



December 21, 2018

Mike Sylvester
City of Olathe Public Works
1385 S. Robinson Drive
Olathe, KS 66061

Re: Mentum Development
Stormwater Detention Summary Memorandum
PEI #180957

Dear Mike:

A Preliminary Stormwater Management Plan was completed for the Mentum Development by Phelps Engineering and submitted to the City of Olathe on November 21, 2018 which included a detailed detention analysis for the proposed Mentum Development. The report analyzed the existing and proposed conditions in the 1, 10 and 100 year storm per City of Olathe requirements.

The existing conditions was analyzed as the watershed being undeveloped, and before construction of the six existing ponds located on Lot 16, South Park Phase II. See Exhibit A for the Existing Drainage Map. The following peak runoff rates were determined for the existing conditions (allowable release rate) in the 1, 10 and 100 year storm event:

1-Year Allowable Peak Site Release $Q_1 = 472$ cfs

10-Year Allowable Peak Site Release $Q_{10} = 1,287$ cfs

100-Year Allowable Peak Site Release $Q_{100} = 2,187$ cfs

The proposed conditions was analyzed for the ultimate development conditions, as the entirety of the watershed having a land cover type of "Commercial and Business" which corresponds to an average of 85% impervious area in the watershed. This includes the development of Lot 16, South Park Phase II. See Exhibit B for the Proposed Drainage Map. The following peak runoff rates were determined for the proposed conditions in the 1, 10 and 100 year storm event, and the water surface elevations of each of the existing ponds located in Lot 16, South Park Phase II:

Storm	Discharge Pt.	Proposed Conditions				Allowable Release Rate, cfs
		Inflow Rate, cfs	Outflow Rate, cfs	WSE, ft	Storage, ac-ft	
1-year	Pond 1	453.48	100.23	1028.89	12.29	-
	Pond 2	22.54	2.51	1027.16	0.564	-
	Pond 3 & 4	204.12	134.21	1026.64	8.997	-
	Pond 5	83.23	62.98	1028.82	4.484	-
	Pond 6	322.95	81.98	1031.01	8.968	-
	Total Watershed	-	134.21	-	-	472
10-year	Pond 1	872.59	214.16	1031.05	23.036	-
	Pond 2	43.20	3.31	1027.76	1.156	-
	Pond 3 & 4	423.6	288.46	1028.67	17.177	-
	Pond 5	178.75	135.57	1030.71	8.163	-
	Pond 6	614.14	175.90	1033.28	16.840	-
	Total Watershed	-	288.46	-	-	1,287
100-year	Pond 1	1,303	290.58	1033.06	34.264	-
	Pond 2	64.43	3.5	1028.28	1.814	-
	Pond 3 & 4	651.86	417.40	1030.77	27.124	-
	Pond 5	343.46	210.57	1032.31	11.731	-
	Pond 6	984.78	338.8	1035.36	24.832	-
	Total Watershed	-	417.40	-	-	2,187

As seen in the table above, the total watershed peak release rates are lowered in the fully developed proposed conditions when compared to the existing conditions allowable release rates in the 1, 10 and 100 year storm event. The existing ponds have adequate storage in the 100 year storm event for the fully developed upstream conditions. See the Preliminary Stormwater Management Plan dated November 21, 2018 for a detailed analysis of the watershed.

Sincerely,

Phelps Engineering, Inc.



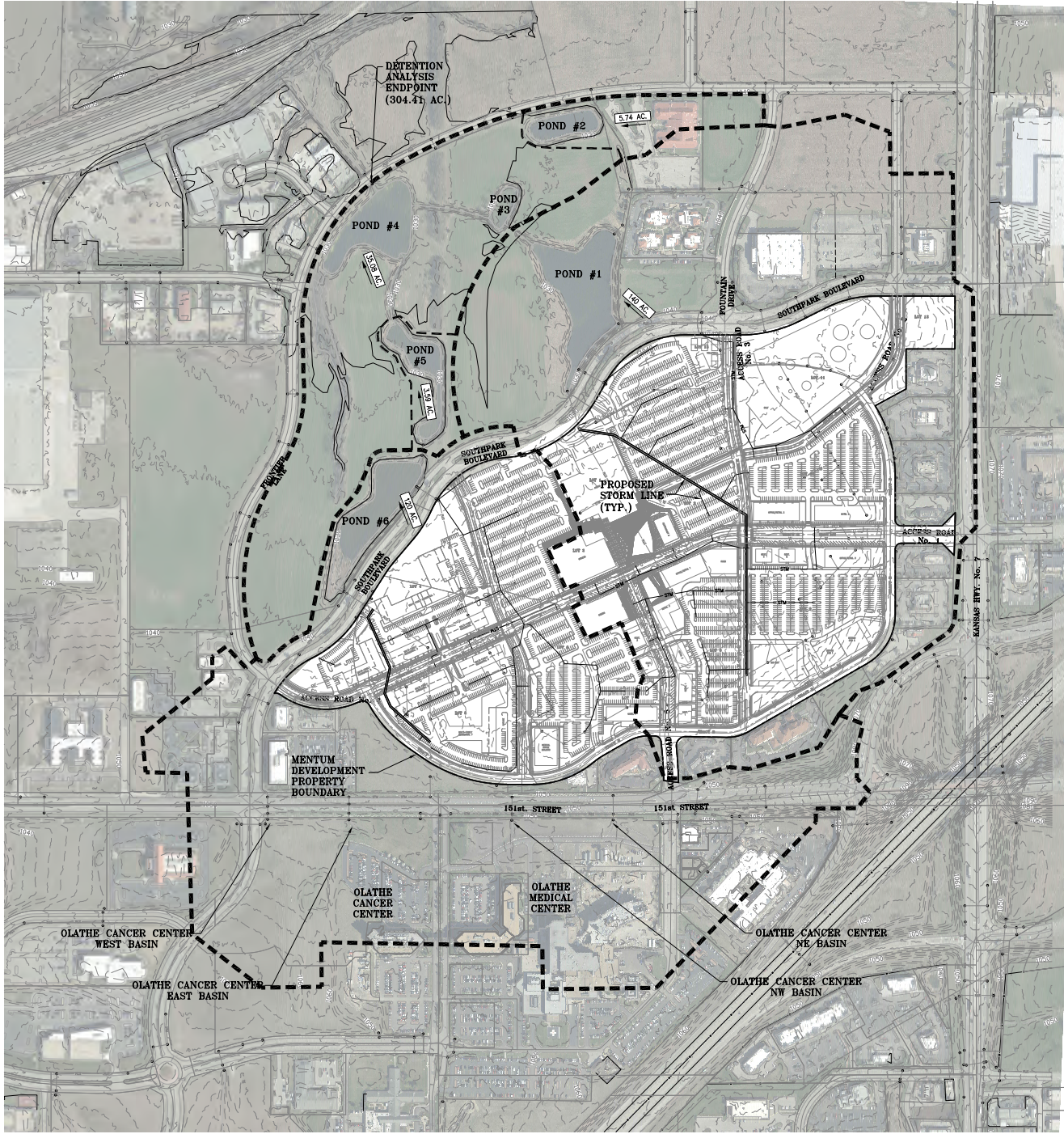
Daniel McMullen, P.E.

Enclosures

EXHIBIT A – Existing Drainage Map



EXHIBIT B – Proposed Drainage Map

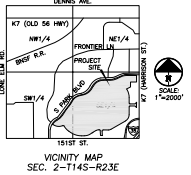


EXISTING POND CHARACTERISTICS

NO.	DATE	AREA (AC)	PERIMETER (FT)	DEPTH (FT)	VOLUME (CU FT)
1	10/10/00	1.0	100	1.0	1000
2	10/10/00	5.74	100	1.0	5740
3	10/10/00	1.0	100	1.0	1000
4	10/10/00	1.0	100	1.0	1000
5	10/10/00	1.0	100	1.0	1000
6	10/10/00	1.0	100	1.0	1000

PROPOSED POND CONDITIONS

NO.	DATE	AREA (AC)	PERIMETER (FT)	DEPTH (FT)	VOLUME (CU FT)
1	10/10/00	1.0	100	1.0	1000
2	10/10/00	5.74	100	1.0	5740
3	10/10/00	1.0	100	1.0	1000
4	10/10/00	1.0	100	1.0	1000
5	10/10/00	1.0	100	1.0	1000
6	10/10/00	1.0	100	1.0	1000



- LEGEND**
- PL - PROPERTY LINE
 - R/W - RIGHT-OF-WAY
 - EXISTING CONTOURS
 - EXISTING STORM SEWER
 - DETECTED DRAINAGE BOUNDARY
 - DETECTED DRAINAGE AREA TO POND

