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Drainage Report
Preliminary Subdivision Plan
Randall Rd. Extension
Reading, Ma 01867

Prepared for
MG Hall Contractors
286 Park St.
North Reading, Ma 01864

The following report is submitted to address section 5.1.1 of Town of Reading Subdivision Regulations.

This project consists of extending Randall Road approximately 200 feet. The existing cul-de-sac located in front of #39 Randall Rd will be removed and a new cul-de-sac will be constructed at the end of the 200 feet extension. Three new dwellings will be constructed along the extended road.

The total area subject to development is 83,760 sf. However, approximately 20% of that area will remain undisturbed. The existing impervious area consists of the existing cul-de-sac and the roof area at #25 Springvale Rd. This area is equal to 6,835 sf. The remainder of the site is wooded and equals 76,925 sf.

A portion of the wooded area is wetland subject to the jurisdiction of the Reading Conservation Commission. The applicant has appeared before the Conservation Commission and the Wetland Boundary has been approved.

The proposed impervious area consists of the extended roadway and new cul-de-sac, three new roofs and driveways, and the roof area at #25 Springvale Rd. This area is equal to 19,958 sf. Grass and lawn areas will occupy 49,162 sf. The remaining wooded area amounts to approximately 15,000 sf.

A comparison of runoff and volumes is as follows

Storm Frequency	Rainfall	Existing Site	Proposed Site
2 year	3.1 inches	0.07 cfs	.019 cfs
10 year	4.5	0.65	1.09
25 year	5.3	1.29	1.86
100 year	6.5	2.47	3.19

Attenuation of the runoff increase will be mitigated by a pocket wetland to be constructed on Lot 2 in the location where the existing cul-de-sac will be removed. Overflow from the pocket wetland will discharge to the existing 24 RCP culvert located west of #36 Randall Rd. This pocket wetland will also provide water quality.

Groundwater recharge will be facilitated by a subsurface recharge field located on Lot 1 as well as by recharge chambers located at the downspouts of each individual dwelling.

Runoff volumes and rates for each storm frequency are attached.

John M. McQuilkin

John F. McQuilkin, PE

Summary for Subcatchment 1S: Site

Runoff = 0.07 cfs @ 12.53 hrs, Volume= 0.024 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.10"

	Area (sf)	CN	Description
*	6,835	98	Impervious
	23,234	30	Woods, Good, HSG A
	53,691	55	Woods, Good, HSG B
	83,760	52	Weighted Average
	76,925		91.84% Pervious Area
	6,835		8.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry, Direct Entry**

Summary for Subcatchment 1S: Site

Runoff = 0.65 cfs @ 12.26 hrs, Volume= 0.095 af, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

	Area (sf)	CN	Description
*	6,835	98	Impervious
	23,234	30	Woods, Good, HSG A
	53,691	55	Woods, Good, HSG B
	83,760	52	Weighted Average
	76,925		91.84% Pervious Area
	6,835		8.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry, Direct Entry**

Summary for Subcatchment 1S: Site

Runoff = 1.29 cfs @ 12.21 hrs, Volume= 0.151 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

	Area (sf)	CN	Description
*	6,835	98	Impervious
	23,234	30	Woods, Good, HSG A
	53,691	55	Woods, Good, HSG B
	83,760	52	Weighted Average
	76,925		91.84% Pervious Area
	6,835		8.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry, Direct Entry**

Summary for Subcatchment 1S: Site

Runoff = 2.47 cfs @ 12.19 hrs, Volume= 0.250 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

	Area (sf)	CN	Description
*	6,835	98	Impervious
	23,234	30	Woods, Good, HSG A
	53,691	55	Woods, Good, HSG B
	83,760	52	Weighted Average
	76,925		91.84% Pervious Area
	6,835		8.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry, Direct Entry**

Summary for Subcatchment 1S: Site

Runoff = 0.19 cfs @ 12.42 hrs, Volume= 0.040 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.10"

	Area (sf)	CN	Description
*	19,598	98	Impervious
	49,162	39	>75% Grass cover, Good, HSG A
	15,000	55	Woods, Good, HSG B
	83,760	56	Weighted Average
	64,162		76.60% Pervious Area
	19,598		23.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry, Direct Entry**

Summary for Subcatchment 1S: Site

Runoff = 1.09 cfs @ 12.21 hrs, Volume= 0.127 af, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

	Area (sf)	CN	Description
*	19,598	98	Impervious
	49,162	39	>75% Grass cover, Good, HSG A
	15,000	55	Woods, Good, HSG B
	83,760	56	Weighted Average
	64,162		76.60% Pervious Area
	19,598		23.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry, Direct Entry**

Summary for Subcatchment 1S: Site

Runoff = 1.86 cfs @ 12.20 hrs, Volume= 0.192 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

	Area (sf)	CN	Description
*	19,598	98	Impervious
	49,162	39	>75% Grass cover, Good, HSG A
	15,000	55	Woods, Good, HSG B
	83,760	56	Weighted Average
	64,162		76.60% Pervious Area
	19,598		23.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry, Direct Entry**

Summary for Subcatchment 1S: Site

Runoff = 3.19 cfs @ 12.19 hrs, Volume= 0.304 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.50"

	Area (sf)	CN	Description
*	19,598	98	Impervious
	49,162	39	>75% Grass cover, Good, HSG A
	15,000	55	Woods, Good, HSG B
	83,760	56	Weighted Average
	64,162		76.60% Pervious Area
	19,598		23.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0					**Direct Entry, Direct Entry**