DEXTER WILSON ENGINEERING, INC.

WATER • WASTEWATER • RECYCLED WATER

CONSULTING ENGINEERS

SEWER SYSTEM ANALYSIS
FOR THE
NERIO FARMS ESTATES PROJECT
IN THE CITY OF CHINO

July 2026

2234 FARADAY AVENUE • CARLSBAD, CA • (760) 438-4422

SEWER SYSTEM ANALYSIS
FOR THE
NERIO FARMS ESTATES PROJECT
IN THE CITY OF CHINO

July 2026



7-10-26

Prepared for:
Bornstein Enterprises
11766 Wilshire Boulevard #820
Los Angeles, CA 90025

Prepared by:
Dexter Wilson Engineering, Inc.
2234 Faraday Avenue
Carlsbad, CA 92008

Job No. 1081-004

TABLE OF CONTENTS

PAGE NO.

CHAPTER 1	INTRODUCTION	1-1
	PROJECT OVERVIEW	1-1
	PURPOSE OF STUDY	1-1
CHAPTER 2	DESIGN CRITERIA	2-1
	Sewer Generation Rates and Peaking Factor	2-1
	Manning's "n"	2-2
	Depth and Velocity of Flow in Gravity Sewers	2-2
CHAPTER 3	PROJECTED SEWER FLOWS	3-1
	Project Sewer Demand	3-1
	Existing Community Potential Sewer Demand	3-1
CHAPTER 4	EXISTING AND PROPOSED SEWER SYSTEM	4-1
	Existing Sewer System	4-1
	Proposed Sewer Extension	4-1
	SEWER SYSTEM ANALYSIS	4-4
	Sewer Flow Monitoring	4-4
	Project Sewer System Analysis	4-5
	Potential Additional Connections Sewer System Analysis	4-6
CHAPTER 5	FUTURE SEWER EXTENSIONS	5-1
	Future Sewer Demand	5-1
	Future Sewer Extensions	5-3
CHAPTER 6	CONCUSIONS AND RECOMMENDATIONS	6-1

LIST OF TABLES

PAGE NO.

TABLE 2-1 CITY OF CHINO SEWER GENERATION RATES.....2-1

TABLE 3-1 NERIO FARMS ESTATES PROJECTED SEWER DEMAND.....3-1

TABLE 3-2 EXISTING HOMES POTENTIAL SEWER DEMAND 3-2

TABLE 4-1 SEWER MONITORING EXISTING CONDITIONS 4-4

TABLE 5-1 FUTURE SEWER DEMAND 5-1

TABLE 5-2 FUTURE EXTENSION SUMMARY.....5-3

LIST OF FIGURES

PAGE NO.

FIGURE 1-1 VICINITY MAP.....1-2

FIGURE 4-1 EXISTING AND PROPOSED SEWER FACILITIES.....4-2

FIGURE 4-2 POTENTIAL ADDITIONAL CONNECTIONS.....4-7

FIGURE 5-1 POTENTIAL FUTURE EXTENSIONS 5-2

ATTACHMENTS

ATTACHMENT A	2022 SEWER MASTER PLAN UPDATE
ATTACHMENT B	IEUA TRUNK SEWER AS BUILT
ATTACHMENT C	SEWER MANHOLE MONITORING RESULTS AND UTILITIES POTHOLING RESULTS
ATTACHMENT D	CITY OF CHINO CORRESPONDENCE
ATTACHMENT E	EXISTING SEWER SYSTEM AND PROJECT SEWER EXTENSION ANALYSIS
ATTACHMENT F	EXISTING SEWER SYSTEM AND PROJECT SEWER EXTENSION ANALYSIS PLUS ADDITIONAL SEWER CONNECTIONS ANALYSIS
ATTACHMENT G	EXISTING SEWER SYSTEM AND PROJECT SEWER EXTENSION ANALYSIS PLUS FUTURE SEWER EXTENSION ANALYSIS
ATTACHMENT H	ALTERNATIVE SEWER CONFIGURATION
EXHIBIT A	MANHOLE DIAGRAM

CHAPTER 1

INTRODUCTION

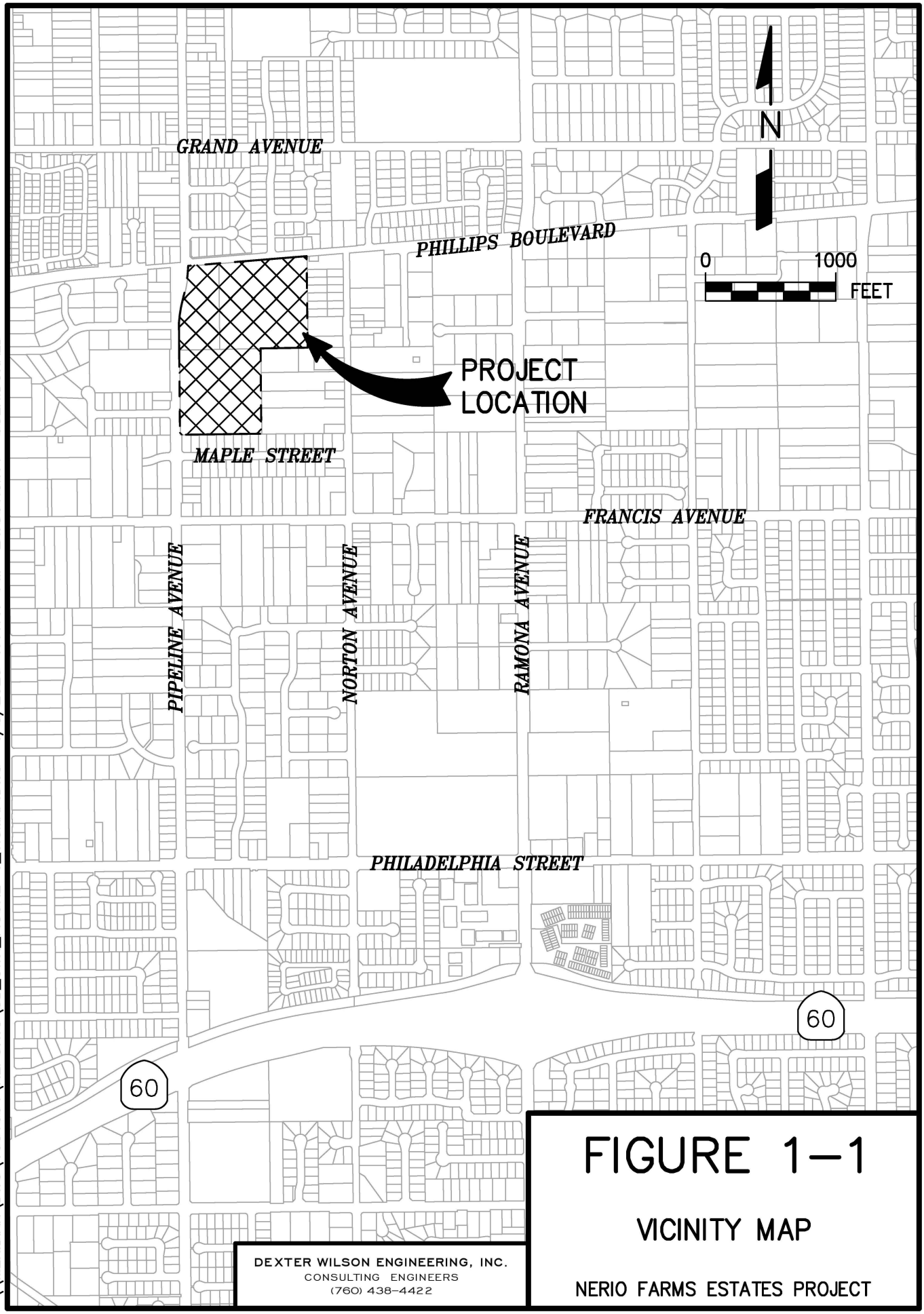
This report provides a public sewer system analysis for the Nerio Farms Estates project in the City of Chino (City). This report will analyze the feasibility of extending an offsite public gravity sewer to the project in order for the project to receive sewer service from the City. It will also explore the additional existing homes that could convert from septic to public sewer as a result of the extension.

PROJECT OVERVIEW

The Nerio Farms Estates project is located between Norton Avenue and Pipeline Avenue on the north side of Maple Street. The project is proposing a residential development that includes 90 single-family units, a park, and a detention basin on a 23.8 net acre site. A vicinity map for the project is provided in Figure 1-1.

PURPOSE OF STUDY

The Nerio Farms Estates project is located within the City of Chino for sewer service, but there are currently no public sewers in the area. The purpose of this report is to determine if sewer service could be provided to the project by extending the existing City of Chino sewer system to the project site. This report will also discuss the other lots which could potentially connect to this sewer extension both directly and via further extensions.



\\MERIDIAN\DWG\1081004\REPORTS\SB_SWR_FIGURE-1_VICMAP.DWG 4/3/2025 1:41:47 PM LAYOUT:8x11 USER:DONALD

FIGURE 1–1

VICINITY MAP

NERIO FARMS ESTATES PROJECT

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

CHAPTER 2

DESIGN CRITERIA

This chapter presents the design criteria used to evaluate the recommended sewer system extension for the Nerio Farms Estates project. Sewer system planning and design criteria for the Nerio Farms Estates project are based on the City of Chino's May 2022 Sewer Master Plan Update. Excerpts from the 2022 Sewer Master Plan Update are provided in Attachment A.

Sewer Generation Rates and Peaking Factor

Chapter 3 of the 2022 Sewer Master Plan Update was used to develop average sewer flow for the Nerio Farms Estates project as well as existing homes fronting the proposed sewer extension.

Daily sewer generation rates based on dwelling unit density and residential area type are identified in the 2022 Sewer Master Plan Update. These values will be used to analyze the impact of the project's wastewater generation and are presented in Table 2-1. The 2022 Sewer Master Plan Update uses a peaking factor of 1.34 to convert average dry weather flow (ADWF) to peak dry weather flow (PDWF).

TABLE 2-1
CITY OF CHINO
SEWER GENERATION RATES

Area	Units	Acreage	Residential Density	ADWF Generation Rate
Proposed Project	90	24.1	3.7 3-7 DU/acre	220 gpd/DU
Existing Homes (Estimated)	64	19.9	3.2 3-7 DU/acre	220 gpd/DU

Manning's "n"

The gravity sewer analysis was performed using a computer program which uses the Manning Equation for all of its calculations. The Manning's "n" used by the computer program is held as a constant for all depths in a circular conduit. The value of Manning's "n" used for this study is 0.013, which corresponds with the value used in the 2022 Sewer Master Plan Update.

Depth and Velocity of Flow in Gravity Sewers

Gravity sewer lines are designed to convey peak dry weather design flow. Proposed sewers that are smaller than 12-inches in diameter are designed to convey this flow with a maximum depth-to-diameter (d/D) ratio of 0.50. Proposed sewers that are 12-inches in diameter are designed to convey this flow with a maximum d/D of 0.67 and any proposed sewers larger than 12-inches are designed for a maximum d/D of 0.75.

For gravity sewer lines the design criterion for minimum velocity is 2.0 feet per second at peak flow and the minimum slope for an 8-inch sewer is 0.4 percent. The minimum depth requirement for a gravity sewer line refers to the depth from the finished surface to the top of the sewer line and is 5 feet per the City General Notes for Sanitary Sewer Improvement Plans.

CHAPTER 3

PROJECTED SEWER FLOWS

This chapter provides the projected sewer flows for the Nerio Farms Estates project and the surrounding area based on the criteria presented in Chapter 2.

Project Sewer Demand

Based on the sewage generation factors presented in Table 2-1, the estimated average sewer generation for the project is calculated in Table 3-1. As previously mentioned, a peaking factor of 1.34 is used for this analysis. Thus, the peak dry weather sewage flow for the Nerio Farms Estates project is 26,532 gpd (18.4 gpm).

TABLE 3-1
NERIO FARMS ESTATES
PROJECTED SEWER DEMAND

Land Use	Dwelling Units	Generation Rate	Average Dry Weather Flow, gpd
Single Family Homes (4 DUs/acre)	90	220 gpd/DU	19,800
TOTAL	**90**	**-**	**19,800 gpd (13.75 gpm)**

Existing Community Potential Sewer Demand

As will be further discussed in later chapters of this report, there will be potential for existing homes in the vicinity of the project to directly connect to the sewers constructed by the project. Based on the sewage generation factors presented in Table 2-1, the estimated average sewer generation for the existing homes fronting the proposed project sewer extension is calculated in Table 3-2. A factor of 1 ADU per 8 EDUs was assumed to account for potential existing and future ADUs' sewer generation. The peak dry weather sewage flow for this area is 27,390 gpd (19 gpm).

TABLE 3-2
EXISTING HOMES
POTENTIAL SEWER DEMAND

Land Use	Dwelling Units	Total Units with ADUs	Acreage	Generation Rate	Average Dry Weather Flow, gpd
Single Family Homes (3.2 DU/acre)	64	72	-	220 gpd/DU	15,840
Church	-	-	4.6	1000 gpd/acre	4600
TOTAL	**64 units**	**72 units**	**4.6**	**-**	**20,440 gpd (14.2 gpm)**

CHAPTER 4

EXISTING AND PROPOSED SEWER SYSTEM

The Nerio Farms Estates project is located approximately 0.43 miles from the existing City of Chino sewer system. Due to the project's location, it requires that the public sewer system be extended to serve the project. This chapter presents the recommendations for the proposed sewer system improvements required to provide service to the Nerio Farms Estates project and looks at the existing homes that may directly benefit from the extension.

Existing Sewer System

The closest sewer line to the project is an 8-inch vitrified clay pipe (VCP) line in Norton Avenue, terminating near the intersection with Camelia Court. The 8-inch VCP line runs to the south in Norton Avenue and increases to 10 inches in diameter at the intersection of Philadelphia Street and Norton Avenue. The VCP line continues south and turns into Wintress Drive, continuing through a parking lot before turning south in Pipeline Avenue and increasing to 12 inches in diameter. The 12-inch VCP line then turns south in Roswell Avenue and continues south to cross State Route 60. This sewer eventually discharges into the existing 12-inch VCP Inland Empire Utilities Agency (IEUA) trunk sewer near the intersection of Roswell Avenue and State Route 60. All monitored sewers were noted to be vitrified clay pipe (VCP) and the sewer monitoring locations are discussed in the Sewer Flow Monitoring section below. The as-built drawing of the IEUA trunk sewer is included in Attachment B.

Proposed Sewer Extension

Figure 4-1 presents the proposed offsite sewer extension to be constructed for the project. The proposed extension is VCP, 8-inches in diameter, and has an approximate length of 2,820 feet. It was estimated that 9 new manholes would also be needed for this extension, but final manhole locations will be determined during the sewer line design process. If the extension was extended along the full frontage of the project, it would have an approximate length of 3,970' and would require approximately 13 total manholes. This configuration assumes the relocation of the Monte Vista Water District water line at the intersection of Maple Street and Pipeline Avenue, so that the sewer can be as steep and shallow as possible.

RIM=840.3
IE=833.62
SLOPE=0.85%
L=210
RIM=838.2
IE=831.83
SLOPE=0.85%
L=263
RIM=835.7
IE=829.49
8"
L=324
SLOPE=0.85%
RIM=832.6
IE=826.64
SLOPE=0.85%
L=347
RIM=829.5
IE=823.59
SLOPE=0.85%
L=340
8"
MAPLE STREET
RIM=825.9
IE=820.6
RIM=826.6
IE=819.25
L=310
L=324
L=324
L=324
8"
RIM=827.8
IE=817.95
RIM=828.9
IE=816.65
RIM=830.8
IE=815.25
L=236
RIM=828.4
IE=814.16
L=236
8"
RIM=826.5
IE=813.19
L=329
RIM=824.1
IE=811.87
L=329
8"
CONNECTION TO
EXISTING SEWER SYSTEM
RIM=819.8
IE=810.55
CAMELIA COURT
RIM=815.28
IE=808.39
EX.8"
EX.8"
EX.8"
EX.10"
EX.10"
EX.10"
EX.10"
EX.12"
EX.12"
EX.12"
EX.12"
EX.12"
EX.12"
PROJECT BOUNDARY
PHILLIPS BOULEVARD
NORTON AVENUE
FRANCIS AVENUE
PIPELINE AVENUE
LEXINGTON AVENUE
NORTON AVENUE
PHILADELPHIA ST
ROSWELL AVE
WALNUT AVE
SEWER MONITORING
LOCATION NOR 03
WINTRESS DRIVE
SEWER MONITORING
LOCATION WAK 02
SEWER MONITORING
LOCATION ROS 01
CONNECTION
TO 12" VCP
IEUA TRUNK
SEWER
ROSWELL AVE
60
N
0
500
FEET

LEGEND

- PROJECT BOUNDARY
- EXISTING IEUA TRUNK SEWER
- EXISTING PUBLIC SEWER LINE
- PROPOSED PUBLIC SEWER LINE
- ADDITIONAL EXTENSION

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 4-1

EXISTING AND PROPOSED SEWER FACILITIES

NERIO FARMS ESTATES PROJECT

As previously discussed, the City of Chino has a minimum slope of 0.4% for sewers and a minimum depth of 5 feet. Both of these criteria cannot be met for the proposed sewer extension, so a balance of the two was struck in discussion with the City. As currently proposed, the minimum depth of the sewer extension is approximately 4.6 feet. The analysis assumed this minimum depth to avoid conflicts with other utilities based on potholing completed on April 8, 2026 with the exception of the relocated water line. The potholing results are included in Attachment C. Most of the extension (2,412 feet) is at a slope of 0.37 percent, which contributes to low sewer velocities described in detail in later sections of Chapter 4 as well as in Chapter 5. The City of Chino would have to allow a design exception to the City's minimum depth and slope requirements. Communication has been ongoing with the City of Chino regarding the possible options for the design criteria to be met, and formal approval is pending submittal of design plans and approval of the water line relocation by Monte Vista Water District. Correspondence with the City of Chino regarding the design exception is included in Attachment D. The sewer analysis that follows assumes this deviation is granted.

If the Monte Vista Water District does not allow the relocation of their water line, Attachment H contains an alternative configuration with a minimum slope of 0.3% and depth of 5.5 feet that goes under the conflicting water line.

Other sewer extension routes were explored, such as going west in Francis Avenue, but due to the existing topography, the proposed slope and/or depth would have to be reduced further. It should be noted that the proposed alignment is conceptual in nature and meant to serve as a check on feasibility. Preliminary utilities potholing has been completed, but additional verification should be completed before construction during the improvement plan process.

SEWER SYSTEM ANALYSIS

An evaluation of the proposed sewer extension and existing public sewer system up to the connection to the IEUA trunk sewer is provided in this chapter under both project flows and project plus the addition of the flows from the existing homes fronting the proposed extension.

Sewer Flow Monitoring

The City of Chino required sewer flow monitoring in order to analyze the impact of the project on the existing sewer system. Three manhole locations were monitored downstream of the proposed sewer extension point of connection. The three locations were the intersection of Lombardy Street and Norton Avenue, the intersection of Wakefield Avenue and Olive Street, and near the cul-de-sac at the end of Roswell Avenue. A summary of the results of the sewer monitoring is in Table 4-1 below. The results of the sewer flow monitoring are included in Attachment C.

TABLE 4-1
SEWER MONITORING
EXISTING CONDITIONS

Location	Diameter, in	Average Flow, gpd	Peak Flow, gpd	Peak Factor	Max d/D
4291 Lombardy St[1]	8	9,985	37,000	3.71	0.13
4051 Wakefield Ave	10	67,559	183,000	2.71	0.27
12455 Roswell Ave	12	111,000	295,000	2.02	0.45

[1]Note data from 7pm to 9pm on 11/13 was removed due to inconsistency with the remaining data. We believe it was either the start of the wet weather flows or an artificial peak as no other downstream location saw the same increase in flows.

The data from the sewer monitoring was used in the analysis of the existing sewer system downstream of the proposed sewer extension point of connection in multiple scenarios, including existing conditions, existing conditions plus project flows, and two scenarios of existing conditions plus project flow and potential additional future connections. It should be noted that the sewer monitoring was completed from November 1, 2025 to November 14, 2025, however, the data from November 14 was excluded because there was a rain event, and the analysis of the sewer is for peak dry weather flows. This analysis is included in Attachment E, F, and G.

The peaking factors for the sewer analysis were based on the sewer manhole monitoring results. The factors were calculated by dividing the maximum flow by the average flow for each manhole monitoring location.

Project Sewer System Analysis

When the Nerio Farms Estates project is first constructed, it may be the only flows connected to the proposed sewer extension. The analysis of the proposed sewer extension and public sewer system up to the connection to the IEUA trunk sewer with existing plus project flows is provided in Attachment E.

Existing Sewer System. The results of the analysis in Attachment E of the existing sewer system indicate that the maximum depth-to-diameter (d/D) ratio for the existing sewer system up to the connection to the IEUA trunk sewer is 0.33 under peak dry weather conditions. This is below the 0.5 maximum d/D criteria for sewers less than 12-inches in diameter. The minimum velocity in this analysis is 1.28 fps, which does not meet the design criteria for a minimum velocity of 2 fps. The manholes corresponding to the sewer analysis are depicted in Exhibit A.

Proposed Sewer System. The results of the analysis in Attachment E of the proposed sewer extension and existing sewer system indicate that the maximum depth-to-diameter (d/D) ratio is 0.38 under peak dry weather flow conditions. This is below the 0.5 maximum d/D criteria for sewers less than 12-inches in diameter and below the 0.67 maximum d/D criteria for sewers greater than 12-inches in diameter. The minimum velocity in this analysis is 1.53 fps, which does not meet the design criteria of a minimum velocity of 2 fps. The proposed sewer slope cannot be increased due to the grading of the existing road and the existing utilities in the area. The manholes corresponding to the sewer analysis are depicted in Exhibit A.

Potential Additional Connections Analysis

The existing homes fronting the proposed sewer extension currently utilize private septic systems for sewage disposal. By extending the existing line in Norton Avenue, Maple Street, and Pipeline Avenue to serve the project, the homes along the proposed sewer line extension would have the potential ability to connect to the public sewer system. It is estimated that 64 existing homes front the proposed extension. Using a factor of 1 ADU per 8 DUs, there are approximately 72 total EDUs including ADUs fronting the proposed extension. The analysis of the sewer system with the additional flows from these homes is provided in Attachment F. A map of these additional potential connections is provided in Figure 4-2.

The results of the expanded analysis of the proposed sewer extension and existing sewer system indicate that the maximum depth-to-diameter (d/D) ratio for the proposed sewer extension is 0.43 under peak dry weather flow conditions. This is below the 0.5 maximum d/D criteria for sewers less than 12-inches in diameter and the 0.67 maximum d/D criteria for sewers greater than 12-inches in diameter. The velocities in this analysis range from 0.68 to 4.93 fps, which does not meet the design criteria of a minimum velocity of 2 fps. However, as previously discussed, the slope cannot be increased. The manholes corresponding to the sewer analysis are depicted in Exhibit A.

LEGEND

PROJECT BOUNDARY

EXISTING PUBLIC SEWER LINE

PROPOSED PUBLIC SEWER LINE

POTENTIAL ADDITIONAL CONNECTIONS

PARCELS:	67
EDUS:	64
EDUS WITH ADUS:	72
TOTAL ACREAGE:	19.9

PHILLIPS BOULEVARD

BOYER STREET

NORTON AVENUE

LOCUST STREET

MAPLE STREET

PROJECT BOUNDARY

FRANCIS AVENUE

PIPELINE AVENUE

LEXINGTON AVENUE

PHILADELPHIA STREET

8"

EX.8"

N

0 400 FEET

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 4-2

POTENTIAL ADDITIONAL CONNECTIONS

NERIO FARMS ESTATES PROJECT

CHAPTER 5

FUTURE SEWER EXTENSIONS

In addition to the existing homes directly fronting the line, additional existing homes could connect to this extension if they construct shorter extensions of their own. This chapter will provide a preliminary analysis of these potential future sewer extensions.

Future Sewer Demand

The potential future sewer extensions are located in Maple Street, Francis Avenue, Boyer Street, Locust Street, and Norton Avenue. Table 5-1 estimates the flow from each area using the criteria in Chapter 2. Figure 5-1 highlights the parcels that could be served by further extensions. A factor of 1 ADU per 8 EDUs was used to estimate the amount of ADUs that may be included per existing dwelling units.

TABLE 5-1
FUTURE SEWER DEMAND

Area	Dwelling Units	Total Dwelling Units Including ADUs	Generation Rate	Average Dry Weather Flow, gpd	Peak Dry Weather Flow, gpd
Francis Avenue	27	30.375	280	8,505	11,406
Norton Avenue	31	34.875	280	9,765	13,095
Boyer Street	17	19.125	280	5,355	7,166
Locust Street	18	20.25	220	4,455	5,984
Maple Street	2	2.25	280	630	844
TOTAL	**95 DUs**	**107 Units**	**-**	**28,710 gpd**	**38,496 gpd**

\\MERIDIAN\DWG\1081004\REPORTS\SB_SWR_FIGURE-5-1-POTFUTEXT.DWG 7/9/2026 4:05:08 PM LAYOUT: 11x17 USER: Alyssa

PROJECT BOUNDARY

PHILLIPS BOULEVARD

NORTON AVENUE

N

0 400 FEET

17 EDUS
8.8 ACRES

BOYER STREET

18 EDUS
4.9 ACRES

LOCUST STREET

31 EDUS
26 ACRES

2 EDUS
0.9 ACRES

MAPLE STREET

MAPLE STREET

12 EDUS
14.6 ACRES

FRANCIS AVENUE

15 EDUS
12.7 ACRES

PIPELINE AVENUE

LEXINGTON AVENUE

CAMELIA COURT

EX.8"

EX.8"

EX.8"

PHILADELPHIA STREET

EX.8"

LOMBARDY STREET

EX.10"

LEGEND

PROJECT BOUNDARY

EXISTING PUBLIC SEWER LINE

PROPOSED PUBLIC SEWER LINE

POTENTIAL ADDITIONAL CONNECTIONS

POTENTIAL FUTURE CONNECTIONS

PARCELS:	96
EDUS:	95
TOTAL WITH ADUS:	107

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 5-1

POTENTIAL FUTURE EXTENSIONS

NERIO FARMS ESTATES PROJECT

Future Sewer Extensions

To preliminarily analyze the potential future extensions, Google Earth was used to look at the existing slope of Francis Street, Norton Avenue, Boyer Street, Locust Street, and Maple Street. Table 5-2 summarizes the preliminary characteristic of each extension.

TABLE 5-2
FUTURE EXTENSION SUMMMARY

Area	Existing Dwelling Units	Diameter, inches	Length, feet	Assumed Slope
Francis Avenue West	12	8	1,325	0.5%
Francis Avenue East[1]	15	8	700	0.4%
Norton Avenue	31	8	1,545	0.5%
Boyer Street	17	8	1,386	0.5%
Locust Street	18	8	786	0.5%
Maple Street	2	8	228	0.5%
Total	**95 DUs**	**-**	**5,970**	**-**

[1]Minimum slope of 0.4% used to maximize the number of homes able to be served.

The results of the expanded analysis indicate that the maximum depth-to-diameter (d/D) ratio for the Nerio Farms Estates project sewers is 0.56 under peak dry weather flow conditions. This is above the 0.5 maximum d/D criteria for sewers less than 12-inches in diameter and below the 0.67 maximum d/D criteria for sewers greater than 12-inches in diameter. There are five stretches of sewer that have a d/D greater than 0.5 occurring in the 8-inch sewer north of Philadelphia Street, upstream of the transition to 10-inch sewer in the existing sewer in Norton Avenue. If the future extensions are constructed, it may be required to upsize the existing 8-inch sewer in Norton Avenue to accommodate additional flows.

The velocities in this analysis range from 0.68 to 5.61 fps, which does not meet the design criteria of a minimum velocity of 2 fps. However as previously discussed, the slope cannot be increased. The analysis of the sewer system with the additional flows from these homes is provided in Attachment G. The manholes corresponding to the sewer analysis are depicted in Exhibit A.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations have been made related to providing sewer service to the Nerio Farms Estates project.

1. The Nerio Farms Estates project could receive public sewer service from the City of Chino via a public sewer extension. The proposed public sewer extension is viable and would require a formal approval for a design exception to the City's minimum slope, depth, and velocity requirements. Correspondence regarding the design exception is included in Attachment D.

2. The existing and proposed public sewer system is presented in Figure 4-1.

3. The project will connect to the existing 8-inch sewer line in Norton Avenue that terminates approximately 169 feet north of the intersection of Camelia Court and Norton Avenue.

4. To connect to the existing sewer line in Norton Avenue and provide adequate utility separation, the majority of the proposed 8-inch sewer (2,475 feet) will need to be installed at a slope of 0.37%. The minimum velocity requirement of 2 fps is not met by the sewer analysis in any case analyzed, with a minimum velocity of 1.53 fps. While the velocities in the proposed sewer and extensions do not meet minimum velocity requirements due to the slope required by the field conditions, the addition of the project flows increases the minimum velocity in the existing sewer from 1.28 fps to 1.53 fps.

5. Under estimated project flows, the existing sewer system and proposed sewer line extension has adequate capacity to serve the project.

6. Approximately 64 existing homes would have the ability to directly connect to the proposed extension. This would allow them to be served by the City of Chino and abandon the existing septic systems. The existing sewer system and proposed sewer line extension will have adequate capacity to serve these additional homes.

7. The Nerio Farms Estates project sewer extension opens up the possibility of future sewer extensions in Norton Avenue, Francis Avenue, Boyer Street, Locust Street, and Maple Street to serve approximately 95 additional dwelling units. The existing sewer system and proposed sewer extension may need to be upsized to accommodate all of the estimated future flows analyzed.

ATTACHMENT A

2022 SEWER MASTER PLAN UDPATE

3 Future Flow Projections

This section summarizes anticipated growth in the sewer service area and the sewer loadings used in the future capacity analysis scenarios.

3.1 Population Growth Projections

This section describes the City's current population as well as projected populations throughout the planning horizon. Growth forecasts are presented to show the projected range in population that may occur within the City by year 2040, the buildout planning period currently anticipated by the City.

3.1.1 Existing Population

According to the U.S. Census Bureau website, the population of the City in April 2020 was estimated at 91,400.

3.1.2 Projected Population

Table 3.1 provides future population projections based on the City's 2020 population and a straight-line interpolation to the buildout population projection provided by the City for 2040.

Table 3.1: Existing and Projection Population

Year	2020	2025[1]	2030[1]	2035[1]	2040[2]
Population	91,400	98,650	105,900	113,150	120,400

Notes:
[1] Population estimated using straight-line interpolation between 2021 and 2040.
[2] 2040 buildout population provided by City of 120,400 does not include the population of the potential annexed SOI areas.

3.2 Existing Sewer Flows

While the City has performed intermittent flow metering around the City, the City-generated sewage discharges to IEUA facilities that are not consistently metered; therefore, no exact measurement of total average dry weather flow (ADWF) exists for the City's sewer collection system. Existing ADWF was calculated as part of this master plan based on the sum of the flow metered basins (5.25 MGD) and estimated flows in non-flow metered basin based on land use (2.3 MGD) for a total estimated existing ADWF for the system of 7.55 MGD. Refer to Section 5.1 for more information on the flow metering program performed for this master plan.

3.3 Projected Near-Term Flows

As of May 2021, the City planning department had 82 development projects on file. At the time flow monitoring took place in early 2021, Dudek confirmed that 15 of the 82 developments were already completed. The remaining 67 developments were used in the development of the near-term loading analysis. Of the 67 developments:

- 27 are residential projects (with approximately 3,087 dwelling units listed in planning documents for the 14 residential projects that provided dwelling unit data),

- 24 are commercial projects,
- 14 are industrial projects,
- one (1) is a mixed-use development, and
- one (1) is the California Institute of Women (CIW)'s sewage diversion, described in greater detail below.

The mixed use developed is a 7.53-acre portion of the College Park Specific Plan Development located northeast of the intersection of Eucalyptus Ave and Oaks Ave. **Appendix A** provides detail on each of the 82 developments considered in the near-term flow analysis. **Figure 3.1** shows the location of just the 67 undeveloped or under construction near-term developments that were ultimately included in the flow analysis.

In order to estimate sewer loads from these planned developments, sewage flow factors were developed for each land use type, based on information from flow monitoring data, neighboring agencies and industry standards. **Table 3.2** presents the unit sewage flow factors applied to the 67 near-term developments. The projected sewage load of each near-term development was calculated and added to the hydraulic model to create the hydraulic model's near-term scenario.

Table 3.2: Unit Sewage Flow Factors

Land Use	Unit Flow Factor	
	gpd/DU	gpd/acre
Residential		
Estate Residential or Residential 1 (RD 1; 1 DU/acre)	280	280
Residential 2 (RD 2; 2 DU/acre)	280	560
Residential 3-7 (RD 3-7; 3-7 DU/acre)	220	990
Residential 8-11 (RD 8-11; 8-11 DU/acre)	220	1,760
Residential 12-13 (RD 12-13; 12-13 DU/acre)	180	2,160
Residential 14-19 (RD 14-19; 14-19 DU/acre)	180	2,520
Residential 20-29 (RD 20-29; 20-29 DU/acre)	180	3,600
Residential 30 (RD 30; 30 DU/acre)	180	5,400
Non-Residential		
Commercial	-	1,500
Hotel	110 gpd/room	N/A
Light Industrial	-	1,000
Industrial	-	1,500
Hospital	-	1,500
School/Church	-	1,000
Airport	-	1,000
Public/Institutional	-	1,500

6 Collection System Capacity Analysis

The level of sewer service that is provided to a community is related to the implementation of improvements that are planned and designed in accordance with accepted criteria. The capacity of the sewer system is analyzed with a hydraulic model and results are evaluated with respect to established and verified design criteria to identify capacity deficiencies. This section describes the design criteria, the collection system hydraulic model development and the results of the existing and future capacity evaluations of the City's sewer collection system. The evaluation method employs the use of the Innovyze® InfoSWMM hydraulic modeling software, which performs hydraulic calculations with extended period simulations (EPS).

6.1 Design Criteria

The design criteria provide the basis for planning of new facilities to improve existing service or to handle future wastewater flows. The design criteria recommended for use in this Master Plan Update are based on the 2011 City of Chino Sewer Master Plan's sewer analysis criteria, criteria from similar and neighboring sewer agencies, as well as industry standards. The recommended sewer design and evaluation criteria for this study are summarized in **Table 6.1**.

Table 6.1: Design and Evaluation Criteria

Gravity Main Criteria	Minimum pipe diameter	8-inches
	Minimum allowable velocity at peak dry design flow	2 ft per sec
	Manning's Roughness Coefficient	0.013
Depth-to-Diameter Ratio for Gravity Mains	For sewer mains < 12-inch	0.50
	For sewer mains = 12-inch	0.67
	For sewer mains > 12-inch	0.75
Lift Station Criteria[1]	Minimum Number of Pumps	2
	Minimum Pump Capacity	Duty pumps capable of handling peak flow
	Standby Capacity	100% of the largest pump capacity
	Emergency Backup Power	Required
	Emergency Storage Capacity	90 minutes of ADWF
Velocity for Force Mains	Minimum allowable velocity	2.5 ft per sec
	Maximum allowable velocity	8 ft per sec

Note:
[1] This criteria does not apply to the Preserve LS, which is operated and maintained by IEUA.

The most common capacity evaluation criteria for gravity sewers include the ratio of depth of flow divided by diameter (d/D) and velocity, which are calculated in the hydraulic model based on Manning's Equation. Gravity sewers are designed with unoccupied space at the top of the pipe for conveyance of sewage gasses and to provide contingent capacity for wet weather inflow and infiltration.

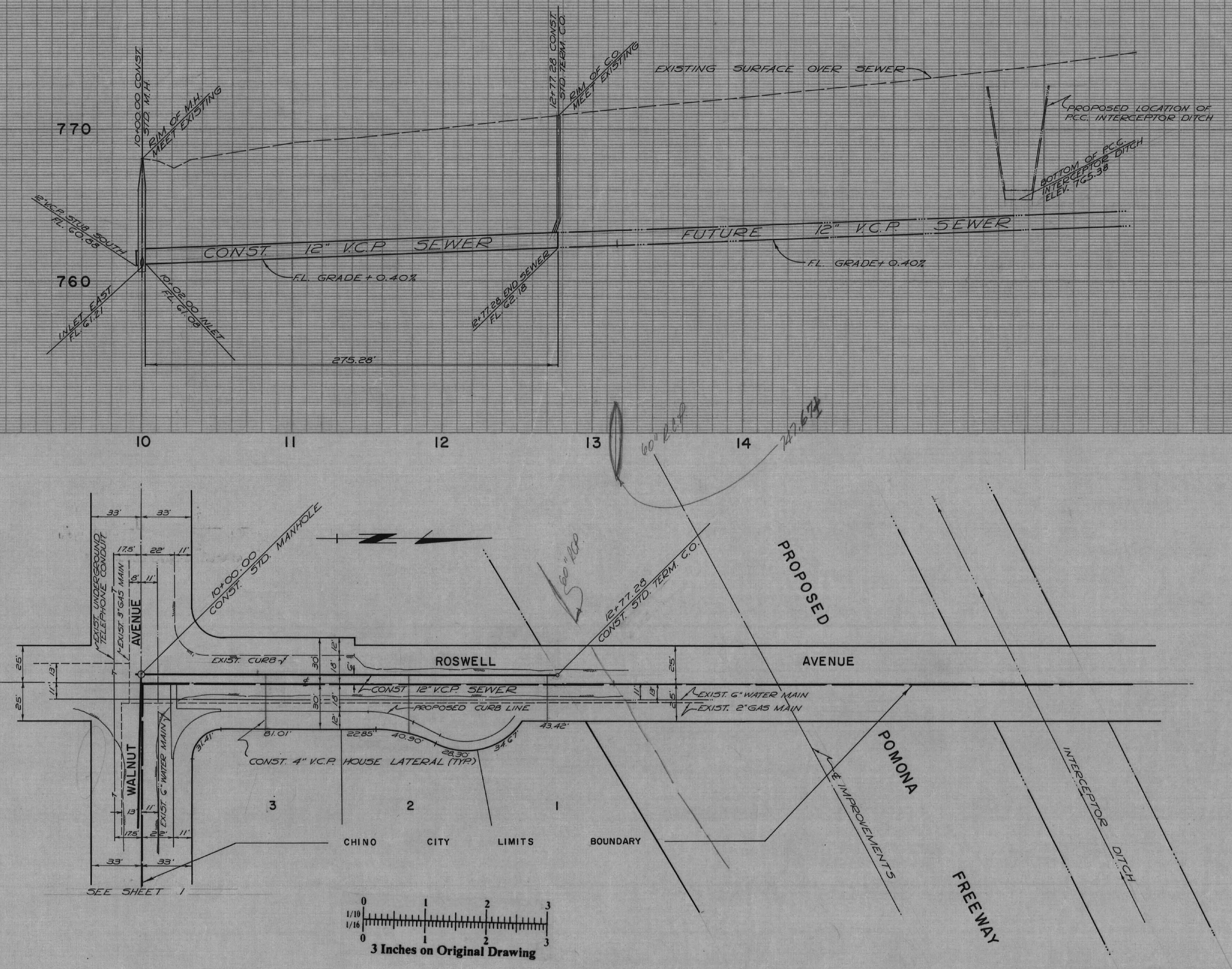
Table 6.11: Existing and Projected Sewer Flows

Model Scenario Timeframe	Est. ADWF (MGD)	Est. PDWF (MGD)[1]
Existing (2021)	7.55	10.12
Near-Term (2030)	9.67	12.96
Ultimate (2040)	11.39	15.26

Notes:
[1] PDWF estimated as the ADWF multiplied by the average diurnal peaking factor from the 2021 flow metering program data of 1.34.

ATTACHMENT B

IEUA TRUNK SEWER AS BUILT



BENCH MARKS

CROSS IN END OF SIDEWALK AT THE S.W. CORNER OF WALNUT AVE. AND ROSWELL AVE.
ELEV. 767.12 (SAN BNDO. CO. DATUM)

CITY OF CHINO B.M. No. 12
CHIS. SQUARE IN TOP OF CURB AT N. END B.C. AT THE N.E. CORNER OF PIPELINE AVE. AND WALNUT AVE.
ELEV. 770.04 (THESE PLANS) S.B.C. DATUM
ELEV. 766.55 (CITY OF CHINO DATUM)
ELEV. 768.58 (C.H.C. DATUM)

3
48"
19e.

APPROVED AND ADOPTED BY THE COUNCIL OF THE CITY OF CHINO, STATE OF CALIFORNIA. THIS 5th DAY OF September, 1967.

John R. Wright
CITY CLERK CITY OF CHINO

CITY OF CHINO

PLAN AND PROFILE OF SEWERS

ROSWELL AVENUE
FROM WALNUT AVENUE TO 277' NORTH

TRACT NO. 7516

RECOMMENDED	APPROVED Elmer L. Miller 9-8-67 CITY ENGINEER R.E. 15564 DATE
CHECKED	ASSOCIATED ENGINEERS 316 EAST "E" STREET ONTARIO, CALIFORNIA R.E. Mills R.C.E. 7344
CHECKED	SHEET 4 OF 4
DRAWN alvin	DWG. NO. BA-146

64-147 B

HOUSE LATERAL LOCATIONS

LOT Nº	DESIGN LOCATION		"AS BUILT" LOCATION		REMARKS
	10+78	L.	10+79.5	L.	4" TEE ONLY
3	10+83	R.	10+82.5	R.	
2	11+78	R.	11+75.5	R.	
1	12+70	R.	12+68.5	R.	

ATTACHMENT C

SEWER MANHOLE MONITORING RESULTS AND UTILITIES POTHOLING RESULTS

Roswell Ave Trunk Sewer Flow Monitoring, Chino 2025

Final Report Submitted to **Dexter Wilson Engineering, Inc.**
November 26, 2025



ADS ENVIRONMENTAL SERVICES

15201 Springdale St
Huntington Beach, CA 92649

800-633-7246
www.adsenv.com

November 26, 2025

Kathleen H. Noel, P.E.
Dexter Wilson Engineering, Inc.
2234 Faraday Ave,
Carlsbad, CA, 92008

SUBJECT: Roswell Ave Trunk Sewer Flow Monitoring, Chino 2025

Dear Kathleen H. Noel,

ADS is pleased to submit the report for the Roswell Ave Trunk Sewer Flow Monitoring Chino 2025 completed on behalf of Dexter Wilson Engineering. The metering was conducted at three (3) locations. The study was conducted during the period of Saturday, 01 November 2025 to Thursday, 13 November 2025.

The report contains depth, velocity, and quantity hydrographs as well as daily long tables for the metering period. An Excel file containing depth, quantity, and velocity entities for the monitoring location in 5-minute format was provided previously.

In addition, we would be happy to further explain any details about the report that may seem unclear. Should you have any questions or comments, you may contact the Project Manager, Paul Mitchell at (714) 920-5518.

It has been our pleasure to be of service to you in the performance of this project. Thank you for choosing ADS products and services to meet your flow monitoring needs.

Sincerely,
ADS ENVIRONMENTAL SERVICES

Andrew Sanchez
Data Analyst
(714) 614-4274

Roswell Ave Trunk Sewer Flow Monitoring, Chino 2025

Prepared For:

Kathleen H. Noel, P.E.
Dexter Wilson Engineering, Inc.
2232 Faraday Ave
Carlsbad, CA, 92008

Prepared By:

ADS, LLC
15201 Springdale St
Huntington Beach, CA 92649

Scope and Methodology

Introduction

Dexter Wilson Engineering, Inc entered into an agreement with ADS Environmental Services to conduct flow monitoring at (3) three locations in the City of Chino, CA. The study was scheduled for a 14-day period. The objective of this was to confirm flows for planning purposes.

Project Scope

The scope of this study involved using a flow monitor to quantify wastewater flow at the designated location for the

14-day time period. Specifically, the study included the following key components.

- Investigate the proposed flow-monitoring sites for sewer capacity
- Flow monitor installations
- Flow monitor confirmations and data collections
- Flow data analysis

Equipment installation was completed on October 31, 2025. The monitoring began on November 1, 2025 and was completed on November 14, 2025. Upon completion of the study, equipment was removed from the system.

Flow Monitoring Equipment



The ***ADS Triton+*** monitor was selected for this project. This flow monitor is an area velocity flow monitor that uses both the Continuity and Manning's equations to measure flow.

The ADS Triton+ monitor consists of data acquisition sensors and a battery-powered microcomputer. The microcomputer includes a processor unit, data storage, and an on-board clock to control and synchronize the sensor recordings. The monitor was programmed to acquire and store depth of flow and velocity readings at 5-minute intervals.

The Triton+ monitor features cross-checking using multiple technologies in each sensor for continuous running of comparisons and tolerances. The Triton+ monitor can support two (2) sets of sensors. The sensor option used for this project was:

The Peak Combo Sensor installed at the bottom of the pipe includes three types of data acquisition technologies.

The ***up looking ultrasonic depth*** uses sound waves from two independent transceivers to measure the distance from the sensor upward toward the flow surface; applying the speed of sound in the water and the temperature measured by

sensor to calculate depth.

The ***pressure depth*** is calculated by using a piezo-resistive crystal to determine the difference between hydrostatic and atmospheric pressure. The pressure sensor is temperature compensated and vented to the atmosphere through a desiccant filled breather tube.

To obtain ***peak velocity*****,** the sensor sends an ultrasonic signal at an angle upward through the widest cross-section of the oncoming flow. The signal is reflected by suspended particles, air bubbles, or organic matter with a frequency shift proportional to the velocity of the reflecting objects. The reflected signal is received by the sensor and processed using digital spectrum analysis to determine the peak flow velocity.

Installation

Installation of flow monitoring equipment typically proceeds in four steps. First, the site is investigated for safety and to determine physical and hydraulic suitability for the flow monitoring equipment. Second, the equipment is physically installed at the selected location. Third, the monitor is tested to assure proper operation of the velocity and depth of flow sensors and verify that the monitor clock is operational and synchronized to the master computer clock. Fourth, the depth and velocity sensors are confirmed and line confirmations are performed.

In pipes up to 42 inches in diameter, the sensors were mounted on expandable stainless steel rings, inserted at least a foot upstream into influent pipes and tightened against the inside walls of the pipes. Influent pipe installations reduce the influences of turbulence and backwater often caused by changes in channel geometry in manholes.





Data Collection, Confirmation, and Quality Assurance

Data collection was done remotely via wireless connect on a weekly basis via ADS Field Representatives. During the monitoring period, field crews visit each monitoring location to verify proper monitor operation and document field conditions. The following quality assurance steps are taken to assure the integrity of the collected data:

Measure power supplies: monitors were powered by dry cell battery packs. Voltages were recorded and battery packs replaced, as necessary. Separate batteries provided back-up power to memory allowing primary batteries to be replaced without loss of data.

Clock synchronization: Field crews synchronized monitor clocks to master clocks.

Confirm depth and velocity readings: Field crews descended into meter manholes to manually measure depths and velocities and compare them meter readings to confirm that they agreed. They also measured silt levels, if any, in the inverts of the pipes. Silt areas were subtracted from flow areas to compute true areas of flow.

Confirm average velocities through cross-sectional velocity profiles: Since ADS velocity sensors measure peak velocity, field crews collected cross-sectional velocity profiles in order to develop a relationship between peak and average velocity in lines that meet the hydraulic criteria.

Upload and Review Data: Data collected from the monitors were uploaded and reviewed by a Data Analyst for completeness, outliers and deviations in the flow patterns, which indicate system anomalies or equipment failure.

Flow Quantification Methods

There are two main equations used to measure open channel flow: the ***Continuity Equation*** and the ***Manning Equation.*** The Continuity Equation, which is considered the most accurate, can be used if both depth of flow and velocity are available. In cases where velocity measurements are not available or not practical to obtain, the Manning Equation can be used to estimate velocity from the depth data based on certain physical characteristics of the pipe (i.e. the slope and roughness of the pipe being measured). However, the Manning equation assumes uniform, steady flow hydraulic conditions with non-varying roughness, which are typically invalid assumptions in most sanitary sewers. The Continuity Equation was used exclusively for this study.

Continuity Equation

The Continuity Equation states that the flow quantity (Q) is equal to the wetted area (A) multiplied by the average velocity (V) of the flow.

Q = A * V

This equation is applicable in a variety of conditions including backwater, surcharge, and reverse flow.

Data Analysis and Presentation

Data Analysis

A flow monitor is typically programmed to collect data at 5-minute intervals throughout the monitoring period. The monitor stores raw data consisting of (1) the ultrasonic depth, (2) the peak velocity and (3) the pressure depth. The data is imported into ADS's proprietary software and is examined by a data analyst to verify its integrity. The data analyst also reviews the daily field reports and site visit records to identify conditions that would affect the collected data.

Velocity profiles and the line confirmation data developed by the field personnel are reviewed by the data analyst to identify inconsistencies and verify data integrity. Velocity profiles are reviewed and an average to peak velocity ratio is calculated for the site. This ratio is used in converting the peak velocity measured by the sensor to the average velocity used in the Continuity equation. The data analyst selects which depth sensor entity will be used to calculate the final depth information. Silt and/or debris are often present in sewer lines. When present, silt levels are measured at each site visit. They are reviewed by the data analyst and representative silt levels established. Silt reduces the cross sectional area of the flow where as debris causes depth to become deeper and slower. Calculated flow should remain consistent in both hydraulic conditions. Debris may result in reduced line capacity.

Occasionally the velocity sensor's performance may be compromised resulting in invalid readings sporadically during the monitoring period. This is generally caused by excessive debris (silt) blocking the sensor's crystals, shallow flows (~< 1") that may drop below the top of the sensor or very clear flows lacking the particles needed to measure rate. In order to use the Continuity equation to quantify the flow during these periods, a Data Analyst and/or Engineer will use the site's historical pipe curve (depth vs. velocity) data along with valid field confirmations to reconstitute and replace the false velocity recordings with expected velocity readings for a given historical depth along the curve.

Selections for the above parameters can be constant or can change during the monitoring period. While the data analysis process is described in a linear manner, it often requires an iterative approach to accurately complete.

Data Presentation

This type of flow monitoring project generates a large volume of data. To facilitate review of the data, results have been provided in graphical and tabular formats. The flow data is presented graphically in the form of scattergraphs and hydrographs. Hydrographs are based on 15 minute averaging. The daily tabular min/max data are based on base 5-min. interval data. These tables show the flow rate for each day, along with the daily minimum and maximums, the times they were observed, the total daily flow, and total flow for the month (or monitoring period). The following explanation of terms may aid in interpretation of the tables and hydrographs.

DFINAL - Final calculated depth measurement (in inches)

QFINAL - Final calculated flow rate (in MGD)

VFINAL - Final calculated flow velocity (in feet per second)

REPORT TOTAL - Total volume of flow recorded for the indicated time period (in MG)

NOR03

Site Commentary

SITE INFORMATION

Pipe	Elliptical (9.88 in H x 8.5 in W)
Silt	0.00 (in)

OBSERVATIONS

Site NOR03 functioned under normal conditions during the period Saturday, 1 November 2025 to Thursday, 13 November 2025. No surcharge conditions were experienced at this location. No backwater conditions were observed. This site was positioned upstream of site WAK02. A review of flow balancing indicated no issues.

Average flow depth, velocity, and quantity data observed during **Saturday, 01 November 2025 to Thursday, 13 November 2025**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	0.48	1.62	0.011
Minimum	0.05	0.00	0.000
Maximum	1.02	3.95	0.053
Min Time	11/12/2025 5:35:00 AM	11/12/2025 2:35:00 AM	11/12/2025 2:35:00 AM
Max Time	11/01/2025 9:20:00 AM	11/14/2025 2:05:00 PM	11/13/2025 8:20:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and tabular report are based on the 5-minute average.

Values in the graphical reports are based on the fifteen-minute average.

DATA UPTIME

Data uptime observed during **Saturday, 01 November 2025 to Friday, 14 November 2025** is provided in the following table:

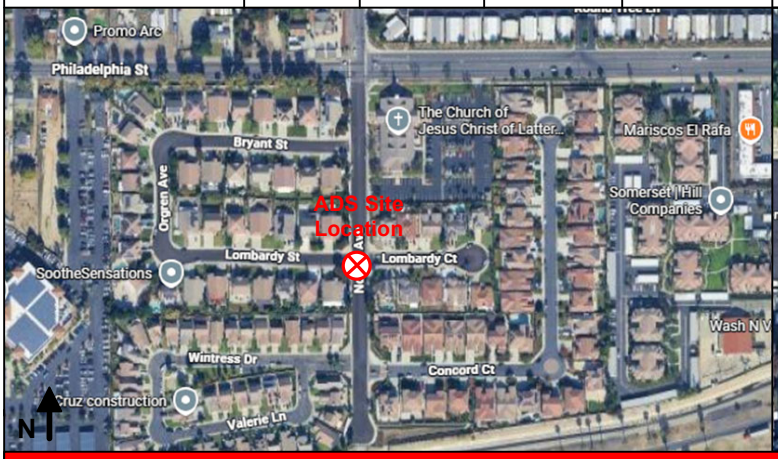
Percent Uptime	
DFINAL (in)	100
VFINAL (ft/s)	100
QFINAL (MGD - Total MG)	100

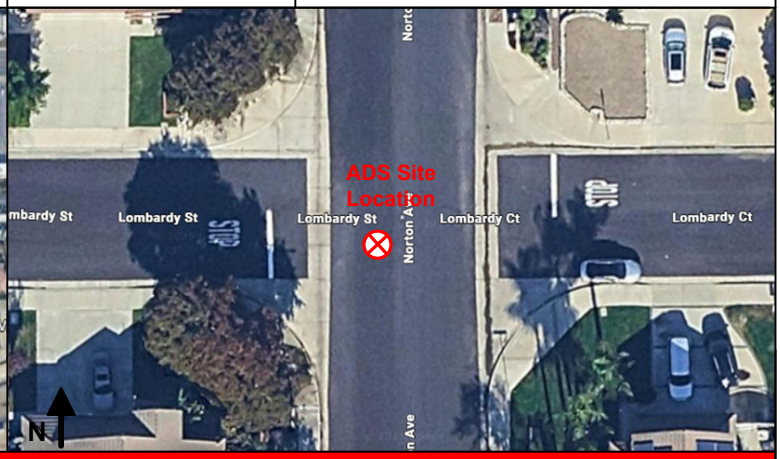
ADS ENVIRONMENTAL SERVICES®

ADS Site Report

Quality Form

Project Name:	Chino.Dexter.TFM.CA25	**City:**	Chino	**Agency:** Chino	**FM Initials:** VM
Site Name:	NOR03	**Install Date:**	10/31/2025	**Monitor Type**	Peak Doppler
Address/Location:	4291 Lombardy St			**Monitor Model**	Triton +
				Data Acquisition	Manual/Wireless Collect
				Manhole ID	Unknown
Access: Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:** 9.88 "
					Pipe Width: 8.50 "





Investigation Information:

Date/Time of Investigation:	10/31/2025 @ 01:10 AM
Site Hydraulics:	Low Straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	0.63 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	1.15 fps
Silt:	0.00 Inches

Manhole Information:

Manhole Depth:	8'
Manhole Material / Condition	PreCast/Good
Pipe Material / Condition:	VCP/Good

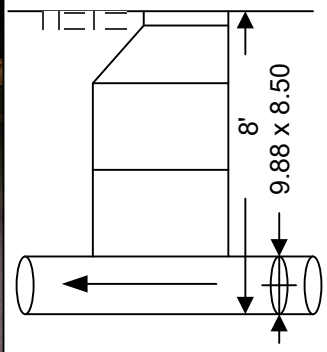
Land Use:	Residential	Commercial	Industrial	Other
	[x]	[ ]	[ ]	[ ]

Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0

Safety Notes:

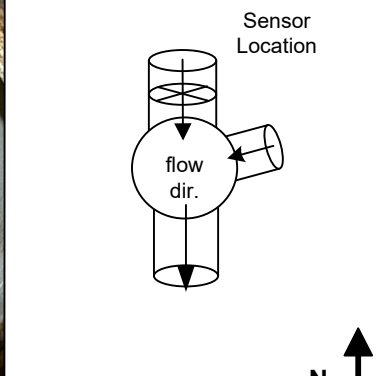
2 man crew required and one blower is to be operated at all times.





Cross Section





Plan

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Standard	Trunk	[ ]	[x]	[ ]	
Sensors Devices:	Ultrasonic/Velocity/Pressure	Lift / Pump Station	[ ]	[x]	[ ]	
Surcharge Height:	0	WWTP	[ ]	[x]	[ ]	
Rain Gauge Zone:		Other	[ ]	[x]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

Hydrograph Report

NOR03

Flow Monitor

NOR03

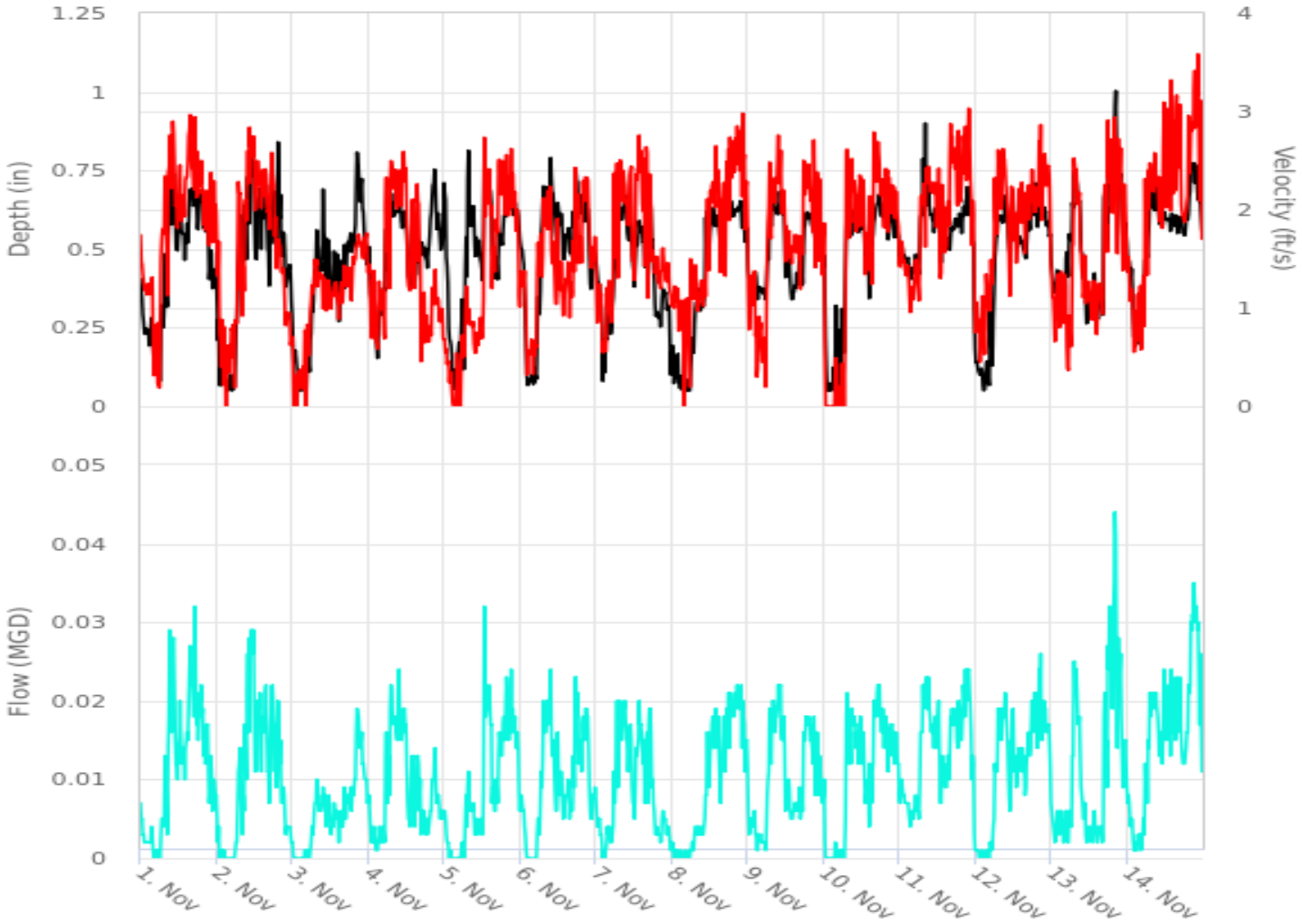
Pipe Height
9.88
in

Report Period

11/01/2025
To
11/14/2025

Legend

DFINAL
VFINAL
QFINAL



15201 Springdale St
Huntington Beach, CA 92649

800-633-7246
www.adsenv.com

Scattergraph Report

NOR03

Flow Monitor

NOR03

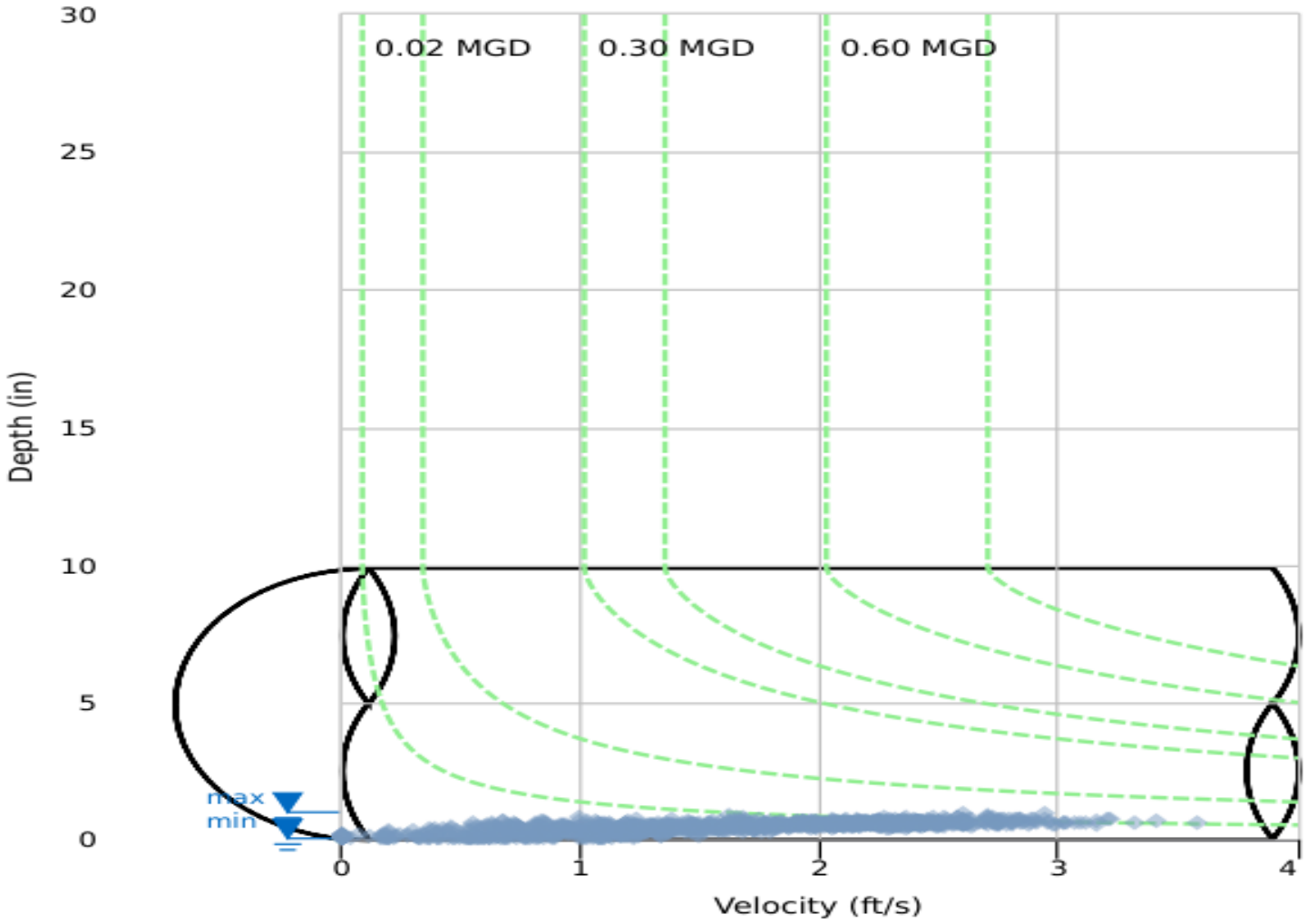
Pipe Height
9.88
in

Report Period

11/01/2025
To
11/14/2025

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



15201 Springdale St
Huntington Beach, CA 92649

800-633-7246
www.adsenv.com

Daily Tabular Report

11/01/2025 00:00 - 11/14/2025 23:59
NOR03Pipe: Elliptical (9.88 in H x 8.5 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)					
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total
11/01/2025	06:05	0.05	09:20	1.02	0.46	04:25	0.00	15:25	3.23	1.86	04:25	0.000	17:20	0.037	0.012	0.012
11/02/2025	01:10	0.05	19:30	0.99	0.45	01:25	0.00	11:50	3.08	1.56	01:25	0.000	11:15	0.034	0.010	0.010
11/03/2025	01:50	0.05	09:50	1.01	0.40	00:30	0.00	21:10	1.95	1.09	00:30	0.000	21:10	0.020	0.006	0.006
11/04/2025	03:00	0.15	09:45	0.78	0.50	16:45	0.41	07:25	2.66	1.43	03:05	0.000	09:45	0.027	0.009	0.009
11/05/2025	02:40	0.05	07:40	0.89	0.49	01:55	0.00	12:55	2.96	1.27	01:55	0.000	12:50	0.034	0.009	0.009
11/06/2025	02:25	0.05	09:50	0.85	0.49	02:25	0.00	07:40	2.62	1.44	02:25	0.000	09:50	0.027	0.010	0.010
11/07/2025	02:20	0.05	17:30	0.70	0.43	00:40	0.51	16:55	3.19	1.66	02:25	0.000	16:55	0.024	0.009	0.009
11/08/2025	00:50	0.05	10:45	0.69	0.40	04:00	0.00	20:45	3.21	1.70	04:00	0.000	18:00	0.025	0.010	0.010
11/09/2025	14:10	0.33	10:25	0.70	0.49	03:10	0.00	21:10	3.08	1.68	03:10	0.000	10:30	0.023	0.010	0.010
11/10/2025	01:10	0.05	17:50	0.68	0.46	00:40	0.00	16:35	3.20	1.55	00:40	0.000	17:10	0.026	0.011	0.011
11/11/2025	23:55	0.25	08:15	0.95	0.56	03:40	0.93	17:20	3.22	1.97	23:55	0.002	21:55	0.026	0.014	0.014
11/12/2025	01:50	0.05	18:55	0.72	0.46	02:35	0.00	20:45	3.09	1.82	02:35	0.000	20:50	0.028	0.011	0.011
11/13/2025	04:05	0.25	20:20	1.02	0.52	05:30	0.34	20:20	3.31	1.54	04:05	0.001	20:20	0.053	0.011	0.011
11/14/2025	03:10	0.18	20:45	0.78	0.55	03:55	0.46	14:05	3.95	2.12	03:10	0.001	21:25	0.041	0.016	0.016

11/01/2025 00:00 - 11/14/2025 23:59

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)
Total			0.147
Average	0.48	1.62	0.011

ROS01

Site Commentary

SITE INFORMATION

Pipe	Elliptical (12.13 in H x 12.25 in W)
Silt	0.00 (in)

OBSERVATIONS

Site ROS01 functioned under normal conditions during the period Saturday, 1 November 2025 to Thursday, 13 November 2025. No surcharge conditions were experienced at this location. No backwater conditions were observed. This site was positioned downstream of site WAK02. A review of flow balancing indicated no issues.

Average flow depth, velocity, and quantity data observed during **Saturday, 01 November 2025 to Thursday, 13 November 2025**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	3.52	0.83	0.111
Minimum	1.86	0.41	0.022
Maximum	5.43	1.30	0.295
Min Time	11/10/2025 4:00:00 AM	11/07/2025 3:00:00 AM	11/10/2025 3:55:00 AM
Max Time	11/14/2025 8:55:00 PM	11/14/2025 8:55:00 PM	11/14/2025 8:55:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and tabular report are based on the 5-minute average.

Values in the graphical reports are based on the fifteen-minute average.

DATA UPTIME

Data uptime observed during **Saturday, 01 November 2025 to Friday, 14 November 2025** is provided in the following table:

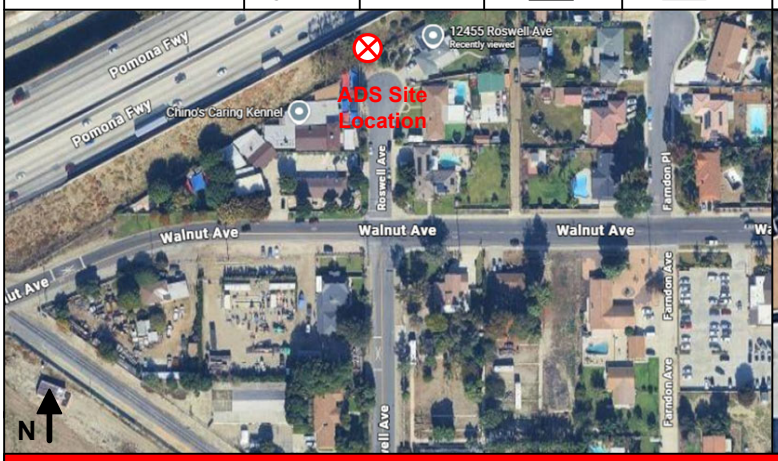
Percent Uptime	
DFINAL (in)	100
VFINAL (ft/s)	100
QFINAL (MGD - Total MG)	100

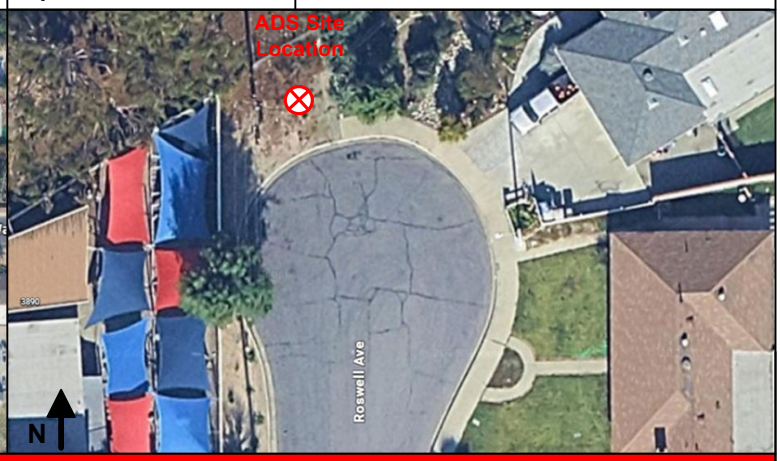
ADS ENVIRONMENTAL SERVICES®

ADS Site Report

Quality Form

Project Name:	Chino.Dexter.TFM.CA25	**City:**	Chino	**Agency:** Chino	**FM Initials:** VM
Site Name:	ROS01	**Install Date:**	10/31/2025	**Monitor Type**	Peak Doppler
Address/Location:	12455 Roswell Ave			**Monitor Model**	Triton +
				Data Acquisition	Manual/Wireless Collect
				Manhole ID	Unknown
Access: Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:** 12.13 "
					Pipe Width: 12.25 "





Investigation Information:

Date/Time of Investigation:	10/31/2025 @ 03:10 AM
Site Hydraulics:	Good Straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	2.25 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	0.60 fps
Silt:	0.00 Inches

Manhole Information:

Manhole Depth:	8'-4"
Manhole Material / Condition	PreCast/Good
Pipe Material / Condition:	VCP/Good

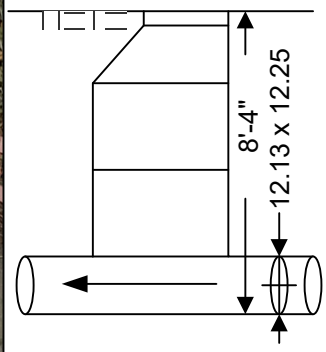
Land Use:	Residential	Commercial	Industrial	Other
	[x]	[ ]	[ ]	[ ]

Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0

Safety Notes:

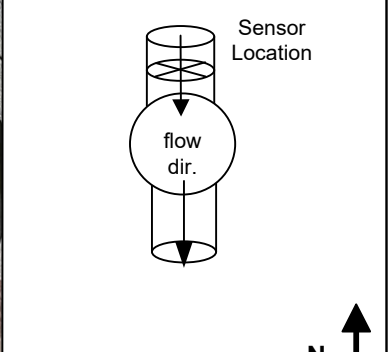
2 man crew required and one blower is to be operated at all times.





Cross Section





Plan

Installation Information

Installation Type:	Standard
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	**Yes**	**No**	**?**	**Distance**
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[x]	[ ]	
WWTP	[ ]	[x]	[ ]	
Other	[ ]	[x]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

Hydrograph Report

ROS01

Flow Monitor

ROS01

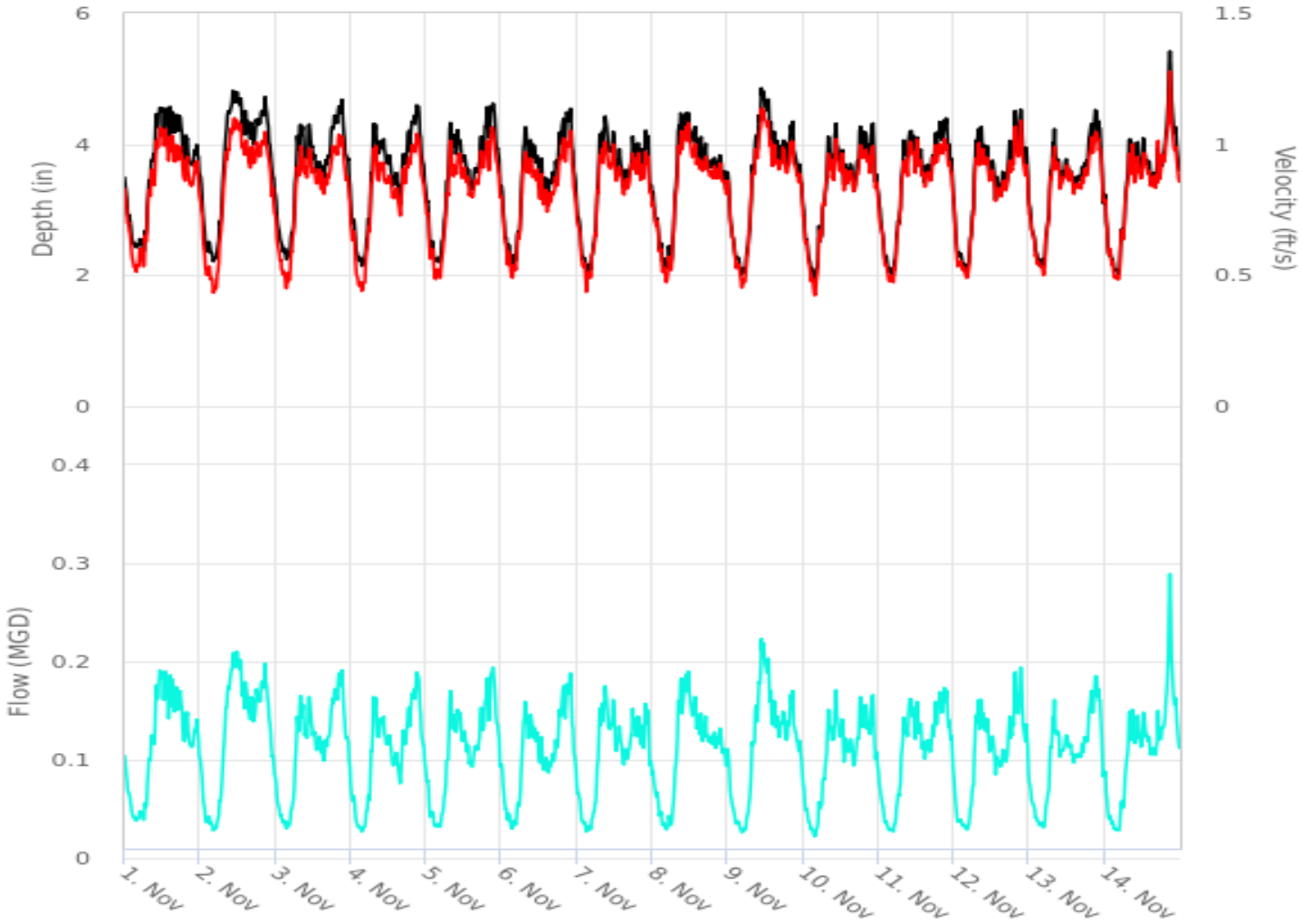
Pipe Height
12.13
in

Report Period

11/01/2025
To
11/14/2025

Legend

DFINAL
VFINAL
QFINAL



15201 Springdale St
Huntington Beach, CA 92649

800-633-7246
www.adsenv.com

Scattergraph Report

ROS01

Flow Monitor

ROS01

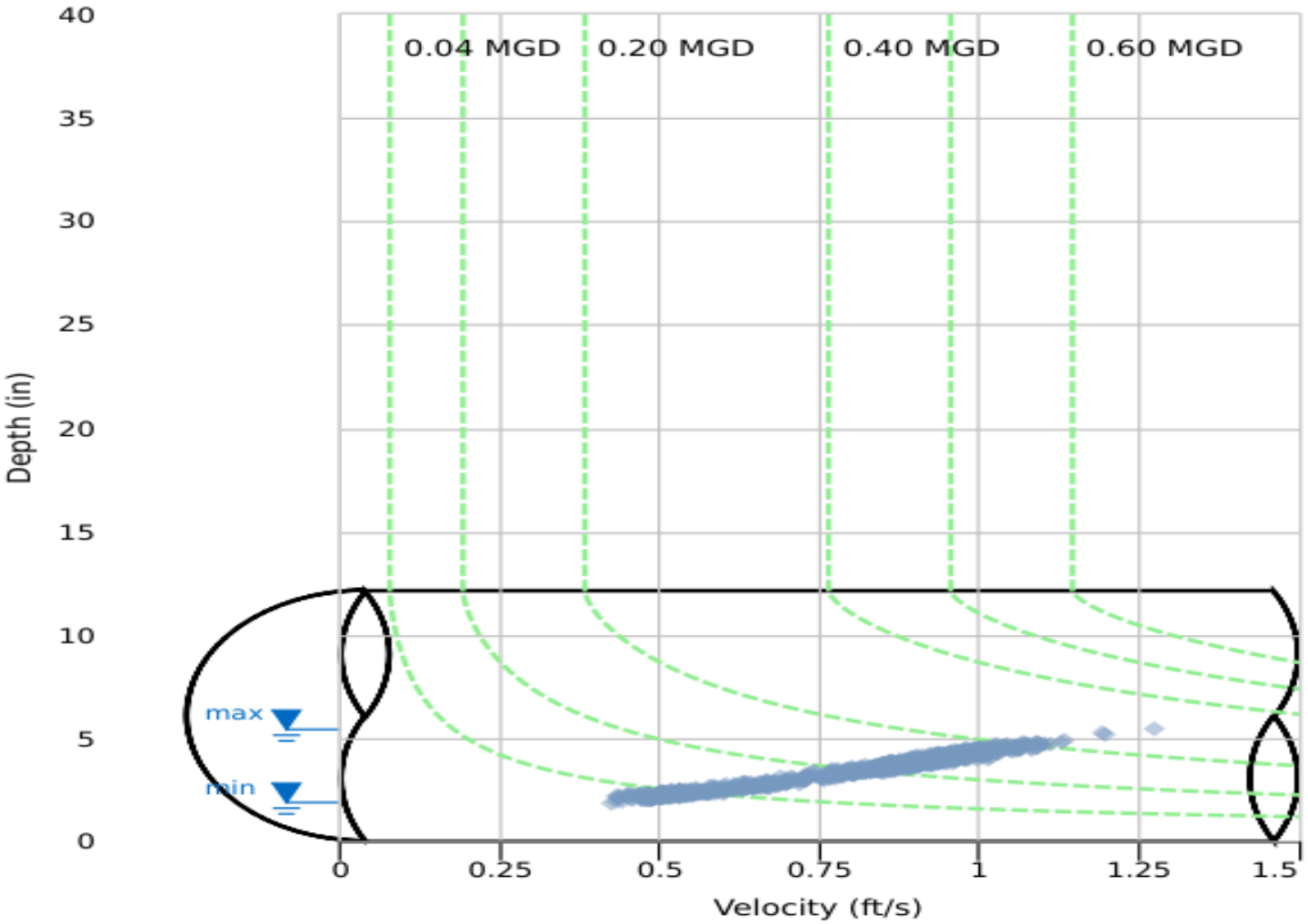
Pipe Height
12.13
in

Report Period

11/01/2025
To
11/14/2025

Legend

- DFINAL - VFINAL
- Iso-Q™
- Min-Max Depth



15201 Springdale St
Huntington Beach, CA 92649

800-633-7246
www.adsenv.com

Daily Tabular Report

11/01/2025 00:00 - 11/14/2025 23:59
ROS01Pipe: Elliptical (12.13 in H x 12.25 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)					
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total
11/01/2025	06:15	2.35	14:35	4.63	3.65	03:45	0.50	11:10	1.08	0.84	03:45	0.037	11:15	0.194	0.118	0.118
11/02/2025	04:20	2.19	10:30	4.83	3.79	04:15	0.43	10:45	1.10	0.85	04:20	0.028	11:50	0.214	0.129	0.129
11/03/2025	03:35	2.23	21:15	4.71	3.60	03:35	0.44	20:20	1.05	0.82	03:35	0.029	21:20	0.194	0.113	0.113
11/04/2025	03:35	2.13	21:00	4.60	3.51	03:30	0.44	20:55	1.04	0.80	03:35	0.027	21:00	0.189	0.107	0.107
11/05/2025	03:00	2.18	21:25	4.67	3.54	03:05	0.46	20:55	1.08	0.82	03:00	0.031	21:25	0.197	0.111	0.111
11/06/2025	03:30	2.09	22:00	4.58	3.48	02:00	0.47	22:05	1.08	0.81	03:30	0.029	22:05	0.194	0.106	0.106
11/07/2025	04:35	2.02	09:05	4.46	3.45	03:00	0.41	09:05	1.03	0.82	03:00	0.026	09:05	0.180	0.106	0.106
11/08/2025	04:30	2.09	10:45	4.58	3.48	04:30	0.46	11:40	1.09	0.83	04:30	0.028	10:45	0.196	0.110	0.110
11/09/2025	04:40	1.98	10:55	4.89	3.54	04:40	0.44	10:45	1.15	0.85	04:40	0.025	10:45	0.224	0.117	0.117
11/10/2025	04:00	1.86	10:30	4.47	3.39	03:35	0.42	10:30	1.03	0.81	03:55	0.022	10:30	0.180	0.104	0.104
11/11/2025	04:40	2.00	19:25	4.47	3.46	03:25	0.47	10:25	1.04	0.83	04:40	0.027	19:25	0.177	0.109	0.109
11/12/2025	04:15	2.06	19:30	4.59	3.43	04:00	0.49	21:15	1.10	0.82	04:15	0.029	21:15	0.197	0.106	0.106
11/13/2025	03:35	2.12	21:05	4.54	3.42	04:30	0.49	21:30	1.08	0.82	04:30	0.031	21:30	0.191	0.105	0.105
11/14/2025	04:20	2.01	20:55	5.43	3.49	03:20	0.48	20:55	1.30	0.84	04:20	0.027	20:55	0.295	0.113	0.113

11/01/2025 00:00 - 11/14/2025 23:59

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)
Total			1.553
Average	3.52	0.83	0.111

WAK02

Site Commentary

SITE INFORMATION

Pipe	Round (11.88 in H)
Silt	0.00 (in)

OBSERVATIONS

Site WAK02 functioned under normal conditions during the period Saturday, 1 November 2025 to Thursday, 13 November 2025. No surcharge conditions were experienced at this location. No backwater conditions were observed. This site was positioned downstream of site NOR03. A review of flow balancing indicated no issues.

Average flow depth, velocity, and quantity data observed during **Saturday, 01 November 2025 to Thursday, 13 November 2025,** along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	1.67	1.45	0.067
Minimum	0.97	0.48	0.010
Maximum	2.70	2.21	0.183
Min Time	11/10/2025 3:00:00 AM	11/10/2025 3:25:00 AM	11/11/2025 4:20:00 AM
Max Time	11/14/2025 8:35:00 PM	11/09/2025 12:40:00 PM	11/09/2025 12:40:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and tabular report are based on the 5-minute average.

Values in the graphical reports are based on the fifteen-minute average.

DATA UPTIME

Data uptime observed during **Saturday, 01 November 2025 to Friday, 14 November 2025** is provided in the following table:

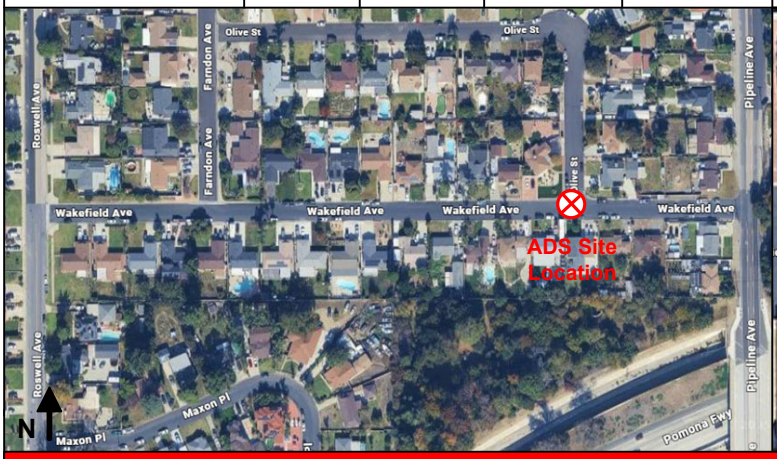
Percent Uptime	
DFINAL (in)	100
VFINAL (ft/s)	100
QFINAL (MGD - Total MG)	100

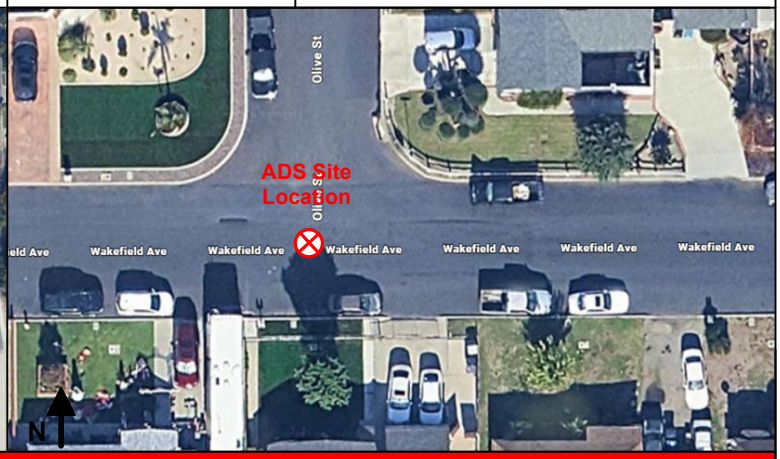
ADS ENVIRONMENTAL SERVICES®

ADS Site Report

Quality Form

Project Name:	Chino.Dexter.TFM.CA25	**City:**	Chino	**Agency:** Chino	**FM Initials:** VM
Site Name:	WAK02	**Install Date:**	10/31/2025	**Monitor Type**	Peak Doppler
Address/Location:	4051 Wakefield Ave			**Monitor Model**	Triton +
				Data Acquisition	Manual/Wireless Collect
				Manhole ID	Unknown
Access: Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:** 11.88 “
					Pipe Width: 11.88 “





Investigation Information:

Date/Time of Investigation:	10/31/2025 @ 02:10 AM
Site Hydraulics:	Good Straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	1.50 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	1.39 fps
Silt:	0.00 Inches

Manhole Information:

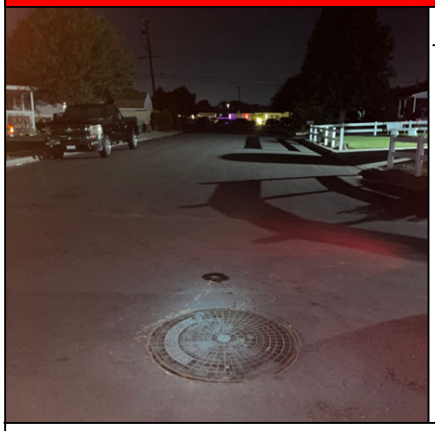
Manhole Depth:	13'-4"
Manhole Material / Condition	PreCast/Good
Pipe Material / Condition:	VCP/Good

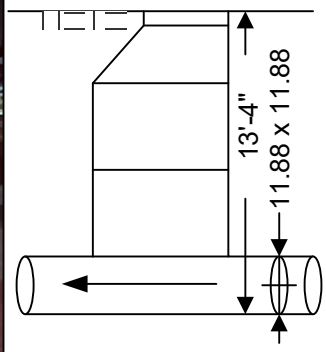
Land Use:	Residential	Commercial	Industrial	Other
	[x]	[ ]	[ ]	[ ]

Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0

Safety Notes:

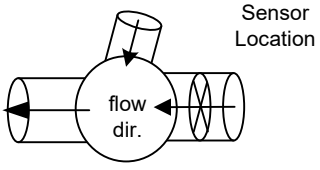
2 man crew required and one blower is to be operated at all times.





Cross Section





Plan

N

Installation Information

Installation Type:	Standard
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	Yes	No	?	Distance
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[x]	[ ]	
WWTP	[ ]	[x]	[ ]	
Other	[ ]	[x]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

Hydrograph Report

WAK02

Flow Monitor

WAK02

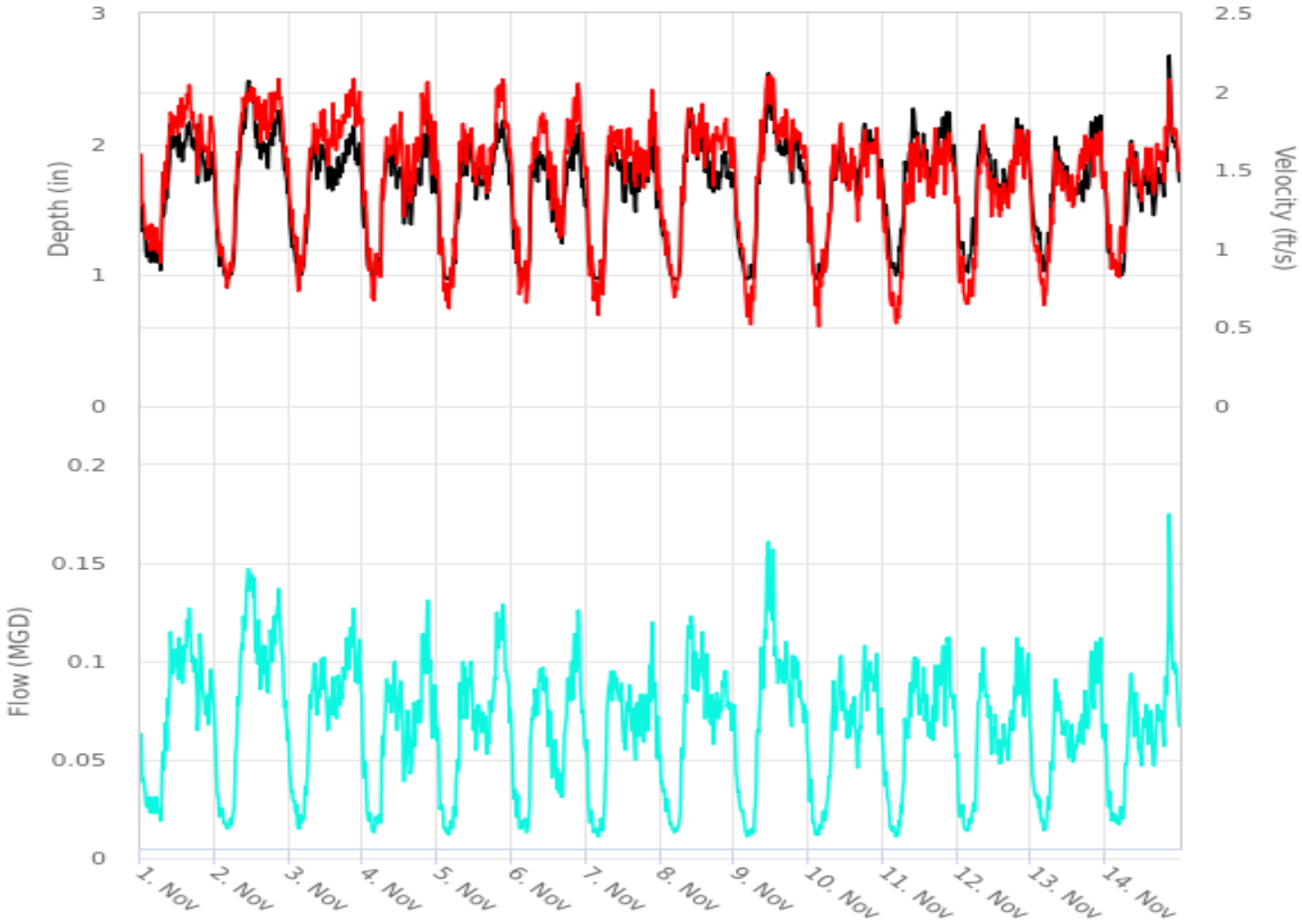
Pipe Height
11.88
in

Report Period

11/01/2025
To
11/14/2025

Legend

DFINAL
VFINAL
QFINAL



15201 Springdale St
Huntington Beach, CA 92649

800-633-7246
www.adsenv.com

Scattergraph Report

WAK02

Flow Monitor

WAK02

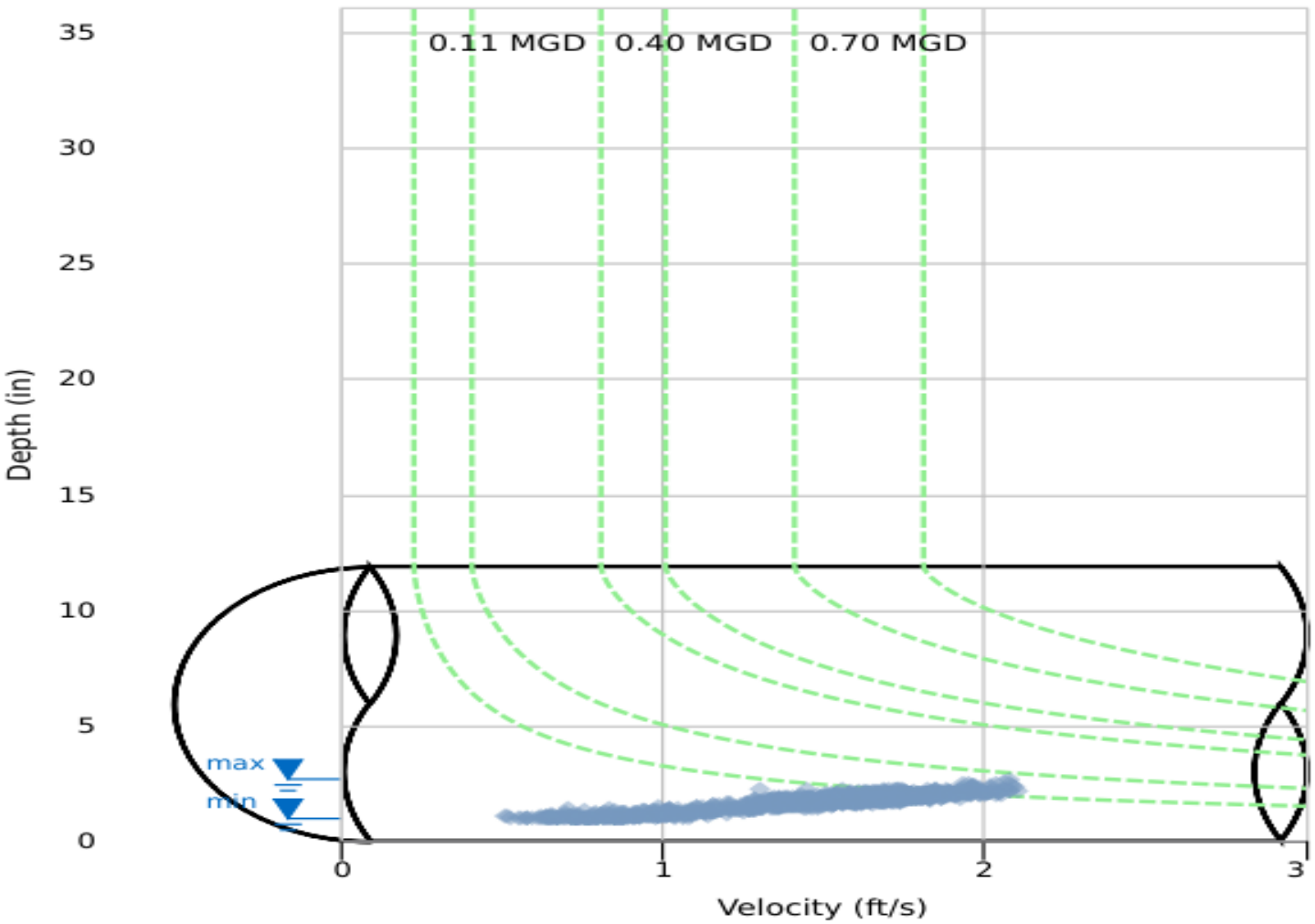
Pipe Height
11.88
in

Report Period

11/01/2025
To
11/14/2025

Legend

DFINAL - VFINAL
Iso-Q™
Min-Max Depth



15201 Springdale St
Huntington Beach, CA 92649

800-633-7246
www.adsenv.com

Daily Tabular Report

11/01/2025 00:00 - 11/14/2025 23:59
WAK02Pipe: Round (11.88 in H), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)					
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total
11/01/2025	06:35	1.03	15:55	2.24	1.70	06:30	0.88	13:15	2.11	1.56	06:35	0.018	15:55	0.135	0.073	0.073
11/02/2025	04:10	0.97	11:00	2.54	1.79	04:05	0.73	21:25	2.12	1.60	04:10	0.014	12:05	0.153	0.084	0.084
11/03/2025	03:15	0.98	21:05	2.16	1.69	03:05	0.71	20:55	2.09	1.58	03:05	0.014	21:05	0.129	0.073	0.073
11/04/2025	03:35	0.98	20:45	2.21	1.61	03:35	0.63	20:55	2.18	1.46	03:35	0.012	20:55	0.138	0.063	0.063
11/05/2025	03:00	0.97	21:20	2.22	1.66	02:45	0.59	21:10	2.10	1.48	02:45	0.012	19:15	0.133	0.068	0.068
11/06/2025	05:20	0.97	21:40	2.18	1.58	04:50	0.65	21:15	2.11	1.45	04:50	0.013	21:40	0.128	0.062	0.062
11/07/2025	03:05	0.97	21:25	2.19	1.60	04:00	0.56	21:25	2.05	1.43	04:00	0.011	21:25	0.129	0.062	0.062
11/08/2025	04:20	0.97	10:25	2.42	1.65	04:35	0.69	09:00	2.01	1.48	04:35	0.013	10:25	0.141	0.068	0.068
11/09/2025	03:55	0.97	12:40	2.65	1.72	05:20	0.50	12:40	2.21	1.50	04:05	0.010	12:40	0.183	0.075	0.075
11/10/2025	02:35	0.97	18:10	2.18	1.67	03:25	0.48	10:40	1.86	1.35	03:25	0.011	18:10	0.113	0.062	0.062
11/11/2025	04:15	0.99	09:40	2.40	1.75	04:10	0.52	16:40	1.88	1.32	04:15	0.010	20:50	0.118	0.065	0.065
11/12/2025	03:30	1.01	19:15	2.30	1.69	03:05	0.62	08:40	1.88	1.31	03:30	0.013	19:15	0.125	0.061	0.061
11/13/2025	04:00	1.02	22:20	2.24	1.66	04:05	0.63	22:25	1.78	1.35	04:05	0.013	22:20	0.115	0.061	0.061
11/14/2025	05:25	0.99	20:35	2.70	1.62	03:30	0.78	20:30	2.08	1.44	03:30	0.016	20:35	0.177	0.063	0.063

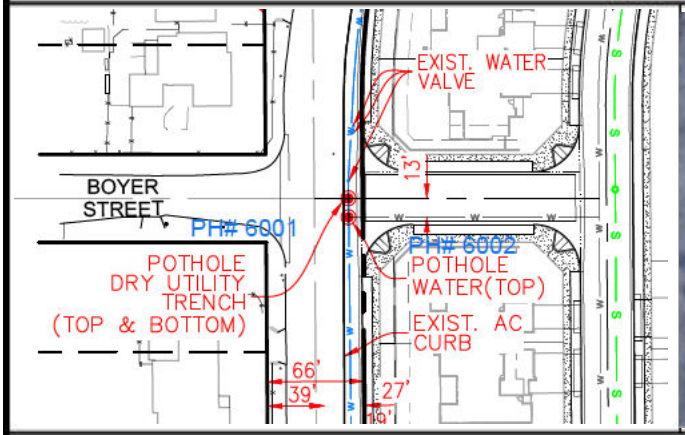
11/01/2025 00:00 - 11/14/2025 23:59

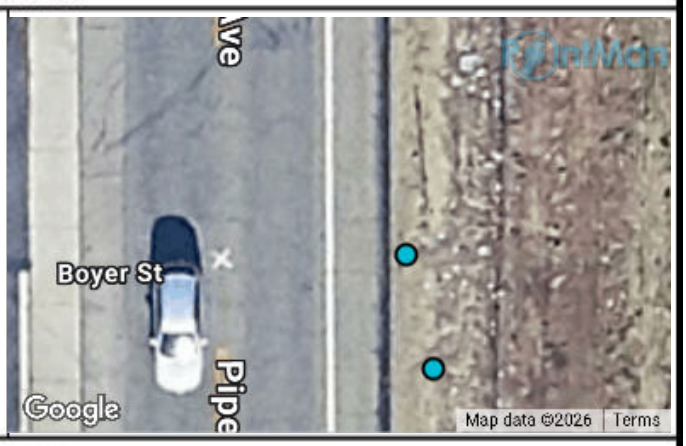
	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)
Total			0.941
Average	1.67	1.45	0.067

TEST HOLE DATA FORM

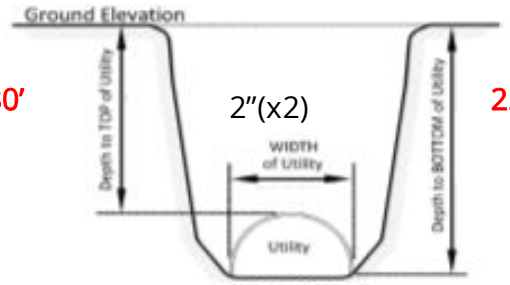
TEST HOLE HOLE NUMBER	6001	CREW	Charlie
DATE EXCAVATED	04/08/2026	TRUCK #	208
CLIENT PROJECT NO.		CITY	Chino
BPC PROJECT NO.	226-032	COUNTY	SB
PROJECT NAME	Pipeline Ave	LOCATION	Pipeline Ave and Boyer St

LOCATION PLAN





SECTION VIEW



NOT TO SCALE

UTILITY DIRECTION:

N-S

COORDINATES

N: _____

E: _____

ELE: 835.4646 ft

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM. MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED UTILITY. ACTUAL MATERIAL MAY DIFFER/ BOUDREAU PIPELINE IS NOT RESPONSIBLE FOR HOW THE INFORMATION SUPPORTED IS INTERPRETED AND USED.

SURFACE TYPE	Dirt	SWING TIES FROM STRUCTURE	APROX. DISTANCE
THICKNESS		A W of staked location	2'7"
SOIL CONDITIONS	Loam	B	
UTILITY TYPE	Comms	C	
UTILITY SIZE	2"(x2)	UTILITY OWNER MCI	
UTILITY MATERIAL	Plastic	PREPARED BY: Charlie	
MARKET SET	Orange Stake	REVIEWED BY: NW	

REMARKS

Two, 2" lines stacked on top of each other. Depth from the top of the highest to the bottom of the lowest line

POWERED BY FieldMan

BOUDREAU UTILITY LOCATING

Before



Utility



Rod Shot



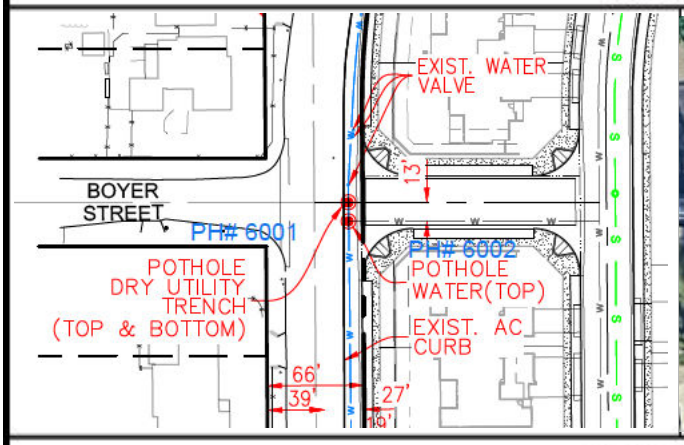
Final



TEST HOLE DATA FORM

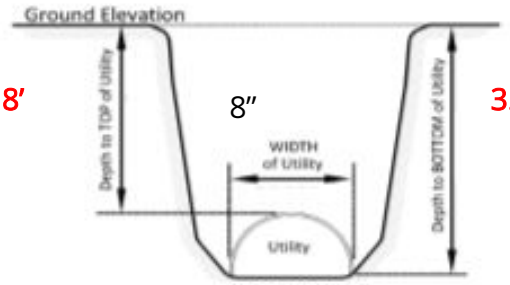
TEST HOLE HOLE NUMBER	6002	CREW	Charlie
DATE EXCAVATED	04/08/2026	TRUCK #	208
CLIENT PROJECT NO.		CITY	Chino
BPC PROJECT NO.	226-032	COUNTY	SB
PROJECT NAME	Pipeline Ave	LOCATION	Pipeline Ave and Boyer St

LOCATION PLAN





SECTION VIEW



NOT TO SCALE

UTILITY DIRECTION:

N-S

COORDINATES

N: _____

E: _____

ELE: _____

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM. MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED UTILITY. ACTUAL MATERIAL MAY DIFFER/ BOUDREAU PIPELINE IS NOT RESPONSIBLE FOR HOW THE INFORMATION SUPPORTED IS INTERPRETED AND USED.

SURFACE TYPE	Dirt	SWING TIES FROM STRUCTURE	APROX. DISTANCE
THICKNESS		A E of staked location	2'
SOIL CONDITIONS	Loam	B	
UTILITY TYPE	Water	C	
UTILITY SIZE	8"	UTILITY OWNER	
UTILITY MATERIAL	ACP	PREPARED BY: Charlie	
MARKET SET	Blue Stake	REVIEWED BY: NW	

REMARKS

POWERED BY RamMan

PIPELINE AVENUE AND BOYER STREET

Before



Utility



Rod Shot



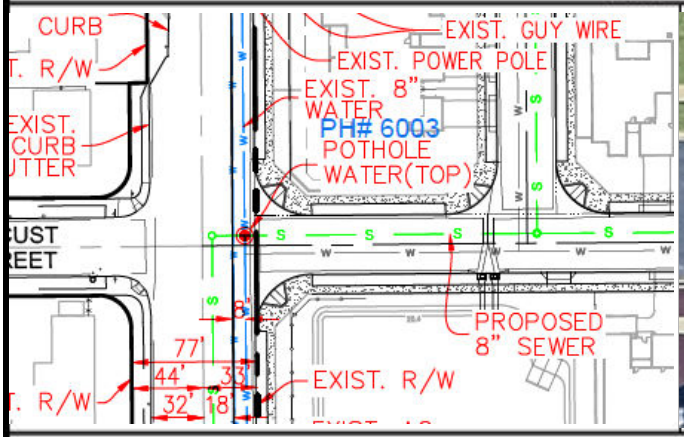
Final

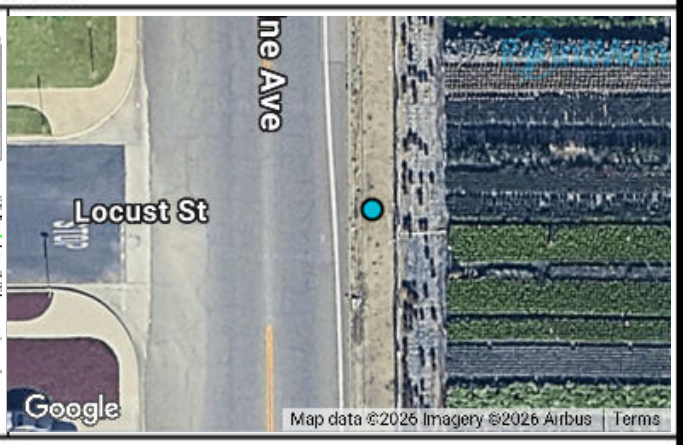


TEST HOLE DATA FORM

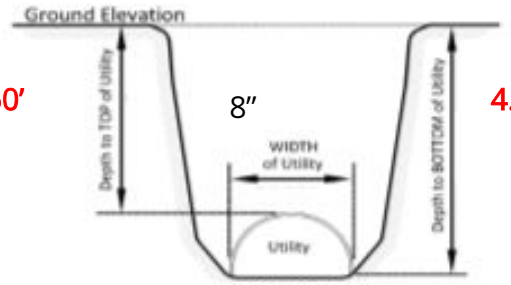
TEST HOLE HOLE NUMBER	6003	CREW	Charlie
DATE EXCAVATED	04/08/2026	TRUCK #	208
CLIENT PROJECT NO.		CITY	Chino
BPC PROJECT NO.	226-032	COUNTY	SB
PROJECT NAME	Pipeline Ave	LOCATION	Pipeline Ave and Locust Ave

LOCATION PLAN





SECTION VIEW



3.60′ 8″ 4.40'

UTILITY DIRECTION:

N-S

COORDINATES

N: _____

E: _____

ELE: 833.2802 ft

NOT TO SCALE

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM. MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED UTILITY. ACTUAL MATERIAL MAY DIFFER/ BOUDREAU PIPELINE IS NOT RESPONSIBLE FOR HOW THE INFORMATION SUPPORTED IS INTERPRETED AND USED.

SURFACE TYPE	Dirt	SWING TIES FROM STRUCTURE		APROX. DISTANCE
THICKNESS		A	W of staked location	1′
SOIL CONDITIONS	Loam	B		
UTILITY TYPE	Water	C		
UTILITY SIZE	8″	UTILITY OWNER		
UTILITY MATERIAL	ACP	PREPARED BY:	Charlie	
MARKET SET	Blue Stake	REVIEWED BY:	NW	

REMARKS

No number on the staked nail , so we just numbered in order with the last 3 holes

POWERED BY RainMan

Before



Utility



Rod Shot



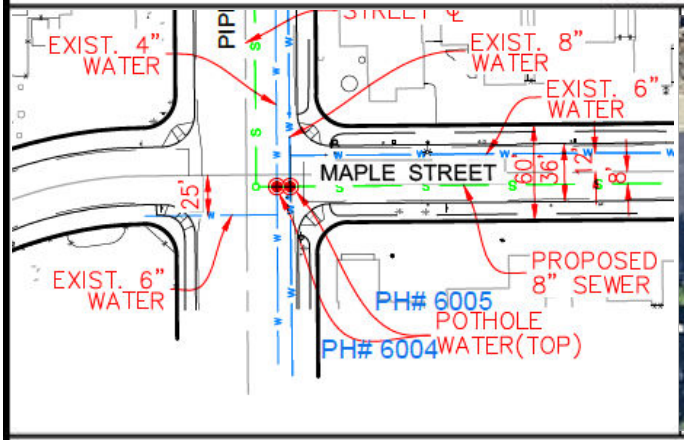
Final



TEST HOLE DATA FORM

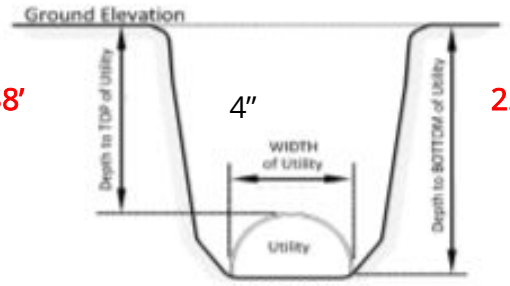
TEST HOLE HOLE NUMBER	6004	CREW	Charlie
DATE EXCAVATED	04/08/2026	TRUCK #	208
CLIENT PROJECT NO.		CITY	Chino
BPC PROJECT NO.	225-032	COUNTY	SB
PROJECT NAME	Pipeline Ave	LOCATION	Pipeline Ave and Maple St

LOCATION PLAN





SECTION VIEW



NOT TO SCALE

UTILITY DIRECTION: N-S

COORDINATES

N: _____

E: _____

ELE: 827.1342 ft

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM. MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED UTILITY. ACTUAL MATERIAL MAY DIFFER/ BOUDREAU PIPELINE IS NOT RESPONSIBLE FOR HOW THE INFORMATION SUPPORTED IS INTERPRETED AND USED.

SURFACE TYPE	AC	SWING TIES FROM STRUCTURE		APROX. DISTANCE
THICKNESS	6"	A	W of staked location	3'
SOIL CONDITIONS	Loam	B		
UTILITY TYPE	Water	C		
UTILITY SIZE	4"	UTILITY OWNER		
UTILITY MATERIAL	Steel	PREPARED BY:	Charlie	
MARKET SET	Blue Nail	REVIEWED BY:	NW	

REMARKS

POWERED BY RainMan

Before



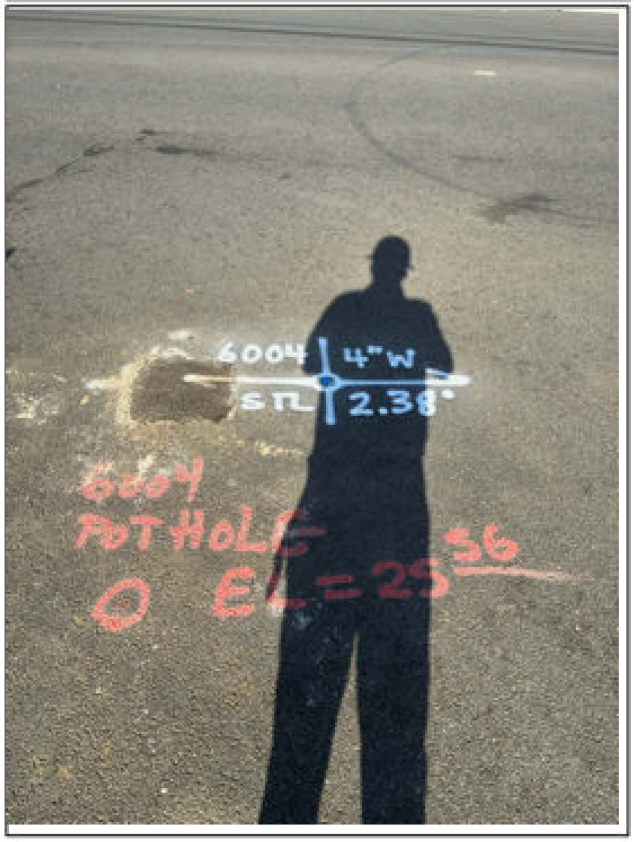
Utility



Rod Shot



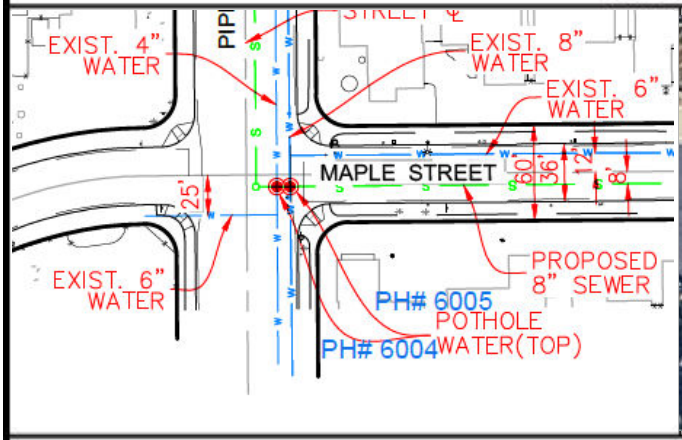
Final



TEST HOLE DATA FORM

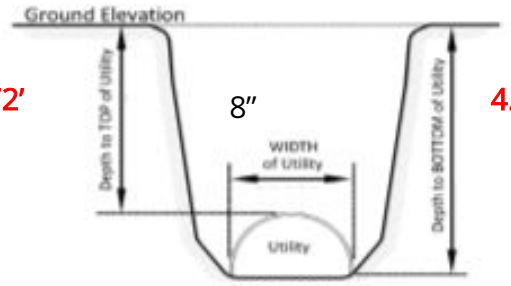
TEST HOLE HOLE NUMBER	6005	CREW	Charlie
DATE EXCAVATED	04/08/2026	TRUCK #	208
CLIENT PROJECT NO.		CITY	Chino
BPC PROJECT NO.	226-032	COUNTY	SB
PROJECT NAME	Pipeline Ave	LOCATION	Pipeline Ave and Maple St

LOCATION PLAN





SECTION VIEW



NOT TO SCALE

UTILITY DIRECTION:

N-S

COORDINATES

N: _____

E: _____

ELE: 824.5538 ft

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM. MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED UTILITY. ACTUAL MATERIAL MAY DIFFER/ BOUDREAU PIPELINE IS NOT RESPONSIBLE FOR HOW THE INFORMATION SUPPORTED IS INTERPRETED AND USED.

SURFACE TYPE	AC	SWING TIES FROM STRUCTURE	APROX. DISTANCE
THICKNESS	6"	A At staked location	
SOIL CONDITIONS	Loam	B	
UTILITY TYPE	Water	C	
UTILITY SIZE	8"	UTILITY OWNER	
UTILITY MATERIAL	ACP	PREPARED BY: Charlie	
MARKET SET	Blue Nail	REVIEWED BY: NW	

REMARKS

POWERED BY RamMan

BOUDREAU
UTILITY LOCATING

Before



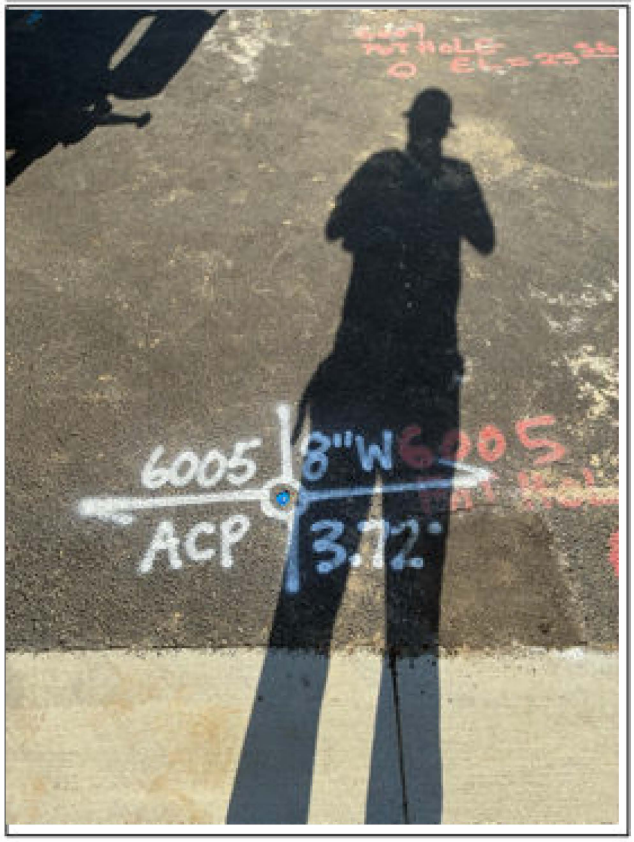
Utility



Rod Shot



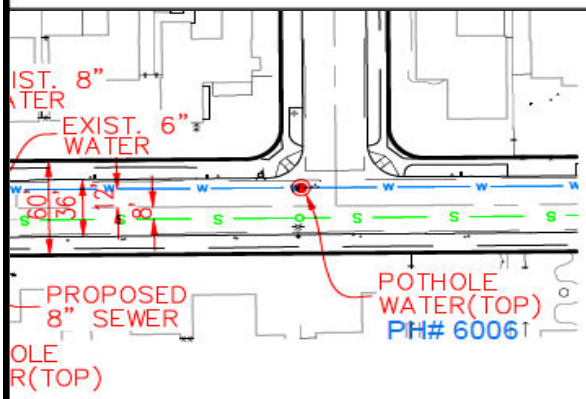
Final



TEST HOLE DATA FORM

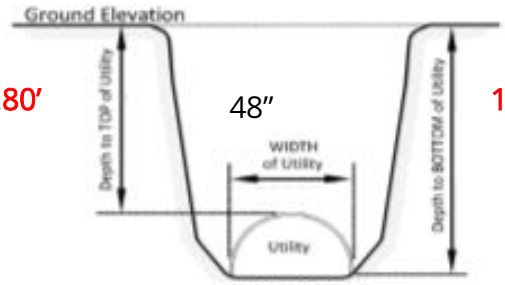
TEST HOLE HOLE NUMBER	6006	CREW	Joel / Charlie
DATE EXCAVATED	04/08/2026	TRUCK #	208
CLIENT PROJECT NO.		CITY	Chino
BPC PROJECT NO.	226-032	COUNTY	San Bernardino
PROJECT NAME	Pipeline Ave	LOCATION	Maple St & College Ave

LOCATION PLAN





SECTION VIEW



NOT TO SCALE

UTILITY DIRECTION: E - W

COORDINATES
N:
E:
ELE: 145.957 m

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM. MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED UTILITY. ACTUAL MATERIAL MAY DIFFER/ BOUDREAU PIPELINE IS NOT RESPONSIBLE FOR HOW THE INFORMATION SUPPORTED IS INTERPRETED AND USED.

SURFACE TYPE	Asphalt	SWING TIES FROM STRUCTURE	APROX. DISTANCE
THICKNESS	7"	A S of CF	16.20'
SOIL CONDITIONS	Loam	B W of SS MH	15.40'
UTILITY TYPE	Storm Drain	C	
UTILITY SIZE	48"	UTILITY OWNER	
UTILITY MATERIAL	RCP	PREPARED BY: Joel Flores	
MARKET SET	Green Nail	REVIEWED BY: NW	

REMARKS

POWERED BY RinMan

Before



Utility



Rod Shot



Final



ATTACHMENT D

CITY OF CHINO CORRESPONDENCE

Outlook

Re: Nerio Farms/Borstein Sewer Study (USE THIS EMAIL)

From Plasencia, Jesus <JPlasencia@cityofchino.org>
Date Thu 7/2/2026 5:08 PM
To Anthony Ng <Anthony@unitedcivilinc.com>; Kathleen Noel <kathleen@dwilsoneng.com>
Cc Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>

Anthony,

I think you raise a valid concern regarding the shallow sewer. We want to avoid creating a situation where the sewer is constructed in a way that would prevent adjacent homeowners from connecting to it in the future. That said, I don't think City staff is prepared to commit to any of the recommended options at this early stage, particularly before engineering design plans have been developed. For the purposes of the sewer study, could you please describe relocating Monte Vista's water line as the City's preferred option, while noting that it is contingent upon obtaining Monte Vista's approval and confirming through engineering design that the relocation would not result in a shallow sewer that limits future residential connections? Additionally, if those conditions cannot be met, the City is willing to consider alternative alignments, including the team's preferred option, during the final engineering design phase.

Thanks,

Jesus Plasencia, P.E.
Assistant City Engineer
City of Chino | Public Works Department
13220 Central Avenue | Chino, CA 91710
(909) 334-3417 | jplasencia@cityofchino.org

www.cityofchino.org

From: Anthony Ng <Anthony@unitedcivilinc.com>
Sent: Tuesday, June 30, 2026 11:25 PM
To: Plasencia, Jesus <JPlasencia@cityofchino.org>; Kathleen Noel <kathleen@dwilsoneng.com>
Cc: Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>
Subject: Nerio Farms/Borstein Sewer Study (USE THIS EMAIL)

Hi Jesus,

Please see another pothole study we prepared at the same location. The elevation was slightly different due to the datum. We also survey as-built the point of connection. The pothole result is illustrated in Detail A with profile: top of pavement 825.18, top of water 821.55, bottom of water 820.66. State Drinking Water Agency requires 12” clear for vertical crossing, the top of proposed sewer is 819.66.

If we are using 10-inch sewer, the invert of pipe will be at 818.63.

With 818.63 at this location and 810.55 at point of connection on Norton Avenue near Lexington, the pipe slope is 0.30% with standard fall within manhole.

The 0.30% is slightly less than the standard 0.32% for 10-inch sewer, but above the sub-minimum of 0.24%.

We may not get the desired pipe velocity in the immediate future, but eventually it will be achieved with additional connections.

The current proposal has the sewer pipe of 6.5’ rim to invert. If we raised the pipe up 1.5’ we will hit shadow manhole condition. It will provide another 0.06% of grade to 0.36%.

However raising the pipe may cause many issues for the areas northerly along Pipeline including our project. We will have shallow sewer which will require the water line to be deeper and go under sewer main. This will certainly be opposed by the Monte Vista Water District. Even if it was approve, the lateral may not have proper depth to serve the building.

Also, it may cause connection issues for existing residence where the service lateral may be in conflict with the existing water main at crossing. I don’t think it is ideal to have shallow manhole and shallow pipe. We should use larger pipe with lesser grade to meet the service requirements.

Thanks

Anthony Ng PE
Principal

UNITED CIVIL INC
Agoura Hills . S El Monte
30141 Agoura Road, Suite 215
Agoura Hills, CA 91301
O: (818) 707-8648 x11
F: (818) 707-8649
M: (818) 398-6039
Anthony@unitedcivilinc.com

From: Plasencia, Jesus <JPlasencia@cityofchino.org>
Sent: Monday, June 29, 2026 5:29 PM
To: Kathleen Noel <kathleen@dwilsoneng.com>
Cc: Anthony Ng <Anthony@unitedcivilinc.com>; Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>
Subject: Re: [EXT EMAIL] Nerio Farms/Borstein Sewer Study

Hi Kathleen,

Regarding the pothole test results for the water lines at the Pipeline and Maple intersection, the reported elevations are 827.1342 ft and 824.5538 ft, respectively. Can you clarify what these elevations represent? Are they the finished surface elevations, or do they refer to the top or bottom of the water pipes? If these are finished surface elevations, please correct me if I'm wrong, but it appears that the primary conflict is with the 8-inch water main, is that correct?

Based on our internal discussions, while we agree that the increase in flow velocity is relatively minor, we see value in reducing the sewer depth and relocating the conflicting water main because it allows the proposed sewer main slope to closely approach the City's standard minimum slope of 0.40%. For that reason, although we understand this may not be your team's preferred alternative for various reasons, this is the option City staff is more willing to support. This is, of course, contingent upon Monte Vista Water District (MVWD) being open to relocating their water main. If the MVWD is not willing to allow the relocation, then we would be open to reconsidering other alternatives. If you could please incorporate this rationale into the narrative of the sewer study, I believe it will adequately address our comment and allow us to move forward.

As an additional point of clarification, at this stage it's difficult for the City to commit to granting specific design waivers. The information currently available is limited, and without a design-level plan to reference, we're not in a good position to evaluate or support waivers with a great amount of confidence.

Thanks,

Jesus Plasencia, P.E.
Assistant City Engineer
City of Chino | Public Works Department
13220 Central Avenue | Chino, CA 91710
(909) 334-3417 | jplasencia@cityofchino.org

www.cityofchino.org

From: Kathleen Noel <kathleen@dwilsoneng.com>
Sent: Friday, June 26, 2026 7:50 AM
To: Plasencia, Jesus <JPlasencia@cityofchino.org>
Cc: Anthony Ng <anthony@unitedcivilinc.com>; Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>
Subject: Re: [EXT EMAIL] Nerio Farms/Borstein Sewer Study

Hi Jesus,

I'll be out of the office next week, but happy to set something up for the following Monday (which is clear for me except 2-3) or if you want to email the question over I can try and get it answered sooner than that.

Best,

KATHLEEN H. NOEL, P.E.
DEXTER WILSON ENGINEERING, INC.
760-438-4422

From: Plasencia, Jesus <JPlasencia@cityofchino.org>
Sent: Thursday, June 25, 2026 5:33 PM
To: Kathleen Noel <kathleen@dwilsoneng.com>
Cc: Anthony Ng <anthony@unitedcivilinc.com>; Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>
Subject: Re: [EXT EMAIL] Nerio Farms/Borstein Sewer Study

Hi Kathleen,

Do you have time for a quick call on Monday? Just want to receive some additional clarification regarding the sewer vertical alignment along Maple and Norton.

Thanks,

Jesus Plasencia, P.E.
Assistant City Engineer
City of Chino | Public Works Department
13220 Central Avenue | Chino, CA 91710
(909) 334-3417 | jplasencia@cityofchino.org

www.cityofchino.org

From: Kathleen Noel <kathleen@dwilsoneng.com>
Sent: Monday, June 22, 2026 9:29 AM
To: Plasencia, Jesus <JPlasencia@cityofchino.org>
Cc: Anthony Ng <anthony@unitedcivilinc.com>; Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>
Subject: Re: [EXT EMAIL] Nerio Farms/Borstein Sewer Study

Hi Jesus,

For #1 see the attached. My apologies I realize now I should have clarified I was talking about Pipeline Avenue in those descriptions.

For #2 see the attached that just has a revised option 3. There is just an incremental improvement in velocity.

Please let me know if you need anything else.

Best,

Kathleen H. Noel, P.E.
Dexter Wilson Engineering, Inc.
760-438-4422

From: Plasencia, Jesus <JPlasencia@cityofchino.org>
Sent: Friday, June 19, 2026 3:46 PM
To: Kathleen Noel <kathleen@dwilsoneng.com>
Cc: Anthony Ng <anthony@unitedcivilinc.com>; Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>
Subject: Re: [EXT EMAIL] Nerio Farms/Borstein Sewer Study

Hi Kathleen,

I reviewed the information and had a couple of questions:

1. Could you please clarify the extents of the various segments identified in the PDF (e.g., "Pipeline North of Project" and "Pipeline Downstream of Project")?

2. For Option 3, would reducing the sewer depth to approximately 4 feet at the upstream end result in any meaningful improvement to the downstream slope and flow velocity?

Thanks,

Jesus Plasencia, P.E.
Assistant City Engineer
City of Chino | Public Works Department
13220 Central Avenue | Chino, CA 91710
(909) 334-3417 | jplasencia@cityofchino.org

www.cityofchino.org

From: Plasencia, Jesus <JPlasencia@cityofchino.org>
Sent: Thursday, June 11, 2026 5:43 PM
To: Kathleen Noel <kathleen@dwilsoneng.com>
Cc: Anthony Ng <anthony@unitedcivilinc.com>; Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>
Subject: Re: [EXT EMAIL] Nerio Farms/Borstein Sewer Study

Hi Kathleen,

Just wanted to let you know that I received your email and am looking into it. I should be able to get back to you sometime next week.

Thanks,

Jesus Plasencia, P.E.
Assistant City Engineer
City of Chino | Public Works Department
13220 Central Avenue | Chino, CA 91710
(909) 334-3417 | jplasencia@cityofchino.org

www.cityofchino.org

From: Kathleen Noel <kathleen@dwilsoneng.com>
Sent: Tuesday, June 9, 2026 11:53 AM
To: Plasencia, Jesus <JPlasencia@cityofchino.org>
Cc: Anthony Ng <anthony@unitedcivilinc.com>; Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>
Subject: Re: [EXT EMAIL] Nerio Farms/Borstein Sewer Study

Hi Jesus,

We've looked through the comments and it seems like the main issue we still have to resolve is the sewer slope/velocity issue. We put together three options for you to consider. Below is a summary and attached has a little more detail for you on each.

Option 1 (our preferred option) - Revise the sewers upstream of the difficult water crossing (Maple/Pipeline intersection) to 1%. This puts the minimum depth to top of pipe for that stretch ~5.5'.

- This increases the velocity in those segments north of the project connection point from 0.51-1.34 fps (last report results) to 0.72-1.88 fps. The segments only have max 30 homes on them, so it will be difficult in any scenario to get them to 2 fps on paper. In reality with those few homes your peaking factor tends to be a little higher than the system wide peaking because there isn't much attenuation.
- This increases the velocity in the segment of Pipeline downstream of the project from 1.72-1.86 fps to 2.39-2.62 fps
- The segments in Maple/Norton would remain at 1.42-1.98 fps

Option 2 - Same as Option 1, but also upsize the Maple/Norton stretch to 10-inches in diameter. This doesn't particularly help your velocity issue. But it would be less of a deviation in your minimum slope standards.

- All velocities same as Option 1 except the Maple/Norton stretch would be 1.39-1.97 fps

Option 3 - Lower the water line at Maple/Norton to put the sewer over top. We could raise the slope of the Maple/Norton segment to 0.37% slope and have the depth at that intersection be 4.83'. In this scenario we could not increase the slope of the Pipeline sewers as much in this scenario, so they would be at 0.85% slope instead of 1%. We would have to sell this option to Monte Vista water as well, which may be difficult.

- This increases the velocity in those segments north of the project connection point to 0.68-1.78 fps.
- This increases the velocity in the segment of Pipeline downstream of the project to 2.26-2.47 fps
- The segments in Maple/Norton would increase to 1.53-2.14 fps

To me I like Option 1 because it obviously avoids the utility issue, but it also gets you the most increase in the most upstream segments. For the work in moving that water line and dealing with that utility crossing now and in the future, Option 3 only gets you a 0.07% slope increase and ~0.11-0.16 fps velocity increase and that comes with a sacrifice in Pipeline Avenue. Please let us know your thoughts and happy to jump on a call if it would be easier to walk through these as a group.

Best,

Kathleen H. Noel, P.E.
Dexter Wilson Engineering, Inc.
760-438-4422

From: Plasencia, Jesus <JPlasencia@cityofchino.org>
Sent: Thursday, May 28, 2026 9:59 AM
To: Kathleen Noel <kathleen@dwilsoneng.com>
Cc: Anthony Ng <anthony@unitedcivilinc.com>; Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>
Subject: Re: [EXT EMAIL] Nerio Farms/Borstein Sewer Study

Hi Kathleen,

I am following up on my email below because you may not have received it due to the size of the attached file. Below is a link where you can download a copy of the study with our remaining comments.

Please let me know if you experience any issues accessing the file.

https://city-secure.cityofchino.org/WebClientNew/index.html/?ShareToken=0FDD093726712C1A0ADBDDA3FE31798067426560

Thanks,

Jesus Plasencia, P.E.
Assistant City Engineer
City of Chino | Public Works Department
13220 Central Avenue | Chino, CA 91710
(909) 334-3417 | jplasencia@cityofchino.org

www.cityofchino.org

From: Plasencia, Jesus <JPlasencia@cityofchino.org>
Sent: Wednesday, May 27, 2026 3:46 PM
To: Kathleen Noel <kathleen@dwilsoneng.com>
Cc: Anthony Ng <anthony@unitedcivilinc.com>; Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>
Subject: Re: [EXT EMAIL] Nerio Farms/Borstein Sewer Study

Hi Kathleen,

We completed our review of the updated study and still have comments. Please see the attached version, which includes our remaining comments. Let me know if you have any questions or need clarification.

Thanks,

Jesus Plasencia, P.E.
Assistant City Engineer
City of Chino | Public Works Department
13220 Central Avenue | Chino, CA 91710
(909) 334-3417 | jplasencia@cityofchino.org

www.cityofchino.org

From: Plasencia, Jesus <JPlasencia@cityofchino.org>
Sent: Thursday, May 14, 2026 5:12 PM
To: Kathleen Noel <kathleen@dwilsoneng.com>
Cc: Anthony Ng <anthony@unitedcivilinc.com>; Alyssa Vacheron <Alyssa@dwilsoneng.com>; Erik Pfahler <erik@borsteinenterprises.com>
Subject: Re: [EXT EMAIL] Nerio Farms/Borstein Sewer Study

Hi Kathleen,

ATTACHMENT E

EXISTING SEWER SYSTEM AND PROJECT SEWER EXTENSION ANALYSIS

DATE: 7/8/2026 4/20/2026

SEWER STUDY SUMMARY

FOR: Nerio Farms Estates - Existing Sewer Only

SHT 1 OF 4

JOB NUMBER: 1081-004

BY: Dexter Wilson Engineering, Inc.

FROM	TO	IN-LINE UNITS	TOTAL UNITS	ACRES (CHURCH)	SEWAGE PER CAPITA/DAY (gpd/DU)	IN LINE AVG. DRY WEATHER FLOW	AVG. DRY TOTAL WEATHER FLOW (gpd)	PEAKING FACTOR	PEAK FLOW (gpd)	PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	DESIGN SLOPE (%)	DEPTH K' (1)	dn (feet)	dn/D(2)	C_a for Velocity(3)	VELOCITY (f.p.s.)	NOTES
										M.G.D.	C.F.S.								
0	14	-	-	-	220	9,985	9,985	3.71	37,046	0.037	0.057	8	1.17	0.020295	0.09510	0.143	0.0687	1.88	
14	15	-	-	-	220	9,985	9,985	3.71	37,046	0.037	0.057	8	0.96	0.022453	0.09990	0.150	0.0738	1.75	
15	16	-	-	-	220	9,985	9,985	3.71	37,046	0.037	0.057	8	0.39	0.035054	0.12402	0.186	0.1008	1.28	
16	17	-	-	-	220	9,985	9,985	3.71	37,046	0.037	0.057	8	1.19	0.020163	0.09481	0.142	0.0684	1.89	
17	18	-	-	-	220	9,985	9,985	3.71	37,046	0.037	0.057	8	1.26	0.019597	0.09355	0.140	0.0670	1.92	
18	19	-	-	-	220	9,985	9,985	3.71	37,046	0.037	0.057	8	0.40	0.034793	0.12358	0.185	0.1003	1.29	
19	20	-	-	-	220	9,985	9,985	3.71	37,046	0.037	0.057	8	0.45	0.032801	0.12017	0.180	0.0963	1.34	
20	21	-	-	-	220	9,985	9,985	3.71	37,046	0.037	0.057	8	1.20	0.020071	0.09460	0.142	0.0682	1.89	
21	22	-	-	-	220	9,985	9,985	3.71	37,046	0.037	0.057	8	4.68	0.010159	0.06820	0.102	0.0423	3.05	
22	23	-	-	-	220	9,985	9,985	3.71	37,046	0.037	0.057	10	0.88	0.012912	0.09553	0.115	0.0500	1.65	
23	24	-	-	-	220	9,985	9,985	3.71	37,046	0.037	0.057	10	1.50	0.009895	0.08421	0.101	0.0415	1.99	
24	25	-	-	-	220	67,243	67,243	2.71	182,229	0.182	0.282	10	1.51	0.048532	0.18207	0.218	0.1269	3.20	
25	26	-	-	-	220	67,243	67,243	2.71	182,229	0.182	0.282	10	0.28	0.111811	0.27879	0.335	0.2303	1.76	
26	27	-	-	-	220	67,243	67,243	2.71	182,229	0.182	0.282	10	0.29	0.109817	0.27619	0.331	0.2274	1.79	
27	28	-	-	-	220	67,243	67,243	2.71	182,229	0.182	0.282	10	0.31	0.106217	0.27139	0.326	0.2220	1.83	
28	29	-	-	-	220	67,243	67,243	2.71	182,229	0.182	0.282	10	0.29	0.109776	0.27614	0.331	0.2273	1.79	
29	30	-	-	-	220	67,243	67,243	2.71	182,229	0.182	0.282	10	0.29	0.109979	0.27641	0.332	0.2276	1.78	
30	31	-	-	-	220	67,243	67,243	2.71	182,229	0.182	0.282	10	0.30	0.109622	0.27594	0.331	0.2271	1.79	
31	32	-	-	-	220	67,243	67,243	2.71	182,229	0.182	0.282	12	1.27	0.032545	0.17957	0.180	0.0958	2.94	
32	33	-	-	-	220	67,243	67,243	2.71	182,229	0.182	0.282	12	0.80	0.040940	0.20081	0.201	0.1125	2.51	
33	34	-	-	-	220	110,928	110,928	2.02	224,075	0.224	0.347	12	0.68	0.054541	0.23175	0.232	0.1380	2.51	
34	35	-	-	-	220	110,928	110,928	2.02	224,075	0.224	0.347	12	0.30	0.082069	0.28495	0.285	0.1845	1.88	
35	36	-	-	-	220	110,928	110,928	2.02	224,075	0.224	0.347	12	0.30	0.082059	0.28493	0.285	0.1844	1.88	
36	37	-	-	-	220	110,928	110,928	2.02	224,075	0.224	0.347	12	0.38	0.073068	0.26859	0.269	0.1699	2.04	
37	38	-	-	-	220	110,928	110,928	2.02	224,075	0.224	0.347	12	1.31	0.039377	0.19694	0.197	0.1094	3.17	
38	39	-	-	-	220	110,928	110,928	2.02	224,075	0.224	0.347	12	1.23	0.040664	0.20015	0.200	0.1119	3.10	
39	40	-	-	-	220	110,928	110,928	2.02	224,075	0.224	0.347	12	0.21	0.099430	0.31464	0.315	0.2117	1.64	
40	41	-	-	-	220	110,928	110,928	2.02	224,075	0.224	0.347	12	0.48	0.065092	0.25325	0.253	0.1564	2.22	
41	42	-	-	-	220	110,928	110,928	2.02	224,075	0.224	0.347	12	0.41	0.070499	0.26365	0.264	0.1655	2.09	
42	43	-	-	-	220	110,928	110,928	2.02	224,075	0.224	0.347	12	0.40	0.070928	0.26448	0.264	0.1662	2.09	

Total EDUS
-

Min Slope
0.21

Max dn/D
0.33

Min Velocity
1.28

DATE:7/8/2026 4/20/2026

SEWER STUDY SUMMARY

FOR: Nerio Farms Estates - Project Only

SHT 2 OF 4

JOB NUMBER: 1081-004

BY: Dexter Wilson Engineering, Inc.

FROM	TO	IN-LINE UNITS	TOTAL UNITS	SEWAGE PER CAPITA/DAY (gpd/DU)	IN LINE AVG. DRY WEATHER FLOW (gpd)	AVG. TOTAL DRY WEATHER FLOW (gpd)	PEAKING FACTOR	PEAK FLOW (gpd)	PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	DESIGN SLOPE (%)	DEPTH K' (1)	dn (feet)	dn/D(2)	C_a for Velocity(3)	VELOCITY (f.p.s.)	NOTES
									M.G.D.	C.F.S.								
9	8	90	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.85	0.047254	0.14372	0.216	0.1245	2.05	
8	7	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.37	0.071621	0.17721	0.266	0.1674	1.53	
7	6	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.37	0.071621	0.17721	0.266	0.1674	1.53	
6	5	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.37	0.071621	0.17721	0.266	0.1674	1.53	
5	4	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.37	0.071621	0.17721	0.266	0.1674	1.53	
4	3	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.37	0.071621	0.17721	0.266	0.1674	1.53	
3	2	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.37	0.071621	0.17721	0.266	0.1674	1.53	
2	1	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.37	0.071621	0.17721	0.266	0.1674	1.53	
1	0	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.37	0.071621	0.17721	0.266	0.1674	1.53	
0	14	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	1.17	0.0605373	0.16277	0.244	0.1485	2.59	
14	15	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	0.96	0.0669743	0.17125	0.257	0.1595	2.41	
15	16	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	0.39	0.1045616	0.21534	0.323	0.2195	1.75	
16	17	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	1.19	0.0601442	0.16224	0.243	0.1478	2.60	
17	18	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	1.26	0.0584567	0.15994	0.240	0.1448	2.66	
18	19	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	0.40	0.1037829	0.21450	0.322	0.2183	1.76	
19	20	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	0.45	0.0978422	0.20802	0.312	0.2093	1.84	
20	21	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	1.20	0.0598706	0.16186	0.243	0.1473	2.61	
21	22	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	4.68	0.0303034	0.11556	0.173	0.0910	4.23	
22	23	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	10	0.88	0.0385153	0.16232	0.195	0.1077	2.29	
23	24	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	10	1.50	0.0295152	0.14263	0.171	0.0894	2.75	
24	25	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	1.51	0.062822	0.20735	0.249	0.1525	3.45	
25	26	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.28	0.1447337	0.31992	0.384	0.2777	1.89	
26	27	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.29	0.1421527	0.31685	0.380	0.2741	1.92	
27	28	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.31	0.1374925	0.31114	0.373	0.2675	1.97	
28	29	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.29	0.1420999	0.31679	0.380	0.2740	1.92	
29	30	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.29	0.1423629	0.31710	0.381	0.2744	1.92	
30	31	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.30	0.1419011	0.31655	0.380	0.2738	1.92	
31	32	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	12	1.27	0.0421283	0.20364	0.204	0.1147	3.18	
32	33	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	12	0.80	0.0529952	0.22843	0.228	0.1352	2.70	
33	34	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.68	0.0642757	0.25168	0.252	0.1550	2.64	
34	35	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.30	0.0967184	0.31019	0.310	0.2076	1.97	
35	36	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.30	0.0967063	0.31017	0.310	0.2076	1.97	
36	37	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.38	0.0861101	0.29209	0.292	0.1909	2.14	
37	38	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	1.31	0.0464051	0.21365	0.214	0.1229	3.32	
38	39	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	1.23	0.0479224	0.21710	0.217	0.1257	3.25	
39	40	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.21	0.1171777	0.34289	0.343	0.2382	1.72	
40	41	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.48	0.0767102	0.27529	0.275	0.1758	2.32	
41	42	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.41	0.0830826	0.28675	0.287	0.1861	2.20	
42	43	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.40	0.0835885	0.28766	0.288	0.1869	2.19	

Total EDUS
90.0

Min Slope
0.21

Max dn/D
0.38

Min Velocity
1.53

ATTACHMENT F

EXISTING SEWER SYSTEM AND PROJECT SEWER EXTENSION PLUS ADDITIONAL SEWER CONNECTIONS ANALYSIS

DATE 7/8/2026 4/20/2026

SEWER STUDY SUMMARY

FOR: Nerio Farms Estates - Additional Units

SHT 3 OF 4

JOB NUMBER: 1081-004

BY: Dexter Wilson Engineering, Inc.

FROM	TO	IN-LINE UNITS	IN-LINE UNITS WITH ADUS	TOTAL UNITS	ACRES (CHURCH)	RESIDENTIAL 3-7 SEWAGE PER DU/DAY (gpd/DU)	IN LINE AVG. DRY WEATHER FLOW	AVG. TOTAL DRY WEATHER FLOW (gpd)	PEAKING FACTOR	PEAK FLOW (gpd)	PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	DESIGN SLOPE (%)	DEPTH K' [1]	dn (feet)	dn/D[2]	C_a for Velocity[3]	VELOCITY (f.p.s.)	NOTES
											M.G.D.	C.F.S.								
13	12	2	2.3	2	0	220	495	495	3.71	1,836	0.002	0.003	8	0.85	0.001181	0.02460	0.037	0.0094	0.68	
12	11	3	3.4	6	0	220	743	1,238	3.71	4,591	0.005	0.007	8	0.85	0.002953	0.03795	0.057	0.0178	0.90	
11	10	2	2.3	8	0	220	495	1,733	3.71	6,428	0.006	0.010	8	0.85	0.004135	0.04449	0.067	0.0226	0.99	
10	9	2	2.3	10	5	220	5,095	6,828	3.71	25,330	0.025	0.039	8	0.85	0.016294	0.08558	0.128	0.0589	1.50	
9	8	93	93.4	104	0	220	20,543	27,370	3.71	101,543	0.102	0.157	8	0.85	0.065320	0.16913	0.254	0.1567	2.26	
8	7	8	9.0	113	0	220	1,980	29,350	3.71	108,889	0.109	0.168	8	0.37	0.106166	0.21706	0.326	0.2219	1.71	
7	6	9	10.1	123	0	220	2,228	31,578	3.71	117,153	0.117	0.181	8	0.37	0.114224	0.22555	0.338	0.2339	1.74	
6	5	10	11.3	134	0	220	2,475	34,053	3.71	126,335	0.126	0.195	8	0.37	0.123176	0.23472	0.352	0.2470	1.78	
5	4	6	6.8	141	0	220	1,485	35,538	3.71	131,844	0.132	0.204	8	0.37	0.128548	0.24014	0.360	0.2548	1.80	
4	3	4	4.5	145	0	220	990	36,528	3.71	135,517	0.136	0.210	8	0.37	0.132129	0.24366	0.365	0.2599	1.82	
3	2	2	2.3	147	0	220	495	37,023	3.71	137,353	0.137	0.213	8	0.37	0.133919	0.24541	0.368	0.2624	1.82	
2	1	5	5.6	153	0	220	1,238	38,260	3.71	141,945	0.142	0.220	8	0.37	0.138396	0.24980	0.375	0.2688	1.84	
1	0	8	9.0	162	0	220	1,980	40,240	3.71	149,290	0.149	0.231	8	0.37	0.145558	0.25672	0.385	0.2788	1.86	
0	14	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	1.17	0.102081	0.21266	0.319	0.2158	3.01	
14	15	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	0.96	0.112935	0.22420	0.336	0.2320	2.80	
15	16	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	0.39	0.176316	0.28524	0.428	0.3208	2.02	
16	17	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	1.19	0.101418	0.21193	0.318	0.2147	3.02	
17	18	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	1.26	0.098572	0.20882	0.313	0.2104	3.08	
18	19	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	0.40	0.175003	0.28406	0.426	0.3190	2.03	
19	20	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	0.45	0.164985	0.27489	0.412	0.3055	2.12	
20	21	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	1.20	0.100956	0.21143	0.317	0.2140	3.03	
21	22	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	4.68	0.051099	0.14948	0.224	0.1316	4.93	
22	23	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	10	0.88	0.064946	0.21081	0.253	0.1561	2.66	
23	24	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	10	1.50	0.049770	0.18439	0.221	0.1292	3.21	
24	25	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	1.51	0.077538	0.23066	0.277	0.1771	3.66	
25	26	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.28	0.178639	0.35915	0.431	0.3239	2.00	
26	27	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.29	0.175453	0.35558	0.427	0.3196	2.03	
27	28	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.31	0.169701	0.34908	0.419	0.3119	2.08	
28	29	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.29	0.175388	0.35550	0.427	0.3195	2.03	
29	30	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.29	0.175712	0.35587	0.427	0.3200	2.03	
30	31	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.30	0.175143	0.35523	0.426	0.3192	2.03	
31	32	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	12	1.27	0.051997	0.22622	0.226	0.1333	3.38	
32	33	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	12	0.80	0.065410	0.25386	0.254	0.1569	2.87	
33	34	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.68	0.074387	0.27107	0.271	0.1720	2.75	
34	35	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.30	0.111933	0.33474	0.335	0.2305	2.05	
35	36	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.30	0.111919	0.33472	0.335	0.2305	2.05	
36	37	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.38	0.099656	0.31501	0.315	0.2121	2.23	
37	38	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	1.31	0.053705	0.23001	0.230	0.1365	3.46	
38	39	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	1.23	0.055461	0.23367	0.234	0.1396	3.39	
39	40	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.21	0.135611	0.37060	0.371	0.2648	1.79	
40	41	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.48	0.088777	0.29669	0.297	0.1952	2.42	
41	42	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.41	0.096152	0.30924	0.309	0.2067	2.29	
42	43	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.40	0.096738	0.31023	0.310	0.2076	2.28	

Total EDUS
162.0

Min Slope
0.21

Max dn/D
0.43

Min Velocity
0.68

ATTACHMENT G

EXISTING SEWER SYSTEM AND PROJECT SEWER EXTENSION PLUS FUTURE SEWER EXTENSION ANALYSIS

DATE: 7/8/2026 4/20/2026

SEWER STUDY SUMMARY

FOR: Nerio Farms Estates - Extension Units SHT 4 OF 4

JOB NUMBER: 1081-004 BY: Dexter Wilson Engineering, Inc.

FROM	TO	IN-LINE UNITS	IN-LINE UNITS WITH ADUS	TOTAL UNITS	ACRES (CHURCH)	RESIDENTIAL 1-2 SEWAGE PER DU/DAY (gpd/DU)	RESIDENTIAL 3-7 SEWAGE PER DU/DAY (gpd/DU)	IN LINE AVG. DRY WEATHER FLOW (gpd)	AVG. TOTAL DRY WEATHER FLOW (gpd)	PEAKING FACTOR	PEAK FLOW (gpd)	PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	DESIGN SLOPE (%)	DEPTH K' [1]	dn (feet)	dn/D[2]	C_a for Velocity[3]	VELOCITY (f.p.s.)	NOTES
												M.G.D.	C.F.S.								
13	12	2	2.3	2	0	280	220	495	495	3.71	1,836	0.002	0.003	8	0.85	0.001181	0.02460	0.037	0.0094	0.68	
12	11	3	3.4	6	0	280	220	743	1,238	3.71	4,591	0.005	0.007	8	0.85	0.002953	0.03795	0.057	0.0178	0.90	
11	10	19	21.4	27	0	280	220	5,850	7,088	3.71	26,295	0.026	0.041	8	0.85	0.016915	0.08718	0.131	0.0605	1.51	
10	9	2	2.3	29	5	280	220	5,095	12,183	3.71	45,197	0.045	0.070	8	0.85	0.029074	0.11328	0.170	0.0884	1.78	
9	8	113	115.9	145	0	280	220	25,628	37,810	3.71	140,275	0.140	0.217	8	0.85	0.090235	0.19947	0.299	0.1975	2.47	
8	7	8	9.0	154	0	280	220	1,980	39,790	3.71	147,621	0.148	0.228	8	0.37	0.143930	0.25517	0.383	0.2766	1.86	
7	6	9	10.1	164	0	280	220	2,228	42,018	3.71	155,885	0.156	0.241	8	0.37	0.151988	0.26281	0.394	0.2877	1.89	
6	5	10	11.3	176	0	280	220	2,475	44,493	3.71	165,067	0.165	0.255	8	0.37	0.160940	0.27115	0.407	0.3000	1.92	
5	4	6	6.8	182	0	280	220	1,485	45,978	3.71	170,577	0.171	0.264	8	0.37	0.166312	0.27612	0.414	0.3073	1.93	
4	3	35	39.4	222	0	280	220	10,755	56,733	3.71	210,478	0.210	0.326	8	0.37	0.205215	0.31075	0.466	0.3588	2.04	
3	2	2	2.3	224	0	280	220	495	57,228	3.71	212,314	0.212	0.329	8	0.37	0.207006	0.31230	0.468	0.3611	2.05	
2	1	32	36.0	260	0	280	220	9,743	66,970	3.71	248,459	0.248	0.384	8	0.37	0.242247	0.34271	0.514	0.4071	2.13	
1	0	8	9.0	269	0	280	220	1,980	68,950	3.71	255,805	0.256	0.396	8	0.37	0.249409	0.34867	0.523	0.4160	2.14	
0	14	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	1.17	0.160432	0.27068	0.406	0.2993	3.41	
14	15	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	0.96	0.177491	0.28630	0.429	0.3224	3.16	
15	16	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	0.39	0.277102	0.37175	0.558	0.4506	2.26	
16	17	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	1.19	0.159390	0.26971	0.405	0.2979	3.42	
17	18	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	1.26	0.154918	0.26556	0.398	0.2918	3.49	
18	19	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	0.40	0.275038	0.37003	0.555	0.4480	2.28	
19	20	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	0.45	0.259295	0.35691	0.535	0.4284	2.38	
20	21	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	1.20	0.158665	0.26904	0.404	0.2969	3.43	
21	22	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	4.68	0.080308	0.18787	0.282	0.1816	5.61	
22	23	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	10	0.88	0.102071	0.26581	0.319	0.2157	3.02	
23	24	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	10	1.50	0.078219	0.23170	0.278	0.1783	3.66	
24	25	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	1.51	0.098250	0.26059	0.313	0.2099	3.92	
25	26	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.28	0.226355	0.41093	0.493	0.3859	2.13	
26	27	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.29	0.222319	0.40675	0.488	0.3808	2.16	
27	28	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.31	0.215030	0.39896	0.479	0.3715	2.21	
28	29	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.29	0.222236	0.40666	0.488	0.3807	2.16	
29	30	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.29	0.222647	0.40710	0.489	0.3812	2.16	
30	31	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.30	0.221925	0.40633	0.488	0.3803	2.16	
31	32	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	12	1.27	0.065886	0.25478	0.255	0.1577	3.62	
32	33	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	12	0.80	0.082881	0.28640	0.286	0.1858	3.07	
33	34	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.68	0.088514	0.29623	0.296	0.1947	2.89	
34	35	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.30	0.133191	0.36705	0.367	0.2614	2.15	
35	36	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.30	0.133175	0.36702	0.367	0.2613	2.15	
36	37	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.38	0.118583	0.34505	0.345	0.2403	2.34	
37	38	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	1.31	0.063905	0.25097	0.251	0.1544	3.65	
38	39	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	1.23	0.065994	0.25499	0.255	0.1579	3.56	
39	40	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.21	0.161366	0.40731	0.407	0.3006	1.87	
40	41	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.48	0.105638	0.32474	0.325	0.2211	2.54	
41	42	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.41	0.114414	0.33861	0.339	0.2342	2.40	
42	43	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.40	0.115110	0.33970	0.340	0.2352	2.39	

Total EDUS
268.9

Min Slope
0.21

Max dn/D
0.56

Min Velocity
0.68

ATTACHMENT H

ALTERNATIVE SEWER CONFIGURATION

RIM=840.3
IE=838.13
SLOPE=1.0%
L=210
RIM=838.2
IE=832.03
SLOPE=1.0%
L=263
RIM=835.7
IE=829.30
L=324 8"
SLOPE=1.0%
RIM=832.6
IE=825.96
SLOPE=1.0%
L=347
RIM=829.5
IE=822.39
SLOPE=1.0%
L=340 8"
MAPLE STREET
RIM=825.9
IE=818.69
RIM=826.6
IE=817.76
L=310
L=324
L=324
L=324 8"
RIM=827.8
IE=816.69
RIM=828.9
IE=815.62
RIM=830.8
IE=814.45
L=236
RIM=828.4
IE=813.54
L=236 8"
RIM=826.5
IE=812.73
L=329
RIM=824.1
IE=811.64
L=329 8"
CONNECTION TO
EXISTING SEWER SYSTEM
RIM=819.8
IE=810.55
RIM=815.28
IE=808.39
EX.8"
EX.8"
EX.8"
EX.10"
EX.10"
EX.10"
EX.10"
EX.12"
EX.12"
EX.12"
EX.12"
EX.12"
EX.12"
PROJECT BOUNDARY
PHILLIPS BOULEVARD
NORTON AVENUE
FRANCIS AVENUE
PIPELINE AVENUE
LEXINGTON AVENUE
NORTON AVENUE
PHILADELPHIA ST
ROSWELL AVE
WALNUT AVE
CAMELIA COURT
SEWER MONITORING
LOCATION NOR 03
WINTRESS DRIVE
SEWER MONITORING
LOCATION WAK 02
SEWER MONITORING
LOCATION ROS 01
CONNECTION
TO 12" VCP
IEUA TRUNK
SEWER
60
N
0
500
FEET

LEGEND

- PROJECT BOUNDARY
- EXISTING IEUA TRUNK SEWER
- EXISTING PUBLIC SEWER LINE
- PROPOSED PUBLIC SEWER LINE
- ADDITIONAL EXTENSION

EXHIBIT H

ALTERNATIVE CONFIGURATION

NERIO FARMS ESTATES PROJECT

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

DATE:7/8/2026 4/20/2026

SEWER STUDY SUMMARY

FOR: Nerio Farms Estates - Project Only

SHT 2 OF 4

JOB NUMBER: 1081-004

BY: Dexter Wilson Engineering, Inc.

FROM	TO	IN-LINE UNITS	TOTAL UNITS	SEWAGE PER CAPITA/DAY (gpd/DU)	IN LINE AVG. DRY WEATHER FLOW (gpd)	AVG. TOTAL DRY WEATHER FLOW (gpd)	PEAKING FACTOR	PEAK FLOW (gpd)	PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	DESIGN SLOPE (%)	DEPTH K' (1)	dn (feet)	dn/D(2)	C_a for Velocity(3)	VELOCITY (f.p.s.)	NOTES
									M.G.D.	C.F.S.								
9	8	90	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	1.00	0.043566	0.13804	0.207	0.1175	2.18	
8	7	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.30	0.079540	0.18695	0.280	0.1804	1.42	
7	6	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.30	0.079540	0.18695	0.280	0.1804	1.42	
6	5	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.30	0.079540	0.18695	0.280	0.1804	1.42	
5	4	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.30	0.079540	0.18695	0.280	0.1804	1.42	
4	3	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.30	0.079540	0.18695	0.280	0.1804	1.42	
3	2	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.30	0.079540	0.18695	0.280	0.1804	1.42	
2	1	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.30	0.079540	0.18695	0.280	0.1804	1.42	
1	0	0	90	220	19,800	19,800	3.71	73,458	0.073	0.114	8	0.30	0.079540	0.18695	0.280	0.1804	1.42	
0	14	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	1.17	0.0605373	0.16277	0.244	0.1485	2.59	
14	15	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	0.96	0.0669743	0.17125	0.257	0.1595	2.41	
15	16	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	0.39	0.1045616	0.21534	0.323	0.2195	1.75	
16	17	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	1.19	0.0601442	0.16224	0.243	0.1478	2.60	
17	18	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	1.26	0.0584567	0.15994	0.240	0.1448	2.66	
18	19	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	0.40	0.1037829	0.21450	0.322	0.2183	1.76	
19	20	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	0.45	0.0978422	0.20802	0.312	0.2093	1.84	
20	21	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	1.20	0.0598706	0.16186	0.243	0.1473	2.61	
21	22	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	8	4.68	0.0303034	0.11556	0.173	0.0910	4.23	
22	23	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	10	0.88	0.0385153	0.16232	0.195	0.1077	2.29	
23	24	-	-	220	9,985	29,785	3.71	110,504	0.111	0.171	10	1.50	0.0295152	0.14263	0.171	0.0894	2.75	
24	25	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	1.51	0.062822	0.20735	0.249	0.1525	3.45	
25	26	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.28	0.1447337	0.31992	0.384	0.2777	1.89	
26	27	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.29	0.1421527	0.31685	0.380	0.2741	1.92	
27	28	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.31	0.1374925	0.31114	0.373	0.2675	1.97	
28	29	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.29	0.1420999	0.31679	0.380	0.2740	1.92	
29	30	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.29	0.1423629	0.31710	0.381	0.2744	1.92	
30	31	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	10	0.30	0.1419011	0.31655	0.380	0.2738	1.92	
31	32	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	12	1.27	0.0421283	0.20364	0.204	0.1147	3.18	
32	33	-	-	220	67,243	87,043	2.71	235,887	0.236	0.365	12	0.80	0.0529952	0.22843	0.228	0.1352	2.70	
33	34	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.68	0.0642757	0.25168	0.252	0.1550	2.64	
34	35	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.30	0.0967184	0.31019	0.310	0.2076	1.97	
35	36	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.30	0.0967063	0.31017	0.310	0.2076	1.97	
36	37	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.38	0.0861101	0.29209	0.292	0.1909	2.14	
37	38	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	1.31	0.0464051	0.21365	0.214	0.1229	3.32	
38	39	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	1.23	0.0479224	0.21710	0.217	0.1257	3.25	
39	40	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.21	0.1171777	0.34289	0.343	0.2382	1.72	
40	41	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.48	0.0767102	0.27529	0.275	0.1758	2.32	
41	42	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.41	0.0830826	0.28675	0.287	0.1861	2.20	
42	43	-	-	220	110,928	130,728	2.02	264,071	0.264	0.409	12	0.40	0.0835885	0.28766	0.288	0.1869	2.19	

Total EDUS
90.0

Min Slope
0.21

Max dn/D
0.38

Min Velocity
1.42

DATE 7/8/2026 4/20/2026

SEWER STUDY SUMMARY

FOR: Nerio Farms Estates - Additional Units

SHT 3 OF 4

JOB NUMBER: 1081-004

BY: Dexter Wilson Engineering, Inc.

FROM	TO	IN-LINE UNITS	IN-LINE UNITS WITH ADUS	TOTAL UNITS	ACRES (CHURCH)	RESIDENTIAL 3-7 SEWAGE PER DU/DAY (gpd/DU)	IN LINE AVG. DRY WEATHER FLOW	AVG. TOTAL DRY WEATHER FLOW (gpd)	PEAKING FACTOR	PEAK FLOW (gpd)	PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	DESIGN SLOPE (%)	DEPTH K' [1]	dn (feet)	dn/D[2]	C_a for Velocity[3]	VELOCITY (f.p.s.)	NOTES
											M.G.D.	C.F.S.								
13	12	2	2.3	2	0	220	495	495	3.71	1,836	0.002	0.003	8	1.00	0.001089	0.02364	0.035	0.0089	0.72	
12	11	3	3.4	6	0	220	743	1,238	3.71	4,591	0.005	0.007	8	1.00	0.002723	0.03650	0.055	0.0168	0.95	
11	10	2	2.3	8	0	220	495	1,733	3.71	6,428	0.006	0.010	8	1.00	0.003812	0.04279	0.064	0.0213	1.05	
10	9	2	2.3	10	5	220	5,095	6,828	3.71	25,330	0.025	0.039	8	1.00	0.015022	0.08219	0.123	0.0556	1.59	
9	8	93	93.4	104	0	220	20,543	27,370	3.71	101,543	0.102	0.157	8	1.00	0.060222	0.16234	0.244	0.1479	2.39	
8	7	8	9.0	113	0	220	1,980	29,350	3.71	108,889	0.109	0.168	8	0.30	0.117903	0.22934	0.344	0.2393	1.58	
7	6	9	10.1	123	0	220	2,228	31,578	3.71	117,153	0.117	0.181	8	0.30	0.126852	0.23844	0.358	0.2523	1.62	
6	5	10	11.3	134	0	220	2,475	34,053	3.71	126,335	0.126	0.195	8	0.30	0.136794	0.24823	0.372	0.2665	1.65	
5	4	6	6.8	141	0	220	1,485	35,538	3.71	131,844	0.132	0.204	8	0.30	0.142759	0.25406	0.381	0.2750	1.67	
4	3	4	4.5	145	0	220	990	36,528	3.71	135,517	0.136	0.210	8	0.30	0.146736	0.25784	0.387	0.2805	1.68	
3	2	2	2.3	147	0	220	495	37,023	3.71	137,353	0.137	0.213	8	0.30	0.148725	0.25974	0.390	0.2832	1.69	
2	1	5	5.6	153	0	220	1,238	38,260	3.71	141,945	0.142	0.220	8	0.30	0.153696	0.26441	0.397	0.2901	1.70	
1	0	8	9.0	162	0	220	1,980	40,240	3.71	149,290	0.149	0.231	8	0.30	0.161650	0.27181	0.408	0.3010	1.73	
0	14	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	1.17	0.102081	0.21266	0.319	0.2158	3.01	
14	15	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	0.96	0.112935	0.22420	0.336	0.2320	2.80	
15	16	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	0.39	0.176316	0.28524	0.428	0.3208	2.02	
16	17	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	1.19	0.101418	0.21193	0.318	0.2147	3.02	
17	18	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	1.26	0.098572	0.20882	0.313	0.2104	3.08	
18	19	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	0.40	0.175003	0.28406	0.426	0.3190	2.03	
19	20	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	0.45	0.164985	0.27489	0.412	0.3055	2.12	
20	21	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	1.20	0.100956	0.21143	0.317	0.2140	3.03	
21	22	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	8	4.68	0.051099	0.14948	0.224	0.1316	4.93	
22	23	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	10	0.88	0.064946	0.21081	0.253	0.1561	2.66	
23	24	-	-	-	-	220	9,985	50,225	3.71	186,337	0.186	0.288	10	1.50	0.049770	0.18439	0.221	0.1292	3.21	
24	25	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	1.51	0.077538	0.23066	0.277	0.1771	3.66	
25	26	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.28	0.178639	0.35915	0.431	0.3239	2.00	
26	27	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.29	0.175453	0.35558	0.427	0.3196	2.03	
27	28	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.31	0.169701	0.34908	0.419	0.3119	2.08	
28	29	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.29	0.175388	0.35550	0.427	0.3195	2.03	
29	30	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.29	0.175712	0.35587	0.427	0.3200	2.03	
30	31	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	10	0.30	0.175143	0.35523	0.426	0.3192	2.03	
31	32	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	12	1.27	0.051997	0.22622	0.226	0.1333	3.38	
32	33	-	-	-	-	220	67,243	107,483	2.71	291,146	0.291	0.451	12	0.80	0.065410	0.25386	0.254	0.1569	2.87	
33	34	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.68	0.074387	0.27107	0.271	0.1720	2.75	
34	35	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.30	0.111933	0.33474	0.335	0.2305	2.05	
35	36	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.30	0.111919	0.33472	0.335	0.2305	2.05	
36	37	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.38	0.099656	0.31501	0.315	0.2121	2.23	
37	38	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	1.31	0.053705	0.23001	0.230	0.1365	3.46	
38	39	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	1.23	0.055461	0.23367	0.234	0.1396	3.39	
39	40	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.21	0.135611	0.37060	0.371	0.2648	1.79	
40	41	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.48	0.088777	0.29669	0.297	0.1952	2.42	
41	42	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.41	0.096152	0.30924	0.309	0.2067	2.29	
42	43	-	-	-	-	220	110,928	151,168	2.02	305,612	0.306	0.473	12	0.40	0.096738	0.31023	0.310	0.2076	2.28	

Total EDUS
162.0

Min Slope
0.21

Max dn/D
0.43

Min Velocity
0.72

DATE: 7/8/2026 4/20/2026

SEWER STUDY SUMMARY

FOR: Nerio Farms Estates - Extension Units

SHT 4 OF 4

JOB NUMBER: 1081-004

BY: Dexter Wilson Engineering, Inc.

FROM	TO	IN-LINE UNITS	IN-LINE UNITS WITH ADUS	TOTAL UNITS	ACRES (CHURCH)	RESIDENTIAL 1-2 SEWAGE PER DU/DAY (gpd/DU)	RESIDENTIAL 3-7 SEWAGE PER DU/DAY (gpd/DU)	IN LINE AVG. DRY WEATHER FLOW (gpd)	AVG. TOTAL DRY WEATHER FLOW (gpd)	PEAKING FACTOR	PEAK FLOW (gpd)	PEAK FLOW (DESIGN FLOW)		LINE SIZE (inches)	DESIGN SLOPE (%)	DEPTH K' [1]	dn (feet)	dn/D[2]	C_a for Velocity[3]	VELOCITY (f.p.s.)	NOTES
												M.G.D.	C.F.S.								
13	12	2	2.3	2	0	280	220	495	495	3.71	1,836	0.002	0.003	8	1.00	0.001089	0.02364	0.035	0.0089	0.72	
12	11	3	3.4	6	0	280	220	743	1,238	3.71	4,591	0.005	0.007	8	1.00	0.002723	0.03650	0.055	0.0168	0.95	
11	10	19	21.4	27	0	280	220	5,850	7,088	3.71	26,295	0.026	0.041	8	1.00	0.015595	0.08372	0.126	0.0571	1.60	
10	9	2	2.3	29	5	280	220	5,095	12,183	3.71	45,197	0.045	0.070	8	1.00	0.026805	0.10883	0.163	0.0835	1.88	
9	8	113	115.9	145	0	280	220	25,628	37,810	3.71	140,275	0.140	0.217	8	1.00	0.083193	0.19130	0.287	0.1863	2.62	
8	7	8	9.0	154	0	280	220	1,980	39,790	3.71	147,621	0.148	0.228	8	0.30	0.159842	0.27013	0.405	0.2985	1.72	
7	6	9	10.1	164	0	280	220	2,228	42,018	3.71	155,885	0.156	0.241	8	0.30	0.168791	0.27842	0.418	0.3107	1.75	
6	5	10	11.3	176	0	280	220	2,475	44,493	3.71	165,067	0.165	0.255	8	0.30	0.178733	0.28741	0.431	0.3240	1.77	
5	4	6	6.8	182	0	280	220	1,485	45,978	3.71	170,577	0.171	0.264	8	0.30	0.184698	0.29271	0.439	0.3319	1.79	
4	3	35	39.4	222	0	280	220	10,755	56,733	3.71	210,478	0.210	0.326	8	0.30	0.227903	0.33000	0.495	0.3879	1.89	
3	2	2	2.3	224	0	280	220	495	57,228	3.71	212,314	0.212	0.329	8	0.30	0.229891	0.33162	0.497	0.3904	1.89	
2	1	32	36.0	260	0	280	220	9,743	66,970	3.71	248,459	0.248	0.384	8	0.30	0.269028	0.36502	0.548	0.4405	1.96	
1	0	8	9.0	269	0	280	220	1,980	68,950	3.71	255,805	0.256	0.396	8	0.30	0.276982	0.37165	0.557	0.4505	1.98	
0	14	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	1.17	0.160432	0.27068	0.406	0.2993	3.41	
14	15	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	0.96	0.177491	0.28630	0.429	0.3224	3.16	
15	16	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	0.39	0.277102	0.37175	0.558	0.4506	2.26	
16	17	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	1.19	0.159390	0.26971	0.405	0.2979	3.42	
17	18	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	1.26	0.154918	0.26556	0.398	0.2918	3.49	
18	19	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	0.40	0.275038	0.37003	0.555	0.4480	2.28	
19	20	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	0.45	0.259295	0.35691	0.535	0.4284	2.38	
20	21	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	1.20	0.158665	0.26904	0.404	0.2969	3.43	
21	22	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	8	4.68	0.080308	0.18787	0.282	0.1816	5.61	
22	23	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	10	0.88	0.102071	0.26581	0.319	0.2157	3.02	
23	24	-		-	-	280	220	9,985	78,935	3.71	292,851	0.293	0.453	10	1.50	0.078219	0.23170	0.278	0.1783	3.66	
24	25	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	1.51	0.098250	0.26059	0.313	0.2099	3.92	
25	26	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.28	0.226355	0.41093	0.493	0.3859	2.13	
26	27	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.29	0.222319	0.40675	0.488	0.3808	2.16	
27	28	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.31	0.215030	0.39896	0.479	0.3715	2.21	
28	29	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.29	0.222236	0.40666	0.488	0.3807	2.16	
29	30	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.29	0.222647	0.40710	0.489	0.3812	2.16	
30	31	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	10	0.30	0.221925	0.40633	0.488	0.3803	2.16	
31	32	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	12	1.27	0.065886	0.25478	0.255	0.1577	3.62	
32	33	-		-	-	280	220	67,243	136,193	2.71	368,914	0.369	0.571	12	0.80	0.082881	0.28640	0.286	0.1858	3.07	
33	34	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.68	0.088514	0.29623	0.296	0.1947	2.89	
34	35	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.30	0.133191	0.36705	0.367	0.2614	2.15	
35	36	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.30	0.133175	0.36702	0.367	0.2613	2.15	
36	37	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.38	0.118583	0.34505	0.345	0.2403	2.34	
37	38	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	1.31	0.063905	0.25097	0.251	0.1544	3.65	
38	39	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	1.23	0.065994	0.25499	0.255	0.1579	3.56	
39	40	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.21	0.161366	0.40731	0.407	0.3006	1.87	
40	41	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.48	0.105638	0.32474	0.325	0.2211	2.54	
41	42	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.41	0.114414	0.33861	0.339	0.2342	2.40	
42	43	-		-	-	280	220	110,928	179,878	2.02	363,654	0.364	0.563	12	0.40	0.115110	0.33970	0.340	0.2352	2.39	

Total EDUS
268.9

Min Slope
0.21

Max dn/D
0.56

Min Velocity
0.72

EXHIBIT A

MANHOLE DIAGRAM

\\MERIDIAN\DWG\1081004\REPORTS\SB_SWR_EXHA_MH.DWG 2/24/2026 5:13:03 PM LAYOUT: 11x17 USER: Alyssa

PHILLIPS BOULEVARD

NORTON AVENUE

N

0 500 FEET

PROJECT BOUNDARY

MAPLE STREET

FRANCIS AVENUE

PIPELINE AVENUE

LEXINGTON AVENUE

NORTON AVENUE

PHILADELPHIA ST

ROSWELL AVE

WALNUT AVE

8"

EX.8"

EX.10"

EX.12"

13 12 11 10 9 8 7 6 5 4 3 2 1 0 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 60

LEGEND

PROJECT BOUNDARY

EXISTING PUBLIC SEWER LINE

PROPOSED PUBLIC SEWER LINE

ADDITIONAL EXTENSION

0 MANHOLE NUMBER

CONNECTION TO IEUA TRUNK SEWER

EXHIBIT A

MANHOLE DIAGRAM

NERIO FARMS ESTATES PROJECT

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422