

Appendix B

SWPPP  
(Full SWPPP on Attached CD)



# **STORMWATER POLLUTION PREVENTION PLAN**

## **SAW MILL LOFTS**

**VILLAGE OF HASTINGS-ON-HUDSON, WESTCHESTER COUNTY  
NEW YORK**

### **PREPARED FOR:**

Ginsburg Development Companies, LLC/Saw Mill Lofts, LLC  
100 Summit Lake Drive  
Valhalla, NY 10595

### **PREPARED FOR THE FULFILLMENT OF**

NYSDEC – SPDES General Permit For Stormwater Discharges From  
Construction Activities  
Permit Number GP - 0 - 10 - 001

### **DATE:**

February 18, 2013



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## **PLAN DESCRIPTION**

SESI was authorized by Ginsburg Development Companies, LLC/Saw Mill Lofts, LLC, to prepare a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activities (Permit Number GP 0-10-001) for the construction of three residential buildings with associated paved roadways, parking and landscaped areas. Two of these buildings will be three (3) story residential buildings with parking underneath and the third will be a two (2) story residential building with adjacent surface parking.

This SWPPP includes the narrative and site drawings that indicate the site's existing and post-construction conditions. The conditions of proposed stormwater management facilities will be periodically inspected and recorded.

Project compliance with the NYSDEC Stormwater General Permit includes, but is not limited to, completion of the following activities:

1. Maintenance of a full copy of this SWPPP on the project site until termination of project site stabilization.
2. Posting of the project description and Notice of Intent at the site for public.
3. Maintenance of a current SWPPP.
4. Submission of the certified Notice of Termination of NYSDEC at completion of site stabilization and end of stormwater discharges from construction activities.
5. Maintenance of this SWPPP by the project operator for a three (3) year period following completion of final site stabilization.

The project contractor shall refer to the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities for a full listing of project permit compliance items.

## **PROJECT LOCATION**

The site is approximately 7.45-acres and is located in the Village of Hastings-on-Hudson, Westchester County, along the western side of Saw Mill River Road. Access to the property is available directly from Saw Mill River Road.

## **SITE DESCRIPTION**

The site has approximately 2.3 acres of existing asphalt parking lot areas. The first parking lot area is located at the northern end of the property, and the second is located at the southern end of the property.

The site topography gently slopes from Saw Mill River Road generally towards the Saw Mill River, located at the western end of the property. Elevations range from approximately 139 feet near the east central portion of the property near the Saw Mill River Road to approximately 116 feet at the bank of the River. There is a steep-sloped area located in the center of the property, with elevations at the bottom of slope of approximately 120 feet. Also, at the rear (western end) of the property, the bank of the Saw Mill River is steeply sloping.

There is no evidence of significant erosion under present site conditions.

## **ADJACENT PROPERTY**

Land use in the vicinity is commercial/industrial and public open space. The land immediately to the north and east has been developed for industrial and office uses, respectively. According to the Riverwalk Supplemental SDEIS, areas to the south are undeveloped and heavily wooded in green ash, American Beech, American elm, box elder, tulip poplar and hornbeam. There is a small tributary to the Saw Mill River located to the south of the property. This stream is located approximately 100-feet from the southern property boundary. Sediment control measures will be implemented to prevent damage to this tributary.

According to the MUPDD Saw Mill Lofts SFEIS, there are five stormwater pipes that convey runoff from the Ardsley Office Park across Saw Mill River Road and discharge it into the Saw Mill River. The SFEIS indicates that approximately 30.2 acres of drainage area contribute runoff to these pipes. An analysis undertaken in conjunction with the SFEIS determined that the existing stormwater pipes have adequate capacity to accommodate runoff from the proposed development.

## **PROJECT DESCRIPTION**

As indicated previously, the purpose of this redevelopment project is to construct three (3) residential buildings with associated paved roadways, below and at-grade parking areas for two of them, and landscaped areas. Approximately 4.40-acres will be disturbed during this construction period.

## SOILS

According to the NRCS Web Soil Survey, the property is comprised of the following soil types:

1. Udorthents – Ub, smoothed - These are very deep, excessively drained to moderately well-drained soils that originated from prior on-site earthwork activities. Soil boring logs indicate that there is a 2 – 17 foot thick fill layer above virgin soils.
2. Fluvaquents – Udifluvents – Ff – These are very deep, somewhat poorly drained to very poorly drained, nearly level soils that formed in recent alluvial deposits. This soil is frequently inundated by the Saw Mill, resulting in erosion. These soils are located generally within the bank and channel area of the River.

The SESI 2001 soil review indicated that, based on a review of boring and test pit log data, the vast majority of the site contains a miscellaneous, mostly granular fill with varying percentages of silt, gravel, cobbles, boulders, and occasional debris. The fill varies from loose to very dense which is typical for uncontrolled fills. These fill thicknesses range from 4 +/- to 17 +/- feet with a typical thickness in the northern half of the property of 4 – 6 feet and 9 – 13 +/- feet in the southern half of the property. Natural stratified sands, silts and clays underlie the fill and organic soils to the completion depths of the borings. These layers are variable in composition and density and often contain cobbles and boulders. These soils appear to be adequate for infiltration practices.

Groundwater was measured within augers at elevations of 114 to 118 +/- at the time of the subsurface investigations. The water elevation of the Saw Mill River was at approximately elevation 116 during the course of the field investigation. These groundwater levels will vary by several feet depending on the time of year and amount of recent precipitation.

## STORMWATER MANAGEMENT PLAN

**Stormwater Quality Treatment** – The project proposes to utilize two (2) bioretention systems with infiltration as the project Best Management Practices (BMP) to treat stormwater runoff from the majority of the development area prior to discharge into the Saw Mill River. Bioretention facility #1 is located at the southwestern end of the proposed development. Bioretention facility #2 is located at the northwestern end of the development.

The bioretention systems will consist of the following treatment components as defined in the NYSDEC Stormwater Design Manual:

1. A 2.5-foot deep planting soil bed.
2. Decorative stone surface layer.
3. Six (6) to twelve (12) inch deep surface ponding area.

The water quality volume ( $WQ_v$ ) for the project will be the entire volume that will be generated by the "90 percent rule" storm event for this area. The 90 percent rainfall event number is 1.30-inches of precipitation in this portion of Westchester County. These bioretention systems have been designed to provide storage for the entire inflow ( $WQ_v$ ) from their respective drainage areas. Also, the proposed bioretention systems have been designed to safely pass all storm events up to and including the 100-year storm event without ponding effects in adjacent impervious areas. See **Appendix C** for further detail.

There is a 0.45-acre area that consists of the proposed driveway that connects the main on-site driveway to the proposed parking areas at the lower levels of the two, three story buildings along with adjacent berm and landscaped areas. For clarification, within this area, there is only 0.23-acre of impervious surface. Due to site topographic constraints, runoff from this area cannot be conveyed to either of the proposed bioretention facilities. As a result, runoff from this small area will be captured via trench drains and conveyed to a Contech ChamberMAXX infiltration system. Once treated, runoff will be conveyed to a proposed junction manhole (MH #500) and discharge into an existing 22-inch diameter concrete pipe that currently traverses the site from east to west, and discharges to the Saw Mill River.

**Runoff Reduction Volume (RR<sub>v</sub>)** – The project proposes to utilize the above-mentioned two (2) bioretention systems with infiltration along with the Contech ChamberMAXX infiltration as the project Best Management Practices (BMP) to infiltrate the required runoff reduction volume from their contributory drainage areas.

The water quality volume ( $WQ_v$ ) for the project will be the entire volume that will be generated by the "90 percent rule" storm event for this area. The 90 percent rainfall event number is 1.30-inches of precipitation in this portion of Westchester County. These bioretention systems have been designed to provide storage for the entire inflow ( $WQ_v$ ) from their respective drainage area.

Infiltration tests were performed on the property in the locations of the proposed bioretention facilities. In the area of proposed bioretention facility #1, the field infiltration rates was determined to be 1.4 inches per hour. A factor of safety of two (2) was implemented. As a result, its design infiltration rate is 0.70 inch per hour. For proposed bioretention facility #2, the field infiltration rates was determined to be 5.4 inches per hour. A factor of safety of two (2) was implemented. As a result, its design

infiltration rate is 2.70 inch per hour. **Appendix D** contains a Geotechnical Report that was prepared by SESI dated April 20, 2007, that includes infiltration test data.

No infiltration tests have been performed to date in the location of the proposed ChamberMAXX infiltration system. As a conservative measure, the most restrictive of the two prior tests was used for design purposes. In other words, 0.70 inch per hour was used as a infiltration rate for design purposes.

Since the property is comprised of Urdothents soils, the NRCS Web Soil Survey indicates that these are considered hydrologic soil group "B". NYSDEC spreadsheets for the determination of required runoff volume for the area of development, which is approximately 3.9 acres, indicates a required runoff volume reduction value of 3,371 cubic feet. Based on these same NYSDEC spreadsheets, these proposed infiltration-type stormwater facilities will infiltrate the entire water quality volume (WQv) which meets NYSDECs Runoff Reduction Volume requirements.

**Stormwater Quantity Control** – A hydrologic analysis has been prepared to determine the difference in peak flows from existing to post-construction conditions to determine the need for on-site detention areas to capture and attenuate stormwater runoff from flood events prior to discharge into the Saw Mill River to minimize flooding impacts downstream of the subject property. The New York State Stormwater Management Design Manual provides guidance with regard to determining required volumes from the following storm events for detention.

Stream Channel Protection ( $C_{p_v}$ ). 1- year, 24-hour storm event.

Overbank Flood ( $Q_p$ ). 10- year, 24-hour storm event.

Extreme Flood ( $Q_f$ ). 100- year, 24-hour storm event.

The Manual indicates that these requirements do not apply in certain conditions, including when the site discharges to a fourth order (fourth downstream) or larger stream. Based on a review of a map entitled "Saw Mill River Watershed to Riverwalk Southern Property Line", prepared by Ralph G. Mastromonaco, P.E., P.C., dated February 23, 2001, the drainage area of the Saw Mill River at the project site is approximately 22 square miles. Further review of USGS mapping indicates that river is a fourth order stream or greater. As a result, per NYSDEC, detention is technically not required on this property. It should be noted that the impervious coverage for the property will decrease from 2.31-acres in an existing condition to 2.21-acres in a developed condition. This reduction in impervious coverage will generate a benefit in reducing peak rates and volumes of stormwater runoff. Also, due to the infiltration design nature of the two proposed bioretention facilities, they will provide substantial infiltration of treated runoff which will result in additional benefit by further reducing both peak runoff rates and volumes from the site to the Saw Mill River.



The existing conditions hydrologic analysis consists of the evaluation of four (4) on-site drainage areas whose hydrographs are combined at the southeastern property corner (called Global Point of Study X). Runoff coefficients and rainfall values are taken from the Westchester County BMP Manual. See **Appendix A** for further detail.

The post-construction condition hydrologic analysis consists of the evaluation of nineteen (19) on-site drainage areas whose hydrographs are also combined at Global Point of Study X. See **Appendix B** for further detail.

As indicated previously, the analysis indicates that at Global Point of Study X, the MUPDD Saw Mill Lofts project will decrease runoff volumes from the property for the storm events indicated above. The following table indicates both existing conditions and post-construction runoff volumes for the above storm events.

<b>Runoff Flow rates and Volumes at Global Point of Study X</b>				
<b>Storm Event</b>	<b>Existing Condition Rates</b>	<b>Post-Construction Rates</b>	<b>Existing Condition Volumes</b>	<b>Post-Construction Volumes</b>
1-Year	4.96 cfs.	1.59 cfs.	19,494 cubic-feet	6,907 cubic-feet
10-Year	13.55 cfs.	11.24 cfs.	54,514 cubic-feet	36,480 cubic-feet
100-Year	25.14 cfs.	23.26 cfs.	102,132 cubic-feet	80,505 cubic-feet

## **PLANNED EROSION AND SEDIMENTATION CONTROL PRACTICES**

**Sediment Basin:** Two sediment basins will be constructed on the property. The first will be located at the rear of proposed Building A. The second will be located adjacent to the corner of proposed Building B. Stormwater runoff from the proposed disturbed areas will be directed to these sediment basins before leaving the site.

**Stabilized Gravel Construction Entrance/Exit:** Stabilized gravel construction entrances will be installed at the access points to the property from Saw Mill River Road. During wet weather it may be necessary to wash vehicle tires at these locations. See project detail sheets for specifications.

**Temporary Diversion:** Temporary diversions will be constructed above the steep slopes in the central portion of the property between Buildings A and B to prevent surface runoff from eroding these banks. (Note: Sediment-free water may be diverted away from the project sediment basins.) A temporary diversion will be constructed near the middle of the disturbed area to break up this long, potentially erosive slope should the grading operation be temporarily discontinued. A temporary diversion dike will be constructed along the top edge of the fill slope at the end of each day during the filling

operation to protect the fill slope. This temporary diversion will divert runoff to proposed sediment basin #1. See project detail sheets for specification.

**Land Grading:** Heavy grading will be required on approximately 4 acres. The flatter slope after grading will reduce the overall erosion potential of the site. The buildings will be located on the higher cut areas, and the access road and open landscape areas will be located on fill areas. See project detail sheets for specification.

All cut slopes will be 3:1 or flatter to avoid instability due to wetness, provide fill material, give an open area around the buildings, and allow vegetated slopes to be mowed. Cut slopes will be fine graded immediately after rough grading; the surface will be disked and vegetated according to the Vegetation Plan (pages 6.30-6.32).

Fill slopes located in landscaped areas adjacent to Building B will be 2:1 with fill depths up to 4 - 5 ft. Fill should be spread in maximum 12-inch lifts and compacted. (Note: Fills of this depth should have detailed compaction specifications in the general construction contract. These specifications are not part of the erosion and sedimentation control plan.)

A minimum 15-ft undisturbed buffer zone will be maintained at the rear of the site along the Saw Mill River.

**Sediment Fence:** A sediment fence will be constructed around proposed topsoil stockpile and along the top of the River bank as necessary to prevent sediment from entering the channel. See project detail sheets for specifications.

**Construction Road Stabilization:** The south entrance road will be stripped of topsoil and stabilized with a 6-inch course of NYSDOT crushed stone. See project detail sheets for specifications.

**Surface stabilization:** will be accomplished with vegetation and mulch as specified in the vegetation plan. Roadway and parking lot base courses will be installed as soon as finished subgrade is reached.

**Dust control:** is not expected to be a problem due to the small area of exposure, the undisturbed perimeter of trees around the site, and the relatively short time of exposure (not to exceed 9 months). Should excessive dust be generated, it will be controlled by sprinkling.

## **MAINTENANCE OF TEMPORARY AND PERMANENT STRUCTURES AND PRACTICES**

1. **Temporary** – Temporary structures and practices will be constructed and maintained through the duration of the project construction. Structures located in on-site disturbed areas will be inspected by a qualified individual at least every seven days and within 24-hours of the end of a 0.5-inch rainfall event. Site areas that have been completely stabilized will be inspected at least once a month until the entire project site has been completely stabilized. Certified inspection reports will be completed following site inspections. Revisions to the SWPPP will be made based on the site inspections within seven (7) calendar days following the inspection. A blank inspection report is included for use in completing the inspections and report. Completed reports will be added and retained as part of the SWPPP.
2. **Permanent** – Permanent structures and measures for stormwater quality and quantity control will require regular inspection and maintenance. These include permanent erosion control practices, water quality control practices, and related stormwater conveyance structures. The following table identifies the frequency with which inspections of stormwater management measures should occur and the extent of maintenance required. The project operator will be responsible for inspecting and maintaining permanent stormwater management structures and practices.

## **CONSTRUCTION SCHEDULE**

1. Obtain plan approval and other applicable permits.
2. Flag the work limits and mark the buffer area for protection.
3. Hold preconstruction conference at least one week prior to starting construction.
4. Install temporary gravel construction entrance/exit.
5. Construct sediment filter fence at work limits and buffer limits.
6. Complete site clearing.
7. Install sediment basins.
8. Construct temporary diversions between proposed building sites. Vegetate disturbed areas.
9. Strip and stockpile topsoil and install sediment filter fence at the base of stockpile as shown on project plans.
10. Rough grade site, construct channels, install culverts and outlet protection. Maintain diversions along top of fill slope daily. NOTE: A temporary diversion will be

constructed across the middle of the graded area to reduce slope length and the bare areas mulched should grading be discontinued for more than 3 weeks.

11. Building and foundation construction.

12. Fine grade, topsoil critical areas, and permanently vegetate, landscape, and mulch.

13. Complete final grading for roads and parking and stabilize with gravel.

14. All erosion and sediment control practices will be inspected weekly and after rainfall events. Needed repairs will be made immediately.

15. After the site is stabilized, remove all temporary measures and install permanent vegetation on the disturbed areas.

Estimated time before final stabilization – 12 months.