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Memorandum

To: Jennifer S. Kaufman, Inland Wetlands Agent, Town of Mansfield

From: Kimberly Bradley and John McGrane, GEI Consultants, Inc.

Regarding: Storrs Lodge, LLC, Town of Mansfield Inland Wetland Application Review
(PN: 1605880)

Date: May 12, 2016

The Town of Mansfield Wetland Agency selected GEI Consultants, Inc. (GEI) to provide wetland consulting services in association with a pending wetland application for the above-referenced development plan.

The services include:

- Application Review- Includes review of pertinent mapping, reports, and other application materials.
- A site visit to assess the characteristics of the wetland and upland resources at the site was conducted on April 25, 2016. The site visit included Kim Bradley, Senior Wetland Scientist/Ecologist for GEI, Jennifer Kaufman, Inland Wetlands Agent for the Town of Mansfield, George Logan, PWS, CE, and Sigrun Gadwa, PWS of Rema Ecological Services, LLC, and David Zaiks of F.A. Hesketh & Associates, Inc.

Based on the application review and site visit, GEI offers the following initial comments addressing the potential of significant impact to the wetlands of all proposed regulated activities as defined by the Mansfield Inland Wetland and Watercourses Regulations:

1. A total of 4,402 square feet of direct impacts to wetlands is proposed at the wetlands crossing over an unnamed tributary to Eagleville Brook from Hunting Lodge Road to the proposed development. The crossing would serve as the main access road to the development. The location was selected as it is the location of an old woods road on a historic fill causeway, which therefore minimizes wetland impacts resulting from a wetland/stream crossing. The applicant proposes a precast arch bridge with block retaining walls which will prevent any direct impacts to the intermittent watercourse. It should be noted that arch bridges are a preferred stream crossing structure according to the Connecticut Department of Energy and Environmental Protection (CT DEEP) Inland Fisheries Division Habitat Conservation and Enhancement Program: Stream Crossing Guidelines (2008).

It is recommended that the 6' wide sidewalk proposed on the southern portion of the road crossing be reviewed.

2. In general, the storm water management design at the site takes steps to reduce impervious

surface where to the extent possible through reduction of road widths, utilizing pervious pavement, installing and maximizing the use of vegetative swales, employing level spreaders, and increasing and lengthening drainage flow paths. The Engineering and Drainage Report, along with REMA Wetlands Assessment – Supplemental: Review of Storm water System report document the use of “treatment trains” which include a significant infiltration component, using below ground, low-profile infiltration units. Above-ground primary treatment in the form of bio-retention basins and vegetated swales is also utilized at each of the catchment areas. GEI agree with REMA’s recommendation to seed the bottom of bioretention basins with Ernst Conservation Seeds (i.e. ERNMX-180).

3. The plans call for an extensive use of infiltration systems to reduce runoff and meet CT DEEP requirements for Water Quality Volume, and Groundwater Recharge Volume. The entire design is dependent on the permeability of the existing soils and groundwater levels. The Engineering and Drainage report does not document whether the applicant has performed any field investigation to determine in place permeability rates, to in turn determine if the systems will work as designed. Geotechnical borings and laboratory permeability tests, or in place permeability tests may be needed to verify whether the infiltration systems are viable.
4. Accurate groundwater readings should be taken to determine year-round levels in the areas of the proposed infiltration and the BioRetention Basins. If high ground water levels are present, even just seasonally, then the infiltration will not function as designed. Also, the BioRetention Basins will not function properly if they are partially filled with groundwater. If the designed storage volume is occupied with groundwater, they will not have the capacity to store surface runoff, and may overtop the basins.
5. Proposed BioRetention Basins do not have any type of emergency spillway in the event of over topping. If overtopping does occur, it may cause scour and erosion which could impact the wetlands. Consideration to some type of emergency spillway or non-erodible material should be evaluated to accommodate this potential failure mode.
6. The maintenance of the storm water system, infiltration system, and network of bio retention basins should be formalized. These systems will not function as designed if sediment, overgrowth, or erosion occurs over time, and are left unmaintained.
7. The REMA Wetlands Assessment – Supplemental: Review of Storm Water System’s report, and review of the full Engineering and Drainage Report state that the required Water Quality Volume (WQV) for stormwater basin #6 (Watershed/Strom Darin System G, discharge G1) is 2750 C.F., while the provided WQV is only 395 C.F. REMA notes that proposed wetland creation/restoration area restricts the ability to increase the size of Bioretention Area #6. It is also noted that an oversized hydrodynamic separator is proposed within the system to attain 85% TSS removal. While REMA’s rationale of prioritizing wetland restoration and adjacent wetland conditions that allow for discharge flow dispersal are noted, it is recommended that an alternative of increasing the size of bioretention area #6 and identifying an alternative wetland mitigation area is evaluated.
8. The vernal pool located in wetland WA was identified as a high value resources on the site. It is recommended that in addition to the two 2016 vernal pool evaluation surveys and associated summary reports provided by the applicant, at least one additional site visit occur in the June/July timeframe to provide an understanding of when the pool dries and evaluate if the vernal pool maintains adequate hydrology to support successful obligate amphibian reproduction.

The proposed development plan includes a roadway within close vicinity to the vernal pool. The roadway is proposed in an area of historic fill, which may have historically influenced the hydrologic conditions within site wetlands, resulting in isolation of the vernal pool (WA) from the wetlands to the east (WC-1). The applicant has proposed installation of wildlife tunnels beneath the western access and circulation road connecting wetlands WA and WC to reduce some of the development impacts on amphibian populations.

9. Silt fencing and other erosion control measures installed adjacent to vernal pools should be removed from February to June to reduce construction related impacts on vernal pool breeding activity/amphibian migration routes. Sequencing of construction activities within the vicinity of the vernal pool should take into consideration the February-June timeframe, if feasible.
10. Upland and wetland buffers to the unnamed tributary should be considered a valuable natural mitigation measure to protect water quality and aquatic resources of watercourses. Buffers should be enhanced with native plantings and maintained throughout the proposed development. Forested cover and wetland buffers in and around the 50 (at a minimum) to the 150 foot upland review area around wetlands located directly between the proposed developed portions of the site should be maintained throughout the construction process to limit the potential for increased evapotranspiration which may result in alteration of the hydrology of the wetland due to clearing of the forest over story. The proposed limits of disturbance should be strictly adhered to.
11. Proposed parking on northeast portion of the development adjacent to wetlands WC2 and WC3 will require maintenance restrictions to prevent snow management practices that may result in snow melt impacts to adjacent wetlands. It is recommended that storm water management and snow removal maintenance requirements restrict the placement of snow in this parking area, and propose guardrail placement as an engineering control measure.
12. The Construction Sequence outlined on drawing NT-1 is vague. Construction sequence should clarify whether land clearing will occur in a single phase. Land disturbance and clearing should be kept to a minimum and completed in phases if possible. All disturbed areas should be re-stabilized as soon as possible and exposed, unvegetated areas should be protected from storm events.
13. Additional details, including construction methodology and sequence/timing for the wetland crossing from Hunting Lodge Road should be provided. It is recommended that construction occur during the summer low flow period (June through September), in accordance with CT DEEP Inland Fisheries Division Habitat Conservation and Enhancement Program: Stream Crossing Guidelines (2008) to reduce the potential for impacts to wetlands and the unnamed tributary.
14. Erosion and Sediment Control Note 4 states: "The contractor is responsible for the timely installation, inspection, repair or replacement of erosion control devices to insure proper operation." It is recommended that the land owner, developer, or responsible individual (identified per Erosion and Sediment Control Note #2) ensure inspection and regular monitoring will be conducted by an individual with experience in sediment and erosion control.
15. It is recommended that a wetland creation/restoration construction plan be included with wetland mitigation report and/or as a component of a comprehensive landscape plan within the project application drawings. The wetland mitigation report states "Mosaic of wet

meadow, shallow marsh, and scrub-shrub (about 25% total woody cover of shrubs and saplings) is the short-term target cover type.” The wetland mitigation report includes appropriate planting material including shrubs/trees, herbaceous plugs and wetland seed mixes, however a plan will provide a visual depiction of the proposed mitigation design, and provide an estimate of required excavation. Elevations supporting hydrologic regimes required by wetland vegetation communities should be identified within the mitigation design. It is noted that the grading plan (GR-2) does not indicate grading in the wetland mitigation area.

16. The proposed wetland creation and restoration area is in the vicinity of storm water treatment basins. The wetland mitigation should be clearly separated from the site storm water management system. In addition, the proposed mitigation area is in close vicinity to the main roadway within the development (~20 ft. at the closest approximate distance). Has the potential influence of the roadway on the mitigation area been evaluated? Have alternative wetland mitigation areas been considered?
17. The proposed timing of wetland creation and restoration site preparation is not identified within the wetland mitigation report. It is recommended due to the excavation directly adjacent to a wetland hydraulically connected to the unnamed tributary to Eagleville Brook, construction should occur during the summer low flow period (June through September), in accordance with CT DEEP Inland Fisheries Division Habitat Conservation and Enhancement Program: Stream Crossing Guidelines (2008). This timeframe would also limit issues associated with amphibian migration.
18. It is recommended that a landscape plan be developed for the site as a component of the Inland Wetland Application drawings. The plan would provide an understanding of the proposed for landscaped area within the limit of disturbance, provide detailed plan for wetland mitigation as noted above, and identify areas a native plant wetland and watercourse buffer enhancement, as proposed in the Wetlands Assessment - Supplemental: Wetland Mitigation report.
19. According to the Town of Mansfield Inland Wetlands and Watercourses Regulations Effective February 15, 2012) Section 7.4 G, the inland wetland application shall include, at a minimum “Alternatives which would cause less or no environmental impact to wetlands or watercourses and why the alternative requested in the application was chosen; all alternatives shall be diagrammed on a site plan or drawing or otherwise described to the Agency’s satisfaction.” The application plans and reports do not provide an evaluation of feasible and prudent alternatives for the Site. The applicant should be able to provide an evaluation of an alternative for a main access road that would not require direct impact to wetlands.
20. According to the Town of Mansfield Inland Wetlands and Watercourses Regulations Effective February 15, 2012) Section 7.4 M, the inland wetland application shall include, at a minimum “ Submission of documentation verifying that the State of Connecticut Department of Environmental Protection’s Natural Diversity Database has been checked for the presence of any state-listed species or significant natural communities on the property;” The application reports and documents do not provide any documentation of a Natural Diversity Database request submitted to CT DEEP or follow-up site specific review. It should be noted that NT-1 Erosion and Sediment Control Note 15 states: “Due to the area of proposed disturbance, this project will require a storm water permit from the CT DEEP. A copy of this permit, and the required Storm Water Pollution Prevention Plan shall be submitted to the town prior to the start of any construction.” In addition to Town of Mansfield requirements, the CT DEEP storm water permit requires a Natural Diversity Database (NDDDB) review.