Professional Services Corporation, PC

Peer Review of

The Residences at West Union

Ashland, MA

December 4, 2015

Engineer/Surveyor
Guerriere and Halnon, Inc.
333 West Street
Milford, MA 01757

Owner/Applicant
Capital Group Properties
259 Turnpike Road, Suite 100
Southboro, MA 01772

Zoning Districts
Residential (A)

Plans Dated
May 23, 2014,
Revised November 20, 2015

Assessors' Reference
Map 10, Lots 101, 103 and 104

Content
Eleven revised drawing sheets

Location
Off Route 135 between Edgewood Drive and Indian Spring Road

INTRODUCTION

The Project is based upon the Comprehensive Permit Application revised by Capital Group Properties to construct a residential development off West Union Street in Ashland, Massachusetts providing one-hundred thirty-two (132) rental apartments on a total land area of approximately 7.67 acres. The units will be housed in a multi-unit apartment complex consisting of one fifty-six unit building, and one seventy-six unit building. A community building/club house is proposed in the front of the side adjacent to the entrance.

The site is located on four parcels within the Residential A – RA district. The locus has been utilized for residential (multi-family) use. An interior Bordering Vegetated Wetland system transects the locus. Similar to the original project, the revised project occupies both remaining upland areas and is proposed to be connected via an interior wetland crossing under the limited project provisions of 310 CMR 10.53.

The project is served by a main driveway that provides access to West Union Street, whereupon it divides into two interior driveways that each serve an apartment building. Approximately two-thousand forty (2,040) LF of proposed total roadway will be constructed to serve the 132 units. The roadway construction will include vertical granite edging, cape cod berm in parking areas and a 5-foot sidewalk on one side. The project is to be served by a looped water service that connects the project to the existing 12-inch water main within West Union Street in two locations. Septic flows, calculated as 23,320 GPD from the two apartment buildings will be collected via gravity system and will discharge to an existing manhole within West Union Street. Additional (nominal) flows will be generated by the clubhouse building. Gas service will connect to the existing 3-inch service in West Union Street and will be brought into the site beneath the entrance drive. Telephone, electric and cable utilities will be extended underground within the site driveway and into the development.

Surface stormwater is to be collected within closed stormdrain systems and directed to four on-site stormwater subsurface basins. An exterior infiltration basin is also proposed adjacent to the entrance drive.

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

BASIS OF REVIEW

Our evaluation is based upon review of the following:

PLANS, DOCUMENTS, AND EXHIBITS

In undertaking the engineering peer review of this project, and in addition to the materials cited in the PSC October 14, 2014 evaluation of the project, PSC reviewed the additional plans, documentation and exhibits provided by the Project Development Team including the following:

A. *"133 West Union Street"* consisting of eleven (11) drawing sheets prepared by Guerriere & Halnon, Inc., dated May 23, 2014, revised November 20, 2015.

B. Comparative evaluation between the May 23, 2014 and August 26, 2015 layouts, including project density, setbacks, wetland impacts, open space, unit and bedroom breakdowns, etc., presented in a spreadsheet format.

C. *"Stormwater Report "133 West Union Street" Ashland, MA"* prepared by Guerriere & Halnon, Inc., dated May 26, 2014 and revised November 20, 2015.

D. Response to PSC Peer Review of October 16, 2015 provided by Guerriere & Halnon to the Ashland Zoning Board regarding *"The Residences at West Union Ashland, MA"* as dated November 23, 2015.

E. Copy of Goddard Consulting, LLC report addressed to Ashland Conservation Commission regarding *DEP File #095-0855. Installation of Culvert and Utilities at 133 West Union Street, Ashland, MA.*, dated November 17, 2015.

F. Copy of Narrative Description of "*Groundwater and Infiltration Design",* dated November 20, 2015 and prepared by Guerriere & Halnon.

We are limiting our review to the written comment provided in response to our Peer Review dated October 16, 2015. Any outstanding comments from the PSC September 5, 2014 Peer Review of Comprehensive Permit Plan for the Residences at West Union – 133 West Union Street that remain pertinent to the current layout should also be addressed to the satisfaction of the Board.

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

In conducting this peer review, additional information was obtained from the following:

G. *Stormwater Management Regulations; Town of Ashland Conservation Commission.*

H. *Ashland Wetlands Protection Bylaw*

I. *Wetlands Protection Regulations*

J. *Final Ashland Stormwater By-Law (Adopted by Ashland Town Meeting, May 2, 2007)*

K. *Massachusetts Stormwater Handbook Volumes 1-3*

L. *United States Department of Agriculture; Natural Resources Conservation Service Soil Survey of Massachusetts.*

M. *Review of Flood Insurance Rate Map (FIRM), Middlesex County, Massachusetts (All Jurisdictions) Map Number 25017C0626F, Panel 626 of 656, effective date July 7, 2014.*

N. *Massachusetts GIS Online Mapping – OLIVER.*

PEER REVIEW COMMENTS:

1. The wetland delineation provided on the current August 2015 drawings differs significantly from the May 2014 drawings and is much narrower and smaller. The spreadsheet indicates that the previous wetland delineation of 50,807 sq-ft has been reduced as 14,620 sq-ft. Both sets of drawings were provided field flags that differ significantly from one another. As the project is configured closely around the wetlands and buffers, the plans should clearly identify whether either or both delineations were approved through issuance of an Order of Resource Area Delineation.

   GHI Response: The new wetland delineation has been approved by the commission and the state. See the attached approval.

   PSC: The provided documentation should include DEP approval of the ORAD.

2. The current August 2015 drawings do not differentiate between the delineated limits of Bank for the Intermittent Stream, and limits of the Bordering Vegetated Wetlands. Significant areas of

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

Bordering Vegetated Wetlands that were noted on the 2014 drawings are no longer indicated on the plan. Also, the referenced GLM plan delineations (Oct, 2011) are more than three years old and may not be acceptable to the Commission. It was previously noted by the Commission that certain of the wetland flags appeared to have been disturbed. The date and station by station field notes for each re-established flag should be submitted.

GHI Response: The new wetland delineation has been approved by the commission and the state. See the attached approval.

PSC: The provided documentation did not include the referenced approval.

3. The project encroaches in several locations into the 100-foot buffer of the Bordering Vegetated Wetlands and into the 25-foot No Disturb Zone (NDZ) for construction of the electric, water and gas service. Dewatering will be required during construction of these utilities (near the wetland crossing) and they will likely operate in a submerged condition. Encasement details should be provided.

   GHI Response: Dewatering notes and details have been added to the Erosion Control Plan.

   PSC: The utilities have been realigned on the revised plan to remain within the driveway so the encasement detail is no longer required (OK). Temporary stilling basins have been provided in eight locations on the site, including both surface infiltration basins. Although six of the eight basins are suitable, the permanent basins should not be utilized for construction stage sediment control. Keep the permanent basins off line until the site is stabilized with pavement and established vegetation in accordance to Vol 2, Chap 2 of the Massachusetts Stormwater Handbook. The dewatering notes appear appropriate except for Note 2 which should be revised to reference the current project.

4. Stormwater management calculations were not provided. To evaluate the layout in terms of point source discharges from the surface basins, pre- and post-developed discharge rates and volumes from the project, conveyance capacities of onsite stormwater drain pipes, volumetric and infiltrative capacity for each of the subsurface stormwater galley systems, etc., a current set of hydrologic and hydraulic calculations should be submitted.

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

GHI Response: Please see Drainage Report.

PSC: Drainage calculations were provided in a Stormwater Management Report. We offer the following comments based upon evaluation of this report:

a. To more clearly model the impact that the project will have upon the hydrology of the existing Resource Areas, the existing conditions model should be revised by dividing the site into two sections. Each should model contributory drain areas from each of the two uplands and model their flows as they combine into the intermittent stream/bordering vegetated wetland system.

b. The post-developed model separates and examines flows from Building A and Building B development areas and calculates the combined impacts to the intermittent stream/BVW system. This is the recommended approach to the existing model as well. The post-developed model appears to be appropriately routed. OK.

c. The contributory limits of subcatchments P-4 and P-5 should be indicated on the watershed plan.

d. The infiltration basins has been sized using the *Simple Dynamic Method* as defined by DEP. In lieu of conductivity testing beneath each system, the design reverts to the published Rawls Rates for the recharge component of the systems which are based upon the underlying NRCS mapped soils for Middlesex County (B-soils for the entire site). The Rawls rate in the calculations should be corrected from 2.41 inches/hour (used only for A-soils) to either 1.02 inches/hour for B-type sandy loams, or 0.52 inches/hour for B-type loams. The systems may need to be resized if necessary to reflect this refinement.

e. Conveyance and capacity calculations should be provided for the stormwater pipes.

f. The mounding calculations indicate that the groundwater mound experienced while the system recharges stormwater will extend about 8 feet above the existing

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

groundwater level beneath each of the three 38'x58' systems. The two Building 'A' systems are three (3) and four (4) above groundwater and the Building 'B' system is sited within groundwater. The groundwater mound will impact the recharge time and capability for all three systems.

g. The mounding calculations for the Building B systems (one 38'x58' and the 102'x107') do not account for the adjacent retaining wall systems, which will restrict the horizontal extent of the mound beneath both systems. The smaller basin (sited in groundwater) should be redesigned or re-sited. Please refer also to Comment #24.

h. The groundwater mound should not impact the function of the surface basin. OK.

i. The center of the groundwater mound will extend approximately 1 foot into the chambers of the large 102'x107' galley system near Building B.

j. The upper stone layer for the 102'x107' galley system should be increased from 6-inches to 1 foot (Top of Stone to el=257.00) to accommodate the 100-year volume at elevation 256.97.

k. The open basin berm near the front of the site should be raised to 255 to provide 1-foot of freeboard above the 100-year storm elevation of 253.95.

l. The mounding analyses for the five systems should be revised, using a hydraulic conductivity rate for sandy loam.

5. Portions of the utility construction and access drive between with Buildings A and B encroach into the NDZ. It is our opinion that the applicant has not met the required responsibility of addressing to the Board that waiving the local Regulations will include sufficient and reliable information which demonstrates

    a. That sufficient wetland resource area function and value and adjacent upland habitat will remain such that the interests of the Act and bylaw are protected,

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

GHI Response: The existing channel will be reconstructed after all utilities have been installed through crossing area. Please see restoration plan prepared by Goddard Consulting.

PSC: The restoration plan includes a cross section of the stream channel that includes a 1:1 stream bank slope on both sides. To adhere to the Massachusetts River and Stream Crossing Standards recommendation of a maximum height to width ratio of 1:1.5 (vertical to horizontal) to prevent slope failure, the detail should be modified. No further comment regarding the restoration plan.

b. That likely use and maintenance of the altered area will have no detrimental effect on water quality of the adjacent resource area or quality of the remaining habitat area, and

GHI Response: The existing channel will be restored after construction and dewatering plan has been arranged if needed during construction. The proposed development will follow Stormwater Management.

PSC: OK.

c. That the work to be performed sufficiently protects or enhances wetland interests.

GHI Response: All proposed work areas within the 100 foot buffer will have siltation control installed. Weekly inspection will be performed by design engineer and submitted to the Conservation Commission.

PSC: PSC remains concerned that due to the density of development and the nature of on-site topography, we anticipate that extensive excavations for parking areas, driveways, utilities, and foundations will intercept groundwater. To maintain the integrity of pavement parking areas, extensive portions of the site have been provided with underdrains. This will deplete gradual groundwater contribution to the intermittent stream/BVW in the upper reaches of this system by wicking groundwater and concentrating it to the wetlands downgradient of the crossing.

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

6. The comparative spreadsheet does not include an analysis of impacts from either proposed layout to impacts both within the 100-foot buffer and within the 25-foot NDZ.

   GHI Response: Please see spreadsheet.

   PSC: A revised spreadsheet was not included in the submission.

7. Sheet C-8.0 includes a guardrail detail adjacent to the proposed modular block retaining wall system. Guardrail must be designed with sufficient resistance to the overturning moment that it not conflict with the retaining wall system. Because the guardrail near the clubhouse parking spaces and entrance drive pavements is dictated by the configuration of both, the provided detail is not sufficiently dimensioned to illustrate that the guardrail/retaining wall system is feasible.

   GHI Response: All retaining walls are reinforced concrete walls with guardrails.

   PSC: OK.

8. The proposed contours are incorrectly drawn along the entrance drive and clubhouse parking area. The proposed grades between the wall and the NDZ at the toe of wall may extend into the NDZ when corrected. Also, there is a missing 264 contour on the roadway grading plan.

   GHI Response: The proposed grading plan has been revised and the 264 contour has been added to Grading Plan.

   PSC: OK.

9. The Town requested that Low Impact Development Best Management Practices be incorporated into the stormwater management system, including roof rainwater harvesting for use in irrigation. The revised plan does not include LID stormwater design features.

   GHI Response: LID practices have been looked at for this project. The project will have minimum grass areas so less fertilizers will be required. The project will have proposed

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

plantings that will need no watering. The proposed open basins will have proposed planting within them. Swales and rain gardens were looked at around parking areas but due to the wetland location and the 25' NO Disturb Area could not be utilized for this project.

PSC: No further comment.

10. The plan should better clarify the scope and extent of construction within the jurisdictional buffers, including construction details and horizontal limits for retaining wall foundations.

    GHI Response: The proposed retaining walls shown on plan show the footing limits as well as the limit of clearing will be staked prior to construction and will consist of mulch sock, silt fence and orange snow fence, see detail on Erosion Control Plan.

    PSC: With exception of the crossing, the wall foundations appear to be outside the NDZ. OK.

11. The roadway crossing between the upland areas will be constructed fully within the NDZ. The Culvert Profile indicated on Sheet C-10.0 conflicts with the adjacent detail to the left. The water and sewer utilities should be adjusted to be maintained clear of the culvert foundations. The foundations should be drawn to scale on the profile.

    GHI Response: The culvert cross section has been revised. Notes have been added identifying the restoration of the existing channel. The proposed sewer line has also been noted to be sleeved through the crossing area.

    PSC: The details have been revised and coordinated as requested. OK.

12. The embedment note on Sheet C-10.0 indicates the open bottom box culvert will be embedded 24-inches. The profile indicates a significantly deeper embedment depth, which would be more appropriate to keep the foundation below the frost line. The design of both the precast walls and culvert should bear the seal of a registered structural engineer.

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

GHI Response: The proposed retaining walls through the crossing area will not be greater than 4 feet and will not need a structural engineer stamp.

PSC: Given the importance of this sole means of access to the Building B complex, and the geotechnical and structural detail of the design, we recommend that plans for the crossing be completed and stamped by a registered structural engineer.

13. A typical section of the crossing, showing the roadway construction, sidewalk, fencing, guardrail, both retaining walls, the three sided box culvert, channel treatment/restoration, and utilities including gas, electric water and sewer should be added to the plan. A 42 inch high pedestrian protection rail (with no exposed horizontal elements, i.e. ladder effect) must be provided along all walls having a 3 ½ ft. exposed face. A detail showing a combined guardrail and pedestrian rail should be added to the drawings.

    GHI Response: They typical cross section has been added to Sheet 10.

    PSC: A pedestrian protection rail should be provided along the eastern retaining wall behind the guardrail.

14. The snow storage area that has been provided alongside the main entrance will impact the adjacent Resource Area and extends inside the fenced area to the stormwater management basin. Three snow storage locations associated with the Building B site are adjacent to the NDZ and the stormwater management basin and should reconfigured if possible. Signage should be added on the wetland side of each of the parking areas, prohibiting snow storage in wetland areas.

    GHI Response: Snow storage areas have been revised and also some areas have been added.

    PSC: OK.

15. Snow removal operations should emphasize low salt application, with a higher reliance on alternate means of road treatment, such as sanding.

    GHI Response: Magic salt will be used on site. Please refer to snow removal plan prepared by Capital Group.

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

PSC: The referenced brand does not significantly differ from more widely-utilized rock salt. We continue to recommend a low salt application and alternate means of roadway treatment.

16. The project is solely reliant upon subsurface recharge systems to accommodate flows from pavement areas. Each system should be provided with a dedicated oil-water separation unit to protect groundwater from gas or oil spills on the pavement that are conveyed to the closed system with runoff. The Stormceptor SC-900 is specified for the large system near Building B, and at the front of the project. We are concerned that the proposed isolator rows, while complying with the TSS removal requirements, do not protect against hydrocarbons. Additional Stormceptor units should be provided upgradient of each recharge system.

    GHI Response: Stormceptors have been added up gradient to all underground basins.

    PSC: OK.

17. Existing specimen trees over 8-inch caliper along the limits of construction should be added to the Existing Site Conditions Plan to facilitate preservation. A tree protection detail should be added to the drawings for specimens to be maintained.

    GHI Response: Trees have been located and added to the plans.

    PSC: The plans have been revised to include a number of significant specimen trees particularly along the southerly property line near Building A. A tree protection detail should be included in the drawings, and all trees to be protected should be clearly marked in the field.

18. Each row of subsurface galleys should be provided with an observation port to facilitate maintenance. Additional inspection ports should be provided for the large system near Building B.

    GHI Response: The inspection ports have been added and the contractor will following the specification for the number of inspection ports per underground basin.

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

PSC: OK.

19. The applicant has indicated that a first level Environmental Assessment in accordance with MGL Ch. 21E was to be undertaken for the site. It is unclear whether the results have been made available to the Commission.

    GHI Response: This has been submitted to the commission.

    PSC: OK.

20. The prior sets of drawings indicated a proposed irrigation well indicated in the vicinity of the clubhouse. Please clarify whether this supplemental water source is proposed for the current plan.

    GHI Response: The proposed well is shown on the site plan.

    PSC: OK.

21. The applicant should be encouraged to limit turf areas due to water demand and requirements for lawn chemicals and fertilizer. Due to the intensive development of the site that includes large grassed areas, PSC recommends that a Turf Management plan should be provided that adequately protects the adjacent wetland areas from nitrate and phosphate loadings. This was requested during the Comprehensive review for the Board of Appeals, and should be provided, even if included as a condition of approval.

    GHI Response: The development has minimized the amount of grass area to minimize the amount of fertilizer

    PSC: The turf management plan should specify low nitrate/low phosphorous fertilizers.

22. A dedicated location on the site for equipment fueling operations should be sited on the drawings outside the wetland and buffers to minimize the potential for contamination from spills.

    GHI Response: Fueling area location are shown on the erosion control plan.

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

PSC: OK.

23. An updated Operation and Maintenance Plan should be provided, including frequency of inspection and debris removal of the subsurface recharge systems. Maintenance of the subsurface systems should include inspection frequency and debris removal. DEP recommends that mosquito controls be included in the O&M Plan in the event that a system has failed.

    GHI Response: Note has been added to the O&M instructing the owner of project to notify the Mosquito Control Project if need be.

    PSC: OK.

ADDITIONAL COMMENTS

24. Based upon the provided soils test pit logs (DTH#7), the smaller of the two underground chamber systems near Building B is sited within groundwater. Groundwater was measured at elevation 255.75 and the bottom of the chamber are elevation 255 and bottom of stone is 254.5. At least two feet of vertical separation should be provided from the bottom of stone to Seasonal High Ground Water (SHGW).

25. As an measure to help control sediment prior to entering the recharge system, an Isolator Row was specified for Underground Basin #3, but does not appear to have been specified for the other three systems (Detail Sheet C-9.0). Each system should be detailed with an Isolator Row.

26. To correspond with the narrative Standard 9, Section C.4 *BMP Maintenance:,* the provided "Weekly Inspection and Maintenance Log – After Construction" log sheets should add an item for Bi-annual Pavement Sweeping, adjust semiannual inspection of catch basins to quarterly inspections, adjust semiannual inspection of Stormceptors to monthly inspections and add quarterly cleanings. Also, the surface basins should include a maintenance item for mowing sidewalls twice a year, and cleaning sediment out of basins twice a year.

27. A profile sheet for a project in Hopkinton was inadvertently included in the plan set.

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035

28. The Long-Term Operation and Maintenance (O&M) plan (Standard #9) included in the Stormwater Narrative should be adjusted under Section C.2.a. The stormwater maintenance log should be completed and made available, if requested, to DEP or the Commission on a 3-year rolling basis. The words “at least three years” should be replaced with “the last three years” under Section C.2.a.

phone 508.543.4243
fax 508.543.7711

Ten Lincoln Road, Suite 201
Foxboro, Massachusetts 02035