

Storm Runoff Calculations Edgewater Estates-Phase 1

The following calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the Hunnville, UT area taken from data compiled by NOAA Atlas 14, using a 100 year storm.

Runoff storm water has been calculated for two different sets of conditions, one being the existing undeveloped land and the other with land fully improved. The difference between the two quantities will be detained in a holding pond. All water that runs off and over the property at present will be diverted into the holding pond and released at a reduced rate into the existing drainage system.

The calculations are as follows:

- Runoff from the undeveloped existing land.
 Runoff Coefficient
 Rainfall Intensity
 Runoff Quantity
 Acreage
 $C = 0.2$
 $J = 3.0$ IN/HR.
 $Q = 3.80$ CFS
 $A = 3.80$ ACRES

$Q(out) = C \cdot I \cdot A = 2.43$ CFS

- Runoff from developed land
 Runoff Coefficients
 Paved Area
 Landscaped Area
 Roof
 $C = 0.9$
 $C = 0.2$
 $C = 0.8$

Weighted Runoff Coefficient

$I =$ varies with time
 $Q = C \cdot I \cdot A$

- Detention Basin
 Volume in
 Volume out
 $Q \cdot t$
 $Q \cdot t$

The capacity of the detention basin is calculated as the maximum difference between the volume flowing in and the volume flowing out.

The outflow from the detention basin is limited to outflow if undeveloped.

Use 2.43 cfs for Q outflow

The required volume of the detention basin is 6,917 cubic feet
 USE A 7.2 INCH DIAMETER ORIFICE AT OUTLET

DETENTION BASIN Cumulative Volume For Detention Pond Edgewater Estates-Phase 1

time (min)	time (sec)	I (in/hr)	Q (cfs)	Vol. in (cf)	Vol. out (cf)	Difference
0	0	0.00	0.00	0.00	0.00	0.00
5	300	7.55	13.50	4050.00	730.46	3319.52
10	600	5.75	10.68	1460.92	4708.07	4708.07
15	900	3.20	5.72	10296.55	2191.38	6462.80
20	1200	1.98	3.54	12745.67	8785.53	3960.17
30	1800	1.14	2.04	14676.63	17531.03	-2854.20
40	2400	0.79	1.41	15186.24	20296.54	-11098.30
50	3000	0.44	0.78	17116.10	52593.08	-35482.99
60	3600	0.16	0.29	24718.87	210372.34	-185653.46
1440	86400					

Hunnville, UT
NOAA Atlas 14

Storm Runoff Calculations Edgewater Estates-Full

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Runoff storm water has been calculated for two different sets of conditions, one being the existing undeveloped land and the other with land fully improved. The difference between the two quantities will be detained in a holding pond. All water that runs off and over the property at present will be diverted into the holding pond and released at a reduced rate into the existing drainage system.

The calculations are as follows:

- Runoff from the undeveloped existing land.
 Runoff Coefficient
 Rainfall Intensity
 Runoff Quantity
 Acreage
 $C = 0.2$
 $J = 3.20$ IN/HR.
 $Q = 13.02$ CFS
 $A = 13.02$ ACRES

$Q(out) = C \cdot I \cdot A = 8.34$ CFS

- Runoff from developed land
 Runoff Coefficients
 Paved Area
 Landscaped Area
 Roof
 $C = 0.9$
 $C = 0.2$
 $C = 0.8$

Weighted Runoff Coefficient

$I =$ varies with time
 $Q = C \cdot I \cdot A$

- Detention Basin
 Volume in
 Volume out
 $Q \cdot t$
 $Q \cdot t$

The capacity of the detention basin is calculated as the maximum difference between the volume flowing in and the volume flowing out.

The outflow from the detention basin is limited to outflow if undeveloped.

Use 8.34 cfs for Q outflow

The required volume of the detention basin is 20,288 cubic feet
 USE A 13.3 INCH DIAMETER ORIFICE AT OUTLET

DETENTION BASIN Cumulative Volume For Detention Pond Edgewater Estates-Full

time (min)	time (sec)	I (in/hr)	Q (cfs)	Vol. in (cf)	Vol. out (cf)	Difference
0	0	0.00	0.00	0.00	0.00	0.00
5	300	4.80	15.80	4740.25	2500.78	1137.46
10	600	3.20	10.24	3129.36	7502.35	4372.99
15	900	1.98	5.75	1618.04	10288.33	8670.29
20	1200	1.14	3.20	1800.00	13009.38	11209.38
30	1800	0.79	1.98	2070.00	15730.43	13660.43
40	2400	0.44	1.14	2340.00	18451.48	16111.48
50	3000	0.16	0.44	2610.00	21172.53	18562.53
60	3600					
1440	86400					

Hunnville, UT
NOAA Atlas 14

IS reviewed and confirmed calculations for Edgewater are same or similar

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