

Project Narrative:
 The site is located in a residential subdivision north and west of the intersection of W 13th St N and N 135th St W in Wichita, Kansas. The total site area is 33.30 acres. The site is currently undeveloped land, with runoff flowing northeast through the existing site. There is a reserve established on the northeast portion of the site in which a proposed detention pond will be constructed to control runoff to the existing SWS pond system existing northeast of the site.

Water Quality and TSS Removal Calculation:

Water Quality Volume (WQv) Calculation				
Calculation for water quality volume (WQv=P*RV*A/12)		Soil Group 'C'		
85th percentile storm event (1.2 inches), P =	1.20	inches	Calculation of Rv	
Total area, A =	23.17	acres	Coeff.	Area
Rainfall Coeff, Rv, =	0.476	cf	Coeff for undisturbed area, Rv _U =	0.03
Required Vol. for Water Quality =	1.104	ac-ft	Coeff for turf cover, disturbed, Rv _T =	0.20
Corresponding Water Quality Peak Flow =	10.72	cfs	Coeff for impervious area, Rv _I =	0.65
			Weighted, Rv =	0.476

Total water quality flow needs to be treated for proposed development. The WQV and water quality flow will be treated in the proposed detention pond. Required Storage 1.104 ac-ft < Available Storage 5.433 ac-ft.

Runoff Calculations (2-, 5-, 10-, 25-, and 100-yr)

EXISTING CONDITION:
 Total Area A = 33.30 acres, Surface Type = 100% Agricultural Land Use: Cultivated Straight Row
 Soil Group = C

EXISTING SITE									
DRAINAGE AREA	ACRES	Tc min	CN	Q2	Q5	Q10	Q25	Q100	REMARKS
On-site (1)	23.17	40.8	84	31.67	46.17	56.51	69.91	95.31	Undeveloped area flowing northeast to existing outlet structure.
On-site (2)	10.13	20.5	84	21.56	31.22	38.11	47.02	63.93	Undeveloped area draining south to existing detention pond.

DEVELOPED CONDITION:
 Total Area, A = 33.30 acres, Residential Housing (1/4 acre lots) = 65% Impervious (21.6 acres)
 Hydrological Soil Group = C

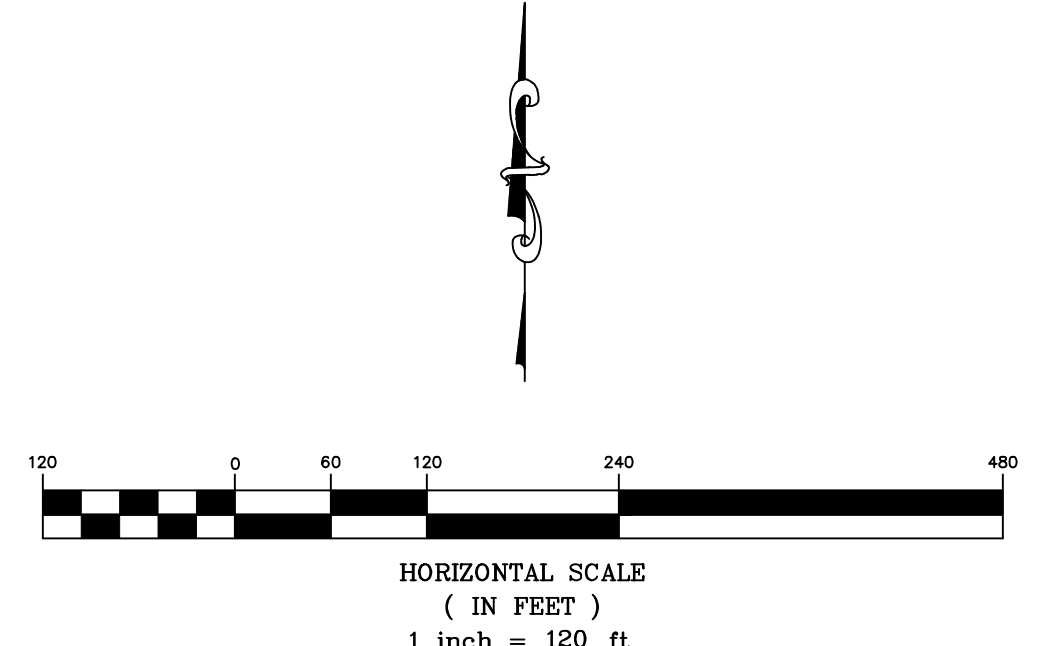
DEVELOPED SITE									
DRAINAGE AREA	ACRES	Tc min	CN	Q2	Q5	Q10	Q25	Q100	REMARKS
On-site (1)	23.17	20.9	86	52.76	75.00	90.65	110.86	148.96	Developed subdivision draining northeast to proposed detention pond.
On-site (2)	10.13	15.0	86	21.56	31.22	38.11	47.02	76.95	Developed subdivision draining south to existing detention pond.

Outfall Structure: Existing 42" Diameter Pipe @ Elev= 1356.00

OUTFLOW							
DRAINAGE AREA	ACRES	Q2	Q5	Q10	Q25	Q100	REMARKS
On-Site (1)	23.17	13.88	23.68	30.95	40.28	56.18	Proposed Pond connecting into existing 42" SWS Pipe outletting to SWS Pond system to the Northeast.

Stage-Storage for Detention Pond		
Proposed Pond		
Storm Event	Runoff Volume, ac-ft	WS Elevation (ft)
2-yr	4.05	1357.37
5-yr	5.80	1357.84
10-yr	7.06	1358.15
25-yr	8.70	1358.53
100-yr	11.85	1359.20

- Engineer's Notes:**
- Site drainage calculations were developed using the SCS Method for peak flow. Weighted CN and 24 hr rainfall depth values were established based on existing and proposed site conditions. Impervious area is assumed for 1/4 acre lots residential housing (65% of total area). Type II rainfall distribution for 24-hr duration is used for analysis.
 - The property is not in designated 100-yr floodplain (FIRM Panel 20173C039G, December 22, 2016.)
 - Design of Internal storm sewer system and/or surface drainage is required to drain the entire site to the proposed detention basins as the site evolves.
 - The detention basins are designated to retain water at normal pool at outfall structure. A detail water balance analysis and proper lining may require in future as the site evolves. The construction of basins may be as per need basis depending on proposed development.



Cheryl's Hollow
Prop Drainage Plan
 Sedgwick County, Kansas

PROJECT NUMBER			
KEMILLER ENGINEERING PA 117 E. Lewis, Wichita, KS 67202 (316)264-0242	KEM NO. 17104	FILE	DATE 09/2017
	DESIGN KM	DRAWN ME	REVISED
			3.0