



Final Utility Report

KING SOOPERS STORE #165

Lot 1, Dawson Trails Filing No. 2, Amendment 4

Castle Rock, CO

CD25-0075

PREPARED FOR:

King Soopers, Inc.

65 Tejon Street

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DATE:

December 12, 2025

REVISED:

June 12, 2026



FINAL UTILITY REPORT

King Soopers Store #165

Legal Description

Lot 1, Dawson Trails Filing No. 2, Amendment 4

Preparation Date

December 12, 2025

Revised: April 1, 2026

Revised: May 8, 2026

Prepared for

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Tel: (720) 563-9374

Attn: Kevin McKenzie

Prepared by:

Reviewed by:

Jessica Greenough, PE

Jennifer Romano, PE

ENGINEER'S STATEMENT

The enclosed utility report and associated calculations and exhibits were prepared by me (or under my direct supervision) and are correct to the best of my knowledge and belief. Said 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.

Jennifer Romano, PE #44401
For and on behalf of Galloway & Company, Inc.

Date

DEVELOPER'S CERTIFICATION

"As the owner and developer of the land identified within this report I agree to proceed, implement, and comply with all recommendations and requirements outlined herein."

Authorized Signature
King Soopers, Inc.

Date

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I. INTRODUCTION

LOCATION

King Soopers Store #165 – referred to herein as “site” or “project site” – is located at the southwest corner of Gambel Ridge Boulevard and Dawson Trails Boulevard at Lot 1, Dawson Trails Filing No. 2, Amendment No. 4 in Castle Rock, Colorado. The project is located in Section 22, Township 8 South, Range 67 West of the 6th P.M., Town of Castle Rock, County of Douglas, State of Colorado. The site consists of vacant land covered by native grasses (80% vegetative density). The site is bounded by Gambel Ridge Boulevard right-of-way to the west and north, Dawson Trails Boulevard right-of-way to the east, and Quandary Peak Drive right-of-way and undeveloped property to the south. A vicinity map is included in Appendix G for reference.

DESCRIPTION OF PROPERTY

The project site covers ten lots, ±21.5 acres. It is currently zoned Planned Development Plan (PDP); rezoning is not required with this development as grocery, fuel, and retail are allowed commercial uses under the Dawson Trails PDP. The site is currently undeveloped and generally slopes from southwest to northeast at grades between 1% and 25%.

New public roadways (Gambel Ridge Boulevard to the north and west, Dawson Trails Boulevard to the east, and Quandary Peak Drive to the south) were constructed with the Dawson Trails Filing No. 2 development. Five access points to the property are proposed from these three public roadways – three right-in / right-out and two ¾ movement.

The proposed development will include a King Soopers grocery store, fueling facility, and associated parking, drives, landscaping, and utility infrastructure. Several outlots will be platted with utility services provided at the property lines for future commercial development.

PREVIOUS UTILITY STUDIES

This report utilizes information from the following utility reports:

Final Utility Report for Dawson Trails Filing 2 Infrastructure, EMK Consultants, Inc., Dec. 2024

Final Utility Report for Dawson Trails Offsite Sanitary Sewer Phase I, CORE Consultants, Inc., April 24, 2025

UTILITY PHASING

All proposed water and sanitary sewer infrastructure associated with the development will be publicly owned, maintained, and dedicated to the Town of Castle Rock as part of the King Soopers Store #165 improvements. On-site utilities serving the outlots will connect to these improvements in the future. Easements or tracts necessary for utilities will be provided either at time of plat amendment or at time of final design and construction documents in accordance with Town of Castle Rock standards.

II. DEVELOPMENT SUMMARY

The development boundary for King Soopers Store #165 is shown on the Development Map in Appendix G for reference; it consists of the northeastern portion of Planning Area E2 as defined in the *Final Utility Report for Dawson Trails Filing 2 Infrastructure*. The entire development consists of commercial buildings. The proposed development composition is included in the table below for reference.

Table 1: Proposed Development Composition

Phase	Parcel	Development Composition	Area (ac)	Total SF	Typical SFEs / Unit
1	Lot 1	Grocery / Fuel	12.09	99,245	0.0005 / SF
2	Lot 2	Retail	0.84	7,200	0.0005 / SF
2	Lot 3	Restaurant	0.61	4,000	0.0075 / SF
2	Lot 4	Bank	0.91	4,000	0.0005 / SF
2	Lot 5	Restaurant	1.10	8,000	0.0075 / SF
2	Lot 6	Retail / Office	1.28	2,000	0.0005 / SF
2	Lot 7	Restaurant	1.13	8,000	0.0075 / SF
2	Lot 8	Retail / Office	1.35	6,000	0.0005 / SF
2	Lot 9	Retail / Office	0.49	6,000	0.0005 / SF
2	Lot 10	Retail / Office	1.02	6,000	0.0005 / SF
Total			20.82	150,445	215.2 SFEs

III. CALCULATED WATER DEMANDS

WATER DESIGN CRITERIA

This report conforms to the specifications and design methodology stated in the Town of Castle Rock *Water System Design 2018 Criteria Manual* (herein after referred to as *Standards*). Where criteria are not specifically stated in these standards, the design will conform to engineering best practices.

Table 2: Water Design Criteria

Description	Value
Retail / Offices	0.2 gpd / sf
Restaurants	3.00 gpd / sf
Car Washes	5,000 gpd / facility
MDD Factor	2.5 * ADD
PHD Factor	5.5 * ADD
Maximum Static Pressure	125 psi
Minimum Static Pressure (zero demand, 20% tank stage)	43 psi
Minimum dynamic pressure – MDD + FF (20% tank storage)*	20 psi
Minimum dynamic pressure – PHD (20% tank storage)*	35 psi
Max HGL elevation (pressure zone red)	6680
Top elevation served (pressure zone red)	6557
Lowest elevation served (pressure zone red)	6393
Maximum Pipe Velocity – PHD	10 fps
Maximum Pipe Velocity – MDD	5 fps
Maximum Pipe Velocity – MDD + FF	15 fps
Hazen-Williams Coefficient (PVC & DIP)	120

* Pressure criteria for MDD + FF and PHD conditions shall be satisfied with one critical distribution loop out of service.

WATER DEMAND CALCULATIONS

The ADD flow rates by land use, MDD factor, and PHD factor listed in Table 2 were utilized in the water demand calculations. Based on the development composition and the demand unit values, King Soppers Store #165 development, including outlots, will have an average daily demand of 91,089 gpd, a max day demand of 158.14 gpm, and a peak hour demand of 347.91 gpm. Water demand calculations are included in Appendix A for reference.

Irrigation demands were calculated for the King Soppers development only; future outlots will provide their own dedicated irrigation systems. There are 28 proposed irrigation zones covering 128,246 SF of landscape area with the highest demand being zone A22 (12.61 gpm). Zone A22 is a temporary zone for establishment of native seed; the highest demand on a permanent zone is A23 (3.34 gpm). Only one zone will run at a time. An irrigation chart and hydraulic worksheet are included in Appendix B for reference.

FIRE FLOW DEMANDS

Fire flows are calculated based on the 2018 International Fire Code flow rates. All buildings were assumed to be construction type IIIB or better, except for the proposed grocery anchor. This building is analyzed in the MDD + FF scenario because it requires the highest potential fire flow demand within the King Soppers store #165 development. The grocery anchor is assumed to be construction type VB. It is also assumed that only one fire will be fought at a time. Based on IFC Table B105.1, a minimum fire flow demand of 6,750 gpm for a 4-hour duration will be required. Per IFC Table B105.2 as amended by the Town of Castle Rock Municipal Code, 15.18.030, the minimum fire flow may be reduced to 20% of that value if an automatic sprinkler system is provided, resulting in a minimum fire flow demand of 1,687 gpm for a 2-hour duration. An excerpt of Table B105.1 is included below for reference. The Confirmation Memorandum of Required Fire Flow signed by Castle Rock Fire and Rescue Department is included in Appendix C for reference.

TABLE B105.1(2) REFERENCE TABLE FOR TABLES B105.1(1) AND B105.2

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

For SI: 1 square foot = 0.0929 m², 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.

IV. WATER SYSTEM

EXISTING DISTRIBUTION SYSTEM

The surrounding Dawson Trails development has been approved by the Town of Castle Rock and is currently under construction. The water distribution system that will serve the subject property will consist of the following:

Dawson Trails Filing No. 1 Infrastructure

- Blue Zone loop, which is necessary to feed the Red Zone
- Water Booster Pump from Blue Zone to Red Zone

Dawson Trails Filing No. 2 Infrastructure

- Tank 19 (Red Zone)
- A 24" / 20" transmission main connection between the Blue Zone / Red Zone Booster Pump and the Red Zone Tank within Dawson Trails Boulevard

The King Soopers Store #165 development will be served by the Red Zone. High and low water levels for Red Zone Tank 19 were obtained from the *Final Utility Report for Dawson Trails Filing 2 Infrastructure* by

EMK Consultants, Inc. dated December 2024 (refer to Appendix E for excerpts). The required storage shall be:

166.39 gpm x 60 min/hr x 24 hrs =	239,602 gallons
97.05 gpm x 60 min/hr x 2 hrs =	11,646 gallons
+ 1,687 gpm x 60 min/hr x 2 hrs =	202,440 gallons
<u>+ 850 gpm x 60 min/hr x 2 hrs =</u>	<u>102,000 gallons</u>
Total required storage =	555,688 gallons (0.56 MG)

Hydrant flow tests to confirm existing static water system pressures and flows will be performed and included in a subsequent submittal once the new Dawson Trails water infrastructure is constructed.

PROPOSED DISTRIBUTION SYSTEM

The proposed on-site water infrastructure is designed to accommodate the King Soopers Store #165 development, including all outlots. Water service sizes and fire sprinkler requirements for buildings on the future outlots are currently unknown.

The proposed on-site water distribution system will be looped through the King Soopers development and connect to the existing 12-inch water main in Quandary Peak Drive at one location and to the existing 20-inch water main in Gambel Ridge Boulevard at two locations. An 8-inch water main is proposed throughout the site. Two dead-end mains are proposed; one runs east along Private Drive 1 and terminates at a fire hydrant, and one runs north between Lots 2/3 and 4 and terminates at a fire hydrant. Both dead-end mains are under 250 feet in length and the terminal hydrants can be used as blow offs to flush the lines. All proposed fire hydrant laterals are under 70 feet in length.

Any future development of the existing water infrastructure needed to serve this site is the responsibility of the developer.

PROPOSED WATER SYSTEM ANALYSIS AND MODELING

Bentley WaterCAD 2024 has been utilized to analyze the proposed water distribution system and demonstrate that demands will not adversely impact the existing water system. The water flow parameters conform to the design guidelines listed in Table 2 above.

Demands for each parcel were clustered at the nearest junction along the water lines. The following scenarios were evaluated:

- Static – 20% tank stage
- Static – 100% tank stage
- Peak Hour Demand (PHD) – 20% tank stage
- Maximum Day Demand plus Fire Flow (MDD + FF) – 20% tank stage – one critical loop off

MDD + FF is the worst-case scenario and was used to determine pipe sizes in the proposed water system.

A tank was placed at the intersection of Dawson Trails Boulevard and Gambel Ridge Boulevard to simulate Tank 19. Tank levels were provided for 100% tank stage and 20% tank stage per the *Final Utility Report*

for *Dawson Trails Filing 2 Infrastructure* by EMK Consultants, Inc. dated December 2024. The hydraulic model is subject to change based on the fire flow test data.

A pump was also placed immediately downstream of each reservoir to more accurately model anticipated flows and pressures. The pump curves were input with data from the *Standards* for this submittal and will be updated based on fire flow test data. A dummy pipe with length of 1 foot, diameter of 48 inches, and Hazen-Williams coefficient of 140 was placed between the tank and the first real junction in the system (J-1) based on recommendations from Bentley, the software manufacturer. The model does not account for bend losses within the existing Town of Castle Rock system.

Results from the water model are included in Appendix B for reference. Residual pressures meet Town of Castle Rock requirements for each scenario analyzed. Maximum velocities are below Town requirements for the entire system for each scenario analyzed.

All irrigation will be provided by the domestic water system. Since the development consists of all commercial properties, it is assumed that irrigation will not run concurrently with business hours and will not contribute to peak water demand.

V. CALCULATED WASTEWATER FLOWS

SANITARY SEWER DESIGN CRITERIA

This report conforms to the specifications and design methodology stated in the Town of Castle Rock *Wastewater Collection Design 2018 Criteria Manual* (herein after referred to as *Standards*).

Table 3: Wastewater Design Criteria

Description	Value
Retail / Offices	0.1 gpd / SF
Restaurants	1.5 gpd / SF
Car Washes	5,000 gpd / acre
Manning's Coefficient (PVC)	0.011
Minimum Velocity*	2.0 fps
Maximum Velocity*	10.0 fps
Maximum Flow Capacity*	75%

* Peak Design Flow scenario

Peak Design Flow (PDF)

$$\text{PDF} = \text{peak base flow} + \text{I/I allowance} = (\text{ADF} * \text{PF}) + (0.1 * \text{ADF})$$

where

$$\text{PF} = 3.65 * [(\text{ADF})^{-0.168}]$$

The maximum PF shall be 5.0, and ADF shall be expressed in units of million gallons per day (MGD).

SANITARY SEWER DESIGN FLOWS

The ADF flow rates by land use listed in Table 3 were utilized in the wastewater demand calculations. Based on the development's composition and the demand calculations, the anticipated Peak Design Flow is 170.16 gpm, or 0.38 cfs. Refer to Appendix C for demand calculations.

VI. WASTEWATER SYSTEM

EXISTING WASTEWATER COLLECTION SYSTEM

Per the *Final Utility Report for Dawson Trails Offsite Sanitary Sewer Phase I* by CORE Consultants, Inc. dated April 24, 2025, the King Sooters Store #165 and outlots portion of Planning Area E-2 was designed to flow to two separate sanitary stubs – one at the northeast corner of the development and one at the south side of the development. These stubs are identified as nodes J-5.06 and J-5.07 in the report. The report accounted for an ADF of 18.06 gpm and a PDF of 90.28 gpm at each of the nodes.

A sanitary connection to Quandary Peak is provided in Private Drive 3. This is intended to serve Lot 6 and Tract A-1. Due to the shallow depth of the southern sanitary sewer in Quandary Peak, most wastewater flows for the King Sooters Store #165 development will be routed to the northern sanitary stub in Dawson Trails Boulevard (J-5.06). That node currently has a remaining capacity of 325 gpm, so increasing the PDF from 90.28 gpm to 170.16 gpm will not have any adverse impacts on the existing sanitary system.

PROPOSED WASTEWATER COLLECTION SYSTEM

The proposed on-site wastewater system will be 8-inch PVC pipe. Slopes will be designed to 0.76% minimum to ensure velocities are at least 2.0 fps in the interim condition where the grocery store has been constructed but the outlots have not yet been constructed. The maximum allowable slope to ensure 10 fps maximum velocities is 19.7%, so a maximum slope of 7.5% will be utilized as the design constraint per the *Standards*. Any proposed or future grease interceptor shall be in accordance with the Plum Creek Water Reclamation Authority Code of Rules and Regulations. Separate permits shall be required for each grease interceptor and pretreatment device.

Any future development of the existing wastewater infrastructure needed to serve this site is the responsibility of the developer.

PROPOSED WASTEWATER SYSTEM ANALYSIS AND MODELING

Hydraulic calculations for minimum and maximum allowable pipe slopes based on minimum and maximum allowable velocities are provided in Appendix D. These calculations utilized Bentley Flowmaster. Minimum slope was determined based on the grocery / fuel site only, since the timing of construction of the outlots is not known at this time. The minimum slope required to provide 2.0 fps minimum velocity in the PDF scenario is 0.76%. The maximum allowable slope to provide 10.0 fps maximum velocity in the PDF scenario is 19.7%.

VII. CONCLUSIONS

The proposed water and wastewater systems for the King Sooters Store #165 development have been designed in accordance with the Town of Castle Rock *Water System Design 2018 Criteria Manual* and the

Town of Castle Rock *Wastewater Collection Design 2018 Criteria Manual*. The proposed water system will connect to the existing 12" water main in Quandary Peak Drive at one location and to the existing 20" water main in Gambel Ridge Boulevard at two locations. The proposed system will add approximately 347.91 gpm of demand to the water system in the Peak Hour Demand scenario. The proposed wastewater system will tie into the 8" sanitary stub at the northeast corner of the site while adding 170.16 gpm or 0.38 cfs in the Peak Design Flow scenario. The proposed development will not have any adverse impacts on existing Town of Castle Rock infrastructure or the surrounding areas.

VIII. REFERENCES

1. Water System Design 2018 Criteria Manual, Town of Castle Rock , December 4, 2018.
2. Wastewater Collection Design 2018 Criteria Manual, Town of Castle Rock, December 4, 2018.
3. Final Utility Report for Dawson Trails Filing 2 Infrastructure, EMK Consultants, Inc., Dec. 2024
4. Final Utility Report for Dawson Trails Offsite Sanitary Sewer Phase I, CORE Consultants, Inc., April 24, 2025

IX. APPENDICES

A. Water Demand Calculations

B. Water Hydraulic Analysis and Modeling

- Water Schematic
- Hydraulic Modeling Output
 - Scenario Summary Report
 - Pipe, Junction, Hydrant, and Tank tables for each scenario

C. Fire Flow Test Results

D. Wastewater Flows

E. Wastewater Hydraulic Modeling

- Flowmaster Calculations

F. Excerpts from Previous Reports

G. Utility Maps

APPENDIX A

WATER DEMAND CALCULATIONS

WATER DEMAND CALCULATIONS

Subdivision: Dawson Trails
Location: Castle Rock, CO

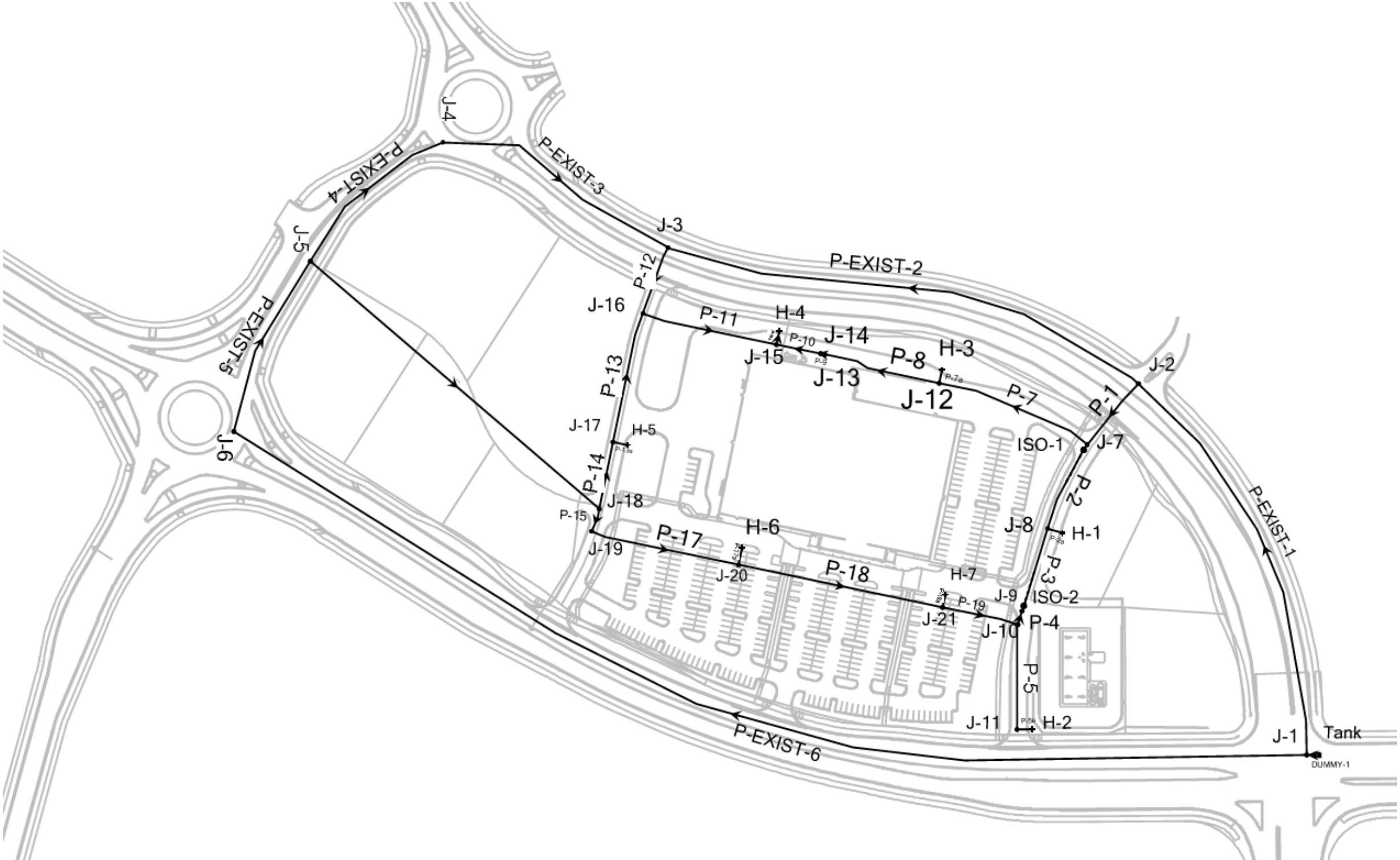
Project Name: King Soopers Store #165
Project No.: KSS000165.20
Calculated By: J. Greenough
Checked By: J. Romano
Date: 12/12/25

Planning Area	Land Use	Total Area (sf)	Flow / Unit* gpd / sf	ADD (gpd)	ADD (gpm)	MDD Factor **	MDD (gpm)	PHD Factor ***	PHD (gpm)
1	Grocery / Fuel	99,245	0.2	19,849	13.78	2.5	34.46	5.5	75.81
1	Retail	7,200	0.2	1,440	1.00	2.5	2.50	5.5	5.50
1	Bank	4,000	0.2	800	0.56	2.5	1.39	5.5	3.06
1	Retail / Office	20,000	0.2	4,000	2.78	2.5	6.94	5.5	15.28
1	Restaurant	20,000	3.0	60,000	41.67	2.5	104.17	5.5	229.17
1	Car Wash	1 facility	5,000 gpd / facility	5,000	3.47	2.5	8.68	5.5	19.10
			Total Flow	91,089	63.26		158.14		347.91

APPENDIX B

WATER HYDRAULIC ANALYSIS AND MODELING

Scenario: MDD + FF - 20% Tank Stage, One Loop Off



Scenario Summary Report

Scenario: Static - 100% Tank Stage

Scenario Summary			
ID	93		
Label	Static - 100% Tank Stage		
Notes			
Active Topology	<I> Base Active Topology		
Physical	<I> Base Physical		
Demand	<I> Base Demand		
Initial Settings	100% Tank Stage		
Operational	<I> Base Operational		
Age	<I> Base Age		
Constituent	<I> Base Constituent		
Trace	<I> Base Trace		
Fire Flow	<I> Base Fire Flow		
Energy Cost	<I> Base Energy Cost		
Transient	<I> Base Transient		
Pressure Dependent Demand	<I> Base Pressure Dependent Demand		
Failure History	<I> Base Failure History		
SCADA	<I> Base SCADA		
User Data Extensions	<I> Base User Data Extensions		
Steady State/EPS Solver Calculation Options	<I> Base Calculation Options		
Transient Solver Calculation Options	<I> Base Calculation Options		
Hydraulic Summary			
Time Analysis Type	Steady State	Use simple controls during steady state?	True
Friction Method	Hazen-Williams	Is EPS Snapshot?	False
Accuracy	0.001	Start Time	12:00:00 AM
Trials	40	Calculation Type	Hydraulics Only

Scenario: Static - 100% Tank Stage
 Current Time Step: 0.000 h
 FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
55	P-15	41	J-19	J-18	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
56	P-14	118	J-18	J-17	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
57	P-EXIST-1	728	J-1	J-2	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
60	P-EXIST-2	858	J-2	J-3	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
61	P-12	121	J-3	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
62	P-13	228	J-17	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
63	P-11	237	J-16	J-15	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
64	P-10	77	J-15	J-14	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
66	P-1	137	J-2	J-7	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
67	P-2	161	J-7	J-8	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
68	P-3	149	J-8	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
70	P-4	25	J-10	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
72	P-17	261	J-19	J-20	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
73	P-7	279	J-7	J-12	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
74	P-8	205	J-12	J-13	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
75	P-9	8	J-13	J-14	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
81	P-13a	25	J-17	H-5	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
82	P-17a	30	J-20	H-6	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
83	P-10a	23	J-15	H-4	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
84	P-7a	23	J-12	H-3	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
85	P-2a	26	J-8	H-1	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
97	P-19	133	J-10	J-21	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
98	P-18	359	J-21	J-20	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
99	P-18a	22	J-21	H-7	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
103	P-5	180	J-11	J-10	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
104	P-5a	26	J-11	H-2	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
118	DUMMY-1	19	Tank	J-1	48.0	PVC	140.0	False	0.000	0	0.00	0.000	True	1
129	P-EXIST-3	444	J-3	J-4	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
134	P-EXIST-4	315	J-4	J-5	12.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
135	P-EXIST-5	325	J-5	J-6	12.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
136	P-42	656	J-18	J-5	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
137	P-EXIST-6	1,990	J-6	J-1	24.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0

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Scenario: Static - 100% Tank Stage**Current Time Step: 0.000 h****FlexTable: Junction Table**

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	6,390.00	Red	<Collection: 0 items>	0	6,680.00	125
34	J-2	6,398.81	Red	<Collection: 0 items>	0	6,680.00	122
35	J-3	6,410.12	Red	<Collection: 0 items>	0	6,680.00	117
36	J-16	6,406.69	Red	<Collection: 0 items>	0	6,680.00	118
37	J-17	6,400.18	Red	<Collection: 0 items>	0	6,680.00	121
38	J-18	6,399.12	Red	<Collection: 0 items>	0	6,680.00	122
39	J-19	6,398.37	Red	<Collection: 0 items>	0	6,680.00	122
41	J-15	6,397.41	Red	<Collection: 0 items>	0	6,680.00	122
42	J-14	6,397.54	Red	<Collection: 0 items>	0	6,680.00	122
43	J-13	6,397.53	Red	<Collection: 0 items>	0	6,680.00	122
44	J-12	6,397.58	Red	<Collection: 0 items>	0	6,680.00	122
45	J-7	6,397.90	Red	<Collection: 0 items>	0	6,680.00	122
46	J-8	6,395.12	Red	<Collection: 0 items>	0	6,680.00	123
47	J-9	6,391.92	Red	<Collection: 0 items>	0	6,680.00	125
48	J-10	6,390.68	Red	<Collection: 0 items>	0	6,680.00	125
50	J-20	6,396.49	Red	<Collection: 0 items>	0	6,680.00	123
96	J-21	6,394.98	Red	<Collection: 0 items>	0	6,680.00	123
101	J-11	6,390.00	Red	<Collection: 0 items>	0	6,680.00	125
128	J-4	6,426.17	Red	<Collection: 0 items>	0	6,680.00	110
130	J-6	6,411.52	Red	<Collection: 0 items>	0	6,680.00	116
133	J-5	6,413.31	Red	<Collection: 0 items>	0	6,680.00	115

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Scenario: Static - 100% Tank Stage
Current Time Step: 0.000 h
FlexTable: Hydrant Table

ID	Label	Hydrant Status	Include Hydrant Lateral Loss?	Emitter Coefficient (gpm/psi^n)	Length (Hydrant Lateral) (ft)	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
76	H-1	Closed	True	0.000	30	6,394.99	Red	<Collection: 0 items>	0	6,680.00	123
77	H-6	Closed	True	0.000	30	6,397.01	Red	<Collection: 0 items>	0	6,680.00	122
78	H-5	Closed	True	0.000	30	6,399.98	Red	<Collection: 0 items>	0	6,680.00	121
79	H-4	Closed	True	0.000	30	6,398.51	Red	<Collection: 0 items>	0	6,680.00	122
80	H-3	Closed	True	0.000	30	6,396.94	Red	<Collection: 0 items>	0	6,680.00	122
95	H-7	Closed	True	0.000	30	6,395.85	Red	<Collection: 0 items>	0	6,680.00	123
100	H-2	Closed	True	0.000	30	6,381.69	Red	<Collection: 0 items>	0	6,680.00	129

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Scenario Summary Report

Scenario: Static - 20% Tank Stage

Scenario Summary			
ID	94		
Label	Static - 20% Tank Stage		
Notes			
Active Topology	<I> Base Active Topology		
Physical	<I> Base Physical		
Demand	<I> Base Demand		
Initial Settings	20% Tank Stage		
Operational	<I> Base Operational		
Age	<I> Base Age		
Constituent	<I> Base Constituent		
Trace	<I> Base Trace		
Fire Flow	<I> Base Fire Flow		
Energy Cost	<I> Base Energy Cost		
Transient	<I> Base Transient		
Pressure Dependent Demand	<I> Base Pressure Dependent Demand		
Failure History	<I> Base Failure History		
SCADA	<I> Base SCADA		
User Data Extensions	<I> Base User Data Extensions		
Steady State/EPS Solver Calculation Options	<I> Base Calculation Options		
Transient Solver Calculation Options	<I> Base Calculation Options		
Hydraulic Summary			
Time Analysis Type	Steady State	Use simple controls during steady state?	True
Friction Method	Hazen-Williams	Is EPS Snapshot?	False
Accuracy	0.001	Start Time	12:00:00 AM
Trials	40	Calculation Type	Hydraulics Only

Scenario: Static - 20% Tank Stage

Current Time Step: 0.000 h

FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
55	P-15	41	J-19	J-18	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
56	P-14	118	J-18	J-17	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
57	P-EXIST-1	728	J-1	J-2	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
60	P-EXIST-2	858	J-2	J-3	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
61	P-12	121	J-3	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
62	P-13	228	J-17	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
63	P-11	237	J-16	J-15	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
64	P-10	77	J-15	J-14	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
66	P-1	137	J-2	J-7	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
67	P-2	161	J-7	J-8	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
68	P-3	149	J-8	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
70	P-4	25	J-10	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
72	P-17	261	J-19	J-20	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
73	P-7	279	J-7	J-12	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
74	P-8	205	J-12	J-13	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
75	P-9	8	J-13	J-14	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
81	P-13a	25	J-17	H-5	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
82	P-17a	30	J-20	H-6	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
83	P-10a	23	J-15	H-4	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
84	P-7a	23	J-12	H-3	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
85	P-2a	26	J-8	H-1	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
97	P-19	133	J-10	J-21	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
98	P-18	359	J-21	J-20	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
99	P-18a	22	J-21	H-7	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
103	P-5	180	J-11	J-10	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
104	P-5a	26	J-11	H-2	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
118	DUMMY-1	19	Tank	J-1	48.0	PVC	140.0	False	0.000	0	0.00	0.000	True	1
129	P-EXIST-3	444	J-3	J-4	20.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
134	P-EXIST-4	315	J-4	J-5	12.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
135	P-EXIST-5	325	J-5	J-6	12.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
136	P-42	656	J-18	J-5	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
137	P-EXIST-6	1,990	J-6	J-1	24.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0

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Scenario: Static - 20% Tank Stage**Current Time Step: 0.000 h****FlexTable: Junction Table**

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	6,390.00	Red	<Collection: 0 items>	0	6,662.00	118
34	J-2	6,398.81	Red	<Collection: 0 items>	0	6,662.00	114
35	J-3	6,410.12	Red	<Collection: 0 items>	0	6,662.00	109
36	J-16	6,406.69	Red	<Collection: 0 items>	0	6,662.00	110
37	J-17	6,400.18	Red	<Collection: 0 items>	0	6,662.00	113
38	J-18	6,399.12	Red	<Collection: 0 items>	0	6,662.00	114
39	J-19	6,398.37	Red	<Collection: 0 items>	0	6,662.00	114
41	J-15	6,397.41	Red	<Collection: 0 items>	0	6,662.00	114
42	J-14	6,397.54	Red	<Collection: 0 items>	0	6,662.00	114
43	J-13	6,397.53	Red	<Collection: 0 items>	0	6,662.00	114
44	J-12	6,397.58	Red	<Collection: 0 items>	0	6,662.00	114
45	J-7	6,397.90	Red	<Collection: 0 items>	0	6,662.00	114
46	J-8	6,395.12	Red	<Collection: 0 items>	0	6,662.00	115
47	J-9	6,391.92	Red	<Collection: 0 items>	0	6,662.00	117
48	J-10	6,390.68	Red	<Collection: 0 items>	0	6,662.00	117
50	J-20	6,396.49	Red	<Collection: 0 items>	0	6,662.00	115
96	J-21	6,394.98	Red	<Collection: 0 items>	0	6,662.00	116
101	J-11	6,390.00	Red	<Collection: 0 items>	0	6,662.00	118
128	J-4	6,426.17	Red	<Collection: 0 items>	0	6,662.00	102
130	J-6	6,411.52	Red	<Collection: 0 items>	0	6,662.00	108
133	J-5	6,413.31	Red	<Collection: 0 items>	0	6,662.00	108

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Scenario: Static - 20% Tank Stage
Current Time Step: 0.000 h
FlexTable: Hydrant Table

ID	Label	Hydrant Status	Include Hydrant Lateral Loss?	Emitter Coefficient (gpm/psi^n)	Length (Hydrant Lateral) (ft)	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
76	H-1	Closed	True	0.000	30	6,394.99	Red	<Collection: 0 items>	0	6,662.00	116
77	H-6	Closed	True	0.000	30	6,397.01	Red	<Collection: 0 items>	0	6,662.00	115
78	H-5	Closed	True	0.000	30	6,399.98	Red	<Collection: 0 items>	0	6,662.00	113
79	H-4	Closed	True	0.000	30	6,398.51	Red	<Collection: 0 items>	0	6,662.00	114
80	H-3	Closed	True	0.000	30	6,396.94	Red	<Collection: 0 items>	0	6,662.00	115
95	H-7	Closed	True	0.000	30	6,395.85	Red	<Collection: 0 items>	0	6,662.00	115
100	H-2	Closed	True	0.000	30	6,381.69	Red	<Collection: 0 items>	0	6,662.00	121

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Scenario Summary Report

Scenario: PHD - 20% Tank Stage

Scenario Summary			
ID	105		
Label	PHD - 20% Tank Stage		
Notes			
Active Topology	Base Active Topology		
Physical	Base Physical		
Demand	PHD		
Initial Settings	20% Tank Stage		
Operational	Base Operational		
Age	Base Age		
Constituent	Base Constituent		
Trace	Base Trace		
Fire Flow	Base Fire Flow		
Energy Cost	Base Energy Cost		
Transient	Base Transient		
Pressure Dependent Demand	Base Pressure Dependent Demand		
Failure History	Base Failure History		
SCADA	Base SCADA		
User Data Extensions	Base User Data Extensions		
Steady State/EPS Solver Calculation Options	Base Calculation Options		
Transient Solver Calculation Options	Base Calculation Options		
Hydraulic Summary			
Time Analysis Type	Steady State	Use simple controls during steady state?	True
Friction Method	Hazen-Williams	Is EPS Snapshot?	False
Accuracy	0.001	Start Time	12:00:00 AM
Trials	40	Calculation Type	Hydraulics Only

Scenario: PHD - 20% Tank Stage**Current Time Step: 0.000 h****FlexTable: Pipe Table**

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
55	P-15	41	J-19	J-18	8.0	PVC	120.0	False	0.000	59	0.38	0.000	False	0
56	P-14	118	J-18	J-17	8.0	PVC	120.0	False	0.000	-107	0.69	0.000	False	0
57	P-EXIST-1	728	J-1	J-2	20.0	PVC	120.0	False	0.000	243	0.25	0.000	False	0
60	P-EXIST-2	858	J-2	J-3	20.0	PVC	120.0	False	0.000	131	0.13	0.000	False	0
61	P-12	121	J-3	J-16	8.0	PVC	120.0	False	0.000	139	0.89	0.001	False	0
62	P-13	228	J-17	J-16	8.0	PVC	120.0	False	0.000	-107	0.69	0.000	False	0
63	P-11	237	J-16	J-15	8.0	PVC	120.0	False	0.000	32	0.20	0.000	False	0
64	P-10	77	J-15	J-14	8.0	PVC	120.0	False	0.000	32	0.20	0.000	False	0
66	P-1	137	J-2	J-7	8.0	PVC	120.0	False	0.000	112	0.72	0.000	False	0
67	P-2	161	J-7	J-8	8.0	PVC	120.0	False	0.000	68	0.43	0.000	False	0
68	P-3	149	J-8	J-9	8.0	PVC	120.0	False	0.000	68	0.43	0.000	False	0
70	P-4	25	J-10	J-9	8.0	PVC	120.0	False	0.000	-59	0.38	0.000	False	0
72	P-17	261	J-19	J-20	8.0	PVC	120.0	False	0.000	-59	0.38	0.000	False	0
73	P-7	279	J-7	J-12	8.0	PVC	120.0	False	0.000	44	0.28	0.000	False	0
74	P-8	205	J-12	J-13	8.0	PVC	120.0	False	0.000	44	0.28	0.000	False	0
75	P-9	8	J-13	J-14	8.0	PVC	120.0	False	0.000	-32	0.20	0.000	False	0
81	P-13a	25	J-17	H-5	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
82	P-17a	30	J-20	H-6	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
83	P-10a	23	J-15	H-4	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
84	P-7a	23	J-12	H-3	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
85	P-2a	26	J-8	H-1	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
97	P-19	133	J-10	J-21	8.0	PVC	120.0	False	0.000	59	0.38	0.000	False	0
98	P-18	359	J-21	J-20	8.0	PVC	120.0	False	0.000	59	0.38	0.000	False	0
99	P-18a	22	J-21	H-7	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
103	P-5	180	J-11	J-10	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
104	P-5a	26	J-11	H-2	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
118	DUMMY-1	19	Tank	J-1	48.0	PVC	140.0	False	0.000	348	0.06	0.000	True	1
129	P-EXIST-3	444	J-3	J-4	20.0	PVC	120.0	False	0.000	-8	0.01	0.000	False	0
134	P-EXIST-4	315	J-4	J-5	12.0	PVC	120.0	False	0.000	-8	0.02	0.000	False	0
135	P-EXIST-5	325	J-5	J-6	12.0	PVC	120.0	False	0.000	-105	0.30	0.000	False	0
136	P-42	656	J-18	J-5	8.0	PVC	120.0	False	0.000	-97	0.62	0.000	False	0
137	P-EXIST-6	1,990	J-6	J-1	24.0	PVC	120.0	False	0.000	-105	0.07	0.000	False	0

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Scenario: PHD - 20% Tank Stage**Current Time Step: 0.000 h****FlexTable: Junction Table**

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	6,390.00	Red	<Collection: 0 items>	0	6,662.00	118
34	J-2	6,398.81	Red	<Collection: 0 items>	0	6,661.99	114
35	J-3	6,410.12	Red	<Collection: 0 items>	0	6,661.98	109
36	J-16	6,406.69	Red	<Collection: 0 items>	0	6,661.92	110
37	J-17	6,400.18	Red	<Collection: 0 items>	0	6,661.84	113
38	J-18	6,399.12	Red	<Collection: 1 item>	264	6,661.80	114
39	J-19	6,398.37	Red	<Collection: 0 items>	0	6,661.80	114
41	J-15	6,397.41	Red	<Collection: 0 items>	0	6,661.91	114
42	J-14	6,397.54	Red	<Collection: 0 items>	0	6,661.90	114
43	J-13	6,397.53	Red	<Collection: 1 item>	76	6,661.90	114
44	J-12	6,397.58	Red	<Collection: 0 items>	0	6,661.92	114
45	J-7	6,397.90	Red	<Collection: 0 items>	0	6,661.94	114
46	J-8	6,395.12	Red	<Collection: 0 items>	0	6,661.91	115
47	J-9	6,391.92	Red	<Collection: 1 item>	9	6,661.89	117
48	J-10	6,390.68	Red	<Collection: 0 items>	0	6,661.89	117
50	J-20	6,396.49	Red	<Collection: 0 items>	0	6,661.83	115
96	J-21	6,394.98	Red	<Collection: 0 items>	0	6,661.87	115
101	J-11	6,390.00	Red	<Collection: 0 items>	0	6,661.89	118
128	J-4	6,426.17	Red	<Collection: 0 items>	0	6,661.98	102
130	J-6	6,411.52	Red	<Collection: 0 items>	0	6,662.00	108
133	J-5	6,413.31	Red	<Collection: 0 items>	0	6,661.98	108

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Scenario: PHD - 20% Tank Stage
Current Time Step: 0.000 h
FlexTable: Hydrant Table

ID	Label	Hydrant Status	Include Hydrant Lateral Loss?	Emitter Coefficient (gpm/psi^n)	Length (Hydrant Lateral) (ft)	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
76	H-1	Closed	True	0.000	30	6,394.99	Red	<Collection: 0 items>	0	6,661.91	115
77	H-6	Closed	True	0.000	30	6,397.01	Red	<Collection: 0 items>	0	6,661.83	115
78	H-5	Closed	True	0.000	30	6,399.98	Red	<Collection: 0 items>	0	6,661.84	113
79	H-4	Closed	True	0.000	30	6,398.51	Red	<Collection: 0 items>	0	6,661.91	114
80	H-3	Closed	True	0.000	30	6,396.94	Red	<Collection: 0 items>	0	6,661.92	115
95	H-7	Closed	True	0.000	30	6,395.85	Red	<Collection: 0 items>	0	6,661.87	115
100	H-2	Closed	True	0.000	30	6,381.69	Red	<Collection: 0 items>	0	6,661.89	121

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(P-2 and P-3 closed between valves ISO-1 and ISO-2)

Scenario Summary Report

Scenario: MDD + FF - 20% Tank Stage, One Loop Off

Scenario Summary			
ID	106		
Label	MDD + FF - 20% Tank Stage, One Loop Off		
Notes			
Active Topology	Base Active Topology		
Physical	Base Physical		
Demand	MDD + FF		
Initial Settings	MDD + FF - 20% Tank Stage, One Loop Closed		
Operational	Base Operational		
Age	Base Age		
Constituent	Base Constituent		
Trace	Base Trace		
Fire Flow	Base Fire Flow		
Energy Cost	Base Energy Cost		
Transient	Base Transient		
Pressure Dependent Demand	Base Pressure Dependent Demand		
Failure History	Base Failure History		
SCADA	Base SCADA		
User Data Extensions	Base User Data Extensions		
Steady State/EPS Solver Calculation Options	Base Calculation Options		
Transient Solver Calculation Options	Base Calculation Options		
Hydraulic Summary			
Time Analysis Type	Steady State	Use simple controls during steady state?	True
Friction Method	Hazen-Williams	Is EPS Snapshot?	False
Accuracy	0.001	Start Time	12:00:00 AM
Trials	40	Calculation Type	Hydraulics Only

Scenario: MDD + FF - 20% Tank Stage, One Loop Off (P-2 and P-3 closed between valves ISO-1 and ISO-2)

Current Time Step: 0.000 h

FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
55	P-15	41	J-19	J-18	8.0	PVC	120.0	False	0.000	-4	0.02	0.000	False	0
56	P-14	118	J-18	J-17	8.0	PVC	120.0	False	0.000	1,020	6.51	0.022	False	0
57	P-EXIST-1	728	J-1	J-2	20.0	PVC	120.0	False	0.000	1,899	1.94	0.001	False	0
60	P-EXIST-2	858	J-2	J-3	20.0	PVC	120.0	False	0.000	347	0.35	0.000	False	0
61	P-12	121	J-3	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
62	P-13	228	J-17	J-16	8.0	PVC	120.0	False	0.000	1,020	6.51	0.022	False	0
63	P-11	237	J-16	J-15	8.0	PVC	120.0	False	0.000	1,020	6.51	0.022	False	0
64	P-10	77	J-15	J-14	8.0	PVC	120.0	False	0.000	-667	4.26	0.010	False	0
66	P-1	137	J-2	J-7	8.0	PVC	120.0	False	0.000	1,552	9.90	0.048	False	0
67	P-2	161	J-7	J-8	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
68	P-3	149	J-8	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
70	P-4	25	J-10	J-9	8.0	PVC	120.0	False	0.000	4	0.02	0.000	False	0
72	P-17	261	J-19	J-20	8.0	PVC	120.0	False	0.000	4	0.02	0.000	False	0
73	P-7	279	J-7	J-12	8.0	PVC	120.0	False	0.000	1,552	9.90	0.048	False	0
74	P-8	205	J-12	J-13	8.0	PVC	120.0	False	0.000	1,552	9.90	0.048	False	0
75	P-9	8	J-13	J-14	8.0	PVC	120.0	False	0.000	1,517	9.68	0.046	False	0
81	P-13a	25	J-17	H-5	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
82	P-17a	30	J-20	H-6	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
83	P-10a	23	J-15	H-4	6.0	PVC	120.0	False	0.000	1,687	19.14	0.227	False	0
84	P-7a	23	J-12	H-3	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
85	P-2a	26	J-8	H-1	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
97	P-19	133	J-10	J-21	8.0	PVC	120.0	False	0.000	-4	0.02	0.000	False	0
98	P-18	359	J-21	J-20	8.0	PVC	120.0	False	0.000	-4	0.02	0.000	False	0
99	P-18a	22	J-21	H-7	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
103	P-5	180	J-11	J-10	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
104	P-5a	26	J-11	H-2	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
118	DUMMY-1	19	Tank	J-1	48.0	PVC	140.0	False	0.000	2,695	0.48	0.000	True	1
129	P-EXIST-3	444	J-3	J-4	20.0	PVC	120.0	False	0.000	347	0.35	0.000	False	0
134	P-EXIST-4	315	J-4	J-5	12.0	PVC	120.0	False	0.000	347	0.98	0.000	False	0
135	P-EXIST-5	325	J-5	J-6	12.0	PVC	120.0	False	0.000	-797	2.26	0.002	False	0
136	P-42	656	J-18	J-5	8.0	PVC	120.0	False	0.000	-1,144	7.30	0.027	False	0
137	P-EXIST-6	1,990	J-6	J-1	24.0	PVC	120.0	False	0.000	-797	0.56	0.000	False	0

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Scenario: MDD + FF - 20% Tank Stage, One Loop Off (P-2 and P-3 closed between valves ISO-1 and ISO-2)

Current Time Step: 0.000 h

FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	6,390.00	Red	<Collection: 0 items>	0	6,662.00	118
34	J-2	6,398.81	Red	<Collection: 0 items>	0	6,661.42	114
35	J-3	6,410.12	Red	<Collection: 0 items>	0	6,661.39	109
36	J-16	6,406.69	Red	<Collection: 0 items>	0	6,635.82	99
37	J-17	6,400.18	Red	<Collection: 0 items>	0	6,640.84	104
38	J-18	6,399.12	Red	<Collection: 1 item>	120	6,643.43	106
39	J-19	6,398.37	Red	<Collection: 0 items>	0	6,643.43	106
41	J-15	6,397.41	Red	<Collection: 0 items>	0	6,630.62	101
42	J-14	6,397.54	Red	<Collection: 1 item>	850	6,631.40	101
43	J-13	6,397.53	Red	<Collection: 1 item>	34	6,631.75	101
44	J-12	6,397.58	Red	<Collection: 0 items>	0	6,641.53	106
45	J-7	6,397.90	Red	<Collection: 0 items>	0	6,654.87	111
46	J-8	6,395.12	Red	<Collection: 0 items>	0	6,490.42	41
47	J-9	6,391.92	Red	<Collection: 1 item>	4	6,643.43	109
48	J-10	6,390.68	Red	<Collection: 0 items>	0	6,643.43	109
50	J-20	6,396.49	Red	<Collection: 0 items>	0	6,643.43	107
96	J-21	6,394.98	Red	<Collection: 0 items>	0	6,643.43	107
101	J-11	6,390.00	Red	<Collection: 0 items>	0	6,643.43	110
128	J-4	6,426.17	Red	<Collection: 0 items>	0	6,661.37	102
130	J-6	6,411.52	Red	<Collection: 0 items>	0	6,661.87	108
133	J-5	6,413.31	Red	<Collection: 0 items>	0	6,661.24	107

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Scenario: MDD + FF - 20% Tank Stage, One Loop Off (P-2 and P-3 closed between valves ISO-1 and ISO-2)

Current Time Step: 0.000 h

FlexTable: Hydrant Table

ID	Label	Hydrant Status	Include Hydrant Lateral Loss?	Emitter Coefficient (gpm/psi^n)	Length (Hydrant Lateral) (ft)	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
76	H-1	Closed	True	0.000	30	6,394.99	Red	<Collection: 0 items>	0	6,490.42	41
77	H-6	Closed	True	0.000	30	6,397.01	Red	<Collection: 0 items>	0	6,643.43	107
78	H-5	Closed	True	0.000	30	6,399.98	Red	<Collection: 0 items>	0	6,640.84	104
79	H-4	Closed	True	0.000	30	6,398.51	Red	<Collection: 1 item>	1,687	6,617.17	95
80	H-3	Closed	True	0.000	30	6,396.94	Red	<Collection: 0 items>	0	6,641.53	106
95	H-7	Closed	True	0.000	30	6,395.85	Red	<Collection: 0 items>	0	6,643.43	107
100	H-2	Closed	True	0.000	30	6,381.69	Red	<Collection: 0 items>	0	6,643.43	113

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Scenario: MDD + FF - 20% Tank Stage, One Loop Off, H-2 Live (P-2 and P-3 closed between valves ISO-1 and ISO-2)
Current Time Step: 0.000 h
FlexTable: Pipe Table

ID	Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Has Check Valve?	Minor Loss Coefficient (Local)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Has User Defined Length?	Length (User Defined) (ft)
118	DUMMY-1	19	Tank	J-1	48.0	PVC	140.0	False	0.000	2,691	0.48	0.000	True	1
66	P-1	137	J-2	J-7	8.0	PVC	120.0	False	0.000	1,320	8.43	0.035	False	0
67	P-2	161	J-7	J-8	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
85	P-2a	26	J-8	H-1	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
68	P-3	149	J-8	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
70	P-4	25	J-10	J-9	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
103	P-5	180	J-11	J-10	8.0	PVC	120.0	False	0.000	-1,687	10.77	0.056	False	0
104	P-5a	26	J-11	H-2	6.0	PVC	120.0	False	0.000	1,687	19.14	0.227	False	0
73	P-7	279	J-7	J-12	8.0	PVC	120.0	False	0.000	1,320	8.43	0.035	False	0
84	P-7a	23	J-12	H-3	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
74	P-8	205	J-12	J-13	8.0	PVC	120.0	False	0.000	1,320	8.43	0.035	False	0
75	P-9	8	J-13	J-14	8.0	PVC	120.0	False	0.000	1,286	8.21	0.034	False	0
64	P-10	77	J-15	J-14	8.0	PVC	120.0	False	0.000	-436	2.78	0.005	False	0
83	P-10a	23	J-15	H-4	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
63	P-11	237	J-16	J-15	8.0	PVC	120.0	False	0.000	-436	2.78	0.005	False	0
61	P-12	121	J-3	J-16	8.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
62	P-13	228	J-17	J-16	8.0	PVC	120.0	False	0.000	-436	2.78	0.005	False	0
81	P-13a	25	J-17	H-5	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
56	P-14	118	J-18	J-17	8.0	PVC	120.0	False	0.000	-436	2.78	0.005	False	0
55	P-15	41	J-19	J-18	8.0	PVC	120.0	False	0.000	-1,687	10.77	0.056	False	0
72	P-17	261	J-19	J-20	8.0	PVC	120.0	False	0.000	1,687	10.77	0.056	False	0
82	P-17a	30	J-20	H-6	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
98	P-18	359	J-21	J-20	8.0	PVC	120.0	False	0.000	-1,687	10.77	0.056	False	0
99	P-18a	22	J-21	H-7	6.0	PVC	120.0	False	0.000	0	0.00	0.000	False	0
97	P-19	133	J-10	J-21	8.0	PVC	120.0	False	0.000	-1,687	10.77	0.056	False	0
136	P-42	656	J-18	J-5	8.0	PVC	120.0	False	0.000	-1,371	8.75	0.038	False	0
57	P-EXIST-1	728	J-1	J-2	20.0	PVC	120.0	False	0.000	1,823	1.86	0.001	False	0
60	P-EXIST-2	858	J-2	J-3	20.0	PVC	120.0	False	0.000	503	0.51	0.000	False	0
129	P-EXIST-3	444	J-3	J-4	20.0	PVC	120.0	False	0.000	503	0.51	0.000	False	0
134	P-EXIST-4	315	J-4	J-5	12.0	PVC	120.0	False	0.000	503	1.43	0.001	False	0
135	P-EXIST-5	325	J-5	J-6	12.0	PVC	120.0	False	0.000	-868	2.46	0.002	False	0
137	P-EXIST-6	1,990	J-6	J-1	24.0	PVC	120.0	False	0.000	-868	0.62	0.000	False	0

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Scenario: MDD + FF - 20% Tank Stage, One Loop Off, H-2 Live (P-2 and P-3 closed between valves ISO-1 and ISO-2)
Current Time Step: 0.000 h
FlexTable: Junction Table

ID	Label	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
33	J-1	6,390.00	Red	<Collection: 0 items>	0	6,662.00	118
34	J-2	6,398.81	Red	<Collection: 0 items>	0	6,661.46	114
35	J-3	6,410.12	Red	<Collection: 0 items>	0	6,661.40	109
128	J-4	6,426.17	Red	<Collection: 0 items>	0	6,661.37	102
133	J-5	6,413.31	Red	<Collection: 0 items>	0	6,661.11	107
130	J-6	6,411.52	Red	<Collection: 0 items>	0	6,661.85	108
45	J-7	6,397.90	Red	<Collection: 0 items>	0	6,656.60	112
46	J-8	6,395.12	Red	<Collection: 0 items>	0	6,626.13	100
47	J-9	6,391.92	Red	<Collection: 0 items>	0	6,591.90	87
48	J-10	6,390.68	Red	<Collection: 0 items>	0	6,591.90	87
101	J-11	6,390.00	Red	<Collection: 0 items>	0	6,581.84	83
44	J-12	6,397.58	Red	<Collection: 0 items>	0	6,646.71	108
43	J-13	6,397.53	Red	<Collection: 1 item>	34	6,639.45	105
42	J-14	6,397.54	Red	<Collection: 1 item>	850	6,639.19	105
41	J-15	6,397.41	Red	<Collection: 0 items>	0	6,638.84	104
36	J-16	6,406.69	Red	<Collection: 0 items>	0	6,637.77	100
37	J-17	6,400.18	Red	<Collection: 0 items>	0	6,636.73	102
38	J-18	6,399.12	Red	<Collection: 1 item>	120	6,636.19	103
39	J-19	6,398.37	Red	<Collection: 0 items>	0	6,633.92	102
50	J-20	6,396.49	Red	<Collection: 0 items>	0	6,619.37	96
96	J-21	6,394.98	Red	<Collection: 0 items>	0	6,599.31	88

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Scenario: MDD + FF - 20% Tank Stage, One Loop Off, H-2 Live (P-2 and P-3 closed between valves ISO-1 and ISO-2)

Current Time Step: 0.000 h

FlexTable: Hydrant Table

ID	Label	Hydrant Status	Include Hydrant Lateral Loss?	Emitter Coefficient (gpm/psi ^{1/n})	Length (Hydrant Lateral) (ft)	Elevation (ft)	Zone	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
76	H-1	Closed	True	0.000	30	6,394.99	Red	<Collection: 0 items>	0	6,626.13	100
77	H-6	Closed	True	0.000	30	6,397.01	Red	<Collection: 0 items>	0	6,619.37	96
78	H-5	Closed	True	0.000	30	6,399.98	Red	<Collection: 0 items>	0	6,636.73	102
79	H-4	Closed	True	0.000	30	6,398.51	Red	<Collection: 0 items>	0	6,638.84	104
80	H-3	Closed	True	0.000	30	6,396.94	Red	<Collection: 0 items>	0	6,646.71	108
95	H-7	Closed	True	0.000	30	6,395.85	Red	<Collection: 0 items>	0	6,599.31	88
100	H-2	Closed	True	0.000	30	6,381.69	Red	<Collection: 1 item>	1,687	6,567.73	80

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Revised 12/1/2025



IRRIGATION CHART

Registered Professional Galloway & Company, LLC Registration # N/A Date 02/06/2026

Company Name Galloway & Company, LLC Address 5500 Greenwood Plaza Blvd., Suite 200, Greenwood Village, CO 80111

Phone 303-770-8884 Email KartikaRachmawati@GallowayUS.com Clock Make Baseline Model 1000-P-R36

☒ Monday, Wednesday, Friday (west side of I-25) ☐ Tuesday, Thursday, Saturday (east side of I-25)

Zone	Hydrozone Very Low (<5") Low (5-10") Medium (10-15") High (>15")	Plant Type (turf, native, shrubs, perennials, trees, annuals, etc.)	Head Type (rotors, sprays, bubblers, drip, SDI, etc.)	Nozzle (nozzle/ emitter size)	App. Rate (inches/hour)	GPM (per zone)	Inches/Month (peak not to exceed 6" per month or 1.5" per week)	Run Time (minutes per month)	Run Time (minutes per day)	Water Usage (gallons per month)
A1	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	1	1.5	129	13	135
A2	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	1	1.5	129	13	198
A3	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	129
A4	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	1	1.5	129	13	129
A5*	LOW	TEMP. SEED	Rotary Spray	Hunter MP	0.4	7	2	300	30	2,142
A6	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	330
A7	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	210
A8	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	307
A9	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	307
A10	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	203
A11	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	292
A12	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	257
A13	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	3	1.5	129	13	508
A14	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	3	1.5	129	13	230
A15*	LOW	TEMP. SEED	Rotary Spray	Hunter MP	0.4	9	2	300	30	2,685
A16*	LOW	TEMP. SEED	Rotary Spray	Hunter MP	0.4	11	2	300	30	3,762
A17	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	3	1.5	129	13	401
A18	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	240
A19	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	1	1.5	129	13	125
A20	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	225
A21*	LOW	TEMP. SEED	Rotary Spray	Hunter MP	0.4	11	2	300	30	3,300
A22*	LOW	TEMP. SEED	Rotary Spray	Hunter MP	0.4	13	2	300	30	3,783
A23	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	3	1.5	129	13	413
A24	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	1	1.5	129	13	148
A25	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	301
A26	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	1	1.5	129	13	163
A27	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	2	1.5	129	13	193
A28	LOW	SHRUBS	Drip (Point Source)	Hunter HE-B	0.7	3	1.5	129	13	257
								0	0	0
								0	0	0
Total								4,457	446	21,373
								Min/month	Min/cycle	Gallons/month

* ALL ROTARY SPRAY ZONES FOR TEMPORARY IRRIGATION UNTIL SEED ESTABLISHMENT. SEE "NATIVE SEED IRRIGATION NOTE" FOR FURTHER INFORMATION.



Irrigation System Hydraulic Worksheet

Project Name: King Soopers, Dawson Trails, #165 Date: March 27th, 2026
Project Location: Crystal Valley Pkwy. & Dawson Trails Blvd.

Prepared by: Galloway & Company, LLC Current TOCR Registration # N/A

Tap Size 1.00 " Source of Pressure Water Main
Static Water Pressure: 80 psi

Hydraulic Grade At Zone: 6352' Company King Soopers

	Ft. of Copper	Pipe Size (")	K Copper	Friction Loss (from chart)	Flow-GPM	Loss/Gain
Service Line (tap to meter):	38 LF	1.00	K Copper	6.57 /100 FT	13	2.46
Water Meter:		1.00		1.10	13	1.10
Service Line (meter to backflow):	10 LF	1.00	K Copper	6.57 /100 FT	13	0.66
Backflow:		1.00		12	13	12.00
Master Valve:		1		3	13	3.00

Pressure Required at Head: 40

Lateral Allowance: 5.00

Control Valve Allowance: 1.50

Mainline Allowances:							
Length of Mainline	Pipe Material	Size	Gals.				
1375	LF CL200BE	2.000 "@	14	GPM	0.59 /100 FT		8.11
	LF CL200BE	"@	14	GPM-Looped	/100 FT		0.00

Elevation: Tap elevation 6,402 High/Low: 6,393 -3.90

Green shading indicates required information you must provide

Total System requirements (PSI) 69.94

Available System Pressure (PSI) 80.00

Town of Castle Rock provides a minimum of 43 psi

Total irrigated area for tap # A is 128,246 sq. ft.

* THIS IRRIGATED AREA SQUARE FOOTAGE INCLUDES THE SQUARE FOOTAGE FOR TEMPORARILY IRRIGATED NATIVE SEED. IRRIGATED AREA SQUARE FOOTAGE DOES NOT INCLUDE SQUARE FOOTAGE FOR NON-IRRIGATED LANDSCAPE (I.E. 2-4" ROCK MULCH).

APPENDIX C

FIRE FLOW TEST RESULTS

CONFIRMATION MEMORANDUM OF REQUIRED FIRE FLOW

PROJECT NAME / DESCRIPTION:

King Scooper's #165 – Dawson Trails

Project consists of the development of approximately +/- 12.2 acres of vacant land for a King Scoopers Marketplace store and Fueling Facility with associated drive aisles, parking lots, and utilities to service the store.

TOTAL SQUARE FOOTAGE:

Commercial: 99,000 sf

Fuel Kiosk: 245 sf

BUILDING CONSTRUCTION TYPE:

Type II-B

FIRE SPRINKLER SYSTEM:

Store – Yes

Fuel Kiosk - No

REQUIRED FLOW AND DURATION:

1687 gpm for 2 hours

CASTLE ROCK FIRE AND RESCUE DEPARTMENT CONFIRMATION:

By: Kevin Sullivan

Digitally signed by Kevin Sullivan
DN: cn=Kevin Sullivan, o=Castle
Rock Fire and Rescue Department, ou=Castle
Rock
Reason: I have reviewed this document
Date: 2025.11.11 09:50:25 -0700

Date: 11-11-25

FIRE REVIEW 18714



11/11/2025

APPENDIX D

WASTEWATER FLOWS

WASTEWATER DEMAND CALCULATIONS

Subdivision: Dawson Trails
Location: Castle Rock, CO

Project Name: King Soopers Store #165
Project No.: KSS000165.20
Calculated By: J. Greenough
Checked By: J. Romano
Date: 12/12/25

Planning Area	Land Use	Total Area (sf)	Flow / Unit* gpd / sf	ADF (gpd)	ADF (gpm)	I & I (gpm)	PF	PDF (gpm)	Design Flow (cfs)
1	Grocery / Fuel	99,245	0.1	9,925	6.89	0.69	5.0	35.15	0.08
1	Retail	7,200	0.1	720	0.50	0.05	5.0	2.55	0.01
1	Bank	4,000	0.1	400	0.28	0.03	5.0	1.42	0.00
1	Retail / Office	20,000	0.1	2,000	1.39	0.14	5.0	7.08	0.02
1	Restaurant	20,000	1.5	30,000	20.83	2.08	5.0	106.25	0.24
1	Car Wash	1 facility	5000 gpd / acre	5,000	3.47	0.35	5.0	17.71	0.04
			Total Flow	48,045	33.36	3.34		170.16	0.38

APPENDIX E

WASTEWATER HYDRAULIC MODELING

Minimum Slope - PDF - Grocery Only

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.76 %
Diameter	8.0 in
Discharge	0.08 cfs

Results	
Normal Depth	1.4 in
Flow Area	0.0 ft ²
Wetted Perimeter	0.6 ft
Hydraulic Radius	0.8 in
Top Width	0.50 ft
Critical Depth	1.5 in
Percent Full	17.2 %
Critical Slope	0.48 %
Velocity	2.00 ft/s
Velocity Head	0.06 ft
Specific Energy	0.18 ft
Froude Number	1.253
Maximum Discharge	1.34 cfs
Discharge Full	1.25 cfs
Slope Full	0.00 %
Flow Type	Supercritical

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	Dry
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	17.2 %
Downstream Velocity	∞ ft/s
Upstream Velocity	∞ ft/s
Normal Depth	1.4 in
Critical Depth	1.5 in
Channel Slope	0.76 %
Critical Slope	0.48 %

Minimum Slope - PDF - Entire Development

Project Description	
Friction Method	Manning
Solve For	Formula Normal Depth
Input Data	
Roughness Coefficient	0.011
Channel Slope	0.50 %
Diameter	8.0 in
Discharge	0.38 cfs
Results	
Normal Depth	3.4 in
Flow Area	0.1 ft ²
Wetted Perimeter	0.9 ft
Hydraulic Radius	1.8 in
Top Width	0.66 ft
Critical Depth	3.4 in
Percent Full	42.5 %
Critical Slope	0.48 %
Velocity	2.69 ft/s
Velocity Head	0.11 ft
Specific Energy	0.40 ft
Froude Number	1.024
Maximum Discharge	1.09 cfs
Discharge Full	1.01 cfs
Slope Full	0.07 %
Flow Type	Supercritical
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	Dry
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	42.5 %
Downstream Velocity	∞ ft/s
Upstream Velocity	∞ ft/s
Normal Depth	3.4 in
Critical Depth	3.4 in
Channel Slope	0.50 %
Critical Slope	0.48 %

7.5% Slope - PDF - Entire Development

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.011
Channel Slope	7.50 %
Diameter	8.0 in
Discharge	0.38 cfs
Results	
Normal Depth	1.7 in
Flow Area	0.1 ft ²
Wetted Perimeter	0.6 ft
Hydraulic Radius	1.0 in
Top Width	0.54 ft
Critical Depth	3.4 in
Percent Full	21.0 %
Critical Slope	0.48 %
Velocity	7.10 ft/s
Velocity Head	0.78 ft
Specific Energy	0.92 ft
Froude Number	3.993
Maximum Discharge	4.21 cfs
Discharge Full	3.92 cfs
Slope Full	0.07 %
Flow Type	Supercritical
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	Dry
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	21.0 %
Downstream Velocity	∞ ft/s
Upstream Velocity	∞ ft/s
Normal Depth	1.7 in
Critical Depth	3.4 in
Channel Slope	7.50 %
Critical Slope	0.48 %

APPENDIX F

GREASE INTERCEPTOR FORM



Commercial Business Building Permit

Grease Interceptor Requirement

All Commercial Business Building Permits for new business and construction of new buildings, remodels, or tenant improvement permits will be required to comply with Town Code 13.05, Grease Interceptors Required. Applicant will be required to submit an Industry Information Questionnaire through the Plum Creek Water Reclamation Authority (PCWRA) to verify if the business will require an oil/grease interceptor. Please go to PCWRA website at:

<https://www.pcwracolorado.org/commercial-businesses>

CONSTRUCTION DRAWINGS

Please note PCWRA requires all new commercial buildings to provide a stub-out for a separate waste line for future interceptor installation, if not proposed with the project. All drainage fixtures and grease waste lines that are tied to the oil/grease must be shown in the construction drawings as well as the location of the oil/grease interceptor.

ACKNOWLEDGEMENT

The applicant must sign and date this form to acknowledge that the applicant has read and understands the Town's Code requirement regarding Grease Interceptors, PCWRA's requirement to complete an Industry Information Questionnaire and Food Service Application, and the Town's requirement that a letter from PCWRA must be provided with the Town of Castle Rock Building Permit. This signed form is required to be included in the Utility Report with the Predevelopment Plan (PDP), Site Development Plan (SDP) and Construction Document (CD) submittals.

King Soopers Store #165

Name of Project

1631 Dawson Trails Boulevard

Address of property, if known

Kevin McKenzie
Signature

1/7/26
Date

APPENDIX G

EXCERPTS FROM PREVIOUS REPORTS

FINAL UTILITY REPORT

FOR

DAWSON TRAILS FILING 2 INFRASTRUCTURE

TOWN OF CASTLE ROCK, COLORADO

CD23-0045

Prepared for:

ACM Dawson Trails VIII JV LLC
4100 E Mississippi Ave, Ste 500
Glendale, CO 80246
Contact: Lawrence Jacobson
Phone: 303-984-9800



DEVELOPMENT SERVICES
APPROVED

By tkucewesky
on 10/21/2025
Approved-CD23-0045 Util Rpt.pdf
Record Document on File

Prepared by:



EMK Consultants, Inc.
7006 S. Alton Way, Bldg F
Centennial, CO 80112
Contact: Gary A. Walter
Phone: 303-694-1520
EMK Job No 13466

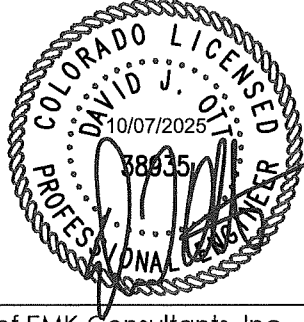
July 2025



UTILITY REPORT APPROVAL BLOCK

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.



Signature: _____
For and on behalf of EMK Consultants, Inc.
Registered Professional Engineer
State Of Colorado No. 38935



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.

ACM Dawson Trails VIII FILL C
Name of Developer

[Signature]
Authorized Signature



1. PROJECT LOCATION AND DESCRIPTION

A. General

The purpose of this Final Utility Report is to present the design of the water and wastewater distribution systems for the Dawson Trails Filing 2 Infrastructure development. Final Utility Reports will be prepared for the various phases of the project as the project progresses through the Town's development process. This Final Utility Report analyzes the proposed infrastructure associated with the development of Dawson Trails, hereon referred to as the "Site". Any future development of the existing water infrastructure needed to serve this site is the responsibility of the developer.

B. Site Location

The Site is in part of Sections 21, 22, 27, 28, and 29 of Township 8 South, Range 67 West of the Sixth Principal Meridian, Town of Castle Rock, Douglas County, State of Colorado. The Site is bounded by Interstate 25 to the east, Keene Ranch Filing No. 1 to the west, an undeveloped Douglas County parcel to the south, and the Twin Oaks subdivision and Dawson Filing 1 Infrastructure to the north. A vicinity map for the site can be found in Appendix A.

C. Project Description

The purpose of this report is to analyze potential future densities of the development to ensure that proper infrastructure is accounted for and will be installed to accommodate the ultimate build-out of the project. Per the approved Planned Development Plan, dated September 2022 the Filing 2 Site will consist of approximately 2,233 residential units, 965,000 square feet of commercial development, one school site, and approximately 52 +/- acres of community parks, open space, and public land dedication across the Filing 2 site. The Filing 2 Site is approximately 670-acres and consists of planning areas B1, C2, D, E2, F3, G1, OSP-2, OSP-3, OSP-4, PL-1.02, PL-1.04, PL-1.05, PL-1.06, and PL-2.02. The Site is currently undeveloped but there were previous infrastructure improvements constructed and abandoned in the 1980s. These improvements include concrete roads, water lines, sanitary sewer lines, storm sewer, and water distribution infrastructure, including wells and a tank, all of which has been deemed unusable per conversations with the Town and is therefore anticipated to be removed or abandoned before development of the Site.

This report proposes conceptual locations and sizes for the water and wastewater systems and analyzes the proposed networks using criteria from the Town of Castle Rock Water System Design 2018 Criteria Manual and Wastewater Collection Design 2018 Criteria Manual. Construction documents for this filing are titled Dawson Trails Filing 2 Infrastructure, CD23-0045.

This report analyzes the proposed water and sanitary sewer systems which will be constructed as part of the development, as well as the connections to the surrounding existing infrastructure shown in the construction drawings of CD23-0045. The utility design will conform to the current Town of Castle Rock standards. Easements will be provided for utilities that fall out of the public right-of-way. These will be dedicated on the final plat or at the time of final design/construction documents. The proposed water line will be accessible within the site, predominantly within the proposed roadways.

The Land Use Map for each Planning Area is included in Appendix E.



D. Phasing

The utilities proposed with this Final Utility Report will be completed in one phase. The Overall Utility & Phasing Map for all of Dawson Trails Development can be found in Appendix E. The timeline of each phase is not yet determined. The phasing of the water infrastructure is an approximation and is subject to change based on the developer's discretion and further analysis during final design. The general phasing of the development transpires in a North to South and East to West direction, rising from the Blue, Red, then Green Zone as well as associated infrastructure for each.

E. Demand Categories, Design Criteria

Water consumption demands from Section 4.4.1 Design Demands were used for the Average Day Demands (ADD) and peaking factors as shown in Table 2.1: Water System Design Values from the Town of Castle Rock Water System Design 2018 Criteria Manual. Please see Appendix B for Filing 2 demand calculations.

Table 2.1: Water System Design Values

Criteria	Value
Average Day Demand (ADD) per SFE	265 gallons per day (gpd)
Maximum Daily Demand (MDD) Factor	2.5 times ADD
Peak Hour Demand (PHD) Factor	5.5 times ADD
Minimum Static Pressure with Zero Demand (20% Tank Stage)	48.92 psi
Minimum Static Pressure with Zero Demand (100% Tank Stage)	56.72 psi
Minimum Dynamic Pressures (based on 20% Tank Stage)	
Max Daily Demand + Fire Flow	20 psi
Peak Hour Demand	35 psi

The following Single-Family Equivalents were used to calculate water demands.

Table 2.2: Single Family Equivalents

Criteria	Value
Single Family Residential and Duplexes	1.0 / dwelling unit
Multi-family Residential (Townhomes and Apartments)	0.65 / dwelling unit
Industrial / Commercial	3.0 / acre
Schools	Varies
Parks	9.38 SF/acre

Parameters used with the model of the Dawson Trails Water System are now as follows:

- **Average Day Demand (ADD)** is the total water use during a year divided by the number of days in a year (365).
- **Maximum Day Demand (MDD)** is the average demand in the month with the overall highest usage during the year (typically July or August). MDD is used to size water pipelines when combined with fire flows. MDD is also used to size water storage tanks (along with fire flow volumes).
- **Peak Hour Demand (PHD)** is the highest hourly demand occurring during the year. PHD is used to evaluate the required size of distribution pipelines. Known irrigation demands were applied to all junctions for public area irrigation and are consistent with



landscaping and irrigation construction documents provided by Norris Design. There are 5 irrigation taps proposed with Filing 2. Three 1.5-inch irrigation taps with a maximum flow rate of 40 gallons per minute and two 1-inch irrigation tap with a maximum flow rate of 18 gallons per minute. The infrastructure irrigation system for Filing 2 will serve 14.15 acres of streetscape landscape, including 12.82 acres of permanent irrigation, and 1.33 acres of temporary native seed irrigation. See Appendix B for irrigation watering charts and hydraulic calculations.

In addition to the parameters above, fire flows were analyzed (along with the Maximum Day Demand) as follows:

- **Fire Flow Demand (FFD)** – Fire flow requirements within Town of Castle Rock are dictated by the Town's Fire Department and the latest edition of the International Fire Code (IFC). Fire flow demands (FFD) vary depending on building usage (residential versus commercial), building square footage, and type of building construction which are defined in Appendix B of the IFC. A 50 percent reduction in required fire flow may be allowed for approved residential sprinkler systems, and a 75 percent reduction may be allowed for approved commercial sprinkler systems at the discretion of the Town of Castle Rock Fire Chief. The minimum fire flow for the water distribution system is 1,500 gpm, unless otherwise approved by the Fire Department.

Commercial, schools, and multi-family residential are the only buildings anticipated to have sprinklers within the Dawson Trails development. The specific building square footages, construction type, and usages are not known at this time. For the water model, a fire flow demand of 3,000 gpm was used at all junctions with the potential for these types of development.

F. Water System Modeling and Analysis

The water system was modeled by MSK Consulting, LLC. using InfoWater software. The InfoWater results are included in Appendix B along with a Vicinity Map in Appendix A for the simulation. Simulations were run for the following scenarios:

- Minimum and Maximum Static Pressures with Zero Demand (20% and 100% Tank level)
- Peak Hour Demand (PHD)
- Max Day Demand + Fire Flow (MDD+FF)
- Extended Period Simulation (EPS)

The steady-state simulations (PHD and MDD+FF) were run separately for each pressure zone since booster pump stations and pressure reducing valves will isolate one zone from another. For the EPS scenario, all three pressure zones were modeling concurrently.

Static Pressure with Zero Demand

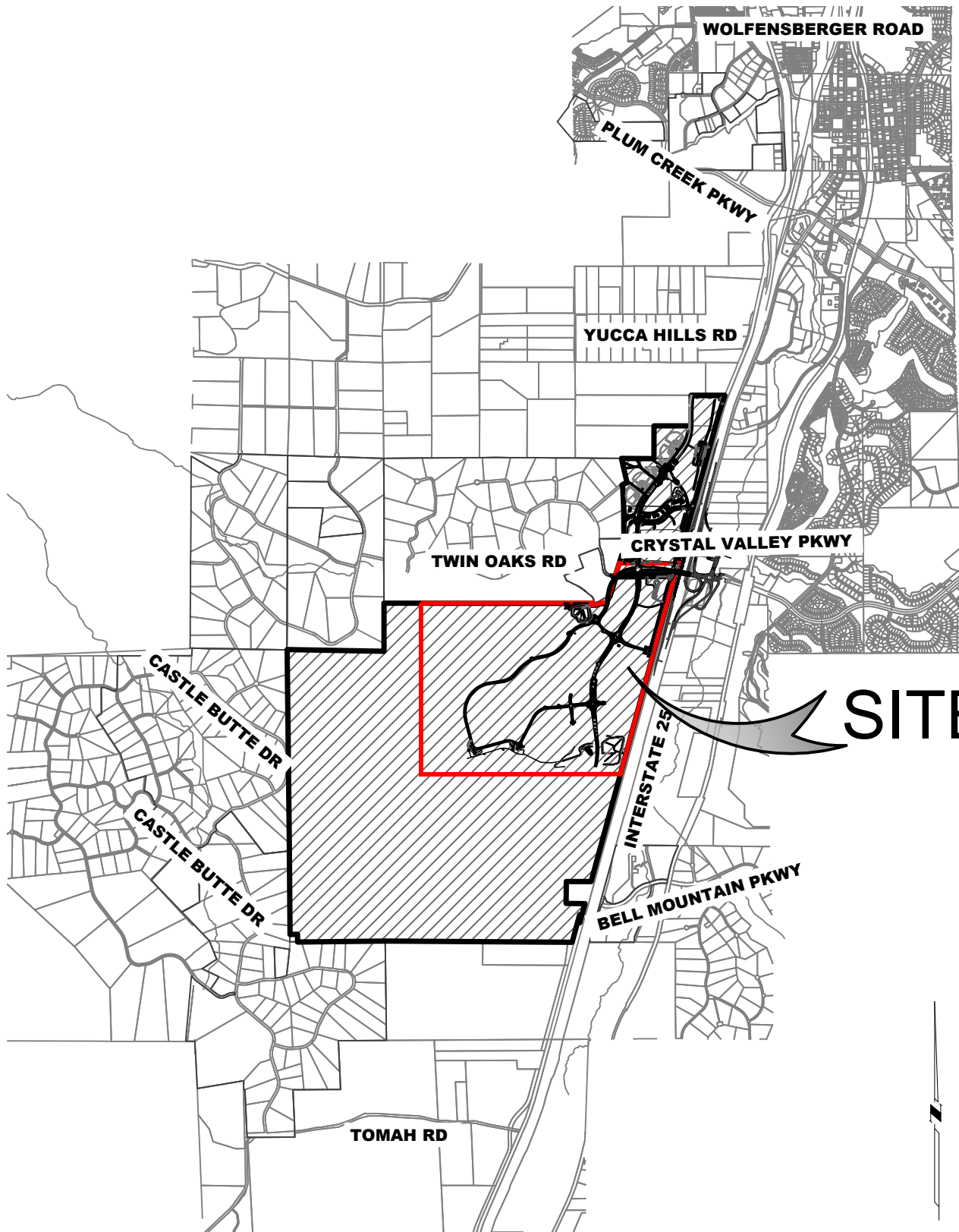
Prior to applying any demands, the static pressures at each junction were evaluated for two conditions: 20% full tank and 100% full tank. The 20% full condition determines the low static pressure and the 100% full scenario reveals the maximum station pressure. For this analysis, the following tank levels were used:

Table 2.3 Tank Water Levels

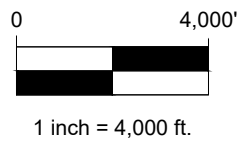
Tank	20% Full Elevation	100% Full Elevation
------	--------------------	---------------------

Appendix A

Figures



SITE



DAWSON TRAILS VICINITY MAP

CREATED BY: CGV

DATE: 12/19/2024

SHEET NUMBER
1
OF 1 SHEETS
JOB NUMBER
20-224



Appendix B

Water Modeling / Calculations

Dawson Trails for Westside**Potable Water Model**

Water Demands-Phase 1

Date: June 2024

MSK Project #: 52-001-01

Calc'd by: DLT

PRELIMINARY**6/27/24****Assumptions:**

Average Day Demand (ADD) per SFE: 265.0 gpd [7/17/23 Lowered by CRW per ordinance]

Max Day Demand (MDD) Factor: 2.5 x ADD

Peak Hour Demand (PHD) Factor: 5.5 x ADD

Irrigation ADD: 3,750 gpd/irrigated acre

Table B1-1: Potable Water Demands for Phase 1 (w/ Irrigation)

A	B	C	D	E	F	G	H	I	J	K	L
No.	Planning Area	Pressure Zone	Total SFEs	ADD (gpd)	MDD (gpd)	MDD (gpm)	PHD (gpm)	Irrigated Area (ac)	Irrigation ADD (gpd)	Irrigation ADD (gpm)	Junction
1	F-1	Blue	0.0	0	0	0.0	0.0				J28
2	F-1	Blue	0.0	0	0	0.0	0.0				J18
3	F-1	Blue	0.0	0	0	0.0	0.0				J20
4	F-1	Blue	0.0	0	0	0.0	0.0				J20
5	E-1	Blue	0.0	0	0	0.0	0.0				J12
Blue Zone Totals			0.0	0	0	0.0	0.0	0.0	0.0	0.0	
6	F-2 (Ph. 1)	Red	0.0	0	0	0.0	0.0	2.29	8,595.6	5.97	J10
7	F-2 (Ph. 1)	Red	102.0	27,030	67,575	46.9	103.2				J14
8	F-3 (Ph. 1)	Red	62.5	16,563	41,406	28.8	63.3				J94
9	F-3	Red	0.0	0	0	0.0	0.0				J96
10	B-1 (Ph. 1)	Red	233.0	61,745	154,363	107.2	235.8				J140
11	D (Ph. 1)	Red	274.0	72,610	181,525	126.1	277.3				J98
12	D	Red	0.0	0	0	0.0	0.0				J24
13	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J112
14	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J114
15	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J120
16	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J102
17	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J58
18	D	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J118
19	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J108
20	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J106
21	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J126
22	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J124
23	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J66
24	C-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J122
25	G-1	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J110
26	G-1	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J116
27	G-2	Red	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J64
Red Zone Totals			671.5	177,948	444,869	308.9	679.7	2.3	8,595.6	6.0	
28	B-1	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J134
29	C-2	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J130
30	C-2	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J44
31	C-2	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J74
32	C-1	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J132
33	C-1	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J128
34	C-1	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J42
35	B-2	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J138
36	A	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J136
37	A	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J48
38	A	Green	0.0	0	0	0.0	0.0	0.0	0.0	0.0	J62
Green Zone Totals			0.0	0	0	0.0	0.0	0.0	0.0	0.0	
Buildout Totals (All Zones)			671.5	177,948	444,869	308.9	679.7	2.3	8,595.6	6.0	

Note:

1. The development composition in each Planning Area is preliminary and may change.

WESTSIDE PROPERTY**Dawson Trails Scenario #0 - Ph1, Static-no demands, Feed 1 OFF, Feed 2 OFF, PS OFF**

Water Model Junction Report

Model Run Date: December 20, 2024

Table B2-1: Water Model Junction Report

ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	PHD Demand Applied (gpm)	RZ Tank at 20%=6662.0		RZ Tank at 100%=6680.0	
							Head (ft)	Pressure (psi)	Head (ft)	Pressure (psi)
J10			Red	1	6,367.00	0.00	295.00	127.82	313.00	135.62
J100			Red	1	6,549.09	0.00	112.91	48.92	130.91	56.72
J102	FH	0.0	Red	1	6,498.44	0.00	163.56	70.87	181.56	78.67
J106	FH	0.0	Red	1	6,492.07	0.00	169.93	73.63	187.93	81.43
J108	FH	0.0	Red	1	6,496.31	0.00	165.69	71.79	183.69	79.59
J14	FH	102.0	Red	1	6,381.00	0.00	281.00	121.75	299.00	129.55
J140	FH	233.0	Red	1	6,467.50	0.00	194.50	84.27	212.50	92.07
J15		0.0	Red	1	6,381.00	0.00	281.00	121.75	299.00	129.55
J16			Red	1	6,350.00	0.00	312.00	135.18	330.00	142.98
J161			Red	1	6,386.00	0.00	276.00	119.58	294.00	127.38
J22			Red	1	6,433.62	0.00	228.38	98.95	246.38	106.75
J24	FH	274.0	Red	1	6,471.80	0.00	190.20	82.41	208.20	90.21
J50			Red	1	6,377.00	0.00	285.00	123.48	303.00	131.28
J54			Red	1	6,425.00	0.00	237.00	102.69	255.00	110.49
J70			Red	1	6,490.00	0.00	172.00	74.52	190.00	82.32
J76	Tank		Red	1	6,646.85	0.00	15.15	6.56	33.15	14.36
J78	Red-Green PS		Red	1	6,607.50	0.00	54.50	23.61	72.50	31.41
J92			Red	1	6,380.00	0.00	282.00	122.18	300.00	129.98
J94	FH	62.5	Red	1	6,395.02	0.00	266.98	115.68	284.98	123.47
J96	FH	0.0	Red	1	6,444.45	0.00	217.55	94.26	235.55	102.06
J98	FH	0.0	Red	1	6,443.18	0.00	218.82	94.81	236.82	102.61
		671.5				0.00				

WESTSIDE PROPERTY

Dawson Trails Scenario #3 - Ph1, SS, PHD, Feed 1 OFF, Feed 2 OFF, PS OFF, RZ Tank=6662.0

Dawson Trails Scenario #4B - Ph1, SS, MDD+FF, Costco FF Alternative (2,150 gpm)

Water Model Junction Report

Model Run Date: Dec 20, 2024

ADD: 265.0 gpd/SFE
MDD: 2.5 x ADD
PHD: 5.5 x ADD

Minimum pressure= 6.74

Table B2-2: Water Model Junction Report

		671.5	[Scenario #3 Results] PHD DMD = 685.6 gpm							
		PHD Demand								
ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	Irrigation ADD (gpm)	Applied (gpm)	PHD + IRR ADD (gpm)	Head (ft)	Pressure (psi)
J10			Red	1	6,367.00	5.97	0.00	5.97	6,662.01	127.83
J100			Red	1	6,549.09		0.00	0.00	6,662.30	49.05
J102	FH	0.0	Red	1	6,498.44		0.00	0.00	6,662.20	70.96
J106	FH	0.0	Red	1	6,492.07		0.00	0.00	6,662.19	73.71
J108	FH	0.0	Red	1	6,496.31		0.00	0.00	6,662.07	71.82
J14	FH	102.0	Red	1	6,381.00		103.24	103.24	6,662.00	121.76
J140	FH	233.0	Red	1	6,467.50		235.83	235.83	6,662.08	84.31
J15		0.0	Red	1	6,381.00		0.00	0.00	6,662.01	121.76
J16			Red	1	6,350.00		0.00	0.00	6,662.01	135.19
J161			Red	1	6,386.00		0.00	0.00	6,662.01	119.59
J17		0.0	Blue	1	6,351.40		0.00	0.00	6,493.00	61.35
J22			Red	1	6,433.62		0.00	0.00	6,661.96	98.94
J24	FH	274.0	Red	1	6,471.80		277.33	277.33	6,661.92	82.38
J50			Red	1	6,377.00		0.00	0.00	6,662.00	123.49
J54			Red	1	6,425.00		0.00	0.00	6,661.99	102.69
J70			Red	1	6,490.00		0.00	0.00	6,662.18	74.61
J76	Tank		Red	1	6,646.85		0.00	0.00	6,662.40	6.74
J78	Red-Green PS		Red	1	6,607.50		0.00	0.00	6,662.36	23.77
J88	Blue-Red PS		Blue	1	6,350.00		0.00	0.00	6,493.00	61.96
J92			Red	1	6,380.00		0.00	0.00	6,662.01	122.20
J94	FH	62.5	Red	1	6,395.02		63.26	63.26	6,662.00	115.68
J96	FH	0.0	Red	1	6,444.45		0.00	0.00	6,661.98	94.26
J98	FH	0.0	Red	1	6,443.18		0.00	0.00	6,661.98	94.81
		671.5				5.97	679.66	685.63		

WESTSIDE PROPERTY

Dawson Trails Scenario #3 - Ph1, SS, PHD+Irr, Feed 1 OFF, Feed 2 OFF, PS OFF, RZ Tank=6662.0

Dawson Trails Scenario #4B - Ph1, SS, MDD+FF+Irr, Costco FF Alternative (2,150 gpm)

Water Model Pipe Report

Model Run Date: Dec 20, 2024

Max Velocity Criteria = 10 ft/sec

Max Velocity = 0.53 ft/sec

Criteria met? yes

Table B2-3: Water Model Pipe Report

Table B2-3: Water Model Pipe Report										[Scenario #3 Results]				
										PHD OUTPUT				
ID (Char)	Description (Char)	Zone (Char)	Phase (Int)	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)	Status	
P-1		Red	1	J15	J161	83.66	12	120	99.37	0.28	0	0.04	Open	
P-11		Red	1	J50	J16	1,423.65	12	120	-41.25	0.12	0.01	0.01	Open	
P-18		Red	1	J76	J78	879.01	24	120	685.64	0.49	0.04	0.05	Open	
P-2		Red	1	J10	J16	777.55	24	120	41.25	0.03	0	0	Open	
P-29	Zone Bndy	Red	1	J88	J16	126.82	24	120	0.00	0	0	0	Closed	
P294	Zone Bndy	Red	1	P1_PH1	J16	64.44	24	120	0.00	0	0	0	Open	
P-30		Red	1	J94	J92	930.51	16	120	-123.61	0.2	0.01	0.02	Open	
P-31		Red	1	J54	J94	1,101.20	16	120	-93.39	0.15	0.01	0.01	Open	
P-32		Red	1	J96	J54	685.74	16	120	-114.88	0.18	0.01	0.01	Open	
P-33		Red	1	J98	J96	257.42	16	120	-114.88	0.18	0	0.01	Open	
P-35		Red	1	J102	J100	970.07	12	120	-162.45	0.46	0.1	0.1	Open	
P-36		Red	1	J106	J102	144.99	12	120	-162.45	0.46	0.01	0.1	Open	
P-37		Red	1	J70	J106	87.97	12	120	-162.45	0.46	0.01	0.1	Open	
P-38		Red	1	J108	J70	1,096.69	12	120	-162.45	0.46	0.11	0.1	Open	
P-39		Red	1	J24	J108	1,454.20	12	120	-162.45	0.46	0.15	0.1	Open	
P-4		Red	1	J22	J24	781.22	12	120	114.88	0.33	0.04	0.05	Open	
P-40		Red	1	J22	J98	1,043.14	16	120	-114.88	0.18	0.01	0.01	Open	
P-66		Red	1	J140	J78	3,778.95	20	120	-523.19	0.53	0.28	0.07	Open	
P-67		Red	1	J92	J140	2,723.50	20	120	-287.36	0.29	0.07	0.02	Open	
P-68		Red	1	J78	J100	2,188.12	16	120	162.45	0.26	0.05	0.02	Open	
P-69		Red	1	J10	J15	1,497.69	24	120	-64.38	0.05	0	0	Open	
P-71		Red	1	J15	J92	570.16	24	120	-163.75	0.12	0	0	Open	
P-72		Red	1	J161	J14	526.76	12	120	66.32	0.19	0.01	0.02	Open	
P-74		Red	1	J14	J50	503.93	12	120	-19.75	0.06	0	0	Open	
P-75		Red	1	J94	J161	1,617.47	12	120	-33.04	0.09	0.01	0.01	Open	
P-76		Red	1	J50	J54	3,892.99	12	120	21.49	0.06	0.01	0	Open	
P-91		Red	1	J10	J14	1,111.51	8	120	17.16	0.11	0.01	0.01	Open	
SUPPLY3	Supply 3	Red	1	FEED3	J76	1.00	24	120	685.64	0.49	0	0	Open	

WESTSIDE PROPERTY

Dawson Trails Scenario #4A - Ph1, SS, MDD+FF+Irr (standard), Feed 1 OFF, Feed 2 OFF, PS OFF, RZ Tank=6662.0

Water Model Fire Flow Report

Model Run Date: Dec 20, 2024

Table B2-4: Water Model Fire Flow Report

ID	Description (Char)	Junction of Interest	Zone (Char)	Elevation (ft)	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Hydrant Available Flow (gpm)	Hydrant Pressure at Available Flow (psi)	Pass /Fail
J102	FH	no	Red	6,498.44	0	71.02	6,662.35	3,000	63.71	8,713.01	20	Pass
J106	FH	no	Red	6,492.07	0	73.78	6,662.35	1,500	71.55	8,740.97	20	Pass
J108	FH	no	Red	6,496.31	0	71.93	6,662.32	3,000	62.57	7,720.29	20	Pass
J14	FH	yes	Red	6,381.00	46.93	121.89	6,662.30	2,000	118.94	14,551.32	20	Pass
J140	FH	no	Red	6,467.50	107.2	84.42	6,662.32	1,500	83.51	17,297.46	20	Pass
J24	FH	no	Red	6,471.80	126.06	82.54	6,662.29	3,000	73.66	9,031.96	20	Pass
J94	FH	no	Red	6,395.02	28.75	115.81	6,662.30	3,000	111.07	16,064.20	20	Pass
J96	FH	no	Red	6,444.45	0	94.39	6,662.30	3,000	88.4	12,203.95	20	Pass
J98	FH	no	Red	6,443.18	0	94.95	6,662.30	3,000	88.72	11,994.30	20	Pass

WESTSIDE PROPERTY**Dawson Trails Scenario #3 - Ph1, SS, PHD, Feed 1 OFF, Feed 2 OFF, PS OFF, RZ Tank=6662.0****Dawson Trails Scenario #4B - Ph1, SS, MDD+FF, Costco FF Alternative (2,150 gpm)**

Water Model Junction Report

Model Run Date: Dec 20, 2024

Table B2-2: Water Model Junction Report

						[Scenario #4B Results]			
671.5						MDD DMD = 2,464.9 gpm			
						MDD + IRR			
ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	MDD Demand Applied (gpm)	ADD (gpm)	Head (ft)	Pressure (psi)
J10			Red	1	6,367.00	0.00	5.97	6,656.66	125.51
J100			Red	1	6,549.09	0.00	0.00	6,661.40	48.66
J102	FH	0.0	Red	1	6,498.44	0.00	0.00	6,660.43	70.19
J106	FH	0.0	Red	1	6,492.07	0.00	0.00	6,660.29	72.89
J108	FH	0.0	Red	1	6,496.31	0.00	0.00	6,659.12	70.54
J14	FH	102.0	Red	1	6,381.00	2196.93	2196.93	6,654.59	118.55
J140	FH	233.0	Red	1	6,467.50	107.20	107.20	6,658.88	82.92
J15		0.0	Red	1	6,381.00	0.00	0.00	6,656.75	119.48
J16			Red	1	6,350.00	0.00	0.00	6,656.64	132.87
J161			Red	1	6,386.00	0.00	0.00	6,656.55	117.23
J17		0.0	Blue	1	6,351.40	0.00	0.00	6,493.00	61.35
J22			Red	1	6,433.62	0.00	0.00	6,657.19	96.88
J24	FH	274.0	Red	1	6,471.80	126.06	126.06	6,657.67	80.54
J50			Red	1	6,377.00	0.00	0.00	6,655.56	120.70
J54			Red	1	6,425.00	0.00	0.00	6,656.89	100.48
J70			Red	1	6,490.00	0.00	0.00	6,660.20	73.75
J76	Tank		Red	1	6,646.85	0.00	0.00	6,662.40	6.74
J78	Red-Green PS		Red	1	6,607.50	0.00	0.00	6,661.93	23.58
J88	Blue-Red PS		Blue	1	6,350.00	0.00	0.00	6,493.00	61.96
J92			Red	1	6,380.00	0.00	0.00	6,656.90	119.98
J94	FH	62.5	Red	1	6,395.02	28.75	28.75	6,656.88	113.46
J96	FH	0.0	Red	1	6,444.45	0.00	0.00	6,657.00	92.10
J98	FH	0.0	Red	1	6,443.18	0.00	0.00	6,657.04	92.67
671.5						2,458.94	2,464.91		

WESTSIDE PROPERTY

Dawson Trails Scenario #3 - Ph1, SS, PHD+Irr, Feed 1 OFF, Feed 2 OFF, PS OFF, RZ Tank=6662.0

Dawson Trails Scenario #4B - Ph1, SS, MDD+FF+Irr, Costco FF Alternative (2,150 gpm)

Water Model Pipe Report

Model Run Date: Dec 20, 2024

Max Velocity Criteria = 5 ft/sec

Max Velocity = 3.22 ft/sec

Criteria met? **yes****Table B2-3: Water Model Pipe Report**

[Scenario #4B Results]

									MDD OUTPUT				
ID (Char)	Description (Char)	Zone (Char)	Phase (Int)	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)	Status
P-1	Zone Bndy	Red	1	J15	J161	83.66	12	120	898.16	2.55	0.2	2.41	Open
P-11		Red	1	J50	J16	1,423.65	12	120	-481.20	1.37	1.08	0.76	Open
P-18		Red	1	J76	J78	879.01	24	120	2,464.92	1.75	0.47	0.53	Open
P-2		Red	1	J10	J16	777.55	24	120	481.21	0.34	0.02	0.03	Open
P-29		Red	1	J88	J16	126.82	24	120	0.00	0	0	0	Closed
P294		Red	1	P1_PH1	J16	64.44	24	120	0.00	0	0	0	Open
P-30		Red	1	J94	J92	930.51	16	120	-147.53	0.24	0.02	0.02	Open
P-31		Red	1	J54	J94	1,101.20	16	120	117.08	0.19	0.02	0.01	Open
P-32		Red	1	J96	J54	685.74	16	120	429.98	0.69	0.1	0.15	Open
P-33		Red	1	J98	J96	257.42	16	120	429.98	0.69	0.04	0.15	Open
P-35	Red	1	J102	J100	970.07	12	120	-556.04	1.58	0.96	0.99	Open	
P-36	Red	1	J106	J102	144.99	12	120	-556.04	1.58	0.14	0.99	Open	
P-37	Red	1	J70	J106	87.97	12	120	-556.04	1.58	0.09	0.99	Open	
P-38	Red	1	J108	J70	1,096.69	12	120	-556.04	1.58	1.09	0.99	Open	
P-39	Red	1	J24	J108	1,454.20	12	120	-556.04	1.58	1.44	0.99	Open	
P-4	Red	1	J22	J24	781.22	12	120	-429.98	1.22	0.48	0.62	Open	
P-40	Red	1	J22	J98	1,043.14	16	120	429.98	0.69	0.16	0.15	Open	
P-66	Red	1	J140	J78	3,778.95	20	120	-1,908.88	1.95	3.06	0.81	Open	
P-67	Red	1	J92	J140	2,723.50	20	120	-1,801.68	1.84	1.98	0.73	Open	
P-68	Red	1	J78	J100	2,188.12	16	120	556.04	0.89	0.53	0.24	Open	
P-69	Red	1	J10	J15	1,497.69	24	120	-755.98	0.54	0.09	0.06	Open	
P-71	Red	1	J15	J92	570.16	24	120	-1,654.14	1.17	0.15	0.26	Open	
P-72	Red	1	J161	J14	526.76	12	120	1,134.03	3.22	1.95	3.71	Open	
P-74	Red	1	J14	J50	503.93	12	120	-794.10	2.25	0.97	1.92	Open	
P-75	Red	1	J94	J161	1,617.47	12	120	235.87	0.67	0.33	0.2	Open	
P-76	Red	1	J50	J54	3,892.99	12	120	-312.90	0.89	1.33	0.34	Open	
P-91	Red	1	J10	J14	1,111.51	8	120	268.80	1.72	2.07	1.86	Open	
SUPPLY3	Supply 3	Red	1	FEED3	J76	1.00	24	120	2,464.92	1.75	0	0.49	Open

WESTSIDE PROPERTY**Dawson Trails Scenario #0 - Buildout, Static-no demands, Feed 1 OFF, Feed 2 OFF, PS OFF,**

Water Model Junction Report

Model Run Date: June 29, 2024

Table B2-7: Water Model Junction ReportTank at 20%.Tank at 100%.BZ=6490.0.BZ=6508.0.RZ=6662.0.RZ=6618.0.GZ=6806.0.GZ=6824.0.

ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	Demand (gpm)	Head (ft)	Pressure (psi)	Head (ft)	Pressure (psi)	Head (ft)	Pressure (psi)
J10			Red	1	6,367.00	0.00	295.00	127.82	6,367.00	2758.67	313.00	135.62
J100			Red	1	6,549.09	0.00	112.91	48.92	6,549.09	2837.56	130.91	56.72
J102	FH	216.0	Red	1	6,498.44	0.00	163.56	70.87	6,498.44	2815.62	181.56	78.67
J106	FH	102.0	Red	1	6,492.07	0.00	169.93	73.63	6,492.07	2812.86	187.93	81.43
J108	FH	17.0	Red	1	6,496.31	0.00	165.69	71.79	6,496.31	2814.69	183.69	79.59
J110	FH	68.0	Red		6,432.18	0.00	229.82	99.58	6,432.18	2786.91	247.82	107.37
J112	FH	517.0	Red		6,433.00	0.00	229.00	99.22	6,433.00	2787.26	247.00	107.02
J114	FH	688.0	Red		6,460.00	0.00	202.00	87.52	6,460.00	2798.96	220.00	95.32
J116	FH	101.0	Red		6,452.69	0.00	209.31	90.69	6,452.69	2795.79	227.31	98.49
J118	FH	191.0	Red		6,450.00	0.00	212.00	91.85	6,450.00	2794.63	230.00	99.65
J12	FH	20.0	Blue	1	6,370.48	0.00	119.52	51.79	6,370.48	2760.17	137.52	59.58
J120	FH	2.0	Red		6,458.83	0.00	203.17	88.03	6,458.83	2798.45	221.17	95.83
J122	FH	5.0	Red		6,440.00	0.00	222.00	96.19	6,440.00	2790.29	240.00	103.99
J124	FH	189.0	Red		6,515.38	0.00	146.62	63.53	6,515.38	2822.95	164.62	71.33
J126	FH	114.0	Red		6,528.47	0.00	133.53	57.86	6,528.47	2828.63	151.53	65.65
J128	FH	222.0	Green		6,597.16	0.00	208.84	90.49	6,597.16	2858.39	226.84	98.28
J130	FH	169.0	Green		6,593.11	0.00	212.89	92.24	6,593.11	2856.63	230.89	100.04
J132	FH	92.0	Green		6,595.46	0.00	210.54	91.22	6,595.46	2857.65	228.54	99.02
J134	FH	239.0	Green		6,565.00	0.00	241.00	104.42	6,565.00	2844.45	259.00	112.22
J136	FH	333.0	Green		6,679.27	0.00	126.73	54.91	6,679.27	2893.96	144.73	62.71
J138	FH	228.0	Green		6,602.50	0.00	203.50	88.17	6,602.50	2860.70	221.50	95.97
J14	FH	102.0	Red	1	6,381.00	0.00	281.00	121.75	6,381.00	2764.73	299.00	129.55
J140	FH	245.0	Red	1	6,467.50	0.00	194.50	84.27	6,467.50	2802.21	212.50	92.07
J15		0.0	Red	1	6,381.00	0.00	281.00	121.75	6,381.00	2764.73	299.00	129.55
J16			Red	1	6,350.00	0.00	312.00	135.18	6,350.00	2751.30	330.00	142.98
J161			Red	1	6,386.00	0.00	276.00	119.58	6,386.00	2766.90	294.00	127.38
J17			Blue		6,351.40	0.00	138.60	60.05	6,351.40	2751.91	156.60	67.85
J18	FH	4.0	Blue	1	6,370.48	0.00	119.52	51.79	6,370.48	2760.17	137.52	59.58
J20	FH	36.0	Blue		6,352.61	0.00	137.39	59.53	6,352.61	2752.43	155.39	67.33
J22			Red	1	6,433.62	0.00	228.38	98.95	6,433.62	2787.53	246.38	106.75
J24	FH	148.0	Red	1	6,471.80	0.00	190.20	82.41	6,471.80	2804.07	208.20	90.21
J26	FH		Blue		6,320.51	0.00	169.49	73.44	6,320.51	2738.52	187.49	81.23
J28	FH	90.0	Blue		6,341.09	0.00	148.91	64.52	6,341.09	2747.44	166.91	72.32
J42	FH	167.0	Green		6,591.59	0.00	214.41	92.90	6,591.59	2855.97	232.41	100.70
J44	FH	334.0	Green		6,578.02	0.00	227.98	98.78	6,578.02	2850.10	245.98	106.58
J46			Green		6,637.06	0.00	168.94	73.20	6,637.06	2875.68	186.94	81.00
J48	FH	2.0	Green		6,701.21	0.00	104.79	45.40	6,701.21	2903.47	122.79	53.20
J50			Red	1	6,377.00	0.00	285.00	123.48	6,377.00	2763.00	303.00	131.28
J54			Red	1	6,425.00	0.00	237.00	102.69	6,425.00	2783.80	255.00	110.49
J56			Red		6,500.00	0.00	162.00	70.19	6,500.00	2816.29	180.00	77.99
J58	FH	384.0	Red		6,471.27	0.00	190.73	82.64	6,471.27	2803.84	208.73	90.44
J60	Tank		Green		6,806.00	0.00	0.00	0.00	6,806.00	2948.87	18.00	7.80
J62	FH	138.0	Green		6,642.50	0.00	163.50	70.84	6,642.50	2878.03	181.50	78.64
J64	FH	13.0	Red		6,430.00	0.00	232.00	100.52	6,430.00	2785.96	250.00	108.32
J66	FH	25.0	Red		6,492.95	0.00	169.05	73.25	6,492.95	2813.24	187.05	81.04
J68			Red		6,440.00	0.00	222.00	96.19	6,440.00	2790.29	240.00	103.99
J70			Red	1	6,490.00	0.00	172.00	74.52	6,490.00	2811.96	190.00	82.32
J72			Green		6,533.66	0.00	272.34	118.00	6,533.66	2830.88	290.34	125.80
J74	FH	17.0	Green		6,582.76	0.00	223.24	96.72	6,582.76	2852.15	241.24	104.52
J76	RZ Tank		Red	1	6,646.85	0.00	15.15	6.56	6,646.85	2879.92	33.15	14.36
J78	GZBPS		Red	1	6,607.50	0.00	54.50	23.61	6,607.50	2862.87	72.50	31.41
J80			Green		6,607.54	0.00	198.46	85.99	6,607.54	2862.89	216.46	93.79
J82			Green		6,593.54	0.00	212.46	92.05	6,593.54	2856.82	230.46	99.85
J84			Blue	1	6,339.66	0.00	150.34	65.14	6,339.66	2746.82	168.34	72.94
J86			Blue	1	6,286.00	0.00	204.00	88.39	6,286.00	2723.57	222.00	96.19
J88	RZBPS		Blue		6,350.00	0.00	140.00	60.66	6,350.00	2751.30	158.00	68.46
J90			Blue	1	6,346.49	0.00	143.51	62.18	6,346.49	2749.78	161.51	69.98
J92			Red	1	6,380.00	0.00	282.00	122.18	6,380.00	2764.30	300.00	129.98
J94	FH	509.0	Red	1	6,395.02	0.00	266.98	115.68	6,395.02	2770.81	284.98	123.47
J96	FH	678.0	Red	1	6,444.45	0.00	217.55	94.26	6,444.45	2792.22	235.55	102.06
J98	FH	470.0	Red	1	6,443.18	0.00	218.82	94.81	6,443.18	2791.67	236.82	102.61

6,875.0

0.00

WESTSIDE PROPERTY

Dawson Trails Scenario #11 - Buildout, SS, PHD+Irr, Feed 1, 3, 4 ON, Feed 2 OFF, RZ and GZ PS OFF, RZ Tank=6662.4

Dawson Trails Scenario #12B - Buildout, SS, MDD+FF+Irr, Costco FF Alternative (2,150 gpm)

Water Model Junction Report

ADD: 265.0 gpd/SFE

Model Run Date: Dec 20, 2024

MDD: 2.5 x ADD

PHD 5.5 x ADD

Table B2-8: Water Model Junction Report

[Scenario #11 Results]

PHD DMD = 7,765.5 gpm

ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	Irrigation ADD (gpm)	PHD Demand Applied (gpm)	PHD + IRR ADD (gpm)	Head (ft)	Pressure (psi)
J10			Red	1	6,367.00	5.97	0.00	5.97	6,650.22	122.72
J100			Red	1	6,549.09		0.00	0.00	6,651.33	44.30
J102	FH	216.0	Red	1	6,498.44	35.67	218.63	254.30	6,646.52	64.16
J106	FH	102.0	Red	1	6,492.07	35.67	103.24	138.91	6,646.03	66.71
J108	FH	17.0	Red	1	6,496.31	35.67	17.21	52.88	6,645.30	64.56
J110	FH	68.0	Red		6,432.18	35.67	68.83	104.50	6,643.91	91.74
J112	FH	517.0	Red		6,433.00	35.67	523.28	558.95	6,644.11	91.47
J114	FH	688.0	Red		6,460.00	35.67	696.36	732.03	6,640.55	78.23
J116	FH	101.0	Red		6,452.69	35.67	102.23	137.90	6,640.51	81.38
J118	FH	191.0	Red		6,450.00	35.67	193.32	228.99	6,640.51	82.55
J12	FH	20.0	Blue	1	6,370.48		20.24	20.24	6,492.80	53.00
J120	FH	2.0	Red		6,458.83	35.67	2.02	37.69	6,640.52	78.73
J122	FH	5.0	Red		6,440.00	35.67	5.06	40.73	6,640.65	86.94
J124	FH	189.0	Red		6,515.38	35.67	191.30	226.97	6,641.44	54.62
J126	FH	114.0	Red		6,528.47	35.67	115.39	151.06	6,641.41	48.94
J128	FH	222.0	Green		6,597.16	23.02	224.70	247.72	6,715.14	51.12
J130	FH	169.0	Green		6,593.11	23.02	171.05	194.07	6,714.77	52.71
J132	FH	92.0	Green		6,595.46	23.02	93.12	116.14	6,714.77	51.70
J134	FH	239.0	Green		6,565.00	23.02	241.90	264.92	6,714.91	64.96
J136	FH	333.0	Green		6,679.27	23.02	337.05	360.07	6,716.58	16.17
J138	FH	228.0	Green		6,602.50	23.02	230.77	253.79	6,720.56	51.16
J14	FH	102.0	Red	1	6,381.00		103.24	103.24	6,650.00	116.56
J140	FH	245.0	Red	1	6,467.50		247.98	247.98	6,654.12	80.86
J15		0.0	Red	1	6,381.00		0.00	0.00	6,650.24	116.66
J16			Red	1	6,350.00		0.00	0.00	6,650.21	130.08
J161			Red	1	6,386.00		0.00	0.00	6,650.10	114.44
J17			Blue		6,351.40		0.00	0.00	6,492.80	61.27
J18	FH	4.0	Blue	1	6,370.48	12.72	4.05	16.77	6,492.80	53.00
J20	FH	36.0	Blue		6,352.61		36.44	36.44	6,492.80	60.75
J22			Red	1	6,433.62		0.00	0.00	6,644.73	91.47
J24	FH	148.0	Red	1	6,471.80		149.80	149.80	6,644.81	74.97
J26	FH		Blue		6,320.51		0.00	0.00	6,492.80	74.65
J28	FH	90.0	Blue		6,341.09		91.09	91.09	6,492.80	65.74
J42	FH	167.0	Green		6,591.59	23.02	169.03	192.05	6,717.65	54.62
J44	FH	334.0	Green		6,578.02	23.02	338.06	361.08	6,716.14	59.85
J46			Green		6,637.06		0.00	0.00	6,725.13	38.16
J48	FH	2.0	Green		6,701.21	23.02	2.02	25.04	6,720.95	8.55
J50			Red	1	6,377.00		0.00	0.00	6,649.91	118.25
J54			Red	1	6,425.00		0.00	0.00	6,647.19	96.28
J56			Red		6,500.00		0.00	0.00	6,641.60	61.35
J58	FH	384.0	Red		6,471.27	35.67	388.67	424.34	6,640.54	73.35
J60	Tank		Green		6,806.00		0.00	0.00	6,805.99	-0.01
J62	FH	138.0	Green		6,642.50	23.02	139.68	162.70	6,731.13	38.40
J64	FH	13.0	Red		6,430.00	35.67	13.16	48.83	6,640.82	91.35
J66	FH	25.0	Red		6,492.95	35.67	25.30	60.97	6,641.41	64.32
J68			Red		6,440.00		0.00	0.00	6,643.61	88.23
J70			Red	1	6,490.00		0.00	0.00	6,645.80	67.51
J72			Green		6,533.66		0.00	0.00	6,717.64	79.72
J74	FH	17.0	Green		6,582.76	23.02	17.21	40.23	6,717.64	58.44
J76	RZ Tank		Red	1	6,646.85		0.00	0.00	6,662.40	6.74
J78	GZBPS		Red	1	6,607.50		0.00	0.00	6,660.40	22.92
J80			Green		6,607.54		0.00	0.00	6,714.81	46.48
J82			Green		6,593.54		0.00	0.00	6,714.81	52.55
J84			Blue	1	6,339.66		0.00	0.00	6,492.84	66.37
J86			Blue	1	6,286.00		0.00	0.00	6,493.00	89.69
J88	RZBPS		Blue		6,350.00		0.00	0.00	6,492.80	61.88
J90			Blue	1	6,346.49		0.00	0.00	6,492.81	63.40
J92			Red	1	6,380.00		0.00	0.00	6,650.30	117.12
J94	FH	509.0	Red	1	6,395.02		515.19	515.19	6,648.85	109.99
J96	FH	678.0	Red	1	6,444.45		686.24	686.24	6,645.49	87.11
J98	FH	470.0	Red	1	6,443.18		475.71	475.71	6,645.21	87.54

6,875.0

806.90

6,958.55

7,765.53

WESTSIDE PROPERTY

Dawson Trails Scenario #11 - Buildout, SS, PHD+Irr, Feed 1, 3, 4 ON, Feed 2 OFF, RZ and GZ PS OFF, RZ Tank=6662.4

Dawson Trails Scenario #12B - Buildout, SS, MDD+FF, Costco FF Alternative

Water Model Pipe Report

Model Run Date: Dec 20, 2024

Max Velocity Criteria = 10 ft/sec

Max Velocity = 6.29 ft/sec

Criteria met? yes

Table B2-9: Water Model Pipe Report

Table B2-9: Water Model Pipe Report									[Scenario #11 Results]				
									PHD OUTPUT				
ID	Description (Char)	Zone (Char)	Phase (Int)	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)	Status
P-1		Red	1	J15	J161	83.66	12	120	724.98	2.06	0.14	1.62	Open
P-10		Green		J46	J48	2,269.53	12	120	776.51	2.2	4.18	1.84	Open
P-11		Red	1	J50	J16	1,423.65	12	120	-243.62	0.69	0.31	0.22	Open
P-13		Red		J56	J58	1,156.14	12	120	531.95	1.51	1.06	0.91	Open
P-14		Green		J60	J62	5,824.79	12	120	2,217.81	6.29	74.85	12.85	Open
P-141	Supply 4	Green		T2-GZ	J60	1.00	12	120	0.00	0	0	0.00	Closed
P-15		Red		J64	J66	2,301.39	12	120	-268.08	0.76	0.59	0.26	Open
P-16		Red		J68	J70	2,127.41	12	120	-567.74	1.61	2.19	1.03	Open
P-17		Green		J72	J74	945.67	12	120	0.00	0	0	0	Open
P-18		Red	1	J76	J78	879.01	24	120	5,383.19	3.82	1.99	2.27	Open
P-181	Supply 3	Red		T1-RZ	J76	1.00	24	120	0.00	0	0	0	Closed
P-19		Green		J80	J82	227.74	12	120	0.00	0	0	0	Open
P-2		Red	1	J10	J16	777.55	24	120	243.63	0.17	0.01	0.01	Open
P-20		Blue	1	J84	J86	6,218.83	16	120	-164.53	0.26	0.16	0.03	Open
P-21		Blue		J26	J88	1,436.03	12	120	-8.98	0.03	0	0	Open
P-22		Blue		J28	J90	342.27	12	120	-82.11	0.23	0.01	0.03	Open
P-23		Blue	1	J90	J84	1,172.78	16	120	-164.53	0.26	0.03	0.03	Open
P-24		Blue	1	J18	J90	1,011.16	16	120	-82.43	0.13	0.01	0.01	Open
P-25		Blue		J17	J88	1,707.01	24	120	0.00	0	0	0	Open
P-26		Blue		J88	J20	253.09	16	120	-13.15	0.02	0	0	Open
P-27		Blue	1	J12	J18	1,454.96	12	120	-16.07	0.05	0	0	Open
P-29	Zone Bndy	Red	1	J88	J16	126.82	24	120	0.00	0	0	0	Closed
P-291	Zone Bndy	Blue		J88	P1	68.07	24	120	0.00	0	0	0	Open
P-292	Zone Bndy	Red		P1	J16	61.69	24	120	0.00	0	0	0	Open
P293	Zone Bndy	Blue	1	J88	P1_PH1	64.87	24	120	0.00	0	0	0	Open
P294	Zone Bndy	Red	1	P1_PH1	J16	64.44	24	120	0.00	0	0	0	Open
P-3		Blue		J18	J20	646.08	16	120	49.59	0.08	0	0	Open
P-30		Red	1	J94	J92	930.51	16	120	-1,513.61	2.42	1.45	1.56	Open
P-31		Red	1	J54	J94	1,101.20	16	120	-1,485.05	2.37	1.66	1.51	Open
P-32		Red	1	J96	J54	685.74	16	120	-1,944.94	3.1	1.7	2.48	Open
P-33		Red	1	J98	J96	257.42	16	120	-1,258.70	2.01	0.29	1.11	Open
P-34		Red		J100	J56	2,226.75	12	120	1,239.03	3.51	9.73	4.37	Open
P-35		Red	1	J102	J100	970.07	12	120	-1,326.83	3.76	4.81	4.96	Open
P-36		Red	1	J106	J102	144.99	12	120	-1,072.53	3.04	0.48	3.34	Open
P-37		Red	1	J70	J106	87.97	12	120	-933.62	2.65	0.23	2.59	Open
P-38		Red	1	J108	J70	1,096.69	12	120	-365.88	1.04	0.5	0.46	Open
P-39		Red	1	J24	J108	1,454.20	12	120	-313.00	0.89	0.5	0.34	Open
P-4		Red	1	J22	J24	781.22	12	120	-163.20	0.46	0.08	0.1	Open
P-40		Red	1	J22	J98	1,043.14	16	120	-782.99	1.25	0.48	0.46	Open
P-41		Red		J110	J112	393.61	12	120	-387.24	1.1	0.2	0.51	Open
P-42		Red		J112	J22	233.82	12	120	-946.19	2.68	0.62	2.65	Open
P-43		Red		J68	J110	1,036.73	12	120	-282.74	0.8	0.29	0.28	Open
P-44		Red		J114	J68	1,405.64	12	120	-850.48	2.41	3.06	2.18	Open
P-45		Red		J116	J114	738.3	12	120	-118.45	0.34	0.04	0.06	Open
P-46		Red		J118	J116	148.99	12	120	19.45	0.06	0	0	Open
P-47		Red		J120	J118	481.07	12	120	69.92	0.2	0.01	0.02	Open
P-48		Red		J58	J120	435.82	12	120	107.61	0.31	0.02	0.05	Open
P-49		Red		J122	J118	1,191.76	12	120	178.52	0.51	0.14	0.12	Open
P-5		Blue		J26	J28	227.24	12	120	8.98	0.03	0	0	Open
P-50		Red		J64	J122	917.58	12	120	219.25	0.62	0.16	0.18	Open
P-51		Red		J66	J56	505.3	12	120	-329.05	0.93	0.19	0.38	Open
P-52		Red		J56	J124	323.43	12	120	378.03	1.07	0.16	0.49	Open
P-53	Zone Bndy	Red		J126	J72	384.78	12	120	0.00	0	0	0	Closed
P-54		Red		J124	J126	327.74	12	120	151.06	0.43	0.03	0.09	Open
P-55		Green		J74	J42	355.34	12	120	-40.23	0.11	0	0.01	Open
P-56		Green		J44	J128	1,616.96	12	120	431.45	1.22	1	0.62	Open
P-57		Green		J130	J128	2,911.06	12	120	-183.73	0.52	0.37	0.13	Open
P-58		Green		J132	J130	186.16	12	120	10.34	0.03	0	0	Open
P-59		Green		J80	J132	633.30	12	120	126.48	0.36	0.04	0.06	Open
P-60		Green		J134	J80	1,597.08	12	120	126.48	0.36	0.1	0.06	Open
P-61		Green		J136	J134	3,230.69	12	120	391.40	1.11	1.67	0.52	Open
P-62		Green		J48	J136	2,523.92	12	120	751.47	2.13	4.37	1.73	Open
P-63		Green		J138	J42	948.27	12	120	1,024.81	2.91	2.92	3.08	Open
P-64		Green		J46	J138	985.08	12	120	1,278.60	3.63	4.56	4.63	Open
P-65		Green		J62	J46	538.12	12	120	2,055.11	5.83	6.01	11.16	Open
P-66		Red	1	J140	J78	3,778.95	20	120	-2,817.33	2.88	6.28	1.66	Open
P-661		Red		J78	P2	100.00	12	120	0.00	0	0	0	Open
P-662		Green		P2	J82	100.00	12	120	0.00	0	0	0	Open
P-67		Red	1	J92	J140	2,723.50	20	120	-2,569.35	2.62	3.82	1.4	Open
P-68		Red	1	J78	J100	2,188.12	16	120	2,565.86	4.09	9.07	4.15	Open
P-69		Red	1	J10	J15	1,497.69	24	120	-330.76	0.23	0.02	0.01	Open
P-70		Blue		J12	J88	1,592.12	12	120	-4.17	0.01	0	0	Open
P-71		Red	1	J15	J92	570.16	24	120	-1,055.73	0.75	0.06	0.11	Open
P-72		Red	1	J161	J14	526.76	12	120	238.34	0.68	0.11	0.21	Open
P-74		Red	1	J14	J50	503.93	12	120	216.26	0.61	0.09	0.17	Open
P-75		Red	1	J94	J161	1,617.47	12	120	-486.63	1.38	1.25	0.77	Open
P-76		Red	1	J50	J54	3,892.99	12	120	459.89	1.3	2.72	0.7	Open
P-9		Green		J42	J44	788.06	12	120	792.53	2.25	1.51	1.91	Open
P-91		Red		J10	J14	1,111.51	8	120	81.16	0.52	0.23	0.2	Open
SUPPLY1	Supply 1	Blue	1	FEED1	J86	1.00	16	120	164.53	0.26	0	0	Open
SUPPLY2	Supply 2	Blue		FEED2	J17	887.22	24	120	0.00	0	0	0	Closed
SUPPLY3	Supply 3	Red	1	FEED3	J76	1	24	120	5,383.19	3.82	0	1.95	Open
SUPPLY4	Supply 4	Green		FEED4	J60	1	12	120	2,217.81	6.29	0.01	12.70	Open

WESTSIDE PROPERTY

Dawson Trails Scenario #12A - Buildout, SS, MDD+Irr, Feed 1, 3, 4 ON, Feed 2 OFF, RZ and GZ PS OFF, RZ Tank=6662.4

Water Model Fire Flow Report

Model Run Date: Dec 20, 2024

Table B2-4A: Water Model Fire Flow Report

ID	Description (Char)	Junction of Interest	Zone (Char)	Elevation (ft)	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Hydrant Available Flow (gpm)	Hydrant Pressure at Available Flow (psi)	Pass /Fail
J102	FH	no	Red	6,498.44	135.05	69.03	6,657.74	3,000	59.85	8,998.88	20	Pass
J106	FH	no	Red	6,492.07	82.6	71.73	6,657.60	1,500	68.06	9,202.10	20	Pass
J108	FH	no	Red	6,496.31	43.49	69.81	6,657.43	3,000	57.56	7,290.46	20	Pass
J110	FH	no	Red	6,432.18	66.95	97.43	6,657.04	3,000	86.53	10,644.06	20	Pass
J112	FH	no	Red	6,433.00	273.53	97.11	6,657.13	3,000	87.25	11,700.54	20	Pass
J114	FH	no	Red	6,460.00	352.2	84.85	6,655.82	3,000	67.98	7,541.67	20	Pass
J116	FH	no	Red	6,452.69	82.14	87.99	6,655.77	3,000	70.15	7,219.95	20	Pass
J118	FH	no	Red	6,450.00	123.54	89.16	6,655.77	3,000	71.24	7,317.79	20	Pass
J12	FH	no	Blue	6,370.48	9.2	53.06	6,492.95	3,000	28.79	3,565.97	20	Pass
J120	FH	no	Red	6,458.83	36.59	85.34	6,655.77	3,000	66.22	6,644.49	20	Pass
J122	FH	no	Red	6,440.00	37.97	93.5	6,655.79	3,000	71.44	6,406.49	20	Pass
J124	FH	no	Red	6,515.38	122.62	60.94	6,656.02	1,500	53.3	4,779.93	20	Pass
J126	FH	no	Red	6,528.47	88.12	55.26	6,656.01	1,500	46.64	3,914.67	20	Pass
J128	FH	no	Green	6,597.16	125.16	78.92	6,779.29	1,500	31.58	1,883.88	20	Pass
J130	FH	no	Green	6,593.11	100.77	80.62	6,779.18	1,500	31.63	1,850.43	20	Pass
J132	FH	no	Green	6,595.46	65.35	79.61	6,779.18	1,500	30.57	1,792.94	20	Pass
J134	FH	no	Green	6,565.00	132.98	92.82	6,779.23	1,500	43.87	2,125.16	20	Pass
J136	FH	no	Green	6,679.27	176.22	43.52	6,779.72	1,500	-3.65	1,058.46	20	Fail
J138	FH	no	Green	6,602.50	127.92	77.28	6,780.86	1,500	35.17	2,008.38	20	Pass
J14	FH	yes	Red	6,381.00	46.93	120.43	6,658.94	2,000	115.85	14,637.60	20	Pass
J140	FH	no	Red	6,467.50	112.72	83.45	6,660.09	1,500	81.49	17,139.86	20	Pass
J18	FH	no	Blue	6,370.48	14.56	53.06	6,492.95	3,000	32.93	3,959.72	20	Pass
J20	FH	no	Blue	6,352.61	16.56	60.81	6,492.95	3,000	40.2	4,387.75	20	Pass
J24	FH	no	Red	6,471.80	68.09	80.4	6,657.35	3,000	68.79	8,579.42	20	Pass
J26	FH	no	Blue	6,320.51	0	74.72	6,492.95	3,000	53.53	5,055.77	20	Pass
J28	FH	no	Blue	6,341.09	41.41	65.8	6,492.95	3,000	45.29	4,711.25	20	Pass
J42	FH	no	Green	6,591.59	99.85	81.64	6,780.00	1,500	37.39	2,011.05	20	Pass
J44	FH	no	Green	6,578.02	176.68	87.34	6,779.58	1,500	41.79	2,168.42	20	Pass
J48	FH	no	Green	6,701.21	23.94	34.55	6,780.95	3,000	-83.6	647.82	20	Fail
J58	FH	no	Red	6,471.27	212.34	79.95	6,655.78	3,000	60.36	6,366.59	20	Pass
J62	FH	no	Green	6,642.50	86.51	61.29	6,783.95	1,500	25.85	1,767.16	20	Pass
J64	FH	no	Red	6,430.00	41.65	97.85	6,655.83	3,000	74.61	6,387.30	20	Pass
J66	FH	no	Red	6,492.95	47.17	70.65	6,656.00	3,000	50.94	5,539.64	20	Pass
J74	FH	no	Green	6,582.76	30.84	85.46	6,780.00	3,000	-36.16	1,990.73	20	Fail
J94	FH	no	Red	6,395.02	234.18	114.22	6,658.62	3,000	107.38	16,653.36	20	Pass
J96	FH	no	Red	6,444.45	311.93	92.37	6,657.63	3,000	84.29	12,994.37	20	Pass
J98	FH	no	Red	6,443.18	216.23	92.88	6,657.53	3,000	84.62	12,768.64	20	Pass

WESTSIDE PROPERTY

Dawson Trails Scenario #11 - Buildout, SS, PHD+Irr, Feed 1, 3, 4 ON, Feed 2 OFF, RZ and GZ PS OFF, RZ Tank=6662.4

Dawson Trails Scenario #12B - Buildout, SS, MDD+FF+Irr, Costco FF Alternative (2,150 gpm)

Water Model Junction Report

Model Run Date: Dec 20, 2024

Table B2-8: Water Model Junction Report

[Scenario #12B Results]										
MDD DMD = 6,120.0 gpm										
ID	Description (Char)	SFE	Zone (Char)	Phase (Int)	Elevation (ft)	Irrigation ADD (gpm)	MDD + FF	MDD+ FF	Head (ft)	Pressure (psi)
							Demand Applied (gpm)	+ IRR ADD (gpm)		
J10			Red	1	6,367.00	5.97	0.00	5.97	6,649.52	122.41
J100			Red	1	6,549.09		0.00	0.00	6,654.94	45.86
J102	FH	216.0	Red	1	6,498.44	35.67	99.38	135.05	6,651.39	66.27
J106	FH	102.0	Red	1	6,492.07	35.67	46.93	82.60	6,650.98	68.85
J108	FH	17.0	Red	1	6,496.31	35.67	7.82	43.49	6,650.06	66.62
J110	FH	68.0	Red		6,432.18	35.67	31.28	66.95	6,649.04	93.97
J112	FH	517.0	Red		6,433.00	35.67	237.86	273.53	6,649.00	93.59
J114	FH	688.0	Red		6,460.00	35.67	316.53	352.20	6,648.88	81.84
J116	FH	101.0	Red		6,452.69	35.67	46.47	82.14	6,648.91	85.02
J118	FH	191.0	Red		6,450.00	35.67	87.87	123.54	6,648.93	86.19
J12	FH	20.0	Blue	1	6,370.48		9.20	9.20	6,492.95	53.06
J120	FH	2.0	Red		6,458.83	35.67	0.92	36.59	6,648.97	82.39
J122	FH	5.0	Red		6,440.00	35.67	2.30	37.97	6,649.02	90.57
J124	FH	189.0	Red		6,515.38	35.67	86.95	122.62	6,649.63	58.17
J126	FH	114.0	Red		6,528.47	35.67	52.45	88.12	6,649.62	52.49
J128	FH	222.0	Green		6,597.16	23.02	102.14	125.16	6,779.29	78.92
J130	FH	169.0	Green		6,593.11	23.02	77.75	100.77	6,779.18	80.62
J132	FH	92.0	Green		6,595.46	23.02	42.33	65.35	6,779.18	79.61
J134	FH	239.0	Green		6,565.00	23.02	109.96	132.98	6,779.23	92.82
J136	FH	333.0	Green		6,679.27	23.02	153.20	176.22	6,779.72	43.52
J138	FH	228.0	Green		6,602.50	23.02	104.90	127.92	6,780.86	77.28
J14	FH	102.0	Red	1	6,381.00		2196.93	2196.93	6,647.31	115.39
J140	FH	245.0	Red	1	6,467.50		112.72	112.72	6,654.19	80.89
J15		0.0	Red	1	6,381.00		0.00	0.00	6,649.62	116.39
J16			Red	1	6,350.00		0.00	0.00	6,649.49	129.77
J161			Red	1	6,386.00		0.00	0.00	6,649.32	114.1
J17			Blue		6,351.40		0.00	0.00	6,492.95	61.33
J18	FH	4.0	Blue	1	6,370.48	12.72	1.84	14.56	6,492.95	53.06
J20	FH	36.0	Blue		6,352.61		16.56	16.56	6,492.95	60.81
J22			Red	1	6,433.62		0.00	0.00	6,649.02	93.33
J24	FH	148.0	Red	1	6,471.80		68.09	68.09	6,649.30	76.91
J26	FH		Blue		6,320.51		0.00	0.00	6,492.95	74.72
J28	FH	90.0	Blue		6,341.09		41.41	41.41	6,492.95	65.8
J42	FH	167.0	Green		6,591.59	23.02	76.83	99.85	6,780.00	81.64
J44	FH	334.0	Green		6,578.02	23.02	153.66	176.68	6,779.58	87.34
J46			Green		6,637.06		0.00	0.00	6,782.19	62.89
J48	FH	2.0	Green		6,701.21	23.02	0.92	23.94	6,780.95	34.55
J50			Red	1	6,377.00		0.00	0.00	6,648.22	117.52
J54			Red	1	6,425.00		0.00	0.00	6,649.04	97.08
J56			Red		6,500.00		0.00	0.00	6,649.68	64.86
J58	FH	384.0	Red		6,471.27	35.67	176.67	212.34	6,649.04	77.03
J60	Tank		Green		6,806.00		0.00	0.00	6,806.00	0
J62	FH	138.0	Green		6,642.50	23.02	63.49	86.51	6,783.95	61.29
J64	FH	13.0	Red		6,430.00	35.67	5.98	41.65	6,649.14	94.95
J66	FH	25.0	Red		6,492.95	35.67	11.50	47.17	6,649.55	67.85
J68			Red		6,440.00		0.00	0.00	6,649.21	90.65
J70			Red	1	6,490.00		0.00	0.00	6,650.76	69.66
J72			Green		6,533.66		0.00	0.00	6,780.00	106.74
J74	FH	17.0	Green		6,582.76	23.02	7.82	30.84	6,780.00	85.46
J76	RZ Tank		Red	1	6,646.85		0.00	0.00	6,662.40	6.74
J78	GZBPS		Red	1	6,607.50		0.00	0.00	6,660.73	23.06
J80			Green		6,607.54		0.00	0.00	6,779.19	74.38
J82			Green		6,593.54		0.00	0.00	6,779.19	80.44
J84			Blue	1	6,339.66		0.00	0.00	6,492.96	66.42
J86			Blue	1	6,286.00		0.00	0.00	6,493.00	89.69
J88	RZBPS		Blue		6,350.00		0.00	0.00	6,492.95	61.94
J90			Blue	1	6,346.49		0.00	0.00	6,492.95	63.46
J92			Red	1	6,380.00		0.00	0.00	6,649.81	116.91
J94	FH	509.0	Red	1	6,395.02		234.18	234.18	6,649.33	110.19
J96	FH	678.0	Red	1	6,444.45		311.93	311.93	6,648.98	88.62
J98	FH	470.0	Red	1	6,443.18		216.23	216.23	6,648.98	89.17
6,875.0						806.90	5,312.98	6,119.96		

WESTSIDE PROPERTY

Dawson Trails Scenario #11 - Buildout, SS, PHD+Irr, Feed 1, 3, 4 ON, Feed 2 OFF, RZ and GZ PS OFF, RZ Tank=6662.4

Dawson Trails Scenario #12B - Buildout, SS, MDD+FF, Costco FF Alternative

Water Model Pipe Report

Model Run Date: Dec 20, 2024

Max Velocity Criteria = 5 ft/sec

Max Velocity = 3.47 ft/sec

Criteria met? **yes****Table B2-9: Water Model Pipe Report**

									MDD+FF OUTPUT				
	Description	Zone		From			Diameter		Flow	Velocity	Headloss	HL/1000	
ID	(Char)	(Char)	Phase (Int)	Node	To Node	Length (ft)	(in)	Roughness	(gpm)	(ft/s)	(ft)	(ft/k-ft)	Status
P-1		Red	1	J15	J161	83.66	12	120	1,116.92	3.17	0.3	3.61	Open
P-10		Green		J46	J48	2,269.53	12	120	402.91	1.14	1.24	0.55	Open
P-11		Red	1	J50	J16	1,423.65	12	120	-526.28	1.49	1.27	0.9	Open
P-13		Red		J56	J58	1,156.14	12	120	408.19	1.16	0.65	0.56	Open
P-14		Green		J60	J62	5,824.79	12	120	1,146.22	3.25	22.05	3.78	Open
P-141	Supply 4	Green		T2-GZ	J60	1.00	12	120	0	0	0	0	Closed
P-15		Red		J64	J66	2,301.39	12	120	-222.16	0.63	0.42	0.18	Open
P-16		Red		J68	J70	2,127.41	12	120	-470.39	1.33	1.55	0.73	Open
P-17		Green		J72	J74	945.67	12	120	0.00	0	0	0	Open
P-18		Red	1	J76	J78	879.01	24	120	4,892.02	3.47	1.67	1.9	Open
P-181	Supply 3	Red		T1-RZ	J76	1.00	24	120	0.00	0	0	0	Closed
P-19		Green		J80	J82	227.74	12	120	0.00	0	0	0	Open
P-2		Red	1	J10	J16	777.55	24	120	526.28	0.37	0.02	0.03	Open
P-20		Blue	1	J84	J86	6,218.83	16	120	-81.73	0.13	0.04	0.01	Open
P-21		Blue		J26	J88	1,436.03	12	120	-2.04	0.01	0	0	Open
P-22		Blue		J28	J90	342.27	12	120	-39.37	0.11	0	0.01	Open
P-23		Blue	1	J90	J84	1,172.78	16	120	-81.73	0.13	0.01	0.01	Open
P-24		Blue	1	J18	J90	1,011.16	16	120	-42.36	0.07	0	0	Open
P-25		Blue		J17	J88	1,707.01	24	120	0.00	0	0	0	Open
P-26		Blue		J88	J20	253.09	16	120	-4.34	0.01	0	0	Open
P-27		Blue	1	J12	J18	1,454.96	12	120	-6.90	0.02	0	0	Open
P-29	Zone Bndy	Red	1	J88	J16	126.82	24	120	0.00	0	0	0	Closed
P-291	Zone Bndy	Blue		J88	P1	68.07	24	120	0.00	0	0	0	Open
P-292	Zone Bndy	Red		P1	J16	61.69	24	120	0.00	0	0	0	Open
P293	Zone Bndy	Blue	1	J88	P1_PH1	64.87	24	120	0.00	0	0	0	Open
P294	Zone Bndy	Red	1	P1_PH1	J16	64.44	24	120	0.00	0	0	0	Open
P-3		Blue		J18	J20	646.08	16	120	20.90	0.03	0	0	Open
P-30		Red	1	J94	J92	930.51	16	120	-838.49	1.34	0.49	0.52	Open
P-31		Red	1	J54	J94	1,101.20	16	120	-570.83	0.91	0.28	0.26	Open
P-32		Red	1	J96	J54	685.74	16	120	-329.09	0.53	0.06	0.09	Open
P-33		Red	1	J98	J96	257.42	16	120	-17.16	0.03	0	0	Open
P-34		Red		J100	J56	2,226.75	12	120	888.27	2.52	5.26	2.36	Open
P-35		Red	1	J102	J100	970.07	12	120	-1,124.85	3.19	3.55	3.65	Open
P-36		Red	1	J106	J102	144.99	12	120	-989.80	2.81	0.42	2.89	Open
P-37		Red	1	J70	J106	87.97	12	120	-907.20	2.57	0.22	2.45	Open
P-38		Red	1	J108	J70	1,096.69	12	120	-436.81	1.24	0.7	0.63	Open
P-39		Red	1	J24	J108	1,454.20	12	120	-393.32	1.12	0.76	0.52	Open
P-4		Red	1	J22	J24	781.22	12	120	-325.23	0.92	0.29	0.37	Open
P-40		Red	1	J22	J98	1,043.14	16	120	199.07	0.32	0.04	0.04	Open
P-41		Red		J110	J112	393.61	12	120	147.37	0.42	0.03	0.08	Open
P-42		Red		J112	J22	233.82	12	120	-126.16	0.36	0.01	0.06	Open
P-43		Red		J68	J110	1,036.73	12	120	214.32	0.61	0.18	0.17	Open
P-44		Red		J114	J68	1,405.64	12	120	-256.07	0.73	0.33	0.24	Open
P-45		Red		J116	J114	738.3	12	120	96.13	0.27	0.03	0.04	Open
P-46		Red		J118	J116	148.99	12	120	178.27	0.51	0.02	0.12	Open
P-47		Red		J120	J118	481.07	12	120	159.26	0.45	0.05	0.1	Open
P-48		Red		J58	J120	435.82	12	120	195.85	0.56	0.06	0.14	Open
P-49		Red		J122	J118	1,191.76	12	120	142.54	0.4	0.1	0.08	Open
P-5		Blue		J26	J28	227.24	12	120	2.04	0.01	0	0	Open
P-50		Red		J64	J122	917.58	12	120	180.51	0.51	0.11	0.12	Open
P-51		Red		J66	J56	505.3	12	120	-269.33	0.76	0.13	0.26	Open
P-52		Red		J56	J124	323.43	12	120	210.74	0.6	0.05	0.16	Open
P-53	Zone Bndy	Red		J126	J72	384.78	12	120	0.00	0	0	0	Closed
P-54		Red		J124	J126	327.74	12	120	88.12	0.25	0.01	0.03	Open
P-55		Green		J74	J42	355.34	12	120	-30.84	0.09	0	0.01	Open
P-56		Green		J44	J128	1,616.96	12	120	221.51	0.63	0.29	0.18	Open
P-57		Green		J130	J128	2,911.06	12	120	-96.35	0.27	0.11	0.04	Open
P-58		Green		J132	J130	186.16	12	120	4.42	0.01	0	0	Open
P-59		Green		J80	J132	633.30	12	120	69.77	0.2	0.01	0.02	Open
P-60		Green		J134	J80	1,597.08	12	120	69.77	0.2	0.03	0.02	Open
P-61		Green		J136	J134	3,230.69	12	120	202.75	0.58	0.49	0.15	Open
P-62		Green		J48	J136	2,523.92	12	120	378.97	1.08	1.23	0.49	Open
P-63		Green		J138	J42	948.27	12	120	528.88	1.5	0.86	0.9	Open
P-64		Green		J46	J138	985.08	12	120	656.80	1.86	1.33	1.35	Open
P-65		Green		J62	J46	538.12	12	120	1,059.71	3.01	1.76	3.27	Open
P-66		Red	1	J140	J78	3,778.95	20	120	-2,878.89	2.94	6.54	1.73	Open
P-661		Red		J78	P2	100.00	12	120	0.00	0	0	0	Open
P-662		Green		P2	J82	100.00	12	120	0.00	0	0	0	Open
P-67		Red	1	J92	J140	2,723.50	20	120	-2,766.17	2.82	4.38	1.61	Open
P-68		Red	1	J78	J100	2,188.12	16	120	2,013.12	3.21	5.79	2.65	Open
P-69		Red	1	J10	J15	1,497.69	24	120	-810.76	0.57	0.1	0.07	Open
P-70		Blue		J12	J88	1,592.12	12	120	-2.30	0.01	0	0	Open
P-71		Red	1	J15	J92	570.16	24	120	-1,927.68	1.37	0.19	0.34	Open
P-72		Red	1	J161	J14	526.76	12	120	1,150.40	3.26	2.01	3.81	Open
P-74		Red	1	J14	J50	503.93	12	120	-768.02	2.18	0.91	1.8	Open
P-75		Red	1	J94	J161	1,617.47	12	120	33.48	0.09	0.01	0.01	Open
P-76		Red	1	J50	J54	3,892.99	12	120	-241.74	0.69	0.83	0.21	Open
P-9		Green		J42	J44	788.06	12	120	398.19	1.13	0.42	0.53	Open
P-91		Red		J10	J14	1,111.51	8	120	278.52	1.78	2.21	1.99	Open
SUPPLY1	Supply 1	Blue	1	FEED1	J86	1.00	16	120	81.73	0.13	0	0	Open
SUPPLY2	Supply 2	Blue		FEED2	J17	887.22	24	120	0.00	0	0	0	Closed
SUPPLY3	Supply 3	Red	1	FEED3	J76	1	24	120	4,892.02	3.47	0	1.95	Open
SUPPLY4	Supply 4	Green		FEED4	J60	1	12	120	1,146.22	3.25	0	3.91	Open

Dawson Trails for Westside**Potable Water Model**

Water Demands-Buildout

Date: December 2024

MSK Project #: 52-001-01

Calc'd by: DLT

PRELIMINARY**6/26/24****Assumptions:**

Average Day Demand (ADD) per SFE: 265.0 gpd [7/17/23 Lowered by CRW per ordinance]

Max Day Demand (MDD) Factor: 2.5 x ADD

Peak Hour Demand (PHD) Factor: 5.5 x ADD

Irrigation ADD: 3,750 gpd/irrigated acre

Table B1-1: Potable Water Demands at Buildout (w/ Irrigation)

A	B	C	D	E	F	G	H	I	J	K	L
No.	Planning Area	Pressure Zone	Total SFEs	ADD (gpd)	MDD (gpd)	MDD (gpm)	PHD (gpm)	Irrigated Area (ac)	Irrigation ADD (gpd)	Irrigation ADD (gpm)	Junction
1	F-1	Blue	90.0	23,850	59,625	41.4	91.1				J28
2	F-1	Blue	4.0	1,060	2,650	1.8	4.0	4.89	18,323.6	12.7	J18
3	F-1	Blue	3.0	795	1,988	1.4	3.0				J20
4	F-1	Blue	33.0	8,745	21,863	15.2	33.4				J20
5	E-1	Blue	20.0	5,300	13,250	9.2	20.2				J12
Blue Zone Totals			150.0	39,750	99,375	69.0	151.8	4.9	18,323.6	12.7	
6	F-2 (Ph. 1)	Red	0.0	0	0	0.0	0.0	2.29	8,595.6	6.0	J10
7	F-2 (Ph. 1)	Red	102.0	27,030	67,575	46.9	103.2				J14
8	F-3 (Ph. 1)	Red	509.0	134,885	337,213	234.2	515.2				J94
9	F-3	Red	678.0	179,670	449,175	311.9	686.2				J96
10	B-1 (Ph. 1)	Red	245.0	64,925	162,313	112.7	248.0				J140
11	D (Ph. 1)	Red	470.0	124,550	311,375	216.2	475.7				J98
12	D	Red	148.0	39,220	98,050	68.1	149.8				J24
13	D	Red	517.0	137,005	342,513	237.9	523.3	13.7	51,363.8	35.7	J112
14	D	Red	688.0	182,320	455,800	316.5	696.4	13.7	51,363.8	35.7	J114
15	D	Red	2.0	530	1,325	0.9	2.0	13.7	51,363.8	35.7	J120
16	D	Red	216.0	57,240	143,100	99.4	218.6	13.7	51,363.8	35.7	J102
17	D	Red	384.0	101,760	254,400	176.7	388.7	13.7	51,363.8	35.7	J58
18	D	Red	191.0	50,615	126,538	87.9	193.3	13.7	51,363.8	35.7	J118
19	C-2	Red	17.0	4,505	11,263	7.8	17.2	13.7	51,363.8	35.7	J108
20	C-2	Red	102.0	27,030	67,575	46.9	103.2	13.7	51,363.8	35.7	J106
21	C-2	Red	114.0	30,210	75,525	52.4	115.4	13.7	51,363.8	35.7	J126
22	C-2	Red	189.0	50,085	125,213	87.0	193.3	13.7	51,363.8	35.7	J124
23	C-2	Red	25.0	6,625	16,563	11.5	25.3	13.7	51,363.8	35.7	J66
24	C-2	Red	5.0	1,325	3,313	2.3	5.1	13.7	51,363.8	35.7	J122
25	G-1	Red	68.0	18,020	45,050	31.3	68.8	13.7	51,363.8	35.7	J110
26	G-1	Red	101.0	26,765	66,913	46.5	102.2	13.7	51,363.8	35.7	J116
27	G-2	Red	13.0	3,445	8,613	6.0	13.2	13.7	51,363.8	35.7	J64
Red Zone Totals			4,784.0	1,267,760	3,169,400	2,201.0	4,842.1	207.7	779,051.8	541.0	
28	B-1	Green	239.0	63,335	158,338	110.0	241.9	8.8	33,142.5	23.0	J134
29	C-2	Green	169.0	44,785	111,963	77.8	171.1	8.8	33,142.5	23.0	J130
30	C-2	Green	334.0	88,510	221,275	153.7	338.1	8.8	33,142.5	23.0	J44
31	C-2	Green	17.0	4,505	11,263	7.8	17.2	8.8	33,142.5	23.0	J74
32	C-1	Green	92.0	24,380	60,950	42.3	93.1	8.8	33,142.5	23.0	J132
33	C-1	Green	222.0	58,830	147,075	102.1	224.7	8.8	33,142.5	23.0	J128
34	C-1	Green	167.0	44,255	110,638	76.8	169.0	8.8	33,142.5	23.0	J42
35	B-2	Green	228.0	60,420	151,050	104.9	230.8	8.8	33,142.5	23.0	J138
36	A	Green	333.0	88,245	220,613	153.2	337.0	8.8	33,142.5	23.0	J136
37	A	Green	2.0	530	1,325	0.9	2.0	8.8	33,142.5	23.0	J48
38	A	Green	138.0	36,570	91,425	63.5	139.7	8.8	33,142.5	23.0	J62
Green Zone Totals			1,941.0	514,365	1,285,913	893.0	1,964.6	97.2	364,567.5	253.2	
Buildout Totals (All Zones)			6,875.0	1,821,875	4,554,688	3,163.0	6,958.6	309.9	1,161,942.9	806.9	

Note:

1. The development composition in each Planning Area is preliminary and may change.

Red Zone BPS Buildout Pumping Capacity:

Total Max Day flow: 4,455,313 gpd (Red and Green Zones)

Dawson Trails for Westside

Potable Water Model
Water Model Scenarios Summary
Date: December 2024
MSK Project #: 52-001-01
Calc'd by: DLT

PRELIMINARY
Not for the report
12/20/24

Assumptions:

1. These scenarios are based on the lower ADD value of 265 gpd/SFE requested by CRW to account for the Town's landscaping ordinance.
2. CRW does not want dedicated FF pumps in the RZ BPS. Fire flows will be handled by the tanks.

Summary of Scenario Results

A		B	C	D	E		F	G	H	I	J	K	L	M	N	O	Pass/Fail	Notes
No.	Run	Model Date	Development Area	Model Type	Demand Scenario	Max FF Demand	Red Zone Tank	Red Zone BPS	Blue Zone FEED1	Blue Zone FEED2	ID(s)	Pressure	Pass/Fail	ID(s)	Velocity	Pass?		
0	yes	12/20/24	Phase 1	SS	static - no demands	n/a	online	offline	16", closed	24", closed	n/a	n/a	n/a	n/a	n/a	n/a		
3	yes	12/20/24	Phase 1	SS	PHD+IRR	n/a	online	offline	16", closed	24", closed			see report	n/a	0.53	yes		
4A	yes	12/20/24	Phase 1	SS	MDD+IRR+FF	standard	online	offline	16", closed	24", closed			see report	n/a			Costco (J14) FF=2,000 gpm	
4B	yes	12/20/24	Phase 1	SS	MDD+IRR+FF (Costco Alt)	2,150 (J14)	online	offline	16", closed	24", closed			see report	n/a	3.22	yes	Residual pressure at J14 must be 65 psi or higher	
11	yes	12/20/24	Buildout	SS	PHD+IRR	n/a	online	offline	16", open	24", closed	n/a	n/a	see report	n/a	n/a	see report	Rez 1, 3, 4 are open. All PS are closed. Rez is closed	
12A	yes	12/20/24	Buildout	SS	MDD+IRR+FF	standard	online	offline	16", open	24", closed	n/a	n/a	see report	n/a	n/a	n/a	Costco (J14) FF=2,000 gpm	
12B	yes	12/20/24	Buildout	SS	MDD+IRR+FF (Costco Alt)	2,150 (J14)	online	offline	16", open	24", closed	J14	update	see report	n/a	n/a	n/a	Residual pressure at J14 must be 65 psi or higher	

Model History:

No.	Date	Changes from Previous Model	Scenarios Run
6	12/20/24	Add a RZ junction and two 12" RZ pipes. No changes to demands, feeds.	See above
5	6/30/24	Update pipes/junctions in Phase 1 and BZ feed (only FEED2 for Ph 1). Added irrigation demand to Ph 1 and buildout.	See above
4	6/8/24	Move J10, added 8" line within Costco area, close 16" FEED, open 24" FEED2	5A
3	10/7/23	Found P-71 was closed in Scenarios 11,12,13; opened and reran. Changed P-293 and P-294 to 24".	11,12,13
2	9/29/23	Responded to TCR comments on Crystal Valley Connection Submittal by EMK. Added the revised RZBPS location to J-88 and associated BZ and RZ pipe changes. Also increased FEED1 pipe to 16" based on Master Plan.	3,4,5,11,12,13
1	7/20/23, 7/24/23	Revised RZBPS pumping scenarios to MDD demand over a 12-hour period based on CRW's comments. Reduced ADD to 265 gpd/SFE also based on CRW's comments, which changed MDD and PHD. Revised for both Ph 1 and buildout. Adjusted pipe sizes to meet criteria.	3,4,5,11,12,13



Dawson Trails Infrastructure North Filing 1
Annual Estimated Irrigation Demand

Area Name	Trees in Native				
	Drip / Low Flow	Rotor / Rotary	Drip / Low Flow	Annual Water Use (Gal)	Annual Water Use (Acr/Ft)
	Trees & Shrubs (Acres)	Native Seed (Acres)	Trees & Shrubs (Acres)		
Dawson Trail North Infra	3.65	0.36	0.52	1,764,077	5.4
Temporary Irrigation	0.00	6.39	0.00	2,374,543	7.3
TOTAL	3.65	6.75	0.52	4,138,619	12.70
					Peak Flow Required (GPM)
					61.6
					82.9
					144.53



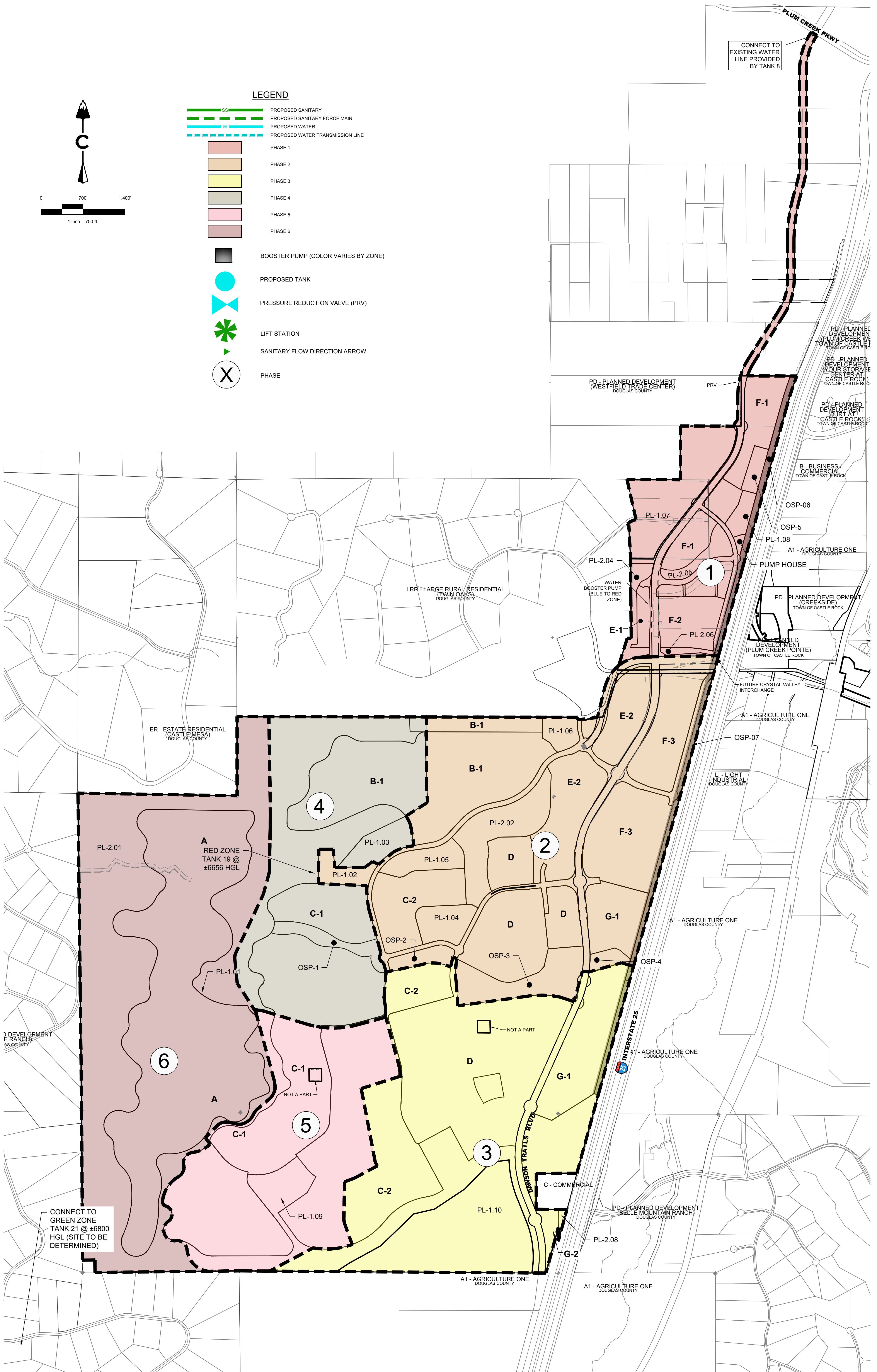
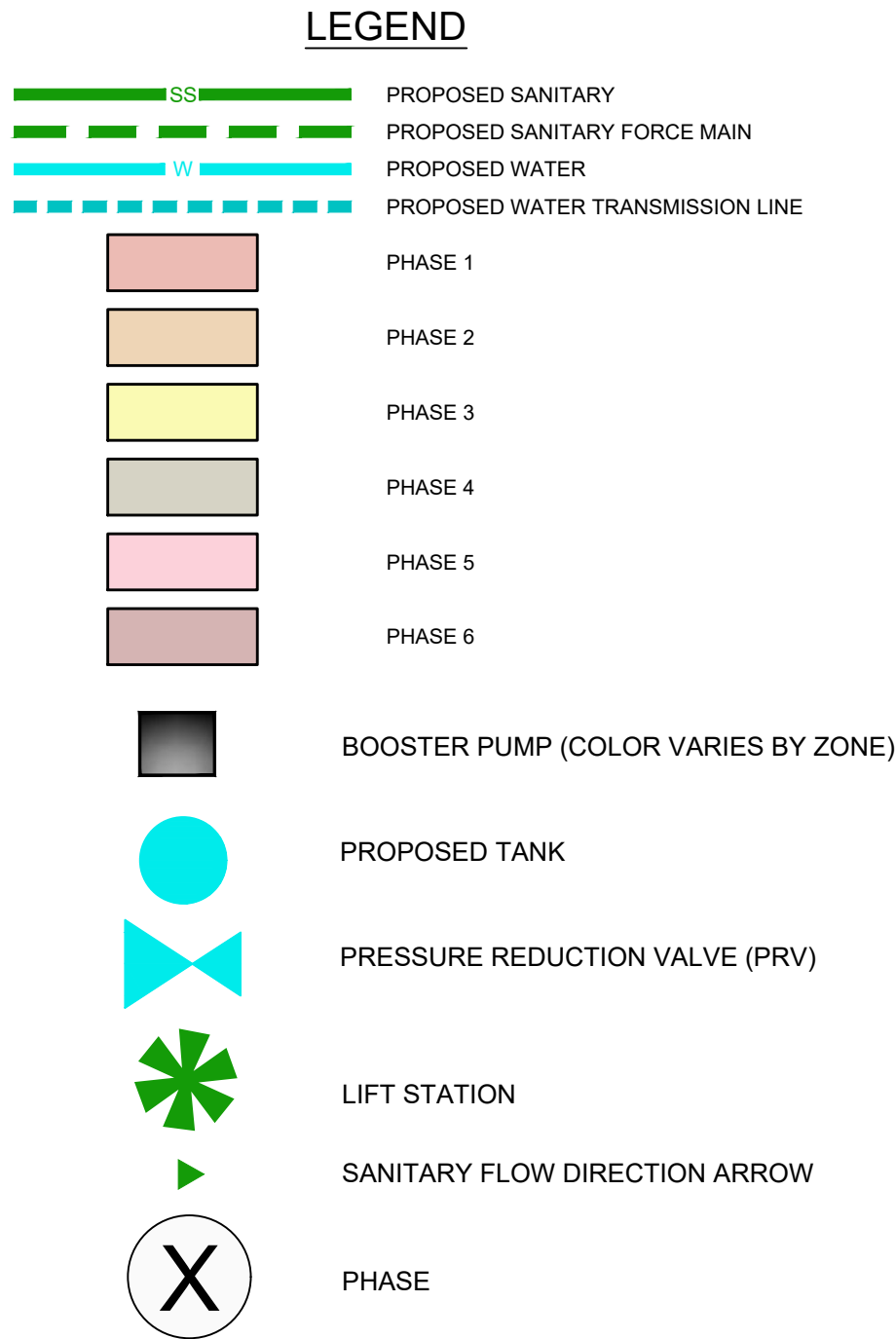
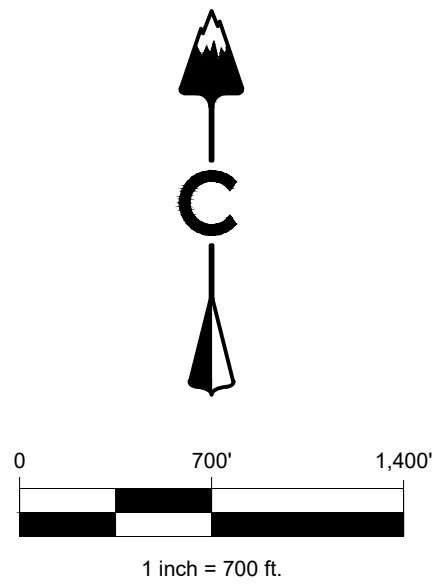
Appendix C

Sanitary Calculations



Appendix E

Maps



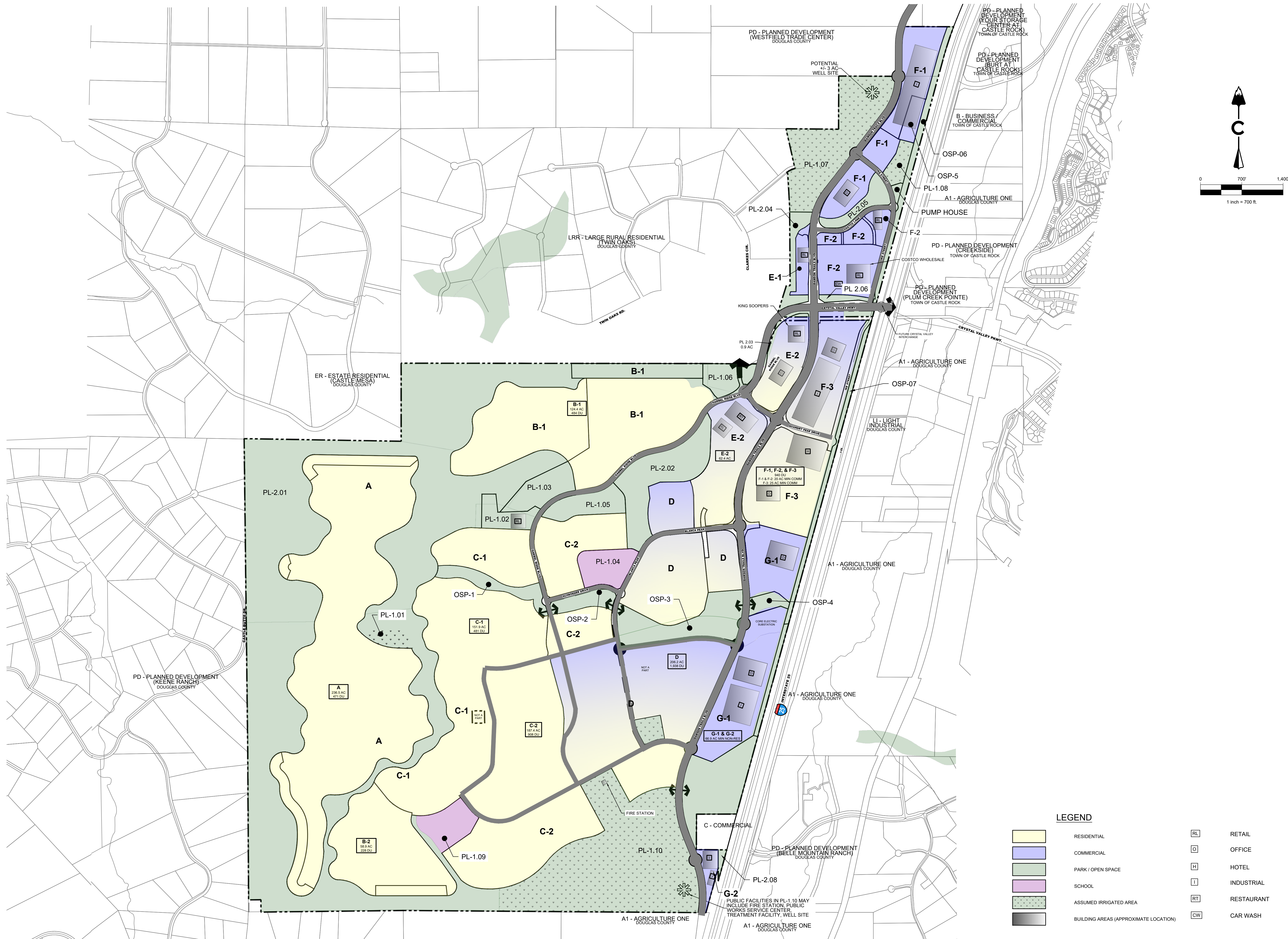
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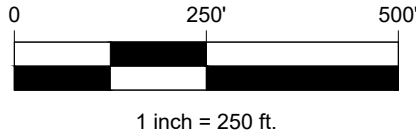
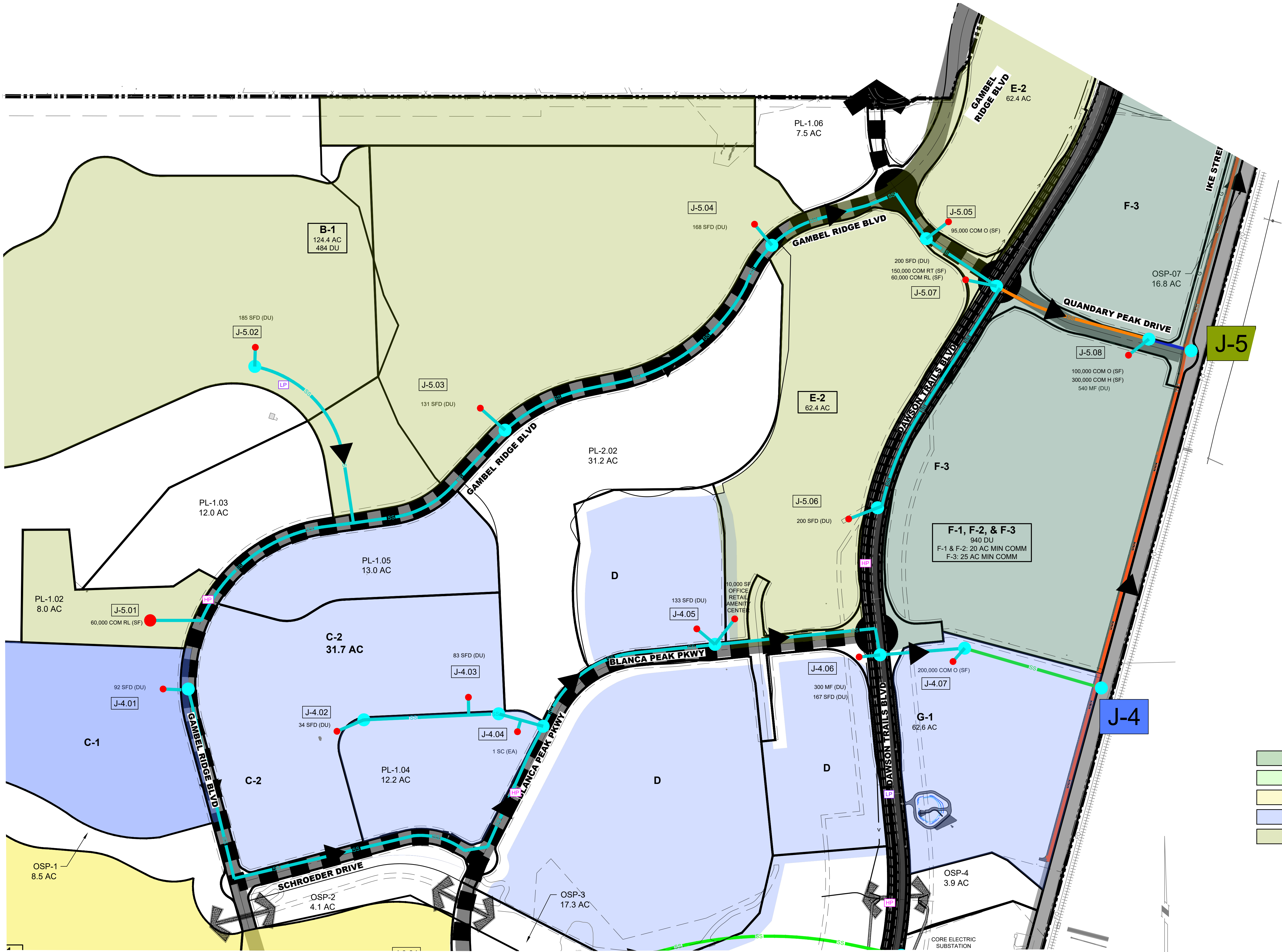
DAWSON TRAILS

OVERALL UTILITY & PHASING MAP

DATE: 8/20/2024
CREATED BY: CGV
JOB NO. 20-224
SHEET
1 OF 5



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JUNCTION TABLE				
JUNCTION	RESIDENTIAL (GPD)	NON-RESIDENTIAL	TOTAL PEAK FLOW (GPM)	CUMULATIVE TOTAL PEAK
J-4.01	18,400	-	65	65
J-4.02	6,800	-	24	89
J-4.03	16,600	-	59	148
J-4.04	-	3,375	12	160
J-4.05	26,600	1,000	98	258
J-4.06	72,400	-	257	514
J-4.07	-	20,000	71	585
J-4	-	-	-	2,948
J-5.01	-	6,000	21	21
J-5.02	37,000	-	131	152
J-5.03	26,200	-	93	245
J-5.04	33,600	-	119	364
J-5.05	-	9,500	34	398
J-5.06	26,000	-	92	92
J-5.07	26,000	231,000	910	1,400
J-5.08	70,200	63,906	475	1,875
J-5	-	-	-	4,823

SUMMARY TABLE			
	USE	QUANTITIES	TOTALS
RESIDENTIAL	MULTIFAMILY (DU)	1,240	2,233
	SINGLE FAMILY (DU)	993	
NON-RESIDENTIAL	SCHOOL (EA)	1	975,000
	PARKS (SFE)	-	
	CAR WASH (AC)	-	
	INDUSTRIAL (SF)	-	
	HOTEL (SF)	300,000	
	RESTAURANTS (SF)	150,000	
	RETAIL/ OFFICE (SF)	525,000	

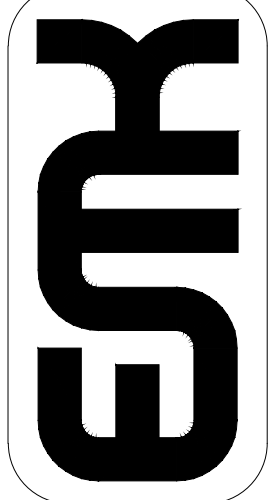
NOTES:
1. SEE APPENDIX C FOR DETAILED SANITARY SEWER CALCULATIONS

LEGEND

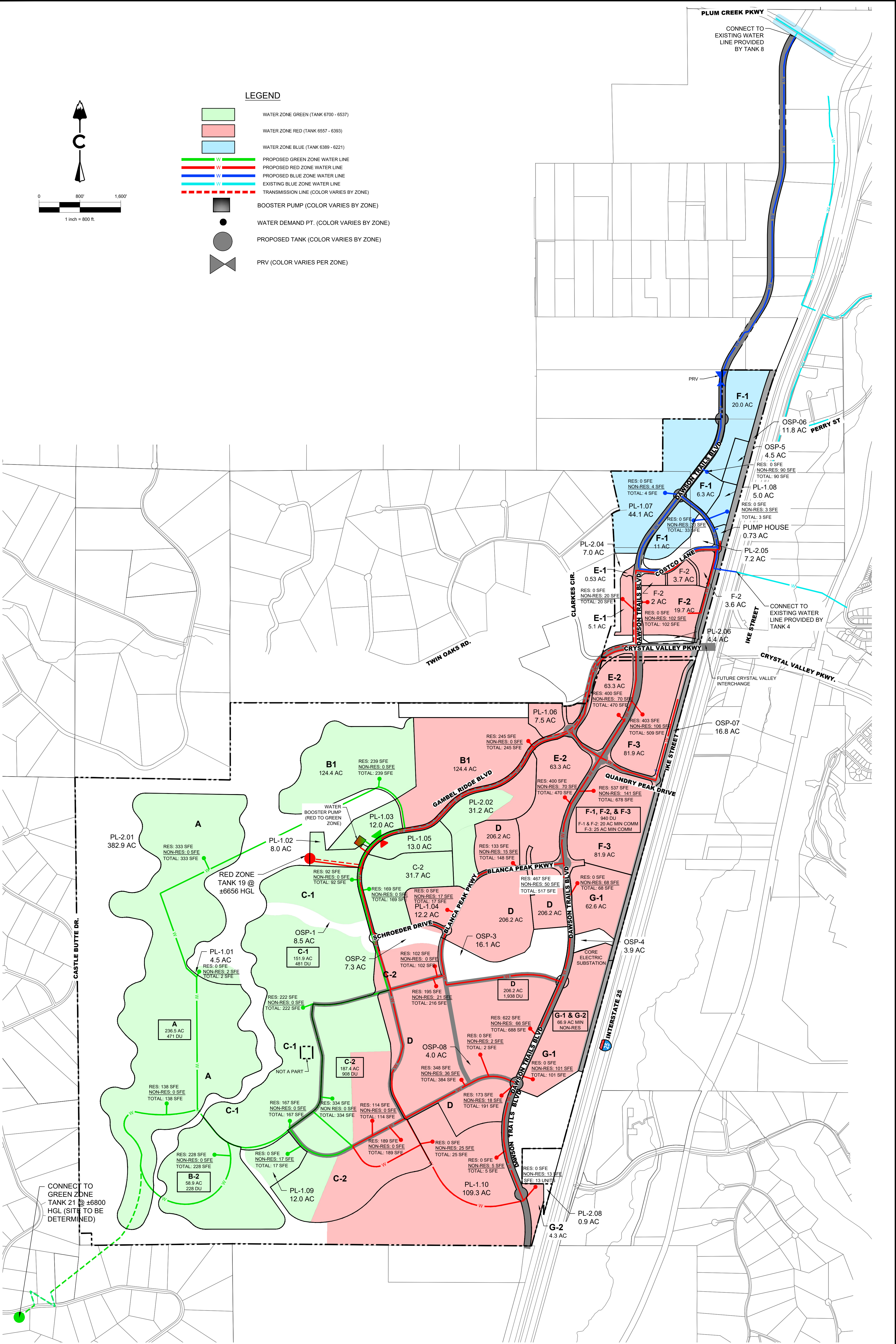
	BASIN 1
	BASIN 2
	BASIN 3
	BASIN 4
	BASIN 5

LEGEND

8"	8" PROPOSED SANITARY
10"	10" PROPOSED SANITARY
12"	12" PROPOSED SANITARY
15"	15" PROPOSED SANITARY
18"	18" PROPOSED SANITARY
21"	21" PROPOSED SANITARY
24"	24" PROPOSED SANITARY
27"	27" PROPOSED SANITARY
	FORCE MAIN SANITARY
	FLOW DIRECTION ARROW
	HIGH POINT
	LOW POINT
	SANITARY JUNCTION
	SANITARY INPUT PT.
	LIFT STATION



2024.05.11 4:38 PM X:\20-224 Dawson/Civil/Reports_Overall/Utility Master Map.dwg OVERALL WATER MAP.dwg Tony Yuan



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LAND DEVELOPMENT
ENERGY
PUBLIC INFRASTRUCTURE

DAWSON TRAILS

OVERALL WATER MAP

DATE: 8/21/2024
CREATED BY: CGV
JOB NO. 20-224
SHEET
3 OF 5



Legend

● Junction

TYPE

● Active

● Domain

○ Inactive

— Pipe

— Active

— Domain

— Inactive

ZONE

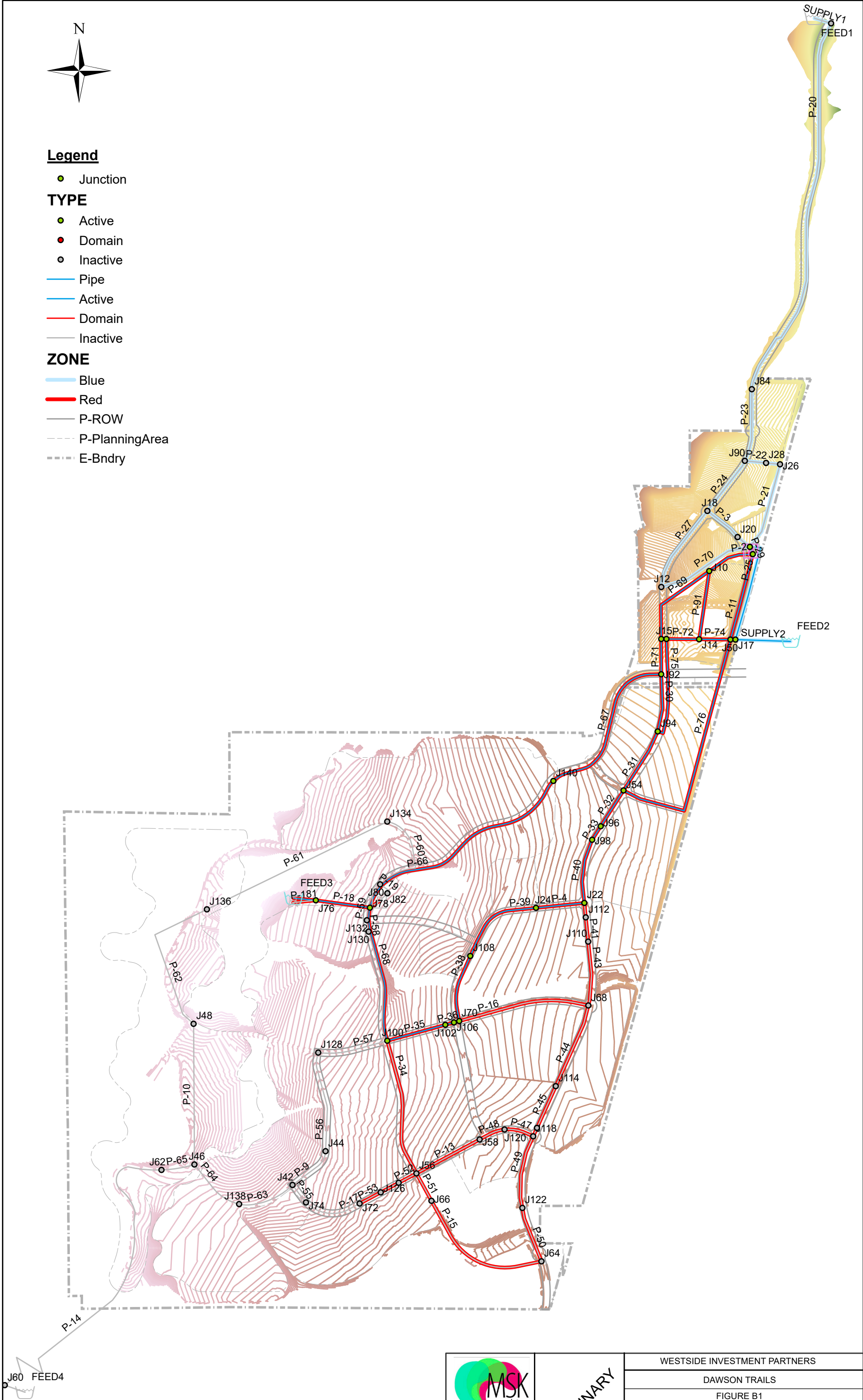
— Blue

— Red

— P-ROW

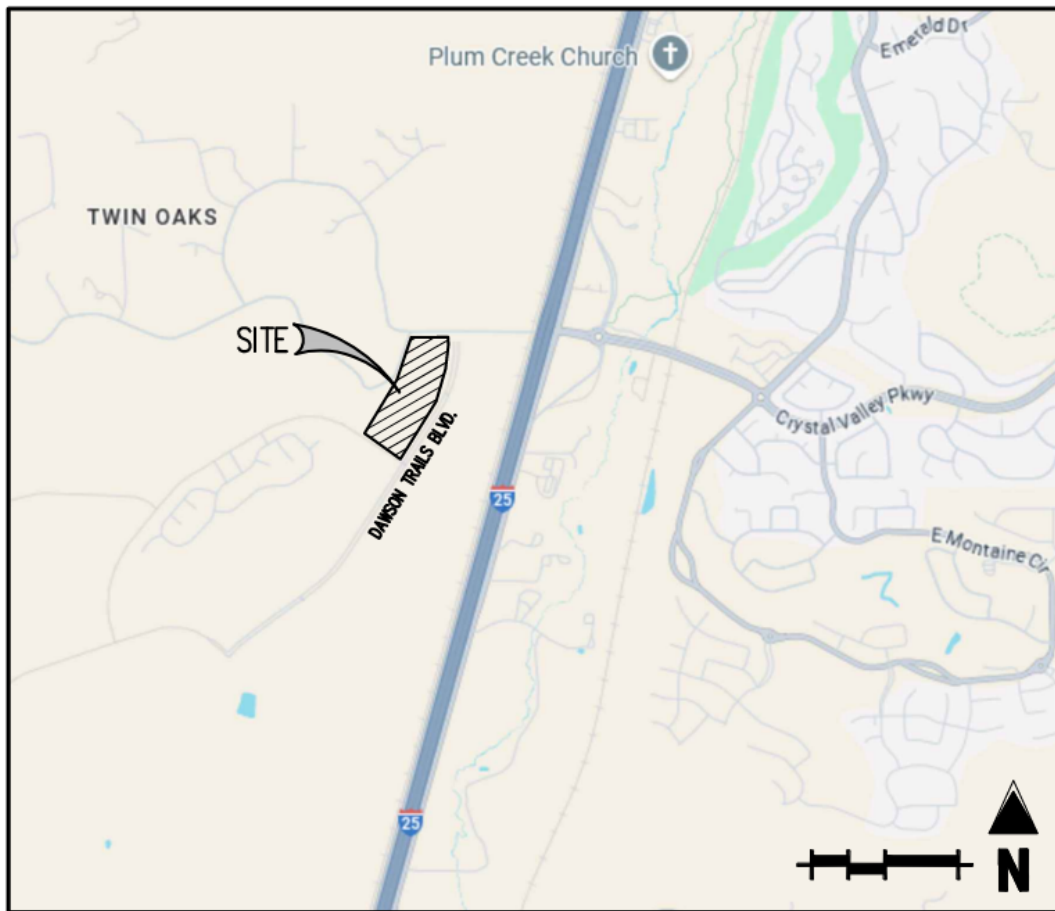
--- P-PlanningArea

--- E-Bndry



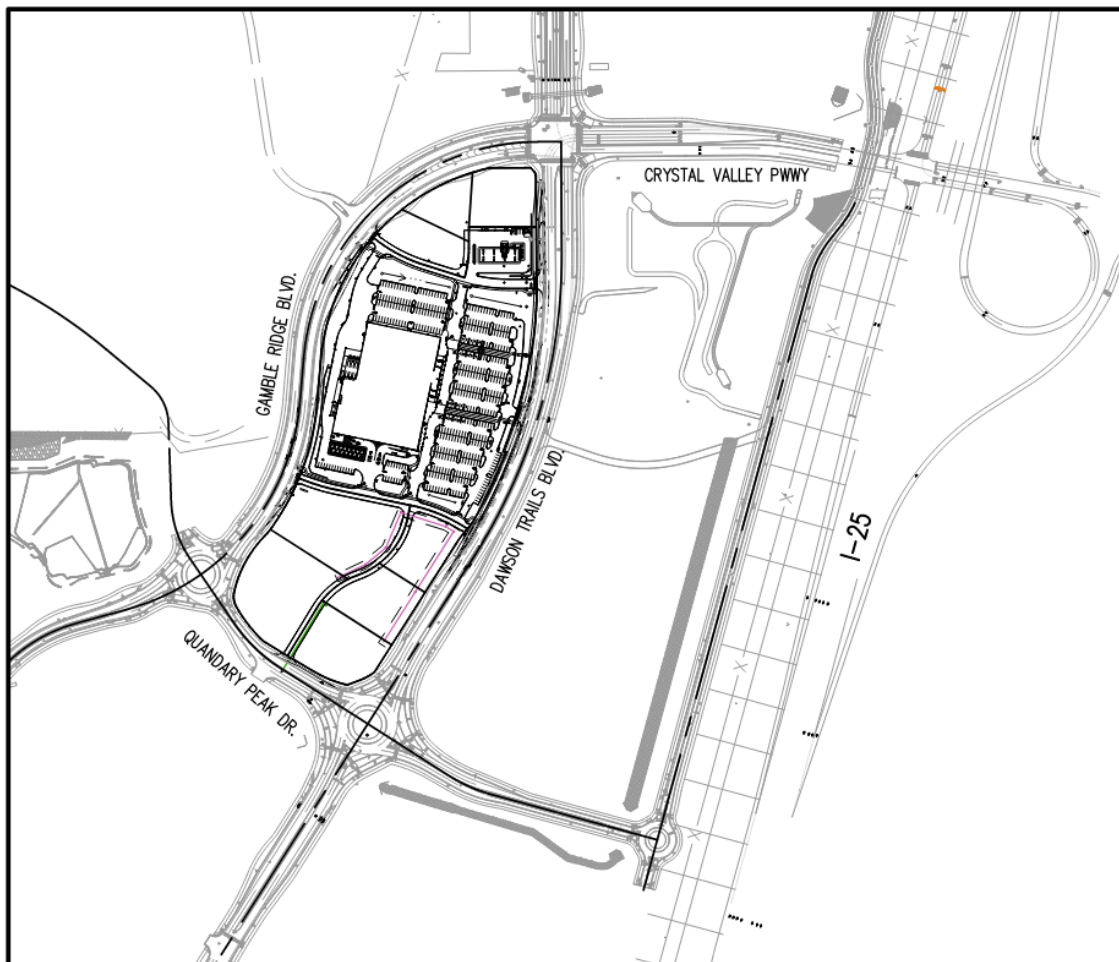
APPENDIX H

MAPS AND PLANS



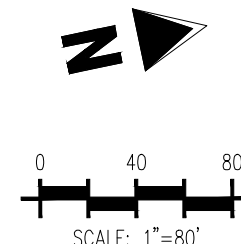
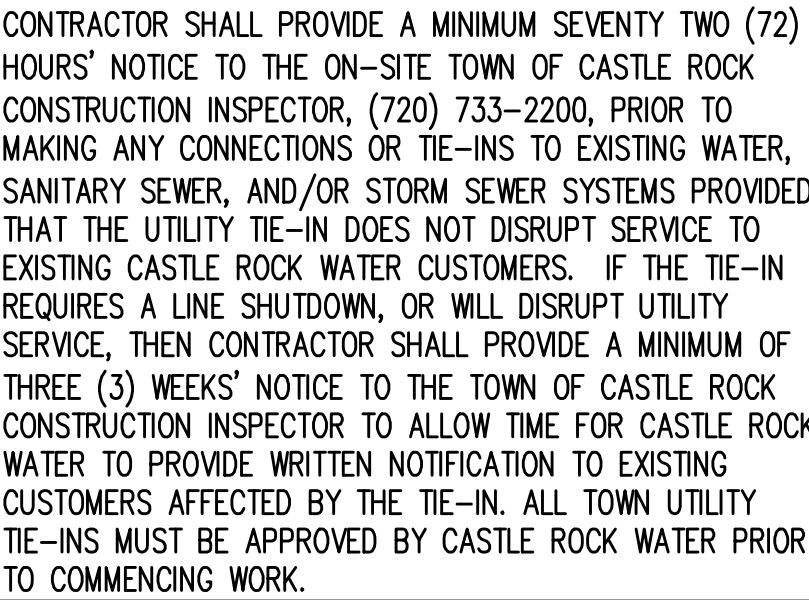
VICINITY MAP

SCALE: 1" = 2000'



SITE MAP

SCALE: 1" = 500'



I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE TOWN OF CASTLE ROCK AND STATE OF COLORADO STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

TOWN APPROVAL BLOCK

TOWN OF CASTLE ROCK APPROVAL
PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM
DATE OF DEVELOPMENT SERVICES APPROVAL

APPROVED BY

DEVELOPMENT SERVICES	DATE
----------------------	------

NOTE: MAINTAIN MINIMUM 18" VERTICAL AND 10' HORIZONTAL SEPARATION BETWEEN POTABLE WATERLINE AND STORM OR SANITARY SEWERS AND LATERALS. A 12" VERTICAL CLEARANCE MUST BE MAINTAINED BETWEEN IRRIGATION LINES.

NOTE: LENGTHS OF STORM/SANITARY SEWER ARE THE HORIZONTAL DISTANCES FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE UNLESS OTHERWISE NOTED. THEREFORE, LENGTHS SHOWN ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND STRUCTURE WIDTHS.

SURVEYOR TO OBTAIN AUTOCAD FILE FROM ENGINEER AND VERIFY ALL HORIZONTAL CONTROL DIMENSIONING PRIOR TO CONSTRUCTION STAKING. SURVEYOR MUST VERIFY ALL BENCHMARK, BASIS OF BEARING AND DATUM INFORMATION TO ENSURE IMPROVEMENTS WILL BE AT THE SAME HORIZONTAL AND VERTICAL LOCATIONS SHOWN ON THE DESIGN CONSTRUCTION DRAWINGS. PRIOR TO CONSTRUCTION STAKING ANY DISCREPANCY MUST BE REPORTED TO OWNER AND ENGINEER PRIOR TO CONTINUATION OF ANY FURTHER STAKING OR CONSTRUCTION WORK.

CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL INFORMATION FOR FINAL ACCEPTANCE OF WORK FOR ANY LOCAL, STATE OR FEDERAL AGENCY, UTILITY DISTRICT OR ANY OTHER AGENCY OR DISTRICT HAVING APPROVAL AUTHORITY OVER WORK. THIS INFORMATION MAY INCLUDE, BUT IS NOT LIMITED TO, AS-BUILT PLANS, CERTIFICATIONS, INSPECTIONS AND REPORTS.

NOTE: CONTRACTOR MUST COORDINATE WORK WITH UTILITY COMPANY AND CITY PRIOR TO BEGINNING WORK AND IS RESPONSIBLE FOR ALL MATERIALS, LABOR, REPAIRS, ETC. TO COMPLETE WORK AND RESTORE AREA TO SAME STATE PRIOR TO STARTING WORK

CONTRACTOR RESPONSIBLE FOR AS-BUILT DRAWINGS, TESTS, REPORTS AND/OR ANY OTHER CERTIFICATES OR INFORMATION AS REQUIRED FOR ACCEPTANCE OF WORK FROM CITY, UTILITY DISTRICTS OR ANY OTHER GOVERNING AGENCY.

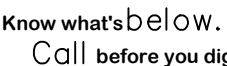
UNLESS OTHERWISE NOTED, CONTRACTOR TO PROTECT
LANDSCAPING IN PLACE AND REPLACE TO MATCH IF DISTURBED
CONTRACTOR TO CAP AND REINSTALL IRRIGATION AS
NECESSARY TO MAINTAIN IRRIGATION TO EXISTING LANDSCAPING

NOTE: CONTRACTOR SHALL PROTECT ALL EXISTING SURVEY MONUMENTATION. CONTRACTOR SHALL HAVE LICENSED SURVEYOR REPLACE ANY DAMAGED OR DISTURBED MONUMENTATION AT THEIR COST.

BEARINGS FOR THIS DESCRIPTION ARE BASED UPON THE NORTH LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 21, TOWNSHIP 8 SOUTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING ASSUMED TO BEAR N 89°55'6" W, FROM THE SOUTH SIXTEENTH CORNER COMMON TO SECTIONS 21 & 22, BEING MONUMENTED BY A 1" DIAMETER PIPE WITH A 2" DIAMETER ALUMINUM CAP STAMPED "LS 6935 - 1988", TO THE SOUTHEAST SIXTEENTH CORNER OF SAID SECTION 21, BEING MONUMENTED BY A #5 REBAR WITH A 1-1/2 INCH DIAMETER ALUMINUM CAP STAMPED "LS 10377", WITH ALL BEARINGS CONTAINED HEREIN RELATIVE THERETO.

THE ELEVATION AND CONTOURS SHOWN HEREON ARE BASED UPON NGS STATION X 396 (PID K1333), BEING A STANDARD NGS STEEL DEEPDROW, WITH A PUNCHMARK, IN A STANDARD NGS LOGO CAP SET IN A CONCRETE SLEEVE, FLUSH TO THE GROUND. MONUMENT LIES 0.25 MI SOUTH OF THE INTERSECTION OF DOUGLAS LANE LEADING EAST, 121.1 FT EAST OF THE CENTERLINE OF THE NORTHBOUND LANES OF INTERSTATE 25, 86.6 FT SOUTH OF THE CENTER OF A PRIVATE DRIVE LEADING EAST TO A FRAME HOUSE, 38.1 FT EAST OF THE CENTERLINE OF THE EAST FRONTAGE ROAD OF INTERSTATE 25, 5.6 FT NORTH OF A UTILITY POLE, ABOUT LEVEL WITH THE HIGHWAY, AND 1 FT WEST OF A FIBERGLASS WITNESS POST AND SHEEP FENCE. PUBLISHED ELEVATION = 6355.09' NAVD88

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.



Project No:	KSS000165
Drawn By:	RDG
Checked By:	JRR
Date:	6/24/26

C4.0

29 of 91