



Exhibit X.C.4. – Storm Water

Submit as Exhibit X.C.4. a description of plans for management of storm water including any plans to use Institute for Sustainable Infrastructure techniques to minimize impact of storm water and maximize its reuse.

INTRODUCTION

This exhibit represents the plans for management of stormwater, meeting the requirements required by the New York State Department of Environmental Conservation (“NYSDEC”) to obtain a Stormwater Pollution Prevention Plan (“SWPPP”) for the Tioga Downs’ expansion (“Project”) proposed for construction at 2384 West River Road in the Town of Nichols, Tioga County, New York. A State Pollutant Discharge Elimination System (“SPDES”) is required for the project, according to Section 402 of the Clean Water Act (“CWA”) which requires construction activities that disturb one (1) or more acres of land to obtain a permit for stormwater discharges.

Within the SWPPP are specific green infrastructure techniques, as well as conservation of natural features and reduction of impervious areas. While the SWPPP was specifically designed based on the August 2010 New York State Stormwater Management Design Manual, these plans follow many of the guidelines set forth by the Institute for Sustainable Infrastructure (“ISI”), a not-for-profit education and research organization founded by the American Public Works Association, the American Council of Engineering Companies and the American Society of Civil Engineers.

ISI TECHNIQUES FOR STORMWATER MANAGEMENT

Commercial development of land can increase the amount of surface runoff leaving the land due to an increase in impervious surfaces. This increase in runoff can create erosion issues, both of the land on site, and erode downstream channels and waterways. In addition, this runoff can carry excess sediment and pollutants, damaging receiving water bodies. Runoff from impervious surfaces is typically warmer than the water in the receiving body, increasing the receiving water body’s temperature. All of these effects can deteriorate water quality in receiving streams.

To combat the negative effects of runoff, design practices can reduce the quantity of the runoff, and increase the quality of the runoff. ISI highlights several measures, called Low Impact

Development (“LID”) measures, to reduce the negative impacts of post-development runoff. LID measures include:

- Gardens and bioretention;
- Rooftop gardens;
- Sidewalk storage;
- Vegetated swales, buffers and strips;
- Tree preservation;
- Roof leader disconnection;
- Rain barrels and cisterns;
- Permeable pavers;
- Soil amendments;
- Impervious surface reduction and disconnection;
- Pollution prevention; and
- Good housekeeping.

The goal of the LID measures for greenfields is to provide the same water storage capacity at post-development that existed in pre-development. The capacities of both conditions can be determined using the TR-55 methodology.

LOW IMPACT DEVELOPMENT MEASURES

The stormwater management plan includes LID measures for conservation of natural features to reduce impervious areas, including:

1. Preservation of the existing stormwater swale located to the east of the existing parking lot. This will remain in place and continue to function as a stormwater management swale.

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2. Restoration/Reuse of soils that are graded/excavated/filled on-site and the stockpiling of on-site topsoil to be used in the green spaces of the project site prior to seeding/mulching.
 3. Retention of green spaces and reduction of impervious cover by adding lawn areas near the parking garage, around the front of the proposed hotel, and median treatments along the entrance drive.

The storm water management plan also includes LID measures for green infrastructure techniques to handle runoff and reduce impacts of runoff, including:

1. The Water Quality Volume (“WQv”) capture of 90% of the average annual runoff, and the Runoff Reduction Volume (“RRv”) were calculated for the project, and Green Infrastructure Techniques were utilized in the design to treat and provide capacity for both the WQv, and the RRv. Runoff volumes for the 2, 10, and 100 years storms will be infiltrated via underground infiltration chambers.
2. Green Infrastructure Techniques such as vegetated open swales were designed to accept runoff from the roadway in front of the northern new parking lot and the proposed hotel. These swales were designed to handle the recharge volume generated from the increased additional impervious cover for the entire site. The vegetated open swales were also designed to capture and provide 100% infiltration for the 2-year, 10-year, and 100-year storm events.
3. Hydro International Inc.’s Downstream Defender Water Treatment units, which are NYDEC approved for pre-treatment, have been incorporated into the design for WQv requirements. These units have been placed off line as a water-quality unit for each of the infiltration systems. These units have been designed to treat the water quality volume required for the site.

GOOD HOUSEKEEPING MEASURES

The following list is to be reviewed by the project’s site superintendent responsible for day-to-day site operations prior to commencing construction.

1. **Fertilizers** - Fertilizers used will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked into the soil to limit exposure to stormwater. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

2. **Petroleum Products** - All onsite vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.
3. **Paints** - All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system, but will be properly disposed of according to the manufacturer's instructions or state and local regulations.
4. **Concrete Trucks** - Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water on the project site.
5. **Waste Disposal** - During removal operations, the contractor will not be allowed to drop waste concrete, debris, and other material into the water course except where the plans specifically permit the dropping of material. Platforms, nets, screens, or other protective devices shall be used to catch the material if the engineer determines that adequate protective devices are not being employed. The work shall be suspended until adequate protection is provided.
6. **Hazardous Waste** - All hazardous waste materials will be disposed of in the manner specified by local/state regulators and the manufacturer, and site personnel shall be instructed in all practices. The site superintendent, responsible for daily operations, must see that these procedures are followed.
7. **Sanitary Waste** - All sanitary waste will be collected from the portable units a minimum of three times per week by a licensed sanitary waste management contractor.
8. **Recyclable Waste** - all recyclable waste (cardboard, wood, etc.) shall be collected and recycled.

The following general material management practices will be used to reduce the risk of spills or other accidental exposure of materials and substances listed above to stormwater runoff.

1. Products will be kept in original containers unless they are not resealable.
2. Original labels/material safety data sheets will be retained for important product information.
3. An effort will be made to store only enough products required to do the job.
4. All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers.



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5. Products will be kept in their original containers with the original manufacturer's label.
 6. Substances will not be mixed with one another unless recommended by the manufacturer.
 7. Whenever possible, all of a product will be used before disposing the container.
 8. Manufacturer's recommendations for proper use and disposal will be followed.
 9. The site superintendent will inspect daily to ensure the proper use and disposal of materials onsite.
 10. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
 11. All spills will be cleaned up immediately after discovery, and the spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
 12. Spills, of any size, of toxic or hazardous material will be reported to the appropriate state or local government agency.

POST-CONSTRUCTION OPERATION, MAINTENANCE, AND INSPECTION

The SWPPP Post-Construction Operations and Maintenance Plan ("PCOMP") involves inspections and activities required for the continuous and effective operation of each Post-Construction Stormwater Management Practice outlined in the SWPPP. The responsible entity for the PCOMP is the Owner/Operator. At the conclusion of construction, the Long Term Inspections/Operation and Maintenance of the Vegetated Open Swales, Underground Infiltration Chambers, and Water Quality Units will be the responsibility of the Owner/Operator. The PCOMP must be performed in order to prevent downstream degradation and to mitigate soil and sediment loading from discharging to adjacent properties and offsite drainage facilities. PCOMP Regular Inspections must be completed, at least semi-annually and after Major Storms, to visually inspect the entire area of the Vegetated Open Swales, Underground Infiltration Chambers, and Water Quality Units. The Owner/Operator must provide PCOMP Maintenance Activities as required to remove any sediment necessary to restore the Vegetated Open Swales to their design elevations. The PCOMP Maintenances



Activities must involve at a minimum the following: (1) Remove all Debris, Undesirable Vegetative Growth, Obstructions, and Sediments from Contributing Areas and the Stormwater Management Practices, (2) Correct any Erosion problems and ensure that the Vegetation Cover is adequate, (3) Ensure that Mowing is done and that the Vegetation Height is being maintained at approximately 4 to 6-inches. The Inspection, Maintenance and Recording requirements of the NYSDEC regulations outlined in the SPDES General Permit GP-0-10-001 must be met at all times to achieve compliance with the conditions of said permit and the SWPPP.

HYDROLOGY

The USDA Soil Conservation Services TR-55 hydrologic models were used to calculate peak runoff rates for the proposed construction site. This hydrologic model uses an empirical method to express storm events as unit hydrographs. The guidelines outlined in USDA Soil Conservation Service's TR-55 were used to compute runoff curve numbers and times of concentration for the defined drainage areas.

Peak runoff rates and volumes were computed using the USDA Soil Conservation Service TR-55 methodology within the Windows based "Hydraflow Hydrographs" computer analysis software. Stormwater quantities produced by the drainage areas based on the CN and Tc were calculated for the various design storms (i.e.: 2-year, 10-year, and 100-year storm events). The program's final output provides the data necessary to make the comparison between the pre-development and the post-development project area conditions.

The SWPPP for the proposed site improvements analyzes stormwater runoff at two common points of analysis. The analysis points were established at a location common to the pre-development and the post-development conditions. The project soils have high permeability. The on-site runoff from the first existing POI drains to the existing drainage swale that runs through the eastern portion of the site, under the track running north, and out to the Susquehanna River. The second existing POI collects runoff from the western portion of the site. Runoff from the western half of the casino, existing gravel parking lot, entrance drive, and area between the track and entrance drive all contribute to this POI.

Post-development stormwater management will utilize the infiltration characteristics of the project soils. Underground infiltration chambers with pre-treatment water quality units and vegetated open swales (a Green Infrastructure Technique) have been proposed to capture/treat and provide 100% infiltration into the ground water for the runoff generated from the proposed impervious surfaces for the 2-year, 10-year, and 100-year storm events. There is no point source discharge location for the proposed improvements.



All newly created post-development runoff from the site will be captured, treated, and retained on-site with no offsite discharge; therefore, quality and quantity stormwater management has been provided and post development flows are less than pre-development flows, meeting the ISI target for greenfield development.

EROSION AND SEDIMENT CONTROL MEASURES

The site development plans incorporate permanent features that are to be installed as early as practical during construction. These features will be maintained as permanent measures to reduce soil erosion. The major element of the permanent erosion and sediment control plan is the establishment of permanent dense meadow grass vegetative covering to reduce the amount of sediment runoff during storm events. Erosion control blankets will be used for permanent stabilization for areas with slopes 3:1 or steeper. This immediate stabilization will allow for proper seeding and prevent erosion.