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851 Chemung Street  
Horseheads, New York 14845

August 4, 2016

Mr. Patrick Hinman, Code Enforcement Officer  
Village of Horseheads  
202 South Main Street  
Horseheads, New York 14845

**Re: Villas at Gardner Road  
Gardner Road, Village of Horseheads  
Review of Stormwater Pollution Prevention Plan**

Mr. Hinman:

I have completed a cursory review of the above-referenced project regarding the proposed stormwater management system for that project.

- Stormwater Pollution Prevention Plan (SWPPP) for Villas at Gardner Road - Horseheads, NY, Stamped by a NYS Licensed Professional Engineer, Prepared by Fagan Engineers, Prepared for Barrington Associates, Dated July 2016, Received July 13, 2016
- Site Plan Drawings for Villas at Gardner Road, Village of Horseheads, Chemung County, NY, PRELIMINARY PRINTS, Not stamped by a NYS Licensed Professional Engineer, Prepared by Fagan Engineers, Dated July 11, 2016, Received July 13, 2016

My cursory review comments and questions regarding the SWPPP and stormwater management system for the above-referenced project, based upon the submitted information, are as follows.

**I. STORMWATER MODELING**

1. It is important to note that for pervious areas that are compacted during construction, but do not undergo soil restoration, the Hydrologic Soil Group (for modeling purposes) has to be increased by one group (for example, HSG C to HSG D). Is it reasonable to expect that soil restoration will be completed for 100 percent of the compacted pervious soils on the project site? Was this considered in the development of the post-developed CNs?
2. The Point of Study (POS) points should be indicated both the Existing Conditions Drainage Area Map and the Developed Conditions Drainage Area Map.
3. It appears that the Times of Concentration (Tc) values for Post-Developed Sub-Areas A3, A4, A5, and A9 are too high, given the nature of the proposed development within those sub-areas.
4. In regards to the Curve Numbers (CNs) utilized for the hydrologic analysis, I would like to meet with the applicant's engineer to discuss these.

## II. STORMWATER MANAGEMENT

1. In the SWPPP, it is noted that the proposed infiltration basin will have a "stone low flow channel" to ensure the stormwater has direct contact to the gravel material". The plans should indicate the location of this stone channel and include associated construction details.
2. The bottom of the proposed infiltration basin is proposed to be excavated to an elevation of 918 feet. Will this elevation allow the underlying gravel layer to be exposed across the floor of the basin? If the intent is to expose the gravel layer, perhaps a note to that effect would help ensure that the design intent is achieved.
3. Has consideration been given to constructing a grassed and/or landscaped islands within the proposed cul-de-sacs, to reduce impervious area and runoff? The cul-de-sacs, as proposed, would be large impervious areas that would be expected to generate a significant amount of runoff. The reduction of impervious areas for cul-de-sacs is outlined in the NYS Stormwater Management Design Manual as a recommended Green Infrastructure Practice.

## III. STORMWATER COLLECTION & CONVEYANCE

### Hydraulic Sizing

1. Hydrologic and hydraulic calculations justifying the sizing of the proposed storm sewers (including inlet grates), culverts, and swales should be provided. The proposed design return period should be clearly noted. The sizing of inlet grates should consider the potential of these being partially clogged/blocked.

### Cul-De-Sac Runoff

1. It appears that the proposed storm sewer that would receive stormwater runoff from the proposed east cul-de-sac (as presently designed) may not effectively collect this runoff.
2. How will stormwater reaching the perimeter of the proposed cul-de-sacs be conveyed?
3. It appears that certain driveways would receive a relatively large amount of runoff from the proposed cul-de-sacs that could be problematic.

### Storm Sewer & Culvert System

1. In regards to the proposed culvert below the proposed drive near Buildings 17/18 and 19/20, the invert elevations do not appear to be correct.
2. The type of storm sewer pipe should be clearly noted on the plans.
3. Are culverts proposed for the individual driveways?

### Drainage Swales

1. Details regarding the proposed drainage swales should be provided including cross-sectional and dimensional information.
2. The plans should clearly indicate what measures are proposed to prevent the proposed drainage swales from eroding.
3. Does sufficient freeboard exist for the proposed drainage swales near Building 17/18 and near Building 19/20 to contain stormwater within the swale? For example, in regards to the proposed swale near Building 19/20, could stormwater flows reach the adjacent Lot #10?

### Roof Runoff

1. It is unclear from the submitted plans how roof runoff is proposed to be collected and conveyed. In the SWPPP, it is stated that roof drains will be directed to a perforated perimeter underdrain, although the plans do not include information regarding this. As such, detailed information on how roof runoff is proposed to be managed should be provided on the plans and in the SWPPP.

## **IV. EROSION & SEDIMENT CONTROL**

1. What is the maximum acreage that will be disturbed at any one time?
2. The Erosion and Sediment Control Plan should include the locations of proposed concrete wash-out areas. In addition, a detail of the proposed wash-out areas should be included.
3. Given that the proposed project shall be completed in two phases, an Erosion & Sediment Control Plan for each phase should be provided. Although the proposed project is proposed to be completed in two phases, could the area in Phase 2 have disturbance (such as earth moving operations), when Phase 1 is being constructed?
4. As per the proposed Grading Plan, there appears to be a number of areas of the regraded site that will most likely be prone to erosion, if appropriate measures are not implemented. These areas include the following.
  - The steeper portions of the proposed drainage swales
  - The discharges of the drainage swales to the proposed forebay
  - Drainage swales and steeper slopes that would receive runoff from the proposed cul-de-sacs
  - Steeper fill slopes

The plans should clearly indicate how erosion of these areas of the regraded site would be prevented.

5. Details for the proposed rip rap pads for culvert and storm sewer discharges should be provided on the plans. Also, the location of these should be shown on the plans.

**V. SOIL RESTORATION**

1. As per the Item 11 of the proposed Construction Sequence, it is noted that soil restoration shall be completed for all *impervious* areas. This should state for all pervious areas of the disturbed site.
2. Specific requirements for the proposed soil restoration should be included on the plans and SWPPP to clarify the Contractor's responsibilities and work in regards to this item. It is recommended that NYSDEC's document entitled Deep-Ripping and Decompaction, April 2008, be included as part of the SWPPP.

**VI. PROJECT PHASING**

1. In the SWPPP, it is noted that the proposed project shall be completed in two phases, Phase 1 and Phase 2. The boundaries of these proposed phases should be included in the plans.

**VII. MISCELLANEOUS**

1. In accordance with the Village's Stormwater Management and Erosion and Sediment Ordinance, a formal, signed enforceable operation and maintenance agreement for the stormwater collection and management system shall be provided by the Applicant. Furthermore, this agreement must reference and include an approved Operation & Maintenance Plan that are specific to the proposed stormwater management practices. It is recommended that the O & M Plan outline steps and measures to be implemented if operational/performance issues are encountered with the proposed stormwater infiltration system.

This agreement shall be binding on all subsequent landowners and recorded in the office of the County Clerk as a deed restriction on the property. Also, the Applicant shall convey to the Village easements and/or rights-of-way to assure access for periodic inspections by the Village or their representatives (and for maintenance if required). These agreements, as well as the Operation & Maintenance Plan, shall be subject to the review and approval of the Village of Horseheads, their attorney, and Chemung County Stormwater Coalition.

2. This review pertains to stormwater management. The Applicant is responsible to obtaining all necessary approvals, including those from the Village of Horseheads.
3. In accordance with the SPDES Stormwater General Permit for Construction Activity, documentation must be included in the SWPPP that the proposed construction activities will not adversely affect a property that is listed or is eligible for listing on the State of National Register of Historic Places (including archeological sites).
4. Although the SWPPP discusses a possible future Phase 3 of this project, a design for that phase (including the stormwater management system for that phase) was not provided in the submitted information. Accordingly, my review did not include the future Phase 3.

If you have any questions or comments regarding this letter, please do not hesitate to contact me. Furthermore, I would be happy to meet to discuss this project in greater detail.

Sincerely,



Jimmie Joe Carl, P.E.

Cc: Fagan Engineers