



TRAILS AT CROWFOOT MASTER UTILITY REPORT

Prepared for:
E5X Management Inc
Englewood, CO 80112
Phone (303) -440-9111
Contact: Chris Elliott

Prepared by:
CVL Consultants of Colorado, Inc.
10333 E. Dry Creek Road, Suite 240
Englewood, CO 80112
Phone (720) 482-9526
Contact: Brian Wilson, P.E.

CVL PROJECT NO. 8130283701
April 2017

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
	1. Project Location	
	2. Description of Property	
	3. Proposed Development	
	4. General Topography	
II.	SANITARY SEWER SYSTEM.....	3
	1. Wastewater Design Criteria	
	2. Existing Wastewater Infrastructure	
	3. Proposed Wastewater Infrastructure	
III.	WATER DISTRIBUTION SYSTEM.....	4
	1. Water Design Criteria	
	2. Pressures	
	3. Distribution System	
	4. Existing Infrastructure and Supply	
	5. Network Analysis	
	6. Model Results	
IV.	CONCLUSION.....	6
V.	REFERENCES.....	6

APPENDICIES

- A. Sanitary Sewer Summary Exhibit
- B. Sanitary Sewer Summary Table & Routing Table
- C. WaterCAD Exhibit
- D. WaterCAD Results

I. INTRODUCTION

Project Location

The Trails at Crowfoot Development is located within the Town of Parker, Douglas County, Colorado. The boundary of the development spans several sections, all of which are located within Township 7 South, Range 66 west of the 5th principal meridian.

More specifically, the southwest quarter, and majority of the north half, of Section 4, the south half, and majority of the north half, of Section 5, the east half of Section 6, a small portion along the east edge of Section 8, the north half, and the north half of the southwest quarter, of Section 9.

The site is bounded by N. Crowfoot Valley Rd. to the northwest, Rich Lawn Estates to the north, Hungry Horse open space to the east and the Town of Parker city limits to the south.

Scope of Work

The purpose of this Master Utility Report is to design a water distribution and sanitary sewer collection system for the Trails at Crowfoot master planned Community. The proposed water and Sewer system must meet the criteria set forth by the guidelines of the *Parker Water and Sanitation District Engineering Department Standards and Specification Manual* and the *Parker Water and Sanitation District 2014 Water and Sewer Master Plan*. CVL Consultants of Colorado, Inc. (CVL) will work in conjunction with the client and PWSD to ensure that the water distribution and sanitary sewer collection systems are compatible with existing facilities.

Proposed Development

Trails at Crowfoot development consists of approximately 890 single family residential lots, a school, parks and 4 mixed use developments.

Topographic Conditions

The proposed site consists of approximately 400 Acres of currently undeveloped land. The west side of site generally slopes from southeast to northwest. The east side of the site generally slopes from southeast to northwest. The total elevation gain across the site is 210'. The highest elevation is 6200 near the southwest and the lowest is 5990 near the east corner of the property.

From the *Parker Water and Sanitation District 2014 Water and Wastewater Master Plan*, it is shown that although a small portion of the site is in zone 1, the limited number residential lots in the zone across combined with the relatively small elevation difference across the lots makes the pressure zone 1 negligible. The water network has been designed to be entirely in pressure zone 2. The table below represents the pressure zones for the City of Parker.

Table 1 – Parker Water and Sanitation District Pressure Zones

**Table 5-1
Pressure Zone Summary**

Pressure Zone	Ground Elevation Range	Minimum Hydraulic Grade Line ¹	Maximum Hydraulic Grade Line
	ft	ft	ft
1	5,780 – 6,000	6,103.0 ²	6,128.5
2 ³	6,000 – 6,205	6,315.0	6,324.0
3	6,205 – 6,440	6,581.0	6,592.0
Notes: ¹ The minimum hydraulic grade line represents the storage tanks being approximately ½ their full depth. ² Based on the ½ full depths of the Butterfield Tanks. ³ Zone 2 is separated into an East and West side and is not directly hydraulically connected.			

II. Sanitary Sewer System

Wastewater Design Criteria

The Trails at Crowfoot is comprised of 13 different Filings. See the Appendix for a phasing plan. The proposed phases include Single family residential housing, open space, parks, an elementary school center and multi-use parcels. Below is a summary of the design criteria used to develop the wastewater model.

- A per capita flow rate of 120 GDP single family for residential flows
- 3000 Gallons per net acre day was used for Multi-use residential flows, PA-35 & PA-36
- 30,000 Gallons per net acre day was used for multi-use flows, PA-43 & PA-44
- The elementary school was assumed to be 80,000 sf with a demand of 600 gpd/1000sf
- A peaking of factor was calculated from the equation, $PF = \text{Avg. Day} \times 2.6 \times 10^{-16}$ with a maximum value of 4.0 and a minimum of 2.6.
- An infiltration rate of 10%
- The depth of flow in the pipes shall not exceed 86% of full flow capacity
- Minimum pipe slope of 0.4%
- Minimum of 8" diameter PVC for all mains
- 0.2' drop across all manholes

Existing Wastewater Infrastructure

There is no exiting wastewater infrastructure existing on site. The nearest collection system is a 27" line located to the northeast which eventually drains to the Oak Gulch Collector Basin to the north.

Proposed Wastewater Infrastructure

The proposed wastewater improvements are designed to serve the Trails at Crowfoot and the future Hess Ranch development north of Crowfoot Valley Rd. The lines will consist of gravity sewer lines throughout the site and will not include lift stations. The onsite mains will consist of 8" PVC and 12" PVC pipe. Pipes were sized to allow a maximum of 86% full flow capacity at a minimum slope of 0.4%. Offsite flows from the, *Preliminary Utility Report, Hess Ranch Planned Development Annexation*, prepared by Manhard Consutling, November 18, 2014, will be conveyed towards the Northeast and tie into the the existing 27" collector main. A 15" main will be installed from the site to Lemon Gulch where it will upsize to an 18" main to accept offsite flows and a 12" main will run offsite from the northeast corner of the site to the Lemon Gulch main. The wastewater flow calculations and routing tables can be found in the Appendices. Table 2 below summarizes the flows at the major design points

Table 2 – Sanitary Routing Summary Table

DESIGN POINT	PEAK FLOW W/ INFIL (CFS)	PIPE DIAM (IN)	MIN. PIPE SLOPE (%)	PIPE VELOCITY (ft/s)	DESCRIPTION
15	0.1471	8"	0.4	1.69	DP15
14	0.2965	8"	0.4	2.04	DP15 + DP14
13	0.4748	8"	0.4	2.31	DP13 + DP14 + DP15
12	1.2463	12"	0.4	1.97	DP12 + DP13 + DP14 + DP15
11	0.1087	8"	0.4	1.55	DP11
10	0.14921	8"	0.4	1.24	DP10 + DP11
9	0.2855	8"	0.4	2.03	DP 9
8	3.4630	15"	0.4	3.73	DP8 + DP9 + DP10 + DP11 + DP12 + DP13 + DP14 + DP15
7	0.4122	8"	0.4	1.71	DP7
6	0.2054	8"	0.4	1.84	DP6
5	0.8797	12"	0.4	2.07	DP5 + DP6 + DP7
4	1.0140	12"	0.4	1.77	DP4 + DP5 + DP6 + DP7
3	3.2540	15"	0.4	3.70	DP3 + DP4
2	3.4630	15"	0.4	3.73	DP2
1	6.7170	18"	0.4	2.15	DP3 + DP2

III. Water Distribution System

Waste Design Criteria

This section describes the design criteria incorporated in developing the water distribution system for the proposed development. The following is a list of criteria used to develop the water demands for the proposed site

- Single Family Average Day demand = 0.28 gpm/day/SFE
- Multi Family Average Day demand = 0.1 gpm/capita
- School Average Day Demand = 5.90 gpm
- Commercial Average Day Demand = 5.00 gpm
- Single Family Max Day demand = 2.80 x average daily flow
- Multi Family Max Day demand = 0.28 gpm/capita
- School Max Day Demand = 16.52gpm
- Commercial Max Demand = 14.00gpm
- Single Family Peak Hour demand = 4.5 x average daily flow
- Multi Family Peak Hour demand = 0.45gpm/capita
- School Peak Hour Demand = 26.50 gpm
- Commercial Peak Hour Demand = 22.50 gpm

Pressures

The system was analyzed to meet the maximum day plus fire flow demand with a residential pressure of no less than 20 psi at any point in the water distribution system. The system will maintain at a minimum 40 psi at any point in the distribution system during the Average day demand and a maximum system pressure of 150 psi.

Distribution System

The following constraints will be used to model the fire flow requirements

- Max velocity @ MDF plus fire flow = 5fps
- Residential Fire Flow = 1750 gpm
- Commercial Fire Flow = 3500 gpm
- School Fire Flow = 4500 gpm
- Hazen Williams Coef. = 130

Existing Infrastructure and Supply

Trails at Crowfoot is located within the Parker Water and Sanitation District. There will be two points of connection to existing water mains. One connection will be within the Stroh Road ROW to the north of the project and the second will be to the northeast near Lemon Gulch and Cherry Creek. Refer to the appendices for locations. Both mains are owned and operated by the Parker Water and Sanitation District. The project lies within City of Parker pressure zones 2.

Network Analysis

Bentley WaterGEMS V8i was used to model and output results for the water demand calculations. Flows were allocated to each node (pipe junction or external demand) based on tributary area mapped to each node within the site. Demands were then determined by land use and unit flows. The water supply connections were modeled as reservoirs. The hydraulic grades for these reservoirs for different pressure zones were taken from the *Parker Water and Sanitation District 2014 Water and Sewer Master Plan*.

Within the model, several cases were included to fully analyze how peak flows and fire demands will affect the system.

Input Parameters of the water distribution system modeled above include the following:

1. Pipe Diameters (inches)
2. Pipe Lengths (feet)
3. Node Elevations (feet)
4. System Demands (as outlined above)
5. Fire Flows (1,500 gpm and 3,500 gpm)
6. Pipe Friction Coefficient, $C = 130$

Water Model Results

Table 3 – Water Distribution Model Results

SCENARIO	MIN. (PSI)	NODE	MAX (PSI)	NODE
Average Demand	48	J153	128	J59
Max Demand	43	J153	123	J59
Peak Demand	39	J153	123	J59

IV. Conclusion

The results of the system analysis indicate that the proposed water and sanitary system conforms to the Parker Water and Sewer Department Standards and Specifications Manual as well as the Parker Water and Sanitation District 2014 Water and Wastewater Master Plan. Any Subsequent changes to the water and sanitary distribution system will require a reanalysis of the design models. The Appendix contains the results of the WaterCAD model as well as the Sanitary Sewer tables.

VI. References

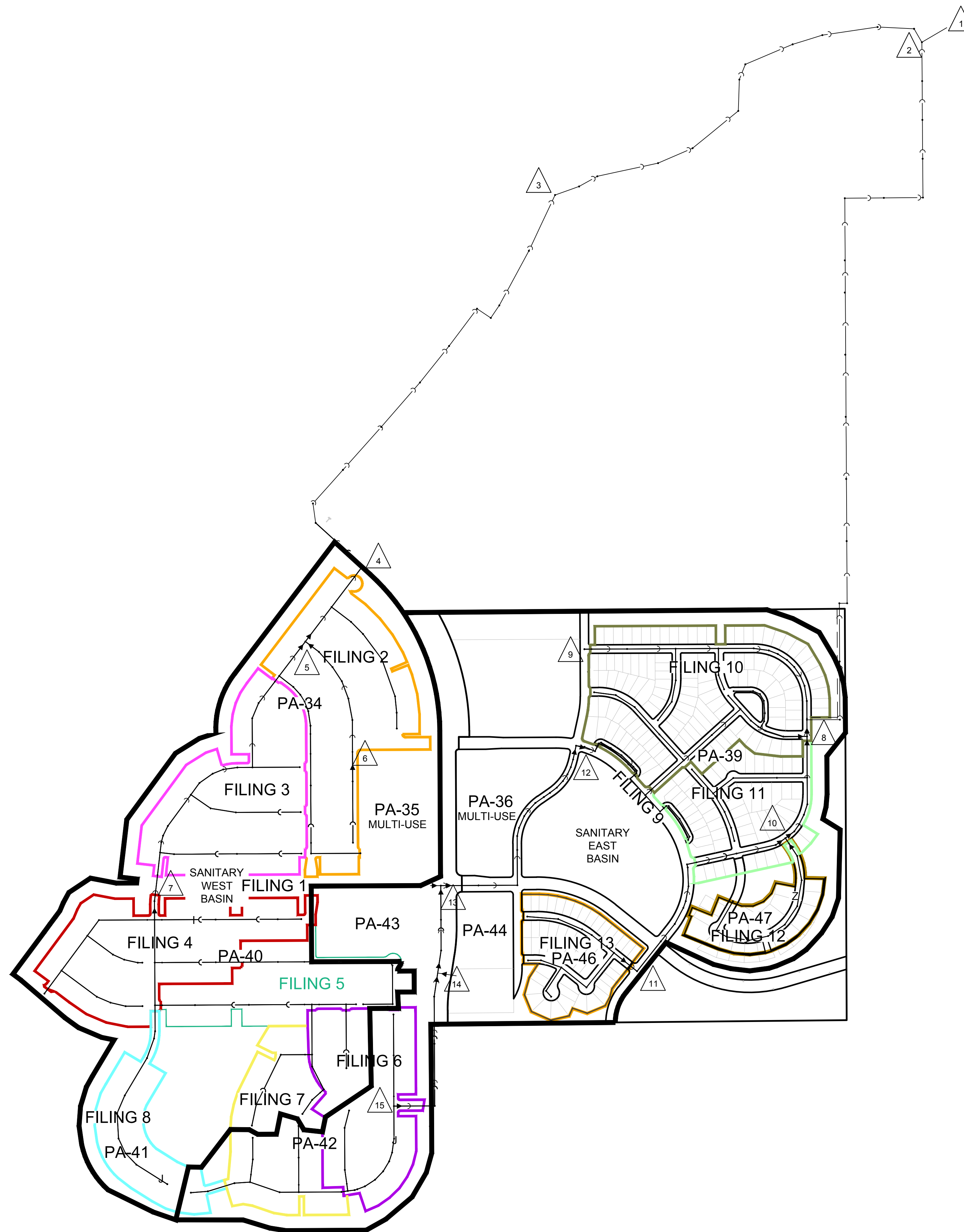
Parker Water and Sanitation District 2014 Water and Wastewater Master Plan, City of Parker, 2014

Parker Water and Sanitation District Engineering Department Standards and Specifications Manual, City of Parker, 2017

Preliminary Utility Report Hess Ranch Planned Development Annexation, Manhard Consulting, November 18, 2014

Appendix A

N:\PROJECTS\WES RANCH\DCS\ENGINEERING\MASTER UTILITY REPORT\SEWER2.DWG, CLAYG, 4/17/2017 9:35 AM





10333 E. Dry Creek Rd.
Suite 240
Englewood, CO 80112
Tel: (720) 482-9526
Fax: (720) 482-9546

TRAILS AT CROWFOOT
SANITARY BASINS

SCALE: AS SHOWN			DRAWN BY: BPW			SHEET NO: 1		
FILE NO: 8130283701			CHECKED BY: JJJ					
DATE: 4-18-17								
No.	Revisions	Date	Init.	Appr.	Date			

Appendix B

HESS RANCH - TRAILS AT CROWFOOT

Sanitary Sewer Demand Calculations
Parker Water and Sanitation District

DATE: March 27th 2017
BY: CMG

SUMMARY TABLE

DESIGN POINT	RES LOTS (EA)	FLOW FACTOR (GPD/EA)	TOTAL FLOW (GPD)	TOTAL FLOW (CFS)	MULTIUSE (AC)	FLOW FACTOR (GPD/AC)	TOTAL FLOW (GPD)	TOTAL FLOW (CFS)	COMMERC (AC)	FLOW FACTOR (GPD/AC)	TOTAL FLOW (GPD)	TOTAL FLOW (CFS)	COMBINED FLOW (CFS)	PEAKING FACTOR	INFILTR. 10% AVG FLOW (CFS)	TOTAL W/ INFILTRATION (CFS)
1	0	336	0	0.000	0	3000	0	0.0000	0	30000	0	0.0000	0.0000	0	0.000	0.0000
2	0	336	0	0.000	0	3000	0	0.0000	0	30000	0	0.0000	0.0000	0.00	0.000	0.0000
3**	0	336	0	0.000	0	3000	0	0.0000	0	30000	0	0.0000	0.0000	N/A	0.000	2.2400
4	63	336	21168	0.033	0	3000	0	0.0000	0	30000	0	0.0000	0.0328	4.00	0.003	0.1343
5	123	336	41328	0.064	0	3000	0	0.0000	0	30000	0	0.0000	0.0639	4.00	0.006	0.2622
6	11	336	3696	0.006	9.56	3000	28680	0.0444	0	30000	0	0.0000	0.0501	4.00	0.005	0.2054
7	208	336	69888	0.108	0	3000	0	0.0000	0	30000	0	0.0000	0.1081	3.71	0.011	0.4122
8	181	336	60816	0.094	0	3000	0	0.0000	0	30000	0	0.0000	0.0941	3.79	0.009	0.3665
9*	0	336	0	0.000	0	3000	0	0.0000	0	30000	0	0.0700	0.0700	3.98	0.007	0.2855
10	19	336	6384	0.010	0	3000	0	0.0000	0	30000	0	0.0000	0.0099	4.00	0.001	0.0405
11	51	336	17136	0.027	0	3000	0	0.0000	0	30000	0	0.0000	0.0265	4.00	0.003	0.1087
12	0	336	0	0.000	6.61	3000	19830	0.0307	1	30000	30000	0.0464	0.0771	2.69	0.008	0.2154
13	0	336	0	0.000	12.06	3000	36180	0.0560	0	30000	0	0.0000	0.0560	3.08	0.006	0.1783
14	0	336	0	0.000	0	3000	0	0.0000	1	30000	30000	0.0464	0.0464	3.12	0.005	0.1494
15	69	336	23184	0.036	0	3000	0	0.0000	0	30000	0	0.0000	0.0359	4.00	0.004	0.1471

*Design Point 9 includes only School Demand = 0.07 cfs

**Design Point 3 includes offsite flow only

PA-35 to DP 6

PA-36 to DP 12

PA-44 to DP 14

PA-43 to DP 13

8" PVC Pipe @ 0.4% min. flowing 86% full = 0.79cfs

12" PVC pipe @ 0.4% min. flowing 86% full = 2.34cfs

HESS RANCH - TRAILS AT CROWFOOT

Sanitary Sewer Demand Calculations
Parker Water and Sanitation District

DATE: 7-Apr-17
BY: CMG

ROUTING TABLE

DESIGN POINT	PEAK FLOW W/ INFIL (CFS)	PIPE DIAM (IN)	MIN. PIPE SLOPE (%)	PIPE VELOCITY (ft/s)	DESCRIPTION
15	0.1471	8"	0.4	1.69	DP15
14	0.2965	8"	0.4	2.04	DP15 + DP14
13	0.4748	8"	0.4	2.31	DP13 + DP14 + DP15
12	1.2463	12"	0.4	2.07	DP12 + DP13 + DP14 + DP15
11	0.1087	8"	0.4	1.55	DP11
10	0.14921	8"	0.4	1.24	DP10 + DP11
9	0.2855	8"	0.4	2.03	DP 9
8	1.4915	12"	0.4	3.07	DP8 + DP9 + DP10 + DP11 + DP12 + DP13 + DP14 + DP15
7	0.4122	8"	0.4	1.71	DP7
6	0.2054	8"	0.4	1.84	DP6
5	0.8797	12"	0.4	2.07	DP5 + DP6 + DP7
4	1.0140	12"	0.4	1.77	DP4 + DP5 + DP6 + DP7
3	3.2540	*18"	0.4	3.70	DP3 + DP4
2	1.4915	*18"	0.4	3.73	DP2
1	4.7455	18"	0.4	2.15	DP3 + DP2

8" PVC Pipe @ 0.4% min. flowing 86% full = 0.79cfs

12" PVC pipe @ 0.4% min. flowing 86% full = 2.34cfs

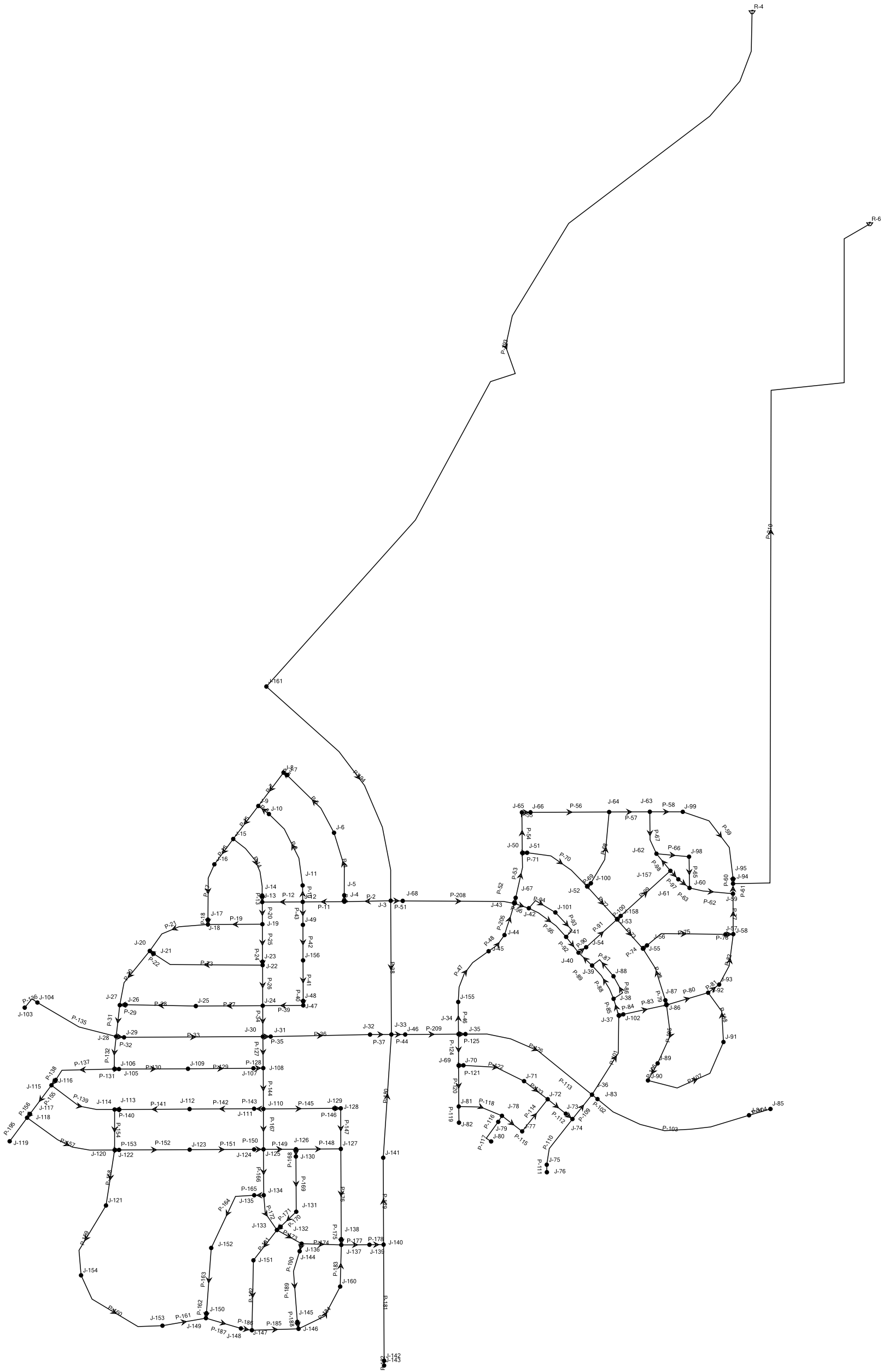
15" PVC pipe @ 0.4% min. flowing 86% full = 4.25cfs

18" PVC pipe @ 0.4% min. flowing 86% full = 6.90cfs

*Upsized pipe to meet requirements of *Preliminary Utility Report Hess Ranch Planned Development Annexation*

Appendix C

Routing Diagram



Appendix D

Scenario: Average Day Scenario
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-59	5,984.64	4	6,280.56	128
J-58	5,986.75	4	6,282.35	128
J-94	5,985.00	0	6,279.30	127
J-57	5,988.15	0	6,282.44	127
J-95	5,986.00	0	6,279.40	127
J-84	5,996.00	0	6,287.72	126
J-85	5,996.00	0	6,287.72	126
J-99	5,993.34	0	6,281.33	125
J-93	5,996.35	0	6,283.09	124
J-60	5,997.03	0	6,281.73	123
J-91	5,998.92	0	6,283.35	123
J-92	6,000.92	3	6,283.28	122
J-61	6,001.98	0	6,281.90	121
J-98	6,002.04	0	6,281.86	121
J-63	6,002.69	5	6,282.02	121
J-157	6,005.16	2	6,282.03	120
J-56	6,007.08	0	6,283.36	120
J-62	6,006.49	3	6,281.99	119
J-55	6,008.15	4	6,283.42	119
J-90	6,009.71	0	6,283.49	118
J-161	6,034.00	0	6,305.72	118
J-89	6,012.26	0	6,283.52	117
J-158	6,015.52	0	6,283.44	116
J-87	6,015.79	0	6,283.59	116
J-53	6,015.85	0	6,283.55	116
J-86	6,015.94	6	6,283.61	116
J-64	6,016.06	5	6,283.13	116
J-8	6,034.74	6	6,293.76	112
J-54	6,025.95	0	6,284.76	112
J-102	6,026.32	0	6,284.85	112
J-7	6,035.27	0	6,293.76	112
J-37	6,026.97	3	6,284.99	112
J-40	6,028.00	2	6,284.98	111
J-38	6,028.37	0	6,284.99	111
J-39	6,029.13	0	6,284.98	111
J-83	6,032.00	0	6,287.72	111
J-41	6,029.81	0	6,285.54	111
J-88	6,030.00	0	6,284.98	110
J-36	6,032.77	0	6,287.72	110
J-52	6,029.24	4	6,283.59	110
J-100	6,029.43	0	6,283.56	110
J-66	6,031.24	0	6,283.91	109
J-65	6,032.00	3	6,283.99	109
J-104	6,042.48	0	6,293.48	109
J-103	6,042.48	0	6,293.48	109
J-74	6,037.43	0	6,287.83	108
J-15	6,043.41	4	6,293.67	108
J-16	6,044.00	0	6,293.66	108
J-101	6,036.38	0	6,285.74	108
J-73	6,038.69	0	6,287.85	108
J-9	6,046.75	4	6,293.71	107
J-75	6,041.76	0	6,287.83	106
J-76	6,042.02	0	6,287.83	106
J-10	6,048.75	0	6,293.71	106
J-50	6,041.33	7	6,284.40	105
J-51	6,041.37	0	6,284.35	105
J-72	6,045.00	4	6,287.93	105
J-17	6,051.26	0	6,293.63	105
J-42	6,043.59	0	6,285.94	105
J-18	6,051.58	4	6,293.63	105
J-20	6,052.00	5	6,293.58	105
J-21	6,052.00	0	6,293.58	105

J-45	6,046.00	0	6,287.04	104
J-14	6,054.29	0	6,293.67	104
J-44	6,048.00	0	6,286.77	103
J-13	6,056.60	1	6,293.67	103
J-67	6,049.76	0	6,286.15	102
J-43	6,050.15	26	6,286.37	102
J-27	6,058.00	5	6,293.53	102
J-71	6,052.87	0	6,287.97	102
J-6	6,058.84	0	6,293.86	102
J-26	6,058.87	0	6,293.53	102
J-77	6,055.39	0	6,287.96	101
J-28	6,061.16	0	6,293.48	101
J-29	6,063.61	0	6,293.48	99
J-155	6,058.11	0	6,287.79	99
J-11	6,064.45	0	6,293.71	99
J-19	6,064.70	4	6,293.63	99
J-12	6,068.24	27	6,293.71	98
J-105	6,068.04	4	6,293.46	98
J-106	6,068.98	0	6,293.46	97
J-78	6,064.02	5	6,287.98	97
J-35	6,064.25	0	6,288.06	97
J-79	6,064.93	0	6,287.98	97
J-34	6,066.23	5	6,288.17	96
J-49	6,072.37	0	6,293.69	96
J-70	6,069.43	0	6,288.04	95
J-69	6,070.44	3	6,288.05	94
J-119	6,076.00	0	6,293.44	94
J-80	6,070.57	0	6,287.98	94
J-116	6,076.09	0	6,293.44	94
J-115	6,076.68	3	6,293.44	94
J-25	6,077.82	0	6,293.54	93
J-23	6,078.37	0	6,293.59	93
J-5	6,078.78	0	6,293.94	93
J-22	6,079.62	0	6,293.58	93
J-118	6,079.69	4	6,293.44	92
J-117	6,079.70	0	6,293.44	92
J-4	6,080.35	4	6,293.95	92
J-46	6,079.63	0	6,292.33	92
J-33	6,081.77	5	6,293.41	92
J-81	6,077.40	1	6,288.02	91
J-32	6,083.10	0	6,293.44	91
J-156	6,084.41	0	6,293.65	91
J-114	6,086.17	4	6,293.44	90
J-68	6,086.62	0	6,293.69	90
J-113	6,087.01	0	6,293.44	89
J-82	6,081.96	0	6,288.02	89
J-3	6,088.69	0	6,294.48	89
J-24	6,094.39	6	6,293.55	86
J-109	6,095.58	4	6,293.46	86
J-143	6,096.00	0	6,293.41	85
J-142	6,096.34	0	6,293.41	85
J-48	6,097.08	0	6,293.60	85
J-47	6,098.61	2	6,293.59	84
J-30	6,103.54	0	6,293.48	82
J-112	6,103.95	4	6,293.44	82
J-31	6,104.00	0	6,293.47	82
J-141	6,104.54	5	6,293.41	82
J-120	6,104.78	8	6,293.43	82
J-122	6,105.44	0	6,293.43	81
J-107	6,108.30	0	6,293.46	80
J-108	6,109.48	3	6,293.46	80
J-123	6,112.34	4	6,293.43	78
J-140	6,115.62	0	6,293.41	77
J-139	6,116.15	0	6,293.42	77
J-111	6,118.74	0	6,293.44	76
J-110	6,120.25	4	6,293.44	75
J-137	6,121.89	4	6,293.42	74
J-138	6,122.24	0	6,293.42	74
J-124	6,124.72	0	6,293.43	73
J-129	6,126.00	0	6,293.43	72
J-125	6,126.00	3	6,293.43	72
J-128	6,126.46	2	6,293.43	72

	6,127.25	3	6,293.42	72
J-145	6,128.11	0	6,293.42	72
J-160	6,130.00	0	6,293.42	71
J-127	6,130.86	3	6,293.43	70
J-121	6,132.42	0	6,293.43	70
J-130	6,134.56	0	6,293.43	69
J-126	6,134.64	0	6,293.43	69
J-136	6,136.68	1	6,293.42	68
J-134	6,137.06	0	6,293.43	68
J-144	6,137.84	0	6,293.42	67
J-135	6,138.29	0	6,293.43	67
J-147	6,141.82	3	6,293.43	66
J-131	6,142.32	0	6,293.43	65
J-132	6,145.99	0	6,293.43	64
J-133	6,146.65	2	6,293.43	64
J-148	6,147.27	0	6,293.43	63
J-154	6,155.70	0	6,293.43	60
J-151	6,156.36	0	6,293.43	59
J-149	6,164.50	8	6,293.43	56
J-150	6,165.41	0	6,293.43	55
J-152	6,170.42	0	6,293.43	53
J-153	6,181.82	4	6,293.43	48

N:\Projects\Hess Ranch\docs\engineering\MASTER UTILITY REPORT\water\Water Model.wtg

Scenario: Average Day Scenario
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (ft)	Material
P-195	199	J-118	J-119	8.0	0	0.00	0.000	0	0.00	PVC
P-205	226	J-43	J-44	8.0	-282	1.80	0.002	0	0.40	PVC
P-208	759	J-68	J-43	8.0	708	4.52	0.010	0	7.32	PVC
P-209	362	J-46	J-34	8.0	779	4.97	0.011	0	4.16	PVC
P-210	5,273	R-6	J-94	8.0	-1,386	8.85	0.033	0	176.30	PVC
P-2	315	J-3	J-4	8.0	276	1.76	0.002	0	0.53	PVC
P-3	43	J-4	J-5	8.0	84	0.54	0.000	0	0.01	PVC
P-4	435	J-5	J-6	8.0	84	0.54	0.000	0	0.08	PVC
P-5	510	J-6	J-7	8.0	84	0.54	0.000	0	0.10	PVC
P-6	29	J-7	J-8	8.0	84	0.54	0.000	0	0.01	PVC
P-7	284	J-8	J-9	8.0	78	0.50	0.000	0	0.05	PVC
P-8	90	J-9	J-10	8.0	0	0.00	0.000	0	0.00	PVC
P-9	554	J-10	J-11	8.0	0	0.00	0.000	0	0.00	PVC
P-10	112	J-11	J-12	8.0	0	0.00	0.000	0	0.00	PVC
P-11	283	J-12	J-4	8.0	-189	1.20	0.001	0	0.23	PVC
P-12	275	J-12	J-13	8.0	80	0.51	0.000	0	0.05	PVC
P-13	44	J-13	J-14	8.0	-19	0.12	0.000	0	0.00	PVC
P-14	456	J-14	J-15	8.0	-19	0.12	0.000	0	0.01	PVC
P-15	282	J-15	J-9	8.0	-74	0.47	0.000	0	0.04	PVC
P-16	214	J-15	J-16	8.0	51	0.32	0.000	0	0.02	PVC
P-17	384	J-16	J-17	8.0	51	0.32	0.000	0	0.03	PVC
P-18	33	J-17	J-18	8.0	51	0.32	0.000	0	0.00	PVC
P-19	370	J-18	J-19	8.0	-15	0.09	0.000	0	0.00	PVC
P-20	150	J-19	J-13	8.0	-98	0.63	0.000	0	0.04	PVC
P-21	465	J-18	J-20	8.0	61	0.39	0.000	0	0.05	PVC
P-22	32	J-20	J-21	8.0	-11	0.07	0.000	0	0.00	PVC
P-23	762	J-21	J-22	8.0	-11	0.07	0.000	0	0.00	PVC
P-24	24	J-22	J-23	8.0	-80	0.51	0.000	0	0.00	PVC
P-25	254	J-23	J-19	8.0	-80	0.51	0.000	0	0.04	PVC
P-26	275	J-22	J-24	8.0	69	0.44	0.000	0	0.04	PVC
P-27	454	J-24	J-25	8.0	26	0.17	0.000	0	0.01	PVC
P-28	485	J-25	J-26	8.0	26	0.17	0.000	0	0.01	PVC
P-29	31	J-26	J-27	8.0	26	0.17	0.000	0	0.00	PVC
P-30	433	J-27	J-20	8.0	-67	0.43	0.000	0	0.05	PVC
P-31	214	J-27	J-28	8.0	88	0.56	0.000	0	0.04	PVC
P-32	54	J-28	J-29	8.0	32	0.21	0.000	0	0.00	PVC
P-34	210	J-30	J-24	8.0	-115	0.73	0.000	0	0.07	PVC
P-35	53	J-30	J-31	8.0	95	0.61	0.000	0	0.01	PVC
P-37	145	J-32	J-33	8.0	95	0.61	0.000	0	0.03	PVC
P-39	275	J-24	J-47	8.0	-78	0.50	0.000	0	0.05	PVC
P-40	31	J-47	J-48	8.0	-81	0.51	0.000	0	0.00	PVC
P-41	275	J-48	J-156	8.0	-81	0.51	0.000	0	0.05	PVC
P-42	242	J-156	J-49	8.0	-81	0.51	0.000	0	0.04	PVC
P-43	155	J-49	J-12	8.0	-81	0.51	0.000	0	0.03	PVC
P-44	94	J-33	J-46	8.0	779	4.97	0.011	0	1.08	PVC
P-46	218	J-34	J-155	8.0	282	1.80	0.002	0	0.38	PVC
P-47	426	J-155	J-45	8.0	282	1.80	0.002	0	0.75	PVC
P-48	156	J-45	J-44	8.0	282	1.80	0.002	0	0.27	PVC
P-51	81	J-68	J-3	8.0	-708	4.52	0.010	0	0.79	PVC
P-52	39	J-43	J-67	8.0	530	3.38	0.006	0	0.22	PVC
P-53	310	J-67	J-50	8.0	530	3.38	0.006	0	1.75	PVC
P-54	275	J-50	J-65	8.0	259	1.65	0.001	0	0.41	PVC
P-55	58	J-65	J-66	8.0	255	1.63	0.001	0	0.08	PVC
P-56	534	J-66	J-64	8.0	255	1.63	0.001	0	0.78	PVC
P-57	276	J-64	J-63	8.0	442	2.82	0.004	0	1.11	PVC
P-58	224	J-63	J-99	8.0	381	2.43	0.003	0	0.69	PVC
P-59	629	J-99	J-95	8.0	381	2.43	0.003	0	1.93	PVC
P-60	34	J-95	J-94	8.0	381	2.43	0.003	0	0.10	PVC
P-61	68	J-94	J-59	8.0	-1,005	6.41	0.018	0	1.26	PVC
P-62	303	J-59	J-60	8.0	-434	2.77	0.004	0	1.18	PVC
P-63	96	J-60	J-61	8.0	-277	1.77	0.002	0	0.16	PVC
P-65	212	J-60	J-98	8.0	-156	1.00	0.001	0	0.13	PVC
P-66	222	J-98	J-62	8.0	-156	1.00	0.001	0	0.13	PVC
P-67	294	J-62	J-63	8.0	-55	0.35	0.000	0	0.02	PVC
P-68	511	J-64	J-100	8.0	-191	1.22	0.001	0	0.44	PVC
P-69	34	J-100	J-52	8.0	-191	1.22	0.001	0	0.03	PVC
P-70	486	J-52	J-51	8.0	-265	1.69	0.002	0	0.76	PVC
P-71	33	J-51	J-50	8.0	-265	1.69	0.002	0	0.05	PVC
P-72	302	J-52	J-53	8.0	69	0.44	0.000	0	0.04	PVC
P-73	265	J-53	J-55	8.0	142	0.91	0.000	0	0.13	PVC
P-74	35	J-55	J-56	8.0	272	1.74	0.002	0	0.06	PVC
P-75	562	J-56	J-57	8.0	272	1.74	0.002	0	0.92	PVC
P-76	53	J-57	J-58	8.0	272	1.74	0.002	0	0.09	PVC
P-77	274	J-58	J-59	8.0	575	3.67	0.007	0	1.80	PVC
P-78	386	J-55	J-87	8.0	-134	0.86	0.000	0	0.17	PVC

P-79	33	J-87	J-86	8.0	-134	0.86	0.000	0	0.01	PVC
P-80	295	J-86	J-92	8.0	221	1.41	0.001	0	0.33	PVC
P-81	93	J-92	J-93	8.0	306	1.95	0.002	0	0.19	PVC
P-82	361	J-93	J-58	8.0	306	1.95	0.002	0	0.74	PVC
P-83	300	J-86	J-102	8.0	-450	2.87	0.004	0	1.25	PVC
P-84	32	J-102	J-37	8.0	-450	2.87	0.004	0	0.13	PVC
P-85	118	J-37	J-38	8.0	25	0.16	0.000	0	0.00	PVC
P-86	197	J-38	J-88	8.0	11	0.07	0.000	0	0.00	PVC
P-87	211	J-88	J-39	8.0	11	0.07	0.000	0	0.00	PVC
P-88	271	J-39	J-38	8.0	-14	0.09	0.000	0	0.00	PVC
P-89	120	J-39	J-40	8.0	25	0.16	0.000	0	0.00	PVC
P-90	53	J-40	J-54	8.0	456	2.91	0.004	0	0.23	PVC
P-91	282	J-54	J-53	8.0	456	2.91	0.004	0	1.21	PVC
P-92	142	J-40	J-41	8.0	-434	2.77	0.004	0	0.55	PVC
P-93	226	J-41	J-101	8.0	-196	1.25	0.001	0	0.20	PVC
P-94	223	J-101	J-42	8.0	-196	1.25	0.001	0	0.20	PVC
P-95	315	J-42	J-41	8.0	238	1.52	0.001	0	0.40	PVC
P-96	111	J-42	J-43	8.0	-434	2.77	0.004	0	0.43	PVC
P-97	79	J-61	J-157	8.0	-277	1.77	0.002	0	0.13	PVC
P-98	150	J-157	J-62	8.0	104	0.67	0.000	0	0.04	PVC
P-99	456	J-157	J-158	8.0	-384	2.45	0.003	0	1.41	PVC
P-100	35	J-158	J-53	8.0	-384	2.45	0.003	0	0.11	PVC
P-101	590	J-37	J-36	8.0	-477	3.05	0.005	0	2.74	PVC
P-102	48	J-36	J-83	8.0	0	0.00	0.000	0	0.00	PVC
P-105	417	J-86	J-89	8.0	89	0.57	0.000	0	0.09	PVC
P-106	133	J-89	J-90	8.0	89	0.57	0.000	0	0.03	PVC
P-107	680	J-90	J-91	8.0	89	0.57	0.000	0	0.14	PVC
P-108	366	J-91	J-92	8.0	89	0.57	0.000	0	0.08	PVC
P-109	212	J-36	J-74	8.0	-140	0.90	0.000	0	0.10	PVC
P-110	366	J-74	J-75	8.0	0	0.00	0.000	0	0.00	PVC
P-111	51	J-75	J-76	8.0	0	0.00	0.000	0	0.00	PVC
P-112	58	J-74	J-73	8.0	-140	0.90	0.000	0	0.03	PVC
P-113	158	J-73	J-72	8.0	-140	0.90	0.000	0	0.08	PVC
P-114	278	J-72	J-77	8.0	-62	0.40	0.000	0	0.03	PVC
P-115	173	J-77	J-78	8.0	-62	0.40	0.000	0	0.02	PVC
P-116	48	J-78	J-79	8.0	0	0.00	0.000	0	0.00	PVC
P-117	177	J-79	J-80	8.0	0	0.00	0.000	0	0.00	PVC
P-118	305	J-78	J-81	8.0	-67	0.43	0.000	0	0.04	PVC
P-119	110	J-81	J-82	8.0	0	0.00	0.000	0	0.00	PVC
P-120	278	J-81	J-69	8.0	-68	0.44	0.000	0	0.04	PVC
P-121	33	J-69	J-70	8.0	83	0.53	0.000	0	0.01	PVC
P-122	434	J-70	J-71	8.0	83	0.53	0.000	0	0.08	PVC
P-123	202	J-71	J-72	8.0	83	0.53	0.000	0	0.04	PVC
P-124	213	J-69	J-34	8.0	-154	0.98	0.001	0	0.12	PVC
P-125	47	J-34	J-35	8.0	337	2.15	0.002	0	0.12	PVC
P-127	214	J-30	J-108	8.0	52	0.33	0.000	0	0.02	PVC
P-128	67	J-108	J-107	8.0	-7	0.05	0.000	0	0.00	PVC
P-129	444	J-107	J-109	8.0	-7	0.05	0.000	0	0.00	PVC
P-130	469	J-109	J-106	8.0	-11	0.07	0.000	0	0.00	PVC
P-131	31	J-106	J-105	8.0	-11	0.07	0.000	0	0.00	PVC
P-132	221	J-105	J-28	8.0	-55	0.35	0.000	0	0.02	PVC
P-136	123	J-104	J-103	8.0	0	0.00	0.000	0	0.00	PVC
P-137	440	J-105	J-116	8.0	40	0.26	0.000	0	0.02	PVC
P-138	41	J-116	J-115	8.0	40	0.26	0.000	0	0.00	PVC
P-139	479	J-115	J-114	8.0	19	0.12	0.000	0	0.01	PVC
P-140	32	J-114	J-113	8.0	-1	0.01	0.000	0	0.00	PVC
P-141	477	J-113	J-112	8.0	-1	0.01	0.000	0	0.00	PVC
P-142	438	J-112	J-111	8.0	-6	0.04	0.000	0	0.00	PVC
P-143	63	J-111	J-110	8.0	-6	0.04	0.000	0	0.00	PVC
P-144	278	J-110	J-108	8.0	-56	0.36	0.000	0	0.02	PVC
P-145	481	J-110	J-129	8.0	18	0.12	0.000	0	0.01	PVC
P-146	44	J-129	J-128	8.0	18	0.12	0.000	0	0.00	PVC
P-147	276	J-128	J-127	8.0	17	0.11	0.000	0	0.00	PVC
P-148	305	J-127	J-126	8.0	-3	0.02	0.000	0	0.00	PVC
P-149	221	J-126	J-125	8.0	-15	0.09	0.000	0	0.00	PVC
P-150	63	J-125	J-124	8.0	-8	0.05	0.000	0	0.00	PVC
P-151	438	J-124	J-123	8.0	-8	0.05	0.000	0	0.00	PVC
P-152	479	J-123	J-122	8.0	-12	0.07	0.000	0	0.00	PVC
P-153	30	J-122	J-120	8.0	-12	0.07	0.000	0	0.00	PVC
P-154	275	J-120	J-114	8.0	-16	0.10	0.000	0	0.00	PVC
P-155	243	J-115	J-117	8.0	18	0.12	0.000	0	0.00	PVC
P-156	33	J-117	J-118	8.0	18	0.12	0.000	0	0.00	PVC
P-157	656	J-118	J-120	8.0	15	0.09	0.000	0	0.00	PVC
P-158	381	J-120	J-121	8.0	12	0.07	0.000	0	0.00	PVC
P-159	526	J-121	J-154	8.0	12	0.07	0.000	0	0.00	PVC
P-160	708	J-154	J-153	8.0	12	0.07	0.000	0	0.00	PVC
P-161	300	J-153	J-149	8.0	8	0.05	0.000	0	0.00	PVC
P-162	34	J-149	J-150	8.0	-6	0.04	0.000	0	0.00	PVC
P-163	445	J-150	J-152	8.0	-6	0.04	0.000	0	0.00	PVC
P-164	514	J-152	J-135	8.0	-6	0.04	0.000	0	0.00	PVC
P-165	65	J-135	J-134	8.0	-6	0.04	0.000	0	0.00	PVC
P-166	312	J-134	J-125	8.0	-18	0.11	0.000	0	0.00	PVC
P-167	274	J-125	J-110	8.0	-28	0.18	0.000	0	0.01	PVC
P-168	50	J-126	J-130	8.0	12	0.07	0.000	0	0.00	PVC
P-169	375	J-130	J-131	8.0	12	0.07	0.000	0	0.00	PVC
P-170	147	J-131	J-132	8.0	12	0.07	0.000	0	0.00	PVC
P-171	34	J-132	J-133	8.0	12	0.07	0.000	0	0.00	PVC

	261	J-133	J-134	8.0	-12	0.07	0.000	0	0.00	PVC
P-173	191	J-133	J-136	8.0	16	0.10	0.000	0	0.00	PVC
P-174	270	J-136	J-137	8.0	13	0.08	0.000	0	0.00	PVC
P-175	39	J-137	J-138	8.0	-16	0.10	0.000	0	0.00	PVC
P-176	613	J-138	J-127	8.0	-16	0.10	0.000	0	0.01	PVC
P-177	191	J-137	J-139	8.0	32	0.20	0.000	0	0.01	PVC
P-178	96	J-139	J-140	8.0	32	0.20	0.000	0	0.00	PVC
P-182	32	J-142	J-143	8.0	0	0.00	0.000	0	0.00	PVC
P-183	283	J-137	J-160	8.0	-7	0.05	0.000	0	0.00	PVC
P-184	424	J-160	J-146	8.0	-7	0.05	0.000	0	0.00	PVC
P-185	317	J-146	J-147	8.0	-9	0.06	0.000	0	0.00	PVC
P-186	76	J-147	J-148	8.0	-6	0.04	0.000	0	0.00	PVC
P-187	248	J-148	J-149	8.0	-6	0.04	0.000	0	0.00	PVC
P-188	48	J-146	J-145	8.0	-2	0.01	0.000	0	0.00	PVC
P-189	487	J-145	J-144	8.0	-2	0.01	0.000	0	0.00	PVC
P-190	53	J-144	J-136	8.0	-2	0.01	0.000	0	0.00	PVC
P-191	260	J-133	J-151	8.0	6	0.04	0.000	0	0.00	PVC
P-192	475	J-151	J-147	8.0	6	0.04	0.000	0	0.00	PVC
P-33	943	J-29	J-30	12.0	32	0.09	0.000	0	0.00	PVC
P-36	675	J-31	J-32	12.0	95	0.27	0.000	0	0.02	PVC
P-38	908	J-33	J-3	12.0	-661	1.88	0.001	0	1.07	PVC
P-103	1,097	J-83	J-84	12.0	0	0.00	0.000	0	0.00	PVC
P-104	152	J-84	J-85	12.0	0	0.00	0.000	0	0.00	PVC
P-126	986	J-35	J-36	12.0	337	0.96	0.000	0	0.33	PVC
P-135	588	J-28	J-104	12.0	0	0.00	0.000	0	0.00	PVC
P-179	590	J-140	J-141	12.0	32	0.09	0.000	0	0.00	PVC
P-180	839	J-141	J-33	12.0	27	0.08	0.000	0	0.00	PVC
P-181	788	J-140	J-142	12.0	0	0.00	0.000	0	0.00	PVC
P-194	1,763	J-161	J-3	12.0	1,646	4.67	0.006	0	11.24	PVC
P-193	5,907	R-4	J-161	16.0	1,646	2.63	0.002	0	9.28	PVC

N:\Projects\Hess Ranch\docs\engineering\MASTER UTILITY REPORT\water\Water Model.wtg

Scenario: Max Day Scenario
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-161	6,034.00	0	6,300.92	115
J-59	5,984.64	10	6,268.34	123
J-58	5,986.75	10	6,270.04	123
J-94	5,985.00	0	6,267.17	122
J-57	5,988.15	0	6,270.13	122
J-95	5,986.00	0	6,267.27	122
J-84	5,996.00	0	6,275.59	121
J-85	5,996.00	0	6,275.59	121
J-99	5,993.34	0	6,269.06	119
J-93	5,996.35	0	6,270.75	119
J-60	5,997.03	0	6,269.44	118
J-91	5,998.92	0	6,271.01	118
J-92	6,000.92	9	6,270.94	117
J-8	6,034.74	17	6,282.43	107
J-61	6,001.98	0	6,269.60	116
J-98	6,002.04	0	6,269.56	116
J-7	6,035.27	0	6,282.44	107
J-63	6,002.69	15	6,269.70	116
J-157	6,005.16	6	6,269.72	114
J-56	6,007.08	0	6,271.03	114
J-62	6,006.49	8	6,269.68	114
J-55	6,008.15	10	6,271.08	114
J-90	6,009.71	0	6,271.15	113
J-104	6,042.48	0	6,282.07	104
J-103	6,042.48	0	6,282.07	104
J-15	6,043.41	11	6,282.29	103
J-89	6,012.26	0	6,271.18	112
J-16	6,044.00	0	6,282.27	103
J-9	6,046.75	13	6,282.35	102
J-158	6,015.52	0	6,271.11	111
J-87	6,015.79	0	6,271.25	111
J-53	6,015.85	0	6,271.22	110
J-86	6,015.94	17	6,271.26	110
J-64	6,016.06	14	6,270.78	110
J-10	6,048.75	0	6,282.35	101
J-17	6,051.26	0	6,282.23	100
J-18	6,051.58	12	6,282.23	100
J-21	6,052.00	0	6,282.17	100
J-20	6,052.00	15	6,282.17	100
J-14	6,054.29	0	6,282.28	99
J-54	6,025.95	0	6,272.47	107
J-102	6,026.32	0	6,272.56	107
J-13	6,056.60	4	6,282.28	98
J-37	6,026.97	9	6,272.70	106
J-40	6,028.00	6	6,272.70	106
J-83	6,032.00	0	6,275.59	105
J-38	6,028.37	0	6,272.70	106
J-27	6,058.00	15	6,282.11	97
J-6	6,058.84	0	6,282.63	97
J-36	6,032.77	0	6,275.59	105
J-39	6,029.13	0	6,272.70	105
J-26	6,058.87	0	6,282.11	97
J-41	6,029.81	0	6,273.29	105
J-88	6,030.00	0	6,272.70	105
J-52	6,029.24	13	6,271.25	105
J-100	6,029.43	0	6,271.22	105
J-28	6,061.16	0	6,282.07	96
J-66	6,031.24	0	6,271.56	104
J-65	6,032.00	9	6,271.64	104
J-74	6,037.43	0	6,275.69	103
J-29	6,063.61	0	6,282.07	95
J-11	6,064.45	0	6,282.35	94

J-73	6,038.69	0	6,275.72	103
J-19	6,064.70	10	6,282.23	94
J-101	6,036.38	0	6,273.50	103
J-75	6,041.76	0	6,275.69	101
J-76	6,042.02	0	6,275.69	101
J-12	6,068.24	77	6,282.35	93
J-105	6,068.04	11	6,282.04	93
J-106	6,068.98	0	6,282.04	92
J-72	6,045.00	13	6,275.79	100
J-50	6,041.33	19	6,272.07	100
J-51	6,041.37	0	6,272.02	100
J-49	6,072.37	0	6,282.32	91
J-42	6,043.59	0	6,273.71	100
J-45	6,046.00	0	6,274.88	99
J-44	6,048.00	0	6,274.59	98
J-119	6,076.00	0	6,282.00	89
J-116	6,076.09	0	6,282.01	89
J-115	6,076.68	9	6,282.00	89
J-5	6,078.78	0	6,282.79	88
J-25	6,077.82	0	6,282.13	88
J-23	6,078.37	0	6,282.18	88
J-67	6,049.76	0	6,273.94	97
J-71	6,052.87	0	6,275.83	96
J-43	6,050.15	74	6,274.17	97
J-4	6,080.35	10	6,282.81	88
J-22	6,079.62	0	6,282.18	88
J-118	6,079.69	11	6,282.00	88
J-117	6,079.70	0	6,282.00	88
J-77	6,055.39	0	6,275.82	95
J-46	6,079.63	0	6,280.83	87
J-33	6,081.77	14	6,282.06	87
J-32	6,083.10	0	6,282.06	86
J-155	6,058.11	0	6,275.68	94
J-156	6,084.41	0	6,282.26	86
J-68	6,086.62	0	6,282.93	85
J-3	6,088.69	0	6,283.87	84
J-114	6,086.17	11	6,282.00	85
J-113	6,087.01	0	6,282.00	84
J-78	6,064.02	15	6,275.83	92
J-35	6,064.25	0	6,275.96	92
J-79	6,064.93	0	6,275.83	91
J-34	6,066.23	14	6,276.08	91
J-24	6,094.39	16	6,282.14	81
J-70	6,069.43	0	6,275.92	89
J-109	6,095.58	10	6,282.04	81
J-69	6,070.44	9	6,275.93	89
J-143	6,096.00	0	6,282.03	80
J-80	6,070.57	0	6,275.83	89
J-142	6,096.34	0	6,282.03	80
J-48	6,097.08	0	6,282.20	80
J-47	6,098.61	6	6,282.19	79
J-81	6,077.40	2	6,275.88	86
J-30	6,103.54	0	6,282.07	77
J-31	6,104.00	0	6,282.07	77
J-112	6,103.95	13	6,282.00	77
J-141	6,104.54	14	6,282.04	77
J-120	6,104.78	21	6,282.00	77
J-122	6,105.44	0	6,282.00	76
J-82	6,081.96	0	6,275.88	84
J-107	6,108.30	0	6,282.04	75
J-108	6,109.48	9	6,282.04	75
J-123	6,112.34	11	6,282.00	73
J-140	6,115.62	0	6,282.03	72
J-139	6,116.15	0	6,282.02	72
J-111	6,118.74	0	6,282.00	71
J-110	6,120.25	10	6,282.00	70
J-137	6,121.89	13	6,282.00	69
J-138	6,122.24	0	6,282.00	69
J-124	6,124.72	0	6,282.00	68
J-129	6,126.00	0	6,282.00	67
J-125	6,126.00	8	6,282.00	67
J-128	6,126.46	5	6,282.00	67

	6,127.25	9	6,282.00	67
J-145	6,128.11	0	6,282.00	67
J-160	6,130.00	0	6,282.00	66
J-127	6,130.86	9	6,282.00	65
J-121	6,132.42	0	6,282.00	65
J-130	6,134.56	0	6,282.00	64
J-126	6,134.64	0	6,282.00	64
J-136	6,136.68	4	6,282.00	63
J-134	6,137.06	0	6,282.00	63
J-144	6,137.84	0	6,282.00	62
J-135	6,138.29	0	6,282.00	62
J-147	6,141.82	9	6,282.00	61
J-131	6,142.32	0	6,282.00	60
J-132	6,145.99	0	6,282.00	59
J-133	6,146.65	6	6,282.00	59
J-148	6,147.27	0	6,282.00	58
J-154	6,155.70	0	6,281.99	55
J-151	6,156.36	0	6,282.00	54
J-149	6,164.50	21	6,281.99	51
J-150	6,165.41	0	6,281.99	50
J-152	6,170.42	0	6,282.00	48
J-153	6,181.82	11	6,281.99	43

N:\Projects\Hess Ranch\docs\engineering\MASTER UTILITY REPORT\water\Water Model.wtg

Scenario: Max Day Scenario
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (ft)	Material
P-195	199	J-118	J-119	8.0	0	0.00	0.000	0	0.00	PVC
P-205	226	J-43	J-44	8.0	-291	1.86	0.002	0	0.42	PVC
P-208	759	J-68	J-43	8.0	780	4.98	0.012	0	8.76	PVC
P-209	362	J-46	J-34	8.0	836	5.34	0.013	0	4.74	PVC
P-210	5,273	R-6	J-94	8.0	-1,334	8.51	0.031	0	164.17	PVC
P-2	315	J-3	J-4	8.0	402	2.56	0.003	0	1.06	PVC
P-3	43	J-4	J-5	8.0	122	0.78	0.000	0	0.02	PVC
P-4	435	J-5	J-6	8.0	122	0.78	0.000	0	0.16	PVC
P-5	510	J-6	J-7	8.0	122	0.78	0.000	0	0.19	PVC
P-6	29	J-7	J-8	8.0	122	0.78	0.000	0	0.01	PVC
P-7	284	J-8	J-9	8.0	105	0.67	0.000	0	0.08	PVC
P-8	90	J-9	J-10	8.0	0	0.00	0.000	0	0.00	PVC
P-9	554	J-10	J-11	8.0	0	0.00	0.000	0	0.00	PVC
P-10	112	J-11	J-12	8.0	0	0.00	0.000	0	0.00	PVC
P-11	283	J-12	J-4	8.0	-270	1.72	0.002	0	0.46	PVC
P-12	275	J-12	J-13	8.0	99	0.63	0.000	0	0.07	PVC
P-13	44	J-13	J-14	8.0	-21	0.14	0.000	0	0.00	PVC
P-14	456	J-14	J-15	8.0	-21	0.14	0.000	0	0.01	PVC
P-15	282	J-15	J-9	8.0	-92	0.59	0.000	0	0.06	PVC
P-16	214	J-15	J-16	8.0	60	0.38	0.000	0	0.02	PVC
P-17	384	J-16	J-17	8.0	60	0.38	0.000	0	0.04	PVC
P-18	33	J-17	J-18	8.0	60	0.38	0.000	0	0.00	PVC
P-19	370	J-18	J-19	8.0	-19	0.12	0.000	0	0.00	PVC
P-20	150	J-19	J-13	8.0	-117	0.74	0.000	0	0.05	PVC
P-21	465	J-18	J-20	8.0	68	0.43	0.000	0	0.06	PVC
P-22	32	J-20	J-21	8.0	-16	0.10	0.000	0	0.00	PVC
P-23	762	J-21	J-22	8.0	-16	0.10	0.000	0	0.01	PVC
P-24	24	J-22	J-23	8.0	-87	0.56	0.000	0	0.00	PVC
P-25	254	J-23	J-19	8.0	-87	0.56	0.000	0	0.05	PVC
P-26	275	J-22	J-24	8.0	71	0.45	0.000	0	0.04	PVC
P-27	454	J-24	J-25	8.0	30	0.19	0.000	0	0.01	PVC
P-28	485	J-25	J-26	8.0	30	0.19	0.000	0	0.01	PVC
P-29	31	J-26	J-27	8.0	30	0.19	0.000	0	0.00	PVC
P-30	433	J-27	J-20	8.0	-69	0.44	0.000	0	0.06	PVC
P-31	214	J-27	J-28	8.0	84	0.53	0.000	0	0.04	PVC
P-32	54	J-28	J-29	8.0	10	0.06	0.000	0	0.00	PVC
P-34	210	J-30	J-24	8.0	-112	0.71	0.000	0	0.07	PVC
P-35	53	J-30	J-31	8.0	45	0.28	0.000	0	0.00	PVC
P-37	145	J-32	J-33	8.0	45	0.28	0.000	0	0.01	PVC
P-39	275	J-24	J-47	8.0	-87	0.56	0.000	0	0.05	PVC
P-40	31	J-47	J-48	8.0	-93	0.60	0.000	0	0.01	PVC
P-41	275	J-48	J-156	8.0	-93	0.60	0.000	0	0.06	PVC
P-42	242	J-156	J-49	8.0	-93	0.60	0.000	0	0.05	PVC
P-43	155	J-49	J-12	8.0	-93	0.60	0.000	0	0.04	PVC
P-44	94	J-33	J-46	8.0	836	5.34	0.013	0	1.23	PVC
P-46	218	J-34	J-155	8.0	291	1.86	0.002	0	0.41	PVC
P-47	426	J-155	J-45	8.0	291	1.86	0.002	0	0.79	PVC
P-48	156	J-45	J-44	8.0	291	1.86	0.002	0	0.29	PVC
P-51	81	J-68	J-3	8.0	-780	4.98	0.012	0	0.94	PVC
P-52	39	J-43	J-67	8.0	549	3.51	0.006	0	0.24	PVC
P-53	310	J-67	J-50	8.0	549	3.51	0.006	0	1.87	PVC
P-54	275	J-50	J-65	8.0	264	1.69	0.002	0	0.43	PVC
P-55	58	J-65	J-66	8.0	255	1.63	0.001	0	0.08	PVC
P-56	534	J-66	J-64	8.0	255	1.63	0.001	0	0.78	PVC
P-57	276	J-64	J-63	8.0	434	2.77	0.004	0	1.08	PVC
P-58	224	J-63	J-99	8.0	367	2.34	0.003	0	0.64	PVC
P-59	629	J-99	J-95	8.0	367	2.34	0.003	0	1.80	PVC
P-60	34	J-95	J-94	8.0	367	2.34	0.003	0	0.10	PVC
P-61	68	J-94	J-59	8.0	-966	6.17	0.017	0	1.17	PVC
P-62	303	J-59	J-60	8.0	-418	2.67	0.004	0	1.10	PVC
P-63	96	J-60	J-61	8.0	-268	1.71	0.002	0	0.15	PVC
P-65	212	J-60	J-98	8.0	-150	0.96	0.001	0	0.12	PVC
P-66	222	J-98	J-62	8.0	-150	0.96	0.001	0	0.12	PVC
P-67	294	J-62	J-63	8.0	-52	0.33	0.000	0	0.02	PVC
P-68	511	J-64	J-100	8.0	-193	1.23	0.001	0	0.44	PVC
P-69	34	J-100	J-52	8.0	-193	1.23	0.001	0	0.03	PVC
P-70	486	J-52	J-51	8.0	-266	1.70	0.002	0	0.77	PVC
P-71	33	J-51	J-50	8.0	-266	1.70	0.002	0	0.05	PVC
P-72	302	J-52	J-53	8.0	61	0.39	0.000	0	0.03	PVC
P-73	265	J-53	J-55	8.0	146	0.93	0.001	0	0.14	PVC
P-74	35	J-55	J-56	8.0	268	1.71	0.002	0	0.06	PVC
P-75	562	J-56	J-57	8.0	268	1.71	0.002	0	0.90	PVC
P-76	53	J-57	J-58	8.0	268	1.71	0.002	0	0.08	PVC
P-77	274	J-58	J-59	8.0	558	3.56	0.006	0	1.70	PVC
P-78	386	J-55	J-87	8.0	-133	0.85	0.000	0	0.17	PVC

P-79	33	J-87	J-86	8.0	-133	0.85	0.000	0	0.01	PVC
P-80	295	J-86	J-92	8.0	221	1.41	0.001	0	0.33	PVC
P-81	93	J-92	J-93	8.0	300	1.92	0.002	0	0.18	PVC
P-82	361	J-93	J-58	8.0	300	1.92	0.002	0	0.71	PVC
P-83	300	J-86	J-102	8.0	-460	2.93	0.004	0	1.30	PVC
P-84	32	J-102	J-37	8.0	-460	2.93	0.004	0	0.14	PVC
P-85	118	J-37	J-38	8.0	23	0.15	0.000	0	0.00	PVC
P-86	197	J-38	J-88	8.0	10	0.07	0.000	0	0.00	PVC
P-87	211	J-88	J-39	8.0	10	0.07	0.000	0	0.00	PVC
P-88	271	J-39	J-38	8.0	-13	0.08	0.000	0	0.00	PVC
P-89	120	J-39	J-40	8.0	23	0.15	0.000	0	0.00	PVC
P-90	53	J-40	J-54	8.0	465	2.97	0.004	0	0.23	PVC
P-91	282	J-54	J-53	8.0	465	2.97	0.004	0	1.25	PVC
P-92	142	J-40	J-41	8.0	-448	2.86	0.004	0	0.59	PVC
P-93	226	J-41	J-101	8.0	-203	1.29	0.001	0	0.21	PVC
P-94	223	J-101	J-42	8.0	-203	1.29	0.001	0	0.21	PVC
P-95	315	J-42	J-41	8.0	246	1.57	0.001	0	0.43	PVC
P-96	111	J-42	J-43	8.0	-448	2.86	0.004	0	0.46	PVC
P-97	79	J-61	J-157	8.0	-268	1.71	0.002	0	0.13	PVC
P-98	150	J-157	J-62	8.0	106	0.68	0.000	0	0.04	PVC
P-99	456	J-157	J-158	8.0	-380	2.43	0.003	0	1.39	PVC
P-100	35	J-158	J-53	8.0	-380	2.43	0.003	0	0.11	PVC
P-101	590	J-37	J-36	8.0	-491	3.14	0.005	0	2.89	PVC
P-102	48	J-36	J-83	8.0	0	0.00	0.000	0	0.00	PVC
P-105	417	J-86	J-89	8.0	89	0.57	0.000	0	0.09	PVC
P-106	133	J-89	J-90	8.0	89	0.57	0.000	0	0.03	PVC
P-107	680	J-90	J-91	8.0	89	0.57	0.000	0	0.14	PVC
P-108	366	J-91	J-92	8.0	89	0.57	0.000	0	0.08	PVC
P-109	212	J-36	J-74	8.0	-137	0.88	0.000	0	0.10	PVC
P-110	366	J-74	J-75	8.0	0	0.00	0.000	0	0.00	PVC
P-111	51	J-75	J-76	8.0	0	0.00	0.000	0	0.00	PVC
P-112	58	J-74	J-73	8.0	-137	0.88	0.000	0	0.03	PVC
P-113	158	J-73	J-72	8.0	-137	0.88	0.000	0	0.07	PVC
P-114	278	J-72	J-77	8.0	-61	0.39	0.000	0	0.03	PVC
P-115	173	J-77	J-78	8.0	-61	0.39	0.000	0	0.02	PVC
P-116	48	J-78	J-79	8.0	0	0.00	0.000	0	0.00	PVC
P-117	177	J-79	J-80	8.0	0	0.00	0.000	0	0.00	PVC
P-118	305	J-78	J-81	8.0	-76	0.48	0.000	0	0.05	PVC
P-119	110	J-81	J-82	8.0	0	0.00	0.000	0	0.00	PVC
P-120	278	J-81	J-69	8.0	-78	0.50	0.000	0	0.05	PVC
P-121	33	J-69	J-70	8.0	89	0.57	0.000	0	0.01	PVC
P-122	434	J-70	J-71	8.0	89	0.57	0.000	0	0.09	PVC
P-123	202	J-71	J-72	8.0	89	0.57	0.000	0	0.04	PVC
P-124	213	J-69	J-34	8.0	-176	1.13	0.001	0	0.16	PVC
P-125	47	J-34	J-35	8.0	354	2.26	0.003	0	0.13	PVC
P-127	214	J-30	J-108	8.0	77	0.49	0.000	0	0.03	PVC
P-128	67	J-108	J-107	8.0	-1	0.00	0.000	0	0.00	PVC
P-129	444	J-107	J-109	8.0	-1	0.00	0.000	0	0.00	PVC
P-130	469	J-109	J-106	8.0	-11	0.07	0.000	0	0.00	PVC
P-131	31	J-106	J-105	8.0	-11	0.07	0.000	0	0.00	PVC
P-132	221	J-105	J-28	8.0	-74	0.47	0.000	0	0.03	PVC
P-136	123	J-104	J-103	8.0	0	0.00	0.000	0	0.00	PVC
P-137	440	J-105	J-116	8.0	52	0.33	0.000	0	0.03	PVC
P-138	41	J-116	J-115	8.0	52	0.33	0.000	0	0.00	PVC
P-139	479	J-115	J-114	8.0	20	0.13	0.000	0	0.01	PVC
P-140	32	J-114	J-113	8.0	-6	0.04	0.000	0	0.00	PVC
P-141	477	J-113	J-112	8.0	-6	0.04	0.000	0	0.00	PVC
P-142	438	J-112	J-111	8.0	-18	0.12	0.000	0	0.00	PVC
P-143	63	J-111	J-110	8.0	-18	0.12	0.000	0	0.00	PVC
P-144	278	J-110	J-108	8.0	-68	0.44	0.000	0	0.04	PVC
P-145	481	J-110	J-129	8.0	14	0.09	0.000	0	0.00	PVC
P-146	44	J-129	J-128	8.0	14	0.09	0.000	0	0.00	PVC
P-147	276	J-128	J-127	8.0	9	0.06	0.000	0	0.00	PVC
P-148	305	J-127	J-126	8.0	10	0.07	0.000	0	0.00	PVC
P-149	221	J-126	J-125	8.0	4	0.02	0.000	0	0.00	PVC
P-150	63	J-125	J-124	8.0	12	0.08	0.000	0	0.00	PVC
P-151	438	J-124	J-123	8.0	12	0.08	0.000	0	0.00	PVC
P-152	479	J-123	J-122	8.0	1	0.01	0.000	0	0.00	PVC
P-153	30	J-122	J-120	8.0	1	0.01	0.000	0	0.00	PVC
P-154	275	J-120	J-114	8.0	-15	0.09	0.000	0	0.00	PVC
P-155	243	J-115	J-117	8.0	23	0.15	0.000	0	0.00	PVC
P-156	33	J-117	J-118	8.0	23	0.15	0.000	0	0.00	PVC
P-157	656	J-118	J-120	8.0	12	0.08	0.000	0	0.00	PVC
P-158	381	J-120	J-121	8.0	7	0.05	0.000	0	0.00	PVC
P-159	526	J-121	J-154	8.0	7	0.05	0.000	0	0.00	PVC
P-160	708	J-154	J-153	8.0	7	0.05	0.000	0	0.00	PVC
P-161	300	J-153	J-149	8.0	-4	0.03	0.000	0	0.00	PVC
P-162	34	J-149	J-150	8.0	-11	0.07	0.000	0	0.00	PVC
P-163	445	J-150	J-152	8.0	-11	0.07	0.000	0	0.00	PVC
P-164	514	J-152	J-135	8.0	-11	0.07	0.000	0	0.00	PVC
P-165	65	J-135	J-134	8.0	-11	0.07	0.000	0	0.00	PVC
P-166	312	J-134	J-125	8.0	-9	0.06	0.000	0	0.00	PVC
P-167	274	J-125	J-110	8.0	-26	0.16	0.000	0	0.01	PVC
P-168	50	J-126	J-130	8.0	7	0.04	0.000	0	0.00	PVC
P-169	375	J-130	J-131	8.0	7	0.04	0.000	0	0.00	PVC
P-170	147	J-131	J-132	8.0	7	0.04	0.000	0	0.00	PVC
P-171	34	J-132	J-133	8.0	7	0.04	0.000	0	0.00	PVC

	261	J-133	J-134	8.0	2	0.01	0.000	0	0.00	PVC
P-173	191	J-133	J-136	8.0	-11	0.07	0.000	0	0.00	PVC
P-174	270	J-136	J-137	8.0	-22	0.14	0.000	0	0.00	PVC
P-175	39	J-137	J-138	8.0	11	0.07	0.000	0	0.00	PVC
P-176	613	J-138	J-127	8.0	11	0.07	0.000	0	0.00	PVC
P-177	191	J-137	J-139	8.0	-60	0.38	0.000	0	0.02	PVC
P-178	96	J-139	J-140	8.0	-60	0.38	0.000	0	0.01	PVC
P-182	32	J-142	J-143	8.0	0	0.00	0.000	0	0.00	PVC
P-183	283	J-137	J-160	8.0	15	0.09	0.000	0	0.00	PVC
P-184	424	J-160	J-146	8.0	15	0.09	0.000	0	0.00	PVC
P-185	317	J-146	J-147	8.0	13	0.08	0.000	0	0.00	PVC
P-186	76	J-147	J-148	8.0	14	0.09	0.000	0	0.00	PVC
P-187	248	J-148	J-149	8.0	14	0.09	0.000	0	0.00	PVC
P-188	48	J-146	J-145	8.0	-7	0.05	0.000	0	0.00	PVC
P-189	487	J-145	J-144	8.0	-7	0.05	0.000	0	0.00	PVC
P-190	53	J-144	J-136	8.0	-7	0.05	0.000	0	0.00	PVC
P-191	260	J-133	J-151	8.0	10	0.06	0.000	0	0.00	PVC
P-192	475	J-151	J-147	8.0	10	0.06	0.000	0	0.00	PVC
P-33	943	J-29	J-30	12.0	10	0.03	0.000	0	0.00	PVC
P-36	675	J-31	J-32	12.0	45	0.13	0.000	0	0.01	PVC
P-38	908	J-33	J-3	12.0	-879	2.49	0.002	0	1.81	PVC
P-103	1,097	J-83	J-84	12.0	0	0.00	0.000	0	0.00	PVC
P-104	152	J-84	J-85	12.0	0	0.00	0.000	0	0.00	PVC
P-126	986	J-35	J-36	12.0	354	1.00	0.000	0	0.37	PVC
P-135	588	J-28	J-104	12.0	0	0.00	0.000	0	0.00	PVC
P-179	590	J-140	J-141	12.0	-60	0.17	0.000	0	0.01	PVC
P-180	839	J-141	J-33	12.0	-74	0.21	0.000	0	0.02	PVC
P-181	788	J-140	J-142	12.0	0	0.00	0.000	0	0.00	PVC
P-194	1,763	J-161	J-3	12.0	2,061	5.85	0.010	0	17.05	PVC
P-193	5,907	R-4	J-161	16.0	2,061	3.29	0.002	0	14.08	PVC

N:\Projects\Hess Ranch\docs\engineering\MASTER UTILITY REPORT\water\Water Model.wtg

Scenario: Peak Hour Scenario
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-161	6,034.00	0	6,296.81	114
J-59	5,984.64	16	6,238.55	110
J-58	5,986.75	16	6,239.99	110
J-94	5,985.00	0	6,237.59	109
J-57	5,988.15	0	6,240.06	109
J-95	5,986.00	0	6,237.67	109
J-84	5,996.00	0	6,246.11	108
J-85	5,996.00	0	6,246.11	108
J-99	5,993.34	0	6,239.14	106
J-93	5,996.35	0	6,240.61	106
J-60	5,997.03	0	6,239.45	105
J-91	5,998.92	0	6,240.84	105
J-92	6,000.92	15	6,240.77	104
J-8	6,034.74	28	6,272.39	103
J-61	6,001.98	0	6,239.58	103
J-98	6,002.04	0	6,239.54	103
J-7	6,035.27	0	6,272.40	103
J-63	6,002.69	24	6,239.66	103
J-157	6,005.16	10	6,239.68	101
J-56	6,007.08	0	6,240.84	101
J-62	6,006.49	13	6,239.64	101
J-55	6,008.15	16	6,240.89	101
J-90	6,009.71	0	6,240.97	100
J-104	6,042.48	0	6,271.91	99
J-103	6,042.48	0	6,271.91	99
J-15	6,043.41	18	6,272.17	99
J-89	6,012.26	0	6,240.99	99
J-16	6,044.00	0	6,272.15	99
J-9	6,046.75	20	6,272.26	98
J-158	6,015.52	0	6,240.90	98
J-87	6,015.79	0	6,241.06	97
J-53	6,015.85	0	6,241.00	97
J-86	6,015.94	28	6,241.07	97
J-64	6,016.06	23	6,240.56	97
J-10	6,048.75	0	6,272.26	97
J-17	6,051.26	0	6,272.09	96
J-18	6,051.58	19	6,272.09	95
J-21	6,052.00	0	6,272.02	95
J-20	6,052.00	24	6,272.02	95
J-14	6,054.29	0	6,272.17	94
J-54	6,025.95	0	6,242.20	94
J-102	6,026.32	0	6,242.35	93
J-13	6,056.60	6	6,272.17	93
J-37	6,026.97	14	6,242.49	93
J-40	6,028.00	10	6,242.42	93
J-83	6,032.00	0	6,246.11	93
J-38	6,028.37	0	6,242.46	93
J-27	6,058.00	24	6,271.95	93
J-6	6,058.84	0	6,272.72	93
J-36	6,032.77	0	6,246.11	92
J-39	6,029.13	0	6,242.45	92
J-26	6,058.87	0	6,271.95	92
J-41	6,029.81	0	6,242.86	92
J-88	6,030.00	0	6,242.46	92
J-52	6,029.24	20	6,241.01	92
J-100	6,029.43	0	6,240.98	92
J-28	6,061.16	0	6,271.91	91
J-66	6,031.24	0	6,241.22	91
J-65	6,032.00	14	6,241.29	91
J-74	6,037.43	0	6,246.23	90
J-29	6,063.61	0	6,271.92	90
J-11	6,064.45	0	6,272.26	90

J-73	6,038.69	0	6,246.26	90
J-19	6,064.70	16	6,272.10	90
J-101	6,036.38	0	6,243.01	89
J-75	6,041.76	0	6,246.23	88
J-76	6,042.02	0	6,246.23	88
J-12	6,068.24	123	6,272.26	88
J-105	6,068.04	18	6,271.84	88
J-106	6,068.98	0	6,271.84	88
J-72	6,045.00	20	6,246.34	87
J-50	6,041.33	30	6,241.66	87
J-51	6,041.37	0	6,241.62	87
J-49	6,072.37	0	6,272.22	86
J-42	6,043.59	0	6,243.17	86
J-45	6,046.00	0	6,245.53	86
J-44	6,048.00	0	6,245.24	85
J-119	6,076.00	0	6,271.75	85
J-116	6,076.09	0	6,271.77	85
J-115	6,076.68	14	6,271.76	84
J-5	6,078.78	0	6,272.98	84
J-25	6,077.82	0	6,271.97	84
J-23	6,078.37	0	6,272.03	84
J-67	6,049.76	0	6,243.30	84
J-71	6,052.87	0	6,246.40	84
J-43	6,050.15	119	6,243.51	84
J-4	6,080.35	16	6,273.01	83
J-22	6,079.62	0	6,272.03	83
J-118	6,079.69	18	6,271.75	83
J-117	6,079.70	0	6,271.76	83
J-77	6,055.39	0	6,246.38	83
J-46	6,079.63	0	6,270.42	83
J-33	6,081.77	23	6,271.93	82
J-32	6,083.10	0	6,271.92	82
J-155	6,058.11	0	6,246.33	81
J-156	6,084.41	0	6,272.15	81
J-68	6,086.62	0	6,273.97	81
J-3	6,088.69	0	6,274.77	81
J-114	6,086.17	18	6,271.75	80
J-113	6,087.01	0	6,271.75	80
J-78	6,064.02	24	6,246.40	79
J-35	6,064.25	0	6,246.58	79
J-79	6,064.93	0	6,246.40	79
J-34	6,066.23	23	6,246.75	78
J-24	6,094.39	26	6,271.99	77
J-70	6,069.43	0	6,246.52	77
J-109	6,095.58	16	6,271.84	76
J-69	6,070.44	15	6,246.53	76
J-143	6,096.00	0	6,271.85	76
J-80	6,070.57	0	6,246.40	76
J-142	6,096.34	0	6,271.85	76
J-48	6,097.08	0	6,272.06	76
J-47	6,098.61	10	6,272.05	75
J-81	6,077.40	4	6,246.46	73
J-30	6,103.54	0	6,271.92	73
J-31	6,104.00	0	6,271.92	73
J-112	6,103.95	20	6,271.75	73
J-141	6,104.54	23	6,271.88	72
J-120	6,104.78	34	6,271.75	72
J-122	6,105.44	0	6,271.75	72
J-82	6,081.96	0	6,246.46	71
J-107	6,108.30	0	6,271.84	71
J-108	6,109.48	15	6,271.84	70
J-123	6,112.34	18	6,271.75	69
J-140	6,115.62	0	6,271.85	68
J-139	6,116.15	0	6,271.83	67
J-111	6,118.74	0	6,271.77	66
J-110	6,120.25	16	6,271.77	66
J-137	6,121.89	20	6,271.77	65
J-138	6,122.24	0	6,271.77	65
J-124	6,124.72	0	6,271.75	64
J-129	6,126.00	0	6,271.76	63
J-125	6,126.00	13	6,271.76	63
J-128	6,126.46	9	6,271.76	63

	6,127.25	14	6,271.75	63
J-145	6,128.11	0	6,271.76	62
J-160	6,130.00	0	6,271.76	61
J-127	6,130.86	15	6,271.76	61
J-121	6,132.42	0	6,271.75	60
J-130	6,134.56	0	6,271.76	59
J-126	6,134.64	0	6,271.76	59
J-136	6,136.68	6	6,271.76	58
J-134	6,137.06	0	6,271.75	58
J-144	6,137.84	0	6,271.76	58
J-135	6,138.29	0	6,271.75	58
J-147	6,141.82	14	6,271.75	56
J-131	6,142.32	0	6,271.75	56
J-132	6,145.99	0	6,271.75	54
J-133	6,146.65	10	6,271.75	54
J-148	6,147.27	0	6,271.75	54
J-154	6,155.70	0	6,271.74	50
J-151	6,156.36	0	6,271.75	50
J-149	6,164.50	34	6,271.74	46
J-150	6,165.41	0	6,271.74	46
J-152	6,170.42	0	6,271.75	44
J-153	6,181.82	18	6,271.74	39

N:\Projects\Hess Ranch\docs\engineering\MASTER UTILITY REPORT\water\Water Model.wtg

Scenario: Peak Hour Scenario
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Start Node	Stop Node	Diameter (in)	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (ft)	Material
P-195	199	J-118	J-119	8.0	0	0.00	0.000	0	0.00	PVC
P-205	226	J-43	J-44	8.0	-293	3.33	0.008	0	1.73	PVC
P-208	759	J-68	J-43	8.0	718	8.14	0.040	0	30.46	PVC
P-209	362	J-46	J-34	8.0	934	10.60	0.065	0	23.67	PVC
P-210	5,273	R-6	J-94	8.0	-1,198	7.65	0.026	0	134.59	PVC
P-2	315	J-3	J-4	8.0	528	3.37	0.006	0	1.76	PVC
P-3	43	J-4	J-5	8.0	160	1.02	0.001	0	0.03	PVC
P-4	435	J-5	J-6	8.0	160	1.02	0.001	0	0.27	PVC
P-5	510	J-6	J-7	8.0	160	1.02	0.001	0	0.31	PVC
P-6	29	J-7	J-8	8.0	160	1.02	0.001	0	0.02	PVC
P-7	284	J-8	J-9	8.0	132	0.84	0.000	0	0.12	PVC
P-8	90	J-9	J-10	8.0	0	0.00	0.000	0	0.00	PVC
P-9	554	J-10	J-11	8.0	0	0.00	0.000	0	0.00	PVC
P-10	112	J-11	J-12	8.0	0	0.00	0.000	0	0.00	PVC
P-11	283	J-12	J-4	8.0	-352	2.25	0.003	0	0.75	PVC
P-12	275	J-12	J-13	8.0	120	0.77	0.000	0	0.10	PVC
P-13	44	J-13	J-14	8.0	-24	0.15	0.000	0	0.00	PVC
P-14	456	J-14	J-15	8.0	-24	0.15	0.000	0	0.01	PVC
P-15	282	J-15	J-9	8.0	-112	0.72	0.000	0	0.09	PVC
P-16	214	J-15	J-16	8.0	71	0.45	0.000	0	0.03	PVC
P-17	384	J-16	J-17	8.0	71	0.45	0.000	0	0.05	PVC
P-18	33	J-17	J-18	8.0	71	0.45	0.000	0	0.00	PVC
P-19	370	J-18	J-19	8.0	-24	0.16	0.000	0	0.01	PVC
P-20	150	J-19	J-13	8.0	-137	0.88	0.000	0	0.07	PVC
P-21	465	J-18	J-20	8.0	76	0.49	0.000	0	0.07	PVC
P-22	32	J-20	J-21	8.0	-21	0.14	0.000	0	0.00	PVC
P-23	762	J-21	J-22	8.0	-21	0.14	0.000	0	0.01	PVC
P-24	24	J-22	J-23	8.0	-97	0.62	0.000	0	0.01	PVC
P-25	254	J-23	J-19	8.0	-97	0.62	0.000	0	0.06	PVC
P-26	275	J-22	J-24	8.0	75	0.48	0.000	0	0.04	PVC
P-27	454	J-24	J-25	8.0	34	0.21	0.000	0	0.02	PVC
P-28	485	J-25	J-26	8.0	34	0.21	0.000	0	0.02	PVC
P-29	31	J-26	J-27	8.0	34	0.21	0.000	0	0.00	PVC
P-30	433	J-27	J-20	8.0	-74	0.47	0.000	0	0.06	PVC
P-31	214	J-27	J-28	8.0	83	0.53	0.000	0	0.04	PVC
P-32	54	J-28	J-29	8.0	-28	0.18	0.000	0	0.00	PVC
P-34	210	J-30	J-24	8.0	-113	0.72	0.000	0	0.07	PVC
P-35	53	J-30	J-31	8.0	-34	0.22	0.000	0	0.00	PVC
P-37	145	J-32	J-33	8.0	-34	0.22	0.000	0	0.00	PVC
P-39	275	J-24	J-47	8.0	-98	0.63	0.000	0	0.07	PVC
P-40	31	J-47	J-48	8.0	-108	0.69	0.000	0	0.01	PVC
P-41	275	J-48	J-156	8.0	-108	0.69	0.000	0	0.08	PVC
P-42	242	J-156	J-49	8.0	-108	0.69	0.000	0	0.07	PVC
P-43	155	J-49	J-12	8.0	-108	0.69	0.000	0	0.05	PVC
P-44	94	J-33	J-46	8.0	934	5.96	0.016	0	1.51	PVC
P-46	218	J-34	J-155	8.0	293	1.87	0.002	0	0.41	PVC
P-47	426	J-155	J-45	8.0	293	1.87	0.002	0	0.80	PVC
P-48	156	J-45	J-44	8.0	293	1.87	0.002	0	0.29	PVC
P-51	81	J-68	J-3	8.0	-718	4.58	0.010	0	0.81	PVC
P-52	39	J-43	J-67	8.0	512	3.27	0.005	0	0.21	PVC
P-53	310	J-67	J-50	8.0	512	3.27	0.005	0	1.64	PVC
P-54	275	J-50	J-65	8.0	246	1.57	0.001	0	0.37	PVC
P-55	58	J-65	J-66	8.0	232	1.48	0.001	0	0.07	PVC
P-56	534	J-66	J-64	8.0	232	1.48	0.001	0	0.65	PVC
P-57	276	J-64	J-63	8.0	396	2.53	0.003	0	0.91	PVC
P-58	224	J-63	J-99	8.0	329	2.10	0.002	0	0.52	PVC
P-59	629	J-99	J-95	8.0	329	2.10	0.002	0	1.47	PVC
P-60	34	J-95	J-94	8.0	329	2.10	0.002	0	0.08	PVC
P-61	68	J-94	J-59	8.0	-869	5.55	0.014	0	0.96	PVC
P-62	303	J-59	J-60	8.0	-375	2.39	0.003	0	0.90	PVC
P-63	96	J-60	J-61	8.0	-242	1.54	0.001	0	0.13	PVC
P-65	212	J-60	J-98	8.0	-133	0.85	0.000	0	0.09	PVC
P-66	222	J-98	J-62	8.0	-133	0.85	0.000	0	0.10	PVC
P-67	294	J-62	J-63	8.0	-43	0.27	0.000	0	0.02	PVC
P-68	511	J-64	J-100	8.0	-186	1.19	0.001	0	0.42	PVC
P-69	34	J-100	J-52	8.0	-186	1.19	0.001	0	0.03	PVC
P-70	486	J-52	J-51	8.0	-236	1.51	0.001	0	0.61	PVC
P-71	33	J-51	J-50	8.0	-236	1.51	0.001	0	0.04	PVC
P-72	302	J-52	J-53	8.0	30	0.19	0.000	0	0.01	PVC
P-73	265	J-53	J-55	8.0	130	0.83	0.000	0	0.11	PVC
P-74	35	J-55	J-56	8.0	248	1.58	0.001	0	0.05	PVC
P-75	562	J-56	J-57	8.0	248	1.58	0.001	0	0.77	PVC
P-76	53	J-57	J-58	8.0	248	1.58	0.001	0	0.07	PVC
P-77	274	J-58	J-59	8.0	510	3.26	0.005	0	1.44	PVC
P-78	386	J-55	J-87	8.0	-134	0.85	0.000	0	0.17	PVC

P-79	33	J-87	J-86	8.0	-134	0.85	0.000	0	0.01	PVC
P-80	295	J-86	J-92	8.0	210	1.34	0.001	0	0.30	PVC
P-81	93	J-92	J-93	8.0	279	1.78	0.002	0	0.16	PVC
P-82	361	J-93	J-58	8.0	279	1.78	0.002	0	0.62	PVC
P-83	300	J-86	J-102	8.0	-456	2.91	0.004	0	1.28	PVC
P-84	32	J-102	J-37	8.0	-456	2.91	0.004	0	0.14	PVC
P-85	118	J-37	J-38	8.0	86	0.55	0.000	0	0.02	PVC
P-86	197	J-38	J-88	8.0	38	0.24	0.000	0	0.01	PVC
P-87	211	J-88	J-39	8.0	38	0.24	0.000	0	0.01	PVC
P-88	271	J-39	J-38	8.0	-48	0.30	0.000	0	0.02	PVC
P-89	120	J-39	J-40	8.0	86	0.55	0.000	0	0.02	PVC
P-90	53	J-40	J-54	8.0	456	2.91	0.004	0	0.22	PVC
P-91	282	J-54	J-53	8.0	456	2.91	0.004	0	1.20	PVC
P-92	142	J-40	J-41	8.0	-380	2.42	0.003	0	0.43	PVC
P-93	226	J-41	J-101	8.0	-172	1.10	0.001	0	0.16	PVC
P-94	223	J-101	J-42	8.0	-172	1.10	0.001	0	0.16	PVC
P-95	315	J-42	J-41	8.0	208	1.33	0.001	0	0.31	PVC
P-96	111	J-42	J-43	8.0	-380	2.42	0.003	0	0.34	PVC
P-97	79	J-61	J-157	8.0	-242	1.54	0.001	0	0.10	PVC
P-98	150	J-157	J-62	8.0	103	0.66	0.000	0	0.04	PVC
P-99	456	J-157	J-158	8.0	-355	2.27	0.003	0	1.22	PVC
P-100	35	J-158	J-53	8.0	-355	2.27	0.003	0	0.09	PVC
P-101	590	J-37	J-36	8.0	-556	3.55	0.006	0	3.63	PVC
P-102	48	J-36	J-83	8.0	0	0.00	0.000	0	0.00	PVC
P-105	417	J-86	J-89	8.0	84	0.54	0.000	0	0.08	PVC
P-106	133	J-89	J-90	8.0	84	0.54	0.000	0	0.02	PVC
P-107	680	J-90	J-91	8.0	84	0.54	0.000	0	0.13	PVC
P-108	366	J-91	J-92	8.0	84	0.54	0.000	0	0.07	PVC
P-109	212	J-36	J-74	8.0	-149	0.95	0.001	0	0.11	PVC
P-110	366	J-74	J-75	8.0	0	0.00	0.000	0	0.00	PVC
P-111	51	J-75	J-76	8.0	0	0.00	0.000	0	0.00	PVC
P-112	58	J-74	J-73	8.0	-149	0.95	0.001	0	0.03	PVC
P-113	158	J-73	J-72	8.0	-149	0.95	0.001	0	0.08	PVC
P-114	278	J-72	J-77	8.0	-66	0.42	0.000	0	0.03	PVC
P-115	173	J-77	J-78	8.0	-66	0.42	0.000	0	0.02	PVC
P-116	48	J-78	J-79	8.0	0	0.00	0.000	0	0.00	PVC
P-117	177	J-79	J-80	8.0	0	0.00	0.000	0	0.00	PVC
P-118	305	J-78	J-81	8.0	-90	0.58	0.000	0	0.06	PVC
P-119	110	J-81	J-82	8.0	0	0.00	0.000	0	0.00	PVC
P-120	278	J-81	J-69	8.0	-94	0.60	0.000	0	0.06	PVC
P-121	33	J-69	J-70	8.0	103	0.66	0.000	0	0.01	PVC
P-122	434	J-70	J-71	8.0	103	0.66	0.000	0	0.12	PVC
P-123	202	J-71	J-72	8.0	103	0.66	0.000	0	0.06	PVC
P-124	213	J-69	J-34	8.0	-212	1.36	0.001	0	0.22	PVC
P-125	47	J-34	J-35	8.0	406	2.59	0.003	0	0.16	PVC
P-127	214	J-30	J-108	8.0	120	0.76	0.000	0	0.08	PVC
P-128	67	J-108	J-107	8.0	2	0.01	0.000	0	0.00	PVC
P-129	444	J-107	J-109	8.0	2	0.01	0.000	0	0.00	PVC
P-130	469	J-109	J-106	8.0	-14	0.09	0.000	0	0.00	PVC
P-131	31	J-106	J-105	8.0	-14	0.09	0.000	0	0.00	PVC
P-132	221	J-105	J-28	8.0	-111	0.71	0.000	0	0.07	PVC
P-136	123	J-104	J-103	8.0	0	0.00	0.000	0	0.00	PVC
P-137	440	J-105	J-116	8.0	79	0.51	0.000	0	0.07	PVC
P-138	41	J-116	J-115	8.0	79	0.51	0.000	0	0.01	PVC
P-139	479	J-115	J-114	8.0	30	0.19	0.000	0	0.01	PVC
P-140	32	J-114	J-113	8.0	-9	0.06	0.000	0	0.00	PVC
P-141	477	J-113	J-112	8.0	-9	0.06	0.000	0	0.00	PVC
P-142	438	J-112	J-111	8.0	-30	0.19	0.000	0	0.01	PVC
P-143	63	J-111	J-110	8.0	-30	0.19	0.000	0	0.00	PVC
P-144	278	J-110	J-108	8.0	-102	0.65	0.000	0	0.07	PVC
P-145	481	J-110	J-129	8.0	19	0.12	0.000	0	0.01	PVC
P-146	44	J-129	J-128	8.0	19	0.12	0.000	0	0.00	PVC
P-147	276	J-128	J-127	8.0	10	0.07	0.000	0	0.00	PVC
P-148	305	J-127	J-126	8.0	18	0.11	0.000	0	0.00	PVC
P-149	221	J-126	J-125	8.0	9	0.06	0.000	0	0.00	PVC
P-150	63	J-125	J-124	8.0	22	0.14	0.000	0	0.00	PVC
P-151	438	J-124	J-123	8.0	22	0.14	0.000	0	0.01	PVC
P-152	479	J-123	J-122	8.0	4	0.03	0.000	0	0.00	PVC
P-153	30	J-122	J-120	8.0	4	0.03	0.000	0	0.00	PVC
P-154	275	J-120	J-114	8.0	-22	0.14	0.000	0	0.00	PVC
P-155	243	J-115	J-117	8.0	35	0.23	0.000	0	0.01	PVC
P-156	33	J-117	J-118	8.0	35	0.23	0.000	0	0.00	PVC
P-157	656	J-118	J-120	8.0	18	0.11	0.000	0	0.01	PVC
P-158	381	J-120	J-121	8.0	9	0.06	0.000	0	0.00	PVC
P-159	526	J-121	J-154	8.0	9	0.06	0.000	0	0.00	PVC
P-160	708	J-154	J-153	8.0	9	0.06	0.000	0	0.00	PVC
P-161	300	J-153	J-149	8.0	-9	0.05	0.000	0	0.00	PVC
P-162	34	J-149	J-150	8.0	-18	0.11	0.000	0	0.00	PVC
P-163	445	J-150	J-152	8.0	-18	0.11	0.000	0	0.00	PVC
P-164	514	J-152	J-135	8.0	-18	0.11	0.000	0	0.01	PVC
P-165	65	J-135	J-134	8.0	-18	0.11	0.000	0	0.00	PVC
P-166	312	J-134	J-125	8.0	-12	0.07	0.000	0	0.00	PVC
P-167	274	J-125	J-110	8.0	-37	0.24	0.000	0	0.01	PVC
P-168	50	J-126	J-130	8.0	9	0.06	0.000	0	0.00	PVC
P-169	375	J-130	J-131	8.0	9	0.06	0.000	0	0.00	PVC
P-170	147	J-131	J-132	8.0	9	0.06	0.000	0	0.00	PVC
P-171	34	J-132	J-133	8.0	9	0.06	0.000	0	0.00	PVC

	261	J-133	J-134	8.0	6	0.04	0.000	0	0.00	PVC
P-173	191	J-133	J-136	8.0	-22	0.14	0.000	0	0.00	PVC
P-174	270	J-136	J-137	8.0	-39	0.25	0.000	0	0.01	PVC
P-175	39	J-137	J-138	8.0	22	0.14	0.000	0	0.00	PVC
P-176	613	J-138	J-127	8.0	22	0.14	0.000	0	0.01	PVC
P-177	191	J-137	J-139	8.0	-108	0.69	0.000	0	0.06	PVC
P-178	96	J-139	J-140	8.0	-108	0.69	0.000	0	0.03	PVC
P-182	32	J-142	J-143	8.0	0	0.00	0.000	0	0.00	PVC
P-183	283	J-137	J-160	8.0	26	0.17	0.000	0	0.01	PVC
P-184	424	J-160	J-146	8.0	26	0.17	0.000	0	0.01	PVC
P-185	317	J-146	J-147	8.0	23	0.15	0.000	0	0.01	PVC
P-186	76	J-147	J-148	8.0	25	0.16	0.000	0	0.00	PVC
P-187	248	J-148	J-149	8.0	25	0.16	0.000	0	0.00	PVC
P-188	48	J-146	J-145	8.0	-11	0.07	0.000	0	0.00	PVC
P-189	487	J-145	J-144	8.0	-11	0.07	0.000	0	0.00	PVC
P-190	53	J-144	J-136	8.0	-11	0.07	0.000	0	0.00	PVC
P-191	260	J-133	J-151	8.0	15	0.10	0.000	0	0.00	PVC
P-192	475	J-151	J-147	8.0	15	0.10	0.000	0	0.00	PVC
P-33	943	J-29	J-30	12.0	-28	0.08	0.000	0	0.00	PVC
P-36	675	J-31	J-32	12.0	-34	0.10	0.000	0	0.00	PVC
P-38	908	J-33	J-3	12.0	-1,121	3.18	0.003	0	2.85	PVC
P-103	1,097	J-83	J-84	12.0	0	0.00	0.000	0	0.00	PVC
P-104	152	J-84	J-85	12.0	0	0.00	0.000	0	0.00	PVC
P-126	986	J-35	J-36	12.0	406	1.15	0.000	0	0.47	PVC
P-135	588	J-28	J-104	12.0	0	0.00	0.000	0	0.00	PVC
P-179	590	J-140	J-141	12.0	-108	0.31	0.000	0	0.02	PVC
P-180	839	J-141	J-33	12.0	-131	0.37	0.000	0	0.05	PVC
P-181	788	J-140	J-142	12.0	0	0.00	0.000	0	0.00	PVC
P-194	1,763	J-161	J-3	12.0	2,367	6.72	0.013	0	22.04	PVC
P-193	5,907	R-4	J-161	16.0	2,367	3.78	0.003	0	18.19	PVC

N:\Projects\Hess Ranch\docs\engineering\MASTER UTILITY REPORT\water\Water Model.wtg