

Appendices

Appendix O Master Plan of Sewer

Appendices

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MASTER PLAN OF SEWER

RANCHO SAN GORGONIO SPECIFIC PLAN

CITY OF BANNING

COUNTY OF RIVERSIDE

STATE OF CALIFORNIA

PREPARED BY:



Engineering Communities for Life

9302 Pittsburgh Avenue Suite 230
Rancho Cucamonga, CA 91730
909-481-6322
Mark Bertone, President



Encompass Associates, Inc.

5699 Cousins Place
Rancho Cucamonga, CA 91737
909-684-0093
Aaron Skeers, P.E.

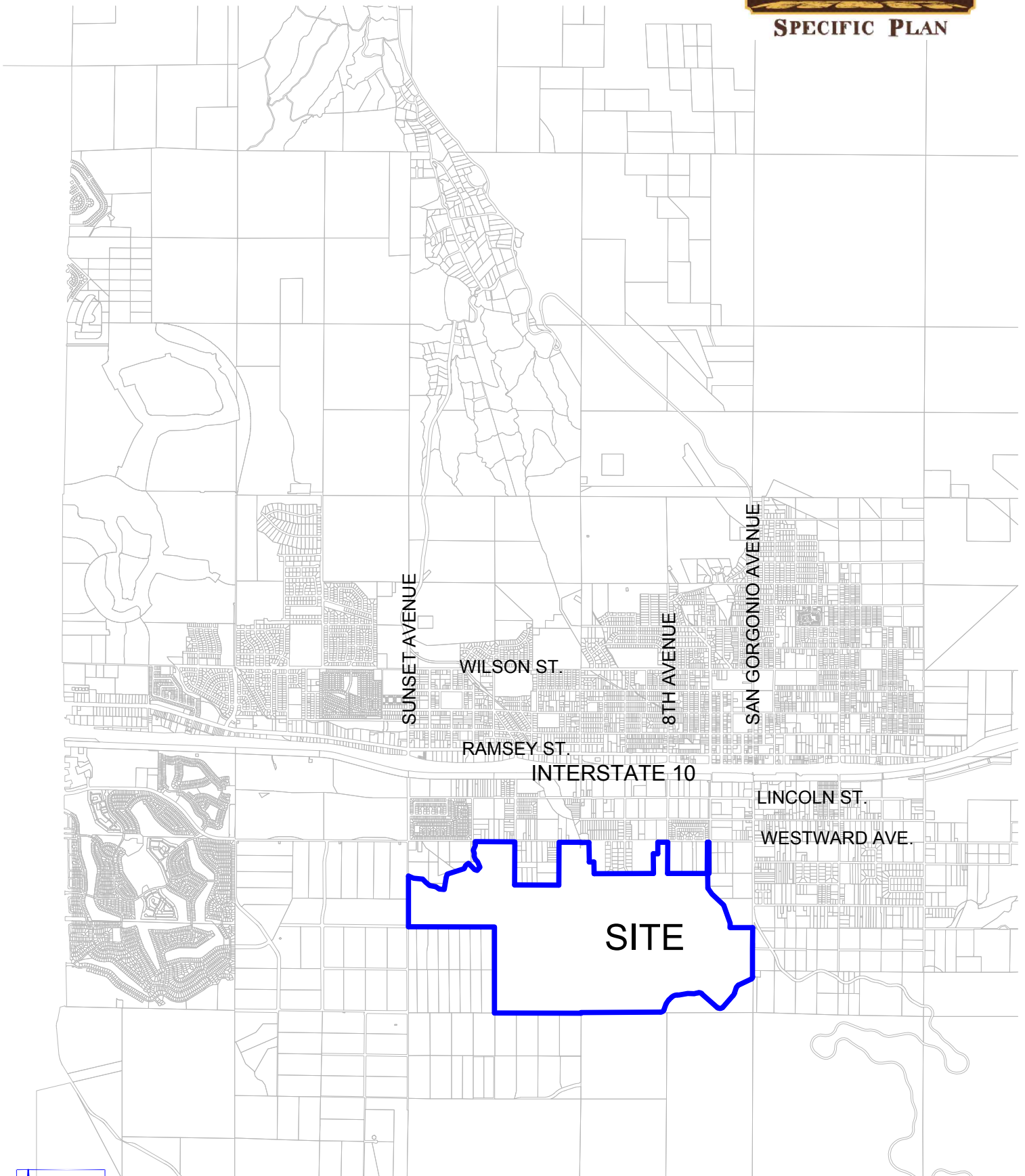
Prepared for:

Rancho San Gorgonio, LLC

April 10, 2015

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Vicinity Map

1. Executive Summary

Rancho San Gorgonio is a master planned community proposed in the City of Banning, Riverside County, California. The proposed site is located on approximately 830.84 acres on the south side of the city, including approximately 160 acres to be annexed from the county, with up to 3385 residences anticipated, among other uses and amenities.

The purpose of this Master Plan of Sewer (MPS) is to estimate the size and configuration of the sanitary sewer improvements needed to serve the proposed community. Peak sewer flows are calculated for each planning area based on standards established by the city.

The city has an existing network of sewer pipelines in the vicinity of the project, and therefore only approximately 600 feet of off-site sewerline improvements are necessary. The existing Wastewater Treatment Plant is currently at capacity, however a satellite package plant is proposed to be constructed as part of this project, therefore the project will not need to contribute to the upsizing of the plant.

2. Master Plan of Sewer

2.1. Introduction

This Master Plan of Sewer (MPS) is prepared to determine the location, size and extent of the main network of sanitary sewer improvements necessary to serve the proposed Rancho San Gorgonio Master Planned Development. Furthermore, the impact this project will have on the existing city of Banning sewer system is assessed to determine sufficiency.

This MPS is based upon the city of Banning General Plan, Sewer Master Plan (SMP), Sewer System Study (SSS), and Sewer System Management Plan (SSMP). Data pertaining to historical system capacity and usage is taken from the SSMP. Projections can then be made for the increase in system utilization from the proposed Rancho San Gorgonio development.

The sections below include a brief review of the existing pertinent city documents.

2.2. Existing Sewer Master Plan (SMP)

In March 1994, NBS/Lowry completed the most current Sewer Master Plan for the city of Banning.

The land comprising this proposed community is included in the current SMP, however at lower densities than are proposed by Rancho San Gorgonio. This MPS relies upon the SMP and will only address the changes proposed with this master planned community. See below for the Land Use Displacement analysis for a determination of the impact the project will have on the existing system.

The SMP classified the entire area comprising Rancho San Gorgonio as in the “Residential/ Agricultural” land use zone. The SMP used a factor of 1 dwelling unit per acre for the ultimate system design, and applied a 75% factor to the calculations per the General Plan, to account more accurately for the actual expected development density. This factor was implemented by reducing the area being added at various nodes (manholes) in the ultimate system design calculations. A sewage flow factor of 90 gallons per capita per day was used to complete the ultimate average flow condition, and a peak flow was determined from the equation on page VI-1 in the SMP.

The ultimate design calculations are based on a service area that is projected to include 68,660 people (based on 75% of a buildout population of 91,512), and a peak flow of 7.8 MGD.

The project will connect to the existing 21” sewer trunk line located south of Wesley Street, east of San Gorgonio Avenue, in the projection of Porter Street, near the correctional

institution. Easements will need to be obtained from the properties being crossed between the site and point of connection.

The city Wastewater Treatment Plant (WWTP) has an existing capacity of approximately 3.0 MGD, per the SMP, and as of 1992, the average flow was 2.0 MGD.

It is noted that the city is anticipating an update to the master plans, which may begin soon. If the applicable master plans are complete prior to final issuance of this report, any applicable changes in methodology, etc., will be incorporated herein.

2.3. Existing Sewer System Management Plan (SSMP)

The city of Banning's latest Sewer System Management Plan was completed in July 2009.

Per the SSMP, the WWTP design capacity had been increased to 3.6 MGD, and received an average daily flow of 2.4 MGD.

2.4. Existing Sewer System Study (SSS)

Around 2006, due to the recent completion of Sun Lakes, and numerous pending planned communities being brought forth, the city undertook an updated assessment of the sewer system. In November 2006, Carollo Engineers completed the Sewer System Study (SSS).

Per the SSS, the WWTP design capacity is 3.6 MGD, and received an average daily flow of 2.8 MGD through 2005. However, when assessing BOD5 concentrations, with respect to waste discharge requirements, the WWTP is at capacity at 2.8 MGD unless chemical treatment is introduced.

The SSS establishes wastewater peaking factors (see page 35 of the SSS). The dry weather peaking factor is 1.7, the wet weather factor is 2.5 at the WWTP, and the dry weather factor plus 500 gpd/ac for the collection system.

The existing city system was modeled, along with future development projections, to assess the current collection system and WWTP.

2.5. Proposed Project Description

Rancho San Gorgonio is a master planned community proposed in the city of Banning, California, comprising approximately 830.84 acres. The site is south of Interstate 10, generally situated between Sunset Avenue and San Gorgonio Avenue, south of Westward Avenue. A portion of the property is in unincorporated Riverside County, and will be annexed into the city limits as part of the development process.

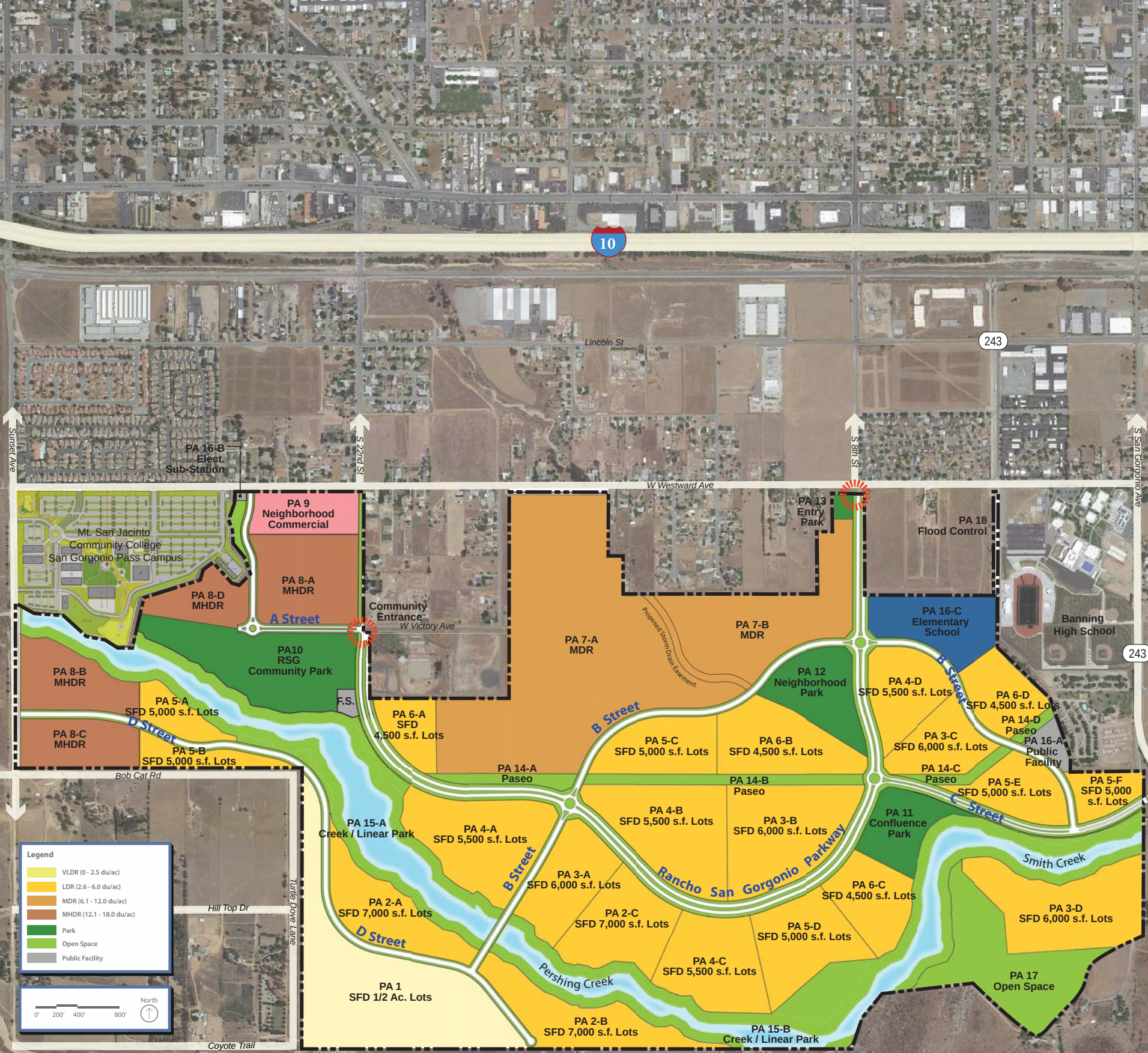
The proposed project will consist of up to 3385 dwelling units, 49 acres of regional parks, 135 acres of paseos and open space, and 78 acres of right-of-way and utility easements.

A mix of residential properties is proposed, in a variety of lot sizes, and including multi-family residences. Numerous parks are planned throughout, with amenities anticipated to include a community building, picnic areas, and athletic fields.

Table 2.5-1: Proposed Land Use with Maximum Buildout Density				
Type	Zoning Density	Target Dwelling Units per Acre	Acres	Maximum Dwelling Units
Single-Family Residential**	0.5-6	2-6	362.8	1533
Multi-Family Residential	12.1-18.0	18	51.7	930
Age-Qualified Residential	6.1-12.0	6.5	115.94	754
Mixed Use *	12.1-18.0	18	9.33	168
Parks & Open Space	n/a	n/a	209.18	0
Right-of-way	n/a	n/a	77.17	0
Public Facility	n/a	n/a	3.62	0
Storm Drain Easement	n/a	n/a	1.1	0
			830.84	3385

* Neighborhood Commercial with Residential Overlay

** 84 du (14 ac) are dedicated to the residential overlay within PA 16-C



Planning Area	Land Use	Density Range	Target Density	Acreage	DU
PA 1	VLDR - Single Family Detached 1/2 Acre Lots	0-2.5	2.0	47.05	94
PA 2-A	LDR - Single Family Detached 7000 Lots	2.6-6.0	3.4	15.51	53
PA 2-B	LDR - Single Family Detached 7000 Lots	2.6-6.0	3.4	17.57	60
PA 2-C	LDR - Single Family Detached 7000 Lots	2.6-6.0	3.4	16.33	56
PA 3-A	LDR - Single Family Detached 6000 Lots	2.6-6.0	3.8	13.96	53
PA 3-B	LDR - Single Family Detached 6000 Lots	2.6-6.0	3.8	23.81	90
PA 3-C	LDR- Single Family Detached 6000 Lots	2.6-6.0	3.8	10.63	40
PA 3-D	LDR - Single Family Detached 6000 Lots	2.6-6.0	3.8	24.00	91
PA 4-A	LDR - Single Family Detached 5500 Lots	2.6-6.0	4.4	23.19	102
PA 4-B	LDR - Single Family Detached 5500 Lots	2.6-6.0	4.4	23.11	102
PA 4-C	LDR - Single Family Detached 5500 Lots	2.6-6.0	4.4	17.73	78
PA 4-D	LDR - Single Family Detached 5500 Lots	2.6-6.0	4.4	12.34	54
PA 5-A	LDR - Single Family Detached 5000 Lots	2.6-6.0	5.2	5.90	31
PA 5-B	LDR - Single Family Detached 5000 Lots	2.6-6.0	5.2	6.50	34
PA 5-C	LDR - Single Family Detached 5000 Lots	2.6-6.0	5.2	12.60	66
PA 5-D	LDR - Single Family Detached 5000 Lots	2.6-6.0	5.2	16.43	85
PA 5-E	LDR - Single Family Detached 5000 Lots	2.6-6.0	5.2	10.41	54
PA 5-F	LDR - Single Family Detached 5000 Lots	2.6-6.0	5.2	5.87	31
PA 6-A	LDR - Single Family Detached 4500 Lots	2.6-6.0	6.0	7.26	44
PA 6-B	LDR - Single Family Detached 4500 Lots	2.6-6.0	6.0	16.83	101
PA 6-C	LDR - Single Family Detached 4500 Lots	2.6-6.0	6.0	11.72	70
PA 6-D	LDR - Single Family Detached 4500 Lots	2.6-6.0	6.0	10.05	60
PA 7-A	MDR - 6.5	6.1-12.0	6.5	85.36	555
PA 7-B	MDR - 6.5	6.1-12.0	6.5	30.58	199
PA 8-A	MHDR - 18	12.1-18.0	18.0	18.50	333
PA 8-B	MHDR - 18	12.1-18.0	18.0	12.90	232
PA 8-C	MHDR - 18	12.1-18.0	18.0	11.70	211
PA 8-D	MHDR - 18	12.1-18.1	18.0	8.60	154
PA 9	Neighborhood Commercial (MHDR-18 Residential Overlay)	12.1-18.0	18.0	9.33	168
PA 9	Neighborhood Commercial (0.25 FAR)				
PA 10	RSG Community Park			25.00	
PA 11	Confluence Park			10.15	
PA 12	Neighborhood Park			12.70	
PA 13	Entry Park			1.08	
PA 14-A	Village Paseo			3.25	
PA 14-B	Village Paseo			6.01	
PA 14-C	Village Paseo			2.26	
PA 14-D	Village Paseo			1.03	
PA 15-A	Creeks / Creek Edge Linear Parks (100' Width)			54.83	
PA 15-B	Creeks / Creek Edge Linear Parks (100' Width)			67.17	
PA 16-A	Public Facility			2.42	
PA 16-B	Electrical Sub-station			0.20	
PA 16-C	Elementary School LDR SFD 4,500SF Overlay		6.0	14.00	84
PA 17	Open Space			25.70	
PA 18	Flood Control			1.10	
	Fire Station			1.00	
	Right-of-Way (Include Landscape Corridor)			77.17	
	TOTAL			830.84	3,385

Land Use	Acreage	DU	% of Total Ac.
VLDR	47.05	94	6%
LDR	301.75	1355	36%
MDR	115.94	754	14%
MHDR	51.70	930	6%
Neighborhood Commercial with Residential overlay*	9.33	168	1%
Elementary School with Residential Overlay**	14.00	84	2%
Parks & Open Space	209.18		25%
Right-of-way	77.17		9%
Public Facility	2.62		0%
Flood Control	1.10		0%
Fire Station	1.00		0%
TOTAL	830.84	3,385	100%

Distribution of Product Type	Density Range	Target Density	Acreage	DU	% of Total DU
Single Family Detached 1/2 Acre Lots	0 - 2.5	2.0	47.05	94	3%
Single Family Detached 7000 Lots	2.6 - 6.0	3.4	49.41	169	5%
Single Family Detached 6000 Lots	2.6 - 6.0	3.8	72.40	274	8%
Single Family Detached 5500 Lots	2.6 - 6.0	4.4	76.37	336	10%
Single Family Detached 5000 Lots	2.6 - 6.0	5.2	57.71	301	9%
Single Family Detached 4500 Lots	2.6 - 6.0	6.0	45.86	359	11%
Age Qualified	6.1 - 12.0	6.5	115.94	754	22%
Multi-Family Attached-18 *	12.1 - 18.0	18.0	61.03	1098	32%
TOTAL			525.77	3,385	100%

* 168 dwelling units (9.33 ac.) are dedicated to the residential overlay within PA 9.

* * 84 dwelling units (14 ac.) are dedicated to the residential overlay within PA 16-C.

2.6. Proposed Project Wastewater Flows

The methodology used to determine city-wide sewage collection in the SMP was followed in this MPS. The “Unit Sewage Flow Factors” table on Page V-2 of the MPS defines the projected wastewater flow factors, broken down by land use type, as was determined based upon historical data.

UNIT SEWAGE FLOW FACTORS	
Residential	90 Gal/Capita/Day
Commercial	1500 Gal/Acre/Day
Industrial	1000 Gal/Acre/Day
Airport	250 Gal/Acre/Day
Public (Park)	500 Gal/Acre/Day
Prison (Rehab. Center)	2000 Gal/Acre/Day

Per the City General Plan, there is an average of 2.7 persons (capita) per dwelling unit. The base flow factor is then 243 gallons per day per dwelling unit. Due to the state-mandated potable water consumption reduction program, “20x2020”, the base flow factor is reduced by 20%, down to 194 gallons per day per dwelling unit.

Sewage flow for the proposed public facilities, including restrooms in the parks, the community building and fire station, was estimated based on a preliminary fixture unit count, converted to flow rate based on tables and charts included in the California Plumbing Code. See the calculation in Appendix A.

In order to determine the change in projected wastewater flow due to the proposed project, an estimate of the change in dwelling units, or population, is first required.

Table 2.6-2 below shows the existing zoning breakdown and maximum buildout dwelling unit yield. Per the General Plan, the city estimates that 75% of the maximum density will be achieved at buildout.

CITY LAND USE MAP CURRENT LAND USE ZONES

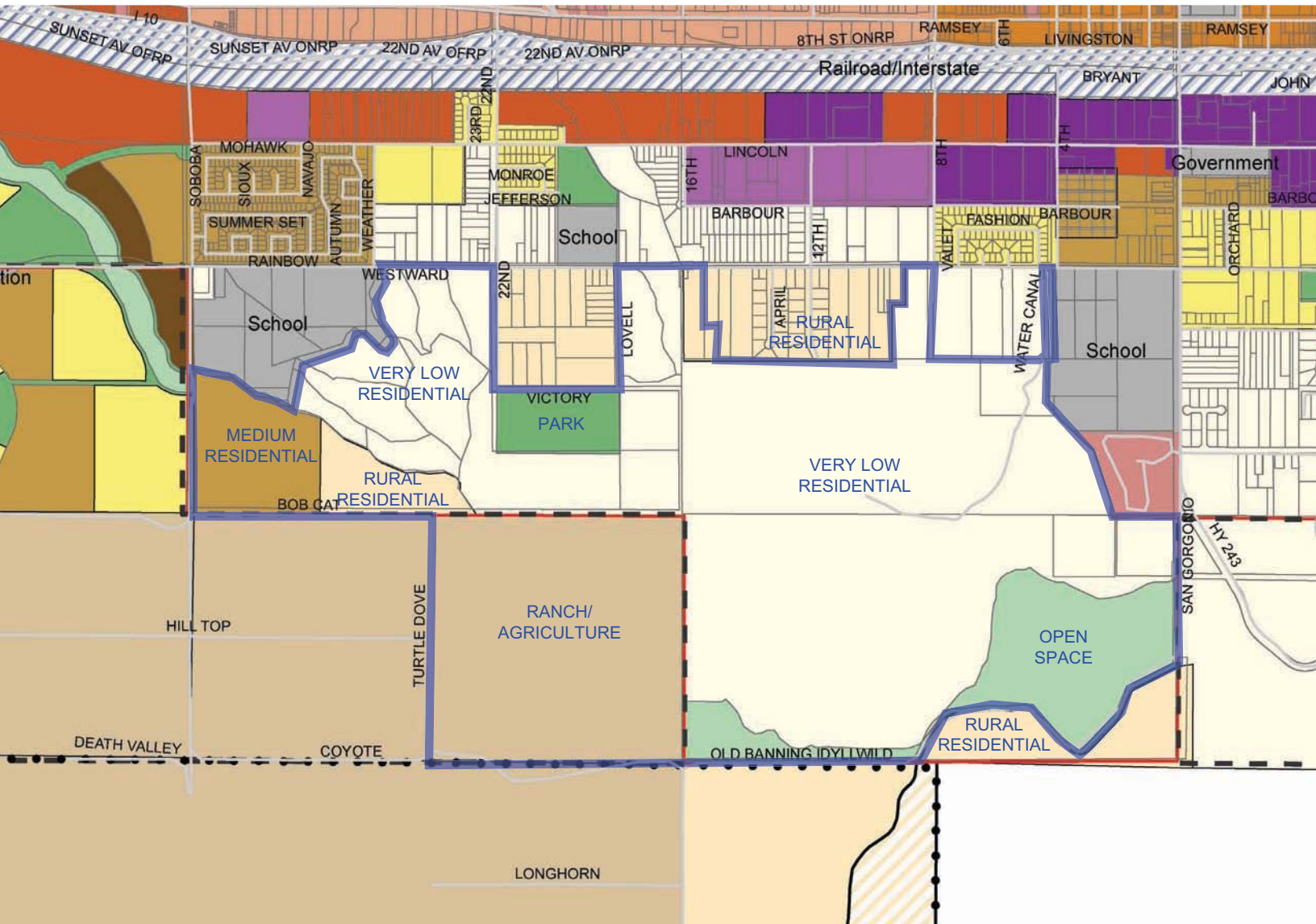


Table 2.6-2: Existing Land Use with Projected Buildout Density					
Type	Zoning Density	Dwelling Units per Acre	Acres	Maximum Dwelling Units	75% of Max. Density*
Ranch/Agriculture**	10 ac min.	0.10	149.49	8	6
Rural SFR	0-1 du/ac	1	26.78	26	20
Very Low SFR***	0-2 du/ac	2	542.73	1067	800
Low SFR	0-5 du/ac	5	0	0	0
Medium SFR	0-10 du/ac	10	14	140	105
Very High MFR	19-24 du/ac	24	26	624	468
Park	0 du/ac	0	0	0	0
Open Space (Resources)	0 du/ac	0	69	0	0
			830	1865	1399

*The City General Plan assumes 75% of maximum density for buildout conditions

**This Type is comprised of 8 parcels, all less than 20 acres, therefore only 8 units max

***Maximum units calculated by parcel, not by gross acreage

Based on Tables 2.5-1 and 2.6-2 above, the increase in proposed dwelling units is proposed to be 2013. Table 2.6-3 below shows an evaluation of impact the change in dwelling units will have on the city sewer system.

Table 2.6-3: Estimated Increase In Required Sewer Capacity						
Land Use	Factor	Unit	Existing "Buildout" DU	MGD	Proposed DU or AC	MGD
Residential	194	Gal/Capita/Day	1399	0.271406	3385	0.65669
Commercial	1500	Gal/Acre/Day				
Industrial	1000	Gal/Acre/Day				
Airport	250	Gal/Acre/Day				
Public Park	182,448	Gal/day based on Fixture Units			1	0.18245
Prison (Rehab. Center)	2000	Gal/Acre/Day				
		Total Average Flow		0.271406		0.83914
		Total Peak Flow*		0.46139		1.42653
		Increase			0.96514	

Note: Park area includes PA 10, PA 11 and 12 only.

*Peaking factor is from SSS (see Section 3.1 for the formula, dry weather)

2.7. Evaluation of the Existing Sewer System to meet Project Wastewater Flows

Given this change in city-wide wastewater flow, an assessment of the ability of the existing system to adequately convey and treat the project wastewater flows can be made. As stated in the SSS, the WWTP is already at the limit without chemical treatment.

Therefore, a project-specific package “satellite” wastewater treatment plant is proposed, possibly in PA 16-A. The plant is discussed further in Section 2.10 below.

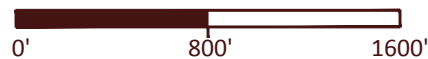
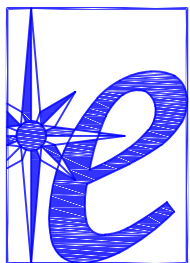
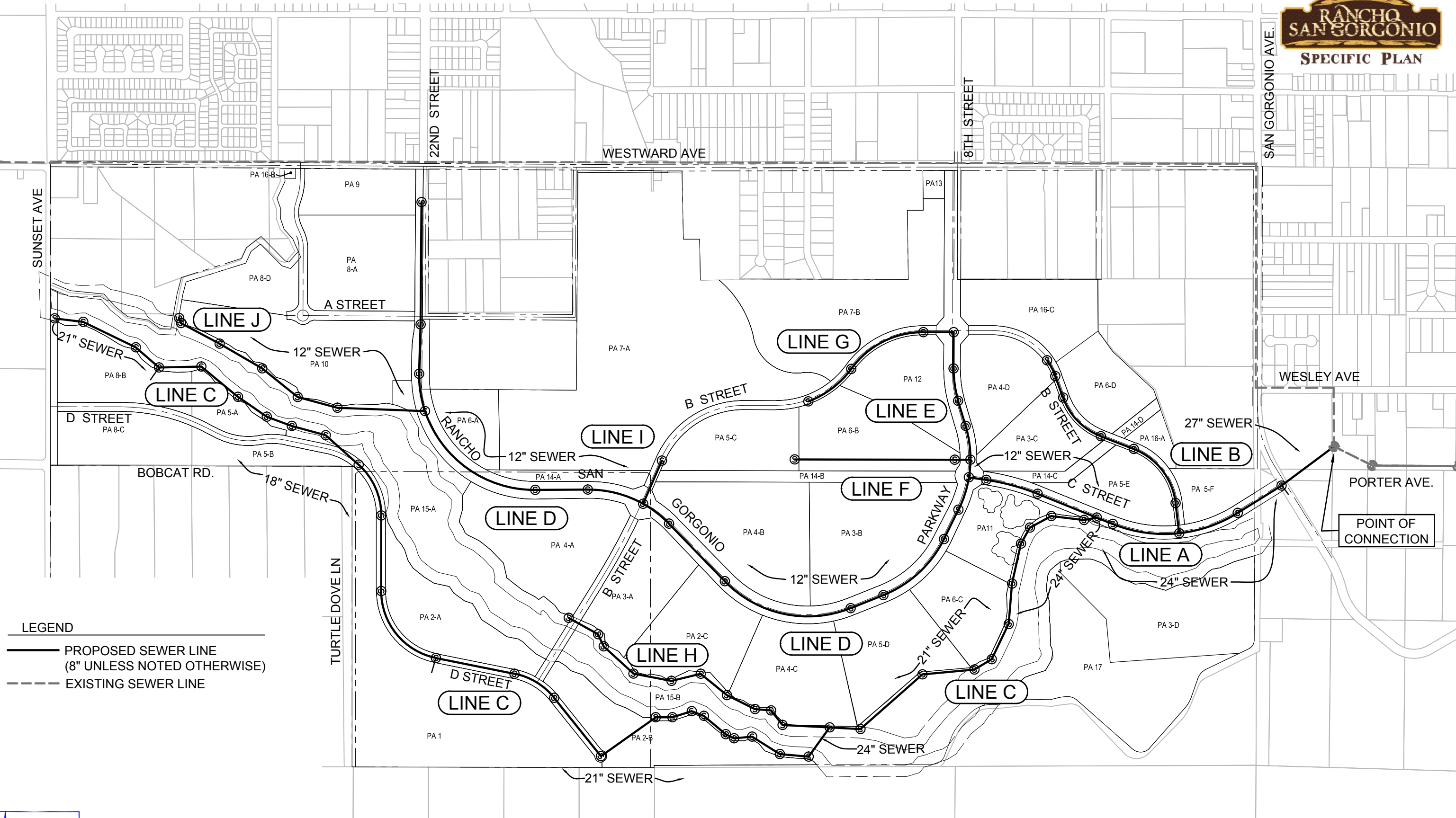
A possible alternative is to either expand the existing WWTP, or add chemical treatment as needed to meet the project wastewater flow. Per Table 2.6-3, the project will need to contribute to the expansion of the existing WWTP treatment capacity commiserate with the peak flow rate of 1.42653 MGD. However, because of the proposed package plant, this expansion is not anticipated.

The existing sewer main that the project will connect to has been modeled in the hydraulic calculations included herein, and has been determined to be adequate as is to accommodate the proposed development, however is generally insufficient to handle the Deutsch Trunk Line build-out flows.

2.8. Proposed Sewer Collection System

A system of sewer main pipelines will be installed throughout the project, with larger lines serving as the backbone infrastructure, which in turn will serve smaller local sewerlines distributed throughout the various planning areas. See Exhibit 2.8-1 for sewer main alignments.

The point of connection for the project sewer is an existing 21-inch sewer main located about 450 feet south of Wesley Street, and about 600 feet east of San Gorgonio Avenue. Making this connection will require the construction of approximately 600 feet of off-site sewer main. See Exhibit 2.8-1 for the point of connection location. Easements will need to be obtained between the site and point of connection.



2.9. Deutsch Trunk Line

Per the SMP, a master planned trunk line is proposed across the project. Rancho San Gorgonio will be required to include the capacity of the so called Deutsch Trunk Line into the sewerage improvements. An offset in sewer impact fees reflective of the sewer main upsizing cost shall be allowed. Additional reimbursement agreements will be instituted as well to facilitate the collection of fair-share costs from future developments.

2.10. Recycled Water

The city currently has plans to implement a recycled water system, however as of this writing, such a system is not in place. As discussed above, the project is proposing the installation of a package wastewater treatment plant that would generate recycled water from project sewage.

The package plant will be sized to accommodate the project, and will be designed such that it can be expanded in phases consistent with project build-out. The package plant would be operated and maintained by the city. The package plant will produce recycled water for use in common area irrigation throughout the project, and possibly elsewhere in the city.

A membrane bioreactor (MBR) plant is an efficient alternative for wastewater treatment. The system is fully contained and does not have open-air settling ponds or clarifying tanks, so odor is not a concern. A chamber at the headworks filters out larger particles and debris, with the balance of the effluent passing through a combination of anoxic and aerobic tanks, and finally through a fine filter membrane, with openings that completely restrict the passage of bacteria and other microbes.

The filtered-out sludge will then be discharged to the project sewer system and onto the city WWTP. The treated water will then be pumped into the on-site recycled water system. As listed above, the average sewage flow from the project is calculated to be about 0.84 MGD. With a conservative yield of 50%, about 0.42 MGD of recycled water could be generated, or about 470 acre-feet per year, which exceeds the project irrigation demand of approximately 218 acre-feet per year. The excess recycled water can be passed on to the city-wide recycled water system, or conveyed to the city WWTP via the sewer pipeline.

The footprint of a system required to serve the site is generally less than 1 acre. PA 16-A is at least twice as large as needed to serve a MBR plant.

A connection to the existing city sewer system would still be constructed, should the package plant need to be taken off-line, and when irrigation demand does not fully utilize project discharge, and for the conveyance of sludge from the MBR plant.

3. Hydraulic Calculations: New and Existing System

The approach to hydraulic modeling of the proposed system is to re-construct in the model the existing system from the point of connection downstream to the WWTP. Furthermore, per the SMP, the Deutsch Trunk Line needs to be accommodated in the project system, as well as providing for a connection by a smaller area to the west of the project, and for the future Mt. San Jacinto Community College campus at Sunset Avenue and Westward Avenue.

The existing and proposed sewer system was entered into Autodesk Civil 3D, with hydraulic modeling completed with Autodesk Storm and Sanitary Sewer Analysis. The calculations are included in Appendix A.

3.1. Sanitary Sewer System Design Requirements

Per the SSS, sewers are to be sized for peak flow per the formulas in Table 4.1 of the SSS:

Table 4.1 Wastewater Peaking Factors Sewer System Study City of Banning	
Flow Condition	Factor
PDWF ⁽¹⁾	1.7 * ADWF
PWWF - at WWTP ⁽²⁾	2.5 * ADWF
PWWF - in Collection System ⁽³⁾	PDWF + 500 gpd/ac (I/I)

(1) Per Figure 4.1: $PDWF/ADWF = 4.8/2.8 = 1.7$

(2) Per Figure 4.1: $PWWF/ADWF = 7.1/2.8 = 2.5$

(3) Per Figure 4.1: Maximum Flow Increase = 2.3 mgd. I/I = 2.6 mgd/4,900 acres (per Table 2.1) = 470 gpd/ac. This is rounded to 500 gpd/ac.

Pipe sizes are established such that the depth-to-diameter-ratios listed below are not exceeded (Page VI-1 of the SMP):

Maximum Depth to Diameter Ratios

12" or less	0.50
15" or greater	0.75

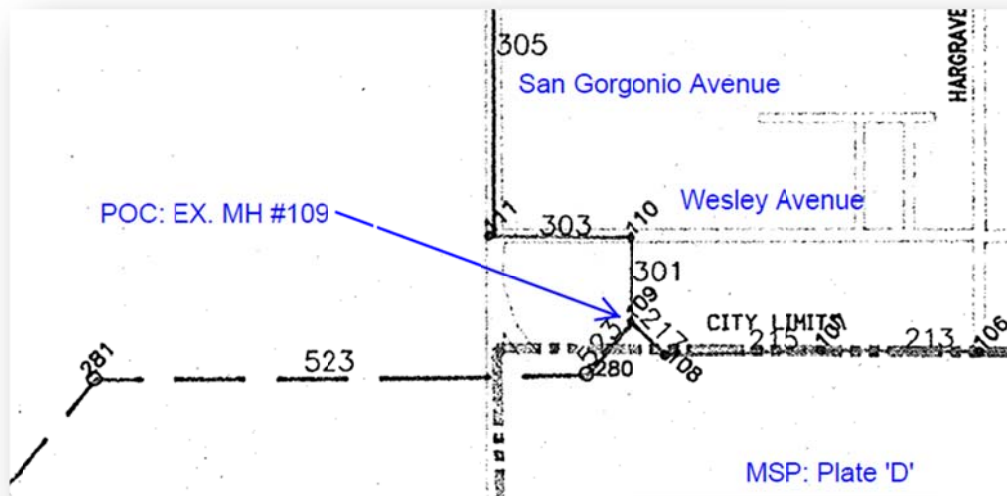
Finally, the design of sewer pipe profiles shall maintain at least the minimum slopes for scouring based on the table on Page VI-2 of the SMP:

Minimum Recommended Slopes

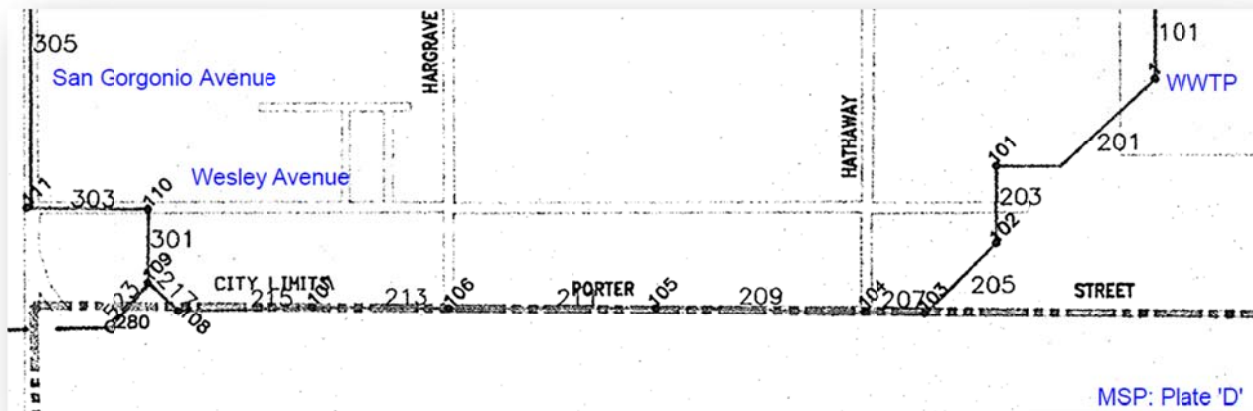
8"	0.40%
10"	0.30%
12"	0.24%
15"	0.17%
18"	0.14%
21"	0.11%
24" or larger	0.10%

3.2. Existing Sewer System Information

As stated above, the project point of connection will be off-site approximately 600 feet east of San Gorgonio Avenue.



The existing system was modeled from the point of connection, "MH 109", downstream to the WWTP. (Peak flow rates excerpted below from the SMP are in cubic feet per second.)

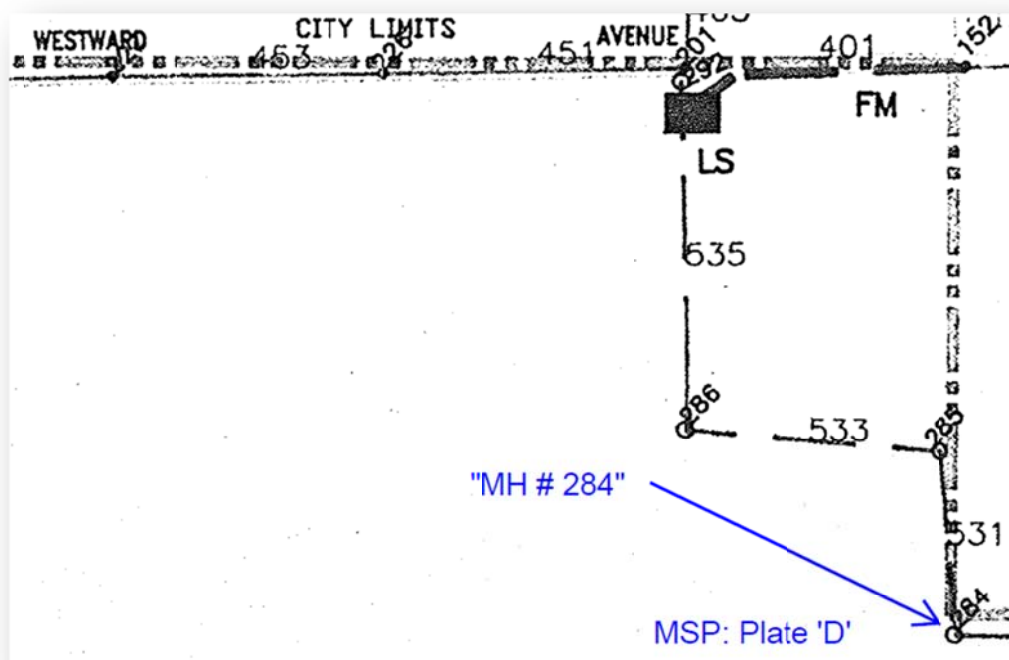


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SEWER ANALYSIS SANITARY LOAD APPLICATIONS
Design system Design flows Diversion condition=1

MH Up	MH Down	Slope	Diam	Capacity	Area	Flow Input	Point Source	Average Flow	Peak Flow	Velocity	Depth Ratio
110	109	.02150	21	16.00	.00	.00	.00	1.89	3.24	7.7	.32
280	109							2.9			
109	108	.01730	21	14.36	.00	.00	.00	4.76	7.30	8.9	.53
108	107	.01560	21	13.63	.00	.00	.00	4.76	7.30	8.5	.54
107	106	.00680	21	9.00	135.23	.00	.04	4.79	7.35	6.1	.72
106	105	.01500	21	13.37	.00	.00	.00	4.79	7.35	8.4	.55
105	104	.01380	21	12.82	66.03	.00	.01	4.81	7.36	8.1	.56
104	103	.00450	24	10.45	113.04	.00	.02	4.83	7.39	5.3	.65
103	102	.00100	30	8.93	346.34	.00	.09	4.92	7.52	3.0	.74
102	101	.00100	30	8.93	.00	.00	.00	4.92	7.52	3.0	.74
101	1	.00100	30	8.93	.00	.00	.00	4.92	7.52	3.0	.74

The Deutsch Trunk Line will be added to the system at Sunset Avenue and Pershing Creek:

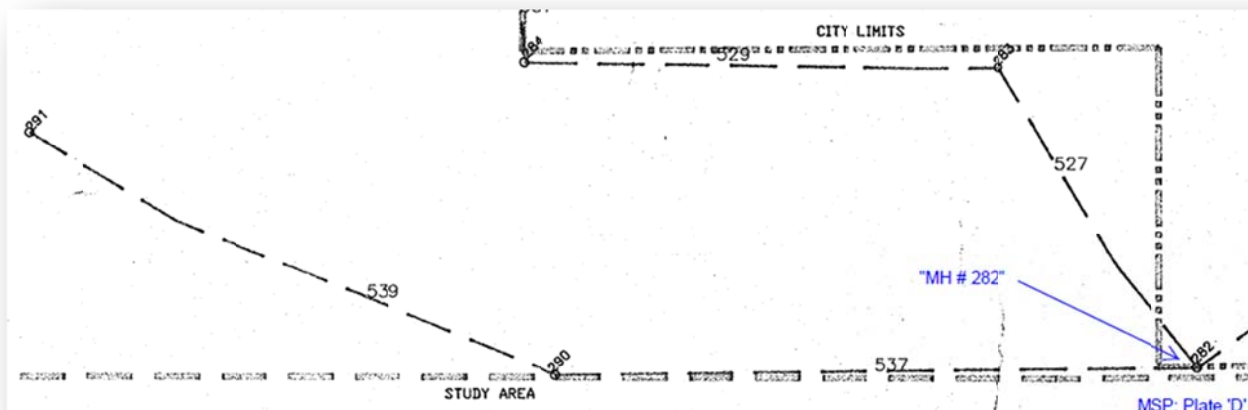


SEWER ANALYSIS SANITARY LOAD APPLICATIONS
Design system Design flows Diversion condition=1

10/21/93 17: 1: 2

MH Up	MH Down	Slope	Diam	Capa- city	Area	Flow Input	Point Source	Average Flow	Peak Flow	Vel- ocity	Depth Ratio
285	284	.00470	18	4.24	.00	.00	.00	2.59	4.28	4.6	.76
284	283	.02000	18	8.76	.00	.00	.00	2.59	4.28	8.2	.47

And the “southwesterly” portion will be added at Pershing and Smith Creeks:



SEWER ANALYSIS SANITARY LOAD APPLICATIONS
Design system Design flows Diversion condition=1

10/21/93 17: 1: 2

MH Up	MH Down	Slope	Diam	Capa- city	Area	Flow Input	Point Source	Average Flow	Peak Flow	Vel- ocity	Depth Ratio
291	290	.00900	8	.37	250.65	.00	.04	.04	.12	2.4	.26
290	282	.01400	8	.46	250.65	.00	.04	.09	.22	3.4	.33

Updated off-site flow rates have been taken from updated studies being prepared by Carollo Engineers (provided via email, dated 4/7/15, from Mr. Ryan Orgill, Carollo Engineers): 2633 gpm for the Deutsch Trunk Line, and 319 gpm for the southwesterly portion. And at the downstream point of connection, the project will join with 693 gpm from the north.

Off-site Flows						
	MH Reference	SMP Peak Flow		SSS / Update		
				ADWF	PWWF*	PWWF
		cfs	MGD	gpm	gpm	MGD
"Deutsch Trunk Line"	284	4.28	2.7662	2633	5888	8.47872
Southerly Area	282 from 290	0.22	0.1422	319	678	0.97632
Downstream	109	3.24	2.0941	693	1636	2.35584

*Peak flow factors per Section 3.1 ($\times 1.7 + 500$ gal/day/ac)

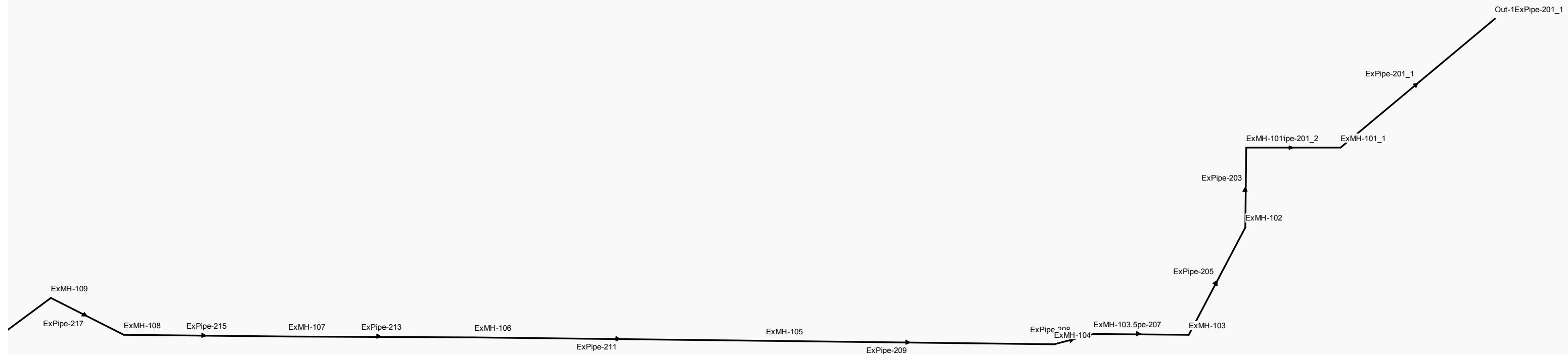
3.3. Proposed Sewer System Information

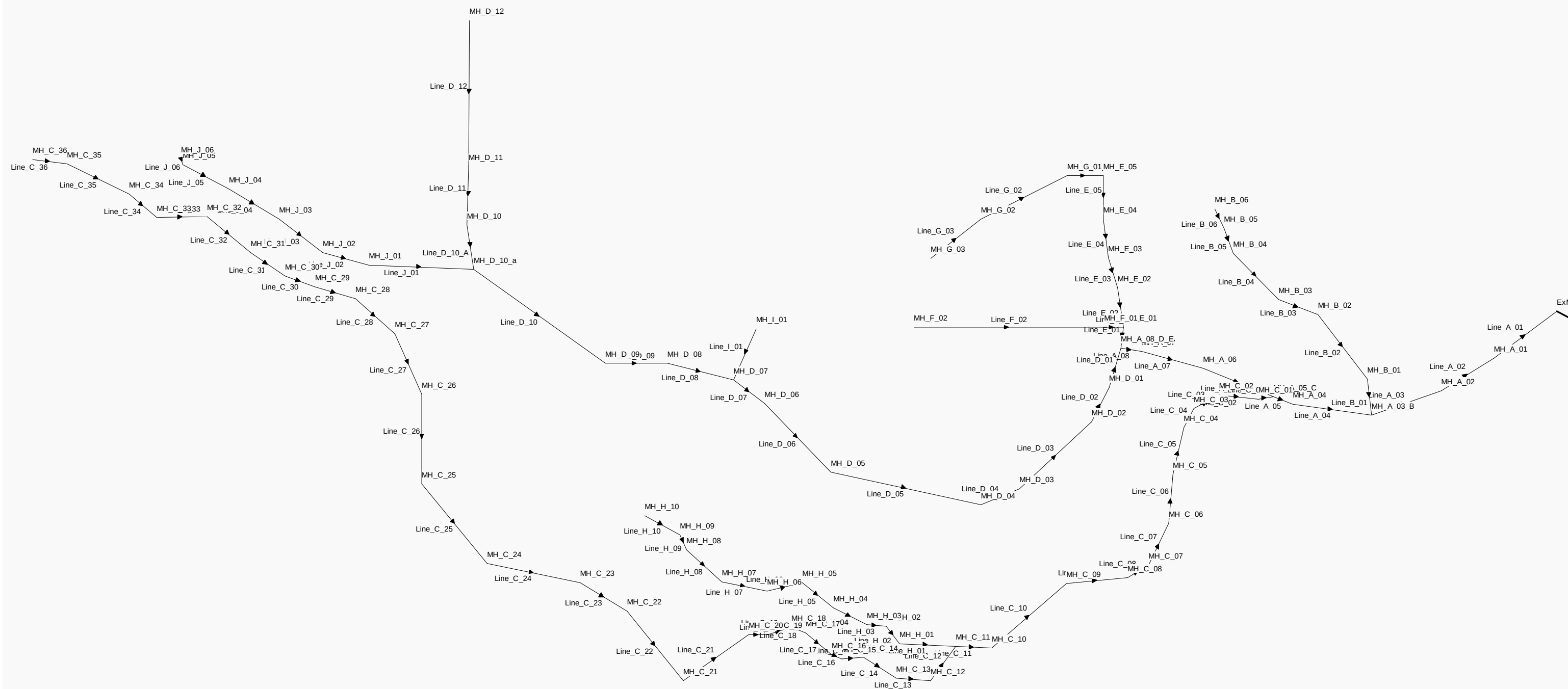
The following table lists the sewer flow calculation broken down by planning area. The peaking factor formula provided by the SSS is utilized (multiplied by 1.7, plus 500 gallons per day per acre for potential infiltration and inflows).

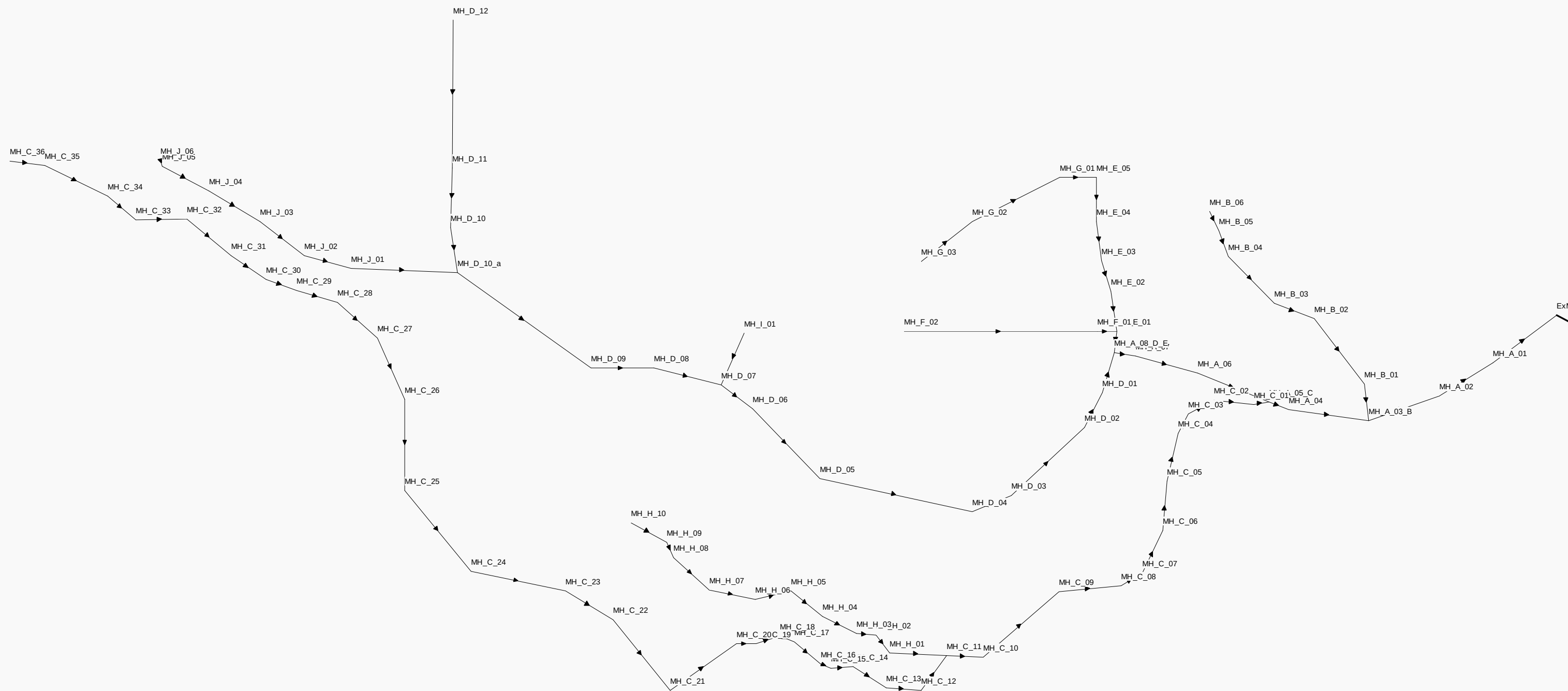
Proposed Sanitary Sewer System Flow Rates								
PLANNING AREA	Dwelling Units	Acreage	Fixture	Unit Sewer Factor		Average Flow		Peak Flow
		AC	Units	Gal/capita/Day	Gal/Ac/Day	GPD	MGD	MGD
PA 1	94	47		194		18236	0.01824	0.05450
PA 2-A	53	15.51		194		10282	0.01028	0.02523
PA 2-B	60	17.57		194		11640	0.01164	0.02857
PA 2-C	56	16.33		194		10864	0.01086	0.02663
PA 3-A	53	13.96		194		10282	0.01028	0.02446
PA 3-B	90	23.81		194		17460	0.01746	0.04159
PA 3-C	40	10.63		194		7760	0.00776	0.01851
PA 3-D	91	24		194		17654	0.01765	0.04201
PA 4-A	102	23.19		194		19788	0.01979	0.04523
PA 4-B	102	23.11		194		19788	0.01979	0.04519
PA 4-C	78	17.73		194		15132	0.01513	0.03459
PA 4-D	54	12.34		194		10476	0.01048	0.02398
PA 5-A	31	5.9		194		6014	0.00601	0.01317
PA 5-B	34	6.5		194		6596	0.00660	0.01446
PA 5-C	66	12.6		194		12804	0.01280	0.02807
PA 5-D	85	16.43		194		16490	0.01649	0.03625
PA 5-E	54	10.41		194		10476	0.01048	0.02301
PA 5-F	31	5.87		194		6014	0.00601	0.01316
PA 6-A	44	7.26		194		8536	0.00854	0.01814
PA 6-B	101	16.83		194		19594	0.01959	0.04172
PA 6-C	70	11.72		194		13580	0.01358	0.02895
PA 6-D	60	10.05		194		11640	0.01164	0.02481
PA 7-A	555	85.36		194		107670	0.10767	0.22572
PA 7-B	199	30.58		194		38606	0.03861	0.08092
PA 8-A	333	18.5		194		64602	0.06460	0.11907
PA 8-B	232	12.9		194		45008	0.04501	0.08296
PA 8-C	211	11.7		194		40934	0.040934	0.075438
PA 8-D	154	8.6		194		29876	0.029876	0.055089
PA 9	168			194		32592	0.032592	0.055406
PA 9		9.33				0	0	0
PA 10		30	237			135648	0.135648	0.245602
PA 11		10.15	22.5			23400	0.0234	0.044855
PA 12		12.7	22.5			23400	0.0234	0.04613
PA 13		1.08				0	0	0
PA 14-A						0	0	0
PA 14-B						0	0	0
PA 14-C						0	0	0
PA 14-D						0	0	0
PA 15-A						0	0	0
PA 15-B						0	0	0
PA 16-A						0	0	0
PA 16-B						0	0	0
PA 16-C	84	14		194		16296	0.016296	0.034703
PA 17		25.7				0	0	0
PA 18						0	0	0
MSJCC		51			1500	76500	0.0765	0.13005
MPS-"MH284"								8.47872
MPS-"MH282"								0.97632
For Fixture Units, gpm per CPC Chart A-2, A-3					Peak flow includes (I/I) factor of 500 gpd/ac			

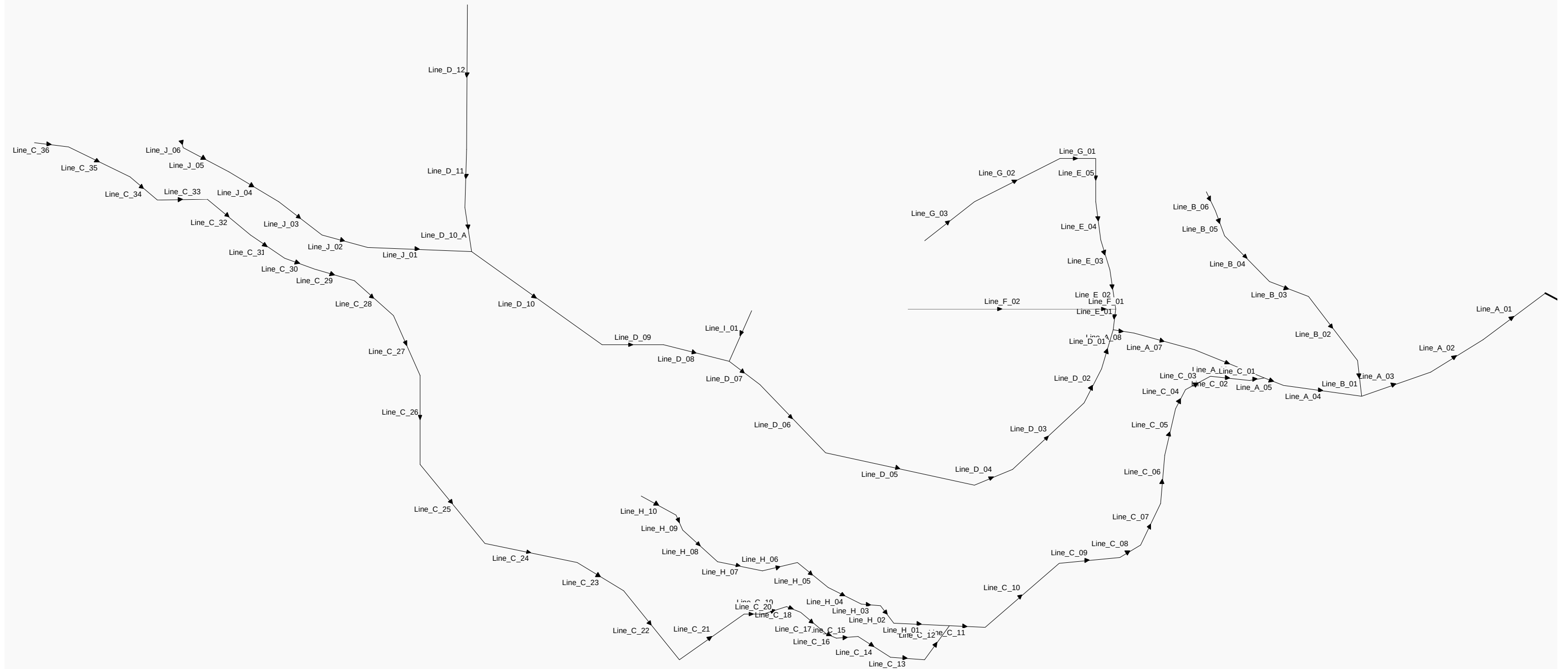
Hydraulic Model - Flows Added at M.H.			
Add at Model MH Ref:	PA	PA	Total Peak Flow
			MGD
MH_A_02	PA 5-F		0.01316
MH_A_03_B	PA 3-D		0.04201
MH_B_01	PA 5-E		0.02301
MH_B_03	PA 3-C	PA 6-D	0.04332
MH_B_06	PA 16-C		0.03470
MH_C_02	PA 11		0.04486
MH_C_05	PA 6-C		0.02895
MH_C_09	PA 5-D		0.03625
MH_C_11	PA 4-C		0.03459
MH_C_12	MPS-"MH282"		0.97632
MH_C_13	PA 2-B		0.02857
MH_C_21	PA 1		0.05450
MH_C_23	PA 2-A		0.02523
MH_C_27	PA 5-B		0.01446
MH_C_29	PA 5-A		0.01317
MH_C_33	PA 8-C	PA 8-B	0.15840
MH_C_36	MPS-"MH284"		8.47872
MH_D_01	PA 3-B		0.04159
MH_D_05	PA 4-B		0.04519
MH_D_10	PA 6-A		0.01814
MH_D_11	PA 8-A		0.11907
MH_D_12	PA 9		0.05541
MH_E_01	PA 4-D		0.02398
MH_E_02	PA 12		0.04613
MH_F_01	PA 6-B		0.04172
MH_F_02	PA 5-C		0.02807
MH_G_01	PA 7-B		0.08092
MH_G_03	PA 7-A		0.22572
MH_H_05	PA 2-C		0.02663
MH_H_08	PA 3-A		0.02446
MH_H_10	PA 4-A		0.04523
MH_J_04	PA 10	PA 8-D	0.30069
MH_J_06	MSJCC		0.13005

Appendix A. Hydraulic Calculations









Project Description

File Name BanningPre.SPF
Description Rancho San Gorgonio - Master Plan of Sewer

Project Options

Flow Units MGD
Elevation Type Elevation
Hydrology Method EPA SWMM
EPA SWMM Infiltration Method SCS Curve Number
Link Routing Method Steady Flow
Enable Overflow Ponding at Nodes YES
Skip Steady State Analysis Time Periods NO

Analysis Options

Start Analysis On Mar 26, 2013 00:00:00
End Analysis On Mar 26, 2013 01:00:00
Start Reporting On Mar 26, 2013 00:00:00
Antecedent Dry Days 0 days
Runoff (Dry Weather) Time Step 0 01:00:00 days hh:mm:ss
Runoff (Wet Weather) Time Step 0 00:05:00 days hh:mm:ss
Reporting Time Step 0 00:05:00 days hh:mm:ss
Routing Time Step 30 seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins.....	0
Nodes.....	102
<i>Junctions</i>	101
<i>Outfalls</i>	1
<i>Flow Diversions</i>	0
<i>Inlets</i>	0
<i>Storage Nodes</i>	0
Links.....	101
<i>Channels</i>	0
<i>Pipes</i>	101
<i>Pumps</i>	0
<i>Orifices</i>	0
<i>Weirs</i>	0
<i>Outlets</i>	0
Pollutants	0
Land Uses	0

Node Summary

SN	Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
			(ft)	(ft)	(ft)	(ft)	(ft²)	(mgd)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
1	ExMH-101	Junction	2116.09	2133.00	2140.60	2176.32	0.00	12.84	2118.59	0.00	14.41	0 00:00	0.00	0.00
2	ExMH-101_1	Junction	2115.67	2122.00	2139.98	2175.70	0.00	12.84	2118.17	0.00	3.83	0 00:00	0.00	0.00
3	ExMH-102	Junction	2116.47	2129.00	2141.29	2177.01	0.00	12.84	2118.97	0.00	10.03	0 00:00	0.00	0.00
4	ExMH-103	Junction	2117.01	2135.00	2142.06	2177.58	0.00	13.60	2135.00	0.00	0.00	0 00:01	1.17	61.00
5	ExMH-103.5	Junction	2119.47	2124.00	0.00	0.00	0.00	13.60	2120.55	0.00	3.45	0 00:00	0.00	0.00
6	ExMH-104	Junction	2120.25	2143.00	2144.30	2179.19	0.00	13.60	2122.33	0.00	20.67	0 00:00	0.00	0.00
7	ExMH-105	Junction	2140.16	2162.00	2162.70	2167.54	0.00	13.72	2162.00	0.00	0.00	0 00:01	0.31	61.00
8	ExMH-106	Junction	2163.52	2190.00	2182.74	2206.86	0.00	13.70	2164.86	0.00	25.14	0 00:00	0.00	0.00
9	ExMH-107	Junction	2170.06	2202.00	2188.76	2206.92	0.00	13.69	2171.57	0.00	30.43	0 00:00	0.00	0.00
10	ExMH-108	Junction	2183.18	2202.00	2201.83	2210.92	0.00	13.69	2184.59	0.00	17.41	0 00:00	0.00	0.00
11	ExMH-109	Junction	2189.68	2207.00	2207.00	2213.92	0.00	13.66	2191.08	0.00	15.92	0 00:00	0.00	0.00
12	MH_A_01	Junction	2193.00	2204.00	2189.48	2204.00	0.00	11.30	2194.45	0.00	9.55	0 00:00	0.00	0.00
13	MH_A_02	Junction	2196.00	2206.89	2191.75	2206.89	0.00	11.30	2197.45	0.00	9.44	0 00:00	0.00	0.00
14	MH_A_03_B	Junction	2200.40	2213.12	2199.98	2213.12	0.00	11.29	2201.74	0.00	11.38	0 00:00	0.00	0.00
15	MH_A_04	Junction	2208.00	2218.02	2208.93	2218.02	0.00	11.15	2209.28	0.00	8.74	0 00:00	0.00	0.00
16	MH_A_05_C	Junction	2209.58	2220.84	2209.58	2220.84	0.00	11.15	2211.23	0.00	9.61	0 00:00	0.00	0.00
17	MH_A_06	Junction	2214.00	2224.49	2212.49	2224.49	0.00	1.16	2214.54	0.00	9.94	0 00:00	0.00	0.00
18	MH_A_07	Junction	2227.20	2246.24	2227.20	2246.24	0.00	1.16	2228.54	0.00	17.69	0 00:00	0.00	0.00
19	MH_A_08_D_E	Junction	2229.00	2252.09	2229.00	2252.09	0.00	1.16	2229.89	0.00	22.20	0 00:00	0.00	0.00
20	MH_B_01	Junction	2205.91	2216.25	2205.91	2216.25	0.00	0.10	2206.13	0.00	10.12	0 00:00	0.00	0.00
21	MH_B_02	Junction	2215.49	2238.78	2215.49	2238.78	0.00	0.08	2215.67	0.00	23.11	0 00:00	0.00	0.00
22	MH_B_03	Junction	2238.85	2245.75	2238.85	2245.75	0.00	0.08	2238.94	0.00	6.81	0 00:00	0.00	0.00
23	MH_B_04	Junction	2253.00	2261.00	0.00	2261.00	0.00	0.03	2253.11	0.00	7.89	0 00:00	0.00	0.00
24	MH_B_05	Junction	2254.00	2262.00	0.00	2262.00	0.00	0.03	2254.11	0.00	7.89	0 00:00	0.00	0.00
25	MH_B_06	Junction	2258.00	2266.00	0.00	2266.00	0.00	0.03	2258.08	0.00	7.92	0 00:00	0.00	0.00
26	MH_C_01	Junction	2211.00	2218.27	2211.00	2218.27	0.00	9.99	2212.64	0.00	5.63	0 00:00	0.00	0.00
27	MH_C_02	Junction	2212.62	2221.08	2212.62	2221.08	0.00	9.99	2214.19	0.00	6.90	0 00:00	0.00	0.00
28	MH_C_03	Junction	2213.78	2222.85	2213.78	2222.85	0.00	9.95	2215.25	0.00	7.60	0 00:00	0.00	0.00
29	MH_C_04	Junction	2216.31	2226.01	2216.31	2226.01	0.00	9.95	2217.88	0.00	8.14	0 00:00	0.00	0.00
30	MH_C_05	Junction	2218.21	2226.97	2218.21	2226.97	0.00	9.95	2219.77	0.00	7.19	0 00:00	0.00	0.00
31	MH_C_06	Junction	2220.10	2227.91	2220.10	2227.91	0.00	9.92	2221.57	0.00	6.35	0 00:00	0.00	0.00
32	MH_C_07	Junction	2224.00	2232.99	2225.33	2232.99	0.00	9.92	2225.23	0.00	7.76	0 00:00	0.00	0.00
33	MH_C_08	Junction	2227.07	2234.55	2227.07	2234.55	0.00	9.92	2228.43	0.00	6.13	0 00:00	0.00	0.00
34	MH_C_09	Junction	2232.09	2242.36	2232.09	2242.36	0.00	9.92	2233.39	0.00	8.97	0 00:00	0.00	0.00
35	MH_C_10	Junction	2239.73	2248.01	2239.73	2248.01	0.00	9.88	2241.00	0.00	7.02	0 00:00	0.00	0.00
36	MH_C_11	Junction	2243.88	2251.29	2243.88	2251.29	0.00	9.88	2245.43	0.00	5.87	0 00:00	0.00	0.00
37	MH_C_12	Junction	2245.57	2253.06	2245.57	2253.06	0.00	9.75	2247.01	0.00	6.05	0 00:00	0.00	0.00
38	MH_C_13	Junction	2250.25	2258.97	2250.25	2258.97	0.00	8.77	2251.22	0.00	7.75	0 00:00	0.00	0.00
39	MH_C_14	Junction	2255.31	2263.14	2255.31	2263.14	0.00	8.74	2256.38	0.00	6.75	0 00:00	0.00	0.00
40	MH_C_15	Junction	2257.34	2265.22	2257.34	2265.22	0.00	8.74	2258.58	0.00	6.64	0 00:00	0.00	0.00
41	MH_C_16	Junction	2258.04	2266.56	2258.04	2266.56	0.00	8.74	2259.28	0.00	7.28	0 00:00	0.00	0.00
42	MH_C_17	Junction	2263.33	2270.75	2263.33	2270.75	0.00	8.74	2264.26	0.00	6.49	0 00:00	0.00	0.00
43	MH_C_18	Junction	2266.17	2272.70	2266.17	2272.70	0.00	8.74	2267.41	0.00	5.29	0 00:00	0.00	0.00
44	MH_C_19	Junction	2267.70	2275.33	2267.70	2275.33	0.00	8.74	2268.95	0.00	6.38	0 00:00	0.00	0.00
45	MH_C_20	Junction	2269.92	2278.68	2269.92	2278.68	0.00	8.74	2271.04	0.00	7.64	0 00:00	0.00	0.00
46	MH_C_21	Junction	2278.89	2291.43	2278.89	2291.43	0.00	8.74	2280.01	0.00	11.43	0 00:00	0.00	0.00
47	MH_C_22	Junction	2288.85	2299.83	2288.85	2299.83	0.00	8.69	2290.04	0.00	9.79	0 00:00	0.00	0.00
48	MH_C_23	Junction	2294.00	2304.01	2295.22	2304.01	0.00	8.69	2295.24	0.00	8.77	0 00:00	0.00	0.00
49	MH_C_24	Junction	2300.00	2315.05	2298.84	2315.05	0.00	8.66	2301.24	0.00	13.82	0 00:00	0.00	0.00
50	MH_C_25	Junction	2313.00	2321.73	2311.28	2321.73	0.00	8.66	2314.13	0.00	7.60	0 00:00	0.00	0.00
51	MH_C_26	Junction	2324.00	2332.31	2321.38	2332.31	0.00	8.66	2325.13	0.00	7.18	0 00:00	0.00	0.00
52	MH_C_27	Junction	2333.00	2341.94	2334.06	2341.94	0.00	8.66	2334.12	0.00	7.81	0 00:00	0.00	0.00
53	MH_C_28	Junction	2339.50	2351.48	2339.98	2351.48	0.00	8.65	2340.62	0.00	10.86	0 00:00	0.00	0.00
54	MH_C_29	Junction	2344.70	2356.32	2344.53	2356.32	0.00	8.65	2345.83	0.00	10.49	0 00:00	0.00	0.00
55	MH_C_30	Junction	2348.58	2360.35	2348.58	2360.35	0.00	8.64	2349.70	0.00	10.64	0 00:00	0.00	0.00
56	MH_C_31	Junction	2355.40	2368.11	2355.40	2368.11	0.00	8.64	2356.45	0.00	11.66	0 00:00	0.00	0.00
57	MH_C_32	Junction	2363.72	2377.05	2363.72	2377.05	0.00	8.64	2364.77	0.00	12.28	0 00:00	0.00	0.00
58	MH_C_33	Junction	2373.00	2383.76	2375.00	2383.76	0.00	8.64	2374.28	0.00	9.48	0 00:00	0.00	0.00
59	MH_C_34	Junction	2375.00	2391.69	2377.26	2391.69	0.00	8.48	2376.28	0.00	15.41	0 00:00	0.00	0.00
60	MH_C_35	Junction	2379.00	2394.68	2379.93	2394.68	0.00	8.48	2380.26	0.00	14.42	0 00:00	0.00	0.00
61	MH_C_36	Junction	2381.29	2387.82	2381.29	2387.82	0.00	8.48	2382.48	0.00	5.35	0 00:00	0.00	0.00
62	MH_D_01	Junction	2231.80	2246.87	2231.80	2246.87	0.00	0.71	2232.36	0.00	14.51	0 00:00	0.00	0.00
63	MH_D_02	Junction	2234.80	2242.73	2234.80	2242.73	0.00	0.67	2235.33	0.00	7.40	0 00:00	0.00	0.00
64	MH_D_03	Junction	2244.39	2253.11	2244.39	2253.11	0.00	0.67	2244.80	0.00	8.30	0 00:00	0.00	0.00
65	MH_D_04	Junction	2249.14	2260.70	2249.14	2260.70	0.00	0.67	2249.52	0.00	11.18	0 00:00	0.00	0.00
66	MH_D_05	Junction	2279.27	2288.56	2279.27	2288.56	0.00	0.67	2279.64	0.00	8.92	0 00:00	0.00	0.00
67	MH_D_06	Junction	2297.00	2304.31	2297.00	2304.31	0.00	0.62	2297.39	0.00	6.91	0 00:00	0.00	0.00
68	MH_D_07	Junction	2302.20	2310.65	2302.20	2310.65	0.00	0.62	2302.66	0.00	7.99	0 00:00	0.00	0.00
69	MH_D_08	Junction	2314.86	2321.70	2314.86	2321.70	0.00	0.62	2315.27	0.00	6.44	0 00:00	0.00	0.00
70	MH_D_09	Junction	2321.90	2332.00	2321.90	2332.00	0.00	0.62	2322.31	0.00	9.69	0 00:00	0.00	0.00
71	MH_D_10	Junction	2346.87	2355.24	2346.87	2355.24	0.00	0.19	2347.07	0.00	8.18	0 00:00	0.00	0.00
72	MH_D_10_a	Junction	2341.69	2349.00	2341.69	2349.00	0.00	0.62	2342.03	0.00	6.97	0 00:00	0.00	0.00
73	MH_D_11	Junction	2355.59	2363.23	2355.59	2363.23	0.00	0.17	2355.79	0.00	7.44	0 00:00	0.00	0.00
74	MH_D_12	Junction	2376.07	2381.76	2376.07	2381.76	0.00	0.06	2376.17	0.00	5.59	0 00:00	0.00	0.00
75	MH_E_01	Junction	2239.55	2253.77	2239.55	2253.77	0.00	0.45	2239.91	0.00	13.86	0 00:00	0.00	0.00
76	MH_E_02	Junction	2245.00	2257.79	2241.15	2257.79	0.00	0.35	2245.26	0.00	12.54	0 00:00	0.00	0.00
77	MH_E_03	Junction	2251.66	2258.00	2251.66	2258.00	0.00	0.31	2251.93	0.00	6.07	0 00:00	0.00	0.00
78	MH_E_04	Junction	2267.58	2274.49	2267.58	2274.49	0.00	0.31	2267.87	0.00	6.62	0 00:00	0.00	0.00
79	MH_E_05	Junction	2											

Node Summary

SN Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
		(ft)	(ft)	(ft)	(ft)	(ft²)	(mgd)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
82 MH_G_01	Junction	2280.31	2290.47	2280.31	2290.47	0.00	0.31	2280.65	0.00	9.82	0 00:00	0.00	0.00
83 MH_G_02	Junction	2291.52	2300.34	2291.52	2300.34	0.00	0.23	2291.83	0.00	8.50	0 00:00	0.00	0.00
84 MH_G_03	Junction	2298.82	2304.51	2298.82	2304.51	0.00	0.23	2299.03	0.00	5.48	0 00:00	0.00	0.00
85 MH_H_01	Junction	2253.77	2259.94	2253.77	2259.94	0.00	0.10	2254.00	0.00	5.93	0 00:00	0.00	0.00
86 MH_H_02	Junction	2256.32	2262.88	2256.32	2262.88	0.00	0.10	2256.60	0.00	6.28	0 00:00	0.00	0.00
87 MH_H_03	Junction	2257.13	2265.18	2257.13	2265.18	0.00	0.10	2257.36	0.00	7.81	0 00:00	0.00	0.00
88 MH_H_04	Junction	2261.36	2269.23	2261.36	2269.23	0.00	0.10	2261.59	0.00	7.64	0 00:00	0.00	0.00
89 MH_H_05	Junction	2265.92	2275.82	2265.92	2275.82	0.00	0.10	2266.13	0.00	9.68	0 00:00	0.00	0.00
90 MH_H_06	Junction	2269.98	2276.98	2269.98	2276.98	0.00	0.07	2270.20	0.00	6.79	0 00:00	0.00	0.00
91 MH_H_07	Junction	2275.20	2283.58	2275.20	2283.58	0.00	0.07	2275.40	0.00	8.18	0 00:00	0.00	0.00
92 MH_H_08	Junction	2284.15	2290.37	2284.15	2290.37	0.00	0.07	2284.34	0.00	6.02	0 00:00	0.00	0.00
93 MH_H_09	Junction	2286.02	2293.79	2286.02	2293.79	0.00	0.05	2286.20	0.00	7.59	0 00:00	0.00	0.00
94 MH_H_10	Junction	2293.52	2299.21	2293.52	2299.21	0.00	0.05	2293.60	0.00	5.61	0 00:00	0.00	0.00
95 MH_I_01	Junction	2308.86	2314.55	2308.86	2314.55	0.00	0.00	2308.86	0.00	5.69	0 00:00	0.00	0.00
96 MH_J_01	Junction	2345.25	2350.87	2345.25	2350.87	0.00	0.43	2345.59	0.00	5.28	0 00:00	0.00	0.00
97 MH_J_02	Junction	2349.57	2358.24	2349.57	2358.24	0.00	0.43	2349.84	0.00	8.40	0 00:00	0.00	0.00
98 MH_J_03	Junction	2359.48	2367.31	2359.48	2367.31	0.00	0.43	2359.74	0.00	7.57	0 00:00	0.00	0.00
99 MH_J_04	Junction	2365.50	2375.56	0.00	0.00	0.00	0.43	2365.76	0.00	9.80	0 00:00	0.00	0.00
100 MH_J_05	Junction	2380.95	2387.96	2380.95	2387.96	0.00	0.13	2381.09	0.00	6.87	0 00:00	0.00	0.00
101 MH_J_06	Junction	2382.27	2387.96	2382.27	2387.96	0.00	0.13	2382.41	0.00	5.55	0 00:00	0.00	0.00
102 Out-1ExPipe-201_1	Outfall	2114.75					12.84	2117.25					

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Reported	Surcharged Condition
					(ft)	(ft)	(ft)	(%)	(in)		(mgd)	(mgd)		(ft/sec)	(ft)		(min)	
1	ExPipe-201_1	Pipe	ExMH-101_1	Out-1ExPipe-201_1	812.13	2115.67	2114.75	0.1100	30.000	0.0120	12.84	12.84	1.00	4.05	2.50	1.00	61.00	SURCHARGED
2	ExPipe-201_2	Pipe	ExMH-101	ExMH-101_1	416.43	2116.09	2115.67	0.1000	30.000	0.0120	12.84	12.84	1.00	4.05	2.50	1.00	61.00	SURCHARGED
3	ExPipe-203	Pipe	ExMH-102	ExMH-101	487.63	2116.47	2116.09	0.0800	30.000	0.0120	12.84	12.84	1.00	4.05	2.50	1.00	61.00	SURCHARGED
4	ExPipe-205	Pipe	ExMH-103	ExMH-102	571.27	2117.01	2116.47	0.0900	30.000	0.0120	12.84	12.84	1.00	4.05	2.50	1.00	61.00	SURCHARGED
5	ExPipe-207	Pipe	ExMH-103.5	ExMH-103	430.18	2119.47	2117.01	0.5700	24.000	0.0120	13.60	23.96	0.57	6.08	1.08	0.54	0.00	Calculated
6	ExPipe-208	Pipe	ExMH-104	ExMH-103.5	183.20	2120.78	2119.47	0.7200	24.000	0.0120	13.60	26.79	0.51	6.62	1.01	0.50	0.00	Calculated
7	ExPipe-209	Pipe	ExMH-105	ExMH-104	1319.19	2140.16	2120.58	1.4800	21.000	0.0120	13.52	13.52	1.00	8.69	1.75	1.00	61.00	SURCHARGED
8	ExPipe-211	Pipe	ExMH-106	ExMH-105	1322.46	2163.52	2140.36	1.7500	21.000	0.0120	13.70	14.68	0.93	10.72	1.34	0.77	0.00	Calculated
9	ExPipe-213	Pipe	ExMH-107	ExMH-106	855.56	2169.96	2163.72	0.7300	21.000	0.0120	13.69	19.10	0.72	6.68	1.10	0.63	0.00	Calculated
10	ExPipe-215	Pipe	ExMH-108	ExMH-107	824.88	2183.08	2170.16	1.5700	21.000	0.0120	13.69	13.94	0.98	10.22	1.41	0.80	0.00	Calculated
11	ExPipe-217	Pipe	ExMH-109	ExMH-108	287.39	2189.58	2183.28	2.1900	21.000	0.0120	13.66	16.56	0.83	11.89	1.21	0.69	0.00	Calculated
12	Line_A_01	Pipe	MH_A_01	MH_A-109	617.85	2193.00	2189.68	0.5400	27.000	0.0120	11.30	15.90	0.71	6.71	1.40	0.62	0.00	Calculated
13	Line_A_02	Pipe	MH_A_02	MH_A_01	454.29	2196.00	2193.00	0.6600	24.000	0.0120	11.30	12.87	0.88	7.15	1.45	0.73	0.00	Calculated
14	Line_A_03	Pipe	MH_A_03_B	MH_A_02	543.92	2200.40	2196.00	0.8100	24.000	0.0120	11.29	14.25	0.79	7.78	1.34	0.67	0.00	Calculated
15	Line_A_04	Pipe	MH_A_04	MH_A_03_B	590.62	2208.00	2200.40	1.2900	21.000	0.0120	11.15	12.59	0.89	9.14	1.28	0.73	0.00	Calculated
16	Line_A_05	Pipe	MH_A_05_C	MH_A_04	151.10	2209.58	2208.00	1.0500	24.000	0.0120	11.15	16.21	0.69	8.60	1.22	0.61	0.00	Calculated
17	Line_A_06	Pipe	MH_A_06	MH_A_05_C	560.71	2214.00	2210.33	0.6500	12.000	0.0120	1.16	2.02	0.57	4.11	0.54	0.54	0.00	Calculated
18	Line_A_07	Pipe	MH_A_07	MH_A_06	468.99	2227.20	2214.00	2.8100	12.000	0.0120	1.16	4.19	0.28	7.05	0.36	0.36	0.00	Calculated
19	Line_A_08	Pipe	MH_A_08_D_E	MH_A_07	154.50	2229.00	2228.00	0.6500	12.000	0.0120	1.16	2.01	0.58	4.09	0.54	0.54	0.00	Calculated
20	Line_B_01	Pipe	MH_B_01	MH_A_03_B	267.69	2205.91	2200.40	2.0600	8.000	0.0120	0.10	1.21	0.08	3.26	0.13	0.19	0.00	Calculated
21	Line_B_02	Pipe	MH_B_02	MH_B_01	601.35	2215.49	2206.01	1.5800	8.000	0.0120	0.08	1.06	0.07	2.75	0.12	0.18	0.00	Calculated
22	Line_B_03	Pipe	MH_B_03	MH_B_02	310.25	2238.85	2215.59	7.5000	8.000	0.0120	0.08	2.32	0.03	4.78	0.08	0.13	0.00	Calculated
23	Line_B_04	Pipe	MH_B_04	MH_B_03	475.63	2253.00	2238.85	2.9700	8.000	0.0120	0.04	1.46	0.02	2.52	0.07	0.11	0.00	Calculated
24	Line_B_05	Pipe	MH_B_05	MH_B_04	201.41	2254.00	2253.00	0.5000	8.000	0.0120	0.04	0.60	0.06	1.44	0.11	0.16	0.00	Calculated
25	Line_B_06	Pipe	MH_B_06	MH_B_05	155.22	2258.00	2254.00	2.5800	8.000	0.0120	0.04	1.36	0.03	2.37	0.08	0.12	0.00	Calculated
26	Line_C_01	Pipe	MH_C_01	MH_A_05_C	114.20	2211.00	2210.02	0.8600	24.000	0.0120	9.99	14.68	0.68	7.77	1.21	0.61	0.00	Calculated
27	Line_C_02	Pipe	MH_C_02	MH_C_01	290.68	2212.62	2211.16	0.5000	24.000	0.0120	9.99	11.20	0.89	6.23	1.47	0.74	0.00	Calculated
28	Line_C_03	Pipe	MH_C_03	MH_C_02	212.32	2213.78	2212.72	0.5000	24.000	0.0120	9.95	11.20	0.89	6.23	1.47	0.73	0.00	Calculated
29	Line_C_04	Pipe	MH_C_04	MH_C_03	161.95	2216.31	2213.88	1.5000	24.000	0.0120	9.95	19.40	0.51	9.61	1.02	0.51	0.00	Calculated
30	Line_C_05	Pipe	MH_C_05	MH_C_04	360.04	2218.21	2216.41	0.5000	24.000	0.0120	9.95	11.20	0.89	6.23	1.47	0.73	0.00	Calculated
31	Line_C_06	Pipe	MH_C_06	MH_C_05	358.47	2220.10	2218.31	0.5000	24.000	0.0120	9.92	11.20	0.89	6.23	1.46	0.73	0.00	Calculated
32	Line_C_07	Pipe	MH_C_07	MH_C_06	341.95	2224.00	2220.10	1.1400	21.000	0.0120	9.92	11.85	0.84	8.53	1.23	0.70	0.00	Calculated
33	Line_C_08	Pipe	MH_C_08	MH_C_07	177.91	2227.07	2224.00	1.7300	21.000	0.0120	9.92	14.58	0.68	10.08	1.06	0.61	0.00	Calculated
34	Line_C_09	Pipe	MH_C_09	MH_C_08	458.54	2232.09	2227.17	1.0700	21.000	0.0120	9.92	11.49	0.86	8.31	1.25	0.72	0.00	Calculated
35	Line_C_10	Pipe	MH_C_10	MH_C_09	727.83	2239.73	2232.12	1.0500	21.000	0.0120	9.88	11.34	0.87	8.21	1.26	0.72	0.00	Calculated
36	Line_C_11	Pipe	MH_C_11	MH_C_10	270.17	2243.88	2239.83	1.5000	21.000	0.0120	9.88	13.59	0.73	9.53	1.11	0.63	0.00	Calculated
37	Line_C_12	Pipe	MH_C_12	MH_C_11	316.70	2245.57	2243.98	0.5000	24.000	0.0120	9.75	11.20	0.87	6.21	1.44	0.72	0.00	Calculated
38	Line_C_13	Pipe	MH_C_13	MH_C_12	254.28	2250.25	2245.67	1.8000	21.000	0.0120	8.77	14.90	0.59	9.97	0.97	0.55	0.00	Calculated
39	Line_C_14	Pipe	MH_C_14	MH_C_13	287.84	2255.31	2250.25	1.7600	21.000	0.0120	8.74	14.70	0.59	9.86	0.97	0.56	0.00	Calculated
40	Line_C_15	Pipe	MH_C_15	MH_C_14	159.01	2257.34	2255.31	1.2800	21.000	0.0120	8.74	12.53	0.70	8.71	1.08	0.62	0.00	Calculated
41	Line_C_16	Pipe	MH_C_16	MH_C_15	81.69	2258.04	2257.33	0.8700	21.000	0.0120	8.74	10.26	0.85	7.41	1.24	0.71	0.00	Calculated
42	Line_C_17	Pipe	MH_C_17	MH_C_16	250.68	2263.33	2258.14	2.0700	21.000	0.0120	8.74	15.97	0.55	10.50	0.92	0.53	0.00	Calculated
43	Line_C_18	Pipe	MH_C_18	MH_C_17	114.89	2266.17	2263.30	2.5000	21.000	0.0120	8.74	17.44	0.50	11.22	0.88	0.50	0.00	Calculated
44	Line_C_19	Pipe	MH_C_19	MH_C_18	178.72	2267.70	2266.11	0.8900	21.000	0.0120	8.74	10.27	0.85	7.42	1.24	0.71	0.00	Calculated
45	Line_C_20	Pipe	MH_C_20	MH_C_19	146.16	2269.92	2267.73	1.5000	21.000	0.0120	8.74	13.59	0.64	9.28	1.02	0.58	0.00	Calculated
46	Line_C_21	Pipe	MH_C_21	MH_C_20	591.02	2278.89	2270.02	1.5000	21.000	0.0120	8.74	13.59	0.64	9.28	1.02	0.58	0.00	Calculated
47	Line_C_22	Pipe	MH_C_22	MH_C_21	657.72	2288.85	2278.99	1.5000	21.000	0.0120	8.69	13.59	0.64	9.26	1.02	0.58	0.00	Calculated
48	Line_C_23	Pipe	MH_C_23	MH_C_22	409.15	2294.00	2288.95	1.2300	21.000	0.0120	8.69	12.32	0.71	8.59	1.08	0.62	0.00	Calculated
49	Line_C_24	Pipe	MH_C_24	MH_C_23	703.70	2300.00	2294.00	0.8500	21.000	0.0120	8.67	10.24	0.85	7.39	1.24	0.71	0.00	Calculated
50	Line_C_25	Pipe	MH_C_25	MH_C_24	760.22	2313.00	2300.00	1.7100	18.000	0.0120	8.67	9.62	0.90	9.52	1.11	0.74	0.00	Calculated
51	Line_C_26	Pipe	MH_C_26	MH_C_25	666.35	2324.00	2313.00	1.6500	18.000	0.0120	8.67	9.45	0.92	9.38	1.13	0.75	0.00	Calculated
52	Line_C_27	Pipe	MH_C_27	MH_C_26	488.58	2333.00	2324.00	1.8400	18.000	0.0120	8.67	9.98	0.87	9.83	1.08	0.72	0.00	Calculated
53	Line_C_28	Pipe	MH_C_28	MH_C_27	387.76	2339.50	2333.00	1.6800	18.000	0.0120	8.65	9.52	0.91	9.44	1.12	0.75	0.00	Calculated
54	Line_C_29	Pipe	MH_C_29	MH_C_28	310.45	2344.70	2339.50	1.6800	18.000	0.0120	8.65	9.52	0.91	9.44	1.12	0.75	0.00	Calculated
55	Line_C_30	Pipe	MH_C_30	MH_C_29	233.73	2348.58	2344.70	1.6600	18.000	0.0120	8.64	9.47	0.91	9.40	1.13	0.75	0.00	Calculated
56	Line_C_31	Pipe	MH_C_31	MH_C_30	307.35	2355.40	2348.55	2.2300	18.000	0.0120	8.64	10.96	0.79	10.63	1.00	0.67	0.00	Calculated
57	Line_C_32	Pipe	MH_C_32	MH_C_31	419.27	2363.72	2355.40	1.9800	18.000	0.0120	8.64	10.36	0.83	10.15	1.05	0.70	0.00	Calculated
58	Line_C_33	Pipe	MH_C_33	MH_C_32	372.50	2373.00	2363.65	2.5100	18.000	0.0120	8.64	11.61	0.74	11.14	0.96	0.64	0.00	Calculated

Link Summary

SN Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Reported Surcharged Condition
				(ft)	(ft)	(ft)	(%)	(in)		(mgd)	(mgd)		(ft/sec)	(ft)		(min)
59 Line_C_34	Pipe	MH_C_34	MH_C_33	269.40	2375.00	2373.00	0.7400	21.000	0.0120	8.48	9.56	0.89	6.94	1.28	0.73	0.00 Calculated
60 Line_C_35	Pipe	MH_C_35	MH_C_34	514.76	2379.00	2375.00	0.7800	21.000	0.0120	8.48	9.78	0.87	7.08	1.26	0.72	0.00 Calculated
61 Line_C_36	Pipe	MH_C_36	MH_C_35	251.96	2381.29	2379.00	0.9100	21.000	0.0120	8.48	10.58	0.80	7.56	1.19	0.68	0.00 Calculated
62 Line_D_01	Pipe	MH_D_01	MH_A_08_D_E	300.28	2231.80	2229.50	0.7700	12.000	0.0120	0.71	2.18	0.33	3.84	0.39	0.39	0.00 Calculated
63 Line_D_02	Pipe	MH_D_02	MH_D_01	287.29	2234.80	2232.00	0.9700	12.000	0.0120	0.67	2.46	0.27	4.13	0.36	0.36	0.00 Calculated
64 Line_D_03	Pipe	MH_D_03	MH_D_02	726.33	2244.39	2235.00	1.2900	12.000	0.0120	0.67	2.84	0.24	4.56	0.33	0.33	0.00 Calculated
65 Line_D_04	Pipe	MH_D_04	MH_D_03	310.32	2249.14	2244.49	1.5000	12.000	0.0120	0.67	3.06	0.22	4.82	0.32	0.32	0.00 Calculated
66 Line_D_05	Pipe	MH_D_05	MH_D_04	1132.35	2279.27	2249.24	2.6500	12.000	0.0120	0.67	4.06	0.16	5.91	0.27	0.27	0.00 Calculated
67 Line_D_06	Pipe	MH_D_06	MH_D_05	705.11	2297.00	2279.37	2.5000	12.000	0.0120	0.62	3.94	0.16	5.67	0.27	0.27	0.00 Calculated
68 Line_D_07	Pipe	MH_D_07	MH_D_06	287.61	2302.20	2297.10	1.7700	12.000	0.0120	0.62	3.32	0.19	5.01	0.29	0.29	0.00 Calculated
69 Line_D_08	Pipe	MH_D_08	MH_D_07	502.42	2314.86	2302.16	2.5300	12.000	0.0120	0.62	3.96	0.16	5.69	0.27	0.27	0.00 Calculated
70 Line_D_09	Pipe	MH_D_09	MH_D_08	462.66	2321.90	2314.96	1.5000	12.000	0.0120	0.62	3.06	0.20	4.72	0.31	0.31	0.00 Calculated
71 Line_D_10	Pipe	MH_D_10_a	MH_D_09	1444.59	2341.69	2322.00	1.3600	12.000	0.0120	0.62	2.91	0.21	4.57	0.31	0.31	0.00 Calculated
72 Line_D_10_A	Pipe	MH_D_10	MH_D_10_a	331.50	2346.87	2341.69	1.5600	8.000	0.0120	0.19	1.06	0.18	3.55	0.19	0.29	0.00 Calculated
73 Line_D_11	Pipe	MH_D_11	MH_D_10	434.41	2355.59	2346.87	2.0100	8.000	0.0120	0.17	1.20	0.15	3.79	0.17	0.26	0.00 Calculated
74 Line_D_12	Pipe	MH_D_12	MH_D_11	1077.12	2376.07	2355.69	1.8900	8.000	0.0120	0.06	1.16	0.05	2.66	0.10	0.15	0.00 Calculated
75 Line_E_01	Pipe	MH_E_01	MH_A_08_D_E	154.99	2239.55	2229.50	6.4800	8.000	0.0120	0.45	2.15	0.21	7.53	0.21	0.31	0.00 Calculated
76 Line_E_02	Pipe	MH_E_02	MH_E_01	299.44	2245.00	2239.65	1.7900	8.000	0.0120	0.35	1.13	0.31	4.42	0.26	0.38	0.00 Calculated
77 Line_E_03	Pipe	MH_E_03	MH_E_02	231.22	2251.66	2245.00	2.8800	8.000	0.0120	0.31	1.44	0.21	5.06	0.21	0.31	0.00 Calculated
78 Line_E_04	Pipe	MH_E_04	MH_E_03	286.57	2267.58	2251.76	5.5200	8.000	0.0120	0.31	1.99	0.15	6.39	0.18	0.27	0.00 Calculated
79 Line_E_05	Pipe	MH_E_05	MH_E_04	320.28	2278.88	2267.68	3.5000	8.000	0.0120	0.31	1.58	0.19	5.43	0.20	0.30	0.00 Calculated
80 Line_F_01	Pipe	MH_F_01	MH_E_01	137.00	2247.23	2239.55	5.6100	8.000	0.0120	0.07	2.00	0.03	4.17	0.08	0.13	0.00 Calculated
81 Line_F_02	Pipe	MH_F_02	MH_F_01	1407.99	2282.53	2247.33	2.5000	8.000	0.0120	0.03	1.34	0.02	2.27	0.07	0.10	0.00 Calculated
82 Line_G_01	Pipe	MH_G_01	MH_E_05	266.02	2280.31	2278.98	0.5000	8.000	0.0120	0.31	0.60	0.51	2.67	0.34	0.51	0.00 Calculated
83 Line_G_02	Pipe	MH_G_02	MH_G_01	712.42	2291.52	2280.41	1.5600	8.000	0.0120	0.23	1.06	0.21	3.72	0.21	0.31	0.00 Calculated
84 Line_G_03	Pipe	MH_G_03	MH_G_02	473.34	2298.82	2291.62	1.5200	8.000	0.0120	0.23	1.04	0.22	3.69	0.21	0.32	0.00 Calculated
85 Line_H_01	Pipe	MH_H_01	MH_C_11	415.21	2253.77	2243.88	2.3800	8.000	0.0120	0.10	1.31	0.07	3.39	0.12	0.18	0.00 Calculated
86 Line_H_02	Pipe	MH_H_02	MH_H_01	163.41	2256.32	2253.87	1.5000	8.000	0.0120	0.10	1.04	0.09	2.88	0.14	0.21	0.00 Calculated
87 Line_H_03	Pipe	MH_H_03	MH_H_02	142.13	2257.13	2256.42	0.5000	8.000	0.0120	0.10	0.60	0.16	1.95	0.18	0.27	0.00 Calculated
88 Line_H_04	Pipe	MH_H_04	MH_H_03	275.22	2261.36	2257.23	1.5000	8.000	0.0120	0.10	1.04	0.09	2.88	0.14	0.21	0.00 Calculated
89 Line_H_05	Pipe	MH_H_05	MH_H_04	297.39	2265.92	2261.46	1.5000	8.000	0.0120	0.10	1.04	0.09	2.88	0.14	0.21	0.00 Calculated
90 Line_H_06	Pipe	MH_H_06	MH_H_05	264.15	2269.98	2266.02	1.5000	8.000	0.0120	0.07	1.04	0.07	2.58	0.12	0.18	0.00 Calculated
91 Line_H_07	Pipe	MH_H_07	MH_H_06	341.38	2275.20	2270.08	1.5000	8.000	0.0120	0.07	1.04	0.07	2.58	0.12	0.18	0.00 Calculated
92 Line_H_08	Pipe	MH_H_08	MH_H_07	354.02	2284.15	2275.30	2.5000	8.000	0.0120	0.07	1.34	0.05	3.13	0.10	0.15	0.00 Calculated
93 Line_H_09	Pipe	MH_H_09	MH_H_08	117.70	2286.02	2284.25	1.5000	8.000	0.0120	0.05	1.04	0.04	2.31	0.09	0.14	0.00 Calculated
94 Line_H_10	Pipe	MH_H_10	MH_H_09	296.18	2293.52	2286.12	2.5000	8.000	0.0120	0.05	1.34	0.03	2.76	0.08	0.13	0.00 Calculated
95 Line_I_01	Pipe	MH_I_01	MH_D_07	413.71	2308.86	2302.66	1.5000	8.000	0.0120	0.00	1.04	0.00	0.00	0.00	0.00	0.00 Calculated
96 Line_J_01	Pipe	MH_J_01	MH_D_10_a	771.27	2345.25	2341.69	0.4600	12.000	0.0120	0.43	1.69	0.25	2.79	0.34	0.34	0.00 Calculated
97 Line_J_02	Pipe	MH_J_02	MH_J_01	358.09	2349.57	2345.25	1.2100	12.000	0.0120	0.43	2.74	0.16	3.93	0.27	0.27	0.00 Calculated
98 Line_J_03	Pipe	MH_J_03	MH_J_02	403.71	2359.48	2349.57	2.4500	12.000	0.0120	0.43	3.91	0.11	5.06	0.22	0.22	0.00 Calculated
99 Line_J_04	Pipe	MH_J_04	MH_J_03	432.41	2365.50	2359.48	1.3900	12.000	0.0120	0.43	2.94	0.15	4.14	0.26	0.26	0.00 Calculated
100 Line_J_05	Pipe	MH_J_05	MH_J_04	386.80	2380.95	2365.50	3.9900	12.000	0.0120	0.13	4.99	0.03	4.20	0.11	0.11	0.00 Calculated
101 Line_J_06	Pipe	MH_J_06	MH_J_05	47.09	2382.27	2380.95	2.8000	8.000	0.0120	0.13	1.42	0.09	3.92	0.14	0.20	0.00 Calculated

Junction Input

SN Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Initial Water Elevation	Initial Water Depth	Surcharge Elevation	Surcharge Depth	Ponded Area	Minimum Pipe Cover
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft²)	(in)
1 ExMH-101	2116.09	2133.00	16.91	2140.60	24.51	2176.32	43.32	0.00	172.92
2 ExMH-101_1	2115.67	2122.00	6.33	2139.98	24.31	2175.70	53.70	0.00	45.96
3 ExMH-102	2116.47	2129.00	12.53	2141.29	24.82	2177.01	48.01	0.00	120.36
4 ExMH-103	2117.01	2135.00	17.99	2142.06	25.05	2177.58	42.58	0.00	185.88
5 ExMH-103.5	2119.47	2124.00	4.53	0.00	-2119.47	0.00	-2124.00	0.00	30.36
6 ExMH-104	2120.25	2143.00	22.75	2144.30	24.05	2179.19	36.19	0.00	242.64
7 ExMH-105	2140.16	2162.00	21.84	2162.70	22.54	2167.54	5.54	0.00	238.68
8 ExMH-106	2163.52	2190.00	26.48	2182.74	19.22	2206.86	16.86	0.00	294.36
9 ExMH-107	2170.06	2202.00	31.94	2188.76	18.70	2206.92	4.92	0.00	361.08
10 ExMH-108	2183.18	2202.00	18.82	2201.83	18.65	2210.92	8.92	0.00	203.64
11 ExMH-109	2189.68	2207.00	17.32	2207.00	17.32	2213.92	6.92	0.00	180.84
12 MH_A_01	2193.00	2204.00	11.00	2189.48	-3.52	2204.00	0.00	0.00	105.00
13 MH_A_02	2196.00	2206.89	10.89	2191.75	-4.25	2206.89	0.00	0.00	106.68
14 MH_A_03_B	2200.40	2213.12	12.72	2199.98	-0.42	2213.12	0.00	0.00	128.70
15 MH_A_04	2208.00	2218.02	10.02	2208.93	0.93	2218.02	0.00	0.00	96.27
16 MH_A_05_C	2209.58	2220.84	11.26	2209.58	0.00	2220.84	0.00	0.00	105.86
17 MH_A_06	2214.00	2224.49	10.49	2212.49	-1.51	2224.49	0.00	0.00	113.83
18 MH_A_07	2227.20	2246.24	19.04	2227.20	0.00	2246.24	0.00	0.00	206.87
19 MH_A_08_D_E	2229.00	2252.09	23.09	2229.00	0.00	2252.09	0.00	0.00	259.11
20 MH_B_01	2205.91	2216.25	10.34	2205.91	0.00	2216.25	0.00	0.00	114.85
21 MH_B_02	2215.49	2238.78	23.29	2215.49	0.00	2238.78	0.00	0.00	270.32
22 MH_B_03	2238.85	2245.75	6.90	2238.85	0.00	2245.75	0.00	0.00	74.76
23 MH_B_04	2253.00	2261.00	8.00	0.00	-2253.00	2261.00	0.00	0.00	88.00
24 MH_B_05	2254.00	2262.00	8.00	0.00	-2254.00	2262.00	0.00	0.00	88.00
25 MH_B_06	2258.00	2266.00	8.00	0.00	-2258.00	2266.00	0.00	0.00	88.00
26 MH_C_01	2211.00	2218.27	7.27	2211.00	0.00	2218.27	0.00	0.00	61.21
27 MH_C_02	2212.62	2221.08	8.47	2212.62	0.00	2221.08	0.00	0.00	76.39
28 MH_C_03	2213.78	2222.85	9.07	2213.78	0.00	2222.85	0.00	0.00	83.66
29 MH_C_04	2216.31	2226.01	9.70	2216.31	0.00	2226.01	0.00	0.00	91.25
30 MH_C_05	2218.21	2226.97	8.76	2218.21	0.00	2226.97	0.00	0.00	79.91
31 MH_C_06	2220.10	2227.91	7.81	2220.10	0.00	2227.91	0.00	0.00	69.72
32 MH_C_07	2224.00	2232.99	8.99	2225.33	1.33	2232.99	0.00	0.00	86.87
33 MH_C_08	2227.07	2234.55	7.48	2227.07	0.00	2234.55	0.00	0.00	67.60
34 MH_C_09	2232.09	2242.36	10.26	2232.09	0.00	2242.36	0.00	0.00	101.79
35 MH_C_10	2239.73	2248.01	8.28	2239.73	0.00	2248.01	0.00	0.00	77.18
36 MH_C_11	2243.88	2251.29	7.41	2243.88	0.00	2251.29	0.00	0.00	63.71
37 MH_C_12	2245.57	2253.06	7.49	2245.57	0.00	2253.06	0.00	0.00	65.92
38 MH_C_13	2250.25	2258.97	8.72	2250.25	0.00	2258.97	0.00	0.00	83.67
39 MH_C_14	2255.31	2263.14	7.83	2255.31	0.00	2263.14	0.00	0.00	72.95
40 MH_C_15	2257.34	2265.22	7.89	2257.34	0.00	2265.22	0.00	0.00	73.64
41 MH_C_16	2258.04	2266.56	8.53	2258.04	0.00	2266.56	0.00	0.00	80.05
42 MH_C_17	2263.33	2270.75	7.41	2263.33	0.00	2270.75	0.00	0.00	67.94
43 MH_C_18	2266.17	2272.70	6.53	2266.17	0.00	2272.70	0.00	0.00	57.40
44 MH_C_19	2267.70	2275.33	7.62	2267.70	0.00	2275.33	0.00	0.00	70.16
45 MH_C_20	2269.92	2278.68	8.76	2269.92	0.00	2278.68	0.00	0.00	82.88
46 MH_C_21	2278.89	2291.43	12.54	2278.89	0.00	2291.43	0.00	0.00	128.33
47 MH_C_22	2288.85	2299.83	10.98	2288.85	0.00	2299.83	0.00	0.00	109.51
48 MH_C_23	2294.00	2304.01	10.01	2295.22	1.22	2304.01	0.00	0.00	99.06
49 MH_C_24	2300.00	2315.05	15.05	2298.84	-1.16	2315.05	0.00	0.00	159.64
50 MH_C_25	2313.00	2321.73	8.73	2311.28	-1.72	2321.73	0.00	0.00	86.73
51 MH_C_26	2324.00	2332.31	8.31	2321.38	-2.62	2332.31	0.00	0.00	81.74
52 MH_C_27	2333.00	2341.94	8.94	2334.06	1.06	2341.94	0.00	0.00	89.22
53 MH_C_28	2339.50	2351.48	11.98	2339.98	0.48	2351.48	0.00	0.00	125.82
54 MH_C_29	2344.70	2356.32	11.62	2344.53	-0.17	2356.32	0.00	0.00	121.41
55 MH_C_30	2348.58	2360.35	11.77	2348.58	0.00	2360.35	0.00	0.00	123.25
56 MH_C_31	2355.40	2368.11	12.71	2355.40	0.00	2368.11	0.00	0.00	134.53
57 MH_C_32	2363.72	2377.05	13.33	2363.72	0.00	2377.05	0.00	0.00	141.92
58 MH_C_33	2373.00	2383.76	10.76	2375.00	2.00	2383.76	0.00	0.00	108.10
59 MH_C_34	2375.00	2391.69	16.69	2377.26	2.26	2391.69	0.00	0.00	179.29
60 MH_C_35	2379.00	2394.68	15.68	2379.93	0.93	2394.68	0.00	0.00	167.19
61 MH_C_36	2381.29	2387.82	6.53	2381.29	0.00	2387.82	0.00	0.00	57.40
62 MH_D_01	2231.80	2246.87	15.07	2231.80	0.00	2246.87	0.00	0.00	166.42
63 MH_D_02	2234.80	2242.73	7.93	2234.80	0.00	2242.73	0.00	0.00	80.72
64 MH_D_03	2244.39	2253.11	8.72	2244.39	0.00	2253.11	0.00	0.00	91.43
65 MH_D_04	2249.14	2260.70	11.56	2249.14	0.00	2260.70	0.00	0.00	125.50
66 MH_D_05	2279.27	2288.56	9.28	2279.27	0.00	2288.56	0.00	0.00	98.22
67 MH_D_06	2297.00	2304.31	7.31	2297.00	0.00	2304.31	0.00	0.00	74.49
68 MH_D_07	2302.20	2310.65	8.45	2302.20	0.00	2310.65	0.00	0.00	87.91
69 MH_D_08	2314.86	2321.70	6.84	2314.86	0.00	2321.70	0.00	0.00	68.92
70 MH_D_09	2321.90	2332.00	10.10	2321.90	0.00	2332.00	0.00	0.00	107.99
71 MH_D_10	2346.87	2355.24	8.37	2346.87	0.00	2355.24	0.00	0.00	92.45
72 MH_D_10_a	2341.69	2349.00	7.31	2341.69	0.00	2349.00	0.00	0.00	75.72
73 MH_D_11	2355.59	2363.23	7.64	2355.59	0.00	2363.23	0.00	0.00	82.52
74 MH_D_12	2376.07	2381.76	5.69	2376.07	0.00	2381.76	0.00	0.00	60.28
75 MH_E_01	2239.55	2253.77	14.22	2239.55	0.00	2253.77	0.00	0.00	161.42
76 MH_E_02	2245.00	2257.79	12.79	2241.15	-3.85	2257.79	0.00	0.00	145.54
77 MH_E_03	2251.66	2258.00	6.34	2251.66	0.00	2258.00	0.00	0.00	66.91
78 MH_E_04	2267.58	2274.49	6.92	2267.58	0.00	2274.49	0.00	0.00	73.82
79 MH_E_05	2278.88	2285.69	6.80	2278.88	0.00	2285.69	0.00	0.00	72.44
80 MH_F_01	2247.23	2253.70	6.47	2247.23	0.00	2253.70	0.00	0.00	68.39
81 MH_F_02	2282.53	2288.22	5.69	2282.53	0.00	2288.22	0.00	0.00	60.28
82 MH_G_01	2280.31	2290.47	10.16	2280.31	0.00	2290.47	0.00	0.00	112.71

Junction Input

SN Element ID	Invert Elevation	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
83 MH_G_02	2291.52	2300.34	8.82	2291.52	0.00	2300.34	0.00	0.00	96.58
84 MH_G_03	2298.82	2304.51	5.69	2298.82	0.00	2304.51	0.00	0.00	60.28
85 MH_H_01	2253.77	2259.94	6.17	2253.77	0.00	2259.94	0.00	0.00	64.85
86 MH_H_02	2256.32	2262.88	6.56	2256.32	0.00	2262.88	0.00	0.00	69.52
87 MH_H_03	2257.13	2265.18	8.05	2257.13	0.00	2265.18	0.00	0.00	87.43
88 MH_H_04	2261.36	2269.23	7.87	2261.36	0.00	2269.23	0.00	0.00	85.28
89 MH_H_05	2265.92	2275.82	9.90	2265.92	0.00	2275.82	0.00	0.00	109.60
90 MH_H_06	2269.98	2276.98	7.00	2269.98	0.00	2276.98	0.00	0.00	74.85
91 MH_H_07	2275.20	2283.58	8.38	2275.20	0.00	2283.58	0.00	0.00	91.38
92 MH_H_08	2284.15	2290.37	6.22	2284.15	0.00	2290.37	0.00	0.00	65.43
93 MH_H_09	2286.02	2293.79	7.77	2286.02	0.00	2293.79	0.00	0.00	84.04
94 MH_H_10	2293.52	2299.21	5.69	2293.52	0.00	2299.21	0.00	0.00	60.28
95 MH_I_01	2308.86	2314.55	5.69	2308.86	0.00	2314.55	0.00	0.00	60.28
96 MH_J_01	2345.25	2350.87	5.62	2345.25	0.00	2350.87	0.00	0.00	55.44
97 MH_J_02	2349.57	2358.24	8.67	2349.57	0.00	2358.24	0.00	0.00	92.04
98 MH_J_03	2359.48	2367.31	7.83	2359.48	0.00	2367.31	0.00	0.00	81.96
99 MH_J_04	2365.50	2375.56	10.06	0.00	-2365.50	0.00	-2375.56	0.00	108.72
100 MH_J_05	2380.95	2387.96	7.01	2380.95	0.00	2387.96	0.00	0.00	72.12
101 MH_J_06	2382.27	2387.96	5.69	2382.27	0.00	2387.96	0.00	0.00	60.28

Junction Results

SN Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
	(mgd)	(mgd)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-in)	(min)
1 ExMH-101	12.84	0.00	2118.59	2.50	0.00	14.41	2118.59	2.50	0 00:00	0 00:00	0.00	0.00
2 ExMH-101_1	12.84	0.00	2118.17	2.50	0.00	3.83	2118.17	2.50	0 00:00	0 00:00	0.00	0.00
3 ExMH-102	12.84	0.00	2118.97	2.50	0.00	10.03	2118.97	2.50	0 00:00	0 00:00	0.00	0.00
4 ExMH-103	13.60	0.00	2135.00	17.99	0.00	0.00	2135.00	17.99	0 00:00	0 00:01	1.17	61.00
5 ExMH-103.5	13.60	0.00	2120.55	1.08	0.00	3.45	2120.55	1.08	0 00:00	0 00:00	0.00	0.00
6 ExMH-104	13.60	0.08	2122.33	2.08	0.00	20.67	2122.33	2.08	0 00:00	0 00:00	0.00	0.00
7 ExMH-105	13.72	0.02	2162.00	21.84	0.00	0.00	2162.00	21.84	0 00:00	0 00:01	0.31	61.00
8 ExMH-106	13.70	0.01	2164.86	1.34	0.00	25.14	2164.86	1.34	0 00:00	0 00:00	0.00	0.00
9 ExMH-107	13.69	0.00	2171.57	1.51	0.00	30.43	2171.57	1.51	0 00:00	0 00:00	0.00	0.00
10 ExMH-108	13.69	0.03	2184.59	1.41	0.00	17.41	2184.59	1.41	0 00:00	0 00:00	0.00	0.00
11 ExMH-109	13.66	2.36	2191.08	1.40	0.00	15.92	2191.08	1.40	0 00:00	0 00:00	0.00	0.00
12 MH_A_01	11.30	0.00	2194.45	1.45	0.00	9.55	2194.45	1.45	0 00:00	0 00:00	0.00	0.00
13 MH_A_02	11.30	0.01	2197.45	1.45	0.00	9.44	2197.45	1.45	0 00:00	0 00:00	0.00	0.00
14 MH_A_03_B	11.29	0.04	2201.74	1.34	0.00	11.38	2201.74	1.34	0 00:00	0 00:00	0.00	0.00
15 MH_A_04	11.15	0.00	2209.28	1.28	0.00	8.74	2209.28	1.28	0 00:00	0 00:00	0.00	0.00
16 MH_A_05_C	11.15	0.00	2211.23	1.65	0.00	9.61	2211.23	1.65	0 00:00	0 00:00	0.00	0.00
17 MH_A_06	1.16	0.00	2214.54	0.54	0.00	9.94	2214.54	0.54	0 00:00	0 00:00	0.00	0.00
18 MH_A_07	1.16	0.00	2228.54	1.34	0.00	17.69	2228.54	1.34	0 00:00	0 00:00	0.00	0.00
19 MH_A_08_D_E	1.16	0.00	2229.89	0.89	0.00	22.20	2229.89	0.89	0 00:00	0 00:00	0.00	0.00
20 MH_B_01	0.10	0.02	2206.13	0.22	0.00	10.12	2206.13	0.22	0 00:00	0 00:00	0.00	0.00
21 MH_B_02	0.08	0.00	2215.67	0.18	0.00	23.11	2215.67	0.18	0 00:00	0 00:00	0.00	0.00
22 MH_B_03	0.08	0.04	2238.94	0.09	0.00	6.81	2238.94	0.09	0 00:00	0 00:00	0.00	0.00
23 MH_B_04	0.03	0.00	2253.11	0.11	0.00	7.89	2253.11	0.11	0 00:00	0 00:00	0.00	0.00
24 MH_B_05	0.03	0.00	2254.11	0.11	0.00	7.89	2254.11	0.11	0 00:00	0 00:00	0.00	0.00
25 MH_B_06	0.03	0.03	2258.08	0.08	0.00	7.92	2258.08	0.08	0 00:00	0 00:00	0.00	0.00
26 MH_C_01	9.99	0.00	2212.64	1.64	0.00	5.63	2212.64	1.64	0 00:00	0 00:00	0.00	0.00
27 MH_C_02	9.99	0.04	2214.19	1.57	0.00	6.90	2214.19	1.57	0 00:00	0 00:00	0.00	0.00
28 MH_C_03	9.95	0.00	2215.25	1.47	0.00	7.60	2215.25	1.47	0 00:00	0 00:00	0.00	0.00
29 MH_C_04	9.95	0.00	2217.88	1.57	0.00	8.14	2217.88	1.57	0 00:00	0 00:00	0.00	0.00
30 MH_C_05	9.95	0.03	2219.77	1.56	0.00	7.19	2219.77	1.56	0 00:00	0 00:00	0.00	0.00
31 MH_C_06	9.92	0.00	2221.57	1.47	0.00	6.35	2221.57	1.47	0 00:00	0 00:00	0.00	0.00
32 MH_C_07	9.92	0.00	2225.23	1.23	0.00	7.76	2225.23	1.23	0 00:00	0 00:00	0.00	0.00
33 MH_C_08	9.92	0.00	2228.43	1.36	0.00	6.13	2228.43	1.36	0 00:00	0 00:00	0.00	0.00
34 MH_C_09	9.92	0.04	2233.39	1.30	0.00	8.97	2233.39	1.30	0 00:00	0 00:00	0.00	0.00
35 MH_C_10	9.88	0.00	2241.00	1.27	0.00	7.02	2241.00	1.27	0 00:00	0 00:00	0.00	0.00
36 MH_C_11	9.88	0.03	2245.43	1.55	0.00	5.87	2245.43	1.55	0 00:00	0 00:00	0.00	0.00
37 MH_C_12	9.75	0.98	2247.01	1.44	0.00	6.05	2247.01	1.44	0 00:00	0 00:00	0.00	0.00
38 MH_C_13	8.77	0.03	2251.22	0.97	0.00	7.75	2251.22	0.97	0 00:00	0 00:00	0.00	0.00
39 MH_C_14	8.74	0.00	2256.38	1.07	0.00	6.75	2256.38	1.07	0 00:00	0 00:00	0.00	0.00
40 MH_C_15	8.74	0.00	2258.58	1.24	0.00	6.64	2258.58	1.24	0 00:00	0 00:00	0.00	0.00
41 MH_C_16	8.74	0.00	2259.28	1.24	0.00	7.28	2259.28	1.24	0 00:00	0 00:00	0.00	0.00
42 MH_C_17	8.74	0.00	2264.26	0.93	0.00	6.49	2264.26	0.93	0 00:00	0 00:00	0.00	0.00
43 MH_C_18	8.74	0.00	2267.41	1.24	0.00	5.29	2267.41	1.24	0 00:00	0 00:00	0.00	0.00
44 MH_C_19	8.74	0.00	2268.95	1.25	0.00	6.38	2268.95	1.25	0 00:00	0 00:00	0.00	0.00
45 MH_C_20	8.74	0.00	2271.04	1.12	0.00	7.64	2271.04	1.12	0 00:00	0 00:00	0.00	0.00
46 MH_C_21	8.74	0.05	2280.01	1.12	0.00	11.43	2280.01	1.12	0 00:00	0 00:00	0.00	0.00
47 MH_C_22	8.69	0.00	2290.04	1.19	0.00	9.79	2290.04	1.19	0 00:00	0 00:00	0.00	0.00
48 MH_C_23	8.69	0.03	2295.24	1.24	0.00	8.77	2295.24	1.24	0 00:00	0 00:00	0.00	0.00
49 MH_C_24	8.66	0.00	2301.24	1.24	0.00	13.82	2301.24	1.24	0 00:00	0 00:00	0.00	0.00
50 MH_C_25	8.66	0.00	2314.13	1.13	0.00	7.60	2314.13	1.13	0 00:00	0 00:00	0.00	0.00
51 MH_C_26	8.66	0.00	2325.13	1.13	0.00	7.18	2325.13	1.13	0 00:00	0 00:00	0.00	0.00
52 MH_C_27	8.66	0.01	2334.12	1.12	0.00	7.81	2334.12	1.12	0 00:00	0 00:00	0.00	0.00
53 MH_C_28	8.65	0.00	2340.62	1.12	0.00	10.86	2340.62	1.12	0 00:00	0 00:00	0.00	0.00
54 MH_C_29	8.65	0.01	2345.83	1.13	0.00	10.49	2345.83	1.13	0 00:00	0 00:00	0.00	0.00
55 MH_C_30	8.64	0.00	2349.70	1.12	0.00	10.64	2349.70	1.12	0 00:00	0 00:00	0.00	0.00
56 MH_C_31	8.64	0.00	2356.45	1.05	0.00	11.66	2356.45	1.05	0 00:00	0 00:00	0.00	0.00
57 MH_C_32	8.64	0.00	2364.77	1.05	0.00	12.28	2364.77	1.05	0 00:00	0 00:00	0.00	0.00
58 MH_C_33	8.64	0.16	2374.28	1.28	0.00	9.48	2374.28	1.28	0 00:00	0 00:00	0.00	0.00
59 MH_C_34	8.48	0.00	2376.28	1.28	0.00	15.41	2376.28	1.28	0 00:00	0 00:00	0.00	0.00
60 MH_C_35	8.48	0.00	2380.26	1.26	0.00	14.42	2380.26	1.26	0 00:00	0 00:00	0.00	0.00
61 MH_C_36	8.48	8.48	2382.48	1.19	0.00	5.35	2382.48	1.19	0 00:00	0 00:00	0.00	0.00
62 MH_D_01	0.71	0.04	2232.36	0.56	0.00	14.51	2232.36	0.56	0 00:00	0 00:00	0.00	0.00
63 MH_D_02	0.67	0.00	2235.33	0.53	0.00	7.40	2235.33	0.53	0 00:00	0 00:00	0.00	0.00
64 MH_D_03	0.67	0.00	2244.80	0.41	0.00	8.30	2244.80	0.41	0 00:00	0 00:00	0.00	0.00
65 MH_D_04	0.67	0.00	2249.52	0.38	0.00	11.18	2249.52	0.38	0 00:00	0 00:00	0.00	0.00
66 MH_D_05	0.67	0.05	2279.64	0.37	0.00	8.92	2279.64	0.37	0 00:00	0 00:00	0.00	0.00
67 MH_D_06	0.62	0.00	2297.39	0.39	0.00	6.91	2297.39	0.39	0 00:00	0 00:00	0.00	0.00
68 MH_D_07	0.62	0.00	2302.66	0.46	0.00	7.99	2302.66	0.46	0 00:00	0 00:00	0.00	0.00
69 MH_D_08	0.62	0.00	2315.27	0.41	0.00	6.44	2315.27	0.41	0 00:00	0 00:00	0.00	0.00
70 MH_D_09	0.62	0.00	2322.31	0.41	0.00	9.69	2322.31	0.41	0 00:00	0 00:00	0.00	0.00
71 MH_D_10	0.19	0.02	2347.07	0.20	0.00	8.18	2347.07	0.20	0 00:00	0 00:00	0.00	0.00
72 MH_D_10_a	0.62	0.00	2342.03	0.34	0.00	6.97	2342.03	0.34	0 00:00	0 00:00	0.00	0.00
73 MH_D_11	0.17	0.12	2355.79	0.20	0.00	7.44	2355.79	0.20	0 00:00	0 00:00	0.00	0.00
74 MH_D_12	0.06	0.06	2376.17	0.10	0.00	5.59	2376.17	0.10	0 00:00	0 00:00	0.00	0.00
75 MH_E_01	0.45	0.02	2239.91	0.36	0.00	13.86	2239.91	0.36	0 00:00	0 00:00	0.00	0.00
76 MH_E_02	0.35	0.05	2245.26	0.26	0.00	12.54	2245.26	0.26	0 00:00	0 00:00	0.00	0.00
77 MH_E_03	0.31	0.00	2251.93	0.27	0.00	6.07	2251.93	0.27	0 00:00	0 00:00	0.00	0.00
78 MH_E_04	0.31	0.00	2267.87	0.29	0.00	6.62	2267.87	0.29	0 00:00	0 00:00	0.00	0.00
79 MH_E_05	0.31	0.00	2279.32	0.44	0.00	6.36	2279.32	0.44	0 00:00	0 00:00	0.00	0.00
80 MH_F_01	0.07	0.04	2247.40	0.17	0.00	6.30	2247.40	0.17	0 00:00	0 00:00	0.00	0.00
81 MH_F_02	0.03	0.03	2282.60	0.07	0.00	5.62	2282.60	0.07	0 00:00	0 00:00	0.00	0.00

Junction Results

SN Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
	(mgd)	(mgd)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-in)	(min)
82 MH_G_01	0.31	0.08	2280.65	0.34	0.00	9.82	2280.65	0.34	0 00:00	0 00:00	0.00	0.00
83 MH_G_02	0.23	0.00	2291.83	0.31	0.00	8.50	2291.83	0.31	0 00:00	0 00:00	0.00	0.00
84 MH_G_03	0.23	0.23	2299.03	0.21	0.00	5.48	2299.03	0.21	0 00:00	0 00:00	0.00	0.00
85 MH_H_01	0.10	0.00	2254.00	0.23	0.00	5.93	2254.00	0.23	0 00:00	0 00:00	0.00	0.00
86 MH_H_02	0.10	0.00	2256.60	0.28	0.00	6.28	2256.60	0.28	0 00:00	0 00:00	0.00	0.00
87 MH_H_03	0.10	0.00	2257.36	0.23	0.00	7.81	2257.36	0.23	0 00:00	0 00:00	0.00	0.00
88 MH_H_04	0.10	0.00	2261.59	0.23	0.00	7.64	2261.59	0.23	0 00:00	0 00:00	0.00	0.00
89 MH_H_05	0.10	0.03	2266.13	0.21	0.00	9.68	2266.13	0.21	0 00:00	0 00:00	0.00	0.00
90 MH_H_06	0.07	0.00	2270.20	0.22	0.00	6.79	2270.20	0.22	0 00:00	0 00:00	0.00	0.00
91 MH_H_07	0.07	0.00	2275.40	0.20	0.00	8.18	2275.40	0.20	0 00:00	0 00:00	0.00	0.00
92 MH_H_08	0.07	0.02	2284.34	0.19	0.00	6.02	2284.34	0.19	0 00:00	0 00:00	0.00	0.00
93 MH_H_09	0.05	0.00	2286.20	0.18	0.00	7.59	2286.20	0.18	0 00:00	0 00:00	0.00	0.00
94 MH_H_10	0.05	0.05	2293.60	0.08	0.00	5.61	2293.60	0.08	0 00:00	0 00:00	0.00	0.00
95 MH_I_01	0.00	0.00	2308.86	0.00	0.00	5.69	2308.86	0.00	0 00:00	0 00:00	0.00	0.00
96 MH_J_01	0.43	0.00	2345.59	0.34	0.00	5.28	2345.59	0.34	0 00:00	0 00:00	0.00	0.00
97 MH_J_02	0.43	0.00	2349.84	0.27	0.00	8.40	2349.84	0.27	0 00:00	0 00:00	0.00	0.00
98 MH_J_03	0.43	0.00	2359.74	0.26	0.00	7.57	2359.74	0.26	0 00:00	0 00:00	0.00	0.00
99 MH_J_04	0.43	0.30	2365.76	0.26	0.00	9.80	2365.76	0.26	0 00:00	0 00:00	0.00	0.00
100 MH_J_05	0.13	0.00	2381.09	0.14	0.00	6.87	2381.09	0.14	0 00:00	0 00:00	0.00	0.00
101 MH_J_06	0.13	0.13	2382.41	0.14	0.00	5.55	2382.41	0.14	0 00:00	0 00:00	0.00	0.00

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Pipe Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	No. of Barrels
1	ExPipe-201_1	812.13	2115.67	0.00	2114.75	0.00	0.92	0.1100	CIRCULAR	30.000	30.000	0.0120	0.5000	0.5000	0.0000	1
2	ExPipe-201_2	416.43	2116.09	0.00	2115.67	0.00	0.42	0.1000	CIRCULAR	30.000	30.000	0.0120	0.5000	0.5000	0.0000	1
3	ExPipe-203	487.63	2116.47	0.00	2116.09	0.00	0.38	0.0800	CIRCULAR	30.000	30.000	0.0120	0.5000	0.5000	0.0000	1
4	ExPipe-205	571.27	2117.01	0.00	2116.47	0.00	0.54	0.0900	CIRCULAR	30.000	30.000	0.0120	0.5000	0.5000	0.0000	1
5	ExPipe-207	430.18	2119.47	0.00	2117.01	0.00	2.46	0.5700	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	2
6	ExPipe-208	183.20	2120.78	0.53	2119.47	0.00	1.31	0.7200	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	2
7	ExPipe-209	1319.19	2140.16	0.00	2120.58	0.33	19.58	1.4800	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
8	ExPipe-211	1322.46	2163.52	0.00	2140.36	0.20	23.16	1.7500	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
9	ExPipe-213	855.56	2169.96	-0.10	2163.72	0.20	6.24	0.7300	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	2
10	ExPipe-215	824.88	2183.08	-0.10	2170.16	0.10	12.92	1.5700	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
11	ExPipe-217	287.39	2189.58	-0.10	2183.28	0.10	6.30	2.1900	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
12	Line_A_01	617.85	2193.00	0.00	2189.68	0.00	3.32	0.5400	CIRCULAR	27.000	27.000	0.0120	0.5000	0.5000	0.0000	1
13	Line_A_02	454.29	2196.00	0.00	2193.00	0.00	3.00	0.6600	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	1
14	Line_A_03	543.92	2200.40	0.00	2196.00	0.00	4.40	0.8100	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	1
15	Line_A_04	590.62	2208.00	0.00	2200.40	0.00	7.60	1.2900	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
16	Line_A_05	151.10	2209.58	0.00	2208.00	0.00	1.58	1.0500	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	1
17	Line_A_06	560.71	2214.00	0.00	2210.33	0.75	3.67	0.6500	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
18	Line_A_07	468.99	2227.20	0.00	2214.00	0.00	13.20	2.8100	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
19	Line_A_08	154.50	2229.00	0.00	2228.00	0.80	1.00	0.6500	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
20	Line_B_01	267.69	2205.91	0.00	2200.40	0.00	5.51	2.0600	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
21	Line_B_02	601.35	2215.49	0.00	2206.01	0.10	9.47	1.5800	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
22	Line_B_03	310.25	2238.85	0.00	2215.59	0.10	23.27	7.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
23	Line_B_04	475.63	2253.00	0.00	2238.85	0.00	14.15	2.9700	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
24	Line_B_05	201.41	2254.00	0.00	2253.00	0.00	1.00	0.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
25	Line_B_06	155.22	2258.00	0.00	2254.00	0.00	4.00	2.5800	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
26	Line_C_01	114.20	2211.00	0.00	2210.02	0.44	0.98	0.8600	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	1
27	Line_C_02	290.68	2212.62	0.00	2211.16	0.16	1.45	0.5000	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	1
28	Line_C_03	212.32	2213.78	0.00	2212.72	0.10	1.06	0.5000	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	1
29	Line_C_04	161.95	2216.31	0.00	2213.88	0.10	2.43	1.5000	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	1
30	Line_C_05	360.04	2218.21	0.00	2216.41	0.10	1.80	0.5000	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	1
31	Line_C_06	358.47	2220.10	0.00	2218.31	0.10	1.79	0.5000	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	1
32	Line_C_07	341.95	2224.00	0.00	2220.10	0.00	3.90	1.1400	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
33	Line_C_08	177.91	2227.07	0.00	2224.00	0.00	3.07	1.7300	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
34	Line_C_09	458.54	2232.09	0.00	2227.17	0.10	4.92	1.0700	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
35	Line_C_10	727.83	2239.73	0.00	2232.12	0.03	7.61	1.0500	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
36	Line_C_11	270.17	2243.88	0.00	2239.83	0.10	4.05	1.5000	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
37	Line_C_12	316.70	2245.57	0.00	2243.98	0.10	1.58	0.5000	CIRCULAR	24.000	24.000	0.0120	0.5000	0.5000	0.0000	1
38	Line_C_13	254.28	2250.25	0.00	2245.67	0.10	4.59	1.8000	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
39	Line_C_14	287.84	2255.31	0.00	2250.25	0.00	5.05	1.7600	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
40	Line_C_15	159.01	2257.34	0.00	2255.31	0.00	2.03	1.2800	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
41	Line_C_16	81.69	2258.04	0.00	2257.33	-0.01	0.71	0.8700	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
42	Line_C_17	250.68	2263.33	0.00	2258.14	0.11	5.19	2.0700	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
43	Line_C_18	114.89	2266.17	0.00	2263.30	-0.03	2.87	2.5000	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
44	Line_C_19	178.72	2267.70	0.00	2266.11	-0.06	1.59	0.8900	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
45	Line_C_20	146.16	2269.92	0.00	2267.73	0.03	2.19	1.5000	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
46	Line_C_21	591.02	2278.89	0.00	2270.02	0.10	8.87	1.5000	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
47	Line_C_22	657.72	2288.85	0.00	2278.99	0.10	9.87	1.5000	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
48	Line_C_23	409.15	2294.00	0.00	2288.95	0.10	5.05	1.2300	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
49	Line_C_24	703.70	2300.00	0.00	2294.00	0.00	6.00	0.8500	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
50	Line_C_25	760.22	2313.00	0.00	2300.00	0.00	13.00	1.7100	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	1
51	Line_C_26	666.35	2324.00	0.00	2313.00	0.00	11.00	1.6500	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	1
52	Line_C_27	488.58	2333.00	0.00	2324.00	0.00	9.00	1.8400	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	1
53	Line_C_28	387.76	2339.50	0.00	2333.00	0.00	6.50	1.6800	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	1
54	Line_C_29	310.45	2344.70	0.00	2339.50	0.00	5.20	1.6800	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	1
55	Line_C_30	233.73	2348.58	0.00	2344.70	0.00	3.88	1.6600	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	1
56	Line_C_31	307.35	2355.40	0.00	2348.55	-0.02	6.85	2.2300	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	1
57	Line_C_32	419.27	2363.72	0.00	2355.40	0.00	8.32	1.9800	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	1
58	Line_C_33	372.50	2373.00	0.00	2363.65	-0.07	9.35	2.5100	CIRCULAR	18.000	18.000	0.0120	0.5000	0.5000	0.0000	1
59	Line_C_34	269.40	2375.00	0.00	2373.00	0.00	2.00	0.7400	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
60	Line_C_35	514.76	2379.00	0.00	2375.00	0.00	4.00	0.7800	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
61	Line_C_36	251.96	2381.29	0.00	2379.00	0.00	2.29	0.9100	CIRCULAR	21.000	21.000	0.0120	0.5000	0.5000	0.0000	1
62	Line_D_01	300.28	2231.80	0.00	2229.50	0.50	2.30	0.7700	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
63	Line_D_02	287.29	2234.80	0.00	2232.00	0.20	2.80	0.9700	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
64	Line_D_03	726.33	2244.39	0.00	2235.00	0.20	9.39	1.2900	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
65	Line_D_04	310.32	2249.14	0.00	2244.49	0.10	4.65	1.5000	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
66	Line_D_05	1132.35	2279.27	0.00	2249.24	0.10	30.03	2.6500	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
67	Line_D_06	705.11	2297.00	0.00	2279.37	0.10	17.63	2.5000	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
68	Line_D_07	287.61	2302.20	0.00	2297.10	0.10	5.10	1.7700	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
69	Line_D_08	502.42	2314.86	0.00	2302.16	-0.04	12.70	2.5300	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
70	Line_D_09	462.66	2321.90	0.00	2314.96	0.10	6.94	1.5000	CIRCULAR	12.000	1					

Pipe Input

SN Element ID	Length	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Pipe Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	No. of Barrels
83 Line_G_02	712.42	2291.52	0.00	2280.41	0.10	11.11	1.5600	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
84 Line_G_03	473.34	2298.82	0.00	2291.62	0.10	7.20	1.5200	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
85 Line_H_01	415.21	2253.77	0.00	2243.88	0.00	9.88	2.3800	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
86 Line_H_02	163.41	2256.32	0.00	2253.87	0.10	2.45	1.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
87 Line_H_03	142.13	2257.13	0.00	2256.42	0.10	0.71	0.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
88 Line_H_04	275.22	2261.36	0.00	2257.23	0.10	4.13	1.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
89 Line_H_05	297.39	2265.92	0.00	2261.46	0.10	4.46	1.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
90 Line_H_06	264.15	2269.98	0.00	2266.02	0.10	3.96	1.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
91 Line_H_07	341.38	2275.20	0.00	2270.08	0.10	5.12	1.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
92 Line_H_08	354.02	2284.15	0.00	2275.30	0.10	8.85	2.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
93 Line_H_09	117.70	2286.02	0.00	2284.25	0.10	1.77	1.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
94 Line_H_10	296.18	2293.52	0.00	2286.12	0.10	7.40	2.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
95 Line_J_01	413.71	2308.86	0.00	2302.66	0.46	6.21	1.5000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1
96 Line_J_01	771.27	2345.25	0.00	2341.69	0.00	3.56	0.4600	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
97 Line_J_02	358.09	2349.57	0.00	2345.25	0.00	4.32	1.2100	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
98 Line_J_03	403.71	2359.48	0.00	2349.57	0.00	9.91	2.4500	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
99 Line_J_04	432.41	2365.50	0.00	2359.48	0.00	6.02	1.3900	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
100 Line_J_05	386.80	2380.95	0.00	2365.50	0.00	15.45	3.9900	CIRCULAR	12.000	12.000	0.0120	0.5000	0.5000	0.0000	1
101 Line_J_06	47.09	2382.27	0.00	2380.95	0.00	1.32	2.8000	CIRCULAR	8.040	8.040	0.0120	0.5000	0.5000	0.0000	1

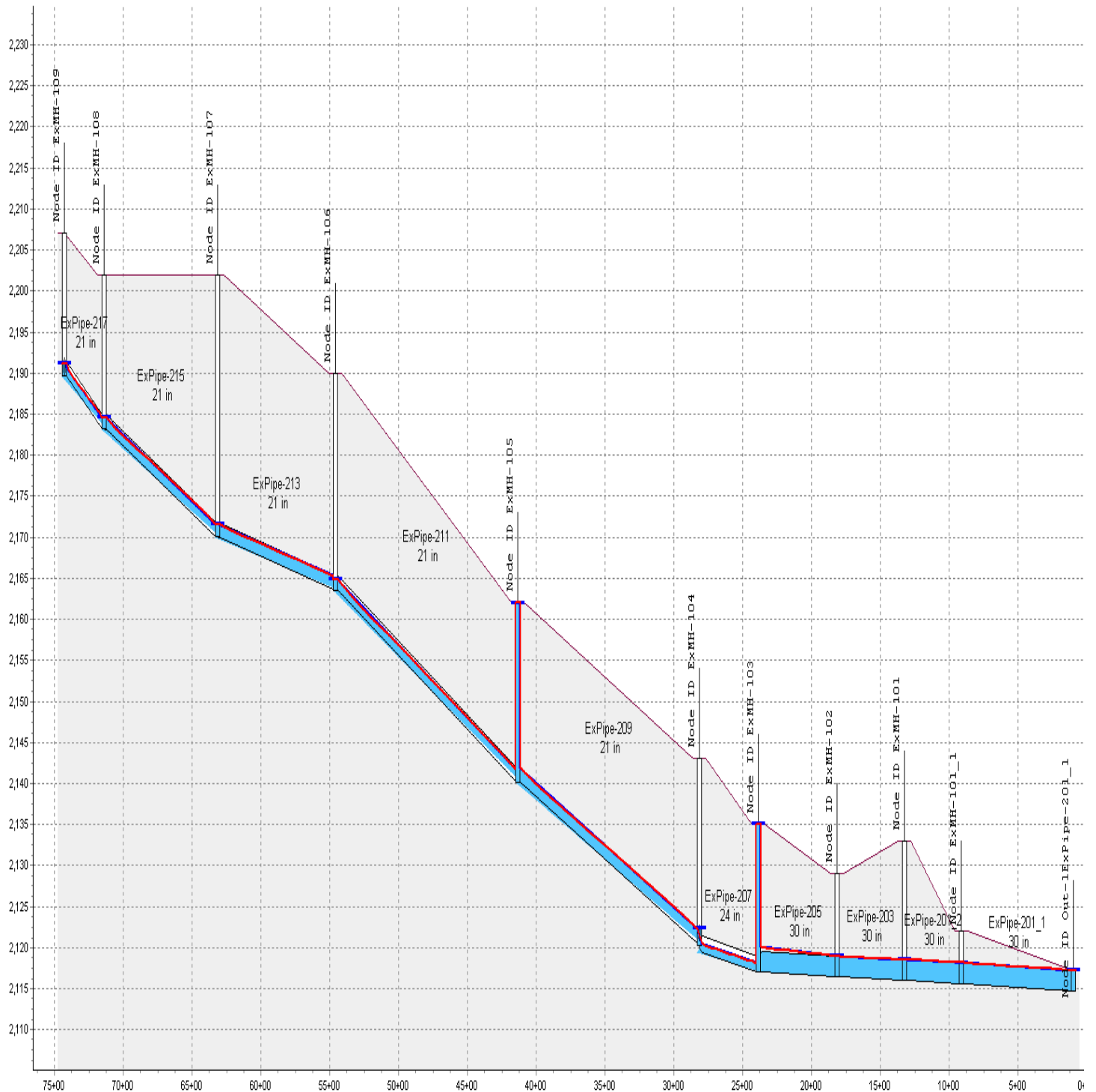
Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
		(mgd)	(days hh:mm)	(mgd)		(ft/sec)	(min)	(ft)		(min)		
1	ExPipe-201_1	12.84	0 00:00	12.84	1.00	4.05	3.34	2.50	1.00	61.00		SURCHARGED
2	ExPipe-201_2	12.84	0 00:00	12.84	1.00	4.05	1.71	2.50	1.00	61.00		SURCHARGED
3	ExPipe-203	12.84	0 00:00	12.84	1.00	4.05	2.01	2.50	1.00	61.00		SURCHARGED
4	ExPipe-205	12.84	0 00:00	12.84	1.00	4.05	2.35	2.50	1.00	61.00		SURCHARGED
5	ExPipe-207	13.60	0 00:00	23.96	0.57	6.08	1.18	1.08	0.54	0.00		Calculated
6	ExPipe-208	13.60	0 00:00	26.79	0.51	6.62	0.46	1.01	0.50	0.00		Calculated
7	ExPipe-209	13.52	0 00:00	13.52	1.00	8.69	2.53	1.75	1.00	61.00		SURCHARGED
8	ExPipe-211	13.70	0 00:00	14.68	0.93	10.72	2.06	1.34	0.77	0.00		Calculated
9	ExPipe-213	13.69	0 00:00	19.10	0.72	6.68	2.13	1.10	0.63	0.00		Calculated
10	ExPipe-215	13.69	0 00:00	13.94	0.98	10.22	1.35	1.41	0.80	0.00		Calculated
11	ExPipe-217	13.66	0 00:00	16.56	0.83	11.89	0.40	1.21	0.69	0.00		Calculated
12	Line_A_01	11.30	0 00:00	15.90	0.71	6.71	1.53	1.40	0.62	0.00		Calculated
13	Line_A_02	11.30	0 00:00	12.87	0.88	7.15	1.06	1.45	0.73	0.00		Calculated
14	Line_A_03	11.29	0 00:00	14.25	0.79	7.78	1.17	1.34	0.67	0.00		Calculated
15	Line_A_04	11.15	0 00:00	12.59	0.89	9.14	1.08	1.28	0.73	0.00		Calculated
16	Line_A_05	11.15	0 00:00	16.21	0.69	8.60	0.29	1.22	0.61	0.00		Calculated
17	Line_A_06	1.16	0 00:00	2.02	0.57	4.11	2.27	0.54	0.54	0.00		Calculated
18	Line_A_07	1.16	0 00:00	4.19	0.28	7.05	1.11	0.36	0.36	0.00		Calculated
19	Line_A_08	1.16	0 00:00	2.01	0.58	4.09	0.63	0.54	0.54	0.00		Calculated
20	Line_B_01	0.10	0 00:00	1.21	0.08	3.26	1.37	0.13	0.19	0.00		Calculated
21	Line_B_02	0.08	0 00:00	1.06	0.07	2.75	3.64	0.12	0.18	0.00		Calculated
22	Line_B_03	0.08	0 00:00	2.32	0.03	4.78	1.08	0.08	0.13	0.00		Calculated
23	Line_B_04	0.04	0 00:00	1.46	0.02	2.52	3.15	0.07	0.11	0.00		Calculated
24	Line_B_05	0.04	0 00:00	0.60	0.06	1.44	2.33	0.11	0.16	0.00		Calculated
25	Line_B_06	0.04	0 00:00	1.36	0.03	2.37	1.09	0.08	0.12	0.00		Calculated
26	Line_C_01	9.99	0 00:00	14.68	0.68	7.77	0.24	1.21	0.61	0.00		Calculated
27	Line_C_02	9.99	0 00:00	11.20	0.89	6.23	0.78	1.47	0.74	0.00		Calculated
28	Line_C_03	9.95	0 00:00	11.20	0.89	6.23	0.57	1.47	0.73	0.00		Calculated
29	Line_C_04	9.95	0 00:00	19.40	0.51	9.61	0.28	1.02	0.51	0.00		Calculated
30	Line_C_05	9.95	0 00:00	11.20	0.89	6.23	0.96	1.47	0.73	0.00		Calculated
31	Line_C_06	9.92	0 00:00	11.20	0.89	6.23	0.96	1.46	0.73	0.00		Calculated
32	Line_C_07	9.92	0 00:00	11.85	0.84	8.53	0.67	1.23	0.70	0.00		Calculated
33	Line_C_08	9.92	0 00:00	14.58	0.68	10.08	0.29	1.06	0.61	0.00		Calculated
34	Line_C_09	9.92	0 00:00	11.49	0.86	8.31	0.92	1.25	0.72	0.00		Calculated
35	Line_C_10	9.88	0 00:00	11.34	0.87	8.21	1.48	1.26	0.72	0.00		Calculated
36	Line_C_11	9.88	0 00:00	13.59	0.73	9.53	0.47	1.11	0.63	0.00		Calculated
37	Line_C_12	9.75	0 00:00	11.20	0.87	6.21	0.85	1.44	0.72	0.00		Calculated
38	Line_C_13	8.77	0 00:00	14.90	0.59	9.97	0.43	0.97	0.55	0.00		Calculated
39	Line_C_14	8.74	0 00:00	14.70	0.59	9.86	0.49	0.97	0.56	0.00		Calculated
40	Line_C_15	8.74	0 00:00	12.53	0.70	8.71	0.30	1.08	0.62	0.00		Calculated
41	Line_C_16	8.74	0 00:00	10.26	0.85	7.41	0.18	1.24	0.71	0.00		Calculated
42	Line_C_17	8.74	0 00:00	15.97	0.55	10.50	0.40	0.92	0.53	0.00		Calculated
43	Line_C_18	8.74	0 00:00	17.44	0.50	11.22	0.17	0.88	0.50	0.00		Calculated
44	Line_C_19	8.74	0 00:00	10.27	0.85	7.42	0.40	1.24	0.71	0.00		Calculated
45	Line_C_20	8.74	0 00:00	13.59	0.64	9.28	0.26	1.02	0.58	0.00		Calculated
46	Line_C_21	8.74	0 00:00	13.59	0.64	9.28	1.06	1.02	0.58	0.00		Calculated
47	Line_C_22	8.69	0 00:00	13.59	0.64	9.26	1.18	1.02	0.58	0.00		Calculated
48	Line_C_23	8.69	0 00:00	12.32	0.71	8.59	0.79	1.08	0.62	0.00		Calculated
49	Line_C_24	8.67	0 00:00	10.24	0.85	7.39	1.59	1.24	0.71	0.00		Calculated
50	Line_C_25	8.67	0 00:00	9.62	0.90	9.52	1.33	1.11	0.74	0.00		Calculated
51	Line_C_26	8.67	0 00:00	9.45	0.92	9.38	1.18	1.13	0.75	0.00		Calculated
52	Line_C_27	8.67	0 00:00	9.98	0.87	9.83	0.83	1.08	0.72	0.00		Calculated
53	Line_C_28	8.65	0 00:00	9.52	0.91	9.44	0.68	1.12	0.75	0.00		Calculated
54	Line_C_29	8.65	0 00:00	9.52	0.91	9.44	0.55	1.12	0.75	0.00		Calculated
55	Line_C_30	8.64	0 00:00	9.47	0.91	9.40	0.41	1.13	0.75	0.00		Calculated
56	Line_C_31	8.64	0 00:00	10.96	0.79	10.63	0.48	1.00	0.67	0.00		Calculated
57	Line_C_32	8.64	0 00:00	10.36	0.83	10.15	0.69	1.05	0.70	0.00		Calculated
58	Line_C_33	8.64	0 00:00	11.61	0.74	11.14	0.56	0.96	0.64	0.00		Calculated
59	Line_C_34	8.48	0 00:00	9.56	0.89	6.94	0.65	1.28	0.73	0.00		Calculated
60	Line_C_35	8.48	0 00:00	9.78	0.87	7.08	1.21	1.26	0.72	0.00		Calculated
61	Line_C_36	8.48	0 00:00	10.58	0.80	7.56	0.56	1.19	0.68	0.00		Calculated
62	Line_D_01	0.71	0 00:00	2.18	0.33	3.84	1.30	0.39	0.39	0.00		Calculated
63	Line_D_02	0.67	0 00:00	2.46	0.27	4.13	1.16	0.36	0.36	0.00		Calculated
64	Line_D_03	0.67	0 00:00	2.84	0.24	4.56	2.65	0.33	0.33	0.00		Calculated
65	Line_D_04	0.67	0 00:00	3.06	0.22	4.82	1.07	0.32	0.32	0.00		Calculated
66	Line_D_05	0.67	0 00:00	4.06	0.16	5.91	3.19	0.27	0.27	0.00		Calculated
67	Line_D_06	0.62	0 00:00	3.94	0.16	5.67	2.07	0.27	0.27	0.00		Calculated
68	Line_D_07	0.62	0 00:00	3.32	0.19	5.01	0.96	0.29	0.29	0.00		Calculated
69	Line_D_08	0.62	0 00:00	3.96	0.16	5.69	1.47	0.27	0.27	0.00		Calculated
70	Line_D_09	0.62	0 00:00	3.06	0.20	4.72	1.63	0.31	0.31	0.00		Calculated
71	Line_D_10	0.62	0 00:00	2.91	0.21	4.57	5.27	0.31	0.31	0.00		Calculated
72	Line_D_10_A	0.19	0 00:00	1.06	0.18	3.55	1.56	0.19	0.29	0.00		Calculated
73	Line_D_11	0.17	0 00:00	1.20	0.15	3.79	1.91	0.17	0.26	0.00		Calculated
74	Line_D_12	0.06	0 00:00	1.16	0.05	2.66	6.75	0.10	0.15	0.00		Calculated
75	Line_E_01	0.45	0 00:00	2.15	0.21	7.53	0.34	0.21	0.31	0.00		Calculated
76	Line_E_02	0.35	0 00:00	1.13	0.31	4.42	1.13	0.26	0.38	0.00		Calculated
77	Line_E_03	0.31	0 00:00	1.44	0.21	5.06	0.76	0.21	0.31	0.00		Calculated
78	Line_E_04	0.31	0 00:00	1.99	0.15	6.39	0.75	0.18	0.27	0.00		Calculated
79	Line_E_05	0.31	0 00:00	1.58	0.19	5.43	0.98	0.20	0.30	0.00		Calculated
80	Line_F_01	0.07	0 00:00	2.00	0.03	4.17	0.55	0.08	0.13	0.00		Calculated
81	Line_F_02	0.03	0 00:00	1.34	0.02	2.27	10.34	0.07	0.10	0.00		Calculated

Pipe Results

SN Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
	(mgd)	(days hh:mm)	(mgd)		(ft/sec)	(min)	(ft)		(min)		
82 Line_G_01	0.31	0 00:00	0.60	0.51	2.67	1.66	0.34	0.51	0.00		Calculated
83 Line_G_02	0.23	0 00:00	1.06	0.21	3.72	3.19	0.21	0.31	0.00		Calculated
84 Line_G_03	0.23	0 00:00	1.04	0.22	3.69	2.14	0.21	0.32	0.00		Calculated
85 Line_H_01	0.10	0 00:00	1.31	0.07	3.39	2.04	0.12	0.18	0.00		Calculated
86 Line_H_02	0.10	0 00:00	1.04	0.09	2.88	0.95	0.14	0.21	0.00		Calculated
87 Line_H_03	0.10	0 00:00	0.60	0.16	1.95	1.21	0.18	0.27	0.00		Calculated
88 Line_H_04	0.10	0 00:00	1.04	0.09	2.88	1.59	0.14	0.21	0.00		Calculated
89 Line_H_05	0.10	0 00:00	1.04	0.09	2.88	1.72	0.14	0.21	0.00		Calculated
90 Line_H_06	0.07	0 00:00	1.04	0.07	2.58	1.71	0.12	0.18	0.00		Calculated
91 Line_H_07	0.07	0 00:00	1.04	0.07	2.58	2.21	0.12	0.18	0.00		Calculated
92 Line_H_08	0.07	0 00:00	1.34	0.05	3.13	1.89	0.10	0.15	0.00		Calculated
93 Line_H_09	0.05	0 00:00	1.04	0.04	2.31	0.85	0.09	0.14	0.00		Calculated
94 Line_H_10	0.05	0 00:00	1.34	0.03	2.76	1.79	0.08	0.13	0.00		Calculated
95 Line_I_01	0.00	0 00:00	1.04	0.00	0.00		0.00	0.00	0.00		Calculated
96 Line_J_01	0.43	0 00:00	1.69	0.25	2.79	4.61	0.34	0.34	0.00		Calculated
97 Line_J_02	0.43	0 00:00	2.74	0.16	3.93	1.52	0.27	0.27	0.00		Calculated
98 Line_J_03	0.43	0 00:00	3.91	0.11	5.06	1.33	0.22	0.22	0.00		Calculated
99 Line_J_04	0.43	0 00:00	2.94	0.15	4.14	1.74	0.26	0.26	0.00		Calculated
100 Line_J_05	0.13	0 00:00	4.99	0.03	4.20	1.53	0.11	0.11	0.00		Calculated
101 Line_J_06	0.13	0 00:00	1.42	0.09	3.92	0.20	0.14	0.20	0.00		Calculated

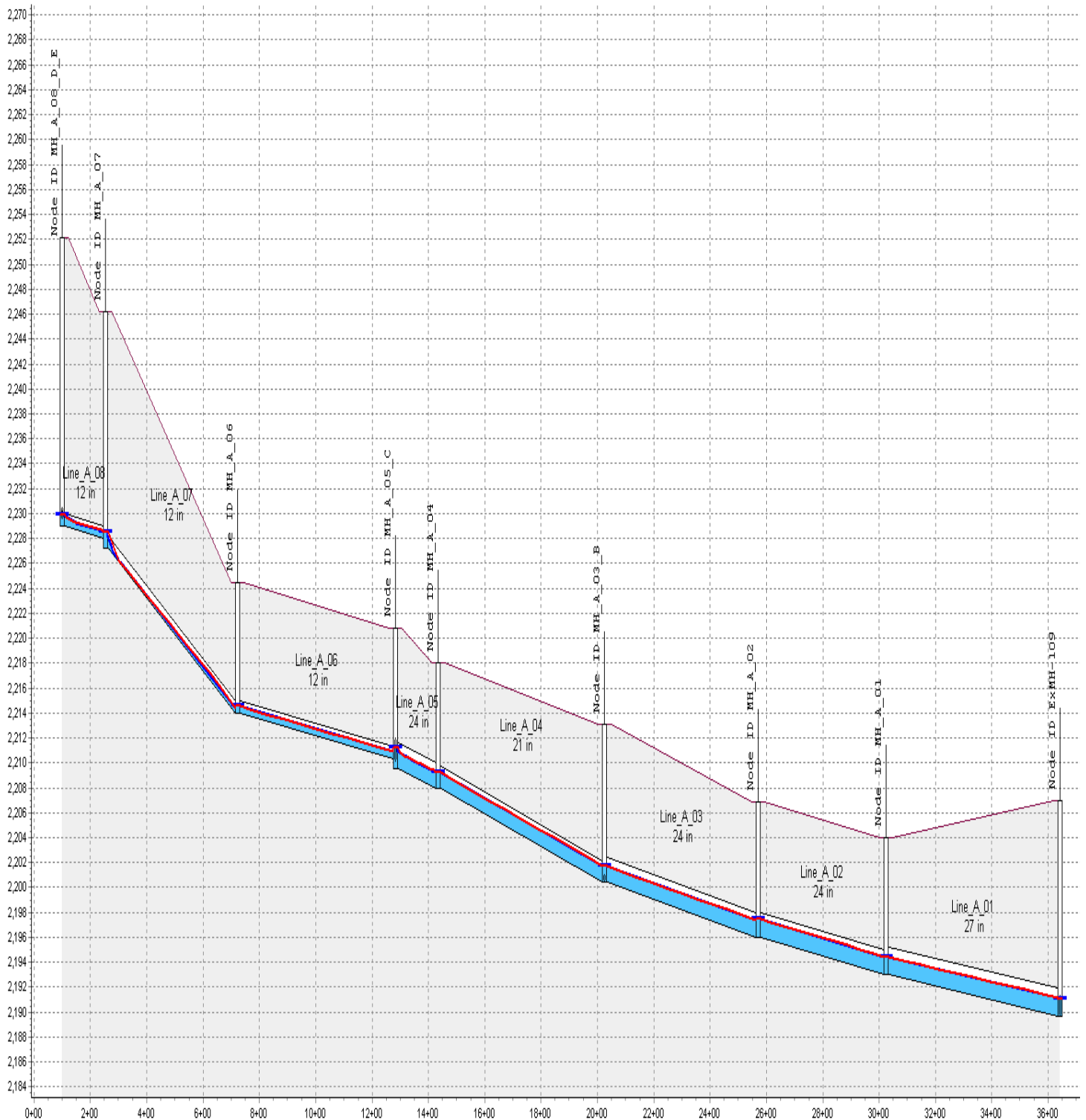
Existing Line



Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Min. Pipe Cover (inches)	Peak Inflow (mgd)	Maximum HGL Depth Attained (ft)
ExMH-101	2116	2133	16.91	173	12.84	2.50
ExMH-101_1	2116	2122	6.33	46	12.84	2.50
ExMH-102	2116	2129	12.53	120	12.84	2.50
ExMH-103	2117	2135	17.99	186	13.60	17.99
ExMH-103.5	2119	2124	4.53	30	13.60	1.08
ExMH-104	2120	2143	22.75	243	13.60	2.08
ExMH-105	2140	2162	21.84	239	13.72	21.84
ExMH-106	2164	2190	26.48	294	13.70	1.34
ExMH-107	2170	2202	31.94	361	13.69	1.51
ExMH-108	2183	2202	18.82	204	13.69	1.41
ExMH-109	2190	2207	17.32	181	13.66	1.40

Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow (mgd)	Max Flow Velocity (ft/sec)	Design Flow Capacity (mgd)	Max Flow Depth / Total Depth Ratio	Max Flow Depth (ft)
ExPipe-201_1	ExMH-101_1	Out-1ExPipe-201_1	812	2116	2115	0.11	30	0.012	0.50	0.50	12.84	4.05	12.84	1.00	2.50
ExPipe-201_2	ExMH-101	ExMH-101_1	416	2116	2116	0.10	30	0.012	0.50	0.50	12.84	4.05	12.84	1.00	2.50
ExPipe-203	ExMH-102	ExMH-101	488	2116	2116	0.08	30	0.012	0.50	0.50	12.84	4.05	12.84	1.00	2.50
ExPipe-205	ExMH-103	ExMH-102	571	2117	2116	0.09	30	0.012	0.50	0.50	12.84	4.05	12.84	1.00	2.50
ExPipe-207	ExMH-103.5	ExMH-103	430	2119	2117	0.57	24	0.012	0.50	0.50	13.60	6.08	23.96	0.54	1.08
ExPipe-208	ExMH-104	ExMH-103.5	183	2121	2119	0.72	24	0.012	0.50	0.50	13.60	6.62	26.79	0.50	1.01
ExPipe-209	ExMH-105	ExMH-104	1319	2140	2121	1.48	21	0.012	0.50	0.50	13.52	8.69	13.52	1.00	1.75
ExPipe-211	ExMH-106	ExMH-105	1322	2164	2140	1.75	21	0.012	0.50	0.50	13.70	10.72	14.68	0.77	1.34
ExPipe-213	ExMH-107	ExMH-106	856	2170	2164	0.73	21	0.012	0.50	0.50	13.69	6.68	19.10	0.63	1.10
ExPipe-215	ExMH-108	ExMH-107	825	2183	2170	1.57	21	0.012	0.50	0.50	13.69	10.22	13.94	0.80	1.41
ExPipe-217	ExMH-109	ExMH-108	287	2190	2183	2.19	21	0.012	0.50	0.50	13.66	11.89	16.56	0.69	1.21

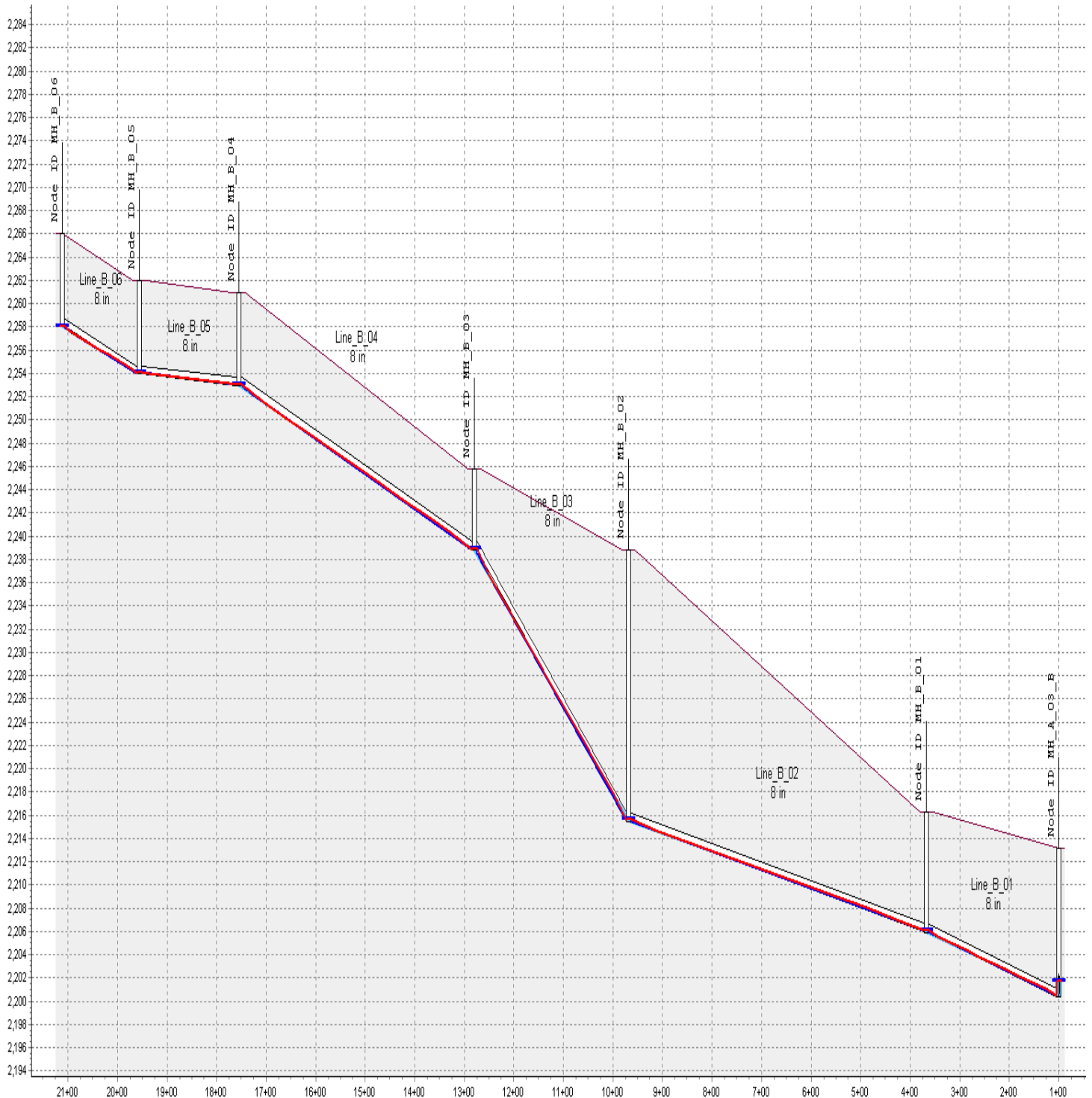
Line A



Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Min. Pipe Cover (inches)	Peak Inflow (mgd)	Maximum HGL Depth Attained (ft)
MH_A_01	2193	2204	11.00	105	11.30	1.45
MH_A_02	2196	2207	10.89	107	11.30	1.45
MH_A_03_B	2200	2213	12.72	129	11.29	1.34
MH_A_04	2208	2218	10.02	96	11.15	1.28
MH_A_05_C	2210	2221	11.26	106	11.15	1.65
MH_A_06	2214	2224	10.49	114	1.16	0.54
MH_A_07	2227	2246	19.04	207	1.16	1.34
MH_A_08_D_E	2229	2252	23.09	259	1.16	0.89

Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow (mgd)	Max Flow Velocity (ft/sec)	Design Flow Capacity (mgd)	Max Flow Depth / Total Depth Ratio	Max Flow Depth (ft)
Line_A_01	MH_A_01	ExMH-109	618	2193	2190	0.54	27	0.012	0.50	0.50	11.30	6.71	15.90	0.62	1.40
Line_A_02	MH_A_02	MH_A_01	454	2196	2193	0.66	24	0.012	0.50	0.50	11.30	7.15	12.87	0.73	1.45
Line_A_03	MH_A_03_B	MH_A_02	544	2200	2196	0.81	24	0.012	0.50	0.50	11.29	7.78	14.25	0.67	1.34
Line_A_04	MH_A_04	MH_A_03_B	591	2208	2200	1.29	21	0.012	0.50	0.50	11.15	9.14	12.59	0.73	1.28
Line_A_05	MH_A_05_C	MH_A_04	151	2210	2208	1.05	24	0.012	0.50	0.50	11.15	8.60	16.21	0.61	1.22
Line_A_06	MH_A_06	MH_A_05_C	561	2214	2210	0.65	12	0.012	0.50	0.50	1.16	4.11	2.02	0.54	0.54
Line_A_07	MH_A_07	MH_A_06	469	2227	2214	2.81	12	0.012	0.50	0.50	1.16	7.05	4.19	0.36	0.36
Line_A_08	MH_A_08_D_E	MH_A_07	155	2229	2228	0.65	12	0.012	0.50	0.50	1.16	4.09	2.01	0.54	0.54

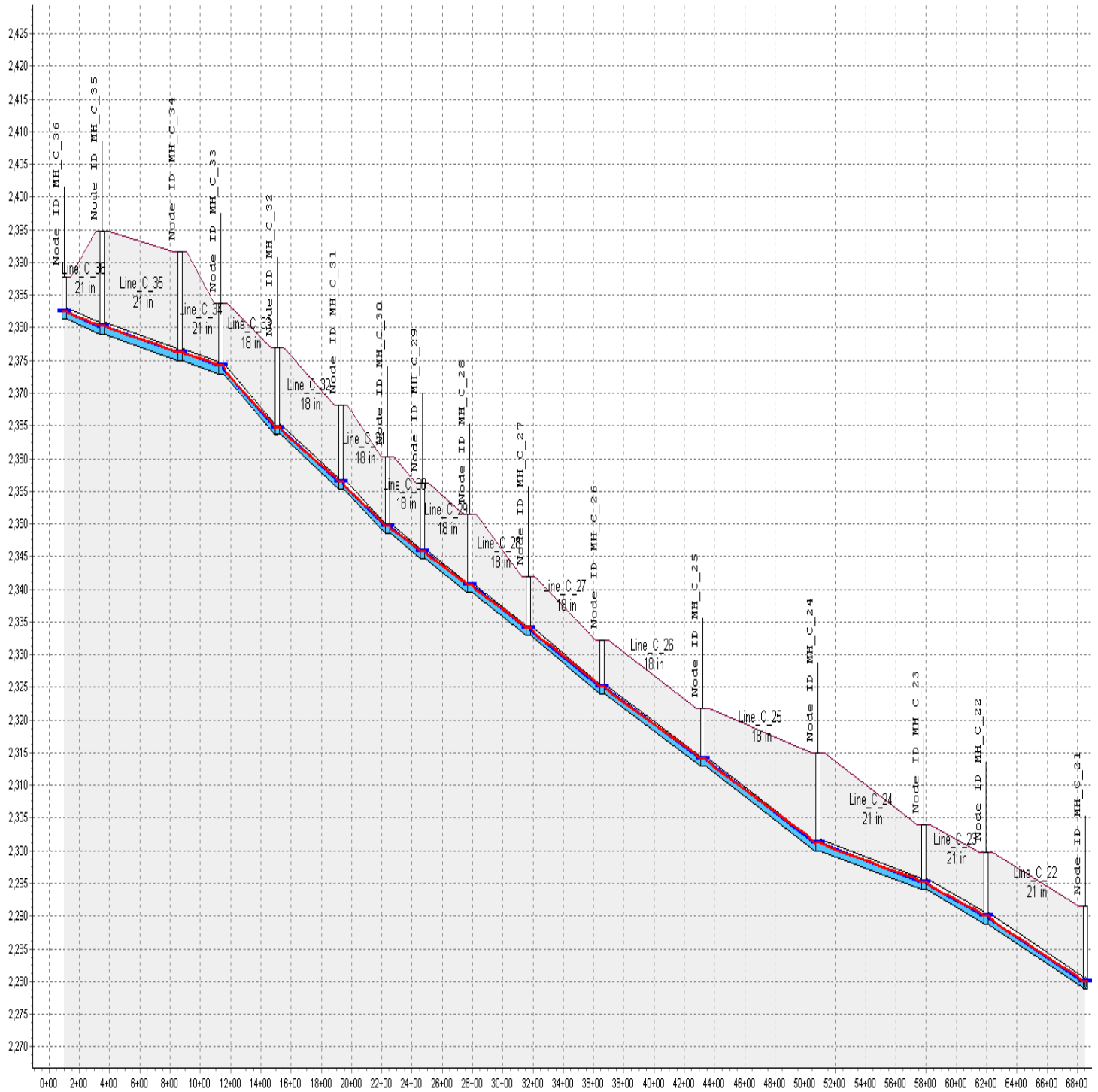
Line B



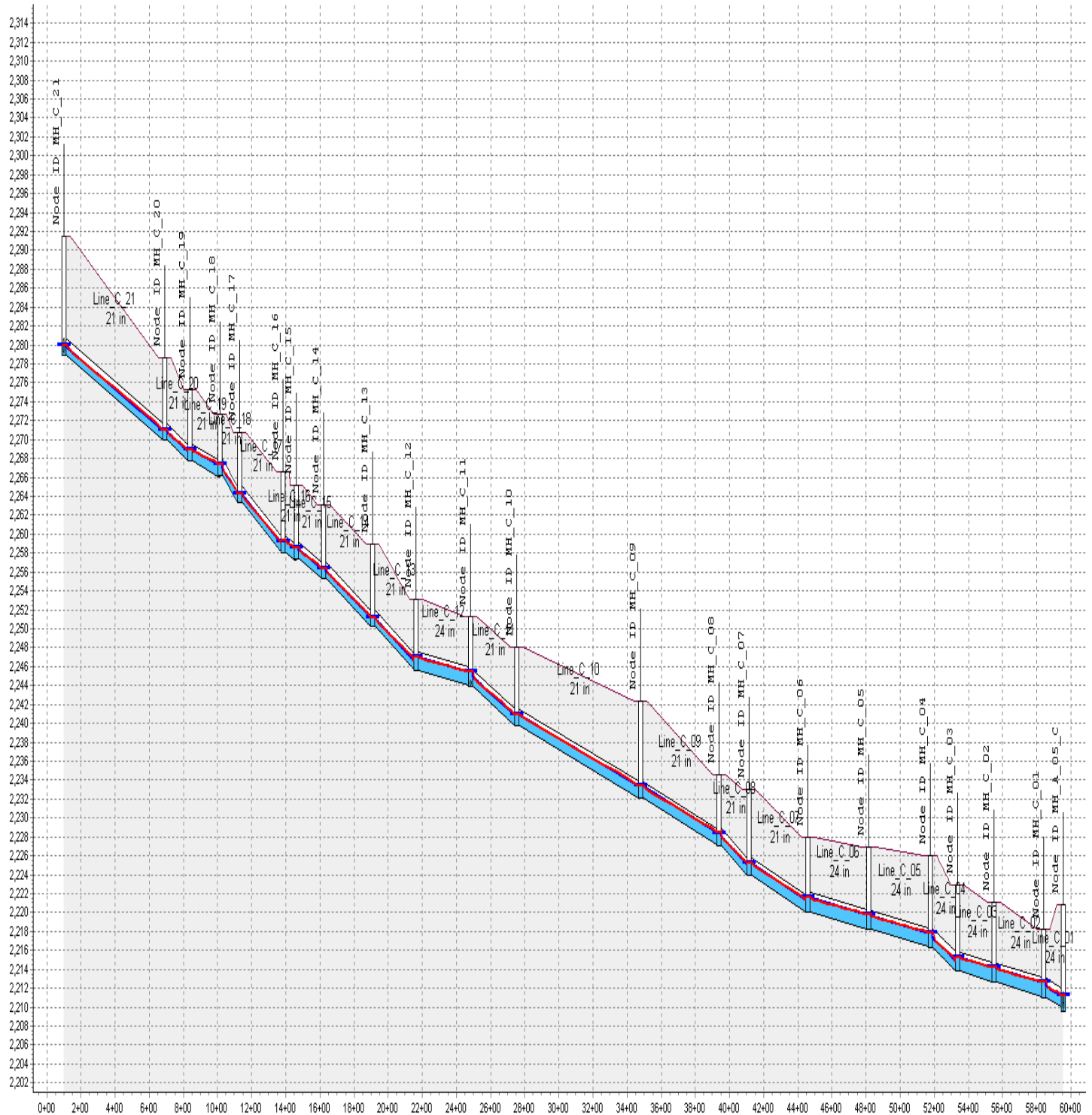
Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Min. Pipe Cover (inches)	Peak Inflow (mgd)	Maximum HGL Depth Attained (ft)
MH_B_01	2206	2216	10.34	115	0.10	0.22
MH_B_02	2215	2239	23.29	270	0.08	0.18
MH_B_03	2239	2246	6.90	75	0.08	0.09
MH_B_04	2253	2261	8.00	88	0.03	0.11
MH_B_05	2254	2262	8.00	88	0.03	0.11
MH_B_06	2258	2266	8.00	88	0.03	0.08

Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow (mgd)	Max Flow Velocity (ft/sec)	Design Flow Capacity (mgd)	Max Flow Depth / Total Depth Ratio	Max Flow Depth (ft)
Line_B_01	MH_B_01	MH_A_03_B	268	2206	2200	2.06	8	0.012	0.50	0.50	0.10	3.26	1.21	0.19	0.13
Line_B_02	MH_B_02	MH_B_01	601	2215	2206	1.58	8	0.012	0.50	0.50	0.08	2.75	1.06	0.18	0.12
Line_B_03	MH_B_03	MH_B_02	310	2239	2216	7.50	8	0.012	0.50	0.50	0.08	4.78	2.32	0.13	0.08
Line_B_04	MH_B_04	MH_B_03	476	2253	2239	2.97	8	0.012	0.50	0.50	0.04	2.52	1.46	0.11	0.07
Line_B_05	MH_B_05	MH_B_04	201	2254	2253	0.50	8	0.012	0.50	0.50	0.04	1.44	0.60	0.16	0.11
Line_B_06	MH_B_06	MH_B_05	155	2258	2254	2.58	8	0.012	0.50	0.50	0.04	2.37	1.36	0.12	0.08

Line C-Upper

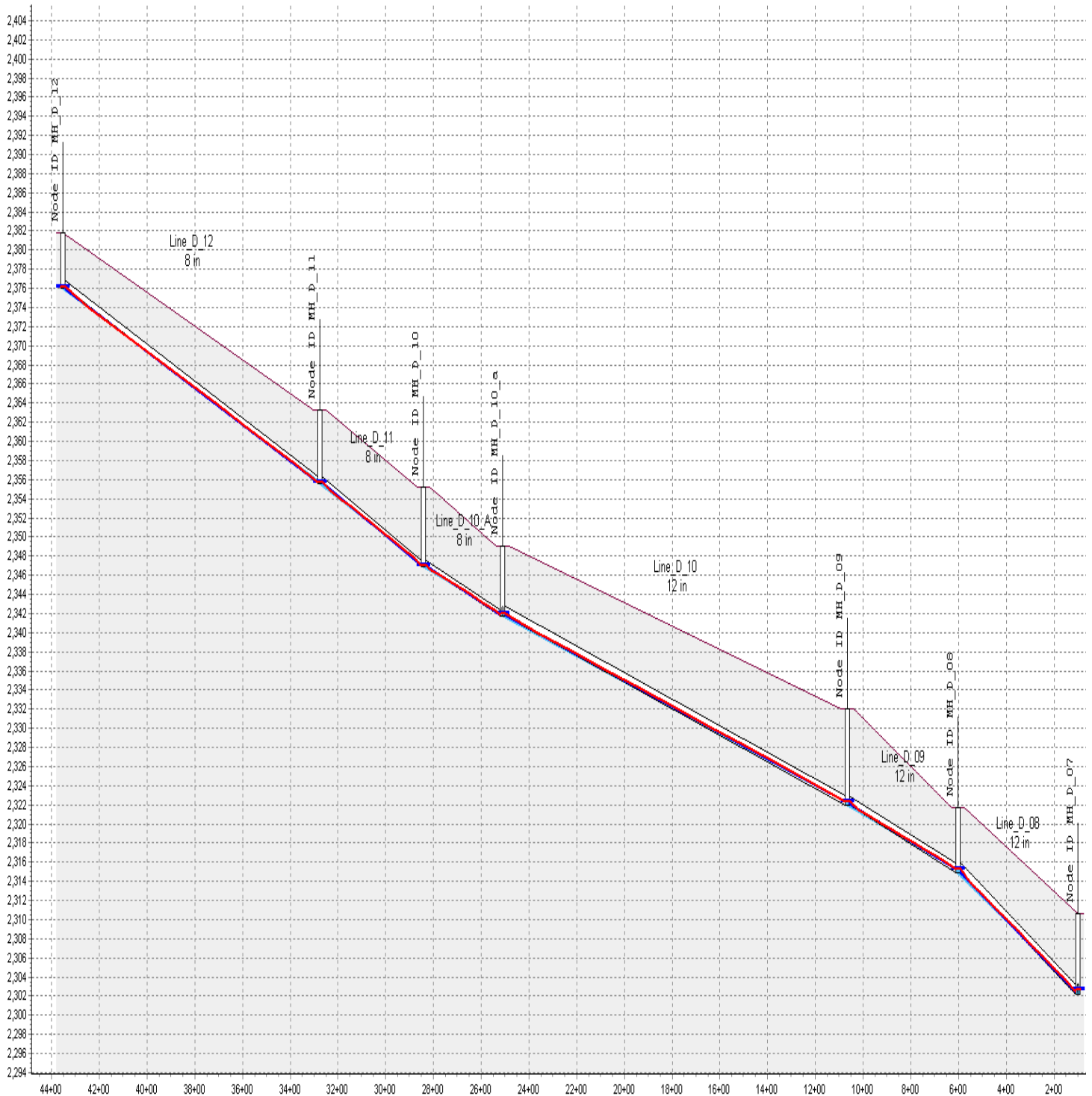


Line C-Lower

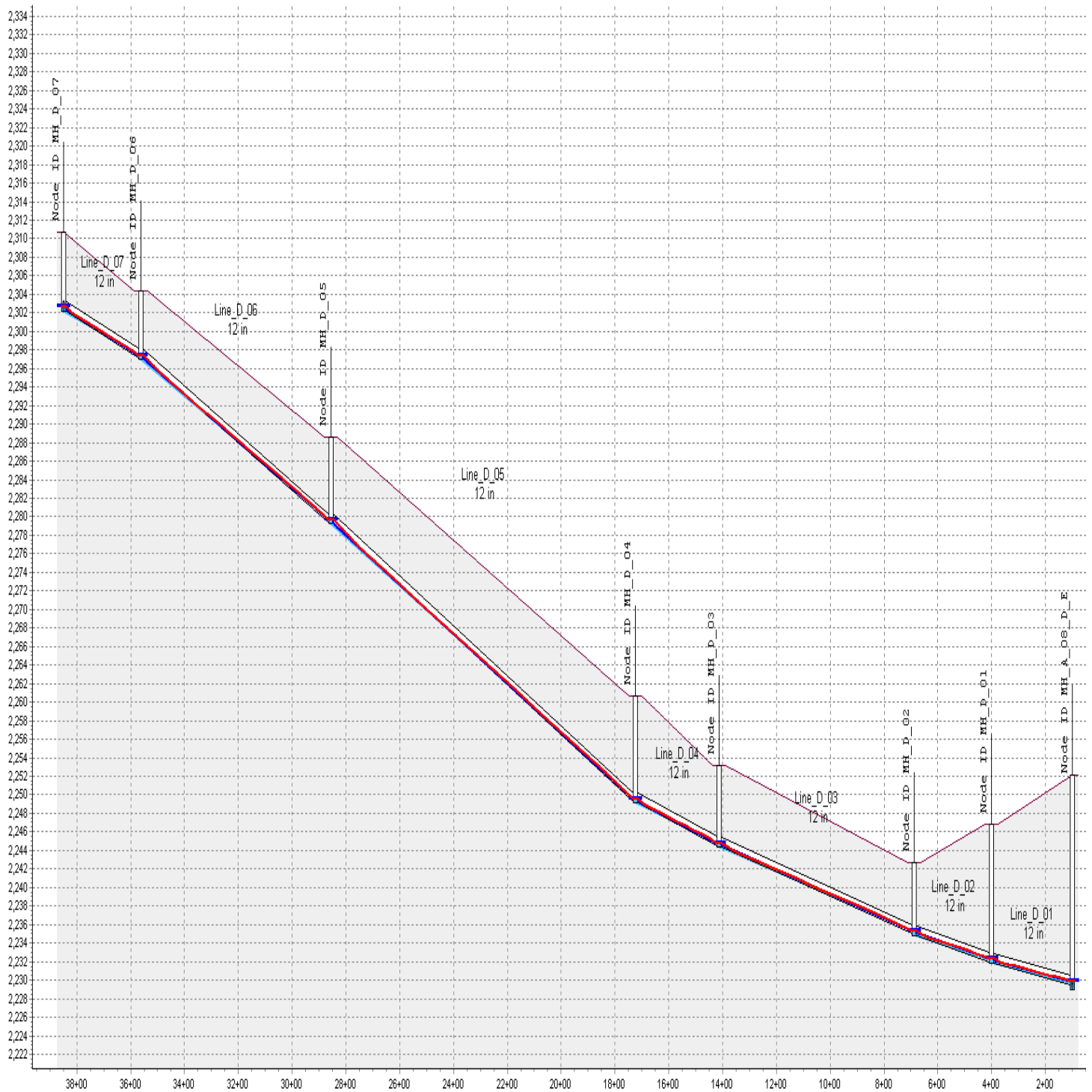


Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Min. Pipe Cover	Peak Inflow	Maximum HGL Depth Attained
	(ft)	(ft)	(ft)	(inches)	(mgd)	(ft)
MH_C_01	2211	2218	7.27	61	9.99	1.64
MH_C_02	2213	2221	8.47	76	9.99	1.57
MH_C_03	2214	2223	9.07	84	9.95	1.47
MH_C_04	2216	2226	9.70	91	9.95	1.57
MH_C_05	2218	2227	8.76	80	9.95	1.56
MH_C_06	2220	2228	7.81	70	9.92	1.47
MH_C_07	2224	2233	8.99	87	9.92	1.23
MH_C_08	2227	2235	7.48	68	9.92	1.36
MH_C_09	2232	2242	10.26	102	9.92	1.30
MH_C_10	2240	2248	8.28	77	9.88	1.27
MH_C_11	2244	2251	7.41	64	9.88	1.55
MH_C_12	2246	2253	7.49	66	9.75	1.44
MH_C_13	2250	2259	8.72	84	8.77	0.97
MH_C_14	2255	2263	7.83	73	8.74	1.07
MH_C_15	2257	2265	7.89	74	8.74	1.24
MH_C_16	2258	2267	8.53	80	8.74	1.24
MH_C_17	2263	2271	7.41	68	8.74	0.93
MH_C_18	2266	2273	6.53	57	8.74	1.24
MH_C_19	2268	2275	7.62	70	8.74	1.25
MH_C_20	2270	2279	8.76	83	8.74	1.12
MH_C_21	2279	2291	12.54	128	8.74	1.12
MH_C_22	2289	2300	10.98	110	8.69	1.19
MH_C_23	2294	2304	10.01	99	8.69	1.24
MH_C_24	2300	2315	15.05	160	8.66	1.24
MH_C_25	2313	2322	8.73	87	8.66	1.13
MH_C_26	2324	2332	8.31	82	8.66	1.13
MH_C_27	2333	2342	8.94	89	8.66	1.12
MH_C_28	2340	2351	11.98	126	8.65	1.12
MH_C_29	2345	2356	11.62	121	8.65	1.13
MH_C_30	2349	2360	11.77	123	8.64	1.12
MH_C_31	2355	2368	12.71	135	8.64	1.05
MH_C_32	2364	2377	13.33	142	8.64	1.05
MH_C_33	2373	2384	10.76	108	8.64	1.28
MH_C_34	2375	2392	16.69	179	8.48	1.28
MH_C_35	2379	2395	15.68	167	8.48	1.26
MH_C_36	2381	2388	6.53	57	8.48	1.19

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Pipe Diameter	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow	Max Flow Velocity	Design Flow Capacity	Max Flow Depth / Total Depth Ratio	Max Flow Depth
			(ft)	(ft)	(ft)	(%)	(inches)				(mgd)	(ft/sec)	(mgd)		(ft)
Line_C_01	MH_C_01	MH_A_05_C	114	2211	2210	0.86	24	0.012	0.50	0.50	9.99	7.77	14.68	0.61	1.21
Line_C_02	MH_C_02	MH_C_01	291	2213	2211	0.50	24	0.012	0.50	0.50	9.99	6.23	11.20	0.74	1.47
Line_C_03	MH_C_03	MH_C_02	212	2214	2213	0.50	24	0.012	0.50	0.50	9.95	6.23	11.20	0.73	1.47
Line_C_04	MH_C_04	MH_C_03	162	2216	2214	1.50	24	0.012	0.50	0.50	9.95	9.61	19.40	0.51	1.02
Line_C_05	MH_C_05	MH_C_04	360	2218	2216	0.50	24	0.012	0.50	0.50	9.95	6.23	11.20	0.73	1.47
Line_C_06	MH_C_06	MH_C_05	358	2220	2218	0.50	24	0.012	0.50	0.50	9.92	6.23	11.20	0.73	1.46
Line_C_07	MH_C_07	MH_C_06	342	2224	2220	1.14	21	0.012	0.50	0.50	9.92	8.53	11.85	0.70	1.23
Line_C_08	MH_C_08	MH_C_07	178	2227	2224	1.73	21	0.012	0.50	0.50	9.92	10.08	14.58	0.61	1.06
Line_C_09	MH_C_09	MH_C_08	459	2232	2227	1.07	21	0.012	0.50	0.50	9.92	8.31	11.49	0.72	1.25
Line_C_10	MH_C_10	MH_C_09	728	2240	2232	1.05	21	0.012	0.50	0.50	9.88	8.21	11.34	0.72	1.26
Line_C_11	MH_C_11	MH_C_10	270	2244	2240	1.50	21	0.012	0.50	0.50	9.88	9.53	13.59	0.63	1.11
Line_C_12	MH_C_12	MH_C_11	317	2246	2244	0.50	24	0.012	0.50	0.50	9.75	6.21	11.20	0.72	1.44
Line_C_13	MH_C_13	MH_C_12	254	2250	2246	1.80	21	0.012	0.50	0.50	8.77	9.97	14.90	0.55	0.97
Line_C_14	MH_C_14	MH_C_13	288	2255	2250	1.76	21	0.012	0.50	0.50	8.74	9.86	14.70	0.56	0.97
Line_C_15	MH_C_15	MH_C_14	159	2257	2255	1.28	21	0.012	0.50	0.50	8.74	8.71	12.53	0.62	1.08
Line_C_16	MH_C_16	MH_C_15	82	2258	2257	0.87	21	0.012	0.50	0.50	8.74	7.41	10.26	0.71	1.24
Line_C_17	MH_C_17	MH_C_16	251	2263	2258	2.07	21	0.012	0.50	0.50	8.74	10.50	15.97	0.53	0.92
Line_C_18	MH_C_18	MH_C_17	115	2266	2263	2.50	21	0.012	0.50	0.50	8.74	11.22	17.44	0.50	0.88
Line_C_19	MH_C_19	MH_C_18	179	2268	2266	0.89	21	0.012	0.50	0.50	8.74	7.42	10.27	0.71	1.24
Line_C_20	MH_C_20	MH_C_19	146	2270	2268	1.50	21	0.012	0.50	0.50	8.74	9.28	13.59	0.58	1.02
Line_C_21	MH_C_21	MH_C_20	591	2279	2270	1.50	21	0.012	0.50	0.50	8.74	9.28	13.59	0.58	1.02
Line_C_22	MH_C_22	MH_C_21	658	2289	2279	1.50	21	0.012	0.50	0.50	8.69	9.26	13.59	0.58	1.02
Line_C_23	MH_C_23	MH_C_22	409	2294	2289	1.23	21	0.012	0.50	0.50	8.69	8.59	12.32	0.62	1.08
Line_C_24	MH_C_24	MH_C_23	704	2300	2294	0.85	21	0.012	0.50	0.50	8.67	7.39	10.24	0.71	1.24
Line_C_25	MH_C_25	MH_C_24	760	2313	2300	1.71	18	0.012	0.50	0.50	8.67	9.52	9.62	0.74	1.11
Line_C_26	MH_C_26	MH_C_25	666	2324	2313	1.65	18	0.012	0.50	0.50	8.67	9.38	9.45	0.75	1.13
Line_C_27	MH_C_27	MH_C_26	489	2333	2324	1.84	18	0.012	0.50	0.50	8.67	9.83	9.98	0.72	1.08
Line_C_28	MH_C_28	MH_C_27	388	2340	2333	1.68	18	0.012	0.50	0.50	8.65	9.44	9.52	0.75	1.12
Line_C_29	MH_C_29	MH_C_28	310	2345	2340	1.68	18	0.012	0.50	0.50	8.65	9.44	9.52	0.75	1.12
Line_C_30	MH_C_30	MH_C_29	234	2349	2345	1.66	18	0.012	0.50	0.50	8.64	9.40	9.47	0.75	1.13
Line_C_31	MH_C_31	MH_C_30	307	2355	2349	2.23	18	0.012	0.50	0.50	8.64	10.63	10.96	0.67	1.00
Line_C_32	MH_C_32	MH_C_31	419	2364	2355	1.98	18	0.012	0.50	0.50	8.64	10.15	10.36	0.70	1.05
Line_C_33	MH_C_33	MH_C_32	373	2373	2364	2.51	18	0.012	0.50	0.50	8.64	11.14	11.61	0.64	0.96
Line_C_34	MH_C_34	MH_C_33	269	2375	2373	0.74	21	0.012	0.50	0.50	8.48	6.94	9.56	0.73	1.28
Line_C_35	MH_C_35	MH_C_34	515	2379	2375	0.78	21	0.012	0.50	0.50	8.48	7.08	9.78	0.72	1.26
Line_C_36	MH_C_36	MH_C_35	252	2381	2379	0.91	21	0.012	0.50	0.50	8.48	7.56	10.58	0.68	1.19



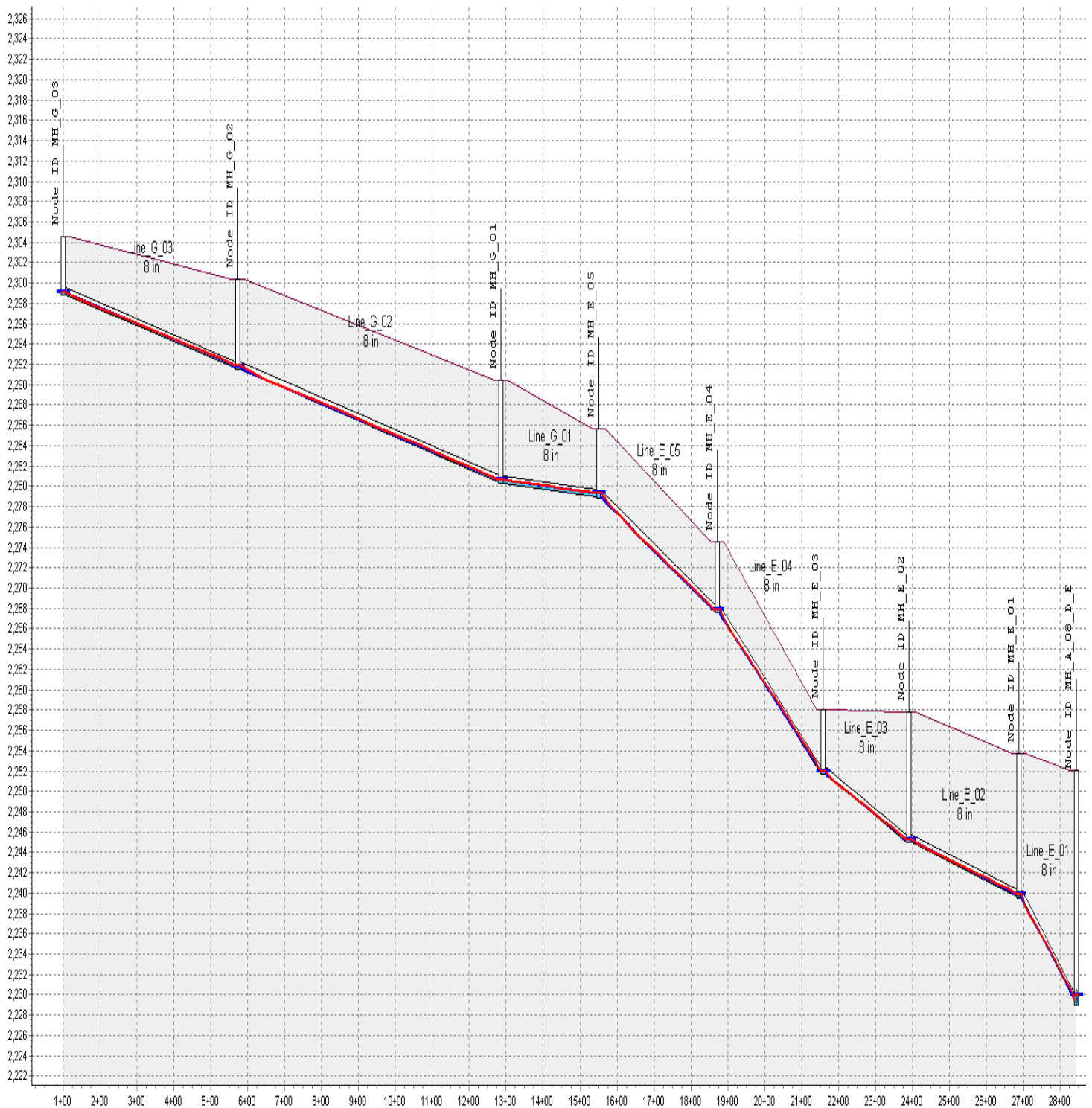
Line D-Lower



Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Min. Pipe Cover (inches)	Peak Inflow (mgd)	Maximum HGL Depth Attained (ft)
MH_D_01	2232	2247	15.07	166	0.71	0.56
MH_D_02	2235	2243	7.93	81	0.67	0.53
MH_D_03	2244	2253	8.72	91	0.67	0.41
MH_D_04	2249	2261	11.56	126	0.67	0.38
MH_D_05	2279	2289	9.28	98	0.67	0.37
MH_D_06	2297	2304	7.31	74	0.62	0.39
MH_D_07	2302	2311	8.45	88	0.62	0.46
MH_D_08	2315	2322	6.84	69	0.62	0.41
MH_D_09	2322	2332	10.10	108	0.62	0.41
MH_D_10	2347	2355	8.37	92	0.19	0.20
MH_D_10_a	2342	2349	7.31	76	0.62	0.34
MH_D_11	2356	2363	7.64	83	0.17	0.20
MH_D_12	2376	2382	5.69	60	0.06	0.10

Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter (inches)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow (mgd)	Max Flow Velocity (ft/sec)	Design Flow Capacity (mgd)	Max Flow Depth / Total Depth Ratio	Max Flow Depth (ft)
Line_D_01	MH_D_01	MH_A_08_D_E	300	2232	2230	0.77	12	0.012	0.50	0.50	0.71	3.84	2.18	0.39	0.39
Line_D_02	MH_D_02	MH_D_01	287	2235	2232	0.97	12	0.012	0.50	0.50	0.67	4.13	2.46	0.36	0.36
Line_D_03	MH_D_03	MH_D_02	726	2244	2235	1.29	12	0.012	0.50	0.50	0.67	4.56	2.84	0.33	0.33
Line_D_04	MH_D_04	MH_D_03	310	2249	2244	1.50	12	0.012	0.50	0.50	0.67	4.82	3.06	0.32	0.32
Line_D_05	MH_D_05	MH_D_04	1132	2279	2249	2.65	12	0.012	0.50	0.50	0.67	5.91	4.06	0.27	0.27
Line_D_06	MH_D_06	MH_D_05	705	2297	2279	2.50	12	0.012	0.50	0.50	0.62	5.67	3.94	0.27	0.27
Line_D_07	MH_D_07	MH_D_06	288	2302	2297	1.77	12	0.012	0.50	0.50	0.62	5.01	3.32	0.29	0.29
Line_D_08	MH_D_08	MH_D_07	502	2315	2302	2.53	12	0.012	0.50	0.50	0.62	5.69	3.96	0.27	0.27
Line_D_09	MH_D_09	MH_D_08	463	2322	2315	1.50	12	0.012	0.50	0.50	0.62	4.72	3.06	0.31	0.31
Line_D_10	MH_D_10_a	MH_D_09	1445	2342	2322	1.36	12	0.012	0.50	0.50	0.62	4.57	2.91	0.31	0.31
Line_D_10_A	MH_D_10	MH_D_10_a	332	2347	2342	1.56	8	0.012	0.50	0.50	0.19	3.55	1.06	0.29	0.19
Line_D_11	MH_D_11	MH_D_10	434	2356	2347	2.01	8	0.012	0.50	0.50	0.17	3.79	1.20	0.26	0.17
Line_D_12	MH_D_12	MH_D_11	1077	2376	2356	1.89	8	0.012	0.50	0.50	0.06	2.66	1.16	0.15	0.10

Line E and G



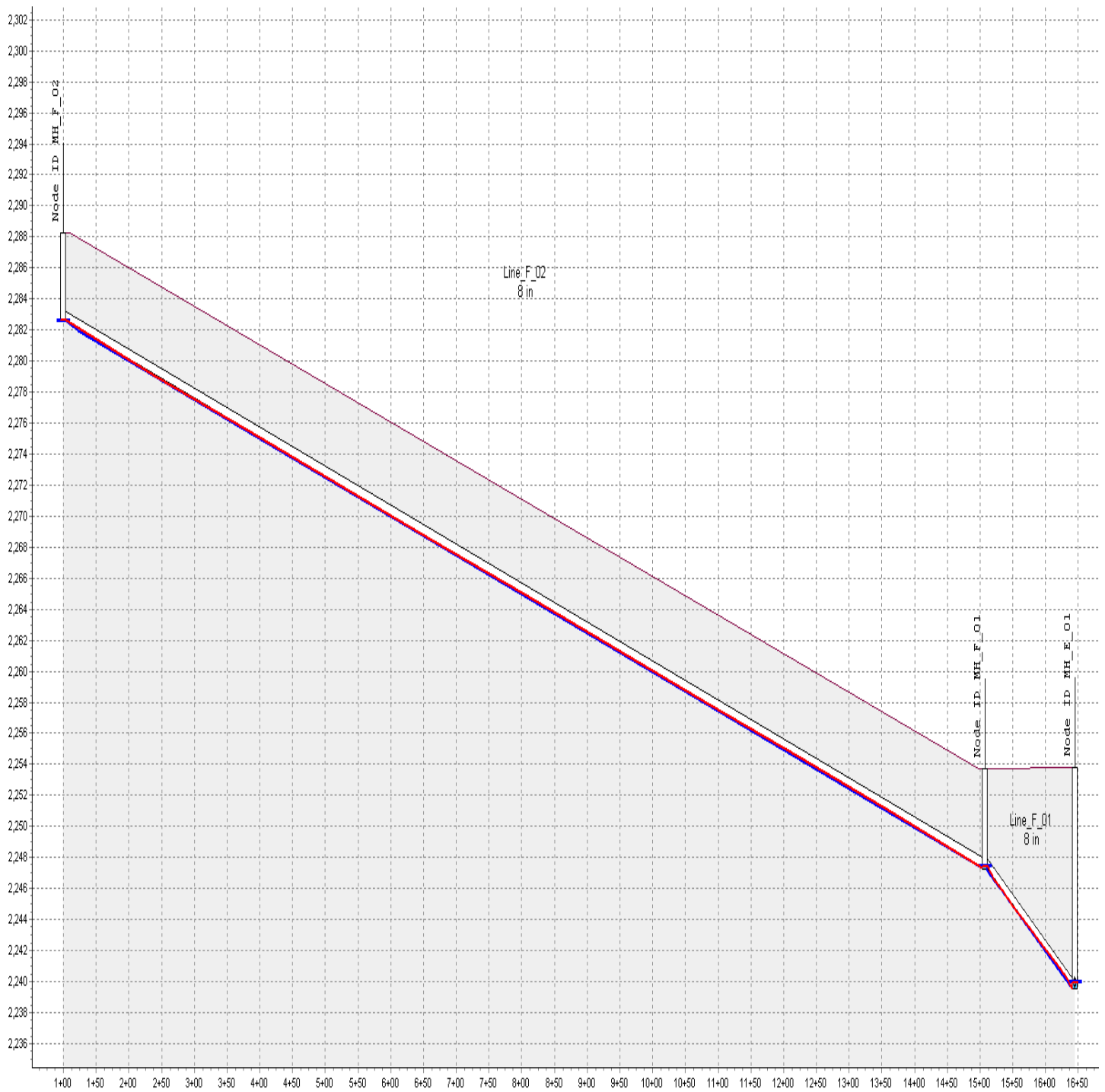
Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Min. Pipe Cover (inches)	Peak Inflow (mgd)	Maximum HGL Depth Attained (ft)
MH_E_01	2240	2254	14.22	161	0.45	0.36
MH_E_02	2245	2258	12.79	146	0.35	0.26
MH_E_03	2252	2258	6.34	67	0.31	0.27
MH_E_04	2268	2274	6.92	74	0.31	0.29
MH_E_05	2279	2286	6.80	72	0.31	0.44

Element ID	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (inches)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow (mgd)	Max Flow Velocity (ft/sec)	Design Flow Capacity (mgd)	Max Flow Depth / Total Depth Ratio	Max Flow Depth (ft)
Line_E_01	MH_E_01	MH_A_08_D_E	155	2240	2230	6.48	8	0.012	0.50	0.50	0.45	7.53	2.15	0.31	0.21
Line_E_02	MH_E_02	MH_E_01	299	2245	2240	1.79	8	0.012	0.50	0.50	0.35	4.42	1.13	0.38	0.26
Line_E_03	MH_E_03	MH_E_02	231	2252	2245	2.88	8	0.012	0.50	0.50	0.31	5.06	1.44	0.31	0.21
Line_E_04	MH_E_04	MH_E_03	287	2268	2252	5.52	8	0.012	0.50	0.50	0.31	6.39	1.99	0.27	0.18
Line_E_05	MH_E_05	MH_E_04	320	2279	2268	3.50	8	0.012	0.50	0.50	0.31	5.43	1.58	0.30	0.20

Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Min. Pipe Cover	Peak Inflow	Maximum HGL Depth Attained
	(ft)	(ft)	(ft)	(inches)	(mgd)	(ft)
MH_G_01	2280	2290	10.16	113	0.31	0.34
MH_G_02	2292	2300	8.82	97	0.23	0.31
MH_G_03	2299	2305	5.69	60	0.23	0.21

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Pipe Diameter or Height	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow	Max Flow Velocity	Design Flow Capacity	Max Flow Depth / Total Depth Ratio	Max Flow Depth
			(ft)	(ft)	(ft)	(%)	(inches)				(mgd)	(ft/sec)	(mgd)		(ft)
Line_G_01	MH_G_01	MH_E_05	266	2280	2279	0.50	8	0.012	0.50	0.50	0.31	2.67	0.60	0.51	0.34
Line_G_02	MH_G_02	MH_G_01	712	2292	2280	1.56	8	0.012	0.50	0.50	0.23	3.72	1.06	0.31	0.21
Line_G_03	MH_G_03	MH_G_02	473	2299	2292	1.52	8	0.012	0.50	0.50	0.23	3.69	1.04	0.32	0.21

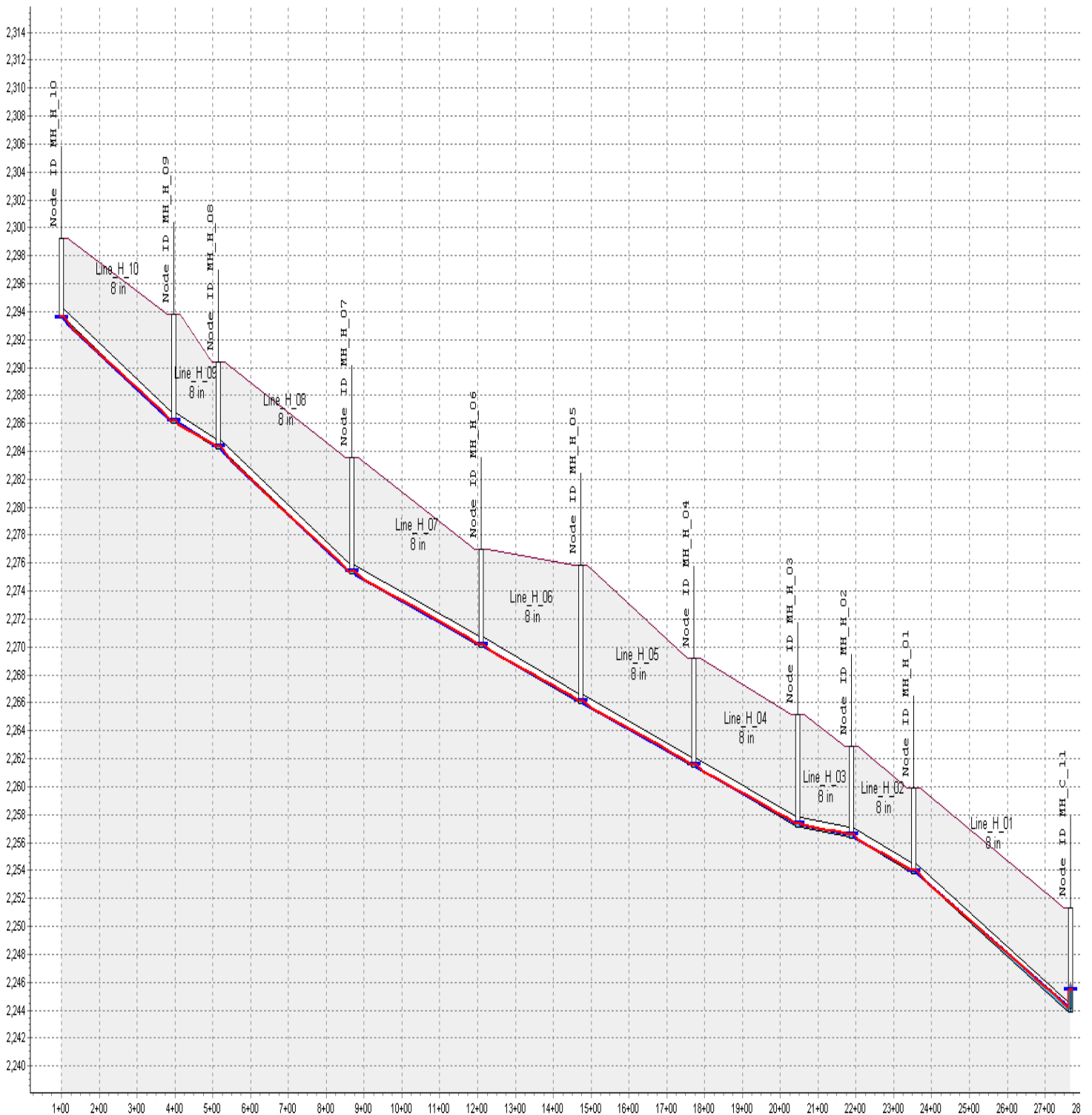
Line F



Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Min. Pipe Cover	Peak Inflow	Maximum HGL Depth Attained
	(ft)	(ft)	(ft)	(inches)	(mgd)	(ft)
MH_F_01	2247	2254	6.47	68	0.07	0.17
MH_F_02	2283	2288	5.69	60	0.03	0.07

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Pipe Diameter or Height	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow	Max Flow Velocity	Design Flow Capacity	Max Flow Depth / Total Depth Ratio	Max Flow Depth
			(ft)	(ft)	(ft)	(%)	(inches)				(mgd)	(ft/sec)	(mgd)		(ft)
Line_F_01	MH_F_01	MH_E_01	137	2247	2240	5.61	8	0.012	0.50	0.50	0.07	4.17	2.00	0.13	0.08
Line_F_02	MH_F_02	MH_F_01	1408	2283	2247	2.50	8	0.012	0.50	0.50	0.03	2.27	1.34	0.10	0.07

Line H



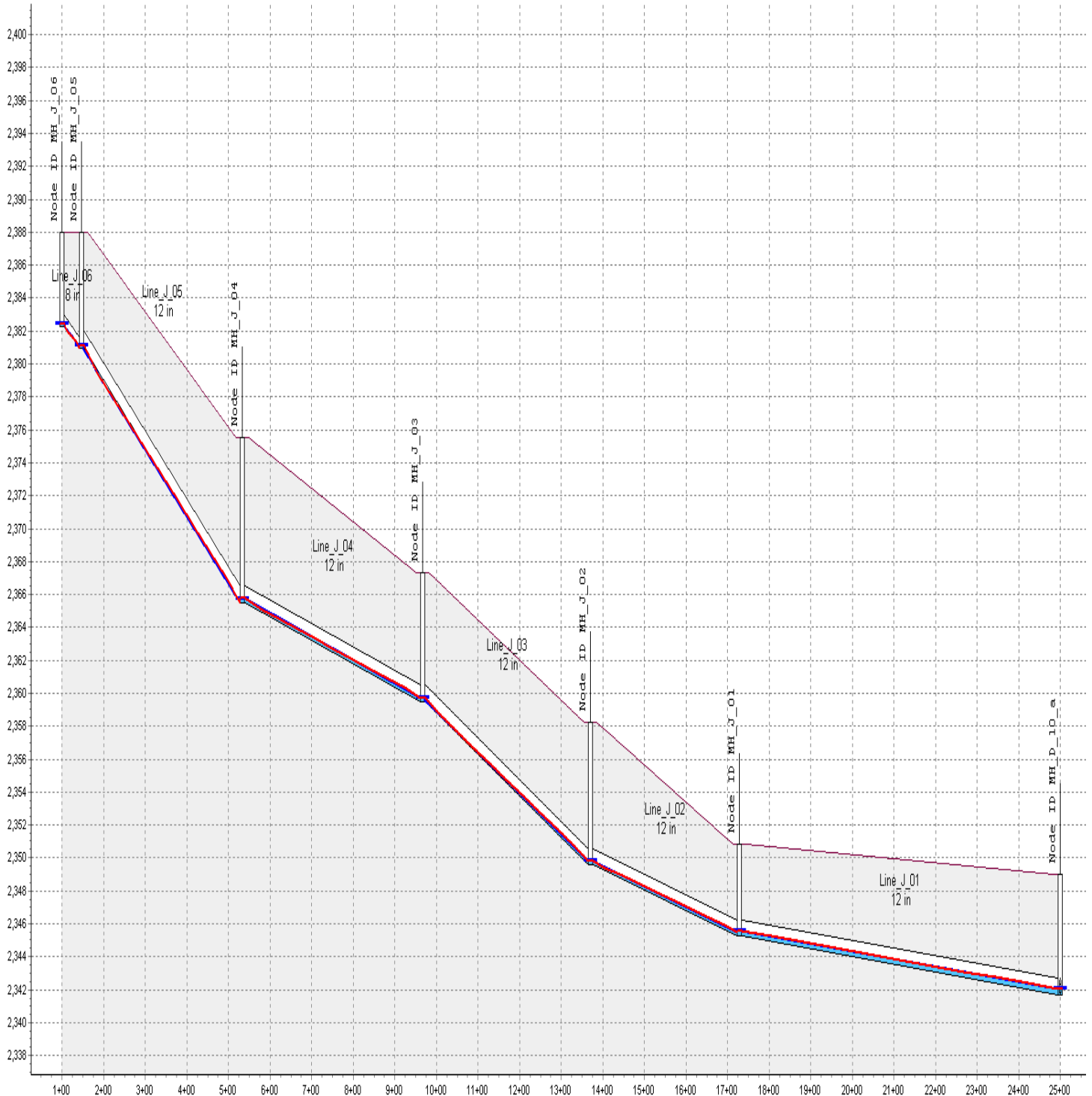
Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Min. Pipe Cover	Peak Inflow	Maximum HGL Depth Attained
	(ft)	(ft)	(ft)	(inches)	(mgd)	(ft)
MH_H_01	2254	2260	6.17	65	0.10	0.23
MH_H_02	2256	2263	6.56	70	0.10	0.28
MH_H_03	2257	2265	8.05	87	0.10	0.23
MH_H_04	2261	2269	7.87	85	0.10	0.23
MH_H_05	2266	2276	9.90	110	0.10	0.21
MH_H_06	2270	2277	7.00	75	0.07	0.22
MH_H_07	2275	2284	8.38	91	0.07	0.20
MH_H_08	2284	2290	6.22	65	0.07	0.19
MH_H_09	2286	2294	7.77	84	0.05	0.18
MH_H_10	2294	2299	5.69	60	0.05	0.08

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Pipe Diameter or Height	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow	Max Flow Velocity	Design Flow Capacity	Max Flow Depth / Total Depth Ratio	Max Flow Depth
			(ft)	(ft)	(ft)	(%)	(inches)				(mgd)	(ft/sec)	(mgd)		(ft)
Line_H_01	MH_H_01	MH_C_11	415	2254	2244	2.38	8	0.012	0.50	0.50	0.10	3.39	1.31	0.18	0.12
Line_H_02	MH_H_02	MH_H_01	163	2256	2254	1.50	8	0.012	0.50	0.50	0.10	2.88	1.04	0.21	0.14
Line_H_03	MH_H_03	MH_H_02	142	2257	2256	0.50	8	0.012	0.50	0.50	0.10	1.95	0.60	0.27	0.18
Line_H_04	MH_H_04	MH_H_03	275	2261	2257	1.50	8	0.012	0.50	0.50	0.10	2.88	1.04	0.21	0.14
Line_H_05	MH_H_05	MH_H_04	297	2266	2261	1.50	8	0.012	0.50	0.50	0.10	2.88	1.04	0.21	0.14
Line_H_06	MH_H_06	MH_H_05	264	2270	2266	1.50	8	0.012	0.50	0.50	0.07	2.58	1.04	0.18	0.12
Line_H_07	MH_H_07	MH_H_06	341	2275	2270	1.50	8	0.012	0.50	0.50	0.07	2.58	1.04	0.18	0.12
Line_H_08	MH_H_08	MH_H_07	354	2284	2275	2.50	8	0.012	0.50	0.50	0.07	3.13	1.34	0.15	0.10
Line_H_09	MH_H_09	MH_H_08	118	2286	2284	1.50	8	0.012	0.50	0.50	0.05	2.31	1.04	0.14	0.09
Line_H_10	MH_H_10	MH_H_09	296	2294	2286	2.50	8	0.012	0.50	0.50	0.05	2.76	1.34	0.13	0.08

Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Min. Pipe Cover	Peak Inflow	Maximum HGL Depth Attained
	(ft)	(ft)	(ft)	(inches)	(mgd)	(ft)
MH_I_01	2309	2315	5.69	60	0.00	0.00

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Pipe Diameter or Height	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow	Max Flow Velocity	Design Flow Capacity	Max Flow Depth / Total Depth Ratio	Max Flow Depth
			(ft)	(ft)	(ft)	(%)	(inches)				(mgd)	(ft/sec)	(mgd)		(ft)
Line_I_01	MH_I_01	MH_D_07	414	2309	2303	1.50	8	0.012	0.50	0.50	0.00	0.00	1.04	0.00	0.00

Line J



Element ID	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Min. Pipe Cover	Peak Inflow	Maximum HGL Depth Attained
	(ft)	(ft)	(ft)	(inches)	(mgd)	(ft)
MH_J_01	2345	2351	5.62	55	0.43	0.34
MH_J_02	2350	2358	8.67	92	0.43	0.27
MH_J_03	2359	2367	7.83	82	0.43	0.26
MH_J_04	2366	2376	10.06	109	0.43	0.26
MH_J_05	2381	2388	7.01	72	0.13	0.14
MH_J_06	2382	2388	5.69	60	0.13	0.14

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Pipe Diameter or Height	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Peak Flow	Max Flow Velocity	Design Flow Capacity	Max Flow Depth / Total Depth Ratio	Max Flow Depth
			(ft)	(ft)	(ft)	(%)	(inches)				(mgd)	(ft/sec)	(mgd)		(ft)
Line_J_01	MH_J_01	MH_D_10_a	771	2345	2342	0.46	12	0.012	0.50	0.50	0.43	2.79	1.69	0.34	0.34
Line_J_02	MH_J_02	MH_J_01	358	2350	2345	1.21	12	0.012	0.50	0.50	0.43	3.93	2.74	0.27	0.27
Line_J_03	MH_J_03	MH_J_02	404	2359	2350	2.45	12	0.012	0.50	0.50	0.43	5.06	3.91	0.22	0.22
Line_J_04	MH_J_04	MH_J_03	432	2366	2359	1.39	12	0.012	0.50	0.50	0.43	4.14	2.94	0.26	0.26
Line_J_05	MH_J_05	MH_J_04	387	2381	2366	3.99	12	0.012	0.50	0.50	0.13	4.20	4.99	0.11	0.11
Line_J_06	MH_J_06	MH_J_05	47	2382	2381	2.80	8	0.012	0.50	0.50	0.13	3.92	1.42	0.20	0.14

Table 7-3: 2010 CPC: Drainage Fixture Unit Values (DFU)

		Neighborhood Park		Confluence Park		Community Park						Fire Station		
Appliances, Appurtenances or Fixtures	Public	Restroom	DFU	Restroom	DFU	Restroom at Play Fields	Community Center	Kitchen	Maintenance Building	Restroom at Trailhead Picnic Area	DFU		DFU	
Clothes washer	3										0	2	6	
Dishwasher	2							1			2	2	4	
Drinking Fountain or Water Cooler	0.5	1	0.5	1	0.5	1	2			1	2	2	1	
Lavatory	1	4	4	4	4	6	6		2	2	16	8	8	
Sinks														
Kitchen	3							1			3	2	6	
Laundry	2										0	2	4	
Service or Mop Basin	3							1			3		0	
Shower, per head	2										0	7	14	
Urinal, flush tank	2	1	2	1	2	2	3		1	1	14	2	4	
Water Closet, 1.6 GPF Gravity Tank	4	3	12	3	12	6	6		2	3	68	7	28	
Floor Drain	2	2	4	2	4	4	6	1	2	2	30	12	24	
Count		11		11		19	23	4	7	9		46		
DFU			22.5		22.5						138		99	
GPM			16.25		16.25						51.5		42.7	
GPD			23400		23400						74160		61488	
								Combined (Community Park/Fire Station)						135,648
Total GPD	182,448													

from Appendix A, 2010 CPC

CHART A-3
ENLARGED SCALE DEMAND LOAD

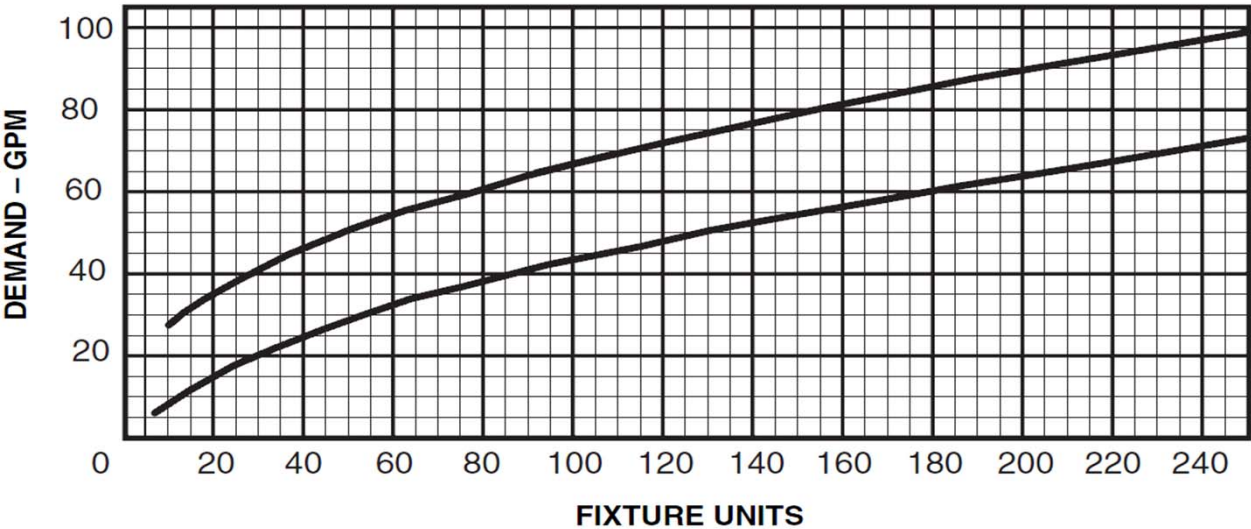


CHART A-2
ESTIMATE CURVES FOR DEMAND LOAD

