



June 8, 2022

Attn: City of Aurora, Colorado

15151 E Alameda Pkwy #2300

Aurora, CO 80012

RE: Windler Final Utility Letter – Neighborhood E (PA-7, FRLO Area 1), Neighborhood F (PA-8, FRLO Area 1)

Dear Sir or Madam:

This letter is to serve as a statement of the compliance of Neighborhood E (PA-7) and Neighborhood F (PA-8) with the Windler Master Utility Study for the Windler Subdivision Filing's 4, and 5, prepared by Olsson, dated May 2022 (Windler Master Utility Report, Appendix C). The Master Utility Report provides water and sanitary sewer analysis for the development of Neighborhoods E and F.

Neighborhood E (PA-7) of Windler Subdivision Filing No. 4 is located south of Street 3, and north of 53rd Avenue. Located west of Harvest Road, and east of Fultondale Street. Approximately 34.5 acres total, with approximately 4.2 acres of open space, Neighborhood E contains 216 lots, achieving a unit density of 6.2 dwelling units per acre. Within PA-7, there is a commercial area to be developed later than the surrounding area, with a size of 0.5 acres. The development of Neighborhood E will have the capacity to include the commercial area, following the standards of the Aurora Water, Sanitary Sewer & Storm Drainage Infrastructure Standards & Specifications. Northeast of Neighborhood E is a detention pond, Pond U115, a publicly maintained detention basin. Neighborhood E is graded generally so that there is a downhill grade in the north direction, with a slight northeast bias towards the detention basin.

Southwest of Neighborhood E is Neighborhood F (PA-8), located east of Denali Street, and west of Fultondale Street, south of 53rd Avenue, and north of 52nd Avenue. Neighborhood F is approximately 16.9 acres in total, with 2.2 acres of open space. Neighborhood F is made of 136 residential lots, including paired homes, single family homes, and two-story and three-story townhomes. Neighborhood F has a density of 8.0 dwelling units per acre. Neighborhood F is graded generally so that there is a downhill grade in the north direction.

Water Connections

See Appendix B - Proposed Utility Plan for water and sanitary connections of PA-7, and PA-8 with surrounding water and sanitary sewer mains. The water mains throughout the planned areas mentioned are 8", with ¾" service lines for each lot. See Appendix C – Windler Master Utility Study (MUS) for the water and sewer mains outside of PA-7 and PA-8, for example: PW55, PW82, P47, Node A.10, etc. The pipes and nodes that are named in that manner are referenced per the Windler Master Utility Study.



West of Neighborhood E is an 8" water main, PW55 (MUS). PW82 (MUS) is a 12" water main south of Neighborhood E. P59 (MUS) is an existing 24" water main east of Neighborhood E. There is an 8" water main in Street 3 north of Neighborhood E. Neighborhood E connects to the 8" water main in Street 3 to the north at three locations. Neighborhood E connects to PW82 at two locations.

Neighborhood F is surrounded by 8" water mains on three sides, PW54, PW61, and PW58 (MUS), and a 36" water main in Denali Road, P47 and P86 (MUS). Neighborhood F connects to PW54 at two locations, as well as PW61 at two locations. Neighborhood F also connects to PW58 at three locations.

All demands and flows of Neighborhoods E and F have been calculated using criteria provided in the *Aurora Water - Water, Sanitary Sewer & Storm Drainage Infrastructure Standards and Specifications* (January 2022).

Sanitary Sewer Connections

In Neighborhood E, the sanitary sewer flow direction is from south to north generally. Three 8" sanitary sewer main extensions are anticipated from Street 3. Sanitary sewer in Street 3 flow from west to east, corresponding with the Master Utility Plan showing PA-7 sanitary sewer going to node A.10 (MUS).

Neighborhood F sanitary sewer generally flows south to north throughout the site as well. Five 8" sanitary sewer main extension are anticipated from 53rd Avenue, and one 8" sanitary sewer main extension is anticipated from Fultondale Street. In 53rd Avenue, the flow direction from the Neighborhood F connections is to the east towards Fultondale Street. In Fultondale Street, the flow direction is north. Therefore, the connections in 53rd Avenue and Fultondale Street correspond with the Windler Master Utility Plan showing PA-8 sanitary sewer connecting to node B.2 (MUS).

Throughout both sites, a minimum spacing of 10' was maintained from the edge of sanitary sewer mains to the edge of water mains. In locations where water, storm sewer, and sanitary sewer are in the same easement, water is to the north and east of the centerline, storm is near the centerline, and sanitary sewer is to the south and west. Where practical, 10' horizontal spacing on center was maintained for sanitary sewer to storm, and storm sewer to water.

Neighborhood E (PA-7) – Water System Demand

Total Acres = 34.50 acres

Proposed Units = 216 units

$$\begin{aligned} \text{Average Daily Demand (ADD)} &= 215 \text{ units} \times 2.77 \frac{\text{people}}{\text{units}} \times 101 \frac{\text{ADD (gpd)}}{\text{capita}} \\ &= 60,430 \text{ gpd} \div 1400 = 43 \text{ gpm} \end{aligned}$$

$$\text{Max Day Demand (MDD)} = \text{ADD} \times 2.8 = 43 \text{ gpm} \times 2.8 = 120 \text{ gpm}$$

$$\text{Peak Hour Demand (PHD)} = \text{ADD} \times 4.5 = 43 \text{ gpm} \times 4.5 = 192 \text{ gpm}$$

$$\text{Required Fire Flow} = 1500 \text{ gpm}$$

$$\text{Max Day Demand} + \text{Fire Flow} = 120 \text{ gpm} + 1500 \text{ gpm} = 1620 \text{ gpm}$$

Neighborhood F (PA-8) – Water System Demand

$$\text{Total Acres} = 16.92 \text{ acres}$$

$$\text{Proposed Units} = 136 \text{ units}$$

$$\begin{aligned} \text{Average Daily Demand (ADD)} &= 136 \text{ units} \times 2.77 \frac{\text{people}}{\text{units}} \times 101 \frac{\text{ADD (gpd)}}{\text{capita}} \\ &= 38,050 \text{ gpd} \div 1400 = 27 \text{ gpm} \end{aligned}$$

$$\text{Max Day Demand (MDD)} = \text{ADD} \times 2.8 = 27 \text{ gpm} \times 2.8 = 76 \text{ gpm}$$

$$\text{Peak Hour Demand (PHD)} = \text{ADD} \times 4.5 = 27 \text{ gpm} \times 4.5 = 121 \text{ gpm}$$

$$\text{Required Fire Flow} = 1500 \text{ gpm}$$

$$\text{Max Day Demand} + \text{Fire Flow} = 76 \text{ gpm} + 1500 \text{ gpm} = 1576 \text{ gpm}$$

Neighborhood E (PA-7) – Wastewater System Demand

$$\text{Total Acres} = 34.50 \text{ acres}$$

$$\text{Proposed Units} = 216 \text{ units}$$

$$\text{Population} = 216 \text{ units} \times 2.77 \frac{\text{people}}{\text{unit}} = 598 \text{ people}$$

$$\text{Average Daily Flow (ADF)} = 598 \text{ people} \times 68 \frac{\text{gpd}}{\text{capita}} = 40,664 \text{ gpd}$$

$$\text{Peak Factor (PF)} = 5 \div p^{0.167} = 5 \div .598^{0.167} = 5.45, \text{ where } p = \text{population in thousands}$$

$$\text{Maximum PF} = 4$$

$$\text{Peak Design Flow Rate (PDF)} = \text{ADF} \times \text{PF} = 40,664 \text{ (gpd)} \times 4 = 162,656 \text{ gpd}$$

$$\text{Infiltration} = \text{ADF} \times 10\% = 4,066 \text{ gpd}$$

$$\text{Peak Flow} + \text{Infiltration} = 162,656 + 4,066 = 166,722 \text{ gpd}$$

Neighborhood F (PA-8) – Wastewater System Demand

$$\text{Total Acres} = 16.92 \text{ acres}$$

$$\text{Proposed Units} = 136 \text{ units}$$

$$\text{Population} = 136 \text{ units} \times 2.77 \frac{\text{people}}{\text{unit}} = 377 \text{ people}$$

$$\text{Average Daily Flow (ADF)} = 377 \text{ people} \times 68 \frac{\text{gpd}}{\text{capita}} = 25,636 \text{ gpd}$$

$$\text{Peak Factor (PF)} = 5 \div p^{0.167} = 5 \div .377^{0.167} = 5.88, \text{ where } p = \text{population in thousands}$$

$$\text{Maximum PF} = 4$$

$$\text{Peak Design Flow Rate (PDF)} = \text{ADF} \times \text{PF} = 25,636 \text{ (gpd)} \times 4 = 102,544 \text{ gpd}$$

$$\text{Infiltration} = \text{ADF} \times 10\% = 2,564 \text{ gpd}$$

$$\text{Peak Flow} + \text{Infiltration} = 102,544 + 2,564 = 105,108 \text{ gpd}$$

Comparison of Demands

PA-7	<u>Master Utility Study</u>	<u>Actual</u>	<u>Percentage</u>
Water System			
Average Day Demand (ADD)	53 gpm	43 gpm	81.1%
Maximum Day Demand (MDD)	147 gpm	120 gpm	81.6%
Peak Hour Demand (PHD)	237 gpm	192 gpm	81.0%
Wastewater System			
Average Day Flow (ADF)	51,387 gpd	40,664 gpd	79.1%
Peak Day Flow (PDF)	205,547 gpd	166,722 gpd	81.1%

PA-8	<u>Master Utility Study</u>	<u>Actual</u>	<u>Percentage</u>
Water System			
Average Day Demand (ADD)	31 gpm	27 gpm	87.1%
Maximum Day Demand (MDD)	88 gpm	76 gpm	86.4%
Peak Hour Demand (PHD)	140 gpm	121 gpm	86.4%
Wastewater System			
Average Day Flow (ADF)	30,107 gpd	25,636 gpd	85.1%
Peak Day Flow (PDF)	120,430 gpd	105,108 gpd	87.3%

Adjustment Requests

Per *Aurora Water - Water, Sanitary Sewer & Storm Drainage Infrastructure Standards and Specifications* (January 2022), Section 5.04, "Water mains shall be a minimum of five feet (5') from the edge of the concrete gutters at all locations, except as approved by the Aurora Water." Water mains were spaced throughout the site 5' or greater from the edge of gutters where possible. However, where there are sanitary sewer, storm sewer, and water mains in Local Streets, it was not possible to space the water mains with 5' horizontal spacing from the edge of concrete gutters, while maintaining 10' horizontal spacing of the utilities. 10' horizontal spacing



between utilities was prioritized, so in cases where storm, sanitary, and water are in a street together, water mains are 3' from the edge of the concrete gutter or greater.

The Aurora Water *Standards and Specifications* state in Section 17.02, "At no time shall the service line be any closer than five feet (5') to the side property line." Service lines that are located in the street throughout the site follow this guidance. However, in the alley, in order to keep water meters out of lot driveways, we would like to locate the service lines 2.5' from the side property line. This would enable us to place water meters in lot landscaping areas in the alley where applicable.

Summary

Based off the above calculations, all demands and flow rates from the Neighborhoods E and F (PA 7 and 8) are within the allowable demands and flows assumed in the Windler Master Utility Study. We request this letter be acceptable as the final utility letter for Planning Areas 7 and 8.

If you have any questions or comments, please feel free to reach out to me at (303) 374-3101 or at dklisis@olsson.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "Debbie Klisis", with a long horizontal flourish extending to the right.

Debbie Klisis, PE

Olsson Project Manager

Registered Professional Engineer

State of Colorado No. 0032969



Attachments:

Appendix A: Vicinity Map

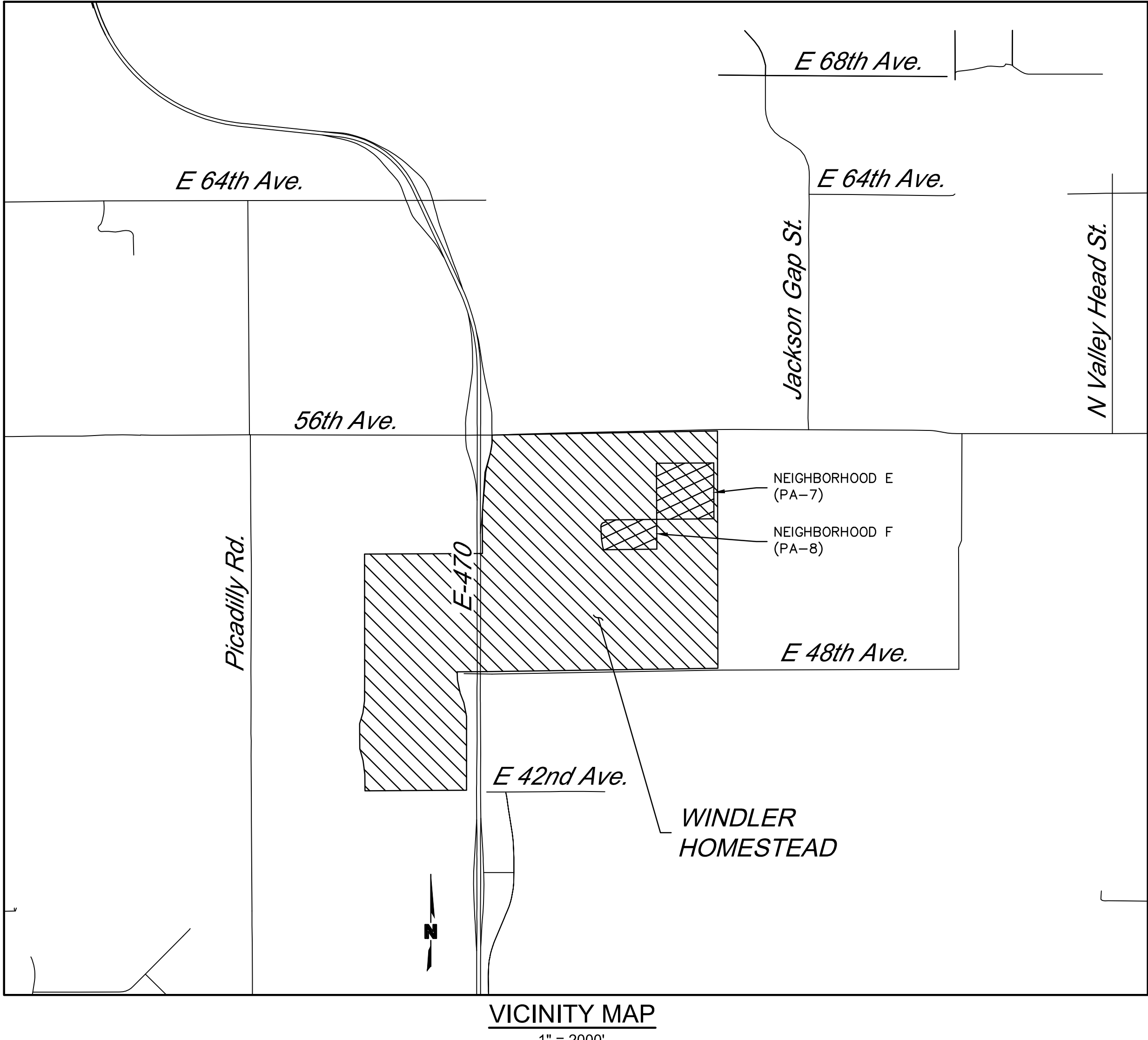
Appendix B: Proposed Utility Plan

Appendix C: Windler Master Utility Study
(*Olsson, 2022*)

Appendix A

Vicinity Map

WINDLER VICINITY MAP



VICINITY MAP
1" = 2000'

1" = 2000

USER: wkimbrough
DATE: Jun 08, 2022 3:13pm
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VICINITY MAP

WINDLER

AURORA, COLORADO

REVISIONS DESCRIPTION

DATE _____

REV. 11-80

REVISIONS

CALL UTILITY NOTIFICATION
CENTER OF COLORADO

811

Know what's below.
Call before you dig.

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE
YOU DIG. GRADE AND EXCAVATE FOR THE
MARKING OF UNDERGROUND MEMBER
UTILITIES.

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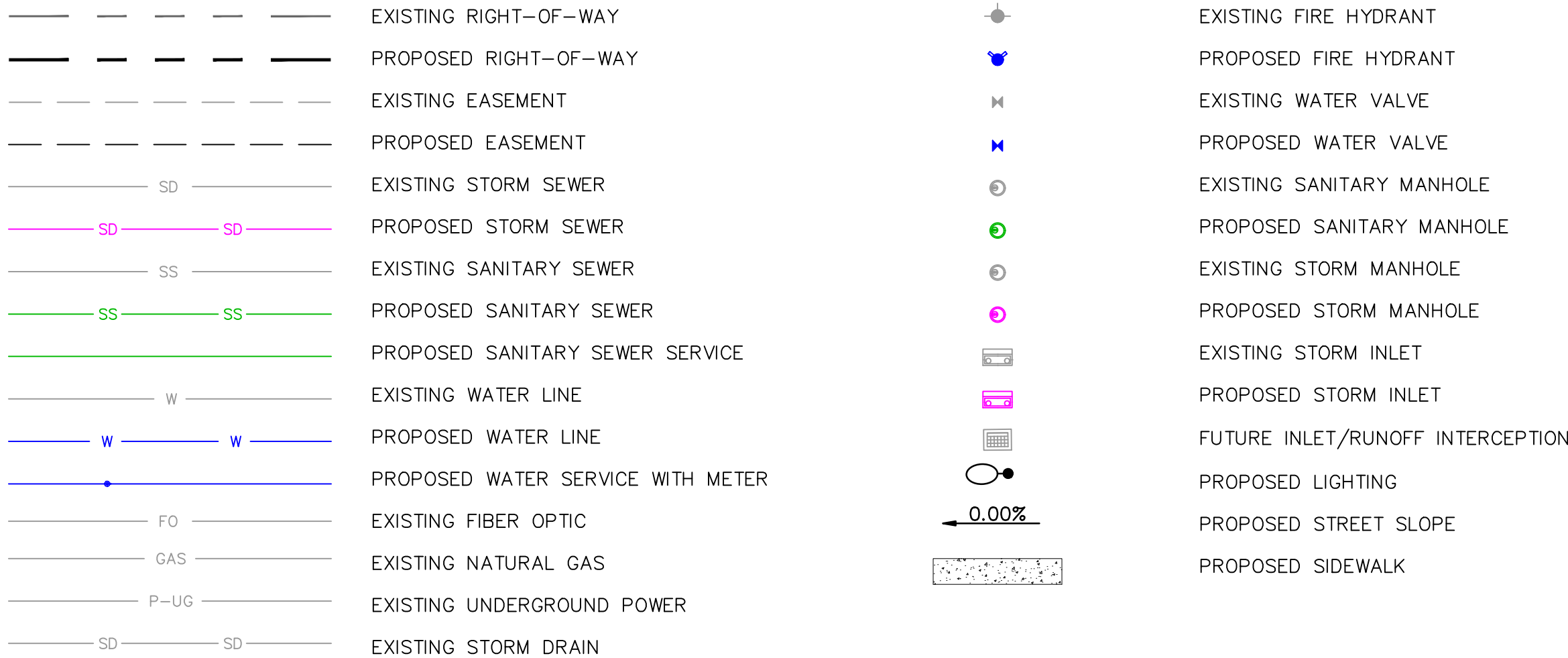
dl
1880 Fall River Drive,
Suite 200
Loveland, CO 80538

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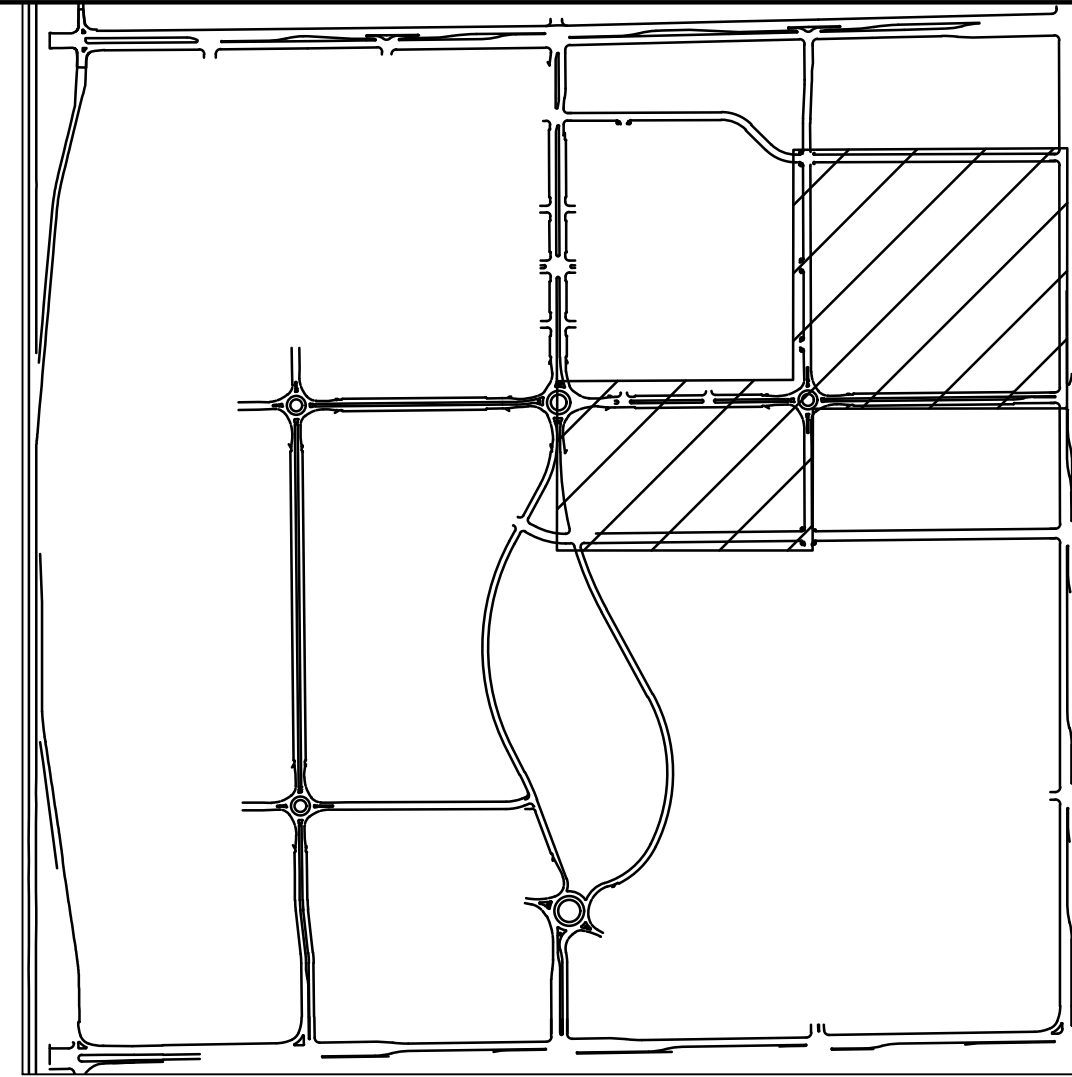
Appendix B

Proposed Utility Plan

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DATE: Jun 08, 2022 2:03pm
USER: wkimbrough



KEY MAP
1" = 1000'



1880 Fall River Drive,
Suite 200
Loveland, CO 80538

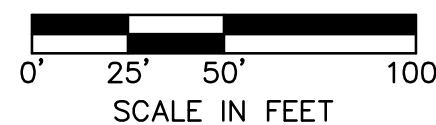
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YOU DIG, GRADE, OR EXCAVATE FOR THE
MARKING OF UNDERGROUND MEMBER
UTILITIES.

		2022
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AURORA, COLORADO

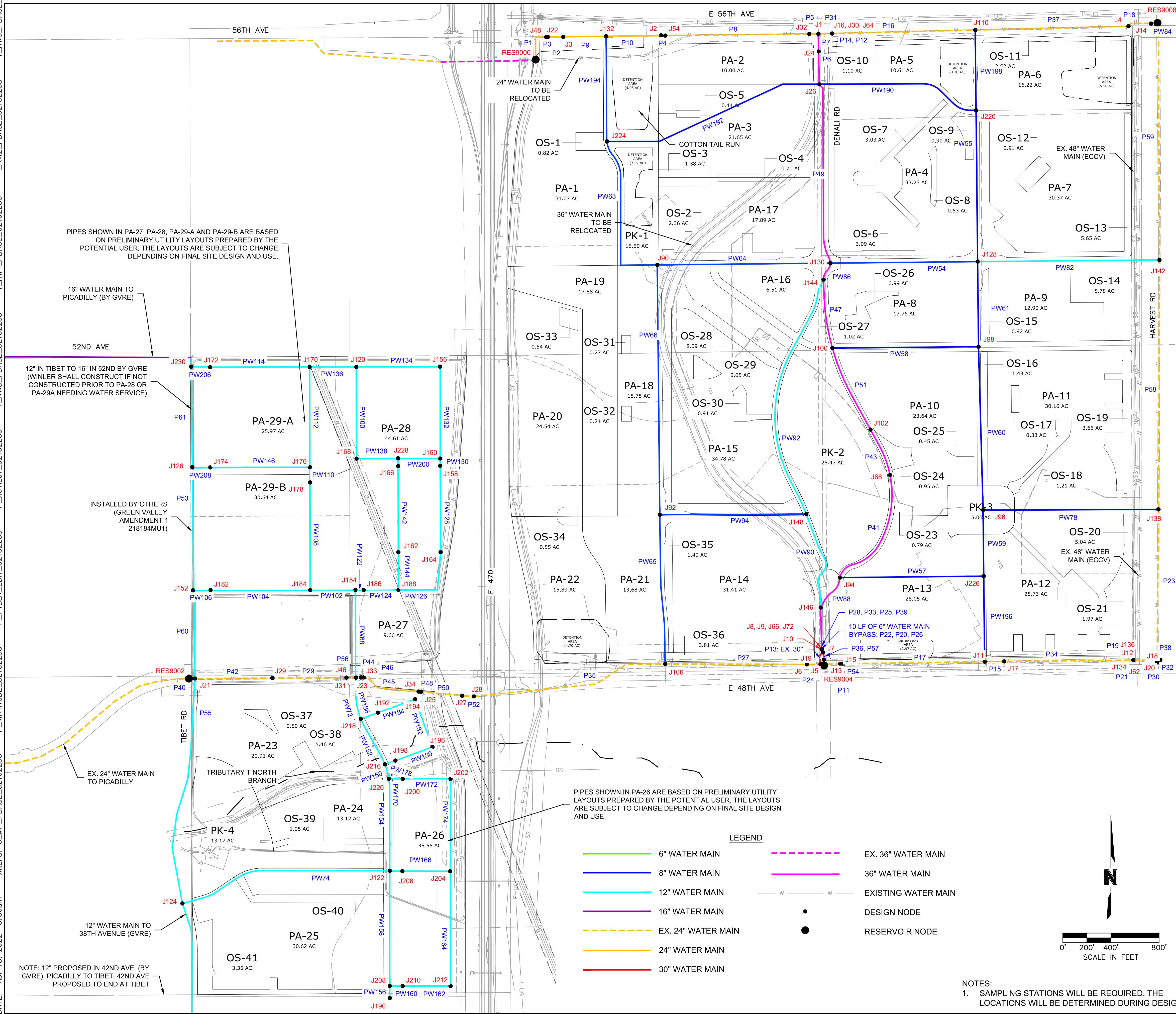
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Appendix C

Windler Master Utility Study

(Olsson, 2022)



FACSIMILE
THIS ELECTRONIC PLAN IS A
FACSIMILE OF THE SIGNED
AND SEALED PDF SET

NAME HERE DATE
David P. Kuhlmann 05/11/2022

Approved For One Year From This Date	

City Engineer	Date
Fire Department	Date
Water Department	Date

- NOTES:
1. SAMPLING STATIONS WILL BE REQUIRED. THE LOCATIONS WILL BE DETERMINED DURING DESIGN.

DWG: F:\2021\02001-02500\021-02235\40-Design\AutoCAD\021-02235_Final Plans\01-06_MP_Sheets\WTRW_P_PLANO1_SAN_02102235.dwg USER: gmaidl T_RW4_PBASE_02102235 T_RW2_PBASE_02102235 T_RW5_PBASE_02102235
DATE: May 11, 2022 9:01am XREFS: P_MP_PUTIL01_02102235 P_XUTIL01_02102235 C_MP_PBASE_02102235 P_PTBK_EDIT_02102235

		From Node	To Node	MAP AREA CODE	Peak Flow + Infiltration on (CFS)	Avg Day + Infiltration on (CFS)	Pipe Size (in)	Pipe Percent Full (Peak Flow)	Avg Day Velocity (FT/S)
SECOND CREEK	LINE A	A.9	A.8	PA-16	0.07	0.02	8	3%	2.1
		A.8	A.6	PA-15	0.44	0.12	8	22%	3.2
		A.7	A.6	PA-20	0.23	0.06	8	15%	2.2
		A.6	A.5	PA-18, PA-19	1.04	0.28	8	73%	3.2
		A.5	A.4	PA-1	1.33	0.36	10	61%	2.9
		A.12	A.11	PA-17	0.19	0.05	8	7%	3.2
		A.11	A.4	PA-3	0.67	0.18	8	33%	3.6
		A.4	A.3	PA-2	2.67	0.77	12	63%	4.1
		A.3	A.2.5	PA-5	2.98	0.87	12	71%	4.2
		A.2.5	A.2	Line B	3.64	1.13	15	57%	3.9
	A.2	A.1	PA-6	3.86	1.21	15	60%	4.0	
	A.10	A.1	PA-7	0.20	0.05	8	10%	2.5	
	LINE B	B.3	B.2	PA-10, PA-11	0.58	0.16	8	23%	4.0
		B.2	B.1	PA-8, PA-9	0.70	0.19	8	31%	3.9
B1		A.2.5	PA-4	0.97	0.26	10	26%	3.9	

NOTE: MINIMUM PIPE SIZE IN PLANNING AREAS (PA) SHALL BE 8-INCH

FIRST CREEK	LINE C	From Node	To Node	MAP AREA CODE	Peak Flow + Infiltration (CFS)	Avg Day + Infiltration (CFS)	Pipe Size (in)	Pipe Percent Full (Peak Flow)	Avg Day Velocity (FT/S)
		C.4	C.3	PA-14	0.42	0.11	8	29%	2.4
		C.3	C.2	PA-21	0.80	0.21	8	56%	2.9
		C.2	C.1	PA-22	1.24	0.33	8	53%	4.8
	LINE D	D.1	EX 36"	PA-13, PK-2	0.52	0.14	8	18%	4.2
		E.1	EX 36"	PA-12	0.28	0.07	8	10%	3.5
	LINE E	F.3	F.1	PA-29A, GVRE 310-1	1.20	0.32	10	66%	2.5
		F.4	F.2	PA-28	0.34	0.09	8	28%	2.0
		F.2	F.1	PA-27, PA-28	0.41	0.11	8	26%	2.6
		F.1	GVRE 12"	PA-27, PA-28, PA-29A, PA-29B, GVRE 310-1	1.76	0.50	12	59%	2.8
LINE F	LINE F	G.1	EX 36"	PA-26	0.27	0.07	8	19%	2.1
		H.1	EX 36"	PA-24	0.14	0.04	8	8%	2.0
		I.1	EX 36"	PA-23, PA-25, PK-4	0.67	0.18	8	47%	2.8

GVRE 3010-1
0.246

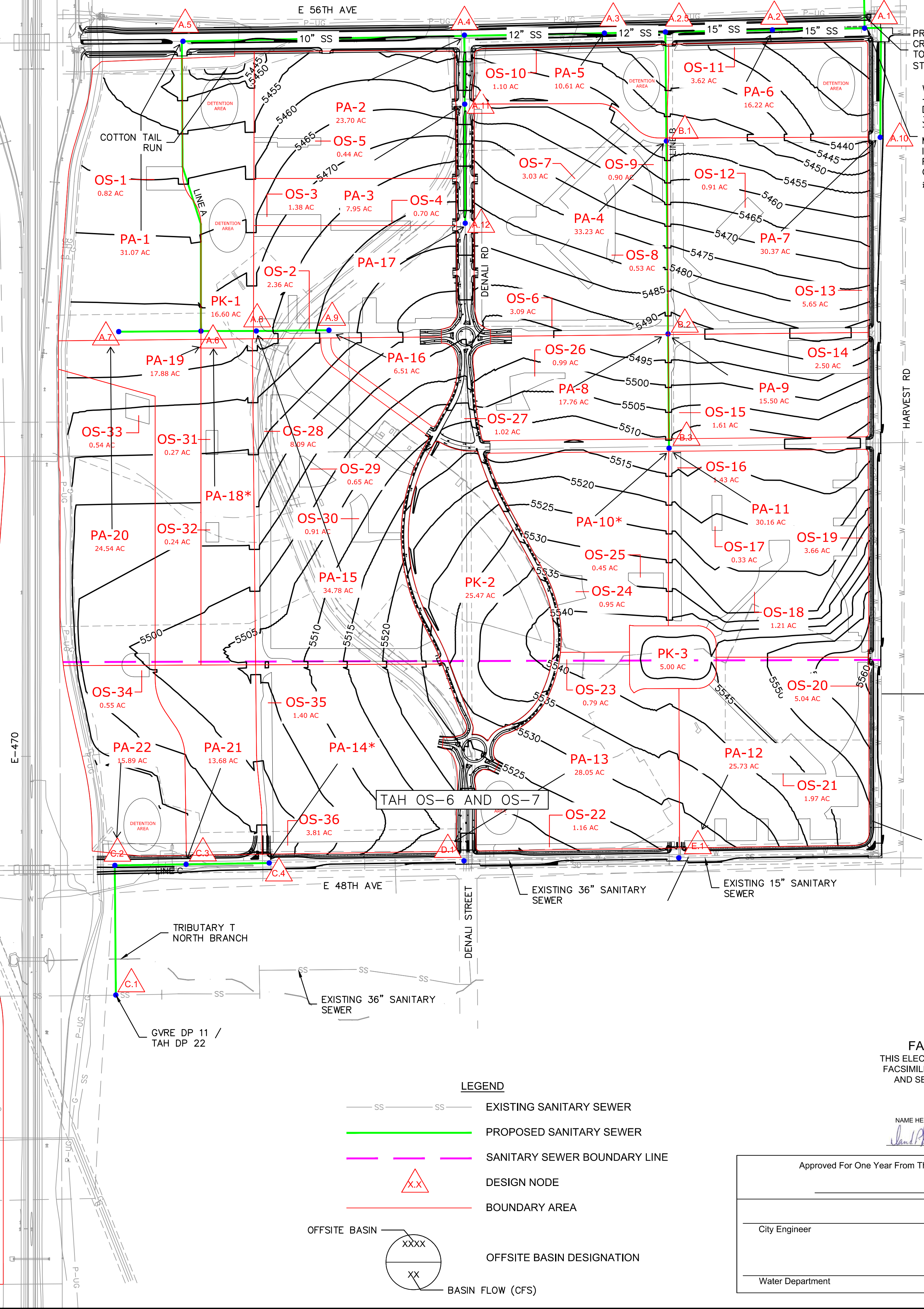
PROPOSED 10" SANITARY SEWER (BY OTHERS, GREEN VALLEY - AMENDMENT 1 218184MU1) WINDLER SHALL CONSTRUCT TO NEAREST OUTFALL IF NOT CONSTRUCTED PRIOR TO PA-28 AND 29 NEEDING SANITARY SEWER SERVICE

WINDLER PEAK FLOW + INFILTRATION AT DESIGN NODE F.1 OF 380 GPM IS LESS THAN GVRE MUR PEAK FLOW+ INFILTRATION AT GVRE NODE 6 OF 635 GPM END (#218184MU1)

PEAK FLOW + INFILTRATION AT DESIGN NODE I.1 IS 9019 GPM
PEAK FLOW + INFILTRATION AT GVRE MUR DESIGN (#218184MU1) POINT 12 IS 8225 GPM

EXISTING 36" SANITARY SEWER TO FIRST CREEK LIFT STATION

GVRE DP 15 INCLUDES GVRE DP 13 AND 14
PEAK FLOW + INFILTRATION WITH TAH AND WINDLER IS 9211 GPM
PEAK FLOW + INFILTRATION AT GVRE DP15 IS 8517 GPM



PROPOSED 30" SECOND CREEK SANITARY SEWER TO SECOND CREEK LIFT STATION (BY OTHERS)

WINDLER PEAK FLOW + INFILTRATION AT DESIGN NODE A.1 OF 3.89 CFS IS LESS THAN FULEWIDER MUS PEAK FLOW + INFILTRATION AT FULEWIDER NODE T OF 4.377 EDN #220131MU1

EXISTING FORCE MAIN
EXISTING 15" SANITARY SEWER

FACSIMILE
THIS ELECTRONIC PLAN IS A FACSIMILE OF THE SIGNED AND SEALED PDF SET

NAME HERE DATE
05/11/2022

Approved For One Year From This Date

City Engineer Date

Water Department Date

olsson

1525 Raleigh Street
Suite 400
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SANITARY SEWER MASTER PLAN

WINDLER MIXED USE DEVELOPMENT MASTER UTILITY PLAN

2021

drawn by:
checked by:
approved by:
QA/QC by:
project no.:
drawing no.:
date:

SHEET
B.1

WINDLER MASTER UTILITY STUDY Aurora, CO

Prepared For:

GVP Windler LLC
5750 DTC Parkway, #210
Greenwood Village, CO 80111
Don Provost - 303.771.4004
Chris Fellows – 303.795.9900

Prepared By:

Olsson
1525 Raleigh Street, Suite 400
Denver, CO 80204
David Krickbaum, PE
303.374.3133

Rev May 2022
Rev April 2022
Rev February 2022
October 2021
Olsson Project No. 021-02235

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THIS ELECTRONIC PLAN IS A
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NAME HERE

DATE

David Krickbaum

05/11/2022

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City Engineer	Date
Fire Department	Date
Water Department	Date



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Appendix A - Water Distribution System Demands and Analysis

Appendix B - Sanitary Sewer Collection System Demands and Analysis

Appendix C - Referenced Documents

1. INTRODUCTION

1.1 Purpose

This Master Utility Study analyzes the projected water and sanitary sewer demands for Windler and summarizes the required water and sanitary sewer infrastructure.

A Master Utility Report (MUR) for the project area was approved by the City of Aurora for Windler Homestead in January 2004. The MUR was amended with Addendum 1 in November 2005.

1.2 Location

Windler is bordered by 56th Avenue on the north, Harvest Road on the east, 48th Avenue and future 42nd Avenue on the south, future Tibet Road and E-470 on the west. It is located in Section 18, Township 3 South, Range 65 West of the Sixth Principal Meridian, and the southeast one-quarter of Section 13 and the northeast one-quarter of Section 24, Township 3 South, Range 66 West of the Sixth Principal Meridian, City of Aurora, Colorado. Figure 1 shows the location of Windler.



Figure 1 - Vicinity Map

1.3 Proposed Development

The project consists of approximately 840 acres of mixed-use development including parks, single- and multi-family, school, retail, office, and flex land uses. It is surrounded by the

Fulenwider development on the north, Harvest Road and unplanned development on the east, The Aurora Highlands on the South and Green Valley Ranch on the west.

Windler Homestead, as amended, consisted of 870 acres. The difference between that and the currently proposed project is the exclusion of a parcel in the south one-half of the southwest one-quarter of the southeast one-quarter of Section 13, on the northeast corner of Tibet Road and 48th Avenue. The proposed land uses are similar, but densities are different.

2. WATER DISTRIBUTION

2.1 Existing Water Infrastructure

The City of Aurora has existing 24-inch water mains in 56th Avenue, 48th Avenue and Harvest Road. Green Valley Ranch has proposed a 12-inch water main in Tibet Road. The city has recently constructed a 36-inch water main along the Gun Club Road alignment from the south that terminates at 56th Avenue. Windler plans to relocate the 36-inch water main to the Denali Street alignment as shown in the water master plan. The site is located in Pressure Zone 3 with a static head of 5710 feet.

2.2 Water System Design Criteria

The water distribution system was analyzed using the criteria established by Aurora Water, Water, Sanitary Sewer & Storm Drainage Infrastructure Standards and Specifications, dated January 2022.

2.3 Water Demand Calculations

Water demands were projected to model the proposed distribution system. The demands were based on the following Aurora Water criteria and are included in Appendix A:

Residential

Zoning	People / Unit	Average Day Per Capita Flow (gpd)
Residential	2.77	101

Non-Residential

Zoning	Average Day (gpd/acre)	Max Day (gpd/acre)	Max Hour (gpd/acre)
Commercial	1,500	4,200	6,750
Industrial (including schools)	1,200	3,360	5,400
Parks	1,800	5,040	N/A

The water mains were sized with the following peaking factors.

Ratio	Peaking Factor
Maximum Hour : Average Day	4.5 : 1
Maximum Day : Average Day	2.8 : 1

The system was modeled with maximum day demand plus fire flow with the requirement to maintain a minimum pressure of 20 psi.

Fire Flow

Use Classification	Fire Flow Demand
Residential	1,500 gpm for 2 hours
Commercial/Multi-family	2,500 for 2 hours
Industrial (schools)	3,500 for 3 hours

The water mains were sized as minimum 8-inch in diameter with maximum allowable velocity of 3 feet per second (fps) and a maximum head loss of 5 feet per 1000 feet.

2.4 Hydraulic Modeling and Results

The Geographic Information System (GIS) based InfoWater software, which is a product of Innovyze, Inc., was used to model the distribution system for Windler.

The calculated demands were used to model the following scenarios.

- Static
- Average Day Demand
- Max Day Demand
- Max Day Demand plus Fire Flow
- Max Hour Demand

The fire flow analysis analyzes selected junctions and provides the maximum available fire flow at the selected junctions with a maximum velocity of 10 feet per second (fps) and a minimum residual pressure of 20 psi.

The water supply to the development was simulated by inserting four (4) reservoirs with a fixed head of 5,710 ft for the static and average day conditions and variable head for the max day demand, max day demand plus fire flow, and max hour demand conditions connected to the 24-inch and 36-inch transmission lines that provide flow into the area. The variable head data that was provided for the reservoirs can be seen in Appendix A. Existing hydrant flow data was not provided for the area, therefore calibration of the model was not performed.

A Hazen-Williams factor of $C=150$ was applied to all PVC waterlines while $C=100$ was applied to the steel waterline

The following summarizes the modeled scenarios:

- The Static and Average Day scenarios show pressures between 69 and 121 psi
- The Max Day and Max Hour scenarios at the minimum reservoir head (21 hour) show pressures between 57 and 109 psi
- The maximum velocity for the Max Hour scenario at the maximum reservoir head (15 hour) 1.35 fps
- The maximum headloss per 1000 ft for the Max Hour scenario at the maximum reservoir head (15 hour) was 0.79 ft per 1000 ft
- The Max Day plus Fire Flow scenario indicates that pressures do not fall below 20 psi at either the minimum or maximum reservoir head.

The data included indicates the worst-case scenario results based on the variable head reservoir data.

Complete water model scenario results can be seen in Appendix A.

Sizing for the water distribution system in the development parcels will be prepared during design of each parcel.

3. SANITARY SEWER

3.1 Existing Sanitary Sewer Infrastructure

The existing sanitary sewer infrastructure includes the Second Creek lift station and associated force mains in Harvest Road that discharge to a 15-inch gravity main in 48th Avenue.

The 30-inch Second Creek sanitary sewer has been designed by Martin/Martin and submitted to the City for approval. This sewer is anticipated to be constructed in 2022. The sewer will extend from the Second Creek lift station to 56th Avenue and Harvest Road. The northerly portion of Windler will flow to the 30-inch Second Creek sanitary sewer.

The southerly portion of Windler, east of E-470 and Windler west of E-470 will flow to the 15-inch and 36-inch gravity sewers and ultimately to the First Creek lift station.

The Colorado Department of Public Health & Environment Corrected Site Location Approval No: ES.18.SA.04313, dated July 24, 2018 (included in Appendix C) states that the Second Creek lift station has a peak hydraulic capacity of 1.6 Million Gallons Per Day (MGD) to convey wastewater to the First Creek lift station via force mains and gravity sewers. The flows are then

conveyed from the First Creek lift station to the Metro Wastewater Reclamation District Robert W. Hite Treatment Facility.

There are no off-site developments that will contribute flow to the Windler system.

3.2 Sanitary Sewer Design Criteria

The sanitary sewer system was analyzed using the criteria established by Aurora Water, Water, Sanitary Sewer & Storm Drainage Infrastructure Standards and Specifications, dated January 2022.

3.3 Sanitary Sewer Demand Calculations

Sanitary sewer demand projections were prepared to size the proposed collection system. The demands were based on the following Aurora Water criteria:

Residential

Zoning	People / Unit	Loading Rate (gpd)
Residential	2.77	68

Non-Residential

Zoning	Average Day (gpd/acre)	Equivalent Population per Acre
Commercial	1,500	22
Industrial (including schools)	1,200	18

The demand projections include inflow and infiltration at 10% of the average flow. The peaking factor was calculated using:

$$1.7 < 5 / p * 0.167 \text{ where } p = \text{population in thousands} < 4.0$$

The projected average day and peak flow calculations are included in Appendix B.

Windler's projected discharge to the First Creek and Second Creek lift stations compared to the previously approved Windler Homestead discharges are summarized below. Calculations and excerpts from the Windler Homestead MUR and Addendum 1 are in Appendix C.

	First Creek (MGD)	Second Creek (MGD)
Windler Homestead	0.74	0.72
Windler (2022)	0.65	0.75

Windler's peak discharge to the 30-inch Second Creek sanitary sewer is 3.70 cfs. The Fulenwider MUR shows they planned on 4.38 cfs being discharged from Windler.

Differences in project area, land uses, densities and changed city criteria are attributed to the differences between Windler and Windler Homestead discharges. The following table shows the difference between current criteria and that used for the Windler Homestead.

	Total Area (Ac)	MF Residential (People / DU)	SF Residential (People / DU)	Residential (gpcd)	Commercial (gpd)
Windler Homestead	791	1.7	3.2	80	2600
Windler	736	2.77		68	1500

The Second Creek lift station capacity will need to be increased or the planned 30-inch interceptor to the Metro Wastewater treatment will need to be completed prior to the ultimate build out of Windler.

3.4 Sanitary Sewer Sizing

The sewer mains were sized to be a maximum 75% full with peak flows for pipes 12-inches and smaller. A maximum velocity of 10 fps and a minimum velocity of 2 fps was used.

The pipe sizing calculations for the main lines shown on the sanitary sewer master plan are included in Appendix B. Sizing for the collection system in the development parcels will be prepared during design of each parcel.

3.5 36-inch Interceptor Analysis

An analysis was completed to estimate peak flows in the 36-inch interceptor, at Green Valley Ranch design point 15, that flow to the First Creek lift station, south of 48th Avenue. Information from The Aurora Highlands Master Utility Report – Amendment 1 (219069MU2) and the Green Valley – Amendment 1 Master Utility Report, (218184MU1) was the basis of the analysis. All flows used in the analysis are peak flow plus infiltration. For this analysis it was assumed that The Aurora Highlands (TAH) design point 22 is the same as Green Valley Ranch (GVR) design point 11. Although both MURs show their design points south of 48th Avenue, GVR shows theirs on the west side of E-470 and TAH shows theirs on the east side of E-470. It appears the intent in both reports is for the design point to be at the location where the 36-inch interceptor crosses E-470. The peak flow at this location is higher in the TAH MUR than in the GVR MUR. The TAH MUR was approved after the GVR MUR. Therefore, it was assumed to be based on more current information and was used in the analysis.

TAH design point 22	8550 gpm	12.31 MGD
GVR design point 11	8000 gpm	11.52 MGD

Windler PA-12, PA-13, PA-14, PA-21, and PA-22 represent basins OS-6 and OS-7 in the TAH MUR. Projected average day flows from Windler are higher than shown in the TAH MUR resulting in a peak flow of 8791 gpm at TAH design point 22 which is 241 gpm higher than shown in the TAH MUR.

TAH design point 22	8550 gpm	12.31 MGD
TAH design point 22 with current Windler projected flows	8791 gpm	12.66 MGD
TAH DP 22 flow change attributed to Windler	241 gpm	0.35 MGD

The GVR MUR assumes 8,000 gpm from TAH at GVR design point 11. This is less than the 8,550 gpm shown in the TAH MUR and the updated flow of 8791 gpm with Windler.

TAH design point 22 with current Windler projected flows	8791 gpm	12.66 MGD
GVR design point 11	8000 gpm	11.52 MGD
GVR DP 11 flow change attributed to TAH and Windler	791 gpm	1.14 MGD

Windler PA-23, PA-24, PA-25, PA-26, and PK-4 represent GVR basins OS-5 and OS-6. Windler will route the flow from GVR basin OS-6 to GVR design point 12 instead of GVR design point 14. GVR design points 12 and 14 flow the GVR design point 15. For this analysis comparisons were made at GVR design point 15.

The GVR MUR shows peak flows of 344 gpm and 320 gpm for basins OS-5 and OS-6, respectively. The projected peak flow for Windler basins PA-23, PA-24, PA-25, PA-26, and PK-4 is 488 gpm, a decrease of 176 gpm

GVR OS-5	344 gpm	0.50 MGD
GVR OS-6	320 gpm	0.46 MGD
GVR total	664 gpm	0.96 MGD
Windler basins PA-23, PA-24, PA-25, PA-26, and PK-4	488 gpm	0.70 MGD
Net peak flow change for GVR basins OS-5 and OS-6 attributed to Windler	-176 gpm	-0.25 MGD

The peak flow at GVR design point 15 with changes attributed to TAH and Windler is 9211 gpm, an increase of 694 gpm.

GVR DP 15	8517 gpm	12.26 MGD
Total peak flow at GVR DP 15	9211 gpm	13.26 MGD
Net flow change at GVR DP 15	694 gpm	1.00 MGD

The calculations for the peak flow plus infiltration in the above analysis are in Appendix B.

Because the peaking factor used to determine peak flows is based on population, the peak flow increase was prorated based on population to estimate the increase attributed to Windler and TAH. The calculations are in Appendix B.

	Population	Peak Flow + Infiltration	Peak Flow + Infiltration
Windler	6,888	63 gpm	0.09 MGD
The Aurora Highlands	68,675	631 gpm	0.91 MGD
Total	75,563	694 gpm	1.00 MGD

The design of the 36-inch interceptor was included in the Windler Homestead Filing 1 District Road Construction Plans. The capacity of the interceptor is limited by the pipe segment between SS-MH-1 and SS-MH-2 on sheet SS-01 of said plans with a 0.40% slope. This pipe segment has a full flow capacity of 50 cfs. The calculation and referenced sheet are included in Appendix B and C, respectively. The peak flow plus infiltration at GVR design point 15 is 9211 gpm (21 cfs).

4. CONCLUSIONS

East of E-470, the water distribution system will connect to existing 24-inch water mains in 48th Avenue, 56th Avenue and Harvest Road, and the 36-inch water main in Denali Street. West of E-470, connections will be made to the 24-inch water main in 48th Avenue and the planned 12-inch water main in Tibet Road. The proposed water distribution system meets the city's criteria.

The sanitary sewer collection system is conveyed to the First Creek and Second Creek lift stations. The collection system in First Creek will connect to existing 15- and 36-inch sanitary sewers. The collection system in Second Creek will connect to the proposed 30-inch Second Creek sanitary sewer.

Peak flows in the 36-inch interceptor are higher at Tibet Road, design point 15 in the GVR MUR. The higher peak flow is from TAH and Windler. With the higher peak flows, the 36-inch interceptor flows less than 1/2 full.

5. REFERENCES

Aurora Water. January 2022. *Water, Sanitary Sewer & Storm Drainage Infrastructure Standards and Specifications*.

Martin/Martin. May 6, 2021. *30" Second Creek Sanitary Sewer Construction Documents*.

Martin/Martin. July 22, 2020. *Fulenwider – Master Utility Report, (220131MU1)*

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Carter & Burgess, Inc. June 13, 2005. *Master Utility Report Addendum 1 Windler Homestead. (RPT2-204061)*

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HR Green Development, LLC. October 2019. *The Aurora Highlands Master Utility Report – Amendment 1. (219069MU2)*

Calibre Engineering, Inc. November 18, 2005. *Windler Homestead Filing No. 1 District Road Construction Plans. (206051)*

Appendix A

Water Distribution System Demands and Analysis

Windler - Water Demand Projections

Water Distribution Design Criteria

Land Use	Avg Day (gdp/acre)	Max Day (gdp/acre)	Peak Hour (gdp/acre)
Commercial	1,500	4,200	6,750
Industrial (schools)	1,200	3,360	5,400
Parks & Greenbelts	1,800	5,040	N/A

Residential Criteria

People / unit	2.77
Avg day / capita (gpd)	101

Peaking Factors

Max Day	2.8
Max Hour	4.5

Fire Flow

Classification	Demand (gpm)	Time (hrs)
Residential	1500	2
Commercial/Multifamily	2500	2
Industrial	3500	3

Map Area Code	Land Use	Nodes	Total Acres	Proposed Units	Avg Day Demand (gpd)	Avg Day Demand (gpm)	Max Day Demand (gdp)	Max Day Demand (gpm)	Peak Hour Demand (gpd)	Peak Hour Demand (gpm)	Required Fire Flow (gpm)	Max Day Demand + Fire Flow (gpm)
OS-1	OPEN SPACE		0.82	N/A	1,476	1	4,133	3	N/A	N/A		3
OS-10			1.10	N/A	1,980	1	5,544	4	N/A	N/A		4
OS-11			3.62	N/A	6,516	5	18,245	13	N/A	N/A		13
OS-12			0.91	N/A	1,638	1	4,586	3	N/A	N/A		3
OS-13			5.65	N/A	10,170	7	28,476	20	N/A	N/A		20
OS-14			2.50	N/A	4,500	3	12,600	9	N/A	N/A		9
OS-15			1.61	N/A	2,898	2	8,114	6	N/A	N/A		6
OS-16			1.43	N/A	2,574	2	7,207	5	N/A	N/A		5
OS-17			0.33	N/A	594	0	1,663	1	N/A	N/A		1
OS-18			1.21	N/A	2,178	2	6,098	4	N/A	N/A		4
OS-19			3.66	N/A	6,588	5	18,446	13	N/A	N/A		13
OS-2			2.36	N/A	4,248	3	11,894	8	N/A	N/A		8
OS-20			5.04	N/A	9,072	6	25,402	18	N/A	N/A		18
OS-21			1.97	N/A	3,546	2	9,929	7	N/A	N/A		7
OS-22			1.16	N/A	2,088	1	5,846	4	N/A	N/A		4
OS-23			0.79	N/A	1,422	1	3,982	3	N/A	N/A		3
OS-24			0.95	N/A	1,710	1	4,788	3	N/A	N/A		3
OS-25			0.45	N/A	810	1	2,268	2	N/A	N/A		2
OS-26			0.99	N/A	1,782	1	4,990	3	N/A	N/A		3
OS-27			1.02	N/A	1,836	1	5,141	4	N/A	N/A		4
OS-28			8.09	N/A	14,562	10	40,774	28	N/A	N/A		28
OS-29			0.65	N/A	1,170	1	3,276	2	N/A	N/A		2
OS-3			1.38	N/A	2,484	2	6,955	5	N/A	N/A		5
OS-30			0.91	N/A	1,638	1	4,586	3	N/A	N/A		3
OS-31			0.27	N/A	486	0	1,361	1	N/A	N/A		1
OS-32			0.24	N/A	432	0	1,210	1	N/A	N/A		1
OS-33			0.54	N/A	972	1	2,722	2	N/A	N/A		2
OS-34			0.55	N/A	990	1	2,772	2	N/A	N/A		2
OS-35			1.40	N/A	2,520	2	7,056	5	N/A	N/A		5
OS-36			3.81	N/A	6,858	5	19,202	13	N/A	N/A		13
OS-37			0.50	N/A	900	1	2,520	2	N/A	N/A		2
OS-38			2.72	N/A	4,896	3	13,709	10	N/A	N/A		10
OS-39			1.05	N/A	1,890	1	5,292	4	N/A	N/A		4
OS-4			0.70	N/A	1,260	1	3,528	2	N/A	N/A		2
OS-40			2.10	N/A	3,780	3	10,584	7	N/A	N/A		7
OS-41			1.90	N/A	3,420	2	9,576	7	N/A	N/A		7
OS-5			0.44	N/A	792	1	2,218	2	N/A	N/A		2
OS-6			3.09	N/A	5,562	4	15,574	11	N/A	N/A		11
OS-7			3.03	N/A	5,454	4	15,271	11	N/A	N/A		11
OS-8			0.53	N/A	954	1	2,671	2	N/A	N/A		2
OS-9			0.90	N/A	1,620	1	4,536	3	N/A	N/A		3
PA-1	MIXED COMM		31.07	N/A	46,605	32	130,494	91	209,723	146	2500	2591
PA-10	SFD/SFA FLEX		23.64	213	59,524	41	166,667	116	267,857	186	1500	1616
PA-11			30.16	271	75,941	53	212,634	148	341,733	237	1500	1648
PA-12			25.73	232	64,786	45	181,402	126	291,539	202	1500	1626
PA-13			21.05	183	51,198	36	143,354	100	230,391	160	1500	1600

Windler - Water Demand Projections

Water Distribution Design Criteria

Land Use	Avg Day (gdp/acre)	Max Day (gdp/acre)	Peak Hour (gdp/acre)
Commercial	1,500	4,200	6,750
Industrial (schools)	1,200	3,360	5,400
Parks & Greenbelts	1,800	5,040	N/A

Residential Criteria

People / unit
Avg day / capita (gpd)

Peaking Factors

2.77 Max Day
101 Max Hour

Fire Flow

Classification	Demand (gpm)	Time (hrs)
Residential	1500	2
Commercial/Multifamily	2500	2
Industrial	3500	3

Map Area Code	Land Use	Nodes	Total Acres	Proposed Units	Avg Day Demand (gpd)	Avg Day Demand (gpm)	Max Day Demand (gdp)	Max Day Demand (gpm)	Peak Hour Demand (gpd)	Peak Hour Demand (gpm)	Required Fire Flow (gpm)	Max Day Demand + Fire Flow (gpm)
PA-13	MF		6.50	195	54,555	38	152,754	106	245,498	170	1500	1606
PA-13	COMMERCIAL		0.50	N/A	750	1	2,100	1	3,375	2	2500	2501
PA-14	SFD/SFA		17.82	160	44,870	31	125,635	87	201,913	140	1500	1587
PA-14	MF		3.59	108	30,131	21	84,367	59	135,591	94	1500	1559
PA-14	COMMERCIAL		10.00	N/A	15,000	10	42,000	29	67,500	47	2500	2529
PA-15			34.78	313	87,574	61	245,206	170	394,081	274	1500	1670
PA-16	SFD/SFA FLEX		6.51	59	16,392	11	45,897	32	73,763	51	1500	1532
PA-17			16.89	152	42,528	30	119,078	83	191,375	133	1500	1583
PA-17	COMMERCIAL		1.00	N/A	1,500	1	4,200	3	6,750	5	2500	2503
PA-18	SFD/SFA FLEX		15.75	142	39,657	28	111,041	77	178,458	124	1500	1577
PA-19	SFA		17.88	161	45,021	31	126,058	88	202,593	141	1500	1588
PA-2	MF		23.70	711	198,916	138	556,966	387	895,124	622	1500	1887
PA-20			24.54	N/A	36,810	26	103,068	72	165,645	115	2500	2572
PA-21	MIXED COMM		4.10	N/A	6,156	4	17,237	12	27,702	19	2500	2512
PA-21			9.58	287	80,372	56	225,043	156	361,675	251	1500	1656
PA-22	MF		11.12	334	93,356	65	261,398	182	420,104	292	1500	1682
PA-22	MIXED COMM		4.77	N/A	7,151	5	20,021	14	32,177	22	2500	2514
PA-23			20.50	209	58,472	41	163,721	114	263,124	183	1500	1614
PA-24	SFD/SFA FLEX		13.24	118	33,013	23	92,436	64	148,558	103	1500	1564
PA-25			32.94	276	77,217	54	216,206	150	347,474	241	1500	1650
PA-26			35.55	N/A	42,660	30	119,448	83	191,970	133	3500	3583
PA-27	IND-3.3.5.Y,		9.66	N/A	11,592	8	32,458	23	52,164	36	3500	3523
PA-28	IND-3.3.5.Z		44.61	N/A	53,532	37	149,890	104	240,894	167	3500	3604
PA-29			56.61	N/A	67,932	47	190,210	132	305,694	212	3500	3632
PA-3	SFA		6.95	76	21,388	15	59,888	42	96,248	67	1500	1542
PA-3	COMMERCIAL		1.00	N/A	1,500	1	4,200	3	6,750	5	2500	2503
PA-4	SFD/SFA-FLEX		33.23	316	88,319	61	247,294	172	397,436	276	1500	1672
PA-5	MF		10.61	228	63,871	44	178,840	124	287,422	200	1500	1624
PA-6	MF		16.22	322	89,974	62	251,927	175	404,883	281	1500	1675
PA-7	SFD/SFA-FLEX		29.87	269	75,211	52	210,590	146	338,448	235	1500	1646
PA-7	COMMERCIAL		0.50	N/A	750	1	2,100	1	3,375	2	2500	2501
PA-8	SFD/SFA-FLEX		17.76	160	44,718	31	125,212	87	201,233	140	1500	1587
PA-9	SCHOOL		15.50	N/A	18,600	13	52,080	36	83,700	58	3500	3536
PK-1			16.60	N/A	29,880	21	83,664	58	N/A	N/A		58
PK-2												
Park	NEIGHBORHOOD PARK		18.97	N/A	34,146	24	95,609	66	N/A	N/A		66
Event Center			6.50	N/A	9,750	7	27,300	19	43,875	N/A	2500	2519
PK-3			5.00	N/A	9,000	6	25,200	18	N/A	N/A		18
PK-4			14.77	N/A	41,586	29	141,941	99	67,500	N/A	2500	2599

***Assume park & greebelt demand plus 15,000 gpd in PK-4 to account for planned restaurant and education venues.

Windler Development

Active Scenario: Static

Table: Reservoir Table

ID	Flow (gpm)	Head (ft)
RES9000	0	5,710.00
RES9002	0	5,710.00
RES9004	0	5,710.00
RES9006	0	5,710.00

Windler Development
Active Scenario: Static
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)
P1	87.78	24	150	0
P10	544.38	24	150	0
P11	150.60	24	150	0
P12	2.00	24	150	0
P13	96.81	30	150	0
P14	2.00	24	150	0
P15	141.89	24	150	0
P16	1,233.29	24	150	0
P17	1,196.27	24	150	0
P18	55.13	24	150	0
P19	35.00	24	150	0
P2	13.85	24	150	0
P20	10.00	6	150	0
P21	52.00	24	150	0
P22	2.00	6	150	0
P23	1,155.15	24	150	0
P24	128.15	24	150	0
P25	29.01	36	100	0
P26	2.00	6	150	0
P27	1,176.66	24	150	0
P28	3.00	36	100	0
P29	615.77	24	150	0
P3	2.00	24	100	0
P30	15.00	24	150	0
P31	113.94	24	150	0
P32	5.00	24	150	0
P33	3.00	36	100	0
P34	1,072.79	24	150	0
P35	1,645.39	24	150	0
P36	62.00	36	100	0
P37	1,214.65	24	150	0
P38	26.83	24	150	0
P39	494.59	36	100	0
P4	39.00	24	150	0
P40	50.38	24	150	0
P41	714.93	36	100	0
P42	643.98	24	150	0
P43	486.73	36	100	0
P44	31.99	24	150	0

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)
P45	492.72	24	150	0
P46	23.00	24	150	0
P47	476.32	36	100	0
P48	19.67	24	150	0
P49	1,789.27	36	100	0
P5	75.00	24	150	0
P50	344.87	24	150	0
P51	599.57	36	100	0
P52	96.20	24	150	0
P53	1,027.44	12	150	0
P54	25.39	24	150	0
P55	1,890.12	12	150	0
P56	88.01	24	150	0
P57	47.50	36	100	0
P58	2,066.91	24	150	0
P59	2,034.20	24	150	0
P6	95.12	36	100	0
P60	647.50	12	150	0
P61	789.77	12	150	0
P7	64.84	36	100	0
P8	1,214.14	24	150	0
P9	410.62	24	150	0
PW100	718.76	12	150	0
PW102	371.50	12	150	0
PW104	805.59	12	150	0
PW106	206.48	12	150	0
PW108	920.17	12	150	0
PW110	104.22	12	150	0
PW112	822.92	12	150	0
PW114	819.45	12	150	0
PW122	67.74	12	150	0
PW124	309.03	12	150	0
PW126	530.94	12	150	0
PW128	784.79	12	150	0
PW130	76.70	12	150	0
PW132	750.01	12	150	0
PW134	687.54	12	150	0
PW136	378.49	12	150	0
PW138	339.92	12	150	0

Windler Development

Active Scenario: Static

Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1	0.00	5,450.00	5,710.00	112.66
J10	0.00	5,510.00	5,710.00	86.66
J100	0.00	5,505.00	5,710.00	88.83
J102	0.00	5,525.00	5,710.00	80.16
J106	0.00	5,495.45	5,710.00	92.96
J11	0.00	5,518.50	5,710.00	82.98
J110	0.00	5,439.92	5,710.00	117.02
J12	0.00	5,545.00	5,710.00	71.49
J120	0.00	5,485.00	5,710.00	97.49
J122	0.00	5,470.00	5,710.00	103.99
J124	0.00	5,455.00	5,710.00	110.49
J126	0.00	5,465.00	5,710.00	106.16
J128	0.00	5,480.00	5,710.00	99.66
J13	0.00	5,505.50	5,710.00	88.61
J130	0.00	5,485.00	5,710.00	97.49
J132	0.00	5,447.85	5,710.00	113.59
J134	0.00	5,545.00	5,710.00	71.49
J136	0.00	5,545.00	5,710.00	71.49
J138	0.00	5,550.00	5,710.00	69.33
J14	0.00	5,430.00	5,710.00	121.32
J142	0.00	5,470.00	5,710.00	103.99
J144	0.00	5,492.49	5,710.00	94.25
J146	0.00	5,515.28	5,710.00	84.37
J148	0.00	5,520.00	5,710.00	82.33
J15	0.00	5,505.50	5,710.00	88.61
J152	0.00	5,465.00	5,710.00	106.16
J154	0.00	5,480.00	5,710.00	99.66
J156	0.00	5,487.00	5,710.00	96.63
J158	0.00	5,485.00	5,710.00	97.49
J16	0.00	5,450.00	5,710.00	112.66
J160	0.00	5,485.00	5,710.00	97.49
J162	0.00	5,485.00	5,710.00	97.49
J164	0.00	5,485.00	5,710.00	97.49
J166	0.00	5,485.00	5,710.00	97.49
J168	0.00	5,482.00	5,710.00	98.79
J17	0.00	5,518.50	5,710.00	82.98
J170	0.00	5,482.00	5,710.00	98.79
J172	0.00	5,465.00	5,710.00	106.16
J174	0.00	5,475.00	5,710.00	101.83
J176	0.00	5,480.00	5,710.00	99.66

Windler Development

Active Scenario: Static

Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J178	0.00	5,480.00	5,710.00	99.66
J18	0.00	5,545.00	5,710.00	71.49
J182	0.00	5,475.00	5,710.00	101.83
J184	0.00	5,485.00	5,710.00	97.49
J186	0.00	5,480.00	5,710.00	99.66
J188	0.00	5,485.00	5,710.00	97.49
J19	0.00	5,510.00	5,710.00	86.66
J190	0.00	5,465.00	5,710.00	106.16
J192	0.00	5,470.00	5,710.00	103.99
J194	0.00	5,470.00	5,710.00	103.99
J196	0.00	5,465.00	5,710.00	106.16
J198	0.00	5,465.00	5,710.00	106.16
J2	0.00	5,445.00	5,710.00	114.82
J20	0.00	5,545.00	5,710.00	71.49
J200	0.00	5,465.00	5,710.00	106.16
J202	0.00	5,465.00	5,710.00	106.16
J204	0.00	5,470.00	5,710.00	103.99
J206	0.00	5,470.00	5,710.00	103.99
J208	0.00	5,465.00	5,710.00	106.16
J21	0.00	5,454.50	5,710.00	110.71
J210	0.00	5,467.00	5,710.00	105.29
J212	0.00	5,470.00	5,710.00	103.99
J216	0.00	5,468.35	5,710.00	104.71

Windler Development
Active Scenario: Average Day
Table: Reservoir Table

ID	Flow (gpm)	Head (ft)
RES9000	-210.62	5,710.00
RES9002	-273.59	5,710.00
RES9004	-529.40	5,710.00
RES9006	-282.62	5,710.00

Windler Development
Active Scenario: Average Day
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
P1	87.78	24	150	210.45	0.15	0.00	0.00
P10	544.38	24	150	137.24	0.10	0.00	0.00
P11	150.60	24	150	84.92	0.06	0.00	0.00
P12	2.00	24	150	-97.86	0.07	0.00	0.00
P13	96.81	30	150	-212.77	0.10	0.00	0.00
P14	2.00	24	150	-97.86	0.07	0.00	0.00
P15	141.89	24	150	-47.87	0.03	0.00	0.00
P16	1,233.29	24	150	-97.86	0.07	0.00	0.00
P17	1,196.27	24	150	84.92	0.06	0.00	0.00
P18	55.13	24	150	-182.34	0.13	0.00	0.01
P19	35.00	24	150	41.56	0.03	0.00	0.00
P2	13.85	24	150	210.45	0.15	0.00	0.00
P20	10.00	6	150	2.68	0.03	0.00	0.00
P21	52.00	24	150	-47.87	0.03	0.00	0.00
P22	2.00	6	150	2.68	0.03	0.00	0.00
P23	1,155.15	24	150	41.56	0.03	0.00	0.00
P24	128.15	24	150	-127.85	0.09	0.00	0.00
P25	29.01	36	100	316.73	0.10	0.00	0.00
P26	2.00	6	150	2.68	0.03	0.00	0.00
P27	1,176.66	24	150	127.85	0.09	0.00	0.00
P28	3.00	36	100	314.06	0.10	0.00	0.00
P29	615.77	24	150	120.98	0.09	0.00	0.00
P3	2.00	24	100	210.45	0.15	0.00	0.00
P30	15.00	24	150	0.00	0.00	0.00	0.00
P31	113.94	24	150	-97.86	0.07	0.00	0.00
P32	5.00	24	150	0.00	0.00	0.00	0.00
P33	3.00	36	100	-314.06	0.10	0.00	0.00
P34	1,072.79	24	150	47.87	0.03	0.00	0.00
P35	1,645.39	24	150	4.81	0.00	0.00	0.00
P36	62.00	36	100	529.50	0.17	0.00	0.01
P37	1,214.65	24	150	-177.82	0.13	0.00	0.00
P38	26.83	24	150	0.00	0.00	0.00	0.00
P39	494.59	36	100	316.73	0.10	0.00	0.00
P4	39.00	24	150	137.24	0.10	0.00	0.01
P40	50.38	24	150	273.59	0.19	0.00	0.00
P41	714.93	36	100	225.81	0.07	0.00	0.00
P42	643.98	24	150	-162.21	0.12	0.00	0.00
P43	486.73	36	100	224.62	0.07	0.00	0.00
P44	31.99	24	150	-4.81	0.00	0.00	0.00

Windler Development
Active Scenario: Average Day
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
P45	492.72	24	150	4.81	0.00	0.00	0.00
P46	23.00	24	150	-4.81	0.00	0.00	0.00
P47	476.32	36	100	149.75	0.05	0.00	0.00
P48	19.67	24	150	4.81	0.00	0.00	0.00
P49	1,789.27	36	100	-31.48	0.01	0.00	0.00
P5	75.00	24	150	135.52	0.10	0.00	0.00
P50	344.87	24	150	4.81	0.00	0.00	0.00
P51	599.57	36	100	183.28	0.06	0.00	0.00
P52	96.20	24	150	4.81	0.00	0.00	0.00
P53	1,027.44	12	150	-30.33	0.09	0.00	0.00
P54	25.39	24	150	84.92	0.06	0.00	0.00
P55	1,890.12	12	150	61.68	0.17	0.02	0.01
P56	88.01	24	150	120.98	0.09	0.00	0.00
P57	47.50	36	100	529.50	0.17	0.00	0.00
P58	2,066.91	24	150	4.29	0.00	0.00	0.00
P59	2,034.20	24	150	-100.35	0.07	0.00	0.00
P6	95.12	36	100	48.96	0.02	0.00	0.00
P60	647.50	12	150	-49.70	0.14	0.00	0.01
P61	789.77	12	150	28.47	0.08	0.00	0.00
P7	64.84	36	100	48.96	0.02	0.00	0.00
P8	1,214.14	24	150	135.52	0.10	0.00	0.00
P9	410.62	24	150	210.45	0.15	0.00	0.00
PW100	718.76	12	150	17.02	0.05	0.00	0.00
PW102	371.50	12	150	3.21	0.01	0.00	0.00
PW104	805.59	12	150	-19.36	0.05	0.00	0.00
PW106	206.48	12	150	-19.36	0.05	0.00	0.00
PW108	920.17	12	150	22.57	0.06	0.00	0.00
PW110	104.22	12	150	22.57	0.06	0.00	0.00
PW112	822.92	12	150	24.44	0.07	0.00	0.00
PW114	819.45	12	150	18.71	0.05	0.00	0.00
PW122	67.74	12	150	39.50	0.11	0.00	0.01
PW124	309.03	12	150	31.45	0.09	0.00	0.00
PW126	530.94	12	150	14.68	0.04	0.00	0.00
PW128	784.79	12	150	14.68	0.04	0.00	0.00
PW130	76.70	12	150	14.68	0.04	0.00	0.00
PW132	750.01	12	150	14.43	0.04	0.00	0.00
PW134	687.54	12	150	14.43	0.04	0.00	0.00
PW136	378.49	12	150	-5.73	0.02	0.00	0.00
PW138	339.92	12	150	-17.02	0.05	0.00	0.00
PW142	774.38	12	150	-16.76	0.05	0.00	0.00
PW144	222.90	12	150	-16.76	0.05	0.00	0.00
PW146	816.09	12	150	1.87	0.01	0.00	0.00
PW150	144.25	12	150	79.68	0.23	0.00	0.02

Windler Development
Active Scenario: Average Day
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
PW152	463.38	12	150	52.29	0.15	0.00	0.01
PW154	574.01	12	150	33.04	0.09	0.00	0.00
PW156	124.91	12	150	0.00	0.00	0.00	0.00
PW158	1,062.91	12	150	-12.96	0.04	0.00	0.00
PW160	125.94	12	150	12.96	0.04	0.00	0.00
PW162	364.61	12	150	12.96	0.04	0.00	0.00
PW164	1,064.73	12	150	-16.66	0.05	0.00	0.00
PW166	332.40	12	150	7.05	0.02	0.00	0.00
PW170	91.52	12	150	23.72	0.07	0.00	0.00
PW172	318.29	12	150	23.72	0.07	0.00	0.00
PW174	604.87	12	150	23.72	0.07	0.00	0.00
PW178	110.23	12	150	-30.79	0.09	0.00	0.00
PW180	305.49	12	150	-30.79	0.09	0.00	0.00
PW182	433.96	12	150	-30.79	0.09	0.00	0.00
PW184	238.83	12	150	-30.79	0.09	0.00	0.00
PW186	146.87	12	150	-30.79	0.09	0.00	0.00
PW190	1,563.15	8	150	8.91	0.06	0.00	0.00
PW192	2,115.23	8	150	8.57	0.05	0.00	0.00
PW194	819.93	8	150	-19.07	0.12	0.01	0.01
PW196	777.84	8	150	-35.60	0.23	0.02	0.03
PW198	606.04	8	150	-17.47	0.11	0.00	0.01
PW200	347.95	12	150	-0.25	0.00	0.00	0.00
PW202	92.24	12	150	16.76	0.05	0.00	0.00
PW206	213.77	12	150	-28.47	0.08	0.00	0.00
PW208	220.96	12	150	-1.87	0.01	0.00	0.00
PW210	105.18	12	150	7.05	0.02	0.00	0.00
PW54	1,338.40	8	150	-28.87	0.18	0.03	0.02
PW55	1,375.38	8	150	-26.38	0.17	0.02	0.02
PW57	949.37	8	150	31.22	0.20	0.02	0.02
PW58	1,311.35	8	150	-32.26	0.21	0.03	0.02
PW59	425.84	8	150	-31.27	0.20	0.01	0.02
PW60	1,360.88	8	150	7.78	0.05	0.00	0.00
PW61	710.45	8	150	-16.50	0.11	0.00	0.01
PW63	1,460.70	8	150	-27.64	0.18	0.03	0.02
PW64	1,379.34	8	150	-30.94	0.20	0.03	0.02
PW65	1,291.85	8	150	48.49	0.31	0.07	0.05
PW66	2,002.94	8	150	-26.31	0.17	0.03	0.02
PW68	662.37	12	150	42.70	0.12	0.00	0.01
PW72	345.92	12	150	83.08	0.24	0.01	0.02
PW74	1,959.18	12	150	23.19	0.07	0.00	0.00
PW78	1,281.12	8	150	-32.70	0.21	0.03	0.02
PW82	1,215.48	12	150	-93.31	0.26	0.03	0.02
PW84	53.68	24	150	-282.69	0.20	0.00	0.00

Windler Development
Active Scenario: Average Day
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
PW86	284.96	36	100	124.08	0.04	0.00	0.00
PW88	505.64	36	100	258.02	0.08	0.00	0.00
PW90	730.79	12	150	58.72	0.17	0.01	0.01
PW92	1,987.35	12	150	-25.68	0.07	0.00	0.00
PW94	1,018.33	8	150	52.10	0.33	0.06	0.06

Windler Development
Active Scenario: Average Day
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1	184.42	5,450.00	5,710.00	112.66
J10	0.00	5,510.00	5,710.00	86.66
J100	1.28	5,505.00	5,710.00	88.82
J102	41.34	5,525.00	5,710.00	80.16
J106	74.56	5,495.45	5,710.00	92.96
J11	1.45	5,518.50	5,710.00	82.98
J110	62.48	5,439.92	5,710.00	117.02
J12	6.30	5,545.00	5,710.00	71.49
J120	37.17	5,485.00	5,709.99	97.49
J122	3.94	5,470.00	5,709.98	103.98
J124	84.88	5,455.00	5,709.98	110.48
J126	0.00	5,465.00	5,709.99	106.15
J128	132.05	5,480.00	5,709.97	99.65
J13	0.00	5,505.50	5,710.00	88.61
J130	95.75	5,485.00	5,710.00	97.49
J132	54.14	5,447.85	5,710.00	113.59
J134	0.00	5,545.00	5,710.00	71.49
J136	0.00	5,545.00	5,710.00	71.49
J138	4.58	5,550.00	5,710.00	69.33
J14	0.00	5,430.00	5,710.00	121.32
J142	11.33	5,470.00	5,710.00	103.99
J144	0.00	5,492.49	5,710.00	94.25
J146	0.00	5,515.28	5,710.00	84.37
J148	32.30	5,520.00	5,709.99	82.32
J15	0.00	5,505.50	5,710.00	88.61
J152	0.00	5,465.00	5,709.99	106.16
J154	0.00	5,480.00	5,709.99	99.66
J156	0.00	5,487.00	5,709.99	96.62
J158	0.00	5,485.00	5,709.99	97.49
J16	0.00	5,450.00	5,710.00	112.66
J160	0.00	5,485.00	5,709.99	97.49
J162	0.00	5,485.00	5,709.99	97.49
J164	0.00	5,485.00	5,709.99	97.49
J166	0.00	5,485.00	5,709.99	97.49
J168	0.00	5,482.00	5,709.99	98.79
J17	0.00	5,518.50	5,710.00	82.98
J170	0.00	5,482.00	5,709.99	98.79
J172	47.17	5,465.00	5,709.99	106.15
J174	0.00	5,475.00	5,709.99	101.82

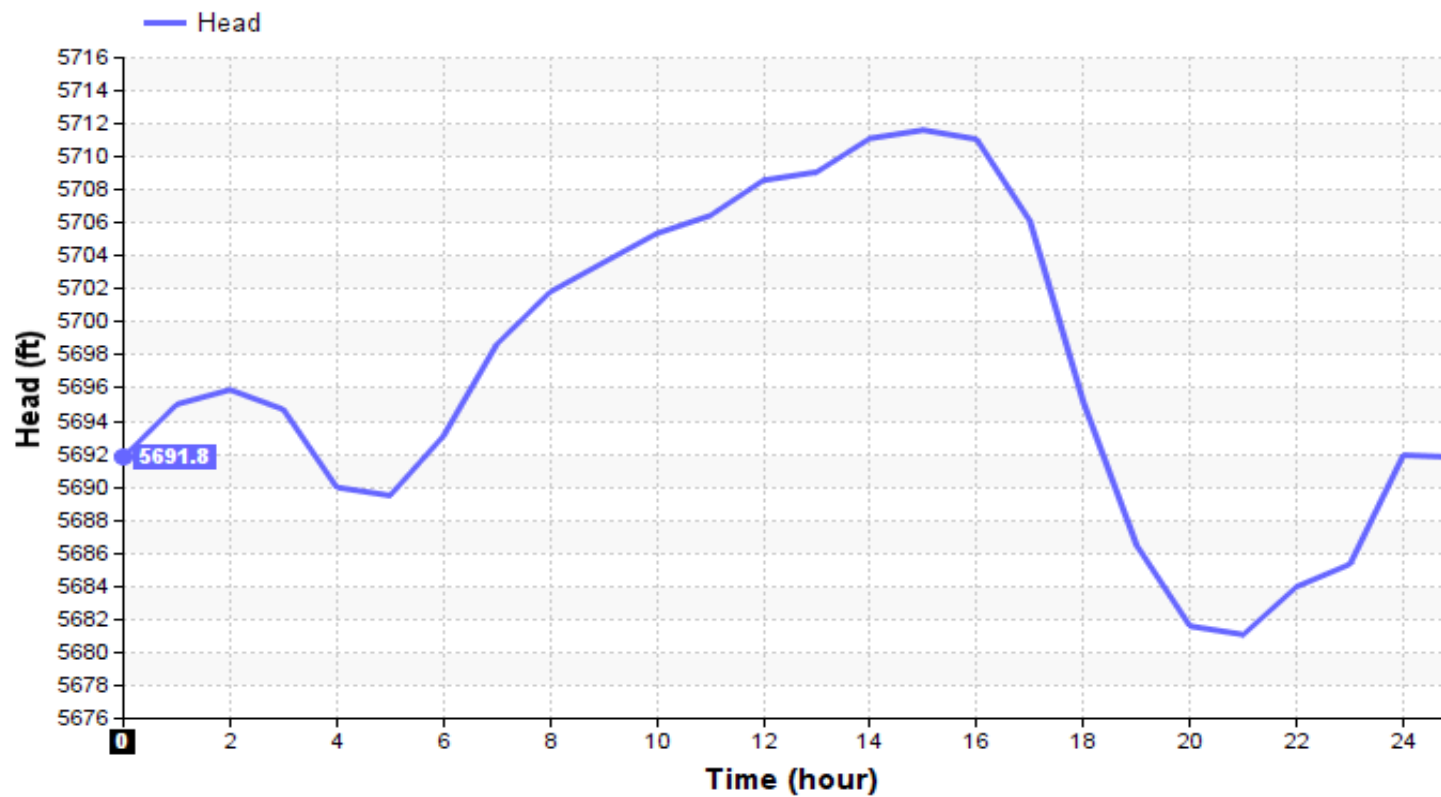
Windler Development
Active Scenario: Average Day
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J176	0.00	5,480.00	5,709.99	99.66
J178	0.00	5,480.00	5,709.99	99.66
J18	0.00	5,545.00	5,710.00	71.49
J182	0.00	5,475.00	5,709.99	101.82
J184	0.00	5,485.00	5,709.99	97.49
J186	8.05	5,480.00	5,709.99	99.66
J188	0.00	5,485.00	5,709.99	97.49
J19	0.00	5,510.00	5,710.00	86.66
J190	0.00	5,465.00	5,709.98	106.15
J192	0.00	5,470.00	5,709.99	103.99
J194	0.00	5,470.00	5,709.99	103.99
J196	0.00	5,465.00	5,709.99	106.15
J198	0.00	5,465.00	5,709.99	106.15
J2	1.73	5,445.00	5,710.00	114.82
J20	0.00	5,545.00	5,710.00	71.49
J200	0.00	5,465.00	5,709.98	106.15
J202	0.00	5,465.00	5,709.98	106.15
J204	0.00	5,470.00	5,709.98	103.98
J206	0.00	5,470.00	5,709.98	103.98
J208	0.00	5,465.00	5,709.98	106.15
J21	0.00	5,454.50	5,710.00	110.71
J210	0.00	5,467.00	5,709.98	105.28
J212	29.62	5,470.00	5,709.98	103.98
J216	3.40	5,468.35	5,709.99	104.7
J218	0.00	5,467.29	5,709.99	105.16
J22	0.00	5,450.00	5,710.00	112.66
J220	22.93	5,468.69	5,709.98	104.56
J222	0.00	5,470.00	5,709.99	103.99
J224	0.00	5,455.00	5,709.99	110.49
J226	35.55	5,540.00	5,709.98	73.65
J228	0.00	5,483.48	5,709.99	98.15
J23	0.00	5,466.50	5,710.00	105.51
J230	0.00	5,465.00	5,709.99	106.15
J24	0.00	5,460.00	5,710.00	108.32
J25	0.00	5,470.00	5,710.00	103.99
J26	0.00	5,460.00	5,710.00	108.32
J27	0.00	5,480.00	5,710.00	99.66
J28	0.00	5,480.00	5,710.00	99.66
J29	41.23	5,466.79	5,710.00	105.38
J3	0.00	5,450.00	5,710.00	112.66
J30	0.00	5,450.00	5,710.00	112.66
J31	0.00	5,463.50	5,710.00	106.81
J32	0.00	5,450.00	5,710.00	112.66
J33	0.00	5,466.50	5,710.00	105.51

Windler Development
Active Scenario: Average Day
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J34	0.00	5,470.00	5,710.00	103.99
J4	4.53	5,430.00	5,710.00	121.32
J46	0.00	5,466.50	5,710.00	105.51
J48	0.00	5,450.00	5,710.00	112.66
J5	0.00	5,505.50	5,710.00	88.61
J54	0.00	5,445.00	5,710.00	114.82
J6	0.00	5,506.50	5,710.00	88.18
J62	0.00	5,545.00	5,710.00	71.49
J64	0.00	5,450.00	5,710.00	112.66
J66	0.00	5,510.00	5,710.00	86.66
J68	1.19	5,525.00	5,710.00	80.16
J7	0.00	5,510.00	5,710.00	86.66
J72	0.00	5,510.00	5,710.00	86.66
J8	0.00	5,510.00	5,710.00	86.66
J9	0.00	5,510.00	5,710.00	86.66
J90	32.28	5,490.00	5,709.96	95.31
J92	126.89	5,510.00	5,709.93	86.63
J94	0.99	5,525.00	5,710.00	80.16
J96	56.19	5,545.00	5,709.97	71.48
J98	56.54	5,530.00	5,709.96	77.98

Reservoir RES9002



Windler Development
Active Scenario: Maximum Day @ 15 hours
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
P1	87.78	24	150	589.35	0.42	0.00	0.03
P10	544.38	24	150	384.35	0.27	0.01	0.01
P11	150.60	24	150	237.59	0.17	0.00	0.01
P12	2.00	24	150	-274.08	0.19	0.00	0.00
P13	96.81	30	150	-599.90	0.27	0.00	0.01
P14	2.00	24	150	-274.08	0.19	0.00	0.00
P15	141.89	24	150	-133.86	0.09	0.00	0.00
P16	1,233.29	24	150	-274.08	0.19	0.01	0.01
P17	1,196.27	24	150	237.59	0.17	0.01	0.00
P18	55.13	24	150	-510.63	0.36	0.00	0.02
P19	35.00	24	150	116.22	0.08	0.00	0.00
P2	13.85	24	150	589.35	0.42	0.00	0.04
P20	10.00	6	150	7.50	0.09	0.00	0.00
P21	52.00	24	150	-133.86	0.09	0.00	0.00
P22	2.00	6	150	7.50	0.09	0.00	0.00
P23	1,155.15	24	150	116.22	0.08	0.00	0.00
P24	128.15	24	150	-362.30	0.26	0.00	0.01
P25	29.01	36	100	886.74	0.28	0.00	0.02
P26	2.00	6	150	7.50	0.09	0.00	0.00
P27	1,176.66	24	150	362.30	0.26	0.01	0.01
P28	3.00	36	100	879.24	0.28	0.00	0.00
P29	615.77	24	150	342.71	0.24	0.01	0.01
P3	2.00	24	100	589.35	0.42	0.00	0.00
P30	15.00	24	150	0.00	0.00	0.00	0.00
P31	113.94	24	150	-274.08	0.19	0.00	0.00
P32	5.00	24	150	0.00	0.00	0.00	0.00
P33	3.00	36	100	-879.24	0.28	0.00	0.00
P34	1,072.79	24	150	133.86	0.09	0.00	0.00
P35	1,645.39	24	150	17.81	0.01	0.00	0.00
P36	62.00	36	100	1,486.63	0.47	0.00	0.04
P37	1,214.65	24	150	-497.96	0.35	0.02	0.02
P38	26.83	24	150	0.00	0.00	0.00	0.00
P39	494.59	36	100	886.74	0.28	0.01	0.02
P4	39.00	24	150	384.35	0.27	0.00	0.01
P40	50.38	24	150	779.40	0.55	0.00	0.05
P41	714.93	36	100	632.14	0.20	0.01	0.01
P42	643.98	24	150	-458.16	0.32	0.01	0.02
P43	486.73	36	100	628.81	0.20	0.00	0.01
P44	31.99	24	150	-17.81	0.01	0.00	0.00

Windler Development
Active Scenario: Maximum Day @ 15 hours
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
P45	492.72	24	150	17.81	0.01	0.00	0.00
P46	23.00	24	150	-17.81	0.01	0.00	0.00
P47	476.32	36	100	419.19	0.13	0.00	0.00
P48	19.67	24	150	17.81	0.01	0.00	0.00
P49	1,789.27	36	100	-88.29	0.03	0.00	0.00
P5	75.00	24	150	379.52	0.27	0.00	0.01
P50	344.87	24	150	17.81	0.01	0.00	0.00
P51	599.57	36	100	513.07	0.16	0.00	0.01
P52	96.20	24	150	17.81	0.01	0.00	0.00
P53	1,027.44	12	150	-85.02	0.24	0.02	0.02
P54	25.39	24	150	237.59	0.17	0.00	0.00
P55	1,890.12	12	150	181.81	0.52	0.16	0.08
P56	88.01	24	150	342.71	0.24	0.00	0.01
P57	47.50	36.00	100	1,486.63	0.47	0.00	0.04
P58	2,066.91	24	150	11.84	0.01	0.00	0.00
P59	2,034.20	24	150	-281.14	0.20	0.01	0.01
P6	95.12	36	100	137.23	0.04	0.00	0.00
P60	647.50	12	150	-139.44	0.40	0.03	0.05
P61	789.77	12	150	79.72	0.23	0.01	0.02
P7	64.84	36	100	137.23	0.04	0.00	0.00
P8	1,214.14	24	150	379.52	0.27	0.01	0.01
P9	410.62	24	150	589.35	0.42	0.01	0.02
PW100	718.76	12	150	47.63	0.14	0.00	0.01
PW102	371.50	12	150	8.73	0.02	0.00	0.00
PW104	805.59	12	150	-54.42	0.15	0.01	0.01
PW106	206.48	12	150	-54.42	0.15	0.00	0.01
PW108	920.17	12	150	63.15	0.18	0.01	0.01
PW110	104.22	12	150	63.15	0.18	0.00	0.01
PW112	822.92	12	150	68.44	0.19	0.01	0.01
PW114	819.45	12	150	52.37	0.15	0.01	0.01
PW122	67.74	12	150	110.55	0.31	0.00	0.03
PW124	309.03	12	150	88.01	0.25	0.01	0.02
PW126	530.94	12	150	41.10	0.12	0.00	0.01
PW128	784.79	12	150	41.10	0.12	0.00	0.00
PW130	76.70	12	150	41.10	0.12	0.00	0.01
PW132	750.01	12	150	40.38	0.11	0.00	0.01
PW134	687.54	12	150	40.38	0.11	0.00	0.00
PW136	378.49	12	150	-16.08	0.05	0.00	0.00
PW138	339.92	12	150	-47.63	0.14	0.00	0.01
PW142	774.38	12	150	-46.92	0.13	0.01	0.01
PW144	222.90	12	150	-46.92	0.13	0.00	0.01
PW146	816.09	12	150	5.30	0.02	0.00	0.00
PW150	144.25	12	150	231.72	0.66	0.02	0.13

Windler Development
Active Scenario: Maximum Day @ 15 hours
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
PW152	463.38	12	150	151.83	0.43	0.03	0.06
PW154	574.01	12	150	97.72	0.28	0.02	0.03
PW156	124.91	12	150	0.00	0.00	0.00	0.00
PW158	1,062.91	12	150	-35.99	0.10	0.00	0.00
PW160	125.94	12	150	35.99	0.10	0.00	0.00
PW162	364.61	12	150	35.99	0.10	0.00	0.00
PW164	1,064.73	12	150	-46.96	0.13	0.01	0.01
PW166	332.40	12	150	22.86	0.06	0.00	0.00
PW170	91.52	12	150	69.81	0.20	0.00	0.01
PW172	318.29	12	150	69.81	0.20	0.00	0.02
PW174	604.87	12	150	69.81	0.20	0.01	0.01
PW178	110.23	12	150	-89.41	0.25	0.00	0.02
PW180	305.49	12	150	-89.41	0.25	0.01	0.02
PW182	433.96	12	150	-89.41	0.25	0.01	0.02
PW184	238.83	12	150	-89.41	0.25	0.01	0.02
PW186	146.87	12	150	-89.41	0.25	0.00	0.02
PW190	1,563.15	8	150	24.94	0.16	0.02	0.02
PW192	2,115.23	8	150	24.00	0.15	0.03	0.01
PW194	819.93	8	150	-53.41	0.34	0.05	0.06
PW196	777.84	8	150	-99.67	0.64	0.15	0.20
PW198	606.04	8	150	-48.93	0.31	0.03	0.05
PW200	347.95	12	150	-0.71	0.00	0.00	0.00
PW202	92.24	12	150	46.92	0.13	0.00	0.01
PW206	213.77	12	150	-79.72	0.23	0.00	0.02
PW208	220.96	12	150	-5.30	0.02	0.00	0.00
PW210	105.18	12	150	22.86	0.06	0.00	0.00
PW54	1,338.40	8	150	-80.83	0.52	0.18	0.13
PW55	1,375.38	8	150	-73.87	0.47	0.15	0.11
PW57	949.37	8	150	87.43	0.56	0.15	0.15
PW58	1,311.35	8	150	-90.31	0.58	0.21	0.16
PW59	425.84	8	150	-87.54	0.56	0.07	0.15
PW60	1,360.88	8	150	21.77	0.14	0.02	0.01
PW61	710.45	8	150	-46.21	0.29	0.03	0.05
PW63	1,460.70	8	150	-77.41	0.49	0.18	0.12
PW64	1,379.34	8	150	-86.64	0.55	0.21	0.15
PW65	1,291.85	8	150	135.73	0.87	0.45	0.35
PW66	2,002.94	8	150	-73.68	0.47	0.22	0.11
PW68	662.37	12	150	119.28	0.34	0.03	0.04
PW72	345.92	12	150	241.24	0.68	0.05	0.14
PW74	1,959.18	12	150	73.55	0.21	0.03	0.02
PW78	1,281.12	8	150	-91.56	0.58	0.21	0.17
PW82	1,215.48	12	150	-261.27	0.74	0.20	0.16
PW84	53.68	24	150	-791.77	0.56	0.00	0.05

Windler Development
Active Scenario: Maximum Day @ 15 hours
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
PW86	284.96	36	100	347.28	0.11	0.00	0.00
PW88	505.64	36	100	722.33	0.23	0.01	0.01
PW90	730.79	12	150	164.41	0.47	0.05	0.07
PW92	1,987.35	12	150	-71.91	0.20	0.03	0.01
PW94	1,018.33	8	150	145.89	0.93	0.40	0.40

Windler Development
Active Scenario: Maximum Day @ 15 hours
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1	516.37	5,450.00	5,711.59	113.35
J10	0.00	5,510.00	5,711.62	87.36
J100	3.57	5,505.00	5,711.59	89.51
J102	115.74	5,525.00	5,711.59	80.85
J106	208.76	5,495.45	5,711.60	93.66
J11	4.06	5,518.50	5,711.61	83.67
J110	174.95	5,439.92	5,711.59	117.71
J12	17.64	5,545.00	5,711.61	72.19
J120	104.09	5,485.00	5,711.55	98.17
J122	11.03	5,470.00	5,711.49	104.64
J124	255.36	5,455.00	5,711.46	111.12
J126	0.00	5,465.00	5,711.56	106.84
J128	369.75	5,480.00	5,711.41	100.27
J13	0.00	5,505.50	5,711.61	89.31
J130	268.10	5,485.00	5,711.59	98.18
J132	151.59	5,447.85	5,711.61	114.29
J134	0.00	5,545.00	5,711.61	72.19
J136	0.00	5,545.00	5,711.61	72.19
J138	12.81	5,550.00	5,711.60	70.02
J14	0.00	5,430.00	5,711.62	122.02
J142	31.71	5,470.00	5,711.60	104.69
J144	0.00	5,492.49	5,711.59	94.94
J146	0.00	5,515.28	5,711.61	85.07
J148	90.43	5,520.00	5,711.56	83.00
J15	0.00	5,505.50	5,711.61	89.31
J152	0.00	5,465.00	5,711.58	106.85
J154	0.00	5,480.00	5,711.58	100.34
J156	0.00	5,487.00	5,711.56	97.30
J158	0.00	5,485.00	5,711.56	98.17
J16	0.00	5,450.00	5,711.59	113.35
J160	0.00	5,485.00	5,711.56	98.17
J162	0.00	5,485.00	5,711.57	98.17
J164	0.00	5,485.00	5,711.56	98.17
J166	0.00	5,485.00	5,711.56	98.17
J168	0.00	5,482.00	5,711.56	99.47
J17	0.00	5,518.50	5,711.61	83.67
J170	0.00	5,482.00	5,711.55	99.47
J172	132.09	5,465.00	5,711.55	106.83

Windler Development
Active Scenario: Maximum Day @ 15 hours
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J174	0.00	5,475.00	5,711.56	102.50
J176	0.00	5,480.00	5,711.56	100.34
J178	0.00	5,480.00	5,711.57	100.34
J18	0.00	5,545.00	5,711.61	72.19
J182	0.00	5,475.00	5,711.58	102.51
J184	0.00	5,485.00	5,711.58	98.18
J186	22.54	5,480.00	5,711.57	100.34
J188	0.00	5,485.00	5,711.57	98.17
J19	0.00	5,510.00	5,711.62	87.36
J190	0.00	5,465.00	5,711.49	106.80
J192	0.00	5,470.00	5,711.55	104.66
J194	0.00	5,470.00	5,711.54	104.66
J196	0.00	5,465.00	5,711.53	106.82
J198	0.00	5,465.00	5,711.53	106.82
J2	4.83	5,445.00	5,711.60	115.52
J20	0.00	5,545.00	5,711.61	72.19
J200	0.00	5,465.00	5,711.51	106.81
J202	0.00	5,465.00	5,711.50	106.81
J204	0.00	5,470.00	5,711.49	104.64
J206	0.00	5,470.00	5,711.49	104.64
J208	0.00	5,465.00	5,711.49	106.80
J21	0.00	5,454.50	5,711.62	111.41
J210	0.00	5,467.00	5,711.49	105.94
J212	82.95	5,470.00	5,711.49	104.64
J216	9.52	5,468.35	5,711.53	105.37
J218	0.00	5,467.29	5,711.55	105.84
J22	0.00	5,450.00	5,711.62	113.36
J220	64.19	5,468.69	5,711.51	105.21
J222	0.00	5,470.00	5,711.56	104.67
J224	0.00	5,455.00	5,711.56	111.17
J226	99.55	5,540.00	5,711.46	74.29
J228	0.00	5,483.48	5,711.56	98.83
J23	0.00	5,466.50	5,711.60	106.20
J230	0.00	5,465.00	5,711.55	106.83
J24	0.00	5,460.00	5,711.59	109.01
J25	0.00	5,470.00	5,711.60	104.69
J26	0.00	5,460.00	5,711.59	109.01
J27	0.00	5,480.00	5,711.60	100.35
J28	0.00	5,480.00	5,711.60	100.35
J29	115.45	5,466.79	5,711.61	106.08
J3	0.00	5,450.00	5,711.62	113.36
J30	0.00	5,450.00	5,711.59	113.35
J31	0.00	5,463.50	5,711.60	107.50
J32	0.00	5,450.00	5,711.59	113.35

Windler Development
Active Scenario: Maximum Day @ 15 hours
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J33	0.00	5,466.50	5,711.60	106.20
J34	0.00	5,470.00	5,711.60	104.69
J4	12.67	5,430.00	5,711.62	122.02
J46	0.00	5,466.50	5,711.60	106.20
J48	0.00	5,450.00	5,711.62	113.36
J5	0.00	5,505.50	5,711.61	89.31
J54	0.00	5,445.00	5,711.60	115.52
J6	0.00	5,506.50	5,711.61	88.88
J62	0.00	5,545.00	5,711.61	72.19
J64	0.00	5,450.00	5,711.59	113.35
J66	0.00	5,510.00	5,711.62	87.36
J68	3.33	5,525.00	5,711.60	80.85
J7	0.00	5,510.00	5,711.62	87.36
J72	0.00	5,510.00	5,711.62	87.36
J8	0.00	5,510.00	5,711.62	87.36
J9	0.00	5,510.00	5,711.62	87.36
J90	90.38	5,490.00	5,711.38	95.92
J92	355.30	5,510.00	5,711.15	87.16
J94	2.77	5,525.00	5,711.60	80.85
J96	157.33	5,545.00	5,711.39	72.10
J98	158.30	5,530.00	5,711.37	78.59

Windler Development
Active Scenario: Maximum Day @ 21 hours
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
P1	87.78	24	150	589.35	0.42	0.00	0.03
P10	544.38	24	150	384.35	0.27	0.01	0.01
P11	150.60	24	150	237.59	0.17	0.00	0.00
P12	2.00	24	150	-274.08	0.19	0.00	0.00
P13	96.81	30	150	-599.90	0.27	0.00	0.01
P14	2.00	24	150	-274.08	0.19	0.00	0.00
P15	141.89	24	150	-133.86	0.09	0.00	0.00
P16	1,233.29	24	150	-274.08	0.19	0.01	0.01
P17	1,196.27	24	150	237.59	0.17	0.01	0.00
P18	55.13	24	150	-510.63	0.36	0.00	0.02
P19	35.00	24	150	116.22	0.08	0.00	0.00
P2	13.85	24	150	589.35	0.42	0.00	0.04
P20	10.00	6	150	7.50	0.09	0.00	0.00
P21	52.00	24	150	-133.86	0.09	0.00	0.00
P22	2.00	6	150	7.50	0.09	0.00	0.00
P23	1,155.15	24	150	116.22	0.08	0.00	0.00
P24	128.15	24	150	-362.30	0.26	0.00	0.01
P25	29.01	36	100	886.74	0.28	0.00	0.02
P26	2.00	6	150	7.50	0.09	0.00	0.00
P27	1,176.66	24	150	362.30	0.26	0.01	0.01
P28	3.00	36	100	879.24	0.28	0.00	0.00
P29	615.77	24	150	342.71	0.24	0.01	0.01
P3	2.00	24	100	589.35	0.42	0.00	0.00
P30	15.00	24	150	0.00	0.00	0.00	0.00
P31	113.94	24	150	-274.08	0.19	0.00	0.00
P32	5.00	24	150	0.00	0.00	0.00	0.00
P33	3.00	36	100	-879.24	0.28	0.00	0.00
P34	1,072.79	24	150	133.86	0.09	0.00	0.00
P35	1,645.39	24	150	17.81	0.01	0.00	0.00
P36	62.00	36	100	1,486.63	0.47	0.00	0.04
P37	1,214.65	24	150	-497.96	0.35	0.02	0.02
P38	26.83	24	150	0.00	0.00	0.00	0.00
P39	494.59	36	100	886.74	0.28	0.01	0.02
P4	39.00	24	150	384.35	0.27	0.00	0.01
P40	50.38	24	150	779.41	0.55	0.00	0.04
P41	714.93	36	100	632.14	0.20	0.01	0.01
P42	643.98	24	150	-458.16	0.32	0.01	0.02
P43	486.73	36	100	628.81	0.20	0.00	0.01
P44	31.99	24	150	-17.81	0.01	0.00	0.00
P45	492.72	24	150	17.81	0.01	0.00	0.00

Windler Development
Active Scenario: Maximum Day @ 21 hours
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
P46	23.00	24	150	-17.81	0.01	0.00	0.00
P47	476.32	36	100	419.19	0.13	0.00	0.00
P48	19.67	24	150	17.81	0.01	0.00	0.00
P49	1,789.27	36	100	-88.29	0.03	0.00	0.00
P5	75.00	24	150	379.52	0.27	0.00	0.01
P50	344.87	24	150	17.81	0.01	0.00	0.00
P51	599.57	36	100	513.07	0.16	0.00	0.01
P52	96.20	24	150	17.81	0.01	0.00	0.00
P53	1,027.44	12	150	-85.02	0.24	0.02	0.02
P54	25.39	24	150	237.59	0.17	0.00	0.02
P55	1,890.12	12	150	181.81	0.52	0.16	0.08
P56	88.01	24	150	342.71	0.24	0.00	0.01
P57	47.50	36	100	1,486.63	0.47	0.00	0.04
P58	2,066.91	24.00	150	11.84	0.01	0.00	0.00
P59	2,034.20	24	150	-281.14	0.20	0.01	0.01
P6	95.12	36	100	137.23	0.04	0.00	0.00
P60	647.50	12	150	-139.44	0.40	0.03	0.05
P61	789.77	12	150	79.72	0.23	0.01	0.02
P7	64.84	36	100	137.23	0.04	0.00	0.00
P8	1,214.14	24	150	379.52	0.27	0.01	0.01
P9	410.62	24	150	589.35	0.42	0.01	0.02
PW100	718.76	12	150	47.63	0.14	0.00	0.01
PW102	371.50	12	150	8.73	0.02	0.00	0.00
PW104	805.59	12	150	-54.42	0.15	0.01	0.01
PW106	206.48	12	150	-54.42	0.15	0.00	0.01
PW108	920.17	12	150	63.15	0.18	0.01	0.01
PW110	104.22	12	150	63.15	0.18	0.00	0.01
PW112	822.92	12	150	68.44	0.19	0.01	0.01
PW114	819.45	12	150	52.37	0.15	0.01	0.01
PW122	67.74	12	150	110.55	0.31	0.00	0.03
PW124	309.03	12	150	88.01	0.25	0.01	0.02
PW126	530.94	12	150	41.10	0.12	0.00	0.01
PW128	784.79	12	150	41.10	0.12	0.00	0.00
PW130	76.70	12	150	41.10	0.12	0.00	0.01
PW132	750.01	12	150	40.38	0.11	0.00	0.01
PW134	687.54	12	150	40.38	0.11	0.00	0.00
PW136	378.49	12	150	-16.08	0.05	0.00	0.00
PW138	339.92	12	150	-47.63	0.14	0.00	0.01
PW142	774.38	12	150	-46.92	0.13	0.01	0.01
PW144	222.90	12	150	-46.92	0.13	0.00	0.01
PW146	816.09	12	150	5.30	0.02	0.00	0.00
PW150	144.25	12	150	231.72	0.66	0.02	0.13
PW152	463.38	12	150	151.83	0.43	0.03	0.06

Windler Development
Active Scenario: Maximum Day @ 21 hours
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
PW154	574.01	12	150	97.72	0.28	0.02	0.03
PW156	124.91	12	150	0.00	0.00	0.00	0.00
PW158	1,062.91	12	150	-36.00	0.10	0.00	0.00
PW160	125.94	12	150	35.99	0.10	0.00	0.00
PW162	364.61	12	150	35.99	0.10	0.00	0.00
PW164	1,064.73	12	150	-46.96	0.13	0.01	0.01
PW166	332.40	12	150	22.86	0.06	0.00	0.00
PW170	91.52	12	150	69.81	0.20	0.00	0.01
PW172	318.29	12	150	69.81	0.20	0.00	0.02
PW174	604.87	12	150	69.81	0.20	0.01	0.01
PW178	110.23	12	150	-89.41	0.25	0.00	0.02
PW180	305.49	12	150	-89.41	0.25	0.01	0.02
PW182	433.96	12	150	-89.41	0.25	0.01	0.02
PW184	238.83	12	150	-89.41	0.25	0.01	0.02
PW186	146.87	12	150	-89.41	0.25	0.00	0.02
PW190	1,563.15	8	150	24.94	0.16	0.02	0.02
PW192	2,115.23	8	150	24.00	0.15	0.03	0.01
PW194	819.93	8	150	-53.41	0.34	0.05	0.06
PW196	777.84	8	150	-99.67	0.64	0.15	0.20
PW198	606.04	8	150	-48.93	0.31	0.03	0.05
PW200	347.95	12	150	-0.71	0.00	0.00	0.00
PW202	92.24	12	150	46.92	0.13	0.00	0.01
PW206	213.77	12	150	-79.72	0.23	0.00	0.02
PW208	220.96	12	150	-5.30	0.02	0.00	0.00
PW210	105.18	12	150	22.86	0.06	0.00	0.00
PW54	1,338.40	8	150	-80.83	0.52	0.18	0.13
PW55	1,375.38	8	150	-73.87	0.47	0.15	0.11
PW57	949.37	8	150	87.43	0.56	0.15	0.15
PW58	1,311.35	8	150	-90.31	0.58	0.21	0.16
PW59	425.84	8	150	-87.54	0.56	0.07	0.15
PW60	1,360.88	8	150	21.77	0.14	0.02	0.01
PW61	710.45	8	150	-46.21	0.29	0.03	0.05
PW63	1,460.70	8	150	-77.41	0.49	0.18	0.12
PW64	1,379.34	8	150	-86.64	0.55	0.21	0.15
PW65	1,291.85	8	150	135.73	0.87	0.45	0.35
PW66	2,002.94	8	150	-73.68	0.47	0.22	0.11
PW68	662.37	12	150	119.28	0.34	0.03	0.04
PW72	345.92	12	150	241.24	0.68	0.05	0.14
PW74	1,959.18	12	150	73.55	0.21	0.03	0.02
PW78	1,281.12	8	150	-91.56	0.58	0.21	0.17
PW82	1,215.48	12	150	-261.27	0.74	0.20	0.16
PW84	53.68	24	150	-791.77	0.56	0.00	0.05
PW86	284.96	36	100	347.28	0.11	0.00	0.00

Windler Development
Active Scenario: Maximum Day @ 21 hours
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
PW88	505.64	36	100	722.33	0.23	0.01	0.01
PW90	730.79	12	150	164.41	0.47	0.05	0.07
PW92	1,987.35	12	150	-71.91	0.20	0.03	0.01
PW94	1,018.33	8	150	145.89	0.93	0.40	0.40

Windler Development
Active Scenario: Maximum Day @ 21 hours
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1	516.37	5,450.00	5,681.05	100.11
J10	0.00	5,510.00	5,681.08	74.13
J100	3.57	5,505.00	5,681.05	76.28
J102	115.74	5,525.00	5,681.05	67.62
J106	208.76	5,495.45	5,681.06	80.43
J11	4.06	5,518.50	5,681.07	70.44
J110	174.95	5,439.92	5,681.05	104.48
J12	17.64	5,545.00	5,681.07	58.96
J120	104.09	5,485.00	5,681.01	84.93
J122	11.03	5,470.00	5,680.95	91.41
J124	255.36	5,455.00	5,680.92	97.89
J126	0.00	5,465.00	5,681.02	93.6
J128	369.75	5,480.00	5,680.87	87.04
J13	0.00	5,505.50	5,681.07	76.08
J130	268.10	5,485.00	5,681.05	84.95
J132	151.59	5,447.85	5,681.07	101.05
J134	0.00	5,545.00	5,681.07	58.96
J136	0.00	5,545.00	5,681.07	58.96
J138	12.81	5,550.00	5,681.06	56.79
J14	0.00	5,430.00	5,681.08	108.79
J142	31.71	5,470.00	5,681.06	91.45
J144	0.00	5,492.49	5,681.05	81.7
J146	0.00	5,515.28	5,681.07	71.84
J148	90.43	5,520.00	5,681.02	69.77
J15	0.00	5,505.50	5,681.07	76.08
J152	0.00	5,465.00	5,681.04	93.61
J154	0.00	5,480.00	5,681.04	87.11
J156	0.00	5,487.00	5,681.02	84.07
J158	0.00	5,485.00	5,681.02	84.94
J16	0.00	5,450.00	5,681.05	100.11
J160	0.00	5,485.00	5,681.02	84.94
J162	0.00	5,485.00	5,681.03	84.94
J164	0.00	5,485.00	5,681.02	84.94
J166	0.00	5,485.00	5,681.02	84.94
J168	0.00	5,482.00	5,681.02	86.23
J17	0.00	5,518.50	5,681.07	70.44
J170	0.00	5,482.00	5,681.01	86.23
J172	132.09	5,465.00	5,681.01	93.6
J174	0.00	5,475.00	5,681.02	89.27

Windler Development
Active Scenario: Maximum Day @ 21 hours
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J176	0.00	5,480.00	5,681.02	87.1
J178	0.00	5,480.00	5,681.03	87.1
J18	0.00	5,545.00	5,681.07	58.96
J182	0.00	5,475.00	5,681.04	89.28
J184	0.00	5,485.00	5,681.04	84.94
J186	22.54	5,480.00	5,681.03	87.11
J188	0.00	5,485.00	5,681.03	84.94
J19	0.00	5,510.00	5,681.08	74.13
J190	0.00	5,465.00	5,680.95	93.57
J192	0.00	5,470.00	5,681.01	91.43
J194	0.00	5,470.00	5,681.00	91.43
J196	0.00	5,465.00	5,680.99	93.59
J198	0.00	5,465.00	5,680.99	93.59
J2	4.83	5,445.00	5,681.06	102.29
J20	0.00	5,545.00	5,681.07	58.96
J200	0.00	5,465.00	5,680.97	93.58
J202	0.00	5,465.00	5,680.96	93.58
J204	0.00	5,470.00	5,680.95	91.41
J206	0.00	5,470.00	5,680.95	91.41
J208	0.00	5,465.00	5,680.95	93.57
J21	0.00	5,454.50	5,681.08	98.18
J210	0.00	5,467.00	5,680.95	92.7
J212	82.95	5,470.00	5,680.95	91.4
J216	9.52	5,468.35	5,680.99	92.13
J218	0.00	5,467.29	5,681.01	92.61
J22	0.00	5,450.00	5,681.08	100.13
J220	64.19	5,468.69	5,680.97	91.98
J222	0.00	5,470.00	5,681.02	91.44
J224	0.00	5,455.00	5,681.02	97.93
J226	99.55	5,540.00	5,680.92	61.06
J228	0.00	5,483.48	5,681.02	85.59
J23	0.00	5,466.50	5,681.06	92.97
J230	0.00	5,465.00	5,681.01	93.6
J24	0.00	5,460.00	5,681.05	95.78
J25	0.00	5,470.00	5,681.06	91.45
J26	0.00	5,460.00	5,681.05	95.78
J27	0.00	5,480.00	5,681.06	87.12
J28	0.00	5,480.00	5,681.06	87.12
J29	115.45	5,466.79	5,681.07	92.85
J3	0.00	5,450.00	5,681.08	100.13
J30	0.00	5,450.00	5,681.05	100.11
J31	0.00	5,463.50	5,681.06	94.27
J32	0.00	5,450.00	5,681.05	100.11
J33	0.00	5,466.50	5,681.06	92.97

Windler Development
Active Scenario: Maximum Day @ 21 hours
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J34	0.00	5,470.00	5,681.06	91.45
J4	12.67	5,430.00	5,681.08	108.79
J46	0.00	5,466.50	5,681.06	92.97
J48	0.00	5,450.00	5,681.08	100.13
J5	0.00	5,505.50	5,681.07	76.08
J54	0.00	5,445.00	5,681.06	102.29
J6	0.00	5,506.50	5,681.07	75.64
J62	0.00	5,545.00	5,681.07	58.96
J64	0.00	5,450.00	5,681.05	100.11
J66	0.00	5,510.00	5,681.08	74.13
J68	3.33	5,525.00	5,681.06	67.62
J7	0.00	5,510.00	5,681.08	74.13
J72	0.00	5,510.00	5,681.08	74.13
J8	0.00	5,510.00	5,681.08	74.13
J9	0.00	5,510.00	5,681.08	74.13
J90	90.38	5,490.00	5,680.84	82.69
J92	355.30	5,510.00	5,680.61	73.93
J94	2.77	5,525.00	5,681.06	67.62
J96	157.33	5,545.00	5,680.85	58.86
J98	158.30	5,530.00	5,680.83	65.36

Windler Development
Active Scenario: Maximum Hour @ 15 hour
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
P1	87.78	24	150	873.67	0.62	0.00	0.06
P10	544.38	24	150	646.06	0.46	0.02	0.03
P11	150.60	24	150	305.38	0.22	0.00	0.01
P12	2.00	24	150	-451.57	0.32	0.00	0.00
P13	96.81	30	150	-812.44	0.37	0.00	0.02
P14	2.00	24	150	-451.57	0.32	0.00	0.00
P15	141.89	24	150	-157.42	0.11	0.00	0.00
P16	1,233.29	24	150	-451.57	0.32	0.02	0.02
P17	1,196.27	24	150	305.38	0.22	0.01	0.01
P18	55.13	24	150	-806.77	0.57	0.00	0.04
P19	35.00	24	150	157.41	0.11	0.00	0.00
P2	13.85	24	150	873.67	0.62	0.00	0.04
P20	10.00	6	150	12.02	0.14	0.00	0.00
P21	52.00	24	150	-157.42	0.11	0.00	0.00
P22	2.00	6	150	12.02	0.14	0.00	0.00
P23	1,155.15	24	150	157.41	0.11	0.00	0.00
P24	128.15	24	150	-507.06	0.36	0.00	0.02
P25	29.01	36	100	1,421.50	0.45	0.00	0.03
P26	2.00	6	150	12.02	0.14	0.00	0.00
P27	1,176.66	24	150	507.06	0.36	0.02	0.02
P28	3.00	36	100	1,409.48	0.44	0.00	0.00
P29	615.77	24	150	477.73	0.34	0.01	0.02
P3	2.00	24	100	873.67	0.62	0.00	0.00
P30	15.00	24	150	0.00	0.00	0.00	0.00
P31	113.94	24	150	-451.57	0.32	0.00	0.01
P32	5.00	24	150	0.00	0.00	0.00	0.00
P33	3.00	36	100	-1,409.48	0.44	0.00	0.00
P34	1,072.79	24	150	157.42	0.11	0.00	0.00
P35	1,645.39	24	150	-1.95	0.00	0.00	0.00
P36	62.00	36	100	2,233.94	0.70	0.01	0.09
P37	1,214.65	24	150	-806.77	0.57	0.05	0.04
P38	26.83	24	150	0.00	0.00	0.00	0.00
P39	494.59	36	100	1,421.50	0.45	0.02	0.04
P4	39.00	24	150	646.06	0.46	0.00	0.03
P40	50.38	24	150	1,078.26	0.76	0.00	0.08
P41	714.93	36	100	1,044.04	0.33	0.02	0.02
P42	643.98	24	150	-660.46	0.47	0.02	0.03
P43	486.73	36	100	1,044.04	0.33	0.01	0.02
P44	31.99	24	150	1.95	0.00	0.00	0.00

Windler Development
Active Scenario: Maximum Hour @ 15 hour
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
P45	492.72	24	150	-1.95	0.00	0.00	0.00
P46	23.00	24	150	1.95	0.00	0.00	0.00
P47	476.32	36	100	725.85	0.23	0.00	0.01
P48	19.67	24	150	-1.95	0.00	0.00	0.00
P49	1,789.27	36	100	-206.09	0.06	0.00	0.00
P5	75.00	24	150	646.06	0.46	0.00	0.03
P50	344.87	24	150	-1.95	0.00	0.00	0.00
P51	599.57	36	100	858.02	0.27	0.01	0.01
P52	96.20	24	150	-1.95	0.00	0.00	0.00
P53	1,027.44	12	150	-135.11	0.38	0.05	0.05
P54	25.39	24	150	305.38	0.22	0.00	0.00
P55	1,890.12	12	150	198.76	0.56	0.18	0.10
P56	88.01	24	150	477.73	0.34	0.00	0.02
P57	47.50	36	100	2,233.94	0.70	0.00	0.09
P58	2,066.91	24	150	25.50	0.02	0.00	0.00
P59	2,034.20	24	150	-372.63	0.26	0.02	0.01
P6	95.12	36	100	276.41	0.09	0.00	0.00
P60	647.50	12	150	-219.04	0.62	0.08	0.12
P61	789.77	12	150	127.88	0.36	0.03	0.04
P7	64.84	36	100	276.41	0.09	0.00	0.01
P8	1,214.14	24	150	646.06	0.46	0.04	0.03
P9	410.62	24	150	873.67	0.62	0.02	0.05
PW100	718.76	12	150	76.89	0.22	0.01	0.02
PW102	371.50	12	150	18.47	0.05	0.00	0.00
PW104	805.59	12	150	-83.93	0.24	0.02	0.02
PW106	206.48	12	150	-83.93	0.24	0.00	0.02
PW108	920.17	12	150	102.39	0.29	0.03	0.03
PW110	104.22	12	150	102.39	0.29	0.00	0.03
PW112	822.92	12	150	109.63	0.31	0.03	0.03
PW114	819.45	12	150	84.41	0.24	0.02	0.02
PW122	67.74	12	150	178.30	0.51	0.01	0.08
PW124	309.03	12	150	142.07	0.40	0.02	0.05
PW126	530.94	12	150	66.34	0.19	0.01	0.01
PW128	784.79	12	150	66.34	0.19	0.01	0.01
PW130	76.70	12	150	66.34	0.19	0.00	0.01
PW132	750.01	12	150	65.18	0.18	0.01	0.01
PW134	687.54	12	150	65.18	0.18	0.01	0.01
PW136	378.49	12	150	-25.22	0.07	0.00	0.00
PW138	339.92	12	150	-76.89	0.22	0.01	0.02
PW142	774.38	12	150	-75.74	0.21	0.01	0.02
PW144	222.90	12	150	-75.74	0.21	0.00	0.02
PW146	816.09	12	150	7.23	0.02	0.00	0.00
PW150	144.25	12	150	279.02	0.79	0.03	0.18

Windler Development
Active Scenario: Maximum Hour @ 15 hour
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
PW152	463.38	12	150	175.61	0.50	0.04	0.08
PW154	574.01	12	150	101.35	0.29	0.02	0.03
PW156	124.91	12	150	0.00	0.00	0.00	0.00
PW158	1,062.91	12	150	-59.88	0.17	0.01	0.01
PW160	125.94	12	150	59.88	0.17	0.00	0.01
PW162	364.61	12	150	59.88	0.17	0.00	0.01
PW164	1,064.73	12	150	-73.44	0.21	0.02	0.02
PW166	332.40	12	150	1.07	0.00	0.00	0.00
PW170	91.52	12	150	74.51	0.21	0.00	0.02
PW172	318.29	12	150	74.51	0.21	0.01	0.02
PW174	604.87	12	150	74.51	0.21	0.01	0.02
PW178	110.23	12	150	-103.42	0.29	0.00	0.03
PW180	305.49	12	150	-103.42	0.29	0.01	0.03
PW182	433.96	12	150	-103.42	0.29	0.01	0.03
PW184	238.83	12	150	-103.42	0.29	0.01	0.03
PW186	146.87	12	150	-103.42	0.29	0.00	0.03
PW190	1,563.15	8	150	36.46	0.23	0.05	0.03
PW192	2,115.23	8	150	33.87	0.22	0.06	0.03
PW194	819.93	8	150	-81.97	0.52	0.11	0.14
PW196	777.84	8	150	-147.96	0.94	0.32	0.41
PW198	606.04	8	150	-74.03	0.47	0.07	0.11
PW200	347.95	12	150	-1.15	0.00	0.00	0.00
PW202	92.24	12	150	75.74	0.21	0.00	0.02
PW206	213.77	12	150	-127.88	0.36	0.01	0.04
PW208	220.96	12	150	-7.23	0.02	0.00	0.00
PW210	105.18	12	150	1.07	0.00	0.00	0.00
PW54	1,338.40	8	150	-120.35	0.77	0.37	0.28
PW55	1,375.38	8	150	-110.48	0.71	0.33	0.24
PW57	949.37	8	150	127.92	0.82	0.30	0.31
PW58	1,311.35	8	150	-132.17	0.84	0.43	0.33
PW59	425.84	8	150	-115.89	0.74	0.11	0.26
PW60	1,360.88	8	150	45.34	0.29	0.06	0.05
PW61	710.45	8	150	-59.81	0.38	0.05	0.08
PW63	1,460.70	8	150	-115.84	0.74	0.38	0.26
PW64	1,379.34	8	150	-128.45	0.82	0.43	0.31
PW65	1,291.85	8	150	198.03	1.26	0.90	0.70
PW66	2,002.94	8	150	-103.60	0.66	0.42	0.21
PW68	662.37	12	150	196.76	0.56	0.06	0.10
PW72	345.92	12	150	279.02	0.79	0.06	0.18
PW74	1,959.18	12	150	42.54	0.12	0.01	0.01
PW78	1,281.12	8	150	-131.91	0.84	0.42	0.33
PW82	1,215.48	12	150	-398.13	1.13	0.43	0.35
PW84	53.68	24	150	-1,179.40	0.84	0.00	0.09

Windler Development
Active Scenario: Maximum Hour @ 15 hour

Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
PW86	284.96	36	100	624.19	0.20	0.00	0.01
PW88	505.64	36	100	1,171.96	0.37	0.01	0.03
PW90	730.79	12	150	249.54	0.71	0.11	0.15
PW92	1,987.35	12	150	-101.67	0.29	0.06	0.03
PW94	1,018.33	8	150	211.00	1.35	0.80	0.79

Windler Development
Active Scenario: Maximum Hour @ 15 hour
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1	821.21	5,450.00	5,711.54	113.32
J10	0.00	5,510.00	5,711.61	87.36
J100	0.00	5,505.00	5,711.54	89.5
J102	186.01	5,525.00	5,711.55	80.83
J106	310.98	5,495.45	5,711.58	93.65
J11	0.00	5,518.50	5,711.60	83.67
J110	281.17	5,439.92	5,711.56	117.7
J12	0.00	5,545.00	5,711.60	72.19
J120	167.29	5,485.00	5,711.46	98.13
J122	0.00	5,470.00	5,711.44	104.62
J124	241.30	5,455.00	5,711.43	111.11
J126	0.00	5,465.00	5,711.49	106.8
J128	569.16	5,480.00	5,711.16	100.16
J13	0.00	5,505.50	5,711.61	89.31
J130	581.48	5,485.00	5,711.54	98.16
J132	145.64	5,447.85	5,711.59	114.28
J134	0.00	5,545.00	5,711.60	72.19
J136	0.00	5,545.00	5,711.60	72.19
J138	0.00	5,550.00	5,711.59	70.02
J14	0.00	5,430.00	5,711.62	122.02
J142	0.00	5,470.00	5,711.59	104.68
J144	0.00	5,492.49	5,711.54	94.92
J146	0.00	5,515.28	5,711.59	85.06
J148	140.22	5,520.00	5,711.48	82.97
J15	0.00	5,505.50	5,711.61	89.31
J152	0.00	5,465.00	5,711.54	106.83
J154	0.00	5,480.00	5,711.52	100.32
J156	0.00	5,487.00	5,711.47	97.26
J158	0.00	5,485.00	5,711.48	98.13
J16	0.00	5,450.00	5,711.54	113.33
J160	0.00	5,485.00	5,711.48	98.13
J162	0.00	5,485.00	5,711.50	98.14
J164	0.00	5,485.00	5,711.49	98.14
J166	0.00	5,485.00	5,711.48	98.14
J168	0.00	5,482.00	5,711.48	99.43
J17	0.00	5,518.50	5,711.60	83.67
J170	0.00	5,482.00	5,711.46	99.43
J172	212.29	5,465.00	5,711.45	106.79
J174	0.00	5,475.00	5,711.49	102.47

Windler Development
Active Scenario: Maximum Hour @ 15 hour
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J176	0.00	5,480.00	5,711.49	100.31
J178	0.00	5,480.00	5,711.49	100.31
J18	0.00	5,545.00	5,711.60	72.19
J182	0.00	5,475.00	5,711.54	102.49
J184	0.00	5,485.00	5,711.52	98.15
J186	36.22	5,480.00	5,711.52	100.32
J188	0.00	5,485.00	5,711.50	98.14
J19	0.00	5,510.00	5,711.62	87.36
J190	0.00	5,465.00	5,711.43	106.78
J192	0.00	5,470.00	5,711.52	104.65
J194	0.00	5,470.00	5,711.51	104.65
J196	0.00	5,465.00	5,711.50	106.81
J198	0.00	5,465.00	5,711.49	106.8
J2	0.00	5,445.00	5,711.58	115.51
J20	0.00	5,545.00	5,711.60	72.19
J200	0.00	5,465.00	5,711.46	106.79
J202	0.00	5,465.00	5,711.45	106.79
J204	0.00	5,470.00	5,711.44	104.62
J206	0.00	5,470.00	5,711.44	104.62
J208	0.00	5,465.00	5,711.43	106.78
J21	0.00	5,454.50	5,711.62	111.41
J210	0.00	5,467.00	5,711.43	105.91
J212	133.31	5,470.00	5,711.43	104.61
J216	0	5,468.35	5,711.49	105.35
J218	0	5,467.29	5,711.52	105.82
J22	0	5,450.00	5,711.62	113.36
J220	103.17	5,468.69	5,711.46	105.19
J222	0	5,470.00	5,711.49	104.64
J224	0	5,455.00	5,711.48	111.13
J226	159.99	5,540.00	5,711.28	74.22
J228	0	5,483.48	5,711.48	98.79
J23	0	5,466.50	5,711.58	106.2
J230	0	5,465.00	5,711.46	106.79
J24	0	5,460.00	5,711.54	108.99
J25	0	5,470.00	5,711.58	104.68
J26	0	5,460.00	5,711.54	108.99
J27	0	5,480.00	5,711.58	100.35
J28	0	5,480.00	5,711.58	100.35
J29	182.72	5,466.79	5,711.60	106.08
J3	0	5,450.00	5,711.61	113.36
J30	0	5,450.00	5,711.54	113.33
J31	0	5,463.50	5,711.59	107.5
J32	0	5,450.00	5,711.54	113.33
J33	0	5,466.50	5,711.58	106.2

Windler Development
Active Scenario: Maximum Hour @ 15 hour
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J34	0	5,470.00	5,711.58	104.68
J4	0	5,430.00	5,711.61	122.02
J46	0	5,466.50	5,711.58	106.2
J48	0	5,450.00	5,711.62	113.36
J5	0	5,505.50	5,711.61	89.31
J54	0	5,445.00	5,711.58	115.51
J6	0	5,506.50	5,711.61	88.87
J62	0	5,545.00	5,711.60	72.19
J64	0	5,450.00	5,711.54	113.33
J66	0	5,510.00	5,711.61	87.36
J68	0	5,525.00	5,711.56	80.84
J7	0	5,510.00	5,711.61	87.36
J72	0	5,510.00	5,711.61	87.36
J8	0	5,510.00	5,711.61	87.36
J9	0	5,510.00	5,711.61	87.36
J90	140.69	5,490.00	5,711.10	95.8
J92	512.63	5,510.00	5,710.68	86.96
J94	0	5,525.00	5,711.58	80.84
J96	202.46	5,545.00	5,711.17	72
J98	237.31	5,530.00	5,711.11	78.47

Windler Development
Active Scenario: Maximum Hour @ 21 hour
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
P1	87.78	24	150	873.67	0.62	0.00	0.05
P10	544.38	24	150	646.06	0.46	0.02	0.03
P11	150.60	24	150	305.38	0.22	0.00	0.01
P12	2.00	24	150	-451.57	0.32	0.00	0.00
P13	96.81	30	150	-812.44	0.37	0.00	0.02
P14	2.00	24	150	-451.57	0.32	0.00	0.00
P15	141.89	24	150	-157.42	0.11	0.00	0.00
P16	1233.29	24	150	-451.57	0.32	0.02	0.02
P17	1196.27	24	150	305.38	0.22	0.01	0.01
P18	55.13	24	150	-806.77	0.57	0.00	0.04
P19	35.00	24	150	157.41	0.11	0.00	0.00
P2	13.85	24	150	873.67	0.62	0.00	0.04
P20	10.00	6	150	12.02	0.14	0.00	0.00
P21	52.00	24	150	-157.42	0.11	0.00	0.00
P22	2.00	6	150	12.02	0.14	0.00	0.00
P23	1155.15	24	150	157.41	0.11	0.00	0.00
P24	128.15	24	150	-507.06	0.36	0.00	0.02
P25	29.01	36	100	1,421.50	0.45	0.00	0.03
P26	2.00	6	150	12.02	0.14	0.00	0.00
P27	1176.66	24	150	507.06	0.36	0.02	0.02
P28	3.00	36	100	1,409.48	0.44	0.00	0.00
P29	615.77	24	150	477.73	0.34	0.01	0.02
P3	2.00	24	100	873.67	0.62	0.00	0.24
P30	15.00	24	150	0.00	0.00	0.00	0.00
P31	113.94	24	150	-451.57	0.32	0.00	0.01
P32	5.00	24	150	0.00	0.00	0.00	0.00
P33	3.00	36	100	-1,409.48	0.44	0.00	0.00
P34	1072.79	24	150	157.42	0.11	0.00	0.00
P35	1645.39	24	150	-1.95	0.00	0.00	0.00
P36	62.00	36	100	2,233.94	0.70	0.01	0.09
P37	1214.65	24	150	-806.77	0.57	0.05	0.04
P38	26.83	24	150	0.00	0.00	0.00	0.00
P39	494.59	36	100	1,421.50	0.45	0.02	0.04
P4	39.00	24	150	646.06	0.46	0.00	0.03
P40	50.38	24	150	1,078.26	0.76	0.00	0.08
P41	714.93	36	100	1,044.04	0.33	0.02	0.02
P42	643.98	24	150	-660.46	0.47	0.02	0.03
P43	486.73	36	100	1,044.04	0.33	0.01	0.02
P44	31.99	24	150	1.95	0.00	0.00	0.00

Windler Development
Active Scenario: Maximum Hour @ 21 hour
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
P45	492.72	24	150	-1.95	0.00	0.00	0.00
P46	23.00	24	150	1.95	0.00	0.00	0.00
P47	476.32	36	100	725.85	0.23	0.00	0.01
P48	19.67	24	150	-1.95	0.00	0.00	0.00
P49	1789.27	36	100	-206.09	0.06	0.00	0.00
P5	75.00	24	150	646.06	0.46	0.00	0.03
P50	344.87	24	150	-1.95	0.00	0.00	0.00
P51	599.57	36	100	858.02	0.27	0.01	0.02
P52	96.20	24	150	-1.95	0.00	0.00	0.00
P53	1027.44	12	150	-135.11	0.38	0.05	0.05
P54	25.39	24	150	305.38	0.22	0.00	0.00
P55	1890.12	12	150	198.76	0.56	0.18	0.10
P56	88.01	24	150	477.73	0.34	0.00	0.02
P57	47.50	36	100	2,233.94	0.70	0.00	0.09
P58	2066.91	24	150	25.50	0.02	0.00	0.00
P59	2034.20	24	150	-372.63	0.26	0.02	0.01
P6	95.12	36	100	276.41	0.09	0.00	0.00
P60	647.50	12	150	-219.04	0.62	0.08	0.12
P61	789.77	12	150	127.88	0.36	0.03	0.04
P7	64.84	36	100	276.41	0.09	0.00	0.01
P8	1214.14	24	150	646.06	0.46	0.04	0.03
P9	410.62	24	150	873.67	0.62	0.02	0.05
PW100	718.76	12	150	76.89	0.22	0.01	0.02
PW102	371.50	12	150	18.47	0.05	0.00	0.00
PW104	805.59	12	150	-83.93	0.24	0.02	0.02
PW106	206.48	12	150	-83.93	0.24	0.00	0.02
PW108	920.17	12	150	102.39	0.29	0.03	0.03
PW110	104.22	12	150	102.39	0.29	0.00	0.03
PW112	822.92	12	150	109.63	0.31	0.03	0.03
PW114	819.45	12	150	84.41	0.24	0.02	0.02
PW122	67.74	12	150	178.30	0.51	0.01	0.08
PW124	309.03	12	150	142.07	0.40	0.02	0.05
PW126	530.94	12	150	66.34	0.19	0.01	0.01
PW128	784.79	12	150	66.34	0.19	0.01	0.01
PW130	76.70	12	150	66.34	0.19	0.00	0.01
PW132	750.01	12	150	65.18	0.18	0.01	0.01
PW134	687.54	12	150	65.18	0.18	0.01	0.01
PW136	378.49	12	150	-25.22	0.07	0.00	0.00
PW138	339.92	12	150	-76.89	0.22	0.01	0.02
PW142	774.38	12	150	-75.74	0.21	0.01	0.02
PW144	222.90	12	150	-75.74	0.21	0.00	0.02
PW146	816.09	12	150	7.23	0.02	0.00	0.00
PW150	144.25	12	150	279.02	0.79	0.03	0.18

Windler Development
Active Scenario: Maximum Hour @ 21 hour
Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
PW152	463.38	12	150	175.60	0.50	0.04	0.08
PW154	574.01	12	150	101.35	0.29	0.02	0.03
PW156	124.91	12	150	0.00	0.00	0.00	0.00
PW158	1062.91	12	150	-59.88	0.17	0.01	0.01
PW160	125.94	12	150	59.88	0.17	0.00	0.01
PW162	364.61	12	150	59.88	0.17	0.00	0.01
PW164	1064.73	12	150	-73.44	0.21	0.02	0.02
PW166	332.40	12	150	1.07	0.00	0.00	0.00
PW170	91.52	12	150	74.51	0.21	0.00	0.02
PW172	318.29	12	150	74.51	0.21	0.01	0.02
PW174	604.87	12	150	74.51	0.21	0.01	0.02
PW178	110.23	12	150	-103.42	0.29	0.00	0.03
PW180	305.49	12	150	-103.42	0.29	0.01	0.03
PW182	433.96	12	150	-103.42	0.29	0.01	0.03
PW184	238.83	12	150	-103.42	0.29	0.01	0.03
PW186	146.87	12	150	-103.42	0.29	0.00	0.03
PW190	1563.15	8	150	36.46	0.23	0.05	0.03
PW192	2115.23	8	150	33.87	0.22	0.06	0.03
PW194	819.93	8	150	-81.97	0.52	0.11	0.14
PW196	777.84	8	150	-147.96	0.94	0.32	0.41
PW198	606.04	8	150	-74.03	0.47	0.07	0.11
PW200	347.95	12	150	-1.15	0.00	0.00	0.00
PW202	92.24	12	150	75.74	0.21	0.00	0.02
PW206	213.77	12	150	-127.88	0.36	0.01	0.04
PW208	220.96	12	150	-7.23	0.02	0.00	0.00
PW210	105.18	12	150	1.07	0.00	0.00	0.00
PW54	1338.40	8	150	-120.35	0.77	0.37	0.28
PW55	1375.38	8	150	-110.48	0.71	0.33	0.24
PW57	949.37	8	150	127.92	0.82	0.30	0.31
PW58	1311.35	8	150	-132.17	0.84	0.43	0.33
PW59	425.84	8	150	-115.89	0.74	0.11	0.26
PW60	1360.88	8	150	45.34	0.29	0.06	0.05
PW61	710.45	8	150	-59.81	0.38	0.05	0.08
PW63	1460.70	8	150	-115.84	0.74	0.38	0.26
PW64	1379.34	8	150	-128.45	0.82	0.43	0.31
PW65	1291.85	8	150	198.03	1.26	0.90	0.70
PW66	2002.94	8	150	-103.60	0.66	0.42	0.21
PW68	662.37	12	150	196.76	0.56	0.06	0.10
PW72	345.92	12	150	279.02	0.79	0.06	0.18
PW74	1959.18	12	150	42.54	0.12	0.01	0.01
PW78	1281.12	8	150	-131.91	0.84	0.42	0.33
PW82	1215.48	12	150	-398.13	1.13	0.43	0.35
PW84	53.68	24	150	-1,179.40	0.84	0.00	0.09

Windler Development
Active Scenario: Maximum Hour @ 21 hour

Table: Pipe Table

ID	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)
PW86	284.96	36	100	624.19	0.20	0.00	0.01
PW88	505.64	36	100	1,171.96	0.37	0.01	0.03
PW90	730.79	12	150	249.54	0.71	0.11	0.15
PW92	1987.35	12	150	-101.67	0.29	0.06	0.03
PW94	1018.33	8	150	211.00	1.35	0.80	0.79

Windler Development
Active Scenario: Maximum Hour @ 21 hr
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J1	821.21	5,450.00	5,681.00	100.09
J10	0.00	5,510.00	5,681.07	74.12
J100	0.00	5,505.00	5,681.00	76.26
J102	186.01	5,525.00	5,681.01	67.60
J106	310.98	5,495.45	5,681.04	80.42
J11	0.00	5,518.50	5,681.06	70.44
J110	281.17	5,439.92	5,681.02	104.47
J12	0.00	5,545.00	5,681.06	58.95
J120	167.29	5,485.00	5,680.92	84.89
J122	0.00	5,470.00	5,680.90	91.38
J124	241.30	5,455.00	5,680.89	97.88
J126	0.00	5,465.00	5,680.95	93.57
J128	569.16	5,480.00	5,680.62	86.93
J13	0.00	5,505.50	5,681.07	76.07
J130	581.48	5,485.00	5,681.00	84.92
J132	145.64	5,447.85	5,681.05	101.05
J134	0.00	5,545.00	5,681.06	58.95
J136	0.00	5,545.00	5,681.06	58.95
J138	0.00	5,550.00	5,681.05	56.79
J14	0.00	5,430.00	5,681.08	108.79
J142	0.00	5,470.00	5,681.05	91.45
J144	0.00	5,492.49	5,681.00	81.68
J146	0.00	5,515.28	5,681.05	71.83
J148	140.22	5,520.00	5,680.94	69.74
J15	0.00	5,505.50	5,681.07	76.07
J152	0.00	5,465.00	5,681.00	93.59
J154	0.00	5,480.00	5,680.98	87.09
J156	0.00	5,487.00	5,680.93	84.03
J158	0.00	5,485.00	5,680.94	84.90
J16	0.00	5,450.00	5,681.00	100.09
J160	0.00	5,485.00	5,680.94	84.90
J162	0.00	5,485.00	5,680.96	84.91
J164	0.00	5,485.00	5,680.95	84.91
J166	0.00	5,485.00	5,680.94	84.90
J168	0.00	5,482.00	5,680.94	86.20
J17	0.00	5,518.50	5,681.06	70.44
J170	0.00	5,482.00	5,680.92	86.19
J172	212.29	5,465.00	5,680.91	93.55
J174	0.00	5,475.00	5,680.95	89.24

Windler Development
Active Scenario: Maximum Hour @ 21 hr
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J176	0.00	5,480.00	5,680.95	87.07
J178	0.00	5,480.00	5,680.95	87.07
J18	0.00	5,545.00	5,681.06	58.95
J182	0.00	5,475.00	5,681.00	89.26
J184	0.00	5,485.00	5,680.98	84.92
J186	36.22	5,480.00	5,680.98	87.08
J188	0.00	5,485.00	5,680.96	84.91
J19	0.00	5,510.00	5,681.08	74.13
J190	0.00	5,465.00	5,680.89	93.55
J192	0.00	5,470.00	5,680.98	91.42
J194	0.00	5,470.00	5,680.97	91.41
J196	0.00	5,465.00	5,680.96	93.57
J198	0.00	5,465.00	5,680.95	93.57
J2	0.00	5,445.00	5,681.04	102.27
J20	0.00	5,545.00	5,681.06	58.95
J200	0.00	5,465.00	5,680.92	93.56
J202	0.00	5,465.00	5,680.91	93.55
J204	0.00	5,470.00	5,680.90	91.38
J206	0.00	5,470.00	5,680.90	91.38
J208	0.00	5,465.00	5,680.89	93.55
J21	0.00	5,454.50	5,681.08	98.18
J210	0.00	5,467.00	5,680.89	92.68
J212	133.31	5,470.00	5,680.89	91.38
J216	0.00	5,468.35	5,680.95	92.12
J218	0.00	5,467.29	5,680.98	92.59
J22	0.00	5,450.00	5,681.08	100.12
J220	103.17	5,468.69	5,680.92	91.96
J222	0.00	5,470.00	5,680.95	91.40
J224	0.00	5,455.00	5,680.94	97.90
J226	159.99	5,540.00	5,680.74	60.98
J228	0.00	5,483.48	5,680.94	85.56
J23	0.00	5,466.50	5,681.04	92.96
J230	0.00	5,465.00	5,680.92	93.56
J24	0.00	5,460.00	5,681.00	95.76
J25	0.00	5,470.00	5,681.04	91.45
J26	0.00	5,460.00	5,681.00	95.76
J27	0.00	5,480.00	5,681.04	87.11
J28	0.00	5,480.00	5,681.04	87.11
J29	182.72	5,466.79	5,681.06	92.84
J3	0.00	5,450.00	5,681.07	100.12
J30	0.00	5,450.00	5,681.00	100.09
J31	0.00	5,463.50	5,681.05	94.26
J32	0.00	5,450.00	5,681.00	100.09
J33	0.00	5,466.50	5,681.04	92.96

Windler Development
Active Scenario: Maximum Hour @ 21 hr
Table: Junction Table

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
J34	0.00	5,470.00	5,681.04	91.45
J4	0.00	5,430.00	5,681.07	108.79
J46	0.00	5,466.50	5,681.04	92.96
J48	0.00	5,450.00	5,681.08	100.13
J5	0.00	5,505.50	5,681.07	76.07
J54	0.00	5,445.00	5,681.04	102.27
J6	0.00	5,506.50	5,681.07	75.64
J62	0.00	5,545.00	5,681.06	58.95
J64	0.00	5,450.00	5,681.00	100.09
J66	0.00	5,510.00	5,681.07	74.12
J68	0.00	5,525.00	5,681.02	67.60
J7	0.00	5,510.00	5,681.07	74.12
J72	0.00	5,510.00	5,681.07	74.12
J8	0.00	5,510.00	5,681.07	74.12
J9	0.00	5,510.00	5,681.07	74.12
J90	140.69	5,490.00	5,680.56	82.57
J92	512.63	5,510.00	5,680.14	73.72
J94	0.00	5,525.00	5,681.04	67.61
J96	202.46	5,545.00	5,680.63	58.77
J98	237.31	5,530.00	5,680.57	65.24

Windler Development
Active Scenario: Maximum Day Plus Fire Flow @ 15 hours
Table: Fire Flow Table

ID	Total Demand (gpm)	Hydrant Available Flow (gpm)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (gpm)	Hydrant Pressure at Design Flow (psi)	Critical Pipe ID for Design Run	Critical Pipe Velocity at Design Flow (ft/s)
J224	1,500.00	3,476.29	J138	70.02	70.02	20	3,442.34	99.73	PW194	9.99
J222	1,500.00	3,484.51	J138	70	70.01	20	3,464.09	96.17	PW198	9.99
J190	1,500.00	3,525.11	J138	70.02	70.02	20	3,525.11	98.04	PW156	10.00
J96	1,657.33	3,630.08	J96	62.51	69.81	20	3,630.08	62.51	PW59	9.98
J98	1,658.30	3,817.49	J98	67.36	76.14	20	3,817.49	67.36	PW61	9.97
J92	2,855.30	3,970.39	J138	70.02	70.02	20	3,962.64	72.46	PW94	10.00
J90	1,590.37	4,080.32	J138	70.02	70.02	20	4,056.41	76.65	PW64	10.01
J218	1,500.00	4,186.72	J138	70.02	70.02	20	4,178.54	102.66	PW72	10.01
J186	3,522.54	4,275.46	J138	70.02	70.02	20	4,275.46	96.54	PW122	10.00
J226	1,599.55	4,403.60	J226	63.38	72.54	20	4,403.60	63.38	PW196	10.00
J200	1,500.00	4,448.43	J138	70.02	70.02	20	4,422.36	100.39	PW170	9.99
J220	1,564.19	4,690.14	J138	70.02	70.02	20	4,680.98	99.08	PW150	9.99
J192	1,500.00	4,706.74	J138	70.02	70.02	20	4,679.16	99.56	PW186	9.99
J188	1,500.00	5,162.86	J138	70.02	70.02	20	5,162.86	90.62	PW124	10.00
J162	1,500.00	5,181.22	J138	70.02	70.02	20	5,171.10	88.94	PW144	10.00
J206	1,500.00	5,291.33	J138	70.02	70.02	20	5,291.33	94.60	PW210	10.00
J198	1,500.00	5,346.62	J138	70.02	70.02	20	5,346.62	99.43	PW178	9.95
J158	1,500.00	5,360.92	J138	70.02	70.02	20	5,360.92	87.58	PW130	9.95
J182	1,500.00	5,367.58	J138	70.02	70.02	20	5,336.13	96.37	PW106	9.99
J166	1,500.00	5,672.07	J138	70.02	70.02	20	5,672.07	86.76	PW202	9.95
J194	1,500.00	5,681.44	J138	70.02	70.02	20	5,648.15	96.05	PW184	10.00
J202	1,500.00	5,821.04	J138	70.02	70.02	20	5,786.93	94.32	PW172	9.99
J152	1,500.00	5,871.73	J138	70.02	70.02	20	5,860.26	101.21	P60	9.99
J174	1,500.00	5,918.38	J138	70.02	70.02	20	5,918.38	91.19	PW208	10.00
J154	1,500.00	5,960.14	J138	70.02	70.02	20	5,948.50	94.39	PW68	9.99
J164	1,500.00	6,027.86	J138	70.02	70.02	20	6,016.09	84.11	PW126	10.00
J168	1,500.00	6,182.83	J138	70.02	70.02	20	6,170.76	84.73	PW138	10.00
J148	1,590.43	6,267.89	J138	70.01	70.02	20	6,267.89	76.57	PW90	10.00
J124	2,755.36	6,309.91	J138	70.02	70.02	20	6,272.94	94.76	P55	9.99
J178	1,500.00	6,311.94	J138	70.02	70.02	20	6,311.94	88.99	PW110	9.92
J208	1,500.00	6,317.24	J138	70.02	70.02	20	6,280.23	85.27	PW158	9.99
J230	1,500.00	6,479.07	J138	70.02	70.02	20	6,479.07	89.87	P61	10.00
J196	1,500.00	6,484.95	J138	70.02	70.02	20	6,484.95	95.08	PW180	9.92
J212	3,582.95	6,521.45	J138	70.02	70.02	20	6,521.45	81.89	PW164	10.00
J210	1,500.00	6,613.23	J138	70.02	70.02	20	6,574.48	82.29	PW160	9.99
J156	1,500.00	6,759.92	J138	70.02	70.02	20	6,759.92	78.11	PW134	9.98
J120	3,604.09	6,823.56	J138	70.02	70.02	20	6,823.56	83.59	PW136	9.95
J172	3,632.09	6,839.98	J138	70.02	70.02	20	6,839.98	88.62	PW114	9.98
J128	3,869.75	7,005.34	J138	69.76	69.93	20	6,964.30	89.44	PW82	10.01
J216	1,509.52	7,224.64	J138	70.02	70.02	20	7,210.53	93.89	PW152	9.99
J126	1,500.00	7,722.24	J138	70.02	70.02	20	7,722.24	90.35	P53	10.00
J184	1,500.00	7,724.01	J138	70.02	70.02	20	7,724.01	86.93	PW102	10.00
J204	1,500.00	7,827.87	J138	70.02	70.02	20	7,812.58	83.50	PW166	9.99
J160	1,500.00	8,170.56	J138	70.02	70.02	20	8,170.56	76.36	PW200	10.00
J122	1,511.02	8,375.29	J138	70.02	70.02	20	8,375.29	83.66	PW154	10.00
J176	1,500.00	8,634.10	J138	70.02	70.02	20	8,583.51	81.09	PW110	10.02
J170	1,500.00	9,229.69	J138	70.02	70.02	20	9,229.69	75.73	PW136	9.98

Windler Development
Active Scenario: Maximum Day Plus Fire Flow @ 15 hours
Table: Fire Flow Table

ID	Total Demand (gpm)	Hydrant Available Flow (gpm)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (gpm)	Hydrant Pressure at Design Flow (psi)	Critical Pipe ID for Design Run	Critical Pipe Velocity at Design Flow (ft/s)
J228	1,500.00	9,307.98	J138	70.02	70.02	20	9,307.98	71.91	PW200	10.00
J20	1,500.00	14,100.44	J138	67.2	69.96	20	14,100.44	68.43	P32	10.00
J18	1,500.00	14,100.44	J138	67.2	69.96	20	14,100.44	68.34	P38	10.00
J62	1,500.00	14,100.44	J138	67.2	69.96	20	14,100.44	68.37	P30	10.00
J21	1,500.00	14,476.33	J138	70.02	70.02	20	14,448.05	111.21	P40	10.01
J48	1,500.00	15,921.10	J138	70.02	70.02	20	15,890.00	113.02	P1	9.99
J14	1,500.00	16,003.31	J138	69.9	70.02	20	15,972.05	121.82	PW84	10.00
J4	1,512.67	16,075.01	J138	69.9	70.02	20	16,075.02	121.62	P18	10.00
J13	1,500.00	16,093.13	J138	69.57	70.01	20	16,093.13	88.51	P11	10.00
J3	1,500.00	16,130.30	J138	70.02	70.02	20	16,098.79	112.97	P2	9.99
J15	1,500.00	16,246.90	J138	69.52	70.01	20	16,246.90	88.41	P54	10.00
J6	1,500.00	16,281.11	J138	69.88	70.02	20	16,249.31	88.16	P24	9.99
J29	1,615.45	20,290.78	J138	70	70.02	20	20,290.78	103.34	P42	10.00
J132	2,651.59	20,297.34	J138	70	70.02	20	20,297.34	112.31	P9	10.00
J16	1,500.00	20,642.12	J138	69.94	70.02	20	20,642.12	110.85	P31	9.96
J30	1,500.00	20,657.41	J138	69.94	70.02	20	20,657.41	110.84	P14	9.96
J64	1,500.00	20,672.71	J138	69.94	70.02	20	20,672.71	110.83	P12	9.96
J17	1,500.00	20,698.06	J138	66.48	69.98	20	20,576.78	78.03	P15	9.99
J32	1,500.00	20,913.97	J138	69.94	70.02	20	20,913.97	110.91	P5	9.93
J23	1,500.00	20,974.71	J138	69.98	70.02	20	20,974.71	102.07	P44	9.96
J33	1,500.00	21,080.24	J138	69.97	70.02	20	21,080.25	101.98	P46	9.96
J11	1,504.06	21,295.04	J138	66.58	69.98	20	21,087.08	78.14	P17	9.99
J106	2,708.76	23,019.86	J138	69.88	70.02	20	22,884.98	88.37	P27	10.02
J34	1,500.00	23,358.53	J138	69.95	70.02	20	23,358.53	98.55	P45	9.98
J25	1,500.00	23,451.86	J138	69.95	70.02	20	23,451.86	98.47	P48	9.98
J142	1,531.71	24,007.93	J138	64.88	69.97	20	24,007.93	96.62	P59	10.00
J134	1,500.00	24,291.80	J134	62.17	72.11	20	24,244.36	62.21	P34	10.02
J31	1,500.00	24,299.31	J138	69.97	70.02	20	24,299.31	102.31	P29	10.00
J54	1,500.00	24,351.10	J138	69.97	70.02	20	24,113.29	111.47	P10	9.99
J12	1,517.64	24,483.30	J12	61.97	72.11	20	24,435.48	62.01	P21	10.01
J136	1,500.00	24,613.71	J136	61.81	72.11	20	24,565.63	61.85	P19	10.01
J2	1,504.83	24,686.51	J138	69.97	70.02	20	24,445.43	111.32	P4	9.99
J46	1,500.00	24,909.01	J138	69.96	70.02	20	24,909.01	100.66	P56	10.00
J27	1,500.00	25,149.54	J138	69.93	70.02	20	25,149.54	92.80	P50	9.99
J5	1,500.00	25,267.87	J138	69.7	70.02	20	25,218.52	88.76	P13	9.99
J28	1,500.00	25,649.37	J138	69.92	70.02	20	25,649.37	92.42	P52	9.99
J110	1,674.95	26,537.55	J138	69.85	70.02	20	26,278.39	112.60	P37	10.00
J138	1,512.81	29,101.06	J138	55.22	69.94	20	29,101.06	55.22	P58	10.00
J8	1,500.00	34,517.35	J138	69.71	70.02	20	34,449.93	86.74	P25	9.99
J19	1,500.00	34,575.80	J138	69.87	70.02	20	34,508.27	87.12	P57	10.00
J10	1,500.00	34,783.45	J138	69.71	70.02	20	34,715.51	86.72	P33	9.99
J9	1,500.00	34,937.81	J138	69.7	70.02	20	34,869.57	86.70	P28	9.99
J22	1,500.00	36,828.77	J138	70.01	70.02	20	36,469.12	111.82	P3	10.00
J7	1,500.00	37,230.38	J138	69.67	70.02	20	37,157.66	86.80	P36	10.00
J146	1,500.00	40,851.93	J138	69.61	70.02	20	40,851.93	81.87	P39	10.00
J94	1,502.76	45,530.16	J138	69.54	70.02	20	45,085.52	74.99	PW88	10.00
J1	2,016.37	47,405.76	J138	69.72	70.02	20	47,128.00	103.89	P5	10.01

Windler Development
Active Scenario: Maximum Day Plus Fire Flow @ 15 hours
Table: Fire Flow Table

ID	Total Demand (gpm)	Hydrant Available Flow (gpm)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (gpm)	Hydrant Pressure at Design Flow (psi)	Critical Pipe ID for Design Run	Critical Pipe Velocity at Design Flow (ft/s)
J68	1,503.32	50,420.69	J96	69.2	72.09	20	50,125.26	71.36	P41	10.02
J102	1,615.74	54,553.12	J102	68.67	80.82	20	54,233.47	68.80	P43	10.01
J24	1,500.00	55,619.27	J138	69.61	70.02	20	55,619.27	95.88	P7	10.00
J26	1,500.00	56,467.03	J138	69.6	70.02	20	56,467.03	95.36	P6	10.00
J100	1,503.57	60,143.74	J96	68.35	72.08	20	59,791.34	74.20	P51	10.00
J130	1,768.10	60,776.05	J96	68.75	72.09	20	60,657.36	81.98	PW86	10.00
J144	1,500.00	62,891.51	J96	68.37	72.09	20	62,523.01	77.97	P47	9.99

Windler Development
Active Scenario: Maximum Day Plus Fire Flow @ 21 hours
Table: Fire Flow Table

ID	Total Demand (gpm)	Hydrant Available Flow (gpm)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (gpm)	Hydrant Pressure at Design Flow (psi)	Critical Pipe ID for Design Run	Critical Pipe Velocity at Design Flow (ft/s)
J224	1,500.00	3,475.16	J138	56.79	56.79	20	3,454.80	86.42	PW194	10.02
J222	1,500.00	3,483.90	J138	56.77	56.78	20	3,463.48	82.94	PW198	9.99
J190	1,500.00	3,525.11	J138	56.79	56.79	20	3,525.11	84.81	PW156	10.00
J96	1,657.33	3,630.87	J96	49.28	56.58	20	3,630.87	49.28	PW59	9.99
J98	1,658.30	3,818.64	J98	54.12	62.91	20	3,818.64	54.12	PW61	9.97
J92	2,855.30	3,969.79	J138	56.78	56.79	20	3,962.03	59.23	PW94	9.99
J90	1,590.37	4,077.52	J138	56.78	56.79	20	4,053.63	63.44	PW64	10.01
J218	1,500.00	4,186.48	J138	56.79	56.79	20	4,178.31	89.43	PW72	10.01
J186	3,522.54	4,275.43	J138	56.79	56.79	20	4,275.43	83.31	PW122	10.00
J226	1,599.55	4,403.45	J226	50.15	59.30	20	4,403.45	50.15	PW196	10.00
J200	1,500.00	4,447.72	J138	56.79	56.79	20	4,421.66	87.16	PW170	9.99
J220	1,564.19	4,689.95	J138	56.79	56.79	20	4,680.79	85.85	PW150	9.99
J192	1,500.00	4,706.30	J138	56.79	56.79	20	4,697.11	86.29	PW186	10.02
J188	1,500.00	5,162.81	J138	56.79	56.79	20	5,162.81	77.39	PW124	10.00
J162	1,500.00	5,180.63	J138	56.79	56.79	20	5,170.51	75.71	PW144	10.00
J206	1,500.00	5,291.40	J138	56.79	56.79	20	5,291.40	81.36	PW210	10.00
J198	1,500.00	5,347.47	J138	56.79	56.79	20	5,347.47	86.19	PW178	9.95
J158	1,500.00	5,362.25	J138	56.79	56.79	20	5,362.25	74.35	PW130	9.96
J182	1,500.00	5,366.72	J138	56.79	56.79	20	5,335.27	83.14	PW106	9.99
J166	1,500.00	5,673.80	J138	56.79	56.79	20	5,673.80	73.52	PW202	9.95
J194	1,500.00	5,680.14	J138	56.79	56.79	20	5,646.86	82.82	PW184	10.00
J202	1,500.00	5,819.77	J138	56.79	56.79	20	5,808.40	81.01	PW172	10.02
J152	1,500.00	5,871.60	J138	56.79	56.79	20	5,860.13	87.98	P60	9.99
J174	1,500.00	5,918.50	J138	56.79	56.79	20	5,918.50	77.95	PW208	10.00
J154	1,500.00	5,959.96	J138	56.79	56.79	20	5,948.32	81.16	PW68	9.99
J164	1,500.00	6,027.16	J138	56.79	56.79	20	6,015.39	70.88	PW126	10.00
J168	1,500.00	6,181.95	J138	56.79	56.79	20	6,169.87	71.50	PW138	10.00
J148	1,590.43	6,267.77	J138	56.77	56.79	20	6,267.77	63.34	PW90	10.00
J124	2,755.36	6,308.16	J138	56.79	56.79	20	6,271.20	81.54	P55	9.99
J178	1,500.00	6,314.70	J138	56.79	56.79	20	6,314.70	75.75	PW110	9.92
J208	1,500.00	6,314.78	J138	56.79	56.79	20	6,302.44	71.90	PW158	10.02
J230	1,500.00	6,478.97	J138	56.79	56.79	20	6,478.97	76.64	P61	10.00
J196	1,500.00	6,487.39	J138	56.78	56.79	20	6,487.39	81.84	PW180	9.92
J212	3,582.95	6,521.28	J138	56.79	56.79	20	6,521.28	68.66	PW164	10.00
J210	1,500.00	6,610.38	J138	56.79	56.79	20	6,597.47	68.91	PW160	10.02
J156	1,500.00	6,760.94	J138	56.79	56.79	20	6,760.94	64.87	PW134	9.99
J120	3,604.09	6,825.90	J138	56.79	56.79	20	6,825.90	70.34	PW136	9.95
J172	3,632.09	6,840.82	J138	56.79	56.79	20	6,840.82	75.39	PW114	9.98
J128	3,869.75	7,002.81	J138	56.53	56.70	20	6,961.78	76.22	PW82	10.01
J216	1,509.52	7,224.35	J138	56.78	56.79	20	7,210.24	80.66	PW152	9.99
J126	1,500.00	7,722.14	J138	56.79	56.79	20	7,722.14	77.12	P53	10.00
J184	1,500.00	7,724.21	J138	56.79	56.79	20	7,724.21	73.69	PW102	10.00
J204	1,500.00	7,827.47	J138	56.78	56.79	20	7,812.19	70.27	PW166	9.99
J160	1,500.00	8,170.88	J138	56.79	56.79	20	8,170.88	63.13	PW200	10.00
J122	1,511.02	8,456.81	J138	56.78	56.79	20	8,374.23	70.43	PW154	10.00
J176	1,500.00	8,628.57	J138	56.79	56.79	20	8,578.01	67.88	PW110	10.01
J170	1,500.00	9,231.41	J138	56.78	56.79	20	9,231.41	62.49	PW136	9.99

Windler Development
Active Scenario: Maximum Day Plus Fire Flow @ 21 hours
Table: Fire Flow Table

ID	Total Demand (gpm)	Hydrant Available Flow (gpm)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (gpm)	Hydrant Pressure at Design Flow (psi)	Critical Pipe ID for Design Run	Critical Pipe Velocity at Design Flow (ft/s)
J228	1,500.00	9,308.25	J138	56.78	56.79	20	9,308.25	58.68	PW200	10.00
J20	1,500.00	14,100.44	J138	53.97	56.72	20	14,100.44	55.19	P32	10.00
J18	1,500.00	14,100.44	J138	53.97	56.72	20	14,100.44	55.11	P38	10.00
J62	1,500.00	14,100.44	J138	53.97	56.72	20	14,100.44	55.14	P30	10.00
J21	1,500.00	14,476.20	J138	56.79	56.79	20	14,447.92	97.98	P40	10.01
J48	1,500.00	15,921.05	J138	56.78	56.79	20	15,889.95	99.79	P1	9.99
J14	1,500.00	16,003.22	J138	56.67	56.79	20	15,971.97	108.59	PW84	10.00
J4	1,512.67	16,074.99	J138	56.67	56.79	20	16,074.99	108.39	P18	10.00
J13	1,500.00	16,093.10	J138	56.34	56.78	20	16,093.10	75.27	P11	10.00
J3	1,500.00	16,130.24	J138	56.78	56.79	20	16,098.74	99.73	P2	9.99
J15	1,500.00	16,246.87	J138	56.28	56.78	20	16,246.87	75.17	P54	10.00
J6	1,500.00	16,281.02	J138	56.65	56.79	20	16,249.23	74.93	P24	9.99
J29	1,615.45	20,290.67	J138	56.76	56.79	20	20,290.67	90.11	P42	10.00
J132	2,651.59	20,297.29	J138	56.77	56.79	20	20,297.29	99.07	P9	10.00
J16	1,500.00	20,643.23	J138	56.71	56.79	20	20,643.23	97.61	P31	9.96
J30	1,500.00	20,658.54	J138	56.71	56.79	20	20,658.54	97.61	P14	9.96
J64	1,500.00	20,673.83	J138	56.71	56.79	20	20,673.83	97.60	P12	9.96
J17	1,500.00	20,693.06	J138	53.24	56.74	20	20,571.81	64.80	P15	9.99
J32	1,500.00	20,915.73	J138	56.71	56.79	20	20,915.73	97.67	P5	9.93
J23	1,500.00	20,976.61	J138	56.74	56.79	20	20,976.61	88.83	P44	9.96
J33	1,500.00	21,082.13	J138	56.74	56.79	20	21,082.13	88.74	P46	9.96
J11	1,504.06	21,285.90	J138	53.35	56.74	20	21,078.03	64.91	P17	9.99
J106	2,708.76	23,014.05	J138	56.64	56.79	20	22,879.20	75.14	P27	10.01
J34	1,500.00	23,360.03	J138	56.72	56.79	20	23,360.03	85.32	P45	9.98
J25	1,500.00	23,453.34	J138	56.72	56.79	20	23,453.34	85.24	P48	9.98
J142	1,531.71	24,007.78	J138	51.65	56.73	20	24,007.78	83.39	P59	10.00
J134	1,500.00	24,281.55	J134	48.95	58.88	20	24,234.13	48.98	P34	10.01
J31	1,500.00	24,299.15	J138	56.74	56.79	20	24,299.15	89.07	P29	10.00
J54	1,500.00	24,347.25	J138	56.74	56.79	20	24,109.48	98.24	P10	9.99
J12	1,517.64	24,474.11	J62	48.75	58.88	20	24,426.30	48.78	P21	10.01
J136	1,500.00	24,605.32	J136	48.59	58.88	20	24,557.27	48.62	P19	10.01
J2	1,504.83	24,682.56	J138	56.74	56.79	20	24,441.52	98.09	P4	9.99
J46	1,500.00	24,908.83	J138	56.73	56.79	20	24,908.83	87.43	P56	10.00
J27	1,500.00	25,150.77	J138	56.69	56.79	20	25,150.77	79.57	P50	9.99
J5	1,500.00	25,267.77	J138	56.46	56.79	20	25,218.42	75.53	P13	9.99
J28	1,500.00	25,650.48	J138	56.69	56.79	20	25,650.48	79.19	P52	9.99
J110	1,674.95	26,532.50	J138	56.62	56.79	20	26,273.39	99.37	P37	10.00
J138	1,512.81	29,103.42	J138	41.98	56.7	20	29,103.42	41.98	P58	10.00
J8	1,500.00	34,517.13	J138	56.48	56.79	20	34,449.71	73.50	P25	9.99
J19	1,500.00	34,575.41	J138	56.63	56.79	20	34,507.88	73.89	P57	10.00
J10	1,500.00	34,783.22	J138	56.47	56.79	20	34,715.29	73.48	P33	9.99
J9	1,500.00	34,937.59	J138	56.47	56.79	20	34,869.35	73.46	P28	9.99
J22	1,500.00	36,825.36	J138	56.77	56.79	20	36,465.73	98.59	P3	10.00
J7	1,500.00	37,229.77	J138	56.44	56.79	20	37,157.06	73.57	P36	10.00
J146	1,500.00	40,851.41	J138	56.38	56.79	20	40,851.41	68.63	P39	10.00
J94	1,502.76	45,506.29	J138	56.31	56.79	20	45,061.90	61.77	PW88	10.00
J1	2,016.37	47,394.01	J138	56.48	56.79	20	47,116.31	90.66	P5	10.01

Windler Development
Active Scenario: Maximum Day Plus Fire Flow @ 21 hours
Table: Fire Flow Table

ID	Total Demand (gpm)	Hydrant Available Flow (gpm)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (gpm)	Hydrant Pressure at Design Flow (psi)	Critical Pipe ID for Design Run	Critical Pipe Velocity at Design Flow (ft/s)
J68	1,503.32	50,387.89	J96	55.97	58.85	20	50,092.66	58.14	P41	10.02
J102	1,615.74	54,518.02	J102	55.45	67.58	20	54,198.57	55.58	P43	10.00
J24	1,500.00	55,620.40	J138	56.38	56.79	20	55,620.40	82.64	P7	10.00
J26	1,500.00	56,467.71	J138	56.36	56.79	20	56,467.71	82.13	P6	10.00
J100	1,503.57	60,110.92	J96	55.12	58.85	20	59,758.71	60.98	P51	9.99
J130	1,768.10	60,765.60	J96	55.52	58.85	20	60,646.91	68.75	PW86	10.00
J144	1,500.00	62,862.55	J96	55.14	58.85	20	62,494.22	64.75	P47	9.99

Appendix B

Sanitary Sewer Collection System Demands and Analysis

Windler - Projected Sanitary Sewer Demands

Non-Residential Criteria

		Equivalent
Land Use	Avg Day (gdp/ac)	Pop / Ac
Commercial	1,500	22
Industrial (schools)	1,200	18

Residential Criteria

People / unit	2.77
Avg day / capita (gpd)	68

Peaking Factors

MIN	1.7
MAX	4

INFILTRATION

AVG * 10% of average, do not peak I&I

$$\text{Peaking Factor} = 5 \div p^{0.167}$$

p= population in thousands

Based on Windler Land Use Summary - 03/24/2022

Map Area Code	Land Use	Total Acres	Proposed DUs	Population	Avg Daily Flow (GPD)	Peaking Factor	Peak Flow (GPD)	Infiltration (GPD)	Avg Day + Infiltration (GPD)	Avg Day + Infiltration (CFS)	Avg Day + Infiltration (GPM)	Peak Flow + Infiltration (GPD)	Peak Flow + Infiltration (CFS)	Peak Flow + Infiltration (GPM)
PA-1	MIXED COMM	31		684	46,605	4.0	186,420	4,661	51,266	0.079	36	191,081	0.296	133
PA-10	SFD/SFA FLEX	24	213	589	40,075	4.0	160,302	4,008	44,083	0.068	31	164,309	0.254	114
PA-11	SFD/SFA FLEX	30	271	752	51,128	4.0	204,514	5,113	56,241	0.087	39	209,627	0.324	146
PA-12	SFD/SFA FLEX	26	232	641	43,619	4.0	174,474	4,362	47,980	0.074	33	178,836	0.277	124
PA-13	SFD/SFA FLEX	21	183	507	34,470	4.0	137,880	3,447	37,917	0.059	26	141,327	0.219	98
PA-13	MF	7	195	540	36,730	4.0	146,921	3,673	40,403	0.063	28	150,594	0.233	105
PA-13	COMMERCIAL	1		11	750	4.0	3,000	75	825	0.001	1	3,075	0.005	2
PA-14	SFD/SFA	18	160	444	30,209	4.0	120,837	3,021	33,230	0.051	23	123,858	0.192	86
PA-14	MF	4	108	298	20,286	4.0	81,145	2,029	22,315	0.035	15	83,174	0.129	58
PA-14	COMMERCIAL	10		220	15,000	4.0	60,000	1,500	16,500	0.026	11	61,500	0.095	43
PA-15	SFD/SFA FLEX	35	313	867	58,960	4.0	235,842	5,896	64,856	0.100	45	241,738	0.374	168
PA-16	SFD/SFA FLEX	7	59	162	11,036	4.0	44,144	1,104	12,140	0.019	8	45,248	0.070	31
PA-17	SFD/SFA FLEX	17	152	421	28,633	4.0	114,530	2,863	31,496	0.049	22	117,394	0.182	82
PA-17	COMMERCIAL	1		22	1,500	4.0	6,000	150	1,650	0.003	1	6,150	0.010	4
PA-18	SFD/SFA FLEX	16	142	393	26,700	4.0	106,800	2,670	29,370	0.045	20	109,470	0.169	76
PA-19	SFA	18	161	446	30,311	4.0	121,244	3,031	33,342	0.052	23	124,275	0.192	86
PA-2	MF	24	711	1,969	133,924	4.0	535,696	13,392	147,316	0.228	102	549,088	0.850	381
PA-20	MIXED COMM	25		540	36,810	4.0	147,240	3,681	40,491	0.063	28	150,921	0.233	105
PA-21	MIXED COMM	4		90	6,156	4.0	24,624	616	6,772	0.010	5	25,240	0.039	18
PA-21	MF	10	287	796	54,112	4.0	216,448	5,411	59,523	0.092	41	221,859	0.343	154
PA-22	MF	11	334	924	62,854	4.0	251,415	6,285	69,139	0.107	48	257,701	0.399	179
PA-22	MIXED COMM	5		105	7,151	4.0	28,602	715	7,866	0.012	5	29,317	0.045	20
PA-23	SFD/SFA FLEX	21	209	579	39,367	4.0	157,469	3,937	43,304	0.067	30	161,406	0.250	112
PA-24	SFD/SFA FLEX	13	118	327	22,226	4.0	88,906	2,223	24,449	0.038	17	91,129	0.141	63
PA-25	SFD/SFA FLEX	33	276	765	51,987	4.0	207,949	5,199	57,186	0.088	40	213,148	0.330	148
PA-26	IND-3.3.5.Y, IND-3.3.5.Z	36		640	42,660	4.0	170,640	4,266	46,926	0.073	33	174,906	0.271	121

Windler - Projected Sanitary Sewer Demands

Non-Residential Criteria

		Equivalent
Land Use	Avg Day (gdp/ac)	Pop / Ac
Commercial	1,500	22
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Residential Criteria

People / unit	2.77
Avg day / capita (gpd)	68

Peaking Factors

MIN	1.7
MAX	4
Peaking Factor = $5 \div p^{0.167}$	
p= population in thousands	

INFILTRATION

AVG * 10% of average, do not peak I&I

Based on Windler Land Use Summary - 03/24/2022

Map Area Code	Land Use	Total Acres	Proposed DUs	Population	Avg Daily Flow (GPD)	Peaking Factor	Peak Flow (GPD)	Infiltration (GPD)	Avg Day + Infiltration (GPD)	Avg Day + Infiltration (CFS)	Avg Day + Infiltration (GPM)	Peak Flow + Infiltration (GPD)	Peak Flow + Infiltration (CFS)	Peak Flow + Infiltration (GPM)
PA-27	IND-3.3.5.Y, IND-3.3.5.Z	10		174	11,592	4.0	46,368	1,159	12,751	0.020	9	47,527	0.074	33
PA-28	IND-3.3.5.Y, IND-3.3.5.Z	45		803	53,532	4.0	214,128	5,353	58,885	0.091	41	219,481	0.340	152
PA-29	IND-3.3.5.Y, IND-3.3.5.Z													
PA-29A		26		464	30,900	4.00	123,600	3,090	33,990	0.053	24	126,690	0.196	88
PA-29B		31		555	37,032	4.00	148,128	3,703	40,735	0.063	28	151,831	0.235	105
PA-3	SFA	7	76	212	14,400	4.0	57,600	1,440	15,840	0.025	11	59,041	0.091	41
PA-3	COMMERCIAL	1		22	1,500	4.0	6,000	150	1,650	0.003	1	6,150	0.010	4
PA-4	SFD/SFA-FLEX	33	316	874	59,462	4.0	237,850	5,946	65,409	0.101	45	243,796	0.377	169
PA-5	MF	10.61	228	632	43,003	4.0	172,010	4,300	47,303	0.073	33	176,311	0.273	122
PA-6	MF	16.22	322	891	60,577	4.0	242,306	6,058	66,634	0.103	46	248,364	0.384	172
PA-7	SFD/SFA-FLEX	29.87	269	745	50,637	4.0	202,547	5,064	55,701	0.086	39	207,611	0.321	144
PA-7	COMMERCIAL	0.50		11	750	4.0	3,000	75	825	0.001	1	3,075	0.005	2
PA-8	SFD/SFA-FLEX	17.76	160	443	30,107	4.0	120,430	3,011	33,118	0.051	23	123,441	0.191	86
PA-9	SCHOOL	15.50		279	18,600	4.0	74,400	1,860	20,460	0.032	14	76,260	0.118	53
PK-2	Event Center	6.50		143	9,750	4.0	39,000	975	10,725	0.017	7	39,975	0.062	28
PK-4	NEIGHBORHOOD PARK	14.77			15,000	4.0	60,000	1,500	16,500	0.026	11	61,500	0.095	43
***Assume 15,000 gpd in PK-4 to account for planned restaurant and education venues.														
		707	5,494	19,980	1,370,102			137,010	1,507,113		1,047			
Residential		446	5,494	15,218	1,034,815			103,481	1,138,296					
Commercial		99	-	1,848	140,972			14,097	155,069					
Industrial (School)		162		2,915	194,316			19,432	213,748					
		707	5,494	19,980	1,370,102			137,010	1,507,113					
Second Creek		358	3,392	10,954	744,719	3.35	2,496,635	74,472	819,191		569	2,571,107	3.98	1,785
First Creek		349	2,102	9,026	625,384	3.46	2,165,438	62,538	687,922		478	2,227,976	3.45	1,547
		707	5,494	19,980	1,370,102		4,662,072	137,010	1,507,113		1047	4,799,083	7.42	3,333
												4,799,083		3,333

Windler - Projected Sanitary Sewer Demands

Based on Windler Land Use Summary - 03/24/2022

	Node	Map Area Code	Population	Sum Population	Avg Day (GPD)	Sum Avg Day (GPD)	Peaking Factor	Avg Day (GPM)	Infiltration (GPM)	Avg Day + Infiltration (GPM)	Peak Flow + Infiltration (GPM)	Peak Flow + Infiltration (CFS)	Avg Day + Infiltration (CFS)
Tributary to Second Creek	Line A												
	A.9	PA-16	162	162	11,036	11,036	4.00	8	1	8	31	0.070	0.019
	A.8	PA-15	867	1,029	58,960	69,996	4.00	49	5	53	199	0.444	0.119
	A.7	PA-20	540	540	36,810	36,810	4.00	26	3	28	105	0.234	0.063
	A.6	PA-18, PA-19	838	2,408	57,011	163,817	4.00	114	11	125	466	1.039	0.279
	A.5	PA-1	684	3,091	46,605	210,422	4.00	146	15	161	599	1.335	0.358
	A.12	PA-17	443	443	30,133	30,133	4.00	21	2	23	86	0.191	0.051
	A.11	PA-3	234	677	75,363	105,495	4.00	73	7	81	300	0.669	0.180
	A.4	PA-2	1,969	5,737	133,924	449,841	3.73	312	31	344	1198	2.669	0.766
	A.3	PA-5	632	6,370	60,577	510,418	3.67	354	35	390	1336	2.977	0.869
	A.2.5	Line B		9,307	103,579	663,225	3.44	461	46	507	1633	3.638	1.129
	A.2	PA-6	891	10,198	50,637	713,861	3.39	496	50	545	1731	3.858	1.215
	A.10	PA-7	756	756	30,857	30,857	4.00	21	2	24	88	0.196	0.053
	A.1			10,954		744,719	3.35	517	52	569	1785	3.978	1.267
	Line B												
	B.3	PA-10, PA-11	1,341	1,341	91,204	91,204	4.00	63	6	70	260	0.579	0.155
	B.2	PA-8, PA-9	722	2,063	18,600	109,804	4.00	76	8	84	313	0.697	0.187
	B1	PA-4	874	2,937	43,003	152,807	4.00	106	11	117	435	0.969	0.260
	Total Contribution to Second Creek Lift Station			10,954	744,719	744,719	3.35	517	52	569	1785	3.978	1.267
Tributary to First Creek										0.82	MGD		
	Line C												
	C.4	PA-14	963	963	65,496	65,496	4.00	45	5	50	186	0.415	0.111
	C.3	PA-21	886	1,849	60,268	125,764	4.00	87	9	96	358	0.798	0.214
	C.2	PA-22	1,029	2,878	70,004	195,768	4.00	136	14	150	557	1.242	0.333
	C.1			2,878	195,768	195,768	4.00	136	14	150	557	1.242	0.333
	D.1	PA-13, PK-2	1,201	1,201	81,700	81,700	4.00	57	6	62	233	0.518	0.139
	E.1	PA-12	641	641	43,619	43,619	4.00	30	3	33	124	0.277	0.074

Windler - Projected Sanitary Sewer Demands

Based on Windler Land Use Summary - 03/24/2022

	Node	Map Area Code	Population	Sum Population	Avg Day (GPD)	Sum Avg Day (GPD)	Peaking Factor	Avg Day (GPM)	Infiltration (GPM)	Avg Day + Infiltration (GPM)	Peak Flow + Infiltration (GPM)	Peak Flow + Infiltration (CFS)	Avg Day + Infiltration (CFS)
Tributary to First Creek	F.3	PA-29A	464	464	30,900	30,900	4.00	21	2	24	88	0.196	0.053
	F.3	GVRE 310-1 (Flows and population from Green Valley-Amendment 1 MUR - #218184MU1)	3,227		158,994			110					
	F.3	PA-29A, GVRE 310-1		3,691		189,894	4.00	132	13	145	541	1.205	0.323
	F.4	PA-28	803	803	53,532	53,532	4.00	37	4	41	152	0.340	0.091
	F.2	PA-27, PA-28	174	977	11,592	65,124	4.00	45	5	50	185	0.413	0.111
	F.1	PA-29B	555	1,532	37,032	102,156	4.00	71	7	78	291	0.648	0.174
	F.1	PA-27, PA-28, PA-29A, PA-29B (From Windler = GVRE OS-4, DP 6)		1,996		133,056	4.00	92	9	102	379	0.844	0.226
	F.1	PA-27, PA-28, PA-29A, PA-29B, GVRE 310-1		5,223	292,050	292,050	3.79	203	20	223	790	1.760	0.497
	Line G												
	G.1	PA-26	640	640	42,660	42,660	4.00	30	3	33	121	0.271	0.073
	H.1	PA-24	327	327	22,226	22,226	4.00	15	2	17	63	0.141	0.038
	I.1	PA-23, PA-25, PK-4	1,343	1,343	106,355	106,355	4.00	74	7	81	303	0.675	0.181
	Total Contribution to First Creek Lift Station (A)			12,253	784,378	784,378	3.29	545	54	599	1847	4.114	1.335
										0.86 MGD including GVRE 310-1			
										0.70 MGD excluding GVRE 310-1			

(A) Includes Average Day flow from GVRE of 158,994 GPD

Windler - Sanitary Sewer Pipe Sizing

Windler - Sanitary Pipe Profile

	From	To	Sum Peak Flow + Infiltration (CFS)	Sum Avg Day + Infiltration (CFS)	Pipe Diameter (in)	Mannings 'n'	Pipe Slope (ft/ft)	Full Capacity (cfs)	Meets Peak Flow Capacity	Peak Flow / Capacity	Avg Day Flow Area (ft^2)	Vel @ Avg Day Flow (fps)	Meets Requirement (2 fps Min.)	Ground Start	Ground End	Length	Invert Start	Invert End	Depth End
Tributary to Second Creek	Line A																		
	A.9	A.8	0.070	0.019	8	0.011	0.0325	2.58	YES	3%	0.009	2.1	YES	5485.0	5470.0	470	5471.00	5455.73	14.27
	A.8	A.6	0.444	0.119	8	0.011	0.0200	2.03	YES	22%	0.038	3.2	YES	5470.0	5470.0	245	5455.73	5450.83	19.17
	A.7	A.6	0.234	0.063	8	0.011	0.0125	1.60	YES	15%	0.028	2.2	YES	5472.0	5470.0	630	5462.00	5454.13	15.88
	A.6	A.5	1.039	0.279	8	0.011	0.0100	1.43	YES	73%	0.088	3.2	YES	5470.0	5458.0	1935	5450.83	5431.48	26.52
	A.5	A.4	1.335	0.358	10	0.011	0.0070	2.17	YES	61%	0.122	2.9	YES	5458.0	5453.0	1810	5431.48	5418.81	34.19
	A.12	A.11	0.191	0.051	8	0.011	0.0400	2.86	YES	7%	0.016	3.2	YES	5480.0	5458.0	755	5470.00	5439.80	18.20
	A.11	A.4	0.669	0.180	8	0.011	0.0200	2.03	YES	33%	0.050	3.6	YES	5458.0	5453.0	435	5439.80	5431.10	21.90
	A.4	A.3	2.669	0.766	12	0.011	0.0100	4.22	YES	63%	0.188	4.1	YES	5453.0	5446.0	900	5418.81	5409.81	36.19
	A.3	A.2.5	2.977	0.869	12	0.011	0.0100	4.22	YES	71%	0.205	4.2	YES	5446.0	5443.0	400	5409.81	5405.81	37.19
	A.2.5	A.2	3.638	1.129	15	0.011	0.0070	6.40	YES	57%	0.287	3.9	YES	5443.0	5435.0	675	5405.81	5401.08	33.92
	A.2	A.1	3.858	1.215	15	0.011	0.0070	6.40	YES	60%	0.303	4.0	YES	5435.0	5427.0	595	5401.08	5396.92	30.09
	A.10	A.1	0.196	0.053	8	0.011	0.0200	2.03	YES	10%	0.021	2.5	YES	5440.0	5427.0	695	5430.00	5416.10	10.90
	Line B																		
	B.3	B.2	0.579	0.155	8	0.011	0.0300	2.48	YES	23%	0.039	4.0	YES	5515.0	5490.0	745	5500.00	5477.65	12.35
	B.2	B1	0.697	0.187	8	0.011	0.0250	2.26	YES	31%	0.048	3.9	YES	5490.0	5455.0	1230	5472.65	5441.90	13.10
	B1	A.2.5	0.969	0.260	10	0.011	0.0200	3.67	YES	26%	0.067	3.9	YES	5455.0	5443.0	690	5441.90	5428.10	14.90
Tributary to First Creek	Line C																		
	C.4	C.3	0.415	0.111	8	0.011	0.0100	1.43	YES	29%	0.046	2.4	YES	5493.5	5490.0	475	5483.50	5478.75	11.25
	C.3	C.2	0.798	0.214	8	0.011	0.0100	1.43	YES	56%	0.073	2.9	YES	5490.0	5490.0	400	5478.75	5474.75	15.25
	C.2	C.1	1.242	0.333	8	0.011	0.0272	2.36	YES	53%	0.070	4.8	YES	5490.0	5472.0	850	5474.75	5451.63	20.37
	D.1	EX 36"	0.518	0.139	8	0.011	0.0400	2.86	YES	18%	0.033	4.2	YES	5515.0	5514.0	100	5505.00	5501.00	13.00
	E.1	EX 36"	0.277	0.074	8	0.011	0.0400	2.86	YES	10%	0.021	3.5	YES	5527.5	5528.0	100	5517.50	5513.50	14.50
	F.3	F.1	1.205	0.323	10	0.011	0.0050	1.84	YES	66%	0.127	2.5	YES	5465.0	5465.0	990	5455.00	5450.05	14.95
	F.4	F.2	0.340	0.091	8	0.011	0.0070	1.20	YES	28%	0.045	2.0	YES	5480.0	5475.0	1390	5472.00	5462.27	12.73
	F.2	F.1	0.413	0.111	8	0.011	0.0120	1.57	YES	26%	0.043	2.6	YES	5475.0	5465.0	990	5462.27	5450.39	14.61
	F.1	GVRE 12"	1.760	0.497	12	0.011	0.0050	2.99	YES	59%	0.176	2.8	YES	5465.0	5465.0	100	5450.05	5449.55	15.45
	G.1	EX 36"	0.271	0.073	8	0.011	0.0100	1.43	YES	19%	0.034	2.1	YES	5493.5	5490.0	475	5483.50	5478.75	11.25
	H.1	EX 36"	0.141	0.038	8	0.011	0.0150	1.75	YES	8%	0.019	2.0	YES	5493.5	5490.0	475	5483.50	5476.38	13.63
	I.1	EX 36"	0.675	0.181	8	0.011	0.0100	1.43	YES	47%	0.064	2.8	YES	5493.5	5490.0	475	5483.50	5478.75	11.25

FlowMaster output included for verifying calulations

Windler - Critical Depth

	From	To	Sum Avg Day + Infiltration (CFS)	Pipe Diameter (in)	Theta	Area (sf)	V (fps)	Top Width (ft)	FR	Critical Depth (ft)	Critical Depth (in)
Tributary to Second Creek	Line A										
	A.9	A.8	0.019	8	1.235	0.016	1.161	0.39	1.00	0.062	0.74
	A.8	A.6	0.119	8	2.030	0.063	1.892	0.57	1.00	0.157	1.89
	A.7	A.6	0.063	8	1.700	0.039	1.591	0.50	1.00	0.113	1.36
	A.6	A.5	0.279	8	2.599	0.116	2.409	0.64	1.00	0.244	2.93
	A.5	A.4	0.358	10	2.371	0.145	2.464	0.77	1.00	0.260	3.12
	A.12	A.11	0.051	8	1.611	0.034	1.509	0.48	1.00	0.102	1.23
	A.11	A.4	0.180	8	2.282	0.085	2.121	0.61	1.00	0.194	2.33
	A.4	A.3	0.766	12	2.597	0.260	2.947	0.96	1.00	0.365	4.38
	A.3	A.2.5	0.869	12	2.699	0.284	3.061	0.98	1.00	0.390	4.68
	A.2.5	A.2	1.129	15	2.467	0.360	3.135	1.18	1.00	0.418	5.02
	A.2	A.1	1.215	15	2.522	0.379	3.203	1.19	1.00	0.435	5.21
	A.10	A.1	0.053	8	1.621	0.035	1.518	0.48	1.00	0.104	1.24
	Line B										
	B.3	B.2	0.155	8	2.188	0.076	2.036	0.59	1.00	0.180	2.16
	B.2	B1	0.187	8	2.308	0.087	2.145	0.61	1.00	0.198	2.38
	B1	A.2.5	0.260	10	2.162	0.116	2.250	0.74	1.00	0.221	2.65
Tributary to First Creek	Line C										
	C.3	C.2	0.214	8	2.402	0.096	2.230	0.62	1.00	0.213	2.55
	C.2	C.1	0.333	8	2.745	0.131	2.542	0.65	1.00	0.268	3.21
	D.1	EX 36"									
	E.1	EX 36"									
	F.3	F.1	0.323	10	2.302	0.135	2.391	0.76	1.00	0.247	2.96
	F.4	F.2	0.091	8	1.884	0.052	1.759	0.54	1.00	0.137	1.65
	F.2	F.1	0.111	8	1.989	0.060	1.856	0.56	1.00	0.152	1.82
	F.1	GVRE 12"	0.497	12	2.284	0.191	2.602	0.91	1.00	0.292	3.51
	G.1	EX 36"	0.073	8	1.770	0.044	1.655	0.52	1.00	0.122	1.47
	H.1	EX 36"	0.038	8	1.485	0.027	1.393	0.45	1.00	0.088	1.05
	I.1	EX 36"	0.181	8	2.287	0.085	2.126	0.61	1.00	0.195	2.34

FlowMaster output included for verifying calculations

Worksheet for 36-inch Interceptor

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	36.0 in
Discharge	20.10 cfs
Results	
Normal Depth	15.9 in
Flow Area	3.0 ft ²
Wetted Perimeter	4.4 ft
Hydraulic Radius	8.3 in
Top Width	2.98 ft
Critical Depth	17.3 in
Percent Full	44.2 %
Critical Slope	0.003 ft/ft
Velocity	6.67 ft/s
Velocity Head	0.69 ft
Specific Energy	2.02 ft
Froude Number	1.170
Maximum Discharge	53.62 cfs
Discharge Full	49.85 cfs
Slope Full	0.001 ft/ft
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	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	44.2 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	15.9 in
Critical Depth	17.3 in
Channel Slope	0.004 ft/ft
Critical Slope	0.003 ft/ft

Slope between manholes SS-MH-1 and SS-MH-2 on the Windler Homestead Filing 1 District Road Construction Plans (#206051)

Worksheet for A.6 to A.5 (avg day)

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.011
Channel Slope	0.010 ft/ft
Diameter	8.0 in
Discharge	0.25 cfs
Results	
Normal Depth	2.3 in
Flow Area	0.1 ft ²
Wetted Perimeter	0.8 ft
Hydraulic Radius	1.3 in
Top Width	0.60 ft
Critical Depth	2.8 in
Percent Full	28.5 %
Critical Slope	0.005 ft/ft
Velocity	3.09 ft/s
Velocity Head	0.15 ft
Specific Energy	0.34 ft
Froude Number	1.476
Maximum Discharge	1.54 cfs
Discharge Full	1.43 cfs
Slope Full	0.000 ft/ft
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	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	28.5 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.3 in
Critical Depth	2.8 in
Channel Slope	0.010 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for A.6 to A.5 (peak)

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.011
Channel Slope	0.010 ft/ft
Diameter	8.0 in
Discharge	1.04 cfs
Results	
Normal Depth	5.1 in
Flow Area	0.2 ft ²
Wetted Perimeter	1.2 ft
Hydraulic Radius	2.3 in
Top Width	0.64 ft
Critical Depth	5.8 in
Percent Full	63.3 %
Critical Slope	0.007 ft/ft
Velocity	4.46 ft/s
Velocity Head	0.31 ft
Specific Energy	0.73 ft
Froude Number	1.306
Maximum Discharge	1.54 cfs
Discharge Full	1.43 cfs
Slope Full	0.005 ft/ft
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	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	63.3 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.1 in
Critical Depth	5.8 in
Channel Slope	0.010 ft/ft
Critical Slope	0.007 ft/ft

Worksheet for A.2 to A.1 (avg day)

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.011
Channel Slope	0.007 ft/ft
Diameter	15.0 in
Discharge	1.11 cfs
Results	
Normal Depth	4.2 in
Flow Area	0.3 ft ²
Wetted Perimeter	1.4 ft
Hydraulic Radius	2.4 in
Top Width	1.12 ft
Critical Depth	5.0 in
Percent Full	28.1 %
Critical Slope	0.004 ft/ft
Velocity	3.90 ft/s
Velocity Head	0.24 ft
Specific Energy	0.59 ft
Froude Number	1.370
Maximum Discharge	6.87 cfs
Discharge Full	6.39 cfs
Slope Full	0.000 ft/ft
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	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	28.1 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.2 in
Critical Depth	5.0 in
Channel Slope	0.007 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for A.2 to A.1 (peak)

Project Description	
Friction Method	Manning
	Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.011
Channel Slope	0.007 ft/ft
Diameter	15.0 in
Discharge	3.86 cfs
Results	
Normal Depth	8.4 in
Flow Area	0.7 ft ²
Wetted Perimeter	2.1 ft
Hydraulic Radius	4.0 in
Top Width	1.24 ft
Critical Depth	9.5 in
Percent Full	56.1 %
Critical Slope	0.005 ft/ft
Velocity	5.45 ft/s
Velocity Head	0.46 ft
Specific Energy	1.16 ft
Froude Number	1.272
Maximum Discharge	6.87 cfs
Discharge Full	6.39 cfs
Slope Full	0.003 ft/ft
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	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	56.1 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.4 in
Critical Depth	9.5 in
Channel Slope	0.007 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for A.4 to A.3 (avg day)

Project Description	
Friction Method	Manning
Solve For	Formula
	Normal Depth
Input Data	
Roughness Coefficient	0.011
Channel Slope	0.010 ft/ft
Diameter	12.0 in
Discharge	0.70 cfs
Results	
Normal Depth	3.3 in
Flow Area	0.2 ft ²
Wetted Perimeter	1.1 ft
Hydraulic Radius	1.9 in
Top Width	0.89 ft
Critical Depth	4.2 in
Percent Full	27.5 %
Critical Slope	0.004 ft/ft
Velocity	3.96 ft/s
Velocity Head	0.24 ft
Specific Energy	0.52 ft
Froude Number	1.576
Maximum Discharge	4.53 cfs
Discharge Full	4.21 cfs
Slope Full	0.000 ft/ft
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	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	27.5 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.3 in
Critical Depth	4.2 in
Channel Slope	0.010 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for A.4 to A.3 (peak)

Project Description	
Friction Method	Manning
Solve For	Formula
	Normal Depth
Input Data	
Roughness Coefficient	0.011
Channel Slope	0.010 ft/ft
Diameter	12.0 in
Discharge	2.67 cfs
Results	
Normal Depth	6.9 in
Flow Area	0.5 ft ²
Wetted Perimeter	1.7 ft
Hydraulic Radius	3.3 in
Top Width	0.99 ft
Critical Depth	8.4 in
Percent Full	57.8 %
Critical Slope	0.006 ft/ft
Velocity	5.67 ft/s
Velocity Head	0.50 ft
Specific Energy	1.08 ft
Froude Number	1.450
Maximum Discharge	4.53 cfs
Discharge Full	4.21 cfs
Slope Full	0.004 ft/ft
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	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	57.8 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.9 in
Critical Depth	8.4 in
Channel Slope	0.010 ft/ft
Critical Slope	0.006 ft/ft

A.5 to A.4 (avg day)

Project Description	
Friction Method	Manning
Solve For	Formula Normal Depth
Input Data	
Roughness Coefficient	0.011
Channel Slope	0.007 ft/ft
Diameter	10.0 in
Discharge	0.33 cfs
Results	
Normal Depth	2.6 in
Flow Area	0.1 ft ²
Wetted Perimeter	0.9 ft
Hydraulic Radius	1.5 in
Top Width	0.73 ft
Critical Depth	3.0 in
Percent Full	26.2 %
Critical Slope	0.004 ft/ft
Velocity	2.86 ft/s
Velocity Head	0.13 ft
Specific Energy	0.35 ft
Froude Number	1.278
Maximum Discharge	2.33 cfs
Discharge Full	2.17 cfs
Slope Full	0.000 ft/ft
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	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	26.2 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.6 in
Critical Depth	3.0 in
Channel Slope	0.007 ft/ft
Critical Slope	0.004 ft/ft

A.5 to A.4 (peak)

Project Description	
Friction Method	Manning
Solve For	Formula Normal Depth
Input Data	
Roughness Coefficient	0.011
Channel Slope	0.007 ft/ft
Diameter	10.0 in
Discharge	1.33 cfs
Results	
Normal Depth	5.7 in
Flow Area	0.3 ft ²
Wetted Perimeter	1.4 ft
Hydraulic Radius	2.7 in
Top Width	0.83 ft
Critical Depth	6.2 in
Percent Full	56.6 %
Critical Slope	0.005 ft/ft
Velocity	4.17 ft/s
Velocity Head	0.27 ft
Specific Energy	0.74 ft
Froude Number	1.185
Maximum Discharge	2.33 cfs
Discharge Full	2.17 cfs
Slope Full	0.003 ft/ft
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	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	56.6 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.7 in
Critical Depth	6.2 in
Channel Slope	0.007 ft/ft
Critical Slope	0.005 ft/ft

36-inch Interceptor
Peak Flow Analysis to TAH DP 22 (GVR DP 11)

Development	Basin	Avg Day Flow (mgd)	Avg Day Flow (gpm)	Infiltration (10%)	Cumulative Population	Peak Factor	Peak Flow + Infl (mgd)	Peak Flow + Infl (gpm)	Peak Flow + Infl (MGD)
Re: The Aurora Highlands Master Utility Report - Amendment 1 (#219069MU2)									
Windler PA-12 and PA-13 comprise TAH basin OS-6									
TAH	OS-6	0.059	41		874				
Windler	PA-12	0.044	30		641				
	PA-13	0.082	57		1,058				
Windler total		0.125	87		1,700				
Windler average day flow and population from PA-12 and PA-13 greater than that assumed in TAH MUR									
		0.066	46		826				
Windler PA-14, PA-21 and PA-22 comprise TAH basin OS-7									
TAH	OS-7	0.102	71		1,492				
Windler	PA-14	0.065	45		963				
	PA-21	0.060	42		886				
	PA-22	0.070	49		1,029				
Windler total		0.196	136		2,878				
Windler average day flow and population from PA-14, PA-21 and PA-22 greater than that assumed in TAH MUR									
		0.094	65		1,386				
TAH DP 22 (peak flow + infiltration at DP22 is 550 gpm higher than that assumed in the GVR MUR)									
		4.822	3,349	335	71,041	2.5		8,550	12.31
Windler average day flow and population from PA-12, PA-13, PA-14, PA-21 and PA-22 greater than that assumed in TAH MUR									
		0.160	111	11	2,211				
TAH DP 22 with Windler		4.982	3,460	346	73,252	2.4		8,791	12.66
Peak flow + infiltration greater than that from TAH MUR									
								241	0.35

36-inch Interceptor
Peak Flow Analysis to GVR DP 15

Development	Basin	Avg Day Flow (mgd)	Avg Day Flow (gpm)	Infiltration (10%)	Cumulative Population	Peak Factor	Peak Flow + Infl (mgd)	Peak Flow + Infl (gpm)	Peak Flow + Infl (MGD)
Re: Green Valley - Amendment 1 Master Utility Report (#218184MU1)									
Windler PA-23, PA-24, PA-25, PA-26 and PK-4 comprise GVR basins OS-5 and OS-6									
GVR	OS-5	0.121	84	8	1,423	4.00		344	0.50
GVR	OS-6	0.112	78	8	1,408	4.00		320	0.46
GVR total		0.233	162	16	2,831	4.00		664	0.96
Windler	PA-23	0.039	27		579				
	PA-24	0.022	15		327				
	PA-25	0.052	36		765				
	PA-26	0.043	30		640				
	PK-4	0.015	10						
Windler total		0.171	119	12	2,310	4.00		488	0.70
Net peak flow change for GVR basins OS-5 and OS-6 attributed to Windler		-0.062	-43					-176	(0.25)
GVR DP 13	5	0.083	58		1,227				
GVR DP 10	310-4	0.028	19		407				
GVR DP 12	Windler PA-23, PA-24, PA-25, PA-26 and PK-4	0.171	119		2,310				
TAH DP 22 with Windler (GVR DP 11)		4.982	3460		73,252				
Updated total at GVR DP 15		5.264	3,656	366	77,197	2.42		9,211	13.26
GVR DP 15 (peak flow +infiltration from GVR MUR		5.143	3,572	357	108,900	2.28		8,517	12.26
Peak flow + infiltration greater than that from GVR MUR								694.00	1.00

Estimated Peak Flow Increase + Infiltration Atributed to Windler and TAH at GVR DP 15

Total population at TAH DP 22	71,041
minus OS-6 population (Windler)	-874
minus OS-7 population (Windler)	-1,492
TAH population without Windler at TAH DP 22	68,675

Windler population at GVR DP 15	
PA-12	641
PA-13	1,058
PA-14	963
PA-21	886
PA-22	1,029
PA-23	579
PA-24	327
PA-25	765
PA-26	640
Total Windler population at GVR DP 15	6,888

Total population TAH and Windler at GVR DP 15 75,563

Estimated peak flow increase + infiltration attributed to Windler at GVR DP 15	63 gpm	0.09 MGD
Estimated peak flow increase + infiltration attributed to TAH at GVR DP 15	631 gpm	0.91 MGD
Peak flow + infiltration greater than that from GVR MUR at GVR DP 15	694 gpm	1.00 MGD

Appendix C

Referenced Documents



COLORADO

Department of Public Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

July 24, 2018

Sarah Young, Planning Services Manager
Aurora Water
15151 East Alameda Parkway
Aurora, CO 80012

Subject: CORRECTED Site Location Approval No.: ES.18.SA.04313
City of Aurora Wastewater Collection System, Second Creek Interceptor
Associated WWTF CDPS Permit No.: CO0026638
Adams County

Dear Ms. Young:

The Water Quality Control Division (Division) has reviewed and evaluated the site location application package for the Second Creek Interceptor. The facility is to be located as follows: The SE 1/4 of Section 6, Township 3 South, Range 65 West of the 6th Prime Meridian, Adams County. The lift station will discharge to the proposed Second Creek Regional Lift Station, which will convey wastewater to the City of Aurora collection system and pass through the First Creek Lift Station for treatment at the Metro Wastewater Reclamation District Robert W. Hite Treatment Facility.

The site location application has been found to be in conformance with the Water Quality Control Commission's *Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works*, 5 CCR 1002-22 (Regulation No. 22) and is approved. This site location approval addresses the following summary of the proposed design and the associated conditions:

1. Based upon application information, the lift station design will be for:
Approximately 1,914 lineal feet of 36-inch diameter gravity interceptor pipeline
 - Hydraulic Design Capacity - 0.8 MGD (maximum month average flow)
 - Peak Hydraulic Capacity - 1.6 MGD (peak hourly flow) (1111 GPM)
2. The service area of the Second Creek Interceptor is planned for phased expansion to reach future, final peak design capacity of approximately 3.4 MGD. The approved capacity of the initial phase is limited to the approved hydraulic capacities of the First Creek lift station, which serves as an intermediate receiving facility for the initial phase. The First Creek lift station was approved for a maximum monthly average flow of 0.8 MGD and a peak hydraulic capacity of 1.6 MGD under site location approval number 4894. The owner/operator of the interceptor must ensure loadings from the service area are maintained within the approved capacities of the interceptor. Any future modifications, including, but not limited to, the design capacity, interceptor size or alignment, or connection of upstream or downstream interceptor segments, will require site location and design approval in accordance with Regulation 22 prior to the commencement of construction.

This site location approval does not constitute design approval for construction. In accordance with Regulation No. 22, Section 22.11(1), in addition to approval of the site location application, the applicant must obtain approval of the design of the treatment works from the Division prior to beginning construction.



This site location approval will expire on **January 24, 2019**. If construction has not commenced by this date, the approval will expire and a new application for site location approval may be required. Construction is defined as entering into a contract for, or for in-house work forces, initiation of any action towards the erection or physical placement of materials, equipment, piping, earthwork or buildings which are to be a part of a domestic wastewater treatment works.

In accordance with Regulation No. 22, Section 22.3(15), this site location approval is subject to appeal pursuant to the State Administrative Procedures Act.

This approval does not relieve the owner from compliance with all local, state, and federal regulations prior to construction nor from responsibility for proper engineering, construction and operation of the facility.

The Engineering Section is interested in gaining feedback about your experience during the engineering review process. We would appreciate your time to complete a Quality-of-Service Survey regarding your experience during the engineering review process leading up to issuance of this decision letter. The Engineering Section will use your responses and comments to identify strengths, target areas for improvement, and evaluate process improvements to better serve your needs. Please take a moment to fill out our survey at the following website: <http://fs8.formsite.com/cohealth/form627710151/index.html>.

If you should have any questions, please contact Emily Wong by phone at 303-692-3566 or via electronic mail at emily.wong@state.co.us.

Sincerely,

Bret Icenogle, P.E.
Engineering Section Manager
Engineering Section | Water Quality Control Division
Colorado Department of Public Health and Environment

cc: Andy Stone, Stantec
Michael Weakley, Tri-County Health Department
Amy Zimmerman, WQCD ES Unit Manager
Emily Wong, WQCD ES Senior Review Engineer
Site Application File | Discharge Permit File (CO-0026638)

Windler Homestead Projected Contribution to First Creek

Data in table is from the Sanitary Sewer Flow Calculations in the Master Utility Plan for JPB July 2003, 1st revision Nov 2003, 2nd revision Jan 2004

Node	Area Designation	Area (ac)	No. DUs	Pop/1000	Avg Day (gpd)	Infiltration	Peaking Factor	Peak Flow (gpd)	Peak Flow (gpm)	Peak Flow (cfs)
2	A1	32.04	83	0.2656	21,248	2,125	4.0	87,117	60	0.135
3	A2	28.46	128	0.4096	32,768	3,277	4.0	134,349	93	0.208
4	A3	12.89	58	0.1856	14,848	1,485	4.0	60,877	42	0.094
12	A4	14.34	71	0.2272	18,176	1,818	4.0	74,522	52	0.115
5	A5	37.61	0	0.5788	97,786	9,779	4.0	400,923	278	0.620
6	A6	30.15	0	0.4640	78,390	7,839	4.0	321,399	223	0.497
9	A14	41.24	0	0.6347	107,224	10,722	4.0	439,618	305	0.680
8	A15	20.15	154	0.3563	28,504	2,851	4.0	116,867	81	0.181
7	A16	30.05	0	0.4624	78,130	7,813	4.0	320,333	222	0.496
11	A17	99.04	304	1.2852	140,470	14,047	4.0	575,927	400	0.891
10	A19	42.42	267	0.7378	59,024	5,902	4.0	241,998	168	0.374
		388.39	1065	5.6072	676,568	67,658	3.7	2,604,193	1,808	4.029

Average Day + Infiltration 744,226

0.74 MGD

Master Utility Report

*Windler Homestead
Aurora, Colorado*

Prepared For:
JPB HOLDINGS, LLC
8155 E. Fairmont Drive, #176
Denver, Colorado 80230

Prepared By:
CARTER & BURGESS, INC.
707 Seventeenth Street
Suite 2300
Denver, Colorado 80202

July 2003
1st Revision: November 2003
2nd Revision: January 2004

WINDLE WESTEAD
MASTER LUMP SUM REPORT
SANITARY SEWER FLOW CALCULATIONS

NODE	LAND USE	ACERAGE (acres)	NUMBER OF DWELLING UNITS	DENSITY (units/acre)	OCCUPANCY (persons/D.U.)	AVG DAY FLOW (gpcd, fpcfda)	POP/1000	AVG DAY FLOW (gpd)	INFILTRATION 10% (gpd)	PEAKING FACTOR (PF)	PEAK FLOW (gpd)	PEAK FLOW (cfs)	PEAK FLOW (mgpd)	DESIGN POINT TRACT NUMBER
1	Off-Site (Residential)	43.50	217	5	3.2	80	0.6944	55,552	5,555	4.00	227,763	0.354	0.228	A0-3
	Total	43.50					0.6944	55,552	5,555	4.00	227,763	0.354	0.228	A0-3
2	SFD - Large	32.04	83	2.6	3.2	80	0.2656	21,248	2,125	4.00	87,117	0.136	0.087	M5
	Open Space	2.03												M12
	Total	34.07					0.9600	76,800	7,680	4.00	314,880	0.490	0.315	1+2+A0-3
3	SFD-Standard	28.46	128	4.5	3.2	80	0.4096	32,768	3,277	4.00	134,349	0.209	0.134	M6
	Total	28.46					1.3696	109,568	10,957	4.00	449,229	0.699	0.449	1+2+3+A0-3+A0-4
4	SFD-Standard	12.89	58	4.5	3.2	80	0.1856	14,848	1,485	4.00	60,877	0.095	0.061	M7
	Off-Site GVR - SFD	71.70	359	5	3.2	80	1.1488	91,904	9,190	4.00	376,806	0.586	0.377	GVR
	Off-Site GVR - Community Center	43.50		1	15.39	2600	0.6695	113,100	11,310	4.00	463,710	0.722	0.464	GVR
	Off-Site GVR - School	15.00		1	1000	35	1.0000	35,000	3,500	4.00	143,500	0.223	0.144	GVR
	Off-Site - Residential	141.40	708	5	3.2	80	2.2656	181,248	18,125	4.00	743,117	1.156	0.743	A0-4
	Total	284.49					6.8683	563,844	56,384	3.62	2,099,988	3.267	2.100	1...4+12+A0-3+A0-4+GVR Off-Site
5	Commercial	37.61		1	15.39	2600	0.5788	97,786	9,779	4.00	400,923	0.624	0.401	AC-19
	Off-Site GVR - Office	43.60		1	15.39	2600	0.6710	113,360	11,336	4.00	464,776	0.723	0.465	GVR
	Off-Site GVR - Activity Center	16.40		1	15.39	2600	0.2524	42,640	4,264	4.00	174,824	0.272	0.175	GVR
	Off-Site GVR - School	54.20		1	2500	35	2.5000	87,500	8,750	4.00	358,750	0.558	0.359	GVR
	Total	151.81					10.8685	905,130	90,513	3.36	3,128,884	4.868	3.129	1...5+12+A0-3+A0-4+GVR Off-Site
6	Commercial	30.15		1	15.39	2600	0.4640	78,390	7,839	4.00	321,399	0.500	0.321	AC-20
	Total	30.15					11.3325	983,520	98,352	3.33	3,376,895	5.254	3.377	1...6+12+A0-3+A0-4+GVR Off-Site
7	Commercial	17.65		1	15.39	2600	0.2716	45,890	4,589	4.00	188,149	0.293	0.188	AC-5
	Commercial	6.72		1	15.39	2600	0.1034	17,472	1,747	4.00	71,635	0.111	0.072	AC-29
	Town Square-Open Space	0.52												AC-28
	Commercial	5.68		1	15.39	2600	0.0874	14,768	1,477	4.00	60,549	0.094	0.061	AC-27
	Neighborhood Park	4.28												AC-40
	Open Space	2.88												AC-30
	Total	37.73					11.7950	1,061,650	106,165	3.31	3,621,592	5.635	3.622	1...7+12+A0-3+A0-4+GVR Off-Site
8	SFA	7.55	91	12	1.7	80	0.1547	12,376	1,238	4.00	50,742	0.079	0.051	AC-26
	SFD-Small	12.60	63	5	3.2	80	0.2016	16,128	1,613	4.00	66,125	0.103	0.066	AC-25
	Off-Site GVR - Office	15.70		1	15.39	2600	0.2416	40,820	4,082	4.00	167,362	0.260	0.167	A0-6
	Open Space (Includes 0.7 acres for Detention)	1.47												AC-38
	Open Space	2.26												AC-39
	Total	39.58					15.3140	1,547,824	154,782	3.17	5,061,394	7.875	5.061	1...8+12+A0-3+A0-4+GVR Off-Site
9	Commercial	14.43		1	15.39	2600	0.2221	37,518	3,752	4.00	153,824	0.239	0.154	AC-31
	Commercial	26.81		1	15.39	2600	0.4126	69,706	6,971	4.00	285,795	0.445	0.286	AC-32
	Total	41.24					0.6347	107,224	10,722	4.00	439,618	0.684	0.440	9
10	Off-Site GVR - SFD	336.10	1680	5	3.2	80	5.3760	430,080	43,008	3.78	1,666,808	2.593	1.667	GVR
	MF-Small	8.18	106	12	2.1	80	0.2226	17,808	1,781	4.00	73,013	0.114	0.073	AC-33
	SFD-Standard	17.53	79	4.5	3.2	80	0.2528	20,224	2,022	4.00	82,918	0.129	0.083	AC-34
	SFD-Small	16.41	82	5	3.2	80	0.2624	20,992	2,099	4.00	86,067	0.134	0.086	AC-36
	Open Space	1.73												AC-35
	Open Space	3.74												AC-37
	Off-Site GVR - SFA	36.90	443	12	1.7	80	0.7531	60,248	6,025	4.00	247,017	0.384	0.247	GVR
	Off-Site GVR - 2-Family	107.80	1078	10	2.1	80	2.2638	181,104	18,110	4.00	742,526	1.155	0.743	GVR
	Off-Site GVR - MF	107.60	1291	12	1.7	80	2.1947	175,576	17,558	4.00	719,862	1.120	0.720	GVR
	GVR-Office	75.90		1	15.39	2600	1.1681	197,340	19,734	4.00	809,094	1.259	0.809	GVR
	GVR-School	114.20		5	1000	35	5.0000	175,000	17,500	3.82	686,275	1.068	0.686	GVR
	GVR-Community Activity Center	17.00		1	15.39	2600	0.2616	44,200	4,420	4.00	181,220	0.282	0.181	GVR
	Off-Site (Residential)	869.90	4518	5	3.2	80	14.4576	1,156,608	115,661	3.20	3,817,522	5.940	3.818	A0-5
	Off-Site (Industrial)	1235.70		1	7.5	600	9.2678	741,420	74,142	3.45	2,630,076	4.092	2.630	A0-5
	Total	2948.69					42.1152	3,327,824	332,782	2.68	9,242,196	14.380	9.242	9+10+A0-5
11	SFD-Small	17.52	88	5	3.2	80	0.2816	22,528	2,253	4.00	92,365	0.144	0.092	AC-1
	SFD-Small	13.64	68	5	3.2	80	0.2176	17,408	1,741	4.00	71,373	0.111	0.071	AC-8
	SFD-Standard	16.54	74	4.5	3.2	80	0.2368	18,944	1,894	4.00	77,670	0.121	0.078	AC-9
	Open Space	2.66												AC-2
	Commercial	10.83		1	15.39	2600	0.1667	28,158	2,816	4.00	115,448	0.180	0.115	AC-3
	Commercial	16.68		1	15.39	2600	0.2567	43,368	4,337	4.00	177,809	0.277	0.178	AC-4
	Open Space	4.10												AC-6
	SFA-Standard	6.18	74	12	1.7	80	0.1258	10,064	1,006	4.00	41,262	0.064	0.041	AC-7
	Neighborhood Park	5.00												AC-10
	Off-Site GVR Community Center	106.30		1	15.39	2600	1.6360	276,380	27,638	4.00	1,133,158	1.763	1.133	GVR
	Total	199.45					2.9211	416,850	41,685	4.00	1,709,085	2.659	1.709	11+GVR Off-Site
12	SFD-Small	11.65	58	5	3.2	80	0.1856	14,848	1,485	4.00	60,877	0.095	0.061	M8
	SFD-Small	2.69	13	5	3.2	80	0.0416	3,328	333	4.00	13,645	0.021	0.014	AC-18
	Total	14.34					0.2272	18,176	1,818	4.00	74,522	0.116	0.075	12
13	Off-Site (Residential)	136.90	684	5	3.2	80	2.1888	175,104	17,510	4.00	717,926	1.117	0.718	A0-2
	Total	136.90					2.1888	175,104	17,510	4.00	717,926	1.117	0.718	13
14	SFD-Standard	26.14	105	4	3.2	80	0.3360	26,880	2,688	4.00	110,208	0.171	0.110	M4
	Total	26.14					2.5248	201,984	20,198	4.00	828,134	1.289	0.828	13+14+A0-2

AC5 - 17.65 ac missing
45,890 gpd avg day

WINDLEF HESTEAD
MASTER U. Y REPORT
SANITARY SEWER FLOW CALCULATIONS

NODE	LAND USE	ACERAGE (acres)	NUMBER OF DWELLING UNITS	DENSITY (units/acre)	OCCUPANCY (persons/D.U.)	AVG DAY FLOW (gpcd, lps/d)	POP/1000	AVG DAY FLOW (gpd)	INFILTRATION 10% (gpd)	PEAKING FACTOR (PF)	PEAK FLOW (gpd)	PEAK FLOW (cfs)	PEAK FLOW (mgd)	DESIGN POINT TRACT NUMBER
15	SFD-Small	17.13	88	5	3.2	80	0.2752	22,016	2,202	4.00	90,266	0.140	0.090	M3
	MF-Medium	0.19	2	12	1.7	80	0.0034	272	27	4.00	1,115	0.002	0.001	M1
	MF-Medium	0.07	1	18	1.7	80	0.0017	136	14	4.00	558	0.001	0.001	AC-47
	SFD-Standard	9.28	42	4.5	3.2	80	0.0144	10,752	1,075	4.00	44,083	0.069	0.044	AC-16
	SFD-Standard	23.69	107	4.5	3.2	80	0.0144	27,392	2,739	4.00	112,307	0.175	0.112	M10
	Open Space	5.54												AC-23
	Open Space	6.38												AC-17
	Neighborhood Park	5.00												M11
	Open Space	2.08												M9
	Total	69.36					2.8339	262,552	26,255	4.00	1,076,463	1.675	1.076	13+14+15+A0-2
16	Commercial	10.99		1	15.39	2600	0.1691	28,574	2,857	4.00	117,153	0.182	0.117	AC-21
	Commercial	17.35		1	15.39	2600	0.2670	45,110	4,511	4.00	184,951	0.288	0.185	AC-24
	Commercial	8.37		1	15.39	2600	0.1288	21,762	2,176	4.00	89,224	0.139	0.089	AC-22
	Commercial	5.21		1	15.39	2600	0.0802	13,546	1,355	4.00	55,539	0.086	0.056	AC-11
	Total	41.92					0.6451	108,992	10,899	4.00	446,867	0.695	0.447	18
17	MF-Medium	15.62	281	17.8	1.7	80	0.4777	38,216	3,822	4.00	158,686	0.244	0.157	R6
	MF-Medium	7.61	91	12	1.7	80	0.1547	12,376	1,238	4.00	50,742	0.079	0.051	AC-15
	Open Space	1.99												AC-14
	Open Space	2.20												R7
	Total	27.42					3.4663	313,144	31,314	4.00	1,283,890	1.998	1.284	13+14+15+17+A0-2
18	Commercial	1.51		1	15.39	2600	0.0232	3,926	393	4.00	16,097	0.025	0.016	AC-12
	Commercial	8.76		1	15.39	2600	0.1348	22,776	2,278	4.00	93,382	0.145	0.093	AC-13
	Commercial	15.09		1	15.39	2600	0.2322	39,234	3,923	4.00	160,859	0.250	0.161	R8
	Commercial	42.09		1	15.39	2600	0.6478	109,434	10,943	4.00	448,679	0.698	0.449	R1
	Open Space	4.62												R9
	Commercial	24.47		1	15.39	2600	0.3766	63,622	6,362	4.00	260,850	0.406	0.261	R10
	Open Space (includes 1.5 acres for Detention)	3.63												R2
	Commercial	12.51		1	15.39	2600	0.1925	32,526	3,253	4.00	133,357	0.207	0.133	R3
	Commercial	13.60		1	15.39	2600	0.2093	35,360	3,536	4.00	144,976	0.226	0.145	R4
	Total	126.28					2.4618	317,777	30,688	4.00	1,705,067	2.653	1.705	16+18
19	Commercial	18.67		1	15.39	2600	0.2873	48,542	4,854	4.00	199,022	0.310	0.199	R5
	Total	18.67					9.6020	948,449	93,755	3.43	3,344,103	5.203	3.344	13...19+A0-2
20	Commercial	14.85		1	15.39	2600	0.2285	38,610	3,861	4.00	158,301	0.246	0.158	AC-41
	Commercial	14.09		1	15.39	2600	0.2168	36,634	3,663	4.00	150,199	0.234	0.150	AC-42
	Fire Station	2.51		1	15.39	2600	0.0386	6,526	653	4.00	26,757	0.042	0.027	AC-43
	Neighborhood Park	5.04												AC-45
	MF-Medium	19.93	355	17.8	1.7	80	0.6035	48,280	4,828	4.00	197,948	0.308	0.198	AC-44
	School	23.69		1	1000	35	1.0000	35,000	3,500	4.00	143,500	0.223	0.144	AC-46 & M2
	Total	80.11					3.3867	268,986	26,899	4.00	1,102,843	1.716	1.103	20+21+A0-7
21	Off-Site (Residential)	81.20	406	5	3.2	80	1.2992	103,936	10,394	4.00	426,138	0.663	0.426	A0-7
	Total	81.20					1.2992	103,936	10,394	4.00	426,138	0.663	0.426	A0-7
22	Gun Club Road Lift Station													
	Off-Site Commercial	394.80		1	15.39	2600	6.0760	1,026,480	102,648	3.70	3,899,788	6.068	3.900	A0-1
	Off-Site Industrial	1047.30		1	7.5	2600	7.8548	2,722,980	272,298	3.54	9,922,299	15.438	9.922	A0-1
	Total	1442.10					23.5327	4,697,909	469,791	2.95	14,331,138	22.298	14.331	13...21+A0-2+A0-7+A0-1

Flows For Entire Site: Assumes using a Peaking Factor using flows for all contributing areas to each lift station.

PICADILLY ROAD LIFT STATION	3853.51					60.3503	5,292,498	529,250	2.52	13,872,364	21.584	13.872	
GUN CLUB ROAD LIFT STATION	2050.10					23.5327	4,697,909	469,791	2.95	14,331,138	22.298	14.331	
WINDLER HOMESTEAD PROPERTY	791.01					11.7212	1,444,070	144,407	3.31	4,931,145	7.673	4.931	
PICADILLY LIFT STATION - INCLUDING GUN CLUB LIFT STATION FLOWS						83.8830	9,990,407	999,041	2.39	28,203,503	43.883	28.204	

Note: "Total" for each design point is the total cumulative flow at that node. For example, the total at node 17 is nodes 13+14+15+17+A0-2.

"GVR" means Green Valley Ranch.

Peaking factor for each "Total" is based on cumulative flows at that node.

The flows listed for the Lift Stations at the bottom of this sheet used a overall peaking factor. This was taken by using the average amount of flow at the Lift Station multiplied by a peaking factor which was calculated by using the city standard.

Flow totals leaving Picadilly Lift Station are based on a Peaking Factor of First Creek and Second Creek Basins combined.

Total shown at node 22 used a peaking factor for



Carter=Burgess

707 17th Street, Suite 2300
Denver, Colorado 80202
(303) 820-5240 FAX (303) 820-5272

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IF NOT ONE INCH ON THIS SHEET,
ADJUST SCALES ACCORDINGLY

[illegible]

**MASTER UTILITY REPORT
SANITARY SEWER FLOWS
EXHIBIT B-2**

PROJECT NO.	071198
DATE:	OCTOBER 31, 2003
SCALE:	1:500
DRAFTED BY:	MJ
DESIGNED BY:	WTP
REVIEWED BY:	MJP

DRAWING CONTENTS:
SANITARY USE

DRAWING NUMBER

SHEET

Master Utility Report

Addendum 1

Windler Homestead

Aurora, Colorado



Prepared For:
City of Aurora
1470 South Havana Street
Aurora, Colorado 80012

Prepared By:
Carter & Burgess, Inc.
707 Seventeenth Street
Suite 2300
Denver, Colorado 80202

June 13, 2005



WINDLER HOMESTEAD
MASTER UTILITY REPORT
SANITARY SEWER PEAKED FLOW CALCULATIONS

PIPE SECTION		Ave. Flows (MGD)			TOTAL Peak	I/I	TOTAL (CFS)	PIPING INPUT	PIPING DATA				
FROM	TO	Inc. Flow	Total Flow	Peaking Factor	A x P	10% (MGD)		Dia. (In)	Slope (%)	Qf Full (CFS)	Vf Full (F/S)	%Q (Qa/Qf x100)	Vactual (F/S)
SECOND CREEK SYSTEM													
14	15	0.05	0.05	4.00	0.22	0.01	0.344	8	0.40	0.903	2.59	38	2.42
15	19	0.02	0.07	4.00	0.29	0.01	0.460	8	1.00	1.427	4.09	32	3.64
16	18B	0.13	0.13	4.00	0.53	0.01	0.836	8	1.00	1.427	4.09	59	4.28
18B	18A	0.15	0.28	4.00	1.14	0.03	1.804	12	0.40	2.662	3.39	68	3.64
18A	18	0.10	0.38	4.00	1.53	0.04	2.432	12	2.50	6.654	8.48	37	7.88
18	19	0.03	0.42	4.00	1.66	0.04	2.638	15	0.40	4.826	3.93	55	4.05
21	17	0.05	0.05	4.00	0.19	0.00	0.299	8	2.00	2.019	5.79	15	4.17
17	20	0.06	0.11	4.00	0.43	0.01	0.684	8	2.00	2.019	5.79	34	5.21
20	19	0.05	0.16	4.00	0.64	0.02	1.010	12	0.40	2.662	3.39	38	3.17
19	22	0.07	0.72	3.82	2.76	0.07	4.381	18	0.40	7.847	4.44	56	4.60
FIRST CREEK SYSTEM													
12	2	0.07	0.07	4.00	0.28	0.01	0.448	8	2.00	2.019	5.79	22	4.63
2	4	0.04	0.11	4.00	0.43	0.01	0.688	8	0.40	0.903	2.59	76	2.86
MH1	4	1.62	1.62	3.34	5.41	0.16	8.626	18	1.00	12.408	7.02	70	7.59
4	3	0.03	1.76	3.30	5.79	0.18	9.228	18	1.00	12.408	7.02	74	7.69
3	5	0.42	2.18	3.18	6.92	0.22	11.050	21	1.00	18.716	7.79	59	8.14
5	6	0.34	2.52	3.10	7.82	0.25	12.484	21	1.70	24.403	10.15	51	10.25
6	7	0.08	2.60	3.09	8.02	0.26	12.809	24	0.40	16.900	5.38	76	5.95
7	8	0.12	2.71	3.07	8.32	0.27	13.286	24	1.00	26.721	8.51	50	8.51
9	10	0.09	0.09	4.00	0.35	0.01	0.555	8	1.00	1.427	4.09	39	3.85
10	8	3.16	3.25	2.97	9.67	0.32	15.457	27	0.40	23.136	5.82	67	6.23
11A	11	0.28	0.28	4.00	1.11	0.03	1.753	12	0.40	2.662	3.39	66	3.61
11	8	0.14	0.42	4.00	1.67	0.04	2.644	15	0.40	4.826	3.93	55	4.05
8	23	0.11	6.49	2.65	17.20	0.65	27.611	36	0.50	55.709	7.89	50	7.89

used in Fulenwider MUR

NOTES:

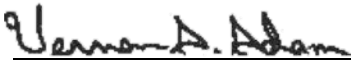
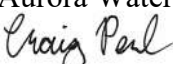
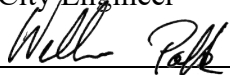
- 1) Design method used is Rational Method
- 2) Velocity percent (%V) from hydraulic elements table
- 3) Pipe sizing based on minimum slope.

Fulenwider– Master Utility Report

56TH AVENUE AND HARVEST ROAD CITY OF AURORA, COLORADO

Martin/Martin, Inc. Project No.: 19.0001

July 22, 2020

City of Aurora Approval Block		
THT	<u></u>	<u>08/05/2020</u>
	Aurora Water	Date
	<u></u> for Victor Rachael	<u>07/31/2020</u>
	City Engineer	Date
	<u></u>	<u>07/30/2020</u>
	Fire Department	Date

Prepared For: L. C. Fulenwider
1125 17th Street, Suite 2500
Denver, CO 80202
303-295-3071

Prepared By: Martin/Martin, Inc.
12499 West Colfax Avenue
Lakewood, Colorado 80215
303.431.6100

Principal-in-Charge: Patrick F. Horn, P.E. CFM
Project Manager: David M. Le, P.E.
Project Engineer: Gregory R. Proulx, P.E.

**FULENWIDER
SANITARY SEWER PEAK FLOW CALCULATIONS**

Node	Basins Added to System	Total Avg. Daily Flow @ Node (MGD)	Total Upstream Population	Peaking Factor = $5/p^{0.167}$	Peak Flow (MGD)	Infiltration (MGD)	Peak Flow + Infiltration (MGD)	Peak Flow + Infiltration (cfs)
4 T	OFFSITE (page 165 of WINDLER HOMSTEAD REPORT)	0.690	3,250	4.00	2.760	0.069	2.829	4.377
1 S	OFFSITE from 310 West Development	0.403	5,928	3.71	1.497	0.040	1.537	2.378
2 R	OFFSITE from Avelon Development	0.362	5,327	3.78	1.369	0.036	1.405	2.174
P	50% PA-1	0.878	12,917	3.26	2.864	0.088	2.951	4.566
O	50% PA-1 + PA-12	1.006	14,799	3.19	3.206	0.101	3.307	5.116
N	NODE O + PA-2	1.062	15,624	3.16	3.355	0.106	3.461	5.355
M	PA-3	0.072	1,058	4.00	0.289	0.007	0.296	0.458
L.1	50% PA-4 + 30% PA-5	0.091	1,370	4.00	0.365	0.009	0.375	0.579
L	NODE L.1 + 50% PA-4	0.140	2,106	4.00	0.562	0.014	0.576	0.891
3 K	OFFSITE (2nd Creek Tributary WINDLER HOMSTEAD REPORT)	3.683	54,718	2.56	9.439	0.368	9.807	15.174
J	35% PA-5 + OFFSITE NODE K + OFFSITE NODE T	4.423	58,708	2.53	11.201	0.442	11.644	18.015
I	PA-8	0.025	367	4.00	0.100	0.003	0.103	0.159
H	35% PA-5 + NODE L + NODE J + NODE I	4.6	61,554	2.51	11.653	0.464	12.117	18.747
G	35% PA-6 + NODE H	4.673	62,083	2.51	11.725	0.467	12.192	18.863
F	PA-9	0.056	825	4.00	0.225	0.006	0.231	0.357
E.1	30% PA-6	0.030	529	4.00	0.121	0.003	0.124	0.192
E	OFFSITE + NODE E.1	0.030	529	4.00	0.121	0.003	0.124	0.192
D	35% PA-6 + NODE G + NODE F	4.764	63,437	2.50	11.911	0.476	12.388	19.166
C	50% PA-7 + NODE D	4.800	63,974	2.50	11.984	0.480	12.464	19.284
B	PA-10	0.090	1,357	4.00	0.362	0.009	0.371	0.574
A	50% PA-7 + NODE B + NODE C + NODE N + NODE M	6.091	145,988	2.18	13.249	0.609	13.858	21.441

¹ OFFSITE from 310 West 1.54 MGD based on COA email from Aurora Planning Department & Aurora Water Engineering 11/1/2019

² Offsite from Avelon Development MUS prepared by Dewberry/J3 dated 8/9/2019 currently under COA Review: DP-19 0.362 MGD & 5,327 Population - 1.84 CFS

³

OFFSITE from 2nd Creek Tributary Area meeting on 06/30/2020

⁴ OFFSITE from Windler Homestead MUS prepared by Carter & Burgess dated 2006 (MGD & Population updated to target peak flow of 4.38 cfs based on COA email from Aurora Water Engineering also as shown in the previously reference report for the Windler Homestead MUS) OPTION 1 ALONG 56TH TO NODE K or OPTION 2 TO DENALI STREET NODE L.1

218184MU1
2017-3032
97S



GREEN VALLEY – AMENDMENT 1

MASTER UTILITY REPORT

MAY 2018

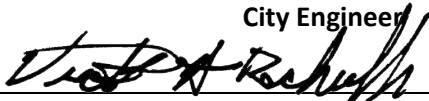

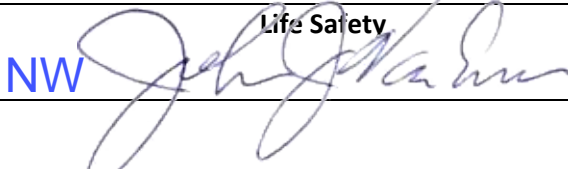
REVISED SEP. 2018

For:

Oakwood Homes
4908 Tower Road
Denver, CO 80249
Contact: Bruce Rau
303.486.8556

Prepared by:

Calibre Engineering Inc.
Contact: Russell L Burrows P.E.
303.730.0434

APPROVED FOR ONE YEAR FROM THIS DATE	
<i>10.24.18</i>	
City Engineer 	Date 09/28/2018
Aurora Water Department 	Date 09/20/2018
NW Life Safety 	Date 09/21/2018



GREEN VALLEY - AMENDMENT 1
SANITARY SEWER GENERATION

RESIDENTIAL		
Single-Family Population Density	2.77	People per Unit
Age Restricted Population Density	2.50	People per Unit
Average Flow Generation	68	gpcpd

MIXED USE	
Unit density of 10 units/acre was assumed and equivalent population was calculated with the Single-Family residential population density of 2.77	

COMMERCIAL		
Average Flow Generation	1,500	gpd/acre
	0.0023	cfs/acre
Equivalent Population	22	capita/acre

SCHOOLS / INDUSTRIAL		
Average Flow Generation	1,200	gpd/acre
	0.0019	cfs/acre
Equivalent Population	18	capita/acre

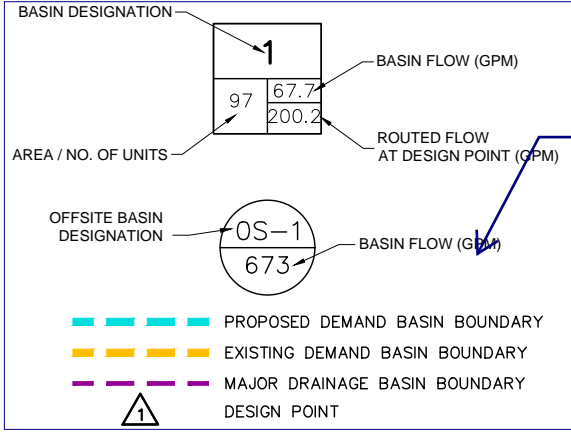
PEAKING FACTOR			
PF = 5/(p^0.167)	Where p = Population in thousands		
Min. PF =	1.7	Max. PF =	4.0

	PIPE CAPACITY (cfs) n = 0.011		
	PIPE SIZE (IN)	0.4% SLOPE	0.25% SLOPE
75 % FULL	8	0.82	0.65
	10	1.49	1.18
	12	2.43	1.92
80 % FULL	15	4.72	3.73
	18	7.67	6.07
	24	16.53	13.07
	30	29.97	23.69
	36	48.73	38.52
	42	73.50	58.11

DESIGN POINT	BASIN	LAND USE	TOTAL ACRES	DENSITY (UNITS/AC)	NO. OF LOTS	EQUIVALENT POPULATION	AVG. DAY FLOW (CFS)	AVG. DAY FLOW (GPD)	AVG. DAY FLOW (GPM)	INFILTRATION @ 10% (GPM)	PEAKING FACTOR	PEAK FLOW (GPM)	PEAK FLOW + INFILTRATION (GPM)	PEAK FLOW + INFILTRATION (CFS)	Estimated Size at 0.4% (IN)	Pipe Percent Full at 0.4% (%)	Existing Pipe Size (IN)	COMMENTS
1	Offsite Basin 310-1	Mixed Use	142.4		-	3,227	0.246	158,994	110	11.0	4.0	442	453	1.01	10	57		Offsite Basin 310-1
2	Offsite Basin 310-2	SF Residential	57.9	5.0	290	802	0.084	54,530	38	3.8	4.0	151	155	0.35	8	43		Offsite Basin 310-2
3	Offsite Basin 310-3	SF Residential	70.4	5.0	352	975	0.103	66,303	46	4.6	4.0	184	189	0.42	8	48		Offsite Basin 310-3
3a	Design Point Total (Option 2 w/ 310-2)					1,777	0.187	120,833	84	8.4	4.0	336	344	0.77	8	71		Offsite Basin 310-2 + 310-3 (see Notes 1 and 4)
4	Basin 1	SF Resid. (Age Restricted)	47.6	5.8	276	690	0.073	46,920	33	3.3	4.0	130	134	0.30	8	40		Basin 1
	Design Point Total					690	0.073	46,920	33	3.3	4.0	130	134	0.30	8	40		
5	Basin 2	SF Resid. (Age Restricted)	32.6	5.8	189	473	0.050	32,130	22	2.2	4.0	89	91	0.20	8	32		Basin 1 + 2
	Design Point Total					1,163	0.122	79,050	55	5.5	4.0	220	225	0.50	8	53		
6	Offsite Basin 4 (GVR D-6)	Mixed Use	106.5		-	2,785	0.345	222,979	155	15.5	4.0	619	635	1.41	10	72		Offsite Basin 4 (GVR D-6)
	Design Point Total (Option 2 w/ 310-1)					6,012	0.591	381,973	265	26.5	3.7	983	1,010	2.25	12	71		Offsite Basin 4 + 310-1 (see Note 2)
7	Basin 3	SF Resid. (Age Restricted)	29.3	5.8	169	423	0.044	28,730	20	2.0	4.0	80	82	0.18	8	30		Offsite Basin 4 + Basin 1 + 2 + 3
	Design Point Total					3,208	0.337	218,110	151	15.1	4.0	606	621	1.38	10	70		
	Design Point Total (Option 2 w/ 310-1)					6,435	0.677	437,546	304	30.4	3.7	1,113	1,144	2.55	15	52		
7a	Design Point Total					4,370	0.512	330,759	230	23.0	3.9	898	921	2.05	12	66		Offsite Basin 4 + Basin 1 + 2 + 3
	Design Point Total (Option 2 w/ 310-1)					7,597	0.758	489,753	340	34.0	3.6	1,212	1,246	2.78	15	54		
8	Basin 4	SF Resid. (Age Restricted)	27.5	5.8	159	398	0.042	27,030	19	1.9	4.0	75	77	0.17	8	29		Offsite Basin 310-3 + Basin 4 (see Note 4)
	Design Point Total					1,373	0.144	93,333	65	6.5	4.0	259	266	0.59	8	59		
	Design Point Total (Option 2 w/ 310-2)					2,174	0.229	147,863	103	10.3	4.0	411	421	0.94	10	54		Offsite Basin 310-2 + 310-3 + Basin 4 (see Notes 1 and 4)
9	Design Point Total					6,905	0.778	503,142	349	34.9	3.6	1,265	1,300	2.90	15	56		Design Point 5 + Design Point 7 + Design Point 8 (see Note 4)
	Design Point Total (Option 2 w/ 310-2)					7,707	0.965	623,975	433	43.3	3.6	1,541	1,584	3.53	15	64		(see Notes 1 and 4)
	Design Point Total (Option 2 w/ 310-1 & 310-2)					10,934	1.211	782,969	544	54.4	3.4	1,823	1,878	4.18	15	72		(see Notes 1, 2 and 4)
10	Offsite Basin 310-4	Commercial	18.5			407	0.043	27,676	19	1.9	4.0	77	79	0.18	8	30		Offsite Basin 310-4
11	TAH (DP 18)	Mixed Use	2,109.0			104,435	7.425	4,798,903	3333	333.3	2.3	7,667	8,000	17.82	30	55		From The Aurora Highlands (TAH) Master Utility Report.
12	Offsite Basin 5 (GVR D-7)	Mixed Use	62.8			1,423	0.187	120,861	84	8.4	4.0	336	344	0.77	8	71		From Lund Green Valley Report (GVR D-7)
	Design Point Total		2,190.3			106,265	7.655	4,947,440	3436	343.6	2.3	7,881	8,225	18.32	30	56		TAH (see Note 3)
13	Basin 5	SF Residential	70.4	6.3	443	1,227	0.129	83,443	58	5.8	4.0	232	238	0.53	8	55		Basin 5
14	Offsite Basin 6 (GVR C-30)	Mixed Use	64.0			1,408	0.174	112,459	78	7.8	4.0	312	320	0.71	8	67		From Lund Green Valley Report (GVR C-30)
	Design Point Total		134.4			2,635	0.303	195,903	136	13.6	4.0	544	558	1.24	10	65		Offsite Basin 6 + Basin 5
15	Design Point Total		2,324.7			108,900	7.958	5,143,343	3572	357.2	2.3	8,160	8,517	18.98	30	57	36"	TAH + Offsite Basin 5 + 6 + Basin 5 (see Note 3)
16	Basin 6	SF Residential	25.6	4.1	104	288	0.030	19,589	14	1.4	4.0	54	56	0.12	8	25		Basin 6
	Design Point Total		2,350.3			109,188	7.988	5,162,932	3585	358.5	2.3	8,187	8,546	19.04	30	57	42"	TAH + Offsite Basin 5 + 6 + Basin 5 + 6 (see Note 3)
17	Offsite Basin 12 (GV OFS-12)	Mixed Use	87.4		-	1,981	0.245	158,348	110	11.0	4.0	440	451	1.00	10	56		Offsite Basin 12 (GV OFS-12)
18	Basin 7	SF Residential	28.5	6.3	179	496	0.052	33,716	23	2.3	4.0	94	96	0.21	8	33		Basin 7
	Design Point Total		115.9			2,477	0.297	192,064	133	13.3	4.0	534	547	1.22	10	64		Basin 7 + Offsite Basin 12
19	Basin 8	School	18.0	-	-	324	0.033	21,600	15	1.5	4.0	60	62	0.14	8	27		Basin 8
	Design Point Total		133.9			2,801	0.331	213,664	148	14.8	4.0	594	608	1.36	10	70		Basins 7+8 + Offsite Basin 12
20	Offsite Basin 13	Mixed Use		-	-								5,157	11.49	24	61	30" @ 0.15%	Offsite Basin 13
21	Basin 9	SF Residential	90.9	6.3	572	1,584	0.167	107,742	75	7.5	4.0	299	307	0.68	8	65		Basin 9
	Design Point Total												5,464	12.17	24	63	30" @ 0.15%	Basin 9 + Offsite Basin 13
21.1	Basin 9.1	SF Residential	33.6	6.3	212	587	0.062	39,932	28	2.8	4.0	111	114	0.25	8	36		Basin 9.1
	Design Point Total		125										5,577	12.43	24	64	30" @ 0.15%	
22	Basin 10	SF Residential	47.2	6.3	297	823	0.087	55,943	39	3.9	4.0	155	159	0.35	8	43		Basin 10
	Design Point Total		297.0			3,624	0.714	246,399	171	17.1	4.0	684	702	1.56	12	55		Basins 7+8+10 and Offsite Basin 12
22.1	Design Point Total												6,279	13.99	24	69	30" @ 0.15%	Basins 7+8+9+9.1+10 + Offsite Basins 12+13
LS	Design Point Total												16,702	37.21	42	64		All Basins
SITE TOTALS		SF Resid. (Age Restricted)	137.0		793	1,983	0.209	134,810	94	9.4	4.0	374	384	0.86				
		SF Residential	296.3		1807	5,005	0.465	340,367	236	23.6	3.8	903	927	2.06				
		School	18.0		-	324	0.033	21600	15	1.5	4.0	60	62	0.14				

NOTE 1: For analysis purposes, Option 2 requires a lift station to convey flows from Basin 310-2 along Picadilly Rd to Design Point 3a
NOTE 2: For analysis purposes, Option 2 requires a lift station to convey flows from Basin 310-1 along Tibet Rd to Design Point 6
NOTE 3: There is an existing 36" or 42" sanitary sewer main in this area
NOTE 4: Sanitary Sewer Pipe runs at 0.25% slope near and along Rome St (Design Points 7a, 8 and 9)

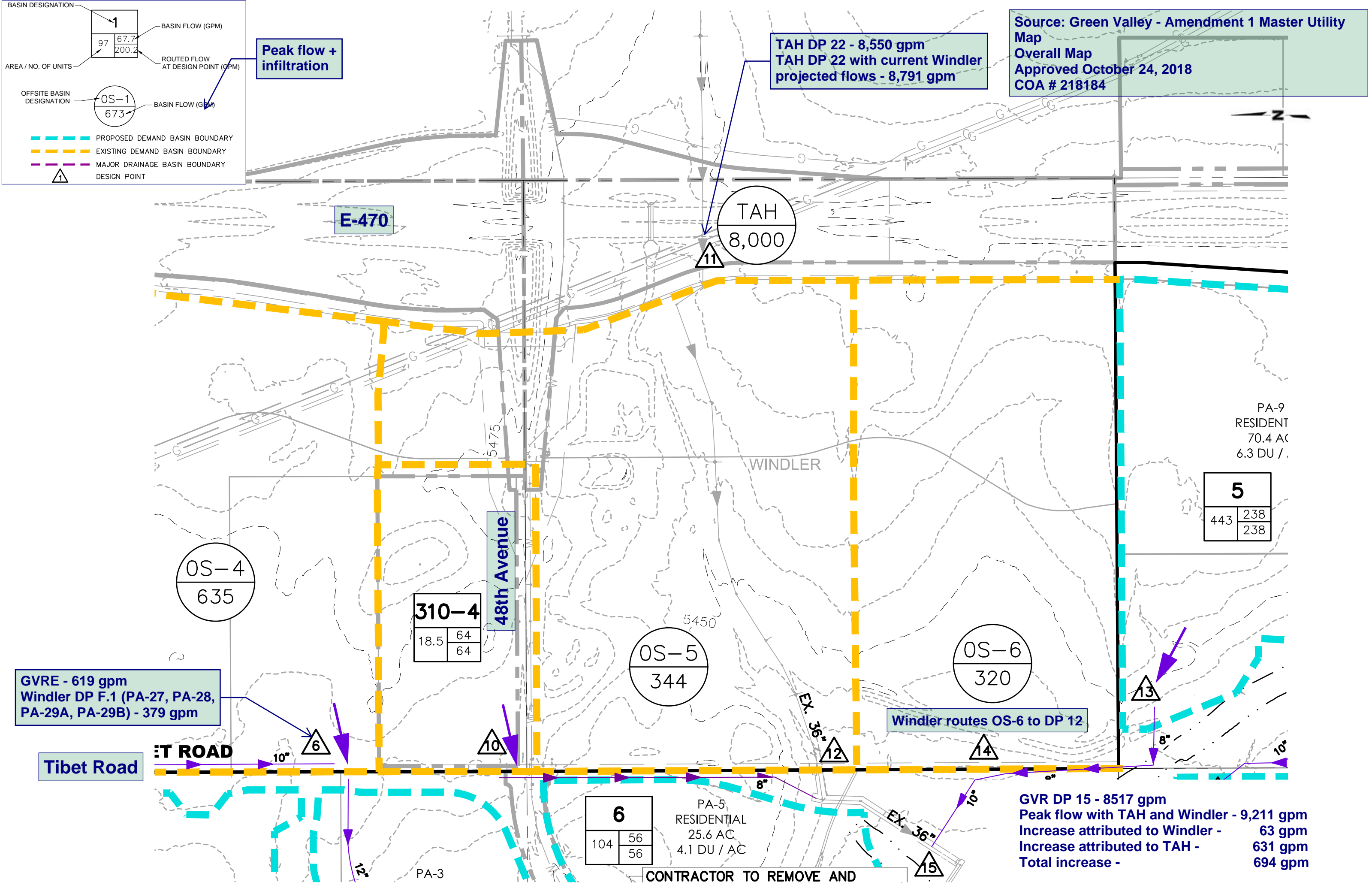
AVERAGE DAY FLOW for Offsite Basin 310-1 and TRIBUTARY AREA for Offsite Basins 310-2 and 310-3 taken from 310 West Master Utility Report by Calibre Engineering
AVERAGE DAY FLOW for Offsite Basins 4, 5, 6 and 12 taken from Master Utility Report for Green Valley by The Lund Partnership, Inc. (2006)
PEAK FLOW + INFILTRATION for Offsite Basin 13 taken from HDR First Creek Interceptor Technical Memorandum 3 provided by COA (Parcels 26 and Parcels 32-38) with peaking factor of 2.25
AVERAGE DAY FLOW for Offsite Basin TAH taken from Master Utility Report for The Aurora Highlands by Calibre Engineering (2018)
SITE TOTALS are flows from Green Valley - Amendment 1 only



Peak flow + infiltration

TAH DP 22 - 8,550 gpm
TAH DP 22 with current Windler projected flows - 8,791 gpm

Source: Green Valley - Amendment 1 Master Utility Map
Overall Map
Approved October 24, 2018
COA # 218184



219069MU2
1900-TAH1
98U, 98V, 98W, 98X, 98Y, 98Z,
99U, 99V, 99W, 99X, 99Y, 99Z,
01U, 01V, 01W, 01X, 01Y, 02U,
02V, 02W, 02X, 02Y
HARGREEN.COM

The Aurora Highlands Master Utility Report – Amendment 1

October 2019

HR Green Project No: 180725.01

Prepared For:



FACSIMILE

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


Ryan W. Littleton 09/30/2019
Date

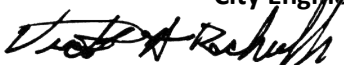
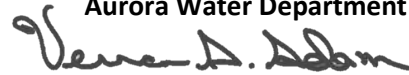

AACMD
c/o Todd Johnson, PE, President
Terra Forma Solutions, Inc
141 Union Blvd #150
Lakewood, CO 80228
303-257-7653

Prepared By:
HR Green Development, LLC
Contact: Ryan Littleton, PE
rlittleton@hrgreen.com
720-602-4937

APPROVED FOR ONE YEAR FROM THIS DATE

01/22/2020

CWB

APPROVED FOR ONE YEAR FROM THIS DATE	
01/22/2020	
City Engineer 	Date 01/21/2020
Aurora Water Department 	Date 01/02/2020
Fire Department 	Date 01/06/2020

SANITARY SEWER DEMAND CALCULATIONS																																	
<div><div>1433</div><div>HRGreen</div></div>			Project #: 180725		Location: Aurora, CO															By K House		Date 9/30/2019											
			Project: The Aurora Highlands		Plan Date: 08/2019															Checked R Littleton		Date 9/30/2019											
Design Point	Planning Area	Flow Split	RESIDENTIAL SINGLE FAMILY							RESIDENTIAL MULTI FAMILY							COMMERCIAL / SCHOOLS / INDUSTRIAL						CUMMULATIVE TOTALS						PIPE PARAMETERS				
			Total Acres	Development Density (DU/acre)	No. of Units	Population Density (people/unit)	Equivalent Population	Average Flow Generation (gpcpd)	Average Day Flow (mgd)	Total Acres	Development Density (DU/acre)	No. of Units	Population Density (people/unit)	Equivalent Population	Average Flow Generation (gpcpd)	Average Day Flow (mgd)	Land Use	Total Acres	Population Density	Equivalent Population	Average Flow Generation (gpd/acre)	Average Day Flow (mgd)	Total Acres	Infil. @ 10% (mgd)	Cumulative Population	Peak Factor	Peak Flow (mgd)	Peak Flow + Infil. (mgd)	Estimated Pipe Slope (%)	Estimated Size at Given Slope	Pipe Name	Velocity (ft/sec)	Percent Full at Given Slope
11.1	PA-55	75%	89.9	5.9	528.0	2.8	1,462.6	68.0	0.1													89.9	0.0	1,462.6	4.0	0.4	0.41	0.40%	8				
	Design Point Total	DP11.1	89.9	5.9	528		1,463		0.099	0.0		0		0		0.000		0.0		0		89.93	0.010	1,463	4.0	0.40	0.41	0.40%	8	SS-28.1	2.8	61.8%	
11.2	PA-52	100%	88.8	5.9	521	2.77	1,443	68	0.098													88.80	0.010	1,443	4.0	0.39	0.40	0.25%	8				
	PA-54	100%															Com.	37.9	22	834	1,500	0.057	37.90	0.006	834	4.0	0.23	0.23	0.25%	8			
	PA-55	25%	30.0	5.9	176	2.77	488	68	0.033													29.98	0.003	488	4.0	0.13	0.14	0.25%	8				
	On-Site Total	DP8 - DP11.2	389.7		2,288		6,338		0.431	29.5		590		1,634	0.111		93.5		1,981		0.135	512.70	0.068	9,953	3.4	2.31	2.37	0.25%	15				
	Design Point Total		608.7	5.7	3,493		9,674		0.658	29.5	20.0	590		1,634	0.111		604.5		13,223		0.901	1,242.70	0.167	24,532	2.9	4.89	5.06	0.25%	24	SS-28	4.4	55.0%	
12	PA-19	100%	54.6	5.9	321	2.77	889	68	0.060													54.60	0.006	889	4.0	0.24	0.25	0.25%	8				
	PA-25	100%															Civic	10.9	18	196	1,200	0.013	10.90	0.001	196	4.0	0.05	0.05	0.25%	8			
	PA-26	100%	11.3	5.8	66	2.77	183	68	0.012													11.30	0.001	183	4.0	0.05	0.05	0.25%	8				
	On-Site Total	DP1 - DP12	1,181.9		6,939		19,220		1.307	45.8		1,079		2,989	0.203		246.0		4,856		0.327	1,473.64	0.184	27,065	2.9	5.30	5.48	0.25%	24				
	Design Point Total		1,723.0	5.8	9,915		27,464		1.868	45.8	23.6	1,079		2,989	0.203		1,169.7		25,138		1.710	2,938.49	0.378	55,591	2.6	9.66	10.04	0.25%	30	SS-29	5.2	58.2%	
13	PA-22	100%															Civic	12.2	18	220	1,200	0.015	12.20	0.001	220	4.0	0.06	0.06	0.25%	8			
	On-Site Total	DP1 - DP13	1,181.9		6,939		19,220		1.307	45.8		1,079		2,989	0.203		258.2		5,076		0.342	1,485.84	0.185	27,284	2.9	5.33	5.52	0.25%	24				
	Design Point Total		1,723.0	5.8	9,915		27,464		1.868	45.8	23.6	1,079		2,989	0.203		1,181.9		25,357		1.725	2,950.69	0.380	55,810	2.6	9.69	10.07	0.25%	30	SS-30	5.2	58.3%	
14	PA-14	100%	2.1	5.7	12	2.77	33	68	0.004													2.10	0.000	33	4.0	0.00	0.00	0.25%	8				
	PA-17	100%	5.0	5.8	29	2.77	80	68	0.00	16.5	30.0	495	2.77	1,371	68	0.093						21.50	0.009	1,451	4.0	0.37	0.38	0.25%	8				
	On-Site Total	DP1 - DP13	1,189.0		6,980		19,333		1.307	62.3		1,574		4,360	0.296		258.2		5,076		0.342	1,509.44	0.195	28,769	2.9	5.55	5.75	0.25%	24				
	Design Point Total		1,730.1	5.8	9,956		27,578		1.868	62.3	25.3	1,574		4,360	0.296		1,181.9		25,357		1.725	2,974.29	0.389	57,295	2.5	9.89	10.28	0.25%	30	SS-31	5.3	59.1%	
15	PA-30	100%															Com.	27.8	18	500	1,200	0.033	27.80	0.003	500	4.0	0.13	0.14	0.40%	8			
	PA-35	50%	34.0	5.9	200	2.77	553	68	0.038													34.00	0.004	553	4.0	0.15	0.15	0.40%	8				
	PA-36	100%															School	18.2	18	328	1,200	0.022	18.20	0.002	328	4.0	0.09	0.09	0.50%	8	SS-32	2.0	25.1%
	Design Point Total	DP15	34.0	5.9	200		553	0.038	0.0			0		0		0.000		46.0		828		0.055	80.00	0.009	1,381	4.0	0.37	0.38	0.40%	8	SS-33	2.8	58.8%
16	PA-29	100%	16.2	5.9	95	2.77	263	68	0.018	17.5	20.0	350	2.77	970	68	0.066						33.70	0.008	1,233	4.0	0.34	0.34	0.40%	8				
	PA-34	100%	27.0	5.9	159	2.77	440	68	0.030													27.00	0.003	440	4.0	0.12	0.12	0.40%	8				
	Design Point Total	DP15 + DP16	77.2	5.9	454		1,256	0.085	17.5	20.0		350		970	0.066		46.0		828		0.055	140.70	0.021	3,054	4.0	0.83	0.85	0.40%	10	SS-34	3.3	67.8%	
17	PA-6	100%	10.4	5.9	61	2.77	169	68	0.011	15.1	20.0	302	2.77	837	68	0.057						25.50	0.007	1,006	4.0	0.27	0.28	0.40%	8				
	PA-13	100%	41.6	5.9	244	2.77	676	68	0.046	0.0												41.60	0.005	676	4.0	0.18	0.19	0.40%	8				
	Design Point Total	DP15 - DP17	129.2	5.9	759		2,101	0.143	32.6	20.0		652		1,806	0.123		46.0		828		0.055	207.80	0.032	4,735	3.9	1.24	1.27	0.40%	12	SS-35	3.7	63.9%	
18	PA-12	100%	21.0	5.9	123	2.77	341	68	0.023													21.00	0.002	341	4.0	0.09	0.09	0.40%	8				
	PA-16	100%															School	18.2	18	328	1,200	0.022	18.20	0.002	328	4.0	0.09	0.09	0.50%	8	SS-36	2.0	25.1%
	Design Point Total	DP15 - DP18	150.2	5.9	882		2,442	0.166	32.6	20.0		652		1,806	0.123		64.2		1,156		0.077	247.00	0.037	5,403	3.8	1.38	1.42	0.40%	12	SS-37	3.8	69.2%	
19	OS-6 (GVRE OFS-10)		51.0	5.0	255	3.20	816	80	0.065								NAC	5.4	31.25	169	13,068	0.071	56.40	0.014	985	4.0	0.54	0.56	0.40%	</			

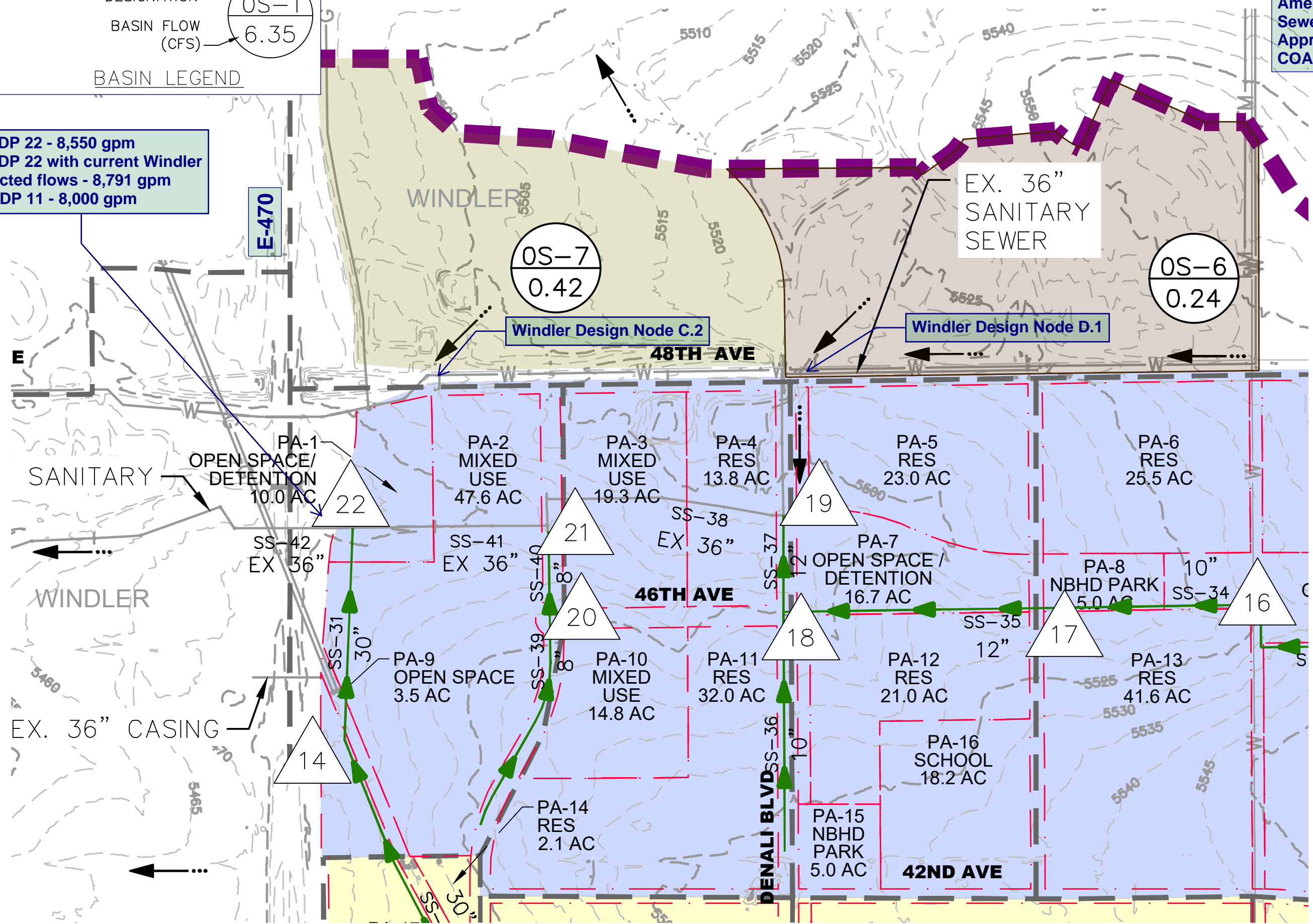
DESIGN POINT 

OFFSITE BASIN DESIGNATION  OS-1

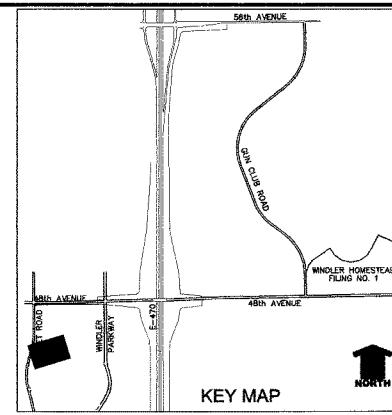
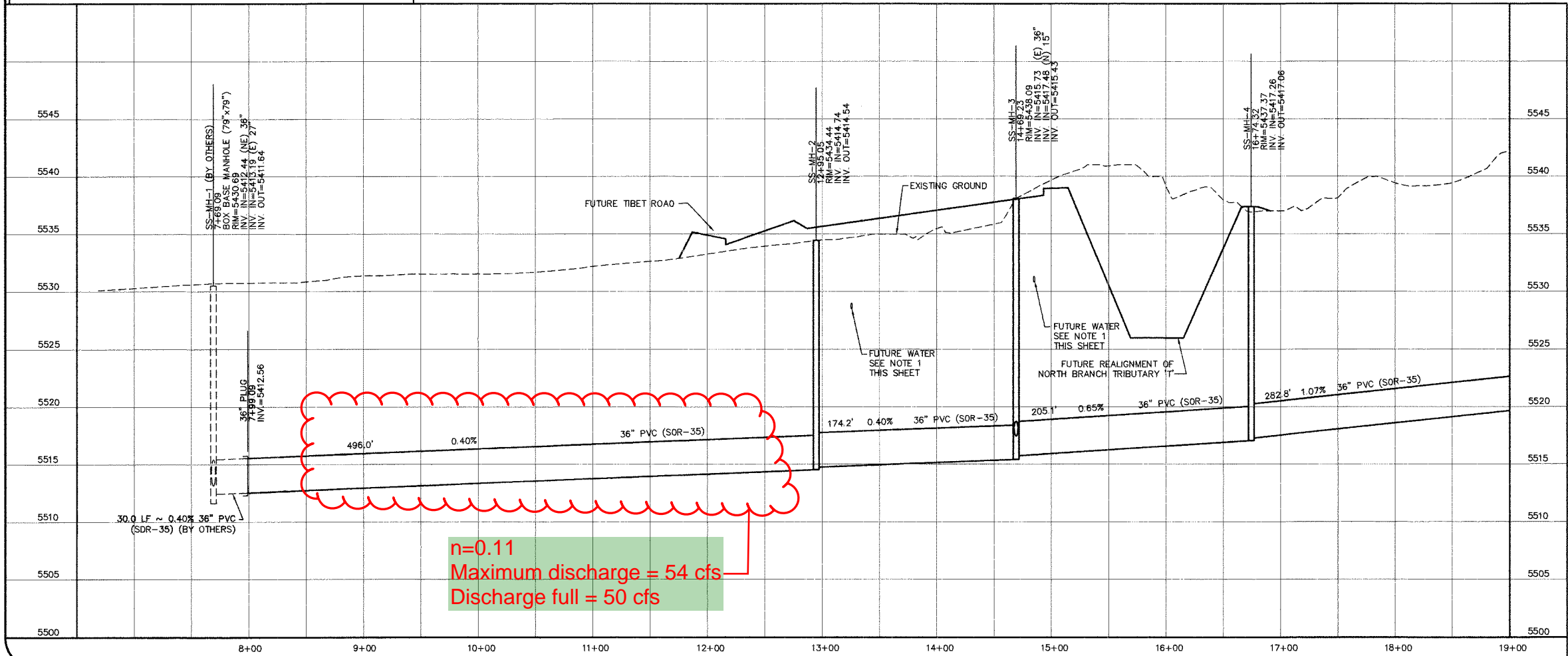
BASIN FLOW (CFS) 6.35

BASIN LEGEND

TAH DP 22 - 8,550 gpm
TAH DP 22 with current Windler
projected flows - 8,791 gpm
GVR DP 11 - 8,000 gpm



48th Avenue

[illegible]

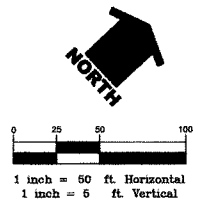
NOTE:

1. LOCATION OF ALL EXISTING UTILITIES (PRIVATE OR PUBLIC) SHALL BE IDENTIFIED AND VERIFIED BY CONTRACTOR PRIOR TO MOBILIZATION, CONSTRUCTION, OR ORDERING OF MATERIALS. FOR INFORMATION CONTACT: DENVER INTER-UTILITY GROUP, 1-800-922-1987 OR LOCAL AGENCY, PRIVATE ENTITY, OR OTHER ASSOCIATED ENTITIES WITHIN THE LIMITS OF CONSTRUCTION. THE CONTRACTOR SHALL BEAR THE FULL COST OF REMOVAL, REPLACEMENT, AND DELAY RELATED TO UNVERIFIED EXISTING CONDITIONS. WHERE THE CONTRACTOR FINDS CONFLICTS OR DISCREPANCIES THEY SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.

1-800-922-1987

Utility Notification Center of Colorado
Administrative Office 303-232-1991
12600 W. Colfax Ave., Suite B-310 Lakewood, Co 80215
CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR
EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

2. ALL MANHOLES FOR THE 36-INCH SANITARY MAIN SHALL USE AMERON T-LOCK PVC SHEET LINER OR AN APPROVED EQUIVALENT.



Project Benchmark:
City of Aurora benchmark number AB-095 (a 3" diam. brass cap in City of Aurora range box for North 1/4 corner of Section 18, Township 3 South, Range 66 West, 6th P.M.).
Aurora Elevation - Datum: 5448.78 feet -- NGVD 1929

ENGINEER'S CERTIFICATE

I HEREBY AFFIRM THAT THESE PLANS FOR WINDLER
HOMESTEAD WERE PREPARED BY ME OR UNDER MY
DIRECT SUPERVISION AND THAT I AM A REGISTERED
PROFESSIONAL ENGINEER UNDER THE LAWS OF THE
STATE OF COLORADO.



TODD A. JOHNSON, P.E.
COLORADO NO. 37660
FOR AND ON BEHALF OF
CALIBRE ENGINEERING INC.

Approved One Year From This Date

Approved For Curb-Gutter Only	Approved For Street Permits
----------------------------------	--------------------------------

Initials	Date	Initials	Date
----------	------	----------	------

2/22/64
Bull Dog Club 2-22-64

City Engineer Date

Part 3 ~~4~~ 2-3-91

Utilities Department Date

Calibre
ENGINEERING

Calibre Engineering, Inc.
8201 Southpark Lane, Unit 200
Littleton, CO 80120 (303) 730-0434
Civil Engineering Survey Land Development

[illegible]

**WINDLER HOMESTEAD
FILING NO.1
DISTRICT ROAD CONSTRUCTION PLANS**

**SANITARY MAIN
SEWER PLAN & PROFILE
STA: 10+00 TO 19+00**

PROJECT NO.	PULTE: WH1
DATE:	NOVEMBER 18, 2005
SCALE:	1"=50'
DRAWN BY:	DBC
DESIGNED BY:	PJS
REVIEWED BY:	TAJ
DRAWING CONTENTS: SAN SEWER PLAN & PROFILE	
DRAWING NUMBER: SS-01	
SHEET 40 OF 78	