

III.D Stormwater Management and Subsurface Water

I. Former Project

The Former Project included sidewalks, a parking lot, driveways, a subsurface parking garage, and landscaped areas, in addition to the proposed residential building. Stormwater runoff would source from the rooftop of the building, the driveway, parking areas, and the sidewalks, and would be collected and conveyed by drainage manholes and catch basins to a network of high-density polyethylene (HDPE) drainpipe installed underground with discharge to proposed infiltration basins and a micropool extended detention basin. There was a total of approximately 3.92 acres of impervious surface on the Project Site.

A Subsurface Soil Investigation was performed by Carlin Simpson & Associates for the Previous Project, and is included in Appendix C of the DEIS. Borings were performed to determine the depth to the seasonally high water table or bedrock and borehole permeability tests were performed to determine the infiltration rate of the soil at each of the proposed stormwater management area locations. A summary of the Subsurface Soil Investigation is provided in the Stormwater Pollution Prevention Plan (SWPPP) (See DEIS Appendix F). The results of the Subsurface Soil Investigation determined that stormwater management areas 1A and 1B were suitable for infiltration basins and that stormwater management area 2B was not. Therefore, stormwater management area 2B was designed as a micropool extended detention basin.

The proposed drainage improvements include conventional and green infrastructure stormwater practices, such as infiltration basins with forebays and stormwater planters. The vegetated stormwater practices and overland discharges will also provide opportunities to enhance water quality and infiltration practices.

Implementation of the proposed stormwater management plan will significantly improve stormwater quantity and quality over existing conditions. The proposed

Stormwater Pollution Prevention Plan (SWPPP) will be in compliance with the requirements of NYSDEC SPDES General Permit No. GP-0-15-002 at the time for Stormwater Discharges from Construction Activity and Chapter 168, “Stormwater Management and Erosion and Sediment Control,” of the Code of the Town of Ossining. Erosion control measures employed during construction will conform to the New York Standards and Specifications for Erosion and Sediment Control (August, 2005). The proposed stormwater management improvements will provide runoff reduction, water quality treatment for the 90% rainfall event, stream channel protection, and attenuate peak rates of runoff for the 10- and 100-year storms as required by NYSDEC SPDES General Permit No. GP-0-15-002.

To determine the post-development rates of runoff generated on-site, two Design Points were identified for comparing peak rates of runoff for existing and proposed conditions. Similarly, two Drainage Areas were identified based on the proposed drainage divides at the site. Each Drainage Area corresponded to the Design Point it drains towards.

2. Proposed Project

The Proposed Project will include 19 townhouse buildings, a clubhouse, pool and associated parking area, driveways, sidewalks and landscaped areas (Figure III.D-1 and Figure III.D-2 depict the existing impervious areas on the site and the proposed impervious areas, respectively). Stormwater runoff from the rooftops of the buildings, driveways, parking areas and sidewalks will be collected and conveyed by catch basins and drain manholes via a network of high-density polyethylene (HDPE) drain pipe with discharges to proposed infiltration basins and hydrodynamic structures.

The proposed Stormwater Pollution Prevention Plan (SWPPP) ([Appendix B SDEIS Volume 2 Appendix](#)) will be in compliance with the requirements of NYSDEC SPDES General Permit No. GP-0-20-001 for Stormwater Discharges from Construction Activity and Chapter 168, “Stormwater Management and Erosion and Sediment Control,” of the Code of the Town of Ossining. Erosion control measures employed

during construction will conform to the New York Standards and Specifications for Erosion and Sediment Control (November, 2016). The proposed stormwater management improvements will provide runoff reduction, water quality treatment for the 90% rainfall event, stream channel protection, and attenuate peak rates of runoff for the 10- and 100-year storms as required by NYSDEC SPDES General Permit No. GP-0-20-001.

In order to determine the post-development rates of runoff generated on-site, the following drainage areas were analyzed in the post-development conditions. These areas are graphically depicted on Drawing DA-2 "Proposed Drainage Area Map" within the SWPPP (the Existing and Proposed Drainage Area Maps are included within the [Appendix B SDEIS](#) Volume 2 Appendix "Preliminary Stormwater Pollution Prevention Plan").

Similar to existing conditions, three separate drainage areas were identified in proposed conditions based on the proposed drainage divides at the site. The numbers included in the name of each drainage area correspond to the Design Point they drain towards.

The following is a description of each of the drainage areas analyzed in the proposed conditions analysis.

Proposed Drainage Area I is the western portion of the site and discharges to Design Point I, which is an existing catch basin located in Pershing Avenue. Proposed Drainage Area I consists of the following sub-drainage areas:

Proposed Drainage Area IA (PDA-IA) is 6.08 acres located at the northwestern portion of the site and consist of the proposed townhouses, driveways, parking areas and landscaping areas. Runoff from PDA-IA will be collected by roof drain leaders and drain inlets and conveyed in pipes to infiltration basin IA. Stormwater runoff will be pretreated prior to discharging into the infiltration basin with the use of a Cascade Separator water quality structure. The pretreated water from the Cascade unit will be routed to the

infiltration basin 1A. Multiple infiltration tests were conducted in the footprint of the stormwater basin and revealed infiltration rates ranging from 2-12 inches per hour. To provide a conservative analysis, the average 5 inches per hour was utilized in all infiltration calculations. The outflow from the infiltration basin will be conveyed by the outlet control structure OCS-1A which consist of a 3" orifice at elevation 358.75, a 4' weir at elevation 362.20 and the grate top set at elevation 363.10. A 15" culvert pipe is proposed to route the stormwater runoff to the Design Point 1. The Curve Number (CN) and Time of Concentration (Tc) for this drainage area are 77 and 5 minutes, respectively.

Proposed Drainage Area 1B (PDA-1B) is 5.82 acres located at the central western portion of the site and consists of a portion of the proposed townhouses, asphalt parking areas, asphalt drives and adjacent landscape areas. Runoff from PDA-1B will be collected by roof drain leaders and drain inlets and conveyed in pipes to infiltration basin 1B. Stormwater runoff will be pretreated prior to discharging into the infiltration basin with the use of a Cascade Separator water quality structure. The treated water from the Cascade unit will be routed to the infiltration basin 1B. Multiple infiltration tests were conducted in the footprint of the stormwater basin and revealed an average rate of 4 inches per hour that was utilized in all infiltration calculations. The outflow from the infiltration basin will be controlled by outlet control structure OCS-1 which consists of an 8" orifice at elevation 343.60 and the grate top set at elevation 347.10. A 15" pipe is proposed to route the stormwater runoff to the Design Point 1. The Curve Number (CN) and Time of Concentration (Tc) for this drainage area are 79 and 5 minutes, respectively.

Proposed Drainage Area 1C (PDA-1C) is 0.65 acres in size and consists southern area of the site remaining undeveloped that will continue to be routed through an existing pipe that extends through the neighboring properties and into the existing catch basin in Pershing Avenue. The Curve Number (CN) and Time of Concentration (Tc) for this drainage area are 76 and 5 minutes, respectively.

Proposed Drainage Area 1D (PDA-1D) is 1.40 acres and consists of the proposed clubhouse building, off street parking, driveway and adjacent landscape areas. Under proposed conditions the total drainage area and total impervious have been reduced as compared to the existing conditions. Therefore, Water Quality Treatment Options II & III will be utilized. According to Option III of the Redevelopment Standards, alternative or non-standard practices such as manufactured treatment devices are acceptable if they treat 75% of the water quality volume from the disturbed areas as well as any additional runoff directed to the practice. Therefore, the impervious areas will be treated with a Cascade Separator Unit CS-3, which is a NYSDEC approved alternative practice. Runoff from PDA-1D will flow overland to a depression located south of the site driveway. The outflow from the depression will be conveyed to a proposed series of pipes located in Croton Dam Road and then discharge into an existing catch basin in Pershing Avenue. The Curve Number (CN) and Time of Concentration (Tc) for this drainage area are 80 and 5 minutes, respectively.:

Proposed Drainage Area 2A (PDA-2A) is 3.27 in size and located along the easter portion of the site. the drainage area consists of rear roof areas of three buildings, landscape areas and adjacent undisturbed areas. Under the proposed conditions the total drainage area and total impervious have been reduced as compared to the existing conditions. Therefore, Water Quality Treatment Options II & III will be utilized. According to Option III of the Redevelopment Standards, alternative or non-standard practices such as manufactured treatment devices are acceptable if they treat 75% of the water quality volume from the disturbed areas as well as any additional runoff directed to the practice. Therefore, the impervious areas will be treated with a Cascade Separator Unit CS-3, which is a NYSDEC approved alternative practice. Runoff from PDA-2A flows overland to the wetland in the northeast corner of the site, as in existing conditions. The Curve Number (CN) and Time of Concentration (Tc) for this drainage area are 70 and 5 minutes, respectively.

Proposed Drainage Area PDA-3A is 0.07 acres and consists of the same portion of the asphalt drive and grass area adjacent to Croton Dam Road as compared to existing

conditions. Runoff from PDA-3A flows overland out to Croton Dam Road. The Curve Number (CN) and Time of Concentration (T_c) for this drainage area are 87 and 5 minutes, respectively.

The peak rates of runoff to the design point of each of the analyzed drainage areas for each storm are shown on the table below:

Table III.D-1
Summary of Proposed Peak Rates of Runoff in Proposed Conditions
(Cubic Feet per Second)

Storm Recurrence Interval	DP-1	DP-2	DP-3
1 year	0.57	1.84	0.11
10 year	2.81	7.44	0.26
100 year	17.70	19.30	0.52

The reductions in peak rates of runoff from proposed to existing conditions are shown on the table below:

Table III.D-2
Percent Reductions in Peak Rates of Runoff (Existing vs. Proposed Conditions)
(Cubic Feet per Second)

Design Point	Storm Recurrence Frequency (Years)	Existing Peak Runoff Rate (cfs)	Proposed Peak Runoff Rate (cfs)	Percent Reduction (%)
1	1 year	3.65	0.57	84
	10 year	12.59	2.81	77
	100 year	26.73	17.70	33
2	1 year	3.21	1.84	42
	10 year	15.40	7.44	51
	100 year	42.32	19.30	54
3	1 year	0.21	0.11	47
	10 year	0.39	0.26	33
	100 year	2.28	0.52	77

3. Mitigation

A potential impact of the Proposed Project on soils or slopes will be that of erosion and transport of sediment during construction. An Erosion and Sediment Control Management Program will be established for the Proposed Project, beginning at the start of construction and continue throughout its course, as outlined in the "New York State Standards and Specifications for Erosion and Sediment Control," November 2016. Post construction and throughout the life of the project, a maintenance program will be implemented for the control of sediment transport and erosion control.

There are approximately 2.42 acres of impervious surface on the existing Site, and approximately 2.92 acres following the proposed redevelopment.

As noted previously, the Existing and Proposed Drainage Area Maps (watershed maps) are included within the [Appendix B SDEIS](#) Volume 2 Appendix "Preliminary Stormwater Pollution Prevention Plan".

Because of the following requirements, it is not anticipated that the Project would have failed erosion, sedimentation, and stormwater controls during and post-construction. Failures of these design practices is subject to significant fines by the NYSDEC as well as the Town. An assessment of the site by a qualified construction professional will be conducted prior to beginning construction to certify that the appropriate erosion and sediment controls, as shown on the Erosion and Sediment and Control Plans, have been installed to ensure adequate preparedness for construction. In addition, site inspections shall be conducted at least every seven calendar days and at least two site inspections every seven calendar days when greater than five acres of soil is disturbed at any one time.

Prior to beginning any construction, the developer/owner must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting, and maintaining the erosion and sediment control

practices included in the SWPPP, and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The developer/owner must identify at least one person, known as the trained contractor, who will be responsible for implementation of the SWPPP. The developer/owner must ensure and identify with a signed and certified copy that at least one trained contractor will be on-site on a daily basis when soil disturbance activities are being performed.

Hudson Park Group LLC, and subsequently the HOA, will be responsible for the long-term operation and maintenance of the permanent stormwater management practices. The permanent stormwater management practices are to be maintained in accordance with the Maintenance Inspection Checklists provided in Appendix E of the SWPPP ([Appendix B SDEIS](#) Volume 2 Appendix).

Construction Site Chemical Control

As discussed in detail in the SWPPP ([Appendix B SDEIS](#) Volume 2 Appendix), the purpose of these management measures is to prevent the generation of nonpoint source pollution from construction sites due to improper handling and usage of nutrients and toxic substances, and to prevent the movement of toxic substances from the construction site.

Many potential pollutants other than sediment are associated with construction activities. These pollutants include pesticides; fertilizers used for vegetative stabilization; petrochemicals; construction chemicals such as concrete products, sealers, and paints; wash water associated with these products; paper; wood; garbage; and sanitary waste.

Disposal of excess pesticides and pesticide-related wastes are to conform to registered label directions for the disposal and storage of pesticides and pesticide containers set forth in applicable Federal, State and local regulations that govern their

usage, handling, storage, and disposal.

Pesticides are to be disposed of through either a licensed waste management firm or a treatment, storage and disposal (TSD) facility. Containers are to be triple-rinsed before disposal, and rinse waters should be reused as product.

Other practices include setting aside a locked storage area, tightly closing lids, storing in a cool, dry place, checking containers periodically for leaks or deterioration, maintaining a list of products in storage, using plastic sheeting to line the storage areas, and notifying neighboring property owners prior to spraying.

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