Southmoor Ridge

General Utility Report

February 2024
HR Green Project No: 2303146

Prepared For:

Bryan Kniep – Vice President of Operations
DHN Development
2335 Coralbell Grove, Unit 101
Colorado Springs, CO 80910
(719) 244-9851

Prepared By:

Richie Lyon, PE
Project Manager
HR Green Development, LLC
1975 Research Parkway
Colorado Springs, CO 80920

Engineer's Statement:

The enclosed utility report, and exhibits, were prepared by me or under my direct supervision and is correct to the best of my knowledge and belief. Said utility report has been prepared in accordance with applicable Town of Castle Rock criteria and is in conformance with the master utility plans for the affected area. I accept responsibility for any liability caused by negligent acts, errors, or omissions on my part in preparing this report.

_____

Richie Lyon, P.E.   Date
State of Colorado No. 53921
For and on behalf of HR Green Development, LLC

Owner/Developer's Statement:

As Owner/Developer of Land(s) identified within this report, I agree to proceed, implement, and comply with all recommendations and requirements outlined herein.

_____

Name of Developer   Date

_____

Authorized Signature

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A.   Project Location and Description

1.   Site Location

The Southmoor Ridge development is located within a portion of the North ½ of the Northwest ¼ of Section 24, and the Southwest ¼ of the Southwest ¼ of Section 13 within Township 15 South, Range 66 West of the 6th Principal Meridian in the City of Fountain in El Paso County, Colorado. The El Paso County numbers are 6513314015 ,6513300021, 6524200052, and 6524200053. The site is located to the east of Southmoor Drive, bisected by a planned future right-of-way extension of Fontaine Boulevard, and east of US Highway 85-87 in the City of Fountain. The area is surrounded by commercial buildings.

Figure 1: Vicinity Map

2.   Description of Property and Land Use

The site is a parcel of approximately 16.4 acres that consists of apartment complexes, townhomes, amenity center, pool and all the relevant infrastructure for the development. Southmoor Ridge includes four apartments building, townhomes, amenity buildings (clubhouse, pool, sports court) and accessory structures such as garages. There are 210 apartment units on 1.57 acres that vary from studio to three-bedroom. The 77 townhome units cover 1.77 acres and vary from one to three-bedroom. The amenity center is 4,250 square feet and will have approximately a 1,500 square foot pool. The development will have 6.7 acres dedicated to tracts and open space – approximately 4.25 acres will be irrigated.

B.   Calculated Water Demands

1.   Average Day Demands (ADD)

The Average Day Demand Rates were calculated per Security Water and Sanitation District Memorandum in Appendix F and supporting calculations can be found in Appendix A. The table below depicts a summary of the tabulated results.

Land Use	Dwelling Units	WSFUs	Area (SF)	ADD (GPD)	ADD (GPM)
Townhomes 1 Bedroom	9	70.2	N/A	1,268	9.72
Townhomes 2-3 Bedroom	68	775.2	N/A	14,000	0.88
Apartment Studio, 1-2 Bedroom	202	1575.6	N/A	28,455	19.76
Apartment 3 Bedroom	8	91.2	N/A	1,647	1.14
Amenity Center			4,250	2,125	1.48
Pool	N/A	N/A	1500	95	0.07
Irrigation Tap	N/A	N/A	185,130	3,794	2.63
Total				51,384	36

2.   Max Day Demands (MDD)

The Max Day Demand Rates were calculated per Security Water and Sanitation District Memorandum in Appendix F and supporting calculations can be found in Appendix A. A peaking factor of 2.8 was used. The table below depicts a summary of the tabulated results.

Land Use	Dwelling Units	WSFUs	Area (SF)	MDD (GPD)	MDD (GPM)
Townhomes 1 Bedroom	9	70.2	N/A	3,550	2.47
Townhomes 2-3 Bedroom	68	775.2	N/A	39,200	27.22
Apartment Studio, 1-2 Bedroom	202	1575.6	N/A	79,674	55.33
Apartment 3 Bedroom	8	91.2	N/A	4,612	3.20
Amenity Center			4,250	5,950	4.13
Pool	N/A	N/A	1500	267	0.19
Irrigation Tap	N/A	N/A	185,130	10,624	7.38
Total				143,876	100

Storage requirements for the proposed development are included in Appendix B. The required storage volume for the site is 0.62 MG.

3. Peak Hour Demands (PHD)

The Peak Hour Demand Rates were calculated per Security Water and Sanitation District Memorandum in Appendix F and supporting calculations can be found in Appendix A. A peaking factor of 4.5 was applied. The table below depicts a summary of the tabulated results.

Land Use	Dwelling Units	WSFUs	Area (SF)	PHD (GPD)	PHD (GPM)
Townhomes 1 Bedroom	9	70.2	N/A	5,705	4.08
Townhomes 2-3 Bedroom	68	775.2	N/A	63,000	45.00
Apartment Studio, 1-2 Bedroom	202	1575.6	N/A	128,047	91.46
Apartment 3 Bedroom	8	91.2	N/A	7,412	5.29
Amenity Center			4,250	9,563	6.83
Pool	N/A	N/A	1500	430	0.31
Irrigation Tap	N/A	N/A	185,130	17,074	12.20
Total				**231,229**	**165**

4. Irrigation Demands

The Irrigation Demand was calculated per the Security Water and Sanitation District Memorandum and supporting calculations can be found in Appendix B. Irrigation was included in all demand calculations above.

C. Existing Water System

1. Existing Distribution System

The proposed development will be served by Security Water and Sanitation Distrcit infrastructure. Currently, a 12-inch ductile iron main line runs along Southmoor Drive and Fontaine Blvd. The proposed Southmoor Ridge development will connect into the system in a single pressure zone, and a hydraulic model has been provided to show acceptable pressures. The development will connect into the 12-inch DIP in four separate locations which is provided in Appendix B. Existing hydrant information was provided by Security Water and Sanitation Districted and included in Appendix F.

D. Proposed Water System

1. Proposed Distribution System

The proposed development will utilize an 8-inch DIP public loop that runs through the roads within the development. These internal lines will connect to the larger Security Water and Sanitation District infrastructure at four locations: three locations on the 12-inch the runs along Southmoor Drive and one location on the 12-inch DIP that runs along Fountain Blvd. Proposed apartment buildings and townhomes will be served by a single water meter inside of each building. The final water meter sizes will be determined at a later date. Any future development of the existing water infrastructure needed to serve this site will be the responsibility of the developer.

Currently, it is projected that 4.25 acres will be irrigated. Once landscape and irrigation plans are finalized, irrigation demands will be adjusted accordingly.

2. Required Fire Flows

The minimum fire flow for the water distribution system is determined to be 2,000 gpm at two hydrants. The largest building is considered construction type V-A and has a building square footage of 51,300 sq. ft. of livable space. In accordance with Colorado Springs Fire Department (CFSD) Manual and the International Fire Code (IFC), the fire flow requirement is 4,000 gpm at 20 psi residual pressure for 4 hours. Since the buildings will have a sprinkler system, the fire flow is reduced 50% to 2,000 gpm. The average spacing between hydrants must be 450 ft and the maximum distance from any point on the street or road frontage to hydrant (Engine Hose Lay) must be 225 ft.

E. Proposed Water System Analysis and Modeling

1. Hydraulic Model

The proposed water system was modeled using WaterGEMs. Primary distribution lines and connections to the existing system are represented in the model. A plan view schematic exhibit of the model is included in Appendix C.

All water modeling was performed with the given HGL's at tie-in points. See table below for hydrant data used:

Hydrant ID	Hydraulic Grade Line	Static Pressure
H-48	5872.07	78
H-51	5872.03	76
H-47	5872.08	79
H-46	5872.09	81

A full report of the hydrant data provided by Security Water and Wastewater Sanitation District is provided in Appendix C. The Hazen-Williams 'C' factor of 120 was used for all pipes.

2. Hydraulic Modeling Scenarios

The following scenarios were modeled, and results can be found in Appendix C:

- Average Day Demand for the full build-out of the development

- Max Day Demand plus Fire Flow for the full build-out of the development

- Peak Hour Demand for the full build-out of the development

No water quality aging analysis or model has been included at this time.

3. Hydraulic Modeling Results

Per the Widefield Water and Wastewater System Specifications, the pressure range are as follows:

- Minimum static pressure – 35 psi

- Maximum static and dynamic pressure - 120 psi

- Minimum dynamic pressures

   o Max Daily Demand + Fire Flow – 20 psi

Acceptable velocities are noted below:

- Maximum velocity with Peak Hour Demands: 2 fps

- Maximum velocity with on a Peak Day Demand during Fire Flow Conditions: 5 fps

The total demand supplied by the model for each scenario can be found in Appendix A. The Maximum Day Demand + Fire Flow scenario was calculated by adding the required Fire Flow and the Maximum Day Demand. Although only two hydrants are required to supply the 2,000 gpm flow per CSFD, the results show that all hydrants will be able to individually supply the 2,000 gpm flow and maintain a residual pressure of 20 psi.

All modeled scenarios fall within the acceptable pressure ranges. Schematics and junction and pipe reports are located in Appendix C.

F. Calculated Wastewater Flows

1. Average Daily Wastewater Flows (ADF)

It is safe to assume that all water demands (excluding irrigation) will in turn be used as expected wastewater flow. Typical values for wastewater ADFs according to land use were taken from the Security Water and Sanitation District Memorandum that was provided:

- Townhomes
    - 1 Bedroom = 141 gpd/unit
    - 2-3 Bedroom = 206 gpd/unit
- Apartments
    - Studio, and 1 to 2 Bedroom = 141 gpd/unit
    - 3 Bedroom = 206 gpd/unit
- Amenity Center = 0.1 gpd/square-foot
- Pool = 95.46 gpd/ unit

Land Use	ADF (gpm)	ADF (gpd)	ADF (cfs)
Apartments	20.9	30,102	0.047
Townhomes	10.6	15,268	0.024
Amenity Clubhouse	1.5	2,125	0.003
Pool	0.1	95	0.0001

2. Peaking Factor

The peaking factor (PF) is defined by the following equation, $PF = 5 \times (ADF)^{-0.168}$ where ADF is expressed in million gallons per day. The maximum PF is 5.0. The PF was calculated 5.0 for this site, please see Appendix D for complete calculations.

3. Peak Design Flows (PDF)

The following expression was used for calculating peak design flow (PDF), PDF = (ADF x PF) + (0.1 x ADF).

Land Use	PDF (gpm)	PDF (gpd)	PDF (cfs)
Apartments	106.6	153,520	0.238
Townhomes	54.1	77,865	0.120
Amenity Clubhouse	7.5	10,838	0.017
Pool	0.3	487	0.001

G. Existing Wastewater System

1.   Existing Collection System

The proposed sanitary sewer network for the site will connect to an existing 12-in main line running through the development from west to east. This line ultimately runs to the City of Fountain Wastewater Treatment Facility.

H.   Proposed Wastewater System

1.   Proposed Collection System

The proposed sanitary sewer system will be located in the internal private drives with services for the townhomes, apartment buildings and amenity center. Per Security Water and Sanitation District Standards, a minimum of 8-in sanitary sewer main will convey wastewater from the residential buildings and amenity center and connect into the existing 12-inch main in two locations.

No lift stations, force mains, or pretreatment are anticipated to be required at this time. A separate sanitary service (grease interceptor) is not needed.

I. Proposed Wastewater System Analysis and Modeling

1.   Hydraulic Models

Bentley FlowMaster was utilized for all wastewater hydraulic calculations associated with the Southmoor Ridge site. Primary collection lines were modeled at this time. Additional downstream segments will be modeled upon request.

2.   Hydraulic Modeling Scenarios

Peak Design Flow calculations for the full build-out condition are included in Appendix E.

3.   Hydraulic Modeling Output and Required Schematics

Pipe segment tabulation is included in Appendix E. Pipe slopes are set at the minimum allowable at slope of 1.0% per the Security Widefield Water and Wastewater System Standard Specifications. Proposed 8-in pipes are well under the maximum percentage full of 75%.

J. References

1. <u>Water and Wastewater System Standard Specification</u>, Widefield Water and Sanitation District, January 2019

APPENDIX A

WATER DEMANDS

HRGreen

DOMESTIC WATER DEMAND GENERATION

 HRGreen

Project #: 2303146
Project: Southmoor Ridge
Location: Fountain, CO
Plan Date:

By: C Budge
Checked:
Date: 2/15/2024

UNIT DEMANDS

TOWNHOMES			24.70	WSFU/SFE	0.5 AAF/SFE	
1-BEDROOM	7.8	WSFU/UNIT			446 GPD/SFE	
2-3 BEDROOM	11.4	WSFU/UNIT			0.31 GPM/SFE	
APARTMENTS						
STUDIO, 1-2 BEDROOM	7.8	WSFU/UNIT	0.32	SFE/UNIT		
THREE-BEDROOM	11.4	WSFU/UNIT	0.46	SFE/UNIT		
AMENITY CENTER	0.5	GPD/SF	0.00	SFE/SF		
POOL	0.1	AAF/UNIT	95.46	GPD/UNIT		
IRRIGATION	893	GPD/IRR. ACRE				

PEAKING FACTORS

MAX. DAY / AVG. DAY	2.8
PEAK HOUR / FLOW RATIO	4.5

BUILDING TYPE	DWELLING UNITS	WATER SERVICE FIXTURE UNITS	TOTAL SQUARE-FEET	SINGLE FAMILY EQUIVALENT UNITS	AVERAGE DAY DEMAND (ADD)		MAXIMUM DAY DEMAND (MDD)		PEAK HOUR DEMAND (PHD)	
					GPD	GPM	GPD	GPM	GPD	GPM
TOWNHOMES 2-3 BEDROOM	68	775.2	N/A	31.4	14,000	9.72	39,200	27.22	63,000	45.00
TOWNHOMES 1 BEDROOM	9	70.2	N/A	2.8	1,268	0.88	3,550	2.47	5,705	4.08
APARTMENT STUDIO, 1-2 BEDROOM	202	1575.6	N/A	63.8	28,455	19.76	79,674	55.33	128,047	91.46
APARTMENT 3 BEDROOM	8	91.2	N/A	3.7	1,647	1.14	4,612	3.20	7,412	5.29
AMENITY CENTER	N/A	N/A	4,250	5.3	2,125	1.48	5,950	4.13	9,563	6.83
POOL	N/A	N/A	1,500	0.2	95	0.07	267	0.19	430	0.31
IRRIGATION	N/A	N/A	185,130	N/A	3,794	2.63	10,624	7.38	17,074	12.20
		2512.2		107	51,384	36	143,876	100	231,229	165

APPENDIX B

WATER STORAGE

HRGreen

APPENDIX B

IFC TABLE B105.1(2) MINIMUM REQUIRED FIRE-FLOW AND FLOW DURATION FOR BUILDINGS

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW	FLOW DURATION
Type IA and IB[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]	(gallons per minute)[b]	(hours)
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	2
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	2
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	2
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	2
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	2
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	3
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	3
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	3
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	4
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	4
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	4
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	4
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	4
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	4
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	4
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	4
-	-	115,801-125,500	83,701-90,600	51,501-55,700	6,250	4
-	-	125,501-135,500	90,601-97,900	55,701-60,200	6,500	4
-	-	135,501-145,800	97,901-106,800	60,201-64,800	6,750	4
-	-	145,801-156,700	106,801-113,200	64,801-69,600	7,000	4
-	-	156,701-167,900	113,201-121,300	69,601-74,600	7,250	4
-	-	167,901-179,400	121,301-129,600	74,601-79,800	7,500	4
-	-	179,401-191,400	129,601-138,300	79,801-85,100	7,750	4
-	-	191,401-Greater	138,301-Greater	85,101-Greater	8,000	4

For SI: 1 square foot = 0.0929 m^2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. Types of construction are based on the *International Building Code*.
b. Measured at 20 psi residual pressure.
Exception: A reduction in required fire-flow of 50 percent, as *approved*, is allowed when the building is equipped with an *approved automatic sprinkler system*.

STORAGE REQUIREMENTS

Project #: 2303146 By: C Budge

Project: Southmoor Ridge Checked:

Location: Fountain, CO Date: 2/15/2024

Plan Date:

Storage Volume (MG) = Maximum Day Demand (MG) + Fire Flow (MG)

Maximum Day Demand (MDD)

100 GPM

143,876 Gal

Fire Flow (FF)

2,000 GPM

4 hr

480,000 Gal

Storage Volume

0.62 MG

APPENDIX C

WATER HYDRAULIC ANALYSIS AND MODELING

Southmoor Ridge
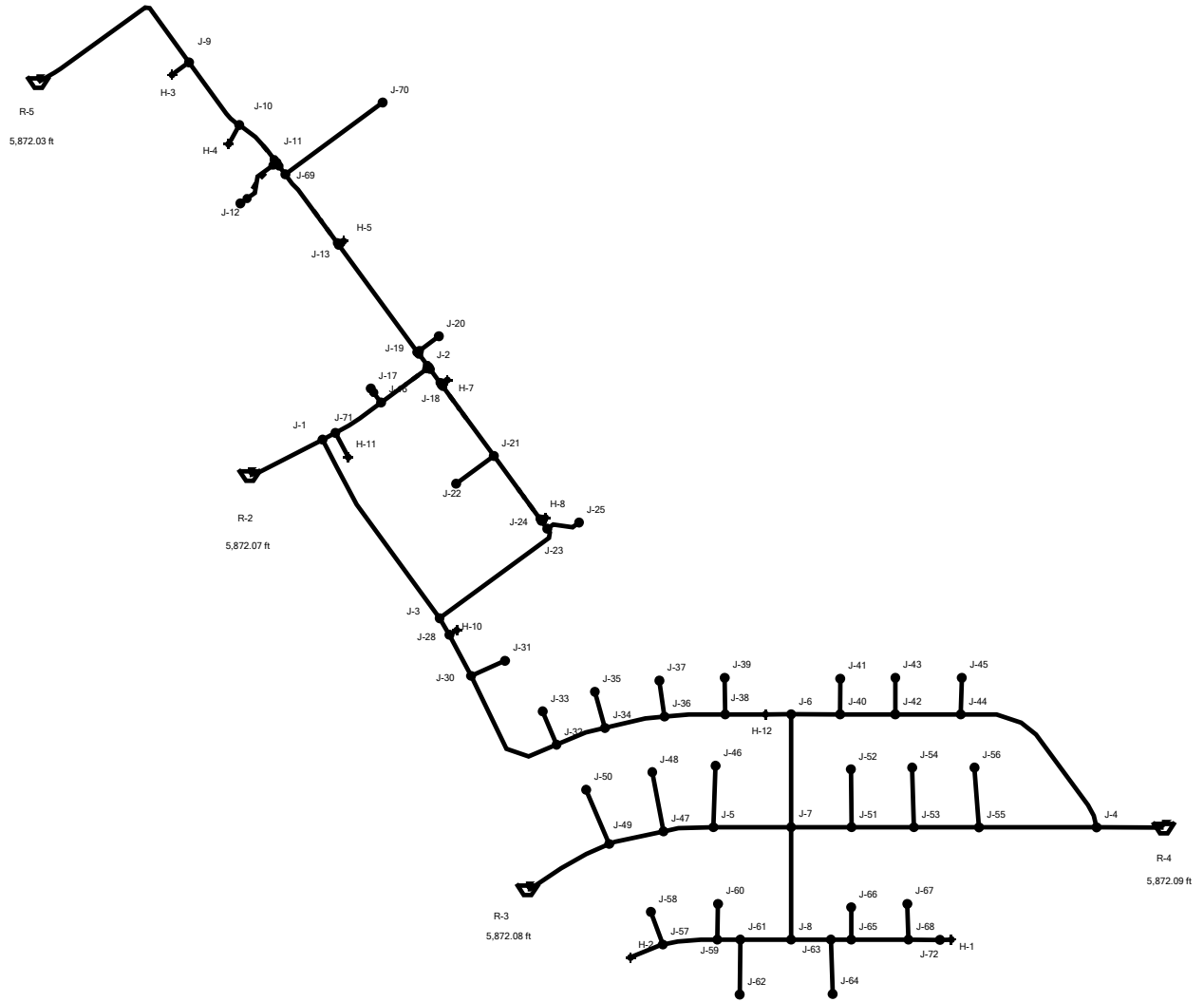
Southmoor Ridge
FlexTable: Pipe Table
Active Scenario: ADD

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)
P-1	98	J-1	R-2	8.0	DIP	120.0	-31	0.20
P-2	258	J-3	J-1	8.0	DIP	120.0	3	0.02
P-3	81	J-4	R-4	8.0	DIP	120.0	-39	0.25
P-4	94	J-7	J-5	8.0	DIP	120.0	4	0.03
P-5	136	J-6	J-7	8.0	DIP	120.0	-10	0.06
P-6	135	J-7	J-8	8.0	DIP	120.0	4	0.03
P-7	243	R-5	J-9	8.0	DIP	120.0	-32	0.21
P-8	25	J-9	H-3	8.0	DIP	120.0	0	0.00
P-9	97	J-9	J-10	8.0	DIP	120.0	-32	0.21
P-10	27	J-10	H-4	8.0	DIP	120.0	0	0.00
P-11	64	J-10	J-11	8.0	DIP	120.0	-32	0.21
P-12	70	J-11	J-12	8.0	DIP	120.0	5	0.03
P-13	7	J-13	H-5	8.0	DIP	120.0	0	0.00
P-17	71	J-16	J-2	8.0	DIP	120.0	29	0.18
P-18	21	J-16	J-17	8.0	DIP	120.0	5	0.03
P-19	26	J-2	J-18	8.0	DIP	120.0	-15	0.10
P-20	9	J-18	H-7	8.0	DIP	120.0	0	0.00
P-22	23	J-19	J-2	8.0	DIP	120.0	-44	0.28
P-23	32	J-19	J-20	8.0	DIP	120.0	5	0.03
P-24	107	J-18	J-21	8.0	DIP	120.0	-15	0.10
P-25	56	J-21	J-22	8.0	DIP	120.0	2	0.01
P-26	97	J-21	J-23	8.0	DIP	120.0	-17	0.11
P-27	6	J-23	H-8	8.0	DIP	120.0	0	0.00
P-29	42	J-24	J-25	8.0	DIP	120.0	5	0.03
P-30	12	J-23	J-24	8.0	DIP	120.0	-17	0.11
P-32	23	J-3	J-28	8.0	DIP	120.0	-25	0.16
P-33	10	J-28	H-10	8.0	DIP	120.0	0	0.00
P-35	45	J-30	J-31	8.0	DIP	120.0	1	0.00
P-36	162	J-30	J-32	8.0	DIP	120.0	-26	0.16
P-37	43	J-32	J-33	8.0	DIP	120.0	0	0.00
P-38	62	J-32	J-34	8.0	DIP	120.0	-26	0.17
P-39	45	J-34	J-35	8.0	DIP	120.0	1	0.00
P-40	73	J-34	J-36	8.0	DIP	120.0	-27	0.17
P-41	44	J-36	J-37	8.0	DIP	120.0	1	0.00
P-42	73	J-36	J-38	8.0	DIP	120.0	-27	0.17
P-43	44	J-38	J-39	8.0	DIP	120.0	1	0.00
P-44	59	J-6	J-40	8.0	DIP	120.0	-18	0.11
P-45	43	J-40	J-41	8.0	DIP	120.0	0	0.00
P-46	66	J-40	J-42	8.0	DIP	120.0	-18	0.12
P-47	44	J-42	J-43	8.0	DIP	120.0	1	0.00
P-48	79	J-42	J-44	8.0	DIP	120.0	-19	0.12
P-49	232	J-44	J-4	8.0	DIP	120.0	-19	0.12
P-50	44	J-44	J-45	8.0	DIP	120.0	1	0.00
P-51	74	J-5	J-46	8.0	DIP	120.0	1	0.00
P-52	61	J-5	J-47	8.0	DIP	120.0	4	0.02
P-53	73	J-47	J-48	8.0	DIP	120.0	1	0.00
P-54	67	J-47	J-49	8.0	DIP	120.0	3	0.02
P-55	113	J-49	R-3	8.0	DIP	120.0	3	0.02
P-56	71	J-49	J-50	8.0	DIP	120.0	1	0.00
P-57	73	J-51	J-7	8.0	DIP	120.0	18	0.12
P-58	70	J-51	J-52	8.0	DIP	120.0	1	0.00
P-59	75	J-53	J-51	8.0	DIP	120.0	19	0.12
P-60	72	J-53	J-54	8.0	DIP	120.0	1	0.00

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)
P-61	142	J-4	J-55	8.0	DIP	120.0	20	0.13
P-62	78	J-55	J-53	8.0	DIP	120.0	20	0.12
P-63	72	J-55	J-56	8.0	DIP	120.0	1	0.00
P-64	42	H-2	J-57	8.0	DIP	120.0	0	0.00
P-65	42	J-57	J-58	8.0	DIP	120.0	1	0.00
P-66	66	J-57	J-59	8.0	DIP	120.0	-1	0.00
P-67	43	J-59	J-60	8.0	DIP	120.0	1	0.00
P-68	28	J-59	J-61	8.0	DIP	120.0	-1	0.01
P-69	61	J-61	J-8	8.0	DIP	120.0	-2	0.01
P-70	66	J-61	J-62	8.0	DIP	120.0	1	0.00
P-71	48	J-8	J-63	8.0	DIP	120.0	2	0.02
P-72	66	J-63	J-64	8.0	DIP	120.0	1	0.00
P-73	25	J-63	J-65	8.0	DIP	120.0	2	0.01
P-74	39	J-65	J-66	8.0	DIP	120.0	0	0.00
P-75	69	J-65	J-68	8.0	DIP	120.0	1	0.01
P-77	43	J-68	J-67	8.0	DIP	120.0	1	0.00
P-78	18	J-11	J-69	8.0	DIP	120.0	-38	0.24
P-79	106	J-69	J-13	8.0	DIP	120.0	-39	0.25
P-81	48	J-38	H-12	8.0	DIP	120.0	-28	0.18
P-82	31	H-12	J-6	8.0	DIP	120.0	-28	0.18
P-83	146	J-69	J-70	8.0	DIP	120.0	2	0.01
P-84	17	J-1	J-71	8.0	DIP	120.0	34	0.22
P-85	66	J-71	J-16	8.0	DIP	120.0	34	0.22
P-86	33	J-71	H-11	8.0	DIP	120.0	0	0.00
P-87	160	J-13	J-19	8.0	DIP	120.0	-39	0.25
P-88	175	J-3	J-24	8.0	DIP	120.0	22	0.14
P-89	56	J-30	J-28	8.0	DIP	120.0	25	0.16
P-90	38	J-68	J-72	8.0	DIP	120.0	1	0.01
P-91	14	J-72	H-1	8.0	DIP	120.0	0	0.00

Southmoor Ridge
FlexTable: Junction Table
Active Scenario: ADD

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,687.96	0	5,872.07	80
J-2	5,686.25	0	5,872.06	80
J-3	5,686.39	0	5,872.07	80
J-4	5,679.55	0	5,872.09	83
J-5	5,683.37	0	5,872.08	82
J-6	5,683.40	0	5,872.08	82
J-7	5,682.46	0	5,872.08	82
J-8	5,681.19	0	5,872.08	83
J-9	5,689.18	0	5,872.04	79
J-10	5,688.28	0	5,872.04	80
J-11	5,687.70	0	5,872.04	80
J-12	5,690.50	5	5,872.04	79
J-13	5,687.15	0	5,872.05	80
J-16	5,686.72	0	5,872.06	80
J-17	5,687.00	5	5,872.06	80
J-18	5,685.69	0	5,872.06	81
J-19	5,686.23	0	5,872.06	80
J-20	5,688.50	5	5,872.06	79
J-21	5,684.94	0	5,872.06	81
J-22	5,686.50	2	5,872.06	80
J-23	5,684.43	0	5,872.06	81
J-24	5,684.43	0	5,872.06	81
J-25	5,686.50	5	5,872.06	80
J-28	5,686.41	0	5,872.07	80
J-30	5,686.77	0	5,872.07	80
J-31	5,685.95	1	5,872.07	81
J-32	5,686.02	0	5,872.07	80
J-33	5,686.06	0	5,872.07	80
J-34	5,685.30	0	5,872.07	81
J-35	5,684.86	1	5,872.07	81
J-36	5,684.72	0	5,872.08	81
J-37	5,684.50	1	5,872.08	81
J-38	5,684.13	0	5,872.08	81
J-39	5,683.88	1	5,872.08	81
J-40	5,682.88	0	5,872.08	82
J-41	5,683.46	0	5,872.08	82
J-42	5,682.29	0	5,872.08	82
J-43	5,682.96	1	5,872.08	82
J-44	5,681.64	0	5,872.08	82
J-45	5,682.32	1	5,872.08	82
J-46	5,683.82	1	5,872.08	81
J-47	5,683.96	0	5,872.08	81
J-48	5,684.54	1	5,872.08	81
J-49	5,684.65	0	5,872.08	81
J-50	5,685.32	1	5,872.08	81
J-51	5,681.86	0	5,872.08	82
J-52	5,682.32	1	5,872.08	82
J-53	5,681.25	0	5,872.08	83
J-54	5,681.68	1	5,872.08	82
J-55	5,680.62	0	5,872.08	83
J-56	5,681.05	1	5,872.08	83
J-57	5,682.42	0	5,872.08	82
J-58	5,682.99	1	5,872.08	82

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-59	5,681.92	0	5,872.08	82
J-60	5,682.38	1	5,872.08	82
J-61	5,681.68	0	5,872.08	82
J-62	5,681.38	1	5,872.08	83
J-63	5,681.23	0	5,872.08	83
J-64	5,680.77	1	5,872.08	83
J-65	5,681.25	0	5,872.08	83
J-66	5,681.50	0	5,872.08	82
J-67	5,680.91	1	5,872.08	83
J-68	5,680.71	0	5,872.08	83
J-69	5,687.70	0	5,872.05	80
J-70	5,688.70	2	5,872.05	79
J-71	5,687.70	0	5,872.07	80
J-72	5,680.40	1	5,872.08	83

Southmoor Ridge
FlexTable: Pipe Table
Active Scenario: MDD

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)
P-1	98	J-1	R-2	8.0	DIP	120.0	-57	0.36
P-2	258	J-3	J-1	8.0	DIP	120.0	-7	0.04
P-3	81	J-4	R-4	8.0	DIP	120.0	-46	0.29
P-4	94	J-7	J-5	8.0	DIP	120.0	-10	0.06
P-5	136	J-6	J-7	8.0	DIP	120.0	-16	0.10
P-6	135	J-7	J-8	8.0	DIP	120.0	12	0.07
P-7	243	R-5	J-9	8.0	DIP	120.0	-18	0.11
P-8	25	J-9	H-3	8.0	DIP	120.0	0	0.00
P-9	97	J-9	J-10	8.0	DIP	120.0	-18	0.11
P-10	27	J-10	H-4	8.0	DIP	120.0	0	0.00
P-11	64	J-10	J-11	8.0	DIP	120.0	-18	0.11
P-12	70	J-11	J-12	8.0	DIP	120.0	15	0.09
P-13	7	J-13	H-5	8.0	DIP	120.0	0	0.00
P-17	71	J-16	J-2	8.0	DIP	120.0	35	0.23
P-18	21	J-16	J-17	8.0	DIP	120.0	15	0.09
P-19	26	J-2	J-18	8.0	DIP	120.0	-15	0.09
P-20	9	J-18	H-7	8.0	DIP	120.0	0	0.00
P-22	23	J-19	J-2	8.0	DIP	120.0	-50	0.32
P-23	32	J-19	J-20	8.0	DIP	120.0	14	0.09
P-24	107	J-18	J-21	8.0	DIP	120.0	-15	0.09
P-25	56	J-21	J-22	8.0	DIP	120.0	4	0.03
P-26	97	J-21	J-23	8.0	DIP	120.0	-19	0.12
P-27	6	J-23	H-8	8.0	DIP	120.0	0	0.00
P-29	42	J-24	J-25	8.0	DIP	120.0	14	0.09
P-30	12	J-23	J-24	8.0	DIP	120.0	-19	0.12
P-32	23	J-3	J-28	8.0	DIP	120.0	-26	0.17
P-33	10	J-28	H-10	8.0	DIP	120.0	0	0.00
P-35	45	J-30	J-31	8.0	DIP	120.0	2	0.01
P-36	162	J-30	J-32	8.0	DIP	120.0	-29	0.18
P-37	43	J-32	J-33	8.0	DIP	120.0	1	0.01
P-38	62	J-32	J-34	8.0	DIP	120.0	-30	0.19
P-39	45	J-34	J-35	8.0	DIP	120.0	2	0.01
P-40	73	J-34	J-36	8.0	DIP	120.0	-31	0.20
P-41	44	J-36	J-37	8.0	DIP	120.0	2	0.01
P-42	73	J-36	J-38	8.0	DIP	120.0	-33	0.21
P-43	44	J-38	J-39	8.0	DIP	120.0	2	0.01
P-44	59	J-6	J-40	8.0	DIP	120.0	-18	0.12
P-45	43	J-40	J-41	8.0	DIP	120.0	1	0.01
P-46	66	J-40	J-42	8.0	DIP	120.0	-20	0.13
P-47	44	J-42	J-43	8.0	DIP	120.0	2	0.01
P-48	79	J-42	J-44	8.0	DIP	120.0	-21	0.14
P-49	232	J-44	J-4	8.0	DIP	120.0	-23	0.15
P-50	44	J-44	J-45	8.0	DIP	120.0	2	0.01
P-51	74	J-5	J-46	8.0	DIP	120.0	2	0.01
P-52	61	J-5	J-47	8.0	DIP	120.0	-11	0.07
P-53	73	J-47	J-48	8.0	DIP	120.0	2	0.01
P-54	67	J-47	J-49	8.0	DIP	120.0	-13	0.08
P-55	113	J-49	R-3	8.0	DIP	120.0	-14	0.09
P-56	71	J-49	J-50	8.0	DIP	120.0	2	0.01
P-57	73	J-51	J-7	8.0	DIP	120.0	18	0.12
P-58	70	J-51	J-52	8.0	DIP	120.0	2	0.01
P-59	75	J-53	J-51	8.0	DIP	120.0	20	0.13
P-60	72	J-53	J-54	8.0	DIP	120.0	2	0.01

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)
P-61	142	J-4	J-55	8.0	DIP	120.0	23	0.15
P-62	78	J-55	J-53	8.0	DIP	120.0	21	0.14
P-63	72	J-55	J-56	8.0	DIP	120.0	2	0.01
P-64	42	H-2	J-57	8.0	DIP	120.0	0	0.00
P-65	42	J-57	J-58	8.0	DIP	120.0	2	0.01
P-66	66	J-57	J-59	8.0	DIP	120.0	-2	0.01
P-67	43	J-59	J-60	8.0	DIP	120.0	2	0.01
P-68	28	J-59	J-61	8.0	DIP	120.0	-3	0.02
P-69	61	J-61	J-8	8.0	DIP	120.0	-5	0.03
P-70	66	J-61	J-62	8.0	DIP	120.0	2	0.01
P-71	48	J-8	J-63	8.0	DIP	120.0	7	0.04
P-72	66	J-63	J-64	8.0	DIP	120.0	2	0.01
P-73	25	J-63	J-65	8.0	DIP	120.0	5	0.03
P-74	39	J-65	J-66	8.0	DIP	120.0	1	0.01
P-75	69	J-65	J-68	8.0	DIP	120.0	4	0.03
P-77	43	J-68	J-67	8.0	DIP	120.0	2	0.01
P-78	18	J-11	J-69	8.0	DIP	120.0	-32	0.21
P-79	106	J-69	J-13	8.0	DIP	120.0	-37	0.23
P-81	48	J-38	H-12	8.0	DIP	120.0	-35	0.22
P-82	31	H-12	J-6	8.0	DIP	120.0	-35	0.22
P-83	146	J-69	J-70	8.0	DIP	120.0	4	0.03
P-84	17	J-1	J-71	8.0	DIP	120.0	50	0.32
P-85	66	J-71	J-16	8.0	DIP	120.0	50	0.32
P-86	33	J-71	H-11	8.0	DIP	120.0	0	0.00
P-87	160	J-13	J-19	8.0	DIP	120.0	-37	0.23
P-88	175	J-3	J-24	8.0	DIP	120.0	33	0.21
P-89	56	J-30	J-28	8.0	DIP	120.0	26	0.17
P-90	38	J-68	J-72	8.0	DIP	120.0	2	0.02
P-91	14	J-72	H-1	8.0	DIP	120.0	0	0.00

Southmoor Ridge
FlexTable: Junction Table
Active Scenario: MDD

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,687.96	0	5,872.06	80
J-2	5,686.25	0	5,872.05	80
J-3	5,686.39	0	5,872.06	80
J-4	5,679.55	0	5,872.08	83
J-5	5,683.37	0	5,872.08	82
J-6	5,683.40	0	5,872.08	82
J-7	5,682.46	0	5,872.08	82
J-8	5,681.19	0	5,872.08	83
J-9	5,689.18	0	5,872.03	79
J-10	5,688.28	0	5,872.03	80
J-11	5,687.70	0	5,872.03	80
J-12	5,690.50	15	5,872.03	79
J-13	5,687.15	0	5,872.04	80
J-16	5,686.72	0	5,872.05	80
J-17	5,687.00	15	5,872.05	80
J-18	5,685.69	0	5,872.05	81
J-19	5,686.23	0	5,872.05	80
J-20	5,688.50	14	5,872.05	79
J-21	5,684.94	0	5,872.05	81
J-22	5,686.50	4	5,872.05	80
J-23	5,684.43	0	5,872.05	81
J-24	5,684.43	0	5,872.05	81
J-25	5,686.50	14	5,872.05	80
J-28	5,686.41	0	5,872.06	80
J-30	5,686.77	1	5,872.06	80
J-31	5,685.95	2	5,872.06	81
J-32	5,686.02	0	5,872.07	80
J-33	5,686.06	1	5,872.07	80
J-34	5,685.30	0	5,872.07	81
J-35	5,684.86	2	5,872.07	81
J-36	5,684.72	0	5,872.07	81
J-37	5,684.50	2	5,872.07	81
J-38	5,684.13	0	5,872.07	81
J-39	5,683.88	2	5,872.07	81
J-40	5,682.88	0	5,872.08	82
J-41	5,683.46	1	5,872.08	82
J-42	5,682.29	0	5,872.08	82
J-43	5,682.96	2	5,872.08	82
J-44	5,681.64	0	5,872.08	82
J-45	5,682.32	2	5,872.08	82
J-46	5,683.82	2	5,872.08	81
J-47	5,683.96	0	5,872.08	81
J-48	5,684.54	2	5,872.08	81
J-49	5,684.65	0	5,872.08	81
J-50	5,685.32	2	5,872.08	81
J-51	5,681.86	0	5,872.08	82
J-52	5,682.32	2	5,872.08	82
J-53	5,681.25	0	5,872.08	83
J-54	5,681.68	2	5,872.08	82
J-55	5,680.62	0	5,872.08	83
J-56	5,681.05	2	5,872.08	83
J-57	5,682.42	0	5,872.08	82
J-58	5,682.99	2	5,872.08	82

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-59	5,681.92	0	5,872.08	82
J-60	5,682.38	2	5,872.08	82
J-61	5,681.68	0	5,872.08	82
J-62	5,681.38	2	5,872.08	83
J-63	5,681.23	0	5,872.08	83
J-64	5,680.77	2	5,872.08	83
J-65	5,681.25	0	5,872.08	83
J-66	5,681.50	1	5,872.08	82
J-67	5,680.91	2	5,872.08	83
J-68	5,680.71	0	5,872.08	83
J-69	5,687.70	0	5,872.04	80
J-70	5,688.70	4	5,872.04	79
J-71	5,687.70	0	5,872.06	80
J-72	5,680.40	2	5,872.08	83

Southmoor Ridge

Fire Flow Node FlexTable: Fire Flow Results Table

Active Scenario: Fire Flow

Label	Satisfies Fire Flow Constraints?	Fire Flow Status	Fire Flow (Needed) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)
H-1	True	Passed	2,000	20	47	49	J-72	49	J-72
H-2	True	Passed	2,000	20	46	50	J-58	50	J-58
H-3	True	Passed	2,000	20	67	70	J-9	70	J-9
H-4	True	Passed	2,000	20	66	69	J-10	69	J-10
H-5	True	Passed	2,000	20	69	70	J-13	70	J-13
H-7	True	Passed	2,000	20	71	72	J-18	72	J-18
H-8	True	Passed	2,000	20	70	70	J-25	70	J-25
H-10	True	Passed	2,000	20	72	73	J-28	73	J-28
H-11	True	Passed	2,000	20	72	75	J-71	75	J-71
H-12	True	Passed	2,000	20	75	75	J-38	75	J-38

Southmoor Ridge
FlexTable: Pipe Table
Active Scenario: PHD

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)
P-1	98	J-1	R-2	8.0	DIP	120.0	-77	0.49
P-2	258	J-3	J-1	8.0	DIP	120.0	-14	0.09
P-3	81	J-4	R-4	8.0	DIP	120.0	-56	0.36
P-4	94	J-7	J-5	8.0	DIP	120.0	-19	0.12
P-5	136	J-6	J-7	8.0	DIP	120.0	-20	0.13
P-6	135	J-7	J-8	8.0	DIP	120.0	19	0.12
P-7	243	R-5	J-9	8.0	DIP	120.0	5	0.03
P-8	25	J-9	H-3	8.0	DIP	120.0	0	0.00
P-9	97	J-9	J-10	8.0	DIP	120.0	5	0.03
P-10	27	J-10	H-4	8.0	DIP	120.0	0	0.00
P-11	64	J-10	J-11	8.0	DIP	120.0	5	0.03
P-12	70	J-11	J-12	8.0	DIP	120.0	24	0.16
P-13	7	J-13	H-5	8.0	DIP	120.0	0	0.00
P-17	71	J-16	J-2	8.0	DIP	120.0	38	0.24
P-18	21	J-16	J-17	8.0	DIP	120.0	24	0.16
P-19	26	J-2	J-18	8.0	DIP	120.0	-11	0.07
P-20	9	J-18	H-7	8.0	DIP	120.0	0	0.00
P-22	23	J-19	J-2	8.0	DIP	120.0	-49	0.31
P-23	32	J-19	J-20	8.0	DIP	120.0	23	0.15
P-24	107	J-18	J-21	8.0	DIP	120.0	-11	0.07
P-25	56	J-21	J-22	8.0	DIP	120.0	7	0.05
P-26	97	J-21	J-23	8.0	DIP	120.0	-18	0.11
P-27	6	J-23	H-8	8.0	DIP	120.0	0	0.00
P-29	42	J-24	J-25	8.0	DIP	120.0	23	0.15
P-30	12	J-23	J-24	8.0	DIP	120.0	-18	0.11
P-32	23	J-3	J-28	8.0	DIP	120.0	-27	0.17
P-33	10	J-28	H-10	8.0	DIP	120.0	0	0.00
P-35	45	J-30	J-31	8.0	DIP	120.0	3	0.02
P-36	162	J-30	J-32	8.0	DIP	120.0	-31	0.20
P-37	43	J-32	J-33	8.0	DIP	120.0	2	0.01
P-38	62	J-32	J-34	8.0	DIP	120.0	-33	0.21
P-39	45	J-34	J-35	8.0	DIP	120.0	3	0.02
P-40	73	J-34	J-36	8.0	DIP	120.0	-35	0.23
P-41	44	J-36	J-37	8.0	DIP	120.0	3	0.02
P-42	73	J-36	J-38	8.0	DIP	120.0	-38	0.24
P-43	44	J-38	J-39	8.0	DIP	120.0	3	0.02
P-44	59	J-6	J-40	8.0	DIP	120.0	-21	0.13
P-45	43	J-40	J-41	8.0	DIP	120.0	2	0.01
P-46	66	J-40	J-42	8.0	DIP	120.0	-23	0.14
P-47	44	J-42	J-43	8.0	DIP	120.0	3	0.02
P-48	79	J-42	J-44	8.0	DIP	120.0	-25	0.16
P-49	232	J-44	J-4	8.0	DIP	120.0	-28	0.18
P-50	44	J-44	J-45	8.0	DIP	120.0	3	0.02
P-51	74	J-5	J-46	8.0	DIP	120.0	3	0.02
P-52	61	J-5	J-47	8.0	DIP	120.0	-22	0.14
P-53	73	J-47	J-48	8.0	DIP	120.0	3	0.02
P-54	67	J-47	J-49	8.0	DIP	120.0	-24	0.16
P-55	113	J-49	R-3	8.0	DIP	120.0	-27	0.17
P-56	71	J-49	J-50	8.0	DIP	120.0	3	0.02
P-57	73	J-51	J-7	8.0	DIP	120.0	20	0.13
P-58	70	J-51	J-52	8.0	DIP	120.0	3	0.02
P-59	75	J-53	J-51	8.0	DIP	120.0	23	0.15
P-60	72	J-53	J-54	8.0	DIP	120.0	3	0.02

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)
P-61	142	J-4	J-55	8.0	DIP	120.0	28	0.18
P-62	78	J-55	J-53	8.0	DIP	120.0	25	0.16
P-63	72	J-55	J-56	8.0	DIP	120.0	3	0.02
P-64	42	H-2	J-57	8.0	DIP	120.0	0	0.00
P-65	42	J-57	J-58	8.0	DIP	120.0	3	0.02
P-66	66	J-57	J-59	8.0	DIP	120.0	-3	0.02
P-67	43	J-59	J-60	8.0	DIP	120.0	3	0.02
P-68	28	J-59	J-61	8.0	DIP	120.0	-5	0.03
P-69	61	J-61	J-8	8.0	DIP	120.0	-8	0.05
P-70	66	J-61	J-62	8.0	DIP	120.0	3	0.02
P-71	48	J-8	J-63	8.0	DIP	120.0	11	0.07
P-72	66	J-63	J-64	8.0	DIP	120.0	3	0.02
P-73	25	J-63	J-65	8.0	DIP	120.0	9	0.06
P-74	39	J-65	J-66	8.0	DIP	120.0	2	0.01
P-75	69	J-65	J-68	8.0	DIP	120.0	7	0.04
P-77	43	J-68	J-67	8.0	DIP	120.0	3	0.02
P-78	18	J-11	J-69	8.0	DIP	120.0	-19	0.12
P-79	106	J-69	J-13	8.0	DIP	120.0	-26	0.17
P-81	48	J-38	H-12	8.0	DIP	120.0	-41	0.26
P-82	31	H-12	J-6	8.0	DIP	120.0	-41	0.26
P-83	146	J-69	J-70	8.0	DIP	120.0	7	0.04
P-84	17	J-1	J-71	8.0	DIP	120.0	63	0.40
P-85	66	J-71	J-16	8.0	DIP	120.0	63	0.40
P-86	33	J-71	H-11	8.0	DIP	120.0	0	0.00
P-87	160	J-13	J-19	8.0	DIP	120.0	-26	0.17
P-88	175	J-3	J-24	8.0	DIP	120.0	41	0.26
P-89	56	J-30	J-28	8.0	DIP	120.0	27	0.17
P-90	38	J-68	J-72	8.0	DIP	120.0	4	0.03
P-91	14	J-72	H-1	8.0	DIP	120.0	0	0.00

Southmoor Ridge
FlexTable: Junction Table
Active Scenario: PHD

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,687.96	0	5,872.05	80
J-2	5,686.25	0	5,872.04	80
J-3	5,686.39	0	5,872.05	80
J-4	5,679.55	0	5,872.08	83
J-5	5,683.37	0	5,872.07	82
J-6	5,683.40	0	5,872.07	82
J-7	5,682.46	0	5,872.07	82
J-8	5,681.19	0	5,872.07	83
J-9	5,689.18	0	5,872.03	79
J-10	5,688.28	0	5,872.03	79
J-11	5,687.70	0	5,872.03	80
J-12	5,690.50	24	5,872.03	79
J-13	5,687.15	0	5,872.03	80
J-16	5,686.72	0	5,872.04	80
J-17	5,687.00	24	5,872.04	80
J-18	5,685.69	0	5,872.04	81
J-19	5,686.23	0	5,872.04	80
J-20	5,688.50	23	5,872.04	79
J-21	5,684.94	0	5,872.04	81
J-22	5,686.50	7	5,872.04	80
J-23	5,684.43	0	5,872.04	81
J-24	5,684.43	0	5,872.04	81
J-25	5,686.50	23	5,872.04	80
J-28	5,686.41	0	5,872.05	80
J-30	5,686.77	1	5,872.05	80
J-31	5,685.95	3	5,872.05	81
J-32	5,686.02	0	5,872.06	80
J-33	5,686.06	2	5,872.06	80
J-34	5,685.30	0	5,872.06	81
J-35	5,684.86	3	5,872.06	81
J-36	5,684.72	0	5,872.06	81
J-37	5,684.50	3	5,872.06	81
J-38	5,684.13	0	5,872.07	81
J-39	5,683.88	3	5,872.07	81
J-40	5,682.88	0	5,872.07	82
J-41	5,683.46	2	5,872.07	82
J-42	5,682.29	0	5,872.07	82
J-43	5,682.96	3	5,872.07	82
J-44	5,681.64	0	5,872.08	82
J-45	5,682.32	3	5,872.08	82
J-46	5,683.82	3	5,872.07	81
J-47	5,683.96	0	5,872.08	81
J-48	5,684.54	3	5,872.08	81
J-49	5,684.65	0	5,872.08	81
J-50	5,685.32	3	5,872.08	81
J-51	5,681.86	0	5,872.07	82
J-52	5,682.32	3	5,872.07	82
J-53	5,681.25	0	5,872.08	83
J-54	5,681.68	3	5,872.08	82
J-55	5,680.62	0	5,872.08	83
J-56	5,681.05	3	5,872.08	83
J-57	5,682.42	0	5,872.07	82
J-58	5,682.99	3	5,872.07	82

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-59	5,681.92	0	5,872.07	82
J-60	5,682.38	3	5,872.07	82
J-61	5,681.68	0	5,872.07	82
J-62	5,681.38	3	5,872.07	83
J-63	5,681.23	0	5,872.07	83
J-64	5,680.77	3	5,872.07	83
J-65	5,681.25	0	5,872.07	83
J-66	5,681.50	2	5,872.07	82
J-67	5,680.91	3	5,872.07	83
J-68	5,680.71	0	5,872.07	83
J-69	5,687.70	0	5,872.03	80
J-70	5,688.70	7	5,872.03	79
J-71	5,687.70	0	5,872.05	80
J-72	5,680.40	4	5,872.07	83

APPENDIX D

WASTEWATER FLOWS

HRGreen

SANITARY SEWER DEMAND CALCULATIONS

Project #: 2303146 | Location: Fountain, Colorado | By C Budge | Date 2/15/2024
Project: Southmoor Ridge | Plan Date: | Checked | Date

Design Point	Location	Land Use	Area (sq-ft)	Residential Units	Single Family Equivalent (SFE)	Average Day Flow (gpm)	Average Day Flow (mgd)	Average Day Flow (cfs)	Commercial Units	Single Family Equivalent (SFE)	Average Day Flow (gpm)	Average Day Flow (mgd)	Average Day Flow (cfs)	Peaking Factor	Peak Flow (gpm)	Infiltration / Inflow (gpm)	Peak Flow + I/I (gpm)	Peak Flow + I/I (mgpd)	Peak Flow + I/I (cfs)	Total SFE	Upstream Manhole ID	Downstream Manhole ID	Pipe Slope (%)	Pipe Size (in)	Full Pipe flow (gpm)	Maximum Capacity 75% full (gpm)	Ratio PDF/75% Capacity
1	Apartments	Studio/1-2 Bed		202	64	19.8	0.03	0.04						5.0	98.8	2.0	**100.8**	0.145	0.225								
	Apartments	3 Bed		8	4	1.1	0.002	0.003						5.0	5.7	0.1	**5.8**	0.008	0.013								
	Amenity	Pool	1,500						1	0.2	0.1	0.001	0.0001	5.0	0.3	0.0	**0.3**	0.000	0.001								
	Amenity	Clubhouse	4,250						1	5.3	1.5	0.002	0.003	5.0	7.4	0.1	**7.5**	0.011	0.017								
	Total at Design Point			210	67	21	0.030	0.047	2	5.5	1.5	0.003	0.003	5.0	112.2	2.2	**114.5**	0.165	0.255	73.01	-	-	1.0	8	542.34	494.6	23.1%
2	Townhomes	1-Bed		9	2.8	0.9	0.001	0.002						5.0	4.4	0.1	**4.5**	0.006	0.010								
	Townhomes	2-3 Bed		68	21.5	9.7	0.014	0.022						5.0	48.6	1.0	**49.6**	0.071	0.110								
	Total at Design Point			77	24	11	0.015	0.024	0	0	0	0	0	5.0	53.0	1.1	**54.1**	0.078	0.120	24.3	-	-	1.0	8	542.34	494.6	10.9%

APPENDIX E

WASTEWATER HYDRAULIC MODELING

Worksheet for 8-in Pipe - 75% Capacity

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	6.00	in
Diameter	8.00	in

Results

Discharge	494.55	gal/min
Flow Area	0.28	ft²
Wetted Perimeter	1.40	ft
Hydraulic Radius	2.41	in
Top Width	0.58	ft
Critical Depth	0.50	ft
Percent Full	75.0	%
Critical Slope	0.01010	ft/ft
Velocity	3.92	ft/s
Velocity Head	0.24	ft
Specific Energy	0.74	ft
Froude Number	0.99	
Maximum Discharge	583.40	gal/min
Discharge Full	542.34	gal/min
Slope Full	0.00832	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.00	%
Downstream Velocity	Infinity	ft/s

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.00	in
Critical Depth	0.50	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.01010	ft/ft

APPENDIX F

MAPS

HRG
HRGreen

SOUTHMOOR RIDGE

VICINITY MAP

A TRACT OF LAND LOCATED IN A PORTION OF THE NORTH HALF OF
THE NORTHWEST QUARTER OF SECTION 24, AND IN A PORTION OF
THE SOUTH HALF OF THE SOUTHWEST QUARTER OF SECTION 13,
ALL IN TOWNSHIP 15 SOUTH, RANGE 66 WEST OF THE 6TH P.M.,
COUNTY OF EL PASO, STATE OF COLORADO

WAL-MART
ZONING: VC

BLOCK SECURITY SUBDIVISION

SOUTHMOOR DRIVE

SHOPPING CENTER
ZONING: VC

ZONING: VC

CITY OF COLORADO SPRINGS

HIGHWAY 85-87

FONTAINE BLVD

PROPOSED SITE

CITY OF FOUNTAIN

FONTAINE BLVD

SHOPPING CENTER

ZONING: SO

ZONING: SO

ZONING: VC

ZONING: RA

BLOCK 2
WIDEFIELD HOMES

FOUNTAIN CREEK
FEMA FLOODZONE AE

ZONING: SO

BLOCK 3 SOUTHMOOR
SUBDIVISION
ZONING: R1

VICINITY MAP
SCALE: 1"=1,000'

DRAWN BY: DLH	JOB DATE: 2/12/2024	BAR IS ONE INCH ON OFFICIAL DRAWINGS.	NO.	DATE	BY	REVISION DESCRIPTION
APPROVED: RDL	JOB NUMBER: 2303146	0 ▮▮ 1"				
CAD DATE: 1/5/2024		IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.				
CAD FILE: J:\2023\2303146\CAD\Dwgs\C\Vicinity_Map\Vicinity-Map_2303146						

HR Green - COLORADO SPRINGS
7222 COMMERCE CENTER DR. SUITE 220
COLORADO SPRINGS CO 80919
PHONE: 719.622.6222
FAX: 844.273.1057

SOUTHMOOR RIDGE
DHN DEVELOPMENT INC.
FOUNTAIN, COLORADO

DHN Development
PLACES management

CONCEPT PLAN & OVERALL DEVELOPMENT PLAN
VICINITY MAP

SHEET
VM

1

SOUTHMOOR RIDGE

PRELIMINARY UTILITY PLANS

A TRACT OF LAND LOCATED IN A PORTION OF THE NORTH HALF OF
THE NORTHWEST QUARTER OF SECTION 24, AND IN A PORTION OF
THE SOUTH HALF OF THE SOUTHWEST QUARTER OF SECTION 13,
ALL IN TOWNSHIP 15 SOUTH, RANGE 66 WEST OF THE 6TH P.M.,
COUNTY OF EL PASO, STATE OF COLORADO

VICINITY MAP (SCALE: 1"=1,000')

WAL-MART
LOT #1
LOT #2
LOT #3
FOUNTAINE CREEK

LOT #1

LOT #2

POOL

POOL HOUSE &
COMMUNITY BLDG.

AMENITIES AREA

MULTI-SPORTS
COURT

MATCHLINE
SEE SHEET 2

NORTH

0   25   50

LEGEND

	EXISTING	PROPOSED
MATCH LINE		
LOT LINE		
SECTION LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
CENTERLINE		
PLASTIC FENCE	X — X	
WOODEN FENCE		
U.G. ELECTRIC	UE	UE
OVERHEAD ELECTRIC	OHE	OE
GAS MAIN	UG	
SANITARY SEWER		
STORM DRAIN		
TELEPHONE	UT	UT
WATER MAIN		W
SWALE		
TRAIL		
CURB & GUTTER		
INDEX CONTOUR	5250	5250
INTER. CONTOUR		
100-YR FLOODPLAIN		
FLOODWAY		

STORM SEWER

	EXISTING	PROPOSED
MANHOLE		
STORM INLET		
FLARED END SECTION		
RIPRAP		
CONC. FOREBAY		
CONC. TRICKLE CHANNEL		
DETENTION AREA		

SANITARY SEWER

	EXISTING	PROPOSED
CLEAN OUT		
MANHOLE		
PLUG		

WATER

	EXISTING	PROPOSED
FIRE HYDRANT		
FIRE DEPT. CONNECTION		
GATE VALVE		
MANHOLE		
METER		
TEE		
REDUCER		

DRY UTILITIES

ELECTRIC METER
ELECTRIC PEDESTAL
ELECTRICAL CABINET
ELECTRIC VAULT
FIBER OPTIC PULL BOX
FIBER OPTIC MANHOLE
FIBER OPTIC PEDESTAL
FIBER OPTIC SIGN
FIBER OPTIC VAULT
GAS METER
GAS SIGN
GAS VAULT
TELEPHONE CABINET
TELEPHONE MANHOLE
TELEPHONE SIGNAL/MAST
TELEPHONE SIGN
TELEPHONE PEDESTAL
TRANSFORMER
LIGHT POLE
FIBER OPTIC VAULT

MISCELLANEOUS

SIGN
BOLLLARD
ACCESSIBLE PARKING

NOTES:

1. WATER AND WASTEWATER SERVICES TO BE PROVIDED BY SECURITY WATER & SANITATION DISTRICT AND NATURAL GAS SERVICES BY AGUITA AND COLORADO SPRINGS UTILITIES. ELECTRIC SERVICE WILL BE BY CITY OF FOUNTAIN. INTERNET AND TV WILL BE BY LOCAL PROVIDERS.

2. EXISTING LOT SCH. NO. 6524200052 REQUIRES A PETITION FOR INCLUSION FOR WASTEWATER INTO THE SECURITY WASTEWATER DISTRICT. EXISTING LOT NO. 6524200053 REQUIRES A PETITION FOR INCLUSION FOR WATER AND WASTEWATER INTO THE SECURITY WATER DISTRICT AND THE SECURITY WASTEWATER DISTRICT. PETITION OF INCLUSION HAVE BEEN SUBMITTED TO SECURITY WATER AND SANITATION DISTRICT.

3. ALL PROPOSED PUBLIC AND PRIVATE WATER AND WASTEWATER MAIN ARE DESIGNED TO MEET SECURITY WATER & SANITATION DISTRICT CONSTRUCTION STANDARDS INCLUDING HORIZONTAL SEPARATIONS OF A MINIMUM OF 10.0' FROM PIPE EDGE TO EDGE BETWEEN WATER AND WASTEWATER.

4. HYDRANTS ARE SITED AT A MINIMUM OF 500' SPACING FROM DWELLING UNITS AND AMENITY BUILDINGS. NUMBER OF HYDRANTS REQUIRED FOR THE APARTMENT BUILDINGS AND AMENITY BUILDINGS ARE DETERMINED BY CITY OF FOUNTAIN FIRE PROTECTION DISTRICT AND I.F.C. CRITERIA FOR THEIR CONSTRUCTION TYPES. HYDRANTS ARE SITED FOR A MINIMUM OF TWO (2) HYDRANTS WITHIN HOSE LAY DISTANCE OF APARTMENT AND AMENITY BUILDINGS.

5. APARTMENT BUILDINGS ARE SPRINKLERED AND HAVE RISER PIPES FOR INTERNAL FIRE DEPARTMENT CONNECTIONS WITHIN STAIRWELLS ON EACH SIDE OF THE BUILDING.

6. FIRE DEPARTMENT CONNECTIONS ARE AT THE FIRE SERVICE LINE ENTRY LOCATIONS AND ARE WITHIN 100' OF A HYDRANT.

7. INDIVIDUAL TOWNHOME UNITS ARE SERVICED INDIVIDUALLY WITH A PRIVATE WATER AND WASTEWATER SERVICE TAP TO PUBLIC MAIN AS SHOWN ON THE PLAN. TAP SEPARATIONS ARE AT A MINIMUM OF 5.0'.

WATER/SANITATION DISTRICT:
SECURITY WATER & SANITATION DISTRICT
231 SECURITY BOULEVARD
COLORADO SPRINGS, CO 80911
ATTN: BRANDON BERNARD, ROY HEALD
TELE: 719.392.3475

NATURAL GAS:
NORTH AREA OF SITE:
COLORADO SPRINGS UTILITIES
1521 HANCOCK EXPRESSWAY #4801
COLORADO SPRINGS, CO 80903

SOUTH AREA OF SITE:
BLACK HILLS ENERGY
105 S. VICTORIA AVENUE
PUEBLO, CO 81003
ATTN: ADAM MAGOON
TELE: 719.400.8995
EMAIL: ADAM.MAGOON@BLACKHILLSCORP.COM

ELECTRIC:
CITY OF FOUNTAIN ELECTRIC
116 SOUTH MAIN STREET
FOUNTAIN, COLORADO 80817
TELE: 719.322.2000

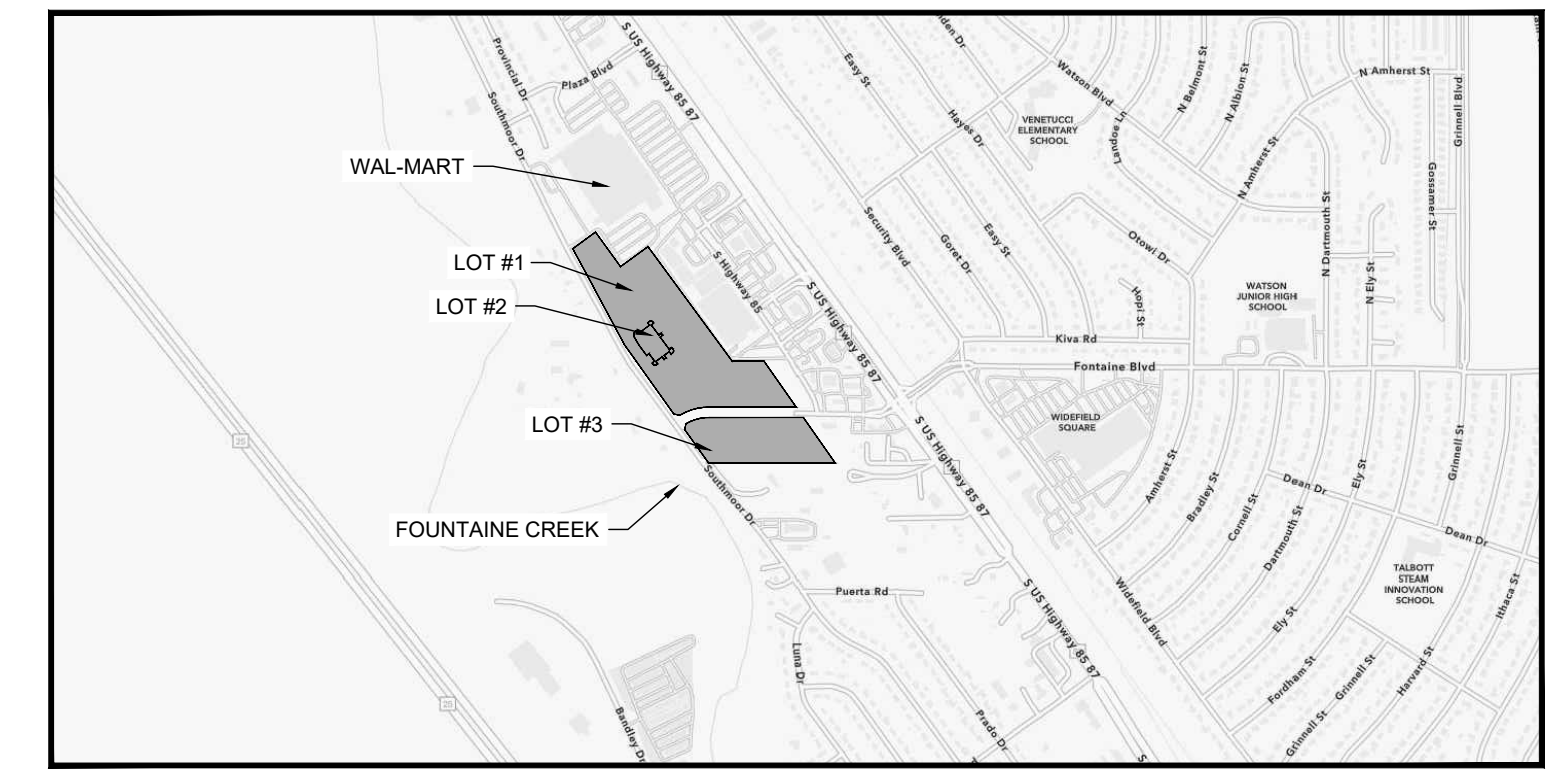| DRAWN BY: DLH | JOB DATE: 2/12/2024 | | NO. | DATE | BY | REVISION DESCRIPTION | | SOUTHMOOR RIDGE | | OVERALL DEVELOPMENT PLAN | SHEET | 1 |
APPROVED: RDL	JOB NUMBER: 2303146						HR GREEN - COLORADO SPRINGS 7222 COMMERCE CENTER DR. SUITE 220 COLORADO SPRINGS CO 80919 PHONE: 719.622.6222 FAX: 844.273.1057	DHN DEVELOPMENT INC. FOUNTAIN, COLORADO	DHN Development / PLACES management	PRELIMINARY UTILITY PLAN	UTIL	
CAD DATE: 2/14/2024												
CAD FILE: J:\2023\2303146\CAD\Dwgs\C\Prelim_Utilities\Preliminary_Utilities-3146												

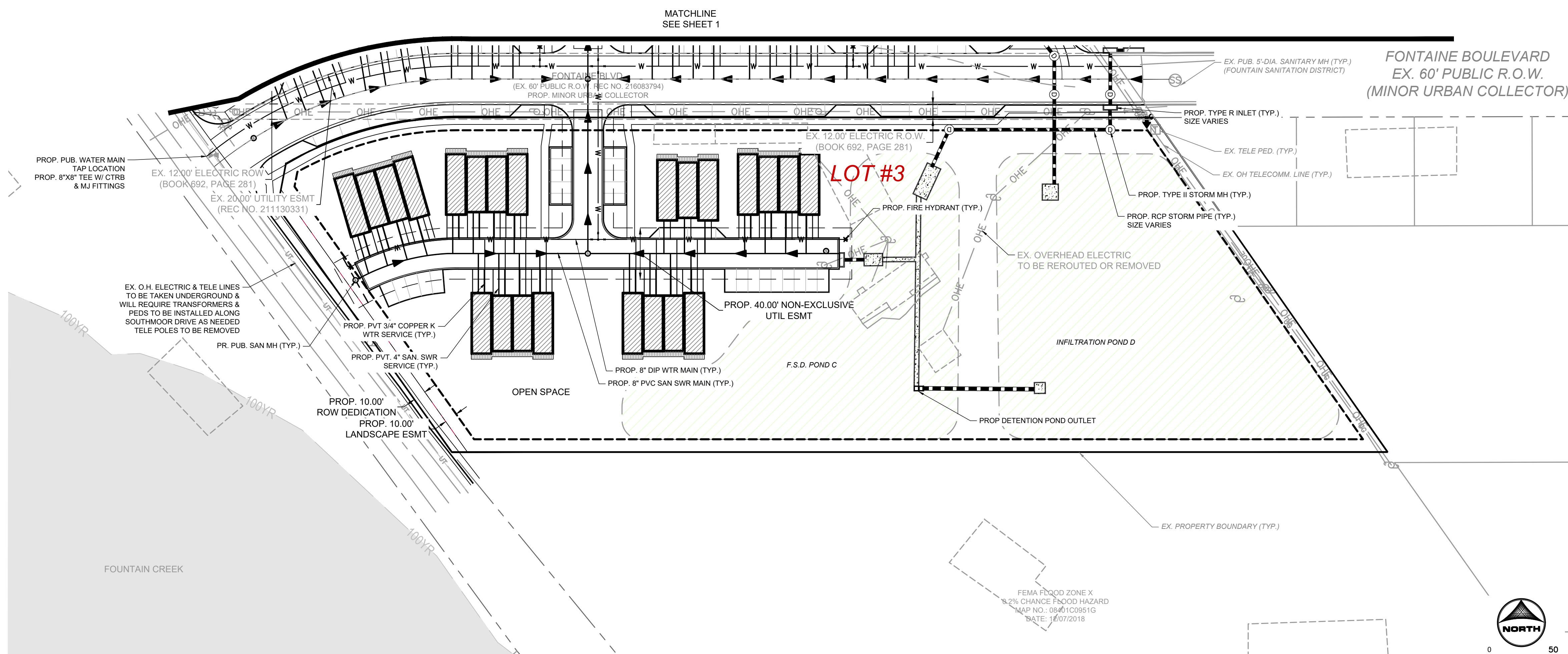# SOUTHMOOR RIDGE

PRELIMINARY UTILITY PLANS

A TRACT OF LAND LOCATED IN A PORTION OF THE NORTH HALF OF
THE NORTHWEST QUARTER OF SECTION 24, AND IN A PORTION OF
THE SOUTH HALF OF THE SOUTHWEST QUARTER OF SECTION 13,
ALL IN TOWNSHIP 15 SOUTH, RANGE 66 WEST OF THE 6TH P.M.,
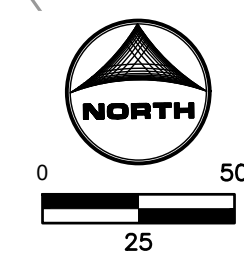COUNTY OF EL PASO, STATE OF COLORADO

VICINITY MAP (SCALE: 1"=1,000')

LEGEND

	EXISTING	PROPOSED
MATCH LINE		
LOT LINE		
SECTION LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
CENTERLINE		
PLASTIC FENCE	X	
WOODEN FENCE		
U.G. ELECTRIC	UE	UE
OVERHEAD ELECTRIC	OHE	OE
GAS MAIN	UG	
SANITARY SEWER		
STORM DRAIN		
TELEPHONE	UT	UT
WATER MAIN		
SWALE		
TRAIL		
CURB & GUTTER		
INDEX CONTOUR	5250	5250
INTER. CONTOUR		
100-YR FLOODPLAIN		
FLOODWAY		

STORM SEWER

	EXISTING	PROPOSED
MANHOLE		
STORM INLET		
FLARED END SECTION		
RIPRAP		
CONC. FOREBAY		
CONC. TRICKLE CHANNEL		
DETENTION AREA		

SANITARY SEWER

CLEAN OUT		
MANHOLE		
PLUG		

WATER

FIRE HYDRANT
FIRE DEPT. CONNECTION
GATE VALVE
MANHOLE
METER
TEE
REDUCER

DRY UTILITIES

ELECTRIC METER
ELECTRIC PEDESTAL
ELECTRICAL CABINET
ELECTRIC VAULT
FIBER OPTIC PULL BOX
FIBER OPTIC MANHOLE
FIBER OPTIC PEDESTAL
FIBER OPTIC SIGN
FIBER OPTIC VAULT
GAS METER
GAS SIGN
GAS VAULT
TELEPHONE CABINET
TELEPHONE MANHOLE
TELEPHONE SIGNAL/MAST
TELEPHONE SIGN
TELEPHONE PEDESTAL
TRANSFORMER
LIGHT POLE
FIBER OPTIC VAULT

MISCELLANEOUS

SIGN
BOLLARD
ACCESSIBLE PARKING

(Plan view labels)

MATCHLINE
SEE SHEET 1

FONTAINE BOULEVARD
EX. 60' PUBLIC R.O.W.
(MINOR URBAN COLLECTOR)

EX. PUB. 5'-DIA. SANITARY MH (TYP.)
(FOUNTAIN SANITATION DISTRICT)

FONTAINE BLVD
(EX. 60' PUBLIC R.O.W. REC NO. 216083794)
PROP. MINOR URBAN COLLECTOR

PROP. PUB. WATER MAIN
TAP LOCATION PROP. 8"X8" TEE W/ CTRB
& MJ FITTINGS

EX. 12.00' ELECTRIC ROW
(BOOK 692, PAGE 281)

EX. 20.00' UTILITY ESMT
(REC NO. 211130331)

PROP. TYPE R INLET (TYP.)
SIZE VARIES

EX. 12.00' ELECTRIC R.O.W.
(BOOK 692, PAGE 281)

EX. TELE PED. (TYP.)

EX. OH TELECOMM. LINE (TYP.)

LOT #3

PROP. TYPE II STORM MH (TYP.)

PROP. FIRE HYDRANT (TYP.)

PROP. RCP STORM PIPE (TYP.)
SIZE VARIES

EX. OVERHEAD ELECTRIC
TO BE REROUTED OR REMOVED

EX. O.H. ELECTRIC & TELE LINES
TO BE TAKEN UNDERGROUND &
WILL REQUIRE TRANSFORMERS &
PEDS TO BE INSTALLED ALONG
SOUTHMOOR DRIVE AS NEEDED
TELE POLES TO BE REMOVED

PR. PUB. SAN MH (TYP.)

PROP. PVT 3/4" COPPER K
WTR SERVICE (TYP.)

PROP. PVT. 4" SAN. SWR
SERVICE (TYP.)

PROP. 8" DIP WTR MAIN (TYP.)

PROP. 8" PVC SAN SWR MAIN (TYP.)

PROP. 40.00' NON-EXCLUSIVE
UTIL ESMT

INFILTRATION POND D

F.S.D. POND C

OPEN SPACE

PROP. 10.00'
ROW DEDICATION
PROP. 10.00'
LANDSCAPE ESMT

PROP DETENTION POND OUTLET

100YR

FOUNTAIN CREEK

EX. PROPERTY BOUNDARY (TYP.)

FEMA FLOOD ZONE X
0.2% CHANCE FLOOD HAZARD
MAP NO. 08041C0951G
DATE: 12/07/2018

NOTES:

1. WATER AND WASTEWATER SERVICES TO BE PROVIDED BY SECURITY WATER & SANITATION DISTRICT AND NATURAL GAS SERVICES BY AQUITA AND COLORADO SPRINGS UTILITIES. ELECTRIC SERVICE WILL BE BY CITY OF FOUNTAIN. INTERNET AND TV WILL BE BY LOCAL PROVIDERS.

2. EXISTING LOT SCH. NO. 6524200052 REQUIRES A PETITION FOR INCLUSION FOR WASTEWATER INTO THE SECURITY WASTEWATER DISTRICT. EXISTING LOT NO. 6524200053 REQUIRES A PETITION FOR INCLUSION FOR WATER AND WASTEWATER INTO THE SECURITY WATER DISTRICT AND THE SECURITY WASTEWATER DISTRICT. PETITION OF INCLUSION HAVE BEEN SUBMITTED TO SECURITY WATER AND SANITATION DISTRICT.

3. ALL PROPOSED PUBLIC AND PRIVATE WATER AND WASTEWATER MAIN ARE DESIGNED TO MEET SECURITY WATER & SANITATION DISTRICT CONSTRUCTION STANDARDS INCLUDING HORIZONTAL SEPARATIONS OF A MINIMUM OF 10.0' FROM PIPE EDGE TO EDGE BETWEEN WATER AND WASTEWATER.

4. HYDRANTS ARE SITED AT A MINIMUM OF 500' SPACING FROM DWELLING UNITS AND AMENITY BUILDINGS. NUMBER OF HYDRANTS REQUIRED FOR THE APARTMENT BUILDINGS AND AMENITY BUILDINGS ARE DETERMINED BY CITY OF FOUNTAIN FIRE PROTECTION DISTRICT AND I.F.C. CRITERIA FOR THEIR CONSTRUCTION TYPES. HYDRANTS ARE SITED FOR A MINIMUM OF TWO (2) HYDRANTS WITHIN HOSE LAY DISTANCE OF APARTMENT AND AMENITY BUILDINGS.

5. APARTMENT BUILDINGS ARE SPRINKLERED AND HAVE RISER PIPES FOR INTERNAL FIRE DEPARTMENT CONNECTIONS WITHIN STAIRWELLS ON EACH SIDE OF THE BUILDING.

6. FIRE DEPARTMENT CONNECTIONS ARE AT THE FIRE SERVICE LINE ENTRY LOCATIONS AND ARE WITHIN 100' OF A HYDRANT.

7. INDIVIDUAL TOWNHOME UNITS ARE SERVICED INDIVIDUALLY WITH A PRIVATE WATER AND WASTEWATER SERVICE TAP TO PUBLIC MAIN AS SHOWN ON THE PLAN. TAP SEPARATIONS ARE AT A MINIMUM OF 5.0'.

NORTH

0   25   50

DRAWN BY: DLH	JOB DATE: 2/12/2024	BAR IS ONE INCH ON OFFICIAL DRAWINGS.	NO.	DATE	BY	REVISION DESCRIPTION
APPROVED: RDL	JOB NUMBER: 2303146					
CAD DATE: 2/14/2024		IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.				

CAD FILE: J:\2023\2303146\CAD\Dwgs\C\Prelim_Utilities\Preliminary_Utilities-3146

HR Green
HR GREEN - COLORADO SPRINGS
7222 COMMERCE CENTER DR. SUITE 220
COLORADO COMMERCE CENTER DR, COLORADO SPRINGS CO 80919
PHONE: 719.622.6222
FAX: 844.273.1057

SOUTHMOOR RIDGE
DHN DEVELOPMENT INC.
FOUNTAIN, COLORADO

DHN Development
PLACES management

OVERALL DEVELOPMENT PLAN
PRELIMINARY UTILITY PLAN

SHEET
UTIL
2

APPENDIX F

REFERENCES

	HGL	Static Pressure (psi)	Fire Flow (gpm)		Flow (gpm)	Residual Pressure (psi)
H-46	5872.09	81	3,500		1,000	60
H-47	5872.08	79	3,500			58
H-48	5872.07	78	3,500		1,000	56
H-49	5872.05	80	3,134			60
H-50	5872.03	80	3,500			60
H-51	5872.03	76	3,500			56

Security Water and Sanitation Districts / Enterprises

231 SECURITY BLVD. • COLORADO SPRINGS, COLORADO 80911
TELEPHONE 719-392-3475 • FAX 719-390-7252
www.securitywsd.com

Memorandum

To: Bryan Kniep, DHN Development

From: Brandon Bernard, Operations Manager

Re: Southmoor Development – TENTATIVE New Construction Fees

Per the developer's request, I have configured what the New Construction Fees could look like, based on the information provided, for the Southmoor development located at the intersection of Southmoor Drive and the future Fontain Blvd.

1. Irrigation Supply

This irrigation supply is conceptual in nature as no landscape plan was provided for the Southmoor Development.

Southmoor Development - Landscape Plan - Tentative				
Type	Amount	GPH	Hours	Total Gallons
Deciduous Tree	31	4	52	6448
Deciduous Shrubs	62	2	52	6448
Evergreen Trees	21	4	26	2184
Evergreen Shrubs	60	2	26	3120
Kentucky Bluegrass	1 acre x 325,851 gallons per AF			325,851
			Total gallons	344,051
344,051 gallons / 325,851 gallons per AF = 1.06 Annual Acre Feet				
1.06 AAF x $43,797.00 per AAF* = **$46,424.82**				

*Based on Harvey Economics Consultants

2. Domestic Supply

Water Development Fees are established by water service fixture units (WSFU's). Based on the information provided, it has been determined that this development could have:

- 60 studio apartments with 7.8 WSFU's = 468 WSFU's
- 72 one-bedroom apartments with 7.8 WSFU's = 561.8 WSFU's
- 79 two- or three-bedroom townhouses with 11.4 WSFU's = 900.6 WSFU's
- 39 two-bedroom apartments with 7.8 WSFU's = 304.2 WSFU's
- 39 two-bedroom apartments with 11.4 WSFU's = 444.6 WSFU's

In total, this development will have 2,679 WSFU's. It has been determined by the District that a single family equivalent (SFE) is equal to 24.7 WSFU's.

- 2,679 WSFU's / 24.7 = 108.46 SFE's
- 108.46 SFE's x 0.5 annual acre feet (AAF) per SFE = 54.23 AAF
- 54.23 AAF x 5% of domestic consumptive use = 2.71 AAF of consumptive use
- 2.71 AAF x $36,328.00 per AAF = $98,448.88
- 108.46 AAF x $7,469.00 of the Major Infrastructure Component = $810,087.74

    Tentative Total Domestic Water Development Fee = $908,536.62

3. Swimming Pool

The size of the pool for this development is unknown, so the water development fees are based on an assumed 1,500 sq ft pool. Tentative and preliminary considerations for a water development fee for this swimming pool are in direct relation to the added consumptive use created by this project. There will be additional consumptive use created as well due to evaporation from the free water surface existing at this facility. We have considered the following factors:

The free surface is represented by the plan area of the pool being 1500 sqft.

We have estimated the evaporation from this free water surface using representative NOAA evaporation pan data from the following NOAA/WSO stations, averaging 30 years of data.
- Pueblo Weather Service Office (WSO) at the airport
- Pueblo City Reservoir
- Pueblo Reservoir

Adjusting the pan evaporation for the expected period of use, May 1 to October 15, and utilizing a pan coefficient of 0.7, it is determined that the expected evaporation from the free water surface will range from 3.06 feet to 3.22 feet. Utilizing arithmetic mean of the evaporation data of record, we suggest that the expected average annual consumptive use from the free water surface will be 3.16 feet or 3.16 annual acre feet (AAF) per acre of surface water.

A. Based on the pool area of 1500 square feet and the expected evaporation on an average annual basis, the consumptive use is estimated at 0.107 annual acre-feet (AAF)

B. The Security Water District's adopted policy recognizes a water development fee for non-residential use at the rate of $43,797.00 per AAF of consumptive use. The estimated water development fee for this pool project is as follows.

WDF = $43,797.00 / AAF x 0.107 AAF = $4,686.28

Tentative Total Domestic Water Development Fee = $421,120.34

Table of Total Fees

1. 3/4-inch water tap = $6,000.00 x 79 = $474,000.00
2. 3/4-inch water meter = $332.68 x 79 = $26,281.72
3. 1-inch water tap = $7,500.00 x 2 (Pool and Clubhouse) = $15,000.00
4. 2-inch irrigation water meter = $1,423.33
5. 3-inch water tap = $24,690.00 x 4 = $98,760.00
6. 3-inch water meter = $2,727.00 x 4 = $10,908.00
7. Water Development Fee (Irrigation + Domestic + Pool) = $1,376,081.78
8. Residential Inspection Fee = $31.00 x 86 = $2,666.00
9. Townhome Sewer Tap = $7,551.00 x 79 = $596,529.00
10. Clubhouse Sewer Tap = $7,551.00
11. Pool house Sewer Tap = $7,551.00
12. Apartments Sewer Tap = $7,551.00 x 4 = $30,204.00
13. One- and Two-Bedroom Fixtures Over 18 = 1968 x $213.00 = $419,184.00
14. Residential Inspection Fee = $31.00 x 85 = $2,635.00

After reviewing the limited information that has been provided so far for this project, we have determined that Security Water and Sanitation Districts currently have overall capacities sufficient to provide services to the subject property. This determination is based on the scant information provided to us up to this point, and any significant changes to the plan would require further evaluation to see if a modification of our determination is warranted.

Furthermore, this determination should not be considered as a service commitment. No commitment can be provided until the property owner completes the process to include the property into the Security Water District and the Security Sanitation District. No water resources

or wastewater treatment capacity would be committed to the property until an application for final plat is submitted to the appropriate jurisdiction. Any service commitment may also be subject to determinations of sufficiency and reliability of water supply by El Paso County and the Colorado Division of Water Resources. Water and sewer service would be subject to the rules, regulations, and conditions of the districts and the payment of appropriate fees at the time of requested connection. The current fee schedule is posted on the district's website, Securitywsd.com.