

Chessia Consulting Services LLC



September 24, 2020

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

RE: Engineering Review
19 & 27 Whiting Street
Hingham Gas Development

Dear Ms. Savage-Dunham:

In response to your request, Chessia Consulting Services, LLC has reviewed the site plan submittal for the above referenced project for compliance with the requirements of the Zoning Bylaw (ZBL) for projects submitted under an Application for Site Plan Approval in Association with Application for a Building Permit. An Application for a Special Permit A3 for parking determination has also been submitted. I also reviewed the submittal relative to general engineering design standards, DEP Stormwater Management Regulations/drainage design and parking and circulation as applicable. I visited the site previously to witness soil testing for the Board of Health including on August 28, 2020 and it is not necessary to revisit the site at this time. The data reviewed included the following information:

- Plans entitled “Site Development Plans Hingham Gas #19 & 27 Whiting Street Hingham, MA” dated 5/1/2020 last revised 9-10-2020 prepared by CHA consisting of 24 sheets. (Plans)
- Report entitled “Stormwater Report Hingham Gas 19 & 27 Whiting Street Hingham, Massachusetts” dated September 10, 2020 prepared by CHA. (Report)
- Applications including “Application for Site Plan Approval in Association with Application for Special Permit A2”, “Application for Special Permit A3” and associated supporting documents. (Application) *not resubmitted*
- Notice of Intent Under 310 CMR 10.00 MA Wetlands Protection Act Regulations Hingham Gas 19 & 27 Whiting Street Hingham, MA dated May 1, 2020, revised September 11, 2020. (NOI)
- Response to Engineering Review dated September 10, 2020, prepared by CHA. (Response)
- Response to Staff/Department Review dated September 10, 2020, prepared by CHA. (Staff Response)

- Site Plan Submittal cover letter dated September 10, 2020, prepared by CHA. (Submittal letter)

The project proposes construction of a new convenience store building. The property consists of two lots, 19 Whiting Street is developed with a gas station use and 27 Whiting has a residential dwelling. The lots should be combined to eliminate setback issues as the proposed building is partially on both lots. The site has frontage on Whiting Street and would utilize the existing curb cuts with one existing curb cut proposed to be eliminated.

The site is located on the north side of Whiting Street. Topographically the lot slopes to wetlands in the central part of #27 Whiting Street. These wetlands ultimately flow into Accord Brook a surface water supply. Part of the front of the lots slopes southerly into Whiting Street then to the west and ultimately into Accord Brook.

MassGIS mapping identifies an area of FEMA Flood Hazard in the north of the lot outside of the proposed work area. No certified vernal pools or habitat for rare wildlife were identified on the locus by MassGIS. The site is within a Zone II. MassGIS does not identify the site as in a Zone A for a surface water supply but an intermittent stream channel exists on the lot and if it connects to a Zone A stream channel the Zone A could impact the lot. It is my understanding that the Conservation Commission has determined that the stream intermittent stream is not continuous though the wetland based on testimony from the Applicant's consultant. The site is not in an ACEC based on MassGIS. The MassGIS Title 5 map indicates the wetlands as tributary to a surface water supply.

Based on the Report and published data from the Natural Resource Conservation Service (NRCS), soils appear to be Hinckley in the south and east side of the site and less permeable Newfield soil on the west side. The rear of #27 Whiting is wetland muck. Testing that has been performed indicates sandy or loamy sand soils where mapped with unsuitable soil for infiltration or wastewater purposes on the west side. Seasonal groundwater elevations are well below grade in the higher parts of the site but very shallow on the west side.

The plans have been revised to relocate the proposed wastewater disposal system and to reduce the size of the building by

GENERAL PLAN REVIEW:

The following issues are considered the most significant for the Board to consider in review of the project, current comments are in *italic type* following my initial comments:

Summary of Main Concerns:

- The wastewater disposal system that will require approval through the Board of Health and may require some time to obtain approval.

- Based on the data provided, the plans have not been submitted to the Board of Health at this time and this has been confirmed by Susan Sarni.*
- There is work in the State Highway Layout and a Permit to Access a State Highway will likely be required.
The revised plans include some design modifications to address access to the State Highway. Vanasse & Associates are reviewing traffic issues associated with the project.
 - Drainage design, there are several issues to be addressed in relative to compliance with the Standards.
Some issues remain with the model relative to rate control. Infiltration is questionable at UG 2 based on available testing as no testing is at the actual location of the system as required. More supporting data on TSS removal is required. Subsurface system details are generic and insufficient detail data is provided to confirm the design on the plans compared to the calculations.
 - Landscape Design, the Board should review the plans.
The Board should review the Landscape Design.

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

Section I-I Site Plan Review:

1. Purpose:
No comment required.
2. Procedures:
It is assumed that the appropriate information has been submitted to initiate the review process. The Board should review the project relative to the specific subsections of this section.
3. Pre-Application Submittal.
It is unknown if a pre-application submittal has been submitted or commented on by the Board.
4. Submittal Requirements:
 - a. The submittal includes a “Locus Plan” on the Cover Sheet. The Locus plan is listed as 1”=1000’ scale. The Applicant is Merhej and Sons Realty, LLC. The property limits are indicated on the plans with descriptive data (metes and bounds) on the Existing Conditions Plans, as noted the property consist of two lots that would need to be combined to comply with setback requirements. Topography has been indicated for the locus and generally extends beyond the site at least 10 feet and more in most locations. Structures within 100 feet of the locus should be indicated on the plans. The Board may request data on curb cuts, etc. across the street from the site as this is a busy traffic area with many turning movements. There are references on the Existing Conditions Plan regarding easements and other rights that the Board may request be

provided to demonstrate there are no conflicts between the plans and various rights or easements.

The Response indicates that the intent is to combine the lots. This could be a condition prior to issuance of a building permit if the plans are approved. Structures within 100 feet and data on curb cuts on the opposite side of Whiting Street have been added to the plans.

- b. The plans are drawn to scale. Building plans, including a floor plan, front and east elevations and a perspective view have not been provided. There were no plans provided for the existing gas station building, which is to be razed.
An Architectural Plan sheet has been provided.
- c. It is my understanding that Vanasse and Associates, Inc. are reviewing traffic issues. The existing site has no marked parking spaces but would have some limited parking. It is proposed to create 16 new marked parking spaces for the new building. The existing building would be razed and all connections associated with the existing gas pumps would be relocated to the new building. The plans indicate markings for traffic circulation and in general there would be two way traffic in all areas excepting the westerly curb cut would be one way out only. The Board should determine if a profile of the main access way will be required. Refer to comments under Section V-A Off Street Parking Requirements.
The revised design has 15 spaces. Refer to other comments under Section V-A Off Street Parking Requirements.
- d. The Application requests relief from zoning requirements relative to parking grades but not building setbacks. As noted the lot would need to be combined to meet setback requirements. The site is in the Business B zoning district, excepting the far rear of #27 Whiting Street, which is in the Residence B district. The locus is also in the Accord Pond Watershed and Hingham Aquifer Protection District. The retail store is a permitted use the gas station is subject to an A-1 Permit. The gas station currently exists, I recommend that Town Counsel be consulted on the Applicants grandfathered provisions to allow the gas station to remain as this is not an engineering issue. There is also 2,000 square feet of storage proposed. This is nearly as much space as the retail portion of the building and should be reviewed by the Board as storage is not an allowed use in the district.
The Response indicated that it is intended to combine the two lots. As noted this could be a condition prior to issuance of a building permit if the plans are approved. It is unclear if Town Counsel has provided an opinion to the Board regarding the gas station. The storage portion of the project has been reduced from 2,000 square feet to 1,000 square feet or 28% of the building area. As noted storage use is not allowed in the district, the Board may request the opinion of the Building Commissioner on this issue.
- e. Detailed data on proposed utilities has been provided. Existing utilities, including those to be removed, should be indicated. As both lots have existing septic systems they would also have water service connections. It is also likely that there are gas services for heat, etc. Locations of these utilities should be indicated on the plans. It is proposed to install new connections for

water and gas from Whiting Street to the new building. Electric and cable utilities would be overhead from an existing utility pole on the property east of the locus. Typically, underground utilities are required. There is a proposed new septic system that in the front of the site near Whiting Street. Proposed drainage features include a subsurface infiltration system between the proposed building and Whiting Street on the west side and an open basin along the westerly property line. The entire new system would discharge to the north. The existing gas station has no stormwater facilities and discharges into the state highway (Whiting Street).

The Response indicates that there is limited record data on the water service and septic system locations for #27. Ultimately the locations will be required to be determined as water services will need to be capped and the septic systems properly disposed of for both sites. Partial data is available for the 19 Whiting Street septic system. Reportedly there is no gas to #27 Whiting Street.

Landscaping Plans and details have been included as required.

The plans indicate a new dumpster area at the northeast corner of the new building.

- f. The submittal includes a grading plan and stormwater runoff analysis. Reportedly a Traffic Impact Study has been provided and is under review by others. Refer to comments under Stormwater Management Regulations below for drainage design. The existing conditions plan does not accurately depict conditions along the rear stonewall or indicate the intermittent stream channel within the wetlands on and off site. The grading along the rear of the existing gas station section should also be checked. The plans should include all curb cuts on the opposite side of Whiting Street as well as any other curb cuts on the same side. Limited off site information has been provided. The submittal does not include an estimate of net import/export of material. I recommend that earthwork volume calculations be provided.

Additional survey data has been added to the site plans, but not the Existing Conditions Plan. The Response requests to provide earthwork calculations as a Condition of Approval if the project is approved.

- g. This item requires information to assess the impact of the development on soil, water supply, ways and services. The submittal should address soil removal and/or import and identify if an earth removal permit will be required. The project proposes a new septic system for wastewater disposal. There are two existing septic systems on the site. The plans should identify the location of the system at #27 Whiting Street and if it will be removed. The septic design will require review by the Board of Health and no testing has been performed at the location of the proposed system or reserve location at this time. A new gas line and water service are also proposed. Test pit data for six test locations has been provided; published data and soil logs indicate highly permeable soils in the south and east side of the site, which has been confirmed where testing has been performed. Groundwater varies with over five feet in depth below existing grades where tested in the southeast part of the site with shallow depth along the lower area to the west.

As noted above the Applicant requests a condition to provide earthwork calculations after the project is approved. The Response indicates that there is limited record data on the water service and septic system locations for #27. The Response also indicates that the existing system is proposed to be removed based on field observations it is likely to the easterly side of the house and will likely be at least partially within the excavation area of the proposed building footprint. Additional soil testing has been performed at the proposed septic system location.

- h. The regulations require compliance with DEP Stormwater Management Regulations as discussed below:

STORMWATER MANAGEMENT POLICY/EROSION AND SEDIMENT CONTROL:

The DEP Stormwater Management Regulations consist of ten standards. The standards were reviewed using the Massachusetts Stormwater Handbook Documenting Compliance (MSHDC) together with other sections of the Handbook as appropriate. 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. This project would be considered a redevelopment only for the portion of the site currently covered with impervious surfaces and for other parts full compliance is required. I note that improvements relative to compliance with the Standards is required for redevelopment projects.

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.

There are two new outlets proposed although they are both associated with the Bio-retention basin. There are also two new flared end inlets to the bioretention basin. The project proposes to direct runoff from half of the roof of the new building and the part of the new parking area to a new subsurface system. A portion of the proposed driveway would discharge to a bio-retention basin on the west side of the site. The remainder of the existing area and a portion of new pavement would flow into the state highway layout. The subsurface system would also flow into the bioretention basin.

The revised design has one outlet. Two subsurface systems are proposed together with catch basins and oil/grit separators.

Most of the runoff would receive some level of treatment except the portion of the site that discharges directly into the State Highway layout at the entrance to the site.

More pavement would be collected and treated based on the revised plans than the prior design.

Sizing data for a “Preformed Scour Hole”, which is proposed at pipe ends has been provided and demonstrates adequate protection from erosive forces.

The revised data is also adequate for erosion protection at the outlet.

Subject to approval by MassDOT for the proposed work in the State Highway this Standard would be met. I note comments under other Standards may alter this condition.

Subject to approval by MassDOT for the proposed work in the State Highway this Standard would be met. I note comments under other Standards may alter this condition.

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.

General:

It is proposed to install a subsurface infiltration/detention system (infiltration has not been credited for rate control although the system is proposed to infiltrate the required volume under Standard 3) and a bio-retention basin to control peak rates of runoff. A bio-retention basin is not listed as a suitable BMP for peak rate control and an alternate design should be considered.

The revised design has two subsurface systems for detention purposes as the runoff rate control BMPs.

Existing Conditions:

The drainage divides are partially based on assumptions for runoff into the site from abutting properties. The plans should include more contour information to define these divides. More runoff could enter the site from the east side and it is unclear if runoff from the westerly abutter would flow into the site. The portion of land sloping into the locus from the easterly abutter to the rear of the site may not be required in the analysis, as the rear of the site and the associated off-site tributary area is not being altered.

Based on the data provided, it appears that more of the parking area to the east flows into the site. It may not be necessary to model the area as the offsite runoff flows into Whiting Street in both the existing and proposed cases and any additional runoff from this area would not enter proposed systems. The limits of the study area are consistent between pre and post watersheds as is the discharge location to Whiting Street.

The soil conditions should match test pit data. In the south are sandy soils or loamy sands percolation rates were generally 2 min./in. or less and these would be Hydrologic Soil Group (HSG) A. The rear and west side have wetlands and filled wetlands that would be HSG D soils. The assumption that all soils are HSG B is not a conservative assumption as most of the change is in the HSG A soils where conversion to impervious area has a greater impact on runoff.

Satisfied.

The time of concentration (Tc) across the gas station is likely 5 minutes as estimated but the remainder of the site would likely be longer and should be calculated.

Calculations have been revised but use dense woods for sheet flow which does not exist in New England according to the NRCS.

Proposed Conditions:

Aspects of comments under Existing Conditions would also apply to Proposed Conditions.

The same value of dense woods was used for the proposed conditions for area P-2a.

It is unclear that the landscaped area between Whiting Street and the parking lot would flow to Whiting Street as it currently flows to the north. The grade changes do not appear to redirect this runoff into Whiting Street and it is unclear MassDOT would accept redirecting runoff into the roadway.

Satisfied.

The plans should include design of gutters, downspouts and roof drain piping for the new building. The front of the building is directed into the subsurface system but only the tie in pipe is indicated. It is unclear how the rear of the building would be directed into the bio-retention basin. Grades indicate runoff behind the building would flow to the north not west.

A roof drain is now indicated around the building. The plan should include inverts and sufficient downspouts to handle the 100 year storm without overtopping. The Board could consider a condition to require this analysis and associated design data prior to issuance of a building permit if the project is approved.

The bio-retention basin, if to remain an open basin, should use a Curve Number (CN) of 98 as it would be flooded during most of the storms modeled. As noted a bio-retention area should not be used for rate control according to the DEP Handbook. The design of a stormwater basin should include a wider berm, as designed the top would be a point. Typically, stormwater basins have an accessible berm all the way around them for maintenance and stability.

No longer proposed.

Additional soil testing may be required depending on the final design. *Additional soil testing is required to confirm suitable soils are present for infiltration under UG 2. For this design this is an issue under Standard 3 as recharge is not utilized in the runoff calculations and it is likely sufficiently placed above seasonal high groundwater relative to rate control requirements. I have included the comment here for consistency with prior comments.*

The project proposes an increase in stormwater volume to a flood zone. The downstream wetland does not appear to be restricted by a nearby culvert and the volume from the site is small compared to the entire system but some documentation of the potential impact of an increase in runoff volume to the wetlands should be provided to demonstrate that flooding would not be exacerbated by this project.

The revised design indicates that the wetlands would have an increase in flood elevation of less than 1/2" assuming that the wetlands are flat, which is not likely. The area of the site is small compared to the area of the watershed tributary to the next downstream culvert at Main Street and likely would not have a significant impact at this location. I note that Accord Brook and associated wetlands are listed as a FEMA Flood Hazard Zone A.

The model should be corrected relative to routing, the plans indicate the flow from UG 1 also flows through the outlet structure for UG 2 but is not modeled that way. In addition, the flood elevation in the outlet structure for UG 2 in a 100 year storm is above the outlet elevation at UG 1 and UG 1 would not have a free discharge as modeled. More site specific details for the proposed subsurface systems should be provided

A 1" outlet is proposed at both outlet structures. This size will be difficult to protect from clogging.

It is not clear that this Standard has been met by the design. Additional information is required to demonstrate compliance with this Standard.

It is not clear that this Standard has been met by the design. 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.

I note that there is a discrepancy in the impervious area calculations between the HydroCAD model and the Recharge Calculations in the Report. The difference is approximately 260 square feet.

This issue has been corrected.

Infiltration would only occur in the subsurface system below the outlet of the system. There appears to be just 2 feet of groundwater separation based on testing although the closest test just outside the system on the east side had a higher groundwater than used in the design of 0.1 foot. It is also unclear if suitable soils exist at the far west end of the system as soils next to the existing driveway were not suitable and the location of the change in soil conditions has not been determined. I note that the peak runoff rate calculation under Standard 2 did not include an infiltration component in any of the storms modeled.

Based on the data on the plans and confirmed by review of my field soil logs, UG 1 has a maximum seasonal high water table of EL 134.18 at TP #4. The bottom of the system is at EL 135.9 and would not provide 2 feet of separation as required.

No soil testing has been performed under System UG 2 as required. At this location it is not known if there are any suitable soils as to the west soils were not suitable. There were suitable soils to the east side, but the location of the change in soils was not determined and the area proposed is under the existing driveway where the existing grade is lower than the tests which had suitable soils. The lowest measured nearby seasonal high groundwater elevation (131.33) was used for the design, not the highest (133.6) as required. Using the higher elevation would place the system less than 2 feet above seasonal high groundwater. As previously noted it was not clear that suitable soils exist in this area.

The revised calculations do not utilize any of the storage volume in the runoff rate calculations. Although this is a conservative assumption, it is acceptable and would reduce the total runoff volume to include the lost volume in the system, subject to other issues.

Not all of the impervious area has been captured. The impervious area directed to the infiltration system does exceed the overall increase and an adjustment calculation would not be required.

The only impervious area not captured is currently paved and flows to Whiting Street. I note that it is required to demonstrate it is not practicable to infiltrate more volume as a partial redevelopment under Standard 7. In this case there are suitable soils at UG 1 and the area does not appear to be maximized for infiltration volume. It is unclear that UG 2 has suitable soils and if not suitable this requirement would not be met by UG 1 alone as designed.

The design assumes HSG B soils which have a lower requirement than HSG A soils. In this case most of the area would be in HSG A soils although further testing would be necessary to determine the limits on the westerly side. If all of the new impervious area is in HSG A soils including adding in the

difference in area as noted above a total of 446 cubic feet of recharge would be required and only 327 cubic feet is provided.

Satisfied.

The revised design has UG 2 adjacent to a steep slope, the bottom would be near the elevation of the toe of the slope but the top is close to the slope and larger storms could be a concern relative to slope breakout and stability. The DEP Handbook has setbacks for trenches of 100 feet. This may be more than required for this application, but the issue should be addressed if suitable soils are present in at the proposed system location.

Additional information to demonstrate that this Standard would be met is required. I also note that design considerations under other Standards could alter the design, and additional testing to confirm the entire area is suitable for infiltration and groundwater separation should be performed.

Additional information to demonstrate that this Standard would be met is required. I also note that design considerations under other Standards could alter the design, and additional testing to confirm that soils at the proposed location of UG 2 are suitable for infiltration and groundwater separation should be performed. In particular it is required to provide infiltration to the maximum extent practicable as a partial redevelopment and more runoff could likely be infiltrated in UG 1.

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 portions of the site lie in highly permeable soils pretreatment prior to infiltration of 44% TSS removal is required. The site is also located in a Critical Area Zone II, and Tributary to a Surface Water Supply both of which require 44% pretreatment. Refer also to Standard 5 as this site is listed as a Land Use with Higher Potential Pollutant Loads.

Although portions of the area proposed for the project are currently developed, it is required to have some improvement in TSS removal if feasible. At a minimum, documentation to demonstrate that no improvement relative to treatment of existing flows into the State Highway Layout are infeasible should be provided.

The following BMP's are proposed:

- Catch basins – One double grate catch basin is proposed. The submittal quantifies the impervious area tributary to the catch basin to document that it would comply with DEP requirements for credit of 25%. DEP only credits TSS removal for catch basins with ¼ acre or less impervious area tributary. The proposed catch basin would meet

this requirement. This catch basin discharges to the subsurface system.

The revised plans have three catch basins all of which have less than ¼ acre of impervious tributary area and would receive TSS credit of 25%.

- *Oil/Grit Separator – Two Oil/Grit Separators have been added to the design. I note that these are typically required at fueling facilities as proposed. I note that the submittal does not take credit for the Oil/Grit Separators and no sizing data has been provided except for the fuel storage capacity. The details do not indicate the proposed valves. The detail is not consistent with the DEP detail for an Oil/Grit Separator. I recommend that these be designed consistent with the requirements and be considered for TSS removal credit (25%) as a pretreatment device.*
- **Infiltration/Detention Chambers with Isolator Row –** The submittal credits the isolator row with 80% TSS removal. This has not been fully documented and as a proprietary system is only credited with a removal rate acceptable to the Board. I do not recommend a removal rate of 80% for this component of the system. An infiltration system with an isolator row would receive 80% as would just an infiltration system, if properly sized. The submittal does not demonstrate that the system is sized appropriately and based on my calculations the system is not sized for TSS credits. The calculations use a water quality volume to flow conversion but it is not clear that this is appropriate in this case. To receive TSS credit in highly pervious soils as well as in a critical area 44% TSS removal is required for pretreatment the isolator row is within the subsurface system and not necessarily a pretreatment unit. I note that the roof does not require pretreatment.
The revised submittal credits the isolator row with 65% pretreatment and the overall system with 80% treatment as an infiltration system. The isolator row data provided indicates that they can be effective treatment systems in the appropriate location. Refer to other comments as in this case as the site is both a LUHPPL and in a Critical Area and other requirements apply. The data provided is from the University of New Hampshire and Stormtech (the manufacturer), not the actual data from a TARP affiliate of which New Jersey is a participant. A brief review of the New Jersey stormwater website did not find the referenced product but this reference could be provided if available.
In addition, the infiltration systems themselves to receive credit need to infiltrate the water quality volume, in this case 1” of runoff, which has not been provided.
- **Proprietary Units –** The inlet at the intersection of the proposed egress at Whiting Street is a proprietary unit. The TSS calculations credit this unit with 65% TSS removal. The unit proposed only provides pretreatment and 65% overestimates the removal in my opinion. I

recommend that the Board allow a credit of 30% for swirl type separators as proposed.

For sites not in a Critical Area or a LUHPPL a credit of 65% may be approvable by the Board but in this case more data is required as noted above.

- Bioretention area – Bio-retention areas can receive 90% TSS removal credit subject to proper design and pre-treatment. Insufficient documentation for the bio-retention system has been provided to demonstrate that it would meet requirements.

No longer proposed.

- Water Quality Swale – The rear paved access to the lower level storage area reportedly flows to a water quality swale (WQS) prior to discharge to the bio-retention area. This system has not been credited with any removal and has no design data to demonstrate any removal of TSS.

No longer proposed.

More detailed data on the proposed systems is required to demonstrate that the required TSS removal would be achieved. In particular pretreatment in many locations is inadequate for the next downgradient system to receive removal credits.

Additional data is required to confirm that this Standard would be met.

Refer also to comments on these systems under Standards 2, 3 and 5.

Refer also to comments on these systems under Standards 2, 3, 5, 6 and 7.

It does not appear that this Standard would be met.

It does not appear that this Standard would be met.

Standard 5 – Higher Potential Pollutant Loads

The project is considered a Land Use with Higher Potential Pollutant Loads (LUHPPL) as it is a gasoline fueling station.

LUHPPL's have specific requirements for BMP's that can be used on sites of this type. I have listed the specifics for each proposed BMP relative to applicability and special design considerations as listed in the DEP Handbook.

- Catch basins – Catch basins are an acceptable pretreatment device.
- Infiltration/Detention Chambers with Isolator Row – Since the isolator row is part of the infiltration system it is not a pretreatment device. In addition, it is not clear that the system has been verified for this application by DEP as a proprietary system. In general, an oil/grit separator is required as part of the treatment train for a gas station, in particular prior to an infiltration system. The subsurface structure

itself (the Stormtech chambers) are also a proprietary system and would need documentation to be used at this location.

Partially addressed, as a LUHPPL more documentation of the isolator row approval is required. As noted I did not find the specific product after a brief review of the New Jersey stormwater website. The volume to be infiltrated as a system proposed to meet multiple Standards would be the most restrictive, in this case 1" WQV. This has not been met.

- Proprietary Units – The inlet at the intersection of the proposed egress at Whiting Street is a proprietary unit. The unit proposed is commonly used. The appropriate STEP or TARP data for the unit should be provided. I believe other project have previously provided this data to the Board for this type of unit.

No longer proposed.

- Bioretention area – Bio-retention areas can be used if proper pretreatment has been provided and the system is lined and sealed. The proposed system does not have a liner as required.

No longer proposed.

- Water Quality Swale – Dry water quality swales can be used but should have some pretreatment. In this case the WQS is not credited with treatment.

No longer proposed.

- Oil/Grit Separator – Two Oil/Grit Separators have been added to the design. These are typically required at a LUHPPL that is proposed as a fueling facilities. I note that the submittal does not take credit for the Oil/Grit Separators and no sizing data has been provided except for the fuel storage capacity. The details do not indicate the proposed valves. The detail is not consistent with the DEP detail for an Oil/Grit Separator. I recommend that these be designed consistent with the requirements.

This Standard would not be met.

This Standard would not be met.

Standard 6 – Protection of Critical Areas

The site is located in a critical area as the area is within a Zone II of water supply wells and is tributary to a surface water supply.

Critical areas have specific requirements for BMP's that can be used on sites of this type. The applicability varies depending on the type of critical area. I have listed the specifics for each proposed BMP relative to applicability and special design considerations as listed in the DEP Handbook.

- Catch basins – Catch basins are an acceptable pretreatment device for both surface water supply tributaries and Zone II's.

- Infiltration/Detention Chambers with Isolator Row – Since the isolator row is part of the infiltration system it is not a pretreatment device. In addition, it is not clear that the system has been verified for this application by DEP as a proprietary system. The subsurface structure itself (the Stormtech chambers) are also a proprietary system and would need documentation to be used in both a Zone II and any area that discharges to a surface water supply.
Partially addressed, as a Critical Area more documentation of the isolator row approval is required. As noted I did not find the specific product after a brief review of the New Jersey stormwater website. The volume to be infiltrated as a system proposed to meet multiple Standards would be the most restrictive, in this case 1” WQV. This has not been met.
- Proprietary Units – The inlet the intersection of the proposed egress at Whiting Street is a proprietary unit. The unit proposed is commonly used. The appropriate SEP or TARP data for the unit should be provided. I believe other project have previously provided this data to the Board for use of this product as a pretreatment unit.
No longer proposed.
- Bioretention area – Bio-retention areas can be used if proper pretreatment has been provided and the system is lined and sealed in a Zone II. The proposed system does not have a liner as required in a Zone II.
No longer proposed.
- Water Quality Swale – Water quality swales are not listed for use in either a Zone II or an area tributary to a surface water supply.
No longer proposed.
- Oil/Grit Separator – *Two Oil/Grit Separators have been added to the design. These are acceptable pretreatment devices, if properly designed, in a Critical Area. I note that the submittal does not take credit for the Oil/Grit Separators and no sizing data has been provided except for the fuel storage capacity. The details do not indicate the proposed valves. The detail is not consistent with the DEP detail for an Oil/Grit Separator. I recommend that these be designed consistent with the requirements.*

This Standard would not be met.
This Standard would not be met.

Standard 7 – Redevelopment Projects

The project proposed would be a partial redevelopment project. I note that no improvements are proposed for much of the existing gas station lot, including some of the expanded pavement area.

It is required to demonstrate that no improvement to this area can be accomplished. No data on why improvements are not feasible has been provided.

It is required to demonstrate that maximum feasible compliance has been met by the design. It appears that greater infiltration could be achieved at UG 1 but it is questionable that any infiltration could be achieved at UG 2. In addition, further documentation regarding treatment is also required as noted under other Standards. It appears that it would be difficult to collect more of the existing pavement and still size the systems to meet all of the requirements.

More information is required to demonstrate compliance with this Standard.
More information is required 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 is less than the one acre of disturbance threshold and an EPA NPDES Permit and SWPPP will not be required.

This Standard requires the following data. I reference the Stormwater Report Checklist. Some of this information could be provided prior to construction:

- Narrative – The Report includes an Executive Summary that provides a general narrative description of the project.
- Construction Period Operation and Maintenance Plan – A Construction Period O&M has not been provided. The plans should also include the location of temporary basins, if proposed, stockpile and staging areas, etc. and discussion of maintenance of these areas. This is a small site with a requirement to maintain operation of the gas station during construction and limited space for stockpiles, staging, etc. is available. This information should all be indicated on the plans.
A Construction Period Operation and Maintenance Plan has been provided.
- Names of Persons or Entity Responsible for Plan Compliance – It is unclear who will be responsible for the construction and operation phase of the work. The Application should address responsibilities for both construction and inspections. There should be someone experienced in erosion and sediment controls responsible for this aspect of the project.
The Construction Manager, to be named, would be the responsible party for plan compliance according to the Report. The Board may want to include a condition, if the plan is approved, that the person responsible for plan compliance be acceptable to the Board.
- Construction Period Pollution Prevention Measures – Some data is provided on the plans, primarily a mulch sock to be installed at the rear

of the property and a tracking pad. I recommend that the plans and construction sequence in the Report also requires protection of subsurface infiltration structures, the septic system area, etc. The Conservation Commission may have additional requirements as the work is proposed within the 50 foot buffer on a steep slope, including drainage outlets.

Partially addressed, more data has been added to the Demolition and Sediment Control Plan and a construction sequence is included in the report. I recommend that areas proposed for infiltration and the septic leaching area be protected from compaction by heavy equipment. The proposed sediment basin should be sized and utilize a control to allow sediment to settle prior to discharge.

- Erosion and Sediment Control Drawings – There is a Demolition & Sediment Control Plan in the set. A complete Erosion and Sediment Control Plan responsive to all of the requirements should be provided. Also refer to other comments.

Partially addressed, more data has been added to the Demolition and Sediment Control Plan. As noted infiltration and septic leaching areas should be protected from compaction, a location for construction vehicles to park should be provided. It is unclear if a construction trailer is proposed. Stockpile locations should be indicated on the plans.

- Detail Drawings and specifications for erosion control BMPs, including sizing calculations. – There are details for a 12” mulch sock, tracking pad, stockpile protection, catch basin silt sack and a temporary basin. I recommend that the temporary basin have a floating skimmer outlet and that the sizing data be included together with the location and tributary area. Other details may be required depending on any revisions to the plans.

Comment remains relative to the temporary basins.

- Vegetation Planning – Typically planting periods for successful growth should be included. There is a Landscape Plan with a listing of trees and specification for grass and topsoil.

Satisfied, this data is in the Report.

- Site Development Plan – This requirement would be satisfied with the Plans.
- Construction Sequencing Plan – The submittal includes a sequence of construction (Section 1.10 of the Report). I recommend references to straw bales be removed and that the plans identify the proposed location of various temporary BMP’s. The plans indicate a filter sock for sediment control and the Sequence discusses silt fence and straw bales, the data should be consistent. I recommend a double row barrier be provided where work is within the 50 foot no-disturb zone. The sequence should include appropriate time periods for various vegetative measures and stabilization for winter conditions.

Partially addressed, the straw bale reference has been removed. I recommend a double row be provided where work is within 50 feet of wetlands.

- Sequencing of Erosion and Sediment Controls – The Application lists that sediment controls would be installed first as required.
- Operation and Maintenance of Erosion and Sediment Controls – The submittal should include a separate Construction Phase Operation and Maintenance Plan.

This has been added to the Report as required.

- Inspection Schedule – A schedule for inspection of various erosion and sediment controls should be included.

Satisfied this is included in the Report.

- Maintenance Schedule - A schedule for maintenance of erosion and sediment controls should be included.

The maintenance schedule is for long term maintenance, inspection frequency is listed but not construction phase for all BMP's.

- Inspection and Maintenance Log Form – A construction phase log form was not included with the submittal.

Satisfied, log forms are included in the Report.

Additional data is required under this Standard.
Additional data is required under this Standard.

Standard 9 – Operation and Maintenance Plan

An Operation and Maintenance Plan (O&M) was provided in the Report. For all projects a comprehensive O&M is required for the entire site, including areas not proposed to be altered.

The (O&M) includes a description of general non-structural BMP's that is consistent with DEP requirements. The westerly snow storage area should be relocated away from the basin. There is limited area for snow storage on the site.

The following structural BMP's are proposed.

Catch basins – The maintenance is consistent with DEP requirements. .

Subsurface Infiltration System – The proposed subsurface infiltration/detention system includes an isolator row and the manufacturer's maintenance manual is included as required by DEP. Maintenance is consistent with DEP requirements. I recommend that the details on the plans be site specific, and include data on inverts, system elevations, soil removal/replacement notes and specifications, etc.. The observation port should not be listed as optional.

Recommendation remains relative to site specific details. The observation port is no longer optional.

Bio-Retention Area – Bioretention area maintenance should include more data on frequency of soil testing as listed in the O&M. Snow is proposed to be stored on the system slope, counter to the proposed O&M requirements. The plans should include more data on specific plantings proposed. Refer also to issues listed under other Standards.

No longer proposed.

Water Quality Swale – The submittal lists a water quality swale with the bioretention basin but not specific design data has been included and the design does not meet DEP Handbook requirements for a water quality swale.

No longer proposed.

Proprietary Hydrodynamic Separator – One unit is proposed and the manufacturer's maintenance manual is included as required by DEP.

No longer proposed.

The O&M also includes maintenance of the outlet control structures and outlet protection. The O&M is acceptable for these systems.

I recommend roof drain gutters be included and required to be cleaned twice a year once in the fall after leaf drop and again in the spring after snow melt. It is unclear if a roof gutter/downspout system is proposed for the rear of the building.

Satisfied.

Additional data is required to comply with this Standard.

Subject to site specific details for the subsurface systems this Standard would be met.

Standard 10 Illicit Discharge

A signed statement has been provided.

- i. The plans do not include any data on proposed lighting. I recommend that the submittal include photogrammetric plans for the proposed lighting.
The Response indicates that lighting will be attached to the building and that if a photogrammetric plan is required that the Board include it as a condition to be provided prior to construction. The Board should review this request.
- j. It is unclear if the Board requires or requests and other materials not identified above regarding the project.
No further comment.

The Board should review the comments and determine if all of the information required under Section 6. Review Standards and Approval have been addressed by the Applicant prior to arriving at a decision.

Section V-A Off Street Parking Requirements

1. The site is currently used as fueling facility and a residential dwelling. Existing on-site parking is currently provided for the dwelling including a garage. There is some parking but no marked spaces at the gas station. An A3 Special Permit is requested.
2. There is a Parking Calculation Table on Sheet C-101. The site includes spaces for the retail use and for a storage use. As noted Storage is not an allowed use in this district. It is proposed to have in excess of the required number of spaces as the calculations indicate 15 are required and 16 are proposed.
The revised plans have 15 spaces. The Board and Vanasse & Associates should also review this aspect. I am unclear on the use as table discusses Gross Floor Area (GFA) and in this case 17 spaces would be required for the GFA. The Applicant has requested an A3 Special Permit for a parking determination.
3. Parking Dimension Requirements:
The proposed parking spaces are 18 feet long by 9 feet wide except for handicap spaces. There is no overhang as the spaces abut a concrete curb and sidewalk. The spaces do not comply with requirements for length and should be 20 feet long as designed. The spaces comply with width requirements as all are proposed to be 9 feet in width.
A waiver from the requirement for a 20 foot long space without overhang has been requested. Spaces are 18 feet long and abut a curb.
There is a 15.5 foot wide by 20 foot long loading space in front of the dumpster areas. I recommend that the application discuss how trucks will maneuver into and out of this space.
Truck turning plans have been provided. I defer this aspect of the review to Vanasse & Associates.
Aisle widths vary and are not all identified on the Plans. I recommend that the plans clearly identify the space allocated for vehicles at pumps and circulation aisles around the pumps.
Not addressed on the plans.
4. The plans are drawn at 1"=20' as required. The plans are stamped as required.
 - a. Details of proposed monolithic curb, concrete sidewalks, curb stops (although not specified on the plans), paving, etc. have been provided. Sign details, and landscaping data have also been provided. No data has been provided regarding proposed site lighting.
The submittal claims no site lighting is proposed although elsewhere wall lights appear to be proposed on the building.

- b. The required building location, lot lines, etc. have been indicated. A zoning table is provided on Sheet C-101.
 - c. A Landscaping Plan has been provided,. The Board should review the plans. The plans include a list of species and sizes as required.
The Board should review proposed landscaping.
5. Design standards
- a. This section addresses general safety and access convenience. This aspect of the project is under review by Vanasse and Associates.
No further comment.
 - b. It is proposed to retain three of the existing access points and close one existing curb cut. There are minimal changes to the access locations. I note that the easterly entrance is partially in an easement. The plans indicate available clear sight lines at the proposed intersections, although it is unclear if there would be vegetation or grade issues impacting sight lines. I recommend that the plans also indicate roadway grades within Whiting Street. The central curb cut is at approximately a 6% grade. The existing openings in the center and east side are 40 feet wide, which exceeds typical opening sizes. The Board should review this aspect of the project.
Partially addressed, the plans have modified some aspects of the access locations and narrower openings are proposed. Roadway grades have not been added to the Grading & Drainage Plan.
 - c. One loading space has been identified on the plan. An enclosed dumpster area is also identified on the plans. This aspect of site operation should be discussed by the Board, in particular maneuverability of trucks for deliveries and loading dumpsters.
Plans for truck access to various facilities, gas tanks, dumpster and Emergency Fire Access have been provided.
 - d. No loading or service doors are included on the plans or identified in this submittal.
The Response indicates that no loading doors are required, deliveries will be by hand truck.
 - e. Spaces do not require backing into a way or the movement of another vehicle to access the space and would comply with this requirement.
 - f. All of the spaces would overhang the sidewalk. The design does not comply with this section of the Bylaw.
A waiver from the requirement for a 20 foot long space without overhang has been requested. Spaces are 18 feet long and abut a curb.
 - g. I recommend that the plans clarify the location of proposed curb stops. The plans indicate that there would be a curb and sidewalk at the end of each space. The details for handicap spaces indicate a curb stop.
Curb stops are no longer proposed.
 - h. Photogrammetric plans and lighting details have not been provided. This aspect of the Bylaw should be addressed.

The Response states that no site lighting is proposed although it is unclear if wall lights would be proposed on the building.

- i. The plan specifies white pavement markings as required for parking.
- j. There are 2 handicap spaces proposed. Based on 521 CMR one handicap space would be required and the plans comply.
- k. The Site Plan indicates proposed snow storage areas. One of the areas should not be utilized for snow storage as it is the side of the bio-retention basin. The plan should be revised. There is minimal storage space for snow.

Snow is proposed to be stored on the steep slope on the west side of the site. Storage at this location could be an issue relative to maintenance of the grass and wildflower mix proposed. The area is also partially within the 100 foot wetland buffer. I understand that the Assistant Conservation Officer has also requested alternative location(s) for snow storage.

- l. Portions of the parking lot area do not comply with grade requirements as grades exceed 4%. A waiver has been requested from this requirement. Refer to comments under Section 4. h. regarding stormwater design.

The grade waiver is still requested.

- m. The parking lot would have 15 total spaces and be subject to this requirement for landscaping. Three trees are located in the front landscape island between Whiting Street and the parking area. These trees are of the required size. There is a mix of plantings but I recommend that the Board review the proposed tree locations relative to this requirement.

The revised plans have 2 trees in the island at the front of the site. The Board should review this plan.

- n. This section addresses shared parking spaces and would not apply.
- o. This section is not applicable no land banked spaces are proposed.

Section V-B Signs

The Board should address signage. There appears to be a large identification sign proposed at the entrance. Other signs for handicap and a stop sign are included on the plans.

I defer signage review to the Board.

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