GCG ASSOCIATES, INC.

CIVIL ENGINEERING AND LAND SURVEYING
84 Main Street
Wilmington, Massachusetts 01887

Phone: (978) 657-9714
Fax: (978) 657-7915

November 20, 2019

Ms. Whitney McClees,
Conservation Agent and Sustainability Coordinator
Conservation Commission
Town Hall
40 Center Street
Fairhaven, MA 02719

RE: Lewis Landing, Fairhaven, MA.
Proposed Multi-Unit Residential Development
Huttleston Ave.

Dear Ms. McClees:

GCG Associates, Inc. has reviewed the following information for the Lewis Landing Multi-Unit Residential Development off Huttleston Avenue in Fairhaven, MA with respect to stormwater and Stromwater related requirements under 310 CMR 10.00 Wetlands Protection Act Regulations.

Plan References: "Lewis Landing, Fairhaven, MA. Proposed Multi-Unit Residential Development, Huttleston Ave., Fairhaven, MA prepared by Prime Engineering, Inc. dated September 9, 2019, last revised November 08, 2019 consists of:

Cover Sheet
1 – Existing Conditions Plan
2 – Site Layout and Landscaping Plan
3 – Grading and Utilities Plan
4 – Erosion Control Plan
5 – Detail Sheet - 1
6 – Detail Sheet - 2
7 – Architecturals

Documents: Cover letter to Fairhaven Conservation Commission, prepared by Prime Engineering Inc. dated November 8, 2019

WPA Form 3 – Notice of Intent support package prepared by Prime Engineering, Inc. dated September 26, 2019, last revised October 17, 2019

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 and 310 CMR 10.00 Wetlands Protection. The numerical section of the regulations is referenced at the beginning of each comment unless it is a general comment. Prime Engineering responses shown in *Italic* and GCG latest comments in **Bold.**

GENERAL PLAN AND DEVELOPMENT COMMENTS

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

1. This is a vacant parcel located at the south side of Huttleston Avenue (U.S. Route 6) across street from New Boston Road as identified as Assessor's Map 31 Lots 115A & 117C. The parcel consists of 2.463+/- acres.
2. The applicant has filed a Notice of Intent for a Multi-Unit Residential Development consists of four 3-unit buildings, two storage buildings, one maintenance shed and associated pavement parking lot and utilities. The proposed work area is over 1 acre and requires filing an US EPA - NPDES permit and associated SWPPP. (NPDES NOI shall be filed 14 days prior to construction start.)
3. The proposed work limit also exceeds the Land Disturbance Permit (Chapter 194) threshold and requires filing a permit with the Fairhaven Board of Public Works.
4. The proposed multi-family site development in RC Zoning District requires a Planning Board Special Permit approval per Chapter 198-29. Which requires site design in compliance with Chapter 198-31.1 Stormwater management standards. Hence, stormwater management design is being reviewed to meet 198-31.1 requirements.
5. The project is located within Zone X, Area of Minimal Flood Hazard, (FIRM 25005C0413F, effective 7/7/2009), two series (A1- A-30 and B-1 to B-6) of wetland resource area were identified on the property and requires to file a Notice of Intent with the Fairhaven Conservation Commission and MassDEP.
6. There is no NHESP estimated habitats of rare wildlife or rare species identified in the site vicinity per MassGIS.

PLAN SET

Cover – No comment.

Drawing Sheet -1 – Existing Conditions Plan.

1. Wetland delineation line shown was based on a plan by Allen D. Quintin, dated January 11, 2017 and was not field located by Prime Engineering, Inc. Wetland delineation shown on the plan and Non-Jurisdictional Isolated Land Subject to Flooding status require Conservation Commission review and approval.
2. Plan shown three drain pipes (10"?, 15" and 18") connect to the on-site wetland south of wet flag #A-10, and a dilapidated drainage manhole. The 15" drainpipe appears to collect Huttleston Avenue surface runoff through a pair of catch basins located in front of development site and discharges to the wetland without a benefit of an easement. GCG

recommends obtaining an easement to preserve the right of the existing drainpipes. *A drainage easement will be granted to MassDOT and the Town.* **Applicant to prepare easement.**

3. Existing drainage inverts along Huttleston Avenue should be identified on the plan. Assuming the existing 15" and 18" drainpipes have three feet of cover over pipe and they will be exposed at the bottom of proposed constructed wetland basin. *The inverts have been surveyed and elevations have been added to the plans.* **The plan shown 12" RCP inlet at the Huttleston Ave. culvert and 18" RCP underneath Route 6 and at the downstream DMH. Assuming the pipe size at the bottom of proposed wetland basin is 18", the top of the concrete pipe (with 2.5" pipe thickness) is at elevation 59.9. and pipe bell will be exposed above the basin bottom at 60.0+/-. The side slopes at this location is 2H:1V. without an access drive. Pipe cover should be provided.**

4. Additional soil testing should be performed at the proposed wetland basin area to identify ESHGW by mottling. Applicant needs to proof sufficient water table to support the constructed wetland vegetation. 198-31.1(B)(2)(A)(1)[h] requires soil logs signed by a DEP Certified Soil Elevator. *The test pits were recorded by an approved Soil Evaluator who has signed the existing conditions plan on which the logs are presented. There was no mottling in the 5 feet of fill. The presence of muck at 5 feet is indicative of the water table.* **Submit Soil Evaluator signed copy to Conservation Commission.**

Drawing Sheet 2 – Site Layout and Landscaping Plan.

1. No comment.

Drawing Sheet 3 – Grading and Utilities Plan

1. The proposed roof drain chamber infiltration practices are considered UIC Class V Well by US EPA and required to comply with the MassDEP setback requirements. The proposed 4-unit chamber between storage building #2 and south 3-unit building does not meet the 50' wetland setback and 10' building foundation setback; the 2-unit chamber west of storage building #1 does not meet the 10' foundation setback requirement; the single unit chamber northeast of maintenance shed does not meet the 10' foundation setback and 10' open, surface drain (rain garden) setback requirements. *The infiltration southeast of Storage Building 2 has been deleted. Since this is a re-development project consisting of Type C and D soils, the infiltration only needs to be to the extent practicable. The infiltrators west of Storage Building l have been shifted to be east of Building I.* **Only the existing pavement area qualified for re-development project and requires maximum extent practicable treatments. (See MSH Vol. 2 Ch. 3 Checklist for Redevelopment Projects.) Project components within undeveloped areas must meet all the standards.**
The expanded chamber units east of storage building #1 does not meet the 15 feet setback to Downhill slope (3:1) setback. (Applicant should consider rotate the chambers 90 degree and move it southward and provide 3:1 basin side slope at the chambers location.)
The proposed system calculations should show compliance with the MSH 65% rule (Vol.3, Ch. 1, Pg. 27). Additional infiltration BMP may be required to meet the 65% rule and Fairhaven Zoning Belaw 198-31.1-4 (C)(a)[2] - Water Quality Storm treatment requirements.

2. 198-31.1(C)(2)(g)[6] – requires basins/ponds designed for stormwater runoff control shall have side slopes at a no steeper than a 4H to 1V grade. And a ten-foot wide bench surround any permanent pool. 2:1 and 3:1 side slopes proposed. *The eastern slope of the basin has been flattened to a 4: I slope to provide access by foot.* **Applicant has requested a waiver, see comments below.**

3. 198-31.1(C)(2)(k) - Forebays [1][b] requires forebays to be sized to contain 0.25 inches per impervious acre of contributing drainage and [d] requires forebay be four feet deep. *The forebay has been deepened to be 4 feet and contain .25 inches of runoff over the impervious area.* **Applicant has requested a waiver for the 4:1 side slope, see comments below.**

4. 198-31.1(C)(2)(l) - Fence enclosure for the stormwater basin may be required, depends on permanent pool depth. *The Planning Board will decide whether a fence will be required.* **Planning Board approval is required. Fence and planting location should be incorporated with the basin maintenance access.**

5. 198-31.1(C)(2)(n)[6] – CB-1 pipe (all pipes) should have a minimum 24" cover, proposed HDPE pipe requires a waiver. *Pipes are required to have 2 feet of cover where they are subjected to vehicle loads. A waiver is being requested since no pipe with less than 2 feet of cover will be subjected to vehicle loads. A request to allow HDPE pipe is being made.* **The proposed CB-1 frame and grate to 12 pipe invert has 2.18 feet separation. The pipe wall is approximately 2" thick, that left 12" between the top of the pipe to rim grade. The proposed CB frame has a thickness of 3.5" and the concrete structure top slab thickness is 8". There is no room to physically fit a CB hood. GCG recommends raising the driveway grade to provide additional pipe cover at CB-1. Trees has been proposed at the west side of the micropool and the only access to the wetland basin is over the CB-1 outlet pipe. GCG recommends applicant to provide sufficient pipe cover to support maintenance equipment/vehicle loads.**

6. 198-31.1(C)(4)(a)[2] – requires 48-hour detention time for the water quality (198-31.1(A)(1)(b) - First Flush = (1.25"), see 198-33 Definitions) storm. *The 48-hour detention time requirement only applies to extended detention basins (that are in the Nasketucket Basin zone). The subject site is not in the Nasketucket Basin zone and the proposed basin is not an.* **This section is required for 80% total suspended solids, 30% total phosphorus, and 15% total nitrogen removal only. (For development within the Nasketucket Basin would require additional treatment to removal 30% nitrogen and 50% phosphorous per 198-31.1 (A)(b)[2], which would require a wet extended detention pond/basin (WP).) Please provide the 1.25" storage volume below the outlet orifice or request a local regulation waiver.**

7. 198-31.1(C)(4)(a)[1 & 6] – requires establishment of, and the methodology with which to maintain, wetland vegetation on the bottom of the basin. *This also only applies to extended detention basins. Extended detention basins contain water most of the time since on average it rains every three days. The proposed pocket wetland basin will not have that problem.* **As stated in comment #6 above, these two requirements apply to this development. However, item (4)(a)[1] requires a minimum contributing watershed area of 10 acres is not feasible to enforce, since the development site is only 2.463 acres. GCG recommends applicant to request a waiver. Item (4)(a)(6) has been proven that the proposed basin bottom at 59.00 is below the estimate seasonal high ground water at 59.3. In addition, the basin may require modification to provide the 1.25" storage volume.**

8. MSH Vol.2, Ch.2, Pg. 45 - requires constructed stormwater wetland to have an emergency spillway capable of bypassing runoff from large storms without damage to the impounding structure. *The proposed basin has an emergency spillway at the top of the basin control structure. The spillway can handle the 100-year storm without damage to the impounding structure.* **The 23" diameter inlet grate and 15" HDPE at 0.5% slope, both do not have the capacity to handle the 7.83 cfs inflow during the 100-year storm event. The emergency spillway should be sized with brimful conditions, without any outlets. (Considering the orifice and open grate are both clog during the extreme storm.) The armored spillway should be located near the outlet structure southwestward and allow overtop the private driveway and flows to the onsite wetland. Spillway should be sized to eliminate overflow onto Huttleston Ave.**

9. MSH Vol.2, Ch.2, Pg. 45 – requires an access for maintenance. *A waiver of the 15% slope access drive is being requested.* **This is MSH requirement and under MassDEP's jurisdiction and subject to potential Superseded Order of Conditions. The Conservation Commission**

approval should not be responsible for future MassDEP actions. The applicant is also requested waiver for the 4:1 side slope requirement under 198-31.1 (c)(2)(g)[6]. GCG recommends a minimum of 3H:1V side slopes along the sediment forebay area, (as also required by MSH), and provide a minimum of 10' wide access path along the basin area with steeper than 3H:1V side slope. The proposed sewer line at the northeasterly corner of sediment forebay should be relocated, the sewer pipe as shown is above the forebay finish grade. The applicant should show a reasonable maintenance access to support the waiver request.

10. Forebay inlet pipe slope should be labeled. *The slope of the pipe has been labeled.* **Resolved.**
11. DMH to Forebay rim should be specified. *The rim of the manhole has been added.* **Resolved.**
12. Verify there will be enough cover on top of the two existing 15" and 18" drainpipes. *There is adequate cover over the 15" and 18" diameter pipes since they will not be subjected to vehicle loads.* **The top of existing 18" RCP is at the wetland basin surface. The construction wetland requires clean out sediment in basin/wetland system once very 10-year per MSH. Pipe cover or similar protection should be provided.**
13. Provide pre-treatment in front of rain garden per SMH Vol. 2, Ch.2, Pg. 25. *A grass filler strip has been added in front of the rain garden.* **Please clarify the proposed curb location, there is no curb or cape cod berm specified on the plan, a cape cod berm detail was included in the plan sheet 5 of 7, but not called out on the plan. (GCG recommends cape cod berm be installed in the binder course surface instead of top course) and the contour at this location did not indicate any grade changes along the pavement. MSH requires a vegetated filter strip with a stone diaphragm, to promote sheet flow, for rain garden pre-treatment (See MSH Vol.2, Ch.2, Pg.26 for design requirements.)**

Drawing Sheet 4 – Erosion Control Plan

1. The Construction entrance (exit) should have a minimum length of 50 feet. *The construction entrance has been lengthened to be 50 feet.* **Resolved.**
2. Silt sack should be installed at the east entrance catch basin on Huttleston Avenue. *Silt sacks have been added to the Huttleston Avenue catch basins.* **Resolved.**

Drawing Sheet 5 – Detail Sheet

1. No comment

Drawing Sheet 6 – Detail Sheet

1. Splash pool surface dimension should be called out (or show on the utilities plan). *The splash pool has been dimensioned.* **Resolved.**
2. Rain Garden should consist of 2" – 3" mulch on top of 2.5' to 4' thick Planting Soil (Engineered soil mix for bioretention systems designed to exfiltrate, MSH Vol.2. Ch.2 Pg. 26). *The mulch and underlying soil has been dimensioned and detailed. The soil layer depth dimension should match with the label.* **The soil as specified is suitable for MassDOT planting soil, but not for exfiltration. Please refers to 30" minimum depth of Engineered Soil Mix with 40% sand, 20-30% topsoil, and 30-40% compost as specified on MSH Vol.2. Ch.2 Pg. 26.**
3. Show constructed wetland detail to indicate required volume for deep marsh and shallow marsh. *The percentages of the deep and shallow marsh areas has been specified.* **Please include the detention basin calculations % area table in the plan set.**

Drawing Sheet 7 – Architectural

1. No comment

STORMWATER REPORT COMMENTS

1. 198-31.1(C)(2)(k) - Forebays [1][b] requires forebays be sized to contain 0.25 inches per impervious acre of contributing drainage. *The forebay has been sized for .25 inches per impervious contributing area.* **The 0.25 inches volume has been provided. However, the proposed 2:1 side slope does not meet MSH requirements and the sewer pipe is above the forebay surface.**

2. 198-31.1(A)(1)(b) - requires treatment of the Water quality (First Flush = (1.25" of entire impervious area on site), see First Flush definition for calculation formula (198-33). *1.25 inch of runoff from the site will be routed through the storm treatment system.* **The 1.25" water quality storm should be provided within the wetland basin with 48 hours detention time. 198-31.1(C)(4)(a)[2].**

3. 198-31.1(A)(1)(a)[2] - No increase will be allowed in the volume of runoff off of the site up to the ten-year, twenty-four-hour design storm. The proposed drainage calculations shown increase of runoff volume during 2-year and 10-year storm events. *A waiver on not increasing the volume of runoff is being requested. The poor onsite soils are not suitable for infiltration.* **The applicant has requested a waiver for the runoff volume increase during the 2-year and 10-year storm events. Based on the HydroCAD report the pre-development and post-development runoff volume during 10-year storm event were 0.269 and 0.411 acre feet, respectively. This requirement is under local regulation and is not required by the MSH. This regulation would require approximately additional 6,000 square feet of infiltration area to contain the post-development runoff volume increase, based on the HSG 'C' site soil with 72 hours draw down time.**

4. 198-31.1(C)(2)(n)[1-7] – storm drainage system capacity should be calculated based on 25-year storm event. *The pipes have been sized to carry the 25-year design storm.* **CB-1 grate capacity was calculated based on 0.25' head over the grate, the surface water will excess beyond the 3' gutter width. (C)(2)(n)[3]. GCG recommends to replace CB-1 with 5' diameter double grates catch basin.**

5. Please provide roof drain infiltration unit storage volume calculations to meet Groundwater Recharge volume. *The roof infiltration computations were presented on the bottom of sheet 3.* **There appears to be less than 65% of the site impervious area drains into the infiltration BMPs. Storage volume calculations should be increased per MSH Vol.3, Ch.1, Pg.27 with sample calculations shown on pg. 28. The calculations as presented was based on the MSH requirements and does not meet the Fairhaven Water Quality Storm requirements, a waiver was requested for increase of runoff volume above.**

6. The proposed Rain Garden requires pre-treatment to qualify for 90% TSS removal. *A grass filler strip was added upgradient of the rain garden.* **A grass swale was proposed, a vegetated filter strip with stone diaphragm should be used.**

7. Please verify pre-development paved parking area. The two sub-catchments combined 7,889 s.f. of pavement area. GCG scaled approximately 5,550+/- s.f. *The pre-development paved area has adjusted to 5,488 square feet.* **Resolved.**

8. 198-31.1(C)(4)(a)[2] - provide water quality volume (First Flush) 24 hour detention volume. *The 24-hour first flush detention time applies only to extended detention basins which are required in the Nasketucket Basin. The subject site is not in the Nasketucket Basin***. The 24 hour detention is required for 80% total suspended solids, 30% total phosphorus, and 15% total nitrogen removal only. (For development within the Nasketucket Basin would require**

additional treatment to removal 30% nitrogen and 50% phosphorous per 198-31.1 (A)(b)[2], which would require a wet extended detention pond/basin (WP).)

OPERATIONAL AND MAINTENANCE (O&M) PLAN COMMENTS

1. Temporary Erosion Control should include catch basin silt sack. *Silt sacks have been added.* **Resolved.**

2. Long term O&M plan 4.0 should include catch basin, street sweeping, constructed wetland, splash pool and rain garden operation and maintenance schedule. *The maintenance of catch basins, street sweepers, constructed wetlands, etc. have been added.* **Catch basin should be inspected and cleaned 4 times per year. Constructed pocket wetland shall be inspected twice a year for the first 3 years and clean out forebay once a year. Clean out sediment in basin/wetland once every ten years. Rain garden should be inspected monthly & remove trash. Vegetated filter strip mow 2-12 times per year. Mulch, fertilize, remove dead vegetation and prune annually.**

3. O&M plan should provide a signature block for responsible party/operator signature. *A signature block has been added.* **Resolved.**

4. O&M plan should include estimated annual operation budget and long-term O&M (sample) log. *The annual budget and log have been added.* **Update per comment #2.**

Summary:

The proposed drainage system layout and design were based on Massachusetts Stormwater Handbook and did not meet the Fairhaven Chapter 198-31.1 Stormwater management standards.

Waivers requested:

1. *A 4: 1 side slope to the forebay is being provided. It is requested to allow all other slopes to be 3:1 and 2: 1 in order to save the large linden tree and to provide more separation from the wetlands (Section 198-31.1 (c)(2)(g)[6].* **A 4:1 slope has been provided at the micropool area but not in the sediment forebay. GCG recommends providing at a minimum of 3:1 side slope (as required by MSH) along the sediment forebay, which requires annual cleaning and provide access path where side slope steeper than 3:1.**

2. *To allow the existing pipes in the detention basin and the proposed pipes that are not under paved areas to have less than 2 feet of cover since they will not be subjected to vehicle loads. Also, to allow HDPE pipe (c)(2)(n)[6].* **Cover over the existing 18" RCP should be provided for maintenance equipment loads. Using HDPE pipe with appropriate cover (depth as recommended by pipe manufacturer) in a private development site should have no adverse impacts to the drainage system.**

3. *The onsite soil is not suitable for infiltration. We request a waiver from not increasing the volume of runoff from the 10 year design storm Section (A)(1)(a)[2].* **This is a Town of Fairhaven requirement and as proposed the post-development 10-year storm event**

would increase the runoff volume from pre-development condition's 0.269 a.f. to 0.411 a.f. It would require approximately additional 6,000 square feet of infiltration area to control the runoff volume.

4. *To allow an increase in the volume of runoff since the soils are not suitable for infiltration Section (A) (1) (a) [2].* **See comment #3 above.**

If you have any questions regarding this matter, please contact our office.

Respectfully Submitted,
GCG Associates

Anthony Ma

Anthony C. Ma, P.E.
Senior Project Engineer