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**APPENDIX**

# I. INTRODUCTION

The proposed project consists of a 40 unit senior housing building and 8 single family townhouse auxiliary structures. The project includes associated roadways, parking areas, and stormwater management areas to support the proposed buildings.

The site is situated at the end of Monroe Avenue and Spruce Street Extension, northeast of West Street in the City of Oneonta, NY. The site consists of multiple vacant parcels surrounded by residential lands located along Ravine Parkway, West Street, Monroe Avenue, Clinton Street and Spruce Street Extension. Refer to Appendix 2 for aerial photo.

The provided Stormwater Pollution Prevention Plan (SWPPP) materials adhere to the State Pollutant Discharge Elimination System (SPDES) General Permit (GP-0-10-01) for Stormwater Discharges from Construction Activity. The guidelines specified in by the *New York State Stormwater Management Design Manual, August 2010* (SWDM) were used to analyze the proposed stormwater management facilities for this project. Erosion and Sediment controls were designed in conformance with New York Standards and Specifications for Erosion and Sediment Controls.

A copy of this SWPPP and associated inspection logs will be kept on site in the proposed office space and job trailer/SWPPP mailbox.

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## II. EXISTING CONDITIONS

### A. Topography/ Drainage

The project site is currently vacant residential properties; ground cover consists of woods with some open grassy areas. The terrain slopes downward from the north to the south and contains approximately 50 feet of elevation difference. The high point of the site is located near the northwestern proposed property line.

All stormwater runoff from the site flows south and enters Silver Creek. Silver Creek is a NYSDEC Class C stream, as depicted in Appendix 4.

In order to determine pre-runoff conditions, the site was modeled using the TR-55 methodology and the Hydraflow Hydrographs Extension to AutoCAD 2013 software. Drainage maps, calculations for CN values, time of concentration and resulting hydrographs can also be found in Appendices 9-11 of this report.

### B. Soils

Soils within the project boundary were reviewed for their hydrologic soil group (HSG) in accordance with the USDA's NRCS Soil Survey. The soil survey can be located in Appendix 8.

On-site soils are generally silt loams with the classification of HSG A & C.

### C. Wetlands

The site was reviewed for the existence of federal and state regulated wetlands within the property boundaries. Federal wetlands were researched using the National Wetlands Inventory (NWI) using an online U.S. Fish and Wildlife website search. State regulated wetlands were researched using the NYSDEC's online Environmental Resource Mapper website.

Review of the mapping indicates there is an existing federal wetland near the southern boundary of the project parcel. It does not appear to be located within the bounds of the project parcel; however this area has been mapped and is shown on the design plans. No development or disturbance is proposed near this location due to other environmental restrictions. There will be no impact to the wetland due to the proposed development. Refer to Appendix 4 and 5 for the federal and state regulated wetlands mapping.

### D. Floodplain

The site was reviewed for the location and extent of floodplains within the property boundaries. Floodplains were researched using the online Firmette tools found at FEMA Map Service Center.

Review of the floodplain mapping indicates there is a floodplain located on the site according to FEMA map 360667 0005 B dated September 29, 1978. There is also newer flood mapping that has not been approved to date. Both floodplains are shown on the site plans.

No development or disturbance is proposed within the limits of the floodplain. Refer to Appendix 6 for the FEMA Firmette map.

**E. NYSDEC Environmental Resources**

The NYSDEC has an Environmental Resource Mapper on its website. The Environmental Resource Mapper is an interactive mapping application that can be used to identify some of New York State's natural resources and environmental features that are state protected, or of conservation concern. It displays the following:

- Animals and plants that are rare in New York, including those listed as Endangered or Threatened (generalized locations). [Updated May 2008]
- Significant natural communities, such as rare or high-quality forests, wetlands, and other habitat types.
- New York's streams, rivers, lakes, and ponds; water quality classifications are also displayed

According to this database, there are no rare plants/animals in the vicinity of the project. Refer to Appendix 4 for the NYSDEC's Environmental Resource Mapping.

**F. State Historic Preservation Office Review**

The site was reviewed for the presence of an archeological sensitive area within the property boundary. The archeo-sensitive areas were located using online GIS tools found at the NYS Historic Preservation Office (SHPO).

Based on this review the proposed project is not located within an archeo sensitive area. Refer to Appendix 7 for map.

## III. DEVELOPED CONDITIONS

The proposed project consists of the construction of buildings, roads, parking lots, sidewalk and stormwater management areas to treat impervious areas. The existing drainage areas were broken into 2 areas. One area that flows into Silver Creek upstream of the dam and the other that flows into Silver Creek downstream of the dam. The proposed drainage areas follow the same methodology. The proposed impervious areas will be treated with green infrastructure practices to meet the requirements of the NYSDEC reguirements. Refer to Appendix 9 for maps of the drainage areas.

Additionally, soil restoration practices will scarify and loosen all lawn areas to promote infiltration and conductivity. Lawn areas will be tilled to circulate air and compost into subsoil to a depth of at least 18" using cat-mounted ripper, tractor mounted disc, or tiller. Soils shall be rock-picked until uplifted stone/rock materials of 4" and larger are cleaned off site. Topsoil will be applied to a depth of 6 inches on all areas being returned to grass or landscaping per the plans. Soil restoration practices shall be in compliance with Table 5.3 of the NYS Stormwater Management Design Manual. All lawn areas will convey infiltrated groundwater to either vegetated swales or stormwater management facilities, which have been designed to be at elevations lower than areas of proposed runoff. The drainage measures have been designed with outlets; this allows for relief during seasonal storm events.

The project meets the stormwater quality control requirements based on Section 4.3 of the *New York State Stormwater Management Design Manual, August 2010* for Water Quality Volume (Wqv) by Runoff Reduction Volume (RRv) techniques. This RRv is achieved

by the use of Standard Stormwater Management Practices (SMPs) with RRv capacity. The application of these practices is described below in Section IV.

The project meets the stormwater quantity requirements based on Sections 4.4, 4.5 and 4.6 of the *New York State Stormwater Management Design Manual, August 2010* criteria for Channel Protection Volume (Cpv), Overbank Flood (Q,), and Extreme Storm (Qr) conditions. The application of these practices are described in Section V.

## IV. GREEN INFRASTRUCTURE

The proposed project utilizes green infrastructure measures to provide RRv treatment and contributes to the water quality treatment objectives of Chapter 5 of the NYS SWDM. Green infrastructure and green infrastructure practices have been integrated into the site design as follows:

**Evaluation of Green Infrastructure Techniques**

| Practice | Applied? | Site Limitations |
|---|---|---|
| Conservation of Natural Areas | N/A | Site is completely agricultural with no natural areas no conserve |
| Sheetflow to Riparian Buffers or Filter Strips | No | Runoff from disconnected rooftops and parking lots will discharge to filter strips and proposed site swales. |
| Vegetated Open Swales | Yes | Where possible, vegetated open swales are being used along many of the parking lots to convey the runoff instead of closed pipe systems where possible. |
| Tree Planting/Tree Box | Yes | There are no impervious areas that discharge to tree boxes. |
| Disconnection of Rooftop Runoff | Yes | By disconnecting rooftops and discharging them to designated areas, the impervious area can be removed from calculations. One of the rooftops have been disconnected and discharges to a infiltration basin after flowing over a grass lawn. |
| Stream Daylighting | N/A | The proposed project does not contain streams. Stream day lighting is not applicable. |
| Rain Garden | No | Rain gardens provide runoff reduction through evaporation, transpiration and infiltration in smaller quantities. Due to soil conditions and maintenance concerns, rain gardens are not proposed. |
| Green Roof | N/A | The proposed buildings have pitched roofs. The installation of a green roof is not applicable. |
| Stormwater Planter | No | Stormwater planters are not used. Stormwater planters would be high maintenance and infiltration techniques are used instead. |
| Rain Tank/Cistern | N/A | There are no proposed irrigation systems for the buildings that would use the stormwater cistern. The installation of a cistern is not applicable. |
| Porous Pavement | No | The installation of porous pavement would introduce groundwater towards the building foundations. |

Chapter 5 of the NYSDEC Stormwater Management Design Manual was used for the proposed design to incorporate green infrastructure for this project. Please refer to Appendix 11 for Runoff Reduction volume calculations.

## V. STANDARD STORMWATER MANAGEMENT PRACTICES (SMPs)

Runoff reduction provided reduces the WQv required; the remaining water quality controls are provided in storage above the infiltration basins. These provide Cp, $Q_P$ and $Q_f$ protection in accordance with the *New York State Stormwater Management Design Manual, August 2010*. Refer to Appendix 11 for Runoff Reduction volume calculations. Refer to the table below for a summary of the runoff rates:

| Description | Runoff (cfs) | | | |
|---|---|---|---|---|
| | 1 Year | 2 Year | 10 Year | 100 Year |
| Pre-Developed Condition | 0.42 | 0.71 | 2.06 | 6.02 |
| Post-Developed Condition | 0.38 | 0.60 | 1.92 | 3.90 |
| **Reduction Provided** | **10%** | **15%** | **7%** | **35%** |

A summary of the water quantity and quality control targets is provided below:

| Description | Required | Provided |
|---|---|---|
| $WQ_v$ Total | 0.101 ac-ft | 0.101 ac-ft |
| $RR_v$ Total | 0.101 ac-ft | 0.101 ac-ft |
| $CP_v$ Total | 0.080ac-ft | 0.176 ac-ft |

As shown above, the peak rate of discharge is less for all storm events. This meets the intent of stormwater management by releasing the water at a sustainable rate that does lead to erosion or high levels of pollution entering the ground water. Refer to Appendix 10 for the Hydraflow analysis and Appendix 11 for the $Q_p$ and $Q_f$.

## VI. CONSTRUCTION EROSION CONTROL PRACTICES & INSPECTIONS

The Owner is responsible for having monthly inspections of the storm water management facility completed. The inspections shall review and document the following at a minimum: visual inspection of the outlet structure, check of the outlets for excessive sediment accumulation, visual inspection of the earthen berm for signs of erosion, burrowing, vegetation degradation, or any other issues of concern. A certified copy of the annual summary of inspections report will be provided to the City of Oneonta by the first of December.

Several erosion control practices will be utilized during construction by the contractor under direct supervision by the owner and a qualified SWPPP inspector (S.W.T.). These practices are explained below and shown in detail in the appendix of this report and the construction plans.

- Silt Fence → Silt fencing shall be installed at the toe of all slopes along the perimeter of the disturbed areas and at the toe of slope for any soil stock pile areas. Also, a row of silt fence will be installed around the perimeter of all wetlands in an effort to delineate its boundary. The fencing will be installed in accordance with the NYSDEC construction standards and

at the instruction of this plan. The silt fencing shall be buried in the ground at least 6 inches. The contractor shall provide continued monitoring to ensure the silt fencing remains intact, and shall repair as needed. When the silt accumulates to greater than 1/3 the height of the fence the contractor shall remove and dispose of the silt.

- Stabilized Construction Entrance → The project entrance shall serve as the construction entrance to the project and shall be installed according to the details of this plan. The contractor shall ensure that mud is not tracked onto the adjacent roadways and that the stone entrance properly removes mud and debris from construction vehicles.

- Sediment Basin→ The proposed infiltration basins shall serve as a temporary sediment basin during construction. A temporary outlet pipe will be installed to allow runoff to exit the basin. The SMA area shall be undercut a minimum of 5 ft. below the temporary pipe to provide a settling area for the runoff. Prior to final site stabilization, the sediment shall be removed from the facility.

- Drop Inlet Protection → All field inlets and catch basins shall have inlet protection in accordance with the detail the Appendix. Drop Inlet protection can be removed from catch basins in the roadway when the sub base is installed, and from the field inlets when the adjacent area is brought to final grade and stabilized.

- Seeding and Stabilization → The contractor shall seed and stabilize all disturbed areas not to be worked for 7 days within 7 days of the last disturbance.
  Stabilization measures may include but are not limited to straw mulching, wood chip mulching, jute mesh and hydroseeding. The SMA and adjacent areas shall be stabilized immediately following their shaping and installation.

  All embankments greater than 3:1 shall be stabilized with jute mesh.

- Check Dam → 24 inch high stone check dams will be installed in all temporary and permanent diversion swales. The check dams will be installed every 2 vertical feet. Once the site is stabilized, these check dams will be removed.

- Truck Washdown area → A truck washdown area will be provided adjacent to the construction entrance. This area will be constructed such that it drains to a sediment basin immediately adjacent prior to discharging offsite.

  Additional measures may be required during construction at the guidance of the owner or certified SWPPP Inspector. The contractor shall begin to make all adjustments to the erosion control within 24 hours of receipt of any deficiencies. The owner will be responsible for providing bi-weekly reports by a qualified inspector in accordance with the GP-0-10-001, during construction to the City.

  Any modifications to the SWPPP will be reported to the City in writing prior to implementation. See Appendix 1 for additional SWPPP information.

  The owner is responsible for having a qualified operator on site at all times who has at least 4 hours of erosion control training in accordance with the GP-0-10-001. Once the site has

achieved 80% stabilization and ground cover, the City shall be required to sign off on the Notice of Termination prior to submission to the NYSDEC. Removal of all temporary erosion and sediment control practices is required prior to demobilization.

## VII. POST CONSTRUCTION PRACTICES

The owner of the subject project will be responsible for all post construction practices. The contact information for the owner is illustrated on the cover of this plan as well as the design plans for the project. The post construction practices include performing annual inspections of the SMAs to ensure proper working conditions and ensure continual stabilized cover of all project areas to 80% cover, minimum. All applicable inspection and maintenance activities shall continue until the 80% cover is met. Any silt removal will be disposed either off site or on site and immediately stabilized in accordance with the practices of this plan.

## VIII. SUMMARY

The proposed project results in the requirement to provide stormwater management which conforms to the NYSDEC Phase II regulations. In addition to meeting the requirements set forth by the NYSDEC, the proposed SMAs will also result in a net decrease in peak runoff from the site while meeting the NYSDEC requirements for Water Quality and Channel Protection. Continued monitoring of the practices set forth in this plan will be provided by the owner and a designated SWPPP Inspector.

The appendix of this report illustrates additional requirements and specifications for stormwater pollution prevention. These include standard practices, certification documents, and the General Discharge Permit and inspection forms.

All practices incorporated as part of this project have been designed in compliance with the NYS Storm Water Design Manual and the NYS Standards and Specifications for Erosion and Sediment Control.

# APPENDIX 1: SWPPP PRACTICES, PROCEDURES AND CERTIFICATIONS

# APPENDIX 2: AERIAL PHOTOGRAPH

# APPENDIX 3: SITE AS DEPICTED BY THE USGS QUADRANGLE MAP

# APPENDIX 4: NYSDEC ENVIRONMENTAL RESOURCE MAPPING

# APPENDIX 5: FEDERAL WETLANDS MAPPING

# APPENDIX 6: FEMA FIRMETTE

# APPENDIX 7: NYSHPO ARCHEOLOGICAL SENSITIVE AREA

# APPENDIX 8: USDA NRCS SOIL SURVEY

# APPENDIX 9: SITE DRAINAGE MAPS

# APPENDIX 10: Tc, CN, DRAINAGE COMPUTATIONS & HYDROGRAPHS

# APPENDIX 11: NYSDEC PHASE II CALCULATIONS FOR WQv RRv, AND CPv

# APPENDIX 12: NYSDEC SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITY (PERMIT NO. GP-0-10-001)

# APPENDIX 13: CONSTRUCTION SITE INSPECTION AND MAINTENANCE LOG SHEETS

# APPENDIX 14: NOTICE OF INTENT

# APPENDIX 15: NOI ACKNOWLEDGEMENT LETTER

# APPENDIX 16: NOTICE OF TERMINATION (BLANK)

# APPENDIX 17: EROSION CONTROL DETAILS

# APPENDIX 18: STORMWATER MANAGEMENT FACILITY OPERATION AND MAINTENANCE CHECKLIST