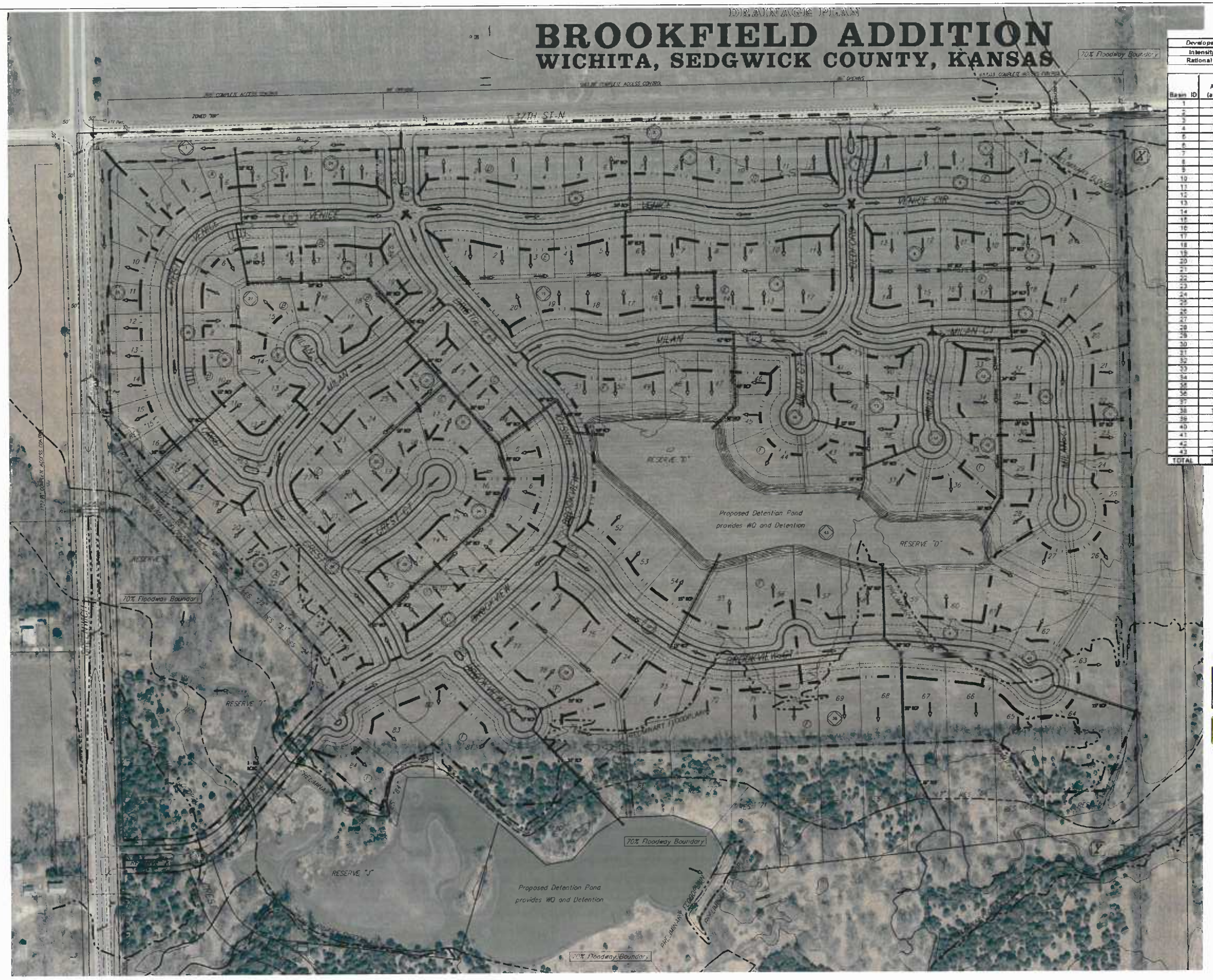
DRAINAGE PLAN

BROOKFIELD ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS



Developed	2yr	10yr	100yr
Intensity	3.83	5.22	7.37
Rational C	0.46	0.55	0.73

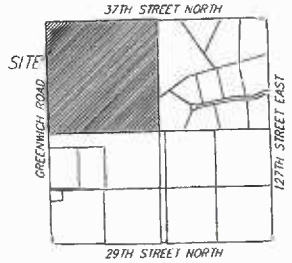
Basin ID	Area (acres)	Developed Flowrates 2-yr cfs	10-yr cfs	100-yr cfs
1	1.1	1.9	3.4	5.9
2	1.5	2.8	4.9	8.0
3	2.0	3.8	6.6	11
4	0.4	0.7	1.2	2.2
5	3.9	6.3	9.2	16
6	2.0	3.8	6.2	11
7	0.8	1.4	2.5	4.3
8	1.1	1.9	3.4	5.9
9	0.9	1.6	2.8	4.8
10	2.1	3.7	6.6	11
11	0.6	1.1	1.8	3.2
12	0.6	1.1	1.8	3.2
13	0.9	1.6	2.8	4.8
14	1.3	2.3	4.0	7.0
15	0.9	1.6	2.8	4.8
16	0.9	1.6	2.8	4.8
17	4.1	7.2	13	22
18	1.6	2.8	4.8	8.6
19	2.3	4.1	7.1	12
20	3.9	6.9	12	21
21	2.8	4.3	8.6	15
22	2.1	3.7	6.5	11
23	0.4	0.7	1.2	2.2
24	1.3	2.3	4.0	7.0
25	3.1	5.5	9.5	17
26	2.6	4.6	8.0	14
27	1.1	1.9	3.4	5.9
28	1.1	1.9	3.4	5.9
29	1.9	1.9	5.1	11.4
30	2.9	5.1	8.9	15
31	0.6	0.9	1.6	2.7
32	1.1	1.9	3.4	5.9
33	1.6	2.8	4.8	8.1
34	1.1	1.9	3.4	5.9
35	0.6	1.1	1.8	3.2
36	3.5	6.2	11	19
37	4.8	8.5	15	26
38	10.7	19	30	58
39	1.6	2.8	4.8	8.6
40	2.7	4.8	8.3	15
41	1.9	3.3	5.6	10
42	0.9	1.6	2.8	4.8
43	11.3	20	36	61
TOTAL	92.9	162	280	496

0' 120' 240'

DATE OF PREPARATION: 6 JUNE 2016
DATE OF TOPOGRAPHY: 12 DECEMBER 2008, 10 MAY 2016
CONTOUR INTERVALS = 1 FOOT (CONTOURS PROVIDED BY SEDGWICK COUNTY)

RESERVES "A", "E", "F", "G", "H", "K" AND "L" ARE RESERVED FOR OPEN SPACE, LANDSCAPING, ENTRY MONUMENTS, STREETS, DRAINAGE PURPOSES, AND UTILITIES.
RESERVES "B" AND "C" ARE RESERVED FOR OPEN SPACE, LANDSCAPING, ENTRY MONUMENTS, DRAINAGE PURPOSES, AND UTILITIES AS CONFINED TO EASEMENTS.
RESERVES "D" AND "J" ARE RESERVED FOR OPEN SPACE, LAKES, LANDSCAPING, AND DRAINAGE PURPOSES.
RESERVE "I" IS RESERVED FOR OPEN SPACE, LANDSCAPING, ENTRY MONUMENTS, SANITARY SEWER LIFT STATION AS CONFINED TO EASEMENT, DRAINAGE PURPOSES AND UTILITIES AS CONFINED TO EASEMENTS.

NOTE: FEMA Floodplain Boundaries are scaled per location per the Preliminary FEMA FIRM Panel 240 & 377 of 680, for Sedgwick County, Kansas, Map Number 20091C0240G AND 20173C0377G.



VICINITY MAP
SEC. 34, T26S, R2E

LEGEND
- Proposed SWS
- Proposed Flow Direction
- Future Effective FEMA FP

NORTHEAST DISCHARGE POINT	
EXISTING	PROPOSED**
Area = 6.2 acres	Area = 3.3 acres
CN = 80	CN = 88
Tc = 22 min*	Tc = 15 min
Q2 = 11 cfs	Q2 = 9.4 cfs
Q5 = 16 cfs	Q5 = 13 cfs
Q10 = 20 cfs	Q10 = 16 cfs
Q25 = 24 cfs	Q25 = 19 cfs
Q100 = 34 cfs	Q100 = 25 cfs

* Tc calculated using 1,285 basin slope with a length of 760'. These figures only account for on site flows only.
** Proposed includes total developed area draining to the point after development. Basin flow will be reduced.

MAIN POND (Static = 1367.0)

STAGE	INFLOW	OUTFLOW	ELEVATION
2 yr	156 cfs	14 cfs	1368.3
5 yr	219 cfs	24 cfs	1369.3
10 yr	263 cfs	28 cfs	1369.8
25 yr	319 cfs	39 cfs	1370.1
100 yr	423 cfs	74 cfs	1371.0

POND

STAGE (elev)	TOTAL STORAGE (ac-ft)	DISCHARGE (cfs)
1367	0.00	0.0
1368	4.32	0.0
1369	8.34	22
1370	4.58	55
1371	4.67	73
1372	5.03	132

Pond modeled using a tailwater elevation of 1368.0 based on the outfall pipe discharging to the floodplain.

Table 4-13 Volumetric Runoff Coefficients by Land Use and Hydrologic Soil Group

Land Use	Hydrologic Soil Group A	B	C	D
Undisturbed	0.02	0.03	0.04	0.05
Turf or Disturbed Soils	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

Land Use	Hydrologic Soil Group A	B	C	D
Undisturbed	56	71	80	84
Turf or Disturbed Soils	71	80	84	86
Impervious Cover	98	98	98	98

Basin	Undist ft²	Dist ft²	Rec Imp ft²	New Imp ft²	Total Area ft²	U %	D %	Rational I %	I %	R_v %	WQ, ft³ eq. 4-25*
Total Brookfield	0	2,548,260	0	1,372,140	3,920,400	0.000	0.163	0.000	0.333	0.4830	154,949

*Total R_v is the entire 150 acres of Tyler's Landing Addition(s) which drain through the burner-fly developed drainage and pond systems.

Pond Volume Below Static Pool						
	Static		Pond Bottom Area		Depth	Volume
Basin	Sq Ft	Acre	Sq Ft	Acre	Feet	Acre-Ft
Main Pond	175,800	4.0	118,800	2.7	8	27.0
South Pond	270,000	6.2	209,000	4.8	8	44.0
Totals:		10.2		7.5		71.0

Pond Volume > WQv		
Pond	WQv	Check
71.0	4.5	Yes

Pond Volumes are estimated using a depth of 8' of water surface with 3:1 sideslopes below the static water surface. The pond volumes far exceed the water quality volume needed for the entire Brookfield development.

Approved
C.O.W.
Joe Nichols
8-29-16

DRY CREEK DISCHARGE	
EXISTING	PROPOSED**
Area = 78 acres	Area = 85 acres
CN = 80	CN = 85
Tc = 65 min*	Post Detention
Q2 = 65 cfs	Q2 = 26 cfs
Q5 = 100 cfs	Q5 = 37 cfs
Q10 = 125 cfs	Q10 = 45 cfs
Q25 = 157 cfs	Q25 = 54 cfs
Q100 = 220 cfs	Q100 = 73 cfs

* Tc calculated using 0.73 basin slope with a length of 1930'.
**Proposed includes total developed area after detention. These figures are for on site runoff only, not total basin runoff. Figures are for comparison purposes only.

TREVOR R. KURTH LICENSED L.A. 19788 STATE OF KANSAS PROFESSIONAL ENGINEER

DRAINAGE PLAN
BROOKFIELD ADDITION
29 August 2016

Baughman Company, P.A.
315 Ellis St. Wichita, KS 67211 P 316.262.2251 F 316.262.0149
Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

E:\Projects\Brookfield Addition_1606 P100\Water Resources\Rtethic 37th & Greenwich_Drain Plan 8-10-16.dwg

NOTES: FEMA Floodplain and Floodway Boundaries were provided by AMEC for this reach and represent the boundaries that will be effective December 22, 2016. Properties located within the floodplain boudaries will require a LOMR-F and all applicable permitting before development in these areas.

Water quality will be performed in the wet surface of the two detention ponds. Storage and calculations are provided per this sheet. Channel protection is provided in the detention portion of the upper pond. The peak flows for this site have been greatly reduced in the detention areas.

Lots located in the floodplain, as shown, will need to be permitted for a floodplain fill with the Kansas Dept of Water Resources. Once permitted, the site can be filled and elevations raised above the BFE. After filling, the lots can be removed via a LOMR-F. We expect the site to develop in phases in which no lots in the 1st phase are expected to be located in the future effective floodplain.

SOUTH (EXISTING) POND (Static = 1366.0)

STAGE	INFLOW	OUTFLOW	ELEVATION
2 yr	45 cfs	4 cfs	1367.2
5 yr	74 cfs	14 cfs	1367.5
10 yr	96 cfs	20 cfs	1367.7
25 yr	111 cfs	27 cfs	1367.8
100 yr	147 cfs	44 cfs	1368.1

POND

STAGE (elev)	TOTAL STORAGE (ac-ft)	DISCHARGE (cfs)
1366	0.00	0.0
1367	5.31	2.47
1368	11.7	41.6
1369	18.0	131.4

Pond below assumes a side Tc of 15 min with a CN of 88 for the total area draining to the pond. No utilities have considered in the pond as it is online to a major flooding source. The outflow and peak elevations are for existing/developed comparisons only. Base flood elevations of the creek are much higher and are used for engineering design.