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September 20, 2007

Albert Bangert, Chairman
Scituate Zoning Board of Appeals
600 Chief Justice Cushing Way
Scituate, MA 02066

RE: Herring Brook Meadow – Submission for October 4, 2007 ZBA Hearing

Dear Chairman Bangert:

Per agreement at the last ZBA hearing for this project, we will be prepared to present at the October 4, 2007 continued ZBA hearing our engineering and scientific analysis of the three over arching environmental issues; 1) coastal flooding, 2) inland flooding and 3) the hydrogeology associated with the proposed wastewater treatment facility. The accompanying documents and plans (10 sets) address the inland flooding issue (issue no. 2). We have redesigned the site layout and reanalyzed the associated impacts to inland flooding in an effort to address concerns raised by the ZBA and the ZBA review consultants.

Regarding the coastal flooding issue (issue no. 1), we previously submitted the following documents to both the ZBA and the ZBA review consultants;

- SITEC report entitled, "Environmental Setting – Stormwater Analysis & Mitigation" dated October 10, 2006 signed by Peter Rosen, Ph.D., Coastal Geologist and Steven Gioiosa, PE, Civil Engineer,

- SITEC letter report from Peter Rosen, Ph.D. to the Scituate Conservation Commission dated March 29, 2007,

- SITEC letter response from Peter Rosen, Ph.D. dated July 23, 2007 to the MEPA office responding to MA CZM comments made at the July 11, 2007 MEPA ENF public meeting, and

- SITEC memorandum from Roderick Gaskell, AICP, PWS, RS, Land Use Planner and Wetlands Scientist dated July 24, 2007 to Chris Ross, MA DEP Southeast Regional Office Wetlands Section.

Regarding the hydrogeology and associated proposed treatment facility issue (issue no.3), we previously submitted the following documents to the ZBA and the ZBA review consultants;

- Geoscience Report entitled, "Hydrogeologic Evaluation Herring Meadow Brook Scituate, Massachusetts" prepared by Peter Dillon, Hydrogeolgist, dated June 2007, submitted with the MEPA ENF,

- SITEC report entitled, "Summary of Wastewater Impacts and Mitigation Herring Brook Meadow, Scituate, Massachusetts prepared by Raymond Quinn, PE, Sanitary Engineer, submitted with the MEPA ENF, and

- Geoscience letter report provided as a follow-up to the July 11, 2007 MEPA public hearing which provides additional responses to issues raised at this meeting, prepared by Peter Dillon, dated August 8, 2007.

We look forward to an opportunity to make our technical presentations regarding these three issues at the October 4 continued ZBA hearing.

For SITEC Environmental, Inc.
Sincerely,

Roderick Gaskell, AICP, PWS, RS
Managing Partner

Cc; Daniel Garson, AICP
Woodard & Curran

James Comeau, PE
Pennoni Associates, Inc.

Janet Stearns, Esq,

HERRING BROOK MEADOW RESIDENTIAL COMMUNITY
REVISED SITE LAYOUT (60 UNIT-3 BUILDING)
SCITUATE, MA

INLAND FLOODING DELINEATION & MITIGATION

Narrative Report – Inland Flooding Delineation & Mitigation Summary

LIST OF ATTACHMENTS

Attachment A	Locus Map
Attachment B Calculations	Revised Storm Drain & Water Quality Swale Capacity
Attachment C	Revised Total Suspended Solids Removal Calculation Worksheet
Attachment D	Operation and Maintenance Plan
Attachment E	Supplemental information
Attachment F	Drawings

List of Drawings

Existing Conditions & Wetland Resource Area Plan
(Sheet 2 of 11, Latest Rev. Sep. 17, 2007)

Site Plan (Sheet 3 of 11)

Grading Plan (Sheet 4 of 11)

Drainage Plan (Sheet 5 of 11)

INLAND FLOODING DELINEATION & MITIGATION SUMMARY

EXISTING CONDITIONS

Under existing conditions, stormwater runoff generated on the subject property flows toward two separate areas. The southerly and westerly portions of the site direct stormwater runoff to an isolated land subject to flooding (ILSF) located within the existing open meadow on the subject property. The ILSF on the property extends to the south into adjacent properties and is a topographical depression that floods during major storm events. The existing storage volume of the ILSF located on the subject property is approximately 34,614 cubic feet. To determine this volume, a detailed topographical survey was conducted in the open meadow area to determine spot elevations. Once spot elevations were determined, contour lines could then be developed with a greater level of accuracy than previously submitted, which has been an ongoing concern of the ZBA and ZBA review consultants. It has been concluded that stormwater will flood the ILSF to approximately elevation 7.4, and will then overtop and spill into the adjacent salt marsh in the northerly portion of the subject property. The revised delineation of the ILSF is presented on the Existing Conditions & Wetland Resource Area Plan included in Attachment F.

The northerly and easterly portions of the site convey stormwater runoff directly to the salt marsh along the northern boundary of the property. All existing stormwater leaving the site is neither mitigated, nor pre-treated, prior to its discharge into Massachusetts Bay. The waters of First Herring Brook are subject to unimpeded tidal flushing.

PROPOSED CONDTIONS

Under proposed conditions, all stormwater runoff from the parking and driveway areas will be directed to one of multiple low points through site grading, catch basin structures and a network of piping. The stormwater management system will discharge at one point along the northern portion of the development area, directing stormwater through a shallow, gentle-sloping vegetated water quality swale. The water quality swale will convey stormwater through the open meadow to the salt marsh along the northerly portion of the property.

The development area will involve the filling of a portion of the revised ILSF, and therefore, it is necessary to replicate the existing ILSF area and volume to avoid altering the function of the ILSF and impacting adjacent properties. The easterly portion of the open meadow (outside the 200' Riverfront Area) will be graded to replicate the ILSF and provide a greater cumulative storage capacity while maintaining the existing function of the ILSF. The relocated ILSF on the subject property will provide approximately 40,780 cubic feet of storage capacity and, consistent with the existing ILSF, will flood to elevation 7.4 prior to overtopping and spilling into the salt marsh.

DEP PERFORMANCE STANDARDS AND DESIGN CRITERIA

The DEP Stormwater Management Policy includes nine Stormwater Management Standards. The Standards were established to provide clear and consistent guidelines for stormwater management projects. The Standards address both water quantity and quality by establishing a level of required controls, which can presumptively be achieved through site planning processes, non-structural measures and the use of Best Management Practices (BMPs).

Each of the standards have been evaluated for their applicability to the proposed Herring Brook Meadow Residential Community in Scituate, Massachusetts, and have been addressed below:

1. **No new stormwater conveyances (outfalls/discharges) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.**

   Since the subject property is located within a Zone II of a public water supply well, DEP requires that one (1) inch of stormwater runoff times the total impervious area be treated prior to its discharge to on-site resource areas. Under proposed conditions, all stormwater runoff from the parking and driveway areas will be directed to deep sump hooded catch basins and will be routed through a CDS Technologies, Inc. stormwater treatment unit. This unit has been designed to treat the required volume of stormwater runoff. The storm drain outfall in the system along the northerly portion of the development area has been designed with rip rap protection and will protect against erosion and turbidity.

2. **Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.**

   First Herring Brook, and the project site, are subject to unimpeded tidal flushing; therefore the control of peak discharge rates is unnecessary. The ILSF, however, extends onto adjacent properties to the south, and therefore, it is necessary to control peak discharge rates and volumes into the ILSF. Stormwater runoff from the development area will be controlled by the proposed stormwater management system and conveyed directly to the vegetated water quality swale, and ultimately, to the salt marsh. The on-site stormwater runoff tributary area to the ILSF has been decreased by approximately 3.0 acres. In addition, the replicated ILSF, as discussed above, will be increased by approximately 6,466 cubic feet, providing more storage capacity. These two factors demonstrate that the proposed development will significantly reduce peak discharge flowrates and volumes into the ILSF.

3. **Loss of annual recharge to ground water should be minimized through the use of infiltration measures to the extent practicable. The annual recharge from the post-development site shall approximate the annual recharge from the pre-development or existing site conditions, based on soil types and cover.**

   The proposed stormwater management system will discharge through an outfall into the open meadow and be conveyed to the salt marsh through a water quality swale. The swale will provide a considerable degree of recharge to groundwater. In addition, roof drain infiltration trenches will be constructed adjacent to the buildings. The trenches will be sized to recharge one (1) inch of stormwater runoff times the total roof area. The trenches will consist of perforated HDPE piping embedded in washed stone and will be designed with emergency overflow piping in the event of larger storm events, conveying residual stormwater to the outfall. The water quality swale has been sized to accommodate the residual roof runoff. The proposed location of the roof drain infiltration trenches has been presented on the Drainage Plan that has been included in Attachment F.

4. **For new development, stormwater management systems must be designed to remove 80% of the average annual load (post-development conditions) of Total**

Suspended Solids (TSS). It is presumed that this standard is met when:

(a) Stormwater management best management practices (BMPs) are sized to capture the prescribed runoff volume,

(b) Stormwater management BMPs meet the technology requirements set forth in the guidance document, and

(c) Stormwater management BMPs are maintained as designed.

BMPs that will be incorporated into the proposed stormwater management system are pavement sweeping, deep sump hooded catch basins, a CDS Technologies, Inc. stormwater treatment unit and a grassed water quality swale. DEP has developed a standard methodology for calculating TSS removal rates. This methodology assigns removal efficiencies to the various BMPs to be used on the project. This calculation is presented on the DEP TSS Removal Calculation Worksheet, which is included in Attachment C. The proposed BMPs for stormwater runoff generated from the development area provide a resultant TSS removal rate of approximately 97%.

5. **Stormwater discharges from areas with higher potential pollutant loads, referred to as "hot spots", require the use of specific stormwater management BMPs listed for "hot spots" in the guidance document, and the use of infiltration practices without pretreatment is prohibited.**

   There are no areas on the project site that may expose stormwater runoff to any higher potential pollutant loads.

6. **Stormwater discharges to critical areas with sensitive resources (Outstanding Resource Waters (ORWs), shellfish beds, swimming beaches, cold water fisheries and recharge areas for public water supplies) must utilize stormwater management BMPs listed for "sensitive areas" in the guidance document to meet and maintain water quality goals.**

   The project site is located within a Zone II area of a public water supply well, therefore specific structural BMPs have been implemented in the proposed stormwater management system. These BMPs include the grassed water quality swale, the CDS Technologies, Inc. stormwater treatment unit, deep sump hooded

catch basins and infiltration trenches. In addition, as an added measure, the stormwater management system will be constructed with shut-off valves on all storm drains, so that stormwater runoff can be contained in the unlikely event of a spill.

7. **Redevelopment of previously developed sites must meet the stormwater performance standards to the extent practicable. However, if it is not practicable to meet all the standards, new stormwater management systems must be designed to improve existing conditions.**

   The proposed residential community is not a redevelopment project.

8. **Erosion and sediment controls must be implemented as part of a "construction phase" erosion and sediment control plan for construction or land disturbance activities.**

   "Construction phase" activities at the project site will include general earthwork activities including excavation, utility installation, site grading, asphalt paving and building construction. During the construction phase, non-structural BMPs will be utilized to mitigate possible short term sedimentation. These temporary non-structural BMPs will include the use of silt/erosion fencing, which will be placed along down-gradient portions of the site as shown on the Grading Plan included in Attachment F. Haybale check dams will also be strategically placed around all catch basin inlets including the CDS stormwater treatment unit inlet, and the rip rap area around the storm drain outfall to minimize sediment accumulation into stormwater controls during the stabilization of vegetation on the site. These measures will also reduce sediment loadings into the adjacent salt marsh.

9. **All stormwater management systems must have an operation and maintenance plan to ensure that systems function as designed.**

   The Stormwater Management System Operation & Maintenance Plan for the project site is included in Attachment D.