision entrance sign, if any.

None at the moment. Should this change, we will address with the Planning/Building department.

2. 322-14(C)(15) - install and show two permanent monuments (tie to NAD 1983 and NAVD 1988.) prior to start of construction.

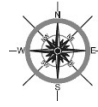
Addressed above.

3. 322-15(G) – Proposed cul-de-sac pavement does not meet the dimensions shown on Appendix C drawing # C-13. The Residential Cul-de-Sac Detail requires 24' wide pavement at the end of the center island with 20' wide pavement on two sides. The plan proposed uniform 24' wide pavement. The proposed pavement width should comply of Appendix C. Proposed cul-de-sac transitional curve to turn around circle right-of-way radius should be 30 feet (Appendix C drawing # C-13), 25' proposed. Show cul-de-sac, transitional curve, and center island sloped granite curb radius.

Modified. It resulted in a reduction of impervious area of 287 S.F.

4. 322-16(B), Table A – show sight distance.

Sight Distance is calculated to be 362 feet. The minimum required is 150 feet.



5. 322-17(A) – Sidewalk should be designed per Appendix C. The applicant has requested a waiver to install one side sidewalk only. The proposed street serves 8 lots and 6 of the lots have access to the proposed sidewalk. The cul-de-sac street is less than 500 feet in length with low traffic trips, approximately 80 trips per day average. The one side sidewalk should not have any adverse impact to the residents. However, the sidewalk as shown should have a wheelchair ramp equipped at the cul-de-sac end.

Provided.

6. The proposed access path to the basin width varies from 14' to 20' back to 15'. This access path is for BMP maintenance and services only, GCG recommends relocating the fence gate to soil test pit #3 location, narrowing the access path to 10' wide with widening at the turns and create a T-turn (parking/loading) area outside the gate between test pit #3 and wetland flags WF-B-7 & 8. MHS does call for 15' wide unimpeded vehicular access around the entire basin perimeter. The recommended 10 feet wide access path is capable for heavy equipment passage and reasonable to minimize wetland crossing width.

The access path has been reviewed and approved by the Department of Public works as well as Army Corps of Engineers. We respectfully request to leave as designed.

Plan Sheet 7 – Grading Plan

1. Verify grading along proposed right-of-way and Lot 24A (54 Sconticut Neck Road) boundary. There appears to be a missing contour elevation 42 to close the existing 42 contour line in Lot 24A. 5 Residence by the Girls Creek Definitive Subdivision 46 Sconticut Neck Road GCG file # 1940

The contour is closed on 42. No change necessary.

2. Lot 5 contour elevation 32 appears to drain toward to the cul-de-sac, not agreeing with the watershed plan.

It was revised per previous peer reviews. The Hydrocad was also revised to include the additional runoff. The watershed map has not been updated. Nesra can provide an updated watershed map if required.

3. Slope lot 6 driveway toward the north side of dwelling and utilize front and side yards for vegetated filter strip treatment. As shown, lot 6 driveway surface runoff drains directly to the wetland.

Lot 6 access driveway width has been reduced from 16 ft to 12. This allows for a vegetated strip of more than 30-ft for treatment of runoff for most of the driveway.

4. Cul-de-sac pavement should have a minimum of 2% cross slope and a minimum of 1% along the gutter line to prevent water ponding. (As shown, the cross slope at the catch basins has cross slope of 0.4%)



Cross slope at the catch basin has been modified to have 2% slope.

5. Proposed Lot 6 driveway is approximately 8' from the BVW, GCG recommends adding a wood railing fence or similar divide along the southside of driveway to provide a physical separation to the wetland, (prevent mowing and snow dumping onto the wetland).

It is now separated by approximately 12 feet at the closest point, and has a wood rail fence barrier. The 12 feet separation is at the tip of the wetland and grows to be more than 30 feet shortly thereafter.

6. Show Lot 9 wetland restoration parcel finish grade to match original wetland surface. The proposed contours do not represent the original wetland grade

Wetland restoration limits, grades, depths, materials, plantings etc. shall be per the plans prepared by our wetland scientist (Ken Thompson) and as approved by state and federal agencies.

Plan Sheet 8 – Utility Plan

1. Identify catch basin, drainage manhole and sewer manhole by number or by station.
2. Show “Flowable Fill” within Sconticut Neck Road layout, as required by the Sewer/Wastewater Division’s Contractor Rules and Regulations. Specifications and requirements for sewer system work.

Provided.

3. Provide hydrant flow test to assure sufficient fire flow for the proposed water and hydrant system.

We contacted the Water Department and BPW. A flow test is not required.

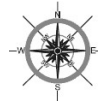
4. Proposed hydrant location subject to Fairhaven Fire Chief approval.

The Fire Chief as already reviewed and approved.

5. The proposed water main would create an approximately 500' dead end water line. Board of Public Works may require an addition hydrant at the end of water main or looping the system. Public Works approval is required.

We are not able to loop the water line.

6. 322-26. F. (3) - Verify catch basin grate inlet capacity to meet 322-26. F. (3). Catch basin grates at Station 2+25+/-R. and Station 4+50+/-R. appear to be under capacity, double grate may



be required, provide calculations. GCG recommends utilize 5' diameter catch basin structure for double grate frame. Verify the proposed 6' diameter at station 4+50+/- R.

CB 1 and CB 3 to be upgraded to 5-ft diameter manhole and double grates.

7. The proposed drainage system consists of 12", 18" and 24" drainpipes with matching inverts. GCG recommends matching the pipe crown with varies pipe sizes in the structure to prevent backflow to the smaller size pipe and provide a minimum of 0.1 feet drop within the structure with same size pipes diameter to compensate hydraulic loss within the structure.

Inverts have been modified to provide a 0.1 ft drop across the structure. Additionally, where possible, the drain lines have been elevated to match the crowns.

8. 322-26. F. (7) – Specify Class IV RCP where having less than 4 feet of cover within right-of-way.

Note added.

9. Verify Infiltration Basin outlet FES invert, plan shown 20.50, HydroCAD used 20.00, show pipe slope on plan.

Adjusted to match HydroCAD.

10. Wetland Crossings - USACE General Permit (GP) for the Commonwealth of Massachusetts Section IV.19.e. - requires hydraulic and ecological connectivity at the wetland crossing which specified a minimum of 2-feet high and 3-feet wide culvert or span opening for ecologic passage. The proposed dual 12" RCP outlets are already extended to the wetland, the finish grade (36 contour) on top of the access path is 2 feet above the wetland, the west side 1.5 horizontal to 1 vertical side slope is also within the wetland area (additional wetland filling required). Furthermore, USACE's required box culvert would raise the access path addition 2'+/- feet in height. Lot 7 driveway as 6 Residence by the Girls Creek Definitive Subdivision 46 Scoticut Neck Road GCG file # 1940 proposed is approximately 34' from the BVW with no qualified surface runoff treatment. GCG recommends considering replacing the remaining wetland in Lot 7 (approximately additional 650 s.f.) with loam and seed and maintain the existing grade to provide additional vegetated separation to BVW, (reconfigure Lot 7 to meet disconnected impervious area, MSH, Vol. 3, Ch.1, Pg. 50, requirements or provide treatments). Install the fence along the westerly lot line, to separate the lot to the BVW. Reduce the access path to 10' width and relocate eastward next to Lot 7 property line, lower the access path grade to match existing wetland with 12" gravel base and 2" loam and seed to allow hydraulic connection sheet flow without any culvert. This would eliminate the ecological connectivity concern and isolate wetland to the westside of the access path. Provide the necessary wetland replication at the wetland restoration area. (Lot 9, Lot 10, and Lot 11 would eventually transfer to the Town of Fairhaven. There is sufficient area to replicate any additional wetland fill.)

Nesra and our wetland scientist has been working with the relevant agencies who have jurisdiction over this area. Based on the latest communication with our Wetland Scientist and his



communication with those agencies, as well as our communication with the Conservation Commission, we are proposing to fill in the small portion of degraded wetland and provide 2:1 replication along with the historical replication.

11. 322-14. D. (8) – A single streetlight (Town of Fairhaven standard) has been proposed at the end of the cul-de-sac. Specify make and model of streetlight to be installed.

At the last planning board meeting, we were requested to match the light pole that was installed at a nearby subdivision. We are currently researching the make and model to match.

Plan Sheet 9 – BMP Access Plan and Details.

1. Proposed wetland crossing does not meet the USACE's ecological connectivity requirements. See wetland cross comment above (Sheet 8, item 10.)

Addressed above.

2. GCG recommends replacing the top 2" of gravel access road with loam and seed, utilizing the vegetation to prevent fine material washed onto the wetland during heavy storm event. A permeable grass paver could be used to provide structural component for stability of the access road.

Addressed above. The access plan has been reviewed and approved by the BPW.

3. Identify contour elevation 22.5 within the infiltration basin and forebays.

Provided as a dashed line.

Plan Sheet 10 – Infiltration Basin, Cross Section and Details.

1. The northerly corner of infiltration basin is within the 50' wetland setback, (peak basin pond elevation at 25.44 per HydroCAD report during the 100-year storm event). GCG recommends reshaping the basin to be outside the 50' setback.

Reshaped. No significant change in storage or volume as we the change was so minor, and we had room to expand northeast.

2. Utilize rip-rap protection at forebays and infiltration basin weirs.

Added.

3. Relocate outlet control structure (OCS) rim= 25.15 to embankment close to the access path and 25 contour line.

Relocated.



4. Provide outlet control structure details, (specify precast DMH structure, diameter, opening dimensions, etc.) and (frame and grate make and model number). A standard 36" x 36" heavy duty grate weight 554 pounds per East Jordan Iron Works, could be difficult for DPW maintenance personal to handle as shown. GCG recommends utilizing grate(s) with manageable weight without heavy equipment.

Sufficient detail and information is provided in the plans and details. Vehicular access path is provided for any machinery that may be necessary in handling the structure and cover.

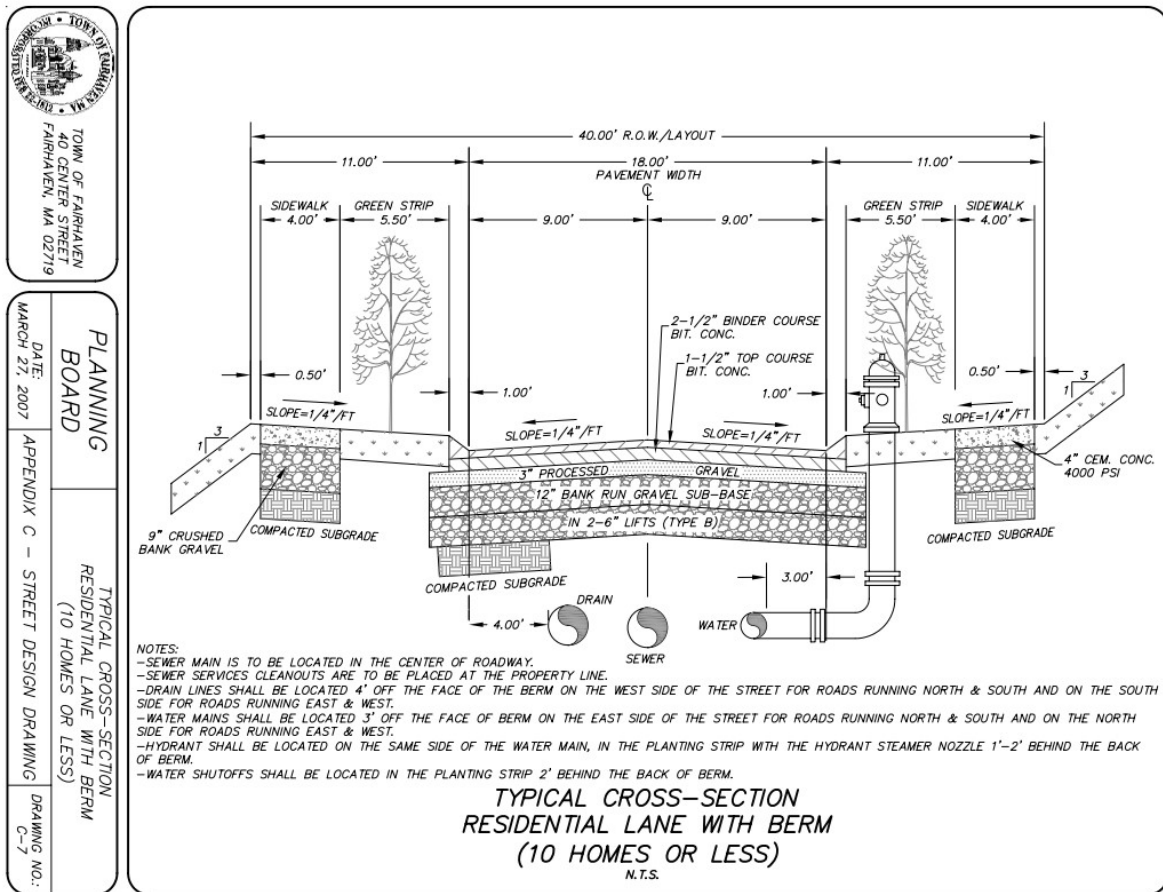
5. Emergency spillway/weir side slope should be 3H:1V minimum.

Revised as requested.

Plan Sheet 11 – Roadway and utility layout and Profile Plan.

1. Water main and sewer line should have a minimum 10 feet horizontal separation. This is a new construction, there is no reason for having 6' separation as shown on the plan.

It was designed per town details. The sewer is called out to be at the center of the road while the water is to be 3-ft of the edge. With 9-ft lanes this only allows for 6-ft of separation.



TOWN OF FAIRHAVEN
40 CENTER STREET
FAIRHAVEN, MA 02719

PLANNING BOARD
DATE: MARCH 27, 2007

APPENDIX C - STREET DESIGN DRAWING

DRAWING NO.: C-7

TYPICAL CROSS-SECTION
RESIDENTIAL LANE WITH BERM
(10 HOMES OR LESS)



2. Water main should be 8" CLDI with a minimum of 5-foot cover, hydrant connection with 6" CLDI.

Provided.

3. Sewer pipe should have a minimum of 4-foot cover without insulation. This subdivision proposed individual dwelling sewer pump system, submit system detail to BPW sewer/wastewater division for approval.

Minimum of 4-ft of cover is proposed. System design has been submitted to BPW for review and comments.

4. 322-14. C.(22)(b) – show existing left and right sidelines per regulation.

It is shown, they just happen to match as the crown is symmetric (double line)

5. 322-14. C.(22)(c) – show finish grade elevation at 50' station and at 25' station within vertical curve.

Provided. Constant slope road until the cul-de-sac with consistent elevation changes.

6. 322-14. C.(22)(d) – show all drainage pipe invert, slopes, capacity, and velocity.

A full hydrological analysis was provided with HydroCad showing all the required information. Too much additional information on the plans will make it illegible.

7. 322-14. C.(22)(g) – requires profile scales to be horizontal one-inch equals 40 feet; vertical one inch equals four inches. The proposed 1" = 20' horizontal scale and 1" = 3' vertical is acceptable. However, with the required information listed above, the profile could be crowded.

The information above is provided. Scale is kept the same.

8. Show catch basin, drainage manhole and sewer manhole rim elevation.

Information was provided on the Utility plan. We have updated the cross section to provide the same information there as well.

9. Drainage pipes with different sizes diameter should have matching pipe crowns in the manhole. Same pipe diameter should have a minimum 0.1' invert drop in the manhole to compensate hydraulic loss within the structure.

Addressed above.



Plan Sheet 12 – Planting Plan.

1. Verify and provide intersection sight distance.

Sight Distance to the right will be greater than 275 ft.
Sight distance to the left will be greater than 370 ft.

Plan Sheet 13 – Construction Details.

1. Pavement detail - requires a 3” processed gravel layer between the hot mix asphalt pavement and 12” bank run gravel base. (See Typical Cross-Section Residential Lane with Berm (10 Homes or Less), Appendix C – Street Design Drawing No. C-7).

Provided.

Plan Sheet 14 – Construction Details.

1. Provide concrete driveway apron detail – specify transition at walkway crossing with minimum width and maximum slope to meet ADA requirements.

Provided.

2. Curb ramp at Scoticut Neck Road transition curb should match existing curb material type and grade. (Existing curb has less than 4” reveal).

Note added to detail.

Plan Sheet 15 – Construction Details.

1. Use Appendix C, Drawing C-7 (with green strip) for roadway cross-section, modify with single side sidewalk waiver.

Updated.

2. Although Appendix-C, Drawing C-7 shows water and sewer main with 6’ horizontal separation, MassDEP requires a minimum 10’ when possible. GCG recommends providing minimum 10’ separation between the two mains.

It is designed by Appendix C Drawing C-7. There has been no mention of shifting them further apart through 3 rounds of peer review. The change would require updating all the plans. We are not opposed to it if it can be done by a note or a condition of approval.



Stormwater Management Report and Wetland Permit Application.

This definitive subdivision plan had been significantly modified from the preliminary subdivision plan reviewed on September 17, 2019. The preliminary subdivision plan was based on 26' x 32' dwelling footprint and 20' wide driveway with two sides sidewalk. The calculated postdevelopment impervious areas were higher than the proposed building footprint and considered conservative. This definitive subdivision plan is based on building footprint of 28' x 36' with a 24' x 24' attached garages, except for Lot 7 with 28' x 48' and 24' x 24' garages. An increase of 195% building footprint in comparison with the preliminary plan. Paved driveways have also been widened from 20' to 24', there is reduction from the one side sidewalk (with waiver requested). In addition, the proposed constructed wetland has been replaced by an infiltration basin. The extent of the changes should warrant a new post-development watershed plan (last POST watershed plan was dated 11/13/2018) with calculations to verify the actual impervious area within each sub-catchment.

We have calculated the impervious area used in the Hydrocad Model, which is 53,655 S.F. based on the TR-55 calculation method you recommended in the previous peer review. The impervious area as proposed in this design, with the increased building sizes and driveways and reduced sidewalk is 40,060 S.F. which is still significantly less than the stormwater design considerations.

Infiltration Calculations: There are discrepancy with the exfiltration rate used in the drainage calculations. Stormwater Management report, Section – 1, stated the site consists of Hydrologic Soil Group (HSG) 'C' soil, with infiltration rate 0.17 inches per hours. Section 4.2 stated that the Rhode Island's 5-3 Table Design Infiltration Rate shows a 2.41 in/hr. design infiltration rate (exfiltration rate for Loamy Sand, HSG 'A' soil). Both infiltration rates were based on the Rawls, Brakensiek and Saxton, 1982, Hydrologic Soil Properties classified by Soil Texture chart, commonly referenced by Massachusetts Stormwater Handbook and Rhode Island Stormwater Design and Installation Standards Manual. Furthermore, section 4.3 referenced saturated hydraulic conductivity testing was performed on site with 5.5 in/hr. infiltration rate, a HSG 'A' soil infiltration rate, which contradicts the USDA Web Soil Survey report. GCG recommends performing additional soil testing to verify the site soil classification. The soil investigation report should be certified by a Massachusetts licensed Soil Evaluator. The Saturated Hydraulic Conductivity test pit location should be shown on the plan. There are two test pits (TP #1 and TP#2) nearby the proposed infiltration basin, both test pits show very fine sandy loam at the top 3' to 3.5' below surface, with loamy fine underneath. However, both test pit found redox (evident of seasonal high groundwater) at the fine sand layer. Hence, additional soil testing is recommended. At a minimum, two saturated hydraulic conductivity test and two deep hole tests should be performed within the infiltration basin location.

Total impervious area was based on the preliminary subdivision, and significantly increased in this submission. GCG recommends an updated post-development watershed plan and recalculate the 65% rule accordingly.

The impervious area was calculated the TR-55 average lot size by residential district as per the peer review below. We have calculated the amount and compared to the actual estimated in the



design. The design is very conservative. The impervious areas is 13,600 square feet less in the proposed design compared to the drainage calculations. Meaning the drainage calculations take in to account for runoff from additional impervious area that is will likely not exist. Furthermore, that means that the drainage system is over design. This was all as a result of the recommendation by GCG in the previous peer reviews.

2. Proposed standard building footprint is relatively small 26'x32'=832 s.f. in comparison with the surrounding single-family dwellings. 198-33 recommends using the TR-55's residential district by average lot size for **impervious area** calculations. Average lot size by residential district is 1/3 of a acre. Based on TR – 55 that is 30% impervious area. Calculations have been revised to provide as such. $(43,560/3 * 0.30 = 4,356 \text{ s.f. per lot.}$
S1 Calculated impervious is 13,068 S.F. (6 lots half of which drain in to this sub-catchment)-3 The impervious area used in the report was 3,746. Resulting in a change of 0.214.
2s Calculated impervious is 4,356 S.F. (two half lots) -1 The impervious area used in the report was 2,639. Resulting in a change of 0.039.
3 S – Calculated impervious is 2,178 S.F. (half of a lot) 0.5 The impervious area used in the report was 1,623. Resulting in a change of 0.013.
4 S – Calculated impervious is 4,356 S.F. (two half lots)1 The impervious area used in the report was 3,173. Resulting in a change of 0.027.
6 S - Calculated impervious is 2,178 S.F. (half of one lot) 0.5. The impervious area used in the report was 2,319. Resulting in a change of 0.003.
7 S – Increase Impervious by 8,712 (one lot and two half lots)2. The impervious area used in the report was 5,364. Resulting in a change of 0.077. Total impervious for 8 lots = 34,845 This is in addition to the roadway impervious area. Resolved.

HydroCAD model, sub-catchment 6S and 7S have been revised from the preliminary subdivision plan, the area drains to the infiltration basin should be modeled with infiltration basin pond surface as impervious (CN 98) per Appendix A.C.(j)[4]. As presented these two subcatchments bypassed the infiltration basin.

These are areas that drain to the nearby wetlands and ore will be part of the wetland replication areas. As such they do not need to be modeled in the infiltration basin.

Stormwater Operations and Maintenance Plan.

1. Sediment forebays should be inspected monthly and cleaned four times per year. The stated once a year cleaning is for constructed wetland forebay application.

O&M Plan has been updated with this information.

2. Infiltration basin buffer area, basin bottom and side slopes should be mowed at a minimum twice per year. Remove grass clippings and accumulated organic matter from basin.

O&M Plan has been updated with this information.



Additional requirements:

1. 322-14(D)(5) – Provide documents to establish homeowners’ association to maintain street and infrastructure until and unless the street is accepted by the Town.

Homeowner’s association will be established. Alexander Gray Development is working with their attorneys to prepare this documentation. A copy will be provided at completion.

2. 322-14(D)(7) – Construction cost estimate is required. Estimates should be based on MassDOT Standard Specifications for Highways and Bridges, provide quantity item numbers, unit price, total amount for cost of completion of project. Costs adjusted to account for prevailing wages, adjusted to add an inflation/safety factor of 20%, engineering inspection, material testing, legal and other soft costs. Estimate shall be certified by the project’s registered professional engineer.

If the project is approved, we will provide prior to start of construction.

Additional Wetland requirements.

The USACE General Permit Application stated requiring wetland scientist to oversee the wetland restoration and establish an Invasive Species Control Plan (ISCP) and 5-year wetland monitoring process. GCG recommends requiring the applicant to provide guaranty (by bond or any other forms acceptable by the Commission) for all the specified labors, material, and related professional services for the wetland monitoring and ISCP for up to 5-year, with satisfaction and approved by the Commission prior to transferring Lot 9 to the Commission.

Army Corps requires 10 years of monitoring. Our wetland scientist will be proving it.

The remaining wetland in Lot 7 is too close to the driveway. GCG recommends relocating the wetland to the westside of the access road. Addition details per sheet 8 comment #10.

Addressed above.

Review Summary

The general drainage design concept is acceptable. The site is unusual with site soil being identified as HSG ‘C’, poorly drain with high seasonal ground water table, and with a rapid infiltration rate. Therefore, GCG is recommending additional soil testing to support the exfiltration rate and ESHGW at the proposed infiltration basin location. GCG recommends drainpipe with different size diameter have matching crown elevation to avoid backflow to the smaller size pipe. Hence, causing sedimentation and higher maintenance. Applicant should provide additional data to support the revised impervious area meeting the drainage calculations. If you have any questions, please call. Respectfully submitted, GCG ASSOCIATES, INC. Michael J. Carter Michael J. Carter, P.E. Project Manager



NESRA
ENGINEERING, LLC

617-506-3772
WWW.NESRAENG.COM

Nesra Engineering has competed dozens of soil test pits and multiple trenches on site. We are extremely familiar with the soil conditions and characteristics. We do not believe additional soil investigation is necessary and will result in undue costs and delays for this project. We agree that the online web soil survey has the area mapped as sandy loam and fill material, however the mapping is done at 1:20,000 scale. Furthermore, the soil survey notes that the maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

The drain lines are design such that they provide additional storage during the 100-year storm event. The hydrological analysis has been computed with the inverts specified and the proposed drainage is functioning properly in the modeling.

We respectfully request that the board review the plans, documents and our response to the peer review and make a determination at the next meeting.

Sincerely,

Arsen Hambardzumian, P.E.
Principal