

MEMO

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TO:	City of Lee's Summit Development Center	
FROM:	Melissa G. DeGonia, PE	
RE:	Woodside Ridge Detention Requirements	
DATE:	June 22, 2018	
OA PROJECT #:	018-1140	
PHASE:	400	
TASK:	400006	

The following is a request for A waiver for detention requirements within Watershed A, relating specifically to Point A1. Refer to attached exhibit for watershed characteristics in relation to the property and proposed improvements.

Per APWA Section 5608.4 and City of Lee's Summit criteria, the performance criteria for detention is to provide detention to limit peak flow rates at downstream points of interest to maximum release rates:

- 50% storm peak rate less than or equal to 0.5 cfs per site acre
- 10% storm peak rate less than or equal to 2.0 cfs per site acre
- 1% storm peak rate less than or equal to 3.0 cfs per site acre

In lieu of matching these "allowable" release rates, the Future Conditions peak flow rates will be reduced to less than the Existing Conditions.

This waiver is requested due to several challenges in relation to detention design, described below. Due to these limitations, it is not possible to collect and detain as much runoff as would be necessary to reduce the peak flow rates fully to the standard onsite release rates.

- The watershed consists of steep slopes which are heavily vegetated, making detention basins difficult to construct.
- The tributary flowing through Watershed A generally follows the property line, which results in stormwater generally sheet flowing directly to the tributary, instead of channelizing to create points of discharge where detention can be effective.

- For several reasons, detention within the channel is not feasible or advisable.
 - The channel is protected by a stream setback zone, and should therefore not be disturbed without necessity.
 - The onsite area is a small portion of the watershed, so there is a significant amount of offsite bypass contributing to the main tributary.
 - Constructing a dam would capture most of the offsite runoff which would excessively cut back peak flow rates in the channel, possibly resulting in increased erosion in the channel and diminution of the existing natural habitat.
 - The channel straddles the property line in most places, so detention would be partially offsite, on several existing lots.
 - An existing sanitary sewer trunk main follows the channel, and would be located underneath any new detention facility in the channel.

While the “allowable” release rates will not be met at Point A1, peak flow rates will be reduced significantly from the Existing Conditions rates in all storm events. Additionally, over 90% of the paved areas within Watershed A are captured and diverted to a detention facility or the existing pond, providing runoff control for most of the new developed area in the watershed, and water quality treatment for most of the proposed streets.

Below is a summary of proposed flow rates in relation to existing and the “allowable” release rates. For more information, reference the Woodside Ridge Preliminary Stormwater Drainage Study.

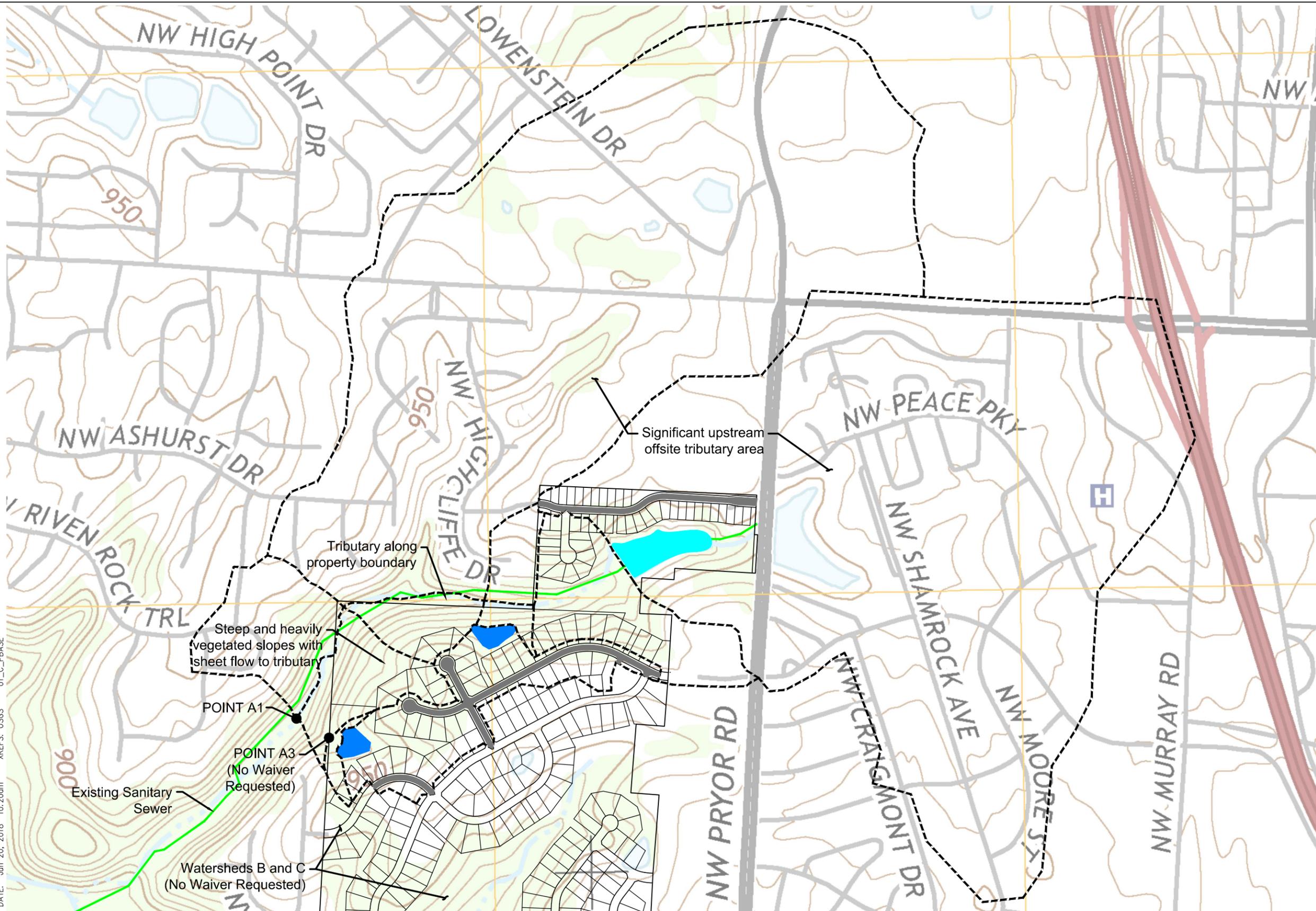
Table 1. Future vs. Allowable Release Rates

	Q₁ (cfs)	Q₁₀ (cfs)	Q₁₀₀ (cfs)
Future	898.31	1528.00	2519.41
Allowable	839.45	1489.65	2426.53
Difference	58.86	38.35	92.88

Table 2. Future vs. Existing Release Rates

	Q₁ (cfs)	Q₁₀ (cfs)	Q₁₀₀ (cfs)
Future	898.31	1528.00	2519.41
Existing	932.86	1582.99	2595.35
Difference	-34.55	-54.99	-75.94

DWG: F:\2018\1001-1500\018-1140-40-Design\Reports\GNCV\Preim Stormwater\Exhibits\Waiver Exhibit.dwg
 DATE: Jun 20, 2018 10:20am
 XREFS: USGS
 USER: mdegonia



- RIDGELINE
- EXISTING POND
- FUTURE DETENTION
- PAVEMENT CAPTURED BY WATERSHED A FACILITIES

Tributary along property boundary

Steep and heavily vegetated slopes with sheet flow to tributary

POINT A1

POINT A3 (No Waiver Requested)

Existing Sanitary Sewer

Watersheds B and C (No Waiver Requested)

Significant upstream offsite tributary area

PROJECT NO:	018-1140
DRAWN BY:	MGD
DATE:	06/20/2018

POINT A1 WAIVER REQUEST

	1301 Burlington Street North Kansas City, MO 64116 TEL 816.587.4320 FAX 816.587.1393	EXHIBIT A
	OLSSON ASSOCIATES - CIVIL ENGINEERING MISSOURI CERTIFICATE OF AUTHORITY #	