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CIVIL ENGINEERING | LAND PLANNING

Technical Memorandum

STORWATER MANAGEMENT REPORT

Date: December 2, 2016

RE: MassDEP Stormwater Standards Summary
North Square at The Mill District
Amherst, MA 02215

This Stormwater Management Report has been prepared to describe compliance with the Ten Stormwater Management Standards established by MassDEP.

SITE DESCRIPTION

The project site is a 14.14± acre parcel located on the south side of Cowls Road. A triangular parcel, the project site is bound by the properties of Sunderland road to the southwest, the properties of Montague Road to the southeast, and Cowls road to the north. The site is presently occupied by a lumber mill and open warehouse located on the west side of the site. Land cover is generally compacted gravel drives and parking lots with grass and landscape areas along Cowls Road.

Topography of the site is generally flat with moderate slopes at a stock pile next to the lumber mill and along the southwest side of the site at an existing wooded slope. Excluding the stockpile, the high elevation onsite is 192.87± located in the eastern corner of the site. The low elevation onsite is 179.96 ± located on the northwestern corner of the site along Cowls Road. The site generally slopes from east to west.

Presently there are two watersheds onsite; one watershed to the north and one to the south. Stormwater runoff from the northern watershed flows overland and offsite to Cowls Road. Stormwater runoff from the southern watershed flows west to and down an existing asphalt drive. The stormwater runoff flows over the asphalt drive to an existing catch basin which in turn discharges to a small water quality basin which discharges to the Cowls Road drain system. Stormwater runoff from both watersheds discharges to the same 18-inch drain pipe in Cowls Road. This drain pipe discharges to Eastman Brook located to the north of Cowls Road.

PROJECT DESCRIPTION

The proposed project include the demolition of the existing lumber mill and the construction of 2 mixed use buildings and associated parking areas, new grass and landscaped areas, and a new stormwater management system. The proposed stormwater management system will comply to all DEP Stormwater Management Regulations and

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will include deep sump catch basins equipped with oil trap hoods, proprietary stormwater treatment devices, and infiltration/detention systems.

The project site is not within any floodplain. However, a portion of the site is over an aquifer. All stormwater flowing to proposed infiltration/detention systems will meet or exceed MassDEP standards for water quality to ensure the protection of this aquifer.

STORMWATER MANAGEMENT STANDARDS

The project includes the redevelopment of an existing lumber yard into a mixed use residential-commercial development. The project will increase impervious area and therefore will not be considered a redevelopment project. A stormwater management system has been developed for this project, and as such, compliance with the MassDEP Stormwater Management Standards is presumed for the project site. The following is a description of the Ten Stormwater Standards and how they relate to the proposed project.

Standard #1
No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

There will be no new stormwater conveyances discharging to wetlands from the project site. Under proposed conditions, all stormwater from the project site will discharge to an existing 18" drain pipe north of the project site. This existing drain pipe discharges to Eastman Brook located to the north of Cowls Road. Through onsite mitigation, proposed flows through this pipe will not exceed predevelopment conditions. All stormwater runoff from impervious areas onsite will undergo 80% TSS removal prior to discharge per MassDEP Stormwater Standard 4 requirement. Therefore the project will not cause new erosion of the receiving wetland and the existing stormwater conveyance will not discharge untreated stormwater directly to wetlands.

Standard #2
Stormwater management systems must be designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates.

The proposed project will not increase the peak rate of runoff flowing offsite. Stormwater mitigation is achieved through a series of subsurface infiltration/detention systems located under the parking areas throughout the proposed site. The infiltration systems will provide mitigation through detention and infiltration of all stormwater runoff up to and including the 100-year storm event.

Standard #3
The annual recharge from the post-development site shall approximate the annual recharge from the pre-development conditions, based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

There will be no loss of annual recharge to groundwater as a result of the proposed project. The project will incorporate a series of subsurface infiltration/detention systems across the project site to compensate for the loss of annual recharge due to the increase in impervious area on the proposed site.

The project site is classified as a Land Use with Higher Potential Pollutant Loads (LUHPPL) because the project will generate over 1000 vehicle trips per day. Also the southern portion of the project is over an aquifer according to MassGIS Maps. Therefore measures must be taken to ensure that stormwater is clean before discharging to proposed subsurface infiltration/detention systems. Pretreatment for stormwater flowing to proposed infiltration systems will be a minimum of 50% TSS removal which exceeds the MassDEP pretreatment requirement of 44% TSS removal for LUHPPLs.

Standard #4

For new developments, stormwater management systems must be designed to remove 80% of the average annual load (post-development conditions) of Total Suspended Solids (TSS). It is presumed that this standard is met when:

a. *Suitable nonstructural practices for source control and pollution prevention are implemented.*
b. *Stormwater management Best Management Practices (BMPs) are sized to capture the prescribed runoff volume.*
c. *Stormwater management BMPs are maintained as designed.*

This project will use Best Management Practices (BMPs) to provide effective treatment of quantity and quality of stormwater prior to its discharge. These measures will meet or exceed the current state guidelines for stormwater treatment. The primary BMPs for water quality are:

1. Installation of catch basins equipped with 4-ft deep sumps and oil trap hoods.
2. Proprietary Water Quality Devices.
3. Subsurface infiltration/detention systems with isolator rows.

The quality of runoff will be improved by employing measures designed to remove in excess of 80% ± of the TSS found in the stormwater runoff from the developed portion of the site (estimated on an average annual basis). Runoff from paved areas such as the proposed bituminous parking areas, access drives, and some of the surrounding disturbed area will be directed to a series of catch basins, then through proprietary treatment chambers, and to subsurface infiltration/detention systems prior to discharge.

Standard #5

Stormwater discharges from areas with higher potential pollutant loads require the use of specific stormwater management BMPs. The use of infiltration practices without pretreatment is prohibited.

The project site is considered a Land Use with Higher Potential Pollutant Loads (LUHPPL) because the proposed project is expected to generate more than 1,000 vehicle

trips per day. All stormwater from paved areas will undergo a minimum pretreatment of 50% TSS Removal prior to discharge to any subsurface infiltration/detention system which is in excess of the MassDEP 44% TSS removal requirement. Proprietary Water Quality Devices have been designed for a water quality discharge rate equivalent to the first 1-inch water quality volume as required for LUHPPL.

Standard #6

Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for "critical areas". Critical areas are Outstanding Resource Waters (ORWs), shellfish beds, swimming beaches, cold-water fisheries and recharge areas for public water supplies.

The project site is not located in a critical area. However, the stormwater management system is designed to meet this standard.

Standard #7

Redevelopment of previously developed sites must meet the Stormwater Management Regulations to the maximum extent practicable. However, if it is not practicable to meet all the Standards, new stormwater management systems must be designed to improve existing conditions.

As the project will result in an increase in impervious area, the proposed project is not considered a "redevelopment project" under the DEP requirements. The project will therefore comply with all of the Stormwater Management Standards.

Standard #8

Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.

Erosion and sedimentation controls will be implemented prior to and throughout the course of construction. Downslope areas will be protected through the installation of a combination of staked haybales and filter fabric fence to be located along the perimeter and/or elsewhere as required to protect and stabilize earthworks. An Operation and Maintenance Plan and Stormwater Pollution Prevention Plan will be included in the stormwater report.

Standard #9

All stormwater management systems must have an operation and maintenance plan to ensure that systems function as designed.

The post development site will be maintained by the project owner to provide a stabilized site with maintained surfaces, thereby preventing excess materials from contacting surface runoff and minimizing transport of materials within the drain system. A long-term Operation and Maintenance Plan will be included in the stormwater report.

Standard #10
All illicit discharges to the stormwater management system are prohibited.

The proposed project will not have any illicit discharges to the proposed stormwater management system. An Illicit Discharge Compliance Certification will be appended to the stormwater report.

SUMMARY

Significant attention and consideration has been given to proper management of stormwater runoff from the project site. The unique site-specific characteristics and hydrologic setting has been carefully studied to develop a comprehensive plan that fully utilizes and recognizes these attributes. Disposition of stormwater has been considered, with respect to its peak rate, total volume and water quality aspects, to ensure appropriate mitigation upon project completion.

- There will be no adverse impact to any surrounding areas.
- The drainage system will be properly designed to handle the design flow rates.