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CONDITIONAL USE PERMIT NARRATIVE

MAP 7, LOT 25

19 PERRY ROAD - MILFORD, NEW HAMPSHIRE

Prepared for:

William T. Mahar

July 3, 2019

I) INTRODUCTION

This project proposes to develop Tax Map Parcel 7-25 with a 9,500 S.F. self-storage facility and a 1,800 S.F. building addition with associated site improvements. The property is located at 19 Perry Road consists of 3.2+/- acres and is currently occupied by GTA Auto Service, a single family residential house and associated site improvement including accessory structures. The property is bordered by a grass field to the north, a commercial development to the north east, old farm land to the east and industrial developments to the south and west.

The subject development will require two Conditional Use Permits. One Conditional Use Permit will be required for the self-storage use under Section 7.13 of the Zoning Ordinance and the other will be required for Section 6.06.6.F as we are seeking relief from Section 6.06.6 Administration to forgo the administrative process and application requirements for submitting a Master Regulating Plan since a portion of this project is located in the Commerce and Community District. We have addressed these Conditional Use Permit requests below.

SELF-STORAGE USE – CONDITIONAL USE PERMIT (SECTION 7.13):

The 2019 Milford Zoning Ordinance addresses Self-Storage Facilities in Section 7.13.10. In the Integrated Commercial-Industrial 2 District Self-Storage Facilities are permitted by the granting of a Conditional Use Permit by the Planning Board.

The ordinances outlines the requirements for a conditional use permit under Section 7.13.3 and the Standards under section 7.13.4. The requirements for these sections are outlined below with responses in bold.

7.13.3 CONDITIONAL USE PERMIT

The following criteria must be met for a Conditional Use Permit to be issued by the Planning Board.

- A. Granting of the application would meet some public need or convenience.

There is a demand and need for this type of facility as research has shown that local facilities are operating at or near capacity.

- B. The property in question is reasonably suited for the use requested.

This property is suited well for the use proposed. The use is compatible with the existing uses on the property and storage of the goods is already done on site with campers,

boats, cars and equipment being stored out behind the existing automotive garage. This project will provide restoration of existing buffer areas and the self-storage site will be situated to the rear of the site where it will be buffered adequately from Perry Road.

- C. There must be appropriate provision for access facilities adequate for the estimated traffic from public streets and sidewalks, so as to assure public safety and to avoid traffic congestion.

The layout and design of the facility accommodates appropriate access to the public street and will provide safe access to the site by emergency response vehicles and the general public. This site has been designed to address public safety and to avoid traffic congestion.

- D. The building design and layout is compatible with the surrounding properties.

The proposed buildings (self-storage buildings) will be compatible with the surrounding properties and the existing buildings on-site. GTA Auto Service's building is a metal building and properties along Perry Road adjacent to the site are also occupied by metal buildings.

- E. Landscaping and screening shall provide adequate visual mitigation to abutting properties.

This project will improve buffering to neighboring properties. This will consist of installing additional landscaping as depicted on the plans. This also includes restoring the wetlands buffer area on-site which is currently occupied by structures, material piles and misc. storage.

7.13.4 STANDARDS

- A. The Planning Board shall evaluate the application for compliance with the following standards:

1. The use of the premises shall be limited to storage only, and shall not be used to manufacture, fabricate, or process goods; service or repair vehicles or boats, trailers, small engines or electrical equipment, or to conduct similar repair activities.

The self-storage portion of the site will be located to the rear of the existing automotive shop. There will be no businesses run out of the self-storage site and the self-storage buildings will be limited to storage only and will thereby meet this requirement.

2. No auctions, garage sales or retail sales of any kind, with the exception of the property owner liquidating abandoned contents of a storage unit, shall be allowed on site.

This project will comply with this requirement.

3. No commercial or industrial activity other than that which pertains to the operation and maintenance of the facility shall be allowed on the site.

The self-storage facility will be located to the rear of the site and will be operated separately from the existing GTA Auto Service business and will therefore comply with this section as reviewed with Town Staff. There will be no businesses allowed to operate out of the self-storage facility.

4. An individual self-service storage unit or private postal boxes within a self-service storage facility shall not be considered premises for the purpose of assigning a legal or business address.

This project will comply with this requirement.

5. Electrical service to storage units shall be for lighting and climate control only. No electrical outlets are permitted inside individual storage units. Lighting fixtures and switches shall be of a secure design that will not allow tapping the fixtures for other purposes.

This project will comply with this requirement.

6. Exterior light fixtures shall comply with Section 6.06 of the Milford Development Regulations.

This project will comply with this requirement. The lighting for this project has been designed to meet the local requirements.

7. If the facility abuts residentially zoned property, the facility loading bays, docks or doors shall have appropriate permanent visual mitigation to as to not be visible from the residential property or from public rights-of-way.

This project does not abutter residentially zoned property but the layout and design of the site does have the doors positioned to face internally with exception of the middle building which will have doors facing Perry Road. This building is situated far back from Perry Road behind the proposed addition to GTA Auto Service. This building will therefore not impact the visual appearance along Perry Road.

8. In order to promote visual compatibility with commercial development allowed in commercial and industrial zones, Self-Storage Facility buildings shall incorporate appropriate landscaping/screening and architectural design features, such as: massing; proportion; façade modulation; exterior building materials and detailing; varied roofline; pedestrian scale; etc.

The proposed self-storage facility is situated to the back of the site a good distance from Perry Road. The location of the use along with the existing landscaping will provide visual compatibility to what exists in the neighborhood. This project will actually consist of removing existing structures on-site that are not compatible so the proposed development will be an improvement to the site and surroundings.

9. All outdoor storage of merchandise or commodities (including motor vehicles) shall be screened from any lot which is in a residence district by a strip at least four (4) feet wide, densely planted with shrubs or trees which are of a type that may be expected to form a year-round dense screen at least six (6) feet high within three (3) years, or by an opaque wall, barrier or uniform fence at least six (6) feet high above finished grade. Such screening shall be maintained in good condition at all times. Such screening or barrier may be interrupted by normal entrances or exits, and shall have no signs hung or attached thereto other than those permitted in the district. As a part of the Site Plan approval, the Planning Board may require additional screening beyond that set forth in Section 6.08 of the Milford Development Regulations if it determines that additional Screening is necessary or appropriate.

The subject property currently provides outdoor storage behind GTA Auto Services. The development of the site as a self-storage complex will eventually eliminate the outdoor storage use. This is addressed on the site plan in the Phasing Notes. The intent of the plan is to Construct Building B in Phase 1 and to allow outdoor storage where Building A will be constructed. This area is currently utilized for outdoor storage and will be screened from

Perry Road as it is situated behind the existing automotive shop. This location will also be buffered from neighboring properties thereby complying with this section.

10. Self-storage facilities shall utilize building materials and architectural features which fit into the context of the surrounding properties.

The design of this site and the proposed buildings is compatible with surrounding properties. The neighboring properties that are developed are all occupied by metal buildings of similar design.

11. Except as provided herein, all property stored on the premises shall be entirely within an enclosed building. Open storage of recreation vehicles, boats and storage pods is permitted, subject to the following:

a. Storage shall occur only in a designated area which is clearly delineated for open storage.

This is detailed in the plan notes (specific location).

b. Such areas shall not exceed 10 percent of the lot or parcel area.

The area of the site where we are proposing outdoor storage is less than 10 percent of the parcel area.

c. Such areas shall be screened from view from property zoned for detached single family residential use and public property, including the public right-of-way.

The proposed location is adequately screened and thereby complies with this section.

d. Storage shall not occur in required parking spaces, drives, parking lanes nor within required building setback areas.

The layout and design of the site meets this requirement.

e. No vehicle maintenance, washing or repair shall be permitted.

This project will comply with this requirement.

12. Vehicle and trailer rental may be permitted on the premises as an accessory use by the Self Storage Facility owner, subject to review and approval as part of Site Plan Approval. Rental vehicles shall not be parked in required parking spaces, drives or parking lanes.

This project does not propose vehicle or trailer rentals at this time.

COMMERCE AND COMMUNITY OVERLAY DISTRICT – CONDITIONAL USE PERMIT (SECTION 6.06.6.F):

The Commerce and Community Overlay District appears to have been intended to incorporate the Brox Properties located off from Perry Road. In reviewing this ordinance the objectives state that this ordinance is intended to provide *“An innovative, environmentally sensitive commercial, industrial, and mixed-use overlay district that is consistent with Milford’s community vision by integrating cost-effective, diverse transportation options and progressive economic development opportunities through comprehensive land use planning”*.

The framework of this ordinance is clearly intended to address a larger project where master planning, phasing and a collaborative process is desired and required. This ordinance requires the preparation of a Mater Regulating Plan which is to include an illustrative Plan, Mater Regulating Plan, a Project Report, a Traffic Impact Report, a Stormwater Management and Erosion Control

Assessment Report and a detailed Phasing Plan. This ordinance also addresses the review process that is required which includes submitting an application for a Master Regulating Plan and a review process with the Expedited Review Committee and the Planning Board. All of the details of this ordinance clearly are intended to address a review of a much larger more complex development.

Although the zoning map shows this district partially overlapping the subject property we do not believe that this ordinance was intended to address a development proposal similar to what is being presented.

To best address this we are seeking a Conditional Use Permit pursuant to Section 6.06.6.F as we are seeking relief from Section 6.06.6 Administration to forgo the administrative process and application requirements for submitting a Master Regulating Plan. The ordinance outlines the requirements for a conditional use permit under Section 6.06.6.F. The requirements for this Conditional Use Permit request are outlined below with responses in bold.

6.06.6.F. Conditional Use Permit

1. Purpose and Intent

The purpose and intent of this section is to provide a mechanism to allow for modifications to the Ordinance, with the intent of providing relief where the application of a standard creates practical difficulties in allowing development to proceed.

2. Application Requirements

a. An application to deviate from the requirements of this Ordinance, within the intent of the Conditional Use Permit, shall be submitted to the Planning Board or its designated agent and shall include:

i. An application in accordance with the Minor Site Plan Regulations

We have submitted a Conditional Use Permit Application.

ii. A narrative description of the deviation from this ordinance

A narrative has been provided above.

iii. Any other documents and/or material required by the Planning Board to determine consistency with this Ordinance.

We have submitted all requested material by Town Staff.

3. Review Process and Appeals

c. A Conditional Use Permit, for relief from the requirements of this Ordinance, may be granted by the Planning Board after proper public notice and public hearing provided the Planning Board finds that the application complies with standards 3.c.i and 3.c.ii below.

i. Consistent with the Commerce and Community District Purpose and Intent, as well as but not limited to:

1. Both public and private buildings and landscaping shall contribute to the physical definition of streetscapes and public spaces; and

The design of this project meets all applicable building and landscaping design standards and the streetscape along Perry Road is maintained.

2. Development shall adequately accommodate motor vehicles and emergency service vehicles, while respecting the pedestrian, bicyclist and the spatial form of public spaces; and

The layout and design adequately accommodates motor vehicles and emergency response vehicles. Safe pedestrian travel is also provided to the existing automotive service shop from the proposed parking areas.

3. Architecture and landscape design shall complement climate, topography, community character, and building practice; and

The proposed architecture and landscape design is compatible with the surrounding areas, improves buffering to the surroundings and meets local requirements. This site will consist of making significant drainage improvements as well and the restoration of the wetlands buffer onsite.

4. Open space and public gathering places shall be provided as locations that reinforce the identity and activity of the District and the community; and

This requirement is not really applicable to this site and proposed development.

5. Does not negatively impact adjacent properties and uses in the District.

This proposal will not negatively impact adjacent properties or uses in the district. All of the improvements to the property should have positive impacts on the neighboring properties.

- ii. Improves public safety within the District and/or in adjacent zoning districts; or provides environmental and natural resource protection; or provides a measureable public benefit (such as increased public space, open space or public amenities).

This project will improve the stormwater management on-site and significantly improve the wetlands buffer area to Tucker Brook. Currently the buffer area is impacted as there are structures, material piles and active storage occurring within 50 feet of Tucker Brook. This project restore this area as depicted on the plans with the removal of these uses and the construction of an infiltration basin with associated landscaping. This will result in an environmental improvement and an improvement to the natural resource.

Thank you for your consideration.

Prepared By:

Chad E. Branon, Project Engineer

RESPONSES TO STAFF REVIEW COMMENTS RECIEVED VIA EMAIL

Hi Lincoln,

Please see our responses to your review comments in red below.

Below please find the preliminary list of questions from Staff for your review and response.

Site Plan and Conditional Use Permit

1. Sheet 1, Owner Signature Block. Please revise the plan to show an owner signature block and have the owner sign the plan. The application will be deemed incomplete until the Community Development Office has received a plan that the owner, engineer, surveyor have all signed. **A signature block has been added to Sheet 1 and the owner has signed the applicable sheets.**
2. Sheet 2, Wetland Buffer. Please revise the plan to show the correct 50' wetland buffer from Tucker Brook to consistent plan notes and following sheets. The plan currently shows a 25' delineated buffer. **The plan has been revised as requested.**
3. Sheets 2 and 4. In viewing the aerial photographs of the property, it would appear that work and excavation has been completed within the 50' buffer area. Please describe the activities that have occurred are ongoing within the 50' wetland buffer area. **The back portion of this site has been used for storage of equipment, cars, campers, etc. for years. This portion of the site has been actively used up to the existing tree lines which is evident from looking at the existing house, structures and vegetation on-site.**
4. Sheet 3, Parking Spaces. Please revise the plan to include a table stating the number of existing and proposed parking spaces. Please revise the plan to show the parking areas for employees, customers, and customer vehicles associated with the garage operation and addition. **This has been added to the plans as requested.**
5. Sheet 3, Parking Spaces. Please clarify if there will be any outside storage of vehicles, boats, RVs associated with the storage facility? If yes, please update the plan accordingly. **The outdoor storage of vehicles has been addressed in Note #2 on Sheet 3. There is no long term plans for outdoor storage once the site construction is completed.**
6. Sheet 3, Designated Snow Storage Areas. A large snow storage area is located within the 50 foot wetland buffer to Tucker Brook and over the proposed detention basin. Please explain the rationale for locating snow storage areas within the buffer zone and what alternatives were considered. The primary concern is the use of chlorides and other deicing agents to manage the impervious surface around the site and long-term impact to Tucker Brook. **This plan really consists of restoring the buffer area. All of the existing disturbances of the buffer area, in the project area, will be removed and the area will be restored through the construction of our infiltration basin. This basin has been designed to handle extreme precipitation storm events and any snow melt will make its way into this basin and be infiltrated and treated through the soils. There will be no direct discharges into the adjacent jurisdictional area. Currently there is no stormwater mitigation on-site so all snow would melt and run into the wetlands. Given this we believe this design will be an improvement over the existing conditions. Also self storage sites are very low volume facilities so ice treatment is less critical and is most often treated with the application of sand.**
7. Sheet 3, Proposed Snow Management Plan. Given the proximity of the project to the Tucker Brook, please discuss the proposed snow maintenance and management plan. **The owner plans to handle the snow maintenance and management himself which would consist of plowing the site as needed and applying sand to the surface as needed. Salt use would**

be restricted to use only when conditions warrant and cannot be adequately treated with sand.

8. Sheet 4, Proposed Drainage Basin. The drainage basin is located within the 50 foot wetland buffer from Tucker Brook. In accordance with Section 6.02.6.B of the Milford Zoning Ordinance, the use would require a Special Exception from the Board of Adjustment. The drainage basin is not a listed permitted use in Section 6.02.5 Accepted Uses, B. Buffer Zones. **As discussed this project does not propose an additional impacts to the wetlands buffer area. In fact this project is really proposes to restore the existing historical impacts to the buffer area. This will included the removal of structures, materials, storage, etc. in these areas and the restoration of this buffer area through the construction of a vegetated infiltration basin, loaming and seeding and landscaping the area as depicted on the attached plan set. When you consider this the project will actually make the site more compliant.**
9. Sheet 5, Landscaping and Lighting Plan. No detail is provided to show how the previously disturbed areas within the 50 foot wetland buffer will be restored. Please revise the plan to show the restoration of the previously disturbed areas located north of the proposed Build C and the detention basin. As part of the update, please revise the construction detail sheets to include the planting and maintenance specifications and best management practices. Preference should be given to using a wetland seedmix. **The plans have been revised to incorporate restoration and landscaping details. As discussed this plan really is a restoration plan for the buffer areas. Structures, storage of materials, etc. will no longer be located in the buffer area and the area will be graded and re-established with vegetation as depicted on the plans. The appropriate seed mixtures have been selected for the soil conditions.**
10. Sheets 4 and 5, Detention Basin. Please revise the plan to show the engineering and construction details for the detention basin. Currently, no detail is provided. Please explain why the detention basin could not be designed as a fully function rain garden complete with plantings? Given its current proposed location within the 50' wetland buffer to Tucker Brook, the applicant should make every effort to improve stormwater management/water quality and mitigate impacts to Tucker Brook. **The plans have been revised to incorporate the suggested construction details. As previously discussed this plan will restore the buffer areas and all stormwater will be collected and infiltrated through the closed drainage system and proposed infiltration basin. This design will improve stormwater management and quality on-site and will certainly mitigate the proposed development and will not have adverse impacts to Tucker Brook.**
11. Sheet 5, Landscaping and Lighting Plan. Please revise the plans to include additional visual screening along the south eastern portion the property abutting Lot 7-23. **The plans have been revised as requested.**
12. Sheet 5, Landscaping and Lighting Plan. Please confirm if the front part of the property contains a minimum of a 10' wide landscaped area. **The front part of the property does contain a minimum of a 10 foot wide landscaped area.**
13. Sheet 5, Landscaping and Lighting Plan. Will the project include a dumpster? If yes, please provide the location and associated engineering, construction, and landscape design elements on a revised plan. **The project is not anticipating the use of a dumpster as noted but we have included a dumpster location to the rear of the existing auto garage in case the owner decides to add one to the site in the future.**
14. Sheet 5, Landscaping and Lighting Plan. Please revise the plan to include all existing and proposed signage. Please include the associated engineering and construction details. **The site plan and details incorporate any proposed signage. The sign for the site is currently a building mounted wall sign so there are no free standing signs on-site.**
15. General Question. Please submit building elevations. **Please see the attached photos which represent typical self-storage facilities.**
16. Please amend the Conditional Use Application to include a brief narrative articulated

compliance with the requirements stipulated in Section 7.13.0 Self Storage Facilities. **Please see the attached narrative addressing the requested Conditional Use Permits.**

Thank you, Chad

Chad E. Branon, P.E.

Civil Engineer / Principal



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June 23, 2019

**PLEASE SEE OUR RESPONSES
TO THESE COMMENTS IN RED
BELOW EACH COMMENT**

Lincoln Daley, Community Development Director
Town of Milford
1 Union Square
Milford, NH 03055

Re: Self Storage Development, 19 Perry Road, Site Plan (Map 7, Lot 25) – Drainage Review

Dear Mr. Daley:

We reviewed the 8-sheet plan set a revision date of May 2, 2019 and Stormwater Management Report dated May 1, 2019 prepared by Fieldstone Land Consultants in accordance with our agreement with the Town. As requested, our review was limited the drainage system only. Based on that review and a site visit, we offer the following comments:

1. The Estimated Seasonal High-Water Table and infiltration rates need to be determined by a test pit/testing in the stormwater basin particularly since infiltration is a critical element of the stormwater mitigation design. **Test Pits were completed and the locations have been added to the plans. Soil testing was completed on-site and NRCS rates were used as they were more conservative.**
2. Hoods on the catch basin outlet pipes are very important to prevent materials from the paved areas from clogging the infiltration system pipes and stone prematurely. Add hoods to all catch basin outlets. **Hoods have been added to all catch basin outlets as requested and a construction detail has been added to the plan set.**
3. Add a construction detail for the pond overflow that depicts shape, slope and surface materials (assume it will be grassed overflow). **A construction detail has been added to the plan set as requested.**
4. In the calculations, rainfall amounts used (NRCS) are lower than the Extreme Precipitation Tables from the Northeast Regional Climate Center which is the standard practice in NH. Clarify why different precipitation values were used for this analysis. **The stormwater management design has been revised to model Extreme Precipitation Rates and a revised summary has been included.**

If you have any questions or need any additional information, please feel free to contact me at 603-413-6650 or on my cell phone at 603-731-1562 or by email at MVignale@kvpllc.com.

Sincerely,

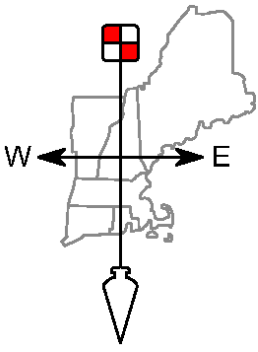
KV Partners LLC



Michael S. Vignale, P.E.
Principal Engineer



Example Elevation of Self-Storage Building



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STORMWATER MANAGEMENT REPORT

MAP 7, LOT 25

MILFORD, NEW HAMPSHIRE

Prepared for:

William T. Mahar

Revised: July 3, 2019

I) INTRODUCTION

The following are stormwater drainage calculations for the proposed self-storage development and building addition at 19 Perry Road in Milford, NH. The subject parcel is 3.2± acres and is bordered by a grass field to the north, a commercial development to the north east, old farm land to the east and industrial developments to the south and west. The applicant is proposing a 9,500 S.F. self-storage facility and an 1,800 S.F. building addition with associated site improvements. The development will be serviced by underground utilities using existing connections. The project is located at 19 Perry Road and is known as Lot 25 on the Town of Milford Assessor's Map 7.

The purpose of this report is to analyze the qualitative and quantitative impacts of the proposed development. The objective of the proposed stormwater management system for this project is to mitigate any increases resulting from the proposed development and to meet the drainage guidelines set forth in the Town of Milford Stormwater Management & Erosion Control Regulations.

II) SITE DESCRIPTION (EXISTING)

The subject property is comprised of 3.2± acres. The parcel is currently developed with a single-family home and an automotive service company (GTA Auto Service). The subject parcel has numerous storage buildings/trailers and a main garage building. There is also a large portion of outdoor storage with associated gravel areas. In the front of the site there is parking for the vehicles being serviced that consists of both gravel and paved parking areas. The site is comprised almost entirely of Hinckley loamy sand which is a Hydrologic Soil Group "A" soil. There is also a portion of Rippowam fine sandy loam on the other side of Tucker Brook which is an HSG "A/D" soil.

The majority of the site drains to a 15" RCP culvert located at the front of the site near the south east corner of the property. The ground cover is primarily gravel storage areas with some open lawn area around the existing house. There is both gravel and paved parking areas in front of the main garage and there are sparse woods around the perimeter of the lot. The subject parcel is also bisected by Tucker Brook which runs west to east through the property. The remainder of the site not draining to the 15" RCP drains to the north discharging directly into Tucker Brook. The site is relatively flat throughout with the exception of the top of bank of Tucker Brook and the abutting property to the south.

III) METHODOLOGY

The quantity of runoff and the conveyance of that flow through the site are determined using the software package HydroCAD r 10.0 by HydroCAD Software Solutions, LLC. HydroCAD is a computer aided design program for modeling storm water hydrology based on the Soil Conservation Service (SCS) TR-20 method combined with standard hydraulics calculations used to model detention basins and culverts.

Stormwater management systems and erosion control are designed in accordance with the methodology for the "Best Management Practices" (BMP's), as outlined in the New Hampshire Storm Water Manual, Volume 2.

IV) DRAINAGE DESIGN

Town of Milford Stormwater Management & Erosion Control Regulations requires that there be no increase in the peak rate of runoff for two (2) year frequency storm over pre-development conditions. The regulations also require that drainage infrastructure be designed to convey the twenty-five (25) year frequency storm and that infiltration/retention BMP's be designed to convey the fifty (50) year frequency storm events. This report has been prepared utilizing the Extreme Precipitation Tables from the Northeast Regional Climate Center. These design storms have been analyzed and the results are attached. A comparison of the pre and post-development peak flow rates and volume of runoff for the 2, 10 and 25 year storm events are shown in Tables 1 & 2 below.

Pre-Development Drainage Conditions:

As can be seen on the Pre-Development Drainage Plan, the majority of the site drains to a 15" RCP (OP1) culvert located at the front of the site near the south east corner of the property. This area consists of the majority of runoff from the existing storage buildings/trailers and the main garage with associated gravel/paved parking areas. A small portion of the site (2S) sheet flows directly into Tucker Brook (OP2) which consists of the stormwater runoff from the existing single-family home and adjacent lawn areas.

Post-Development Drainage Conditions:

As can be seen on the drainage plan, this project proposes to construct an infiltration basin and a series of catch basins with leaching trenches to mitigate any increase in the stormwater runoff peak rates and volumes. Subcatchment 103S consists of the stormwater runoff from the entire proposed gravel/paved areas and nearly all of the proposed buildings. This stormwater runoff is captured by a series of catch basins with leaching trenches (P103) and outlets to the proposed infiltration basin (P102). Subcatchment 102S drains to the proposed infiltration basin (P102) and consists primarily of the stormwater runoff from the grassed areas but also includes a portion of roof runoff from the self-storage buildings. The proposed infiltration basin then outlets via a grass spillway to Tucker Brook (OP2). The stormwater runoff not captured by either of the stormwater

management practices (Subcatchments 101S and 201S) sheet flows directly to each observation point for the site in a similar manner as the pre-development condition. Basin preparation notes have been included on the plans to assure that exfiltration rates are maintained. The slowest default exfiltration (Ksat) rate for Hinckley loamy sand is 6 in./hr. An exfiltration rate of 3 in./hr. was used in the design calculations providing a factor of safety of 2.0.

V) SUMMARY

The intent of the stormwater management system for this project is to address the qualitative and quantitative aspects of the stormwater runoff so that there are no downstream adverse impacts created by the project. To improve the on-site drainage on the subject parcel this project proposes an infiltration basin and a series of catch basins with leaching trenches that will be constructed to current standards. The net result is that new paved (optional)/gravel areas will receive qualitative treatment and the post-development volumes and the peak rates of runoff leaving the site will be maintained.

The following tables are a summary of the attached calculations and show a comparison of the peak flow rates and volumes at the outlet points for the site. The values presented are based on pre- and post-development conditions.

Table 1: Peak Flow Rates (CFS)/Volume (AF) to OP1 – with Post-Development Infiltration

STORM FREQUENCY	PRE-DEV. RUNOFF (CFS/AF)	POST-DEV. RUNOFF (CFS/AF)	CHANGE (CFS/AF)
2-YEAR	0.40/0.064	0.09/0.021	-0.31/-0.043
10-YEAR	1.85/0.203	0.69/0.087	-1.16/-0.116
25-YEAR	3.37/0.344	1.47/0.159	-1.90/-0.185

Table 2: Peak Flow Rates (CFS)/Volume (AF) to OP2 – with Post-Development Infiltration

STORM FREQUENCY	PRE-DEV. RUNOFF (CFS/AF)	POST-DEV. RUNOFF (CFS/AF)	CHANGE (CFS/AF)
2-YEAR	0.00/0.000	0.00/0.000	0.00/0.000
10-YEAR	0.04/0.010	0.02/0.005	-0.02/-0.005
25-YEAR	0.17/0.024	0.09/0.015	-0.08/-0.009

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	71.721 degrees West
Latitude	42.841 degrees North
Elevation	0 feet
Date/Time	Wed, 10 Aug 2016 10:31:03 -0400

Extreme Precipitation Estimates

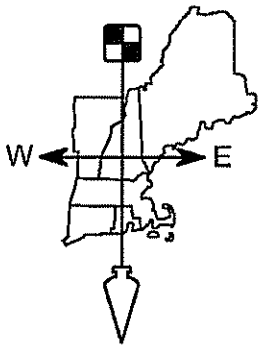
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.42	0.53	0.69	0.86	1.08	1yr	0.75	1.01	1.25	1.57	1.97	2.48	2.75	1yr	2.20	2.64	3.04	3.81	4.38	1yr
2yr	0.33	0.51	0.64	0.84	1.06	1.33	2yr	0.91	1.21	1.53	1.91	2.39	2.98	3.34	2yr	2.64	3.21	3.72	4.45	5.07	2yr
5yr	0.39	0.61	0.77	1.03	1.32	1.67	5yr	1.14	1.51	1.94	2.42	3.01	3.73	4.26	5yr	3.31	4.09	4.73	5.58	6.24	5yr
10yr	0.44	0.70	0.88	1.20	1.56	1.99	10yr	1.34	1.79	2.31	2.89	3.59	4.43	5.12	10yr	3.92	4.92	5.67	6.62	7.30	10yr
25yr	0.53	0.83	1.06	1.46	1.94	2.50	25yr	1.67	2.24	2.92	3.66	4.53	5.57	6.55	25yr	4.93	6.30	7.21	8.31	9.00	25yr
50yr	0.59	0.94	1.21	1.70	2.30	2.99	50yr	1.98	2.65	3.50	4.38	5.41	6.62	7.89	50yr	5.86	7.59	8.65	9.87	10.55	50yr
100yr	0.68	1.09	1.41	2.00	2.72	3.56	100yr	2.35	3.14	4.17	5.23	6.45	7.87	9.52	100yr	6.97	9.15	10.38	11.73	12.37	100yr
200yr	0.77	1.25	1.63	2.33	3.22	4.25	200yr	2.78	3.73	4.99	6.25	7.70	9.36	11.49	200yr	8.29	11.05	12.47	13.94	14.52	200yr
500yr	0.92	1.52	1.98	2.88	4.04	5.36	500yr	3.49	4.68	6.30	7.91	9.73	11.79	14.76	500yr	10.44	14.19	15.88	17.54	17.94	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.20	0.32	0.38	0.52	0.64	0.77	1yr	0.55	0.75	1.01	1.35	1.68	2.21	2.40	1yr	1.96	2.31	2.52	3.45	3.85	1yr
2yr	0.32	0.49	0.60	0.82	1.01	1.19	2yr	0.87	1.17	1.35	1.75	2.24	2.89	3.24	2yr	2.56	3.12	3.60	4.32	4.93	2yr
5yr	0.36	0.55	0.68	0.93	1.19	1.39	5yr	1.02	1.36	1.62	2.10	2.68	3.46	3.95	5yr	3.06	3.80	4.35	5.16	5.82	5yr
10yr	0.39	0.60	0.74	1.04	1.34	1.56	10yr	1.15	1.53	1.76	2.39	3.04	4.00	4.60	10yr	3.54	4.42	5.02	5.89	6.60	10yr
25yr	0.44	0.67	0.83	1.19	1.56	1.81	25yr	1.35	1.77	2.04	2.84	3.56	4.74	5.64	25yr	4.20	5.42	6.07	7.02	7.79	25yr
50yr	0.47	0.72	0.89	1.28	1.73	2.04	50yr	1.49	1.99	2.29	3.26	4.03	5.45	6.60	50yr	4.82	6.35	7.00	8.01	8.83	50yr
100yr	0.50	0.76	0.95	1.37	1.88	2.29	100yr	1.63	2.24	2.57	3.21	4.57	6.26	7.75	100yr	5.54	7.45	8.10	9.13	10.02	100yr
200yr	0.54	0.81	1.03	1.49	2.08	2.58	200yr	1.79	2.52	2.86	3.58	5.21	7.21	9.12	200yr	6.38	8.77	9.36	10.41	11.36	200yr
500yr	0.59	0.89	1.14	1.65	2.35	3.04	500yr	2.03	2.97	3.35	4.14	6.22	8.69	11.37	500yr	7.69	10.93	11.35	12.37	13.43	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.32	0.49	0.59	0.80	0.98	1.17	1yr	0.85	1.14	1.29	1.69	2.10	2.66	2.98	1yr	2.35	2.87	3.34	4.27	4.86	1yr
2yr	0.36	0.56	0.68	0.93	1.14	1.32	2yr	0.99	1.29	1.49	1.91	2.45	3.09	3.46	2yr	2.73	3.33	3.87	4.61	5.23	2yr
5yr	0.44	0.67	0.83	1.14	1.45	1.68	5yr	1.26	1.64	1.86	2.36	2.95	4.03	4.58	5yr	3.57	4.40	5.13	6.01	6.68	5yr
10yr	0.51	0.79	0.98	1.37	1.77	2.06	10yr	1.52	2.01	2.32	2.81	3.48	4.92	5.68	10yr	4.35	5.46	6.36	7.34	8.06	10yr
25yr	0.65	0.99	1.23	1.76	2.32	2.68	25yr	2.00	2.62	3.00	3.53	4.30	6.45	7.52	25yr	5.71	7.23	8.46	9.61	10.32	25yr
50yr	0.78	1.19	1.48	2.12	2.86	3.28	50yr	2.47	3.20	3.66	4.20	5.05	7.91	9.30	50yr	7.00	8.94	10.51	11.80	12.46	50yr
100yr	0.94	1.42	1.78	2.56	3.52	4.02	100yr	3.04	3.93	4.46	5.65	5.93	9.69	11.50	100yr	8.58	11.06	13.04	14.48	15.05	100yr
200yr	1.13	1.70	2.15	3.11	4.34	4.91	200yr	3.74	4.80	5.42	6.86	6.98	11.87	14.22	200yr	10.51	13.67	16.19	17.80	18.20	200yr
500yr	1.45	2.16	2.77	4.03	5.73	6.37	500yr	4.95	6.23	7.04	8.89	8.62	15.51	18.82	500yr	13.73	18.09	21.55	23.38	23.41	500yr



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TEST PIT DATA
WILLIAM T. MAHAR
19 PERRY ROAD
MILFORD, NH

5/9/19

Test Pit #1

0-10" - 10YR 3/3 Dark Brown, gravelly loam, granular friable

10-84" - 2.5Y 6/4 Light Yellowish Brown, gravelly fine-to-coarse sand, single grain, loose (debris/fill)

ESHWT = >84" Observed Water = None Ledge/Boulders = >84" Roots = 48"

Perc Rate = 2 min/in @ 32"

5/9/19

Test Pit #2

0-10" - 10YR 3/3 Dark Brown, loam, granular, friable

10-18" - 2.5Y 6/6 Olive Yellow, very fine sandy loam, granular, friable

18-28" - 10YR 3/3 Dark Brown, loam, weak blocky, friable

28-84" - 2.5Y 6/4 Light Yellowish Brown, fine-to-coarse sand, single grain, loose

ESHWT = >84" Observed Water = None Ledge/Boulders = >84" Roots = 52"

Perc Rate = 2 min/in @ 24"

5/9/19

Test Pit #1

0-1" - 2.5Y 6/4 Light Yellowish Brown, gravelly fine-to-coarse sand, single grain, loose (parking surface)

1-84" - 2.5Y 6/4 Light Yellowish Brown, gravelly coarse-to-fine sand, single grain, loose, few stones

ESHWT = >84" Observed Water = None Ledge/Boulders = >84" Roots = 48"

Perc Rate = 2 min/in @ 32"

Test Pits were logged by:

Kenneth Robinson
NH Licensed Designer #1896

1968.00

