

Chessia Consulting Services LLC



April 6, 2020

Ms. Mary Savage-Dunham
Community Planning Director
Town of Hingham
210 Central Street
Hingham, MA 02043

RE: Engineering Review
213 Cushing Street
Definitive Subdivision Modification

Dear Ms. Savage Dunham:

In response to your request, Chessia Consulting Services, LLC has reviewed the above referenced project for Compliance with the Planning Board Rules and Regulations as amended through September 11, 2018. In addition, I reviewed the design and calculations for conformance to general engineering design standards. The data reviewed included the following information:

- Plans entitled “Corey’s Way Modified Definitive Subdivision Plan at 213 Cushing Street in Hingham, Massachusetts” dated February 25, 2020 prepared by Ross Engineering Company, Inc. consisting of eight sheets. Updated sheets 5 and 6 revised 3-24-20 were received 3-27-20.(Plans)
- Application for Modification of Definitive Plan dated February 27, 2020.
- Report entitled “Stormwater Report Corey’s Way Modified Definitive Subdivision Hingham, MA” dated March 20, 2016 February 25, 2020 prepared by Ross Engineering Company, Inc. (Report)

The initial plans provided for review were updated with a signature date of 3-3-20 next to the Engineer and Surveyors signatures. After filing a revision date should be added to the plans for consistency.

I previously visited the site on behalf of the Hingham Board of Health to witness soil testing. I revisited the site to clarify some questions regarding existing conditions on March 18, 2020.

The site is located on the west side of Cushing Street south of LeClair Drive. The site is mostly wooded with variable steeply sloping topography in many areas. There is an existing access drive into the site over the existing right of way. Part of the access is paved and part is mostly grass with an area of ledge past the pavement. I recommend that the limits of gravel and any other surfaces be surveyed and indicated on the plans. There

is some data on the watershed plans but it is not all consistent with observations in the field. The land slopes from various high areas in the central part of the property east to Cushing Street and to wetlands located south and west as well as to abutting property to the north. There is also an isolated wetland that is considered a Vernal Pool by the Town located in the northwestern part of the property.

A review of MassGIS data indicates that the site is not identified by Natural Heritage Endangered Species Program as a habitat for rare or endangered species. MassGIS does not identify any certified or potential vernal pools on the site but the local wetland by law considers the isolated wetland a vernal pool relative to setbacks, etc. The locus is almost entirely within the Zone II of public water supply wells, excepting a small area in the northern part of the site. There is an area of the property on the western side of the parcel that is within the FEMA flood hazard Zone A. This is associated with the Plymouth River which appears to be over 200 feet from the property limits based on MassGIS.

The subdivision was previously approved for one lot in 1965 based on data provided. It is proposed to construct the roadway and develop two lots on the parcel. No change to the existing right of way layout is proposed. The locus is in the Residence C Zoning District. The lot area is listed as 288,240 square feet (6.62 acres) exclusive of the right of way. It is not labeled on the Plan but is it assumed that the right of way is private. The Plan does not list the area of wetlands as required.

The wetlands comprise most of the northwest portion of the property. It is not known if a Notice of Intent has been filed with the Conservation Commission.

Some previous soil testing data and Natural Resource Conservation Service (NRCS) published data has been included in the Report. I witnessed some testing for the Board of Health and soils are predominantly glacial outwash sands with an area of less permeable soils with areas shallow to bedrock in the northern part of the lot.

Requested waivers are not listed on the plans but are included with the Application package. The following waivers are requested:

- Section 3 C. 2. (l) To waive the requirement to identify existing street trees over 12" in diameter. This section also requires identification of the location size and type of proposed street trees. The waiver requests relief from installing street trees along the roadway except at the cul de sac. This actually would be a waiver under Section 5. B4 (1).
- Section 3 C. 16. It is requested to waive the requirement to prepare an interim As-Built of drainage systems prior to paving. I do not recommend this waiver without further justification of the public benefit of the waiver as it has no relationship to the disturbance of the site as listed as the public benefit.
- Section 4 B. (1) (e) To waive the requirement for a maximum length of 300'. The existing roadway layout is 320.4 feet. I note that the Subdivision Regulations state that the Board will not entertain a waiver of length for this type of roadway.

- I also note that a Limited Residential Street could have essentially the same roadway layout as proposed but would not require this waiver.
- Section 4 B. (3) To waive the requirement for a maximum grade of 5%. I note that a Limited Residential Street would not require this waiver as a grade of 8% is allowed.
 - Section 4 B. (3) (f) To waive the requirement for a maximum leveling area of 3% for 100 feet from Cushing Street.
 - Section 4 B. (4) (b) To waive the requirements to construct a turnaround with planted island. It is proposed to provide a hammerhead type turnaround.
 - Section 5Q 2. (1) To waive the roadway gravel requirement and utilize processed gravel in accordance with Section 5M2.

There are several other waivers or plan modifications that would be needed to implement the plan as proposed.

Summary of Main Concerns:

- Review of waivers relative to public benefit of granting the waivers.
- The roadway is presented as a Private Local Street, but based on the length would not be allowed as a Private Local Street and would be a Limited Residential Street, which impacts several waivers.
- Drainage design, there are several issues to be addressed relative to drainage.
- Sight distance at the proposed intersection. Based on my observations in the field there is minimal sight distance and likely insufficient for safe egress from the site without removal of significant trees and likely some grading in the right of way. I recommend that the measurement points be marked in the field for review. The classification of Cushing Street should be determined by the Board if there is not an existing classification.
- Some of the required data is not included on the plans specifically trees that would be impacted by construction, existing septic systems, etc. as further discussed under specific sections of the Regulations.

Section 3

C Definitive Plan:

I have described my comments with reference to the specific section of the submittal requirements as identified below:

- (1) General
 - (a) It is assumed that the appropriate numbers of plans, etc. were filed with the Board.
 - (b) Form C-1 was included in the Submittal.
 - (c) It is assumed that the appropriate filing fees have been submitted.
 - (d) The does not appear to be any other subdividable land adjacent to the parcel therefore the requirement for a sketch plan regarding potential future subdivision of other land is not necessary.

- (e) Data regarding storm sewer design has been submitted in the hydrologic calculations. The Report lists that Rational Method is included in Appendix C but it was not found in the Report. Refer to comments below on the storm sewer and drainage design.
- (f) Calculations for stormwater management have been included. Refer to comments below regarding drainage.
- (g) A copy of the Order of Resource Area Determination extension to 2-5-2021 has been included as required.
- (h) It is assumed that the Application is sufficiently complete to authorize this review.

(2) Contents of the Definitive Plan

The plans are drawn at an appropriate scale for review and are on 24" by 36" sheets.

- (a) The Subdivision is called Corey's Way. The plans include a north arrow, no benchmarks could be found on the plans and the datum is not specified. The plans include the date and scale. The benchmarks and datum are required to comply with this regulation.
- (b) The name and address of the record owner and applicant is on the plans as required, the name and address of the Engineer and Surveyor is on the plans. The Cover Sheet has a Professional Engineers Certification that has been stamped but not the required Certification a Professional Land Surveyor. The plans are incomplete relative to this regulation.
- (c) The subdivision boundary and all abutter's names are on the Plan as required. The zoning classification of the locus is indicated on the Plan as required.
- (d) The plans indicate the widths of the right of way for the Cushing Street right of way (public 50' width). The width of the traveled ways is indicated on the profile. The width of the proposed roadway is indicated on the Plan.
- (e) The location of nearby ways and their names are included on the Plans on the Locus Map, the plan does not list the scale, a scale of 1"=800' or larger is required.
- (f) Sufficient data to define the layout of the roadway has been provided. Only one existing monument has been identified. It is likely that there are monuments associated with Cushing Street that should be added to the plans.
- (g) Complete boundary lines have been provided. Data on lot frontage, etc. has been provided on the proposed plan as required. The location of the Flood Plain and Watershed Protection District, the FEMA 100 year Flood Zone and Accord Pond Watershed and Hingham Aquifer Protection District are indicated on the plans.
- (h) The location of proposed monuments has been indicated as required. One existing monument is indicated.
- (i) The plan indicates wetlands; an Order of Resource Area Delineation (ORAD) was issued and has been extended to 2-5-2021. The project as

revised on 3-24-20 moves all work outside of the 100 foot buffer and a Notice of Intent (NOI) would not be required. The locus is in the Accord Pond Watershed and Aquifer Protection District.

- (j) Drainage information is included with the submittal. Refer also to comments on Stormwater Management Regulations for specific comments.

The Plans include some of the required data. . The plans should indicate all proposed stormwater BMP's. As submitted many of the proposed stormwater features included in the calculations are not indicated on the Plans.

It is not proposed connect to the Town drainage system, although runoff from the site would continue to flow into Cushing Street. No existing drainage was observed near the proposed roadway within Cushing Street.

The required Schematic has not been included in the set. The schematic should include the data indicated in Figure 3 of the Subdivision Regulations.

There is no direct discharge to a wetland, runoff would flow overland to wetlands at the south and west sides of the site and to the Isolated Vegetated Wetland (IVW).

There are also proposed infiltration trenches and leaching pits associated with lot drainage.

- (k) The plan indicates some proposed utility services. Water and electric, tel. etc. all exist in Cushing Street. The proposed water line diverges from the roadway and is very close to the lot line. It appears that ledge removal would be required for the water in some locations based on the plans. It is unclear how the depth of ledge was determined in the area of the water main and at the roadway centerline. The profile indicates the contour of the top of the ledge but no borings or probe locations have been indicated on the plans. It may not be feasible to locate the water as proposed if ledge is present in the area without impacting abutting property. I note that installation of the water line as proposed would require removal of several previously planted trees that provide a buffer to the southerly abutter, these trees are not indicated on the plan. Data on proposed water services to the houses should be provided. No existing storm sewers are indicated in Cushing Street. Existing utility poles are indicated and one would remain within the roadway as designed. No data on associated approval of proposed utilities has been provided as required. It is unclear that the water system is satisfactory to Aquarion or the Fire Department. It does not appear that street lights or fire alarms are proposed.

- (l) Some but not all existing trees are indicated on the plans. A woods line should be added to the existing conditions plans. No proposed street trees are indicated on the plan. The plans do not comply with this requirement, a waiver has been requested.

- (m) Suitable space has been provided for the Planning Board to sign the plans. A sign off block for the Board of Health should also be provided as required. The project would include on-lot wastewater disposal systems.

The required statement regarding approval is on the Cover Sheet, the typo "TEH" should be corrected.

- (n) Since the roadway is less than 1,000 feet in length it is not required to have a separate plan and profile sheet. The data on Sheet 4 includes plan and profile information. The plan is at 1"=20' versus the required 1"=40' but is legible at this scale, typically the vertical and horizontal scales are different by a factor of 10 versus this case where vertical is a factor of 5. Centerline data should include bearings and distances. Data on radii, length, etc. should be provided where lines differ from the centerline. The profile plan includes the location of proposed monuments. Lot frontages are not indicated, partial data on proposed buildings walks and drives are indicated for the new lots. Only partial drainage data is included on the plan.

Cross section data for the new section of the roadway is included on Sheet 7. Only one cross section is indicated. The Board should determine if additional cross sections will be required.

The profile includes the required line data for centerlines and sidelines. The elevations are indicated at 25 foot stations. The subdrain is incorrect graphically as it is not drawn at a depth of four feet. Some data for storm drains is included but not all required data. The water main is indicated, no other utilities are indicated.

There is a sign off block on the Plan and Profile sheet for the Planning Board but not the Board of Health.

- (o) It is unclear if there are any historic objects on the site. Other existing features are generally indicated on the plans.
- (p) Contours are indicated on the Grading Plan at a one foot interval, which meets requirements. The contours do not extend 100 feet around the site at all locations. I recommend that more data be provided for the abutting lots to the south fronting on Cushing Street.
Earthwork calculations have not been provided as required.
Wetlands are indicated.
- (q) It is unclear if the Board will require additional information.
- (r) I did not observe any roadway staking at my site visit on March 18, 2020. Some property line stakes were observed.
- (s) The regulations require compliance with DEP Stormwater Management Policy as discussed below:

STORMWATER MANAGEMENT REGULATIONS/EROSION AND SEDIMENT CONTROL:

The DEP Stormwater Management Regulations consists of ten standards. This section of the correspondence lists the standards and identifies whether the submittal complies, does not comply or if additional information is required to demonstrate compliance. I have used the DEP Stormwater Handbook, including Volume 3 Documenting Compliance together with Volume 2 for specific details.

Standard 1 – Untreated Stormwater

This standard requires that the project not result in point sources of untreated runoff and that runoff not result in erosion or sedimentation to wetlands.

It is proposed to collect runoff from the roadway in two catch basins roughly at the midpoint of the roadway. These would discharge to a subsurface infiltration system. There is no proposed outlet for this system. Runoff from the first 150 feet of the roadway is proposed to discharge into Cushing Street, although the design would have a ponding area created on the northern side of the intersection as graded.

There are also proposed drywells for lot runoff including the building roofs and lawn areas. These would primarily discharge to drywell/leaching pits at a low point in the lawn. Some of these have a 4" overflow pipe proposed although only DW2 has any outflow from the system, based on the calculations. Runoff from the lawn and flow off of the roof would flow to an infiltration trench, in some areas, and then connect to the drywell/leaching pit.

This Standard would likely be met by the design. Refer to other Standards for additional comments.

Standard 2 – Post Development Peak Discharge Rates

This standard requires that the peak rate of discharge does not exceed pre-development conditions and that the design would not result in off-site flooding during the 100 year storm. System designs should comply with the DEP Handbook for stormwater management systems.

There are some issues with contour data on the plans that in particular along the roadway where there are overlapping contours. This should be clarified, as well as the basis for the contours, i.e. source of data, datum, etc.

Existing Conditions:

I disagree with some of the cover conditions listed on the watershed plans. There were no "poor or fair" woods observed. Areas have been graded for access many years ago and all areas, excepting very few steep slopes that are sparsely vegetated, were covered with vegetation or forest duff. The plans do not consider that the woods would be altered to install the proposed drywells, which is not a realistic assumption.

There are some isolated depressions within the site that would trap and infiltrate runoff that should be included in the calculations. In highly

permeable soils as located in most of the southern part of the site there would likely be little or no runoff out of these areas even in a 100 year storm.

Proposed Conditions:

All proposed infiltration systems should have soil testing to confirm suitability. I recommend that any testing be performed by a licensed soil evaluator and be witnessed by an agent of the Town.

The calculations assume that there would remain a significant area of woods on the lots. This is not consistent with current development patterns and would require that there be a deed restricted area to guarantee that it would remain woods. Analysis should either assume full buildout or impose a restriction for wooded areas to remain.

The plans indicate the flow paths used to determine the time of concentration (Tc) in some but not all areas. I note that it is unlikely that there would be a longer Tc in subarea PST 4 than in Pre 4. In the case of subarea PST 2 there would not be any grass as listed in the Tc as the entire area is woods for a cover condition. As noted above this could change unless otherwise restricted.

The proposed galley system for CB 3 & 4 has not had any soil testing data provided to demonstrate the suitability of the location. This system would most closely resemble an infiltration trench. The system should be located at least 10 feet from the property line. This system should be at least 50 feet from a septic system soil absorption area. The location of septic systems on the proposed and abutting lots has not been indicated and will be required to confirm separation distances. The plans indicate abutting wells, my files indicate that these houses are also connected to Aquarion water. The Board of Health Regulations require a 100 foot setback from irrigation wells. This appears to be met. I note that this system may not be feasible to install without impacting adjacent property. The proposed system would require a 12 foot excavation within 6 feet of the lot line.

There are five proposed drywell/leaching pits proposed based on the calculations. One is located in the area mapped as HSG B soils and would likely not have the infiltration rate used in the calculations unless soil conditions differ from mapped data. As noted soil testing at proposed locations will be required. Subject to other requirements, leaching pits can be used for rate control but at this time there is insufficient data to determine their suitability for this site.

The calculations also include an infiltration trench. Infiltration trenches can be used for rate control subject to appropriate design, etc. At this time there is insufficient data to determine the suitability for this site.

The Rational Method calculations are not included in the Report and will be required to be performed for the 100 year storm for CB 3 & 4 as they would convey the 100 year storm to the infiltration galleys. Alternatively, the bypass could be accounted for in the calculations. Grate capacity should be part of the analysis.

Additional information is required to demonstrate compliance with this Standard.

Standard 3 – Recharge to Groundwater

The design would result in an increase in impervious area. The difference in impervious area over the existing conditions should be infiltrated in accordance with the standard.

It is proposed to infiltrate some of the proposed impervious area in the galley system and individual drywell/leaching pits. As noted soil testing is required for both groundwater depth and soil suitability. The Report should include all of the data required in the DEP Handbook including an adjustment for the percentage of impervious area captured, time to drain, etc.

It is likely that this Standard could be met based on my observations of soil conditions; however, additional documentation required to demonstrate that the submittal complies with this requirement.

Standard 4 – 80% TSS Removal

This standard requires that runoff be treated to remove 80% of total suspended solids (TSS) prior to discharge.

Since it is assumed that highly permeable soils exist pretreatment prior to infiltration of 44% TSS removal is required. The site is also in a Zone II, which requires 44% pretreatment. Specific treatment measures should comply with the DEP Handbook.

No data on TSS removal has been provided. There are catch basins, and infiltration systems proposed. It is required to improve conditions over existing conditions so the area tributary to Cushing Street would need improvement although there is currently an area of impervious pavement at the roadway the extent of impervious roadway is increased at this location.

The submittal should include all supporting data for proposed BMP's to justify the design and sizing, etc.

This Standard would not be met based on the minimal data provided.

Standard 5 – Higher Potential Pollutant Loads

The project is not considered a source of higher pollutant loads, this standard is not applicable.

Standard 6 – Protection of Critical Areas

The site is located in a Zone II and would be considered a critical area.

Insufficient data has been provided to demonstrate compliance with this Standard.

Standard 7 – Redevelopment Projects

The site could be considered a partial redevelopment. Only the portion of the site that would have relaxed standards is the small existing impervious area in the roadway. For areas with existing impervious coverage it is necessary to demonstrate that it is not feasible to comply with the regulations. As noted there would be an increase in impervious pavement tributary to Cushing Street.

Insufficient data has been provided to demonstrate compliance with this Standard.

Standard 8 – Erosion/Sediment Control

This Standard requires development of plans and narrative data to control erosion and sedimentation resulting from the removal of vegetation, etc. as a result of construction. In this case the work area would exceed the one acre of disturbance threshold and an EPA NPDES Permit and SWPPP would be required.

No data has been provided, an Erosion and Sedimentation control plan should be provided consistent with DEP requirements.

This Standard has not been met.

Standard 9 – Operation and Maintenance Plan

An Operation and Maintenance Plan (O&M) was not provided.

I recommend that the O&M plan be included in the deeds as a requirement.

This Standard has not been met.

Standard 10 Illicit Discharge

There does not appear to be an illicit discharge connection. The signed certification should be provided.

This Standard has not been met.

- (3) Review by the Board of Health as to Suitability of the Land
Chessia Consulting Services will be reviewing the project for the Board of Health. It is unclear when the Board of Health will act on the submission.

- (4) Review by Other Officials
It is unclear the status of review by other Town agencies and other utilities. Since work is proposed in the existing public way and drainage from the proposed roadway would discharge to the existing public way, the DPW should comment on the proposed design. I also recommend public safety officials review the plan for both access and sight distance issues.

Section 4 Design Standards

A. General

No comment required this section addresses general approval requirements.

B. Streets (or Ways)

- (1) Types of Streets
The proposed Street is being submitted as a Private Local Street although based on the Regulations it would need to be submitted as a Limited Residential Street. Although there are only two lots the overall length of the street exceed the maximum allowed length of 300 feet and there is no provision for the waiver requested in the Regulations. It may be feasible to modify the existing right of way to have a 300 foot long roadway to have a Private Local Street. I have reviewed the remainder of this section assuming that the Applicant intends to comply with the requirements for a Limited Residential Street.
- (2) Location of Streets
- (a) General: I recommend that public safety officials comment on the roadway relative to safety and access. The plan include sight distance data assuming that only 150 feet of sight distance is required. I note that this is for vertical curves within the subdivision not at intersections.
- (b) It is unclear if the proposed roadway conforms to the Master Plan.
- (c) Based on the topography and wetlands as indicated on the plans it does not appear desirable to have the street project to another property.
- (d) The Board should comment on the attractiveness of the layout.

- (e) The plans do not include a reserve strip. Although there is a long strip along the southerly side of the roadway, the adjacent property has frontage on Cushing Street.
 - (f) The property does not cross into another municipality, this requirement is not applicable.
 - (g) As this is a modification to an existing layout it is unclear if any changes to the layout at Cushing Street should be required. Cushing Street would likely be considered a Major or Secondary Street based on the definitions and the standards of this intersection could be greater than for a less traveled roadway. This section requires that the existing roadway meet the design standards for intersections.
- (3) Width, Alignment and Grades of Streets
- As noted I have reviewed this section assuming a Limited Residential Street.
- (a) Sight distance data has been provided for the intersection with Cushing Street but it does not comply with requirements. Stopping sight distance would comply for vertical curves within the site.
 Table 1:
 The proposed right of way is 40 feet wide as required for a Limited Residential Street.
 The proposed pavement is 20 feet wide as required for a Limited Residential Street.
 Cape cod berms are proposed and comply with the requirements.
 No sidewalk is required or proposed.
 There is no curve to the street and therefore no centerline radius requirement.
 The centerline grade is proposed to be 5.4% maximum which meets the maximum allowable grade of 8% for a Limited Residential Street.
 The centerline grade is proposed to be 2.4% minimum which meets the minimum allowable grade.
 The curb radius for the pavement is 30 feet as required at the intersection with Cushing Street.
 The pavement depths comply with the requirements.
 The gravel subbase is proposed as the 12 versus 24 inches required.
 - (b) Cushing Street would likely be a Major Street with a 500 foot sight distance requirement or a Secondary Street with a 250 foot sight distance requirement. It is unclear if a speed study has been performed to determine required sight distance based on 85th percentile speed. The Board should make a determination on the type of Street and requirements for a speed study.
 - (c) (listed as (d) in the Regulations) The Plan includes a sight distance evaluation (Sheet 8). The starting point should be in the exit lane not the centerline and other points should also be where the vehicle

would be in the lane. The plan requires removal or trees or trimming, this should be clarified as to the extent. Based on observations there is minimal sight distance available. I recommend that the points required for sight distance be marked in the field for observation. It is not known if Cushing Street is a scenic way. As noted I disagree that sufficient data to use a sight distance on Cushing Street of 150 feet has been provided.

- (b) No slope easements are proposed. I note that there is a wall within a portion of the right of way.
 - (c) The angle of the right of way complies with the 60° angle requirement.
 - (d) The proposed roadway does not appear to be within 200 feet of another roadway.
 - (e) The proposed intersection angle of the pavement is close to 90° not applicable.
 - (f) The plan does not comply with leveling area requirements. A waiver has been requested.
 - (g) The proposed vertical curve meets stopping sight requirements.
 - (h) It is not proposed to connect to the Town Sewer system, this section is not applicable.
- (4) Dead End Streets
- (a) The proposed roadway is a dead end street. It is proposed to obtain a waiver to construct a Private Local Street but a waiver for a longer roadway is not allowed so it is assumed that the roadway would be a Limited Residential Street.
 - (b) A waiver has been requested to construct a hammerhead type turn around. The Fire Department should comment on this design.

C. Subsurface and Storm Drains

- (1) Compatibility and General Design
- The existing site currently drains mainly to the wetlands to the south and west side of the site, with the roadway pitching toward Cushing Street. Some runoff flows to on-site depressions. It is unclear how roadway runoff near Cushing Street will be addressed as there is no proposed system at the intersection as required.

The calculations indicate that there would not be an increase in runoff but other factors are also required to be addressed.

- (2) Groundwater Interception
- The roadway would be installed in part within exposed and underground ledge areas. It is assumed that groundwater would be present above the ledge and a subdrain is proposed. The subdrain is proposed to discharge

into Cushing Street or be buried according to the plans. More data is required regarding this design.

(3) Storm Drains

A storm sewer system is proposed for part of the roadway. Storm drain calculations should be provided. It is not recommended to use HydroCAD for storm sewer design. In this case the storm sewer network would be required to be sized for the 100 year storm.

- (a) There are two catch basins proposed. The proposed spacing of the catch basins complies with the requirements, except that there are no catch basins at the intersection with Cushing Street as required. Based on the plans there would be a low point on the northern corner of the intersection. The design does not comply with the Regulations.
- (b) Two manholes are proposed. Manholes meet the requirements.
- (c) There are no culverts proposed, this section is not applicable.
- (d) Insufficient data has been provided regarding the storm sewer system to determine compliance with velocity requirements. Pipes are all 12" diameter or greater and have sufficient slope to meet requirements. The galley system inlet would be above the 10 year storm as required. There is no outlet or connection to a natural waterway or existing system. All systems should have an emergency overflow even if the 100 year storm is contained.
- (e) The only outlets are associated with the drywell/leaching pits on the lots and these may not require a headwall. A four inch overflow outlet is proposed.
- (f) Not applicable, the site is not subject to tidal action.
- (g) Not applicable there is no connection to the public drainage system nor is there any likely extension through the property for a future municipal drainage system.

D. Open Drainage Systems

This calculations include infiltration trenches, these could be considered an open drainage system. A portion of the system on Lot 2 is located in a very steep slope.

E. Stormwater Management Structures.

A subsurface system is proposed for the roadway drainage, and all of the drywell/leaching pits for roof and yard runoff are subsurface systems. A waiver will be required to allow construction of the subsurface systems. There are systems on both Lots 1 & 2. The galley system is located in an easement, not on a separate lot, and the drywell/leaching pits are not in either an easement or on a separate Lot. A waiver from this section is required as the roadway would be a Limited Residential Street based on length.

F. Easements

- (1) The plans include an easements for the galley system only. The easement is listed as to the benefit of the Town. Town Counsel should review this aspect of the proposal.
- (2) It is unclear if there is any municipal drainage from other roadways that discharges to the wetland area and if the Town would require any additional easements. The river is not located on the property but part of the site is in the FEMA flood plain associated with the river.

G. Sidewalks

A sidewalk is not required for a Limited Residential Street.

H. Lots

The lots appear to comply with the applicable zoning requirements of the district.

I have witnessed some prior soil testing but test data has not been provided. More data will be required to demonstrate conformance with the Board of Health, including locations of existing system and potential locations of proposed systems. Soils are generally suitable but the northern part of the site has shallow to ledge areas. Additional soil testing will be necessary for the septic systems and drainage.

I. Open Space

No open space is proposed. This is a small subdivision; the Board should determine whether requiring open space is reasonable in this case.

J. Protection of Natural Features

The plans specify some of the trees which are to be removed as a result of this project. As noted there is a row of trees on Lot 2 that provide a buffer to the abutter. These would be removed to install the water main. The Board should review this aspect of the design.

K. Cases In Which Ways Are Not Adequate

Cushing Street would be considered adequate for access subject to safe sight distance at the location of the proposed intersection.

L. Municipal Services

- (1) The plan does not indicate the size of municipal utility services in Cushing Street as required.
- (2) No information on sleeves for utilities is included on the plans.
- (3) Municipal sewer is not available, this section is not applicable.
- (4) I recommend that the applicant obtain a letter from Aquarion regarding water service. It is proposed to install a hydrant near the end of the roadway.
- (5) I recommend that the Fire Chief comment on the water system relative to fire protection. A new hydrant is proposed near the end of the roadway.
- (6) It is unclear if a fire alarm box will be required for this short roadway. It is my understanding that alarm boxes may be phased out.
- (7) It is typical for the electric system to be designed after approval of the plans. I recommend that the Board obtain comments from the Municipal Light Board. It does not appear that street lights are proposed.
- (8) It is typical for the telephone system to be designed after approval of the plans and in coordination with the electrical system.
- (9) Underground cable utilities are partially proposed for the project. It is proposed to leave an existing pole and overhead wires a distance of approximately 100 feet from Cushing Street.

L. Soil Surveys

Test pit locations and logs have not been provided. Soil testing will be required at the proposed locations of stormwater and wastewater disposal systems.

M. Foot Paths, Bridle and Bicycle Paths

Not applicable there are no paths indicated on the plans and a Limited Residential Street does not require paths.

Section 5

Most of these sections are applicable to the construction phase. I have listed those sections that would require Board approval as part of the Application.

A1. General

I recommend that a note be added to the plan referencing the requirement that construction comply with all aspects of this Section of the Regulations, unless waived.

B1. Subdivision Layout

No Comment required.

C1. Clearing, Grubbing and Excavation

I recommend that a note be added to the plans specifying these requirements. The limit of work should be indicated relative to excavation of slopes in fill sections.

D1. Excavation/Backfill

I recommend that a note be added to the plan referencing this section of the Regulations. On site soils may be suitable as backfill material subject to testing to confirm the gradation.

E1. Disposal of Surplus and Unsuitable Material

It is unclear if this site has excess material that will need to be removed from the site. No earthwork calculations have been performed. The Board may request the location that material will be taken and the amount of trucks required, etc. if there is excess material. The Board may want to restrict trucking to avoid conflicts with school buses.

F1. Test Pits

As noted testing for drainage structures will be required. In addition, this section requires exploratory testing to determine pipe elevations in the roadway where conflicts may exist. The Plans should reference this requirement.

G1. Excavation for Structures

No comment required the Contractor should be aware of these requirements.

H1. Trench Excavation

No comment required the Contractor should be aware of these requirements.

I1. Miscellaneous Trench Excavation

No comment required the Contractor should be aware of these requirements.

J1. Below Grade Excavation

No comment required the Contractor should be aware of these requirements.

K1. Rock Excavation

No comment required the Contractor should be aware of these requirements. It is anticipated that rock excavation will be required.

L1. Drainage and Stormwater Management

- (1) Refer to comments under Section 3 C (2) s. and Sections 4 C, D, E & F.
- (2) No catch basin to catch basin connections are proposed, the plans comply with this requirement.
- (3) A note requiring compliance with MassDOT specifications should be added to the plans.
- (4) The design does not provide a minimum of 2.5' of pipe cover as required. It is likely that the design could be revised to comply.
- (5) Catch basin details comply with the requirements. Granite curb inlets are not proposed, a waiver would be required.
- (6) The catch basin detail complies with requirements.
- (7) The manhole detail complies with requirements.

- (8) A subdrain is required due to ledge on-site. The plans indicate a subdrain but no detail or outlet has been provided.
- (9) No outlet pipes excepting from drywell/leaching pits are proposed. The Board should determine if headwalls are required.
- (10) A tide gate would not be required for this subdivision.
- (11) No comment required the Contractor should be aware of these requirements.
- (12) No comment required the Contractor should be aware of these requirements.

M1. Culvert Piping

- (1) RCP pipe is proposed, the trench detail should include the requirements listed in this section.
- (2) No drain outlet is proposed.

N1. Stormwater Management Structures

The DPW should review the plans under this section.

O1. Fine Grading and Compaction Subgrade Area

No comment required the Contractor should be aware of these requirements.

P1. Lot Grading/Drainage

An easement to drain roadway runoff into DW2 would be required.

Q1. Catch Basin and Drain Manholes

The design meets requirements relative to number of pipes in a manhole and pipe angles. The Contractor should be aware of the other construction requirements.

R1. Pre-Cast Manhole and Catch Basin Materials

No comment required the Contractor should be aware of these requirements.

S1. Catch Basins (built)

Not applicable, precast catch basins are proposed.

T1. Manhole Construction Methods

Not applicable, precast catch basins are proposed.

U1. Drop Inlets

Not applicable, no drop inlets are proposed.

V1. Dry Wells/Leaching

Dry Wells/Leaching Pits are proposed on the individual lots. It is unclear if the proposed units are required to comply with this section as they would not ever be the responsibility of the Town.

W1. Raising Casting Construction

No comment required the Contractor should be aware of these requirements.

X1. Construction Method for Frame and Cover Construction

No comment required the Contractor should be aware of these requirements.

V1. Concrete Materials for Adjusting Sewer or Drain Castings Collars.

No comment required the Contractor should be aware of these requirements.

Z1 Construction Methods for Concrete Placement

No comment required the Contractor should be aware of these requirements.

The remaining sections have specific construction material and installation requirements. I recommend that the Plans include notes requiring that the materials and methods conform to the Planning Board Specifications as described in Section 5.

I appreciate the opportunity to assist the Planning Board on this project and hope that this information is sufficient for your needs. This report is for the Hingham Planning Board and associated Hingham land use agencies only and provides no engineering, planning or other advice that may be relied upon by any party or agency other than the Town of Hingham. I would be pleased to meet with the Board or the design engineer to discuss this project at your convenience. If you have any questions please do not hesitate to contact me.

Very truly yours,
Chessia Consulting Services, LLC

John C. Chessia, P.E.
JCC/jcc