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Stormwater Report

Site Improvement Plan
Camp Oakdale – Public Works Equipment Storage Garage
176 Meeting House Lane
CLA-6314S
October 7, 2024

Narrative:

The proposed development is the construction of a 4,725-square foot equipment storage garage for the Town Public Works Department on the 79.81-acre Camp Oakdale recreation facility. The development will also include approximately 4,500-square feet of gravel access drive for the new garage. Including the roof and gravel surface as impervious areas, the project will add approximately 0.21-acres of impervious area to the park. Stormwater runoff from the new roof and gravel parking area are design to sheet flow from the developed site easterly towards an existing grass playing field, wooded area, and the property boundary along Meeting House Lane. The proposed site grading has been designed to match the existing drainage patterns as closely as possible. As a low impact development measure stormwater will sheet flow from the development over the vegetated areas.

The site and downstream area are located within a Charlton-Chatfield (73C) soil based on NRCS soil mapping. This soil type is a hydrologic soil group B (HSG B) soil. HSG B soil types are characterized as having a moderate infiltration rate. There is more than 425-feet of overland flow to the nearest downstream property line. Based on the overland travel and soil type, a majority of the runoff from the new impervious area will infiltrate into the ground prior to leaving the property. In our opinion the addition of 0.21-acres of impervious roof and parking on the 79.81-acre property will have a negligible impact on peak runoff rate and will have no negative impact downstream.

Stormwater Quality:

Stormwater run-off from the proposed roof and gravel parking area will flow generally easterly toward Meeting House Lane. The stormwater will travel via overland flow over approximately 240-feet of low gradient (±2% slope) grass athletic playing field and approximately 185-feet of woodlands before entering Meeting House Lane. A study by Yuan *et al.* (2009)[1] reviewed the effectiveness of vegetated buffers on water quality and found that "the sediment trapping efficiency was at least 80% for all buffer widths of greater than approximately 5 m." While slope had an impact on the sediment trapping efficiency in the studies, buffer width in excess of 15 m (49.2-ft) produced sediment trapping efficiencies of 80% or more. As noted, stormwater runoff from the proposed development will flow through more than 425-feet of overland flow through grass and wooded vegetation before leaving the property. This vegetated buffer will provide more than adequate width to treat the stormwater run-off and provide more than 8 times the buffer width

outline in the reference study. This overland flow will provide the 90% removal of total suspended solids in accordance with the 2024 Stormwater Quality Manual.

In our opinion, the proposed development will have no negative impact to downstream properties or infrastructure.

CLA Engineers, Inc.
Kyle Haubert, P.E.

References

[1] Yuan, Yongping, Binger, Ronald L., and Locke, Martin A., 2009, A Review if effectiveness of vegetative buffers on sediment trapping in agricultural areas, *Ecohydrology* 2, 321-336 (2009)