



MILESTONE PONDERAY

CITY OF PONDERAY, IDAHO

Project Summary

The purpose of this narrative shall be to describe the proposed drainage impacts to the above noted project site in the City of Ponderay, Idaho, more particularly described as follows:

Parcel Information

- Parcel:
 - RPP076600207B0A & RPP076600207C0A
- Parcel Address:
 - 1005 Schweitzer Plaza Drive, Ponderay, Idaho 83852
- Owner:
 - Milestone Investments, LLC
- Legal:
 - Lot 7B and Lot 7C, Block 2, Schweitzer Plaza Replat of Lot 7
- Zoning:
 - Commercial

Improvements

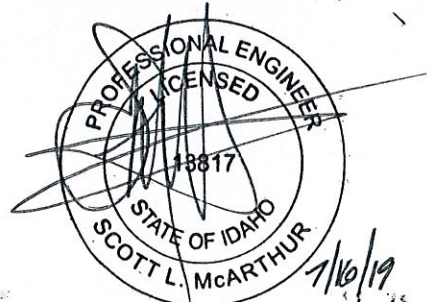
The site is currently vacant, with an existing gravel surface that will partially be revamped for additional site storage. The proposed site improvements shall include a new 5,000 square foot structure, and an overlay of a crushed gravel travel surface shall be improved on a portion of the property for a new parking area and site access (post grading).

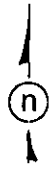
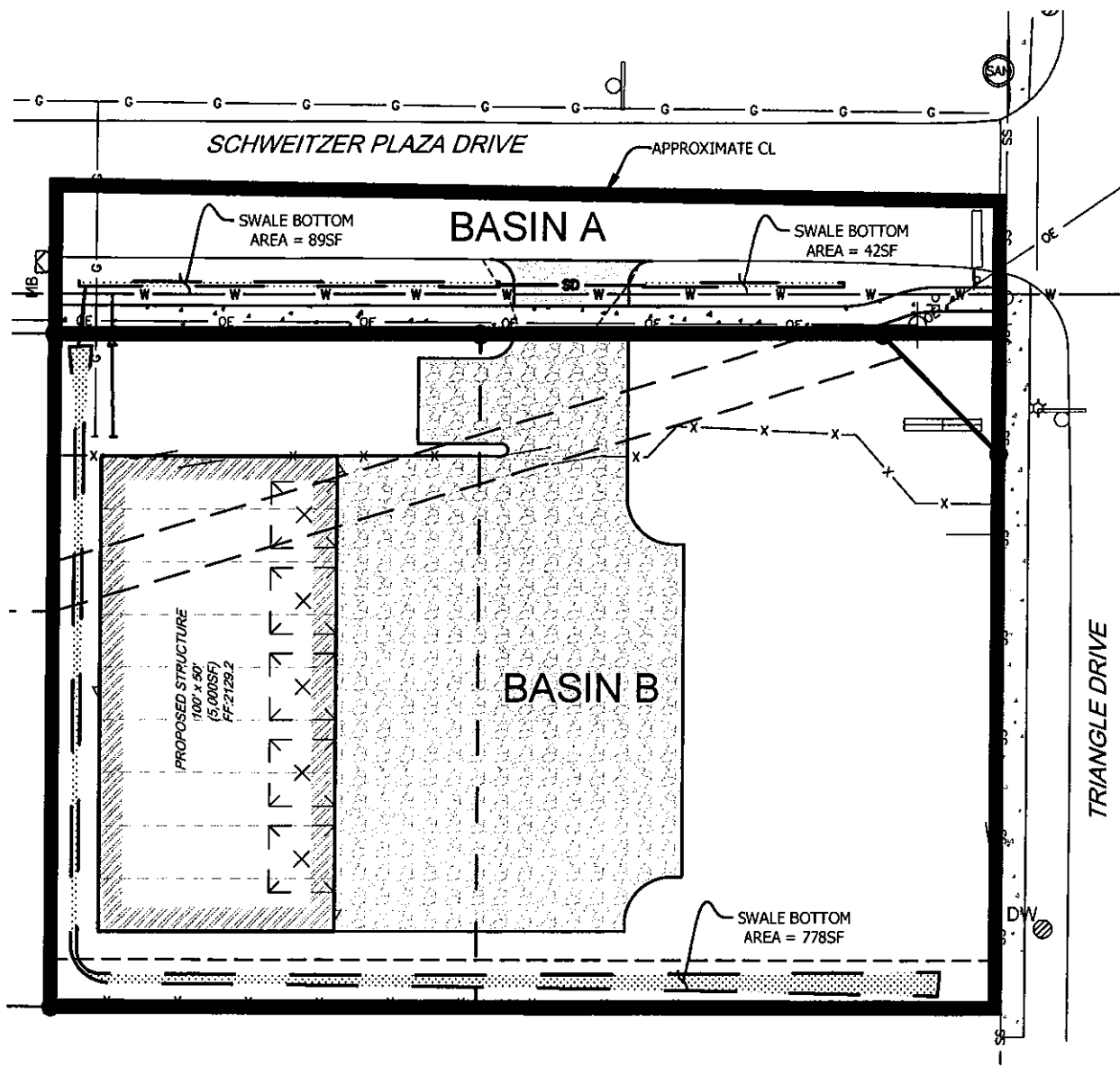
Stormwater Conveyance and Collection

There are no existing stormwater collection improvements on the property. The proposed stormwater collection basins shall collect stormwater runoff from the site impervious surfaces (via overland flow with minimal site grades to reduce erosion concerns), and outlet the stormwater in a historical fashion to the public right of way stormwater ditch line. See the attached stormwater calculations for additional information.

Thank you for your time and consideration of this submittal. Please contact me at our office if you have any questions or comments.

Sincerely,





BASIN A - EXISTING CONDITIONS

Basin: A

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Rational Method

*Reference 13.10 - Rational Method, Page 674, Hydrology and Hydraulic Systems, 2nd Addition - Gupta

IMPERVIOUS AREA

	<i>SF</i>	<i>Acres</i>	
Asphalt:	2,789	0.064	(SCHWEITZER PLZ)
Concrete:	0	0.000	(SIDEWALK)
Gravel:	0	0.000	(ONSITE)

BASIN AREA

	<i>SF</i>	<i>Acres</i>
Total Impervious Area (IA):	2,789	0.064
Total Permeable Area (PA):	3,156	0.072
Total Basin Area:	5,945	0.136

RUNOFF COEFFICIENT (C)

Impervious Area (C_{IA}) =	0.90
Permeable Area (C_{PA}) =	0.40

*Reference Table 13.5, Page 677, Hydrology and Hydraulic Systems, 2nd Addition - Gupta

COMPOSITE RUNOFF COEFFICIENT (C)

	<i>unitless</i>
$C = IA (C_{IA}) + PA (C_{PA}) / \text{Total Basin Area} =$	0.63

RAINFALL INTENSITY (i)

	<i>in/hr</i>
25-year event at T_c =	2.62

*Reference Zone C IDF Curve for Idaho

BASIN A - EXISTING CONDITIONS

TIME OF CONCENTRATION (T_C)

<i>minutes</i>			
T_C	=	5.0	(5 minute minimum)
$T_C = 0.42(nL)^{0.8}/P_2^{0.5}S^{0.4}$		0.7	
L:		25	ft
n:		0.02	(Manning's n, Table 13.7, Page 681)
P_2 :		2.8	(Rainfall intensity, inches per hour)
S:		0.02	ft/ft

*Reference NRCS Equation 13.09, for first 300' of flow, and NRCS Equation 13.10, for remaining flow length in drainage, Page 681, Hydrology and Hydraulic Systems, 2nd Addition - Gupta, and equations

13.09: $T_t = 0.42(nL)^{0.8}/P_2^{0.5}S^{0.4}$ and 13.10: $T_t = L/V$

STORMWATER PEAK FLOW RATE (Q)

<i>cfs</i>		
$Q = C i A$	=	0.23

BASIN A - EXISTING CONDITIONS

Basin: A

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Bowstring Method

*Reference Bowstring Method, Page 5-23, Spokane Regional Stormwater Manual, April 2008

BOWSTRING METHOD NOTES FOR SPREADSHEET DEVELOPMENT

1. Rainfall Intensity Coefficients , m and n, derived by NOAA, under Atlas 2

Where $i = m/T_c^n$

m = 6.98

n = 0.609

*Reference NOAA Atlas 2 for 25-year Event Coefficients for Lat/Long of Site

2. Hydrograph Volume (V_t) is derived through the use of the following equations:

When $t \leq T_c$ use $T_c = 1.34 \times Q \times t$

and

When $t > T_c$, use $T_c = (Q \times t) + (0.34 \times Q \times T_c)$

3. Outflow Volume (V_{out}) was derived by multiplying the outflow rate by the event duration in seconds

4. $Q_{out} = 0.010$ cfs, (assumed outfall)

t	t	i	Q	V_t	Q_{out}	V_{out}	Required Storage
(min)	(sec)	in/hr	cfs	CF	cfs	CF	CF
5	300	2.62	0.227	91.19	0.01	3	88.19
10	600	1.72	0.149	119.58	0.01	6	113.58
15	900	1.34	0.116	140.12	0.01	9	131.12
20	1200	1.13	0.098	156.80	0.01	12	144.80
25	1500	0.98	0.085	171.10	0.01	15	156.10
30	1800	0.88	0.076	183.74	0.01	18	165.74
35	2100	0.80	0.069	195.16	0.01	21	174.16
40	2400	0.74	0.064	205.62	0.01	24	181.62
45	2700	0.69	0.060	215.31	0.01	27	188.31
50	3000	0.64	0.056	224.36	0.01	30	194.36
55	3300	0.61	0.053	232.88	0.01	33	199.88
60	3600	0.58	0.050	240.94	0.01	36	204.94
65	3900	0.55	0.048	248.60	0.01	39	209.60
70	4200	0.53	0.045	255.91	0.01	42	213.91
75	4500	0.50	0.044	262.91	0.01	45	217.91
80	4800	0.48	0.042	269.63	0.01	48	221.63
85	5100	0.47	0.040	276.09	0.01	51	225.09

BASIN A - EXISTING CONDITIONS

90	5400	0.45	0.039	282.33	0.01	54	228.33
95	5700	0.44	0.038	288.37	0.01	57	231.37
100	6000	0.42	0.037	294.21	0.01	60	234.21
105	6300	0.41	0.036	299.87	0.01	63	236.87
110	6600	0.40	0.035	305.38	0.01	66	239.38
115	6900	0.39	0.034	310.73	0.01	69	241.73
120	7200	0.38	0.033	315.95	0.01	72	243.95
125	7500	0.37	0.032	321.03	0.01	75	246.03
130	7800	0.36	0.031	325.99	0.01	78	247.99
135	8100	0.35	0.030	330.84	0.01	81	249.84
140	8400	0.34	0.030	335.57	0.01	84	251.57
145	8700	0.34	0.029	340.21	0.01	87	253.21
150	9000	0.33	0.029	344.75	0.01	90	254.75
155	9300	0.32	0.028	349.20	0.01	93	256.20
160	9600	0.32	0.027	353.56	0.01	96	257.56
165	9900	0.31	0.027	357.84	0.01	99	258.84
170	10200	0.31	0.026	362.04	0.01	102	260.04
175	10500	0.30	0.026	366.17	0.01	105	261.17
180	10800	0.30	0.026	370.22	0.01	108	262.22
360	21600	0.19	0.017	485.48	0.01	216	269.48
720	43200	0.13	0.011	636.60	0.01	432	204.60
1440	86400	0.08	0.007	834.78	0.01	864	-29.22

BASIN A - EXISTING CONDITIONS

Basin: A

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Design Summary

Required Swale Treatment Volume:	116	CF	$V = (1/2)(1'12'')(Total\ Imp.\ Area)$
Proposed Swale Depth:	1	feet*, or	12.0 inches* (DW Rim to Swale Bot)
Provided Swale Bottom Area:	131	SF	(See swale plan with 2:1 side slopes construction in "in situ" material)
Provided Swale Treatment Volume:	131	CF	(Swale bottom area multiplied by the swale depth)

SWALE TREATMENT VOLUME IS ADEQUATE

Notes

BASIN A - EXISTING CONDITIONS

BASIN A - PROPOSED CONDITIONS

Basin: A

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Rational Method

*Reference 13.10 - Rational Method, Page 674, Hydrology and Hydraulic Systems, 2nd Addition - Gupta

IMPERVIOUS AREA

	<i>SF</i>	<i>Acres</i>	
Asphalt:	3,029	0.070	(SCHWEITZER PLZ)
Concrete:	1,011	0.023	(SIDEWALK)
Gravel:	0	0.000	(ONSITE)

BASIN AREA

	<i>SF</i>	<i>Acres</i>
Total Impervious Area (IA):	4,040	0.093
Total Permeable Area (PA):	1,905	0.044
Total Basin Area:	5,945	0.136

RUNOFF COEFFICIENT (C)

Impervious Area (C_{IA}) =	0.90
Permeable Area (C_{PA}) =	0.40

*Reference Table 13.5, Page 677, Hydrology and Hydraulic Systems, 2nd Addition - Gupta

COMPOSITE RUNOFF COEFFICIENT (C)

	<i>unitless</i>
$C = IA (C_{IA}) + PA (C_{PA}) / \text{Total Basin Area} =$	0.74

RAINFALL INTENSITY (i)

	<i>in/hr</i>
25-year event at T_c =	2.62

*Reference Zone C IDF Curve for Idaho

BASIN A - PROPOSED CONDITIONS

TIME OF CONCENTRATION (T_C)

<i>minutes</i>				
T_C	=	5.0	(5 minute minimum)	
$T_C = 0.42(nL)^{0.8}/P_2^{0.5}S^{0.4}$		0.7		
L:		25	ft	
n:		0.02	(Manning's n, Table 13.7, Page 681)	
P_2 :		2.8	(Rainfall intensity, inches per hour)	
S:		0.02	ft/ft	

*Reference NRCS Equation 13.09, for first 300' of flow, and NRCS Equation 13.10, for remaining flow length in drainage, Page 681, Hydrology and Hydraulic Systems, 2nd Addition - Gupta, and equations

13.09: $T_t = 0.42(nL)^{0.8}/P_2^{0.5}S^{0.4}$ and 13.10: $T_t = L/V$

STORMWATER PEAK FLOW RATE (Q)

<i>cfs</i>		
$Q = C i A$	=	0.26

BASIN A - PROPOSED CONDITIONS

Basin: A

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Bowstring Method

*Reference Bowstring Method, Page 5-23, Spokane Regional Stormwater Manual, April 2008

BOWSTRING METHOD NOTES FOR SPREADSHEET DEVELOPMENT

1. Rainfall Intensity Coefficients , m and n, derived by NOAA, under Atlas 2

Where $i = m/T_c^n$

m = 6.98

n = 0.609

*Reference NOAA Atlas 2 for 25-year Event Coefficients for Lat/Long of Site

2. Hydrograph Volume (V_t) is derived through the use of the following equations:

When $t \leq T_c$ use $T_c = 1.34 \times Q \times t$

and

When $t > T_c$, use $T_c = (Q \times t) + (0.34 \times Q \times T_c)$

3. Outflow Volume (V_{out}) was derived by multiplying the outflow rate by the event duration in seconds

4. $Q_{out} = 0.010$ cfs, (assumed outfall)

t	t	i	Q	V_t	Q_{out}	V_{out}	Required Storage
(min)	(sec)	in/hr	cfs	CF	cfs	CF	CF
5	300	2.62	0.264	106.31	0.01	3	103.31
10	600	1.72	0.173	139.41	0.01	6	133.41
15	900	1.34	0.135	163.35	0.01	9	154.35
20	1200	1.13	0.114	182.80	0.01	12	170.80
25	1500	0.98	0.099	199.47	0.01	15	184.47
30	1800	0.88	0.089	214.21	0.01	18	196.21
35	2100	0.80	0.081	227.51	0.01	21	206.51
40	2400	0.74	0.075	239.71	0.01	24	215.71
45	2700	0.69	0.069	251.01	0.01	27	224.01
50	3000	0.64	0.065	261.56	0.01	30	231.56
55	3300	0.61	0.061	271.49	0.01	33	238.49
60	3600	0.58	0.058	280.89	0.01	36	244.89
65	3900	0.55	0.055	289.82	0.01	39	250.82
70	4200	0.53	0.053	298.34	0.01	42	256.34
75	4500	0.50	0.051	306.50	0.01	45	261.50
80	4800	0.48	0.049	314.33	0.01	48	266.33
85	5100	0.47	0.047	321.87	0.01	51	270.87

BASIN A - PROPOSED CONDITIONS

90	5400	0.45	0.045	329.15	0.01	54	275.15
95	5700	0.44	0.044	336.18	0.01	57	279.18
100	6000	0.42	0.043	342.99	0.01	60	282.99
105	6300	0.41	0.041	349.59	0.01	63	286.59
110	6600	0.40	0.040	356.01	0.01	66	290.01
115	6900	0.39	0.039	362.25	0.01	69	293.25
120	7200	0.38	0.038	368.33	0.01	72	296.33
125	7500	0.37	0.037	374.26	0.01	75	299.26
130	7800	0.36	0.036	380.04	0.01	78	302.04
135	8100	0.35	0.036	385.69	0.01	81	304.69
140	8400	0.34	0.035	391.21	0.01	84	307.21
145	8700	0.34	0.034	396.62	0.01	87	309.62
150	9000	0.33	0.033	401.91	0.01	90	311.91
155	9300	0.32	0.033	407.10	0.01	93	314.10
160	9600	0.32	0.032	412.18	0.01	96	316.18
165	9900	0.31	0.031	417.17	0.01	99	318.17
170	10200	0.31	0.031	422.07	0.01	102	320.07
175	10500	0.30	0.030	426.88	0.01	105	321.88
180	10800	0.30	0.030	431.61	0.01	108	323.61
360	21600	0.19	0.020	565.97	0.01	216	349.97
720	43200	0.13	0.013	742.16	0.01	432	310.16
1440	86400	0.08	0.008	973.19	0.01	864	109.19

BASIN A - PROPOSED CONDITIONS

Basin: A

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Design Summary

Required Swale Treatment Volume:	168	CF	$V = (1/2)(1/12)(\text{Total Imp. Area})$
Proposed Swale Depth:	1.5	feet*, or	18.0 inches* (DW Rim to Swale Bot)
Provided Swale Bottom Area:	131	SF	(See swale plan with 2:1 side slopes construction in "in situ" material)
Provided Swale Treatment Volume:	197	CF	(Swale bottom area multiplied by the swale depth)

SWALE TREATMENT VOLUME IS ADEQUATE

Notes

1. ALL STORMWATER WILL BE COLLECTED IN THE ROADSIDE DITCH AND DISCHARGE TO THE RIGHT OF WAY

BASIN A - PROPOSED CONDITIONS

BASIN B - EXISTING CONDITIONS

Basin: B

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Rational Method

*Reference 13.10 - Rational Method, Page 674, Hydrology and Hydraulic Systems, 2nd Addition - Gupta

IMPERVIOUS AREA

	<i>SF</i>	<i>Acres</i>	
Asphalt:	0	0.000	(SCHWEITZER PLZ)
Concrete:	0	0.000	(SIDEWALK)
Gravel:	17,400	0.399	(ONSITE)

BASIN AREA

	<i>SF</i>	<i>Acres</i>
Total Impervious Area (IA):	17,400	0.399
Total Permeable Area (PA):	10,895	0.250
Total Basin Area:	28,295	0.650

RUNOFF COEFFICIENT (C)

Impervious Area (C_{IA}) =	0.90
Permeable Area (C_{PA}) =	0.40

*Reference Table 13.5, Page 677, Hydrology and Hydraulic Systems, 2nd Addition - Gupta

COMPOSITE RUNOFF COEFFICIENT (C)

	<i>unitless</i>
$C = IA (C_{IA}) + PA (C_{PA}) / \text{Total Basin Area} =$	0.71

RAINFALL INTENSITY (i)

	<i>in/hr</i>
25-year event at T_c =	2.62

*Reference Zone C IDF Curve for Idaho

BASIN B - EXISTING CONDITIONS

TIME OF CONCENTRATION (T_C)

<i>minutes</i>				
T_C	=	5.0	(5 minute minimum)	
$T_C = 0.42(nL)^{0.8}/P_2^{0.5}S^{0.4}$		0.7		
L:		25	ft	
n:		0.02	(Manning's n, Table 13.7, Page 681)	
P_2 :		2.8	(Rainfall intensity, inches per hour)	
S:		0.02	ft/ft	

*Reference NRCS Equation 13.09, for first 300' of flow, and NRCS Equation 13.10, for remaining flow length in drainage, Page 681, Hydrology and Hydraulic Systems, 2nd Addition - Gupta, and equations

13.09: $T_1 = 0.42(nL)^{0.8}/P_2^{0.5}S^{0.4}$ and 13.10: $T_1 = L/V$

STORMWATER PEAK FLOW RATE (Q)

<i>cfs</i>		
$Q = C i A$	=	1.20

BASIN B - EXISTING CONDITIONS

Basin: B

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Bowstring Method

*Reference Bowstring Method, Page 5-23, Spokane Regional Stormwater Manual, April 2008

BOWSTRING METHOD NOTES FOR SPREADSHEET DEVELOPMENT

1. Rainfall Intensity Coefficients , m and n, derived by NOAA, under Atlas 2

Where $i = m/T_c^n$

m = 6.98

n = 0.609

*Reference NOAA Atlas 2 for 25-year Event Coefficients for Lat/Long of Site

2. Hydrograph Volume (V_t) is derived through the use of the following equations:

When $t \leq T_c$ use $T_c = 1.34 \times Q \times t$

and

When $t > T_c$, use $T_c = (Q \times t) + (0.34 \times Q \times T_c)$

3. Outflow Volume (V_{out}) was derived by multiplying the outflow rate by the event duration in seconds

4. $Q_{out} = 0.010$ cfs, (assumed outfall)

t	t	i	Q	V_t	Q_{out}	V_{out}	Required Storage
(min)	(sec)	in/hr	cfs	CF	cfs	CF	CF
5	300	2.62	1.204	483.88	0.01	3	480.88
10	600	1.72	0.789	634.52	0.01	6	628.52
15	900	1.34	0.617	743.53	0.01	9	734.53
20	1200	1.13	0.517	832.05	0.01	12	820.05
25	1500	0.98	0.452	907.90	0.01	15	892.90
30	1800	0.88	0.404	974.99	0.01	18	956.99
35	2100	0.80	0.368	1035.56	0.01	21	1014.56
40	2400	0.74	0.339	1091.06	0.01	24	1067.06
45	2700	0.69	0.316	1142.48	0.01	27	1115.48
50	3000	0.64	0.296	1190.53	0.01	30	1160.53
55	3300	0.61	0.279	1235.74	0.01	33	1202.74
60	3600	0.58	0.265	1278.50	0.01	36	1242.50
65	3900	0.55	0.252	1319.15	0.01	39	1280.15
70	4200	0.53	0.241	1357.93	0.01	42	1315.93
75	4500	0.50	0.231	1395.06	0.01	45	1350.06
80	4800	0.48	0.222	1430.71	0.01	48	1382.71
85	5100	0.47	0.214	1465.03	0.01	51	1414.03

BASIN B - EXISTING CONDITIONS

90	5400	0.45	0.207	1498.14	0.01	54	1444.14
95	5700	0.44	0.200	1530.15	0.01	57	1473.15
100	6000	0.42	0.194	1561.15	0.01	60	1501.15
105	6300	0.41	0.188	1591.22	0.01	63	1528.22
110	6600	0.40	0.183	1620.42	0.01	66	1554.42
115	6900	0.39	0.178	1648.83	0.01	69	1579.83
120	7200	0.38	0.174	1676.50	0.01	72	1604.50
125	7500	0.37	0.170	1703.48	0.01	75	1628.48
130	7800	0.36	0.165	1729.80	0.01	78	1651.80
135	8100	0.35	0.162	1755.52	0.01	81	1674.52
140	8400	0.34	0.158	1780.66	0.01	84	1696.66
145	8700	0.34	0.155	1805.26	0.01	87	1718.26
150	9000	0.33	0.152	1829.35	0.01	90	1739.35
155	9300	0.32	0.149	1852.95	0.01	93	1759.95
160	9600	0.32	0.146	1876.10	0.01	96	1780.10
165	9900	0.31	0.143	1898.81	0.01	99	1799.81
170	10200	0.31	0.141	1921.10	0.01	102	1819.10
175	10500	0.30	0.138	1943.00	0.01	105	1838.00
180	10800	0.30	0.136	1964.52	0.01	108	1856.52
360	21600	0.19	0.089	2576.08	0.01	216	2360.08
720	43200	0.13	0.058	3378.01	0.01	432	2946.01
1440	86400	0.08	0.038	4429.59	0.01	864	3565.59

BASIN B - EXISTING CONDITIONS

Basin: B

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Design Summary

Required Swale Treatment Volume:	725	CF	$V = (1/2") (1'12") (\text{Total Imp. Area})$
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Proposed Swale Depth:	0	feet*, or	0.0	inches* (DW Rim to Swale Bot)
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Provided Swale Bottom Area:	0	SF	(See swale plan with 2:1 side slopes construction in "in situ" material)
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Provided Swale Treatment Volume:	0	CF	(Swale bottom area multiplied by the swale depth)
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NO EXISTING STORMWATER TREATMENT ONSITE

Notes

BASIN B - EXISTING CONDITIONS

BASIN B - PROPOSED CONDITIONS

Basin: B

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Rational Method

*Reference 13.10 - Rational Method, Page 674, Hydrology and Hydraulic Systems, 2nd Addition - Gupta

IMPERVIOUS AREA

	<i>SF</i>	<i>Acres</i>	
Asphalt:	0	0.000	
Structure:	5,000	0.115	
Gravel:	14,329	0.329	(EXIST & PROPOSED)

BASIN AREA

	<i>SF</i>	<i>Acres</i>
Total Impervious Area (IA):	19,329	0.444
Total Permeable Area (PA):	8,966	0.206
Total Basin Area:	28,295	0.650

RUNOFF COEFFICIENT (C)

Impervious Area (C_{IA}) =	0.90
Permeable Area (C_{PA}) =	0.40

*Reference Table 13.5, Page 677, Hydrology and Hydraulic Systems, 2nd Addition - Gupta

COMPOSITE RUNOFF COEFFICIENT (C)

	<i>unitless</i>
$C = IA (C_{IA}) + PA (C_{PA}) / \text{Total Basin Area} =$	0.74

RAINFALL INTENSITY (i)

	<i>in/hr</i>
25-year event at T_c =	2.62

*Reference Zone C IDF Curve for Idaho

BASIN B - PROPOSED CONDITIONS

TIME OF CONCENTRATION (T_C)

<i>minutes</i>			
T_C	=	5.0	(5 minute minimum)
$T_C = 0.42(nL)^{0.8}/P_2^{0.5}S^{0.4}$		1.4	
L:		65	ft
n:		0.02	(Manning's n, Table 13.7, Page 681)
P_2 :		2.8	(Rainfall intensity, inches per hour)
S:		0.022	ft/ft

*Reference NRCS Equation 13.09, for first 300' of flow, and NRCS Equation 13.10, for remaining flow length in drainage, Page 681, Hydrology and Hydraulic Systems, 2nd Addition - Gupta, and equations
 13.09: $T_1 = 0.42(nL)0.8/P_2^{0.5}S^{0.4}$ and 13.10: $T_1 = L/V$

STORMWATER PEAK FLOW RATE (Q)

<i>cfs</i>		
$Q = C i A$	=	1.26

BASIN B - PROPOSED CONDITIONS

Basin: B

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Bowstring Method

*Reference Bowstring Method, Page 5-23, Spokane Regional Stormwater Manual, April 2008

BOWSTRING METHOD NOTES FOR SPREADSHEET DEVELOPMENT

1. Rainfall Intensity Coefficients , m and n, derived by NOAA, under Atlas 2

Where $i = m/T_c^n$

m = 6.98

n = 0.609

*Reference NOAA Atlas 2 for 25-year Event Coefficients for Lat/Long of Site

2. Hydrograph Volume (V_t) is derived through the use of the following equations:

When $t \leq T_c$ use $T_c = 1.34 \times Q \times t$

and

When $t > T_c$, use $T_c = (Q \times t) + (0.34 \times Q \times T_c)$

3. Outflow Volume (V_{out}) was derived by multiplying the outflow rate by the event duration in seconds

4. $Q_{out} = 0.010$ cfs, (assumed outfall)

t	t	i	Q	V_t	Q_{out}	V_{out}	Required Storage
(min)	(sec)	in/hr	cfs	CF	cfs	CF	CF
5	300	2.62	1.262	507.20	0.01	3	504.20
10	600	1.72	0.827	665.09	0.01	6	659.09
15	900	1.34	0.646	779.35	0.01	9	770.35
20	1200	1.13	0.542	872.13	0.01	12	860.13
25	1500	0.98	0.473	951.65	0.01	15	936.65
30	1800	0.88	0.424	1021.96	0.01	18	1003.96
35	2100	0.80	0.386	1085.45	0.01	21	1064.45
40	2400	0.74	0.356	1143.63	0.01	24	1119.63
45	2700	0.69	0.331	1197.53	0.01	27	1170.53
50	3000	0.64	0.310	1247.90	0.01	30	1217.90
55	3300	0.61	0.293	1295.28	0.01	33	1262.28
60	3600	0.58	0.278	1340.10	0.01	36	1304.10
65	3900	0.55	0.265	1382.71	0.01	39	1343.71
70	4200	0.53	0.253	1423.36	0.01	42	1381.36
75	4500	0.50	0.243	1462.28	0.01	45	1417.28
80	4800	0.48	0.233	1499.65	0.01	48	1451.65
85	5100	0.47	0.225	1535.62	0.01	51	1484.62

BASIN B - PROPOSED CONDITIONS

90	5400	0.45	0.217	1570.33	0.01	54	1516.33
95	5700	0.44	0.210	1603.88	0.01	57	1546.88
100	6000	0.42	0.204	1636.37	0.01	60	1576.37
105	6300	0.41	0.198	1667.88	0.01	63	1604.88
110	6600	0.40	0.192	1698.50	0.01	66	1632.50
115	6900	0.39	0.187	1728.28	0.01	69	1659.28
120	7200	0.38	0.182	1757.28	0.01	72	1685.28
125	7500	0.37	0.178	1785.55	0.01	75	1710.55
130	7800	0.36	0.173	1813.15	0.01	78	1735.15
135	8100	0.35	0.170	1840.10	0.01	81	1759.10
140	8400	0.34	0.166	1866.45	0.01	84	1782.45
145	8700	0.34	0.162	1892.24	0.01	87	1805.24
150	9000	0.33	0.159	1917.49	0.01	90	1827.49
155	9300	0.32	0.156	1942.23	0.01	93	1849.23
160	9600	0.32	0.153	1966.49	0.01	96	1870.49
165	9900	0.31	0.150	1990.29	0.01	99	1891.29
170	10200	0.31	0.147	2013.66	0.01	102	1911.66
175	10500	0.30	0.145	2036.61	0.01	105	1931.61
180	10800	0.30	0.142	2059.17	0.01	108	1951.17
360	21600	0.19	0.093	2700.19	0.01	216	2484.19
720	43200	0.13	0.061	3540.77	0.01	432	3108.77
1440	86400	0.08	0.040	4643.02	0.01	864	3779.02

BASIN B - PROPOSED CONDITIONS

Basin: B

Project: MILESTONE PONDERAY

Location: PONDERAY, IDAHO

Date: July 15, 2019

Design Summary

Required Swale Treatment Volume:	805	CF	$V = (1/2") (1'12") (\text{Total Imp. Area})$
Proposed Swale Depth:	1.1	feet*, or	13 inches* (DW Rim to Swale Bot)
Provided Swale Bottom Area:	778	SF	(See swale plan with 2:1 side slopes construction in "in situ" material)
Provided Swale Treatment Volume:	856	CF	(Swale bottom area multiplied by the swale depth)

SWALE TREATMENT VOLUME IS ADEQUATE

Notes

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1. ALL STORMWATER WILL BE COLLECTED IN THE ROADSIDE DITCH AND DISCHARGE TO THE RIGHT OF WAY

BASIN B - PROPOSED CONDITIONS