Brewster Yards (aka ProSwing)
160 & 132 Pugsley Road
Town of Southeast, Putnam County, NY

Review of the Final Environmental Impact Statement & Preliminary Stormwater Pollution Prevention Plan

By: Donald W. Lake, Jr. PE, CPESC, CPSWQ
on behalf of the
Office of New York City Watershed Inspector General
March 10, 2023

These notes are based on my review of the following documents:

a. Final Environmental Impact Statement (FEIS), November 17, 2022, Volumes 1 and 2 prepared by KG+D Architects, Mount Kisco, NY.
b. FEIS, Appendix E, Preliminary Stormwater Pollution Prevention Plan (PSWPPP), November 28, 2022, 282 pages, prepared by Insite Engineering, including Appendices A through H.
c. FEIS Appendix G, Civil Drawings, 31 sheets with various dates.
d. AKRF Memo to KG+D Architects, dated December 1, 2022, with Draft FEIS comments, 5 pages.
e. AKRF Memo to KG+D Architects, dated December 7, 2022, with additional comments on the Draft FEIS.

Background

The Office of New York City Watershed Inspector General (WIG) previously reviewed the Draft Environmental Impact Statement (DEIS), the Draft Preliminary SWPPP, and a set of supporting site drawings. The proposed project is to construct an athletic complex for youth baseball, softball, and soccer on two adjoining parcels of land along Pugsley Road in the Town of Southeast. Our nine previous comments were transmitted to the Town of Southeast on August 10,

2022. With the exception of technical comments 7 and 9, our comments were addressed in Volumes 1 and 2 of the FEIS.

Below are my technical comments. It is my opinion that when the corrections to the technical work for this project are made to meet appropriate criteria there will not be enough buildable area to construct this project as currently proposed. I believe the overall scope of this project must be significantly reduced to fit the recreation areas and stormwater infrastructure needed to assure water quality and stormwater management control.

8-10-22 WIG Technical Comments 7 and 9, 10-13-22 KG+D Architect's Response and 3-10-23 WIG Reply

7. WIG Technical Comment 8-10-22: Drawing, Figure 4, Testing Plan, DEIS Appendix M, shows the plan view locations and testing results for the stormwater management infiltration basins. The results for holes I-11 and I-12, in infiltration basin 2.6, had rates of 102 inches per hour and 180 inches per hour, respectively. This basin is 15 feet directly above detention basin 2.7. Infiltration rates this high could cause slope stability problems. In addition, rates this high would probably not provide an opportunity for pollutant removal. Previous guidance in the 1992 and 1993 NYS DEC "Reducing the Impacts of Stormwater Runoff from New Development" set 7.5 inches per hour as a maximum infiltration rate to provide pollutant removal and to prevent direct injection into groundwater. The infiltration rates associated with I-11 and I-12 and the guidance value need to be re-evaluated. In addition, how do these values correlate to the 20 inches per hour used in HydroCAD?

KG+D Response 10-13-22: As noted, onsite soil testing was completed that produced infiltration rates of more than 100 inches/hour (in/hr). For stormwater modeling purposes a conservative infiltration rate of 20 in/hr was used in the stormwater design model (HydroCAD) for the SWPPP in the DEIS. Although the most current stormwater design standards found in the NYSDEC Stormwater Management Design Manual references only a minimum infiltration rate (0.5 in/hr), with no maximum infiltration rate, the stormwater model for the

updated SWPPP has been adjusted to utilize an even more conservative rate of 7.5 in/hr as suggested.

WIG Reply 3-10-23: It is noted that the PSWPPP infiltration rate has been changed to 7.5 in/hr. This will maximize the size of the basin storage for the contributing drainage areas. However, the infiltration rate in basins with high infiltration soils needs to be regulated to provide enough contact time for stormwater pollutant removal. One way this can be accomplished is by layering the infiltration surfaces with a media, such as sand, to control the flow rate. The final design flow rate should be approved by the regulating agency.

9. WIG Technical Comment 8-10-22: The HydroCAD Developed analysis cannot be corroborated due to a lack of drawings and details. A Runoff Curve Number (RCN) of 86 was assigned to the 16.3 acres of synthetic turf fields. An RCN of 86 has an initial abstraction value of 0.326 inches. Initial abstraction is defined as the amount of precipitation that is lost before runoff begins. This includes infiltration, adsorption, evaporation, transpiration, and entrapment. The source documentation for this RCN value of 86 needs to be provided.

KG+D Response 10-15-22: The regionally accepted RCN of 86 is documented in a sub-appendix to the updated SWPPP. See FEIS Appendix E.

WIG Reply 3-10-23: The RCN of 86 is for bare earth hydrologic soil group "B" soil and it is not supported in a sub-appendix to the updated SWPPP or in FEIS Appendix E. This land use category does not appear in TR-20, TR-55, or any technical guidance documents we are aware of. Delving into this issue further, I reached out to the NYSDEC Region 8 stormwater staff on February 6, 2023 for their guidance. They support the application of a RCN of 98 for this situation. So, either provide an established reference supporting a RCN of 86 or redo the hydrologic calculations with an RCN of 98.

<u>New WIG Comments on the Updated SWPPP and Civil Drawings</u>

The Preliminary Stormwater Pollution Prevention Plan (PSWPPP) and the Erosion and Sediment Control Plan (ESC Plan) for

the project is largely deficient. The ESC Plan continues to lack design calculations, proper nomenclature, plan views of practices and their locations, adherence to the design criteria in the 2016 NYS Standards and Specifications for Erosion and Sediment Control (a.k.a. the Blue Book), and consistency in presenting resource data. The PSWPPP is also inconsistent with the design drawings, uses undocumented runoff curve numbers, is lacking a soil survey report, and is void of critical infiltration test hole logs for the proposed infiltration stormwater practices. In addition, there is no grading plan or ESC Plan shown for the Subsurface Sanitary Treatment System.

My technical comments on the ESC portion of the PSWPPP start at the number 10 and are as follows:

10. All language in the PSWPPP and on the Civil Drawings must agree with the nomenclature presented in the 2016 Blue Book. For example, the Stabilized Construction Entrance is properly labeled as Stabilized Construction "Access", Emergency Spillways are now "Auxiliary" Spillways, Level Spreaders are now "Flow" Spreaders, etc. The appropriate nomenclature changes need to be made throughout the documentation.

11. Drawing SS-1, Soil and Slopes Map, indicates that 48,439 square feet (or 1.112 acres) of steep sloped land (>25%), will be disturbed to construct this recreational facility. The site plan should be re-configured to avoid all steep slopes (GP-0-20-001, Part 1, F.6.c.).

12. The PSWPPP contains no definitive soils report, although it does contain some soil information on the Pre and Post drainage area maps (Figures 2 and 3). However, the soils information on these sheets do not identify soils RdB, WdB, and WdC. The full soils inventory table shown on drawing SS-1 needs to be placed on these two figures.

13. Drawing D-4, Details, shows the details for Concrete Truck Washouts and Temporary Soil Stockpiling. However, these locations are missing from the plan views of the Erosion & Sediment Control drawings and need to be provided.

14. Drawing D-4 contains a detail for "silt-sack", as a sediment practice for insert drop inlet protection. However, this practice detail, as shown on Drawing D-4, does not meet the 2016 Blue Book standards, since it does not provide a bypass flow area. Page 5.59 of the 2016 Blue Book states that all manufactured insert devices must provide a minimum of 50% bypass flow area in the drop inlet. An acceptable alternative to silt sack must be provided.

15. The PSWPPP contains the requirements for Soil Restoration, but they are absent in the drawings. The Soil Restoration table contained on page 4.53 of the 2016 Blue Book must be added to one of the Detail drawings.

16. Drawing D-4 contains a list of Erosion & Sediment Control Notes. Note # 3 needs to add a sentence to describe what is to be done with the woody material and stumps from site clearing and grubbing operations. Note #4 must change the stabilization completion to 7 days instead of 14 days (GP-0-20-001, part 1.B.1.b). Note #5 and the Silt Fence detail must specify which type of Silt Fence is to be used, as there are 3 different types of Silt Fence presented on page 5.54 of the 2016 Blue Book. Note # 9 must change the slope designation for Anchored Stabilization Matting for slope protection from 2:1 to 3:1 to comply with the 2016 Blue Book standard on page 4.5.

17. Drawing D-4 presents a detail for "Dirt Bag" which is a geotextile filter bag (*See* 2016 Blue Book standard page 5.16). The use and disposition of these bags need to be discussed in a note added to the Erosion and Sediment Control Notes.

18. Drawings SP-2.2 and SP-3.2 show two grass swales on the east slope, above the four proposed baseball fields. There are no design calculations or details to support the use and operation of the grass swales. This information needs to be provided along with a detailed description of how the outlet stabilization structures are to be placed on natural ground.

19. The ESC Plan drawings show 11 rock outlet protection structures (ROPs), that are designated as "ES" structures. However, no design calculations or design details are presented. These missing elements

must be completed according to the 2016 Blue Book standards on page 3.39.

20. There are 2 Flow (not Level) Spreaders shown on the ESC Plan. Supporting design calculations and details need to be provided (*See* page 3.19 of the 2016 Blue Book).

21. Drawings SP-3.1 through SP-3.4 show the limit of disturbance at the toes of constructed slopes and at the tops of excavated cuts. However, as previously stated in Comment #6 of our 8/10/22 comments, construction activities will disturb the soil beyond the as-built construction lines shown in the drawings. In addition, these updated drawings show installation of hundreds of feet of silt fence beyond the designated limit of disturbance. This inconsistency must be resolved. In addition, there are no ESC practices shown on SP-3.3 for the force main drilling pad and receiving pit which are located outside of the limit of disturbance. ESC practices and details must be added.

22. The PSWPPP, Appendix H, Temporary Sediment Trap Sizing Calculations, lists 5 temporary sediment traps with contributing drainage areas of greater than 5 acres. Since they are all over 5 acres in size, these traps must be designed as Sediment Basins per the 2016 Blue Book standards beginning on page 5.19. This means a full complement of design calculations and design details must be completed. All basins must be designed for the 10-year frequency storm, using the bare earth runoff curve numbers of 86 for "B" soils, 91 for "C" soils, and 94 for "D" soils. A skimmer dewatering device should be used (*See* page 5.10 of the 2016 Blue Book for the Dewatering Device standard). The orifice size will be calculated to release the dewatering zone volume of water over a minimum of 48 hours, or longer, depending on the soil gradation of the contributing drainage area. All design information must be filled out on the Design Data sheets shown on page 5.24 of the 2016 Blue Book for each sediment basin and incorporated into the PSWPPP. Supporting design details and schematics must be added to the drawings.

23. Drawing D-7, Details, shows a detail for a Temporary Sediment Basin Outlet which is identified as Stormwater Management Practice 1.1, with a drainage area of 11.5 acres and a basin bottom elevation at

830. However, there are no supporting design calculations, construction details or a plan view location for this basin. At this time, the plan view drawings show a "Water Quality Swale 1.1", which is not identified in the PSWPPP, located in the northwest corner of the property. Instead of a Water Quality Swale, the practice proposed at this location in the PSWPPP narrative is an "Infiltration Basin 1.1". In fact, the HydroCAD stormwater analysis routes stormwater through Infiltration Basin 1.1, designating the exfiltration flow rate at 0.5 inches per hour. This discrepancy must be addressed and the stormwater analysis corrected, if necessary. In any event, sediment traps and basins are prohibited from being located where infiltration stormwater practices will be built (2015 NYS Stormwater Management Design Manual, page 6-38). The final location for this sediment basin, its design calculations, and schematic details must be provided.

24. All earthen embankments used to control stormwater runoff must have an interior slope of 3:1 or flatter. The exterior or downstream slopes must also have a slope of 3:1 or flatter, unless the embankment contains an interior foundation toe drain or chimney drain. This requirement appears in the 2015 NYS Stormwater Management Design Manual, Appendix A, Sections 9.1.1 and 9.1.2. All Basins shall have their exterior slopes flattened to meet this requirement.

25. All earthfill slopes, other than those used for water control, should be constructed to 2.5:1 or flatter to allow for public safety and ongoing mowing and maintenance activities. The flattening of the above-mentioned slopes will significantly expand the area of disturbance, as well as the area necessary to construct the recreational development as currently planned. As designed, the proposed development will disturb a significant area of steep slopes and encroach into wetland buffer areas, and, in some instances, into the wetlands themselves.

My technical comments on the Stormwater Management Design portion of the PSWPPP start at number 26 and are as follows:

26. The PSWPPP, Figure 4, Testing Plan (page 513/669) shows drill holes and deep test holes for infiltration basins IB 3.6 and IB 2.3. However, a testing plan map is not provided showing the location of test hole IB 1.1 which is located in the Northwest corner of the project near

the Fields Corner Road Turnaround. In addition, no individual test hole logs describing the soil matrix by depth are provided in the PSWPPP. These must be included in the PSWPPP to support the stormwater treatment designs. All appropriate drawings should label this stormwater treatment practice as Infiltration Basin 1.1 and not Water Quality Swale 1.1 and show and describe the pretreatment practice for this basin. The appropriate details and data should be added to the columns in the Infiltration Basin Outlet Structure Detail on drawing D-6, Details. (*See* technical comment 23).

27. The HydroCAD computer model is used to calculate stormwater runoff and set design elevations for proposed stormwater practices. However, it appears the wrong runoff curve number (RCN) was selected for synthetic turf. An RCN of 86 was used in the routings but based on our analysis (*See* technical comment 9) an RCN of 98 should have been used. Rainfall will migrate down through the plastic turfgrass strands to a 3-inch layer of ¼-inch finishing stone. It will then flow through the ¾-inch stone base into the 3-dimensional drain panel, before entering the perforated collector drainpipes. There is very little or no initial abstraction (Ia) of rainfall (amount of precipitation lost before runoff begins) and no potential maximum retention storage volume (S) in the synthetic turf profile. This means there is basically an instantaneous conversion of rainfall to runoff and should be conservatively modeled that way. The Hydrologic model must be rerun with the revised RCN of 98 for all sub-areas containing parts of the 16.3 acres of synthetic turf. This will result in increased volumes of runoff, since there is no soil retention, and will require significant design revisions. The revised model should be re-submitted with a complete operational HydroCAD program file for review.

28. All pipes should be labeled with their diameters and lengths on the SP-2.1 through SP-2.4 drawings titled “Grading and Utilities Plan”.

29. A table should be provided listing the details of all the “ES” outlet structures. These are typically designated as Rock Outlet Protection practices (ROP’s).

30. Flow Splitter 3.6 does not have its details presented on the Detail sheets and must be added. Also, the detail for FS 2 on drawing D-6 is not shown in the HydroCAD model. However, the model displays OS 2.2 in the schematic. Are these the same? Please clarify.

31. Drawing SP-2.1, Grading and Utility Plan, shows two outlets for 2.4 EDB, labeled OS 2.4 A and OS 2.4 B. However, the Details on Drawing D-6 identifies these same two outlets as 2.4 EDB (P) and 2.4 EDB (S). This discrepancy needs to be addressed.

32. Drawing D-6, Details, add "OS 2.2" to the title of the outlet structure detail in the upper right corner of the sheet.

33. The HydroCAD model shows the infiltration basins exfiltrating the water quality volume through the full surface contact area of the basin cross-section. Section 6.3.4 on page 6-36 of the 2015 NYS Stormwater Management Design Manual specifically states the sides of the basin are not to be used when sizing infiltration basins. The routing elevations must be recalculated using only the bottom area of the basin for the outlet device.

34. The downhill side slopes of 3.6 IB and 3.7 EDB are shown at 2:1. These slopes must be flattened to 3:1 to meet dam safety and stormwater management practice maintenance criteria (2015 NYS Stormwater Management Design Manual, Appendix A, Dam Design Guidelines, Sections 9.1.1 and 9.1.2). There are many other sloped areas onsite where this needs to occur. The change at this location will further enlarge the earthfill and the construction disturbance area into the NYC DEP Limiting Distance boundary, and in some locations extend beyond the property line. These areas should be redesigned so they do not encroach into buffers or extend offsite. (*See* technical comment 25).

35. A comparison of the design details and data for 3.7 extended detention basin (EDB) was made between Drawing D-6 (Details, Table "Permanent Extended Dry Stormwater Basin Structure Detail") and the HydroCAD stormwater routings contained in SWPPP Appendix E. (The HydroCAD summary sheets for 3.7 EDB are shown on pages 119 for the

1-year storm, 173 for the 10-year storm, and 281 for the 100-year storm.) The comparison revealed several inconsistencies. The Details on Drawing D-6 presents the measurements of the internal weir in the outlet structure for 3.7 EDB with a width of 2.5 feet and an elevation of 603.0. This is in contrast to the HydroCAD program which shows this weir to be 2.0 feet wide with an elevation of 603.1. Adding to the confusion is a third weir width of 4.0 feet, which is shown in the "Outlet Structure Elevation" detail in drawing D-6, above the Table. This seems to indicate that all weirs are 4 feet wide to match the interior dimensions of the 4' x 4' concrete box riser.

These discrepancies lead to different elevations for the 10-year and 100-year storms. HydroCAD computes peak elevations of 599.78 and 605.41 for the 10-year and 100-year storms respectively, but the Table on sheet D-6 lists elevations of 600.2 and 605.5 for the two events. All inconsistencies must be reconciled between the drawings and the PSWPPP.

This comment provides a "spot check" of only one of the five extended detention basin's outlet structures presented in the SWPPP. The remaining EDB outlet structures for the other four proposed extended detention basins need to be reevaluated to assure there are no inconsistencies between the SWPPP drawings and HydroCAD stormwater routings.