Memorandum

DATE: October 31, 2013

TO: Technical Support Data for Village's Strategic Planning Project File (CBBEL Project No. 13-0521)

Randall Recklaus – Village of Clarendon Hill
Michael Millette – Village of Clarendon Hills

FROM: Donald Dressel, PE, CFM – CBBEL

SUBJECT: Various Topics

Ordinance

Most of the redevelopment of single family lots within the Village fall below the threshold of DuPage County Stormwater and Flood Plain Countrywide Ordinance (Ordinance) requirements for detention storage. It is our understanding that these redevelopment proposals are reviewed by the Village to verify that the proposed grading will not adversely impact drainage on adjacent lots.

Potential Ordinance revisions that would provide funding for future Village stormwater projects and address the slight increase in stormwater storage volume resulting from the increased impervious area during redevelopment follow:

- The Village of Downers Grove has implemented a Stormwater Utility Fee in 2013. The Village of Downers Grove implemented this program to encourage property owners to proactively manage stormwater on their property by incorporating sustainable stormwater management practices that reduce negative impact of development on the drainage system. The Village of Downers Grove stormwater fee is based on the amount impervious area within each property. They have developed a tier system of charges for single family residential based on a range of impervious surface area. The stormwater fee is included in a Utility Bill that includes water charges. They also have included incentives and credits in the program. For incentives, a property owner can received a one-time reimbursement for the installation of rain barrels ($25), rain garden ($250) or permeable pavers ($300). The Village will also provide an ongoing reduction in the assessed stormwater fees for on-site systems that reduce the site's runoff rate (up to 20%), reduce

the site's stormwater volume (up to 20%), provide water quality improvements (up to 10%), direct their discharge outside and downstream of Village's stormwater system (up to 50%) and provide land/facilities to the Village to manage stormwater (up to 100%). The following is the Village's stormwater fee for single family residential:

- Single Family Residential
  - Tier 1 (≤ 2,500 sf of impervious area) $6.30 per month
  - Tier 2 (2,501 to 4,000 sf of impervious area) $8.40 per month
  - Tier 3 (4,001 sf to 7,000 sf of impervious area) $12.60 per month

- Lower the threshold for requiring detention storage to a level where single family residential lot redevelopment would require detention storage.

- Develop a fee-in-lieu program that would allow single family residential lot redevelopment to pay a fee instead of providing the required detention storage onsite. This would be for redevelopments that can be shown to have no negative drainage impact without the detention storage being installed. The Village of Downers Grove has a fee-in-lieu program that charges $133,000 per acre-foot of required detention storage for sites within the Salt Creek watershed.

Metra Underground Lot Underground Storage Basin

We have evaluated on a concept level the Village's proposal of installing a underground storage vault under the existing Metra Commuter Lot to reduce the flooding that occurs adjacent to Blue Lake and Burlington Avenue between Iroquois Drive and Mohawk Drive. Blue Lake outlets southward into the storm sewer located on Park Avenue. This storm sewer also receives flow from the Park Avenue detention basin and Dallas Street detention basin. The concept would include installing a control structure near the downstream end of the storm sewer. This structure would allow storm sewer flow to be diverted into an underground storage vault located under the existing Metra Commuter lot. The stormwater would be temporary stored and then pumped back to the storm sewer after the storm event had concluded. Based on the High Water Level (HWL) elevations determined for the April 18, 2013 storm event and DuPage County's 2-foot contour topographic mapping, we estimated the amount of stormwater that inundated the yards and streets in the Blue Lake study. The amount of stormwater was estimated to be about 10 acre-feet. An underground concrete vault that would provide 10 acre-feet storage would have estimated cost of approximately $5,000,000. A dewatering pump would be required along with the control structure and new storm sewers. This would add approximately $2,000,000 to $3,000,000 to the cost. Another cost that has not been included in the above estimate is the cost of replacing the Metra

Commuter Parking Lot. We have not performed a hydraulic study to determine the benefits of this project in reducing the frequency and depth of inundation in the Blue Lake area or to Colfax Avenue or Richmond Avenue.

Preliminary Stormwater Study

CBBEL completed a concept level flood risk reduction assessment of the Dallas Street and Hosek Park floodprone areas. This study evaluated alternatives to reduce the frequency and depth of flooding to Village areas located downstream of the Dallas Street detention basin (Richmond Avenue and Colfax Avenue) and the area tributary to Hosek Park including homes on 55th Street, Ruby Street, Walker Avenue and Hudson Avenue. All alternatives were studied based on the April 18, 2013 storm event. The hydrologic and hydraulic models were calibrated to the HWL elevations for the April 18, 2013 storm event that were obtained from residences photographs and then surveyed by CBBEL. Some observations from the baseline conditions modeling include:

- Overflow flow from the Dallas Street detention basin is only part of cause of flooding on Richmond Avenue and Colfax Avenue. The 42-inch storm sewer located Park Avenue that drains the Dallas Street detention basin and the Park Avenue detention basin also reaches capacity during extreme storm events resulting in stormwater backing up into the Park Avenue detention basin and the surrounding streets.
- A direct connection from the Dallas Street detention basin to a modified Hosek Park stormwater storage basin is not feasible because the HWL elevation in Hosek Park is several feet higher than the Dallas detention basin HWL elevation.

<u>Alternative 1</u>

This alternative consists of expanding the existing Hosek Park stormwater storage basin by adding excavating to add about 13 acre-feet of new stormwater storage volume. New larger capacity storm sewers would be install to drain the low lying floodprone areas between Ruby Street and 55th Avenue to the expanded Hosek Park detention basin. This alternative would significantly reduce the depth and duration of flooding for the April 18, 2013 storm event that occurred in the study area. The rear yards of the Ruby Street, 55th Street and Walker Avenue homes would have the flood level lowered by 2.4 feet for the April 18, 2013 storm event. An estimated conceptual level cost for this alternative is approximately $1.3 million. This cost includes a 30% contingency to cover utility relocation costs, pavement replacement and engineering costs. The cost estimate does not include any new park equipment or replacement park equipment. Based on the conceptual analysis a dewatering pump station would not be required. However, if this concept proceeds forward the final configuration of the stormwater storage basin might dictate the

need for a dewatering pump station. Also if poor soils or contaminated soils are found at the site, the excavation cost would increase significantly.

Alternative 2

This alternative consists of the Alternative 1 components in addition to adding about 17 acre-feet of stormwater storage volume in the Dallas Street detention basin. The Alternative 1 Hosek Park would be deepened to provide an additional 15 acre-feet of storage volume. This would require a dewatering pump station. The 17 acre-feet of additional stormwater storage would be obtained by lower the bottom elevation of the basin by approximately 13 feet. Due to the lowering, the basin would require a dewatering pump station. A new 48-inch storm sewer along Hudson Avenue would collect excess stormwater flow from the Richmond Avenue storm sewer and convey it the expanded Hosek Park stormwater storage basin. This alternative would significantly reduce the depth and duration of flooding for the April 18, 2013 storm event that occurred in the study area. The rear yards of the Ruby Street, 55th Street and Walker Avenue homes would have the flood level lowered by 2.9 feet for the April 18, 2013 storm event. The additional storage volume in the Dallas Street detention basin would prevent overtopping of the basin during the April 18, 2013 storm event reducing the inundation depths on Richmond Avenue. In addition, the April 18, 2013 HWL elevation of the Park Avenue detention basin would have been reduced by 3 feet keeping stormwater away from the homes on Colfax Avenue. An estimated conceptual level cost for this alternative is approximately $11.3 million. This cost includes a 30% contingency to cover utility relocation costs, pavement replacement and engineering costs. The cost estimate does not include any new park equipment or replacement park equipment. Also if poor soils or contaminated soils are found at the site, the excavation cost would increase significantly.