Matrix Design Group, Inc.
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Denver, CO 80202
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matrixdesigngroup.com

February 17, 2025

Chong Woo
Aurora Water
26791 E Quincy Ave
Aurora, CO 80016

RE: The Aurora Highlands – Lennar Phase 2 Site Plan– Utility Conformance Letter

Dear Mr. Chong Woo,

Matrix Design Group, Inc. (Matrix) is pleased to present this letter to investigate the utility impacts of the Lennar Filling 40 project located at the northeast corner of 26th Avenue and Warm Springs Avenue in the Aurora Highlands development. This 80.7-acre development was previously studied as part of Design Point 9.1 in The Aurora Highlands Master Utility Report – Amendment 2, March 2023 by HR Green, EDN 219069MU3. According to this study, a total of 489 dwellings units were anticipated in Design Point 9.1 where 185 units were part of PA-65 (Filing 33), and 304 units were part of PA-80 (Filing 40). The latest site plans for both filings show a total of 545 dwelling units anticipating in Design Point 9.1. COA Standards and Specifications state the maximum depth of flow of 75% capacity for all pipe sizes 12 inches and smaller and Matrix was able to re-calculate to maximum depth of flow of 58.2% capacity at Design Point 9.1 compared to 43.6% in The Aurora Highlands Master Utility Report – Amendment 2, March 2023 by HR Green, EDN 219069MU3. Relevant pages from the approved MUS and water/sanitary demand calculations based on the proposed site plan dwelling unit numbers will be provided as attachments to this letter.

Sincerely,

Jeff Killion, P.E.
Director - Civil Engineering
Matrix Design Group, Inc.

cc: 24.1099.010, Task 2.0

REV. 219069 2

THE DEVELOPER MAY CONSTRUCT THE ULTIMATE SANITARY SEWER OUTFALL. ANY INFRASTRUCTURE BUILT BY DEVELOPER(S) OUTSIDE THEIR PROPERTY MAY BE SUBJECT TO REIMBURSEMENT BY THE CITY PER THE APPLICABLE REIMBURSEMENT, DEVELOPMENT OR ANNEXATION AGREEMENT ASSOCIATED WITH THE DEVELOPER(S) PROPERTY

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18" IF FLOWS FROM BOX ELDER CREEK ARE INCLUDED

18" IF FLOWS FROM BOX ELDER CREEK ARE INCLUDED

LEGEND

- PR. SANITARY SEWER LINE
- EX. SANITARY SEWER LINE
- PR. FORCE MAIN
- ROW/PROPERTY LINE
- PLANNING AREA BOUNDARY
- PROPERTY BOUNDARY
- EX. MAJOR CONTOUR (25')
- EX. MINOR CONTOUR (5')
- FLOW DIRECTION
- WATERSHED BOUNDARY
- DEMAND BASIN BOUNDARY
- DESIGN POINT
- OFFSITE BASIN DESIGNATION
- BASIN FLOW (CFS)

BASIN LEGEND

- TAH BASIN 1
- TAH BASIN 2
- TAH BASIN 3

OFFSITE BASIN SUMMARY

BASIN	APPROXIMATE ACERAGE	PEAK FLOW + INFIL. (MGD)
OS-1	45.5	0.24
OS-1A	9.9	0.05
OS-2	364.0	1.75
OS-3	124.5	0.66
OS-3A	19.9	0.10
OS-4	191.0	1.01
OS-4A	19.9	0.10
OS-4B	49.0	0.24
OS-5	730.0	3.27
OS-6	56.4	0.24
OS-7	67.8	0.42
OS-8	249.0	1.19
OS-9	368.7	1.66
OS-10	255.7	1.22

DESIGN POINT	PEAK FLOW (MGD)	ESTIMATED PIPE SLOPE (%)	ESTIMATED PIPE SIZE (IN)	PIPE NAME	ESTIMATED VELOCITY (FPS)	% FULL FLOW
	1.97	0.40%	15	SS-1	4.1	56.9%
1	2.12	0.40%	15	SS-2	4.2	60.4%
	0.66	0.40%	10	SS-3	3.2	57.2%
2.1	0.89	0.40%	10	SS-4	3.4	70.2%
	0.20	0.40%	8	SS-5	2.3	40.4%
2.2	3.36	0.40%	18	SS-6	4.8	59.4%
	1.01	0.40%	12	SS-7	3.5	55.1%
	0.24	0.40%	8	SS-8	2.5	44.6%
3.1	1.30	0.40%	12	SS-9	3.7	64.9%
3.2	1.70	0.40%	15	SS-10	4.0	52.6%
3.3	4.79	0.40%	18	SS-11	5.1	77.6%
4	0.31	0.40%	8	SS-12	2.6	51.8%
	0.37	0.40%	8	SS-13	2.7	57.8%
5.1	0.56	0.40%	10	SS-14	3.0	51.7%
	0.15	0.40%	8	SS-15	2.2	34.6%
5.2	0.71	0.40%	10	SS-16	3.2	59.9%
5.3	5.59	0.40%	24	SS-17	5.4	50.7%
6	0.10	0.40%	8	SS-18	1.9	28.0%
	0.49	0.40%	8	SS-19	2.9	70.1%
7	5.95	0.40%	24	SS-20	5.5	52.6%
8	3.27	0.25%	18	SS-21	3.9	68.6%
	0.23	0.40%	8	SS-22	2.4	43.6%
9.1	0.38	0.40%	8	SS-23	2.8	58.8%
	0.20	0.40%	8	SS-24	2.3	40.4%
9.2	0.81	0.40%	10	SS-25	3.3	65.5%
9.3	0.98	0.40%	12	SS-26	3.5	54.0%
10	4.27	0.25%	24	SS-27	4.2	49.7%
11.1	9.41	0.40%	8	SS-28.1	2.9	61.8%
11.2	6.06	0.25%	24	SS-28	4.6	61.7%
12	10.92	0.25%	30	SS-29	5.3	61.5%
13	10.95	0.25%	30	SS-30	5.3	61.6%
14	11.15	0.25%	30	SS-31	5.4	62.3%
	0.09	0.50%	8	SS-32	2.0	25.1%
15	0.38	0.40%	8	SS-33	2.8	58.8%
16	0.85	0.40%	10	SS-34	3.3	67.8%
17	1.27	0.40%	12	SS-35	3.7	63.9%
	0.09	0.50%	8	SS-36	2.0	25.1%
18	1.42	0.40%	12	SS-37	3.8	69.2%
19	1.69	0.40%	36	SS-38	3.7	15.6%
	0.37	0.40%	8	SS-39	2.7	57.8%
20	0.46	0.40%	8	SS-40	2.9	66.9%
21	1.69	0.40%	36	SS-41	4.2	19.7%
22	13.16	0.40%	36	SS-42	6.6	44.5%
	8.69	0.40%	10	SS-43	3.2	58.3%
	1.19	0.40%	12	SS-44	3.7	61.1%
	3.41	0.40%	18	SS-44 ALT	4.8	60.0%
25	1.73	0.40%	15	SS-45	4.0	53.2%
	3.87	0.40%	18	SS-45 ALT	4.9	65.4%
30	1.66	0.40%	15	SS-46	4.0	51.9%
31	2.58	0.40%	15	SS-47	4.4	69.3%

NOTES:
1. WHEN DEVELOPMENT IN THE SECOND CREEK AND BOX ELDER WATERSHEDS OCCUR, INFRASTRUCTURE NEEDS SHOULD BE RE-EVALUATED AND THE MUS AMENDED AS NEEDED.
2. OFFSITE BASIN LOADING RATES ARE BASED ON AREAS AND LAND USES FROM THE *MASTER UTILITY REPORT FOR GREEN VALLEY (COA# 206120)*. THESE RATES HAVE BEEN UPDATED TO INCORPORATE CURRENT COA CRITERIA TO BE CONSISTENT WITH THIS MUS.

FACSIMILE
This electronic plan is a facsimile of the Signed and sealed pdf set.

Ryan W. Littleton — 03-28-23 Date

0 800 400

NORTH

DRAWN BY: KLH	JOB DATE: 11/2022	BAR IS ONE INCH ON OFFICIAL DRAWINGS.	
APPROVED: RWL	JOB NUMBER: 181211.47	0 1"	
CAD DATE: 11/22/2022 1:21:34 PM		IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.	
CAD FILE: J:\2018\181211.47\CAD\Dwgs__Exhibits\X-SS2_AM2.dwg			

NO.	DATE	BY	REVISION DESCRIPTION
1	10/2019	KH	REMOVED SEC. 21 & 28 FROM PROJECT
2	11/2022	KH	REVISED AREA AND LAND USE IN PA-55

HRGreen HRGreen.com

THE AURORA HIGHLANDS
AURORA HIGHLANDS, LLC
AURORA, COLORADO

THE AURORA HIGHLANDS

MASTER UTILITY REPORT – AMENDMENT 2

SANITARY SEWER PLAN

SHEET NO. SS2

REVISED ON 04/12/2023

Xrefs: 00EUT; 01Base – FDP; 00PUT; xgt-00-kmss; 47landuse

SANITARY SEWER DEMAND CALCULATIONS

HRGreen

Project #: 181211.47
Project: The Aurora Highlands
Location: Aurora, CO
Plan Date: 11/2022
By: K House Date: 11/20/2022
Checked: R Littleton Date: 11/20/2022

POPULATION DENSITY		
Multi-Family	2.77	People per Unit
Single-Family	2.77	People per Unit
Age Restricted	2.77	People per Unit
Average Flow Generation	68	gpcpd

COMMERCIAL / SCHOOLS / INDISTRIAL			
	Commercial	Schools / Industrial	
Average Flow Generation	1,500	1,200	gpd/acre
	0.0023	0.0019	cfs/acre
Equivalent Population	22	18	capita

PEAKING FACTOR			
PF = 5/(p^0.167)	Where p = Population in thousands		
Min. PF =	1.7	Max. PF =	4.0

PIPE CAPACITY (mgd) (n=.011)			
75 % FULL	PIPE SIZE (IN)	0.4% SLOPE	0.25% SLOPE
	8	0.53	0.42
	10	0.97	0.76
	12	1.57	1.24

PIPE CAPACITY (mgd) (n=.011)			
80 % FULL	PIPE SIZE (IN)	0.4% SLOPE	0.25% SLOPE
	15	3.05	2.41
	18	4.96	3.92
	24	10.68	8.44
	30	19.37	15.31
	36	31.49	24.90

			RESIDENTIAL SINGLE FAMILY								RESIDENTIAL MULTI FAMILY								COMMERCIAL / SCHOOLS / INDUSTRIAL							CUMMULATIVE TOTALS							PIPE PARAMETERS				
Design Point	Planning Area	Flow Split	Total Acres	Development Density (DU/acre)	No. of Units	Population Density (people/unit)	Equivalent Population	Average Flow Generation (gpcpd)	Average Day Flow (mgd)	Average Day Flow (gpm)	Total Acres	Development Density (DU/acre)	No. of Units	Population Density (people/unit)	Equivalent Population	Average Flow Generation (gpcpd)	Average Day Flow (mgd)	Average Day Flow (gpm)	Land Use	Total Acres	Population Density	Equivalent Population	Average Flow Generation (gpd/acre)	Average Day Flow (mgd)	Average Day Flow (gpm)	Total Acres	Infil. @ 10% (mgd)	Cumulative Population	Peak Factor	Peak Flow (mgd)	Peak Flow + Infil. (mgd)	Peak Flow + Infil. (gpm)	Estimated Pipe Slope (%)	Estimated Size at Given Slope	Pipe Name	Velocity (ft/sec)	Percent Full at Given Slope
First Creek Watershed																																								
1	OS-1 (GVRE OFS-1)		20.2	5.5	111	3.20	356	80	0.028										Com.	25.3	31.25	789	2,500	0.063		45.45	0.009	1,145	4.0	0.37	*0.38*		0.40%	8			
	Updated [1]		20.2	5.5	111	2.77	308	68	0.021										Com.	25.3	22	556	1,500	0.038		45.45	0.006	863	4.0	0.24	*0.24*		0.40%	8			
	OS-1A	20%	4.0		0		0		0.000		0.0		0		0		0.000		Industrial	9.9	18	179	1,200	0.012		9.94	0.001	179	4.0	0.05	*0.05*		0.40%	8			
	OS-2 (GVRE OFS-2)		161.8	5.5	890	3.20	2,847	80	0.228										Com.	202.2	31.25	6,319	2,500	0.506		363.98	0.073	9,166	3.5	2.53	*2.61*		0.40%	15			
	Updated [1]		161.8	5.5	890	2.77	2,465	68	0.168										Com.	202.2	22	4,448	1,500	0.303		363.98	0.047	6,913	3.6	1.70	*1.75*		0.40%	15			
	Total		***182.0***		***1,001***		***2,772***		***0.189***											***237.4***		***5,183***		***0.353***		***419.37***	***0.054***	***7,955***	***3.5***	***1.92***	***1.97***		***0.40%***	***15***	***SS-1***	***4.1***	***56.9%***
	PA-82	100%	5.0		0		0		0.000		0.0		0		0		0.000		Com.	27.8	22	612	1,500	0.042		27.80	0.004	612	4.0	0.17	*0.17*		0.40%	8			
	PA-85	100%	5.0		0		0		0.000		0.0		0		0		0.000		Com.	4.7	22	103	1,500	0.007		4.70	0.001	103	4.0	0.03	*0.03*		0.40%	8			
	On-Site Total																			***32.5***		***715***		***0.049***		***32.50***	***0.005***	***715***	***4.0***	***0.20***	***0.20***		***0.40%***	***8***			
	Design Point Total		***182.0***	***5.5***	***1,001***		***2,772***		***0.189***		***0.0***		***0***		***0***		***0.000***			***269.9***		***5,898***		***0.402***		***451.87***	***0.059***	***8,670***	***3.5***	***2.06***	***2.12***		***0.40%***	***15***	***SS-2***	***4.2***	***60.4%***
2.1	OS-3 (GVRE OFS-3)		55.3	5.5	304	3.20	973	80	0.078											69.2	31.25	2,163	2,500	0.173		124.50	0.025	3,136	4.0	1.00	*1.03*		0.40%	12			
	Updated [2]		55.3	5.5	304	2.77	842	68	0.057										Com.	69.2	22	1,522	1,500	0.104		124.50	0.016	2,365	4.0	0.64	*0.66*		0.40%	10	SS-3	3.2	57.2%
	OS-3A	40%	8.0		0		0		0.000		0.0		0		0		0.000		Industrial	19.9	18	358	1,200	0.024		19.88	0.002	358	4.0	0.10	*0.10*		0.40%	8			
	PA-78	50%	30.2	5.9	177	2.77	490	68	0.033		0.0		0		0		0.000									30.15	0.003	490	4.0	0.13	*0.14*		0.40%	8			
	On-Site Total		***30.2***		***177***		***490***		***0.033***											***19.9***		***358***		***0.024***		***50.03***	***0.006***	***848***	***4.0***	***0.23***	***0.23***		***0.40%***	***8***			
	Design Point Total		***85.5***	***5.6***	***481***		***1,333***		***0.091***		***0.0***		***0***		***0***		***0.000***			***89.1***		***1,880***		***0.128***		***174.53***	***0.022***	***3,213***	***4.0***	***0.87***	***0.89***		***0.40%***	***10***	***SS-4***	***3.4***	***70.2%***
2.2	PA-71	15%	15.0	5.9	88	2.77	244	68	0.017																	15.03	0.002	244	4.0	0.07	*0.07*		0.40%	8			
	PA-74	100%	5.0		0		0		0.000		0.0		0		0		0.000		School	18.0	18	324	1,200	0.022		18.00	0.002	324	4.0	0.09	*0.09*		0.40%	8			
	PA-75	100%																	Fire	2.3	18	41	1,200	0.003		2.30	0.000	41	4.0	0.01	*0.01*		0.40%	8			
	PA-78	50%	30.2	5.9	177	2.77	490	68	0.033		16.3	30.0	489	2.77	1,355	68	0.092									46.45	0.013	1,845	4.0	0.50	*0.51*		0.40%	8			
	PA-80	50%	43.6	5.9	256	2.77	709	68	0.048					2.77		68										43.60	0.005	709	4.0	0.19	*0.20*		0.40%	8	SS-5	2.3	40.4%
	On-Site Total	DP1 - DP2.2	***118.9***		***698***		***1,934***		***0.132***		***16.3***		***489***		***1,355***		***0.092***			***72.7***		***1,438***		***0.097***		***207.91***	***0.032***	***4,727***	***3.9***	***1.24***	***1.27***		***0.40%***	***12***			
	Design Point Total		***356.2***	***5.6***	***2,003***		***5,549***		***0.377***		***16.3***	***30.0***	***489***		***1,355***		***0.092***			***379.3***		***9,143***		***0.554***		***751.78***	***0.102***	***15,047***	***3.2***	***3.25***	***3.36***		***0.40%***	***18***	***SS-6***	***4.8***	***59.4%***
3.1	OS-4 (GVRE OFS-4)		84.9	5.5	467	3.20	1,494	80	0.120											106.1	31.25	3,316	2,500	0.265		190.98	0.038	4,810	3.8	1.48	*1.52*		0.40%	12			
	Updated [2]		84.9	5.5	467	2.77	1,293	68	0.088										Com.	106.1	22	2,334	1,500	0.159		190.98	0.025	3,627	4.0	0.99	*1.01*		0.40%	12	SS-7	3.5	55.1%
	OS-4A	40%																	Industrial	19.9	18	358	1,200	0.024		19.88	0.002	358	4.0	0.10	*0.10*		0.40%	8			
	OS-4B																		Industrial	49.0	18	882	1,200	0.059		49.03	0.006	882	4.0	0.24	*0.24*		*0.40%*	8	SS-8	2.5	44.6%
	On-Site Total		***0.0***		***0***		***0***		***0.000***		***0.0***		***0***		***0***		***0.000***			***68.9***		***1,240***		***0.083***		***68.91***	***0.008***	***1,240***	***4.0***	***0.33***	***0.34***		***0.40%***	***8***			
	Design Point Total		***84.9***	***5.5***	***467***		***1,293***		***0.088***		***0.0***		***0***		***0***		***0.000***			***175.0***		***3,574***		***0.242***		***259.89***	***0.033***	***4,868***	***3.8***	***1.27***	***1.30***		***0.40%***	***12***	***SS-9***	***3.7***	***64.9%***
3.2	PA-37	25%	42.2	5.9	248	2.77	686	68	0.047																	42.18	0.005	686	4.0	0.19	*0.19*		0.40%	8			
	PA-48	100%	24.9	5.9	146	2.77	404	68	0.028																	24.90	0.003	404	4.0	0.11	*0.11*		0.40%	8			
	PA-71	45%	45.1	5.9	265	2.77	733	68	0.050																	45.09	0.005	733	4.0	0.20	*0.20*		0.40%	8			
	On-Site Total	DP3.1 - DP3.2	***112.2***		***658***		***1,823***		***0.124***		***0.0***		***0***		***0***		***0.000***			***68.9***		***1,240***		***0.083***		***181.07***	***0.021***	***3,063***	***4.0***	***0.83***	***0.85***		***0.40%***	***10***			
	Design Point Total		***197.0***	***5.7***	***1,125***		***3,116***		***0.212***		***0.0***		***0***		***0***		***0.000***			***175.0***		***3,574***		***0.242***		***372.05***	***0.045***	***6,691***	***3.6***	***1.65***	***1.70***		***0.40%***	***15***	***SS-10***	***4.0***	***52.6%***
3.3	PA-46	40%	40.4	5.9	237	2.77	657	68	0.045																	40.40	0.004	657	4.0	0.18	*0.18*		0.40%	8			
	PA-71	40%	40.1	5.9	235	2.77	652	68	0.044																	40.08	0.004	652	4.0	0.18	*0.18*		0.40%	8			
	On-Site Total	DP1 - DP3.3	***311.6***		***1,829***		***5,065***		***0.344***		***16.3***		***489***		***1,355***		***0.092***			***141.6***		***2,679***		***0.180***		***469.46***	***0.062***	***9,099***	***3.5***	***2.13***	***2.19***		***0.40%***	***15***			
	Design Point Total		***633.7***	***5.7***	***3,601***		***9,974***		***0.678***		***16.3***	***30.0***	***489***		***1,355***		***0.092***			***554.3***		***11,718***		***0.796***		***1,204.31***	***0.157***	***23,046***	***3.0***	***4.64***	***4.79***		***0.40%***	***18***	***SS-11***	***5.1***	***77.6%***
4.0	PA-70	100%	68.3	5.9	401	2.77	1,111	68	0.076																	68.30	0.008	1,111	4.0	0.30	*0.31*		0.40%	8			
	Design Point Total	DP4	***68.3***	***5.9***	***401***		***1,111***		***0.076***		***0.0***		***0***		***0***		***0.000***			***0.0***		***0***		***0.000***		***68.30***	***0.008***	***1,111***	***4.0***	***0.30***	***0.31***		***0.40%***	***8***	***SS-12***	***2.6***	***51.8%***
5.1	PA-37	25%	42.2	5.9	248	2.77	686	68	0.047																	42.18	0.005	686	4.0	0.19	*0.19*		0.40%	8			
	PA-40	100%	81.2	5.9	477	2.77	1,321	68	0.090																	81.20	0.009	1,321	4.0	0.36	*0.37*		0.40%	8	SS-13	2.7	57.8%
	Design Point Total	DP5.1	***123.4***	***5.9***	***725***		***2,007***		***0.136***		***0.0***		***0***		***0***		***0.000***			***0.0***		***0***		***0.000***		***123.38***	***0.014***	***2,007***	***4.0***	***0.55***	***0.56***		***0.40%***	***10***	***SS-14***	***3.0***	***51.7%***
5.2	PA-35	50%	34.0	5.9	200	2.77	553	68	0.038																	34.00	0.004	553	4.0	0.15	*0.15*		0.40%	8	SS-15	2.2	34.6%
	Design Point Total	DP5.1 - DP5.2	***157.4***	***5.9***	***924***		***2,559***		***0.174***		***0.0***		***0***		***0***		***0.000***			***0.0***		***0***		***0.000***		***157.38***	***0.017***	***2,559***	***4.0***	***0.70***	***0.71***		***0.40%***	***10***	***SS-16***	***3.2***	***59.9%***
5.3	PA-46	60%	60.6	5.9	356	2.77	986	68	0.067																	60.60	0.007	986	4.0	0.27	*0.27*		0.40%	8			
	On-Site Total	DP1 - DP5.3	***597.9***		***3,510***		***9,721***		***0.661***		***16.3***		***489***		***1,355***		***0.092***			***141.6***		***2,679***		***0.180***		***755.74***	***0.093***	***13,754***	***3.2***	***3.01***	***3.10***		***0.40%***	***18***			
	Design Point Total		***920.0***	***5.7***	***5,281***		***14,629***		***0.995***		***16.3***	***30.0***	***489***		***1,355***		***0.092***			***554.3***		***11,718***		***0.796***		***1,490.59***	***0.188***	***27,702***	***2.9***	***5.41***	***5.59***		***0.40%***	***24***	***SS-17***	***5.4***	***50.7%***
6	PA-38	100%	21.1	5.9	124	2.77	343	68	0.023																	21.10	0.002	343	4.0	0.09	*0.10*		0.40%	8			
	Design Point Total	DP6	***21.1***	***5.9***	***124***		***343***		***0.023***		***0.0***		***0***		***0***		***0.000***			***0.0***		***0***		***0.000***		***21.10***	***0.002***	***343***	***4.0***	***0.09***	***0.10***		***0.40%***	***8***	***SS-18***	***1.9***	***28.0%***
7	PA-21	100%	107.3	5.9	630	2.77	1,745	68	0.119																	107.30	0.012	1,745	4.0	0.47	*0.49*		0.40%	8	SS-19	2.9	70.1%
	On-Site Total	DP1 - DP7	***726.3***		***4,264***		***11,810***		***0.803***		***16.3***		***489***		***1,355***		***0.092***			***141.6***		***2,679***		***0.180***		***884.14***	***0.107***	***15,843***	***3.2***	***3.39***	***3.50***		***0.40%***	***18***			
	Design Point Total		***1,048.4***	***5.8***	***6,035***		***16,718***		***1.137***		***16.3***	***30.0***	***489***		***1,355***		***0.092***			***554.3***		***11,718***		***0.796***		***1,618.99***	***0.202***	***29,790***	***2.8***	***5.74***	***5.95***		***0.40%***	***24***	***SS-20***	***5.5***	***52.6%***
8	OS-5 (part of GVRE OFS-8)		219.0	5.5	1,205	3.20	3,854	80	0.308										Com.	511.0	31.25	15,969	2,500	1.278		730.00	0.159	19,823	3.0	4.82	*4.97*		0.25%	24			
			219.0	5.5	1,205	2.77	3,336	68	0.227										Com.	511.0	22	11,242	1,500	0.767		730.00	0.099	14,578	3.2	3.18	*3.27*		0.25%	18	SS-21	3.9	***68.6%***
9.1	PA-65	50%	31.5	5.9	185	2.77	511	68	0.035																	31.45	0.003	511	4.0	0.14	*0.14*		0.40%	8			
	PA-80										15.2	20.0	304	2.77	842	68	0.057									15.20	0.006	842	4.0	0.23	*0.23*		0.40%	8	SS-22	2.4	43.6%
	Design Point Total	DP9.1	***31.5***	***5.9***	***185***		***511***		***0.035***		***15.2***	***20.0***	***304***		***842***		***0.057***			***0.0***		***0***		***0.000***		***46.65***	***0.009***	***1,353***	***4.0***	***0.37***	***0.38***		***0.40%***	***8***	***SS-23***	***2.8***	***58.8%***

DP 9.1 Sanitary Sewer Demand Calculations

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.004 ft/ft
Diameter	8.0 in
Discharge	0.64 cfs

Results	
Normal Depth	4.7 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	2.2 in
Top Width	0.66 ft
Critical Depth	4.5 in
Percent Full	58.2 %
Critical Slope	0.004 ft/ft
Velocity	3.02 ft/s
Velocity Head	0.14 ft
Specific Energy	0.53 ft
Froude Number	0.940
Maximum Discharge	1.07 cfs
Discharge Full	0.99 cfs
Slope Full	0.002 ft/ft
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	0.0 %
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	4.7 in
Critical Depth	4.5 in
Channel Slope	0.004 ft/ft
Critical Slope	0.004 ft/ft

	LENNAR Phase 1 & 2 (F33 & F40) SP	Population Density	2.77	2.77	
			RESIDENTIAL SINGLE FAMILY	**RESIDENTIAL MULTI FAMILY**	
	DESIGN POINT	PLANNING AREA	# OF UNITS	# OF UNITS	
	9.1	PA-65	193	96	
		PA-80	210	46	
		TOTAL (from Site Plan)	403	142	**545**
		MUS (TOTAL)	185	304	489
	2.2	PA-65	0	0	
		PA-80	57	48	
		TOTAL (from Site Plan)	57	48	**105**
		MUS (TOTAL)	256	0	256