Appendix F

Utilities Studies

Appendix F1

Water Supply Assessments

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TECHNICAL MEMORANDUM

DATE: December 12, 2025

Project No.: 415-60-25-46
SENT VIA: EMAIL

TO: Rana Moore, PE, City of Roseville

FROM: Elizabeth Drayer, PE, RCE #46872

REVIEWED BY: Rhodora Biagtan, PE, RCE #59371

SUBJECT: Amendment to the Roseville Industrial Park Project Water Supply Assessment to support the Proposed Phillip Road Project

INTRODUCTION

The Phillip Road Project (Proposed Project) is a planned development project located in the northwest portion of the City of Roseville (City). The development plan for the Proposed Project includes six development phases, including four initial phases with single family residences, a fifth phase with higher density residential, and a final phase with a mix of commercial and light industrial land uses.

The site was originally planned as the Roseville Industrial Park, including light manufacturing, warehouse, and distribution uses, as well as a potential electrical substation south of Pleasant Grove Creek. To support its environmental review, a Water Supply Assessment (WSA) was prepared for the Roseville Industrial Park Project in May 2022.[1]

The purpose of this technical memorandum (TM) is to evaluate whether the findings and conclusions of the previously prepared WSA remain valid in light of the revised land uses and corresponding changes in water demand for the Proposed Project. This Technical Memorandum is organized into the following sections:

- Previous Roseville Industrial Park Project and WSA Findings
- Updated Water Demand Projections for the Proposed Phillip Road Project
- City of Roseville Water Supply Updates
- Implications for WSA Findings
- Compliance with Senate Bill 221 Requirements

[1] Roseville Industrial Park Project Water Supply Assessment, prepared by West Yost, Final Report dated May 2022.

PREVIOUS ROSEVILLE INDUSTRIAL PARK PROJECT AND WSA FINDINGS

The May 2022 WSA for the Roseville Industrial Park Project evaluated the City's water supply availability to serve the project which was proposed to have approximately 1,938 employees and up to 15 industrial buildings totaling approximately 2,415,000 square feet. The total water demand for the project was estimated to be 561 acre-feet per year (AF/yr), including 518 AF/yr of potable water and 43 AF/yr of recycled water.

Because the Roseville Industrial Park Project was not included in the City's 2020 Urban Water Management Plan (UWMP), the WSA recalculated supply and demand comparisons for normal, single dry, and multiple dry years to include the projected water demand for the project. According to the City's 2020 UWMP and the technical analysis provided in the WSA, no water supply shortages were projected during normal water years through 2045. In single dry years, supply shortages of up to 3.7 percent were projected, and in multiple dry years, shortages ranging from 0.3 percent to 8.6 percent were projected in the fourth and fifth years of an extended drought. In the event of any water shortages, the City would implement its Water Shortage Contingency Plan (WSCP), and the project would be subject to the same water use restrictions as other City water customers.

The 2022 WSA focused primarily on potable water supply but noted that the project would utilize recycled water for landscape irrigation demand and construct the necessary recycled water system infrastructure required to connect to the City's existing recycled water system.

UPDATED WATER DEMAND PROJECTIONS FOR THE PROPOSED PHILLIP ROAD PROJECT

The Proposed Project is now planned to include a total of 664 residential dwelling units and approximately 65 acres of community commercial, light industrial and public land uses. As shown in Table 1, the total water demand for the Proposed Project is estimated to be 1,002 acre-feet per year (AF/yr), with 368 AF/yr of potable water and 634 AF/yr of recycled water.[2] The updated water demands reflect a 150 AF/yr decrease in potable water demand and a 591 AF/yr increase in recycled water demand from what was previously projected for the Roseville Industrial Park Project. The Proposed Project now includes a proposed data center, whose water demands are planned to be met completely with recycled water, accounting for the significant increase in recycled water demand compared to the previously evaluated Roseville Industrial Park Project.

Table 1. Summary of Projected Water Demands

	Roseville Industrial Park Project	Phillip Road Project	Change
Potable Water Demand	518 AF/yr	368 AF/yr	- 150 AF/yr
Recycled Water Demand	43 AF/yr	634 AF/yr[(a)]	+ 591 AF/yr
Total Water Demand	**561 AF/yr**	**1,002 AF/yr**	**+ 441 AF/yr**

(a) The recycled water demand shown includes 97 AF/yr for irrigation demand and 537 AF/yr for the data center. Per the Phillip Road Recycled Water Master Plan, prepared by Laugenour and Meikle, dated November 13, 2025, the irrigation demand would be reduced to 38 AF/yr with conservation, including turf area reduction and installation of smart controllers.

[2] Phillip Road Site Potable Water Master Plan, prepared by Laugenour and Meikle, December 8, 2025. The projected potable water demand reflects the subtraction of the recycled water irrigation demand and the potable water conservation savings.

CITY OF ROSEVILLE WATER SUPPLY UPDATES

The City continues to advance projects aimed at strengthening water supply availability and reliability and other long-term projects to increase water resiliency in dry and drought years. These efforts include enhancements to the City's groundwater infrastructure. Since completing the 2020 UWMP and the 2022 WSA, the City has constructed an additional groundwater well and incorporated Aquifer Storage and Recovery (ASR) capabilities into existing wells. The City now operates seven groundwater wells, six equipped with ASR functionality, and plans to add four more wells by 2035. This expanded groundwater capacity aligns with the assumptions outlined in the 2020 UWMP.

In addition, in 2023, the City collaborated with PCWA to update its water supply agreement. Notably, the City's previous water supply agreement with the San Juan Water District was consolidated into the PCWA contract. Overall, the water supply quantities in the amended agreement remain generally consistent with those projected in the 2020 UWMP.

The City's 2020 UWMP and 2022 WSA assumed that water deliveries to the City from the United States Bureau of Reclamation (USBR) would be reduced by 75 percent during a single dry year and in the fifth year of a five-year drought. This assumption reflected the actual curtailment the City experienced in 2015. However, in 2022, the City's USBR allocation was reduced by 100 percent, resulting in a zero allotment.

If the supply and demand analysis in the 2022 WSA were updated to reflect this more severe curtailment, the projected supply shortage during a single dry year or the fifth year of an extended drought would increase to approximately 16.4 percent. Under these conditions, the City may need to implement Stage 2 of its WSCP to reduce demand to levels that can be met with available supplies.

IMPLICATIONS FOR WSA FINDINGS

With the decrease in the projected potable water demand for the Proposed Project, the findings in the 2022 WSA remain valid and indicate that sufficient potable water supplies are available to meet projected demands under normal water year conditions through 2045. The City's WSCP would continue to apply in the event of shortages during single dry years or extended drought conditions, although the extent of any shortages may differ from those identified in the 2022 WSA due to updated supply conditions. In any case, the Proposed Project would be subject to the same water use restrictions as other customers if the WSCP is implemented.

The increase in the projected recycled water demand for the Proposed Project does not affect potable water supply reliability but will require coordination with the City to ensure adequate recycled water infrastructure and supply capacity. In May 2025, a Recycled Water System Evaluation was completed for the City by Woodard & Curran.[3] The objectives of the evaluation included documenting an updated assessment of the recycled water system's supplies and demands to determine recycled water infrastructure needed to supply potential future customers and urban growth areas. The May 2025 report includes recommended improvements for the City's existing system to address anticipated future demands and identifies the location of connection for those future demands.

Although the recycled water demands for the Proposed Project do not appear to have been explicitly included in the May 2025 evaluation, future recycled water supplies are projected to be sufficient to meet anticipated recycled water demands, including those associated with the Proposed Project. It is also

[3] City of Roseville Recycled Water Systems Evaluation, prepared by Woodard & Curran, May 2025.

anticipated that the City's existing recycled water system can be expanded to serve the Proposed Project; however, specific implementation details will need to be confirmed during project design and permitting.

COMPLIANCE WITH SENATE BILL 221 REQUIREMENTS

Senate Bill (SB) 221, enacted in 2001, requires that approval of certain residential subdivisions by a city or county include written verification of a sufficient water supply. Under California Government Code Section 66473.7(a)(1), this requirement applies to proposed residential developments of more than 500 dwelling units.

The Roseville Industrial Park Project was exempt from compliance with SB 221 because it did not include residential development. However, the proposed Phillip Road Project includes 664 residential units, exceeding the 500-unit threshold. Therefore, prior to approval of the final subdivision map, the City must provide affirmative written verification that adequate water supplies are available to serve the development under normal, single dry, and multiple dry year conditions for a 20-year planning horizon.

This verification will be based on the City's 2020 UWMP[4], the City's WSCP, the May 2022 WSA for the Roseville Industrial Park Project, and the updated analysis presented in this Technical Memorandum. Potable water supplies remain sufficient to meet the Proposed Project's demands, and recycled water demand will be addressed through system expansion during project design and permitting. Accordingly, the City can provide the required written verification to demonstrate compliance with SB 221.

[4] The City is currently preparing its 2025 UWMP, which must be submitted to the California Department of Water Resources by July 1, 2026. If the approval process for the Proposed Project occurs after the adoption of the City's 2025 UWMP, additional review may be necessary to ensure consistency with the findings and conclusions of the adopted 2025 UWMP.

FINAL REPORT | MAY 2022

Roseville Industrial Park Project
Water Supply Assessment

PREPARED FOR

City of Roseville

PREPARED BY

WEST YOST
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Roseville Industrial Park Project
Water Supply Assessment

Prepared for

City of Roseville

Project No. 1002-60-21-01

Project Manager: Amy Kwong, PE	May 29,2022 Date
QA/QC Review: Elizabeth Drayer, PE	May 29,2022 Date

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FINAL REPORT | MAY 2022

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Appendix A. Project Water Demand

LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degrees Fahrenheit
AF/yr	Acre-feet Per Year
ASR	Aquifer Storage and Recovery
BRWTP	Barton Road Water Treatment Plant
CEQA	California Environmental Quality Act
CHWD	Citrus Heights Water District
CIMIS	California Irrigation Management Information System
City	City of Roseville
CVP	Central Valley Project
CVP M&I WSP	Central Valley Project Municipal & Industrial Water Shortage Policy
Developer	Panattoni Development Company
Delta	Sacramento-San Joaquin Delta
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESA	Endangered Species Act
GMP	Groundwater Management Plan
gpm	Gallons Per Minute
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
M&I	Municipal & Industrial
MFP	Middle Fork Project
mgd	Million Gallons Per Day
NOP	Notice of Preparation
OCAP	Operations Criteria and Plan
Ophir WTP	Ophir Water Treatment Plant
PCWA	Placer County Water Agency
Proposed Project	Roseville Industrial Park Project
SB 221	Senate Bill 221
SB 610	Senate Bill 610

sf	square foot or square feet
SGMA	Sustainable Groundwater Management Act of 2014
SJWD	San Juan Water District
SMUD	Sacramento Municipal Utilities District
SWRCB	State Water Resources Control Board
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
WELO	Water Efficient Landscape Ordinance
WFA	Water Forum Agreement
WPGSA	West Placer Groundwater Sustainability Agency
WSA	Water Supply Assessment
WSCP	Water Shortage Contingency Plan

Roseville Industrial Park Project
Water Supply Assessment

EXECUTIVE SUMMARY

Overview

This Water Supply Assessment (WSA) has been prepared for the City of Roseville (City) by West Yost in accordance with California Water Code sections 10910 through 10915 in connection with the proposed Roseville Industrial Park Project (Proposed Project). The Proposed Project is located in the northwest portion of the City. The Proposed Project site is undeveloped and would contain various industrial uses, including light manufacturing, warehouse, and distribution uses.

The Proposed Project will include approximately 1,938 employees and up to 15 buildings totaling approximately 2,415,000 square feet.

Projected Water Demands

The projected potable water demands for buildout of the Proposed Project were calculated by Laugenour and Meikle Civil Engineers using the City's adopted unit water demand factors. The projected landscape irrigation demands for buildout of the Proposed Project were estimated based on total irrigated area and the City's Water Efficient Landscape Ordinance (WELO). The total water demand for the Proposed Project is estimated to be 561 acre-feet per year (AF/yr), with 518 AF/yr and 43 AF/yr for potable water and recycled water, respectively. The landscape irrigation demands for the Proposed Project will ultimately be served by the City's recycled water system; however, these demands will be served from the potable water system in the interim until the necessary recycled water system infrastructure is constructed. Summaries of the availability and reliability of potable and recycled water supplies to serve the projected water demands for the Proposed Project are discussed below.

Water Supply Availability and Reliability

The City's water supply sources include American River surface water purchased through supply contracts with the United States Bureau of Reclamation (USBR), Placer County Water Agency (PCWA), and San Juan Water District (SJWD); groundwater pumped from the City's active production wells; and recycled water. The availability and reliability of the City's water supplies as described in this WSA are based on information contained in the City's 2020 Urban Water Management Plan (UWMP). As the Proposed Project was not included in the City's 2020 UWMP, the supply and demand comparison in normal, single dry, and multiple dry years has been recalculated in this WSA to include water demand for the Proposed Project.

According to the City's 2020 UWMP and the technical analysis outlined in this WSA, the City does not anticipate water supply shortages during normal water years through 2045. In single dry years and years four and five of an extended drought, some supply shortages are projected ranging from approximately 0.3 percent to 8.6 percent of projected demand. In the event of any water shortages, the City will implement the provisions of its Water Shortage Contingency Plan (WSCP) to reduce water demand and make up the supply deficit. The Proposed Project, if approved, would be subject to the same water use restrictions as other City water customers if the WSCP is implemented.

1.0 INTRODUCTION

The Roseville Industrial Park Project (Proposed Project) would develop a property in the City of Roseville (City) with a range of industrial uses, including light manufacturing, warehouse, and distribution uses, as well as a potential electrical substation south of Pleasant Grove Creek. Up to 15 buildings would be constructed, ranging in size from approximately 80,000 square feet (sf) to approximately 300,000 sf and connected by a bridge across Pleasant Grove Creek.[1,2]

The purpose of this Water Supply Assessment (WSA) is to support the Environmental Impact Report (EIR) for the Proposed Project. The following sections describe the legal requirement for the WSA and the Project background.

1.1 Legal Requirement for a Water Supply Assessment

California Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 and SB 221 were companion measures which sought to promote more collaborative planning between local water suppliers and cities and counties. Both statutes require detailed information regarding water availability to be provided to the city and county decision-makers prior to approval of specified large development projects. The purpose of this coordination is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing demands, anticipated demands from approved projects and tentative maps, and the demands of proposed projects.

SB 610 amended California Water Code sections 10910 through 10915 (inclusive) to require land use lead agencies to:

- Identify any public water purveyor that may supply water for a proposed development project
- Request a WSA from the identified water purveyor

The purpose of the WSA is to demonstrate the sufficiency of the purveyor's water supplies to satisfy the water demands of the Proposed Project, while still meeting the water purveyor's existing and planned future uses. California Water Code sections 10910 through 10915 delineate the specific information that must be included in the WSA.

SB 221, which amended State law (California Government Code section 66473.7) to require that approval by a city or county of certain residential subdivisions,[3] requires an affirmative written verification of sufficient water supply. SB 221 was intended as a failsafe mechanism to ensure that collaboration on finding the needed water supplies to serve a new large residential subdivision occurs before construction

[1] City of Roseville. July 2021. Notice of Preparation of an Environmental Impact Report for the proposed Roseville Industrial Park Project and Notice of Public Scoping Meeting.

[2] Laugenour and Meikle Civil Engineers. September 2021. Draft Potable Water Study for Roseville Industrial Project.

[3] Per Government Code Section 66473.7(a)(1) subdivision means a proposed residential development of more than 500 dwelling units.

begins. As described further in Section 3.2, the Proposed Project does not include residential dwelling units and is therefore exempt from the requirements of SB 221.

1.2 Need for and Purpose of a Water Supply Assessment

The purpose of this WSA is to perform the evaluation required by SB 610 (California Water Code Sections 10910 through 10915) in connection with the Proposed Project, located within the City limits. This WSA does not reserve water or function as a "will serve" letter or any other form of commitment to supply water (see California Water Code section 10914). The provision of water service will continue to be undertaken in a manner consistent with applicable policies and procedures, consistent with existing law.

1.3 Water Supply Assessment Preparation, Format, and Organization

The format of this WSA is intended to follow California Water Code sections 10910 through 10915 to clearly delineate compliance with the specific requirements for a WSA. This WSA includes the following sections:

Section 1: Introduction
Section 2: Description of the Proposed Project
Section 3: Required Determinations
Section 4: City of Roseville Water System
Section 5: City of Roseville Water Demands
Section 6: City of Roseville Water Supplies
Section 7: Water Supply Reliability
Section 8: Determination of Water Supply Sufficiency Based on the Requirements of SB 610
Section 9: Water Supply Assessment Approval Process
Section 10: References

Relevant citations of California Water Code Sections 10910 through 10915 are included throughout this WSA in *italics* to demonstrate compliance with the specific requirements of SB 610.

2.0 DESCRIPTION OF THE PROPOSED PROJECT

The following sections describe the Proposed Project, including the Proposed Project's location, proposed land uses, and projected water demand.

2.1 Proposed Project Location and Overview

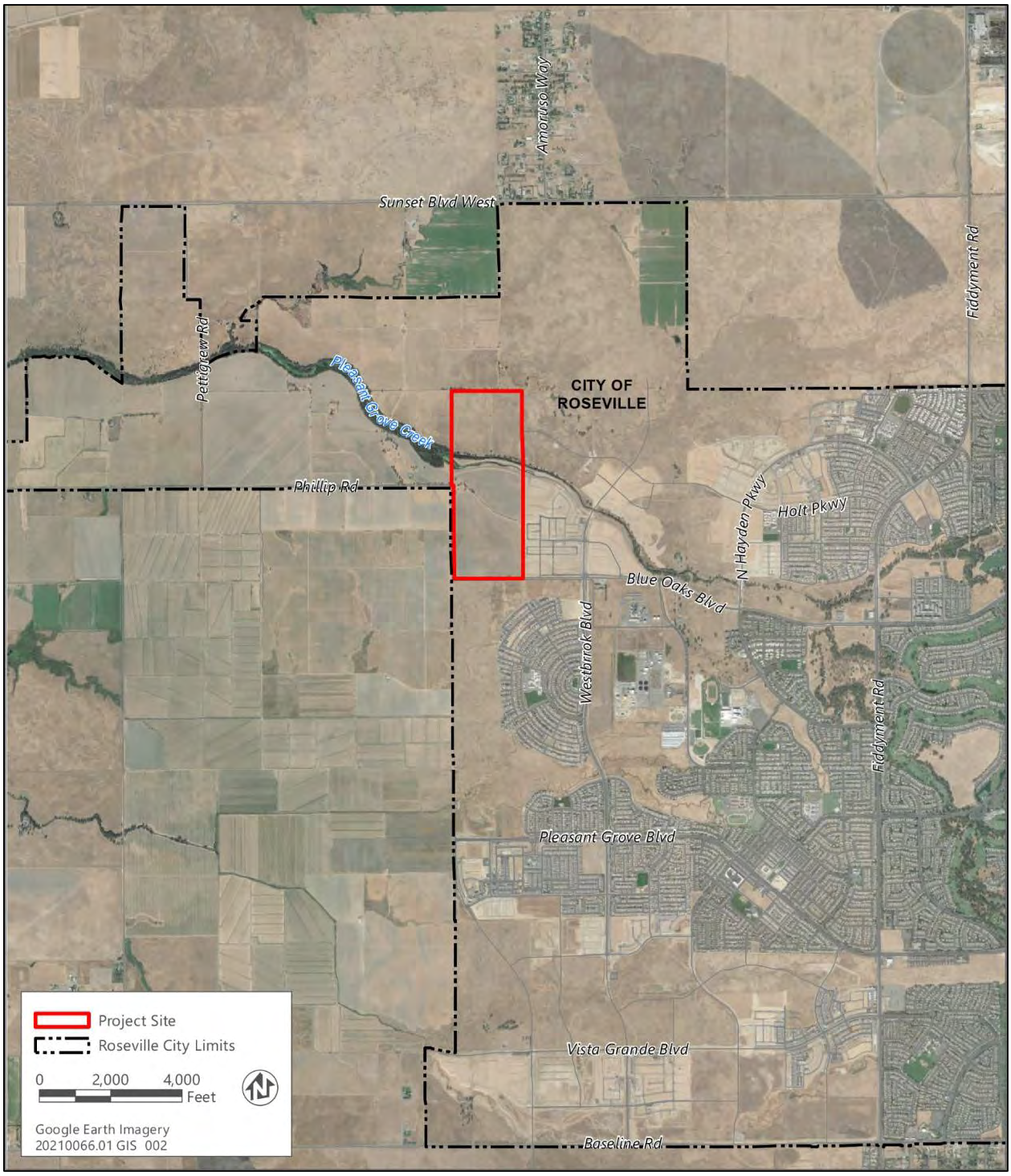
The Proposed Project location is 6382 Phillip Road in the northwest corner of the City, as shown on Figure 2-1. The Proposed Project site is bounded by the Al Johnson Wildlife Area to the northwest, and agricultural uses to the immediate west, east, and south. The future sites of the Creekview Specific Plan area (2,000 residential units), and the remainder of the West Roseville Specific Plan area (10,479 residential units, parks, open space, and commercial uses) are planned to the east and south, respectively. In addition, the Al Johnson Wildlife Area is part of a 1,700-acre site planned to accommodate the City's future stormwater Regional Retention facility.

The Proposed Project site is part of a larger 1,500-acre City-owned property (Reason Farms) purchased in 2003 for a retention basin project. As noted above, the retention basin project will now be located in the Al Johnson Wildlife Area. Therefore, the City entered into an Option and Purchase and Sale Agreement with Panattoni Development Company (Developer) to conduct due diligence and entitle the property in March 2021.

The Proposed Project site consists of approximately 241 acres of undeveloped grazing land. The existing site is predominantly flat with sparsely vegetated, low hills, and Pleasant Grove Creek bisects the property into a north and south parcel. Approximately 180 acres of the site are considered developable with approximately 7 acres for Blue Oaks Boulevard and Phillip Road extensions/widening; the remaining 55 acres consist of the Pleasant Grove Creek Floodplain, a retention basin bypass channel, and the future alignment of Placer Parkway.

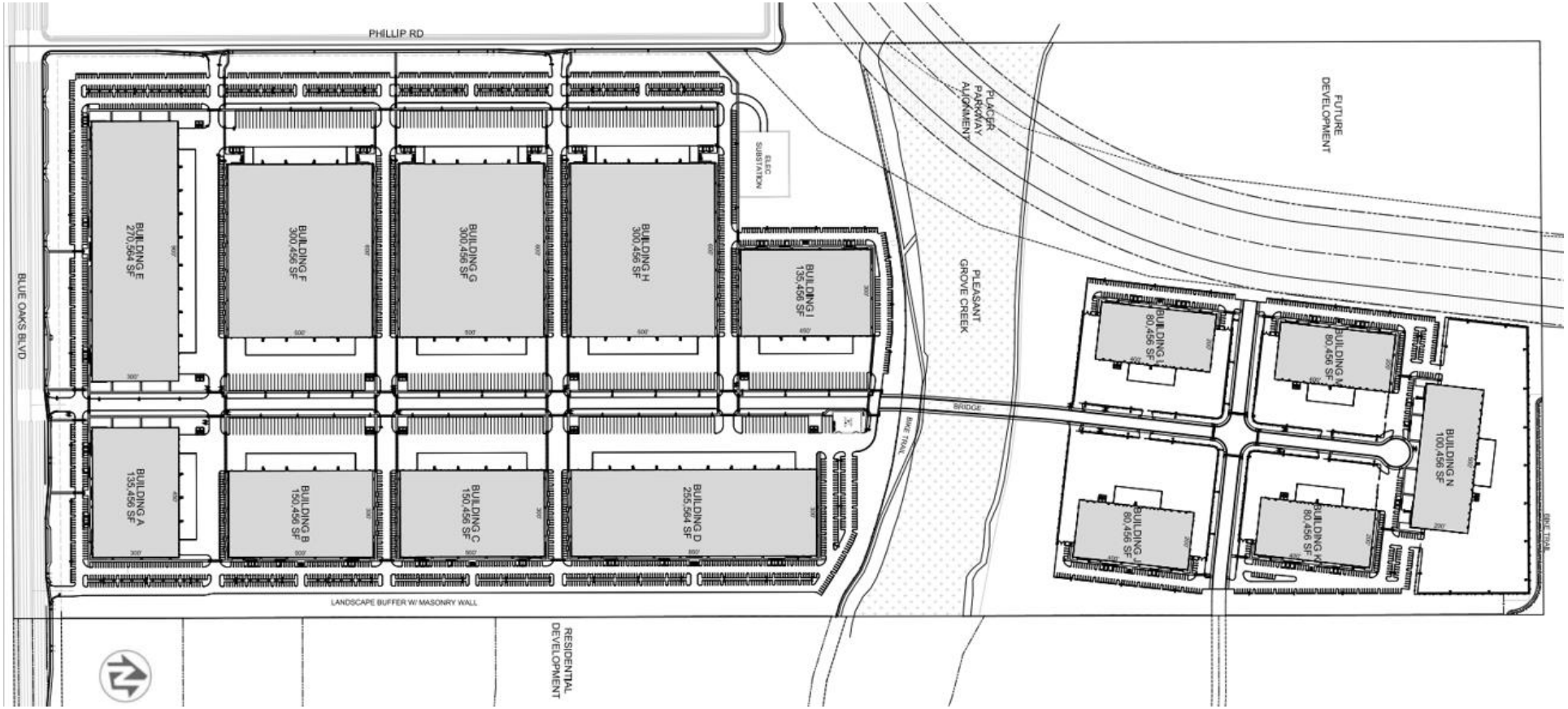
2.2 Proposed Land Uses

The Proposed Project will be developed to incorporate a range of industrial uses, including light manufacturing, warehouse, and distribution uses, totaling up to 2,415,000 sf. The south parcel would include 131 acres of large warehouse buildings for warehousing, distribution, and light manufacturing, and an electrical substation. The north parcel would include 48 acres of industrial buildings for warehousing, light manufacturing, and storage yards. A center spine designed for large truck circulation and a bridge across Pleasant Grove Creek will connect the two parcels, with pedestrian and vehicular paths located around the site perimeter. At buildout, there would be approximately 1,938 employees and up to 15 buildings. Figure 2-2 illustrates the Proposed Project site plan at buildout.



Source: Notice of Preparation of an Environmental Impact Report for the proposed Roseville Industrial Park Project and Notice of Public Scoping Meeting, Figure 2: Project Location. Dated July 2021.

Figure 2-1. Proposed Project Location



Source: Provided by Developer. Dated March 2022.

Figure 2-2. Proposed Project Site

2.3 Projected Water Demand for the Proposed Project

The potable water demand for the Proposed Project was estimated by Laugenour and Meikle Civil Engineers using the City's adopted unit water demand factors. A copy of the potable water demand projection from the draft Potable Water Master Plan is provided in Appendix A. The total projected potable water demand for the Proposed Project is approximately 518 acre-feet per year (AF/yr).

The recycled water demand for the Proposed Project was estimated by Laugenour and Meikle Civil Engineers using the total irrigated area and the City's Water Efficient Landscape Ordinance. A copy of the recycled water demand projection from the draft Potable Water Master Plan is provided in Appendix A. The total projected recycled water demand for the Proposed Project is approximately 43 AF/yr.[4] The landscape irrigation demands for the Proposed Project will ultimately be served by the City's recycled water system; however, these demands will be served from the potable water system in the interim until the necessary recycled water system infrastructure is constructed.

[4] Based on a total estimated water use of 14,147,095 gallons per year.

3.0 REQUIRED DETERMINATIONS

The following sections describe the required determinations for a WSA.

3.1 Does SB 610 Apply to the Proposed Project?

10910 (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

10912 (a) "Project" means any of the following:

(1) A proposed residential development of more than 500 dwelling units.

(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.

(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.

(4) A proposed hotel or motel, or both, having more than 500 rooms.

(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

(6) A mixed-use project that includes one or more of the projects specified in this subdivision.

(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.

As shown in Table 3-1, the Proposed Project does meet the definition of a "Project" as specified in California Water Code section 10912(a). The Proposed Project has not been the subject of a previously adopted WSA and has not been included in an adopted WSA for a larger project. Therefore, according to California Water Code section 10910(a), a WSA is required for the Proposed Project. The City has also determined that the Proposed Project is subject to the California Environmental Quality Act (CEQA) and that an EIR is required.

Table 3-1. Does the Proposed Project Meet the SB 610 Definition of a "Project"?

SB 610 Project Definition Components	Proposed Project Quantity	Meets the SB 610 Definition of a "Project"?
Residential > 500 dwelling units	N/A	NO
Retail > 1,000 employees or > 500,000 sf	N/A	NO
Commercial Office Building > 1,000 employees or > 250,000 sf	N/A	NO
Hotel/Motel > 500 rooms	N/A	NO
Industrial Plant/Park > 1,000 employees or > 40 acres or > 650,000 sf	1,938 employees 180 acres 2.42 million sf	YES
Mixed Use Project that includes one or more of the above	N/A	NO
A Project that would demand the amount of water required by a 500-dwelling unit project	N/A	NO
SB 610 Required?	**--**	**YES**

3.2 Does SB 221 Apply to the Proposed Project?

In 2001, SB 221 amended State law to require that approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply. Per California Government Code Section 66473.7(a)(1), a subdivision means a proposed residential development of more than 500 dwelling units. The Proposed Project does not include residential dwelling units and is therefore exempt from the requirements of SB 221.

3.3 Who is the Identified Public Water System?

> *10910(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined by Section 10912, that may supply water for the project*
>
> *10912 (c) "Public water system" means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections…*

The Proposed Project is located in the City limits. Therefore, the City of Roseville is the identified public water system for the Proposed Project.

3.4 Does the Identified Water Supplier have an adopted UWMP and does the UWMP include the projected water demand for the Proposed Project?

> *10910(c)(1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).*

The City's 2020 Urban Water Management Plan (UWMP) was adopted in June 2021 and is incorporated by reference into this WSA[5]. The City's 2020 UWMP included existing and projected water demands for existing and projected future land uses to be developed within the City's various specific plans through the year 2035. The water demand projections in the City's 2020 UWMP included existing City water demands, plus projected water demands for future developments, but did not include water demand projections for the Proposed Project, because the Proposed Project was not yet part of the City's development planning process. Therefore, this WSA has revised the water demand projections (UWMP Chapter 4) and the supply and demand comparison (UWMP Chapter 7) presented in the City's 2020 UWMP.

[5] City of Roseville 2020 Urban Water Management Plan, June 2021.

4.0 CITY OF ROSEVILLE WATER SYSTEM

The following sections describe the City's existing water service area, including population and climate information.

4.1 Water Service Area

The City of Roseville Water Utility is a public utility owned and operated by the City of Roseville. The City is located along the Interstate 80 corridor, approximately 15 miles northeast of downtown Sacramento, California. The City obtains its surface water from Folsom Lake through wholesale purchase primarily from the United States Bureau of Reclamation (USBR) and additional water contracts with Placer County Water Agency (PCWA) and San Juan Water District (SJWD). The City also maintains and operates several production well sites that provide additional water supply reliability; the City plans to construct additional wells in the future. The City also operates a recycled water system to irrigate landscaped areas throughout the City.

The City's service area boundary lies within the limits of the City of Roseville. There are a few small areas within the City limits that are served by PCWA, SJWD, and Citrus Heights Water District (CHWD). The service area is approximately 3,150 acres.

4.2 Population

City water service area population projections differ slightly from total City population estimates as a small number of City residents are served by adjacent water purveyors. The City estimated its current and projected water service area population in its 2020 UWMP through coordination with the City's General Plan, direct input from the City's Planning Division, and previous studies performed by the City's Environmental Utilities Division. As shown in Table 4-1, the City projects approximately 38 percent growth to occur from 2020 to buildout in 2035, and assumes the population will then remain constant through the rest of the planning period.

Table 4-1. Current and Projected Service Area Population

2020	2025	2030	2035	2040	2045
140,187	151,742	170,526	193,190	193,190	193,190

Source: City of Roseville 2020 UWMP, DWR Table 3-1.

4.3 Climate

The City's water service area experiences cool winters and hot and dry summers. The City's climate is similar to the City of Sacramento approximately 15 miles southwest. Historical climate data reported in the City's 2020 UWMP was obtained from California Irrigation Management Information System (CIMIS) Station 155 in Sacramento and is summarized in Table 4-2. The average monthly temperature from 2016 to 2020 ranged from 39.8 degrees Fahrenheit (°F) to 95.1°F. Typically the wet season begins in October and ends in May, with an average annual total precipitation of 13.2 inches.

Table 4-2. Monthly Average Climate Data[a]

Month	Average Minimum Temperature (°F)	Average Maximum Temperature (°F)	Average Temperature (°F)	Average Monthly Precipitation, inches
January	42.7	56.3	49.5	3.6
February	42.5	61.7	52.1	1.7
March	46.3	64.7	55.5	2.3
April	50.6	73.3	62.0	0.8
May	54.2	80.6	67.4	0.8
June	59.2	90.5	74.9	0.0
July	60.9	95.1	78.0	0.0
August	61.3	92.4	76.9	0.0
September	58.9	87.5	73.2	0.0
October	51.7	78.2	65.0	0.7
November	44.7	65.0	54.9	1.2
December	39.8	56.7	48.3	2.1
Average or Total	**51.1**	**75.2**	**63.1**	**13.2**

Source: City of Roseville 2020 UWMP, COR Table 3-E

(a) Values represent average monthly climate data for the CIMIS station 155 located in Sacramento from 2016 through 2020.

5.0 CITY OF ROSEVILLE WATER DEMANDS

> *10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f) and (g).*

The descriptions provided below for the City's water demands have been taken, for the most part, from the City's 2020 UWMP (adopted in June 2021). As indicated above, the Proposed Project was not included in the City's 2020 UWMP, and the water demand projections have been updated to include the water demand for the Proposed Project.

5.1 Historical and Existing Water Demand

The City's water demand from 2015 to 2020 is shown in Table 5-1. Water demand has increased since 2015 when the drought and subsequent water use restrictions limited demand, but that growth has slowed in recent years. Water demand significantly increased in 2020 due to water transfers to other agencies, as well as groundwater banking via the City's aquifer storage and recovery (ASR) program.

Table 5-1. Historical and Current Water Demand, AF/yr

Use Type	2015[a]	2016[a]	2017[a]	2018[a]	2019[a]	2020[b]
Commercial	1,930	2,101	2,218	2,565	3,021	2,630
Industrial	934	954	921	797	276	254
Institutional/Governmental	561	650	770	384	393	412
Multi-Family	1,464	1,556	1,569	1,376	1,358	1,416
Single Family	11,680	13,215	14,674	15,303	15,387	17,115
Landscape	4,152	4,691	5,491	5,656	5,974	6,422
Losses[c]	2,128	2,330	2,683	2,141	1,865	1,599
Sales/Transfers/Exchanges to other Suppliers	0	0	0	0	0	1,451
Groundwater Recharge	0	0	0	0	0	597
Raw Water[d]	0	0	0	0	0	404
Total	**22,849**	**25,497**	**28,326**	**28,222**	**28,274**	**32,300**

(a) City of Roseville 2020 UWMP, COR Table 4-A. See note (c) for losses.
(b) City of Roseville 2020 UWMP, DWR Table 4-1.
(c) All water losses are from the City of Roseville 2020 UWMP; 2015-2019 water losses are from COR Table 4-D.
(d) Discharge to Linda Creek and water wheeled on behalf of SJWD.

5.2 Projected Water Demand

In the City's 2020 UWMP, projected water demands were calculated by applying the City's current land-used based unit water demand factors to land uses in the City's various specific plans at buildout. As shown in Table 5-2, buildout of all specific plans is assumed to occur in 2035 with a total potable and recycled water demand of 62,546 AF/yr and remains constant through 2045.

Table 5-2. 2020 UWMP Projected Normal Year Water Demand, AF/yr					
Use Type	2025	2030	2035	2040	2045
Commercial	6,135	6,508	7,017	7,017	7,017
Industrial	4,175	4,726	5,123	5,123	5,123
Institutional/Governmental	8,904	9,494	10,321	10,321	10,321
Multi-Family	1,752	2,029	2,725	2,725	2,725
Single Family	22,564	24,508	26,281	26,281	26,281
Landscape	644	765	805	805	805
Losses	1,429	1,401	1,587	1,587	1,587
Sales/Transfers/Exchanges to other Suppliers[a]	0	0	0	0	0
Groundwater Recharge	1,560	2,720	3,350	3,350	3,350
Raw Water[b]	404	404	404	404	404
Recycled Water[c]	4,022	4,435	4,933	4,933	4,933
Total (Potable and Raw Water Only)	**47,567**	**52,555**	**57,613**	**57,613**	**57,613**
Total (All Sources)	**51,589**	**56,990**	**62,546**	**62,546**	**62,546**

Source: City of Roseville 2020 UWMP, DWR Table 4-2.

(a) The City has no planned contracts for water transfers from 2025-2045 as of the preparation of the 2020 UWMP.
(b) Discharge to Linda Creek and water wheeled on behalf of SJWD.
(c) Recycled water projections are from Table DWR 6-4 of the City's 2020 UWMP.

At the time the 2020 UWMP was prepared, the Proposed Project was not considered in the City's water demand projections, as described in Section 3.4. According to the Notice of Preparation (NOP) of an Environmental Impact Report prepared by the City in July 2021, Phase 1 of the Proposed Project will begin occupancy in 2025 with future phases to be determined later. This WSA assumes that the Proposed Project water demand will begin in the year 2025 and linearly increase until buildout in 2035, consistent with the 2020 UWMP.

The Proposed Project water demands are added to the 2020 UWMP potable water demands to obtain the revised water demand projections presented in Table 5-3.

Table 5-3. Revised Projected Water Demand, AF/yr					
Demand Projection	2025	2030	2035	2040	2045
Potable and Raw Water Demand					
2020 UWMP[a]	47,567	52,555	57,613	57,613	57,613
Proposed Project	173	345	518	518	518
Subtotal	**47,740**	**52,900**	**58,131**	**58,131**	**58,131**
Recycled Water Demand					
2020 UWMP[a]	4,022	4,435	4,933	4,933	4,933
Proposed Project	14	29	43	43	43
Subtotal	**4,036**	**4,464**	**4,976**	**4,976**	**4,976**
Total Water Demand	**51,776**	**57,364**	**63,107**	**63,107**	**63,107**

(a) Table 5-2 this WSA.

5.3 Dry Year Water Demand

The City currently has a Water Shortage Contingency Plan (WSCP) in place, as described in Appendix K of the City's 2020 UWMP. The City assumed in its 2020 UWMP that water demand in single dry or multiple dry years would be equal to normal year water demand. This is a conservative assumption as additional water conservation would likely occur in the event of drought or another water supply shortage or emergency due to the implementation of additional water conservation measures outlined in the City's WSCP and Chapter 14.09 of the City's Municipal Code. The City's WSCP and Municipal Code include a five-stage plan describing specific actions to reduce water demand by greater than 50 percent in the event of a water supply shortage or emergency. The water shortage stages, and their respective anticipated reduction in potable water demand, are shown in Table 5-4.[6]

Table 5-4. Water Shortage Contingency Plan Projected Demand Reduction

Water Shortage Stage Description	Projected Demand Reduction, percent
Baseline Water Conservation	0%
Stage 1 Drought	Up to 10
Stage 2 Drought	Up to 20
Stage 3 Drought	Up to 30
Stage 4 Drought	Up to 40
Stage 5 Drought	Up to 50 and Greater than 50

Source: City of Roseville 2020 UWMP, Appendix K, WSCP Table 4.

[6] City of Roseville 2020 Water Shortage Contingency Plan, June 2021.

6.0 CITY OF ROSEVILLE WATER SUPPLIES

The descriptions provided below for the City's water supplies have been taken, for the most part, from the City's 2020 UWMP (adopted in June 2021).

6.1 Roseville Existing and Projected Water Supplies

The City currently receives water from the following sources:

- Untreated surface water from the Folsom Reservoir through water supply contracts with PCWA, USBR, and SJWD;
- Groundwater from the North American Subbasin of the Sacramento Valley Groundwater Basin pumped from six groundwater wells, four of which possess ASR capability; and
- Recycled water delivered through the City's recycled water system.

Each of these existing supplies is discussed below.

6.1.1 Purchased and Imported Water

6.1.1.1 Surface Water from Folsom Lake

The City has historically relied heavily on its water supply contracts with PCWA, the USBR, and SJWD. The four untreated surface water contract entitlements for American River supply total 66,000 AF/yr. The City's current contract and supplies are outlined in Table 6-1.

Table 6-1. Purchased Surface Water Supply Summary

Contract Supply	Supply Type	Quantity, AF	Availability
USBR	Raw Surface Water	32,000	Subject to CVP M&I Usage Policy[(a)]
PCWA	Raw Surface Water	30,000	All Year Types
SJWD	Raw Surface Water	800	Normal or Wet Hydrologic Years
SJWD	Raw Surface Water	3,200	Normal or Wet Hydrologic Years

Source: City of Roseville 2020 UWMP, COR Table 6-A

(a) The City's USBR supply is subject in any year to determinations of allotments based on unimpaired inflow to Folsom Reservoir and downstream operations. See Section 7.1 and subsections for further discussion.

Water supplies from all three source agencies outlined above are received through the same point location at Folsom Dam. Folsom Lake has been the primary source of water supply for the City of Roseville since 1971. Surface water from the American River is collected and diverted at the Folsom Lake Pumping Plant located at Folsom Dam.The City receives supplies from all four of its raw water contract entitlements through the Folsom Lake Municipal and Industrial (M&I) Intake at this facility.

Untreated water supplies received at this point are conveyed by gravity or pumped by USBR depending on lake level through two parallel pipelines (84-inch and 72-inch) to the City's Barton Road Water Treatment Plant (BRWTP), with a capacity for treatment of up to 100 million gallons per day (mgd). The 72-inch pipeline was constructed in 2010 to increase redundancy and reliability of this critical supply route, in partnership with SJWD. Additionally, the City has 17 intertie facilities with neighboring agencies through which water supplies may be transferred under normal water year conditions as well as emergency or

drought conditions. In the future, the City is exploring options with PCWA to facilitate receipt of treated water directly through existing and/or new intertie facilities.

6.1.1.2 Other Available Water Purchases

The City may choose to purchase Article 3F water from the USBR when such supply is available.This supply source is typically only available in winter and spring months as it is generally considered "excess flow" released by the USBR above and beyond the entitlements of downstream users. In 2019, the City exercised this option and used approximately 950 AF of Article 3F water as part of their ASR program to inject and recharge the aquifer. This effort represented a continued commitment to provide not only water supply reliability for the City's residents, but also to support conjunctive use to aid in regional water supply reliability.

6.1.2 Groundwater

In recent years, the City has taken significant steps to expand and strengthen their groundwater program to broaden the City's water supply portfolio. The City currently owns and maintains six operational groundwater wells,with six additional wells planned for development in the next ten years, and one planned destruction. Four of the six operational wells are capable of ASR whereby treated water is injected into the underlying aquifer for later extraction and use. Currently, the City plans to design all new wells with ASR capability, as the City moves toward a more diversified water supply portfolio.

Groundwater is considered to be available for use as part of the City's water supply portfolio in all year types including normal, single dry, or multiple dry year scenarios. Importantly, groundwater will be a critical resource in future drought years as it supplements increasingly vulnerable surface water supplies.

6.1.2.1 Groundwater Basin Description

The City is located over the North American Subbasin of the Sacramento Valley Groundwater Basin. The North American Subbasin (DWR Groundwater Basin Number 5-21.64) is located in the eastern central portion of the Sacramento Valley Groundwater Basin, encompassing portions of Sutter, Placer, and Sacramento Counties. As of 2020, the Basin is listed by the California Department of Water Resources (DWR) as high priority in large part due to the population in the basin and the existing and projected future groundwater use, but the Basin has neither been adjudicated nor is it considered in overdraft or critical overdraft conditions.

Groundwater elevations in the subbasin along the Placer/Sacramento County line declined at a rate of 1 to 1.5 feet per year for multiple decades until approximately the mid-1990s. Some of the largest decreases have occurred in the area of the former McClellan Air Force Base. From 1995, groundwater elevations were stabilized, and the declining elevation trend was dampened due to groundwater management activities stemming from the Water Forum Agreement (see Section 7.1.1) restraining further increases in groundwater pumping and implementation of in-lieu banking in the region. Groundwater elevations in Sutter and northern Placer counties generally remain stable, although some wells in southern Sutter County have experienced declines.

In addition, the subbasin has historically been pumped by agricultural and urban users. Recently, in some areas of the subbasin, agricultural land has been and is being developed and converted to urban uses. The subbasin currently operates within the most recent estimate of sustainable yield.

6.1.2.2 Historical Groundwater Production

Until recently, groundwater had not been utilized by the City under normal year conditions. In the City's 2015 UWMP, the City's groundwater wells were identified for use only in drought or emergency conditions, with minimal pumping for the purpose of maintenance or demonstration of the City's ASR program. Over the last five years, the City has worked to advance and expand the groundwater infrastructure and groundwater program to provide additional water supply reliability.

Beginning in 2018, the City began to regularly operate existing groundwater infrastructure, specifically by pumping small volumes of groundwater from the City's production wells and serving that water into the distribution system as part of the maintenance plan. In 2019 and 2020, the City was able to store excess surface water using the ASR production wells to inject water into the aquifer. As the City continues to develop this program and look to the future of sustainable supply, groundwater pumping patterns will continue to evolve. A summary of the amount of groundwater pumped by the City over the past five years is provided in Table 6-2.

Table 6-2. Historical Groundwater Production, AF/yr

2016	2017	2018	2019	2020
0	0	17	23	201

Source: City of Roseville 2020 UWMP, DWR Table 6-1

6.1.2.3 Groundwater Management

The City actively manages groundwater resources both internally in coordination with land use planning and growth projections as well as regionally in accordance with the provisions of the Sustainable Groundwater Management Act. These efforts are discussed in the following subsections.

6.1.2.3.1 Western Placer County Groundwater Management

A Groundwater Management Plan (GMP) was completed in November of 2007 in accordance with Senate Bill 1938 and Assembly Bill 3030 in cooperation with PCWA, City of Lincoln, and California American Water.

6.1.2.3.2 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act of 2014 (SGMA) contains a framework for sustainable management of groundwater supplies by local agencies, with a limited role for state intervention if local agencies fail to meet the requirements of SGMA. SGMA lays out a process and a timeline for local authorities to achieve sustainable management of high and medium-priority groundwater basins throughout the state. It also provides tools, authorities, and deadlines to achieve statewide sustainable groundwater management. For local agencies involved in implementation, the requirements are significant and will take years to accomplish. DWR has the responsibility to evaluate local agency progress, while the California State Water Resources Control Board (SWRCB) may intervene if DWR determines that local agencies fail to make progress and achieve the requirements of SGMA. Local agencies who volunteer to comply with SGMA must form a Groundwater Sustainability Agency (GSA) and prepare, adopt, and implement a Groundwater Sustainability Plan (GSP) that meets the requirements of SGMA.

More specifically, critical required steps include the formation of GSAs within two years of when SGMA became effective; the adoption of GSPs within five to seven years depending on the status of the basin in question (in critical overdraft condition or not); and preparation, adoption, and implementation of a GSP(s) that achieves the sustainability goal within 20 years of plan adoption.

SGMA applies to basins or subbasins designated by DWR as high or medium-priority, based on a statewide prioritization that uses criteria including population, importance and amount of groundwater pumped, extent of irrigated agriculture dependent on groundwater, and other criteria. DWR's final Basin Prioritization findings indicate that there are 127 of California's 515 groundwater basins and subbasins which are high and/or medium-priority. These high and medium-priority basins account for 96 percent of California's annual groundwater pumping and include 88 percent of the State's population. The priority ranking for the North American Subbasin of the Sacramento Valley Groundwater Basin (from which the City pumps groundwater) is 24 out of the state's 515 basins, with an overall ranking score of 22.5 and a designation of high-priority.

The City is well along the path of SGMA compliance, having joined the West Placer Groundwater Sustainability Agency (WPGSA) consisting of the City of Lincoln, Placer County Water Agency, Nevada Irrigation District, and the County of Placer. The WPGSA is one of a group of five GSAs formed within the North American Subbasin that consist of the West Placer, Sacramento, South Sutter Water District, Sutter County, and Recreation District 1001 GSAs. All five of these GSAs will prepare and submit one joint GSP for the entire subbasin. This GSP has been submitted to DWR for review, and the public comment period closed on April 16, 2022.

6.1.2.3.3 Aquifer Storage and Recovery

The City considers development of a diverse and drought resistant water supply portfolio of primary importance. To this end, the City has invested in both planning and capital improvements to develop their ASR program into a highly functional and critical component of the City's future. The ASR program utilizes groundwater pumping infrastructure along with existing water supplies to increase reliability. ASR wells can inject treated surface water from the distribution system into the groundwater aquifer for later extraction and use.

ASR production wells can be used seasonally (i.e., throughout the water year) or periodically over many years to create a "groundwater bank", storing surface water supplies within the aquifer in times of abundance (wet seasons or wet years) for use in times of scarcity (dry season or dry years). An important component of an ASR program is to maintain consistent and detailed records of groundwater levels within the aquifer and extraction/injection volumes. This information is used to ensure the groundwater basin is managed sustainably providing water supply reliability benefits while avoiding impacts to the groundwater basin. The City is a committed leader in the region with respect to the development of potential future cooperative water banking and responsible regional resource management.

6.1.3 Recycled Water

The Proposed Project will utilize recycled water for landscape irrigation demand and construct the necessary recycled water system infrastructure required to connect to the City's existing recycled water system[7]. The City has been successfully irrigating landscaped areas through the City with recycled water and is planning recycled water implementation as part of new developments. The City operates the recycled water program through the requirements of Master Reclamation Permit Order 97-147 (Permit).

Current uses of recycled water within the City include irrigation of landscapes and golf courses, industrial cooling for the Roseville Energy Park, and construction purposes such as dust control and soil compaction; recycled water is also conveyed outside the City's service area for golf course and landscape irrigation.

The City prepared the 2016 Recycled Water Systems Evaluation to position the City for implementing the next phases of recycled water projects as new users within the City come online, and as the various Urban Growth Areas plan for and install recycled water system infrastructure. The City continues to utilize recycled water supplies to promote responsible water supply management. Beneficial use of available disinfected tertiary treated Title 22 recycled water allows surface water and groundwater supplies to be applied to potable uses.

As of 2020, the peak recycled water production occurs in July and is approximately equal to the peak recycled water demand in July. For the City to further expand recycled water usage during the irrigation season, additional recycled water must be made available. This will most likely be accomplished through expansion of operational storage, with the necessary storage volume dependent on actual demand requirements. Therefore, the City will continue to evaluate City and regional recycled water demands and consider its ability to provide recycled water for future developments.

A major hindrance to expanding use of recycled water in existing developments is lack of infrastructure. Installing new infrastructure in existing areas is exceedingly expensive. The City requires use of recycled water for all commercial irrigation services in newly developing master planned areas, in which the infrastructure can be installed as part of the new construction, such as the Proposed Project.

6.2 Future Water Supply Projects

Future water supply project opportunities, including diversifying the purchasing or importing of water, expansion of the City's groundwater and ASR program, and regional cooperative conjunctive use, are discussed in the following sections.

6.2.1 Purchased or Imported Water

In addition to the current contract with PCWA for 30,000 AF/yr of surface water, the City is evaluating and may enter an agreement with PCWA for additional treated surface water supplies available in all hydrologic year types.The treated PCWA water would be supplied by PCWA's future Ophir Water Treatment Plant (Ophir WTP) which will treat water from the Middle Fork Project. The Ophir WTP will be constructed in phases, with the first phase expected to be operational by 2035 and provide an estimated 10 mgd of total supply to all customers. Additional phases will be evaluated as PCWA wholesale customers need

[7] Laugenour and Meikle Civil Engineers. August 2021. Draft Recycled Water Study for Roseville Industrial Project.

additional supply. The City may purchase up to 3 mgd of normal year capacity from the Ophir WTP, equivalent to 3,360 AF/yr of treated surface water supply.

The City is also exploring future opportunities for water transfers with regional partner agencies in an effort to diversify regional water management strategies in conjunction with responsible groundwater management practices. In 2019, the City executed an agreement for a pilot water transfer program with Sacramento Municipal Utilities District (SMUD). This agreement allows for an annual water transfer for up to 6,000 AF for three years. The transfer allows the City to use wet season supply to recharge the groundwater aquifer for later extraction and use. The City may look to renew this transfer or evaluate similar opportunities in coming years to provide drought resiliency and support the sustainable management of groundwater.

6.2.2 Groundwater and ASR Program

The City has historically relied upon groundwater resources only as a backup supply in times of shortage. In recent years and in response to lessons learned during the 2015 drought, changing climate conditions, and the overall need for further diversity and reliability of water supply, the City has invested in efforts to operate and expand its groundwater program as a regular part of its water supply portfolio in all year types. During the development of the GSP, the City evaluated current infrastructure, potential new well sites, and developed further understanding of the conditions and accessibility of the aquifer within the City's service area boundary to determine how groundwater planning would look moving forward. The result of these planning efforts has been the identification of six future well sites.

Conceptual design and siting have been completed for these sites, with exploratory drilling. The City plans to develop these wells and their above-ground improvements within the next 5 to 10 years, all with ASR capability to enhance flexibility of water system operations and expand the City's conjunctive use capabilities. For planning purposes, each well is assumed to extract a nominal 1,750 gallons per minute (gpm), with a final production value to be determined upon completion of well drilling and development. These six future wells are expected to represent a total of 16,936 AF/yr of additional water supplies.

7.0 WATER SUPPLY RELIABILITY

10910(c)(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

10911(a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that water supplies are, or will be, insufficient, the city or county shall include in its water supply assessment its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. Those plans may include, but are not limited to, information concerning all of the following:

(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional water supplies.

(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional water supplies.

(3) Based on the consideration set forth in paragraphs (1) and (2), the estimated timeframes within which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to able to acquire additional water supplies.

The reliability discussion provided below has been taken, for the most part, from the City's 2020 UWMP (adopted in June 2021).

7.1 Surface Water Reliability

The City's purchased surface water supply is subject to reductions during dry years (seasonal and climatic shortages) pursuant to the Water Forum Agreement (WFA), the USBR Operations Criteria and Plan (OCAP), and the Central Valley Project Municipal and Industrial Water Shortage Policy (CVP M&I WSP). These agreements and programs are discussed in greater detail in the following subsections.

7.1.1 Sacramento Water Forum Agreement

The Sacramento Water Forum is a diverse group of business and agricultural leaders, citizen groups, environmentalists, water managers, and local governments working together to balance two co-equal objectives:

1. Provide a reliable and safe water supply for the Sacramento region's long-term growth and economic health.
2. Preserve the fishery, wildlife, recreational and aesthetic values of the Lower American River.

The City along with several other Sacramento-area water suppliers are signatory to the January 2000 Water Forum Agreement (WFA) which includes Purveyor Specific Agreements, with the most recent revisions adopted in 2015. The WFA provides the framework for how water resources, including surface water and groundwater supplies, would be used in the region through the year 2030. The City's Purveyor Specific Agreement includes limitations on City surface water diversions from the American River under various hydrologic conditions. The Water Forum categorized water years into three types, all of which are

defined in terms of the projected March through November unimpaired flow into Folsom Reservoir. The City's diversions from the American River are limited by the WFA in accordance with the hydrologic conditions outlined in Table 7-1.

Table 7-1. WFA Hydrologic Year Characterization and Limits on City Supplies

WFA Year Type	Required Unimpaired Flow into Folsom Reservoir, AF[(a)]	Maximum Volume of American River Water Diverted by the City, AF[(b)]
Normal/Average or Wet	≥ 950,000	58,900
Drier	400,000 to 950,000	43,800 to 58,900[(c)]
Driest/Critically Dry	≤ 400,000	43,800

(a) From City of Roseville 2020 UWMP, Table 7-A.
(b) From City of Roseville 2020 UWMP, Figure 7-1.
(c) In drier years, the City's maximum diversion from the American River is calculated linearly between 43,800 AF and 58,900 AF, based on the required amount of unimpaired flow between 400,000 AF and 950,000 AF.

It is important to note that during the drier and driest years, the City has an agreement with PCWA to release an additional 20,000 AF/yr of water down the American River on the City's behalf through re-operation of PCWA's American River Middle Fork Project (MFP). This 20,000 AF/yr of water is not part of the City's contracted supply of 66,000 AF/yr. The intent of the MFP re-operational releases during drier and driest years is to mitigate environmental impacts resulting from increased diversions above 1995 baseline levels.

7.1.2 USBR Operations and Criteria Plan

In addition to the WFA, the City's USBR supply is also subject to restrictions as detailed in the 2004 Long-Term Central Valley Project Operations Criteria and Plan. Chapter 5 of the OCAP entitled "Operations Forecasting" states that CVP allocations can be affected by:

- Forecasted reservoir inflows and Central Valley hydrologic water supply;
- Current amounts of storage in upstream reservoirs and in San Luis Reservoir;
- Projected water demands in the Sacramento Valley;
- Instream and Sacramento-San Joaquin Delta (Delta) regulatory requirements;
- Annual management of 3406(b)(2) resources (related to fish and wildlife); and/or
- Efficient use of CVP-SWP export capacity through Joint Point of Diversion flexibility.

The OCAP includes a requirement that contractors be informed by USBR no later than February 15 of any possible deficiency in supplies that year. Since 1992, increasing constraints placed on operations by legislative and Endangered Species Act (ESA) requirements have made water delivery to CVP contractors more difficult, with recent drought conditions further impacting deliveries. Additionally, it is important to note that the City's USBR water deliveries may be curtailed purely based on downstream Delta conditions, irrespective of available upstream supply.

For the purposes of this WSA, the City's USBR contracted amount is assumed to be reduced by 75 percent in single dry years and the fifth year of a five-year drought. This represents the actual curtailments experienced by the City in 2015, and is the largest reduction imposed on the City's USBR supply to date.

The full 32,000 AF is assumed to be available in the first multiple dry year and will decrease by 8,000 AF for each subsequent dry year.

7.1.3 Central Valley Project Municipal and Industrial Water Shortage Policy

Upon a condition of shortage as determined by the OCAP, the CVP M&I WSP details the "incremental steps" by which available M&I water supply is allocated to the CVP water service contractors. Elements of the CVP M&I WSP include:

- Defining water shortage terms and conditions for applicable CVP water service contractors, as appropriate.
- Determining the quantity of water made available to CVP water service contractors that, together with the M&I water service contractors' drought water conservation measures and other non-CVP water supplies would assist the M&I water service contractors in their efforts to protect public health and safety during severe or continuing drought.
- Providing information to CVP water service contractors for their use in water supply planning and development of drought contingency plans.

The Final Environmental Impact Statement (EIS) describes the existing setting, alternatives for future operations under the CVP M&I WSP, and potential environmental impacts of each alternative. USBR selected Alternative 4, the Preferred Alternative, which comprises the Updated CVP M&I WSP developed by USBR with stakeholder input received during preparation of the Final EIS. The decision will allow USBR the greatest degree of flexibility to address CVP water service contractors' needs during a shortage condition while recognizing that CVP deliveries are subject to the amount of CVP water available. The updated CVP M&I WSP also provides clarity to the terms, conditions, and procedures of the CVP M&I WSP.

7.2 Groundwater Reliability

While the City's groundwater supply is not limited in different year types like its purchased supply, the City intends to use their groundwater supply differently in different year types:

- **Normal Years –** In a normal year the City would typically extract less than or equal to the volume injected.
- **Single Dry Years –** In a single dry year the City would expect to pump for six months of the year at 90 percent of total extraction capacity.
- **Multiple Dry Years –** In the fifth year of a five-year drought, the City would expect to pump for six months of the year at 90 percent capacity.

A more detailed summary of the City's available groundwater supply is tabulated in Sections 7.4 and 7.5.

7.3 Recycled Water Reliability

Recycled water is considered 100 percent reliable in all water types. For the purposes of this WSA, projected recycled water supply is assumed to be equal to demand. Showing recycled water surpluses would incorrectly assume that potable water shortages could be offset by recycled water. Therefore, the Proposed Project recycled water demand of 43 AF/yr has been added to the City's recycled water supplies shown in Sections 7.4 and 7.5.

7.4 Normal Year Water Supply

The City's available water supplies in normal years are shown in Table 7-2.

Table 7-2. Normal Year Available Water Supplies, AF/yr

Supply Source	2025	2030	2035	2040	2045
USBR	32,000	32,000	32,000	32,000	32,000
PCWA	30,000	30,000	30,000	30,000	30,000
SJWD	4,000	4,000	4,000	4,000	4,000
Water Forum Limitation[a]	-7,100	-7,100	-7,100	-7,100	-7,100
PCWA (Future)	0	0	3,360	3,360	3,360
Groundwater	1,560	2,720	3,350	3,350	3,350
Recycled Water[b]	4,036	4,464	4,976	4,976	4,976
Total	**64,496**	**66,084**	**70,586**	**70,586**	**70,586**

Source: City of Roseville UWMP, COR Table 7-D

(a) The WFA limits the City's maximum surface water diversion to 58,900 AF in normal/wet years, even if there are no curtailments on the City's total contract amounts of 66,000 AF.

(b) Recycled water supply assumed equal to demands projected in Table 5-3 of this WSA.

7.5 Dry Year Water Supply

The City's available water supplies in single dry years are shown in Table 7-3.

Table 7-3. Single Dry Year Available Water Supplies, AF/yr

Supply Source	2025	2030	2035	2040	2045
USBR[a]	8,000	8,000	8,000	8,000	8,000
PCWA	30,000	30,000	30,000	30,000	30,000
SJWD	0	0	0	0	0
Water Forum Limitation	0	0	0	0	0
PCWA (Future)	0	0	3,360	3,360	3,360
Groundwater[b]	7,920	12,570	14,431	14,431	14,431
Recycled Water[c]	4,036	4,464	4,976	4,976	4,976
Total	**49,956**	**55,034**	**60,767**	**60,767**	**60,767**

Source: City of Roseville UWMP, COR Table 7-D

(a) Assumes a 75 percent curtailment of the USBR contracted value, based on the same curtailment experienced in 2015.

(b) Groundwater is not used as a significant source of supply until a Drought Stage 3 of the WSCP is declared by the City.

(c) Recycled water supply assumed equal to demands projected in Table 5-3 of this WSA.

The City's available water supplies in multiple dry years are shown in Table 7-4.

Table 7-4. Multiple Dry Years Available Water Supplies, AF/yr

Supply Source	2025	2030	2035	2040	2045
Multiple Dry Year 1					
USBR	32,000	32,000	32,000	32,000	32,000
PCWA	30,000	30,000	30,000	30,000	30,000
SJWD	4,000	4,000	4,000	4,000	4,000
Water Forum Limitation	-7,100	-7,100	-7,100	-7,100	-7,100
PCWA (Future)	0	0	3,360	3,360	3,360
Groundwater	1,560	2,720	3,350	3,350	3,350
Recycled Water[(a)]	4,036	4,464	4,976	4,976	4,976
Total	**64,496**	**66,084**	**70,586**	**70,586**	**70,586**
Multiple Dry Year 2					
USBR	24,000	24,000	24,000	24,000	24,000
PCWA	30,000	30,000	30,000	30,000	30,000
SJWD	0	0	0	0	0
Water Forum Limitation	0	0	0	0	0
PCWA (Future)	0	0	3,360	3,360	3,360
Groundwater	1,560	2,720	3,350	3,350	3,350
Recycled Water[(a)]	4,036	4,464	4,976	4,976	4,976
Total	**59,596**	**61,184**	**65,686**	**65,686**	**65,686**
Multiple Dry Year 3					
USBR	24,000	24,000	24,000	24,000	24,000
PCWA	30,000	30,000	30,000	30,000	30,000
SJWD	0	0	0	0	0
Water Forum Limitation	0	0	0	0	0
PCWA (Future)	0	0	3,360	3,360	3,360
Groundwater	1,560	2,720	3,350	3,350	3,350
Recycled Water[(a)]	4,036	4,464	4,976	4,976	4,976
Total	**59,596**	**61,184**	**65,686**	**65,686**	**65,686**
Multiple Dry Year 4					
USBR	16,000	16,000	16,000	16,000	16,000
PCWA	30,000	30,000	30,000	30,000	30,000
SJWD	0	0	0	0	0
Water Forum Limitation	0	0	0	0	0
PCWA (Future)	0	0	3,360	3,360	3,360
Groundwater	1,560	2,720	3,350	3,350	3,350
Recycled Water[(a)]	4,036	4,464	4,976	4,976	4,976
Total	**51,596**	**53,184**	**57,686**	**57,686**	**57,686**

Table 7-4. Multiple Dry Years Available Water Supplies, AF/yr

Supply Source	2025	2030	2035	2040	2045
Multiple Dry Year 5					
USBR	8,000	8,000	8,000	8,000	8,000
PCWA	30,000	30,000	30,000	30,000	30,000
SJWD	0	0	0	0	0
Water Forum Limitation	0	0	0	0	0
PCWA (Future)	0	0	3,360	3,360	3,360
Groundwater	7,920	12,570	14,431	14,431	14,431
Recycled Water[(a)]	4,036	4,464	4,976	4,976	4,976
Total	**49,956**	**55,034**	**60,767**	**60,767**	**60,767**

Source: City of Roseville UWMP, COR Table 7-D

(a) Recycled water supply assumed equal to demands projected in Table 5-3 of this WSA.

8.0 DETERMINATION OF WATER SUPPLY SUFFICIENCY BASED ON THE REQUIREMENTS OF SB 610

> *10910(c)(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.*
>
> *10911 (a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies.*

Pursuant to California Water Code section 10910(c)(4) and based on the technical analyses described in this WSA, the City finds that the total projected water supplies determined to be available for the Proposed Project through 2045 will meet the projected water demand associated with the Proposed Project, in addition to existing and planned future uses.

Table 8-1 summarizes the projected availability of the City's existing and planned future water supplies and the City's projected water demands in normal, single dry, and multiple dry years through 2045. There is sufficient supply to meet projected demands in normal years through buildout. In single dry years and years four and five of an extended drought, some supply shortages are shown ranging from approximately 0.3 percent to 8.6 percent of projected demand. As discussed in Section 5.3, projected demands were not reduced in dry years to remain conservative. It is expected that the City will implement the provisions of its WSCP to reduce demand in years where a shortage is likely.

Table 8-1. Summary of Water Demand Versus Supply During Hydrologic Normal, Single Dry, and Multiple Dry Years

Year Type	Supply and Demand Comparison				
	2025	2030	2035	2040	2045
Normal Year					
Available Potable Water Supply[a]	64,496	66,084	70,586	70,586	70,586
Total Water Demand[b]	51,776	57,364	63,107	63,107	63,107
Surplus (Deficit)	12,720	8,720	7,479	7,479	7,479
Percent Shortfall	--	--	--	--	--
Single Dry Year					
Available Potable Water Supply[c]	49,956	55,034	60,767	60,767	60,767
Total Water Demand[b]	51,776	57,364	63,107	63,107	63,107
Surplus (Deficit)	(1,820)	(2,330)	(2,340)	(2,340)	(2,340)
Percent Shortfall	3.5%	4.1%	3.7%	3.7%	3.7%
Multiple Dry Year 1					
Available Potable Water Supply[d]	64,496	66,084	70,586	70,586	70,586
Total Water Demand[b]	51,776	57,364	63,107	63,107	63,107
Surplus (Deficit)	12,720	8,720	7,479	7,479	7,479
Percent Shortfall	--	--	--	--	--
Multiple Dry Year 2					
Available Potable Water Supply[d]	59,596	61,184	65,686	65,686	65,686
Total Water Demand[b]	51,776	57,364	63,107	63,107	63,107
Surplus (Deficit)	7,820	3,820	2,579	2,579	2,579
Percent Shortfall	--	--	--	--	--
Multiple Dry Year 3					
Available Potable Water Supply[d]	59,596	61,184	65,686	65,686	65,686
Total Water Demand[b]	51,776	57,364	63,107	63,107	63,107
Surplus (Deficit)	7,820	3,820	2,579	2,579	2,579
Percent Shortfall	--	--	--	--	--
Multiple Dry Year 4					
Available Potable Water Supply[d]	51,596	53,184	57,686	57,686	57,686
Total Water Demand[b]	51,776	57,364	63,107	63,107	63,107
Surplus (Deficit)	(180)	(4,180)	(5,421)	(5,421)	(5,421)
Percent Shortfall	0.3%	7.3%	8.6%	8.6%	8.6%
Multiple Dry Year 5					
Available Potable Water Supply[d]	49,956	55,034	60,767	60,767	60,767
Total Water Demand[b]	51,776	57,364	63,107	63,107	63,107
Surplus (Deficit)	(1,820)	(2,330)	(2,340)	(2,340)	(2,340)
Percent Shortfall	3.5%	4.1%	3.7%	3.7%	3.7%

(a) Normal Year water supplies are from Table 7-2.

(b) Projected water demand is from Table 5-3. This WSA conservatively assumes no reduction in water demand in dry years, consistent with the City of Roseville's 2020 UWMP.

(c) Single dry year water supplies are from Table 7-3.

(d) Multiple dry year water supplies are from Table 7-4.

9.0 WATER SUPPLY ASSESSMENT APPROVAL PROCESS

> *10910 (g)(1) Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.*

The Roseville City Council must approve this WSA at a regular or special meeting. Furthermore, this WSA must be included in the Draft EIR being prepared for the Proposed Project.

10.0 REFERENCES

City of Roseville Development Services Planning Division. 2021. *Notice of Preparation: Roseville Industrial Park Project.* July 2021.

City of Roseville. 2021. *Design Standards Section 8 – Domestic Water Supply System*. Accessed at https://www.roseville.ca.us/government/departments/development_services/engineering_land_development/construction_management_inspection/design_construction_standards, on September 16, 2021.

Laugenour and Meikle Civil Engineers. 2021. *Draft Recycle Water Study for Roseville Industrial Project.* August 2021.

Laugenour and Meikle Civil Engineers. 2021. *Draft Potable Water Study for Roseville Industrial Project.* September 2021

Laugenour and Meikle Civil Engineers. 2022. *Potable Water Master Plan for Roseville Industrial Project.* March 2022.

Water Works Engineers, LLC. 2021. *City of Roseville 2020 Urban Water Management Plan.* June 2021.

Water Works Engineers, LLC. 2021. *City of Roseville 2020 Water Shortage Contingency Plan.* June 2021.

Appendix A

Project Water Demand

Table 2 – Potable Water Demand

Location on Site	Water Demand Area (ac)	Land Use	Average Day Unit Water Demand Factor[a]	Unit-Factor Units	Average Day Demand (gpd) (gpd)[b]	Annual Demand (ac-ft/yr)	Peaking Factor[c]	Maximum Day Demand	Peaking Factor[d]	Peak Flow (gpd)[e]	Design Flow (gpm)
Area 1	81.27	M2, General Industrial	2,562	gpd/acre	208,209	233.2	2.0	416,417	1.7	707,909	492
Area 2	48.50	M1, Light Industrial	2,598	gpd/acre	126,008	141.2	2.0	252,016	1.7	428,428	298
Area 3	0.90	PQP, Public Quasi Public	1,780	gpd/acre	1,609	1.8	2.0	3,218	1.7	5,471	4
Area 4	0.17	PQP, Public Quasi Public	1,780	gpd/acre	306	0.3	2.0	612	1.7	1,041	1
Area 5	16.19	OS/Open Space	0	gpd/acre	0	0.0	2.0	0	1.7	0	0
Area 6	16.98	M2, General Industrial	2,562	gpd/acre	43,495	48.7	2.0	86,990	1.7	147,883	103
Area 7	31.86	M1, Light Industrial	2,598	gpd/acre	82,777	92.7	2.0	165,555	1.7	281,443	195
Area 8	21.19	PQP, Public Quasi Public[f]	0	gpd/acre	0	0	2.0	0	1.7	0	0
Area 9	17.34	Future Placer Parkway[g]	0	gpd/acre	0	0	2.0	0	1.7	0	0

(a) From Table of Section 8-6 of the City of Roseville Design Standards (January, 2020) (gpd/ac).

(b) Average Day Demand (gallons per day) = Water Demand Area x Average Day Demand Unit Flow Factor.

(c) Peaking factor from average day demand to maximum day demand per Section 8-7 of the City of Roseville Design Standards (January, 2020).

(d) Peaking factor from maximum day demand to peak hour demand per Section 8-7 of the City of Roseville Design Standards (January, 2020).

(e) Peak Hour Demand = Peaking Factor * Maximum Day Demand.

(f) Area 9 will not be served by the Proposed Project.

(g) The future Placer Parkway is not part of this Master Plan; therefore, no water demand is included in the Report.

Roseville Industrial Park North Worksheet

Reference Evapotranspiration (Eto) 52.2

Regular Landscape Areas There are no special landscape areas. Trees count as 25 sq'

Hydrozone#	Plant Factor	Irrigation Method	Irrigation Efficiency	ETAF (PF/IE)	Landscape Area (sq. ft.)	ETAF X Area	Estimated Total Water Use (GPY)
1	0.2	Drip	0.81	0.25	306,605	76,651	2,480,741
2	0.4	Drip	0.81	0.49	76,651	37,559	1,215,559
3	0.2	Bubbler	0.81	0.25	7,750	1,938	62,705
4	0.4	Bubbler	0.81	0.49	1,650	809	26,166
Total					392,656		3,785,172

Maximum Allowed Water Allowance (MAWA)		5,718,563
Estimated Total Water Use (ETWU)		3,785,172
	Average ETAF	0.27
	Allowed ETAF	0.45

Total Landscape Area

Total Gallons Per Year Allowed Per The Model Water Efficient Landscape Ordinance

Total Gallons Per Year Projected Per The Projected Irrigation Design Usage

Roseville Industrial Park Worksheet
Reference Evapotranspiration (Eto) 52.2

Regular Landscape Areas There are no special landscape areas. Trees count as 25 sq'

Hydrozone#	Plant Factor	Irrigation Method	Irrigation Efficiency	ETAF (PF/IE)	Landscape Area (sq. ft.)	ETAF X Area	Estimated Total Water Use (GPY)
1	0.2	Drip	0.81	0.25	848,078	212,020	6,861,799
2	0.4	Drip	0.81	0.49	207,507	101,678	3,290,721
3	0.2	Bubbler	0.81	0.25	12,700	3,175	102,756
4	0.4	Bubbler	0.81	0.49	6,725	3,295	106,647
Total					1,075,010		10,361,923

Maximum Allowed Water Allowance (MAWA)		15,656,231
Estimated Total Water Use (ETWU)		10,361,923
	Average ETAF	0.27
	Allowed ETAF	0.45

Total Landscape Area

Total Gallons Per Year Allowed Per The Model Water Efficient Landscape Ordinance

Total Gallons Per Year Projected Per The Projected Irrigation Design Usage

Concord

1001 Galaxy Way, Suite 310
Concord CA 94520
925-949-5800

Davis

2020 Research Park Drive, Suite 100
Davis CA 95618
530-756-5905

Eugene

1650 W 11th Avenue, Suite 1-A
Eugene OR 97402
541-431-1280

Lake Forest

23692 Birtcher Drive
Lake Forest CA 92630
949-420-3030

Lake Oswego

5 Centerpointe Drive, Suite 130
Lake Oswego OR 97035
503-451-4500

Oceanside

804 Pier View Way, Suite 100
Oceanside CA 92054
760-795-0365

Olympia

825 Legion Way SE, Suite A6
Olympia WA 98501
360-350-4523

Phoenix

4505 E Chandler Boulevard, Suite 230
Phoenix AZ 85048
602-337-6110

Pleasanton

6800 Koll Center Parkway, Suite 150
Pleasanton CA 94566
925-426-2580

Sacramento

8950 Cal Center Drive, Bldg. 1, Suite 363
Sacramento CA 95826
916-306-2250

San Diego

11939 Rancho Bernardo Road, Suite 100
San Diego CA 92128
858-505-0075

Santa Rosa

2235 Mercury Way, Suite 105
Santa Rosa CA 95407
707-543-8506

Appendix F2

Potable Water Master Plan

PHILLIP ROAD SITE
POTABLE WATER MASTER PLAN

6382 PHILLIP ROAD
ROSEVILLE, CALIFORNIA
(PLANNING APPLICATION 24-1010)

December 19, 2025

Panattoni Development Company, Inc.
400 Capital Mall, Suite 2040
Sacramento, CA 95814
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I. INTRODUCTION

The Phillip Road Site (Proposed Project) Potable Water Master Plan (Plan) has been prepared at the request of Panattoni Development Company, Inc. (PDC) to meet the City of Roseville's (City) utility demand planning requirements and in support of the Phillip Road Site environmental review process.

Proposed land uses, tributary areas, irrigation generation rates, and peaking factors are used to size the potable water facilities for the Proposed Project. The Proposed Project will connect to the existing potable water lines located at the intersection of Blue Oaks Boulevard and Westbrook Boulevard, Grass Creek Drive, and Benchmark Drive.

The purposes of this Potable Water Master Plan are as follows:

- Estimate the expected potable water system demand for the Proposed Project during Near Term (Phases 1 and 2) and complete build-out.
- Determine impacts on the neighboring Creekview Specific Plan Area (CVSP) and Amoruso Ranch Specific Plan Area (ARSP).
- Size potable water system main pipelines for the Proposed Project.

I.A. PROJECT VICINITY:

The Proposed Project is located in the northwest edge of the City of Roseville as shown on **Exhibit 1 – Project Location Plan**. Pleasant Grove Creek and the Pleasant Grove Bypass Channel dissect the Proposed Project.

The Proposed Project will advance in multiple phases. It is expected to be completed in 6 phases, see **Exhibit 2 – Master Phasing Plan**. The first 4 phases are intended to be single family residences, the fifth phase is higher density residential, and the final stage is a combination of commercial and light industrial.

The first and second phases will be located in the easterly half of the project site located south of the Pleasant Grove Bypass Channel. The first phase will include the northerly half of this area and include the main road through the center of the project site, stopping at the southerly boundary of the bypass channel. Connections will be made to the existing water lines at Grass Creek Drive and the intersection of Blue Oaks Boulevard and Westbrook Boulevard during the first phase.

The third and fourth phases are located to the north of Pleasant Grove Bypass Channel. The third phase will include construction of a bridge crossing the channel and connection to existing water line in Benchmark Drive.

The fifth phase will be high density residential, located along Blue Oaks Boulevard on the easterly half of the project site.

The final phase will include the commercial and light industrial buildings located on the westerly portion of the site, south of the Pleasant Grove Bypass Channel.

I.B. PRE-DEVELOPMENT CONDITIONS:

The Proposed Project site is an undeveloped agricultural parcel that was originally planted during the 1950's, maintained in rice production through the 1990's, and has been planted in irrigated crops until the present.

The Pleasant Grove Creek Bypass Channel was constructed south of Pleasant Grove Creek during the summer of 2019 to augment flood mitigation/control in this area.

A 10-foot to 15-foot escarpment runs in a southeasterly direction from the Phillip Road Site entrance of the property's southern portion of the site to its eastern boundary.

The portion of the property north of Pleasant Grove Creek is also currently actively cultivated and irrigated with water from a long-established irrigation canal along the northern boundary.

I.C. PROPOSED PROJECT AREA DEVELOPMENT OPPORTUNITIES & CONSTRAINTS:

The Proposed Project is influenced by several factors, including the physical setting, land use, circulation considerations, and public policies. Two significant aspects that influence the development of the Proposed Project are described below and depicted on **Exhibit 3 – Tentative Map.**

- PLACER PARKWAY

  The proposed Placer Parkway will bisect the northerly portion of the Proposed Project.

- PLEASANT GROVE CREEK AND PLEASANT GROVE CREEK BYPASS CHANNEL

  The existing Pleasant Grove Creek and newly constructed Pleasant Grove Creek Bypass Channel divides the Proposed Project. A bridge will be needed in the future to access the area to the north when it is developed.

II. POTABLE WATER MASTER PLAN PROCESS

The Potable Water Study is used to determine the demand and distribution pipelines for the Proposed Project. The methodology being used in this Master Plan is based on the City of Roseville's Environmental Utilities Department. The current City of Roseville Design Standards (January 2025) were also utilized.

The Proposed Project will consist of Community Commercial (CC), Light Industrial (M1), Low Density Residential (LDR), High Density Residential (HDR), Open Space (OS) and Public/Quasi Public (P/QP) land uses. The Proposed Project land uses are shown on **Exhibit 3 – Tentative Map.**

The average day demand for land use is based on the methods used in the City of Roseville Design Standards (January 2025) as shown in **Table 1 – City of Roseville Demand Factors**.

Table 1 – City of Roseville Demand Factors

Land Use Category		Average Day Unit Water Demand Factors
Residential	LDR (<3.5 DU's/Ac)	*728 gpd/DU*
	LDR (3.5 to 5.0 DU's/Ac)	*600 gpd/DU*
	LMDR (>5.0 to 6.0 DU's/Ac)	*521 gpd/DU*
	LMDR (>6.0 to 8.0 DU's/Ac)	*430 gpd/DU*
	MDR (>8.0 to 12.0 DU's/Ac)	*323 gpd/DU*
	HDR (>12.0 to 16.0 DU's/Ac	*288 gpd/DU*
	HDR (>16.0 DU's/Ac)	*177 gpd/DU*
Commercial/Other	Commercial/Retail	*2,598 gpd/ac*
	Business Professional	*2,598 gpd/ac*
	Light Industrial	*2,598 gpd/ac*
	Industrial	*2,562 gpd/ac*
	Railroad Yard	*109 gpd/ac*
	Elementary Schools	*3,454 gpd/ac*
	High Schools	*4,068 gpd/ac*
	Public (Fire Station, etc)	*1,780 gpd/ac*
	Park/Recreation	*2,988 gpd/ac*
	Open Space/Major ROW	-
	Vacant/Unassigned	-

*Factors assume a 30% F.A.R. 50% F.A.R. for senior living.

The estimated potable water demand is based on land use. **Table 2 – Potable Water Demand -** shows the potable water demand.

Parcel LL-5, as shown in **Exhibit 3 – Tentative Map**, is assumed to contain a potential 40MW data center, adding approximately 480,000 gpd of peak demand flow which, per the city, the recycle water system will be able to supply that water demand after the construction of two pipelines as discussed in the Recycle Water Master Plan.

Table 2 - Potable Water Demand

Location on Site	Dwelling Units (DU)	Water Demand Area (ac)	Land Use	Average Day Unit Water Demand Factor[a]	Unit-Factor Units	Average Day Demand (gpd)[b]	Annual Demand (ac-ft/yr)	Recycled Water Demand (ac-ft/yr)[c]	Water Conservation Savings (ac-ft/yr)[d]	Peaking Factor[e]	Maximum Day Demand (gpd)	Peaking Factor[f]	Peak Flow (gpd)[g]	Design Flow (gpm)	Design Flow+2% (gpm)
LL 1	-	4.139	CC, Community Commercial	2,598	gpd/acre	10,753	12.0	4.5	2.65	2.0	21,506	1.7	36,561	25	26
LL 2	-	3.774	CC, Community Commercial	2,598	gpd/acre	9,805	11.0	4.1	2.41	2.0	19,610	1.7	33,336	23	24
LL 3	-	9.180	M1, Light Industrial	2,598	gpd/acre	23,850	26.7	10.0	5.87	2.0	47,699	1.7	81,089	56	57
LL 4	-	1.033	PQP, Public Quasi Public	1,780	gpd/acre	1,839	2.1	1.9	0.66	2.0	3,677	1.7	6,252	4	4
LL 5	-	8.173	M1, Light Industrial[h]	2,598	gpd/acre	21,233	23.8	546.6	5.23	2.0	42,467	1.7	72,194	50	51
LL 6	-	7.588	M1, Light Industrial	2,598	gpd/acre	19,714	22.1	8.2	4.85	2.0	39,427	1.7	67,026	47	47
LL 7	-	7.252	M1, Light Industrial	2,598	gpd/acre	18,841	21.1	7.9	4.64	2.0	37,681	1.7	64,058	44	45
LL 8	-	7.508	M1, Light Industrial	2,598	gpd/acre	19,506	21.9	8.2	4.80	2.0	39,012	1.7	66,320	46	47
LL 9	-	7.494	M1, Light Industrial	2,598	gpd/acre	19,469	21.8	8.1	4.79	2.0	38,939	1.7	66,196	46	47
LL 10	-	8.949	M1, Light Industrial	2,598	gpd/acre	23,250	26.0	9.7	5.72	2.0	46,499	1.7	79,048	55	56
LL 11	-	0.396	PQP, Public Quasi Public	1,780	gpd/acre	705	0.8	0.7	0.25	2.0	1,410	1.7	2,397	2	2
LL 12	162	25.598	LMDR (>6 to 8.0 DU's/AC), Low Density Residential	430	gpd/DU	69,660	78.0	0.0	16.46	2.0	139,320	1.7	236,844	164	168
LL 13	156	23.604	LMDR (>6 to 8.0 DU's/AC), Low Density Residential	430	gpd/DU	67,080	75.1	0.0	15.85	2.0	134,160	1.7	228,072	158	162
LL 14	-	3.010	PR, Park	2,988	gpd/acre	8,994	10.1	9.8	1.92	2.0	17,988	1.7	30,579	21	22
LL 15	135	5.859	HDR (>16 DU's/AC), High Density Residential	177	gpd/DU	23,895	26.8	8.5	3.75	2.0	47,790	1.7	81,243	56	58
LL 16	-	13.878	OS, Open Space	-		-	-	0.0	8.88	-	-	-	-	-	
LL 17	105	24.257	LDR (>3.5 to 5.0 DU's/AC), Low Density Residential	600	gpd/DU	63,000	70.6	0.0	10.67	2.0	126,000	1.7	214,200	149	152
LL 18	-	1.904	PR, Park	2,988	gpd/acre	5,689	6.4	6.2	1.22	2.0	11,378	1.7	19,343	13	14
LL 19	106	20.714	LMDR (>5 to 6.0 DU's/AC), Low Density Residential	521	gpd/DU	55,226	61.9	0.0	10.77	2.0	110,452	1.7	187,768	130	133
LL 20	-	1.026	OS, Open Space	-		-	-	0.0	0.66	-	-	-	-	-	
Total	664	185.336				462,508	518.1	634.4	112.05		925,015		1,572,526	1,092	1,114

(a) From Table of Section 8-6 of the City of Roseville Design Standards (January, 2025) (gpd/ac or gpd/du).
(b) Average Day Demand (gallons per day) = Water Demand Area x Average Day Demand Unit Flow Factor.
(c) Recycled Water Annual Demand from the Phillip Road Site Recycled Water Master Plan, Table 5.
(d) Water Conservation of Potable Water by Turf Reduction, Smart Controllers Recirculating Hot Water, Table 9, in the Water Conservation Plan
(e) Peaking factor from average day demand to maximum day demand per Section 8-7 of the City of Roseville Design Standards (January, 2025).
(f) Peaking factor from maximum day demand to peak hour demand per Section 8-7 of the City of Roseville Design Standards (January, 2025).
(g) Peak Hour Demand = Peaking Factor * Maximum Day Demand.
(h) Assumes parcel LL-5 will contain a potential 40MW data center, adding approximately 480,000 gpd of peak demand flow to recycled water.

II.A. MAXIMUM DAY DEMAND:

The Maximum Day Demand (MDD) is based on applying a peaking factor of 2.0 to the Average Day Demand (ADD). The MDD will be used for sizing the supply mains. The peaking factor is from the City of Roseville Design Standards.

II.B. FIRE FLOW DEMAND:

The maximum fire flow required by the City of Roseville for a commercial project is 4,000 gpm for sprinklered buildings. Per City of Roseville Standards, each fire hydrant shall not exceed 1,000 gpm.

II.C. MINOR LOSSES:

The minor losses in the system are accounted for by increasing the flow rate by 2%.

II.D. BUILDOUT DEMAND:

The ultimate Buildout of the project will include a potable water demand of 367.7 ac-ft/yr down from 518.1 ac-ft/yr. The ultimate Buildout potable water demand is the calculated Annual Demand (518.1 ac-ft/yr) with the recycled irrigation water demand (96.6 ac-ft/yr) and potable water conservation (53.8 ac-ft/yr) amounts subtracted. The recycled irrigation water demand (96.6 ac-ft/yr) is the irrigation demand calculated by the city, however with recycled water available, all irrigation for the project except the medium density residential, will use the recycled water system. Therefore, the irrigation demand is removed from the potable water demand. The ultimate buildout does not include Fire Flows.

III. POTABLE WATER SYSTEM INFRASTRUCTURE

III.A. SYSTEM DESCRIPTION:

The potable water system is designed to serve the Proposed Project areas, as shown in **Exhibit 3 – Tentative Map**. The potable water system transmission lines, comprised of 12-inch pipes, have been designed to convey potable water flows within the Proposed Project as shown in **Exhibit 4 – Proposed Near-Term Site Plan and Exhibit 5 – Proposed Buildout Site Plan.** The Proposed Project's main transmission line connects to the existing City of Roseville water system at three locations.

The first connection is at the intersection of Blue Oaks Boulevard and Westbrook Drive. The City has stated that a 24-inch pipe will replace or run parallel to the existing 12-inch pipe in Blue Oaks Boulevard. The proposed 24-inch pipe will start at Westbrook Drive and continue west to Phillip Road. If the 24-inch pipe is not installed prior to the start of the project, the project will be responsible for constructing the pipe from Westbrook Drive to Street A with the proposed near-term phases, during Phase 1. The remaining portion of the 24-inch in Blue Oaks Boulevard from Street A to Phillip Road will be installed when construction begins on the Innovation Center, during Phase 6 as shown in **Exhibit 2 – Master Phasing Plan**. A 16-inch pipe continues to the north on Phillip Road and will be constructed as the Innovation Center develops to the north. A stub will be placed at the north end of Phillip Road for a future connection to the proposed City of Roseville Ops Center.

The City will need to confirm the sizing of the proposed pipeline in Blue Oaks Boulevard as part of the City's Potable Water Master Plan, and a maximum diameter of up to 36-inches may be needed.

The second connection is at the west end of Grasscreek Drive. As part of the CVSP project a stub was built to the Proposed Project's east property line. This connection will be included in proposed near term phases, during Phase 1, per **Exhibit 2 – Master Phasing Plan.**

The third connection will be in the future at Benchmark Drive, when the Proposed Project begins to develop north of Pleasant Grove Creek, during Phase 3 per **Exhibit 2 – Master Phasing Plan**.

The low-density residential subdivisions will have a network of 8-in and 12-inch water mains in the street. The water main piping size is based on the current City of Roseville Design Standards (January 2025). The high-density residential development will have a 12-inch loop through the site.

Each building within the Innovation Center in the Proposed Project will have a 12-inch water line loop around the building. The loops will be connected with a common 12-inch line within the main North-South access road.

III.B. SYSTEM DESIGN CRITERIA:

The potable water system will be operated and owned by the City of Roseville. The City is responsible for all maintenance and operations upstream of the water meter, including the water meters. Each individual property owner is responsible for all onsite maintenance and operations downstream of the water meter.

The City has established a set of design standards for the potable water systems that they will operate and maintain. Their goal is to maintain operations to all customers on a consistent basis. See **Table 3 – City of Roseville Operational Criteria** for the City of Roseville Potable Water Operational Criteria.

Table 3 – City of Roseville Operational Criteria

Condition	Operation Value
Normal Minimum Residual Pressure	50 psi
Normal Maximum Residual Pressure	100 psi
Minimum Pressure at Peak Domestic and Fire Demand	20 psi

IV. RECYCLED WATER SUPPLY

The Proposed Project anticipates receiving a commitment for recycled water from the City for the amount discussed in the Recycled Water Master Plan. The recycled water pipes for the project have been sized to handle the irrigation and proposed data center demands for the Proposed Project.

The Recycled Water Master Plan discusses the proposed and future improvements.

The city potable water demand includes irrigation water. The irrigation flows will be subtracted from the water demand calculated by using the City of Roseville's unit demands for modeling and pipe sizing.

During Phase 6, one possible use of light industrial buildings is for a data center. The data center requires water for the cooling systems. The city has stated that the City of Roseville Recycled Water system does have the capacity to meet this requirement, 480,000 gpd or 537.7 ac-ft/yr. The availability is dependent on the completion of the following two projects: (1) 24" pipeline in Blue Oaks Blvd between West Park Drive and Westbrook Blvd and (2) 12" pipeline located in Blue Oaks Blvd between Westbrook Blvd and Phillip Road Site. See the Recycled Water Master Plan for City of Roseville Recycled Water Improvements.

V. HYDRAULIC MODEL ANALYSIS

V.A. HYDRAULIC MODEL ANALYSIS CRITERIA:

The following procedure was used for the preliminary assumptions used for the modeling of the potable water system:

- A Hazen Williams "C" factor of 130 was used for all pipes in the potable water system.
- Steady state condition.
- Operation demand flows increased by 2% to account for system losses.
- Minimum pressure of 50 psi at service connections.
- Minimum Pressure of 20 psi during fire flow.
- Velocity in pipes shall not exceed 6 fps for normal operating conditions.
- Velocity in pipes shall not exceed 12 fps for a simulated fire flow conditions.
- All new pipelines are required to be a minimum of 8 inches, or 6 inches if located in cul-de-sacs..
- Where Pipe depth is unknown, assumed 4 feet of cover for transmission mains (16-inch or larger), 3 feet of cover for pipes smaller than 16-inch diameter.
- Project Datum (N.A.V.D. 88) = As-built Plans (N.G.V.D. 29) + (+/-) 2 feet.
- Modeling was conducted using Bentley OpenFlows WaterCAD® 2024

V.B. HYDRAULIC MODEL ASSUMPTIONS:

The Proposed Project was analyzed during different scenarios: 1) Near Term, 2) Buildout, and 3) Roseville Operations Center operational. Each scenario is discussed below.

- **Near-Term**: Demands in the model reflect Phase 1 and 2 of the Proposed Project, it includes Areas LL-11 to LL-14 as shown on **Exhibit 3 – Tentative Map**. **Exhibit 4 – Proposed Near-Term Site Plan,** shows development being completed through Phase 2. The near-term potable water demand is shown in **Table 4 – Near-Term Potable Water Demand**.

Table 4 – Near-Term Potable Water Demand				
Condition	**Design Flow Demand (gpm)**	**Design Flow Without Fire Flow +2% (gpm)**	**Fire Demand (gpm)**	**Design Flow with Fire Flow + 2% (gpm)**
Near-Term	345	354	1,500	1,884

The MDD is applied to the upper most service connection nodes for the Proposed Project's residences. See **Table 5 – Near-Term Potable Water Demand and Location** for flow demand applied at each point of connection and the corresponding node label.

Table 5 – Near-Term Potable Water Demand and Location		
Land Use Served	**Potable Water Design Flow (gpm)**	**Model Node**
Sewer Lift Station (LL-11)	2	J-66
Phase 1 (LL-12)	168	J-81
Phase 2 (LL-13)	162	J-19
South Park (LL-14)	22	J-41
Fire Hydrant	765	FH-2
Fire Hydrant	765	FH-25
Total	1,884	

The connection pressures are based off the City of Roseville Modeling Results sent to Laugenour and Meikle on December 12, 2025, in a Technical Memorandum by West Yost, **See Appendix A – City Potable Water Model Analysis.**

- **Buildout**: Demands in the model reflect complete buildout of the Proposed Project as shown in **Exhibit 3 – Tentative Map** and **Exhibit 5 – Proposed Buildout Site Plan.** The Buildout potable water demand is shown in **Table 6 – Buildout Potable Water Demand**.

Table 6 – Buildout Potable Water Demand				
Condition	**Design Flow (gpm)**	**Design Flow Without Fire Flow +2% (gpm)**	**Fire Demand (gpm)**	**Design Flow with Fire Flow + 2% (gpm)**
Buildout	1,092	1,114	4,000	5,194

The MDD is applied to the service connection nodes for the Proposed Project's buildings. See **Table 7 – Buildout Potable Water Demand and Location** for flow demand applied at each point of connection and the corresponding node label.

Table 7 – Buildout Potable Water Demand and Location		
Land Use Served	**Potable Water Design Flow + 2%(gpm)**	**Model Node**
Sewer Lift Station (LL-11)	2	J-66
Phase 1 (LL-12)	168	J-81
Phase 2 (LL-13)	162	J-19
Phase 3 (LL-17)	152	J-86
Phase 4 (LL-19)	133	J-115
Phase 6 (LL-15)	58	SERV-HDR-2
South Park (LL-14)	22	J-41
North Park Phase 3 (LL-18)	14	J-94
Buildings A-C (LL-1 to LL-3)	107	J-9
Buildings D-F (LL-5 to LL-7)	143	J-35
Building G-I (LL-8 to LL-10)	150	J-66
Substation (LL-4)	4	J-64
Fire Hydrant (Building C)	1,020	FH-44
Fire Hydrant (Building D)	1,020	FH-45
Fire Hydrant (Building E-South)	1,020	FH-46
Fire Hydrant (Building E-North)	1,020	FH-47
Total	5,194	

The connection pressures are based off the City of Roseville Modeling Results sent to Laugenour and Meikle on December 12, 2025, in a Technical Memorandum by West Yost, **See Appendix A – City Potable Water Model Analysis.** It is assumed that the Creekview project will be completed.

The point of connection was modeled using a reservoir with a water surface height set at the HGL shown in **See Appendix A – City Potable Water Model Analysis** to create constant pressure. The water surface height is the connection pressure supplied by the City of Roseville (**Appendix A – City Potable Water Model Analysis).** It is assumed that the existing potable water system can supply the needed volume of water at the constant pressure.

- **Roseville Operations Center:** The City of Roseville plans to construct an Operations Center located approximately two miles to the West of the Proposed Project Site. The domestic water demand is 50,000 gallons per day. Demands for the fire flow at the Roseville Operations Center were supplied as 4,000 gpm. To verify the Proposed Project can supply sufficient pressure for the future Operations Center, a scenario was modeled using the total water demand. The demand was applied at Node J-65.

V.C. HYDRAULIC MODEL RESULTS:

The near-term without fire flow model node, pipe and network exhibits are shown in **Appendix B - Potable Water Plan – Near Term Onsite Without Fire Flow Model Results**. The entire demand for Phase 1 was placed at the most northerly node, J-81. The demand for Phase 2 was placed at the mostly southerly node, J-19.

The near-term with fire flow model node, pipe and network exhibits are shown in **Appendix C - Potable Water Plan – Near-Term Onsite with Fire Flow Model Results**. Nodes were placed at junctions and fire hydrant locations throughout the Proposed Project. The two (2) fire hydrants (FH-2, and FH-25) are the farthest from the points of connection, each have a demand of 1,020 gpm.

The Buildout without fire flow model node, pipe and network exhibits are shown in **Appendix D - Potable Water Plan – Buildout Onsite Without Fire Flow Model Results**. It includes the water demands of the Near-Term model plus Nodes were placed at three locations that all nine buildings connect to the water main (J-9, J-35 and J-66) and Nodes for Phases 3, 4 and 5 residential (J-86, J-115, J-99 and SERV-HDR-2).

The buildout with fire flow model node, pipe and network exhibits are shown in **Appendix E – Potable Water Plan – Buildout Onsite with Fire Flow Model Results**. It includes the water demand from the Buildout without fire flow and added the fire hydrants. The four (4) fire hydrants (FH-45, FH-46, FH-47, and FH-48) are the farthest from the points of connection each have a demand of 1,020 gpm.

The Operation Center demand is made up of two components: potable water demand and fire demand. The potable water demand is 50,000 gpd, as supplied by the city. The potable water demand was evenly applied over an 8 hr work schedule. By applying the two peaking factors, 2.0 and 1.7, and adding the 2% results in a design demand of 361 gpm. The fire flow of 4,000 gpm was applied to the last Node (J-65) along Phillip Road, approximately 10,000 ft East of the proposed Operation Center, at the intersection of Phillip Road and Blue Oaks Boulevard. The potable water demand for the Proposed Phillip Road Site project remained, but the Fire Flow was removed from the Proposed Phillip Road Site project's fire hydrants. Both the Near-Term and Buildout conditions were modeled to determine feasibility due to a question of timing for the two projects. For node, pipe and network exhibits see Appendices **Appendix F – Potable Water Plan – Near-Term Onsite with Fire Flow To Operations Center Model Results** and **Appendix G – Potable Water Plan – Buildout Onsite With Fire Flow To Operations Center Model Results**.

The project will be served by the City's potable water system within Pressure Zone 4 (Zone 4). The data provided by the City of Roseville modeling for the buildout condition indicates the points of connection pressures varies from 49.5 psi to 52 psi. More recent modeling of near-term conditions indicates the buildout data provided may be overstated by as much as 9 psi. Since the minimum pressure per City of

Roseville standards is 50 psi, the city will be conducting a Pressure Reducing Station (PRS) optimization study for Zone 4 to address low-pressure conditions and define PRS improvements and timing, which will require cost sharing by the Project proponents.

VI. CONCLUSIONS

Based on the information contained within this Potable Water Master Plan and the model analysis of the system, the following conclusions are noted:

- The near-term system without fire flow meets the 50-psi pressure requirement throughout the system including the northerly node (J-81, 70 psi) and southerly node (J-19, 68 psi). The Proposed Project approximately matches the points of connections, and the slight variations are due to elevation changes in the project site.

- The near-term system with fire flow meets the 20-psi pressure at the lowest pressure fire hydrant (FH-2, 44 psi and FH-25, 66 psi).

- The buildout system without fire is slightly below the 50-psi pressure at the lowest pressure building connection (48 psi). There is very little loss in the system, but the project slopes up to the west, therefore the pressure decreases. The Proposed Project approximately matches the points of connection; the points of connection pressure vary 49.5 to 51-psi and the slight variations are due to elevation changes in the project site.

- The buildout system with fire flow meets the 20-psi pressure at the lowest pressure fire hydrant (43 psi).

- The pressure at the westerly bend in Phillip Road as it heads towards the City of Roseville Operations center for the Near-Term and Buildout state was found to be 63-psi and 42 psi, respectively.

- The proposed Phillip Road Site project has two connections through the existing neighboring subdivision, Creekview, at the westerly terminus of Benchmark Drive and Grasscreek Drive. Both of the connections are with a 12" water stub. The Creekview (CVSP) Potable Master Plan did not assume any potable water demands for the Phillip Road Site project. The master plan did include modeling that includes fire flow. Based off the modeling for Phillip Road, the maximum flow required from the Creekview subdivision at any one point of connection during buildout, is 371 gpm (Grasscreek Drive). **Table 8 – Potable Water Flows from Points of Connection** shows the flows from each point connection during regular demands, not including fire flow,

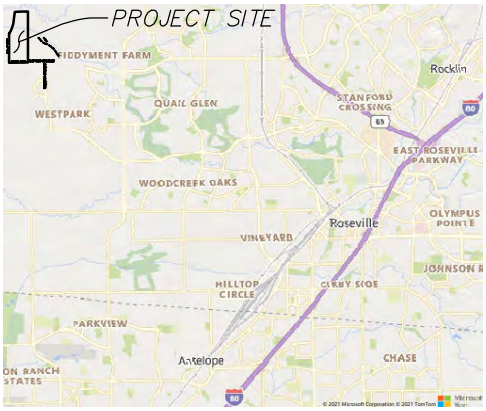
Table 8 – Potable Water Flows from Points of Connection

Flow Condition	Blue Oak 24" Pipe (gpm)	Creekview, Grasscreek Drive, 12" Pipe (gpm)	Creekview, Benchmark Drive, 12" Pipe (gpm)	Total
Near Term	159	195	0	354
Buildout	375	371	368	1,114

The flows coming from the points of connection are dictated by the original pressure supplied to the model and the headloss to the demand location. The three points of connection at Creekview has the highest pressure and the Blue Oaks Boulevard pipe has the lowest pressure all have the same hydraulic grade line. Therefore, the flows are based on the headloss in the system and when the flows are spread throughout the system, the flows are approximately even.

The CVSP Potable Water Master Plan did model a fire flow from two of the points of connection, Grasscreek Drive (CVSP model CV-20) and Benchmark Drive (CVSP model CV-01). The Grasscreek Drive fire flow was 2,000 gpm and the Benchmark Drive fire flow was 2,500 gpm and resulted in a pressure at the nodes of 55 psi and 58 psi, respectively. Based off the fire flow modeling, the piping network can handle the much lower demands of the Phillip Road project. By connecting to the Phillip Road Site project, Creekview Subdivision will also add additional loops to draw water from the 24" water main located in Blue Oaks Drive. Therefore, increasing the accessibility to potable water supply.

EXHIBITS



VICINITY

0 750 1500 3000

LM

SCALE: 1"=1,500'

EXHIBIT 1
PROJECT LOCATION PLAN
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE,
PLACER COUNTY, CALIFORNIA
SHEET 1 OF 1 SEPTEMBER 26, 2025

LM LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
608 COURT STREET, WOODLAND, CALIFORNIA 95695 · PHONE: (530) 662-1755
P.O. BOX 828, WOODLAND, CALIFORNIA 95776 · FAX: (530) 662-4602

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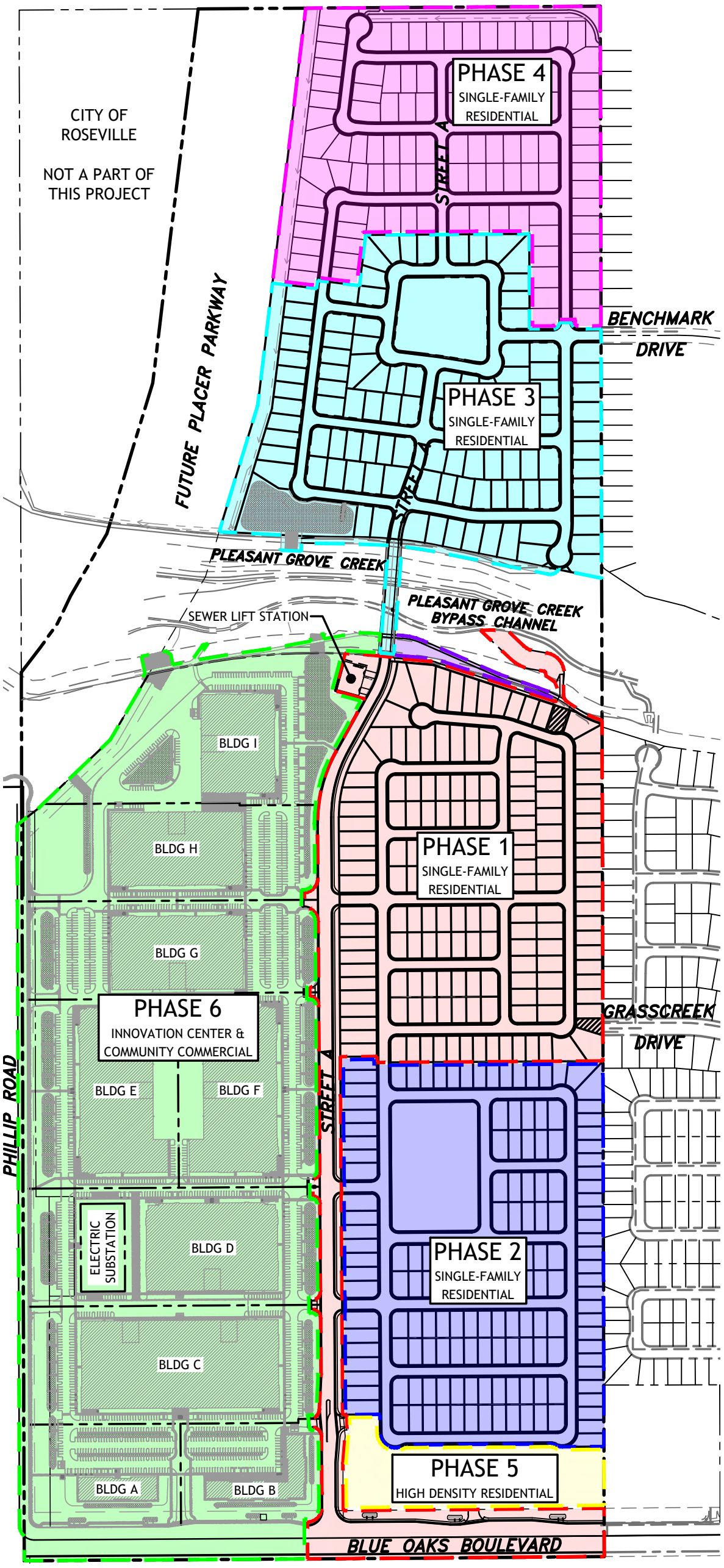

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LM

SCALE: 1"=400'

EXHIBIT 2

MASTER PHASING PLAN

FOR

PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

SHEET 1 OF 1 NOVEMBER 13, 2025

LM LAUGENOUR AND MEIKLE
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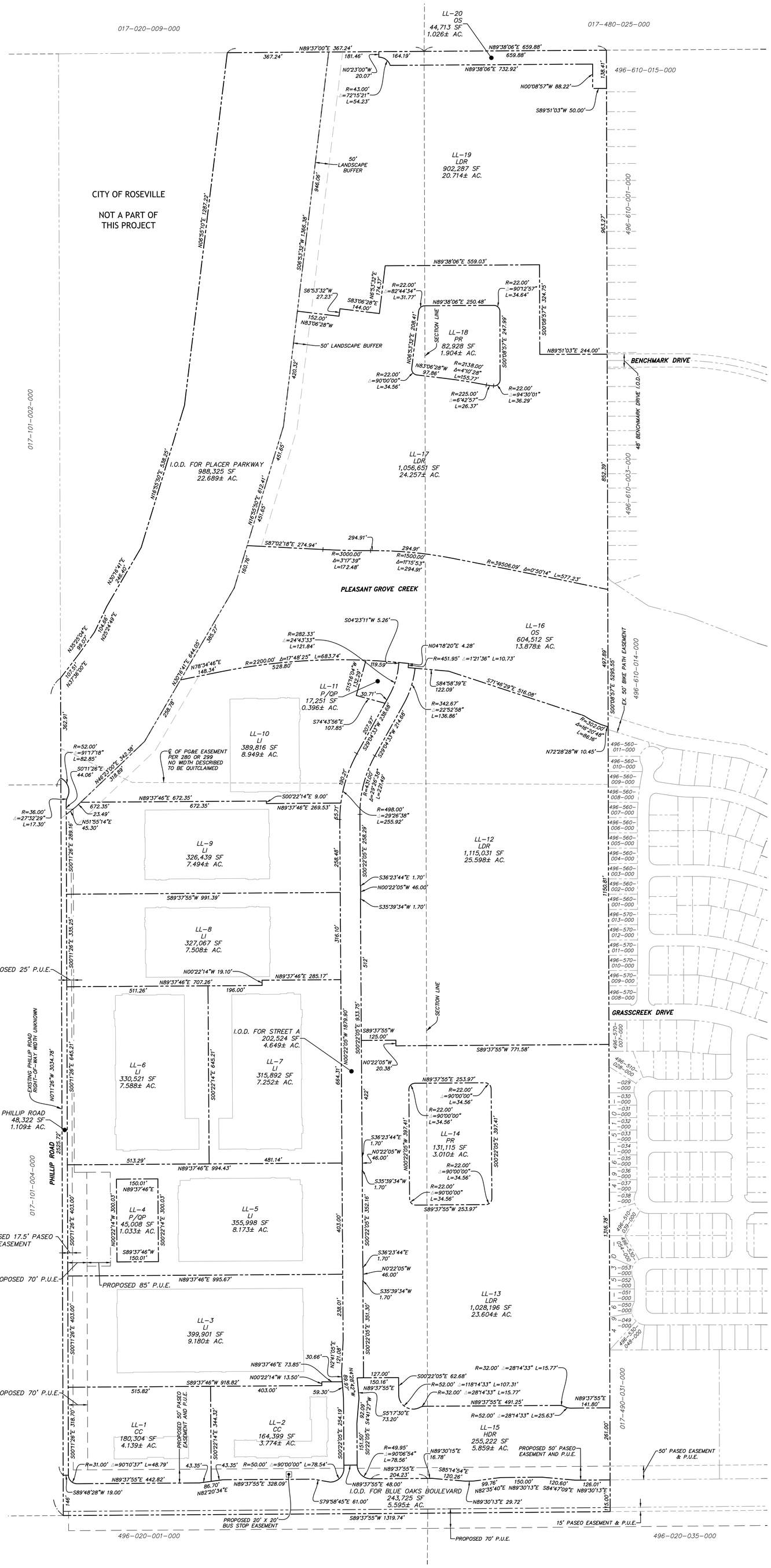

LOT	PROPOSED USE	GENERAL PLAN DESIGNATION	ZONINING	GROSS ACRES±	DWELLING UNITS	DENSITY
LL-1	BUILDING A	CC	C-PD	4.139	–	–
LL-2	BUILDING B	CC	C-PD	3.774	–	–
LL-3	BUILDING C	LI	ITP-PD	9.180	–	–
LL-4	ROSEVILLE ELECTRIC SUBSTATION	P/QP	P/QP	1.033	–	–
LL-5	BUILDING D	LI	ITP-PD	8.173	–	–
LL-6	BUILDING E	LI	ITP-PD	7.588	–	–
LL-7	BUILDING F	LI	ITP-PD	7.252	–	–
LL-8	BUILDING G	LI	ITP-PD	7.508	–	–
LL-9	BUILDING H	LI	ITP-PD	7.494	–	–
LL-10	BUILDING I	LI	ITP-PD	8.949	–	–
LL-11	SANITARY SEWER LIFT STATION	P/QP	P/QP	0.396	–	–
LL-12	VILLAGE 1	LDR	RS/DS	25.598	162	6.33 DU/AC.
LL-13	VILLAGE 2	LDR	RS/DS	23.604	156	6.61 DU/AC.
LL-14	PARK (SOUTH)	PR	PR	3.010	–	–
LL-15	VILLAGE 5	HDR	R3	5.859	135	23.04 DU/AC.
LL-16	PLEASANT GROVE CREEK AND BYPASS CHANNEL	OS	OS	13.878	–	–
LL-17	VILLAGE 3	LDR	RS/DS	24.257	105	4.33 DU/AC.
LL-18	PARK (NORTH)	PR	PR	1.904	–	–
LL-19	VILLAGE 4	LDR	RS/DS	20.714	106	5.12 DU/AC.
LL-20	BIKE TRAIL	OS	OS	1.026	–	–
BLUE OAKS BOULEVARD				5.595	–	–
PHILLIP ROAD				1.109	–	–
STREET A				4.649	–	–
PLACER PARKWAY				22.689	–	–
TOTAL				219.38	664	

NOTE:
SEE SHEET 4 FOR ADDITIONAL UTILITY EASEMENTS.

REGISTERED PROFESSIONAL ENGINEER
BRYAN P. BOYNTON
No. 41804
CIVIL
STATE OF CALIFORNIA

LARGE LOT SUBDIVISION
EXHIBIT 3
TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

LM LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
608 COURT STREET, WOODLAND, CALIFORNIA 95695 · PHONE: (530) 662-1755
P.O. BOX 828, WOODLAND, CALIFORNIA 95776 · FAX: (530) 662-4602

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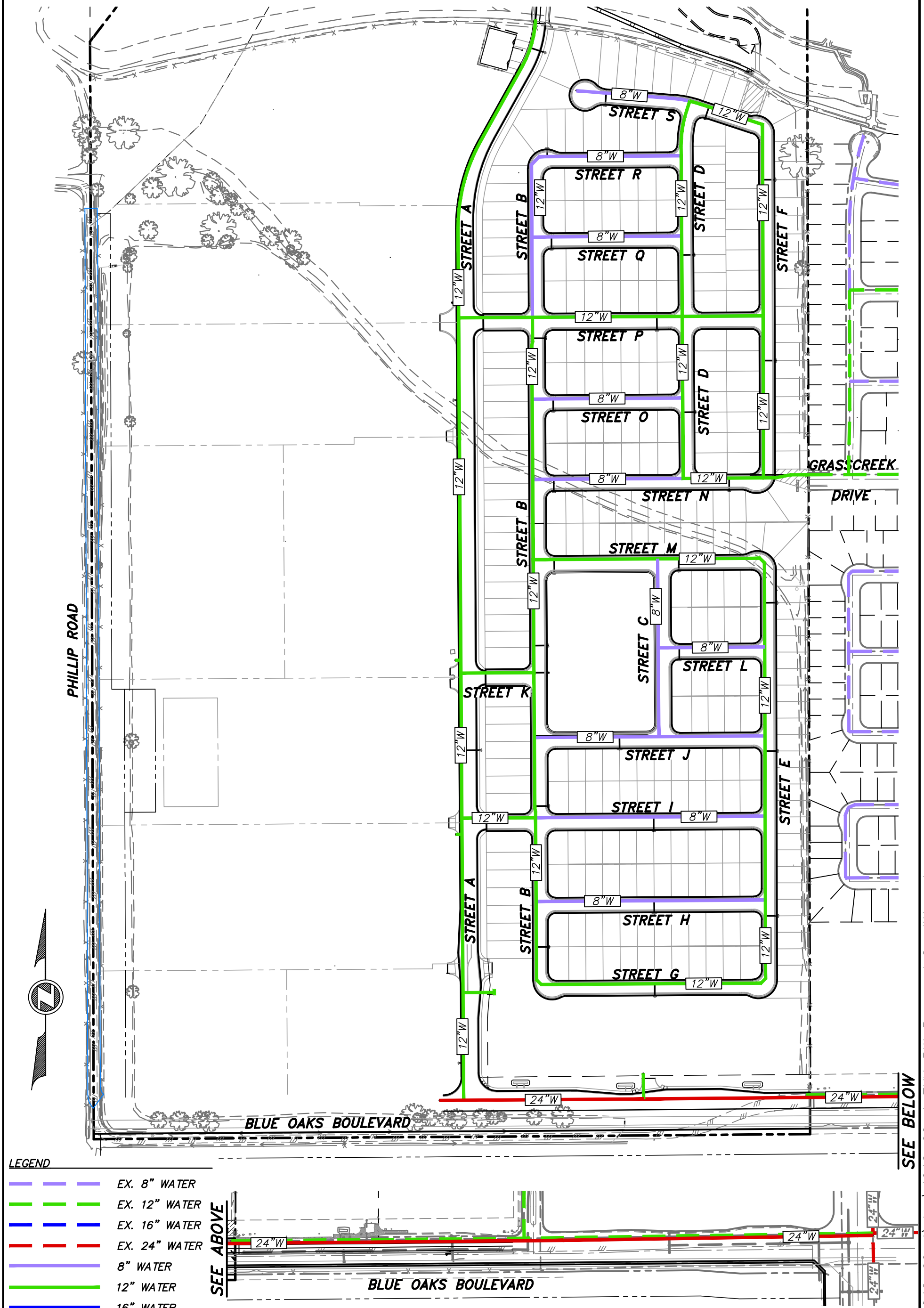

EXHIBIT 4
PROPOSED NEAR-TERM SITE PLAN
FOR
PHILLIP ROAD SITE
PHILLIP ROAD,
CITY OF ROSEVILLE, CALIFORNIA
SHEET 1 OF 1 DECEMBER 16, 2025

SCALE: 1"=250'

LM LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
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P.O. BOX 828, WOODLAND, CALIFORNIA 95776 · FAX: (530) 662-4602

X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH_PW-Proposed Conditions.dwg

SEE SHEET 2

BUILDING I
86.73 FF

BUILDING H
86.75 FF

BUILDING G
87.21 FF

BUILDING E
87.81 FF

BUILDING F
87.81 FF

BUILDING D
88.27 FF

BUILDING C
88.89 FF

BUILDING A
90.18 FF

BUILDING B
89.03 FF

PHILLIP ROAD

STREET A

STREET B

STREET C

STREET D

STREET E

STREET F

STREET G

STREET H

STREET I

STREET J

STREET K

STREET L

STREET M

STREET N

STREET O

STREET P

STREET Q

STREET R

STREET S

GRASSCREEK DRIVE

BLUE OAKS BOULEVARD

SEE BELOW

SEE ABOVE

LEGEND

- EX. 8" WATER
- EX. 12" WATER
- EX. 16" WATER
- EX. 24" WATER
- 8" WATER
- 12" WATER
- 16" WATER
- 24" WATER

LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
608 COURT STREET, WOODLAND, CALIFORNIA 95695 · PHONE: (530) 662-1755
P.O. BOX 828, WOODLAND, CALIFORNIA 95776 · FAX: (530) 662-4602

0 125 250 500
SCALE: 1"=250'

EXHIBIT 5
PROPOSED BUILDOUT SITE PLAN
FOR
PHILLIP ROAD SITE
PHILLIP ROAD,
CITY OF ROSEVILLE, CALIFORNIA
SHEET 1 OF 2 DECEMBER 16, 2025

X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH_PW-Proposed Conditions.dwg

LEGEND

- EX. 8" WATER
- EX. 12" WATER
- EX. 16" WATER
- EX. 24" WATER
- 8" WATER
- 12" WATER
- 16" WATER
- 24" WATER

LM LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
608 COURT STREET, WOODLAND, CALIFORNIA 95695 · PHONE: (530) 662-1755
P.O. BOX 828, WOODLAND, CALIFORNIA 95776 · FAX: (530) 662-4602

0 125 250 500

SCALE: 1"=250'

EXHIBIT 5
PROPOSED BUILDOUT SITE PLAN
FOR
PHILLIP ROAD SITE
PHILLIP ROAD,
CITY OF ROSEVILLE, CALIFORNIA
SHEET 2 OF 2 DECEMBER 16, 2025

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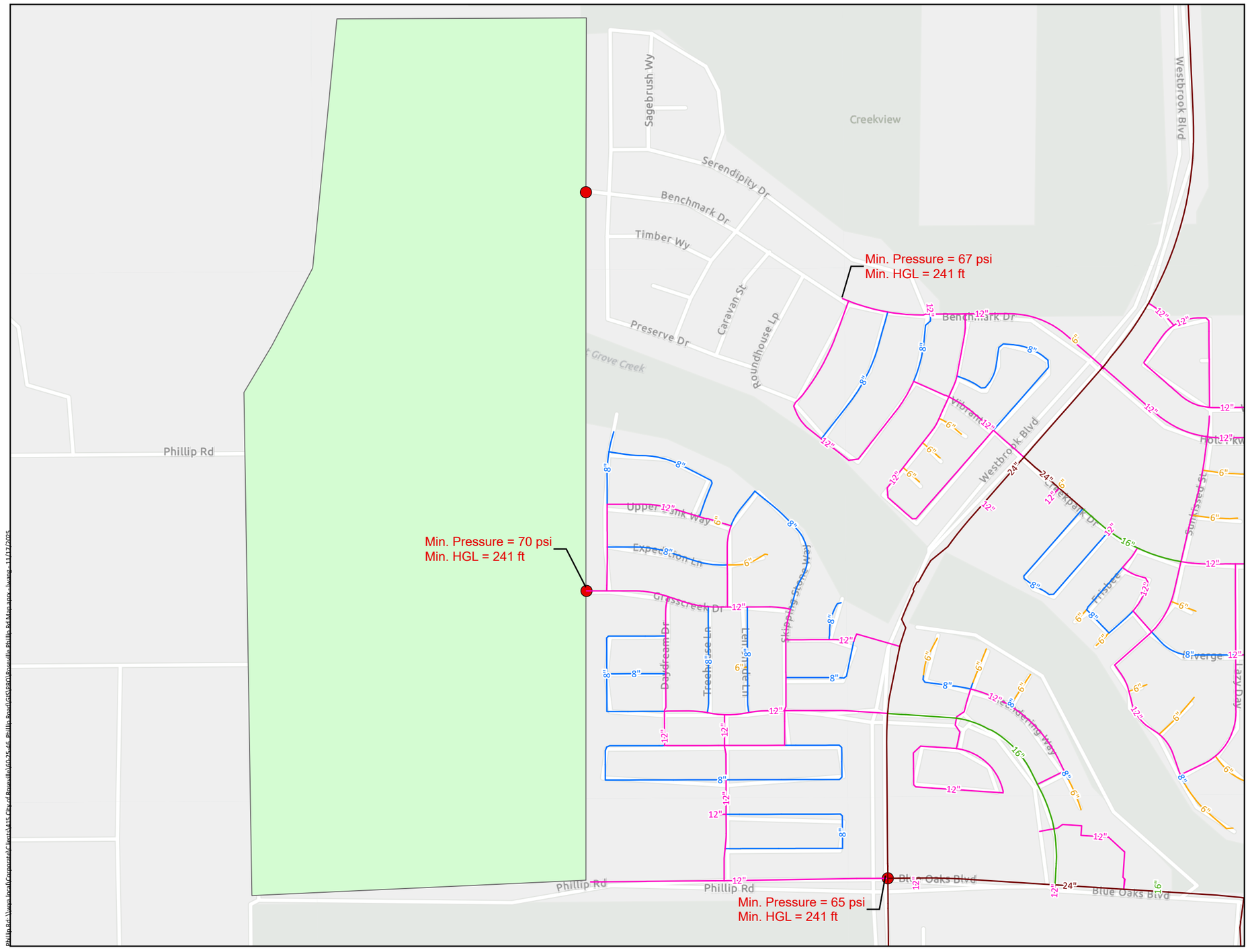
APPENDIX A

CITY POTABLE WATER MODEL ANALYSIS



Connection Point

Pipe Diameter (inch)

- 6
- 8
- 12
- 16
- 24

Project Area

Prepared by:

WEST YOST

N

0 600 US Feet

Prepared for:

City of Roseville

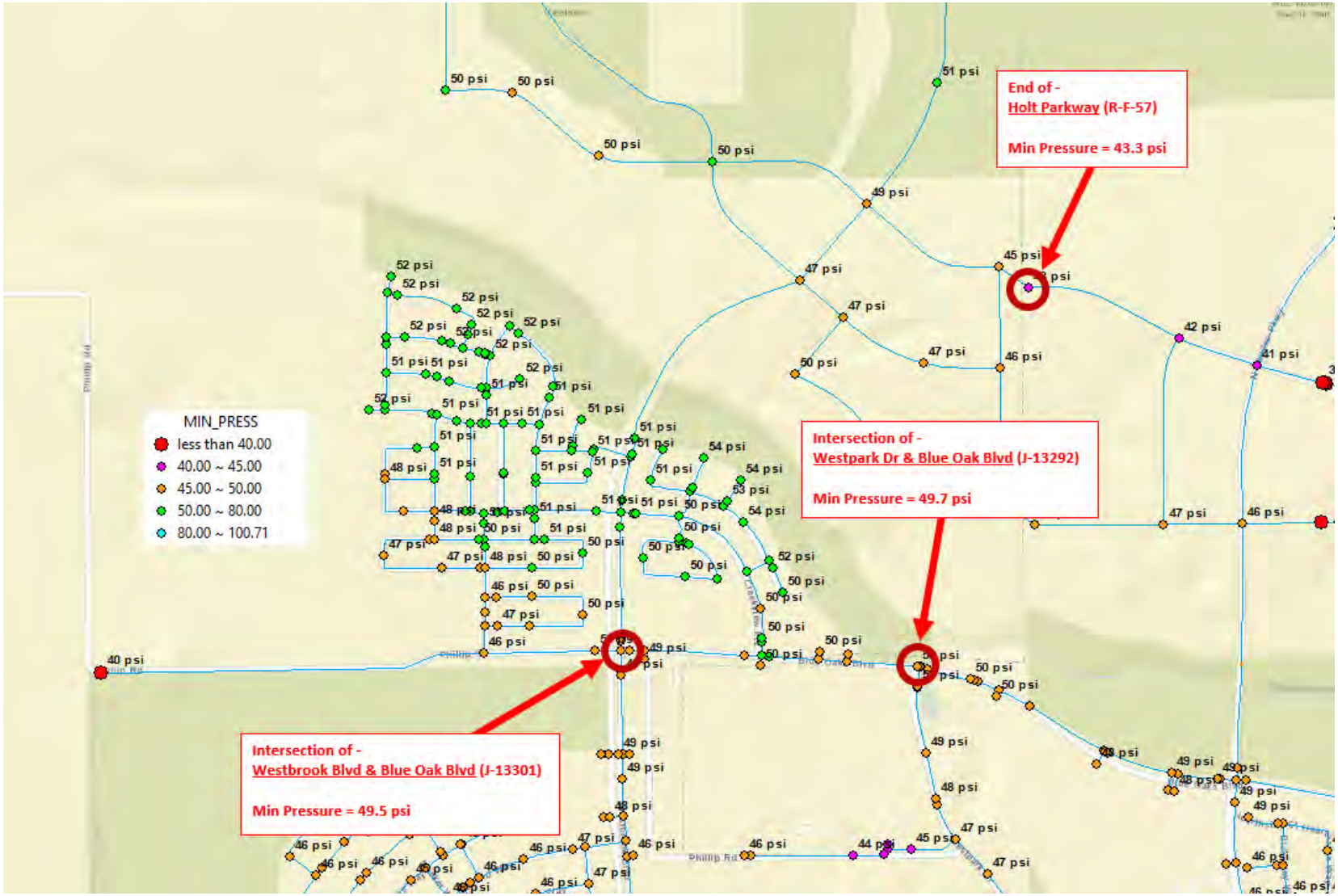
Peer Review of Phillip Road Site Potable Water Master Plan Report

ROSEVILLE CALIFORNIA

Minimum Pressure and Hydraulic Grade Line Under Peak Hour Demand Scenario

Figure 1

City of Roseville Potable Water Model Results - Buildout



APPENDIX B

POTABLE WATER PLAN – NEAR-TERM ONSITE WITHOUT FIRE FLOW MODEL RESULTS

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
31	J-1	81.00	0	241.00	69
32	J-2	87.00	0	241.00	67
33	J-3	89.00	0	240.99	66
39	J-51	76.00	0	241.00	71
44	J-5	87.00	0	240.99	67
46	J-6	88.00	0	240.99	66
48	J-7	88.00	0	240.99	66
50	J-64	85.00	0	240.99	67
52	J-65	80.00	0	240.99	70
54	J-8	82.00	0	240.98	69
56	J-9	82.00	0	240.97	69
58	J-15	82.00	0	240.97	69
60	J-34	82.00	0	240.97	69
62	J-35	83.50	0	240.97	68
64	J-63	78.00	0	240.97	71
66	J-62	77.00	0	240.97	71
68	J-66	77.00	2	240.97	71
83	SERV-HDR-2	84.00	0	240.98	68
87	J-16	81.50	0	240.96	69
89	J-17	82.00	0	240.95	69
91	J-18	82.00	0	240.95	69
93	FH-1	87.20	0	240.95	67
95	J-19	83.00	162	240.94	68
97	FH-2	89.00	0	240.94	66
99	J-20	84.00	0	240.95	68
101	FH-3	89.00	0	240.95	66
103	J-21	83.00	0	240.95	68
106	J-23	82.00	0	240.96	69
108	J-24	82.00	0	240.96	69
110	FH-5	87.10	0	240.96	67
113	J-25	81.00	0	240.96	69
115	FH-6	86.40	0	240.96	67
117	J-26	80.90	0	240.96	69
119	J-27	82.00	0	240.96	69
121	FH-7	86.60	0	240.96	67
123	J-28	83.00	0	240.96	68
125	J-29	84.00	0	240.96	68
127	J-30	83.50	0	240.96	68
129	FH-8	88.60	0	240.96	66
132	J-42	82.50	0	240.96	69
134	J-44	81.50	0	240.96	69
136	FH-11	86.00	0	240.96	67
138	J-45	79.70	0	240.96	70
140	FH-12	84.50	0	240.96	68
142	J-40	79.50	0	240.96	70
144	J-41	80.50	22	240.96	69
147	J-43	80.60	0	240.96	69
149	FH-10	85.60	0	240.96	67

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
152	J-36	80.00	0	240.97	70
155	J-37	79.80	0	240.97	70
157	FH-8	85.30	0	240.97	67
159	J-38	78.90	0	240.97	70
161	J-39	79.20	0	240.96	70
163	FH-9	84.20	0	240.96	68
166	J-46	78.30	0	240.97	70
168	J-47	78.50	0	240.97	70
170	FH-13	83.50	0	240.97	68
172	J-48	77.30	0	240.97	71
174	J-49	77.00	0	240.98	71
176	FH-14	81.60	0	240.98	69
178	J-50	76.90	0	240.98	71
181	J-56	75.70	0	240.97	72
183	FH-17	80.70	0	240.97	69
185	J-57	76.00	0	240.97	71
187	J-58	76.30	0	240.97	71
189	J-59	76.00	0	240.97	71
191	FH-18	81.00	0	240.97	69
193	J-60	77.40	0	240.97	71
196	J-61	77.40	0	240.97	71
198	FH-19	82.40	0	240.97	69
200	J-52	77.20	0	240.97	71
203	J-53	77.50	0	240.97	71
205	FH-15	82.50	0	240.97	69
207	J-54	76.00	0	240.97	71
209	J-55	76.00	0	240.97	71
211	FH-16	80.80	0	240.97	69
215	J-71	77.20	0	240.96	71
217	J-79	77.50	0	240.96	71
219	FH-24	82.30	0	240.96	69
221	J-78	76.30	0	240.96	71
223	J-73	76.00	0	240.96	71
225	J-72	77.50	0	240.96	71
227	FH-20	82.40	0	240.96	69
230	J-74	76.00	0	240.96	71
232	FH-21	80.90	0	240.96	69
235	J-75	75.30	0	240.96	72
237	FH-22	80.35	0	240.96	69
239	J-76	76.00	0	240.95	71
241	FH-23	81.00	0	240.95	69
243	J-77	75.80	0	240.95	71
246	J-80	76.50	0	240.80	71
248	FH-25	81.25	0	240.80	69
250	J-81	77.80	168	240.74	70
252	J-22	83.00	0	240.95	68
255	FH-4	88.20	0	240.95	66
398	J-4	87.00	0	240.99	67

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
401	SERV-HDR-1	87.00	0	240.99	67

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-1	J-1	J-2	24.0	PVC	130.0	159	0.11	0.000	964	0.00
P-2	J-2	J-3	24.0	PVC	130.0	159	0.11	0.000	788	0.00
POC-1	R-1	J-1	60.0	PVC	130.0	159	0.02	0.000	1	0.00
POC-2	R-2	J-51	60.0	PVC	130.0	195	0.02	0.000	1	0.00
P-6	J-5	J-6	24.0	PVC	130.0	63	0.04	0.000	1,034	0.00
P-7	J-6	J-7	24.0	PVC	130.0	0	0.00	0.000	108	0.00
P-11	J-6	J-64	16.0	PVC	130.0	63	0.10	0.000	1,818	0.01
P-82	J-64	J-65	16.0	PVC	130.0	0	0.00	0.000	880	0.00
P-8	J-5	J-8	12.0	PVC	130.0	95	0.27	0.000	371	0.01
P-10	J-8	J-9	12.0	PVC	130.0	95	0.27	0.000	358	0.01
P-19	J-9	J-15	12.0	PVC	130.0	95	0.27	0.000	55	0.00
P-42	J-15	J-34	12.0	PVC	130.0	14	0.04	0.000	400	0.00
P-43	J-34	J-35	12.0	PVC	130.0	-33	0.09	0.000	26	0.00
P-80	J-35	J-63	12.0	PVC	130.0	-33	0.09	0.000	609	0.00
P-79	J-63	J-62	12.0	PVC	130.0	30	0.09	0.000	338	0.00
P-83	J-62	J-66	12.0	PVC	130.0	2	0.01	0.000	42	0.00
P-9	J-8	SERV-HDR-2	12.0	PVC	130.0	0	0.00	0.000	20	0.00
P-20	J-15	J-16	12.0	PVC	130.0	81	0.23	0.000	208	0.01
P-21	J-16	J-17	12.0	PVC	130.0	96	0.27	0.000	232	0.01
P-22	J-17	J-18	12.0	PVC	130.0	85	0.24	0.000	126	0.00
FP-1	J-18	FH-1	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-23	J-18	J-19	12.0	PVC	130.0	85	0.24	0.000	423	0.01
FP-2	J-19	FH-2	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-24	J-19	J-20	12.0	PVC	130.0	-77	0.22	0.000	485	0.01
FP-3	J-20	FH-3	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-25	J-20	J-21	12.0	PVC	130.0	-77	0.22	0.000	44	0.00
P-28	J-21	J-23	12.0	PVC	130.0	-66	0.19	0.000	232	0.00
P-29	J-23	J-24	8.0	PVC	130.0	-18	0.11	0.000	308	0.00
FP-5	J-24	FH-5	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-30	J-24	J-16	8.0	PVC	130.0	-18	0.11	0.000	326	0.00
P-31	J-16	J-25	12.0	PVC	130.0	-32	0.09	0.000	32	0.00
FP-6	J-25	FH-6	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-32	J-25	J-26	12.0	PVC	130.0	-32	0.09	0.000	190	0.00
P-33	J-26	J-27	8.0	PVC	130.0	19	0.12	0.000	235	0.00
FP-7	J-27	FH-7	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-34	J-27	J-28	8.0	PVC	130.0	19	0.12	0.000	103	0.00
P-35	J-28	J-29	8.0	PVC	130.0	13	0.08	0.000	299	0.00
P-36	J-29	J-30	12.0	PVC	130.0	48	0.14	0.000	42	0.00
FP-8	J-30	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-37	J-30	J-23	12.0	PVC	130.0	48	0.14	0.000	180	0.00
P-53	J-29	J-42	12.0	PVC	130.0	-36	0.10	0.000	246	0.00
P-56	J-42	J-44	12.0	PVC	130.0	-34	0.10	0.000	123	0.00
FP-11	J-44	FH-11	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-57	J-44	J-45	12.0	PVC	130.0	-34	0.10	0.000	363	0.00
FP-12	J-45	FH-12	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-58	J-45	J-40	12.0	PVC	130.0	-34	0.10	0.000	54	0.00

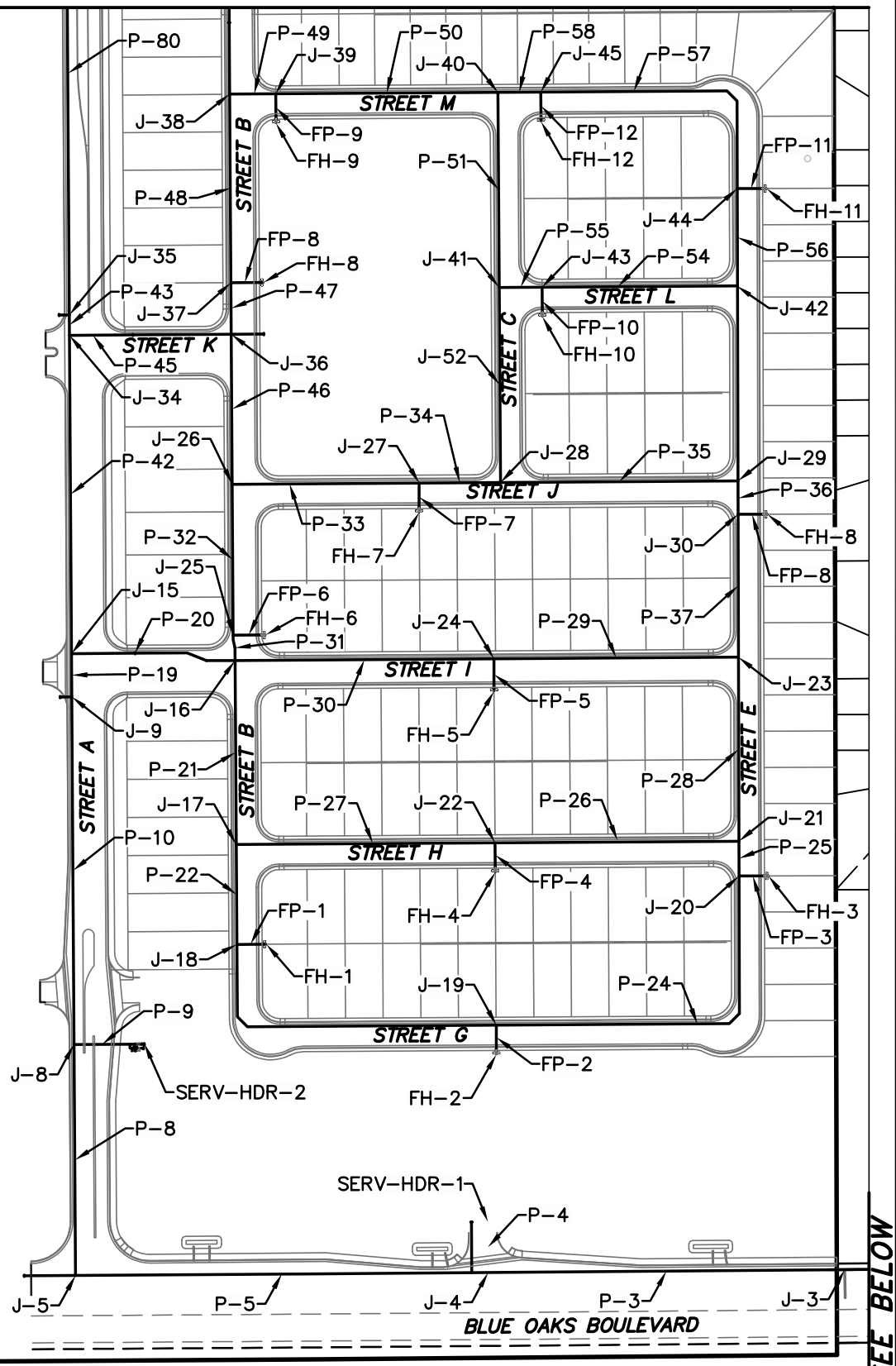
FlexTable: Pipe Table

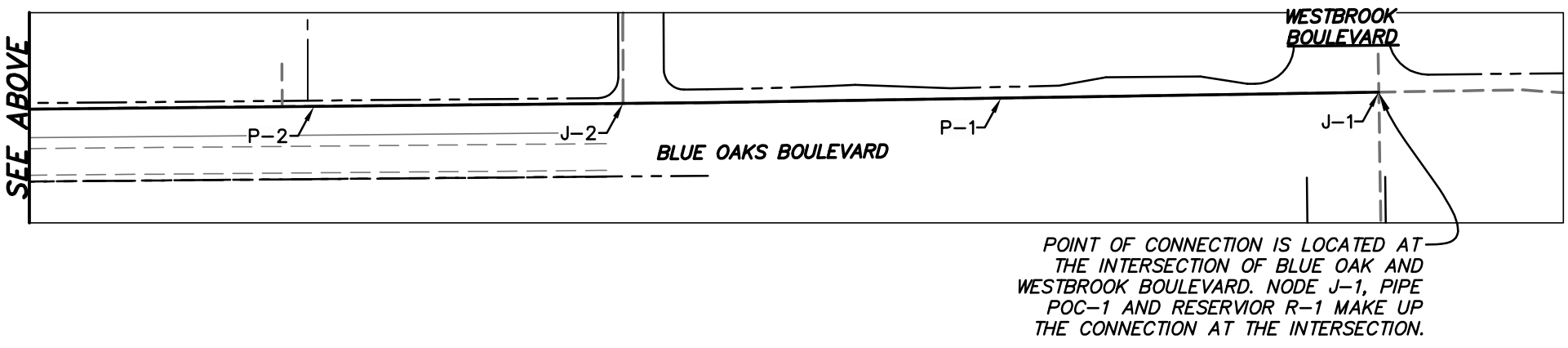
Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-51	J-40	J-41	8.0	PVC	130.0	18	0.11	0.000	246	0.00
P-52	J-41	J-28	8.0	PVC	130.0	-6	0.04	0.000	246	0.00
P-55	J-41	J-43	8.0	PVC	130.0	2	0.01	0.000	54	0.00
FP-10	J-43	FH-10	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-54	J-43	J-42	8.0	PVC	130.0	2	0.01	0.000	246	0.00
P-45	J-34	J-36	12.0	PVC	130.0	47	0.13	0.000	204	0.00
P-46	J-36	J-26	12.0	PVC	130.0	51	0.14	0.000	189	0.00
P-47	J-36	J-37	12.0	PVC	130.0	-4	0.01	0.000	65	0.00
FP-8	J-37	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-48	J-37	J-38	12.0	PVC	130.0	-4	0.01	0.000	238	0.00
P-49	J-38	J-39	12.0	PVC	130.0	52	0.15	0.000	58	0.00
FP-9	J-39	FH-9	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-50	J-39	J-40	12.0	PVC	130.0	52	0.15	0.000	280	0.00
P-59	J-38	J-46	12.0	PVC	130.0	-56	0.16	0.000	222	0.00
P-60	J-46	J-47	12.0	PVC	130.0	-50	0.14	0.000	58	0.00
FP-13	J-47	FH-13	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-61	J-47	J-48	12.0	PVC	130.0	-50	0.14	0.000	358	0.00
P-62	J-48	J-49	12.0	PVC	130.0	-108	0.30	0.000	127	0.01
FP-14	J-49	FH-14	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-63	J-49	J-50	12.0	PVC	130.0	-108	0.30	0.000	95	0.00
P-64	J-50	J-51	12.0	PVC	130.0	-195	0.55	0.000	155	0.02
P-70	J-50	J-56	12.0	PVC	130.0	88	0.25	0.000	324	0.01
FP-17	J-56	FH-17	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-71	J-56	J-57	12.0	PVC	130.0	88	0.25	0.000	124	0.00
P-72	J-57	J-58	8.0	PVC	130.0	14	0.09	0.000	224	0.00
P-74	J-58	J-59	8.0	PVC	130.0	-7	0.05	0.000	70	0.00
FP-18	J-59	FH-18	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-75	J-59	J-60	8.0	PVC	130.0	-7	0.05	0.000	344	0.00
P-78	J-60	J-62	12.0	PVC	130.0	-28	0.08	0.000	206	0.00
P-76	J-60	J-61	12.0	PVC	130.0	-3	0.01	0.000	58	0.00
FP-19	J-61	FH-19	6.0	Ductile Iron	130.0	0	0.00	0.000	37	0.00
P-77	J-61	J-52	12.0	PVC	130.0	-3	0.01	0.000	168	0.00
P-65	J-52	J-46	12.0	PVC	130.0	6	0.02	0.000	222	0.00
P-66	J-52	J-53	8.0	PVC	130.0	-9	0.06	0.000	58	0.00
FP-15	J-53	FH-15	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-67	J-53	J-54	8.0	PVC	130.0	-9	0.06	0.000	358	0.00
P-68	J-54	J-55	12.0	PVC	130.0	-58	0.16	0.000	39	0.00
FP-16	J-55	FH-16	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-69	J-55	J-48	12.0	PVC	130.0	-58	0.16	0.000	183	0.00
P-73	J-54	J-58	12.0	PVC	130.0	49	0.14	0.000	226	0.00
P-92	J-60	J-71	8.0	PVC	130.0	24	0.15	0.000	222	0.00
P-102	J-71	J-79	8.0	PVC	130.0	17	0.11	0.000	253	0.00
FP-24	J-79	FH-24	6.0	Ductile Iron	130.0	0	0.00	0.000	23	0.00
P-103	J-79	J-78	8.0	PVC	130.0	17	0.11	0.000	370	0.00
P-101	J-78	J-73	12.0	PVC	130.0	-77	0.22	0.000	222	0.00

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-94	J-73	J-72	8.0	PVC	130.0	-7	0.05	0.000	360	0.00
FP-20	J-72	FH-20	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-93	J-72	J-71	8.0	PVC	130.0	-7	0.05	0.000	54	0.00
P-95	J-73	J-74	12.0	PVC	130.0	-70	0.20	0.000	52	0.00
FP-21	J-74	FH-21	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-96	J-74	J-58	12.0	PVC	130.0	-70	0.20	0.000	170	0.00
P-97	J-57	J-75	12.0	PVC	130.0	74	0.21	0.000	376	0.01
FP-22	J-75	FH-22	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-98	J-75	J-76	12.0	PVC	130.0	74	0.21	0.000	309	0.01
FP-23	J-76	FH-23	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-99	J-76	J-77	12.0	PVC	130.0	74	0.21	0.000	55	0.00
P-100	J-77	J-78	12.0	PVC	130.0	-94	0.27	0.000	154	0.00
P-104	J-77	J-80	8.0	PVC	130.0	168	1.07	0.001	232	0.16
FP-25	J-80	FH-25	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-105	J-80	J-81	8.0	PVC	130.0	168	1.07	0.001	82	0.06
P-26	J-21	J-22	8.0	PVC	130.0	-11	0.07	0.000	307	0.00
P-27	J-22	J-17	8.0	PVC	130.0	-11	0.07	0.000	326	0.00
FP-4	J-22	FH-4	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-81	J-63	J-64	12.0	PVC	130.0	-63	0.18	0.000	1,028	0.02
P-3	J-3	J-4	24.0	PVC	130.0	159	0.11	0.000	244	0.00
P-5	J-4	J-5	24.0	PVC	130.0	159	0.11	0.000	520	0.00
P-4	J-4	SERV-HDR-1	12.0	PVC	130.0	0	0.00	0.000	20	0.00

SEE SHEET 2





POINT OF CONNECTION IS LOCATED AT THE INTERSECTION OF BLUE OAK AND WESTBROOK BOULEVARD. NODE J-1, PIPE POC-1 AND RESERVIOR R-1 MAKE UP THE CONNECTION AT THE INTERSECTION.

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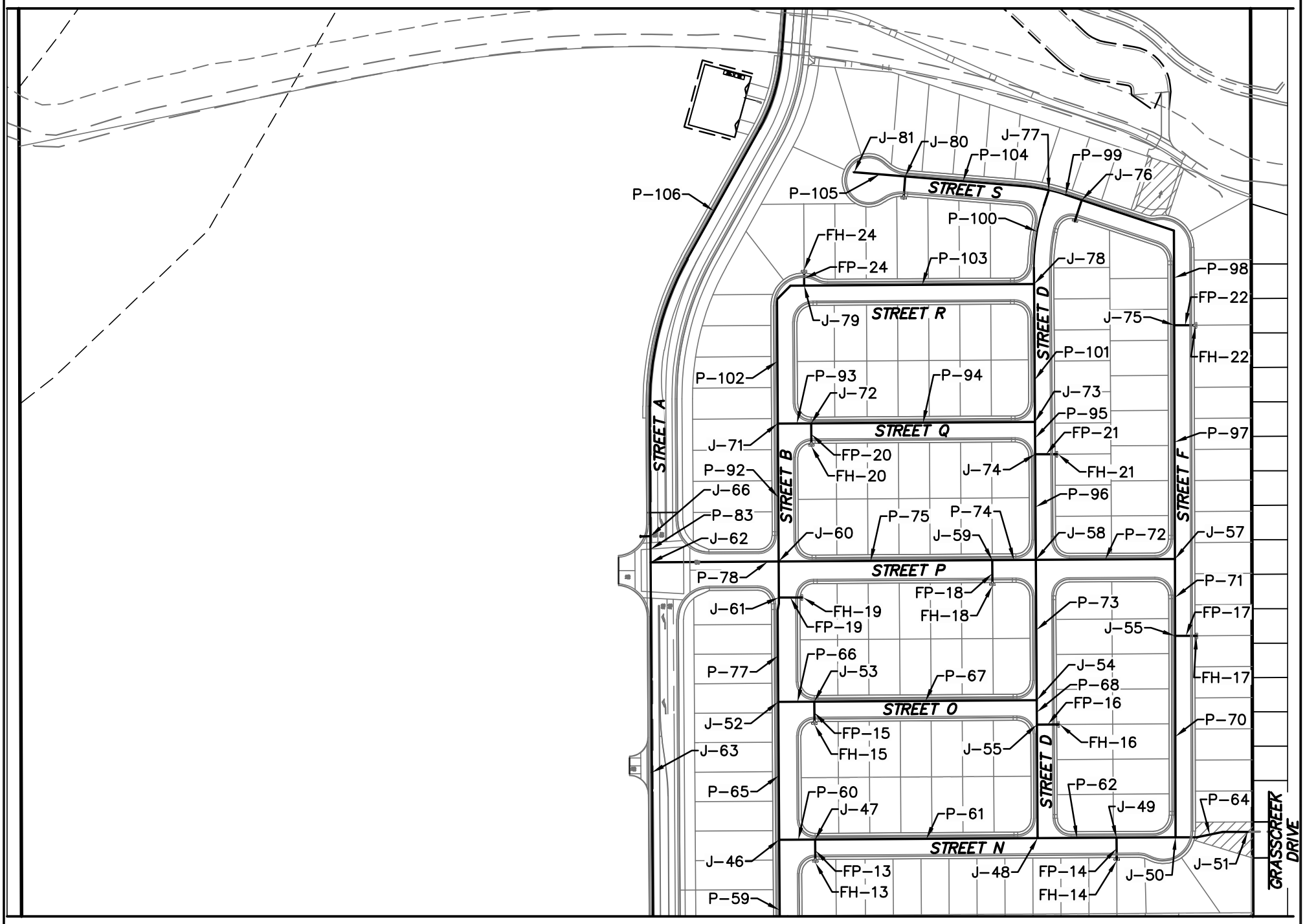
0 100 200 400
SCALE: 1"=200'

NEAR-TERM FIRE SYSTEM EXHIBIT
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA
SHEET 1 OF 3 APRIL 2, 2025

X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH_Fire Site Plan- Near-Term.dwg

SEE SHEET 3



SEE SHEET 1

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LM
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NEAR–TERM FIRE SYSTEM EXHIBIT

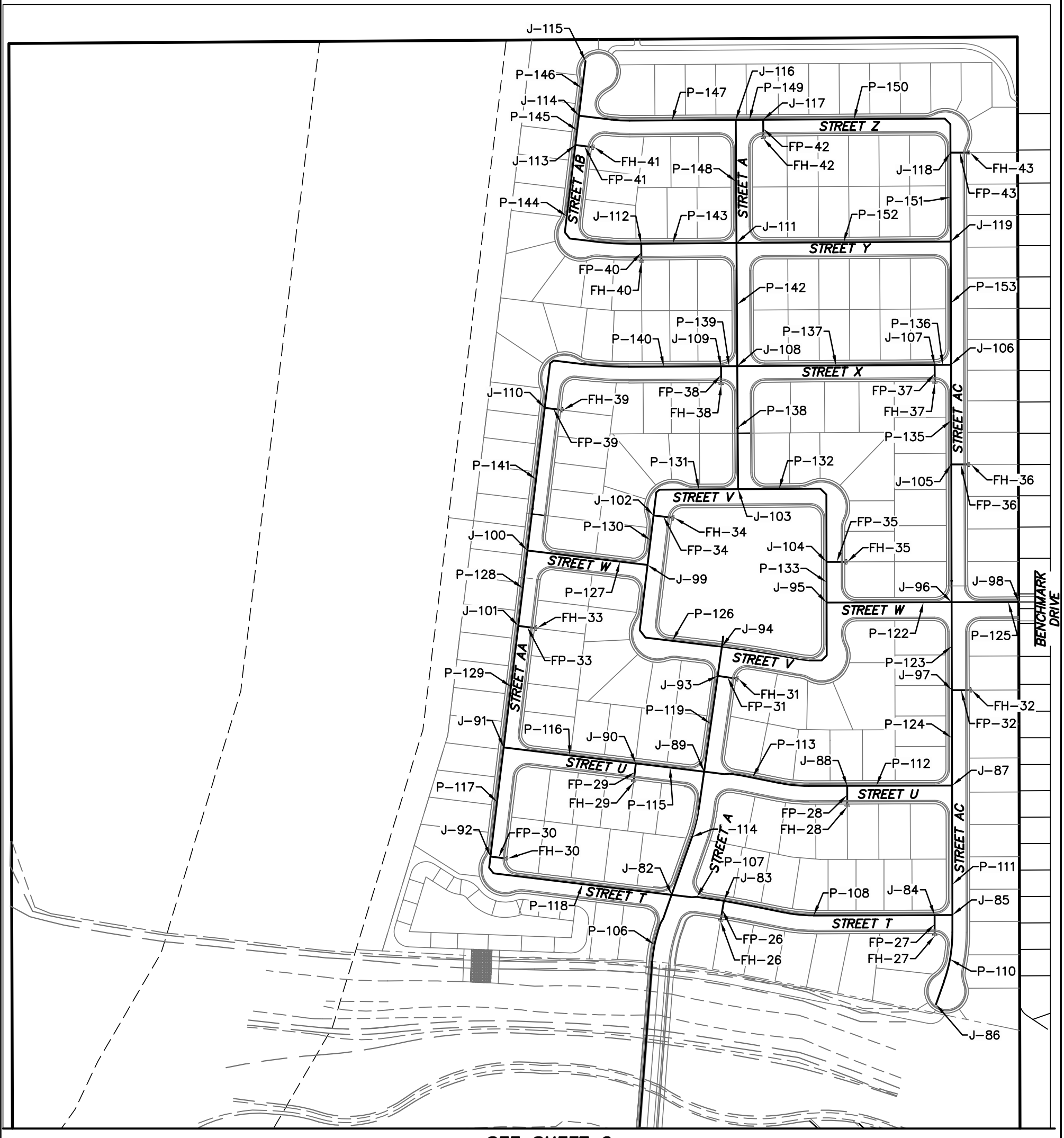
FOR

PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA

SHEET 2 OF 3 APRIL 2, 2025

X:\Land Projects\4042–60–4\dwg\4042–60–4_EXH_Fire Site Plan–Near–Term.dwg



SEE SHEET 2

0 100 200 400

SCALE: 1"=200'

NEAR–TERM FIRE SYSTEM EXHIBIT

FOR

PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA

SHEET 3 OF 3 APRIL 2, 2025

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X:\Land Projects\4042–60–4\dwg\4042–60–4_EXH_Fire Site Plan– Near–Term.dwg

APPENDIX C

POTABLE WATER PLAN – NEAR-TERM ONSITE WITH FIRE FLOW MODEL RESULTS

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
31	J-1	81.00	0	241.00	69
32	J-2	87.00	0	240.94	67
33	J-3	89.00	0	240.89	66
39	J-51	76.00	0	241.00	71
44	J-5	87.00	0	240.84	67
46	J-6	88.00	0	240.83	66
48	J-7	88.00	0	240.83	66
50	J-64	85.00	0	240.68	67
52	J-65	80.00	0	240.68	70
54	J-8	82.00	0	240.58	69
56	J-9	82.00	0	240.32	68
58	J-15	82.00	0	240.28	68
60	J-34	82.00	0	240.28	68
62	J-35	83.50	0	240.28	68
64	J-63	78.00	0	240.34	70
66	J-62	77.00	0	240.31	71
68	J-66	77.00	2	240.31	71
83	SERV-HDR-2	84.00	0	240.58	68
87	J-16	81.50	0	240.17	69
89	J-17	82.00	0	239.98	68
91	J-18	82.00	0	239.90	68
93	FH-1	87.20	0	239.90	66
95	J-19	83.00	162	239.63	68
97	FH-2	89.00	765	238.04	64
99	J-20	84.00	0	239.90	67
101	FH-3	89.00	0	239.90	65
103	J-21	83.00	0	239.93	68
106	J-23	82.00	0	240.03	68
108	J-24	82.00	0	240.10	68
110	FH-5	87.10	0	240.10	66
113	J-25	81.00	0	240.17	69
115	FH-6	86.40	0	240.17	67
117	J-26	80.90	0	240.20	69
119	J-27	82.00	0	240.16	68
121	FH-7	86.60	0	240.16	66
123	J-28	83.00	0	240.14	68
125	J-29	84.00	0	240.09	68
127	J-30	83.50	0	240.08	68
129	FH-8	88.60	0	240.08	66
132	J-42	82.50	0	240.13	68
134	J-44	81.50	0	240.14	69
136	FH-11	86.00	0	240.14	67
138	J-45	79.70	0	240.17	69
140	FH-12	84.50	0	240.17	67
142	J-40	79.50	0	240.18	70
144	J-41	80.50	22	240.14	69
147	J-43	80.60	0	240.14	69
149	FH-10	85.60	0	240.14	67

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
152	J-36	80.00	0	240.24	69
155	J-37	79.80	0	240.24	69
157	FH-8	85.30	0	240.24	67
159	J-38	78.90	0	240.24	70
161	J-39	79.20	0	240.23	70
163	FH-9	84.20	0	240.23	68
166	J-46	78.30	0	240.29	70
168	J-47	78.50	0	240.30	70
170	FH-13	83.50	0	240.30	68
172	J-48	77.30	0	240.38	71
174	J-49	77.00	0	240.49	71
176	FH-14	81.60	0	240.49	69
178	J-50	76.90	0	240.57	71
181	J-56	75.70	0	240.37	71
183	FH-17	80.70	0	240.37	69
185	J-57	76.00	0	240.29	71
187	J-58	76.30	0	240.26	71
189	J-59	76.00	0	240.27	71
191	FH-18	81.00	0	240.27	69
193	J-60	77.40	0	240.29	70
196	J-61	77.40	0	240.29	70
198	FH-19	82.40	0	240.29	68
200	J-52	77.20	0	240.29	71
203	J-53	77.50	0	240.29	70
205	FH-15	82.50	0	240.29	68
207	J-54	76.00	0	240.31	71
209	J-55	76.00	0	240.32	71
211	FH-16	80.80	0	240.32	69
215	J-71	77.20	0	240.19	71
217	J-79	77.50	0	240.13	70
219	FH-24	82.30	0	240.13	68
221	J-78	76.30	0	240.05	71
223	J-73	76.00	0	240.16	71
225	J-72	77.50	0	240.18	70
227	FH-20	82.40	0	240.18	68
230	J-74	76.00	0	240.19	71
232	FH-21	80.90	0	240.19	69
235	J-75	75.30	0	240.10	71
237	FH-22	80.35	0	240.10	69
239	J-76	76.00	0	239.96	71
241	FH-23	81.00	0	239.96	69
243	J-77	75.80	0	239.93	71
246	J-80	76.50	0	236.20	69
248	FH-25	81.25	765	234.62	66
250	J-81	77.80	168	236.15	69
252	J-22	83.00	0	239.95	68
255	FH-4	88.20	0	239.95	66
398	J-4	87.00	0	240.87	67

FlexTable: Junction Table

ID	Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
401	SERV-HDR-1	87.00	0	240.87	67

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-1	J-1	J-2	24.0	PVC	130.0	839	0.60	0.000	964	0.06
P-2	J-2	J-3	24.0	PVC	130.0	839	0.60	0.000	788	0.05
POC-1	R-1	J-1	60.0	PVC	130.0	839	0.10	0.000	1	0.00
POC-2	R-2	J-51	60.0	PVC	130.0	1,045	0.12	0.000	1	0.00
P-6	J-5	J-6	24.0	PVC	130.0	335	0.24	0.000	1,034	0.01
P-7	J-6	J-7	24.0	PVC	130.0	0	0.00	0.000	108	0.00
P-11	J-6	J-64	16.0	PVC	130.0	335	0.53	0.000	1,818	0.15
P-82	J-64	J-65	16.0	PVC	130.0	0	0.00	0.000	880	0.00
P-8	J-5	J-8	12.0	PVC	130.0	505	1.43	0.001	371	0.26
P-10	J-8	J-9	12.0	PVC	130.0	505	1.43	0.001	358	0.26
P-19	J-9	J-15	12.0	PVC	130.0	505	1.43	0.001	55	0.04
P-42	J-15	J-34	12.0	PVC	130.0	69	0.19	0.000	400	0.01
P-43	J-34	J-35	12.0	PVC	130.0	-172	0.49	0.000	26	0.00
P-80	J-35	J-63	12.0	PVC	130.0	-172	0.49	0.000	609	0.06
P-79	J-63	J-62	12.0	PVC	130.0	163	0.46	0.000	338	0.03
P-83	J-62	J-66	12.0	PVC	130.0	2	0.01	0.000	42	0.00
P-9	J-8	SERV-HDR-2	12.0	PVC	130.0	0	0.00	0.000	20	0.00
P-20	J-15	J-16	12.0	PVC	130.0	436	1.24	0.001	208	0.11
P-21	J-16	J-17	12.0	PVC	130.0	537	1.52	0.001	232	0.19
P-22	J-17	J-18	12.0	PVC	130.0	480	1.36	0.001	126	0.08
FP-1	J-18	FH-1	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-23	J-18	J-19	12.0	PVC	130.0	480	1.36	0.001	423	0.28
FP-2	J-19	FH-2	6.0	Ductile Iron	130.0	765	8.68	0.045	35	1.58
P-24	J-19	J-20	12.0	PVC	130.0	-447	1.27	0.001	485	0.28
FP-3	J-20	FH-3	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-25	J-20	J-21	12.0	PVC	130.0	-447	1.27	0.001	44	0.03
P-28	J-21	J-23	12.0	PVC	130.0	-390	1.11	0.000	232	0.10
P-29	J-23	J-24	8.0	PVC	130.0	-92	0.59	0.000	308	0.07
FP-5	J-24	FH-5	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-30	J-24	J-16	8.0	PVC	130.0	-92	0.59	0.000	326	0.07
P-31	J-16	J-25	12.0	PVC	130.0	-193	0.55	0.000	32	0.00
FP-6	J-25	FH-6	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-32	J-25	J-26	12.0	PVC	130.0	-193	0.55	0.000	190	0.02
P-33	J-26	J-27	8.0	PVC	130.0	77	0.49	0.000	235	0.04
FP-7	J-27	FH-7	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-34	J-27	J-28	8.0	PVC	130.0	77	0.49	0.000	103	0.02
P-35	J-28	J-29	8.0	PVC	130.0	82	0.53	0.000	299	0.05
P-36	J-29	J-30	12.0	PVC	130.0	298	0.84	0.000	42	0.01
FP-8	J-30	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-37	J-30	J-23	12.0	PVC	130.0	298	0.84	0.000	180	0.05
P-53	J-29	J-42	12.0	PVC	130.0	-216	0.61	0.000	246	0.04
P-56	J-42	J-44	12.0	PVC	130.0	-171	0.48	0.000	123	0.01
FP-11	J-44	FH-11	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-57	J-44	J-45	12.0	PVC	130.0	-171	0.48	0.000	363	0.03
FP-12	J-45	FH-12	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-58	J-45	J-40	12.0	PVC	130.0	-171	0.48	0.000	54	0.01

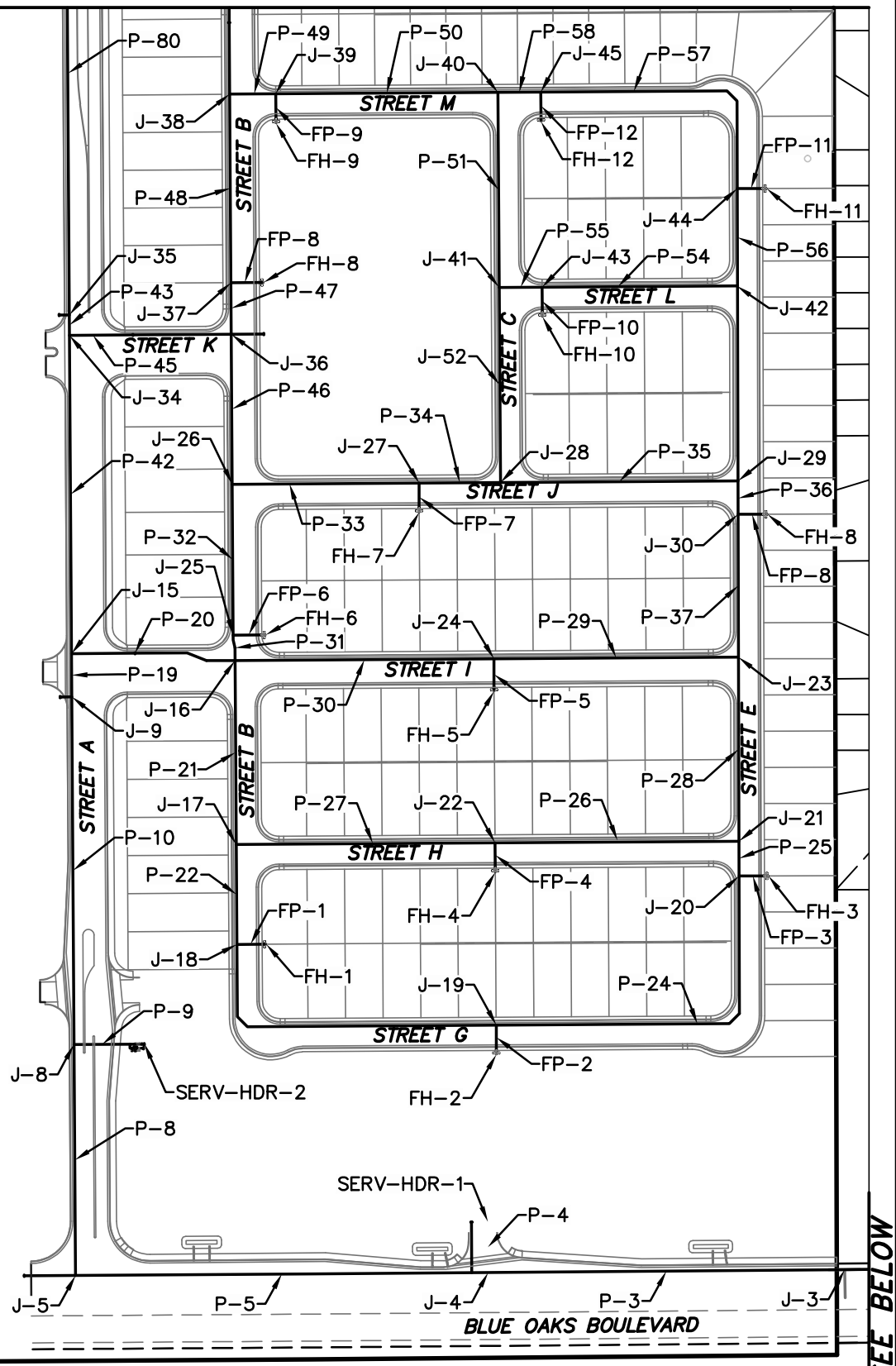
FlexTable: Pipe Table

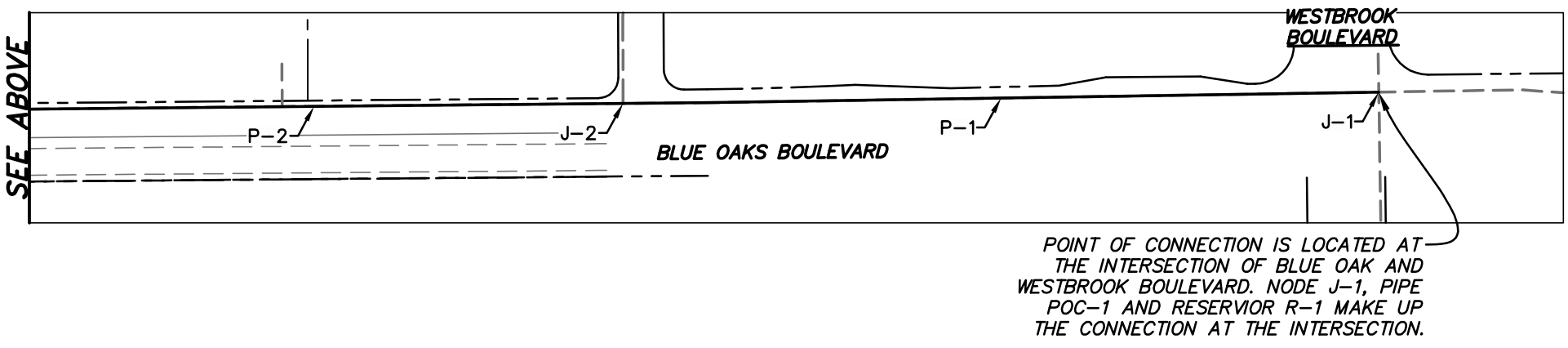
Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-51	J-40	J-41	8.0	PVC	130.0	72	0.46	0.000	246	0.03
P-52	J-41	J-28	8.0	PVC	130.0	5	0.03	0.000	246	0.00
P-55	J-41	J-43	8.0	PVC	130.0	45	0.29	0.000	54	0.00
FP-10	J-43	FH-10	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-54	J-43	J-42	8.0	PVC	130.0	45	0.29	0.000	246	0.01
P-45	J-34	J-36	12.0	PVC	130.0	241	0.68	0.000	204	0.04
P-46	J-36	J-26	12.0	PVC	130.0	270	0.77	0.000	189	0.04
P-47	J-36	J-37	12.0	PVC	130.0	-30	0.08	0.000	65	0.00
FP-8	J-37	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-48	J-37	J-38	12.0	PVC	130.0	-30	0.08	0.000	238	0.00
P-49	J-38	J-39	12.0	PVC	130.0	243	0.69	0.000	58	0.01
FP-9	J-39	FH-9	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-50	J-39	J-40	12.0	PVC	130.0	243	0.69	0.000	280	0.05
P-59	J-38	J-46	12.0	PVC	130.0	-272	0.77	0.000	222	0.05
P-60	J-46	J-47	12.0	PVC	130.0	-258	0.73	0.000	58	0.01
FP-13	J-47	FH-13	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-61	J-47	J-48	12.0	PVC	130.0	-258	0.73	0.000	358	0.07
P-62	J-48	J-49	12.0	PVC	130.0	-569	1.61	0.001	127	0.11
FP-14	J-49	FH-14	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-63	J-49	J-50	12.0	PVC	130.0	-569	1.61	0.001	95	0.08
P-64	J-50	J-51	12.0	PVC	130.0	-1,045	2.96	0.003	155	0.43
P-70	J-50	J-56	12.0	PVC	130.0	476	1.35	0.001	324	0.21
FP-17	J-56	FH-17	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-71	J-56	J-57	12.0	PVC	130.0	476	1.35	0.001	124	0.08
P-72	J-57	J-58	8.0	PVC	130.0	66	0.42	0.000	224	0.03
P-74	J-58	J-59	8.0	PVC	130.0	-50	0.32	0.000	70	0.00
FP-18	J-59	FH-18	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-75	J-59	J-60	8.0	PVC	130.0	-50	0.32	0.000	344	0.02
P-78	J-60	J-62	12.0	PVC	130.0	-161	0.46	0.000	206	0.02
P-76	J-60	J-61	12.0	PVC	130.0	-26	0.08	0.000	58	0.00
FP-19	J-61	FH-19	6.0	Ductile Iron	130.0	0	0.00	0.000	37	0.00
P-77	J-61	J-52	12.0	PVC	130.0	-26	0.08	0.000	168	0.00
P-65	J-52	J-46	12.0	PVC	130.0	15	0.04	0.000	222	0.00
P-66	J-52	J-53	8.0	PVC	130.0	-41	0.26	0.000	58	0.00
FP-15	J-53	FH-15	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-67	J-53	J-54	8.0	PVC	130.0	-41	0.26	0.000	358	0.02
P-68	J-54	J-55	12.0	PVC	130.0	-311	0.88	0.000	39	0.01
FP-16	J-55	FH-16	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-69	J-55	J-48	12.0	PVC	130.0	-311	0.88	0.000	183	0.05
P-73	J-54	J-58	12.0	PVC	130.0	270	0.77	0.000	226	0.05
P-92	J-60	J-71	8.0	PVC	130.0	137	0.88	0.000	222	0.10
P-102	J-71	J-79	8.0	PVC	130.0	93	0.60	0.000	253	0.06
FP-24	J-79	FH-24	6.0	Ductile Iron	130.0	0	0.00	0.000	23	0.00
P-103	J-79	J-78	8.0	PVC	130.0	93	0.60	0.000	370	0.08
P-101	J-78	J-73	12.0	PVC	130.0	-430	1.22	0.001	222	0.12

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-94	J-73	J-72	8.0	PVC	130.0	-44	0.28	0.000	360	0.02
FP-20	J-72	FH-20	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-93	J-72	J-71	8.0	PVC	130.0	-44	0.28	0.000	54	0.00
P-95	J-73	J-74	12.0	PVC	130.0	-386	1.10	0.000	52	0.02
FP-21	J-74	FH-21	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-96	J-74	J-58	12.0	PVC	130.0	-386	1.10	0.000	170	0.07
P-97	J-57	J-75	12.0	PVC	130.0	409	1.16	0.000	376	0.18
FP-22	J-75	FH-22	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-98	J-75	J-76	12.0	PVC	130.0	409	1.16	0.000	309	0.15
FP-23	J-76	FH-23	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-99	J-76	J-77	12.0	PVC	130.0	409	1.16	0.000	55	0.03
P-100	J-77	J-78	12.0	PVC	130.0	-524	1.49	0.001	154	0.12
P-104	J-77	J-80	8.0	PVC	130.0	933	5.96	0.016	232	3.73
FP-25	J-80	FH-25	6.0	Ductile Iron	130.0	765	8.68	0.045	35	1.58
P-105	J-80	J-81	8.0	PVC	130.0	168	1.07	0.001	82	0.06
P-26	J-21	J-22	8.0	PVC	130.0	-57	0.36	0.000	307	0.03
P-27	J-22	J-17	8.0	PVC	130.0	-57	0.36	0.000	326	0.03
FP-4	J-22	FH-4	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-81	J-63	J-64	12.0	PVC	130.0	-335	0.95	0.000	1,028	0.34
P-3	J-3	J-4	24.0	PVC	130.0	839	0.60	0.000	244	0.02
P-5	J-4	J-5	24.0	PVC	130.0	839	0.60	0.000	520	0.03
P-4	J-4	SERV-HDR-1	12.0	PVC	130.0	0	0.00	0.000	20	0.00

SEE SHEET 2





POINT OF CONNECTION IS LOCATED AT THE INTERSECTION OF BLUE OAK AND WESTBROOK BOULEVARD. NODE J-1, PIPE POC-1 AND RESERVIOR R-1 MAKE UP THE CONNECTION AT THE INTERSECTION.

LM LAUGENOUR AND MEIKLE
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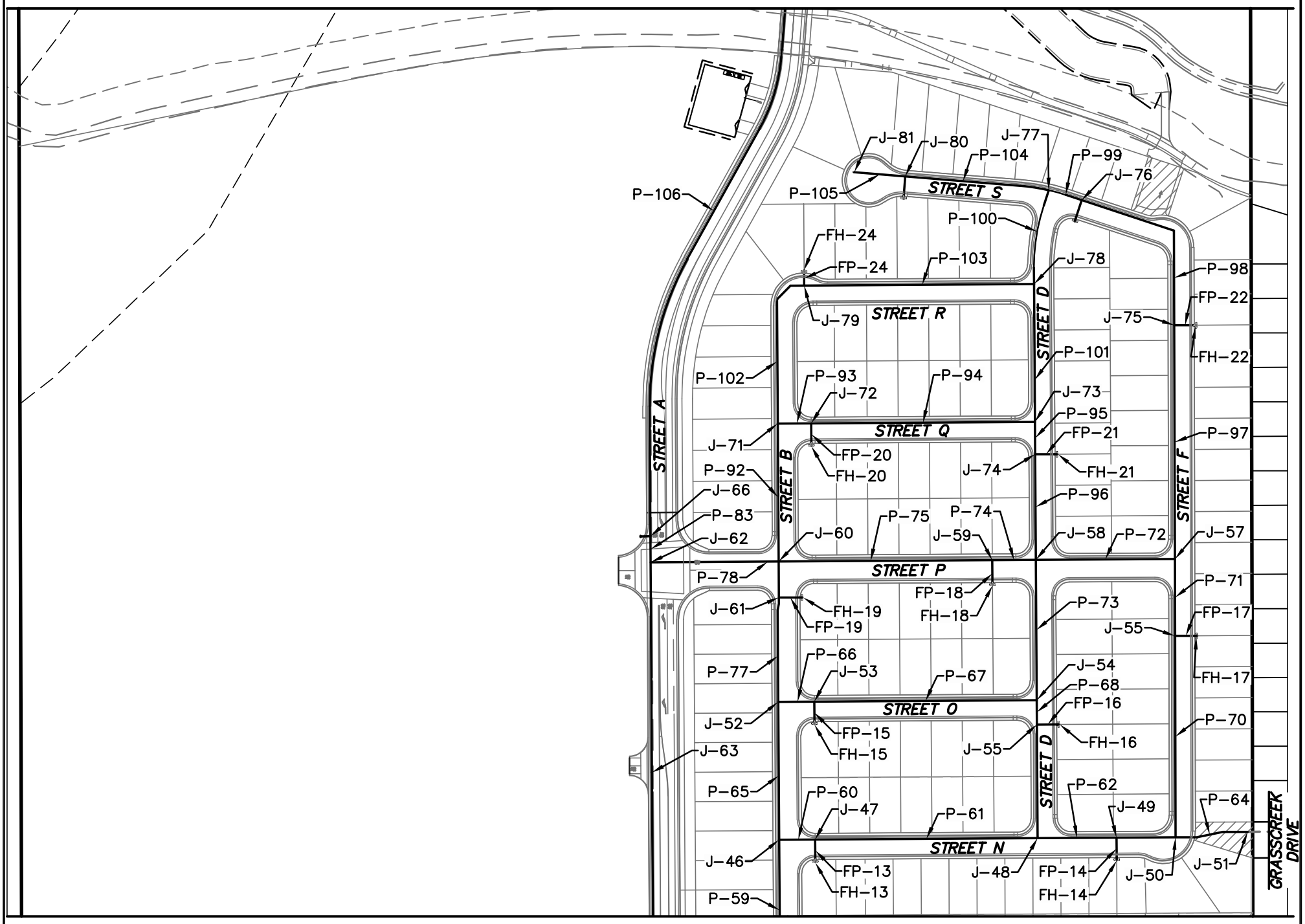
0 100 200 400
SCALE: 1"=200'

NEAR-TERM FIRE SYSTEM EXHIBIT
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA
SHEET 1 OF 3 APRIL 2, 2025

X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH_Fire Site Plan- Near-Term.dwg

SEE SHEET 3



SEE SHEET 1

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LM
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NEAR–TERM FIRE SYSTEM EXHIBIT

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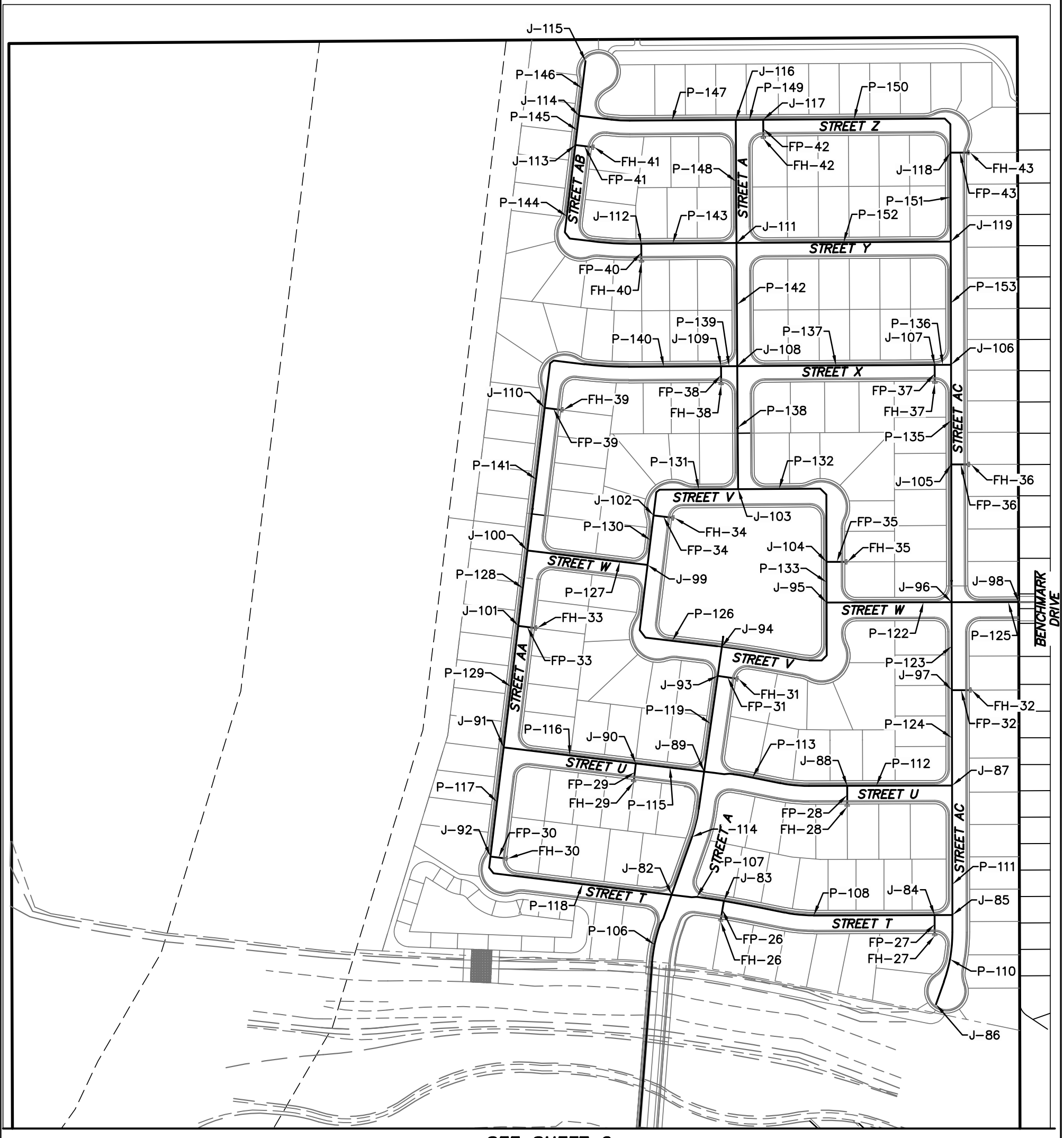
PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA

SHEET 2 OF 3 APRIL 2, 2025

X:\Land Projects\4042–60–4\dwg\4042–60–4_EXH_Fire Site Plan–Near–Term.dwg



SEE SHEET 2

0 100 200 400

SCALE: 1"=200'

NEAR–TERM FIRE SYSTEM EXHIBIT

FOR

PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA

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APPENDIX D

POTABLE WATER PLAN – BUILDOUT ONSITE WITHOUT FIRE FLOW MODEL RESULTS

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
31	J-1	0	81.00	196.03	50
32	J-2	0	87.00	196.03	47
33	J-3	0	89.00	196.03	46
39	J-51	0	76.00	196.12	52
42	J-98	0	83.00	198.50	50
44	J-5	0	87.00	196.03	47
46	J-6	0	88.00	196.04	47
48	J-7	0	88.00	196.04	47
50	J-64	5	85.00	196.05	48
52	J-65	0	80.00	196.05	50
54	J-8	0	82.00	196.02	49
56	J-9	107	82.00	196.02	49
58	J-15	0	82.00	196.02	49
60	J-34	0	82.00	196.03	49
62	J-35	143	83.50	196.03	49
64	J-63	0	78.00	196.09	51
66	J-62	0	77.00	196.16	52
68	J-66	150	77.00	196.19	52
70	J-82	0	79.50	197.83	51
72	J-89	0	76.50	197.89	53
74	J-93	0	76.70	197.91	52
76	J-94	14	76.30	197.92	53
78	J-95	0	77.70	197.95	52
80	J-96	0	81.50	198.19	50
83	SERV-HDR-2	58	84.00	196.02	48
85	J-10	0	82.00	196.19	49
87	J-16	0	81.50	196.02	50
89	J-17	0	82.00	196.02	49
91	J-18	0	82.00	196.01	49
93	FH-1	0	87.20	196.01	47
95	J-19	162	83.00	196.00	49
97	FH-2	0	89.00	196.00	46
99	J-20	0	84.00	196.01	48
101	FH-3	0	89.00	196.01	46
103	J-21	0	83.00	196.02	49
106	J-23	0	82.00	196.02	49
108	J-24	0	82.00	196.02	49
110	FH-5	0	87.10	196.02	47
113	J-25	0	81.00	196.02	50
115	FH-6	0	86.40	196.02	47
117	J-26	0	80.90	196.03	50
119	J-27	0	82.00	196.03	49
121	FH-7	0	86.60	196.03	47
123	J-28	0	83.00	196.03	49
125	J-29	0	84.00	196.03	48
127	J-30	0	83.50	196.02	49
129	FH-8	0	88.60	196.02	46
132	J-42	0	82.50	196.03	49
134	J-44	0	81.50	196.03	50

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
136	FH-11	0	86.00	196.03	48
138	J-45	0	79.70	196.04	50
140	FH-12	0	84.50	196.04	48
142	J-40	0	79.50	196.04	50
144	J-41	22	80.50	196.03	50
147	J-43	0	80.60	196.03	50
149	FH-10	0	85.60	196.03	48
152	J-36	0	80.00	196.03	50
155	J-37	0	79.80	196.04	50
157	FH-8	0	85.30	196.04	48
159	J-38	0	78.90	196.05	51
161	J-39	0	79.20	196.05	51
163	FH-9	0	84.20	196.05	48
166	J-46	0	78.30	196.09	51
168	J-47	0	78.50	196.09	51
170	FH-13	0	83.50	196.09	49
172	J-48	0	77.30	196.10	51
174	J-49	0	77.00	196.10	52
176	FH-14	0	81.60	196.10	50
178	J-50	0	76.90	196.11	52
181	J-56	0	75.70	196.10	52
183	FH-17	0	80.70	196.10	50
185	J-57	0	76.00	196.10	52
187	J-58	0	76.30	196.10	52
189	J-59	0	76.00	196.10	52
191	FH-18	0	81.00	196.10	50
193	J-60	0	77.40	196.12	51
196	J-61	0	77.40	196.12	51
198	FH-19	0	82.40	196.12	49
200	J-52	0	77.20	196.10	51
203	J-53	0	77.50	196.10	51
205	FH-15	0	82.50	196.10	49
207	J-54	0	76.00	196.10	52
209	J-55	0	76.00	196.10	52
211	FH-16	0	80.80	196.10	50
215	J-71	0	77.20	196.11	51
217	J-79	0	77.50	196.10	51
219	FH-24	0	82.30	196.10	49
221	J-78	0	76.30	196.09	52
223	J-73	0	76.00	196.10	52
225	J-72	0	77.50	196.10	51
227	FH-20	0	82.40	196.10	49
230	J-74	0	76.00	196.10	52
232	FH-21	0	80.90	196.10	50
235	J-75	0	75.30	196.09	52
237	FH-22	0	80.35	196.09	50
239	J-76	0	76.00	196.09	52
241	FH-23	0	81.00	196.09	50
243	J-77	0	75.80	196.09	52

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
246	J-80	0	76.50	195.93	52
248	FH-25	0	81.25	195.93	50
250	J-81	168	77.80	195.88	51
252	J-22	0	83.00	196.02	49
255	FH-4	0	88.20	196.02	47
257	J-11	0	83.00	196.19	49
259	J-12	0	83.00	196.19	49
262	J-13	0	83.00	196.19	49
264	J-14	0	82.00	196.19	49
267	J-32	0	83.00	196.19	49
269	J-31	0	82.00	196.19	49
272	J-33	0	82.00	196.19	49
277	J-68	0	82.00	196.19	49
280	J-67	0	83.00	196.19	49
282	J-70	0	82.50	196.19	49
284	J-69	0	82.00	196.19	49
290	FH-31	0	81.70	197.91	50
292	J-83	0	79.40	197.83	51
294	FH-26	0	84.50	197.83	49
296	J-84	0	81.00	197.89	51
298	FH-27	0	86.00	197.89	48
300	J-85	0	81.00	197.89	51
302	J-86	152	82.00	197.79	50
304	J-87	0	80.60	197.99	51
306	J-88	0	78.75	197.95	52
308	FH-28	0	83.80	197.95	49
311	J-90	0	76.70	197.89	52
313	FH-29	0	81.80	197.89	50
315	J-91	0	76.50	197.88	53
317	J-92	0	76.50	197.86	53
319	FH-30	0	82.00	197.86	50
322	J-97	0	81.50	198.09	50
324	FH-32	0	86.44	198.09	48
327	J-104	0	77.80	197.95	52
329	FH-35	0	82.80	197.95	50
331	J-103	0	76.40	197.95	53
333	J-102	0	76.60	197.93	52
335	FH-34	0	81.80	197.93	50
337	J-99	0	77.00	197.93	52
340	J-100	0	76.20	197.92	53
342	J-101	0	76.70	197.90	52
344	FH-33	0	81.70	197.90	50
347	J-108	0	76.30	197.96	53
349	J-109	0	76.30	197.96	53
351	FH-38	0	81.30	197.96	50
353	J-110	0	76.90	197.93	52
355	FH-39	0	81.90	197.93	50
358	J-105	0	81.00	198.11	51
360	FH-36	0	86.10	198.11	48

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
362	J-106	0	80.30	198.06	51
364	J-107	0	80.30	198.05	51
366	FH-37	0	85.30	198.05	49
369	J-119	0	80.50	198.02	51
371	J-111	0	76.60	197.97	53
374	J-112	0	77.40	197.96	52
376	FH-40	0	82.00	197.96	50
378	J-113	0	78.50	197.93	52
380	FH-41	0	83.50	197.93	50
382	J-114	0	78.90	197.92	51
384	J-115	133	79.50	197.88	51
386	J-116	0	77.90	197.98	52
389	J-117	0	78.00	197.98	52
391	FH-42	0	83.00	197.98	50
393	J-118	0	80.00	198.01	51
395	FH-43	0	85.00	198.01	49
398	J-4	0	87.00	196.03	47
401	SERV-HDR-1	0	87.00	196.03	47

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-1	J-1	J-2	24.0	PVC	130.0	0	0.00	0.000	964	0.00
P-2	J-2	J-3	24.0	PVC	130.0	0	0.00	0.000	788	0.00
POC-1	R-1	J-1	60.0	PVC	130.0	0	0.00	0.000	1	0.00
POC-2	R-2	J-51	60.0	PVC	130.0	158	0.02	0.000	1	0.00
POC-3	R-3	J-98	60.0	PVC	130.0	956	0.11	0.000	1	0.00
P-6	J-5	J-6	24.0	PVC	130.0	-94	0.07	0.000	1,034	0.00
P-7	J-6	J-7	24.0	PVC	130.0	0	0.00	0.000	108	0.00
P-11	J-6	J-64	16.0	PVC	130.0	-94	0.15	0.000	1,818	0.01
P-82	J-64	J-65	16.0	PVC	130.0	0	0.00	0.000	880	0.00
P-8	J-5	J-8	12.0	PVC	130.0	94	0.27	0.000	371	0.01
P-10	J-8	J-9	12.0	PVC	130.0	36	0.10	0.000	358	0.00
P-19	J-9	J-15	12.0	PVC	130.0	-71	0.20	0.000	55	0.00
P-42	J-15	J-34	12.0	PVC	130.0	-74	0.21	0.000	400	0.01
P-43	J-34	J-35	12.0	PVC	130.0	-23	0.06	0.000	26	0.00
P-80	J-35	J-63	12.0	PVC	130.0	-166	0.47	0.000	609	0.06
P-79	J-63	J-62	12.0	PVC	130.0	-265	0.75	0.000	338	0.07
P-83	J-62	J-66	12.0	PVC	130.0	-507	1.44	0.001	42	0.03
P-106	J-66	J-82	12.0	PVC	130.0	-657	1.86	0.001	1,405	1.64
P-114	J-82	J-89	12.0	PVC	130.0	-283	0.80	0.000	252	0.06
P-119	J-89	J-93	12.0	PVC	130.0	-210	0.60	0.000	190	0.03
P-120	J-93	J-94	12.0	PVC	130.0	-210	0.60	0.000	58	0.01
P-121	J-94	J-95	12.0	PVC	130.0	-172	0.49	0.000	316	0.03
P-122	J-95	J-96	8.0	PVC	130.0	-205	1.31	0.001	246	0.24
P-125	J-96	J-98	12.0	PVC	130.0	-956	2.71	0.002	132	0.31
P-9	J-8	SERV-HDR-2	12.0	PVC	130.0	58	0.16	0.000	20	0.00
P-12	J-9	J-10	12.0	PVC	130.0	0	0.00	0.000	98	0.00
P-20	J-15	J-16	12.0	PVC	130.0	3	0.01	0.000	208	0.00
P-21	J-16	J-17	12.0	PVC	130.0	82	0.23	0.000	232	0.01
P-22	J-17	J-18	12.0	PVC	130.0	80	0.23	0.000	126	0.00
FP-1	J-18	FH-1	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-23	J-18	J-19	12.0	PVC	130.0	80	0.23	0.000	423	0.01
FP-2	J-19	FH-2	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-24	J-19	J-20	12.0	PVC	130.0	-82	0.23	0.000	485	0.01
FP-3	J-20	FH-3	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-25	J-20	J-21	12.0	PVC	130.0	-82	0.23	0.000	44	0.00
P-28	J-21	J-23	12.0	PVC	130.0	-80	0.23	0.000	232	0.01
P-29	J-23	J-24	8.0	PVC	130.0	-4	0.03	0.000	308	0.00
FP-5	J-24	FH-5	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-30	J-24	J-16	8.0	PVC	130.0	-4	0.03	0.000	326	0.00
P-31	J-16	J-25	12.0	PVC	130.0	-84	0.24	0.000	32	0.00
FP-6	J-25	FH-6	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-32	J-25	J-26	12.0	PVC	130.0	-84	0.24	0.000	190	0.00
P-33	J-26	J-27	8.0	PVC	130.0	-3	0.02	0.000	235	0.00
FP-7	J-27	FH-7	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-34	J-27	J-28	8.0	PVC	130.0	-3	0.02	0.000	103	0.00
P-35	J-28	J-29	8.0	PVC	130.0	13	0.08	0.000	299	0.00
P-36	J-29	J-30	12.0	PVC	130.0	75	0.21	0.000	42	0.00

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
FP-8	J-30	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-37	J-30	J-23	12.0	PVC	130.0	75	0.21	0.000	180	0.00
P-53	J-29	J-42	12.0	PVC	130.0	-63	0.18	0.000	246	0.00
P-56	J-42	J-44	12.0	PVC	130.0	-65	0.18	0.000	123	0.00
FP-11	J-44	FH-11	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-57	J-44	J-45	12.0	PVC	130.0	-65	0.18	0.000	363	0.01
FP-12	J-45	FH-12	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-58	J-45	J-40	12.0	PVC	130.0	-65	0.18	0.000	54	0.00
P-51	J-40	J-41	8.0	PVC	130.0	35	0.22	0.000	246	0.01
P-52	J-41	J-28	8.0	PVC	130.0	15	0.10	0.000	246	0.00
P-55	J-41	J-43	8.0	PVC	130.0	-3	0.02	0.000	54	0.00
FP-10	J-43	FH-10	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-54	J-43	J-42	8.0	PVC	130.0	-3	0.02	0.000	246	0.00
P-45	J-34	J-36	12.0	PVC	130.0	-51	0.15	0.000	204	0.00
P-46	J-36	J-26	12.0	PVC	130.0	81	0.23	0.000	189	0.00
P-47	J-36	J-37	12.0	PVC	130.0	-133	0.38	0.000	65	0.00
FP-8	J-37	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-48	J-37	J-38	12.0	PVC	130.0	-133	0.38	0.000	238	0.01
P-49	J-38	J-39	12.0	PVC	130.0	100	0.28	0.000	58	0.00
FP-9	J-39	FH-9	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-50	J-39	J-40	12.0	PVC	130.0	100	0.28	0.000	280	0.01
P-59	J-38	J-46	12.0	PVC	130.0	-232	0.66	0.000	222	0.04
P-60	J-46	J-47	12.0	PVC	130.0	-92	0.26	0.000	58	0.00
FP-13	J-47	FH-13	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-61	J-47	J-48	12.0	PVC	130.0	-92	0.26	0.000	358	0.01
P-62	J-48	J-49	12.0	PVC	130.0	-93	0.26	0.000	127	0.00
FP-14	J-49	FH-14	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-63	J-49	J-50	12.0	PVC	130.0	-93	0.26	0.000	95	0.00
P-64	J-50	J-51	12.0	PVC	130.0	-158	0.45	0.000	155	0.01
P-70	J-50	J-56	12.0	PVC	130.0	65	0.18	0.000	324	0.01
FP-17	J-56	FH-17	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-71	J-56	J-57	12.0	PVC	130.0	65	0.18	0.000	124	0.00
P-72	J-57	J-58	8.0	PVC	130.0	-2	0.02	0.000	224	0.00
P-74	J-58	J-59	8.0	PVC	130.0	-41	0.26	0.000	70	0.00
FP-18	J-59	FH-18	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-75	J-59	J-60	8.0	PVC	130.0	-41	0.26	0.000	344	0.02
P-78	J-60	J-62	12.0	PVC	130.0	-243	0.69	0.000	206	0.04
P-76	J-60	J-61	12.0	PVC	130.0	153	0.43	0.000	58	0.00
FP-19	J-61	FH-19	6.0	Ductile Iron	130.0	0	0.00	0.000	37	0.00
P-77	J-61	J-52	12.0	PVC	130.0	153	0.43	0.000	168	0.01
P-65	J-52	J-46	12.0	PVC	130.0	141	0.40	0.000	222	0.01
P-66	J-52	J-53	8.0	PVC	130.0	12	0.08	0.000	58	0.00
FP-15	J-53	FH-15	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-67	J-53	J-54	8.0	PVC	130.0	12	0.08	0.000	358	0.00

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-68	J-54	J-55	12.0	PVC	130.0	-1	0.00	0.000	39	0.00
FP-16	J-55	FH-16	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-69	J-55	J-48	12.0	PVC	130.0	-1	0.00	0.000	183	0.00
P-73	J-54	J-58	12.0	PVC	130.0	14	0.04	0.000	226	0.00
P-92	J-60	J-71	8.0	PVC	130.0	49	0.31	0.000	222	0.02
P-102	J-71	J-79	8.0	PVC	130.0	25	0.16	0.000	253	0.00
FP-24	J-79	FH-24	6.0	Ductile Iron	130.0	0	0.00	0.000	23	0.00
P-103	J-79	J-78	8.0	PVC	130.0	25	0.16	0.000	370	0.01
P-101	J-78	J-73	12.0	PVC	130.0	-76	0.22	0.000	222	0.00
P-94	J-73	J-72	8.0	PVC	130.0	-24	0.15	0.000	360	0.01
FP-20	J-72	FH-20	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-93	J-72	J-71	8.0	PVC	130.0	-24	0.15	0.000	54	0.00
P-95	J-73	J-74	12.0	PVC	130.0	-52	0.15	0.000	52	0.00
FP-21	J-74	FH-21	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-96	J-74	J-58	12.0	PVC	130.0	-52	0.15	0.000	170	0.00
P-97	J-57	J-75	12.0	PVC	130.0	67	0.19	0.000	376	0.01
FP-22	J-75	FH-22	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-98	J-75	J-76	12.0	PVC	130.0	67	0.19	0.000	309	0.01
FP-23	J-76	FH-23	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-99	J-76	J-77	12.0	PVC	130.0	67	0.19	0.000	55	0.00
P-100	J-77	J-78	12.0	PVC	130.0	-101	0.29	0.000	154	0.01
P-104	J-77	J-80	8.0	PVC	130.0	168	1.07	0.001	232	0.16
FP-25	J-80	FH-25	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-105	J-80	J-81	8.0	PVC	130.0	168	1.07	0.001	82	0.06
P-26	J-21	J-22	8.0	PVC	130.0	-2	0.01	0.000	307	0.00
P-27	J-22	J-17	8.0	PVC	130.0	-2	0.01	0.000	326	0.00
FP-4	J-22	FH-4	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-13	J-10	J-11	12.0	PVC	130.0	1	0.00	0.000	424	0.00
P-14	J-11	J-12	12.0	PVC	130.0	1	0.00	0.000	963	0.00
P-15	J-12	J-11	12.0	PVC	130.0	0	0.00	0.000	711	0.00
P-16	J-12	J-13	12.0	PVC	130.0	1	0.00	0.000	380	0.00
P-17	J-13	J-14	12.0	PVC	130.0	0	0.00	0.000	778	0.00
P-18	J-14	J-10	12.0	PVC	130.0	1	0.00	0.000	15	0.00
P-39	J-13	J-32	12.0	PVC	130.0	0	0.00	0.000	424	0.00
P-40	J-32	J-31	12.0	PVC	130.0	1	0.00	0.000	777	0.00
P-38	J-31	J-14	12.0	PVC	130.0	0	0.00	0.000	424	0.00
P-41	J-31	J-33	12.0	PVC	130.0	1	0.00	0.000	42	0.00
P-44	J-35	J-33	12.0	PVC	130.0	0	0.00	0.000	99	0.00
P-81	J-63	J-64	12.0	PVC	130.0	99	0.28	0.000	1,028	0.04
P-86	J-33	J-68	12.0	PVC	130.0	1	0.00	0.000	702	0.00
P-85	J-68	J-67	12.0	PVC	130.0	1	0.00	0.000	310	0.00
P-90	J-67	J-70	12.0	PVC	130.0	0	0.00	0.000	536	0.00
P-87	J-68	J-69	12.0	PVC	130.0	0	0.00	0.000	536	0.00
P-88	J-69	J-32	12.0	PVC	130.0	1	0.00	0.000	742	0.00
P-89	J-70	J-69	12.0	PVC	130.0	1	0.00	0.000	310	0.00
P-84	J-66	J-67	12.0	PVC	130.0	0	0.00	0.000	252	0.00
P-91	J-67	J-70	12.0	PVC	130.0	1	0.00	0.000	2,182	0.00

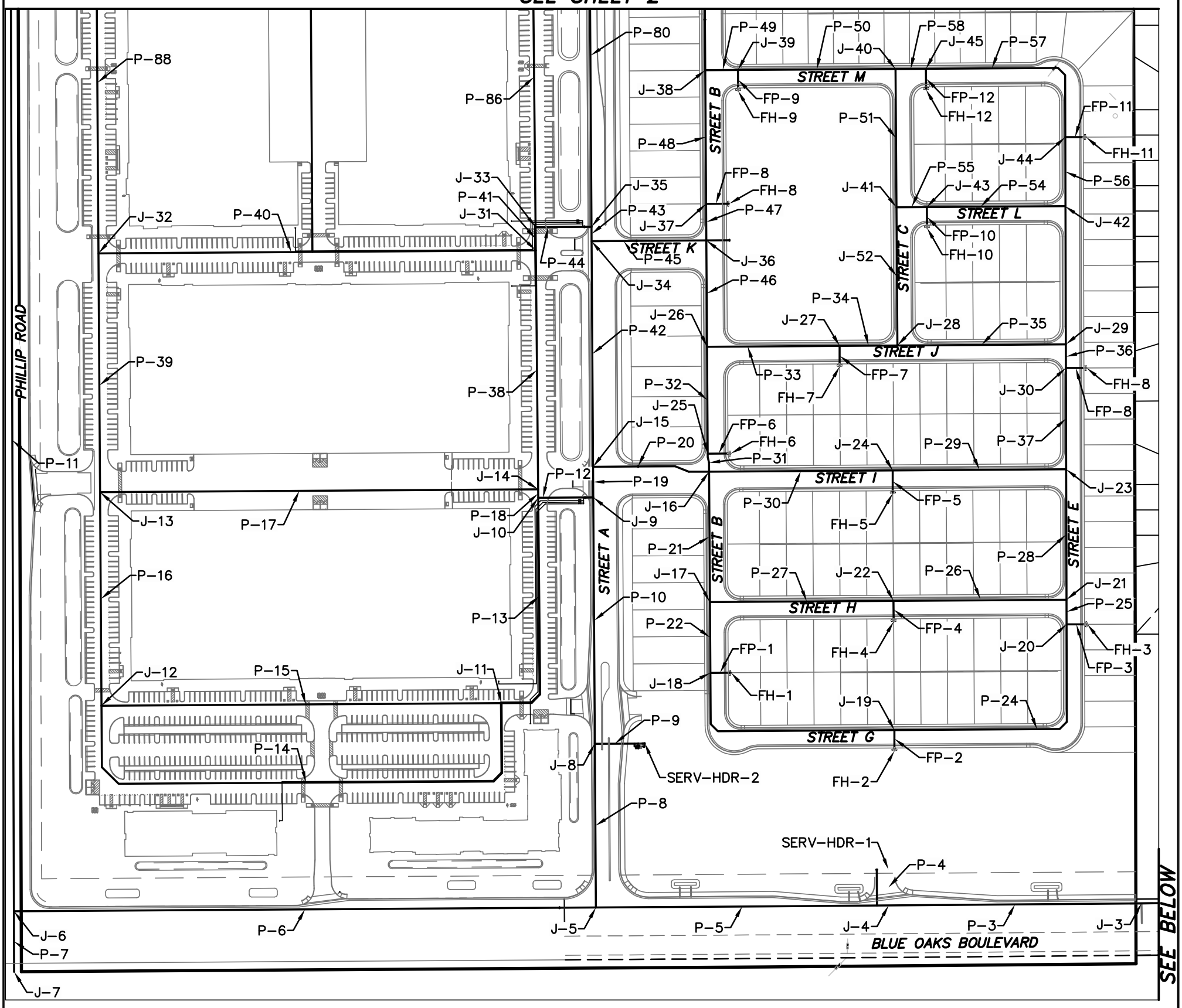
FlexTable: Pipe Table

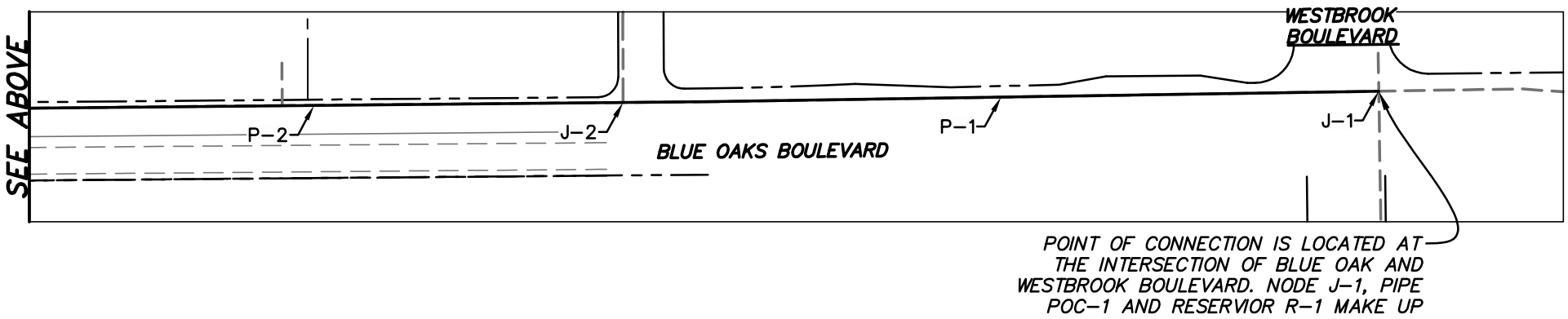
Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
FP-31	J-93	FH-31	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-107	J-82	J-83	12.0	PVC	130.0	-203	0.58	0.000	59	0.01
FP-26	J-83	FH-26	6.0	Ductile Iron	130.0	0	0.00	0.000	36	0.00
P-108	J-83	J-84	12.0	PVC	130.0	-203	0.58	0.000	417	0.06
FP-27	J-84	FH-27	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-109	J-84	J-85	12.0	PVC	130.0	-203	0.58	0.000	35	0.00
P-110	J-85	J-86	8.0	PVC	130.0	152	0.97	0.001	180	0.10
P-111	J-85	J-87	12.0	PVC	130.0	-355	1.01	0.000	255	0.10
P-112	J-87	J-88	8.0	PVC	130.0	89	0.57	0.000	206	0.04
FP-28	J-88	FH-28	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-113	J-88	J-89	8.0	PVC	130.0	89	0.57	0.000	284	0.06
P-115	J-89	J-90	8.0	PVC	130.0	16	0.10	0.000	135	0.00
FP-29	J-90	FH-29	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-116	J-90	J-91	8.0	PVC	130.0	16	0.10	0.000	262	0.00
P-117	J-91	J-92	12.0	PVC	130.0	171	0.49	0.000	216	0.02
FP-30	J-92	FH-30	6.0	Ductile Iron	130.0	0	0.00	0.000	32	0.00
P-118	J-92	J-82	12.0	PVC	130.0	171	0.49	0.000	389	0.04
P-124	J-87	J-97	12.0	PVC	130.0	-444	1.26	0.001	188	0.11
FP-32	J-97	FH-32	6.0	Ductile Iron	130.0	0	0.00	0.000	37	0.00
P-123	J-97	J-96	12.0	PVC	130.0	-444	1.26	0.001	173	0.10
P-133	J-95	J-104	12.0	PVC	130.0	33	0.09	0.000	80	0.00
FP-35	J-104	FH-35	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-132	J-104	J-103	12.0	PVC	130.0	33	0.09	0.000	311	0.00
P-131	J-103	J-102	12.0	PVC	130.0	159	0.45	0.000	209	0.02
FP-34	J-102	FH-34	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-130	J-102	J-99	12.0	PVC	130.0	159	0.45	0.000	98	0.01
P-126	J-99	J-94	12.0	PVC	130.0	52	0.15	0.000	299	0.00
P-127	J-99	J-100	12.0	PVC	130.0	108	0.31	0.000	238	0.01
P-128	J-100	J-101	12.0	PVC	130.0	156	0.44	0.000	150	0.01
FP-33	J-101	FH-33	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-129	J-101	J-91	12.0	PVC	130.0	156	0.44	0.000	241	0.02
P-138	J-103	J-108	12.0	PVC	130.0	-127	0.36	0.000	242	0.01
P-139	J-108	J-109	8.0	PVC	130.0	48	0.31	0.000	32	0.00
FP-38	J-109	FH-38	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-140	J-109	J-110	8.0	PVC	130.0	48	0.31	0.000	427	0.03
FP-39	J-110	FH-39	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-141	J-110	J-100	8.0	PVC	130.0	48	0.31	0.000	282	0.02
P-134	J-96	J-105	12.0	PVC	130.0	308	0.87	0.000	271	0.08
FP-36	J-105	FH-36	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-135	J-105	J-106	12.0	PVC	130.0	308	0.87	0.000	196	0.06
P-136	J-106	J-107	8.0	PVC	130.0	93	0.59	0.000	32	0.01
FP-37	J-107	FH-37	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-137	J-107	J-108	8.0	PVC	130.0	93	0.59	0.000	388	0.09
P-153	J-106	J-119	12.0	PVC	130.0	215	0.61	0.000	242	0.04
P-152	J-119	J-111	8.0	PVC	130.0	68	0.43	0.000	421	0.05
P-142	J-111	J-108	12.0	PVC	130.0	82	0.23	0.000	242	0.01
P-143	J-111	J-112	8.0	PVC	130.0	54	0.34	0.000	187	0.02
FP-40	J-112	FH-40	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-144	J-112	J-113	8.0	PVC	130.0	54	0.34	0.000	330	0.03
FP-41	J-113	FH-41	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-145	J-113	J-114	8.0	PVC	130.0	54	0.34	0.000	58	0.00
P-146	J-114	J-115	8.0	PVC	130.0	133	0.85	0.000	108	0.05
P-147	J-114	J-116	8.0	PVC	130.0	-79	0.50	0.000	309	0.05
P-148	J-116	J-111	12.0	PVC	130.0	68	0.19	0.000	242	0.00
P-149	J-116	J-117	12.0	PVC	130.0	-147	0.42	0.000	54	0.00
FP-42	J-117	FH-42	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-150	J-117	J-118	12.0	PVC	130.0	-147	0.42	0.000	429	0.03
FP-43	J-118	FH-43	6.0	Ductile Iron	130.0	0	0.00	0.000	36	0.00
P-151	J-118	J-119	12.0	PVC	130.0	-147	0.42	0.000	175	0.01
P-3	J-3	J-4	24.0	PVC	130.0	0	0.00	0.000	244	0.00
P-5	J-4	J-5	24.0	PVC	130.0	0	0.00	0.000	520	0.00
P-4	J-4	SERV-HDR-1	12.0	PVC	130.0	0	0.00	0.000	20	0.00

SEE SHEET 2





POINT OF CONNECTION IS LOCATED AT THE INTERSECTION OF BLUE OAK AND WESTBROOK BOULEVARD. NODE J-1, PIPE POC-1 AND RESERVIOR R-1 MAKE UP THE CONNECTION AT THE INTERSECTION.

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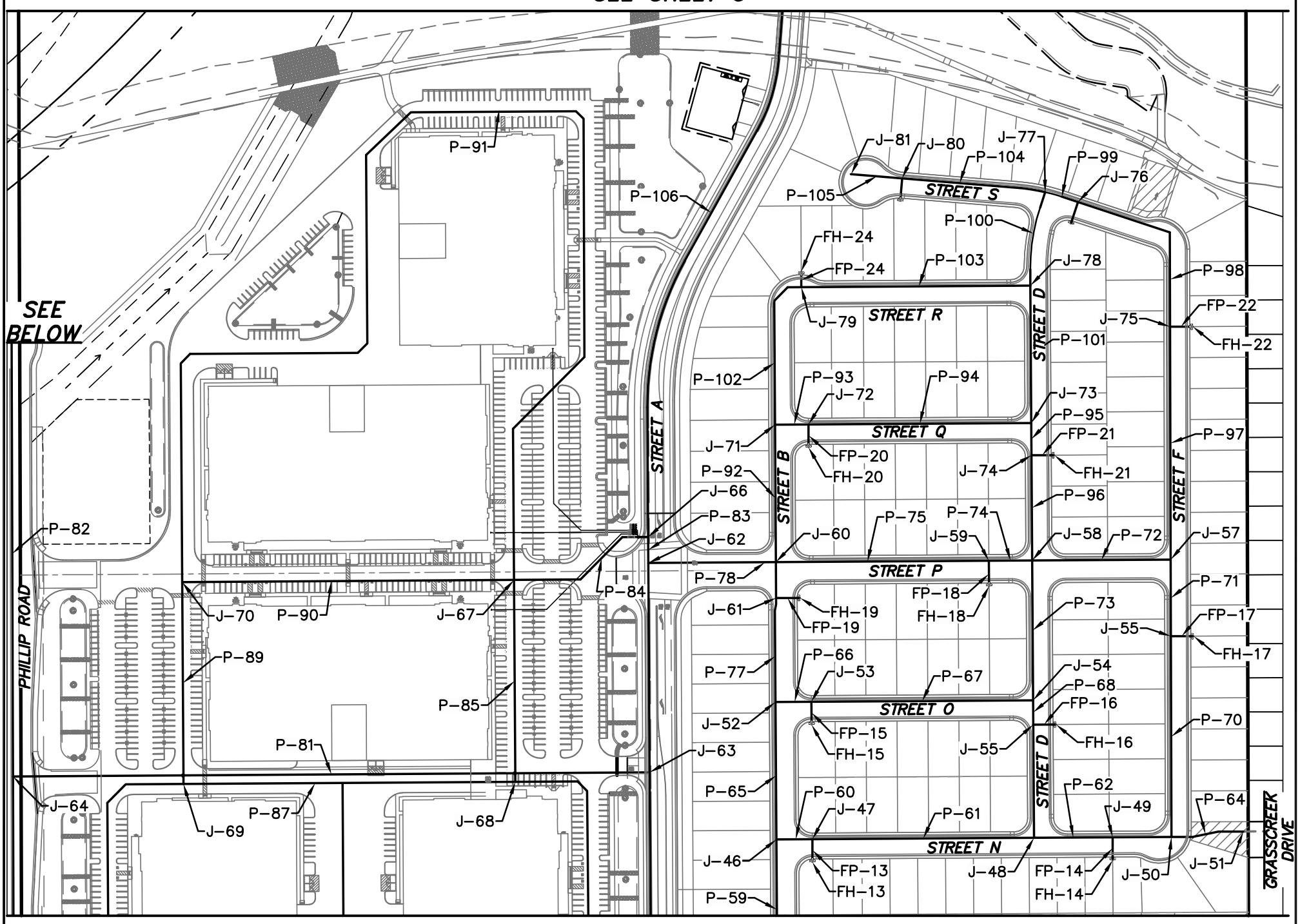
0 100 200 400
SCALE: 1"=200'

FIRE SYSTEM EXHIBIT
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA
SHEET 1 OF 3 APRIL 2, 2025

X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH_Fire Site Plan- Buildout.dwg

SEE SHEET 3



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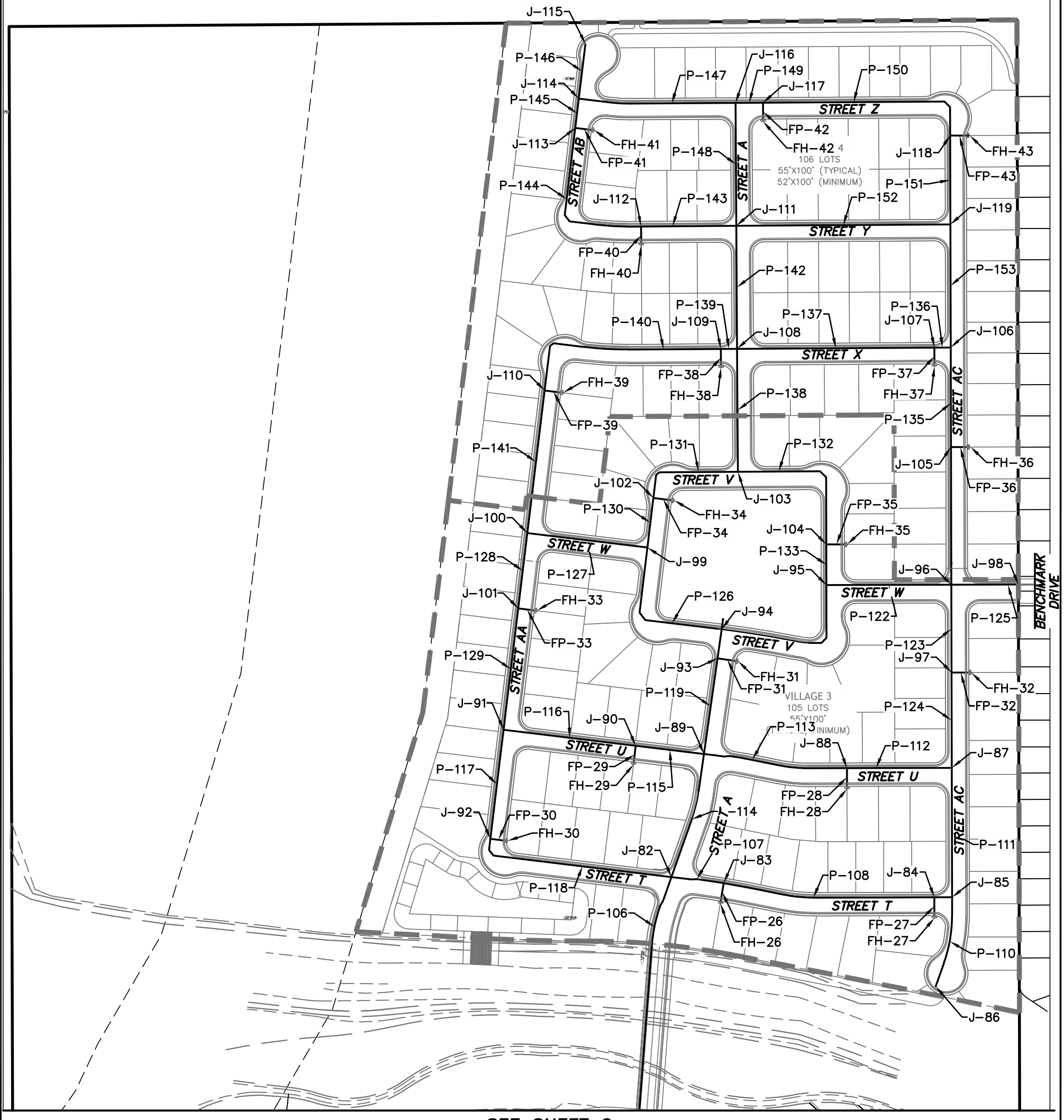
X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH_Fire Site Plan-Buildout.dwg



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FIRE SYSTEM EXHIBIT
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SHEET 3 OF 3 APRIL 2, 2025

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APPENDIX E

POTABLE WATER PLAN – BUILDOUT ONSITE WITH FIRE FLOW MODEL RESULTS

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
31	J-1	0	81.00	195.72	50
32	J-2	0	87.00	195.43	47
33	J-3	0	89.00	195.19	46
39	J-51	0	76.00	196.12	52
42	J-98	0	83.00	198.50	50
44	J-5	0	87.00	194.95	47
46	J-6	0	88.00	194.91	46
48	J-7	0	88.00	194.91	46
50	J-64	5	85.00	194.36	47
52	J-65	0	80.00	194.36	49
54	J-8	0	82.00	193.44	48
56	J-9	107	82.00	192.09	48
58	J-15	0	82.00	192.11	48
60	J-34	0	82.00	192.11	48
62	J-35	143	83.50	192.09	47
64	J-63	0	78.00	193.12	50
66	J-62	0	77.00	193.14	50
68	J-66	150	77.00	193.11	50
70	J-82	0	79.50	197.14	51
72	J-89	0	76.50	197.28	52
74	J-93	0	76.70	197.34	52
76	J-94	14	76.30	197.36	52
78	J-95	0	77.70	197.43	52
80	J-96	0	81.50	197.90	50
83	SERV-HDR-2	58	84.00	193.44	47
85	J-10	0	82.00	191.57	47
87	J-16	0	81.50	192.20	48
89	J-17	0	82.00	192.20	48
91	J-18	0	82.00	192.20	48
93	FH-1	0	87.20	192.20	45
95	J-19	162	83.00	192.20	47
97	FH-2	0	89.00	192.20	45
99	J-20	0	84.00	192.24	47
101	FH-3	0	89.00	192.24	45
103	J-21	0	83.00	192.24	47
106	J-23	0	82.00	192.28	48
108	J-24	0	82.00	192.24	48
110	FH-5	0	87.10	192.24	45
113	J-25	0	81.00	192.21	48
115	FH-6	0	86.40	192.21	46
117	J-26	0	80.90	192.25	48
119	J-27	0	82.00	192.30	48
121	FH-7	0	86.60	192.30	46
123	J-28	0	83.00	192.33	47
125	J-29	0	84.00	192.33	47
127	J-30	0	83.50	192.32	47
129	FH-8	0	88.60	192.32	45
132	J-42	0	82.50	192.39	48
134	J-44	0	81.50	192.41	48

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
136	FH-11	0	86.00	192.41	46
138	J-45	0	79.70	192.49	49
140	FH-12	0	84.50	192.49	47
142	J-40	0	79.50	192.50	49
144	J-41	22	80.50	192.39	48
147	J-43	0	80.60	192.39	48
149	FH-10	0	85.60	192.39	46
152	J-36	0	80.00	192.26	49
155	J-37	0	79.80	192.35	49
157	FH-8	0	85.30	192.35	46
159	J-38	0	78.90	192.65	49
161	J-39	0	79.20	192.63	49
163	FH-9	0	84.20	192.63	47
166	J-46	0	78.30	193.31	50
168	J-47	0	78.50	193.42	50
170	FH-13	0	83.50	193.42	48
172	J-48	0	77.30	194.10	51
174	J-49	0	77.00	194.55	51
176	FH-14	0	81.60	194.55	49
178	J-50	0	76.90	194.89	51
181	J-56	0	75.70	194.51	51
183	FH-17	0	80.70	194.51	49
185	J-57	0	76.00	194.37	51
187	J-58	0	76.30	194.01	51
189	J-59	0	76.00	193.90	51
191	FH-18	0	81.00	193.90	49
193	J-60	0	77.40	193.34	50
196	J-61	0	77.40	193.34	50
198	FH-19	0	82.40	193.34	48
200	J-52	0	77.20	193.34	50
203	J-53	0	77.50	193.44	50
205	FH-15	0	82.50	193.44	48
207	J-54	0	76.00	194.02	51
209	J-55	0	76.00	194.03	51
211	FH-16	0	80.80	194.03	49
215	J-71	0	77.20	193.75	50
217	J-79	0	77.50	193.86	50
219	FH-24	0	82.30	193.86	48
221	J-78	0	76.30	194.02	51
223	J-73	0	76.00	194.01	51
225	J-72	0	77.50	193.79	50
227	FH-20	0	82.40	193.79	48
230	J-74	0	76.00	194.01	51
232	FH-21	0	80.90	194.01	49
235	J-75	0	75.30	194.20	51
237	FH-22	0	80.35	194.20	49
239	J-76	0	76.00	194.06	51
241	FH-23	0	81.00	194.06	49
243	J-77	0	75.80	194.04	51

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
246	J-80	0	76.50	193.88	51
248	FH-25	0	81.25	193.88	49
250	J-81	168	77.80	193.83	50
252	J-22	0	83.00	192.22	47
255	FH-4	0	88.20	192.22	45
257	J-11	0	83.00	190.67	47
259	J-12	0	83.00	190.18	46
262	J-13	0	83.00	190.20	46
264	J-14	0	82.00	191.55	47
267	J-32	0	83.00	190.33	46
269	J-31	0	82.00	191.62	47
272	J-33	0	82.00	191.74	47
277	J-68	0	82.00	191.67	47
280	J-67	0	83.00	191.94	47
282	J-70	0	82.50	191.47	47
284	J-69	0	82.00	190.92	47
290	FH-31	0	81.70	197.34	50
292	J-83	0	79.40	197.16	51
294	FH-26	0	84.50	197.16	49
296	J-84	0	81.00	197.31	50
298	FH-27	0	86.00	197.31	48
300	J-85	0	81.00	197.32	50
302	J-86	152	82.00	197.22	50
304	J-87	0	80.60	197.50	51
306	J-88	0	78.75	197.41	51
308	FH-28	0	83.80	197.41	49
311	J-90	0	76.70	197.28	52
313	FH-29	0	81.80	197.28	50
315	J-91	0	76.50	197.27	52
317	J-92	0	76.50	197.22	52
319	FH-30	0	82.00	197.22	50
322	J-97	0	81.50	197.71	50
324	FH-32	0	86.44	197.71	48
327	J-104	0	77.80	197.43	52
329	FH-35	0	82.80	197.43	50
331	J-103	0	76.40	197.43	52
333	J-102	0	76.60	197.39	52
335	FH-34	0	81.80	197.39	50
337	J-99	0	77.00	197.37	52
340	J-100	0	76.20	197.35	52
342	J-101	0	76.70	197.32	52
344	FH-33	0	81.70	197.32	50
347	J-108	0	76.30	197.47	52
349	J-109	0	76.30	197.46	52
351	FH-38	0	81.30	197.46	50
353	J-110	0	76.90	197.39	52
355	FH-39	0	81.90	197.39	50
358	J-105	0	81.00	197.76	51
360	FH-36	0	86.10	197.76	48

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
362	J-106	0	80.30	197.65	51
364	J-107	0	80.30	197.64	51
366	FH-37	0	85.30	197.64	49
369	J-119	0	80.50	197.59	51
371	J-111	0	76.60	197.49	52
374	J-112	0	77.40	197.48	52
376	FH-40	0	82.00	197.48	50
378	J-113	0	78.50	197.45	51
380	FH-41	0	83.50	197.45	49
382	J-114	0	78.90	197.45	51
384	J-115	133	79.50	197.40	51
386	J-116	0	77.90	197.50	52
389	J-117	0	78.00	197.51	52
391	FH-42	0	83.00	197.51	50
393	J-118	0	80.00	197.56	51
395	FH-43	0	85.00	197.56	49
398	J-4	0	87.00	195.11	47
401	SERV-HDR-1	0	87.00	195.11	47
403	FH-44	1,020	88.50	187.49	43
405	FH-45	1,020	88.50	187.51	43
407	FH-46	1,020	88.50	187.63	43
409	FH-47	1,020	87.50	188.22	44

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-1	J-1	J-2	24.0	PVC	130.0	1,971	1.40	0.000	964	0.29
P-2	J-2	J-3	24.0	PVC	130.0	1,971	1.40	0.000	788	0.24
POC-1	R-1	J-1	60.0	PVC	130.0	1,971	0.22	0.000	1	0.00
POC-2	R-2	J-51	60.0	PVC	130.0	1,856	0.21	0.000	1	0.00
POC-3	R-3	J-98	60.0	PVC	130.0	1,367	0.16	0.000	1	0.00
P-6	J-5	J-6	24.0	PVC	130.0	676	0.48	0.000	1,034	0.04
P-7	J-6	J-7	24.0	PVC	130.0	0	0.00	0.000	108	0.00
P-11	J-6	J-64	16.0	PVC	130.0	676	1.08	0.000	1,818	0.55
P-82	J-64	J-65	16.0	PVC	130.0	0	0.00	0.000	880	0.00
P-8	J-5	J-8	12.0	PVC	130.0	1,295	3.67	0.004	371	1.52
P-10	J-8	J-9	12.0	PVC	130.0	1,237	3.51	0.004	358	1.35
P-19	J-9	J-15	12.0	PVC	130.0	-363	1.03	0.000	55	0.02
P-42	J-15	J-34	12.0	PVC	130.0	17	0.05	0.000	400	0.00
P-43	J-34	J-35	12.0	PVC	130.0	539	1.53	0.001	26	0.02
P-80	J-35	J-63	12.0	PVC	130.0	-803	2.28	0.002	609	1.03
P-79	J-63	J-62	12.0	PVC	130.0	-133	0.38	0.000	338	0.02
P-83	J-62	J-66	12.0	PVC	130.0	469	1.33	0.001	42	0.03
P-106	J-66	J-82	12.0	PVC	130.0	-1,068	3.03	0.003	1,405	4.02
P-114	J-82	J-89	12.0	PVC	130.0	-447	1.27	0.001	252	0.14
P-119	J-89	J-93	12.0	PVC	130.0	-334	0.95	0.000	190	0.06
P-120	J-93	J-94	12.0	PVC	130.0	-334	0.95	0.000	58	0.02
P-121	J-94	J-95	12.0	PVC	130.0	-266	0.75	0.000	316	0.07
P-122	J-95	J-96	8.0	PVC	130.0	-296	1.89	0.002	246	0.47
P-125	J-96	J-98	12.0	PVC	130.0	-1,367	3.88	0.005	132	0.60
P-9	J-8	SERV-HDR-2	12.0	PVC	130.0	58	0.16	0.000	20	0.00
P-12	J-9	J-10	12.0	PVC	130.0	1,493	4.24	0.005	98	0.52
P-20	J-15	J-16	12.0	PVC	130.0	-380	1.08	0.000	208	0.09
P-21	J-16	J-17	12.0	PVC	130.0	-46	0.13	0.000	232	0.00
P-22	J-17	J-18	12.0	PVC	130.0	3	0.01	0.000	126	0.00
FP-1	J-18	FH-1	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-23	J-18	J-19	12.0	PVC	130.0	3	0.01	0.000	423	0.00
FP-2	J-19	FH-2	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-24	J-19	J-20	12.0	PVC	130.0	-159	0.45	0.000	485	0.04
FP-3	J-20	FH-3	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-25	J-20	J-21	12.0	PVC	130.0	-159	0.45	0.000	44	0.00
P-28	J-21	J-23	12.0	PVC	130.0	-208	0.59	0.000	232	0.03
P-29	J-23	J-24	8.0	PVC	130.0	67	0.43	0.000	308	0.04
FP-5	J-24	FH-5	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-30	J-24	J-16	8.0	PVC	130.0	67	0.43	0.000	326	0.04
P-31	J-16	J-25	12.0	PVC	130.0	-266	0.76	0.000	32	0.01
FP-6	J-25	FH-6	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-32	J-25	J-26	12.0	PVC	130.0	-266	0.76	0.000	190	0.04
P-33	J-26	J-27	8.0	PVC	130.0	-97	0.62	0.000	235	0.06
FP-7	J-27	FH-7	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-34	J-27	J-28	8.0	PVC	130.0	-97	0.62	0.000	103	0.02
P-35	J-28	J-29	8.0	PVC	130.0	0	0.00	0.000	299	0.00
P-36	J-29	J-30	12.0	PVC	130.0	276	0.78	0.000	42	0.01

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
FP-8	J-30	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-37	J-30	J-23	12.0	PVC	130.0	276	0.78	0.000	180	0.04
P-53	J-29	J-42	12.0	PVC	130.0	-276	0.78	0.000	246	0.06
P-56	J-42	J-44	12.0	PVC	130.0	-260	0.74	0.000	123	0.03
FP-11	J-44	FH-11	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-57	J-44	J-45	12.0	PVC	130.0	-260	0.74	0.000	363	0.08
FP-12	J-45	FH-12	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-58	J-45	J-40	12.0	PVC	130.0	-260	0.74	0.000	54	0.01
P-51	J-40	J-41	8.0	PVC	130.0	135	0.86	0.000	246	0.11
P-52	J-41	J-28	8.0	PVC	130.0	97	0.62	0.000	246	0.06
P-55	J-41	J-43	8.0	PVC	130.0	16	0.10	0.000	54	0.00
FP-10	J-43	FH-10	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-54	J-43	J-42	8.0	PVC	130.0	16	0.10	0.000	246	0.00
P-45	J-34	J-36	12.0	PVC	130.0	-521	1.48	0.001	204	0.15
P-46	J-36	J-26	12.0	PVC	130.0	169	0.48	0.000	189	0.02
P-47	J-36	J-37	12.0	PVC	130.0	-691	1.96	0.001	65	0.08
FP-8	J-37	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-48	J-37	J-38	12.0	PVC	130.0	-691	1.96	0.001	238	0.30
P-49	J-38	J-39	12.0	PVC	130.0	395	1.12	0.000	58	0.03
FP-9	J-39	FH-9	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-50	J-39	J-40	12.0	PVC	130.0	395	1.12	0.000	280	0.13
P-59	J-38	J-46	12.0	PVC	130.0	-1,086	3.08	0.003	222	0.66
P-60	J-46	J-47	12.0	PVC	130.0	-856	2.43	0.002	58	0.11
FP-13	J-47	FH-13	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-61	J-47	J-48	12.0	PVC	130.0	-856	2.43	0.002	358	0.68
P-62	J-48	J-49	12.0	PVC	130.0	-1,200	3.40	0.004	127	0.45
FP-14	J-49	FH-14	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-63	J-49	J-50	12.0	PVC	130.0	-1,200	3.40	0.004	95	0.34
P-64	J-50	J-51	12.0	PVC	130.0	-1,856	5.26	0.008	155	1.23
P-70	J-50	J-56	12.0	PVC	130.0	655	1.86	0.001	324	0.38
FP-17	J-56	FH-17	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-71	J-56	J-57	12.0	PVC	130.0	655	1.86	0.001	124	0.14
P-72	J-57	J-58	8.0	PVC	130.0	266	1.70	0.002	224	0.35
P-74	J-58	J-59	8.0	PVC	130.0	271	1.73	0.002	70	0.11
FP-18	J-59	FH-18	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-75	J-59	J-60	8.0	PVC	130.0	271	1.73	0.002	344	0.56
P-78	J-60	J-62	12.0	PVC	130.0	602	1.71	0.001	206	0.20
P-76	J-60	J-61	12.0	PVC	130.0	-41	0.11	0.000	58	0.00
FP-19	J-61	FH-19	6.0	Ductile Iron	130.0	0	0.00	0.000	37	0.00
P-77	J-61	J-52	12.0	PVC	130.0	-41	0.11	0.000	168	0.00
P-65	J-52	J-46	12.0	PVC	130.0	230	0.65	0.000	222	0.04
P-66	J-52	J-53	8.0	PVC	130.0	-270	1.73	0.002	58	0.09
FP-15	J-53	FH-15	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-67	J-53	J-54	8.0	PVC	130.0	-270	1.73	0.002	358	0.58

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-68	J-54	J-55	12.0	PVC	130.0	-345	0.98	0.000	39	0.01
FP-16	J-55	FH-16	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-69	J-55	J-48	12.0	PVC	130.0	-345	0.98	0.000	183	0.06
P-73	J-54	J-58	12.0	PVC	130.0	74	0.21	0.000	226	0.00
P-92	J-60	J-71	8.0	PVC	130.0	-291	1.86	0.002	222	0.41
P-102	J-71	J-79	8.0	PVC	130.0	-130	0.83	0.000	253	0.11
FP-24	J-79	FH-24	6.0	Ductile Iron	130.0	0	0.00	0.000	23	0.00
P-103	J-79	J-78	8.0	PVC	130.0	-130	0.83	0.000	370	0.16
P-101	J-78	J-73	12.0	PVC	130.0	91	0.26	0.000	222	0.01
P-94	J-73	J-72	8.0	PVC	130.0	160	1.02	0.001	360	0.22
FP-20	J-72	FH-20	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-93	J-72	J-71	8.0	PVC	130.0	160	1.02	0.001	54	0.03
P-95	J-73	J-74	12.0	PVC	130.0	-70	0.20	0.000	52	0.00
FP-21	J-74	FH-21	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-96	J-74	J-58	12.0	PVC	130.0	-70	0.20	0.000	170	0.00
P-97	J-57	J-75	12.0	PVC	130.0	389	1.10	0.000	376	0.17
FP-22	J-75	FH-22	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-98	J-75	J-76	12.0	PVC	130.0	389	1.10	0.000	309	0.14
FP-23	J-76	FH-23	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-99	J-76	J-77	12.0	PVC	130.0	389	1.10	0.000	55	0.02
P-100	J-77	J-78	12.0	PVC	130.0	221	0.63	0.000	154	0.02
P-104	J-77	J-80	8.0	PVC	130.0	168	1.07	0.001	232	0.16
FP-25	J-80	FH-25	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-105	J-80	J-81	8.0	PVC	130.0	168	1.07	0.001	82	0.06
P-26	J-21	J-22	8.0	PVC	130.0	50	0.32	0.000	307	0.02
P-27	J-22	J-17	8.0	PVC	130.0	50	0.32	0.000	326	0.02
FP-4	J-22	FH-4	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-13	J-10	J-11	12.0	PVC	130.0	909	2.58	0.002	424	0.90
P-14	J-11	J-12	12.0	PVC	130.0	417	1.18	0.001	963	0.48
P-15	J-12	J-11	12.0	PVC	130.0	-492	1.39	0.001	711	0.48
P-16	J-12	J-13	12.0	PVC	130.0	-111	0.31	0.000	380	0.02
P-17	J-13	J-14	12.0	PVC	130.0	-816	2.32	0.002	778	1.35
P-18	J-14	J-10	12.0	PVC	130.0	-584	1.66	0.001	15	0.01
P-39	J-13	J-32	12.0	PVC	130.0	-315	0.89	0.000	424	0.13
P-40	J-32	J-31	12.0	PVC	130.0	-799	2.27	0.002	777	1.30
P-38	J-31	J-14	12.0	PVC	130.0	232	0.66	0.000	424	0.07
P-41	J-31	J-33	12.0	PVC	130.0	-1,031	2.92	0.003	42	0.11
P-44	J-35	J-33	12.0	PVC	130.0	1,199	3.40	0.004	99	0.35
P-81	J-63	J-64	12.0	PVC	130.0	-671	1.90	0.001	1,028	1.24
P-86	J-33	J-68	12.0	PVC	130.0	168	0.48	0.000	702	0.07
P-85	J-68	J-67	12.0	PVC	130.0	-560	1.59	0.001	310	0.27
P-90	J-67	J-70	12.0	PVC	130.0	564	1.60	0.001	536	0.47
P-87	J-68	J-69	12.0	PVC	130.0	728	2.07	0.001	536	0.75
P-88	J-69	J-32	12.0	PVC	130.0	536	1.52	0.001	742	0.59
P-89	J-70	J-69	12.0	PVC	130.0	828	2.35	0.002	310	0.55
P-84	J-66	J-67	12.0	PVC	130.0	1,388	3.94	0.005	252	1.17
P-91	J-67	J-70	12.0	PVC	130.0	264	0.75	0.000	2,182	0.47

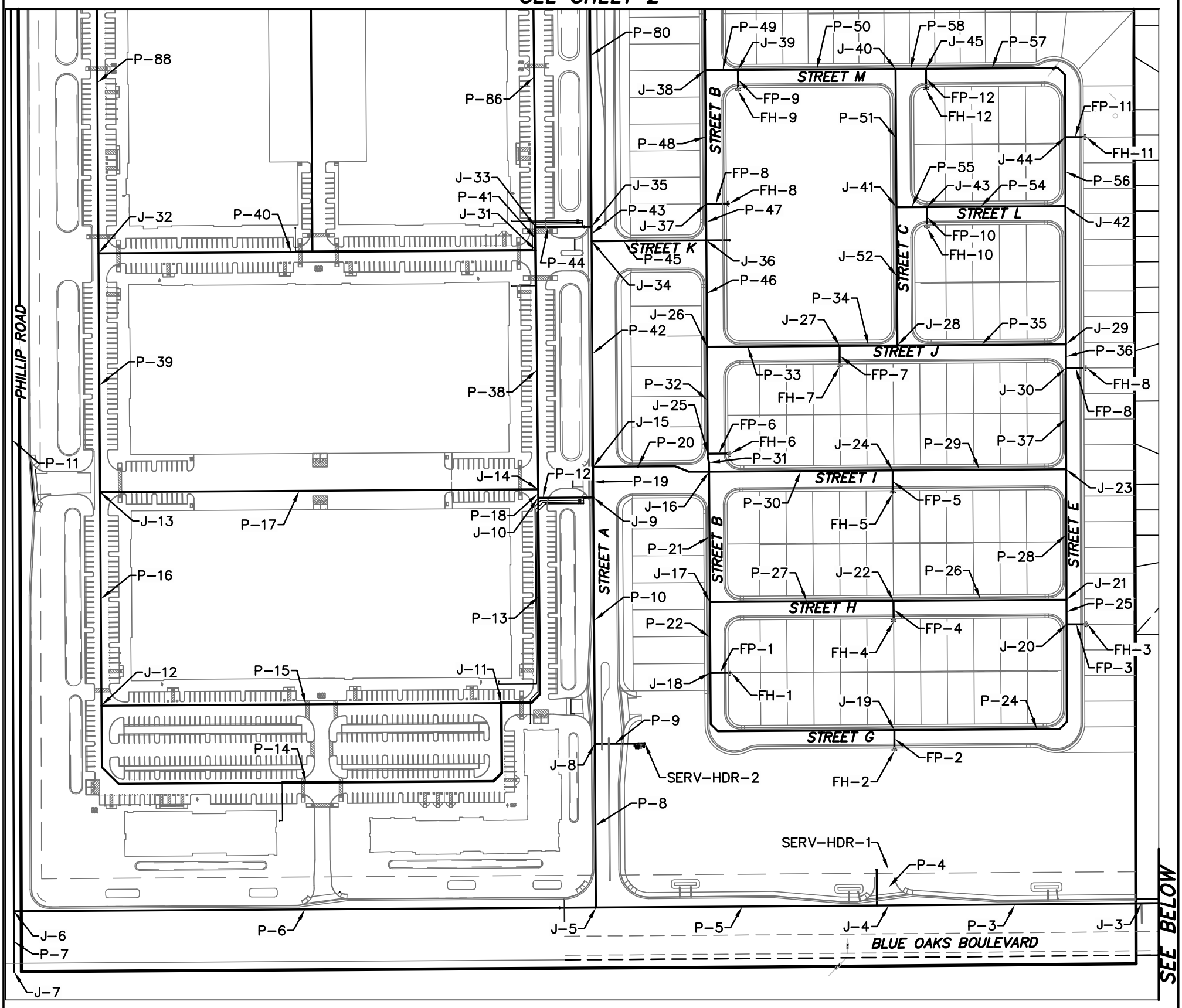
FlexTable: Pipe Table

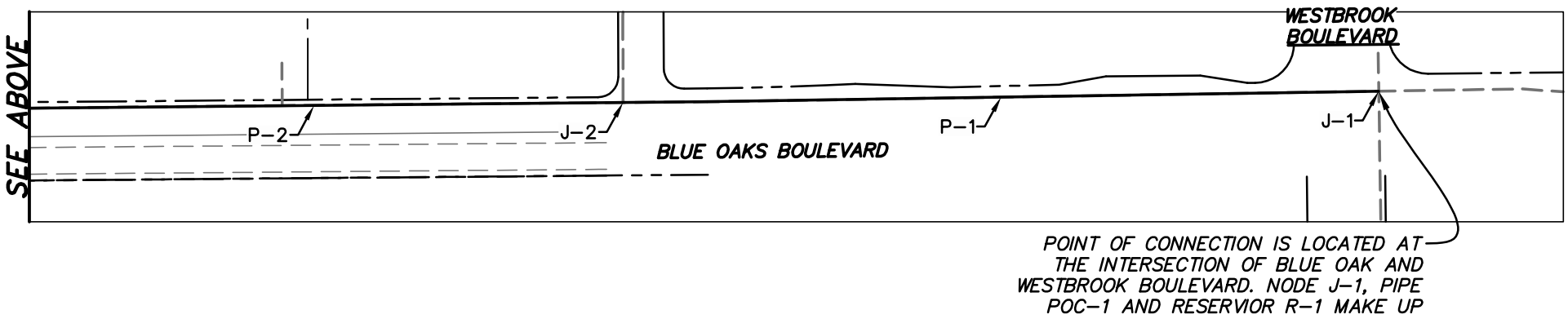
Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
FP-31	J-93	FH-31	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-107	J-82	J-83	12.0	PVC	130.0	-351	1.00	0.000	59	0.02
FP-26	J-83	FH-26	6.0	Ductile Iron	130.0	0	0.00	0.000	36	0.00
P-108	J-83	J-84	12.0	PVC	130.0	-351	1.00	0.000	417	0.15
FP-27	J-84	FH-27	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-109	J-84	J-85	12.0	PVC	130.0	-351	1.00	0.000	35	0.01
P-110	J-85	J-86	8.0	PVC	130.0	152	0.97	0.001	180	0.10
P-111	J-85	J-87	12.0	PVC	130.0	-503	1.43	0.001	255	0.18
P-112	J-87	J-88	8.0	PVC	130.0	136	0.87	0.000	206	0.09
FP-28	J-88	FH-28	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-113	J-88	J-89	8.0	PVC	130.0	136	0.87	0.000	284	0.13
P-115	J-89	J-90	8.0	PVC	130.0	24	0.15	0.000	135	0.00
FP-29	J-90	FH-29	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-116	J-90	J-91	8.0	PVC	130.0	24	0.15	0.000	262	0.00
P-117	J-91	J-92	12.0	PVC	130.0	271	0.77	0.000	216	0.05
FP-30	J-92	FH-30	6.0	Ductile Iron	130.0	0	0.00	0.000	32	0.00
P-118	J-92	J-82	12.0	PVC	130.0	271	0.77	0.000	389	0.09
P-124	J-87	J-97	12.0	PVC	130.0	-639	1.81	0.001	188	0.21
FP-32	J-97	FH-32	6.0	Ductile Iron	130.0	0	0.00	0.000	37	0.00
P-123	J-97	J-96	12.0	PVC	130.0	-639	1.81	0.001	173	0.19
P-133	J-95	J-104	12.0	PVC	130.0	30	0.09	0.000	80	0.00
FP-35	J-104	FH-35	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-132	J-104	J-103	12.0	PVC	130.0	30	0.09	0.000	311	0.00
P-131	J-103	J-102	12.0	PVC	130.0	251	0.71	0.000	209	0.04
FP-34	J-102	FH-34	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-130	J-102	J-99	12.0	PVC	130.0	251	0.71	0.000	98	0.02
P-126	J-99	J-94	12.0	PVC	130.0	82	0.23	0.000	299	0.01
P-127	J-99	J-100	12.0	PVC	130.0	169	0.48	0.000	238	0.02
P-128	J-100	J-101	12.0	PVC	130.0	247	0.70	0.000	150	0.03
FP-33	J-101	FH-33	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-129	J-101	J-91	12.0	PVC	130.0	247	0.70	0.000	241	0.05
P-138	J-103	J-108	12.0	PVC	130.0	-221	0.63	0.000	242	0.04
P-139	J-108	J-109	8.0	PVC	130.0	78	0.50	0.000	32	0.01
FP-38	J-109	FH-38	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-140	J-109	J-110	8.0	PVC	130.0	78	0.50	0.000	427	0.07
FP-39	J-110	FH-39	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-141	J-110	J-100	8.0	PVC	130.0	78	0.50	0.000	282	0.05
P-134	J-96	J-105	12.0	PVC	130.0	432	1.23	0.001	271	0.15
FP-36	J-105	FH-36	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-135	J-105	J-106	12.0	PVC	130.0	432	1.23	0.001	196	0.10
P-136	J-106	J-107	8.0	PVC	130.0	134	0.86	0.000	32	0.01
FP-37	J-107	FH-37	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-137	J-107	J-108	8.0	PVC	130.0	134	0.86	0.000	388	0.17
P-153	J-106	J-119	12.0	PVC	130.0	298	0.84	0.000	242	0.07
P-152	J-119	J-111	8.0	PVC	130.0	95	0.61	0.000	421	0.10
P-142	J-111	J-108	12.0	PVC	130.0	165	0.47	0.000	242	0.02
P-143	J-111	J-112	8.0	PVC	130.0	51	0.33	0.000	187	0.01
FP-40	J-112	FH-40	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-144	J-112	J-113	8.0	PVC	130.0	51	0.33	0.000	330	0.02
FP-41	J-113	FH-41	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-145	J-113	J-114	8.0	PVC	130.0	51	0.33	0.000	58	0.00
P-146	J-114	J-115	8.0	PVC	130.0	133	0.85	0.000	108	0.05
P-147	J-114	J-116	8.0	PVC	130.0	-82	0.52	0.000	309	0.05
P-148	J-116	J-111	12.0	PVC	130.0	121	0.34	0.000	242	0.01
P-149	J-116	J-117	12.0	PVC	130.0	-203	0.57	0.000	54	0.01
FP-42	J-117	FH-42	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-150	J-117	J-118	12.0	PVC	130.0	-203	0.57	0.000	429	0.06
FP-43	J-118	FH-43	6.0	Ductile Iron	130.0	0	0.00	0.000	36	0.00
P-151	J-118	J-119	12.0	PVC	130.0	-203	0.57	0.000	175	0.02
P-3	J-3	J-4	24.0	PVC	130.0	1,971	1.40	0.000	244	0.07
P-5	J-4	J-5	24.0	PVC	130.0	1,971	1.40	0.000	520	0.16
P-4	J-4	SERV-HDR-1	12.0	PVC	130.0	0	0.00	0.000	20	0.00
FP-44	J-12	FH-44	6.0	Ductile Iron	130.0	1,020	11.57	0.077	35	2.69
FP-45	J-13	FH-45	6.0	Ductile Iron	130.0	1,020	11.57	0.077	35	2.69
FP-46	J-32	FH-46	6.0	Ductile Iron	130.0	1,020	11.57	0.077	35	2.69
FP-47	J-69	FH-47	6.0	Ductile Iron	130.0	1,020	11.57	0.077	35	2.69

SEE SHEET 2





POINT OF CONNECTION IS LOCATED AT THE INTERSECTION OF BLUE OAK AND WESTBROOK BOULEVARD. NODE J-1, PIPE POC-1 AND RESERVIOR R-1 MAKE UP THE CONNECTION AT THE INTERSECTION.

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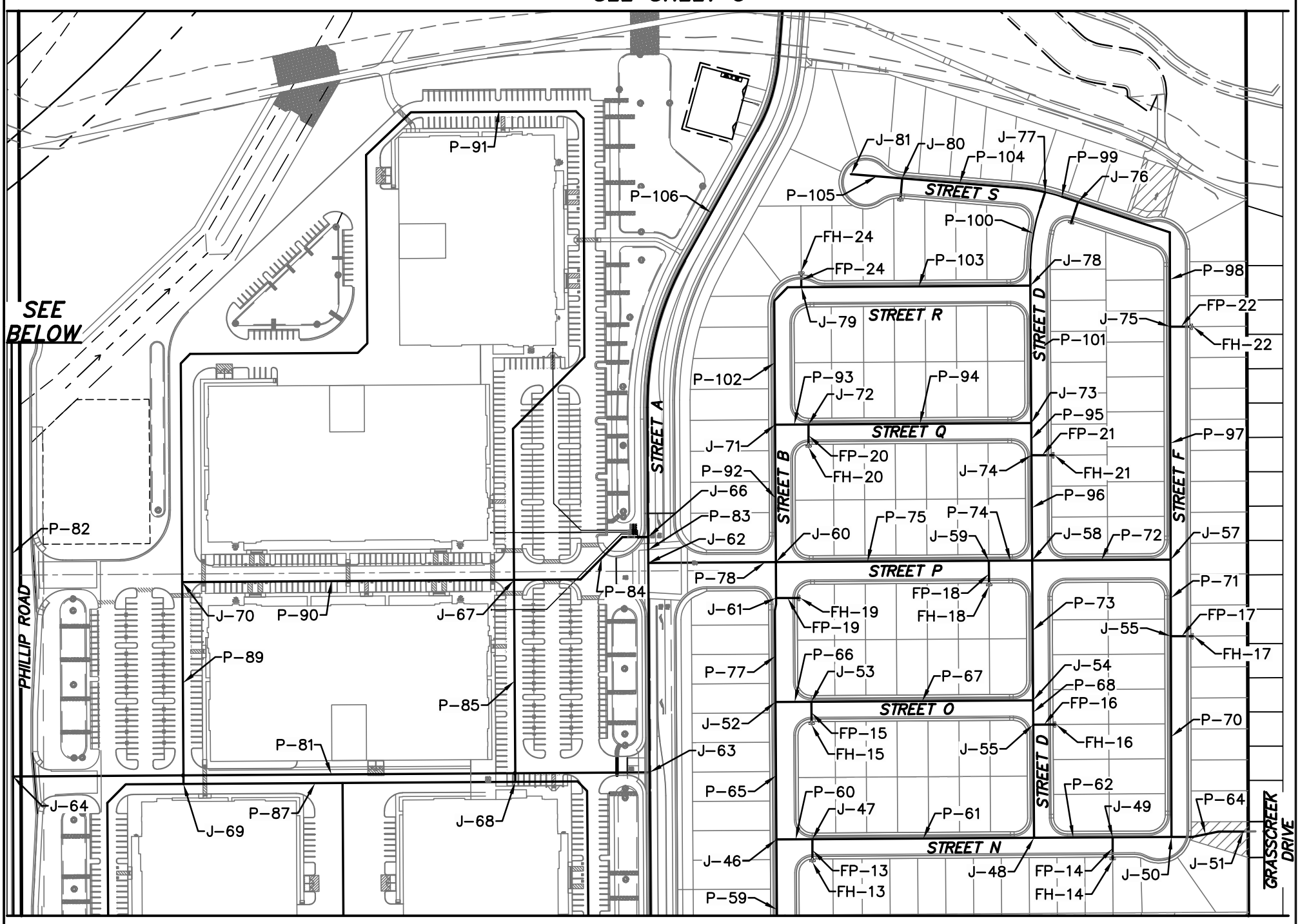
0 100 200 400
SCALE: 1"=200'

FIRE SYSTEM EXHIBIT
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA
SHEET 1 OF 3 APRIL 2, 2025

X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH_Fire Site Plan- Buildout.dwg

SEE SHEET 3



SEE SHEET 1

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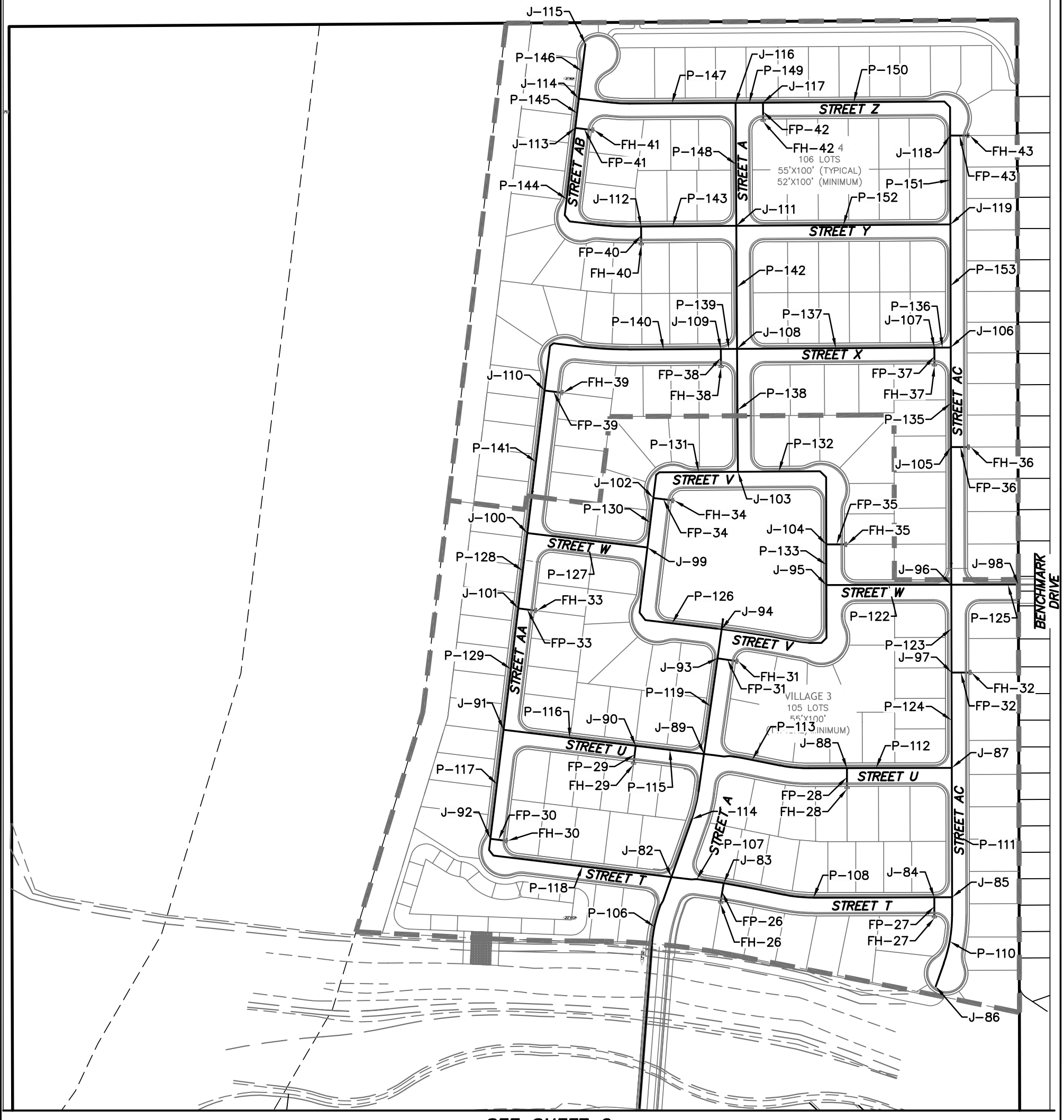

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APPENDIX F

POTABLE WATER PLAN – NEAR-TERM ONSITE WITH FIRE FLOW TO OPERATIONS CENTER MODEL RESULTS

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
31	J-1	0	81.00	241.00	69
32	J-2	0	87.00	240.28	66
33	J-3	0	89.00	239.69	65
39	J-51	0	76.00	241.00	71
44	J-5	0	87.00	239.12	66
46	J-6	0	88.00	238.52	65
48	J-7	0	88.00	238.52	65
50	J-64	0	85.00	230.99	63
52	J-65	4,441	80.00	226.09	63
54	J-8	0	82.00	238.93	68
56	J-9	0	82.00	238.74	68
58	J-15	0	82.00	238.72	68
60	J-34	0	82.00	238.59	68
62	J-35	0	83.50	238.55	67
64	J-63	0	78.00	237.66	69
66	J-62	0	77.00	238.38	70
68	J-66	2	77.00	238.38	70
83	SERV-HDR-2	0	84.00	238.93	67
87	J-16	0	81.50	238.71	68
89	J-17	0	82.00	238.70	68
91	J-18	0	82.00	238.70	68
93	FH-1	0	87.20	238.70	66
95	J-19	162	83.00	238.69	67
97	FH-2	0	89.00	238.69	65
99	J-20	0	84.00	238.71	67
101	FH-3	0	89.00	238.71	65
103	J-21	0	83.00	238.71	67
106	J-23	0	82.00	238.71	68
108	J-24	0	82.00	238.71	68
110	FH-5	0	87.10	238.71	66
113	J-25	0	81.00	238.71	68
115	FH-6	0	86.40	238.71	66
117	J-26	0	80.90	238.71	68
119	J-27	0	82.00	238.72	68
121	FH-7	0	86.60	238.72	66
123	J-28	0	83.00	238.72	67
125	J-29	0	84.00	238.72	67
127	J-30	0	83.50	238.72	67
129	FH-8	0	88.60	238.72	65
132	J-42	0	82.50	238.74	68
134	J-44	0	81.50	238.74	68
136	FH-11	0	86.00	238.74	66
138	J-45	0	79.70	238.76	69
140	FH-12	0	84.50	238.76	67
142	J-40	0	79.50	238.76	69
144	J-41	22	80.50	238.74	68
147	J-43	0	80.60	238.74	68
149	FH-10	0	85.60	238.74	66
152	J-36	0	80.00	238.70	69

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
155	J-37	0	79.80	238.72	69
157	FH-8	0	85.30	238.72	66
159	J-38	0	78.90	238.80	69
161	J-39	0	79.20	238.79	69
163	FH-9	0	84.20	238.79	67
166	J-46	0	78.30	238.96	70
168	J-47	0	78.50	239.03	69
170	FH-13	0	83.50	239.03	67
172	J-48	0	77.30	239.48	70
174	J-49	0	77.00	239.82	70
176	FH-14	0	81.60	239.82	68
178	J-50	0	76.90	240.07	71
181	J-56	0	75.70	239.78	71
183	FH-17	0	80.70	239.78	69
185	J-57	0	76.00	239.67	71
187	J-58	0	76.30	239.40	71
189	J-59	0	76.00	239.30	71
191	FH-18	0	81.00	239.30	68
193	J-60	0	77.40	238.83	70
196	J-61	0	77.40	238.86	70
198	FH-19	0	82.40	238.86	68
200	J-52	0	77.20	238.93	70
203	J-53	0	77.50	239.00	70
205	FH-15	0	82.50	239.00	68
207	J-54	0	76.00	239.41	71
209	J-55	0	76.00	239.42	71
211	FH-16	0	80.80	239.42	69
215	J-71	0	77.20	239.18	70
217	J-79	0	77.50	239.27	70
219	FH-24	0	82.30	239.27	68
221	J-78	0	76.30	239.40	71
223	J-73	0	76.00	239.39	71
225	J-72	0	77.50	239.20	70
227	FH-20	0	82.40	239.20	68
230	J-74	0	76.00	239.39	71
232	FH-21	0	80.90	239.39	69
235	J-75	0	75.30	239.54	71
237	FH-22	0	80.35	239.54	69
239	J-76	0	76.00	239.43	71
241	FH-23	0	81.00	239.43	69
243	J-77	0	75.80	239.41	71
246	J-80	0	76.50	239.26	70
248	FH-25	0	81.25	239.26	68
250	J-81	168	77.80	239.20	70
252	J-22	0	83.00	238.71	67
255	FH-4	0	88.20	238.71	65
398	J-4	0	87.00	239.51	66
401	SERV-HDR-1	0	87.00	239.51	66

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-1	J-1	J-2	24.0	PVC	130.0	3,202	2.27	0.001	964	0.72
P-2	J-2	J-3	24.0	PVC	130.0	3,202	2.27	0.001	788	0.59
POC-1	R-1	J-1	60.0	PVC	130.0	3,202	0.36	0.000	1	0.00
POC-2	R-2	J-51	60.0	PVC	130.0	1,593	0.18	0.000	1	0.00
P-6	J-5	J-6	24.0	PVC	130.0	2,780	1.97	0.001	1,034	0.59
P-7	J-6	J-7	24.0	PVC	130.0	0	0.00	0.000	108	0.00
P-11	J-6	J-64	16.0	PVC	130.0	2,780	4.44	0.004	1,818	7.54
P-82	J-64	J-65	18.0	PVC	130.0	4,441	5.60	0.006	880	4.90
P-8	J-5	J-8	12.0	PVC	130.0	422	1.20	0.001	371	0.19
P-10	J-8	J-9	12.0	PVC	130.0	422	1.20	0.001	358	0.18
P-19	J-9	J-15	12.0	PVC	130.0	422	1.20	0.001	55	0.03
P-42	J-15	J-34	12.0	PVC	130.0	320	0.91	0.000	400	0.12
P-43	J-34	J-35	12.0	PVC	130.0	746	2.12	0.001	26	0.04
P-80	J-35	J-63	12.0	PVC	130.0	746	2.12	0.001	609	0.90
P-79	J-63	J-62	12.0	PVC	130.0	-915	2.60	0.002	338	0.73
P-83	J-62	J-66	12.0	PVC	130.0	2	0.01	0.000	42	0.00
P-9	J-8	SERV-HDR-2	12.0	PVC	130.0	0	0.00	0.000	20	0.00
P-20	J-15	J-16	12.0	PVC	130.0	102	0.29	0.000	208	0.01
P-21	J-16	J-17	12.0	PVC	130.0	66	0.19	0.000	232	0.00
P-22	J-17	J-18	12.0	PVC	130.0	76	0.22	0.000	126	0.00
FP-1	J-18	FH-1	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-23	J-18	J-19	12.0	PVC	130.0	76	0.22	0.000	423	0.01
FP-2	J-19	FH-2	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-24	J-19	J-20	12.0	PVC	130.0	-86	0.24	0.000	485	0.01
FP-3	J-20	FH-3	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-25	J-20	J-21	12.0	PVC	130.0	-86	0.24	0.000	44	0.00
P-28	J-21	J-23	12.0	PVC	130.0	-96	0.27	0.000	232	0.01
P-29	J-23	J-24	8.0	PVC	130.0	17	0.11	0.000	308	0.00
FP-5	J-24	FH-5	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-30	J-24	J-16	8.0	PVC	130.0	17	0.11	0.000	326	0.00
P-31	J-16	J-25	12.0	PVC	130.0	54	0.15	0.000	32	0.00
FP-6	J-25	FH-6	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-32	J-25	J-26	12.0	PVC	130.0	54	0.15	0.000	190	0.00
P-33	J-26	J-27	8.0	PVC	130.0	-44	0.28	0.000	235	0.01
FP-7	J-27	FH-7	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-34	J-27	J-28	8.0	PVC	130.0	-44	0.28	0.000	103	0.01
P-35	J-28	J-29	8.0	PVC	130.0	-3	0.02	0.000	299	0.00
P-36	J-29	J-30	12.0	PVC	130.0	113	0.32	0.000	42	0.00
FP-8	J-30	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-37	J-30	J-23	12.0	PVC	130.0	113	0.32	0.000	180	0.01
P-53	J-29	J-42	12.0	PVC	130.0	-117	0.33	0.000	246	0.01
P-56	J-42	J-44	12.0	PVC	130.0	-117	0.33	0.000	123	0.01
FP-11	J-44	FH-11	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-57	J-44	J-45	12.0	PVC	130.0	-117	0.33	0.000	363	0.02
FP-12	J-45	FH-12	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-58	J-45	J-40	12.0	PVC	130.0	-117	0.33	0.000	54	0.00

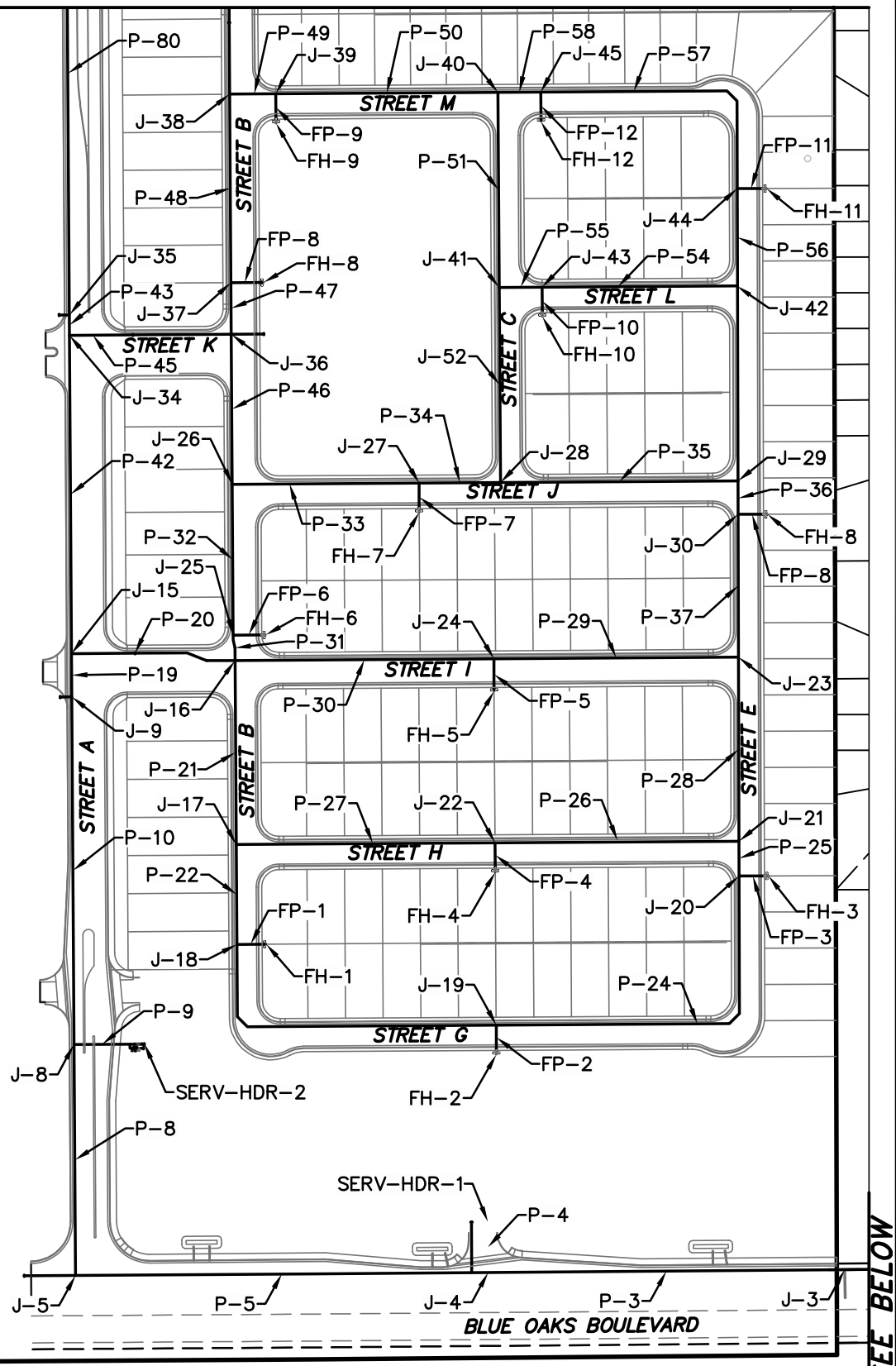
FlexTable: Pipe Table

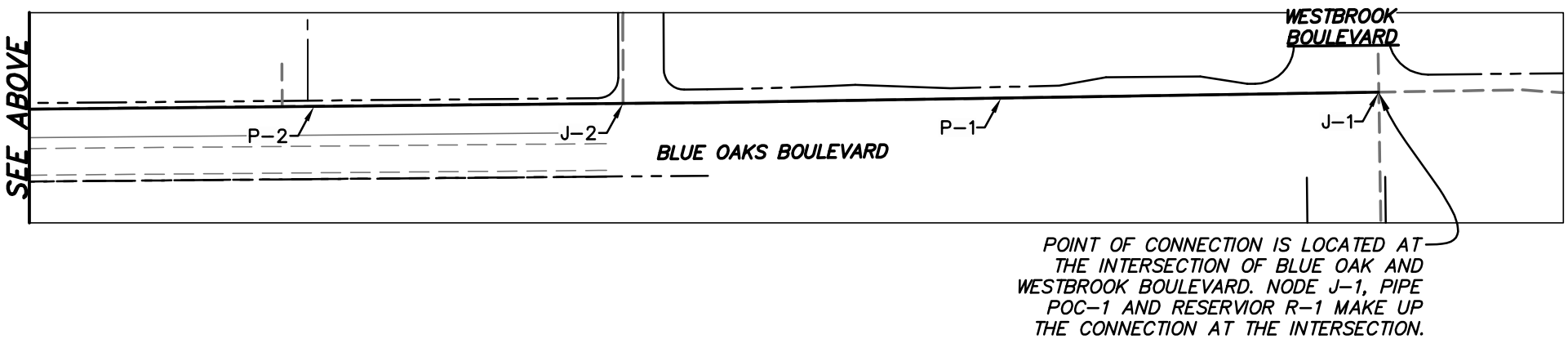
Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-51	J-40	J-41	8.0	PVC	130.0	62	0.39	0.000	246	0.03
P-52	J-41	J-28	8.0	PVC	130.0	40	0.26	0.000	246	0.01
P-55	J-41	J-43	8.0	PVC	130.0	-1	0.00	0.000	54	0.00
FP-10	J-43	FH-10	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-54	J-43	J-42	8.0	PVC	130.0	-1	0.00	0.000	246	0.00
P-45	J-34	J-36	12.0	PVC	130.0	-426	1.21	0.001	204	0.11
P-46	J-36	J-26	12.0	PVC	130.0	-97	0.28	0.000	189	0.01
P-47	J-36	J-37	12.0	PVC	130.0	-329	0.93	0.000	65	0.02
FP-8	J-37	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-48	J-37	J-38	12.0	PVC	130.0	-329	0.93	0.000	238	0.08
P-49	J-38	J-39	12.0	PVC	130.0	179	0.51	0.000	58	0.01
FP-9	J-39	FH-9	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-50	J-39	J-40	12.0	PVC	130.0	179	0.51	0.000	280	0.03
P-59	J-38	J-46	12.0	PVC	130.0	-508	1.44	0.001	222	0.16
P-60	J-46	J-47	12.0	PVC	130.0	-687	1.95	0.001	58	0.07
FP-13	J-47	FH-13	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-61	J-47	J-48	12.0	PVC	130.0	-687	1.95	0.001	358	0.45
P-62	J-48	J-49	12.0	PVC	130.0	-1,022	2.90	0.003	127	0.34
FP-14	J-49	FH-14	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-63	J-49	J-50	12.0	PVC	130.0	-1,022	2.90	0.003	95	0.25
P-64	J-50	J-51	12.0	PVC	130.0	-1,593	4.52	0.006	155	0.93
P-70	J-50	J-56	12.0	PVC	130.0	571	1.62	0.001	324	0.29
FP-17	J-56	FH-17	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-71	J-56	J-57	12.0	PVC	130.0	571	1.62	0.001	124	0.11
P-72	J-57	J-58	8.0	PVC	130.0	229	1.46	0.001	224	0.27
P-74	J-58	J-59	8.0	PVC	130.0	248	1.58	0.001	70	0.10
FP-18	J-59	FH-18	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-75	J-59	J-60	8.0	PVC	130.0	248	1.58	0.001	344	0.48
P-78	J-60	J-62	12.0	PVC	130.0	917	2.60	0.002	206	0.44
P-76	J-60	J-61	12.0	PVC	130.0	-403	1.14	0.000	58	0.03
FP-19	J-61	FH-19	6.0	Ductile Iron	130.0	0	0.00	0.000	37	0.00
P-77	J-61	J-52	12.0	PVC	130.0	-403	1.14	0.000	168	0.08
P-65	J-52	J-46	12.0	PVC	130.0	-179	0.51	0.000	222	0.02
P-66	J-52	J-53	8.0	PVC	130.0	-224	1.43	0.001	58	0.07
FP-15	J-53	FH-15	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-67	J-53	J-54	8.0	PVC	130.0	-224	1.43	0.001	358	0.41
P-68	J-54	J-55	12.0	PVC	130.0	-335	0.95	0.000	39	0.01
FP-16	J-55	FH-16	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-69	J-55	J-48	12.0	PVC	130.0	-335	0.95	0.000	183	0.06
P-73	J-54	J-58	12.0	PVC	130.0	111	0.31	0.000	226	0.01
P-92	J-60	J-71	8.0	PVC	130.0	-266	1.70	0.002	222	0.35
P-102	J-71	J-79	8.0	PVC	130.0	-119	0.76	0.000	253	0.09
FP-24	J-79	FH-24	6.0	Ductile Iron	130.0	0	0.00	0.000	23	0.00
P-103	J-79	J-78	8.0	PVC	130.0	-119	0.76	0.000	370	0.13
P-101	J-78	J-73	12.0	PVC	130.0	55	0.16	0.000	222	0.00

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-94	J-73	J-72	8.0	PVC	130.0	147	0.94	0.001	360	0.19
FP-20	J-72	FH-20	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-93	J-72	J-71	8.0	PVC	130.0	147	0.94	0.001	54	0.03
P-95	J-73	J-74	12.0	PVC	130.0	-92	0.26	0.000	52	0.00
FP-21	J-74	FH-21	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-96	J-74	J-58	12.0	PVC	130.0	-92	0.26	0.000	170	0.01
P-97	J-57	J-75	12.0	PVC	130.0	342	0.97	0.000	376	0.13
FP-22	J-75	FH-22	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-98	J-75	J-76	12.0	PVC	130.0	342	0.97	0.000	309	0.11
FP-23	J-76	FH-23	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-99	J-76	J-77	12.0	PVC	130.0	342	0.97	0.000	55	0.02
P-100	J-77	J-78	12.0	PVC	130.0	174	0.49	0.000	154	0.02
P-104	J-77	J-80	8.0	PVC	130.0	168	1.07	0.001	232	0.16
FP-25	J-80	FH-25	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-105	J-80	J-81	8.0	PVC	130.0	168	1.07	0.001	82	0.06
P-26	J-21	J-22	8.0	PVC	130.0	10	0.07	0.000	307	0.00
P-27	J-22	J-17	8.0	PVC	130.0	10	0.07	0.000	326	0.00
FP-4	J-22	FH-4	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-81	J-63	J-64	12.0	PVC	130.0	1,661	4.71	0.006	1,028	6.67
P-3	J-3	J-4	24.0	PVC	130.0	3,202	2.27	0.001	244	0.18
P-5	J-4	J-5	24.0	PVC	130.0	3,202	2.27	0.001	520	0.39
P-4	J-4	SERV-HDR-1	12.0	PVC	130.0	0	0.00	0.000	20	0.00

SEE SHEET 2





POINT OF CONNECTION IS LOCATED AT THE INTERSECTION OF BLUE OAK AND WESTBROOK BOULEVARD. NODE J-1, PIPE POC-1 AND RESERVIOR R-1 MAKE UP THE CONNECTION AT THE INTERSECTION.

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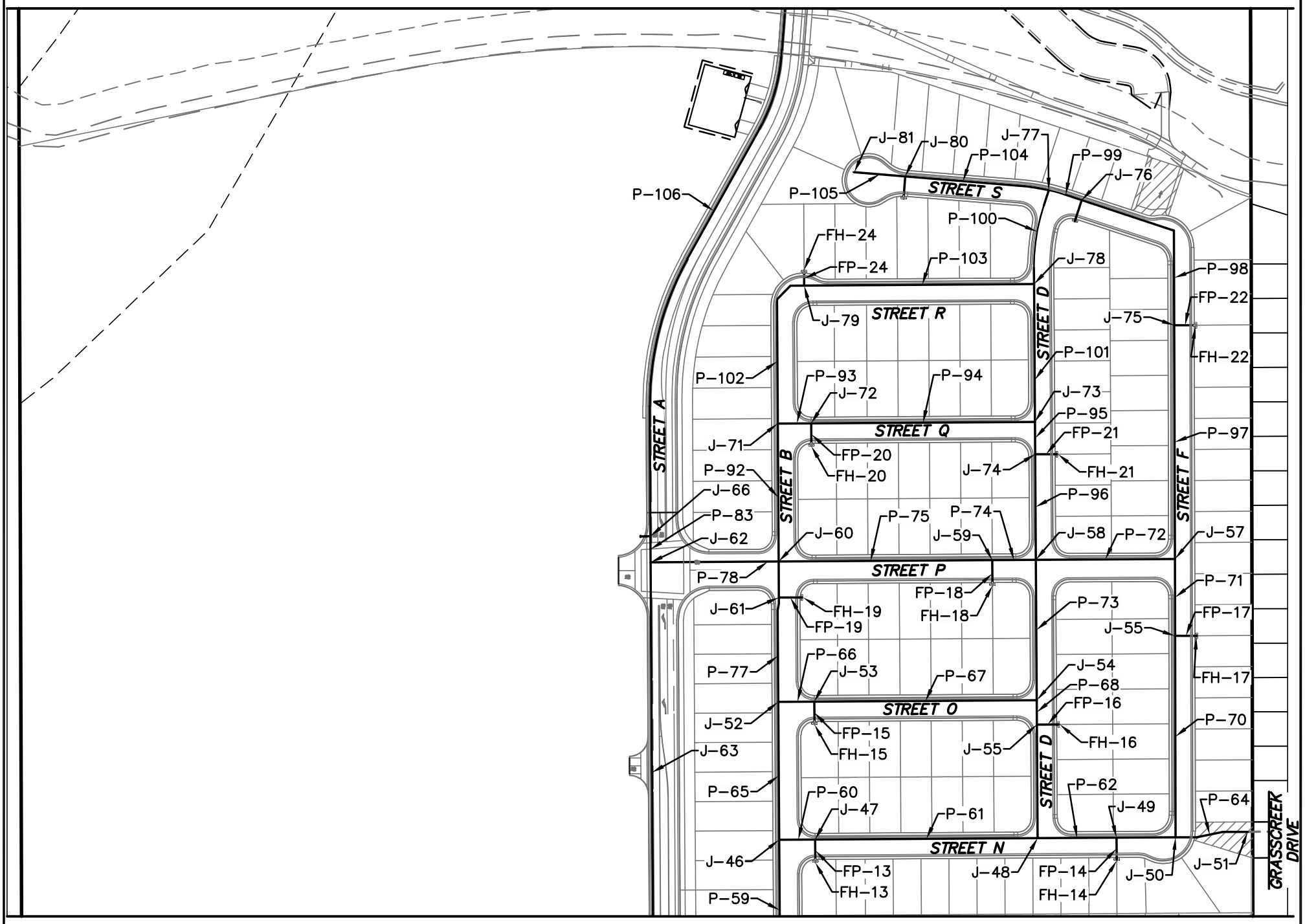
0 100 200 400
SCALE: 1"=200'

NEAR-TERM FIRE SYSTEM EXHIBIT
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA
SHEET 1 OF 3 APRIL 2, 2025

X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH_Fire Site Plan- Near-Term.dwg

SEE SHEET 3



SEE SHEET 1

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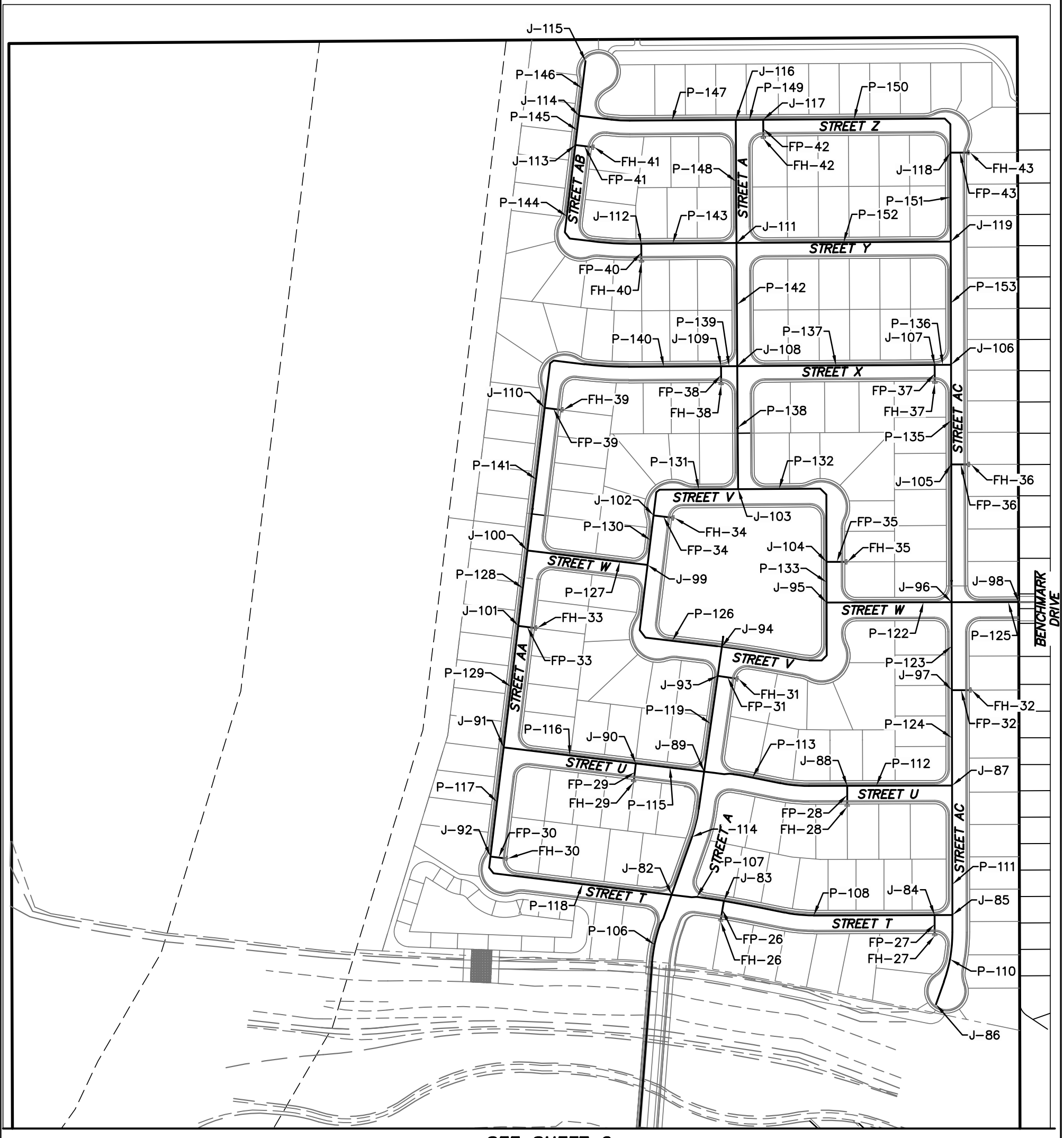
SHEET 2 OF 3 APRIL 2, 2025

X:\Land Projects\4042–60–4\dwg\4042–60–4_EXH_Fire Site Plan–Near–Term.dwg



SEE SHEET 2

0 100 200 400

SCALE: 1"=200'

NEAR–TERM FIRE SYSTEM EXHIBIT

FOR

PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA

SHEET 3 OF 3 APRIL 2, 2025

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APPENDIX G

POTABLE WATER PLAN – BUILDOUT ONSITE WITH FIRE FLOW TO OPERATIONS CENTER MODEL RESULTS

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
31	J-1	0	81.00	195.72	50
32	J-2	0	86.00	195.09	47
33	J-3	0	88.00	194.57	46
39	J-51	0	76.00	196.12	52
42	J-98	0	83.00	198.50	50
44	J-5	0	86.00	194.07	47
46	J-6	0	87.00	193.49	46
48	J-7	0	87.00	193.49	46
50	J-64	4	84.00	186.22	44
52	J-65	4,441	79.00	177.53	43
54	J-8	0	82.00	193.99	48
56	J-9	107	82.00	193.94	48
58	J-15	0	82.00	193.94	48
60	J-34	0	82.00	193.86	48
62	J-35	143	83.50	193.83	48
64	J-63	0	78.00	193.32	50
66	J-62	0	77.00	194.46	51
68	J-66	150	77.00	194.52	51
70	J-82	0	79.50	197.45	51
72	J-89	0	76.50	197.55	52
74	J-93	0	76.70	197.60	52
76	J-94	14	76.30	197.61	52
78	J-95	0	77.70	197.67	52
80	J-96	0	81.50	198.03	50
83	SERV-HDR-2	58	84.00	193.99	48
85	J-10	0	82.00	194.52	49
87	J-16	0	81.50	193.96	49
89	J-17	0	82.00	193.96	48
91	J-18	0	82.00	193.96	48
93	FH-1	0	87.20	193.96	46
95	J-19	162	83.00	193.95	48
97	FH-2	0	89.00	193.95	45
99	J-20	0	84.00	193.97	48
101	FH-3	0	89.00	193.97	45
103	J-21	0	83.00	193.98	48
106	J-23	0	82.00	193.99	48
108	J-24	0	82.00	193.98	48
110	FH-5	0	87.10	193.98	46
113	J-25	0	81.00	193.96	49
115	FH-6	0	86.40	193.96	47
117	J-26	0	80.90	193.97	49
119	J-27	0	82.00	194.00	48
121	FH-7	0	86.60	194.00	46
123	J-28	0	83.00	194.02	48
125	J-29	0	84.00	194.02	48
127	J-30	0	83.50	194.01	48
129	FH-8	0	88.60	194.01	46
132	J-42	0	82.50	194.05	48
134	J-44	0	81.50	194.06	49

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
136	FH-11	0	86.00	194.06	47
138	J-45	0	79.70	194.10	49
140	FH-12	0	84.50	194.10	47
142	J-40	0	79.50	194.11	50
144	J-41	22	80.50	194.05	49
147	J-43	0	80.60	194.05	49
149	FH-10	0	85.60	194.05	47
152	J-36	0	80.00	193.97	49
155	J-37	0	79.80	194.02	49
157	FH-8	0	85.30	194.02	47
159	J-38	0	78.90	194.19	50
161	J-39	0	79.20	194.17	50
163	FH-9	0	84.20	194.17	48
166	J-46	0	78.30	194.54	50
168	J-47	0	78.50	194.60	50
170	FH-13	0	83.50	194.60	48
172	J-48	0	77.30	194.97	51
174	J-49	0	77.00	195.23	51
176	FH-14	0	81.60	195.23	49
178	J-50	0	76.90	195.42	51
181	J-56	0	75.70	195.20	52
183	FH-17	0	80.70	195.20	50
185	J-57	0	76.00	195.12	52
187	J-58	0	76.30	194.92	51
189	J-59	0	76.00	194.86	51
191	FH-18	0	81.00	194.86	49
193	J-60	0	77.40	194.57	51
196	J-61	0	77.40	194.57	51
198	FH-19	0	82.40	194.57	49
200	J-52	0	77.20	194.57	51
203	J-53	0	77.50	194.62	51
205	FH-15	0	82.50	194.62	49
207	J-54	0	76.00	194.92	51
209	J-55	0	76.00	194.93	51
211	FH-16	0	80.80	194.93	49
215	J-71	0	77.20	194.78	51
217	J-79	0	77.50	194.83	51
219	FH-24	0	82.30	194.83	49
221	J-78	0	76.30	194.91	51
223	J-73	0	76.00	194.91	51
225	J-72	0	77.50	194.80	51
227	FH-20	0	82.40	194.80	49
230	J-74	0	76.00	194.91	51
232	FH-21	0	80.90	194.91	49
235	J-75	0	75.30	195.02	52
237	FH-22	0	80.35	195.02	50
239	J-76	0	76.00	194.94	51
241	FH-23	0	81.00	194.94	49
243	J-77	0	75.80	194.92	52

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
246	J-80	0	76.50	194.77	51
248	FH-25	0	81.25	194.77	49
250	J-81	168	77.80	194.71	51
252	J-22	0	83.00	193.97	48
255	FH-4	0	88.20	193.97	46
257	J-11	0	83.00	194.52	48
259	J-12	0	83.00	194.52	48
262	J-13	0	83.00	194.52	48
264	J-14	0	82.00	194.52	49
267	J-32	0	83.00	194.52	48
269	J-31	0	82.00	194.52	49
272	J-33	0	82.00	194.52	49
277	J-68	0	82.00	194.52	49
280	J-67	0	83.00	194.52	48
282	J-70	0	82.50	194.52	48
284	J-69	0	82.00	194.52	49
290	FH-31	0	81.70	197.60	50
292	J-83	0	79.40	197.46	51
294	FH-26	0	84.50	197.46	49
296	J-84	0	81.00	197.57	50
298	FH-27	0	86.00	197.57	48
300	J-85	0	81.00	197.58	50
302	J-86	152	82.00	197.48	50
304	J-87	0	80.60	197.72	51
306	J-88	0	78.75	197.65	51
308	FH-28	0	83.80	197.65	49
311	J-90	0	76.70	197.55	52
313	FH-29	0	81.80	197.55	50
315	J-91	0	76.50	197.55	52
317	J-92	0	76.50	197.51	52
319	FH-30	0	82.00	197.51	50
322	J-97	0	81.50	197.88	50
324	FH-32	0	86.44	197.88	48
327	J-104	0	77.80	197.67	52
329	FH-35	0	82.80	197.67	50
331	J-103	0	76.40	197.66	52
333	J-102	0	76.60	197.63	52
335	FH-34	0	81.80	197.63	50
337	J-99	0	77.00	197.62	52
340	J-100	0	76.20	197.60	53
342	J-101	0	76.70	197.58	52
344	FH-33	0	81.70	197.58	50
347	J-108	0	76.30	197.69	53
349	J-109	0	76.30	197.69	53
351	FH-38	0	81.30	197.69	50
353	J-110	0	76.90	197.64	52
355	FH-39	0	81.90	197.64	50
358	J-105	0	81.00	197.92	51
360	FH-36	0	86.10	197.92	48

FlexTable: Junction Table

ID	Label	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
362	J-106	0	80.30	197.83	51
364	J-107	0	80.30	197.82	51
366	FH-37	0	85.30	197.82	49
369	J-119	0	80.50	197.78	51
371	J-111	0	76.60	197.70	52
374	J-112	0	77.40	197.69	52
376	FH-40	0	82.00	197.69	50
378	J-113	0	78.50	197.66	52
380	FH-41	0	83.50	197.66	49
382	J-114	0	78.90	197.66	51
384	J-115	133	79.50	197.61	51
386	J-116	0	77.90	197.71	52
389	J-117	0	78.00	197.72	52
391	FH-42	0	83.00	197.72	50
393	J-118	0	80.00	197.76	51
395	FH-43	0	85.00	197.76	49
398	J-4	0	86.00	194.41	47
401	SERV-HDR-1	0	87.00	194.41	46
403	FH-44	0	88.50	194.52	46
405	FH-45	0	88.50	194.52	46
407	FH-46	0	88.50	194.52	46
409	FH-47	0	87.50	194.52	46

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-1	J-1	J-2	24.0	PVC	130.0	2,987	2.12	0.001	964	0.63
P-2	J-2	J-3	24.0	PVC	130.0	2,987	2.12	0.001	788	0.52
POC-1	R-1	J-1	60.0	PVC	130.0	2,987	0.34	0.000	1	0.00
POC-2	R-2	J-51	60.0	PVC	130.0	1,369	0.16	0.000	1	0.00
POC-3	R-3	J-98	60.0	PVC	130.0	1,198	0.14	0.000	1	0.00
P-6	J-5	J-6	24.0	PVC	130.0	2,727	1.93	0.001	1,034	0.57
P-7	J-6	J-7	24.0	PVC	130.0	0	0.00	0.000	108	0.00
P-11	J-6	J-64	16.0	PVC	130.0	2,727	4.35	0.004	1,818	7.27
P-82	J-64	J-65	16.0	PVC	130.0	4,441	7.09	0.010	880	8.69
P-8	J-5	J-8	12.0	PVC	130.0	260	0.74	0.000	371	0.08
P-10	J-8	J-9	12.0	PVC	130.0	202	0.57	0.000	358	0.05
P-19	J-9	J-15	12.0	PVC	130.0	95	0.27	0.000	55	0.00
P-42	J-15	J-34	12.0	PVC	130.0	253	0.72	0.000	400	0.08
P-43	J-34	J-35	12.0	PVC	130.0	693	1.97	0.001	26	0.03
P-80	J-35	J-63	12.0	PVC	130.0	550	1.56	0.001	609	0.51
P-79	J-63	J-62	12.0	PVC	130.0	-1,168	3.31	0.003	338	1.14
P-83	J-62	J-66	12.0	PVC	130.0	-749	2.13	0.001	42	0.06
P-106	J-66	J-82	12.0	PVC	130.0	-899	2.55	0.002	1,405	2.92
P-114	J-82	J-89	12.0	PVC	130.0	-379	1.08	0.000	252	0.11
P-119	J-89	J-93	12.0	PVC	130.0	-283	0.80	0.000	190	0.05
P-120	J-93	J-94	12.0	PVC	130.0	-283	0.80	0.000	58	0.01
P-121	J-94	J-95	12.0	PVC	130.0	-227	0.64	0.000	316	0.05
P-122	J-95	J-96	8.0	PVC	130.0	-258	1.65	0.001	246	0.37
P-125	J-96	J-98	12.0	PVC	130.0	-1,198	3.40	0.004	132	0.47
P-9	J-8	SERV-HDR-2	12.0	PVC	130.0	58	0.16	0.000	20	0.00
P-12	J-9	J-10	12.0	PVC	130.0	0	0.00	0.000	98	0.00
P-20	J-15	J-16	12.0	PVC	130.0	-158	0.45	0.000	208	0.02
P-21	J-16	J-17	12.0	PVC	130.0	18	0.05	0.000	232	0.00
P-22	J-17	J-18	12.0	PVC	130.0	49	0.14	0.000	126	0.00
FP-1	J-18	FH-1	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-23	J-18	J-19	12.0	PVC	130.0	49	0.14	0.000	423	0.00
FP-2	J-19	FH-2	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-24	J-19	J-20	12.0	PVC	130.0	-113	0.32	0.000	485	0.02
FP-3	J-20	FH-3	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-25	J-20	J-21	12.0	PVC	130.0	-113	0.32	0.000	44	0.00
P-28	J-21	J-23	12.0	PVC	130.0	-144	0.41	0.000	232	0.02
P-29	J-23	J-24	8.0	PVC	130.0	43	0.28	0.000	308	0.02
FP-5	J-24	FH-5	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-30	J-24	J-16	8.0	PVC	130.0	43	0.28	0.000	326	0.02
P-31	J-16	J-25	12.0	PVC	130.0	-133	0.38	0.000	32	0.00
FP-6	J-25	FH-6	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-32	J-25	J-26	12.0	PVC	130.0	-133	0.38	0.000	190	0.01
P-33	J-26	J-27	8.0	PVC	130.0	-71	0.45	0.000	235	0.03
FP-7	J-27	FH-7	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-34	J-27	J-28	8.0	PVC	130.0	-71	0.45	0.000	103	0.01
P-35	J-28	J-29	8.0	PVC	130.0	-4	0.03	0.000	299	0.00
P-36	J-29	J-30	12.0	PVC	130.0	187	0.53	0.000	42	0.00

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
FP-8	J-30	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-37	J-30	J-23	12.0	PVC	130.0	187	0.53	0.000	180	0.02
P-53	J-29	J-42	12.0	PVC	130.0	-192	0.54	0.000	246	0.03
P-56	J-42	J-44	12.0	PVC	130.0	-184	0.52	0.000	123	0.01
FP-11	J-44	FH-11	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-57	J-44	J-45	12.0	PVC	130.0	-184	0.52	0.000	363	0.04
FP-12	J-45	FH-12	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-58	J-45	J-40	12.0	PVC	130.0	-184	0.52	0.000	54	0.01
P-51	J-40	J-41	8.0	PVC	130.0	96	0.62	0.000	246	0.06
P-52	J-41	J-28	8.0	PVC	130.0	67	0.43	0.000	246	0.03
P-55	J-41	J-43	8.0	PVC	130.0	7	0.05	0.000	54	0.00
FP-10	J-43	FH-10	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-54	J-43	J-42	8.0	PVC	130.0	7	0.05	0.000	246	0.00
P-45	J-34	J-36	12.0	PVC	130.0	-440	1.25	0.001	204	0.11
P-46	J-36	J-26	12.0	PVC	130.0	62	0.17	0.000	189	0.00
P-47	J-36	J-37	12.0	PVC	130.0	-501	1.42	0.001	65	0.05
FP-8	J-37	FH-8	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-48	J-37	J-38	12.0	PVC	130.0	-501	1.42	0.001	238	0.17
P-49	J-38	J-39	12.0	PVC	130.0	281	0.80	0.000	58	0.01
FP-9	J-39	FH-9	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-50	J-39	J-40	12.0	PVC	130.0	281	0.80	0.000	280	0.07
P-59	J-38	J-46	12.0	PVC	130.0	-782	2.22	0.002	222	0.36
P-60	J-46	J-47	12.0	PVC	130.0	-614	1.74	0.001	58	0.06
FP-13	J-47	FH-13	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-61	J-47	J-48	12.0	PVC	130.0	-614	1.74	0.001	358	0.37
P-62	J-48	J-49	12.0	PVC	130.0	-881	2.50	0.002	127	0.25
FP-14	J-49	FH-14	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-63	J-49	J-50	12.0	PVC	130.0	-881	2.50	0.002	95	0.19
P-64	J-50	J-51	12.0	PVC	130.0	-1,369	3.88	0.005	155	0.70
P-70	J-50	J-56	12.0	PVC	130.0	488	1.38	0.001	324	0.22
FP-17	J-56	FH-17	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-71	J-56	J-57	12.0	PVC	130.0	488	1.38	0.001	124	0.08
P-72	J-57	J-58	8.0	PVC	130.0	195	1.24	0.001	224	0.20
P-74	J-58	J-59	8.0	PVC	130.0	191	1.22	0.001	70	0.06
FP-18	J-59	FH-18	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-75	J-59	J-60	8.0	PVC	130.0	191	1.22	0.001	344	0.29
P-78	J-60	J-62	12.0	PVC	130.0	419	1.19	0.001	206	0.10
P-76	J-60	J-61	12.0	PVC	130.0	-24	0.07	0.000	58	0.00
FP-19	J-61	FH-19	6.0	Ductile Iron	130.0	0	0.00	0.000	37	0.00
P-77	J-61	J-52	12.0	PVC	130.0	-24	0.07	0.000	168	0.00
P-65	J-52	J-46	12.0	PVC	130.0	168	0.48	0.000	222	0.02
P-66	J-52	J-53	8.0	PVC	130.0	-192	1.22	0.001	58	0.05
FP-15	J-53	FH-15	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-67	J-53	J-54	8.0	PVC	130.0	-192	1.22	0.001	358	0.31

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-68	J-54	J-55	12.0	PVC	130.0	-267	0.76	0.000	39	0.01
FP-16	J-55	FH-16	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-69	J-55	J-48	12.0	PVC	130.0	-267	0.76	0.000	183	0.04
P-73	J-54	J-58	12.0	PVC	130.0	75	0.21	0.000	226	0.00
P-92	J-60	J-71	8.0	PVC	130.0	-204	1.30	0.001	222	0.21
P-102	J-71	J-79	8.0	PVC	130.0	-91	0.58	0.000	253	0.05
FP-24	J-79	FH-24	6.0	Ductile Iron	130.0	0	0.00	0.000	23	0.00
P-103	J-79	J-78	8.0	PVC	130.0	-91	0.58	0.000	370	0.08
P-101	J-78	J-73	12.0	PVC	130.0	34	0.10	0.000	222	0.00
P-94	J-73	J-72	8.0	PVC	130.0	113	0.72	0.000	360	0.12
FP-20	J-72	FH-20	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-93	J-72	J-71	8.0	PVC	130.0	113	0.72	0.000	54	0.02
P-95	J-73	J-74	12.0	PVC	130.0	-79	0.22	0.000	52	0.00
FP-21	J-74	FH-21	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-96	J-74	J-58	12.0	PVC	130.0	-79	0.22	0.000	170	0.00
P-97	J-57	J-75	12.0	PVC	130.0	293	0.83	0.000	376	0.10
FP-22	J-75	FH-22	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-98	J-75	J-76	12.0	PVC	130.0	293	0.83	0.000	309	0.08
FP-23	J-76	FH-23	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-99	J-76	J-77	12.0	PVC	130.0	293	0.83	0.000	55	0.01
P-100	J-77	J-78	12.0	PVC	130.0	125	0.36	0.000	154	0.01
P-104	J-77	J-80	8.0	PVC	130.0	168	1.07	0.001	232	0.16
FP-25	J-80	FH-25	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-105	J-80	J-81	8.0	PVC	130.0	168	1.07	0.001	82	0.06
P-26	J-21	J-22	8.0	PVC	130.0	31	0.20	0.000	307	0.01
P-27	J-22	J-17	8.0	PVC	130.0	31	0.20	0.000	326	0.01
FP-4	J-22	FH-4	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-13	J-10	J-11	12.0	PVC	130.0	2	0.01	0.000	424	0.00
P-14	J-11	J-12	12.0	PVC	130.0	2	0.01	0.000	963	0.00
P-15	J-12	J-11	12.0	PVC	130.0	0	0.00	0.000	711	0.00
P-16	J-12	J-13	12.0	PVC	130.0	2	0.01	0.000	380	0.00
P-17	J-13	J-14	12.0	PVC	130.0	0	0.00	0.000	778	0.00
P-18	J-14	J-10	12.0	PVC	130.0	2	0.01	0.000	15	0.00
P-39	J-13	J-32	12.0	PVC	130.0	3	0.01	0.000	424	0.00
P-40	J-32	J-31	12.0	PVC	130.0	2	0.00	0.000	777	0.00
P-38	J-31	J-14	12.0	PVC	130.0	3	0.01	0.000	424	0.00
P-41	J-31	J-33	12.0	PVC	130.0	-1	0.00	0.000	42	0.00
P-44	J-35	J-33	12.0	PVC	130.0	0	0.00	0.000	99	0.00
P-81	J-63	J-64	12.0	PVC	130.0	1,718	4.87	0.007	1,028	7.10
P-86	J-33	J-68	12.0	PVC	130.0	-1	0.00	0.000	702	0.00
P-85	J-68	J-67	12.0	PVC	130.0	-2	0.01	0.000	310	0.00
P-90	J-67	J-70	12.0	PVC	130.0	-3	0.01	0.000	536	0.00
P-87	J-68	J-69	12.0	PVC	130.0	1	0.00	0.000	536	0.00
P-88	J-69	J-32	12.0	PVC	130.0	-1	0.00	0.000	742	0.00
P-89	J-70	J-69	12.0	PVC	130.0	-2	0.01	0.000	310	0.00
P-84	J-66	J-67	12.0	PVC	130.0	0	0.00	0.000	252	0.00
P-91	J-67	J-70	12.0	PVC	130.0	1	0.00	0.000	2,182	0.00

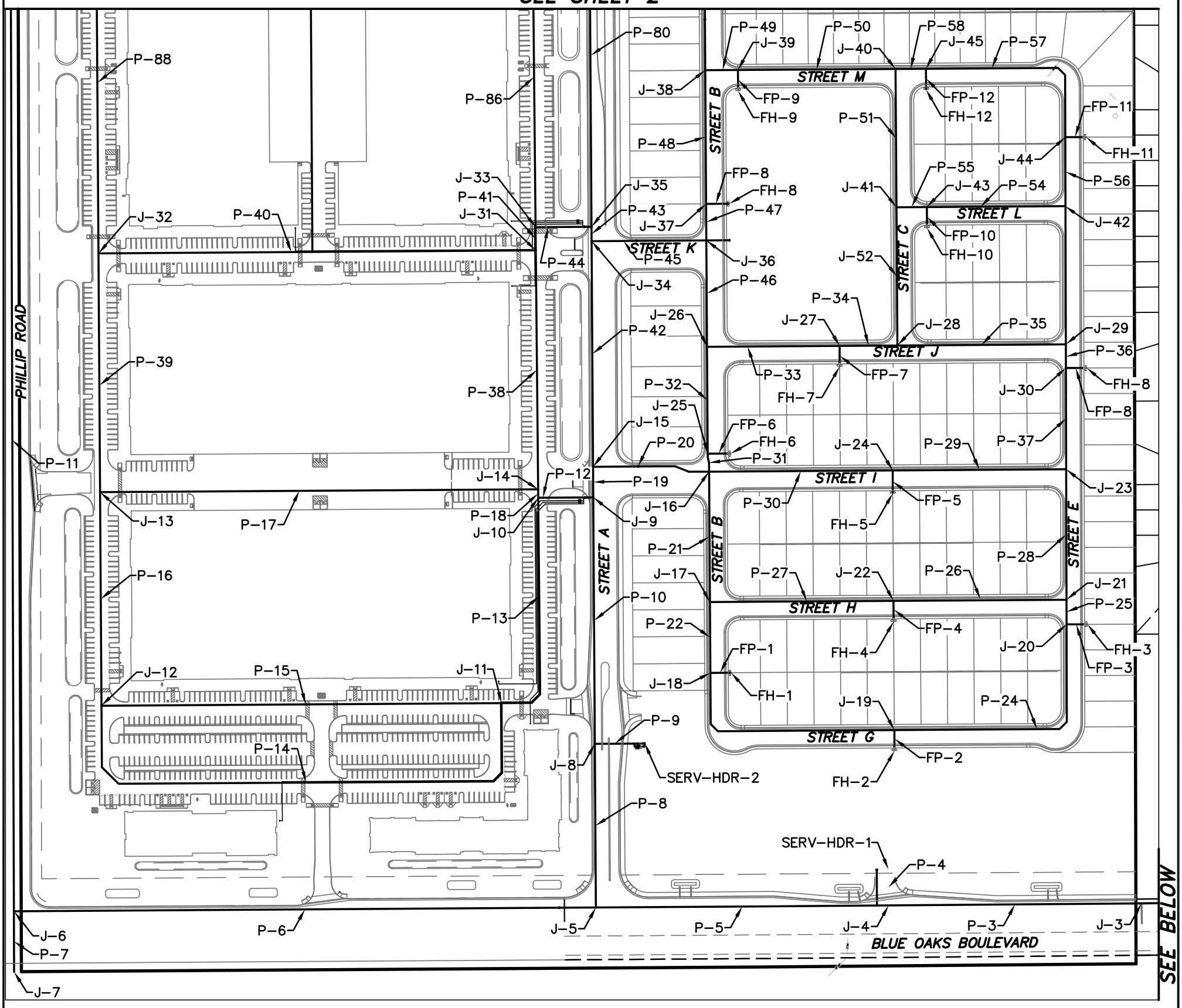
FlexTable: Pipe Table

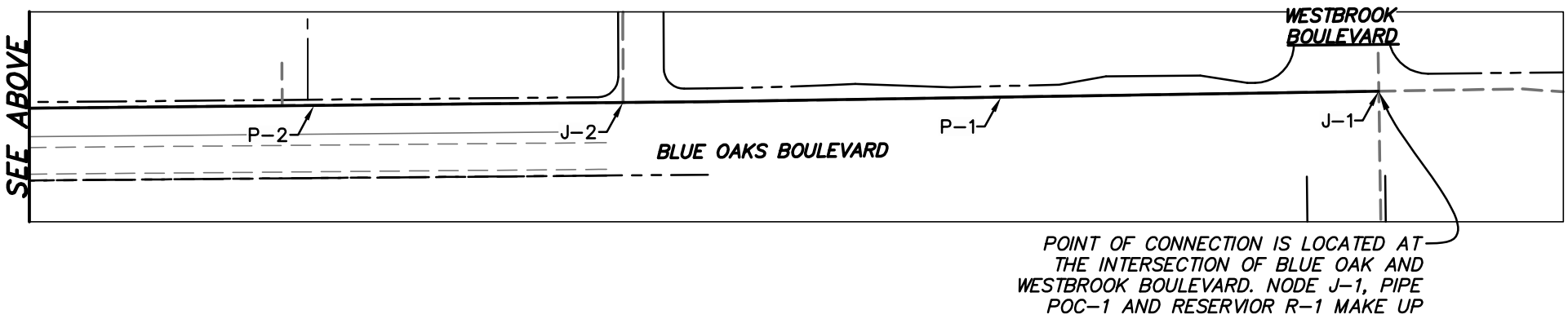
Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
FP-31	J-93	FH-31	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-107	J-82	J-83	12.0	PVC	130.0	-290	0.82	0.000	59	0.02
FP-26	J-83	FH-26	6.0	Ductile Iron	130.0	0	0.00	0.000	36	0.00
P-108	J-83	J-84	12.0	PVC	130.0	-290	0.82	0.000	417	0.11
FP-27	J-84	FH-27	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-109	J-84	J-85	12.0	PVC	130.0	-290	0.82	0.000	35	0.01
P-110	J-85	J-86	8.0	PVC	130.0	152	0.97	0.001	180	0.10
P-111	J-85	J-87	12.0	PVC	130.0	-442	1.25	0.001	255	0.14
P-112	J-87	J-88	8.0	PVC	130.0	117	0.74	0.000	206	0.07
FP-28	J-88	FH-28	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-113	J-88	J-89	8.0	PVC	130.0	117	0.74	0.000	284	0.10
P-115	J-89	J-90	8.0	PVC	130.0	20	0.13	0.000	135	0.00
FP-29	J-90	FH-29	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-116	J-90	J-91	8.0	PVC	130.0	20	0.13	0.000	262	0.00
P-117	J-91	J-92	12.0	PVC	130.0	230	0.65	0.000	216	0.04
FP-30	J-92	FH-30	6.0	Ductile Iron	130.0	0	0.00	0.000	32	0.00
P-118	J-92	J-82	12.0	PVC	130.0	230	0.65	0.000	389	0.06
P-124	J-87	J-97	12.0	PVC	130.0	-559	1.59	0.001	188	0.16
FP-32	J-97	FH-32	6.0	Ductile Iron	130.0	0	0.00	0.000	37	0.00
P-123	J-97	J-96	12.0	PVC	130.0	-559	1.59	0.001	173	0.15
P-133	J-95	J-104	12.0	PVC	130.0	31	0.09	0.000	80	0.00
FP-35	J-104	FH-35	6.0	Ductile Iron	130.0	0	0.00	0.000	39	0.00
P-132	J-104	J-103	12.0	PVC	130.0	31	0.09	0.000	311	0.00
P-131	J-103	J-102	12.0	PVC	130.0	213	0.61	0.000	209	0.03
FP-34	J-102	FH-34	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-130	J-102	J-99	12.0	PVC	130.0	213	0.61	0.000	98	0.01
P-126	J-99	J-94	12.0	PVC	130.0	70	0.20	0.000	299	0.01
P-127	J-99	J-100	12.0	PVC	130.0	144	0.41	0.000	238	0.02
P-128	J-100	J-101	12.0	PVC	130.0	209	0.59	0.000	150	0.02
FP-33	J-101	FH-33	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-129	J-101	J-91	12.0	PVC	130.0	209	0.59	0.000	241	0.03
P-138	J-103	J-108	12.0	PVC	130.0	-182	0.52	0.000	242	0.03
P-139	J-108	J-109	8.0	PVC	130.0	66	0.42	0.000	32	0.00
FP-38	J-109	FH-38	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-140	J-109	J-110	8.0	PVC	130.0	66	0.42	0.000	427	0.05
FP-39	J-110	FH-39	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-141	J-110	J-100	8.0	PVC	130.0	66	0.42	0.000	282	0.03
P-134	J-96	J-105	12.0	PVC	130.0	381	1.08	0.000	271	0.11
FP-36	J-105	FH-36	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-135	J-105	J-106	12.0	PVC	130.0	381	1.08	0.000	196	0.08
P-136	J-106	J-107	8.0	PVC	130.0	117	0.75	0.000	32	0.01
FP-37	J-107	FH-37	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00

FlexTable: Pipe Table

Label	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Length (User Defined) (ft)	Headloss (Friction) (ft)
P-137	J-107	J-108	8.0	PVC	130.0	117	0.75	0.000	388	0.13
P-153	J-106	J-119	12.0	PVC	130.0	264	0.75	0.000	242	0.05
P-152	J-119	J-111	8.0	PVC	130.0	84	0.54	0.000	421	0.08
P-142	J-111	J-108	12.0	PVC	130.0	131	0.37	0.000	242	0.01
P-143	J-111	J-112	8.0	PVC	130.0	52	0.33	0.000	187	0.01
FP-40	J-112	FH-40	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-144	J-112	J-113	8.0	PVC	130.0	52	0.33	0.000	330	0.03
FP-41	J-113	FH-41	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-145	J-113	J-114	8.0	PVC	130.0	52	0.33	0.000	58	0.00
P-146	J-114	J-115	8.0	PVC	130.0	133	0.85	0.000	108	0.05
P-147	J-114	J-116	8.0	PVC	130.0	-81	0.51	0.000	309	0.05
P-148	J-116	J-111	12.0	PVC	130.0	99	0.28	0.000	242	0.01
P-149	J-116	J-117	12.0	PVC	130.0	-180	0.51	0.000	54	0.01
FP-42	J-117	FH-42	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
P-150	J-117	J-118	12.0	PVC	130.0	-180	0.51	0.000	429	0.05
FP-43	J-118	FH-43	6.0	Ductile Iron	130.0	0	0.00	0.000	36	0.00
P-151	J-118	J-119	12.0	PVC	130.0	-180	0.51	0.000	175	0.02
P-3	J-3	J-4	24.0	PVC	130.0	2,987	2.12	0.001	244	0.16
P-5	J-4	J-5	24.0	PVC	130.0	2,987	2.12	0.001	520	0.34
P-4	J-4	SERV-HDR-1	12.0	PVC	130.0	0	0.00	0.000	20	0.00
FP-44	J-12	FH-44	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
FP-45	J-13	FH-45	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
FP-46	J-32	FH-46	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00
FP-47	J-69	FH-47	6.0	Ductile Iron	130.0	0	0.00	0.000	35	0.00

SEE SHEET 2





POINT OF CONNECTION IS LOCATED AT THE INTERSECTION OF BLUE OAK AND WESTBROOK BOULEVARD. NODE J-1, PIPE POC-1 AND RESERVIOR R-1 MAKE UP THE CONNECTION AT THE INTERSECTION.

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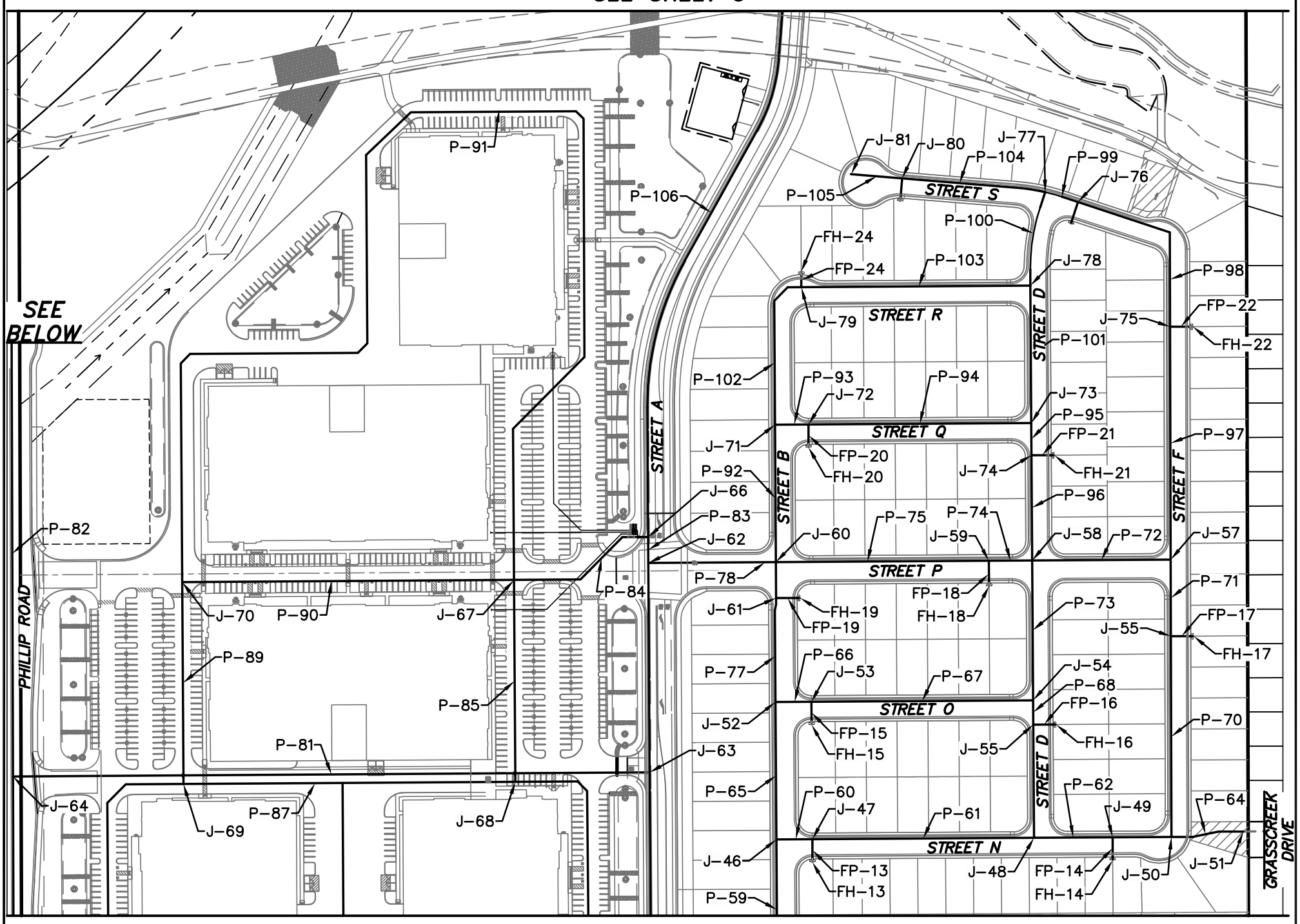
0 100 200 400
SCALE: 1"=200'

FIRE SYSTEM EXHIBIT
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA
SHEET 1 OF 3 APRIL 2, 2025

X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH_Fire Site Plan- Buildout.dwg

SEE SHEET 3



SEE SHEET 1

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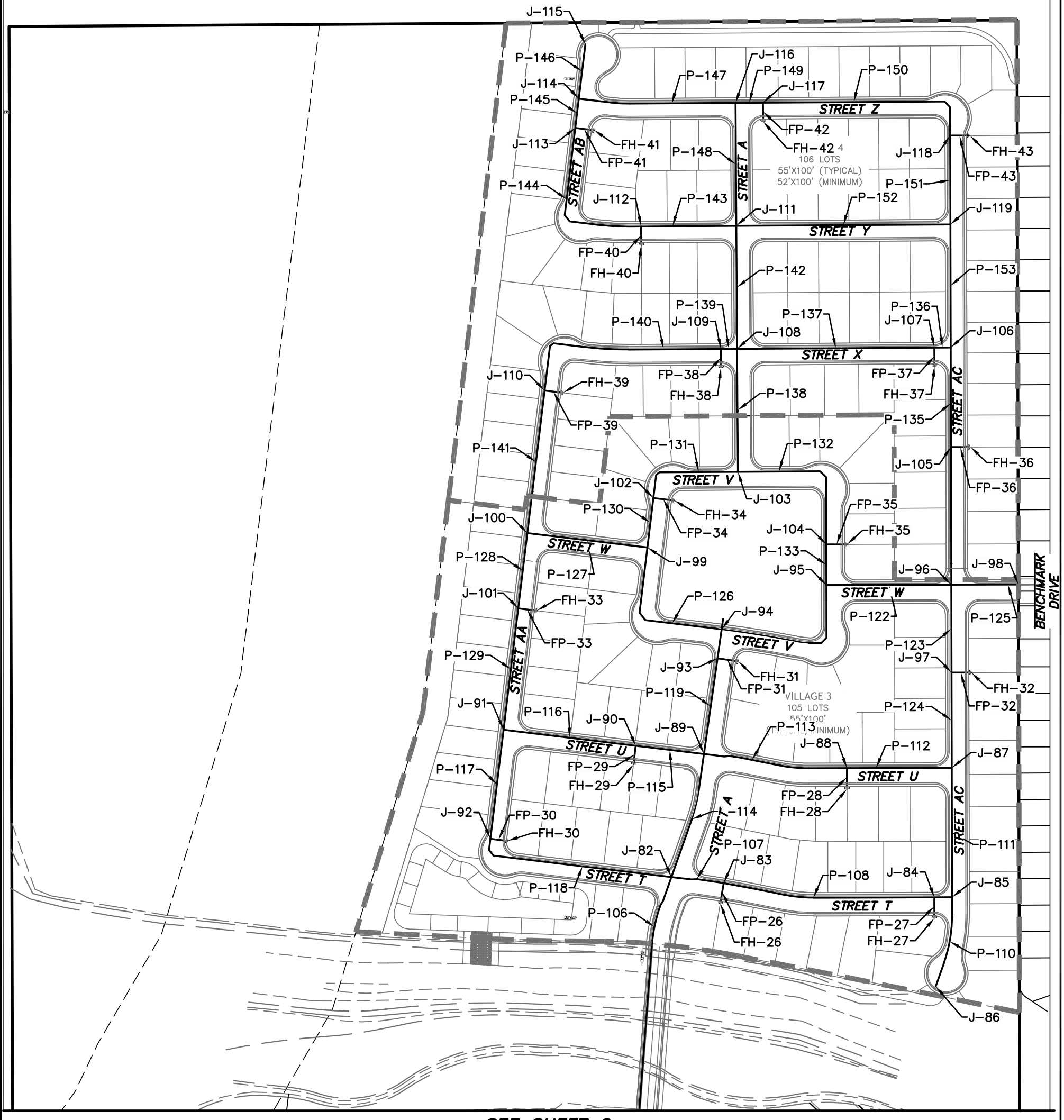

SEE SHEET 2

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SCALE: 1"=200'

FIRE SYSTEM EXHIBIT

FOR

PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA

SHEET 3 OF 3 APRIL 2, 2025

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Appendix F3

Recycled Water Master Plan

PHILLIP ROAD SITE
RECYCLED WATER MASTER PLAN

6382 PHILLIP ROAD
ROSEVILLE, CALIFORNIA
(PLANNING APPLICATION 24-1010)

December 16, 2025

Panattoni Development Company, Inc.
400 Capital Mall, Suite 2040
Sacramento, CA 95814
(916) 379-1115

Prepared By:

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APPENDIX B RECYCLED WATER PLAN – FUTURE ONSITE MODEL RESULTS

I. INTRODUCTION

The Phillip Road Site (Proposed Project) Recycled Water Master Plan (Plan) has been prepared at the request of Panattoni Development Company, Inc. (PDC) to meet the City of Roseville's (City) utility demand planning requirements and in support of the Phillip Road Site environmental review process.

Proposed land uses, tributary areas, irrigation generation rates, and peaking factors are used to size the recycled water facilities for the Proposed Project.

The purposes of this Recycled Water Plan Master Plan are as follows:

- Estimate the expected recycled water system demand for the Proposed Project during Near-Term (Phases 1 and 2) and complete build out.
- Size recycled water system main pipelines for the Proposed Project.

I.A. PROJECT VICINITY AND PHASING:

The Proposed Project is located in the northwest edge of the City of Roseville as shown on **Exhibit 1 – Project Location Plan**. Pleasant Grove Creek and the Pleasant Grove Bypass Channel dissect the Proposed Project.

The Proposed Project will advance in multiple phases. It is expected to be completed in 6 phases, see **Exhibit 2 – Master Phasing Plan**. The first 4 phases are intended to be single family residences, the fifth phase is higher density residential, and the final stage is a combination of commercial and light industrial.

The first and second phases will be located in the easterly half of the project site located south of the Pleasant Grove Bypass Channel. The first phase will include the northerly half of this area and include the main road through the center of the project site, stopping at the southerly boundary of the bypass channel. Phase 1 will construct a new 12" recycled water line along Blue Oaks Boulevard from Westbrook Boulevard to Street A. The recycled water line will then be constructed along Street A toward the southerly boundary of the bypass channel.

The third and fourth phases are located to the north of Pleasant Grove Bypass Channel. The third phase will include construction of a bridge crossing the channel with a recycled water line attached to the bridge to serve the park on the north side of the development.

The fifth phase will be high density residential, located along Blue Oaks Boulevard on the easterly half of the project site.

The final phase will include the commercial and light industrial buildings located on the westerly portion of the site, south of the Pleasant Grove Bypass Channel.

I.B. PRE-DEVELOPMENT CONDITIONS:

The Proposed Project site is an undeveloped agricultural parcel that was originally planted during the 1950's, maintained in rice production through the 1990's, and has been planted in irrigated crops until the present.

The Pleasant Grove Creek Bypass Channel was constructed south of Pleasant Grove Creek during the summer of 2019 to augment flood mitigation/control in this area.

A 10-foot to 15-foot escarpment runs in a southeasterly direction from the Phillip Road Site entrance of the property's southern portion of the site to its eastern boundary, demarcating an elevation change between the southern and norther portions of the southern portion of the site.

The portion of the property north of Pleasant Grove Creek is also currently active cultivation and irrigated with water from a long-established irrigation canal along the northern boundary.

I.C. PROPOSED PROJECT AREA DEVELOPMENT OPPORTUNITIES & CONSTRAINTS:

The Proposed Project is influenced by several factors, including the physical setting, land use, circulation considerations, and public policies. Two significant aspects that influence the development of the Proposed Project are described below and depicted on **Exhibit 3 – Tentative Map**.

- PLACER PARKWAY

  The proposed Placer Parkway will bisect the northerly portion of the Proposed Project Area.

- PLEASANT GROVE CREEK AND PLEASANT GROVE CREEK BYPASS CHANNEL

  The existing Pleasant Grove Creek and newly constructed Pleasant Grove Creek Bypass Channel divides the Proposed Project. A bridge will be needed in the future to access the area to the north when it is developed.

II. RECYCLED WATER MASTER PLAN PROCESS

The Recycled Water Master Plan is used to determine the demand and distribution pipelines for the Proposed Project. The typical methodology used in this Master Plan is based on the City of Roseville's Environmental Utilities Department. The current City of Roseville Design Standards edition is 2025.

The Project area is surrounded by three previous Specific Plans: 1) West Roseville Specific Plan (WRSP), 2) Creekview Specific Plan (CSP), and 3) Amoruso Ranch Specific Plan (ARSP). The criteria used for each of these specific plans is the same as that used to analyze the Proposed Project.

III. PROJECT IRRIGATION DEMANDS

The projected irrigation demands are based on the criteria used in the above mentioned master plans. The criteria used the water usage as calculated in the Potable Water Master Plan and land uses shown per **Exhibit 3 – Tentative Map**.

III.A. BASE WATER DEMAND PROJECTIONS

The Potable Water Study is used to determine the demand and distribution pipelines for the Proposed Project. The methodology being used in this Master Plan is based on the City of Roseville's Environmental Utilities Department. The current City of Roseville Design Standards (January 2025) were also utilized.

The Proposed Project will consist of Light Industrial (M1), Low Density Residential (LDR), High Density Residential (HDR), Open Space (OS) and Public/Quasi Public (P/QP) land uses. The Proposed Project land uses are shown on **Exhibit 3 – Tentative Map**.

The average day demand for land use is based on the methods used in the City of Roseville Design Standards (January 2025) as shown in **Table 1 – City of Roseville Demand Factors**.

Table 1 – City of Roseville Demand Factors

Land Use Category		Average Day Unit Water Demand Factors
Residential	LDR (<3.5 DU's/Ac)	*728 gpd/DU*
	LDR (3.5 to 5.0 DU's/Ac)	*600 gpd/DU*
	LMDR (>5.0 to 6.0 DU's/Ac)	*521 gpd/DU*
	LMDR (>6.0 to 8.0 DU's/Ac)	*430 gpd/DU*
	MDR (>8.0 to 12.0 DU's/Ac)	*323 gpd/DU*
	HDR (>12.0 to 16.0 DU's/Ac	*288 gpd/DU*
	HDR (>16.0 DU's/Ac)	*177 gpd/DU*
Commercial/Other	Commercial/Retail	*2,598 gpd/ac*
	Business Professional	*2,598 gpd/ac*
	Light Industrial	*2,598 gpd/ac*
	Industrial	*2,562 gpd/ac*
	Railroad Yard	*109 gpd/ac*
	Elementary Schools	*3,454 gpd/ac*
	High Schools	*4,068 gpd/ac*
	Public (Fire Station, etc)	*1,780 gpd/ac*
	Park/Recreation	*2,988 gpd/ac*
	Open Space/Major ROW	-
	Vacant/Unassigned	-

*Factors assume a 30% F.A.R. 50% F.A.R. for senior living.

The estimated potable water demand is based on land use. **Table 2 – Potable Water Demand -** shows the potable water demand.

Parcel LL-5, as shown in **Exhibit 3 – Tentative Map** is assumed to have a heavy water user tenant, 480,000 gpd peak flow added on the normal peak flow based on city flow demand as shown. The entire demand will be served by the recycled water system. The city has stated that the recycled water

system will have the availability and capacity to supply the proposed tenant with 480,000 gpd after the completion of offsite improvements as discussed in Section IV.B.

Table 2 - Potable Water Demand

Location on Site	Dwelling Units (DU)	Water Demand Area (ac)	Land Use	Average Day Unit Water Demand Factor[a]	Unit-Factor Units	Average Day Demand (gpd)[b]	Annual Demand (ac-ft/yr)	Recycled Water Demand (ac-ft/yr)[c]	Water Conservation Savings (ac-ft/yr)[d]	Peaking Factor[e]	Maximum Day Demand (gpd)	Peaking Factor[f]	Peak Flow (gpd)[g]	Design Flow (gpm)	Design Flow+2% (gpm)
LL 1	-	4.139	CC, Community Commercial	2,598	gpd/acre	10,753	12.0	4.5	2.65	2.0	21,506	1.7	36,561	25	26
LL 2	-	3.774	CC, Community Commercial	2,598	gpd/acre	9,805	11.0	4.1	2.41	2.0	19,610	1.7	33,336	23	24
LL 3	-	9.180	M1, Light Industrial	2,598	gpd/acre	23,850	26.7	10.0	5.87	2.0	47,699	1.7	81,089	56	57
LL 4	-	1.033	PQP, Public Quasi Public	1,780	gpd/acre	1,839	2.1	1.9	0.66	2.0	3,677	1.7	6,252	4	4
LL 5	-	8.173	M1, Light Industrial[h]	2,598	gpd/acre	21,233	23.8	546.6	5.23	2.0	42,467	1.7	72,194	50	51
LL 6	-	7.588	M1, Light Industrial	2,598	gpd/acre	19,714	22.1	8.2	4.85	2.0	39,427	1.7	67,026	47	47
LL 7	-	7.252	M1, Light Industrial	2,598	gpd/acre	18,841	21.1	7.9	4.64	2.0	37,681	1.7	64,058	44	45
LL 8	-	7.508	M1, Light Industrial	2,598	gpd/acre	19,506	21.9	8.2	4.80	2.0	39,012	1.7	66,320	46	47
LL 9	-	7.494	M1, Light Industrial	2,598	gpd/acre	19,469	21.8	8.1	4.79	2.0	38,939	1.7	66,196	46	47
LL 10	-	8.949	M1, Light Industrial	2,598	gpd/acre	23,250	26.0	9.7	5.72	2.0	46,499	1.7	79,048	55	56
LL 11	-	0.396	PQP, Public Quasi Public	1,780	gpd/acre	705	0.8	0.7	0.25	2.0	1,410	1.7	2,397	2	2
LL 12	162	25.598	LMDR (>6 to 8.0 DU's/AC), Low Density Residential	430	gpd/DU	69,660	78.0	0.0	16.46	2.0	139,320	1.7	236,844	164	168
LL 13	156	23.604	LMDR (>6 to 8.0 DU's/AC), Low Density Residential	430	gpd/DU	67,080	75.1	0.0	15.85	2.0	134,160	1.7	228,072	158	162
LL 14	-	3.010	PR, Park	2,988	gpd/acre	8,994	10.1	9.8	1.92	2.0	17,988	1.7	30,579	21	22
LL 15	135	5.859	HDR (>16 DU's/AC), High Density Residential	177	gpd/DU	23,895	26.8	8.5	3.75	2.0	47,790	1.7	81,243	56	58
LL 16	-	13.878	OS, Open Space	-		-	-	0.0	8.88	-	-	-	-	-	
LL 17	105	24.257	LDR (>3.5 to 5.0 DU's/AC), Low Density Residential	600	gpd/DU	63,000	70.6	0.0	10.67	2.0	126,000	1.7	214,200	149	152
LL 18	-	1.904	PR, Park	2,988	gpd/acre	5,689	6.4	6.2	1.22	2.0	11,378	1.7	19,343	13	14
LL 19	106	20.714	LMDR (>5 to 6.0 DU's/AC), Low Density Residential	521	gpd/DU	55,226	61.9	0.0	10.77	2.0	110,452	1.7	187,768	130	133
LL 20	-	1.026	OS, Open Space	-		-	-	0.0	0.66	-	-	-	-	-	
Total	664	185.336				462,508	518.1	634.4	112.05		925,015		1,572,526	1,092	1,114

(a) From Table of Section 8-6 of the City of Roseville Design Standards (January, 2025) (gpd/ac or gpd/du).
(b) Average Day Demand (gallons per day) = Water Demand Area x Average Day Demand Unit Flow Factor.
(c) Recycled Water Annual Demand from the Phillip Road Site Recycled Water Master Plan, Table 5.
(d) Water Conservation of Potable Water by Turf Reduction, Smart Controllers Recirculating Hot Water, Table 8, in the Water Conservation Plan
(e) Peaking factor from average day demand to maximum day demand per Section 8-7 of the City of Roseville Design Standards (January, 2025).
(f) Peaking factor from maximum day demand to peak hour demand per Section 8-7 of the City of Roseville Design Standards (January, 2025).
(g) Peak Hour Demand = Peaking Factor * Maximum Day Demand.
(h) Assumes parcel LL-5 will contain a potential 40MW data center, adding approximately 480,000 gpd of peak demand flow to recycled water.

III.B. IRRIGATION DEMAND PROJECTIONS

The recycled water system will be used for the irrigation requirements of all the land uses, except low and medium density residential lots. Based on the criteria set forth by the previous master plans, irrigation is based on irrigated areas being planted in turf and irrigation amounts are based on evapotranspiration rates, rainfall and irrigation demand. **Table 3 – Typical Local Irrigation Demands** give a breakdown of monthly irrigation demand.

Table 3 – Typical Local Irrigation Demands

Month	ET-Turf (inches)	Monthly Precipitation (inches)	Monthly Irrigation Demand (inches)	Monthly Irrigation Demand (feet)
January	0.88	3.57	0.0	0.00
February	1.36	3.24	0.0	0.00
March	2.48	2.45	0.6	0.04
April	3.76	1.52	3.3	0.27
May	4.96	0.71	5.7	0.48
June	6.16	0.24	8.0	0.67
July	6.8	0.02	9.2	0.77
August	5.84	0.04	8.0	0.67
September	4.48	0.24	5.8	0.48
October	2.96	0.97	2.8	0.24
November	1.28	1.68	0.0	0.00
Decemeber	0.8	3.63	0.0	0.00
Average	3.48	1.53	3.6	0.30
Total	41.76	18.31	43.4	3.62

Per Table 3, irrigation demand is assumed to be zero between November and February due to rainfall.

The irrigation water demand projections are based on an estimated surface area that will receive irrigation. The estimated areas are determined by applying a factor of irrigated surface area to each of the land use areas. The irrigated surface area factors are shown in **Table 4 – Irrigated Surface Area Factors.**

Table 4 – Irrigated Surface Area Factors

Land Use Category	Irrigated Surface Area Factor (% AC)
High Density Residential (HDR)	0.4
Commercial/Light Industrial	0.3
Public/Quasi Public	0.5
Park	0.9

The total irrigation demand is based on all irrigatable areas being turf with a typical sprinkler irrigation technique. This will produce a conservative estimate of irrigation demand. The Water Conservation Plan that accompanies this Master Plan will delve into different landscape materials and irrigation methods. **Table 5 - Recycled Water Demand** calculates the total water demand projection for the recycled water system.

Table 5 - Recycled Water Demand

Location on Site	Water Demand Area (ac)	Land Use	Irrigated Surface Area Factor (%)	Site Area Irrigated (ac)[b]	Annual Demand (ac-ft/yr)[c]	Average Day Demand (gpd)	Peaking Factor[d]	Peak Day Demand (gpd)	Peak Demand (gpm)[e]	Peaking Factor[f]	Data Center Demand (gpm)[g]	Operational Demand (gpm)	Operational Demand/Data Center + 2% (gpm)
LL 1	4.139	CC, Community Commercial	0.30	1.24	4.5	4,013	2.55	10,232	19	1.5	0	28	29
LL 2	3.774	CC, Community Commercial	0.30	1.13	4.1	3,659	2.55	9,330	17	1.5	0	26	26
LL 3	9.180	M1, Light Industrial	0.30	2.75	10.0	8,900	2.55	22,694	42	1.5	0	63	64
LL 4	1.033	PQP, Public Quasi Public	0.50	0.52	1.9	1,669	2.55	4,256	8	1.5	0	12	12
LL 5	8.173	M1, Light Industrial	0.30	2.45	546.6	487,923	2.55	20,205	37	1.5	333	56	391
LL 6	7.588	M1, Light Industrial	0.30	2.28	8.2	7,356	2.55	18,758	35	1.5	0	52	53
LL 7	7.252	M1, Light Industrial	0.30	2.18	7.9	7,030	2.55	17,928	33	1.5	0	50	51
LL 8	7.508	M1, Light Industrial	0.30	2.25	8.2	7,279	2.55	18,561	34	1.5	0	52	53
LL 9	7.494	M1, Light Industrial	0.30	2.25	8.1	7,265	2.55	18,526	34	1.5	0	51	52
LL 10	8.949	M1, Light Industrial	0.30	2.68	9.7	8,676	2.55	22,123	41	1.5	0	61	63
LL 11	0.396	PQP, Public Quasi Public	0.50	0.20	0.7	640	2.55	1,632	3	1.5	0	5	5
LL 12	25.598	LMDR (>6 to 8.0 DU's/AC), Low Density Residential	0.00										
LL 13	23.604	LMDR (>6 to 8.0 DU's/AC), Low Density Residential	0.00										
LL 14	3.010	PR, Park	0.90	2.71	9.8	8,754	2.55	22,323	41	1.5	0	62	63
LL 15	5.859	HDR (>16 DU's/AC), High Density Residential	0.40	2.34	8.5	7,573	2.55	19,312	36	1.5	0	54	55
LL 16	13.878	OS, Open Space	-										
LL 17	24.257	LDR (>3.5 to 5.0 DU's/AC), Low Density Residential	-					0	0			0	
LL 18	1.904	PR, Park	0.90	1.71	6.2	5,538	2.55	14,121	26	1.5	0	39	40
LL 19	20.714	LMDR (>5 to 6.0 DU's/AC), Low Density Residential	0.00										
LL 20	1.026	OS, Open Space	-										
Total	185.336			26.70	634.4	566,274		219,999	407		333	611	957

(a) Irrigated Surface Area Factor per Table 4 of this Master Plan.
(b) Site Area Irrigated = Water Demand Area * Irrigated Surface Area Factor.
(c) Annual Demand = Site Area Irrigated * 3.62 ft (3.62 feet total irrigation demand per year, see Table 3 of this Master Plan)
(d) Peaking factor = Maximum Monthly Irrigation Demand / Average Monthly Irrigation Demand
(e) Peak Demand is the Peak Day Demand applied to 9 hours of the day.
(f) Peak Factor to account for variations in irrigation systems.
(g) Assumes LL-5 site will contain a potential 40MW Data Center, which adds approximately 480,000 gpd of peak flow (537.7 ac-ft/yr).

IV. RECYCLED WATER SYSTEM INFRASTRUCTURE

IV.A. SYSTEM DESCRIPTION:

The recycled water system is designed to serve the land uses as shown on **Exhibit 3 – Tentative Map**. The recycled water system, comprised of 10-inch, 8-inch and 6-inch pipes, have been designed to convey recycled water flows within the Proposed Project, **Exhibit 4 – Recycled Water Site Plan.**

The Proposed Project's main transmission line connects to the proposed 12-inch pipe at the intersection of Blue Oaks Boulevard and Street A of the Proposed Project. The main line along Street A ranges from 10-inch pipe to 6-inch pipe. The 10-inch pipe will be installed to the service for Building D, then an 8-inch pipe to the service for Building E, and the rest of the main in Street A will be 6-inch pipe.

IV.B. SYSTEM DESIGN CRITERIA:

The recycled water system will be operated and owned by the City of Roseville. The City is responsible for all maintenance and operations downstream including the water meters. Each individual property is responsible for all onsite maintenance and operations upstream of the water meter.

The City has established a set of design standards for the recycled water systems they will operate and maintain. Their goal is to maintain operations to all customers on a consistent basis. See **Table 6 – City Operational Criteria** for the City of Roseville Recycled Water Operational Criteria.

TABLE 6
City Operational Criteria

Condition	Operation Value
Minimum Residual Pressure	50 psi
Maximum Residual Pressure	100 psi
Maximum Pipe Velocity	5.0 fps
Maximum Head Loss per 1,000 Feet of Pipe	5.0 ft

On September 25, 2025 the City completed the analysis of their recycled water system with updated supply and demands including the increased recycled water demands for the Phillip Road Site summarized in Section III of this report. In order to maintain the City's Operational Criteria within Table 6, recycled water infrastructure will need to be constructed both before the Phillip Road Site is supplied and prior to City customers demand buildout. These improvements will require funding from

the developments. Phillip Road Site will need to pay for its fair share portion of the expansion of the recycled water system summarized in **Table 7 – Summary of Recycled Water Improvements** which are needed to support the Phillip Road Site recycle water demands.

Table 7

Summary of Recycled Water Improvements

Description	Timing Required	Constructed By
24-inch diameter pipeline located on Blue Oaks Boulevard between West Park Drive and Westbrook Boulevard	Prior to Phillip Road Site Supply	Phillip Road Site Developer
12-inch diameter pipeline located on Blue Oaks Boulevard between Westbrook Boulevard and the Phillip Road Site	Prior to Phillip Road Site Supply	Phillip Road Site Developer
24-inch diameter pipe parallel to the existing pipe between West Zone Pump Station and West Park Drive	Prior to Buildout of City Customers	City
30-inch diameter force main at Dry Creek Wastewater Treatment Plant (DCWWTP)	Prior to Buildout of City Customers	City
1 million gallon storage at DCWWTP	Prior to Buildout of City Customers	City
1 million gallon storage at West Zone Tank and Pump Station	Prior to Buildout of City Customers	City
Increase pumping capacity at the West Zone Tank and Pump Station	Prior to Buildout of City Customers	City

V. RECYCLED WATER SUPPLY

The Proposed Project anticipates receiving a commitment for recycled water from the City for a minimum amount equal to sixty-nine percent (69%) of the average dry weather flow (ADWF) generated and conveyed by the Proposed Project to the Pleasant Grove Wastewater Treatment Plant. The Proposed Project (not including discharge from the Data Center) will generate an ADWF of 0.173 MGD and anticipates receiving a volume of recycled water 0.119 MGD from the City. See **Table 8 – Available Recycled Water Supply and Demand** for a summary of the recycled water supply.

Table 8 - Available Recycled Water Supply and Demand

Location	Sewer Location	Recycled Water Supply (ADWF) (MGD)[1]	Annual Recycled Water Supply (ac-ft/yr)	Adjusted Supply - 69% (ac-ft/yr)	Recycled Water Demand (ac-ft/yr)	RW Demand after Landscape area reduction (ac-ft/yr)[2]	RW Demand after Turf area reduction (ac-ft/yr)[3]	RW Demand after Smart Controllers (ac-ft/yr)[4]	Recycled Water Demand after Conservation (ac-ft/yr)	Difference (ac-ft/yr)
LL-1	Building A	0.0033	3.7	2.6	4.5	4.5	2.9	2.3	2.3	0.2
LL-2	Building B	0.0033	3.7	2.6	4.1	4.1	2.7	2.1	2.1	0.4
LL-3	Building C	0.0078	8.7	6.0	10.0	6.6	4.3	3.5	3.5	2.6
LL-4	Substation	0.0007	0.8	0.5	1.9	1.9	1.2	1.0	1.0	-0.4
LL-5	Building D	0.0069	7.7	5.3	8.9	5.9	3.8	3.1	3.1	2.3
LL-6	Building E	0.0064	7.2	4.9	8.2	5.5	3.6	2.9	2.9	2.1
LL-7	Building F	0.0062	6.9	4.8	7.9	5.3	3.4	2.7	2.7	2.1
LL-8	Building G	0.0064	7.2	4.9	8.2	5.4	3.5	2.8	2.8	2.1
LL-9	Building H	0.0064	7.2	4.9	8.1	5.4	3.5	2.8	2.8	2.1
LL-10	Building I	0.0076	8.5	5.9	9.7	6.5	4.2	3.4	3.4	2.5
LL-11	SS Lift Station	0.0003	0.3	0.2	0.7	0.7	0.5	0.4	0.4	-0.1
LL-12	Village 1	0.03	33.6	23.2						23.2
LL-13	Village 2	0.03	33.6	23.2						23.2
LL-14	Park				9.8	9.8	6.4	5.1	5.1	-5.1
LL-15	Res-Multi	0.0176	19.7	13.6	8.5	5.7	3.7	3.0	3.0	10.6
LL-16	Creek									
LL-17	Village 3	0.02	22.4	15.5						15.5
LL-18	Park North				6.2	6.2	4.0	3.2	3.2	-3.2
LL-19	Village 4	0.02	22.4	15.5	0.0					15.5
LL-20	Bike trail									
Total		0.173	193.7	133.6	96.6	73.6	47.8	38.3	38.3	95.4

(1) Recycled Water Supply is the wastewater created by the proposed uses per the Phillip Road Site Wastewater Master Plan.
(2) Irrigated surface area factor reduced from 30% to 20% for LI, and 40% to 27% for HDR.
(3) Turf area reduction by 50% in irrgated surface area, resulting in a 35% reduction in irrigation demand.
(4) Smart Controllers reduction irrigation amounts by an estimated 20%.

The recycled water supply shown in **Table 8 – Available Recycled Water Supply and Demand** was adjusted to show that only 69% of the original wastewater supply is available for the Recycled Water system.

The Proposed Project includes an option for a 40 MW data center. The data center will require a cooling system that utilizes recycled water. The cooling system produces a waste of 33% of the recycled water demand. The 33% waste is conveyed from the site by the sewer system and returned to the Recycled Water Supply. **Table 9 – Data Center Recycled Water Demand and Supply** shows the monthly water demand and waste that is returned to the Recycle Water Supply.

TABLE 9
Data Center Recylced Water Demand and Supply

Location	Cooling System Demand (MGD)	Monthly Recycled Water Demand (acre-feet/month)	Monthly Cooling System Waste (33% of Demand) (MGD)	Monthly Recycled Water Supply (acre-feet/month)
Data Center	0.480	44.8	0.160	14.8

A monthly comparison of recycled water supply and recycled water demand is shown in **Table 10 – Comparison of Recycled Water Demand & Recycled Water Supply.**

TABLE 10
Comparison of Recycled Water Demand & Recycled Water Supply

Month	Recycle Water Demand (acre-feet)	Recycle Water Supply (acre-feet)	Surplus/Deficit Supply (acre-feet)	Supplemental Demand Required (Y/N)
January	0	11.1	+11.1	N
February	0	11.1	+11.1	N
March	1.1	11.1	+10.0	N
April	7.2	11.1	+3.9	N
May	12.8	11.1	-1.7	Y
June	17.9	11.1	-6.8	Y
July	20.6	11.1	-9.5	Y
August	17.9	11.1	-6.8	Y
September	12.8	11.1	-1.7	Y
October	6.4	11.1	+4.7	N
November	0	11.1	+11.1	N
December	0	11.1	+11.1	N
Total	**96.6**	**133.2**	**37.0**	

The proposed irrigation demand exceeds the proposed recycled water supplied by the wastewater systems of the development for five months. Therefore, water conservation measures are required to meet the recycled water demand. A Water Conservation Master plan looks into different opportunities to reduce water demand. The primary means of reducing water demand are reduction of turf and use of smart controllers. The reduction in turf will affect the residential land use areas (potable water) and the industrial land use areas (recycled water), while the irrigation controllers affect the parks, commercial and industrial land uses (recycled water). The City of Roseville assumes 30% of the industrial parcels will be landscaping, we are proposing to reduce that area to 20%. The irrigation demand the City of Roseville uses to estimate demand is based on turf, therefore we are also proposing that the landscaping for the industrial land uses will, at a maximum be 50% turf, resulting in a 35% reduction in irrigation demand (non-turf landscaping uses approximately 30% of the water as turf). The 20% reduction for the irrigation controllers will also be implemented. The results of the conservation are shown in **Table 11 – Comparison of Recycled Water Demand & Recycled Water Supply After Conservation.**

TABLE 11
Comparison of Recycled Water Demand & Recycled Water Supply After Conservation

Month	Recycle Water Demand (acre-feet)	Recycle Water Demand after Conservation and Turf Reduction (acre-feet)	Recycle Water Supply (acre-feet)	Surplus/Deficit Supply (acre-feet)	Supplemental Demand Required (Y/N)
January	0	0	11.1	+11.1	N
February	0	0	11.1	+11.1	N
March	1.1	0.4	11.1	+10.7	N
April	7.2	2.9	11.1	+8.2	N
May	12.8	5.1	11.1	+6.0	N
June	17.9	7.1	11.1	+4.0	N
July	20.6	8.1	11.1	+3.0	N
August	17.9	7.1	11.1	+4.0	N
September	12.8	5.1	11.1	+6.0	N
October	6.4	2.5	11.1	+8.6	N
November	0	0	11.1	+11.1	N
December	0	0	11.1	+11.1	N
Total	**96.6**	**38.3**	**133.6**	**95.3**	

VI. HYDRAULIC MODEL ANALYSIS

VI.A. HYDRAULIC MODEL ANALYSIS CRITERIA:

The following procedure was used for the preliminary assumptions used for the modeling of the recycled water system proposed in the Proposed Project Recycled Water Master Plan:

- A Hazen Williams "C" factor of 130 was used for all pipes in the recycled water system.
- Steady state condition.
- Operation demand flows increased by 2% to account for system losses.
- Connection Pressure, 71 psi Near-Term and 62 psi Future scenarios per Woodard & Curran Technical Memorandum, dated December 8, 2021 (**Appendix A – Technical Memorandum – Roseville Industrial Park Recycled Water Study).**
- Minimum pressure of 50 psi at service connections.

- Velocity in pipes shall not exceed 5 fps.
- Minimum size is 6-inch pipe.
- Where pipe depth is unknown, assumed 4 feet depth to top of pipe.
- Project Datum (NAVD 88) = As-built Plans (NGVD 29) + (+/-) 2'
- Modeling was conducted using Bentley OpenFlows WaterCAD® 2024

VI.B. HYDRAULIC MODEL SCENARIOS:

The point of connection was modeled using a reservoir with a water surface height set above the assumed pipe elevation to create a constant pressure. The water surface height is the connection pressure supplied by Woodard & Curran (**Appendix A – Technical Memorandum – Roseville Industrial Park Recycled Water Study).** It is assumed that the existing system can supply the needed volume of water at the constant pressure.

The Woodard & Curran Memorandum determined two pressure conditions, one the near-term and future. The current Recycled Water system does not have the ability to supply the recycled water to the proposed project so only the future condition will be modeled.

- **Future**: For this scenario, Pleasant Grove Wastewater Treatment Plant (PGWWTP) has been upgraded to reflect future sewer flows from the developments in the area. Therefore, there would be no limits to available recycled water for the Phillip Road Ssite project.

VI.C. HYDRAULIC MODEL RESULTS:

The Future model node, pipe and network exhibits are shown in **Appendix B – Recycled Water Plan – Future Onsite Model Results**. Nodes were placed at the service points for each proposed building of the Proposed Project. The project slopes from south to north, therefore the lowest pressure occurs at the most southerly irrigation connection for the commercial/innovation parcels. The pressure calculated at this point of connection is 52-psi.

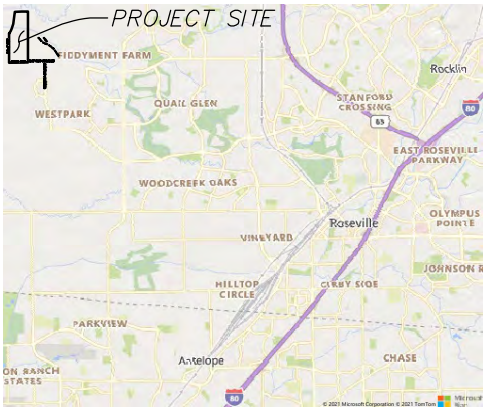
VII. CONCLUSIONS

Based on the information contained within this Recycle Water Master Plan the following conclusions are noted:

- The Future system meets the 50-psi pressure the points of connection (50 psi) for the connection at the sewer lift station.
- The maximum velocity within the network is 5 fps, located in the sections of pipes between the point of connection to the first service connection.
- As shown in Table 8, there are a four lots that do not produce enough waste to cover their recycled water demand. The lots include the parks, the electrical substation and sewer lift station. All these lots do not create much wastewater due to their proposed use. The shortage of recycled water for these four lots can be covered by the excess wastewater created by the residential portion of the project.

- The recycled water produced by the Proposed Project waste flows, as shown in the Wastewater Master Plan does not meet the requirement for the proposed Data Center therefore, alternative supply for Data Center recycled water demand will be needed.

EXHIBITS



VICINITY

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LM

SCALE: 1"=1,500'

EXHIBIT 1
PROJECT LOCATION PLAN
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE,
PLACER COUNTY, CALIFORNIA
SHEET 1 OF 1 SEPTEMBER 26, 2025

LM LAUGENOUR AND MEIKLE
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P.O. BOX 828, WOODLAND, CALIFORNIA 95776 · FAX: (530) 662-4602

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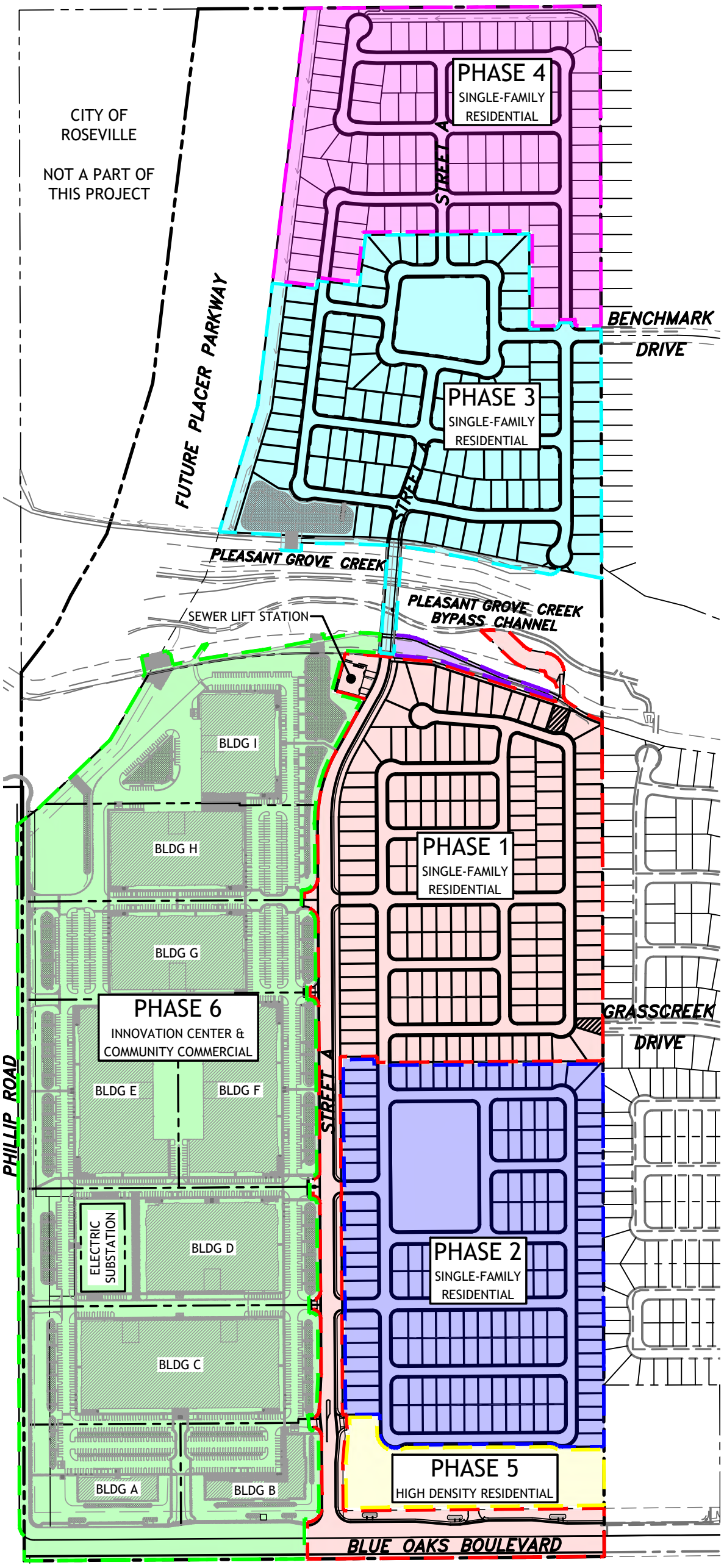

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LM

SCALE: 1"=400'

EXHIBIT 2

MASTER PHASING PLAN

FOR

PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

SHEET 1 OF 1 NOVEMBER 13, 2025

LM LAUGENOUR AND MEIKLE
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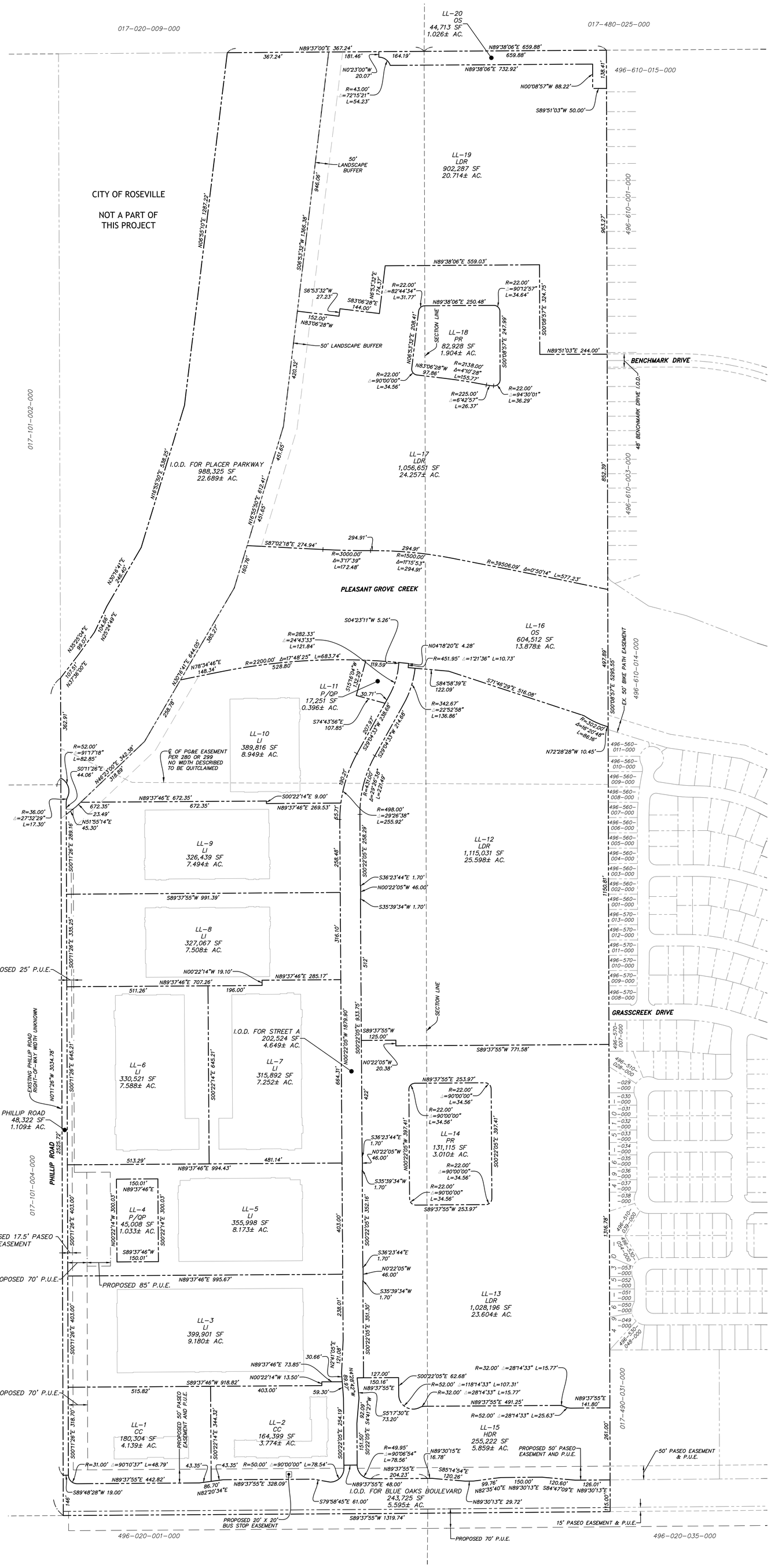

LOT	PROPOSED USE	GENERAL PLAN DESIGNATION	ZONINING	GROSS ACRES±	DWELLING UNITS	DENSITY
LL-1	BUILDING A	CC	C-PD	4.139	–	–
LL-2	BUILDING B	CC	C-PD	3.774	–	–
LL-3	BUILDING C	LI	ITP-PD	9.180	–	–
LL-4	ROSEVILLE ELECTRIC SUBSTATION	P/QP	P/QP	1.033	–	–
LL-5	BUILDING D	LI	ITP-PD	8.173	–	–
LL-6	BUILDING E	LI	ITP-PD	7.588	–	–
LL-7	BUILDING F	LI	ITP-PD	7.252	–	–
LL-8	BUILDING G	LI	ITP-PD	7.508	–	–
LL-9	BUILDING H	LI	ITP-PD	7.494	–	–
LL-10	BUILDING I	LI	ITP-PD	8.949	–	–
LL-11	SANITARY SEWER LIFT STATION	P/QP	P/QP	0.396	–	–
LL-12	VILLAGE 1	LDR	RS/DS	25.598	162	6.33 DU/AC.
LL-13	VILLAGE 2	LDR	RS/DS	23.604	156	6.61 DU/AC.
LL-14	PARK (SOUTH)	PR	PR	3.010	–	–
LL-15	VILLAGE 5	HDR	R3	5.859	135	23.04 DU/AC.
LL-16	PLEASANT GROVE CREEK AND BYPASS CHANNEL	OS	OS	13.878	–	–
LL-17	VILLAGE 3	LDR	RS/DS	24.257	105	4.33 DU/AC.
LL-18	PARK (NORTH)	PR	PR	1.904	–	–
LL-19	VILLAGE 4	LDR	RS/DS	20.714	106	5.12 DU/AC.
LL-20	BIKE TRAIL	OS	OS	1.026	–	–
BLUE OAKS BOULEVARD				5.595	–	–
PHILLIP ROAD				1.109	–	–
STREET A				4.649	–	–
PLACER PARKWAY				22.689	–	–
TOTAL				219.38	664	

NOTE:
SEE SHEET 4 FOR ADDITIONAL UTILITY EASEMENTS.

REGISTERED PROFESSIONAL ENGINEER
BRYAN P. BOEN
No. 41804
CIVIL
STATE OF CALIFORNIA

LARGE LOT SUBDIVISION
EXHIBIT 3
TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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LEGEND

- EX. 6" RECYCLED WATER
- EX. 16" RECYCLED WATER
- EX. 24" RECYCLED WATER
- 6" RECYCLED WATER
- 8" RECYCLED WATER
- 10" RECYCLED WATER
- 12" RECYCLED WATER

CREEKVIEW PROJECT

NORTH PARK

NORTH PARK SERVICE

BENCHMARK DRIVE

STREET A

6"RW

SEWER LIFT STATION SERVICE

SEWER LIFT STATION

BLDG I

BLDG I IRR. SERVICE

BLDG H IRR. SERVICE

BLDG H

BLDG G IRR. SERVICE

BLDG G

BLDG F IRR. SERVICE

BLDG E

BLDG F

BLDG E IRR. SERVICE

PHILLIP ROAD

SOUTH PARK

SOUTH PARK SERVICE

BLDG D IRR. SERVICE

BLDG D

ELECTRICAL SUBSTATION

BLDG C IRR. SERVICE

BLDG C

BLDG A IRR. SERVICE STUB

BLDG B IRR. SERVICE

8"RW

10"RW

HDR IRRIGATION SERVICE

BLDG A

BLDG B

GRASSCREEK DRIVE

CREEKVIEW PROJECT

CLOUD DANCE DRIVE

WESTBROOK BOULEVARD

16"RW

BLUE OAKS BOULEVARD

12"RW

5"RW

24"RW

LOCATION/ALIGNMENT OF FUTURE 12" RECYCLED WATER MAIN FOR ILLUSTRATION PURPOSES ONLY. CITY TO PROVIDE DIRECTION ON ALIGNMENT AND CONNECTION TO CITY RECYCLED WATER SYSTEM.

MODEL FOR THIS PROJECT ASSUMES THE 12" RECYCLED WATER CONNECTION TO CITY SYSTEM.

0 200 400 800

SCALE: 1"=400'

EXHIBIT 4

RECYCLED WATER SITE PLAN

FOR

PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA

SHEET 1 OF 1 NOVEMBER 13, 2025

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APPENDIX A

TECHNICAL MEMORANDUM – ROSEVILLE INDUSTRIAL PARK RECYCLED WATER STUDY

TECHNICAL MEMORANDUM

TO: Abbie Wertheim, Panattoni Development Company

PREPARED BY: Chris van Lienden, PE

REVIEWED BY: Dave Richardson, PE

DATE: January 27, 2022

RE: Roseville Industrial Park Recycled Water Study

1. BACKGROUND

Woodard & Curran was asked to analyze the impacts of the proposed Roseville Industrial Park development on the City of Roseville's recycled water system. The location of the proposed site is shown in Figure 1. The proposed development includes 9 non-residential areas on the parcel located at 6382 Phillip Rd (234 acres), and would receive recycled water from the City of Roseville's recycled water distribution system through a 24-inch and 6-inch pipeline on Westbrook Boulevard.

The purpose of this TM is to evaluate and document whether the City's recycled water model predicts that the City's recycled water system will have capacity to serve the proposed development.

2. MODEL ASSUMPTIONS

The City of Roseville's recycled water system will require upgrades to serve anticipated future customers. These upgrades are discussed in the City of Roseville's Recycled Water Systems Evaluation Report[1] (2016 RW Systems Evaluation) and include additional tanks at the West Roseville Pump Station site, as well as other upgrades. After the Systems Evaluation was completed, the model of the existing system was updated to reflect new piping, and recalibrated based on flow, pressure, and tank level data conducted in 2020 and described in the City's 2020 Recycled Water System Model Development Report[2] (2020 Model Development Report). The updated model has been used for this evaluation, and has been revised to incorporate existing available supply limitations at the Dry Creek and Pleasant Grove Wastewater Treatment Plants (DCWWTP and PGWWTP).

Two demand scenarios have been considered:

- Near-Term: Demands in the model reflect existing demands as described in the 2020 Model Development Report plus near term customers added to reflect current max day demands in the main pressure zone (8 mgd max day demand), as well as Sierra Vista demands.
- Future: Additional demands added to reflect future Creekview (1.25 mgd) and Amoruso (0.94 mgd) max day demands. For these scenarios, PGWWTP supply has been increased by 2.19 mgd to reflect future sewer flows from those developments.

[1] RMC Water & Environment, July 2016, Recycled Water Systems Evaluation
[2] Brown and Caldwell, August 2020, Recycled Water System Model Development Report

To reflect anticipated improvements to serve these additional demands, the model also includes 2 additional tanks and pumping upgrades at the West Roseville Pump Station site (including a parallel 350 linear foot, 24-inch discharge line to Westpark Drive), and a piping extension on Blue Oaks Blvd (approximately 1900 linear feet of 24-inch piping). For modeling purposes, pumping upgrades have been assumed to be sufficient to maintain 75 psi at the discharge from the West Roseville Pump Station. The pumping upgrades would include 1 additional pump under the Near-Term condition, and multiple additional pumps under the Future demand condition.

Projected demands for the Roseville Industrial Park have been added to both demand scenarios based on the peak demand as summarized in Appendix A (280 gpm).

The modeled facilities and the location of the proposed connection of the new development are presented in Figure 1.

3. MODEL RESULTS & CONCLUSIONS

The Roseville Industrial Park demands were applied to the existing 6-inch recycled water main at the corner of Cloud Dance Drive and Blue Oaks Boulevard (the "proposed development connection point" on Figure 1). Based on modeling of the proposed maximum demand, velocities in the 6-inch main would be approximately 3.8 fps, which does not exceed the City's criteria (see Figure 2).

The model predicts that a connection at this location would see a minimum pressure of 71 psi under peak hour demand conditions for the Near-Term scenario, and 62 psi for the Future scenario. Pipeline velocities do not exceed the City's criteria under Near-Term or Future demand conditions with the proposed development. Model results under the Future demand condition are presented in Figure 2. Further studies should be performed prior to connecting significant demand for the Creekview and Amoruso UGAs to confirm the anticipated demands and available pressures.

It should be noted that the proposed Roseville Industrial Park demands would increase the pumping capacity upgrades required at the West Roseville Pump Station. Specifically, in the Near-Term demand scenario, pumping capacity would need to increase from 7,830 gpm to a firm capacity of about 13,000 gpm with Sierra Vista, or 13,280 gpm for Sierra Vista plus the proposed Roseville Industrial Park. Further studies are needed to determine whether that additional pumping requirement for the Roseville Industrial Park would trigger the need for additional pumps.

Overall, prior to connection of the proposed Roseville Industrial Park and the expanded Sierra Vista demands, it is recommended that the City add approximately 1900 linear feet of 24-inch piping on Blue Oaks Boulevard, add two (2) additional storage tanks (currently sized at 2.2 million gallons and 2.4 million gallons), and increase pumping capacity as indicated above. The Roseville Industrial Park demand would contribute to the need for the additional storage tanks and piping but would not increase the planned sizing of the storage or piping facilities.

The proposed development would also contribute to the need for additional pumping capacity at Pleasant Grove WWTP, system-wide storage capacity, and other upgrades as discussed in the 2016 RW Systems Evaluation under buildout conditions. As the demand projections and development timing associated with several of the Urban Growth Areas may have changed since the 2016 RW Systems Evaluation, an update of that report may be needed to describe future system facility requirements.

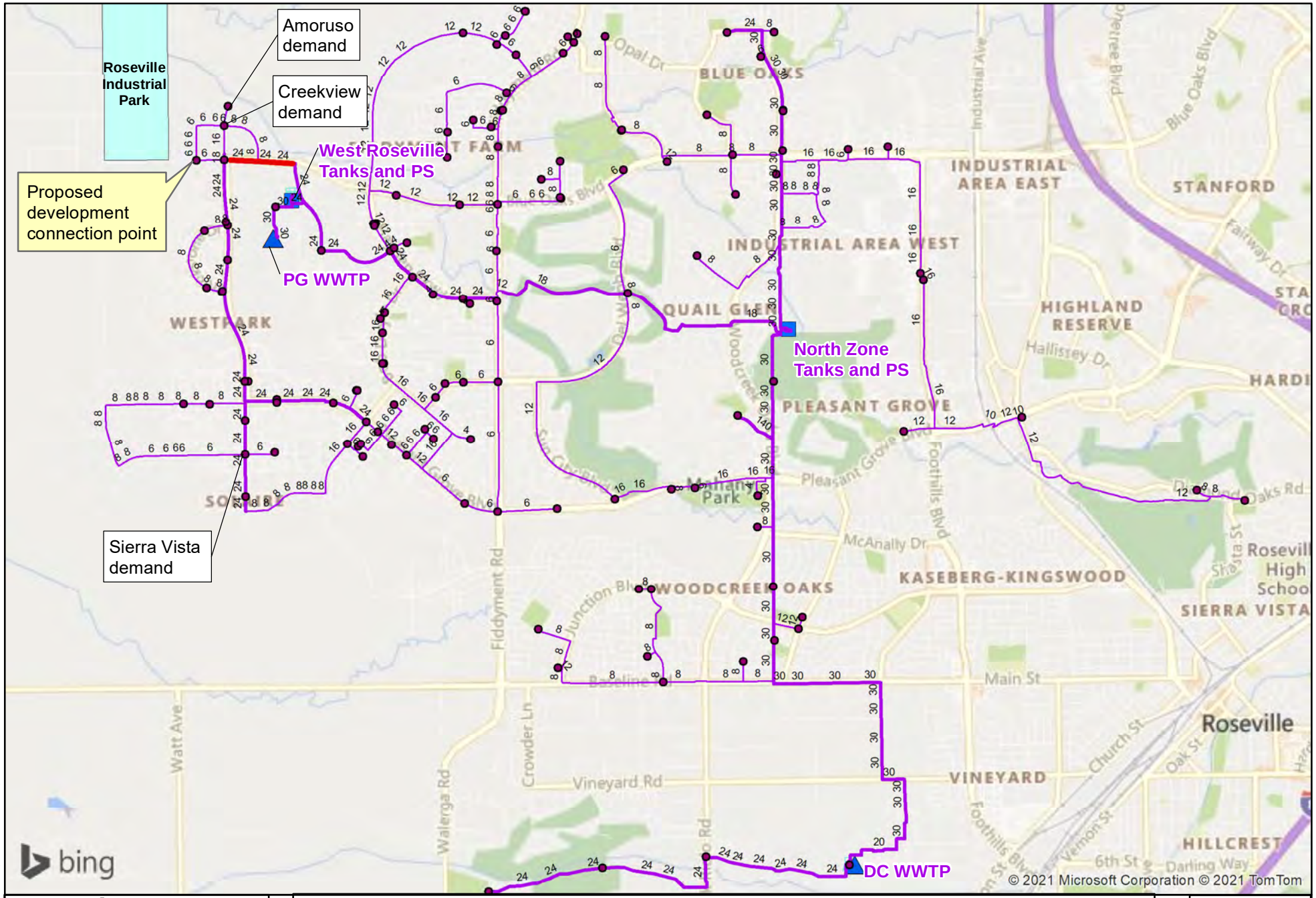


Figure 1
Project Location
Roseville Industrial Park
Recycled Water Study

Legend

- Future pipe added to model
- Pipe < 18 inches
- Pipe > 18 inches
- Modeled Demand
- Tank & PS
- WWTP

N

0 0.25 0.5 1 Miles

WOODARD &CURRAN

Project #: 0012092.00 Map Created: November 2021

Figure Exported: 11/24/2021 By: cvanlenden Using: C:\00. Projects\Roseville\RW Model\Roseville Industrial Park\Figure 1.mxd

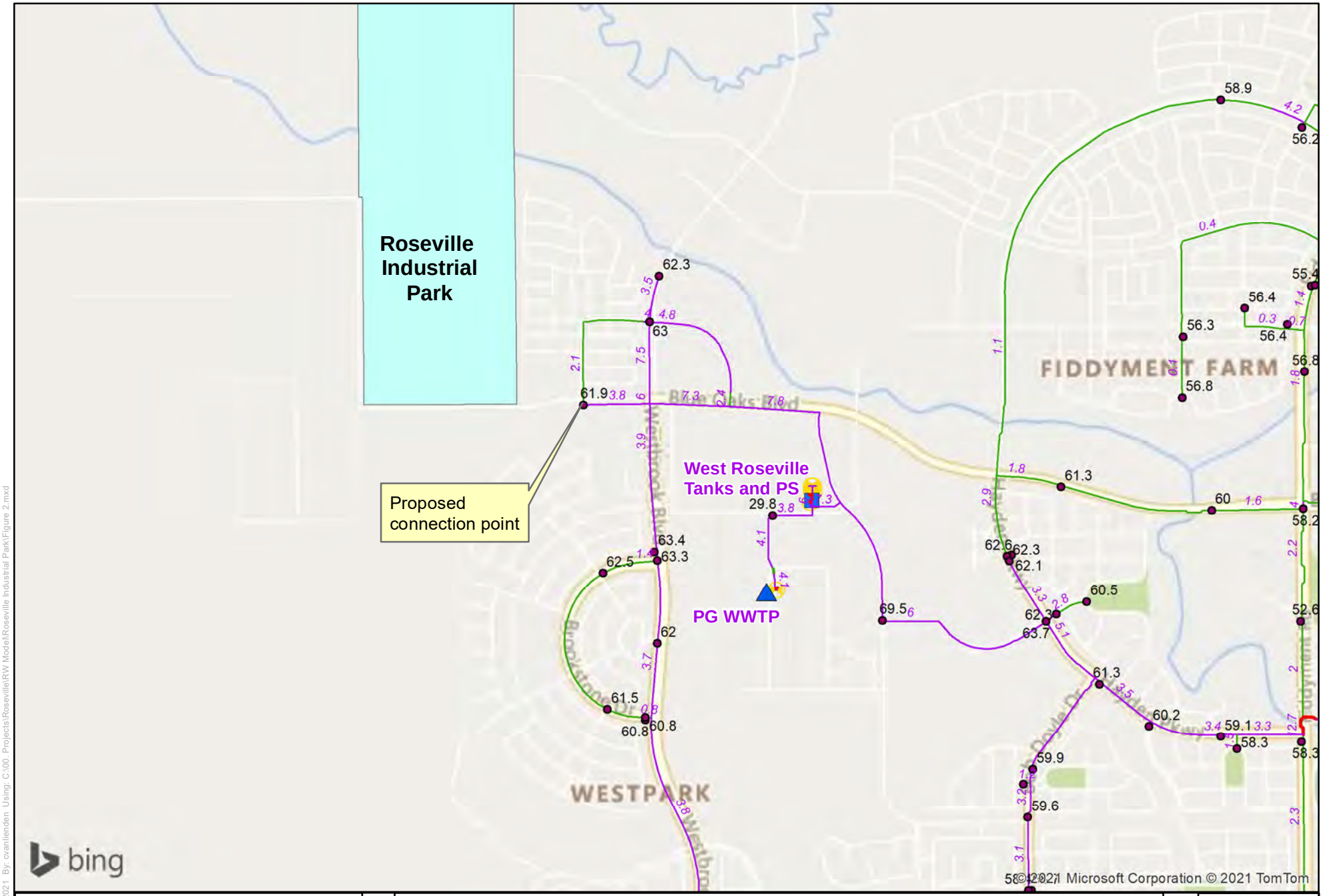


Figure 2

Model Results - Future Demands

Roseville Industrial Park
Recycled Water Study

Legend

velocity (fps)
< 3 fps
3 - 8 fps
> 8 fps

Pressure (psi)
Modeled Demand
Tank & PS
WWTP

N

0 0.1 0.2 0.4 Miles

WOODARD &CURRAN

Project #: 0012092.00 Map Created: December 2021

Figure Exported: 12/8/2021 By: cvanlienden Using: C:\00 Projects\Roseville\RW Model\Roseville Industrial Park\Figure 2.mxd

APPENDIX A – PROPOSED ROSEVILLE INDUSTRIAL LAND USE PLAN, SITE PLAN, AND RECYCLED WATER DEMAND

From: eric@vistaparks.com <eric@vistaparks.com>
Sent: Monday, December 6, 2021 11:08 AM
To: 'Abbie Wertheim' <AWertheim@panattoni.com>; Paymon Fardanesh <pay@lmce.net>
Subject: RE: [EXTERNAL] Roseville Meeting

Abbie,

Attached are 2 irrigation worksheets (1 for the north site and 1 for the south site). These are called WELO Worksheets. They are required on all landscape plans in Roseville.

The city will not approve landscape plans that exceed the Maximum Allowed Water Use (Yellow cells in each file). So, the total volume of irrigation water allowed by the city for these sites is the sum of the numbers in the yellow cells (both sites combined). Total allowed water use is 21,374,794 gallons per year, for the north and south combined. The maximum water use is based on the total irrigated landscape area, which is shown in the orange cells.

My design method typically uses only about 35% of the maximum allowed. I use a design method that uses the least amount of water (point specific drip emitters for plants, and deep well bubblers for trees), compared to other methods of delivering water to plants and trees.

A reliable peak demand number is 280 GPM. This will happen if every building irrigates at the same time of day and on the same day. It represents 1 irrigation valve running for every building at the same time. I cap my volume through an irrigation valve at approximately 20 GPM. 14 buildings running a maxed out irrigation valve at the same time is 280 GPM.

This should make sense to the city.

Thanks,
Eric Dearing
Vista Parks Landscaping Inc.
8264 Barryman Court
Sacramento, CA 95829
P 916-681-2227 f 916-681-2228 c 916-417-9283
eric@vistaparks.com

Roseville Industrial Park North Worksheet

Reference Evapotranspiration (Eto) 52.2

Regular Landscape Areas There are no special landscape areas. Trees count as 25 sq'

Hydrozone#	Plant Factor	Irrigation Method	Irrigation Efficiency	ETAF (PF/IE)	Landscape Area (sq. ft.)	ETAF X Area	Estimated Total Water Use (GPY)
1	0.2	Drip	0.81	0.25	306,605	76,651	2,480,741
2	0.4	Drip	0.81	0.49	76,651	37,559	1,215,559
3	0.2	Bubbler	0.81	0.25	7,750	1,938	62,705
4	0.4	Bubbler	0.81	0.49	1,650	809	26,166
Total					392,656		3,785,172

Maximum Allowed Water Allowance (MAWA)		5,718,563
Estimated Total Water Use (ETWU)		3,785,172
	Average ETAF	0.27
	Allowed ETAF	0.45

Total Landscape Area

Total Gallons Per Year Allowed Per The Model Water Efficient Landscape Ordinance

Total Gallons Per Year Projected Per The Projected Irrigation Design Usage

Roseville Industrial Park Worksheet
Reference Evapotranspiration (Eto) 52.2

Regular Landscape Areas There are no special landscape areas. Trees count as 25 sq'

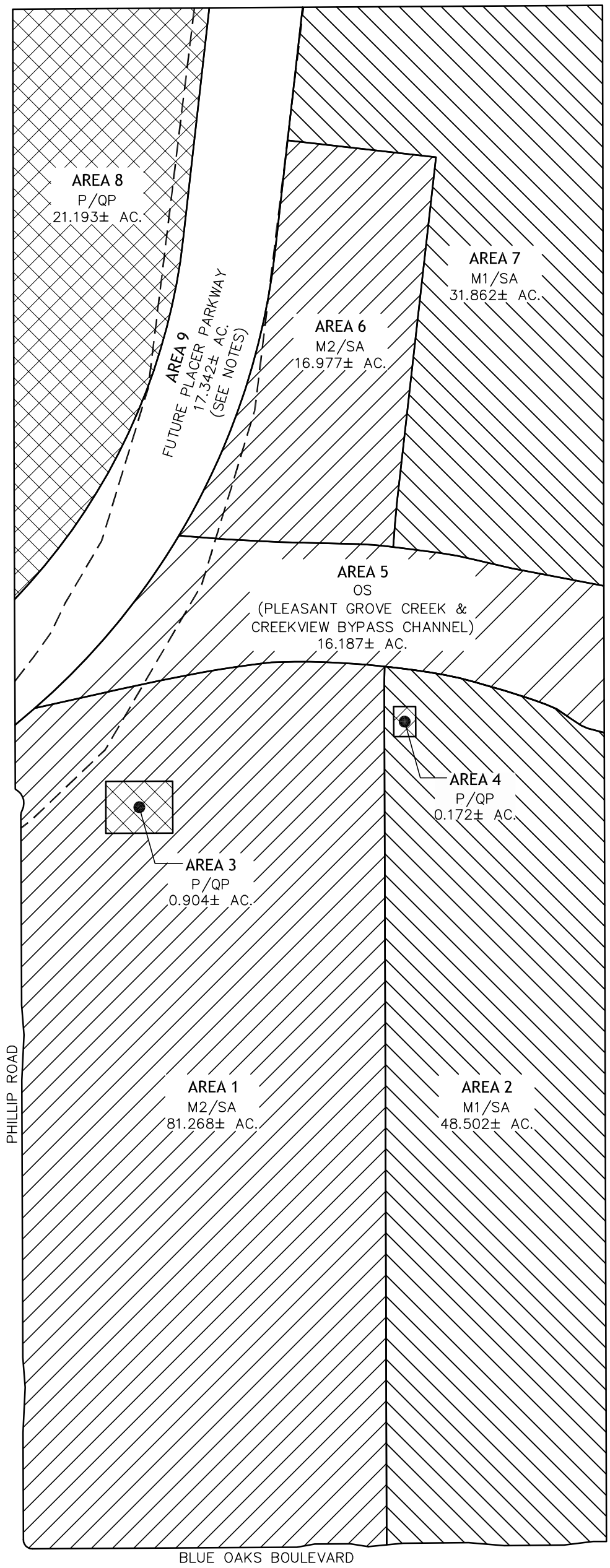
Hydrozone#	Plant Factor	Irrigation Method	Irrigation Efficiency	ETAF (PF/IE)	Landscape Area (sq. ft.)	ETAF X Area	Estimated Total Water Use (GPY)
1	0.2	Drip	0.81	0.25	848,078	212,020	6,861,799
2	0.4	Drip	0.81	0.49	207,507	101,678	3,290,721
3	0.2	Bubbler	0.81	0.25	12,700	3,175	102,756
4	0.4	Bubbler	0.81	0.49	6,725	3,295	106,647
Total					1,075,010		10,361,923

Maximum Allowed Water Allowance (MAWA)		15,656,231
Estimated Total Water Use (ETWU)		10,361,923
	Average ETAF	0.27
	Allowed ETAF	0.45

Total Landscape Area

Total Gallons Per Year Allowed Per The Model Water Efficient Landscape Ordinance

Total Gallons Per Year Projected Per The Projected Irrigation Design Usage



0 200 400 800

SCALE: 1"=400'

NOTES:

1. EXISTING PLACER PARKWAY AREA DENOTED BY DASHED LINE. (– – – – – – – – – – – – – – – –)
2. REVISED PLACER PARKWAY AREA (BY AKT) USED FOR CALCULATING HIGHEST POSSIBLE UTILITY DEMANDS.

LAND USE PLAN
FOR
ROSEVILLE INDUSTRIAL PARK

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA
SHEET 1 OF 1 OCTOBER 28, 2021

LM LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
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P.O. BOX 828, WOODLAND, CALIFORNIA 95776 · FAX: (530) 662-4602

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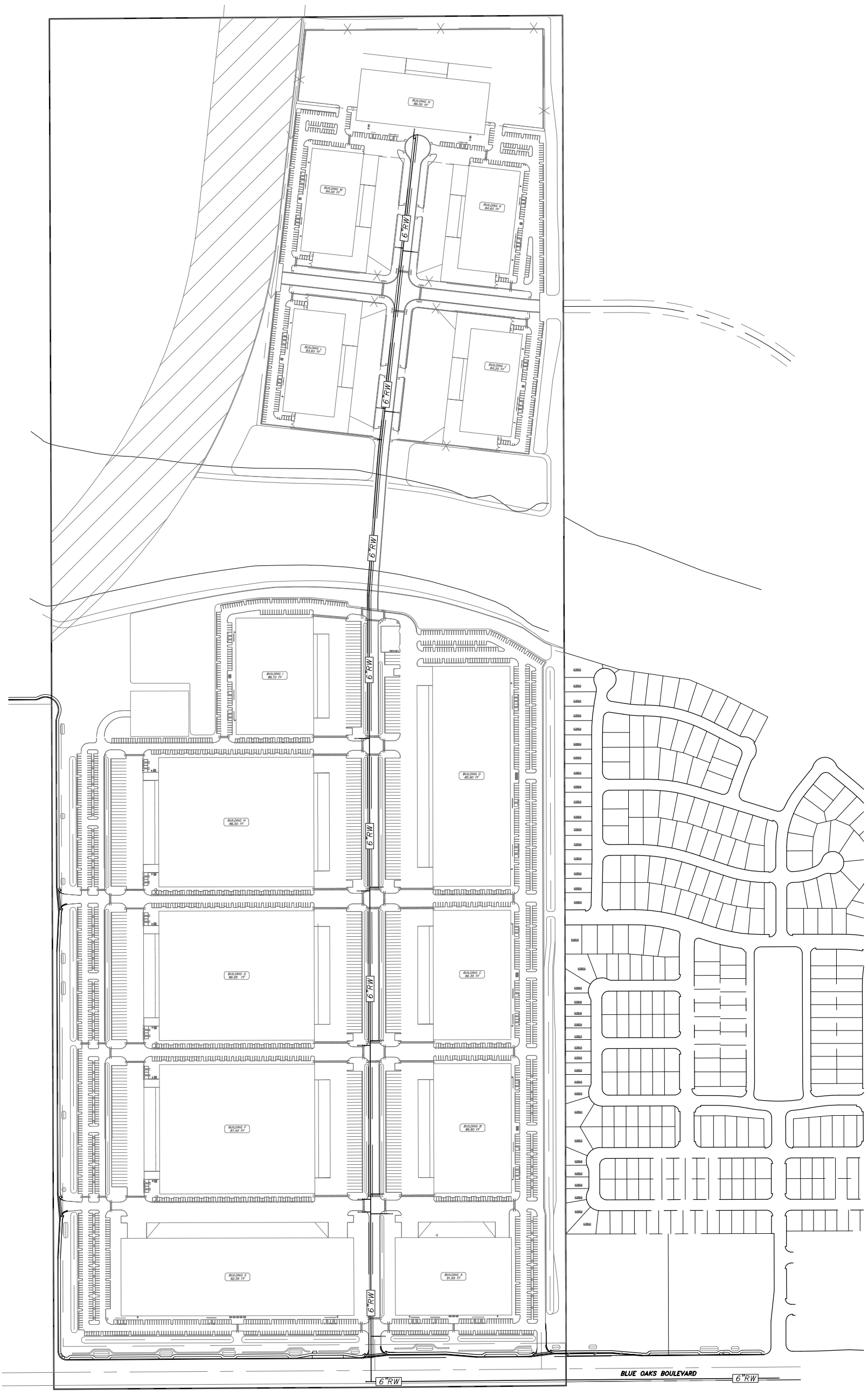

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SCALE: 1"=400'

RECYCLED WATER EXHIBIT
FOR
ROSEVILLE INDUSTRIAL PARK

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA
SHEET 1 OF 1 NOVEMBER 16, 2021

LM LAUGENOUR AND MEIKLE
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APPENDIX B

RECYCLED WATER PLAN – FUTURE ONSITE MODEL RESULTS

FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
INN_SERV_A & B	88.00	55	208.15	52
INN_SERV_C	82.00	64	207.82	54
INN_SERV_D	79.00	391	202.32	53
INN_SERV_E	78.00	53	198.61	52
INN_SERV_F & SUBSTATION	78.00	63	194.43	50
INN_SERV_G	77.00	53	193.04	50
INN_SERV_H	78.00	52	192.71	50
INN_SERV_HDR	82.00	55	208.87	55
INN_SERV_I	77.00	63	192.19	50
INN_SERV_SLS	77.00	5	192.15	50
J-1	71.70	0	214.92	62
J-2	84.00	0	210.84	55
J-3	86.00	0	208.89	53
J-4	82.00	0	208.17	55
J-5	82.00	0	207.83	54
J-7	81.00	0	203.04	53
J-8	79.00	0	198.67	52
J-9	79.00	0	198.63	52
J-10	77.00	0	194.45	51
J-11	77.00	0	193.06	50
J-12	77.00	0	192.73	50
J-13	77.00	0	192.21	50
J-14	77.00	0	192.15	50
PARK_SERV_1	79.50	63	198.58	52
PARK_SERV_2	75.50	40	191.93	50

FlexTable: Pipe Table

Label	Diameter (in)	Start Node	Stop Node	Flow (gpm)	Velocity (ft/s)	Length (User Defined) (ft)	Headloss (ft)	Material	Hazen-Williams C
P-1	12.0	J-1	J-2	957	2.71	1,745	4.08	PVC	130.0
P-2	10.0	J-2	J-3	957	3.91	344	1.95	PVC	130.0
P-3	6.0	J-4	INN_SERV_A & B	55	0.62	52	0.02	PVC	130.0
P-4	10.0	J-3	J-4	902	3.68	141	0.72	PVC	130.0
P-5	6.0	J-3	INN_SERV_HDR	55	0.62	46	0.02	PVC	130.0
P-6	10.0	J-4	J-5	847	3.46	76	0.34	PVC	130.0
P-7	10.0	J-5	INN_SERV_C	64	0.26	55	0.00	PVC	130.0
P-10	8.0	J-5	J-7	783	5.00	412	4.78	PVC	130.0
P-11	6.0	J-7	INN_SERV_D	391	4.44	55	0.72	PVC	130.0
P-12	6.0	J-7	J-8	392	4.45	334	4.37	PVC	130.0
P-13	6.0	J-8	PARK_SERV_1	63	0.71	207	0.09	PVC	130.0
P-14	6.0	J-8	J-9	329	3.73	4	0.04	PVC	130.0
P-15	6.0	J-9	INN_SERV_E	53	0.60	54	0.02	PVC	130.0
P-16	6.0	J-9	J-10	276	3.13	611	4.18	PVC	130.0
P-17	6.0	J-10	INN_SERV_F & SUBSTATION	63	0.71	55	0.02	PVC	130.0
P-18	6.0	J-10	J-11	213	2.42	330	1.40	PVC	130.0
P-19	6.0	J-11	INN_SERV_G	53	0.60	55	0.02	PVC	130.0
P-20	6.0	J-11	J-12	160	1.82	132	0.33	PVC	130.0
P-21	6.0	J-12	INN_SERV_H	52	0.59	55	0.02	PVC	130.0
P-22	6.0	J-12	J-13	108	1.23	431	0.52	PVC	130.0
P-23	6.0	J-13	INN_SERV_I	63	0.71	55	0.02	PVC	130.0
P-24	6.0	J-13	J-14	45	0.51	265	0.06	PVC	130.0
P-25	6.0	J-14	INN_SERV_SLS	5	0.06	55	0.00	PVC	130.0
P-28	6.0	J-14	PARK_SERV_2	40	0.45	1,152	0.22	PVC	130.0
POCP-1	24.0	POCR-1	J-1	957	0.68	32	0.00	PVC	130.0

SEE SHEET 2

BLDG E
INNOVATION
146,032 SF

BLDG F
INNOVATION
146,032 SF

BLDG D
INNOVATION
202,256 SF

BLDG C
INNOVATION
202,256 SF

BLDG A
MEDICAL - 21,300 SF

BLDG B
RETAIL
29,700 SF

J–10
P–17
INN_SERV_F
P–16
J–9
P–15
J–8
INN_SERV_E
PARK_SERV_1
P–13
P–14
P–12
J–7
INN_SERV_D
P–11
P–10
P–7
J–4
INN_SERV_C
P–6
J–4
P–3
P–4
INN_SERV_A&B
HDR_SERV
P–4
J–3
P–2
J–2
P–1

SEE BELOW

SEE ABOVE

BLUE OAKS BOULEVARD

J–1

POINT OF CONNECTION IS LOCATED AT THE INTERSECTION OF BLUE OAK AND WESTBROOK BOULEVARD. NODE J–1, PIPE POCP–1 AND RESERVIOR POCR–1 MAKE UP THE CONNECTION AT THE INTERSECTION.

0 100 200 400

SCALE: 1"=200'

RECYCLED WATER EXHIBIT
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA

SHEET 1 OF 2 SEPTEMBER 30, 2025

LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
608 COURT STREET, WOODLAND, CALIFORNIA 95695 · PHONE: (530) 662–1755
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PARK_SERV_2

P-28

INN_SERV_SLS

SEWER LIFT STATION

P-25

J-14

P-24

INN_SERV_I

J-13

P-23

BLDG I
INNOVATION
84,432 SF

P-22

BLDG H
INNOVATION
112,432 SF

P-21

J-12

INN_SERV_H

P-20

J-11

INN_SERV_G

P-19

BLDG G
INNOVATION
112,432 SF

P-18

SEE SHEET 1

0 100 200 400

SCALE: 1"=200'

RECYCLED WATER EXHIBIT
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA
SHEET 2 OF 2 SEPTEMBER 30, 2025

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Appendix F4

Wastewater Master Plan

PHILLIP ROAD SITE
WASTEWATER MASTER PLAN

6382 PHILLIP ROAD
ROSEVILLE, CALIFORNIA
(PLANNING APPLICATION 24-1010)

January 22, 2026

Panattoni Development Company, Inc.
400 Capital Mall, Suite 2040
Sacramento, CA 95814
(916) 379-1115

Prepared By:

LM LAUGENOUR AND MEIKLE
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EXHIBIT 3 WASTEWATER MASTER PLAN
EXHIBIT 4 UTILITY PLAN

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APPENDIX B EMERGENCY STORAGE CALCULATIONS
APPENDIX C TECHNICAL MEMORANDUM – SANITARY SEWER SYSTEM RECOMMENDATIONS FOR CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES OPERATIONS FACILITY

I. INTRODUCTION

The Phillip Road Site (Proposed Project) Wastewater Master Plan (Plan) has been prepared at the request of Panattoni Development Company, Inc. (PDC) to meet the City of Roseville's (City) utility demand planning requirements and in support of the Phillip Road Site environmental review process.

Proposed land uses, tributary areas, wastewater generation rates, and peaking factors are used to size the sanitary sewer facilities for the Proposed Project. The proposed topography will require the use of a pump station and dual force main to carry wastewater flows to the existing gravity system in Westbrook Boulevard for conveyance to the Pleasant Grove Wastewater Treatment Plant.

I.A. PROJECT VICINITY:

The Proposed Project is in the northwest portion of the City of Roseville as shown on **Exhibit 1 – Vicinity Map** and is within the City's service area. Pleasant Grove Creek and the Pleasant Grove Creek Bypass Channel dissect the site.

The Proposed Project will advance in multiple phases. It is expected to be completed in six phases. The first four phases are intended to be single family residences, the fifth phase is higher density residential, and the final stage is an Innovation Center.

The first and second phases will be in the easterly half of the project site located south of the Pleasant Grove Bypass Channel. The first phase will include the northerly half of this area and include the main road through the center of the project site, stopping at the southerly boundary of the Bypass Channel.

The third and fourth phases are located to the north of Pleasant Grove Bypass Channel. The third phase will include construction of a bridge crossing the channel.

The fifth phase will be high density residential, located along Blue Oaks Boulevard on the easterly half of the project site.

The final phase will include the Innovation Center located on the westerly portion of the site, south of the Pleasant Grove Bypass Channel.

I.B. PRE-DEVELOPMENT CONDITIONS:

The Proposed Project site is an undeveloped agricultural parcel that was originally planted during the 1950's, was maintained in rice production through the 1990's and has been planted in irrigated crops until the present.

The Pleasant Grove Creek Bypass Channel was constructed south of Pleasant Grove Creek during the summer of 2019 to augment flood mitigation/control in this area. A 10-foot to 15-foot escarpment runs in a southeasterly direction from the Phillip Road entrance of the property's southern portion of the site to its eastern boundary.

The portion of the property north of Pleasant Grove Creek is also currently active cultivation and irrigated with water from a long-established irrigation canal along the northern boundary.

I.C. PROPOSED PROJECT AREA DEVELOPMENT OPPORTUNITIES AND CONSTRAINTS:

The Proposed Project is influenced by several factors, including the physical setting, land use, circulation considerations, and public policies. Two significant aspects that influence the development of the Proposed Project are described below and depicted on **Exhibit 2 – Tentative Map**.

- PLACER PARKWAY

  The proposed Placer Parkway will bisect the northerly portion of the Proposed Project.

- PLEASANT GROVE CREEK AND PLEASANT GROVE CREEK BYPASS CHANNEL

  The existing Pleasant Grove Creek and newly constructed Pleasant Grove Creek Bypass Channel divides the Proposed Project. A bridge will be needed in the future to access the area to the north when it is developed.

II. WASTEWATER STUDY PROCESS

The Proposed Project site will consist of Light Industrial (LI), Commercial (CC), Low Density Residential (LDR), High Density Residential (HDR), and Public/Quasi Public (P/QP) land uses. There will be a sewer pump station located at the project site which will be classified as Public/Quasi-Public (P/QP) land use. The Proposed Project land uses are shown on **Exhibit 2 – Tentative Map**.

Each land use generates wastewater flow based on unit factors as designated by the City of Roseville. The Average Dry Weather Flows (ADWF) Unit Flow Factors that are used for the Proposed Project are shown below in **Table 1 – Average Dry Weather Unit Flow Factors**. A summary of the proposed land use acreages that generate wastewater flows is shown in **Table 2 – Wastewater Generation by Land Use**.

The City of Roseville also has a project called the City of Roseville Environmental Utilities Operations Facility (EU Ops) that is located west of the Phillip Road Site that is planning on connecting to the Phillip Road Site sewer system. A Technical Memorandum was prepared by Jacobs, providing the wastewater flow from EU Ops, see **Appendix C –Technical Memorandum – Sanitary Sewer System Recommendations for City of Roseville Environmental Utilities Operations Facility.** The EU Ops wastewater flows are accounted for in the sizing of the sewer mains and sewer lift station within the Phillip Road Site project.

Table 1
Phillip Road Site
Average Dry Weather Unit Flow Factors

Land Use Designation	Land Use Abbreviation	Flow Rate [1]
Commercial (Community Commercial)	CC	850 gpd/acre
Heavy Industrial	IND[3]	850 gpd/acre
Light Industrial	LI	850 gpd/acre
Mixed Use	MU[3]	2,300 gpd/acre
Public/Quasi-Public	P/QP	660 gpd/acre
Public/Quasi-Public (Schools)	P/QP[3]	170 gpd/acre
Residential 1 DU (Low Density Residential)	LDR	190 gpd/DU
Residential 2 DU (Medium Density Residential)	MDR[3]	190 gpd/DU
Residential Multiple DU (High Density Residential[2])	HDR	2,040 gpd/acre or 130 gpd/DU
Open Space	OS	0 gpd/acre
Parks < 10 Acres	PR	0 gpd/acre
Parks > 10 Acres	PR[3]	10 gpd/acre
Vacant	-	0 gpd/acre

(1) Average Dry Weather Flow Factors per City of Roseville Design and Construction Standards, Section 9 (Sanitary Sewer Design), dated January 2025.

(2) High Density Residential is 2,040 gpd/acre or 130 gpd/DU, whichever factor is greater.

(3) Land uses that are not applicable to the project site.

Table 2
Phillip Road Site
Wastewater Generation by Land Use

Land Use	Land Use Abbreviation	Total Area (Acres)	ADWF (MGD)
Light Industrial	LI	56.144	0.0477
Community Commercial	CC	7.913	0.0067
Low Density Residential	LDR	95.589 or 529 units(2)	0.1005
High Density Residential	HDR	5.860 or 135 units(2)	0.0176
Park	PR	4.914	-
Public/Quasi-Public (Developable Area)	P/QP	1.429(3)	0.0009
Wastewater Generation by Land Use Subtotal:			0.1734
Discharge from Data Center			0.1600
Phillip Road Site Total			**0.3334**
EU Ops			**0.0525**
Total Flow from Site			**0.3859**

(1) Includes 0.160 MGD of discharge from a potential 40MW Data Center.
(2) The wastewater generated is based on the number of dwelling units as it is greater than that calculated by area.
(3) Consists of Public/Quasi-Public area designated for Roseville Electric (1.033 acres) and an area near the proposed bridge for a Sewer Lift Station (0.396 acres).

Parcel LL-5, as shown in **Exhibit 2 – Tentative Map** is assumed to contain a potential 40 MW Data Center which adds approximately 480,000 gpd of peak demand flow for a cooling system. It is anticipated that a third of this flow for the cooling system will be discharged to the wastewater system with the remaining evaporated during the cooling process of the Data Center.

The ADWF from the Proposed Project plus the ADWF from the EU Ops Center combined is 0.386 MGD. The City has verified that the combined ADWF does not cause the sewer main downstream of the connection point to exceed 70% of full depth, crown to crown.

III. WASTEWATER SYSTEM INFRASTRUCTURE

The wastewater system is designed to serve the land uses as shown on **Exhibit 2 – Tentative Map**. The wastewater system, comprised of gravity trunk pipelines and a lift station, has been designed to collect wastewater flows within the Proposed Project site as shown in **Exhibit 3 – Wastewater Master Plan.**

Industrial users are responsible for design, installation, operation, and maintenance of all pretreatment equipment necessary to comply with applicable standards for industrial waste discharge.

Wastewater flows from the northern portion of the site are conveyed by gravity pipelines to a lift station located south of the Pleasant Grove Creek Bypass Channel, within a P/QP parcel, on the southern portion of the Proposed Project site. The gravity sewer main will need to be constructed under the Pleasant Grove Creek and Pleasant Grove Creek Bypass Channel per City of Roseville Standards with piles.

The wastewater flows from the southern portion of the site is also conveyed to this lift station. Area topography and the distance required for conveyance of wastewater flows to the Pleasant Grove Wastewater Treatment Plant prevent the use of gravity flow. See **Appendix A – Wastewater Flows by Node** for detailed information about each pipe and contributing sheds, peaking factors, and design flows.

Wastewater flows from EU OPS are planned to be pumped from a lift station on their site through a dual sewer force main along Phillip Road. It will discharge to a sewer manhole along Phillip Road (on the west side of the Innovation Center) and gravity flow across the Innovation Center conveying to the Phillip Road Site Sewer Lift Station. See Appendix C **– Technical Memorandum – Sanitary Sewer System Recommendations for City of Roseville Environmental Utilities Operations Facility** for detailed information about contributing flows.

The sewer lift station will be designed with a submersible pump in a manhole-type wet well and will meet the City's Design Standards. A vault is required within the sewer lift station parcel to provide four-hour emergency storage for the wastewater system. See **Exhibit 4 – Utility Plan** for the layout of the Sewer Pump Station. **Appendix B – Emergency Storage Calculations** contains information on the storage volume provided by the vault.

A dual force main will be constructed from the lift station, south along the Project Site's central corridor toward Blue Oaks Boulevard. It will then follow along Blue Oaks Boulevard to the east and then south along Westbrook Boulevard. A new sewer manhole will be constructed on the west side of Westbrook Boulevard and a gravity pipe will then convey flows to a new sewer manhole in Westbrook Boulevard to connect to the existing 21-inch sewer pipe. The location of the sewer manhole in Westbrook Boulevard was selected based on the As-built Plans to provide proper clearances from the existing 72-inch storm drain line in Westbrook Boulevard. See **Exhibit 3 – Wastewater Master Plan.**

IV. RECYCLED WATER

A Recycled Water Master Plan has been prepared regarding the project's use of Recycled Water to serve the project.

V. HYDRAULIC MODEL ANALYSIS

V.A. HYDRAULIC MODEL ANALYSIS CRITERIA:

The following procedure was used for the preliminary design and analysis of the wastewater system proposed in the Proposed Project Wastewater Master Plan:

- The primary wastewater generation areas within the plan area were delineated.
- A sewer trunk system alignment was defined to collect wastewater flows within the project area. The gravity system was placed within the proposed road system wherever feasible.
- Node points were inserted into the sewer system alignment to define flow collection points within the sewer system.
- The land use areas, with their respective generation rates, were assigned a manhole node to tie into the trunk system.
- Proposed land use acreages for each node point of connection were tabulated.
- Wastewater flows, including average dry weather flows, factored flows, and peak wet weather flows were calculated at each point using the design methodology defined in Section 9 – Sanitary Sewer Design, of the City of Roseville Design and Construction Standards.
- Average dry weather flows were calculated using the Average Dry Weather Unit Flow Factors for the land use types.
- Factored flows were calculated by multiplying average dry weather flows by a factor of safety of 2.0.
- Peak wet weather flows within the trunk system were calculated by summing factored flows at the nodes along the trunk system alignment and applying appropriate peaking factors from the Peaking Factor Curve shown in Figure SS-1 of Section 9 of the City of Roseville Design and Construction Standards.
- Trunk system pipe sizes were initially sized based on peak wet weather flows and pipe capacities based on minimum pipe slopes.
- Preliminary pipe inverts were calculated and compared to proposed finished grades to verify the ability of the gravity system to serve the tributary areas.

V.B. PIPE SIZING CRITERIA

The proposed pipe size diameters were selected using the following pipe criteria:

- A Manning's "n" value of 0.013 was used for all pipe-sizing calculations.
- Pipes 10 inches and less in diameter and pipes with lateral connections are designed to have a maximum depth of flow 70% of the pipe diameter.
- Pipes 12 inches and larger with no lateral connections are designed to flow full.
- Pipe sizes have been selected, assuming pipes will be installed at minimum slopes.
- The minimum slope for a pipe is a slope that yields a minimum 2 feet per second velocity when flowing at design capacity.
- Pipes proposed to be placed deeper than 20 feet shall conform to the pipe manufacturer's construction recommendations and comply with the City of Roseville Improvement Standards.

V.C. SEWER PUMP STATION AND FORCE MAIN CRITERIA

The proposed sewer pump station and force main shall comply with Section 9-13 of the City of Roseville Design standards.

VI. CONCLUSIONS

Based on the information contained within this Wastewater Master Plan the following conclusions are noted:

- The proposed wastewater system accommodates the anticipated flows from EU Ops and the Proposed Project land uses.
- Industrial users are responsible for design, installation, operation, and maintenance of all pretreatment equipment necessary to comply with applicable standards for industrial waste discharge.
- Gravity lines throughout the sanitary system are between 6 feet to 30 feet deep, with sewer laterals not exceeding 15 feet in depth.
- The proposed pipe network meets the City Standards for velocities (minimum 2 fps, maximum 10 fps) for all pipes in excess of 6-inch diameter.
- Minimum 6-inch diameter pipe mains at minimum slope near end runs do not allow for velocities of 2 fps or greater until tributary flows meet a minimum generation rate of 89 gpm.
- The City has confirmed that the City's existing wastewater system has capacity for the Proposed Project in the existing 21-inch sewer main in Westbrook Boulevard. The connection to this pipe is also intended to be crown to crown.

EXHIBITS

VICINITY

0 750 1500 3000

LM

SCALE: 1"=1,500'

EXHIBIT 1
PROJECT LOCATION PLAN
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE,
PLACER COUNTY, CALIFORNIA
SHEET 1 OF 1 SEPTEMBER 26, 2025

LM LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
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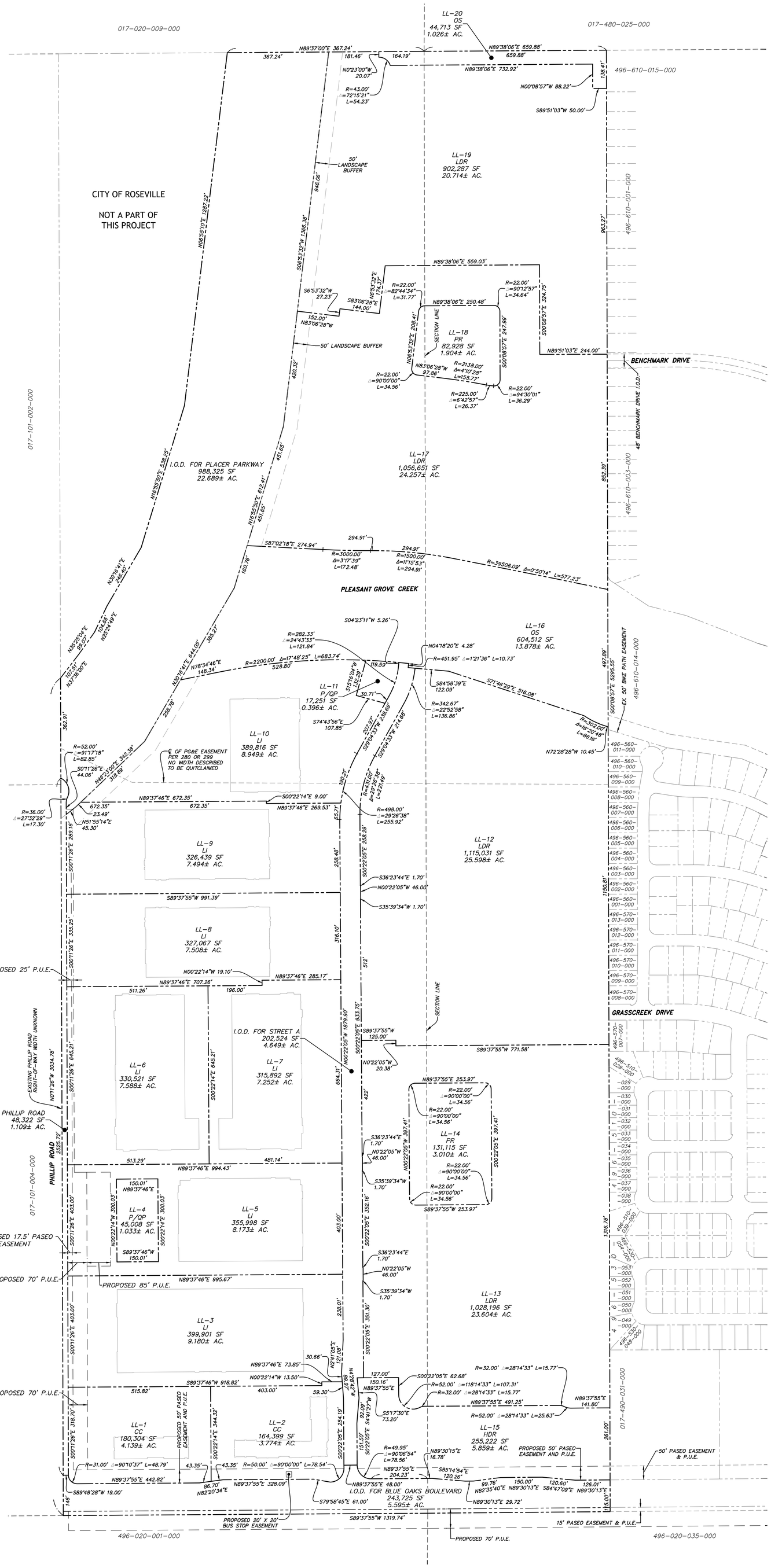
X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH01-Project Location



LOT	PROPOSED USE	GENERAL PLAN DESIGNATION	ZONINING	GROSS ACRES±	DWELLING UNITS	DENSITY
LL-1	BUILDING A	CC	C-PD	4.139	–	–
LL-2	BUILDING B	CC	C-PD	3.774	–	–
LL-3	BUILDING C	LI	ITP-PD	9.180	–	–
LL-4	ROSEVILLE ELECTRIC SUBSTATION	P/QP	P/QP	1.033	–	–
LL-5	BUILDING D	LI	ITP-PD	8.173	–	–
LL-6	BUILDING E	LI	ITP-PD	7.588	–	–
LL-7	BUILDING F	LI	ITP-PD	7.252	–	–
LL-8	BUILDING G	LI	ITP-PD	7.508	–	–
LL-9	BUILDING H	LI	ITP-PD	7.494	–	–
LL-10	BUILDING I	LI	ITP-PD	8.949	–	–
LL-11	SANITARY SEWER LIFT STATION	P/QP	P/QP	0.396	–	–
LL-12	VILLAGE 1	LDR	RS/DS	25.598	162	6.33 DU/AC.
LL-13	VILLAGE 2	LDR	RS/DS	23.604	156	6.61 DU/AC.
LL-14	PARK (SOUTH)	PR	PR	3.010	–	–
LL-15	VILLAGE 5	HDR	R3	5.859	135	23.04 DU/AC.
LL-16	PLEASANT GROVE CREEK AND BYPASS CHANNEL	OS	OS	13.878	–	–
LL-17	VILLAGE 3	LDR	RS/DS	24.257	105	4.33 DU/AC.
LL-18	PARK (NORTH)	PR	PR	1.904	–	–
LL-19	VILLAGE 4	LDR	RS/DS	20.714	106	5.12 DU/AC.
LL-20	BIKE TRAIL	OS	OS	1.026	–	–
BLUE OAKS BOULEVARD				5.595	–	–
PHILLIP ROAD				1.109	–	–
STREET A				4.649	–	–
PLACER PARKWAY				22.689	–	–
TOTAL				219.38	664	

NOTE:
SEE SHEET 4 FOR ADDITIONAL UTILITY EASEMENTS.

REGISTERED PROFESSIONAL ENGINEER
BRYAN P. BOYNTON
No. 41804
CIVIL
STATE OF CALIFORNIA

LARGE LOT SUBDIVISION

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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LEGEND

- TRIBUTARY AREA
- PHILLIP ROAD SITE DUAL SEWER FORCE MAIN
- CITY OF ROSEVILLE EU OPS SEWER FORCE MAIN
- 8" SEWER TRUNK LINE
- 10" SEWER TRUNK LINE
- 12" SEWER TRUNK LINE
- 15" SEWER TRUNK LINE
- 18" SEWER TRUNK LINE
- EXISTING SEWER LINE
- PUBLIC SEWER EASEMENT
- BLDG A / M1 — BUILDING ID AND LAND USE DESIGNATION
- NODE POINT

001
Q_A=0.000
Q_F=0.000
P_F=0.000
Q_P=0.000

SHED
Q_A=AVERAGE DRY WEATHER FLOW (MGD)
Q_F=FACTORED FLOW (MGD)
P_F=PEAKING FACTOR
Q_P=PEAK WET WEATHER FLOW (MGD)

001* SHED INCLUDES DISCHARGE FROM DATA CENTER

Qp=0.000* PEAK WET WEATHER FLOW (MGD) INCLUDES DISCAHRGE FROM DATA CENTER

EMERGENCY STORAGE VAULT FOR PHILLIP ROAD SITE
REQUIRED STORAGE VOLUME FOR 4 HR = 215,367 GAL

EMERGENCY STORAGE VAULT
(72'X38'X13' DEEP**) = 225,118 GAL
** ASSUMES 13' DEEP STRUCTURE BUT ONLY UTILIZING 11' DEPTH FOR STORAGE (1 FOOT FOR FREEBOARD TO TOP OF STRUCTURE AND 1 FOOT FOR SLOPE OF BOTTOM OF CONCRETE STRUCTURE)

EMERGENCY STORAGE VAULT = 225,118 GAL > 215,367 GAL

CITY OF ROSEVILLE

NOT A PART OF THIS PROJECT

FUTURE PLACER PARKWAY

LL-20
OS
1.026± AC.

PARK 2
PR
1.904± AC.

RES 6
LDR
44.971± AC.
211 DU

BENCHMARK DRIVE

140
Q_A=0.0401
Q_F=0.0802
P_F=3.31
Q_P=0.265

SSMH17
SS22

PLEASANT GROVE CREEK & CREEKVIEW BYPASS CHANNEL

150*
Q_A=0.2259
Q_F=0.4519
P_F=2.51
Q_P=1.292*

SS23
SSPS
P/QP
0.396± AC.
SSMH18
SS21

SFM FROM CITY OF ROSEVILLE EU OPS

BLDG I
LI
8.949± AC.

130
Q_A=0.0076
Q_F=0.0152
P_F=3.58
Q_P=0.054

SS20
SSMH15
SSMH16
15'

135*
Q_A=0.1856
Q_F=0.3712
P_F=2.59
Q_P=1.122*

SS19

110
Q_A=0.0064
Q_F=0.127
P_F=3.59
Q_P=0.046

BLDG H
LI
7.494± AC.

SSFM TRANSITION SSMH02
SSMH10
SS15
SSMH11
SSMH12
SS16
SS17
30'

125*
Q_A=0.1780
Q_F=0.3560
P_F=2.61
Q_P=1.090*

120
Q_A=0.0401
Q_F=0.0802
P_F=3.31
Q_P=0.265

SS18
SSMH14
SSMH13
SS13

090
Q_A=0.0525
Q_F=0.1050
P_F=3.21
Q_P=0.338

095
Q_A=0.0589
Q_F=0.1179
P_F=3.17
Q_P=0.374

100
Q_A=0.0064
Q_F=0.0128
P_F=3.59
Q_P=0.046

115
Q_A=0.0717
Q_F=0.1434
P_F=3.09
Q_P=0.442

BLDG G
LI
7.508± AC.

075*
Q_A=0.0662
Q_F=0.1324
P_F=3.12
Q_P=0.573*

SSMH09
SS14
20'

RES 3
LDR
34.248± AC.
211 DU

BLDG F
LI
7.252± AC.

SS12

BLDG E
LI
7.588± AC.

070
Q_A=0.0062
Q_F=0.0123
P_F=3.59
Q_P=0.044

080
Q_A=0.0064
Q_F=0.0129
P_F=3.59
Q_P=0.046

060*
Q_A=0.0076
Q_F=0.0153
P_F=3.58
Q_P=0.215*

SS11

065*
Q_A=0.0600
Q_F=0.1201
P_F=3.16
Q_P=0.540*

045
Q_A=0.0055
Q_F=0.0110
P_F=3.60
Q_P=0.040

SS09
SSMH07
SS10
SS08
SSMH06
SSMH08

PARK 1
PR
3.010± AC.

050
Q_A=0.0007
Q_F=0.0014
P_F=3.64
Q_P=.005

ELEC
P/QP
1.033± AC.

055*
Q_A=0.0069
Q_F=0.0139
P_F=3.58
Q_P=0.210*

BLDG D
LI
8.173± AC.

RES 2
LDR
4.919± AC
29 DU

SS07
SS06
SSMH04
SSMH05

040
Q_A=0.0469
Q_F=0.0938
P_F=3.36
Q_P=0.305

035
Q_A=0.0148
Q_F=0.0296
P_F=3.51
Q_P=0.104

RES 1
LDR
11.451± AC.
78 DU

BLDG C
LI
9.180± AC.

015
Q_A=0.0078
Q_F=0.0156
P_F=3.58
Q_P=0.056

020
Q_A=0.0145
Q_F=0.0291
P_F=3.52
Q_P=0.102

SS05
SSMH03
SS03
SS04
SS02
SSMH02
SS01
20'
25'

025
Q_A=0.0176
Q_F=0.0351
P_F=3.49
Q_P=0.123

030
Q_A=0.0321
Q_F=0.0642
P_F=3.37
Q_P=0.216

RES-MULTI
HDR
5.860± AC.
135 DU

010
Q_A=0.0067
Q_F=0.0135
P_F=3.59
Q_P=0.048

BLDG A
CC
4.139± AC.

BLDG B
CC
3.774± AC.

SSMH01

BLUE OAKS BOULEVARD

GRASSCREEK DRIVE

CLOUD DANCE DRIVE

WESTBROOK BOULEVARD

EX. 21" SS

SEE LEFT

SEE RIGHT

SSFM TRANSITION SSMH01

EX. 21" SS - WESTBROOK BOULEVARD

847.4'

0 75 150 300
SCALE: 1"=150'

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PHILLIP ROAD SITE WASTEWATER MASTER PLAN

SHEET 1 OF 1

SEPTEMBER 26, 2025

X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH_SS Master Plan.dwg

SEE SHEET 13

SEE SHEET 9

SEE SHEET 11

LOT 319 83.91 PAD
LOT 320 84.35 PAD
LOT 321 84.62 PAD
LOT 322 84.86 PAD
LOT 323 85.08 PAD
LOT 324 85.30 PAD
LOT 325 85.52 PAD
LOT 326 85.73 PAD
LOT 327 86.70 PAD
LOT 328 87.03 PAD
LOT 329 87.00 PAD
LOT 330 86.76 PAD
LOT 331 86.43 PAD

BOLLARDS TO BE INSTALLED TO LIMIT ACCESS

POND OVERFLOW

PLEASANT GROVE CREEK

STREET A

PLEASANT GROVE CREEK BYPASS CHANNEL

TREATED STORM WATER DISCHARGE POINT

FUTURE BRIDGE OVER CREEK

10' BIKE TRAIL & MAINTENANCE VEHICLE PATH

10' BIKE TRAIL & MAINTENANCE VEHICLE PATH UNDER FUTURE BRIDGE SHALL BE ABOVE THE 2-YEAR WATER SURFACE ELEVATION

SEWER LIFT STATION

LOT 18 82.94 PAD
LOT 19 82.75 PAD
LOT 20 82.25 PAD
LOT 21 81.60 PAD
LOT 22 81.16 PAD
LOT 23 80.98 PAD
LOT 24 80.81 PAD
LOT 25 80.82 PAD
LOT 26 80.94 PAD
LOT 27 80.81 PAD
LOT 28 80.61 PAD
LOT 29 80.54 PAD
LOT 30 80.50 PAD
LOT 31 80.50 PAD
LOT 32 80.50 PAD
LOT 33 80.50 PAD
LOT 34 80.50 PAD
LOT 35 80.53 PAD
LOT 36 80.53 PAD
LOT 37 80.50 PAD

STREET S
STREET R
STREET Q
STREET B
STREET D
STREET F

MIN. 15' WIDE MAINTENANCE ACCESS TO BIORETENTION BASIN WITH 4:1 MAX. SLOPE

15.0' SANITARY SEWER EASEMENT

TREATED STORM DRAIN DISCHARGE POINT

HATCHING DENOTES PUBLIC UTILITY EASEMENT

CONNECT PROPOSED BIKE TRAIL & MAINTENANCE VEHICLE PATH TO EXISTING PAVED PATH

50.00' BIKE PATH EASEMENT (EE MAPS 97)

LOT 8 82.08 PAD
LOT 7 81.89 PAD
LOT 6 81.96 PAD
LOT 5 82.18 PAD
LOT 4 82.23 PAD
LOT 9 82.25 PAD
LOT 10 82.38 PAD
LOT 11 82.35 PAD
LOT 12 82.11 PAD
LOT 13 81.93 PAD
LOT 14 81.76 PAD
LOT 15 81.58 PAD
LOT 16 81.41 PAD
LOT 17 81.23 PAD
LOT 105 82.44 PAD
LOT 106 82.10 PAD
LOT 107 81.91 PAD
LOT 108 81.74 PAD
LOT 109 81.56 PAD
LOT 110 81.39 PAD
LOT 111 81.29 PAD
LOT 112 81.31 PAD
LOT 113 81.41 PAD
LOT 114 81.58 PAD
LOT 115 81.76 PAD
LOT 116 81.93 PAD
LOT 117 82.12 PAD
LOT 118 82.56 PAD
LOT 119 81.14 PAD
LOT 120 81.08 PAD
LOT 121 81.01 PAD
LOT 122 80.79 PAD
LOT 123 80.79 PAD
LOT 124 81.02 PAD
LOT 125 81.07 PAD
LOT 126
LOT 151 80.72 PAD
LOT 150 80.50 PAD
LOT 149 80.50 PAD
LOT 148 80.50 PAD
LOT 147 80.50 PAD
LOT 146 80.53 PAD
LOT 145 80.38 PAD

LOT 24 PAD ELEV=80.5 (88) PAD ELEV=78.3 (29)
LOT 23 PAD ELEV=80.6 (88) PAD ELEV=78.4 (29)
LOT 22 PAD ELEV=80.8 (88) PAD ELEV=78.6 (29)
LOT 21 PAD ELEV=80.8 (88) PAD ELEV=78.6 (29)
LOT 20 PAD ELEV=80.6 (88) PAD ELEV=78.4 (29)
LOT 19 PAD ELEV=80.5 (88) PAD ELEV=78.3 (29)
LOT 18 PAD ELEV=80.5 (88) PAD ELEV=78.3 (29)

LANDS OF ANTHEM UNITED DOC-2019-0050338-00 CREEKVIEW DEVELOPMENT APN: 017-490-017

PROPERTY LINE

ALDERWOOD PLACE

LEGEND

GENERAL DIRECTION OF RUNOFF

BIORETENTION

OVERLAND RELEASE PATH

0 20 40 80
SCALE: 1"=40'

EMERGENCY STORAGE VAULT FOR PHILLIP ROAD SITE
REQUIRED STORAGE VOLUME FOR 4 HR = 215,367 GAL

EMERGENCY STORAGE VAULT
(72'X38'X13' DEEP**) = 225,118 GAL
** ASSUMES 13' DEEP STRUCTURE BUT ONLY UTILIZING 11' DEPTH FOR STORAGE (1 FOOT FOR FREEBOARD TO TOP OF STRUCTURE AND 1 FOOT FOR SLOPE OF BOTTOM OF CONCRETE STRUCTURE)

EMERGENCY STORAGE VAULT = 225,118 GAL > 215,367 GAL

REGISTERED PROFESSIONAL ENGINEER
BRYAN P. BONINO
No. 41804
CIVIL
STATE OF CALIFORNIA

CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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SEPTEMBER 26, 2025

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APPENDIX A

WASTEWATER FLOWS BY NODE

WASTERWATER FLOWS BY NODE

PHILLIP ROAD SITE- COMPLETE BUILDOUT

Shed #	Contributing Sheds	Upstream Node	Downstream Node	850 GPD/ACRE[a]		660 GPD/ACRE[a]		2040 GPD/ACRE[a]		130 GPD/UNIT[a]		190 GPD/UNIT[a]		Cumulative Q (ADWF)[b] (MGD)	Safety Factor[c]	Factored Flow[d]	Peaking Factor[e]	Design Flow Q (PWWF)[f][h] (MGD)	Pipe Name	Min Pipe Size[i] (in)	Min Pipe Slope[i] (ft/ft)
				Area (Acre)	Q (ADWF)[b] (mgd)	Area (Acre)	Q (ADWF)[b] (mgd)	Area (Acre)	Q (ADWF)[b] (mgd)	UNITS	Q (ADWF)[b] (mgd)	UNITS	Q (ADWF)[b] (mgd)								
SOUTH OF PLEASANT GROVE CREEK																					
010	-	BLDG A & B	SSMH01	7.913	0.0067	0	0.0000	0	0.0000	0	0.0000	0	0.0000	0.0067	2.0	0.0135	3.59	0.048	-	-	-
-	010	SSMH01	SSMH02	-	-	-	-	-	-	-	-	-	-	0.0067	2.0	0.0135	3.59	0.048	SS01	8	0.0035
015	015	BLDG C	SSMH02	9.180	0.0078	0	0.0000	0	0.0000	0	0.0000	0	0.0000	0.0078	2.0	0.0156	3.58	0.056	SS02	8	0.0035
020	010-020	SSMH02	SSMH03	-	-	-	-	-	-	-	-	-	-	0.0145	2.0	0.0291	3.52	0.102	SS03	8	0.0035
025	025	RES-MULTI	SSMH03	0.000	0.0000	0	0.0000	2040[g]	0.0120	135[g]	0.0176	0	0.0000	0.0176	2.0	0.0351	3.49	0.123	SS04	8	0.0035
030	010-030	SSMH03	SSMH05	-	-	-	-	-	-	-	-	-	-	0.0321	2.0	0.0642	3.37	0.216	SS05	8	0.0035
035	035	RES 1	SSMH04	0.000	0.0000	0	0.0000	0	0.0000	0	0.0000	78	0.0148	0.0148	2.0	0.0296	3.51	0.104	-	-	-
-	-	SSMH04	SSMH05	-	-	-	-	-	-	-	-	-	-	0.0148	2.0	0.0296	3.51	0.104	SS06	8	0.0035
040	010-040	SSMH05	SSMH08	-	-	-	-	-	-	-	-	-	-	0.0469	2.0	0.0938	3.26	0.305	SS07	10	0.0025
045	045	RES 2	SSMH06	0.000	0.0000	0	0.0000	0	0.0000	0	0.0000	29	0.0055	0.0055	2.0	0.0110	3.60	0.040	-	-	-
-	-	SSMH06	SSMH08	-	-	-	-	-	-	-	-	-	-	0.0055	2.0	0.0110	3.60	0.040	SS08	8	0.0035
050	050	ELEC	SSMH07	0.000	0.0000	1.033	0.0007	0	0.0000	0	0.0000	0	0.0000	0.0007	2.0	0.0014	3.64	0.005	SS09	8	0.0035
-	055	BLDG D	-	8.173	0.0069	0	0.0000	0	0.0000	0	0.0000	0	0.0000	0.0069	2.0	0.0139	3.58	0.050	-	-	-
-	055	BLDG D	-	DISCHARGE DUE TO ANTICIPATED 0.48 MGD WATER CONSUMPTION OF A 40MW DATA CENTER[h]										-	-	-	-	0.160	-	-	-
055	055	BLDG D	SSMH07	-	-	-	-	-	-	-	-	-	-	0.0069	2.0	0.0139	3.58	0.210	-	-	-
060	055-060	SSMH07	SSMH08	-	-	-	-	-	-	-	-	-	-	0.0076	2.0	0.0153	3.58	0.215	SS10	8	0.0035
065	010-065	SSMH08	SSMH09	-	-	-	-	-	-	-	-	-	-	0.0600	2.0	0.1201	3.16	0.540	SS11	10	0.0025
070	070	BLDG F	SSMH09	7.252	0.0062	0	0.0000	0	0.0000	0	0.0000	0	0.0000	0.0062	2.0	0.0123	3.59	0.044	SS12	8	0.0035
075	010-075	SSMH09	SSMH14	-	-	-	-	-	-	-	-	-	-	0.0662	2.0	0.1324	3.12	0.573	SS13	10	0.0025
080	080	BLDG E	SSMH11	7.588	0.0064	0	0.0000	0	0.0000	0	0.0000	0	0.0000	0.0064	2.0	0.0129	3.59	0.046	SS14	8	0.0035
090	090	EU OPS	SSMH10	-	-	-	-	-	-	-	-	-	-	0.0525	2.0	0.1050	3.21	0.338	-	-	-
-	-	SSMH10	SSMH11	-	-	-	-	-	-	-	-	-	-	0.0525	2.0	0.1050	3.21	0.338	SS15	8	0.0035
095	080-095	SSMH11	SSMH12	-	-	-	-	-	-	-	-	-	-	0.0589	2.0	0.1179	3.17	0.374	SS16	10	0.0025
100	100	BLDG G	SSMH12	7.508	0.0064	0	0.0000	0	0.0000	0	0.0000	0	0.0000	0.0064	2.0	0.0128	3.59	0.046	-	-	-
110	110	BLDG H	SSMH12	7.494	0.0064	0	0.0000	0	0.0000	0	0.0000	0	0.0000	0.0064	2.0	0.0127	3.59	0.046	-	-	-
115	080-115	SSMH12	SSMH14	-	-	-	-	-	-	-	-	-	-	0.0717	2.0	0.1434	3.09	0.442	SS17	10	0.0025
120	120	RES 3	SSMH13	0.000	0.0000	0	0.0000	0	0.0000	0	0.0000	211	0.0401	0.0401	2.0	0.0802	3.31	0.265	-	-	-
-	120	SSMH13	SSMH14	0.000	0.0000	0	0.0000	0	0.0000	0	0.0000		0.0000	0.0401	2.0	0.0802	3.31	0.265	SS18	8	0.0035
125	010-125	SSMH14	SSMH16	-	-	-	-	-	-	-	-	-	-	0.1780	2.0	0.3560	2.61	1.090	SS19	15	0.0015
130	130	BLDG I	SSMH15	8.949	0.0076	0	0.0000	0	0.0000	0	0.0000	0	0.0000	0.0076	2.0	0.0152	3.58	0.054	-	-	-
-	130	SSMH15	SSMH16	-	-	-	-	-	-	-	-	-	-	0.0076	2.0	0.0152	3.58	0.054	SS20	6	0.0050
135	010-135	SSMH16	SSMH20	-	-	-	-	-	-	-	-	-	-	0.1856	2.0	0.3712	2.59	1.122	SS21	15	0.0015
NORTH OF PLEASANT GROVE CREEK																					
140	140	RES 4-6	SSMH16	0	0.0000	0	0.0000	0	0.0000	0	0.0000	211	0.0401	0.0401	2.0	0.0802	3.31	0.265	SS22	8	0.0035
-	150	SSPS	SSMH19	0	0.0000	0.396	0.0003	0	0.0000	0	0.0000	0	0.0000	0.0003	2.0	0.0005	3.65	0.002	-	-	-
150	010-150	SSMH 19	SSPS	-	-	-	-	-	-	-	-	-	-	0.2259	2.0	0.4519	2.51	1.292	SS23	15	0.0015
AVERAGE DAILY FLOW FROM DATA CENTER														0.1600							
TOTAL														0.3859				1.292	-	-	-

(a) From Table 1 - Average Dry Weather Unit Flow Factors of Section 9-2 of the City of Roseville Design Standards. (January 2025)
(b) ADWF = Average Dry Weather Unit Flow Factors
(c) Saftey Factor is 2.0 from Section 9-3 from the City of Roseville Design Standards. (January 2025)
(d) Factored Flow = Safety Factor x Cumulative ADWF
(e) Peaking Factor from Figure SS-1 of Section 9-3 of the City of Roseville Design Standards. (Janurary 2025)
(f) Design Flow/Peak Wet Weather Factored Flow = Factored Flow x Peaking Factor
(g) High Density Residential is either 2,040 GPD/ACRE or 130 GPD/DU, whichever is greater. For RES-MULTI, the DU provided greater Average Daily Waste Flow
(h) 1/3 of water consumed from the anticipated 40MW data center is assumed to be discharged as waste water. The 0.160 MGD is added to Design Flow for pipe sizing purposes. See blue highlighted table cells for Design Flow for these locations.
(i) Pipe size and slope determined from Table 2 of Section 9-4 from the City of Roseville Design Standards. (January 2025)

APPENDIX B

EMERGENCY STORAGE CALCULATIONS

Lift Station Emergency Storage Calculation

Phillip Road Site - Complete Buildout

ONLY UTILIZING THE ONSITE STORAGE VAULT FOR 4 HRS OF STORAGE

	Values	Notes
Buildout Phase - PWWF Design Flow	1.292 mgd 897 gpm	See Appendix B - Wastewater Flows by Node
Storage Capacity @ PWWF	4 hrs	City of Roseville Design Requirement
Required Storage System Volume @ PWWF	215,367 gal	Wet Well + Vault
Controling Manhole Rim Elevation	78.66 ft	Lowest Manhole Rim (SSMH03)

PWWF Analysis - Buildout **Lift Station Wet Well - Available Storage Capacity**		
Wet Well Internal Diameter	8 ft	
Lift Station Rim Elevation	83.50 ft	
15" Gravity Sewer Invert Elevation	58.56 ft	
Lead Pump "On" Elevation	57.56 ft	
Wet Well Storage Section Height	21.10 ft	Controlling manhole minum Lead Pump On Elevation
Wet Well Capacity	530.30 cf 3,967 gal	Section Height * Wet Well Internal Area
Wet Well Time to Fill	4.42 min 0.07 hrs	

Collection System - Available Storage Capacity in Emergency Storage Vault		
Depth	13 ft	Assumes 13' deep structure with only utilizing 11' depth for storage (1 ft for freeboard to top of structure, and 1 ft for slope of bottom of concrete structure)
Length	72 ft	
Width	38 ft	
Emergency Vault Capacity	30,096 cf 225,118 gal	Capacity of Emergency Storage Vault with only utilizing 11' depth for storage (1 ft for freeboard to top of structure, and 1 ft for slope of bottom of concrete structure)
Time to Fill	250.87 min 4.18 hrs	

Required Storage System Volume @ PWWF	215,367 gal	Wet Well + Vault
Available Storage in Vault + Wet Well	229,085 gal	
Total Time to Fill Collection + Wet Well	4.25 hrs	Below controling manhole elevation
Remaining Available Onsite Storage Volume @ PWWF	13,718 gal	Available storage remaining after 4 hours

APPENDIX C

TECHNICAL MEMORANDUM – SANITARY SEWER SYSTEM RECOMMENDATIONS FOR CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES OPERATIONS FACILITY

Technical Memorandum - Sanitary Sewer System Recommendations

Date: January 23, 2025

Project name: Roseville Environmental Utilities Operations Facility

Jacobs Engineering Group Inc.
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833-2937
United States

Executive Summary

Three alternatives were evaluated to address domestic wastewater and industrial wastewater discharges for the phased development of the City of Roseville (City) Environmental Utilities Operations (EU Ops) Facility. Routing domestic and industrial wastewater from EU Ops and neighboring properties to a shared public sewer system within a public utilities easement to the Pleasant Grove Wastewater Treatment Plant (WWTP) is the recommended and likely only currently feasible alternative because:

- Placer County's permitting capabilities (1) do not include industrial facilities and are limited to residential and small commercial developments and (2) are limited to flows equal to or less than 10,000 gallons per day
- Past experience with the California State Water Resources Control Board, Central Valley Region (Regional Board) has indicated their desire to regionalize wastewater treatment plants (WWTPs) throughout California to reduce and/or minimize the number of WWTPs as opposed to constructing and permitting new, relatively small WWTP. Furthermore, assuring regulatory discharge permitting is problematic at this time and is likely to occur later after the construction and startup of all industrial components and the production of representative industrial wastewater characteristics.

This technical memorandum presents the recommended estimates for dry and wet weather biochemical oxygen demand (BOD) and total suspended solids (TSS) loads, peak wet weather flows, and sizes the onsite sewer system and off-site force main based on average dry and wet sewer discharge flows provided by HDR. The recommendations are summarized in a process flow diagram that illustrates how the domestic and industrial flows will be routed and treated prior to the pump station and force mains. A cost estimate for this alternative is also provided.

Selected Alternative

Three alternatives were evaluated to address domestic wastewater and industrial wastewater discharges for the phased development of the EU Ops Facility. The alternatives included:

1) On site septic tanks, pumped out periodically, with waste disposed offsite at a local wastewater plant septage receiving station. Under this alternative, domestic and industrial wastewater would

undergo pretreatment and stored onsite in pond(s) until it can be pumped into trucks and hauled offsite for further treatment and disposal. The pond(s) would likely be lined and aerated.

2) On site septic system to treat and dispose of domestic wastewater via an onsite disposal (e.g., spray) field. The septic tank would require periodic cleaning using vactor trucks. Industrial wastewater would be handled separately and conveyed into wastewater pond(s) for treatment and storage until it can be pumped into trucks and hauled offsite for further treatment and disposal. The pond(s) would likely be lined and aerated.

3) On site sewer lift station(s) and sewer lines collected at an onsite lift station, then pumped offsite to the city sewer. For this alternative, the industrial wastewater could be added to the domestic lines or contained in a lined, and likely aerated, wastewater pond(s), which would then be drained intermittently to sewer.

Alternatives 1 and 2 are dependent on obtaining a septic system permit. Permitting a septic system for this facility is complex since the wastewater flows for this site are too high to be covered by the State On-site Water Treatment Systems (OWTS) or County Local Agency Management Program (LAMP):

- In general, septic systems for residential and light industrial follow a process based on approval by Placer County Environmental Health, which would likely not be applicable to this project but were investigated to determine applicability. Jacobs confirmed general limitations for the LAMP permit with Laura Rath from Placer County during an online meeting on April 26, 2024. The requirements included the restriction that only domestic waste may go to septic systems and that only one on-site septic tank is allowed per parcel, for up to 200 gallons per day of domestic wastewater serving up to 24 people per day. These restrictions impact the ability to implement Alternatives 1 and 2, specifically due to the number of employees for the initial phase of the project exceeding the County's limitations for the use of on-site septic tanks and the need to discharge industrial wastewater.

- Additionally, as previously indicated, an industrial scale septic system permit would likely fall under state RWQCB permitting, which is not expected to be feasible based on site soil, groundwater conditions, and policy. The wastewater flows for this site are too high to be covered by the State OWTS or County LAMP program. The permit for this system, if achievable, would be obtained from the State via a specific order issued by the Regional Water Quality Control Board (RWQCB), subject to revision every 5 years (for discharges to water) or 10 years (for discharges to land).

Based on the information from Placer County and the high feasibility of Alternative 3, routing domestic and industrial wastewater from EU Ops and possibly neighboring properties to a shared public sewer system within a public utilities easement to the Pleasant Grove WWTP is the recommended and likely only currently feasible alternative.

The size and cost of any shared lift station and force main could possibly be shared amongst the developers and public utilities to pump wastewater from all the properties to the Pleasant Grove WWTP. The design for this option is based on the sewer loads provided by HDR for the ultimate expansion (2058) which includes the Corporation Yard.

Domestic, Industrial, and Washdown Discharge Flows

Three types of wastewater discharges are addressed in this technical memorandum: domestic, industrial, and washdown.

Domestic discharges are composed of building plumbing drainage (i.e., toilets, sinks, building drains) from facilities such as the Waste Transfer Facility (WTF), Materials Recovery Facility (MRF), Organics Transfer, Scale House, and Corporation Yard.

Industrial discharges are from wet material received at the WTF, MRF, and Organics Transfer, as well as floor washdown from the WTF and MRF.

Washdown discharges are from washing fleet vehicles and bins and include the discharge from the fire protection pond. The fire protection pond discharge is expected to be very infrequent and therefore is not included in the estimated flows or pollutant loads for five-day BOD or TSS described below.

Estimated Domestic Wastewater Discharges

The estimated average daily Domestic flows for future development is based on 20 gallons per day per employee (gpd/p) using the total number of employees estimated for each facility at the ultimate buildout (year 2058) which includes the Corporation Yard.

Table 1 shows the estimated number of employees by facility in Column 2, with the corresponding estimated Domestic discharges from each facility in Column 3. The total number of estimated employees shown at the bottom of Table 1 in Columns 2 and 3 is 489 and the total estimated average daily Domestic discharge flow is 9,780 gpd.

Estimated Industrial Discharges

Material received at the WTF, MRF, and Organics Transfer Facility will have residual moisture that will be collected and discharged to the sewer system. A discharge for each facility is estimated based on 6.9% by weight of material received and an expected annual tonnage of material. Columns 4 and 5 of Table 1 show the estimated tons of material or number of vehicles or units along with the estimated industrial discharge. As shown at the bottom of Table 1 in Column 5, the total estimated average daily industrial discharge flow is 59,544 gpd. However, the fire protection pond discharge is expected to be very infrequent and fleet vehicle and bin washing are not considered to be industrial discharges and therefore are not included in the recommended industrial discharge flow of 42,877 gpd.

Estimated Washdown Discharges

Fleet vehicle and bin washing are considered to be washdown discharges and low in BOD and are therefore separated from the other discharges described above. The total estimated average daily washdown discharge flow is 6,780 gpd.

The truck and bin wash areas are typically a concrete pad sloped to a trench drain or area drain in the center, with screens or strainers, and perimeter surrounded by a secondary containment curb. Often the vehicle wash outside perimeter is equipped with rumble grating to remove debris from truck tires.

Washdown flows drain through an oil-water separator and collect in a sump that is pumped out or is gravity drained to the main sewer trunk line.

Estimated Fire Protection Discharge:

Fire protection pond discharge is expected to be very infrequent and therefore is not included in any of the discharge estimates provided above.

If the fire protection system is needed and used, the fire water flow of one million gallons will be contained in a retention pond and discharged over a two-month timeframe.

Table 1. Wastewater Discharge and Estimated Flows and Pollutant Loads - Utlimate

Column 1A	1B	2	3	4	5	6	7	8	9	10	11	12	13
		Sewer Discharges		Industrial Discharges					Estimated Dry and Wet Weather Loads, lb/d				
Source (Flow Category)	Source (Building)	Staff	Sewer Discharge (gpd)	Tons of material or Number of Vehicles or units	Industrial Discharge (gpd) Wet Weather	Dry Weather Total Sanitary plus Industrial (gpd)	Wet Weather Sanitary plus Industrial discharges at peak daily flow	Assumptions	Dry BOD	Dry TSS	Wet BOD	Wet TSS	Source/Comments
Waste Transfer Facility	MRF	13	260	350,000	15,886	3,437	16,146	Sewer: reflects 20 gpd per person, Industrial: reflects 6.9% by weight of materials arriving daily	22.49	27.89	109.4	136.0	Sewer Discharge assumed to be equal to Metcalf & Eddy, High Strength Concentrations of 350 and 400 mg BOD and TSS, respectively/L for dry and wet. Industrial discharges assumed to be equal to MRF discharge; concentrations of 820 and 1020 mg BOD and TSS, respectively /L for wet and dry
Materials Recovery Facility	MRF	71	1420	210,000	9,531	3,326	10,951	Sewer: reflects 20 gpd per person, Industrial: reflects 6.9% by weight of materials arriving daily	17.18	20.95	69.3	85.8	Sewer Discharge assumed to be equal to Metcalf & Eddy, High Strength Concentrations of 350 and 400 mg BOD and TSS, respectively/L for dry and wet. Industrial Discharges assumed to be equal to MRF Data (this workbook) - maximum concentrations of 820 and 1020 for both dry and wet
Organics Transfer only	MRF	11	220	156,000	7,081	1,636	7,301	Sewer: reflects 20 gpd per person, Industrial: reflects 6.9% by weight of materials arriving daily	10.33	12.78	49.1	61.0	Sewer Discharge assumed to be equal to Metcalf & Eddy, High Strength Concentrations of 350 and 400 mg BOD and TSS, respectively/L for dry and wet. Industrial discharges assumed to be equal to MRF discharge; concentrations of 820 and 1020 mg BOD and TSS, respectively /L for wet and dry
Scale House	Scale House	8	160	NA	NA	160	160	Sewer: reflects 20 gpd per person, Industrial: reflects 6.9% by weight of materials arriving daily	0.47	0.53	0.5	0.5	Sewer Discharge assumed to be equal to Metcalf & Eddy, High Strength Concentrations of 350 and 400 mg BOD and TSS, respectively/L
WTF Washdown	MRF	NA	NA	NA	1800	1800	1,800	Washdown assumed to occur quarterly, but for peak wet weather, assumes it occurs on one day.	5.25	6.00	5.3	6.0	Assumed to be eqivalent to High Strength Wastewater (conservative estimate) Metcalf & Eddy, High Strength Concentrations of 350 and 400 mg BOD and TSS, respectively/L
MRF Washdown	MRF	NA	NA	NA	1800	1800	1,800	Washdown assumed to occur quarterly, but for peak wet weather, assumes it occurs on one day.	5.25	6.00	5.3	6.0	Assumed to be eqivalent to High Strength Wastewater (conservative estimate) Metcalf & Eddy, High Strength Concentrations of 350 and 400 mg BOD and TSS, respectively/L
Compost Facility Drainage	N/A	NA	NA	NA	NA			Not included. Assumed to be zero discharge from this use.					
Corporation Yard Sanitary Sewer Flow	Shop/Repair, BS TS Water Utility, Wash Facility, EU FS and RA, EU Fleet Admin	386	7720	NA	NA	7720	7720	Assumes all Corp staff use 20 gpd/p	22.53	25.75	22.5	25.8	Assumed to be equal to Metcalf & Eddy, High Strength Concentrations of 350 and 400 mg BOD and TSS, respectively/L
Corporation Yard Wash Down	N/A	N/A	NA	NA	NA			Assumed non-contact stormwater, discharged to surface after detention for peak storm event					
Laydown Area/Totes Discharge	N/A	N/A	NA	NA	NA			Assumed non-contact stormwater, discharged to surface after detention for peak storm event					
Fleet Vehicles Serviced at site	Wash Facility	NA	NA	379	4860	4860	4860	Assumes ea truck washed twice weekly at 45 g discharge per wash	0.41	4.09	0.4	4.1	Assumed to be equal to Metcalf & Eddy, Maximum Stormwater Runoff Concentrations of 10 and 101 mg BOD and TSS, respectively/L
Bin Wash	Wash Facility	NA	NA	NA	1920	1920	1920	Assumes 4 bin stations, operating 4 GMP each for 2 hr per day (no recovery)	0.16	1.62	0.2	1.6	Assumed to be equal to Metcalf & Eddy, Maximum Stormwater Runoff Concentrations of 10 and 101 mg BOD and TSS, respectively/L
Fire Protection Pond Discharge	Fire Water Drainage Pond	NA	NA	NA	16,667	2,778	16,667	One M gallons of contact water discharged over a two month timeframe					
Total		489	9,780	716,379	59,544	29,437	69,324		84	106	262	327	

LEGEND

Columns 1-8 provided by HDR.

Sanitary Sewer: Estimated number of employees and flows provided by HDR.

Industrial: Estimated tons of material or number of vehicles or units and flows provided by HDR.

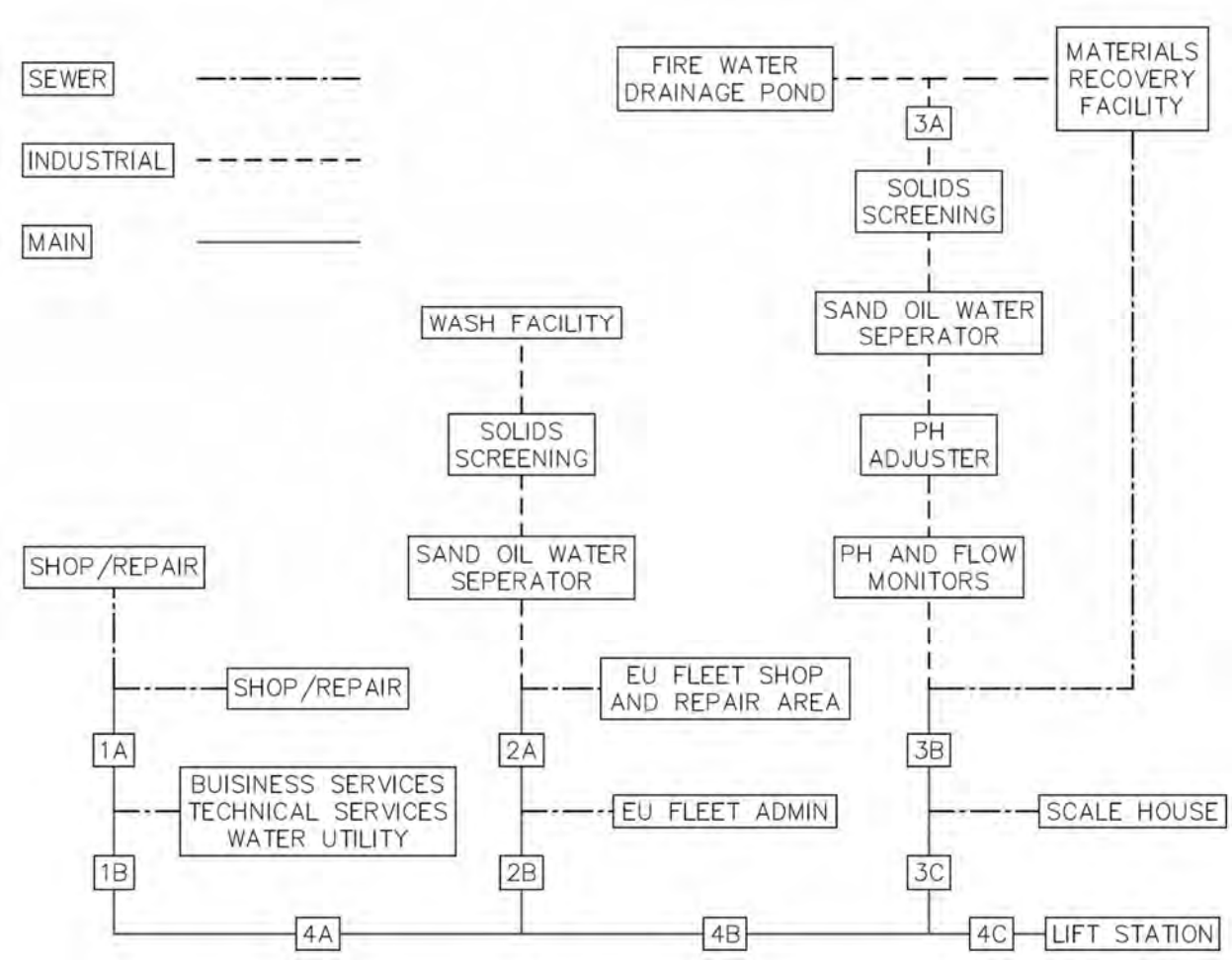
Washdown: Estimated tons of material or number of vehicles or units and flows provided by HDR.

Columns 9-13 developed by Jacobs.

Process Flow Diagram and Sewer System Sizing

Per Section 9-10 of the Roseville Design Standards, the Environmental Utilities Director was consulted to determine the appropriate pre-treatment. Figure 1 illustrates the flow path of the sewer and industrial /washdown discharge from each source to the lift station, including the appropriate pre-treatment.

Figure 1. Process Flow Diagram

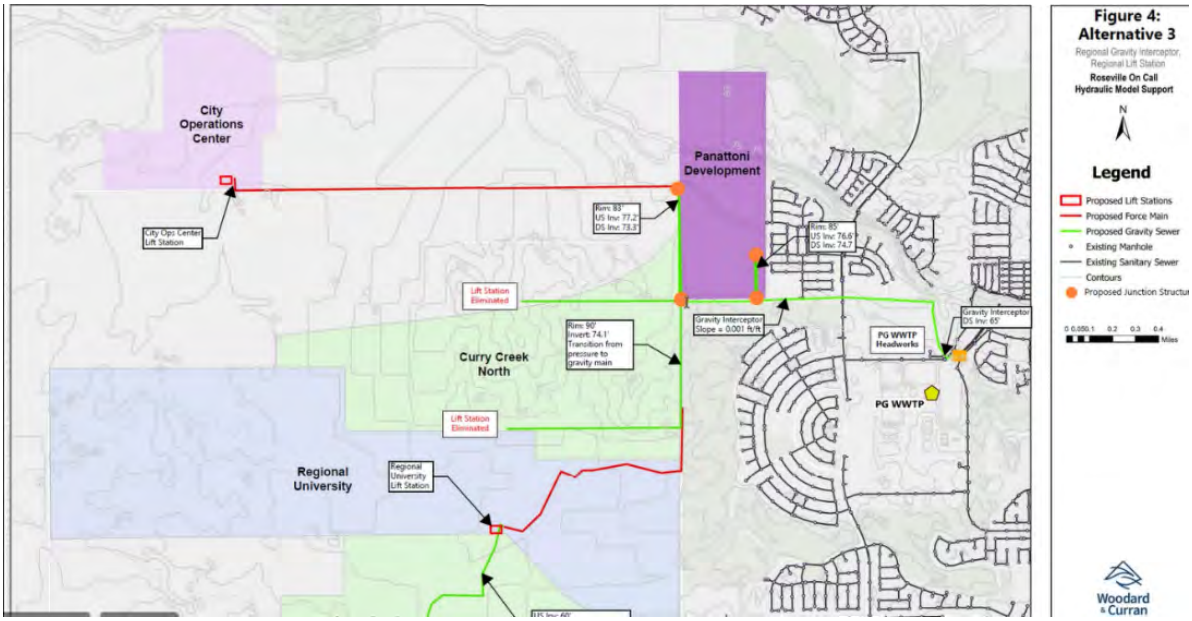


The values in Table 2, below, were calculated using the following process, as outlined by the Roseville Design Standards. The Process Flow Diagram (Figure 1) was used to assign the discharge flows from each building in Table 1 to their appropriate pipe section (totaled in column 2). A safety factor of 2 was then applied to the total flow in each pipe section (column 3) as well as a peaking factor, determined using Figure SS-1 of Section 9 of the Roseville Design Standards (column 4). A minimum scouring velocity of 2ft/s was selected and a fill percentage of 90% assumed to determine the minimum pipe size necessary to convey the peak flow (column 6). Many of the minimum pipe sizes are below the 6-inch minimum required in Section 9 of the Roseville Design Standards. Therefore, each pipe was assigned an ideal design size with that minimum in mind (column 7). A separate calculation was completed to ensure the flow from the Fire Water Drainage Pond could be treated and conveyed along with the normal site flows.

Table 2. Gravity Pipe Flows

1	2	3	4	5	6	7
Gravity Pipe	Average Flow (gpd)	Average Flow Safety Factor (gpd)	Peak Flow (gpd)	Peak Flow (gpm)	Min Calc Size (in)	Proposed Size (in)
1A	1,930	3,860	13,985	29	2.6	6
1B	3,860	7,720	13,985	29	2.6	6
2A	8,710	17,419	31,259	65	3.8	6
2B	10,640	21,279	38,062	79	4.2	6
3A	36,098	72,196	125,46	261	7.7	8
3B	37,998	75,996	131,77	275	7.9	8
3C	38,158	76,316	132,30	276	7.9	8
4A	3,860	7,720	13,985	29	2.6	6
4B	14,500	28,999	51,647	108	4.9	6
4C	52,497	104,995	179,04	373	9.2	10

Figure 2. Off-Site Sewer Routing



Domestic, industrial and wastewater flows will drain from each of the facility buildings or areas, either by gravity or sump pumps, to a common 10-inch gravity sewer trunk line routed through the property. The site is located west and lower in elevation than the Pleasant Grove WWTP, so the site will require a lift station to pump flows via a dual (including redundant line) force main to the City's sewer main, which is in Westbrook Boulevard, approximately 3 miles east of the site.

The lift station will be designed to have a capacity of 4 hours of peak flow (~90,000 gallons) and an outgoing scouring velocity of 4 ft/s, in accordance with Table 3 of Section 9 of the Roseville Design Standards. The standards also require a lead/lag pump, standby pump, and standby outflow line.

Excess Capacity

The sewer system sizing is based on the ultimate buildout of the EU Ops Facility and wet weather flows. However, due to the phased development of the EU Ops Facility, there are lower flows that need to be considered in the initial and interim build-out, the most stringent of which is the initial build-out estimates during dry weather.

The gravity pipe size requirements in the Roseville Design Standards result in the following excess capacity for the ultimate and initial build-out:

- In the ultimate build-out, during wet weather, the 10-inch gravity main will provide 1.19x the capacity needed for the flow entering the lift station.
- In the initial build-out, during dry weather, the 10-inch gravity main will provide more than 11.4x the capacity needed for the flow entering the lift station.

During the initial build-out period, maintenance will have to incorporate a regular flushing plan using the clean-outs along all the gravity lines. This will offset the issues caused by low scouring velocities in the lines. In the ultimate build-out, the flushing plan can be adjusted to address only some of the lines. Namely, the plan can be limited to the pipes that have a calculated minimum size lower than the Roseville Design Standards minimum pipe size of 6 inches (See Table 2, column 6).

Based on an 6-inch pipe and 40 minutes of flow to maintain a flushing velocity of 4ft/s, the lift station needs to hold approximately 12,685 gallons of capacity. That capacity equates to 5.5 hours of incoming flow in initial, dry weather conditions and 34 minutes in ultimate, wet weather conditions. Table 3 in Section 9 of the Roseville Design Standards requires a storage capacity of 4 hours at peak wet weather flow, which is ~90,000 gallons, and provides 3.35x the capacity needed.

Given the long spans between pumps in the initial dry weather condition, there is an increased potential for solids deposition at the bottom of the tank which could cause storage limitations and eventually impede the pump's ability to reach target flow rates. This will be further evaluated during concept design.

Waste Characterization and Recommended BOD and TSS Loads

BOD and TSS pollutant loads were developed from the discharge flows described in Table 1. Columns 9 through 13 in Table 1 describe the methodology discussed and reviewed by HDR during development and reviewed with City of Roseville staff on September 30, 2024.

As shown in Table 1, the discharges have been color-coded according to the following characteristics:

- Domestic Discharge: Considered to be equivalent or close to high strength wastewater concentration with BOD and TSS concentrations of 350 and 400 mg/L, respectively, as described by Metcalf & Eddy, 4th Edition of Wastewater Engineering Treatment and Reuse, Table 3-15.
- Industrial Discharge: Assumed to be equal to the maximum monthly BOD and TSS concentrations of 820 and 1,020 mg/L, respectively, as obtained from HDR (Materials Recovery Facility Analytical Results).
- Washdown Discharge: Considered to be low in BOD and equivalent to stormwater runoff concentrations of 10 and 101 mg/L BOD and TSS, respectively, as described by Metcalf & Eddy, 4th Edition of Wastewater Engineering Treatment and Reuse, Table 3-19.

Estimated dry and wet weather BOD and TSS loads in pounds per day (lb/d) were developed and are shown in Columns 9-12 of Table 1. As shown at the bottom of Table 1, the total dry and wet weather BOD and TSS loads are estimated to be:

- Dry Weather: 84 lb BOD/d and 106 lb TSS/d
- Wet Weather: 262 lb/BOD/d and 327 lb TSS/d

A comparison of the estimated Domestic discharge loads and typical residential per capital BOD and TSS loading rates was conducted. Comparison results indicated that the estimated loads were consistent with typical residential loading rates since most on-site employees, on average, only spend about 8 hours during the week at the facility as opposed to driving routes or completing other off-site work.

Flows are expected to be conveyed and treated at the Pleasant Grove WWTP. Comparison of the estimated BOD and TSS loads shown in Table 1 with estimated Pleasant Grove WWTP capacity indicates that these loads are considered minor relative to Pleasant Grove WWTP's capacity.

Cost Estimate

The total capital cost to construct the selected alternative, Alternative 3, is $14,902,600. The cost estimate accounts for installation of approximately 23,650 Linear Feet (LF) of total piping from the EU Ops Facility to the Pleasant Grove WWTP and includes one new lift station with one 90,000 Gallon Holding Tank and two 325 gpm pumps (one main and one standby). Total piping includes approximately 1,000 LF of 10-inch VCP piping, 1,000 LF of 8-inch VCP piping, 4,000 LF of 6-inch VCP Piping (service line areas), and 17,650 LF of 6-inch Ductile Iron Pipe force main to the Pleasant Grove WWTP.

The cost estimate also includes the treatment systems shown in the process flow diagram in Figure 1:

- Two Solids Screening Units
- Two Sand Oil Separators
- One pH Adjustor
- One PH Adjuster and Flow Monitor

The estimate of probable cost provided in this technical memorandum is based on the limited information and concepts available at the time and was priced to the best of our ability using standard estimating practice, available information provided by the City of Roseville and HDR, and the conceptual status of the project. Given the preliminary and conceptual status, Jacobs does not guarantee that these estimates will align with any subsequent concepts and/or submittals and/or actual construction costs. Also of note is that this estimate does not factor in contractor availability and other items, which can have a significant impact on actual construction cost.

Full documentation for the cost estimate is provided in Appendix B.

Table 3.4 shows the long-term operational costs for Alternative 3. These costs are based on monthly city fees from the City of Roseville Utility Rate Study, May 2023 by IB Consulting, Table 4 Variable Rate1. The variable rate for FY 2025 (commercial metered customer class) is $4.9776/ccf or $0.0067/gal. A yearly fee was calculated assuming seven dry months and five wet months in a year.

Table 3.1

Condition	Estimated (gal/day)	Peaked (gal/day)
Initial Dry	5,135	18,557
Initial Wet	14,793	52,676
Ultimate Dry	26,499	93,118
Ultimate Wet	52,497	179,043

Table 3.2

	2024	2025
$ / ccf	$4.6958	$4.9776
$ / gal	$0.0063	$0.0067

Table 3.3

2025	Phase	Months	gal / month	$ / month	$ / Year
Estimated	Initial	Dry	154,039	$1,024.99	$21,940
		Wet	443,796	$2,953.06	
	Ultimate	Dry	794,972	$5,289.81	$89,427
		Wet	1,574,920	$10,479.65	
Peaked with Safety Factor	Initial	Dry	556,707	$3,704.37	$78,507
		Wet	1,580,282	$10,515.33	
	Ultimate	Dry	2,793,535	$18,588.41	$308,824
		Wet	5,371,280	$35,740.94	

Table 3.4 Lifecycle Costs

Alternative	Installation Cost	O&M Cost (Ultimate)
3 - Piped Force Main to WWTP	$3,097,500	$60,000/ month

Table 4: Proposed Wastewater Rates

Monthly Fixed Charges ($/ Month)		
Customer Class	FY 2024	FY 2025
Residential	$50.42	$53.45
Commercial - Metered	$50.42	$53.45
Commercial - Flat	$50.42	$53.45
Variable Rate ($/ccf)		
Customer Class	FY 2024	FY 2025
Commercial - Metered	$4.6958	$4.9776

[1] O&M Cost indicated is an estimate of monthly sewer fees; fee is based on City of Roseville Utility Rate Study, May 2023 by IB Consulting, Table 4 Variable Rate, Microsoft Word - City of Roseville - FY 2024 Water-Recycled-Wastewater Rate Study Report v1 $13,057/month

Summary

Recommended estimates for dry and wet weather BOD and TSS loads, peak wet weather flows, and onsite sewer system and off-site force main sizing were provided in this technical memorandum. The process flow diagram (Figure 1) summarizes how the Domestic and industrial/washdown flows will be routed and treated prior to the pump station and force mains.

The recommended estimates for dry and wet weather BOD and TSS loads and the sizing of the onsite sewer system and off-site force main are conservative estimates based on the following assumptions that can be further refined during concept design:

- Characterizations for domestic discharge, industrial discharge, and washdown discharge
- Refinement of assumptions for flow estimates from each building (currently flow rates represent multiple buildings)
- Revisiting 6.9% water by weight of material received assumption from Western Placer Waste Management Authority

Appendix A

Minimum Design Values

Chan, Eunice

From: Samuelson, Dave <dsamuelson@roseville.ca.us>
Sent: Tuesday, October 22, 2024 12:15 PM
To: Fisk, Elijah
Cc: Chan, Eunice; Schmidt, Keith
Subject: [EXTERNAL] RE: Design Standard Locations

Elijah, See responses below in red.

Thanks,

David Samuelson
Senior Engineer
Environmental Utilities Dept.- Engineering

(916) 746-1708
Corporation Yard | 2005 Hilltop Circle | Roseville, CA 95747

From: Fisk, Elijah <Elijah.Fisk@jacobs.com>
Sent: Tuesday, October 22, 2024 10:38 AM
To: Samuelson, Dave <dsamuelson@roseville.ca.us>
Cc: Chan, Eunice <Eunice.Chan@jacobs.com>
Subject: Design Standard Locations

External: This email was sent by a person from outside your organization. Exercise caution when clicking links, opening attachments, or taking further action.

Dave,
Thanks for the call. Here are the questions I had.

1. Minimum size for gravity service lines 6"
2. Minimum size for gravity main lines 8"
3. Minimum size for force mains 4"
4. Number of pumps in the lift station and they configuration with the lines going out including valve placement 2 pumps see other email showing configuration.
5. Design velocity of gravity lines 2-10 fps
6. Design velocity of force mains 3-5 fps for normal flow.

Elijah Fisk, EIT | Jacobs | Civil/Environmental Engineer
M: +1 303.885.5911 | Elijah.Fisk@jacobs.com
6440 Millrock Dr | Salt Lake City, UT 84121 | United States

Appendix B

Cost Estimate Documentation

COST ESTIMATE SUMMARY

Site: Roseville Utility Planning
Location: City of Roseville, California
Phase: Option 3 - Piped to WWTP (Conveyance Pipeline from EU Yard to WWTP)
Estimate: Capital Cost Estimate (-30% to +50%)
Date: January 2025

Description: Option 3 consists of the following elements: Installation of approximately 23,650 Linear Feet (total) of Ductile Iron Pipe (DIP) and Vitrified Clay Pipe (VCP) from the Environmental Utilities (EU) Yard to the Pleasant Grove Waste Water Treatment Plant (WWTP), including 1 New Pump Station. Total piping includes the following: Section 1 - 1,000 LF of 6" VCP; Section 2 - 1,000 LF of 6" VCP; Section 3 - 1,000 LF of 8" VCP; Section 4 - 2,000 LF of 6" VCP and 1,000 LF of 10" VCP; and 17,650 LF of 6" lined ductile iron piping to the WWTP. Includes installation of 1 New Pump Station, 2 each 160 gpm pumps (1 main plus 1 standby) and New Treatment Systems including 2 each Solids Screening Units, 2 each Sand Oil Separators, 1 pH Adjustor, 1 pH + Flow Monitor, and 1 each 90,000-gallon tank.

CAPITAL COSTS:

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
1 Submittals / Plans / Permits					
Submittals and Plans (Work Plan, H&S Plan, Quality Control Plan)	1	LS	$30,650	$30,650	Pricing is per RSMeans #01 31 13.20 and includes Work plan, Health and Safety plan, Permits, etc.
Traffic Control Plan	1	LS	$10,000	$10,000	Pricing is based on project similar in nature.
Permitting	1	LS	$25,000	$25,000	Pricing is based on project similar in nature.
Connection Fees	1	LS	$25,000	$25,000	Connection Fees for New Pipeline Installation to WWTP
SUBTOTAL				**$90,650**	
2 Mobilization/Demobilization					
Mobilization/Site Setup	1	LS	$35,000	$35,000	Pricing based on project similar in nature. Includes RSMeans Crews.
Utility Locate	5	DY	$1,800	$9,000	Pricing based on RSMeans Crew #A-6
Pre-Construction Survey	5	DAY	$2,400	$12,000	Pricing based on RSMeans #01 71 23.13 (1200)
Temporary Facilities	12	MO	$3,500	$42,000	Office trailers, storage facilities, utilities including sanitary and water facilities, and internet. Pricing based on project similar in nature.
Contractor Support/Indirects	12	MO	$25,000	$300,000	This includes Surveyor (Grade control), QC, contractor home office support. Pricing based on project similar in nature.
Site Teardown and Demobilization	1	LS	$20,000	$20,000	Pricing based on project similar in nature. Includes RSMeans Crews
SUBTOTAL				**$418,000**	
3 Pre-Remediation Site Work					
Silt Fence and Erosion Control Measures	5,000	LF	$8.00	$40,000	Installation, maintenance, and removal (around the stream and HHRA soil Exceedance area). Pricing is per recent project similar in nature.
Clearing and Grubbing (along roadway)	2	AC	$5,900.00	$11,800	Pricing is per RSMeans #31 11 10.10 (0020)
Road improvements	1,000	FT	$26.00	$26,000	For onsite transport of imported and excavated soils. Pricing is per RSMeans.
Fencing/Signs/Gates	0	LF	$41.00	$0	Pricing is per RSMeans for 6 ft. high Chain Link Fence (6 ga. wire, galv steel).
SUBTOTAL				**$77,800**	
3 Installation of new Pump Station and Treatment System					
Superintendent	100	Hour	$85	$8,500	Pricing is per RSMeans #01 31 13.20 (0260)
Operator - Excavator	100	Hour	$75	$7,500	Pricing is per RSMeans Crew #B-12E
Operator - Boom truck	80	Hour	$75	$6,000	Pricing is per RSMeans Crew #A-3H
Pipefitters (2)	200	Hour	$75	$15,000	Pricing is per RSMeans Crew #Q-1
Laborers (2)	200	Hour	$65	$13,000	Pricing is per RSMeans Crew #B-1F
Electrician with vehicle	40	Hour	$105	$4,200	Pricing is per RSMeans Crew #R-1
Excavator	100	Hour	$65	$6,500	Pricing is per RSMeans Crew #B-12E
Boom Truck	80	Hour	$110	$8,800	Pricing is per RSMeans Crew #A-3H
Packaged Pump Station	1	Each	$400,000	$400,000	Pricing is based on a Pump Station similar in size to the EU Operations Center's based on information from Roseville EU.
Treatment System - Sand Oil Separator (750 gallon)	1	Each	$12,170	$12,170	Pricing is from Interceptorsdirect.com for Sand Oil Separators (1 - 750 gallon) including delivery
Treatment System - Sand Oil Separator (500 gallon)	1	Each	$9,810	$9,810	Pricing is from Interceptorsdirect.com for Sand Oil Separators (1 - 500 gallon) including delivery
Treatment System - Solids Screening Equipment (2 each)	2	Each	$15,000	$30,000	Pricing includes 1 Solids Screening Unit with delivery
Treatment System - Mechanical Piping, pumps, valves (2 each)	2	Each	$22,800	$45,600	Pricing is from RSMeans #23 21 23.13 (5190)
Treatment System - PH Adjuster and PH + Flow Monitor (1 each)	1	Each	$5,020	$5,020	Pricing is from wecofilters.com for 1 each pH Adjusting System including tax.
Treatment System - Purchase and Delivery of 90,000-gallon Holding Tank	1	LS	$247,500	$247,500	Pricing is per Internet search and includes delivery
Treatment System - Crane w/crew to offload 90,000-gallon steel tank	1	LS	$15,000	$15,000	Pricing is based on project similar in nature.
Treatment System - Electrical and Controls	1	LS	$45,000	$45,000	Pricing is based on project similar in nature.
Treatment System - Miscellaneous supplies	1	LS	$5,000	$5,000	Pricing is based on project similar in nature.
SUBTOTAL				**$884,600**	
4 Installation of new 10-inch, 8-inch, and 6-inch Vitrified Clay Pipe (VCP); and 6-inch Ductile Iron Pipe (DIP) to WWTP					
Traffic Control - Flagger personnel and signage	120	Days	$1,525.00	$183,000	Pricing is per recent project similar in nature. Includes 2 Traffic control flaggers @ 10 hours/day, pickup truck, plus signage and barricades.
Vitrified Clay Pipe (VCP) - 10-inch (Section 4) - Labor and Equipment for Installation of piping	8	Day	$11,830.00	$94,640	Pricing is per RSMeans Crew #B-10T, #B-12B, #B-54E, and #E-22 and per recent projects in the Sacramento, CA Area (Includes Superintendent, Equipment Operators, Pipefitters, Skilled Laborers, Excavator, Front-end Loader, Rock Trencher equipment) (Production Rate = 125 LF per day)
Vitrified Clay Pipe (VCP) - 10-inch - Travel - Per Diem	8	Day	$2,124.00	$16,992	Pricing is per gsa.gov for Travel - Per Diem Lodging and M&IE for Sacramento, CA for crew of 9 people
Vitrified Clay Pipe (VCP) - 10-inch - Various small equipment and tools	8	Day	$1,000.00	$8,000	Pricing is per recent project similar in nature
Vitrified Clay Pipe (VCP) - 10-inch (Section 4)	1,000	LF	$24.40	$24,400	Pricing is per pipe supply company and includes 7.25% tax (Production Rate = 200 LF per day)
Vitrified Clay Pipe (VCP) Fittings - 10-inch (Section 4)	5	Each	$355.00	$1,775	Pricing is per RSMeans #33 14 13.35 (1500)
Vitrified Clay Pipe (VCP) Valves - 10-inch (Section 4)	2	Each	$1,825.00	$3,650	Pricing is per RSMeans #23 05 23.30 (0610)
Delivery of 10-inch VCP	1	LS	$500.00	$500	Pricing is per pipe supply company (minimum charge)
					Estimated Unit Cost for Installation of 10-inch VCP = $150/LF
Vitrified Clay Pipe (VCP) - 8-inch (Section 3) - Labor and Equipment for Installation of piping	7	Day	$11,830.00	$82,810	Pricing is per RSMeans Crew #B-10T, #B-12B, #B-54E, and #E-22 and per recent projects in the Sacramento, CA Area (Includes Superintendent, Equipment Operators, Pipefitters, Skilled Laborers, Excavator, Front-end Loader, Rock Trencher equipment) (Production Rate = 150 LF per day)
Vitrified Clay Pipe (VCP) - 8-inch - Travel - Per Diem	7	Day	$2,124.00	$14,868	Pricing is per gsa.gov for Travel - Per Diem Lodging and M&IE for Sacramento, CA for crew of 9 people
Vitrified Clay Pipe (VCP) - 8-inch - Various small equipment and tools	7	Day	$1,000.00	$7,000	Pricing is per recent project similar in nature
Vitrified Clay Pipe (VCP) - 8-inch (Section 3)	1,000	LF	$17.20	$17,200	Pricing is per pipe supply company and includes 7.25% tax (Production Rate = 260 LF per day)
Vitrified Clay Pipe (VCP) Fittings - 8-inch (Section 3)	5	Each	$259.00	$1,295	Pricing is per RSMeans #33 14 13.35 (1400)
Vitrified Clay Pipe (VCP) Valves - 8-inch (Section 3)	2	Each	$1,475.00	$2,950	Pricing is per RSMeans #23 05 23.30 (0600)
Delivery of 8-inch VCP	1	LS	$500.00	$500	Pricing is per pipe supply company (minimum charge)
					Estimated Unit Cost for Installation of 8-inch VCP = $127/LF
Vitrified Clay Pipe (VCP) - 6-inch (Sections 1,2, and 4) - Labor and Equipment for Installation of piping	25	Day	$11,830.00	$295,750	Pricing is per RSMeans Crew #B-10T, #B-12B, #B-54E, and #E-22 and per recent projects in the Sacramento, CA Area (Includes Superintendent, Equipment Operators, Pipefitters, Skilled Laborers, Excavator, Front-end Loader, Rock Trencher equipment) (Production Rate = 160 LF per day)
Vitrified Clay Pipe (VCP) - 6-inch - Travel - Per Diem	25	Day	$2,124.00	$53,100	Pricing is per gsa.gov for Travel - Per Diem Lodging and M&IE for Sacramento, CA for crew of 9 people
Vitrified Clay Pipe (VCP) - 6-inch - Various small equipment and tools	25	Day	$1,000.00	$25,000	Pricing is per recent project similar in nature
Vitrified Clay Pipe (VCP) - 6-inch (Sections 1, 2, and 4)	4,000	LF	$12.90	$51,600	Pricing is per pipe supply company and includes 7.25% tax (Production Rate = 320 LF per day)
Vitrified Clay Pipe (VCP) Fittings - 6-inch (Sections 1, 2, and 4)	20	Each	$191.00	$3,820	Pricing is per RSMeans #33 14 13.35 (1300)
Vitrified Clay Pipe (VCP) Valves - 6-inch (Sections 1, 2, and 4)	6	Each	$1,050.00	$6,300	Pricing is per RSMeans #23 05 23.30 (0590)
Delivery of 6-inch VCP	2	EA	$500.00	$1,000	Pricing is per pipe supply company (2 loads)
					Estimated Unit Cost for Installation of 6-inch VCP = $110/LF
Ductile Iron Piping (DIP) - 6-inch (to WWTP) - Labor and Equipment for Installation of piping	295	Day	$11,830.00	$3,489,850	Pricing is per RSMeans Crew #B-10T, #B-12B, #B-54E, and #E-22 and per recent projects in the Sacramento, CA Area (Includes Superintendent, Equipment Operators, Pipefitters, Skilled Laborers, Excavator, Front-end Loader, Rock Trencher equipment) (Production Rate = 60 LF per day due to excavating in rocky conditions for pipeline installation)
Ductile Iron Pipe (DIP) - 6-inch - Travel - Per Diem	295	Day	$2,124.00	$626,580	Pricing is per gsa.gov for Travel - Per Diem Lodging and M&IE for Sacramento, CA for crew of 9 people
Ductile Iron Piping (DIP) - 6-inch - Various small equipment and tools	295	Day	$1,125.00	$331,875	Pricing is per recent project similar in nature
Ductile Iron Piping (DIP) - 6-inch (to WWTP)	17,650	LF	$40.00	$706,000	Pricing is per Ferguson Waterworks Co.
Ductile Iron Pipe (DIP) Fittings - 6-inch (to WWTP)	20	Each	$487.50	$9,750	Pricing is per RSMeans #33 14 13.15 (8400)
Ductile Iron Pipe (DIP) Valves - 6-inch (to WWTP)	10	Each	$2,070.00	$20,700	Pricing is per F.W. Webb Company for a 6" ball valve cast iron
Delivery of 6-inch Ductile Iron pipe	18	Load	$1,250.00	$22,500	Pricing is per Freight/Delivery company (estimated 1,000 LF per load)
					Estimated Unit Cost for Installation of 6-inch DIP = $295/LF
Transition from gravity to pressure Manhole	1	EA	$40,000.00	$40,000	Pricing is based on a information received from the Roseville EU representative for recent contractor estimates in the area.
Casing for crossings	600	LF	$75.00	$45,000	Pricing is per recent project similar in nature. Note: Assumes that all road crossings will only involve trenching. No directional drilling or jack & boring will
Dump Truck w/Driver	400	Hour	$130.00	$52,000	Pricing is per RSMeans Crew #B-34B
Import Fill	2,630	LCY	$40.00	$105,200	Pricing is per RSMeans #31 23 23.16 (0100)
Dump Fees	5,610	Tons	$45.00	$252,450	Pricing is per recent project similar in nature
Electrician with vehicle	80	Hour	$105.00	$8,400	Pricing is per RSMeans Crew #R-1
Conduit/wire/panels	2	Each	$20,000.00	$40,000	Pricing is per recent project similar in nature
Power hookup	2	EA	$40,000	$80,000	Pricing is per recent project similar in nature
SUBTOTAL				**$6,726,455**	

COST ESTIMATE SUMMARY

Site: Roseville Utility Planning
Location: City of Roseville, California
Phase: Option 3 - Piped to WWTP (Conveyance Pipeline from EU Yard to WWTP)
Estimate: Capital Cost Estimate (-30% to +50%)
Date: January 2025

Description: Option 3 consists of the following elements: Installation of approximately 23,650 Linear Feet (total) of Ductile Iron Pipe (DIP) and Vitrified Clay Pipe (VCP) from the Environmental Utilities (EU) Yard to the Pleasant Grove Waste Water Treatment Plant (WWTP), including 1 New Pump Station. Total piping includes the following: Section 1 - 1,000 LF of 6" VCP; Section 2 - 1,000 LF of 6" VCP; Section 3 - 1,000 LF of 8" VCP; Section 4 - 2,000 LF of 6" VCP and 1,000 LF of 10" VCP; and 17,650 LF of 6" lined ductile iron piping to the WWTP. Includes installation of 1 New Pump Station, 2 each 160 gpm pumps (1 main plus 1 standby) and New Treatment Systems including 2 each Solids Screening Units, 2 each Sand Oil Separators, 1 pH Adjustor, 1 pH + Flow Monitor, and 1 each 90,000-gallon tank.

5 Post-Remediation Site Work						
Seed Pipeline Areas		3	AC	$4,240	$12,720	Pricing is per RSMeans #32 92 19.14 (5400)
Post Construction Surveying and As-Builts		10	DAY	$2,400	$24,000	Pricing based on RSMeans #01 71 23.13 (1200)
	SUBTOTAL				**$36,720**	
6 Final Construction Completion Report						
Final Construction Completion Report		1	LS	$45,000	$45,000	Pricing is based on project similar in nature.
	SUBTOTAL				**$45,000**	
	TOTAL				**$8,279,225**	
Contingency		25%		$8,279,225	$2,069,800	Per EPA Guidance Document (2000), pp. 5-10 and 5-11 (15% Scope and 10% Bid Contingency).
	TOTAL				**$10,349,025**	
Health and Safety		2%		$10,349,025	$207,000	Pricing based on project similar in nature.
Performance Bond		2%		$10,349,025	$207,000	Percentage per RSMeans.
Engineering Services during Construction		8%		$10,349,025	$827,900	Percentage is based on recent projects similar in nature in this area.
Construction Management		12%		$10,349,025	$1,241,900	Percentage is based on recent projects similar in nature in this area.
Overhead and Profit		20%		$10,349,025	$2,069,800	Percentage per RSMeans #01 31 13.80 (0200)
Total Capital Costs					**$14,902,600**	

Appendix F5

Water Conservation Plan

PHILLIP ROAD SITE
WATER CONSERVATION PLAN

6382 PHILLIP ROAD
ROSEVILLE, CALIFORNIA
(PLANNING APPLICATION 24-1010)

December 8, 2025

Panattoni Development Company, Inc.
400 Capital Mall, Suite 2040
Sacramento, CA 95814
(916) 379-1115

Prepared By:

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I. INTRODUCTION

The Phillip Road Site (Proposed Project) Water Conservation Plan (WC Plan) has been prepared at the request of Panattoni Development Company, Inc. (Panattoni) to meet the City of Roseville's (City) requirements and in support of the Phillip Road Site environmental review process.

This WC Plan identifies baseline water usage, water conservation methods, and estimated water demand reductions. This WC Plan has been developed in conformance with the City of Roseville's Water Efficient Landscape Ordinance (WELO) as a minimum.

I.A. PROJECT VICINITY AND PHASING:

The Proposed Project is located in the northwest edge of the City of Roseville as shown on **Exhibit 1 – Project Location Plan**. Pleasant Grove Creek and the Pleasant Grove Bypass Channel dissect the Proposed Project.

The Proposed Project will advance in multiple phases. It is expected to be completed in 6 phases, see **Exhibit 2 – Master Phasing Plan**. The first 4 phases are intended to be single family residences, the fifth phase is higher density residential, and the final stage is a combination of commercial and light industrial.

The first and second phases will be located in the easterly half of the project site located south of the Pleasant Grove Bypass Channel. The first phase will include the northerly half of this area and include the main road through the center of the project site, stopping at the southerly boundary of the bypass channel. Connections will be made to the existing water lines at Grass Creek Drive and the intersection of Blue Oaks Boulevard and Westbrook Boulevard during the first phase.

The third and fourth phases are located to the north of Pleasant Grove Bypass Channel. The third phase will include construction of a bridge crossing the channel and connection to existing water line in Benchmark Drive.

The fifth phase will be high density residential, located along Blue Oaks Boulevard on the easterly half of the project site.

The final phase will include the commercial and light industrial buildings located on the westerly portion of the site, south of the Pleasant Grove Bypass Channel.

I.B. PRE-DEVELOPMENT CONDITIONS:

The Proposed Project site is an undeveloped agricultural parcel that was originally planted during the 1950's, maintained in rice production through the 1990's, and has been planted in irrigated crops until the present.

The Pleasant Grove Creek Bypass Channel was constructed south of Pleasant Grove Creek during the summer of 2019 to augment flood mitigation/control in this area.

A 10-foot to 15-foot escarpment runs in a southeasterly direction from the Phillip Road entrance of the property's southern portion of the site to its eastern boundary.

The portion of the property north of Pleasant Grove Creek is also currently actively cultivated and irrigated with water from a long-established irrigation canal along the northern boundary.

I.C. PROPOSED PROJECT AREA DEVELOPMENT OPPORTUNITIES & CONSTRAINTS:

The Proposed Project is influenced by several factors, including the physical setting, land use, circulation considerations, and public policies. Two significant aspects that influence the development of the Proposed Project are described below and depicted on **Exhibit 3 – Tentative Map.**

- Placer Parkway

  The proposed Placer Parkway will bisect the northerly portion of the Proposed Project.

- Pleasant Grove Creek and Creekview Bypass Channel

  The existing Pleasant Grove Creek and newly constructed Pleasant Grove Creek Bypass Channel divides the Proposed Project. A bridge will be needed in the future to access the area to the north when it is developed.

II. BASELINE WATER USAGE

Laugenour and Meikle (LM) is preparing the Potable Water Master Plan and the Recycled Water Master Plan for the Proposed Project. The water demands estimated for the project include both the potable and recycled water demands. The total water demands within the Proposed Project have been calculated utilizing the City's demand factors as shown in the following **Table 1 - City of Roseville Demand Factors** and totals shown in **Table 2 - Potable Water Demand** and **Table 3 – Recycled Water Demand**:

Table 1 – City of Roseville Demand Factors

Land Use Category		Average Day Unit Water Demand Factors
Residential	LDR (<3.5 DU's/Ac)	*728 gpd/DU*
	LDR (3.5 to 5.0 DU's/Ac)	*600 gpd/DU*
	LMDR (>5.0 to 6.0 DU's/Ac)	*521 gpd/DU*
	LMDR (>6.0 to 8.0 DU's/Ac)	*430 gpd/DU*
	MDR (>8.0 to 12.0 DU's/Ac)	*323 gpd/DU*
	HDR (>12.0 to 16.0 DU's/Ac	*288 gpd/DU*
	HDR (>16.0 DU's/Ac)	*177 gpd/DU*
Commercial/Other	Commercial/Retail	*2,598 gpd/ac*
	Business Professional	*2,598 gpd/ac*
	Light Industrial	*2,598 gpd/ac*
	Industrial	*2,562 gpd/ac*
	Railroad Yard	*109 gpd/ac*
	Elementary Schools	*3,454 gpd/ac*
	High Schools	*4,068 gpd/ac*
	Public (Fire Station, etc)	*1,780 gpd/ac*
	Park/Recreation	*2,988 gpd/ac*
	Open Space/Major ROW	-
	Vacant/Unassigned	-

*Factors assume a 30% F.A.R. 50% F.A.R. for senior living.

Table 2 - Potable Water Demand

Location on Site	Dwelling Units (DU)	Water Demand Area (ac)	Land Use	Average Day Unit Water Demand Factor[a]	Unit-Factor Units	Average Day Demand (gpd)[b]	Annual Demand (ac-ft/yr)	Recycled Water Demand (ac-ft/yr)[c]	Water Conservation Savings (ac-ft/yr)[d]	Peaking Factor[e]	Maximum Day Demand (gpd)	Peaking Factor[f]	Peak Flow (gpd)[g]	Design Flow (gpm)	Design Flow+2% (gpm)
LL 1	-	4.139	CC, Community Commercial	2,598	gpd/acre	10,753	12.0	4.5	2.65	2.0	21,506	1.7	36,561	25	26
LL 2	-	3.774	CC, Community Commercial	2,598	gpd/acre	9,805	11.0	4.1	2.41	2.0	19,610	1.7	33,336	23	24
LL 3	-	9.180	M1, Light Industrial	2,598	gpd/acre	23,850	26.7	10.0	5.87	2.0	47,699	1.7	81,089	56	57
LL 4	-	1.033	PQP, Public Quasi Public	1,780	gpd/acre	1,839	2.1	1.9	0.66	2.0	3,677	1.7	6,252	4	4
LL 5	-	8.173	M1, Light Industrial[h]	2,598	gpd/acre	21,233	23.8	546.6	5.23	2.0	42,467	1.7	72,194	50	51
LL 6	-	7.588	M1, Light Industrial	2,598	gpd/acre	19,714	22.1	8.2	4.85	2.0	39,427	1.7	67,026	47	47
LL 7	-	7.252	M1, Light Industrial	2,598	gpd/acre	18,841	21.1	7.9	4.64	2.0	37,681	1.7	64,058	44	45
LL 8	-	7.508	M1, Light Industrial	2,598	gpd/acre	19,506	21.9	8.2	4.80	2.0	39,012	1.7	66,320	46	47
LL 9	-	7.494	M1, Light Industrial	2,598	gpd/acre	19,469	21.8	8.1	4.79	2.0	38,939	1.7	66,196	46	47
LL 10	-	8.949	M1, Light Industrial	2,598	gpd/acre	23,250	26.0	9.7	5.72	2.0	46,499	1.7	79,048	55	56
LL 11	-	0.396	PQP, Public Quasi Public	1,780	gpd/acre	705	0.8	0.7	0.25	2.0	1,410	1.7	2,397	2	2
LL 12	162	25.598	LMDR (>6 to 8.0 DU's/AC), Low Density Residential	430	gpd/DU	69,660	78.0	0.0	16.46	2.0	139,320	1.7	236,844	164	168
LL 13	156	23.604	LMDR (>6 to 8.0 DU's/AC), Low Density Residential	430	gpd/DU	67,080	75.1	0.0	15.85	2.0	134,160	1.7	228,072	158	162
LL 14	-	3.010	PR, Park	2,988	gpd/acre	8,994	10.1	9.8	1.92	2.0	17,988	1.7	30,579	21	22
LL 15	135	5.859	HDR (>16 DU's/AC), High Density Residential	177	gpd/DU	23,895	26.8	8.5	3.75	2.0	47,790	1.7	81,243	56	58
LL 16	-	13.878	OS, Open Space	-		-	-	0.0	8.88	-	-	-	-	-	
LL 17	105	24.257	LDR (>3.5 to 5.0 DU's/AC), Low Density Residential	600	gpd/DU	63,000	70.6	0.0	10.67	2.0	126,000	1.7	214,200	149	152
LL 18	-	1.904	PR, Park	2,988	gpd/acre	5,689	6.4	6.2	1.22	2.0	11,378	1.7	19,343	13	14
LL 19	106	20.714	LMDR (>5 to 6.0 DU's/AC), Low Density Residential	521	gpd/DU	55,226	61.9	0.0	10.77	2.0	110,452	1.7	187,768	130	133
LL 20	-	1.026	OS, Open Space	-		-	-	0.0	0.66	-	-	-	-	-	
Total	664	185.336				462,508	518.1	634.4	112.05		925,015		1,572,526	1,092	1,114

(a) From Table of Section 8-6 of the City of Roseville Design Standards (January, 2025) (gpd/ac or gpd/du).
(b) Average Day Demand (gallons per day) = Water Demand Area x Average Day Demand Unit Flow Factor.
(c) Recycled Water Annual Demand from the Phillip Road Recycled Water Master Plan, Table 5.
(d) Water Conservation of Potable Water by Turf Reduction, Smart Controllers Recirculating Hot Water, Tables 4, 6, 7 & 8, in the Water Conservation Plan
(e) Peaking factor from average day demand to maximum day demand per Section 8-7 of the City of Roseville Design Standards (January, 2025).
(f) Peaking factor from maximum day demand to peak hour demand per Section 8-7 of the City of Roseville Design Standards (January, 2025).
(g) Peak Hour Demand = Peaking Factor * Maximum Day Demand.
(h) Assumes LL-5 site will contain a potential 40MW Data Center, which adds approximately 480,000 gpd of peak flow (537.7 ac-ft/yr).

Table 3 - Recycled Water Demand

Location on Site	Water Demand Area (ac)	Land Use	Irrigated Surface Area Factor (%)	Site Area Irrigated (ac)[b]	Annual Demand (ac-ft/yr)[c]	Average Day Demand (gpd)	Peaking Factor[d]	Peak Day Demand (gpd)	Peak Demand (gpm)[e]	Peaking Factor[f]	Data Center Demand (gpm)[g]	Operational Demand (gpm)	Operational Demand/Data Center + 2% (gpm)
LL 1	4.139	CC, Community Commercial	0.30	1.24	4.5	4,013	2.55	10,232	19	1.5	0	28	29
LL 2	3.774	CC, Community Commercial	0.30	1.13	4.1	3,659	2.55	9,330	17	1.5	0	26	26
LL 3	9.180	M1, Light Industrial	0.30	2.75	10.0	8,900	2.55	22,694	42	1.5	0	63	64
LL 4	1.033	PQP, Public Quasi Public	0.50	0.52	1.9	1,669	2.55	4,256	8	1.5	0	12	12
LL 5	8.173	M1, Light Industrial	0.30	2.45	546.6	487,923	2.55	20,205	37	1.5	333	56	391
LL 6	7.588	M1, Light Industrial	0.30	2.28	8.2	7,356	2.55	18,758	35	1.5	0	52	53
LL 7	7.252	M1, Light Industrial	0.30	2.18	7.9	7,030	2.55	17,928	33	1.5	0	50	51
LL 8	7.508	M1, Light Industrial	0.30	2.25	8.2	7,279	2.55	18,561	34	1.5	0	52	53
LL 9	7.494	M1, Light Industrial	0.30	2.25	8.1	7,265	2.55	18,526	34	1.5	0	51	52
LL 10	8.949	M1, Light Industrial	0.30	2.68	9.7	8,676	2.55	22,123	41	1.5	0	61	63
LL 11	0.396	PQP, Public Quasi Public	0.50	0.20	0.7	640	2.55	1,632	3	1.5	0	5	5
LL 12	25.598	LMDR (>6 to 8.0 DU's/AC), Low Density Residential	0.00										
LL 13	23.604	LMDR (>6 to 8.0 DU's/AC), Low Density Residential	0.00										
LL 14	3.010	PR, Park	0.90	2.71	9.8	8,754	2.55	22,323	41	1.5	0	62	63
LL 15	5.859	HDR (>16 DU's/AC), High Density Residential	0.40	2.34	8.5	7,573	2.55	19,312	36	1.5	0	54	55
LL 16	13.878	OS, Open Space	-										
LL 17	24.257	LDR (>3.5 to 5.0 DU's/AC), Low Density Residential	-					0	0			0	
LL 18	1.904	PR, Park	0.90	1.71	6.2	5,538	2.55	14,121	26	1.5	0	39	40
LL 19	20.714	LMDR (>5 to 6.0 DU's/AC), Low Density Residential	0.00										
LL 20	1.026	OS, Open Space	-										
Total	185.336			26.70	634.4	566,274		219,999	407		333	611	957

(a) Irrigated Surface Area Factor per Table 4 of Recycled Water Master Plan.
(b) Site Area Irrigated = Water Demand Area * Irrigated Surface Area Factor.
(c) Annual Demand = Site Area Irrigated * 3.62 ft (3.62 feet total irrigation demand per year, see Table 3 of Recycled Water Master Plan)
(d) Peaking factor = Maximum Monthly Irrigation Demand / Average Monthly Irrigation Demand
(e) Peak Demand is the Peak Day Demand applied to 9 hours of the day.
(f) Peak Factor to account for variations in irrigation systems.
(g) Assumes LL-5 site will contain a potential 40MW Data Center, which adds approximately 480,000 gpd of peak flow (537.7 ac-ft/yr).

III. METHODS FOR REDUCING WATER CONSUMPTION

Various water conservation methods are used as part of this proposed project. There are various conservation measures and equipment that are already required, i.e. low flow appliances. Below is a discussion of additional methods to reduce water demand for irrigation.

Irrigation and the proposed data center account for all the recycled water demand for the Proposed Project. The irrigation demand is taken solely from the recycled water system for the non-residential land uses. The data center water demand is set by the cooling equipment so there are no opportunities to reduce the demand besides changing the equipment, therefore all the recycled water conservation methods reviewed will be related to the irrigation and landscaping.

Residential water demand is typically split 47/53% between interior uses (i.e. toilets, sinks, showers, etc) and landscape uses per the "California Single Family Water Use Efficiency Study, 2011" sponsored by California Department of Water Resources. The landscape uses are then further split approximately 60/40 between back yard and front yard, respectively. The front yard is typically smaller and has a higher percentage of non-turf areas (driveways, sidewalkd, etc). However High Density Residential (HDR) units are typically irrigated in the same manner as the Commercial/Light Industrial sites. The HDR and Commercial/Light Industrial irrigation water is via recycled water, while Low Density Residential (LDR) irrigation is supplied from the city connection to the potable water system.

It should be noted that for LDR developments, the backyards are not typically landscaped until the private owner purchases and takes possession of the lot. The developer will landscape the front portion of the lot so the water reduction analysis will be based on the front yard only.

III.A. SMART IRRIGATION CONTROLLERS:

The smart irrigation controllers will control the flow rate of each zone and determine when irrigation times are needed. The irrigation schedule and application rates will change based on weather and time of the year. The controllers are expected to have a 20% reduction in irrigation. While these controllers can be installed in residential areas as well as the commercial/light industrial, we will only be looking at the other uses. The irrigation water demand for the other uses at buildout will be with recycled water. See **Table 4 – Irrigation Conservation by Smart Controller** for water savings.

Table 4 - Irrigation Conservation by Smart Controller			
General Plan Land Use	**Total Irrigation Demand (ac-ft/yr)**	**Total Irrigation Demand After Controller (ac-ft/yr)[1]**	**Water Savings (ac-ft/yr)**
Potable Water (Front Yard)	60.5[2]	48.4	12.1
Potable Water (Back Yard)	90.8[3]	72.7	18.1
Recycled Water (Light Industrial)	58.9[5]	47.1	11.8
Recycled Water (Commercial)	12.4[4]	9.9	2.5
Recycled Water (Park)	23.2[4]	18.6	4.6
Recycled Water (HDR)	8.3[5]	6.6	1.7
Recycled Water (PQP)	2.9[4]	2.3	0.6
Total	**257.0**	**205.6**	**51.4**

(1) Total Irrigation Demand After Controller = (Total Irrigation Demand) * 80% due to 20% reduction.
(2) Front Yard Irrigation demand per Table 6
(3) Back Yard Irrigation Demand = (Irrigation demand per Table 6) * (Back Yard Share of Irrigation per Table 5)
(4) Annual Demand per Table 3
(5) The landscape reduction was applied to the total irrigation demand, 20% area for Industrial and 27% area for HDR

III.B. LIMITING AMOUNT OF TURF:

Potable Water

A typical Low Density Residential (LDR) development has a front yard of 25% hardscapes (driveway, sidewalk, etc.) and 75% landscape area (turf, plants, mulch, etc.). Within the 75% landscape area, turf is typically around 70% and the remaining 5% being non turf.

To reduce the irrigation demand for residential parcels, the total area of turf will be reduced by 40%. More landscaped areas with mulch and low water plants will be placed. The non-turf areas typically use approximately 30% of the water as turf areas. With the reduction in turf, the irrigation system will contain more drip components to reduce water usage. See **Table 5 – Turf Reduction for Conservation** for a breakdown of the residential water demand.

Table 5 – Turf Reduction for Conservation								
Tentative Map Use	Irrigation Share of Total Water Demand, %	Front Yard Share of Irrigation, %	Back Yard Share of Irrigation, %	Front yard, non-irrigated area, %	Pre-Conservation Condition		Turf Reduction Condition	
					Front yard turf area, %	Front yard non-turf area, %	Front yard turf area, %	Front yard non-turf area, %
Residential	53	40	60	25	70	5	42	33

Based on the percentage breakdowns, see **Table 6 – Water Demand Conservation by Turf Reduction** for the calculated demand.

Table 6 – Water Demand Conservation by Turf Reduction for Potable Water											
Tentative Map Use	Total Annual Demand, ac-ft/yr(1)	Irrigation Demand, ac-ft/yr(2)	Front yard Demand, ac-ft/yr(3)	Demand before Turf Reduction			Demand after Turf Reduction			
				Front yard turf area, ac-ft/yr(4)	Front yard non-turf area, ac-ft/yr(5)	Total, ac-ft/yr	Front yard turf area, ac-ft/yr(6)	Front yard non-turf area, ac-ft/yr(7)	Total, ac-ft/yr	Water Savings, ac-ft/yr
Residential	285.6	151.4	60.5	59.3	1.3	60.5	35.6	8.4	43.9	16.6

(1) Sum of Low and Low/Medium uses, Sites LL-12, LL-13, LL-17 and LL-19 of Table 2.
(2) Irrigation Demand ac-ft/yr = (Total Annual Demand) * (Irrigation Share of Total Water Demand per Table 5)
(3) Front Yard Demand = (Irrigation Demand) * (Front Yard Share of Irrigation Demand per Table 5)
(4) Front Yard Turf = (Front Yard Demand) * (irrigation Demand ratio of Turf (70%)/non-Turf (70%+30%*5%))
(5) Front Yard Non-Turf = (Front Yard Demand) * (irrigation Demand ratio of Turf (30%*5%))%)/non-Turf (70%+30%*5%))
(6) Front Yard Turf = (ratio of after/before Turf Reduction per Table 5) * Front Yard Turf Demand
(7) Front Yard Non-Turf = (ratio of after/before Non-Turf Reduction per Table 5) * Front Yard Non-Turf Demand

By reducing the turf area of the front yard by 40%, a reduction of 16.6 ac-ft or 5.8% of the total residential water demand (285.6 ac-ft) was achieved.

Recycled Water

The City of Roseville estimated recycled water demands are based on the assumption of the landscaped areas being landscaped with turf. Also, the city assumes 30% of the lot area will be landscaped. After reviewing the proposed plans some modifications to these assumptions will be implemented to reduce the overall irrigation demand.

Since the City assumes 30% for Industrial and 40% for the High Density Residential, we are proposing that landscaping be reduced to 20% and 27% for Industrial and High Density Residential, respectively. After reviewing the proposed buildings and parking areas, it was determined that the landscaping area would be more accurately estimated by these lower

landscape areas. This reduction would reduce irrigation demand for all industrial/commercial and high density residential by approximately 33%.

To further reduce irrigation demand, we propose replacing 50% of the turf area with non-turf landscaping. The non-turf landscaping uses approximately 30% of the turf area. This will produce a 35% reduction in irrigation demand. **Table 7 – Water Demand Conservation by Turf Reduction for Recycle Water** for the calculated demand savings.

Table 7 – Water Demand Conservation by Turf Reduction for Recycled Water

Tentative Map Use	Total Annual Demand, ac-ft/yr(1)	Reducing Landscape Area Reduction, ac-ft/yr(3)	Smart Controller Reduction, ac-ft/yr(4)	50% Turf Reduction, ac-ft/yr(5)	Total Savings From Turf Reduction and Smart Controler, ac-ft/yr(6)
Industrial and High Density Residential	96.6	23	9.5	25.8	58.3

(1) Annual Demand per Table 3 for only Industrial and HDR.

(3) Annual Demand with the reduction in irrigatable area from 30% to 20% industrial and 40% to 27% HDR

(4) Total Irrigation Demand After Controller = (Total Irrigation Demand) * 20% reduction.

(5) Apply non-turf landscaping to 50% of the total irrigatable area for Industrial and HDR. For a reduction in total irrigation of 35%.

(6) Total Savings of landscape area reduction, Smart Controller and Turf Reduction.

III.C. RECIRCULATING HOT WATER:

An additional method to conserve water is to use recirculating hot water systems in the residential units. A recirculating hot water system consists of a pump installed in the hot water lines. The pump decreases the time between turning the hot water faucet on and hot coming out of the faucet. This eliminates the time of running the water to get hot water. The amount of savings will vary with the number of times the faucet is used. A typical conservative estimate indicates a water savings of approximately 1.25 gallons per day per dwelling unit. See **Table 8 – Recirculating Hot Water Savings** for the expected

Table 8 – Recirculating Hot Water Savings

General Plan Land Use	Dwelling Units (DU)	Water Savings by Recirculating Hot Water (ac-ft/yr)
Residential	664	6.95

IV. SUMMARY

The total estimated volume of water conservation is shown in **Table 9 – Total Conservation** which details estimate of water conservation.

Table 9 – Total Conservation

General Plan Land Use	Total Demand (ac-ft/yr)	Water Savings (ac-ft/yr)
Recycled Water	96.6(1)	58.3
Potable Water - Irrigation	151.4(2)	46.8(3)
Potable Water – Recirculation System	-	6.95
TOTAL	**248**	**112.05**

(1) Recycled Water demand per Table 3, minus the data center water use (537.7 ac-ft/yr)
(2) Total of Potable Irrigation Demand (Front and Back Yard) per Table 6
(3) Sum of Potable Water Savings in Table 4 and Table 6

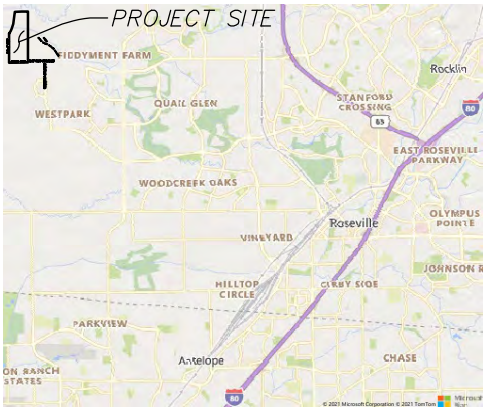
Table 10 – Percent Reduction in Water Demand

Total Water Demand, (ac-ft/yr)(1)	Water Conservation Reduction, (ac-ft/yr)	Percent Water Demand Reduction
518.1	112.05	21.6%

(1) Potable water demand per Table 2.

Based off these conservation measures, a savings of 21.6% is expected, as shown in **Table 10 - Percent Reduction in Water Demand**. More savings are possible with a further decrease in the amount of turf or other water saving opportunities.

EXHIBITS



VICINITY

0 750 1500 3000

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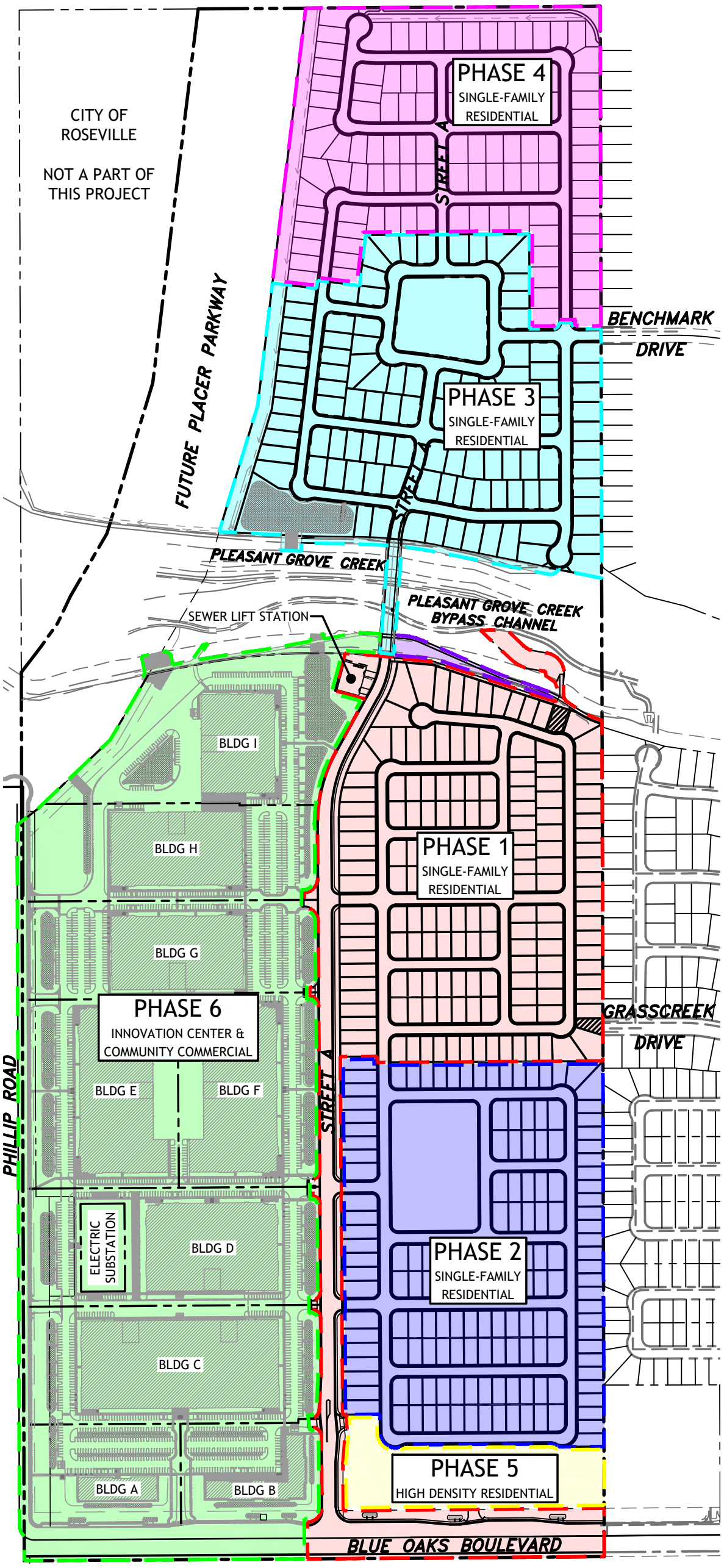
SCALE: 1"=1,500'

EXHIBIT 1
PROJECT LOCATION PLAN
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE,
PLACER COUNTY, CALIFORNIA
SHEET 1 OF 1 SEPTEMBER 26, 2025

LM LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
608 COURT STREET, WOODLAND, CALIFORNIA 95695 · PHONE: (530) 662-1755
P.O. BOX 828, WOODLAND, CALIFORNIA 95776 · FAX: (530) 662-4602

X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH01-Project Location



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SCALE: 1"=400'

EXHIBIT 2

MASTER PHASING PLAN

FOR

PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

SHEET 1 OF 1 NOVEMBER 13, 2025

LM LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
608 COURT STREET, WOODLAND, CALIFORNIA 95695 · PHONE: (530) 662-1755
P.O. BOX 828, WOODLAND, CALIFORNIA 95776 · FAX: (530) 662-4602

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LOT	PROPOSED USE	GENERAL PLAN DESIGNATION	ZONINING	GROSS ACRES±	DWELLING UNITS	DENSITY
LL–1	BUILDING A	CC	C–PD	4.139	–	–
LL–2	BUILDING B	CC	C–PD	3.774	–	–
LL–3	BUILDING C	LI	ITP–PD	9.180	–	–
LL–4	ROSEVILLE ELECTRIC SUBSTATION	P/QP	P/QP	1.033	–	–
LL–5	BUILDING D	LI	ITP–PD	8.173	–	–
LL–6	BUILDING E	LI	ITP–PD	7.588	–	–
LL–7	BUILDING F	LI	ITP–PD	7.252	–	–
LL–8	BUILDING G	LI	ITP–PD	7.508	–	–
LL–9	BUILDING H	LI	ITP–PD	7.494	–	–
LL–10	BUILDING I	LI	ITP–PD	8.949	–	–
LL–11	SANITARY SEWER LIFT STATION	P/QP	P/QP	0.396	–	–
LL–12	VILLAGE 1	LDR	RS/DS	25.598	162	6.33 DU/AC.
LL–13	VILLAGE 2	LDR	RS/DS	23.604	156	6.61 DU/AC.
LL–14	PARK (SOUTH)	PR	PR	3.010	–	–
LL–15	VILLAGE 5	HDR	R3	5.859	135	23.04 DU/AC.
LL–16	PLEASANT GROVE CREEK AND BYPASS CHANNEL	OS	OS	13.878	–	–
LL–17	VILLAGE 3	LDR	RS/DS	24.257	105	4.33 DU/AC.
LL–18	PARK (NORTH)	PR	PR	1.904	–	–
LL–19	VILLAGE 4	LDR	RS/DS	20.714	106	5.12 DU/AC.
LL–20	BIKE TRAIL	OS	OS	1.026	–	–
BLUE OAKS BOULEVARD				5.595	–	–
PHILLIP ROAD				1.109	–	–
STREET A				4.649	–	–
PLACER PARKWAY				22.689	–	–
TOTAL				219.38	664	

NOTE:
SEE SHEET 4 FOR ADDITIONAL UTILITY EASEMENTS.

0 75 150 300
LM
SCALE: 1"=150'

REGISTERED PROFESSIONAL ENGINEER
BRYAN P. BOYNTON
No. 41804
CIVIL
STATE OF CALIFORNIA

LARGE LOT SUBDIVISION
EXHIBIT 3
TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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Appendix F6

Drainage Master Plan

LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING

MEMORANDUM

TO: Shelby Maples
Associate Planner
Planning Department
City of Roseville

FROM: Brian Delemos, P.E., CA C66421
Laugenour and Meikle

DATE: September 29, 2025

SUBJECT: Preliminary Drainage Study for the Phillip Road Site, 6382 Phillip Road, Roseville, California (Planning Application 24-1010)

INTRODUCTION:

This draft memorandum (Memo) was prepared for the proposed Phillip Road Site project (Project) at 6382 Phillip Road, on the west side of the city, as shown on **Exhibit 1, Project Location Plan**. **Exhibit 2, Large Lot Subdivision**, shows the proposed land use plan for the Project, which includes a total of approximately 220 acres. Select sheets from the Project's tentative subdivision map (**Tentative Map)** are included in **Appendix A**, **Select Sheets of the Tentative Map**. Sheet 1, Cover Sheet, of the **Tentative Map** shows the layout of the Project. Approximately 100 acres of low- to high-density residential homes are proposed, along with an approximately 56-acre Innovation Center, and 8 acres of commercial. Roadway improvements are also proposed for Phillip Road on the west side of the Project. On the south side of the Project, Phillip Road will be replaced by Blue Oaks Boulevard.

This Memo presents a summary of an analysis of the Project drainage, including post-construction stormwater quality facilities, design. The analysis was prepared in support of an application for a tentative subdivision map and associated conditions of approval, so it is abbreviated and preliminary in nature. The topics discussed in the following sections include:

- Planning Area
- Existing Drainage Conditions
- Proposed Drainage Conditions
- Storm Drain System Design
- Overland Release Paths
- Post-Construction Stormwater Quality Design
- Peak Flow Mitigation
- Offsite Volumetric Mitigation
- Floodplain Analysis
- Conclusions

PLANNING AREA:

The Project is in the infill planning area Reasons Farms. There is no specific plan for the Project, and there is no drainage master plan. The existing land use is designated as Public/Quasi Public. The extension of Blue Oaks Boulevard into the Project Area (approximately 2,000 feet) will drain through the Project site to the Pleasant Grove Creek Bypass Channel.

EXISTING DRAINAGE CONDITIONS:

As shown on **Exhibit 3, Project Location within the Pleasant Grove Creek Watershed**, the Project site is wholly contained within the Pleasant Grove Creek watershed, which is located within the larger Natomas Cross Canal watershed of northwestern Placer County and southeastern Sutter County. The Pleasant Grove Creek watershed drains to the Pleasant Grove Canal, to the Natomas Cross Canal, and then to the Sacramento River. Pleasant Grove Creek and the Pleasant Grove Creek Bypass Channel (creek/bypass channel) crosses through the middle of the Project. A tributary of Pleasant Grove Creek, University Creek, is just north of the Project.

Exhibit 4, Drainage Map, Existing Conditions, shows the existing drainage conditions over the extents of the Project property. Pleasant Grove Creek and the Pleasant Grove Creek Bypass Channel flow across the Project. As indicated by the topography on **Exhibit 4**, the Project area, on both sides of the creek/bypass channel, drains towards the creek/bypass channel, with generally mild slopes. Also indicated by the topography on **Exhibit 4**, there is negligible local runon of runoff from adjacent areas onto the Project property (besides the creek/bypass channel crossing the Project). The native soils generally have low infiltration rates, with the areas outside of the creek having Hydrologic Soil Groups C and D (NRCS). The current land use is agricultural production, row crops.

The drainage patterns of virtually no local runon to the Project are consistent with the overall watershed map shown on **Exhibit 3, Project Location within the Pleasant Grove Creek Watershed**. On **Exhibit3**, the Project boundaries coincide with the edges of the model sub-watershed boundaries prepared by others, except on the west side of the Project, where land generally slopes to the west, away from the Project. Also, as shown on **Exhibit 5, Hydrology Model Sheds and Topography**, the hydrology model sub-shed boundaries and the topographic contours indicate that local runoff adjacent to the Project generally flows away from the Project (besides the creek/bypass channel crossing the Project).

As shown on **Exhibit 6**, **Location of the Project in the FEMA Floodplain**, the Pleasant Grove Creek and the Pleasant Grove Bypass Channel (just south of the creek) are covered by a Zone AE Special Flood Hazard Area, as shown on the currently effective Flood Insurance Rate Map (FIRM) panel 06061C0920H, dated November 23, 2020. The Zone AE within the Project area has Regulatory Floodways within the creek and the creek bypass channel. The map also shows a relatively small Zone AE Special Flood Hazard Area on the southern overbank area of the creek bypass channel within the

Project area. A small area of the northeast corner of the Project lies within a FEMA Zone A Special Flood Hazard Area of a small creek, Pleasant Grove Tributary 4, also known as University Creek. The city has a local regulatory floodplain for this portion of University Creek that differs from FEMA's floodplain adjacent to the Project.

PROPOSED DRAINAGE CONDITIONS:

Exhibit 7, Drainage Map, Proposed Conditions for the Watershed Model, as well as the Stormwater Control Plan (sheets 16 and 17 in **Appendix A**, **Select Sheets of the Tentative Map**), shows the site plan and associated general drainage conditions for the Project. More detail of the preliminary drainage plan is shown on the Grading, Drainage, and Utilities Plan, sheets 7 through 15 of the Project's **Tentative Map**, included in **Appendix A**, **Select Sheets of the Tentative Map**. Runoff will generally drain towards the creek/bypass channel, on both the north and south sides of the creek/bypass channel. Imperviousness in the Project area will increase, which will increase runoff. Storm drain systems will convey runoff and discharge it to the creek/bypass channel. The drainage system will include post-construction stormwater quality measures, including bioretention and vegetated swales. Cross drainage will be proved by a bridge for Street "A" over the creek/bypass channel. These facilities are described here; the design of the facilities is described in later sections.

For the residential areas north and south of the creek, runoff will be conveyed to the creek by storm drains within the roadways/public right of way, with each system having an outlet discharging into the creek. The storm drains within the proposed collector road (Street "A" on the **Tentative Map**) down the middle of the southern area and the storm drain system of the Blue Oaks Boulevard extension will be connected to the southern residential storm drain system. The Innovation Center on the southern side of the creek will have a private storm drain system that will discharge into the creek/bypass channel at a separate outfall. The improvements to the west side of Phillip Road will include a storm drain system that will discharge to the creek at a separate outfall.

Post-construction stormwater quality of runoff will be managed using site design measures and treatment measures, as shown on the Stormwater Control Plan (**Tentative Map**, sheets 16 and 17). In residential areas, roof runoff will be disconnected, that is, will drain over pervious land cover before reaching the storm drain system. Runoff from roadway pavement and other impervious areas in the residential areas, including Street "A" in the southern area, that will drain directly to the storm drain system will be treated by end-of-pipe treatments, vegetated swales, at the storm drain outlets. Phillip Road (west of the Project) will also be treated by an end-of-pipe treatment, a vegetated swale. Runoff from the remaining area, the Innovation Center and Blue Oaks Boulevard will be routed to bioretention facilities for treatment. Higher flows bypassing bioretention will enter the storm drain systems (that discharge to the creek, as described above).

As discussed for existing drainage conditions above, there is negligible local runon of runoff from adjacent areas onto the Project property (besides the creek/bypass channel crossing the Project), the proposed storm drain system does not need to accommodate any runon.

The increase in impervious surfaces proposed for the Project will increase runoff discharged to the Pleasant Grove Creek, and the floodplain conditions of the creek may be impacted. If impacts are expected, mitigation, such as onsite detention storage, might be required. However, the preliminary watershed modeling discussed below indicates that onsite detention would not likely be needed due to differences in the timing of peak flows from the Project and other parts of the Pleasant Grove Creek watershed. So, it is proposed that onsite detention storage will not be necessary for the Project.

To avoid impacts, development within the FEMA floodplain and regulatory floodways of the creek/bypass channel, as well as the local regulatory flood of University Creek, will be mitigated, as necessary. A bridge will be built within the creek/bypass channel to connect the two sides of the Project. A bike path will be routed under the bridge through the edge of the bypass channel. These features will be designed to meet hydraulic impact requirements. This design work will be done during the building-permit phase of the Project. As can be seen on **Exhibit 3, Project Location within the Pleasant Grove Creek Watershed**, there is a small, isolated Zone AE special hazard outside of the bank of the creek. This area will be removed from the floodplain by filling in the area above the base flood elevation.

Although downstream peak flow impacts are not expected for the Project, volumetric runoff will likely increase downstream flood-prone areas. Volumetric runoff effects are proposed to be addressed offsite by purchasing retention credits in the future Al Johnson Wildlife Area, as discussed further below.

STORM DRAIN SYSTEM DESIGN:

The layout of the storm drain systems of the Project, discussed in more detail above, are shown on the Stormwater Control Plan (sheets 16 and 17 in **Appendix A**, **Select Sheets of the Tentative Map**), and are shown in more detail on the Grading, Drainage, and Utilities Plan, sheets 7 through 15 of the Project's **Tentative Map**. The storm drains will be designed in accordance with the latest version of the City of Roseville Design Standards, Section 10, Drainage, and the Placer County Flood Control and Water Conservation District's (PCFCD) "Stormwater Management Manual" (SWMM). The storm drains will be designed for the 10-year storm event, and the overland releases will be designed to handle up to the 100-year storm event. The SWMM allows for the "Unit Peak Discharge" method, which provides a rapid evaluation of the peak flow rate from small watersheds (less than 200 acres). On each side of the creek, the Project watershed is less than 200 acres; so the Unit Peak Discharge method will be used for design. Sizing and vertical profile design of the storm drains will be deferred until the building-permit phase of the Project.

OVERLAND RELEASE PATHS:

Overland release paths for the Project are shown on the Stormwater Control Plan (sheets 16 and 17 in **Appendix A**, **Select Sheets of the Tentative Map**), and are shown in more detail on the Grading, Drainage, and Utilities Plan, sheets 7 through 15 of the Project's **Tentative Map**. The overland release paths drain runoff for events that overflow the storm drain systems or if the storm drain systems fail. The overland release paths generally slope towards and discharge to the creek/bypass channel.

POST-CONSTRUCTION STORMWATER QUALITY DESIGN:

Post-construction stormwater quality best management practices (BMPs) are intended to manage the effects of the runoff generated from the developed site in perpetuity. The BMPs are designed in conformance with the City Improvement Standards, the West Placer Storm Water Quality Design Manual (Water Quality Design Manual), and the Placer County Flood Control Agency's Stormwater Management Manual. The BMPs proposed for the Project are shown on the **Stormwater Control Plan**, sheets 16 and 17 of the **Tentative Map** in **Appendix A**. The Plan and associated design calculations are summarized in the Post-Construction Storm Water Quality Plan (SWQP) Template worksheets provided with the Water Quality Design Manual. The SWQP worksheets and discussion below are organized by drainage system (having the same outlet to the creek, described above).

Referring to the Stormwater Control Plan (**Tentative Map** sheets 16 and 17), the Innovation Center area has its own drainage system and one outlet, Outlet INNO1. The stormwater quality design is shown in **Appendix B-1, SWQP Worksheets for the Innovation Center**. For this area, stormwater quality will be managed entirely by bioretention facilities. Runoff will flow overland or by storm drain bubble up to the bioretention. Any runoff that does not infiltrate into native soil underneath the bioretention or does not evapotranspirate will drain into the onsite storm drain system, and then will discharge through Outlet INNO1 to the bypass channel. At this stage of the Project, the imperviousness for the Innovation Center was assumed to be 85% for estimating runoff. The runoff coefficients are calculated as weighted averages of impervious (C = 0.9) and pervious (C = 0.3) areas and their associated coefficients. The calculations show that the bioretention facilities provide adequate treatment for the Innovation Center.

Referring to the Stormwater Control Plan (**Tentative Map** sheets 16 and 17), the southern residential area has one outlet, Outlet SR1. Three areas drain to Outlet SR1, Blue Oaks Boulevard, the southern residential area, and Street "A".

For Blue Oaks Boulevard, the stormwater quality design calculations are shown in **Appendix B-2, SWQP Worksheets for Blue Oaks Boulevard**. The site design measure of Tree Planting and Preservation will be used to provide runoff reduction. Runoff will flow overland to the bioretention facilities. Any runoff that does not infiltrate into native soil underneath the bioretention or does not evapotranspirate will drain into the public storm drain system, and then will discharge through Outlet

SR1 to the bypass channel. At this stage of the Project, the imperviousness for Blue Oaks was assumed to be 85% for estimating runoff. The runoff coefficients are calculated as weighted averages of impervious (C = 0.9) and pervious (C = 0.3) areas and their associated coefficients. The calculations show that the bioretention facilities will provide adequate treatment for the Blue Oaks Boulevard.

For the southern residential area and Street "A", the stormwater quality design calculations are shown in **Appendix B-3, SWQP Worksheets for the Southern Residential Area and Street "A"**. Drainage Management Areas (DMAs) 1 and 2 are lumped into one boundary that represents the private and public right-of-way areas of the southern residential area. DMA 1 represents the private area, and the impervious areas (roof and paving) on each lot (private) are assumed to be disconnected, providing runoff reduction/treatment for these impervious areas. The imperviousness of private areas was estimated based on the overall impervious percentage for each residential land use (LDR = 40%, MDR = 50%, HDR = 60%; Park = 15%) and by subtracting out the impervious area in the public right-of-way in the southern residential area. The runoff coefficients are calculated as weighted averages of impervious (C = 0.9) and pervious (C = 0.3) areas and their associated coefficients. DMA 2 consists of impervious area in the public right-of-way (including sidewalks) in the southern residential area. This impervious area drains directly (is not disconnected) from the storm drain system. DMA 2 and DMA 3 (Street "A") will have runoff reduction/treatment provided by a large vegetated swale at the outlet of this storm drain system (Outlet SR1). The sizing of this vegetated swale is based on the combined water quality flows of DMAs 2 and 3 (see Form 3-5) and on the hydraulic calculations in **Appendix B-3, SWQP Worksheets for the Southern Residential Area and Street "A"**. The forms show that the BMPs will provide adequate runoff reduction/treatment for the southern residential area and for Street "A".

For Phillip Road, the stormwater quality design calculations are shown in **Appendix B-4, SWQP Worksheets for Phillip Road**. Phillip Road will have runoff reduction/treatment provided by a large vegetated swale at the outlet of this storm drain system (Outlet PH1). The sizing of this vegetated swale is based on the calculated water quality flow (see Form 3-5) and on the hydraulic calculations in **Appendix B-4**. The calculations show that the BMPs will provide adequate runoff reduction/treatment for Phillip Road.

For the northern residential area, the stormwater quality design calculations are shown in **Appendix B-5, SWQP Worksheets for the Northern Residential Area**. Drainage Management Areas (DMAs) 1 and 2 are lumped into one boundary that represents the private and public right-of-way areas of the northern residential area. DMA 1 represents the private area, and the impervious areas (roof and paving) on each lot (private) are assumed to be disconnected, providing runoff reduction/treatment for these impervious areas. The imperviousness of private areas was estimated based on the overall impervious percentage for each residential land use (LDR = 40%, MDR = 50%, HDR = 60%; Park = 15%) and by subtracting out the impervious area in the public right-of-way in the northern residential area. The runoff coefficients are calculated as weighted averages of impervious (C = 0.9) and pervious (C = 0.3) areas and their associated coefficients. DMA 2 consists of impervious area in the public right-of-way (including sidewalks) in the northern residential area. This impervious area drains directly (is not disconnected from) to the storm drain system. DMA 2 will have runoff reduction/treatment provided by a bioretention facility at the outlet of this storm drain system (Outlet NR1). The forms show that the

BMPs will provide adequate runoff reduction/treatment for the northern residential area and for Street "A".

Hydromodification management for the Project will be provided by the site design and treatment measures discussed above. See Forms 4-1 through 4-3 in **Appendices B-1** through **B-5**.

PEAK FLOW MITIGATION:

A preliminary analysis was conducted to estimate the effects on peak discharges resulting from the Project. The hydrology model (HEC-HMS, version 3.2) for the master drainage plan of the Creekview development, just upstream of the Project on Pleasant Grove Creek, was provided by Civil Engineering Solutions Inc. (personal comm. with Thomas Plummer, PE). The Project falls within model subbasin PL10E (see **Exhibit 3, Project Location within the Pleasant Grove Creek Watershed**). Modifications were made to this model subbasin for existing conditions and for proposed conditions to reflect the Project area. For proposed conditions, model subbasin PL10E was split into four model subbasins, PL10ENR, PL10ESR, PL10ESI and PL10E1, as shown on **Exhibit 7, Drainage Map, Proposed Conditions for the Watershed Model**, to represent proposed conditions for the Project area, and the offsite portion, subbasin PL10E1, of the original PL10E . A model was created for two conditions: (1) existing and (2) proposed with no onsite storage. The changes in the model input are indicated in **Appendix C, HEC-HMS Model Input Changes**. The original and modified models will be submitted electronically with future submittals.

A summary of model results, peak discharges from the Project and in the creek, are listed below. The summary of discharges from the Project to the creek/bypass channel increase under project conditions if no onsite detention storage is provided. However, due to the difference in the timing of the peak flows from the Project and peak flows from other tributary areas in the watershed, the modeled peak flow in the creek/bypass channel is less under project conditions with no onsite detention storage than it is for existing conditions. So, it is proposed that no onsite detention storage for runoff mitigation for more extreme events (up to a 100-year storm event) be provided.

Summary of Model Results, Peak Discharges[a]

Storm Event	Condition	Peak Flow, cfs[a]	
		Discharge From Project	Pleasant Grove Creek
100-yr, 24-hr	Existing[b]	146	5,229
	Proposed without Onsite Mitigation[c]	192	5,224
	Change without Onsite Mitigation[e]	+46	-5

(a) Based on the HEC-HMS model used for the CLOMR/LOMR for the drainage master plan for the adjacent Creekview development.

(b) HEC-HMS model "PGCity_100Y24_PL5F_Alt9_RIPE.hms". Flow/discharge location (model element): Project Area (PL10EPE), Pleasant Grove Creek (YPLTE1).
(c) HEC-HMS model "PGCity_100Y24_PL5F_Alt9_RIPU.hms". Flow/discharge location (model element): Project (YPLTE1BP), Pleasant Grove Creek/Bypass Channel (YPLTE1).
(d) Relative to existing conditions.

FLOODPLAIN ANALYSIS:

It is possible that the Projects would result in impacts to the floodplains (discussed above, and shown on **Exhibit 6**, **Location of the Project in the FEMA Floodplain**). As discussed previously, the Project includes the Street "A" bridge crossing the creek/bypass channel and a bike path that will cross the road under the bridge (in the bypass channel). Some bridge piers and possibly the bike path embankment will be within the Regulatory Floodways of the creek/bypass channel. A no-rise certificate will need to be obtained to show that the base flood elevations (BFEs) in the creek/bypass channel are not increased. If necessary, mitigation measures, such as enlarging the channels in the downstream area, may be necessary. This floodway analysis will be included with future submittals.

There is an isolated, relatively small portion of 100-year floodplain on the creek overbank within the footprint of the Project improvements. Fill is proposed for the FEMA Zone AE just south of the Pleasant Grove Creek Bypass Channel (see **Exhibit 6**). A FEMA Conditional Letter of Map Revision Based on Fill (CLOMR-F) was prepared by the Project team and was approved by FEMA, included in **Appendix D, CLOMR-F for the Project**. This flood zone area will be removed from the floodplain by filling in this area with earthen fill up to the elevation required by the CLOMR-F. A LOMR-F will be obtained after construction of the Project.

A small part of the Project on the north lies with the city's local regulatory floodplain of University Creek. The city plans to realign University Creek as part of the Al Johnson Wildlife Area project, discussed below. If this realignment has not occurred by the time of the development of the northern residential area, the grading/building design will account for this floodplain.

VOLUMETRIC FLOOD MITIGATION:

In addition to potential impacts on peak flood flows within the Pleasant Grove Creek watershed, the Project will result in increased runoff volumes discharged from the Project. To address these effects, the Project will propose to purchase retention credits in the future Al Johnson Wildlife Area Project being implemented by the city of Roseville (offsite from the Project). The volume impact was calculated by the city as documented in the report, "Pleasant Grove/Curry Creek Watershed Mitigation Fee, City of Roseville," October 2024, prepared by Civil Engineering Solutions, Inc. The impact is 29.0 acre-feet (Table 4B, based on land use in Table 1B).

CONCLUSIONS:

The existing and proposed drainage conditions for the Project were reviewed and evaluated. This preliminary analysis appears to indicate that the conceptual drainage design is adequate to meet design requirements that will avoid the need for significant changes to the Project during later stages of the Project. The preliminary analysis appears to identify drainage design/analysis tasks needed during future stages of the Project. These tasks can be included in the City's conditions of approval document for the Project.

If you have any questions, please feel free to call me at (530) 662-1755, or e-mail me at bdelemos@lmce.net.

Enclosures

EXHIBITS

VICINITY

0 750 1500 3000

LM

SCALE: 1"=1,500'

EXHIBIT 1
PROJECT LOCATION PLAN
FOR
PHILLIP ROAD SITE

CITY OF ROSEVILLE,
PLACER COUNTY, CALIFORNIA
SHEET 1 OF 1 APRIL 2, 2025

LM LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
608 COURT STREET, WOODLAND, CALIFORNIA 95695 · PHONE: (530) 662-1755
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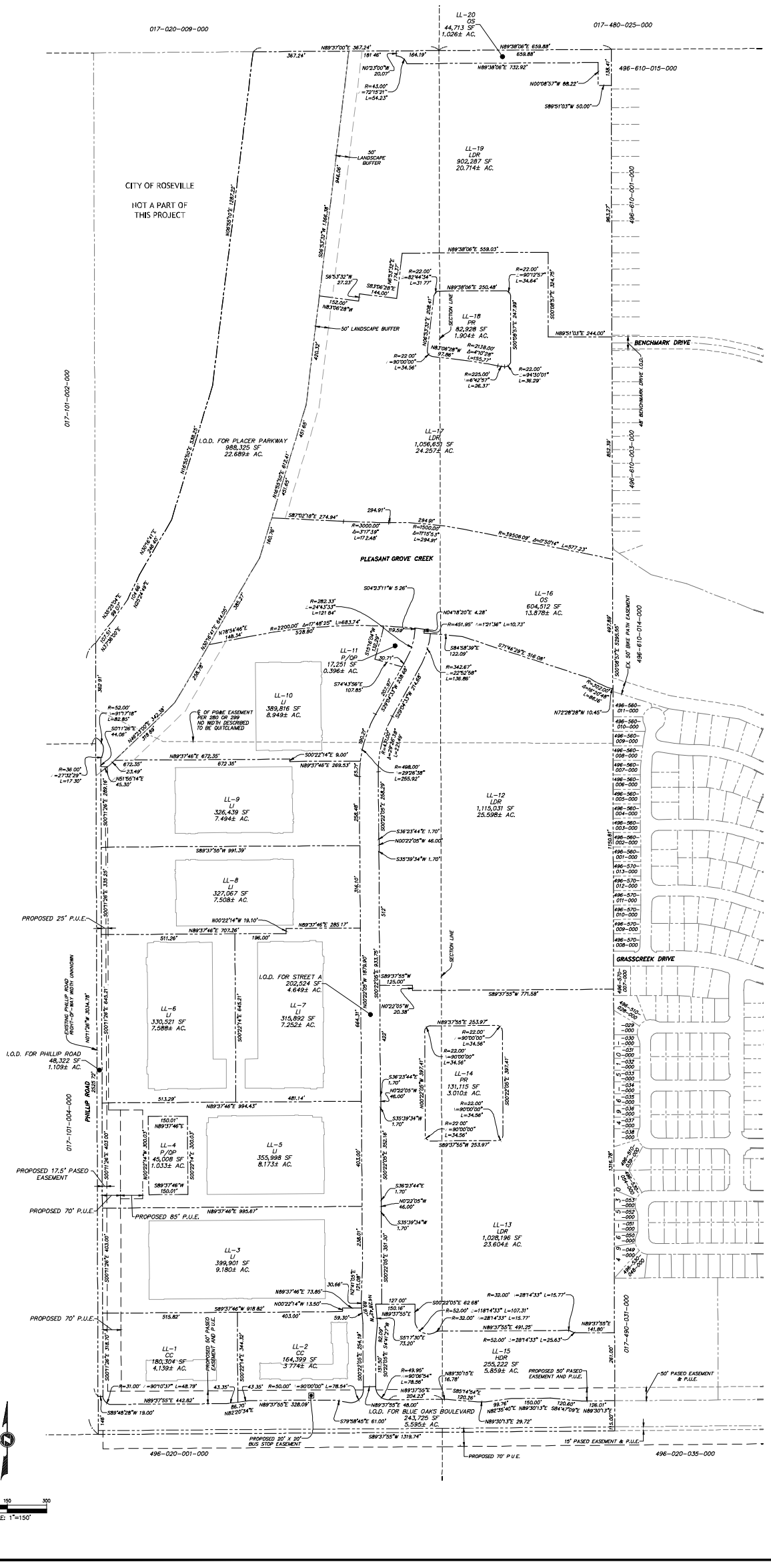
X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH01-Project Location



LOT	PROPOSED USE	GENERAL PLAN DESIGNATION	ZONINING	GROSS ACRES±	DWELLING UNITS	DENSITY
LL-1	BUILDING A	CC	C-PD	4.139	–	–
LL-2	BUILDING B	CC	C-PD	3.774	–	–
LL-3	BUILDING C	LI	ITP-PD	9.180	–	–
LL-4	ROSEVILLE ELECTRIC SUBSTATION	P/QP	P/QP	1.033	–	–
LL-5	BUILDING D	LI	ITP-PD	8.173	–	–
LL-6	BUILDING E	LI	ITP-PD	7.588	–	–
LL-7	BUILDING F	LI	ITP-PD	7.252	–	–
LL-8	BUILDING G	LI	ITP-PD	7.508	–	–
LL-9	BUILDING H	LI	ITP-PD	7.494	–	–
LL-10	BUILDING I	LI	ITP-PD	8.949	–	–
LL-11	SANITARY SEWER LIFT STATION	P/QP	P/QP	0.396	–	–
LL-12	VILLAGE 1	LDR	RS/DS	25.598	162	6 33 DU/AC.
LL-13	VILLAGE 2	LDR	RS/DS	23.604	156	6.61 DU/AC.
LL-14	PARK (SOUTH)	PR	PR	3.010	–	–
LL-15	VILLAGE 5	HDR	R3	5.859	135	23.04 DU/AC.
LL-16	PLEASANT GROVE CREEK AND BYPASS CHANNEL	OS	OS	13.878	–	–
LL-17	VILLAGE 3	LDR	RS/DS	24.257	105	4.33 DU/AC.
LL-18	PARK (NORTH)	PR	PR	1.904	–	–
LL-19	VILLAGE 4	LDR	RS/DS	20.714	106	5.12 DU/AC.
LL-20	BIKE TRAIL	OS	OS	1.026	–	–
BLUE OAKS BOULEVARD				5.595	–	–
PHILLIP ROAD				1.109	–	–
STREET A				4.649	–	–
PLACER PARKWAY				22.689	–	–
TOTAL				219.38	664	

NOTE:
SEE SHEET 4 FOR ADDITIONAL UTILITY EASEMENTS.

EXHIBIT 2
LARGE LOT SUBDIVISION

LARGE LOT SUBDIVISION

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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PROJECT SITE

Legend
- Project Boundary
- Discharge Point
- Streams
- Pleasant Grove Creek Watersheds
- University Creek Watersheds
- City Boundaries

0 5,000 10,000 20,000 Feet

XX/XX/XX JN10-00000 MXD_Name.mxd Initials

Kimley»Horn

AMORUSO RANCH SPECIFIC PLAN MASTER DRAINAGE PLAN

Pleasant Grove Creek Watershed

EXHIBIT 3 - PROJECT LOCATION WITHIN THE PLEASANT GROVE CREEK WATERSHED

Exhibit 1

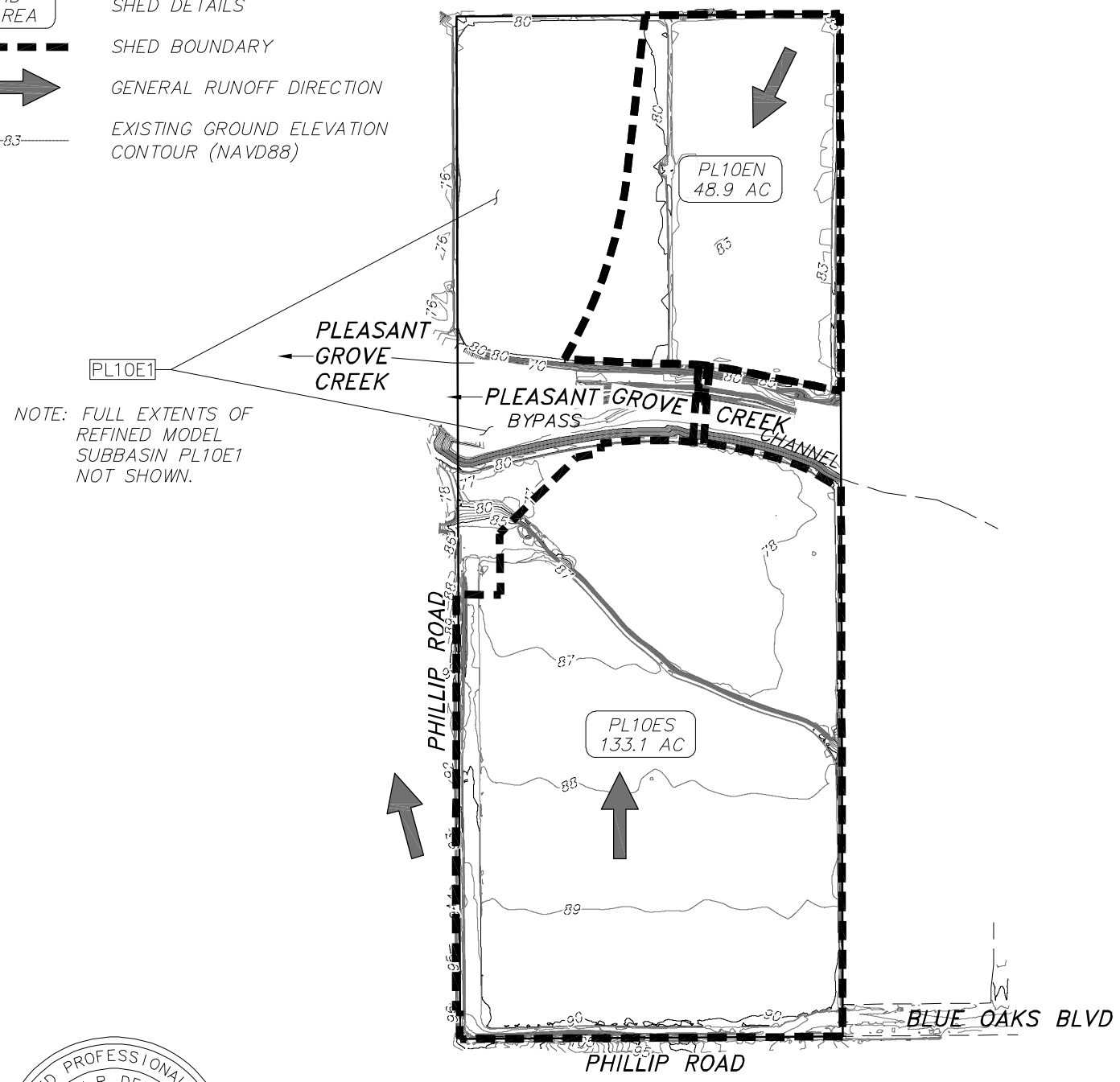
LEGEND

ID AREA — SHED DETAILS

SHED BOUNDARY

GENERAL RUNOFF DIRECTION

83 — EXISTING GROUND ELEVATION CONTOUR (NAVD88)



NOTE: FULL EXTENTS OF REFINED MODEL SUBBASIN PL10E1 NOT SHOWN.

REGISTERED PROFESSIONAL ENGINEER
BRIAN R. DELEMOS
No. 66421
CIVIL
STATE OF CALIFORNIA

0 400 800 1600

SCALE: 1"=800'

EXHIBIT 4
DRAINAGE MAP
EXISTING CONDITIONS
FOR
PHILLIP ROAD SITE

PHILLIP ROAD,
CITY OF ROSEVILLE, CALIFORNIA
SHEET 1 OF 1 APRIL 11, 2025

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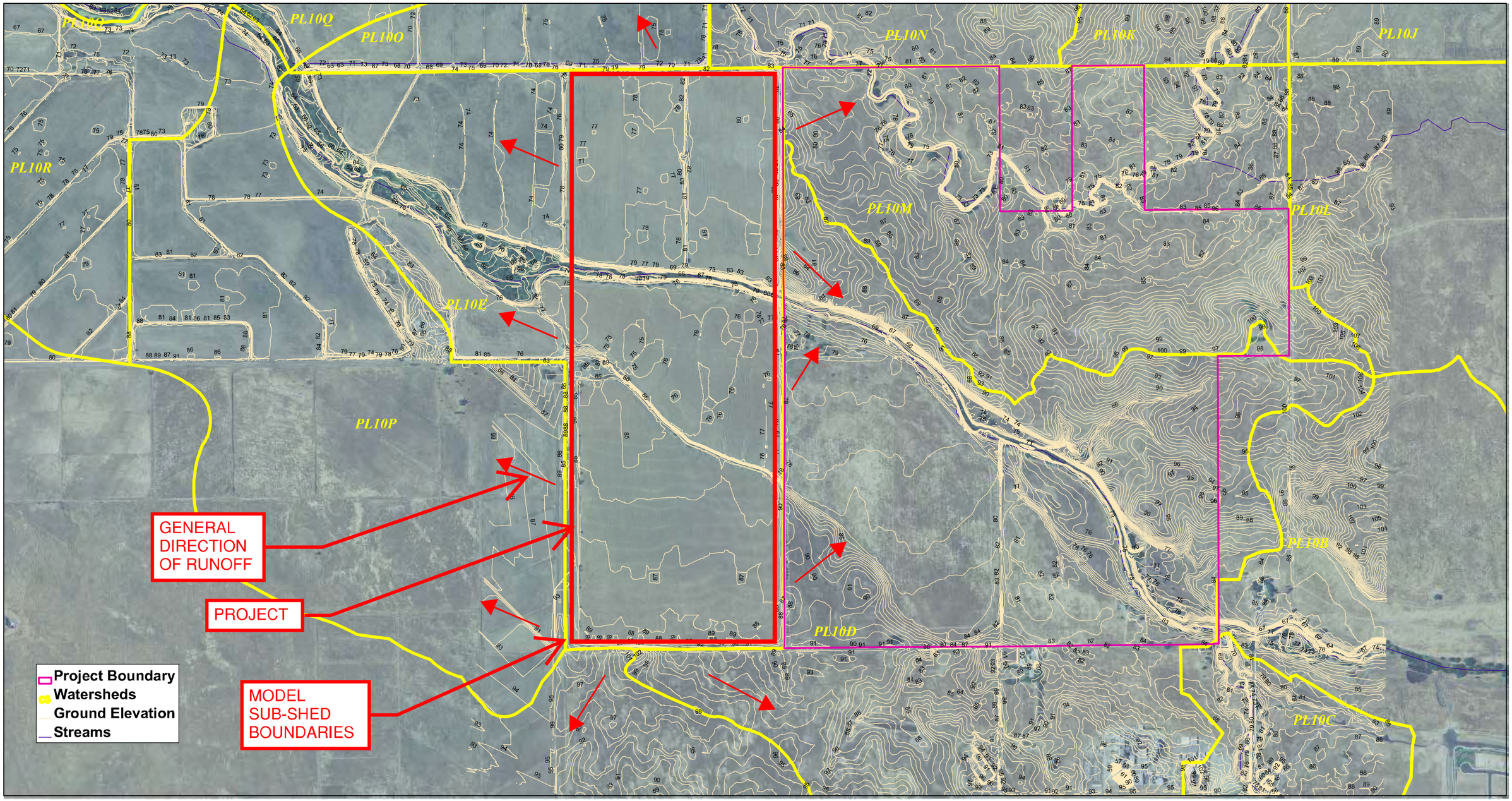
X:\Land Projects\4042-60-4\dwg\4042-60-4_EXH_Existing Conditions

CREEKVIEW SPECIFIC PLAN



CIVIL ENGINEERING SOLUTIONS, INC.

PRE-PROJECT WATERSHEDS

0 400 800 1,600 Feet

CREEKVIEW SPECIFIC PLAN
MASTER DRAINAGE STUDY
AUGUST 2010

SH-1A

EXHIBIT 5 - HYDROLOGY MODEL SHEDS AND TOPOGRAPHY

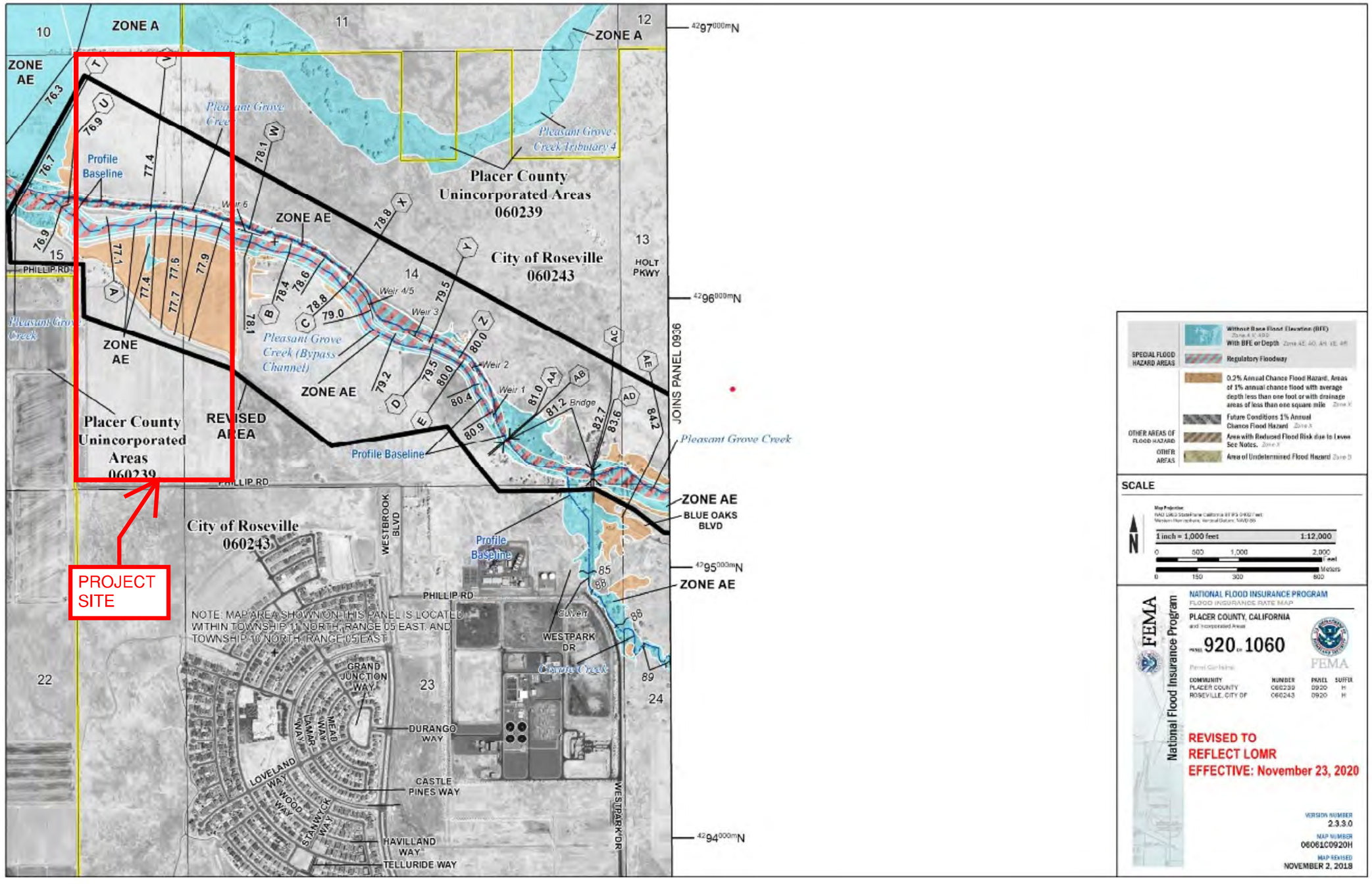
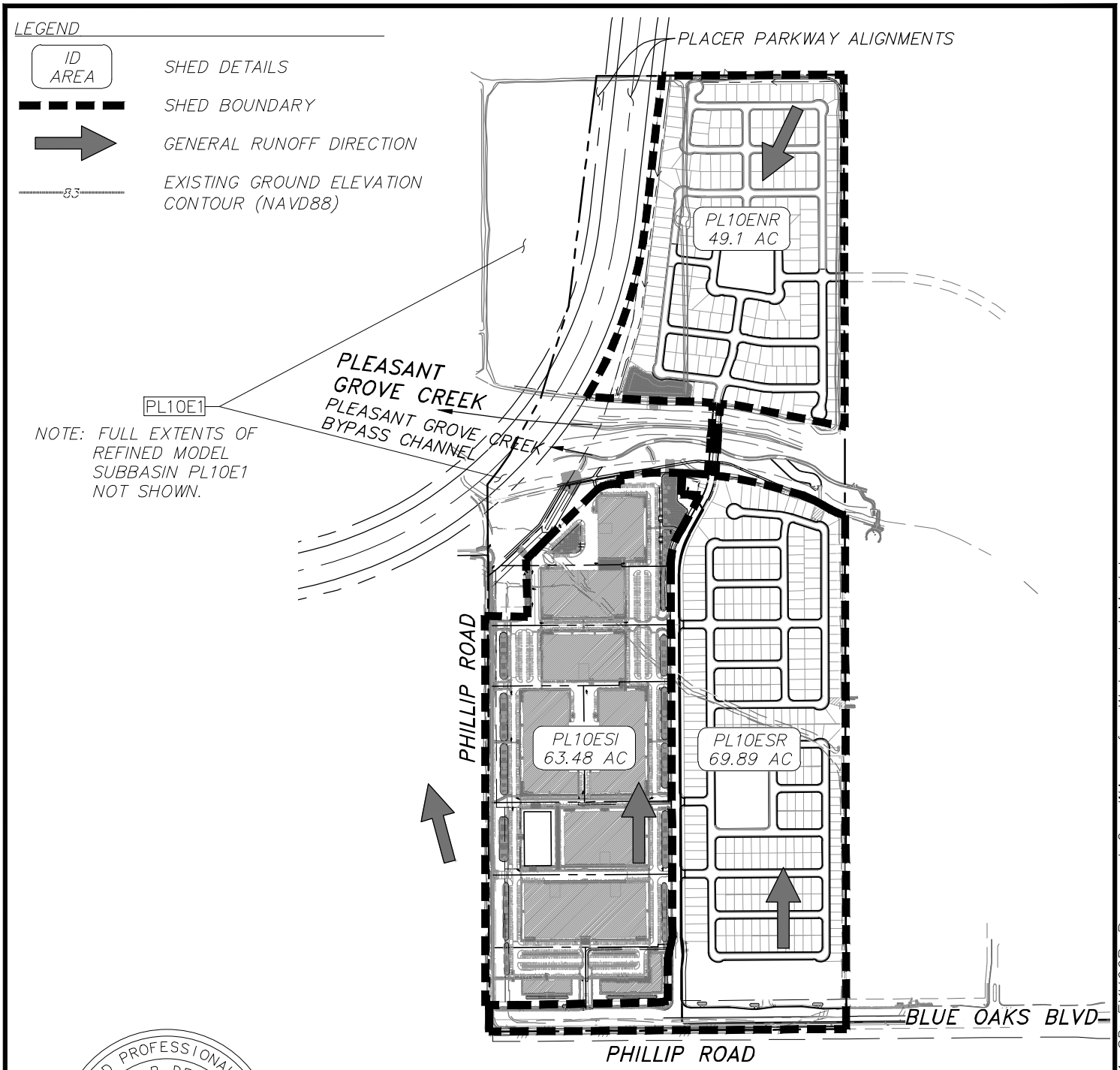
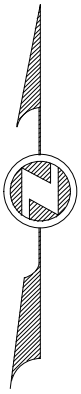


EXHIBIT 6 - LOCATION OF THE PROJECT IN THE FEMA FLOODPLAIN





0 400 800 1600

LM

SCALE: 1"=800'

EXHIBIT 7
DRAINAGE MAP
PROPOSED CONDITIONS
FOR
WATERSHED MODEL
FOR
PHILLIP ROAD PROJECT

PHILLIP ROAD,
CITY OF ROSEVILLE, CALIFORNIA
SHEET 1 OF 1 SEPTEMBER 17, 2025

LM LAUGENOUR AND MEIKLE
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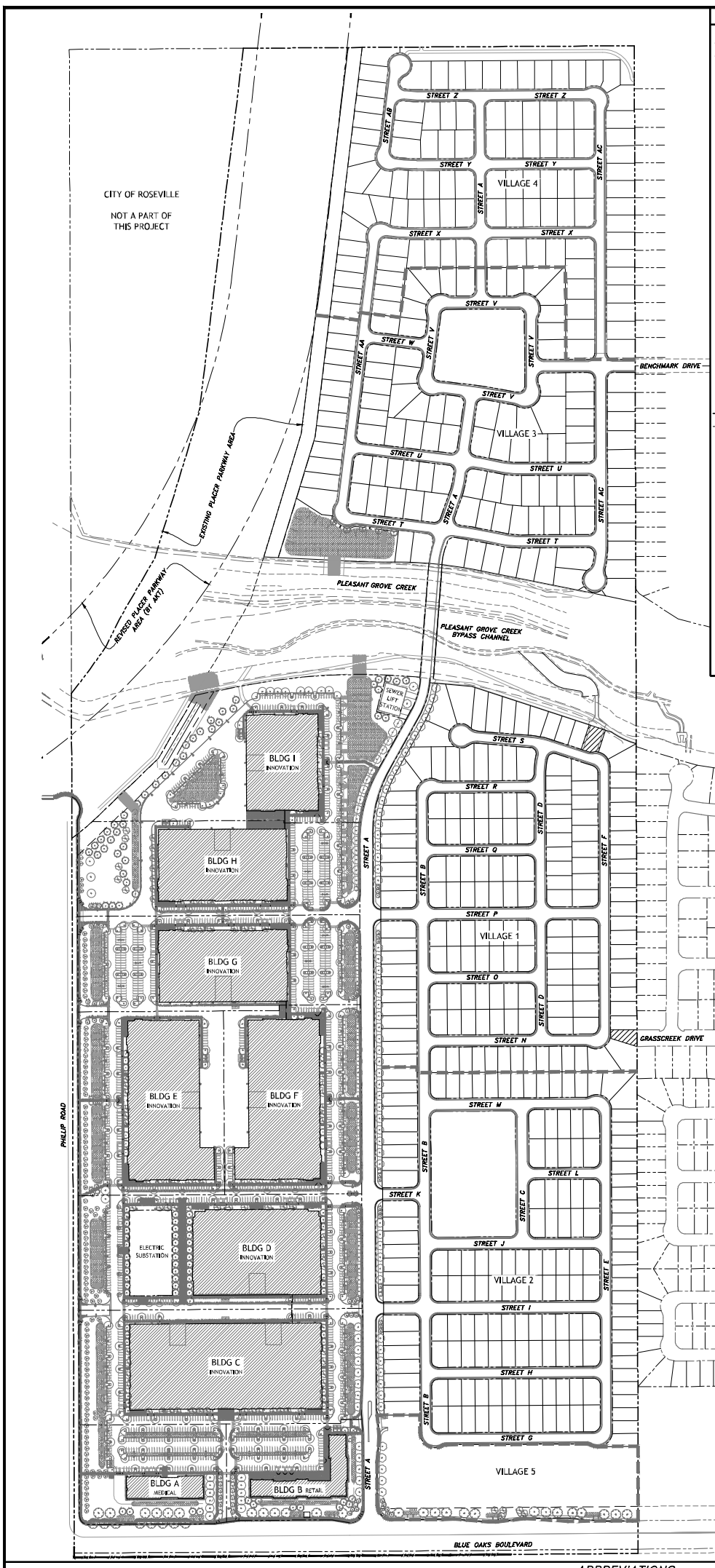
X:\Land Projects\4042-60-4\dwg\4042-60-4_SD_EXH06B-Proposed Conditions for Watershed Model

APPENDIX A

SELECT SHEETS OF THE TENTATIVE MAP



LEGEND

PROPOSED	EXISTING	
12"SD	12"SD	STORM DRAIN AND MANHOLE
12"PSD		PERFORATED STORM DRAIN
6"SS	6"SS	SANITARY SEWER AND MANHOLE
8"SFM	8"SFM	SANITARY SEWER FORCE MAIN
		SEWER PUMP STATION
		FIRE HYDRANT AND VALVE ASSEMBLY
10"W	10"W	WATER MAIN, VALVE, DOUBLE DETECTOR CHECK VALVE, METER & BLOWOFF VALVE
		IRRIGATION CONTROL VALVE
		JOINT UTILITY TRENCH
G	G	GAS MAIN AND VALVE
(UG)E		ELECTRICAL LINE (UG–UNDERGROUND OH–OVERHEAD)
(UG)T		TELEPHONE LINE
SL	SL	STREET LIGHT CONDUIT, WIRING & PULL BOX
SL	SL	STREET LIGHT SERVICE POINT AT UTILITY CO. BOX
		STREET LIGHT AND POLE
		UTILITY POLE WITH DOWN GUY & ANCHOR
PP, TP, JP	PP, TP, JP	POWER POLE, TELEPHONE POLE, JOINT POLE
		FENCE
		VERTICAL CURB, GUTTER & SIDEWALK WITH DRIVEWAY
		CATCH BASIN OR DRAINAGE INLET
		FLOWLINE OF DITCH OR SWALE
		DIRECTION OF SURFACE DRAINAGE FLOW
		CUT OR FILL SLOPE
		RIGHT OF WAY OR PROPERTY LINE
		STREET CENTERLINE OR BASELINE
		SURVEY MONUMENT
		SIGN
		TREE
		TREE TO BE REMOVED
	19.79 + 12.04	EXISTING GROUND SURFACE ELEVATION
58.60 EG		EDGE OF PAVEMENT AND ELEVATION
58.60 FG		FLOW LINE GRADE
59.10 TC 58.85 TC 58.60 FG		TOP OF CURB GRADE/ASPHALT GRADE
58.60 FG		FINISHED CONCRETE GRADE
58.60 TW		TOP OF WALL GRADE
59.10 TC 58.85 TC 57.10 SG		TOP OF CURB/FINISHED GRADE/SUBGRADE ELEVATION
60.50± TC 60.00± FG 60.50± FG 60.50± AC 60.50± BCW		MATCH EXISTING GRADE (FIELD VERIFY)
		PUBLIC UTILITY EASEMENT
		ROLL CURB, GUTTER, & SIDEWALK
		GRADING RIDGE

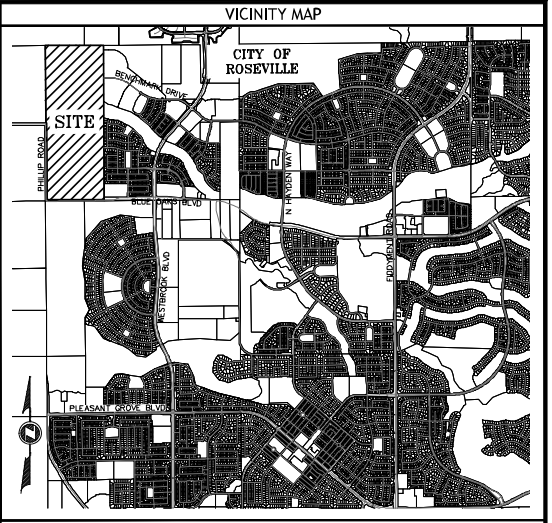
TENTATIVE MAP NOTES

1. LOT DIMENSIONS AND AREAS ARE APPROXIMATE AND ARE SUBJECT TO CHANGE
2. LOT LINES AND LOT AREAS MAY BE ADJUSTED AT THE TIME OF FINAL MAP(S) PREPARATION, PROVIDED NO ADDITIONAL LOTS ARE CREATED, SUBJECT TO APPROVAL BY THE CITY OF ROSEVILLE.
3. THE FINAL MAPPING AND SUBSEQUENT DEVELOPMENT OF PARCELS AND STREETS MAY BE PHASED.
4. PHASING IS TO BE CONSISTENT WITH THE PERFORMANCE CRITERIA IN THE DEVELOPMENT AGREEMENT AND APPLICABLE INFRASTRUCTURE PHASING MATRIX.
5. PROJECT IMPROVEMENTS ARE DEFERRED TO INDIVIDUAL SMALL LOT FINAL MAPS OR PROJECT DEVELOPMENT PLANS AND ARE NOT REQUIRED AT THE LARGE LOT PARCEL MAP.
6. PURSUANT TO GOVERNMENT CODE SECTION 66463.1, THE SUBDIVIDER MAY FILE MULTIPLE FINAL MAPS BASED UPON THIS TENTATIVE SUBDIVISION MAP. THE FILING OF A FINAL MAP OR LARGE LOT PARCEL MAP ON A PORTION OF THIS TENTATIVE SUBDIVISION MAP SHALL NOT INVALIDATE ANY PART OF THIS TENTATIVE SUBDIVISION MAP.
7. ADDITIONAL EASEMENTS TO ACCOMMODATE NEW PUBLIC UTILITY IMPROVEMENTS, ACCESS REQUIRED FOR PARCEL DEVELOPMENT, RIGHTS TO CONSTRUCT, OR OTHER SIMILAR MAPPING REQUIREMENTS NEEDED TO ACCOMPLISH THE FINAL DESIGN MAY BE ADDED PRIOR TO EACH SMALL LOT FINAL MAP BASED ON THIS TENTATIVE SUBDIVISION MAP.
8. A MINIMUM 12.5' PUBLIC UTILITY PUBLIC EASEMENT (PUE) WILL BE LOCATED ADJACENT TO ALL RIGHTS-OF-WAY UNLESS OTHERWISE NOTED.
9. LANDSCAPE CORRIDOR WIDTHS MAY BE REDUCED FOR ANCILLARY RIGHT-TURN LANES, AUXILIARY LANES, BUS TURN-OUTS, STANDARD TAPERS, AND THE LIKE PER APPROVAL BY THE CITY OF ROSEVILLE.
10. THE FOLLOWING LOTS ARE TO BE OFFERED TO THE CITY OF ROSEVILLE WITH THE CORRESPONDING PHASE AT THE TIME OF EACH FINAL MAP: STREETS, PARKS, BIKE TRAILS. LL-4, LL-11, LL-14, LL-16, LL-18 AND LL-20.
11. LANDSCAPE CORRIDOR LOTS, PASEO LOTS, AND LANDSCAPE LOTS ARE NOT TO BE COUNTED AS "LOTS" TOWARDS ANY FUTURE BOUNDARY LINE ADJUSTMENT.
12. DESIGN AND PLACEMENT OF ENTRY SIGNAGE AND MASONRY WALLS TO BE CONSISTENT WITH CITY OF ROSEVILLE GUIDELINES.

UTILITY NOTES

1. ALL EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE.
2. UTILITIES MAY BE PHASED DEPENDING UPON THE DEVELOPMENT SEQUENCE OF THE PROJECT, SUBJECT TO THE REVIEW OF THE CITY OF ROSEVILLE.
3. THE SIZE AND LOCATION OF PROPOSED WATER, RECYCLED WATER, SEWER, AND STORM DRAINAGE INFRASTRUCTURE IS SUBJECT TO CHANGE DURING FINAL DESIGN, SUBJECT TO REVIEW AND APPROVAL BY THE CITY OF ROSEVILLE WITH IMPROVEMENT PLANS.
4. ANY OFFSITE GRADING SHALL REQUIRE RIGHT OF ENTRY FROM ADJOINING PROPERTY OWNERS. IF A RIGHT OF ENTRY CANNOT BE OBTAINED, RETAINING WALLS ALONG PROPERTY LINES ARE TO BE CONSTRUCTED AS SHOWN HEREON.
5. FINAL LOT GRADING SHALL BE IN COMPLIANCE WITH SECTION 11.C. INTERIOR LOT GRADING, CITY DESIGN STANDARDS AND CLASS 1 GRADING DETAILS GR-1 THROUGH GR-5 AND CALIFORNIA BUILDING CODE SECTION 1804. GRADING SHALL INCLUDE 5% SLOPE AWAY AND 2% SWALES WITHIN 10' OF FOUNDATION, DISCONNECTED DOWN SPOUTS, YARD DRAINS, AND UNDERGROUND PIPE SYSTEMS WITH BUBBLE UPS WITH DISCHARGE TO PERVIOUS SURFACE. 1% SWALES ARE NOT ALLOWED WITHIN 10' OF FOUNDATION PER BUILDING CODE. AN OVERLAND RELEASE TO THE STREET SHALL BE INCLUDED AS PART OF THE FINISHED LOT GRADING DESIGN TO PRECLUDE ANY PONDING AGAINST FUTURE FOUNDATIONS.

VICINITY MAP



TENTATIVE MAP INFORMATION

OWNER/APPLICANT:	PANATTONI DEVELOPMENT COMPANY, INC. 400 CAPITOL MALL, SUITE 2040 SACRAMENTO, CA 95814
ENGINEER/SURVEYOR:	LAUGENOUR AND MEIKLE CIVIL ENGINEERS 608 COURT STREET WOODLAND, CA 95695 (530) 662-1755
ASSESSOR'S PARCEL NUMBER:	017-101-008
SITE AREA:	219.378± AC.
GENERAL PLAN LAND USE:	EXISTING: PUBLIC/QUASI-PUBLIC (PQP) PROPOSED: COMMUNITY COMMERCIAL (CC) LIGHT INDUSTRIAL (LI) LOW-DENSITY RESIDENTIAL (LDR) HIGH-DENSITY RESIDENTIAL (HDR) PUBLIC/QUASI-PUBLIC (P/QP)
ZONING:	EXISTING: INFILL (PD) PROPOSED: COMMERCIAL-PLANNED DEVELOPMENT (C-PD) INNOVATION TECH PARK-PLANNED DEVELOPMENT (ITP-PD) SMALL LOT RESIDENTIAL-DEVELOPMENT STANDARD (RS-DS) MULTI-FAMILY HOUSING (R3) PARKS & RECREATION (PR) OPEN SPACE (OS) PUBLIC/QUASI-PUBLIC (P/QP)
NUMBER OF LOTS/PARCELS:	TOTAL LOTS/PARCELS: 557 TOTAL LOTS 2 COMMUNITY COMMERCIAL LOTS 7 INNOVATION TECHNOLOGY PARK LOTS 529 LDR LOTS 1 HDR LOT (135 UNITS) 2 PR LOTS 3 PQP LOTS 2 OS LOTS 11 IOD/ROW/LANDSCAPE CORRIDOR LOTS
SERVICE PROVIDERS:	PARKS & RECREATION: CITY OF ROSEVILLE POLICE & FIRE PROTECTION: CITY OF ROSEVILLE SANITARY SEWER: CITY OF ROSEVILLE DOMESTIC & RECYCLED WATER: CITY OF ROSEVILLE ELECTRICITY: CITY OF ROSEVILLE TELEPHONE: AT&T GAS: PG&E CABLE: COMCAST

SHEET INDEX

NO.	DESCRIPTION
1	COVER SHEET
2	LARGE LOT SUBDIVISION
3	CROSS SECTIONS
4	INNOVATION CENTER SITE PLAN
5	RESIDENTIAL – VILLAGES 1, 2, AND 5
6	RESIDENTIAL – VILLAGES 3 AND 4
7	CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN
8	CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN
9	CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN
10	CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN
11	CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN
12	CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN
13	CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN
14	CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN
15	CONCEPTUAL GRADING DRAINAGE & UTILITIES PLAN
16	STORMWATER CONTROL PLAN
17	STORMWATER CONTROL PLAN
18	FIRE & GARBAGE ACCESS PLAN
19	PRELIMINARY BRIDGE DESIGN
20	GENERAL PLAN AMENDMENT
21	REZONING EXHIBIT
22	PHASE 1 LAYOUT
23	PHASE 2 LAYOUT
24	PHASE 3 LAYOUT
25	PHASE 4 LAYOUT
26	PHASE 5 LAYOUT
27	TREE PRESERVATION PLAN
28	TREE PRESERVATION PLAN
29	CROSS SECTIONS
30	CROSS SECTIONS

BENCHMARKS

DESIGNATION – BM 130

DESCRIPTION:

3-1/4" BRASS DISK STAMPED OCTOBER 2015 LS 8067 LOCATED ON THE NORTHWEST ANGLE POINT OF THE HEADWALL FOR THE STORM DRAIN OUTFALL BEING APROX. 175 FEET SOUTHWEST OF THE WESTERLY ELBOW INTERSECTION OF FORT COLLINS WAY

ELEVATION = 89.45

DATUM: NAVD88

LOCAL BENCHMARK

DESCRIPTION:

COPPERWELD IN MONUMENT WELL STAMPED "LS 9265" IN INTERSECTION OF BLUE OAKS BOULEVARD AND WESTBROOK BOULEVARD

ELEVATION = 89.92

REGISTERED PROFESSIONAL ENGINEER BRYAN P. BOUCHER No. 41804 CIVIL STATE OF CALIFORNIA

COVER SHEET

ABBREVIATIONS

AB	AGGREGATE BASE	CICP	CAST IN PLACE CONCRETE PIPE	EP	EDGE OF PAVEMENT	L	LEFT	PL	PROPERTY LINE	RT	RIGHT	TS	TOP OF SOIL		
AC	ASPHALT CONCRETE			EQUIV	EQUIVALENT	LF	LINEAL FEET	POC	POINT OF CONNECTION, POINT ON	R/W	RIGHT-OF-WAY	TW	TOP OF WALL		
ACP	ASBESTOS CEMENT PIPE	CL	CENTERLINE, CONTROL LINE, CHAIN	EVC	END VERTICAL CURVE	LOG	LIP OF GUTTER		CURVE	S	SOUTH OR SLOPE	TYP	TYPICAL		
AHJ	AUTHORITY HAVING JURISDICTION		LINK OR CLASS	EX, EXIST	EXISTING	LT	LEFT OR LIGHT	PRC	POINT OF REVERSE CURVATURE	SCH	SCHEDULE	UG	UNDERGROUND		
ARV	AIR RELEASE VALVE	CO	CLEANOUT	EXP JT	EXPANSION JOINT	MAX	MAXIMUM	PRVC	POINT OF REVERSE VERTICAL	SD	STORM DRAIN	UNO	UNLESS NOTED OTHERWISE		
ASB	AGGREGATE SUBBASE	CONC	CONCRETE	FB	FLUSHER BRANCH	MH	MANHOLE		CURVATURE	SDFM	STORM DRAIN FORCE MAIN	VAR	VARIES OR VARIABLE		
BC	BEGIN CURVE	CONST	CONSTRUCT	FC	FINISHED CONCRETE	MIN	MINIMUM	PROJ	PROJECTED	SEC	SECTION	VCP	VITRIFIED CLAY PIPE		
BEW	BACK EDGE OF WALK	COR	CORNER	FDR	FULL DEPTH RECLAMATION	MOC	MIDDLE OF CURVE	PROP	PROPERTY	SEP	SEPARATION	VERT	VERTICAL		
BM	BENCH MARK	CP	CONCRETE PIPE	FEW	FRONT EDGE OF WALK	MON	MONUMENT	PSE	PUBLIC SERVICE EASEMENT	SIM	SIMILAR	W	WEST		
BOC	BACK OF CURB	CR	CURB RETURN	FF, FIN FLR	FINISHED FLOOR	MRC	MINIMUM RELATIVE COMPACTION	PT	POINT	SL	STREET LIGHT	WM	WATER METER OR WATER MAIN		
BOV	BLOW-OFF VALVE	CSP	CORRUGATED STEEL PIPE	FG	FINISHED GRADE	N	NORTH	PUE	PUBLIC UTILITY EASEMENT	SS	SEWER SERVICE, SANITARY SEWER	WQF	WATER QUALITY FLOW		
BR	BOTTOM OF ROCK	DCDC	DOUBLE CHECK DETECTOR CHECK	FH	FIRE HYDRANT	NG	NATURAL GROUND	PVCP	POLYVINYL CHLORIDE PIPE	STD	STANDARD	WS	WATER SERVICE		
BTM	BOTTOM	DI	DRAINAGE INLET	FL	FLOW LINE	NIC	NOT IN CONTRACT	PVMT	PAVEMENT	SW	SIDEWALK	XFMR	TRANSFORMER		
BVC	BEGIN VERTICAL CURVE	DIP	DUCTILE IRON PIPE	FOC	FACE OF CURB OR CONCRETE	NTS	NOT TO SCALE	PWD	PUBLIC WORKS DEPARTMENT	SYM	SYMMETRICAL	XING	CROSSING		
BW	BASE OF WALL	DTL	DETAIL	GB	GRADE BREAK	OA	OVERALL	R	RADIUS, RADIAL OR RIGHT	TC	TOP OF CURB OR CONCRETE				
CAMUTCD	CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES	DW	DRIVEWAY	INTX	INTERSECTION	OH	OVERHEAD	RCP	REINFORCED CONCRETE PIPE	TEL	TELEPHONE				
		DWG	DRAWING	INV	INVERT	PB	PULL BOX	REQ'TS	REQUIREMENTS	TEMP	TEMPORARY				
CATV	CABLE TELEVISION	E	EAST	IOD	IRREVOCABLE OFFER OF DEDICATION	PCA	PORTLAND CEMENT ASSOCIATION	RET	RETAINING	TFOC	TOP FACE OF CURB				
C&G	CURB AND GUTTER	EC	END CURVE	IRR	IRRIGATION	PCC	PORTLAND CEMENT CONCRETE OR	RP	RADIUS POINT OR REFERENCE POINT	TR	TOP OF ROCK				
C,G,&SW	CURB, GUTTER AND SIDEWALK	ELEC	ELECTRIC(AL)	JB	JUNCTION BOX		POINT OF COMPOUND CURVATURE	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER	TRAF	TRAFFIC				
CL	CENTER TO CENTER	EL, ELEV	ELEVATION	JT	JOINT-USE TRENCH	PI	POINT OF INTERSECTION			TRANS	TRANSITION				

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

LM LAUGENOUR AND MEIKLE
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P.O. BOX 828, WOODLAND, CALIFORNIA 95776 FAX: (530) 662-4602

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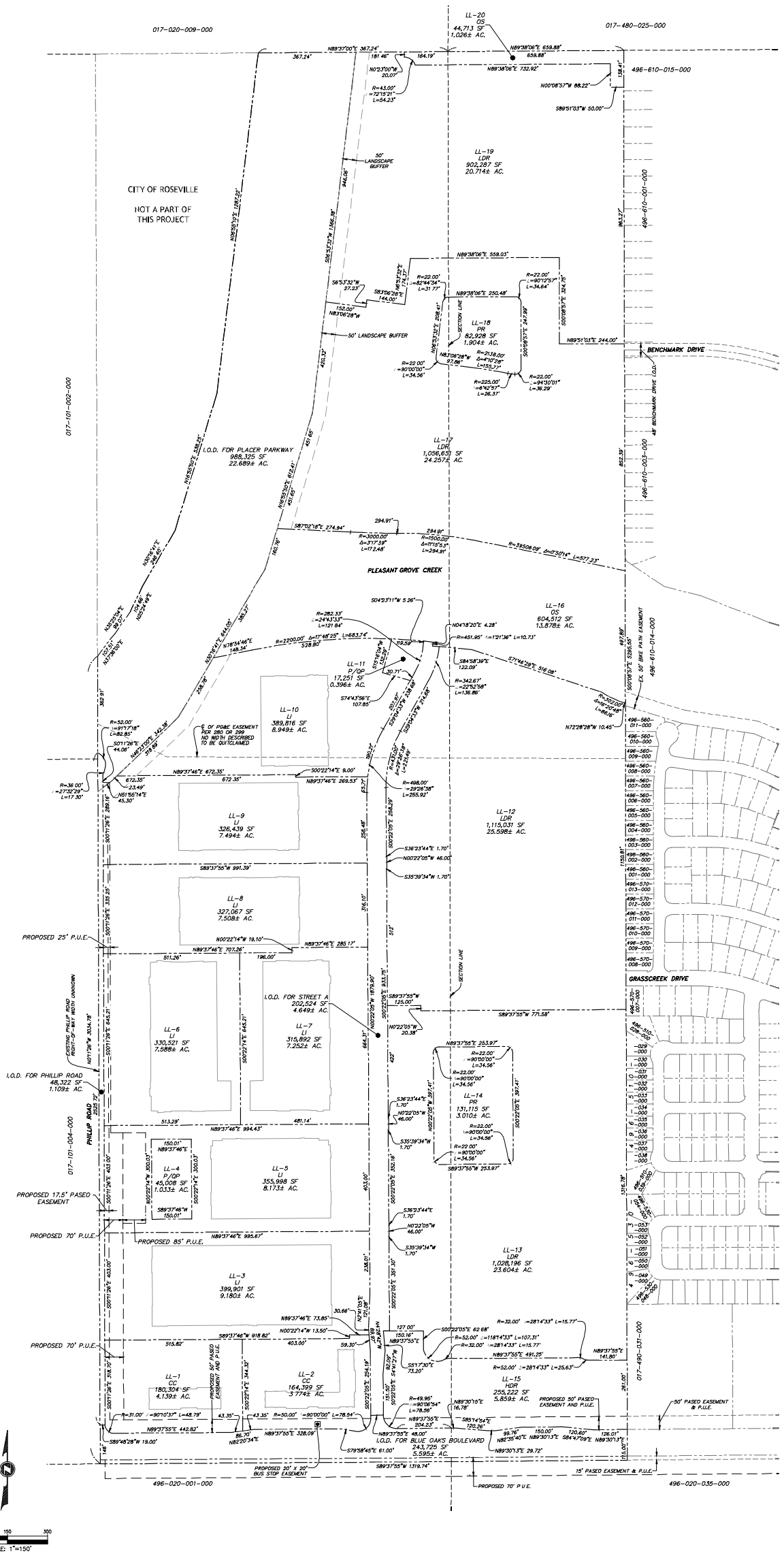

LOT	PROPOSED USE	GENERAL PLAN DESIGNATION	ZONINING	GROSS ACRES±	DWELLING UNITS	DENSITY
LL-1	BUILDING A	CC	C-PD	4.139	–	–
LL-2	BUILDING B	CC	C-PD	3.774	–	–
LL-3	BUILDING C	LI	ITP-PD	9.180	–	–
LL-4	ROSEVILLE ELECTRIC SUBSTATION	P/QP	P/QP	1.033	–	–
LL-5	BUILDING D	LI	ITP-PD	8.173	–	–
LL-6	BUILDING E	LI	ITP-PD	7.588	–	–
LL-7	BUILDING F	LI	ITP-PD	7.252	–	–
LL-8	BUILDING G	LI	ITP-PD	7.508	–	–
LL-9	BUILDING H	LI	ITP-PD	7.494	–	–
LL-10	BUILDING I	LI	ITP-PD	8.949	–	–
LL-11	SANITARY SEWER LIFT STATION	P/QP	P/QP	0.396	–	–
LL-12	VILLAGE 1	LDR	RS/DS	25.598	162	6 33 DU/AC.
LL-13	VILLAGE 2	LDR	RS/DS	23.604	156	6.61 DU/AC.
LL-14	PARK (SOUTH)	PR	PR	3.010	–	–
LL-15	VILLAGE 5	HDR	R3	5.859	135	23.04 DU/AC.
LL-16	PLEASANT GROVE CREEK AND BYPASS CHANNEL	OS	OS	13.878	–	–
LL-17	VILLAGE 3	LDR	RS/DS	24.257	105	4.33 DU/AC.
LL-18	PARK (NORTH)	PR	PR	1.904	–	–
LL-19	VILLAGE 4	LDR	RS/DS	20.714	106	5.12 DU/AC.
LL-20	BIKE TRAIL	OS	OS	1.026	–	–
BLUE OAKS BOULEVARD				5.595	–	–
PHILLIP ROAD				1.109	–	–
STREET A				4.649	–	–
PLACER PARKWAY				22.689	–	–
TOTAL				219.38	664	

NOTE:
SEE SHEET 4 FOR ADDITIONAL UTILITY EASEMENTS.

LARGE LOT SUBDIVISION

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN,
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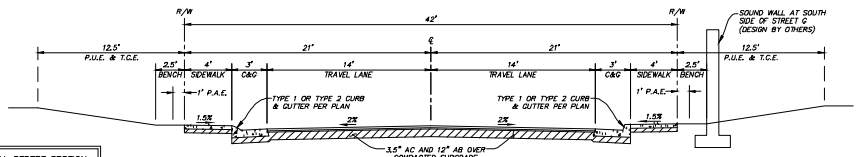
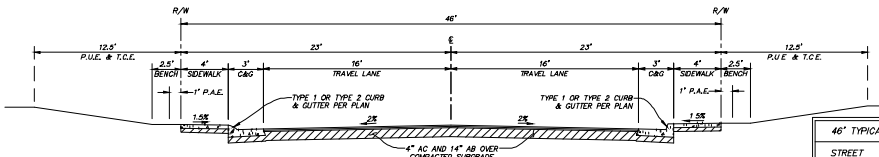


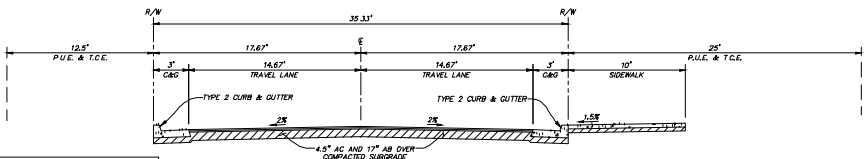
A TYPICAL 42' STREET SECTION
NTS

42' TYPICAL STREET SECTION	
STREET	STATIONS
A	54+47 – 60+87
B	10+00 – 14+59 28+43 – 34+42
D	ALL
E	ALL
F	ALL
G	ALL
H	ALL
J	10+45 – 12+99
L	ALL
M	10+45 – 12+99
N	ALL
O	ALL
Q	ALL
R	ALL
S	ALL
T	10+00 – 13+63
U	10+00 – 13+99
W	ALL
X	ALL
Y	ALL
Z	ALL
AA	ALL
AB	ALL
AC	16+15 – 25+68
SEE SHEETS 10–14 FOR ROAD STATIONING	



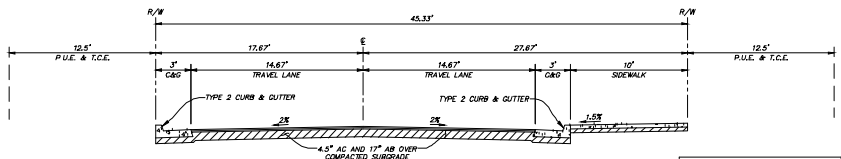
B TYPICAL 46' STREET SECTION
NTS

46' TYPICAL STREET SECTION	
STREET	STATIONS
A	46+24 – 50+43
B	14+59 – 28+43
C	ALL
I	ALL
J	13+89 – 15+92
K	ALL
M	13+89 – 15+90
P	ALL
T	13+63 – 19+20
U	13+99 – 18+89
V	ALL
AC	10+00 – 16+15
BENCHMARK DRIVE	6+80 – 10+00
SEE SHEETS 10–14 FOR ROAD STATIONING	



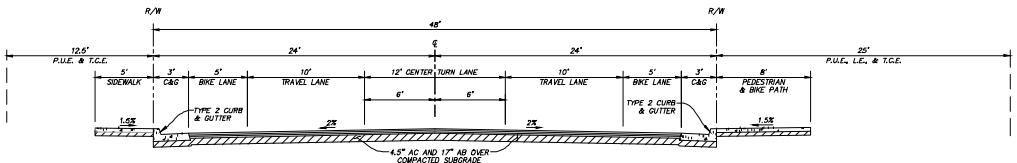
C1 STREET A SOUTH OF BRIDGE
NTS

35.33' TYPICAL STREET SECTION	
STREET	STATIONS
A	37+14 – 40+58
SEE SHEETS 10–14 FOR ROAD STATIONING	



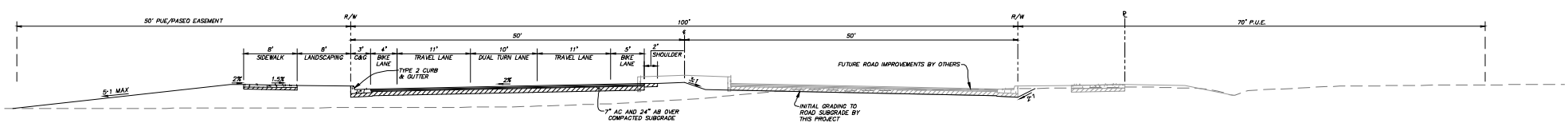
C2 STREET A NORTH OF BRIDGE
NTS

45.33' TYPICAL STREET SECTION	
STREET	STATIONS
A	44+60 – 45+54
SEE SHEETS 10–14 FOR ROAD STATIONING	

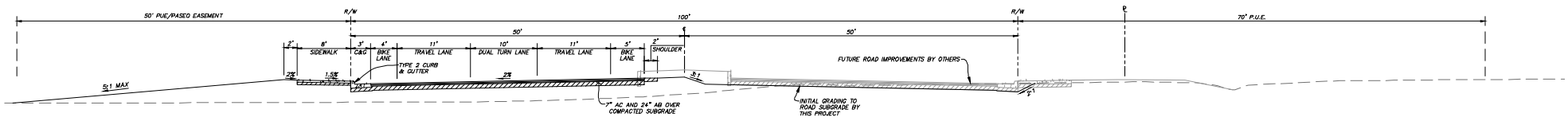


D TYPICAL 48' STREET SECTION
NTS

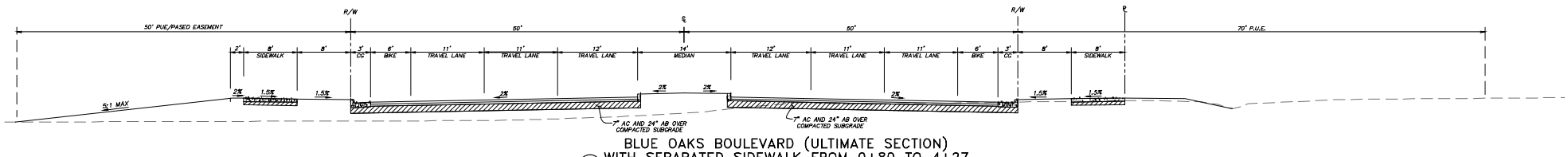
48' TYPICAL STREET SECTION	
STREET	STATIONS
A	11+11 – 31+41
SEE SHEETS 10–14 FOR ROAD STATIONING	



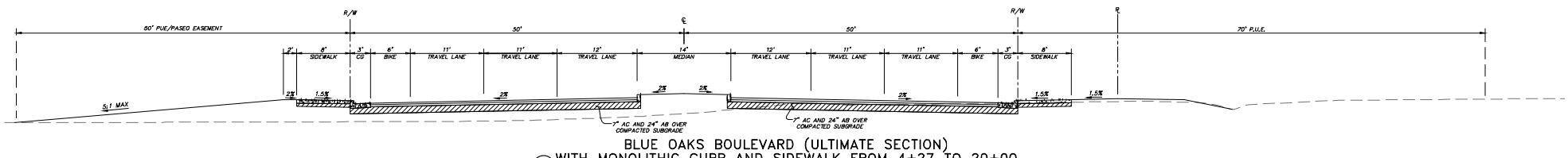
BLUE OAKS BOULEVARD (HALF SECTION)
E1 WITH SEPERATED SIDEWALK FROM 0+80 TO 4+27
NTS



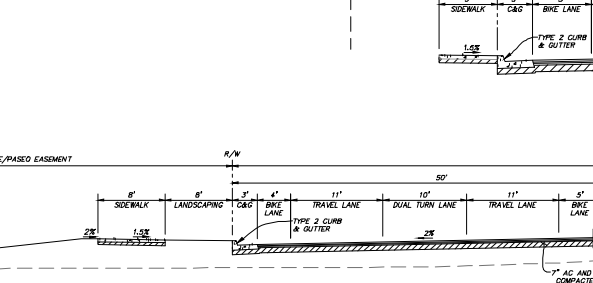
BLUE OAKS BOULEVARD (HALF SECTION)
E2 WITH MONOLITHIC CURB AND SIDEWALK FROM 4+27 TO 20+00
NTS



BLUE OAKS BOULEVARD (ULTIMATE SECTION)
F1 WITH SEPARATED SIDEWALK FROM 0+80 TO 4+27
NTS

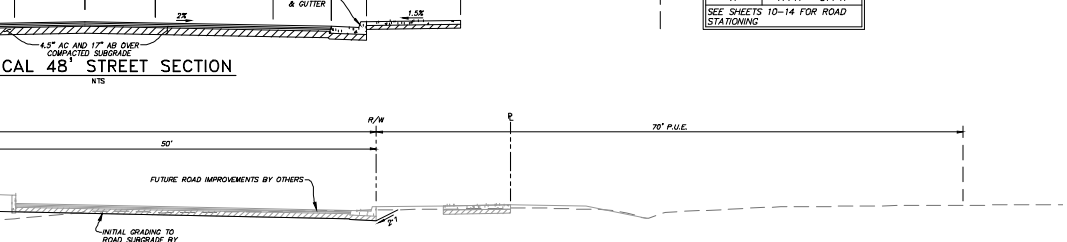


BLUE OAKS BOULEVARD (ULTIMATE SECTION)
F2 WITH MONOLITHIC CURB AND SIDEWALK FROM 4+27 TO 20+00
NTS



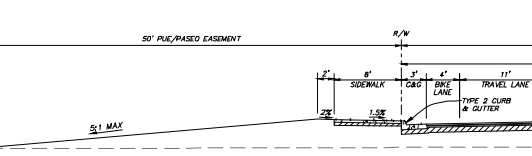
G TYPICAL BRIDGE SECTION
NTS

47.33' TYPICAL BRIDGE SECTION	
STREET	STATIONS
A	40+58 – 44+60
SEE SHEETS 10–14 FOR ROAD STATIONING	

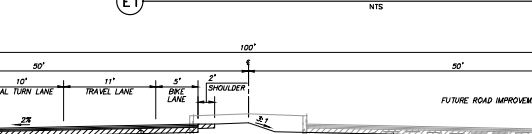


H PHILLIP ROAD
NTS

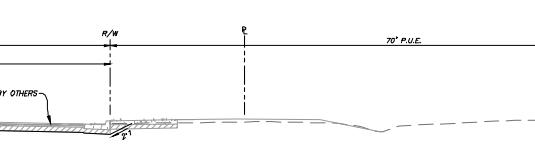
38' TYPICAL STREET SECTION	
STREET	STATIONS
PHILLIP ROAD	10+81 – 35+19
SEE SHEETS 10–14 FOR ROAD STATIONING	



I RESIDENTIAL PROPERTY LINE SECTION
ADJACENT TO LOWER EXISTING BUILDING PAD
NTS



J RESIDENTIAL PROPERTY LINE SECTION
ADJACENT TO HIGHER EXISTING BUILDING PAD
NTS



K TYPICAL ON–SITE RESIDENTIAL PROPERTY LINE SECTION
NTS

CROSS SECTIONS

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN,
CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

LM LAUGENOUR AND MEIKLE
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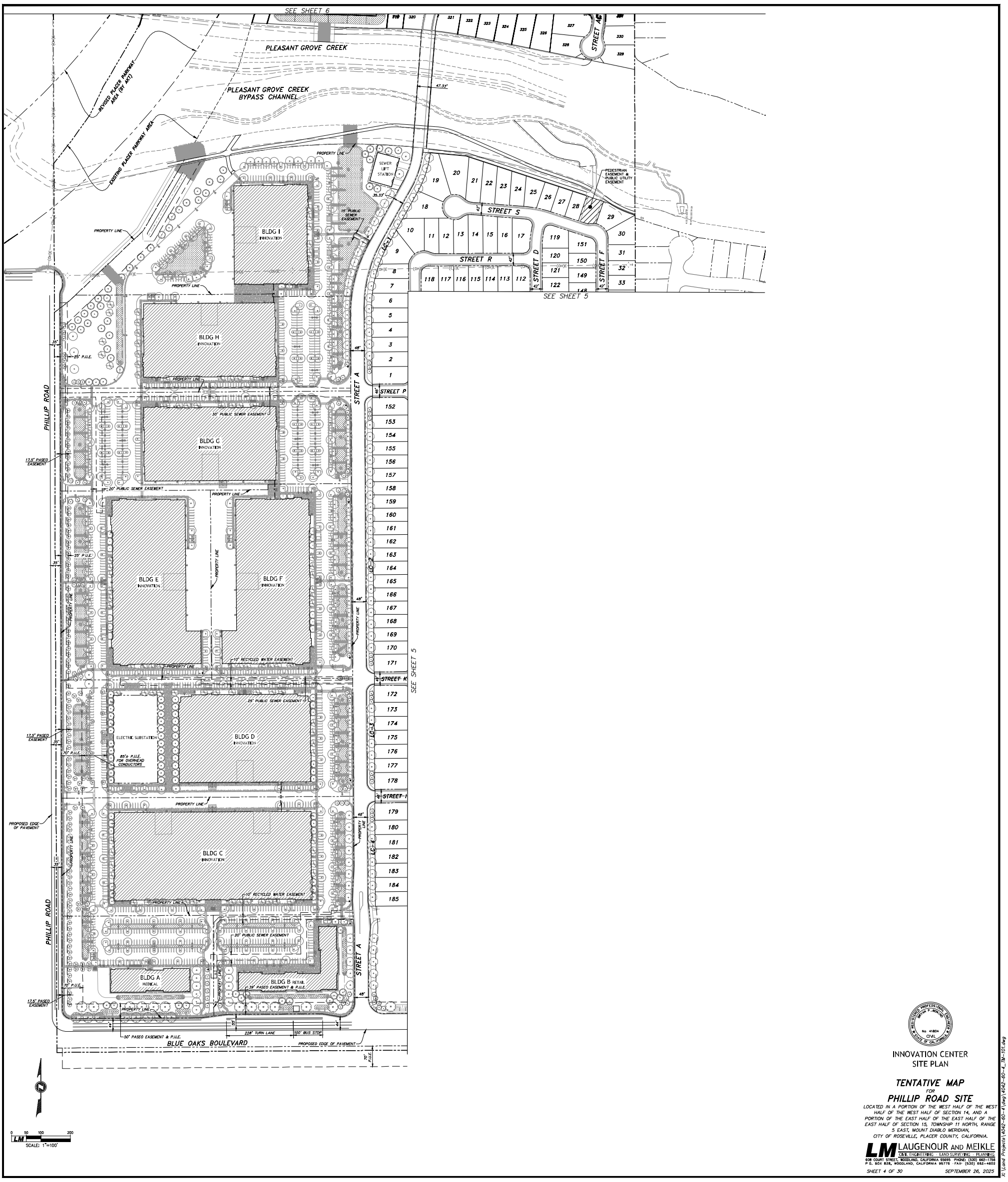
REGISTERED PROFESSIONAL ENGINEER — BRIAN P. BOUND — No. 41804 — CIVIL — STATE OF CALIFORNIA



REGISTERED PROFESSIONAL ENGINEER BRIAN P. MONROE No. 41804 CIVIL STATE OF CALIFORNIA

INNOVATION CENTER SITE PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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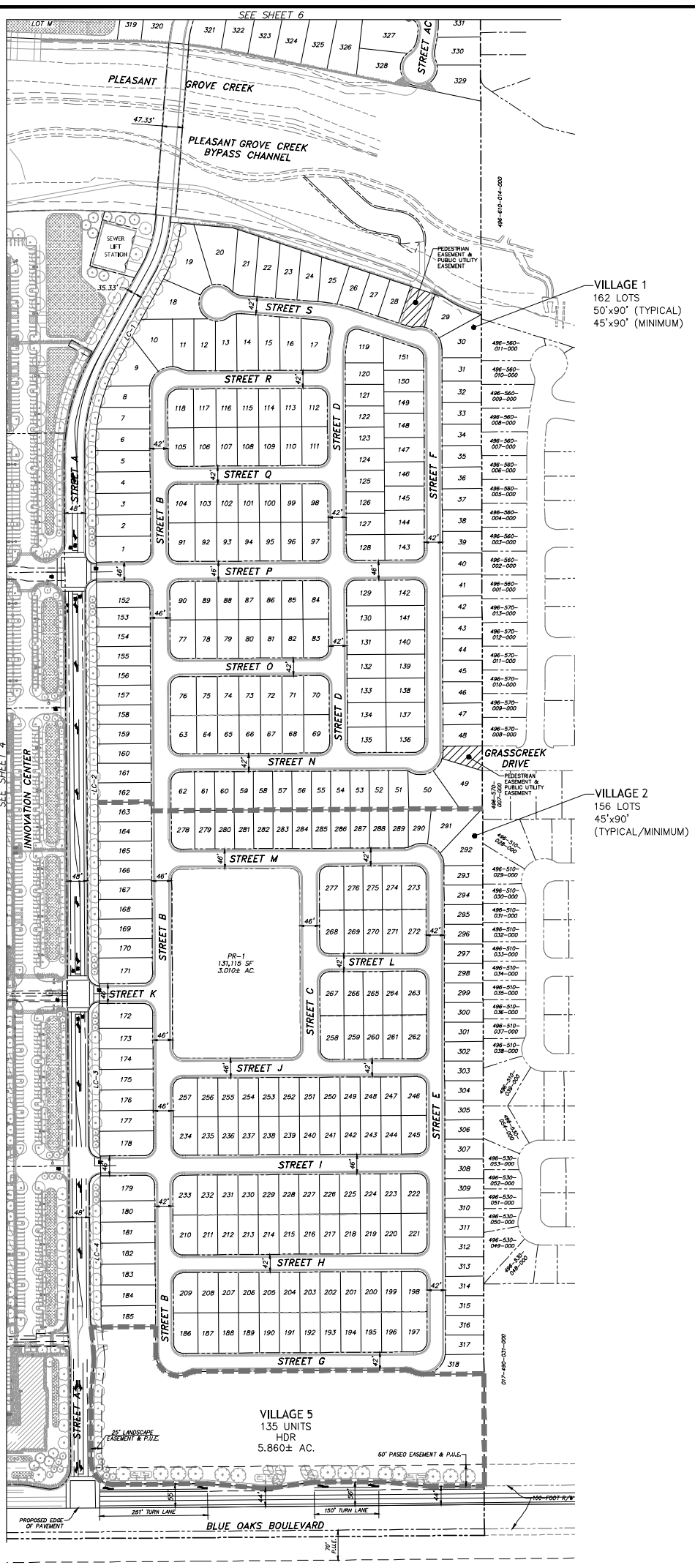

LOT	PROPOSED USE	GENERAL PLAN DESIGNATION	ZONINING	GROSS ACRES±	DWELLING UNITS	DENSITY
LL-11	SANITARY SEWER LIFT STATION	P/QP	P/QP	0.396	–	–
LL-12	VILLAGE 1	LDR	RS/DS	25.598	162	6.33 DU/AC.
LL-13	VILLAGE 2	LDR	RS/DS	23.604	156	6.61 DU/AC.
LL-14	PARK (SOUTH)	PR	PR	3.010	–	–
LL-15	VILLAGE 5	HDR	R3	5.859	135	23.04 DU/AC.
LL-16	PLEASANT GROVE CREEK AND BYPASS CHANNEL	OS	OS	13.878	–	–

Phillip Road Site
Table A
Alternative Development Standards

	RS with attached sidewalk[4(5)]
Area, interior lot	4,050 sq ft
Area, corner lot	4,545 sq ft
Width, interior	45 ft
Width, corner	55 ft
Residential Density	
Maximum number of primary dwelling units per lot	2 dwellings[4(1)]
Maximum number of accessory/junior dwelling units per lot[4(5)]	Up to 2 dwellings
Setbacks (minimum)	
Front[4(3)(6)]	15 ft to living space or side wall of garage; 12.5 ft to porch; 18 ft minimum driveway depth[4(3)]
Sides[4(2)(6)]	5 ft interior; 12.5 ft street side on first floor; 16 ft street side on second floor
Rear[4(1)]	10 ft minimum with minimum usable open space of 700 sq ft or 500 sq ft where a usable front porch is provided[4(2)]
Lot Coverage (primary buildings)	None[4(2)]
Height Limits	35 ft

Notes: (Footnotes below taken from City Ordinance 19.10.030)

(1) Up to two residential units are permitted in the R1 and RS zone districts provided the criteria of Section 19.10.030(G) are met. Residential units may be attached or detached in the R1, RS, or R2 zone districts.

(2) The rear and side yards may be utilized to meet the minimum usable open space provided the minimum dimension, measured perpendicular to the applicable rear or side yard, is 10 feet. Maximum coverage is a function of lot size, required setbacks and usable open space. A minimum usable open space of 500 square feet may be applied where a front porch is provided with minimum dimensions of six feet by 10 feet exclusive of entry way.

(3) Minimum driveway depth of 18 feet requires a roll-up garage door.

(4) Variations to the standards and other housing product types may be permitted subject to processing of a Design Review Permit for Residential Subdivision (DRRS) concurrent with the approval of a tentative subdivision map and review of product type.

(5) A combination of up to two accessory dwelling/junior accessory dwelling units are permitted within areas zoned to allow single-family, two-family or multi-family residential use provided the lot contains an existing or proposed single-family dwelling, two-family or multi-family unit as defined in Sections 19.06.060(F)(1) and (F)(2) (Residential Use Types), the accessory dwelling/junior accessory dwelling unit complies with the standards identified in Chapter 19.60 (Accessory Dwelling Units), and the lot has not been created via a ministerial two- or single-family map or ministerial multi-family map pursuant to Chapter 16.09. See Chapter 19.60 for the maximum number and combination of units allowed per lot. For purposes of density, accessory dwelling units shall be deemed to be an accessory use or an accessory building or structure and shall not be considered to exceed the allowable density for the lot upon which it is located.

(6) From setback (and side setback where adjacent to street) measured from back of walk. Fence side yard setback is five feet from back of walk where facing a street. In the absence of sidewalk, setbacks measured from the edge of right-of-way.

RESIDENTIAL -
VILLAGES 1, 2, AND 5

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN,
CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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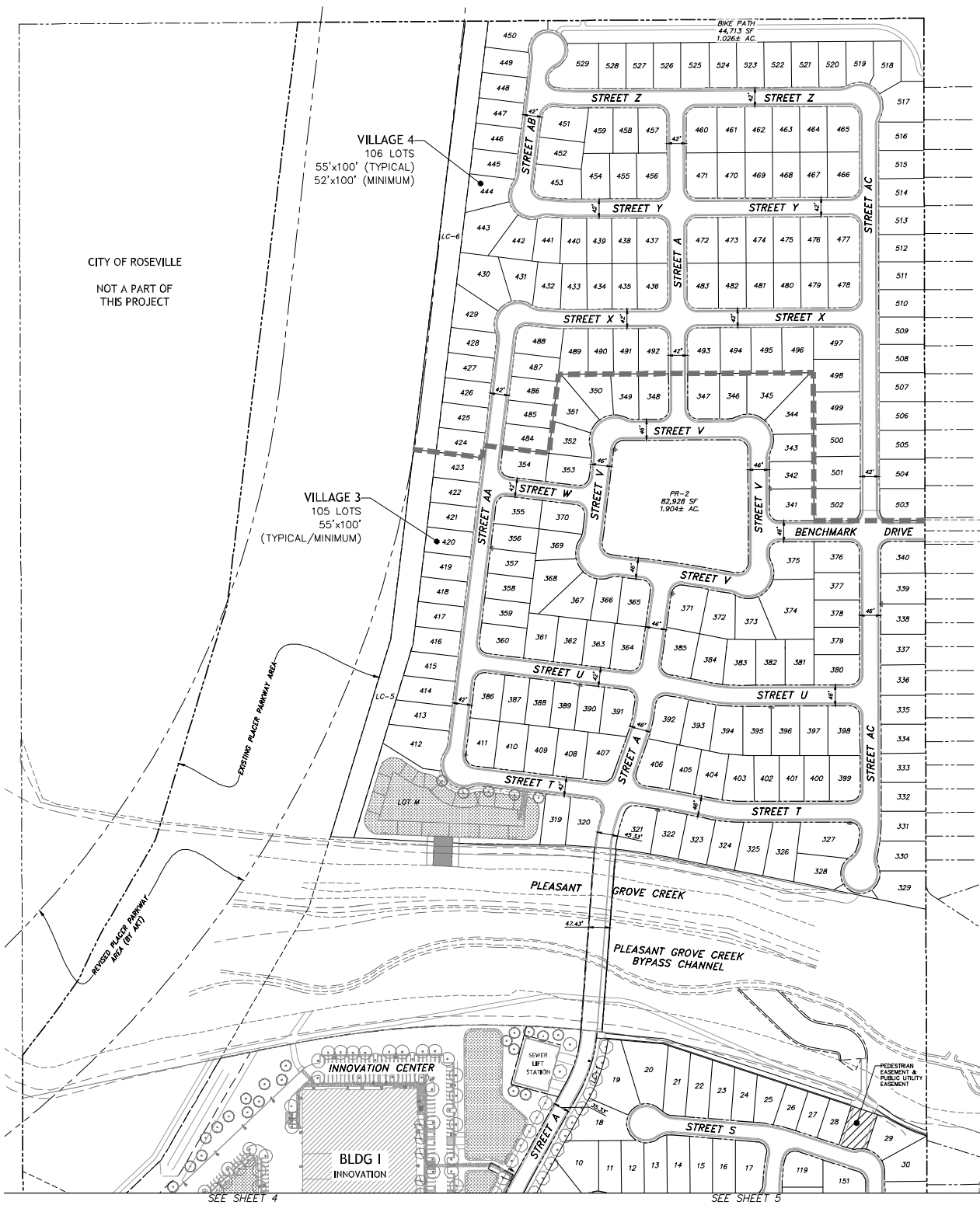

LOT	PROPOSED USE	GENERAL PLAN DESIGNATION	ZONINING	GROSS ACRES±	DWELLING UNITS	DENSITY
LL-16	PLEASANT GROVE CREEK AND BYPASS CHANNEL	OS	OS	13.878	–	–
LL-17	VILLAGE 3	LDR	RS/DS	24.257	105	4.33 DU/AC.
LL-19	PARK (NORTH)	PR	PR	1.904	–	–
LL-20	VILLAGE 4	LDR	RS/DS	20.714	106	5.12 DU/AC.
LL-21	BIKE TRAIL	PR	PR	1.026	–	–

Phillip Road Site
Table A
Alternative Development Standards

	R3 with attached sidewalk[4]
Area, interior lot	4,050 sq ft
Area, corner lot	4,848 sq ft
Width, interior	45 ft
Width, corner	55 ft
Residential Density	
Maximum number of primary dwelling units per lot	2 dwellings[1]
Maximum number of accessory/junior dwelling units per lot[5]	Up to 2 dwellings
Setbacks (minimum)	
Front[1][5]	15 ft to living space or side wall of garage; 12.5 ft to porch; 18 ft minimum driveway depth[3]
Sides[1][5]	5 ft interior 12.5 ft street side on first floor; 15 ft street side on second floor
Rear[1]	10 ft. minimum with minimum usable open space of 700 sq ft or 500 sq ft where a usable front porch is provided[2]
Lot Coverage (primary buildings)	None[2]
Height Limits	35 ft

Notes: (Footnotes below taken from City Ordinance 19.47.030)

(1) Up to two residential units are permitted in the R* and RS zone districts provided the criteria of Section 19.10.030(C) are met. Residential units may be attached or detached in the R1, R5 or R2 zone districts.

(2) The rear and side yards may be utilized to meet the minimum usable open space provided the minimum dimension, measured perpendicular to the applicable rear or side yard, is 10 feet. Maximum coverage is a function of lot size required setbacks and usable open space. A minimum usable open space of 500 square feet may be applied where a front porch is provided with minimum dimensions of six feet by 10 feet exclusive of entry way.

(3) Minimum driveway depth of 18 feet requires a roll-up garage door.

(4) Variations to lot standards and other housing product types may be permitted subject to processing of a Design Review Permit for Residential Subdivision (DRS) concurrent with the approval of a tentative subdivision map and review of product type.

(5) A combination of up to two accessory dwelling/junior accessory dwelling units are permitted within areas zoned to allow single-family, two-family or multi-family residential use provided the lot contains an existing or proposed single-family dwelling, two-family or multi-family unit as defined in sections 19.08.080(F)(1) and (F)(2) (Residential Use Types), the accessory dwelling/junior accessory dwelling unit complies with the standards identified in Chapter 19.80 (Accessory Dwelling Units), and the lot has not been created via a ministerial two-lot single-family map or ministerial multi-family map pursuant to Chapter 19.90. See Chapter 19.80 for the maximum number and combination of units allowed per lot. For purposes of density, accessory dwelling units shall be deemed to be an accessory use or an accessory building or structure and shall not be considered to exceed the allowable density for the lot upon which it is located.

(6) Front setback (and side setback where adjacent to street) measured from back of walk. Fence side yard setback is five feet from back of walk where facing a street. In the absence of sidewalk, setbacks measured from the edge of right-of-way.

0 50 100 200
SCALE: 1"=100'

REGISTERED PROFESSIONAL ENGINEER
GRIFFIN P. MORENO
No. 41804
CIVIL
STATE OF CALIFORNIA

RESIDENTIAL - VILLAGES 3 AND 4

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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 SEPTEMBER 26, 2025

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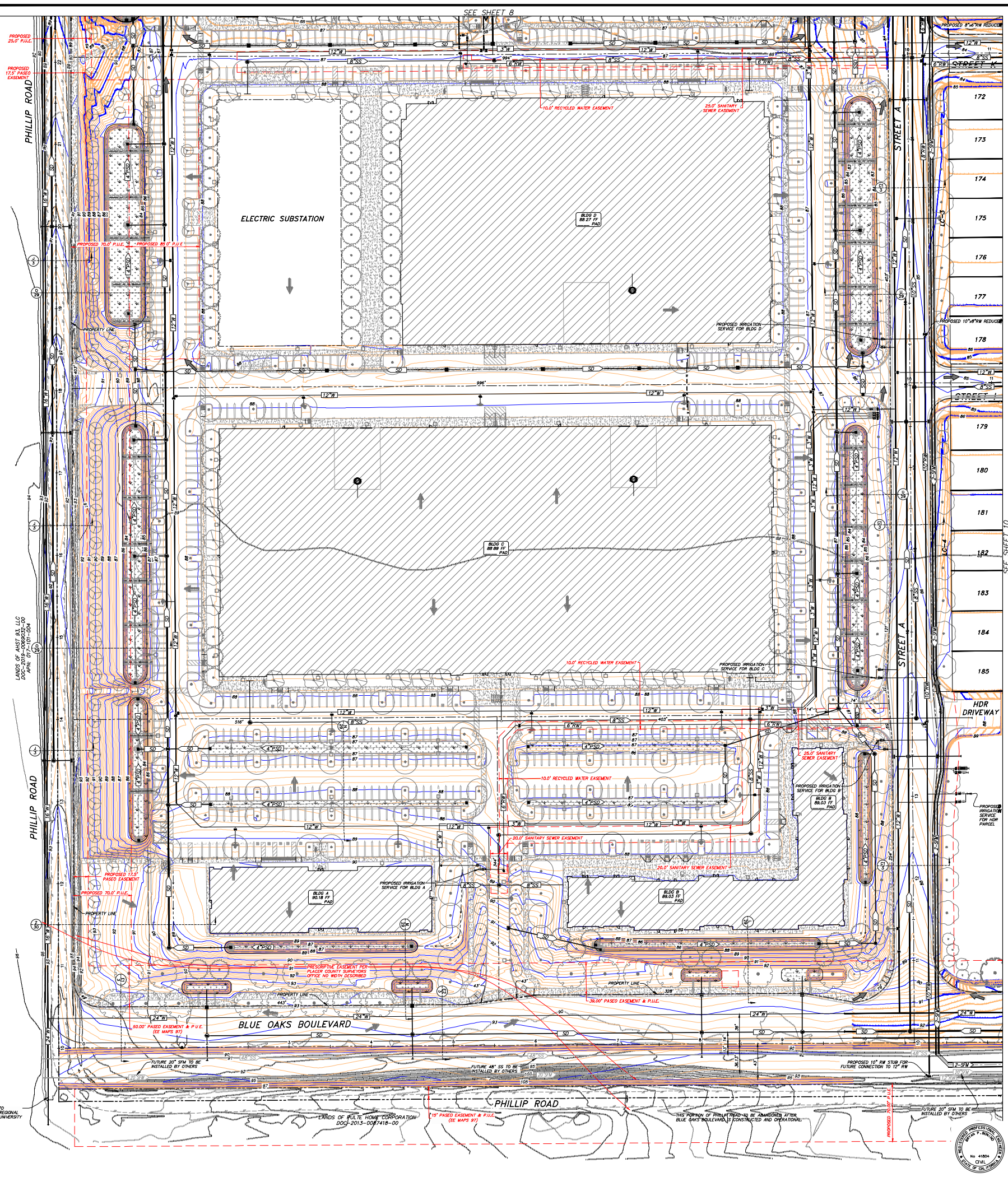

CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN

TENTATIVE MAP

FOR

PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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SEPTEMBER 26, 2025

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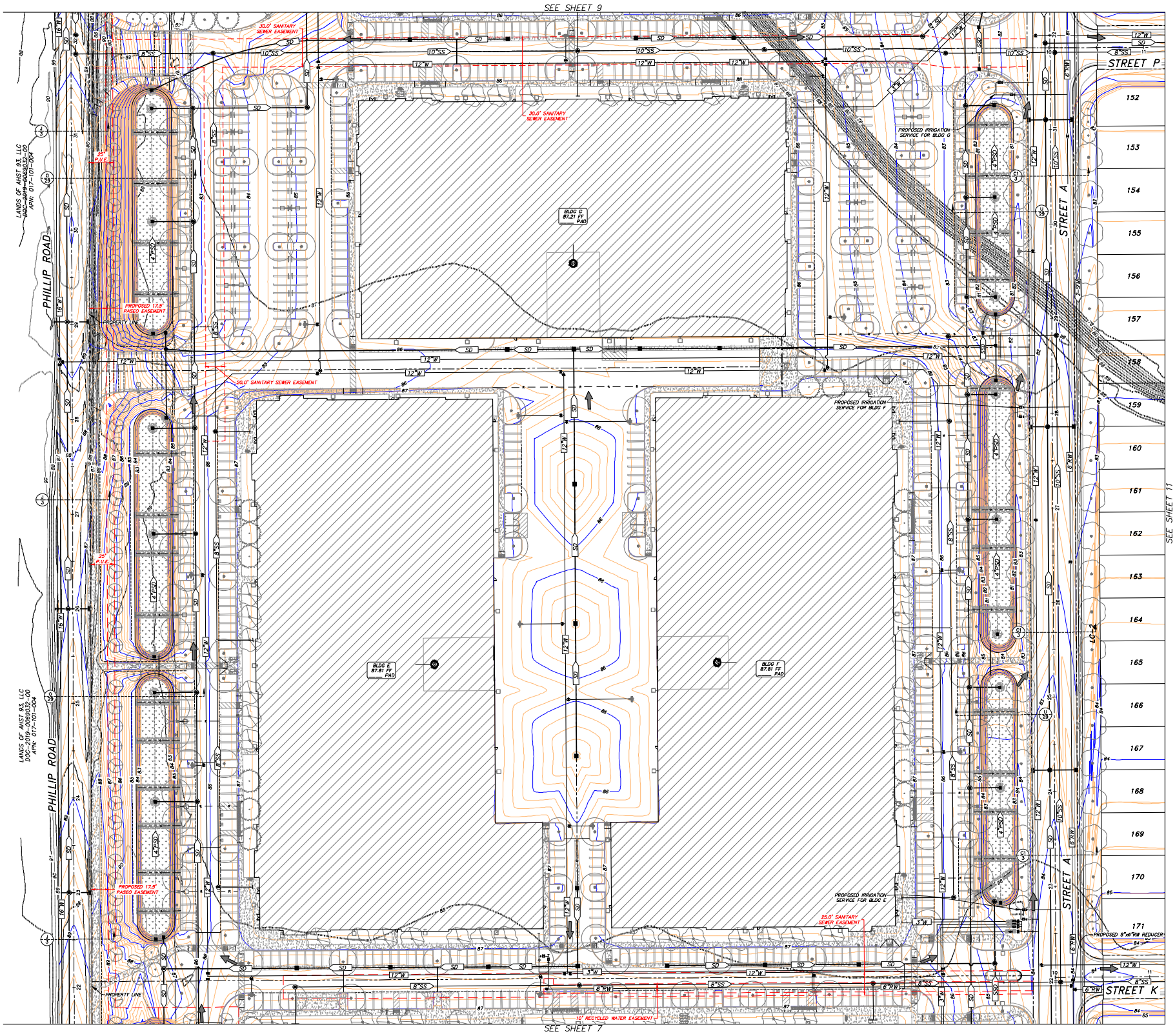

LEGEND

- GENERAL DIRECTION OF RUNOFF
- BIORETENTION
- OVERLAND RELEASE PATH

0 20 40 80
SCALE: 1"=40'

REGISTERED PROFESSIONAL ENGINEER
BRIAN P. ROLLO
No. 41804
CIVIL
STATE OF CALIFORNIA

CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN,
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SHEET 8 OF 30 SEPTEMBER 26, 2025

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PLEASANT GROVE CREEK

POND OVERFLOW

PLEASANT GROVE CREEK BYPASS CHANNEL

EXISTING PLACER PARKWAY AREA

REVISED PLACER PARKWAY AREA (19' AVG)

TREATED STORM WATER DISCHARGE POINT

10' BIKE TRAIL & MAINTENANCE VEHICLE PATH

BIKE TRAIL SHALL BE EXTENDED TO THE APPROVED PLACER PARKWAY ALIGNMENT

NEW MAINTENANCE ACCESS

12' PEDESTRIAN & MAINTENANCE VEHICLE PATH TO BIKE TRAIL

PROPERTY LINE

SEWER LIFT STATION

SEE SHEET 12

MIN. 15' WIDE MAINTENANCE ACCESS TO BIORETENTION BASIN WITH 4:1 MAX. SLOPE

BLDG I 86.75 FF PAD

PROPOSED IRRIGATION SERVICE FOR BLDG I

15' SANITARY SEWER EASEMENT

BLDG H 86.75 FF PAD

PROPOSED IRRIGATION SERVICE FOR BLDG H

TO ROSEVILLE CITY OPS

50' LANDSCAPE BUFFER

PROPOSED 17.5' PASED EASEMENT

25' P.U.E.

30.0' SANITARY SEWER EASEMENT

PHILLIP ROAD

STREET A

STREET P

LANDS OF AHST 93, LLC
DOC-2019-0080632-00
APN: 017-150-004

SEE SHEET 8

LEGEND

GENERAL DIRECTION OF RUNOFF

BIORETENTION

OVERLAND RELEASE PATH

SCALE: 1"=40'

REGISTERED PROFESSIONAL ENGINEER
BRYAN P. BONINO
No. 41804
CIVIL
STATE OF CALIFORNIA

CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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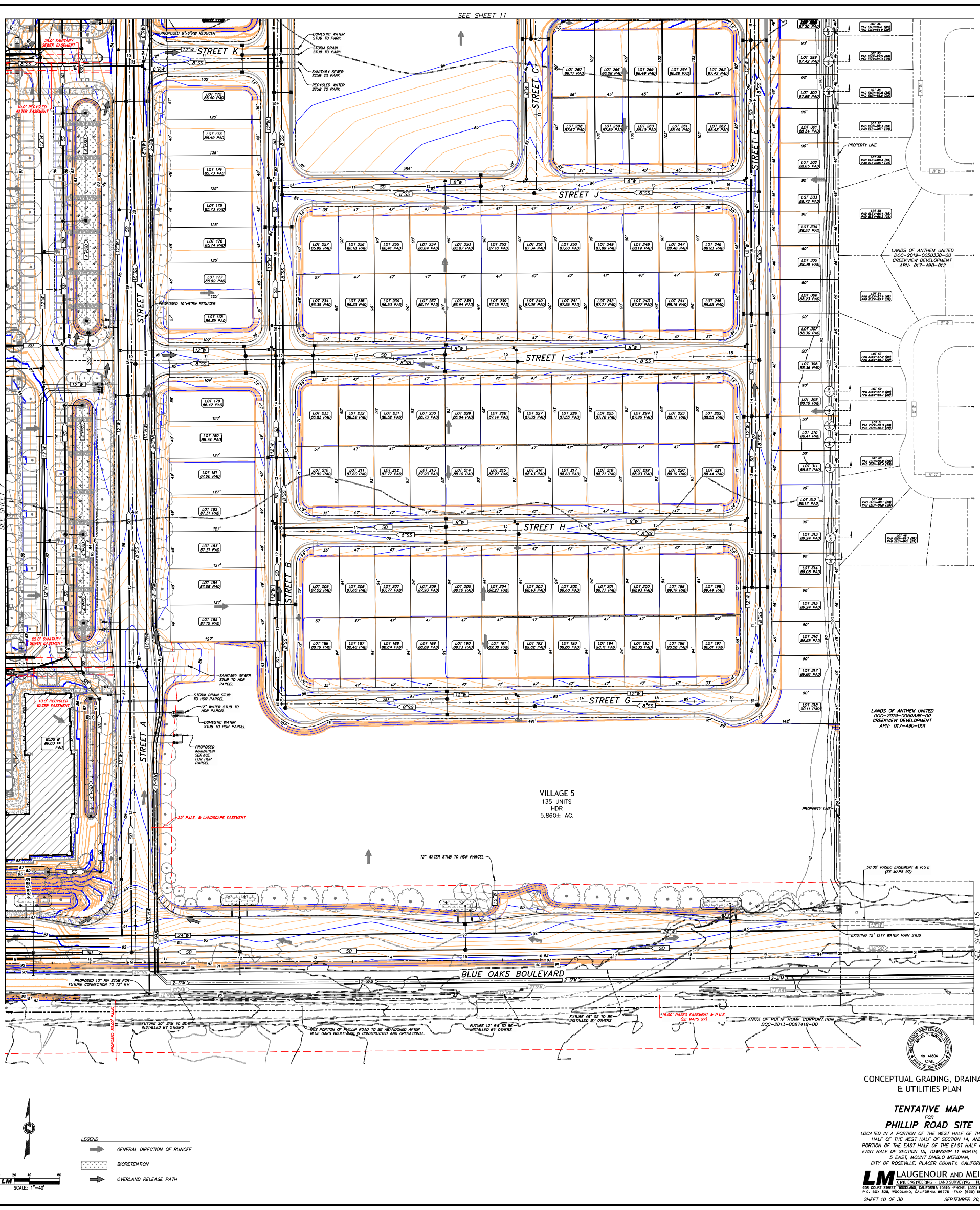

CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN

TENTATIVE MAP

FOR

PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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REGISTERED PROFESSIONAL ENGINEER BRIAN P. BOSWORTH No. 41804 CIVIL STATE OF CALIFORNIA

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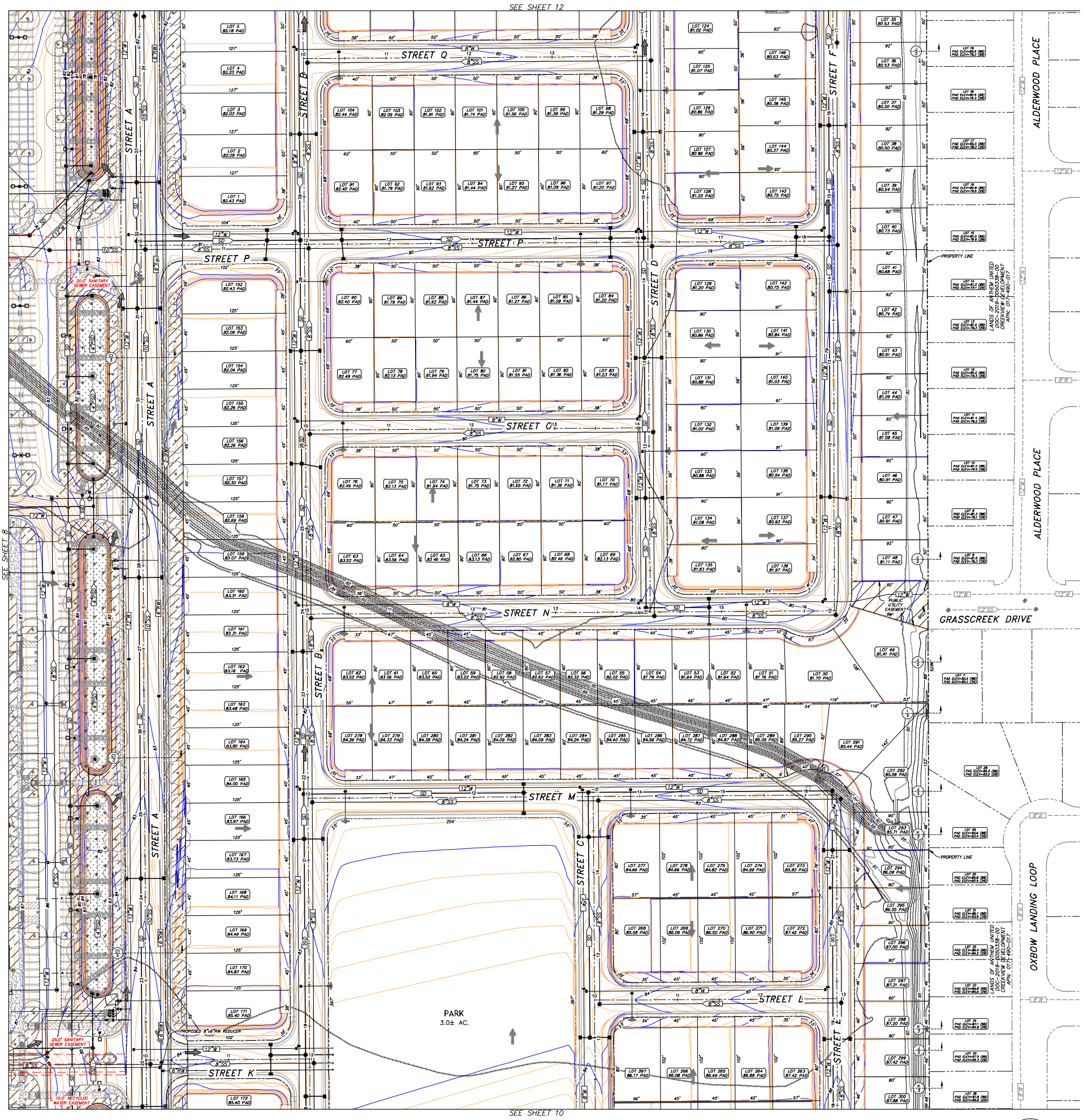

REGISTERED PROFESSIONAL ENGINEER BRIAN P. BOUND No. 41804 CIVIL STATE OF CALIFORNIA

CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN,
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SEPTEMBER 26, 2025

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SEE SHEET 13

SEE SHEET 9

SEE SHEET 11

PLEASANT GROVE CREEK

PLEASANT GROVE CREEK BYPASS CHANNEL

STREET A

STREET B

STREET D

STREET F

STREET Q

STREET R

STREET S

ALDERWOOD PLACE

SEWER LIFT STATION

POND OVERFLOW

TREATED STORM WATER DISCHARGE POINT

FUTURE BRIDGE OVER CREEK

10' BIKE TRAIL & MAINTENANCE VEHICLE PATH

10' BIKE TRAIL & MAINTENANCE VEHICLE PATH UNDER FUTURE BRIDGE SHALL BE ABOVE THE 2-YEAR WATER SURFACE ELEVATION

BOLLARDS TO BE INSTALLED TO LIMIT ACCESS

TREATED STORM DRAIN DISCHARGE POINT

HATCHING DENOTES PUBLIC UTILITY EASEMENT

CONNECT PROPOSED BIKE TRAIL & MAINTENANCE VEHICLE PATH TO EXISTING PAVED PATH

50.00' BIKE PATH EASEMENT (EE MAPS 97)

MIN. 15' WIDE MAINTENANCE ACCESS TO BIORETENTION BASIN WITH 4:1 MAX. SLOPE

15.0' SANITARY SEWER EASEMENT

PROPERTY LINE

LANDS OF ANTHEM UNITED DOC-2019-0050338-00 CREEKVIEW 2E RELOCATION DOC-2017-0127-00

LOT 319 83.91 PAD
LOT 320 84.35 PAD
LOT 321 84.62 PAD
LOT 322 84.86 PAD
LOT 323 85.08 PAD
LOT 324 85.30 PAD
LOT 325 85.52 PAD
LOT 326 85.73 PAD
LOT 327 86.70 PAD
LOT 328 87.03 PAD
LOT 329 87.00 PAD
LOT 330 86.76 PAD
LOT 331 86.43 PAD
LOT 1 82.23 PAD
LOT 2 82.18 PAD
LOT 3 82.23 PAD
LOT 4 82.23 PAD
LOT 5 82.18 PAD
LOT 6 81.96 PAD
LOT 7 81.89 PAD
LOT 8 82.08 PAD
LOT 9 82.25 PAD
LOT 10 82.36 PAD
LOT 11 82.35 PAD
LOT 12 82.11 PAD
LOT 13 81.93 PAD
LOT 14 81.78 PAD
LOT 15 81.58 PAD
LOT 16 81.41 PAD
LOT 17 81.23 PAD
LOT 18 82.94 PAD
LOT 19 82.75 PAD
LOT 20 82.25 PAD
LOT 21 81.60 PAD
LOT 22 81.16 PAD
LOT 23 80.98 PAD
LOT 24 80.81 PAD
LOT 25 80.82 PAD
LOT 26 80.94 PAD
LOT 27 80.81 PAD
LOT 28 80.61 PAD
LOT 29 80.54 PAD
LOT 30 80.50 PAD
LOT 31 80.50 PAD
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LOT 35 80.53 PAD
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LOT 122 80.79 PAD
LOT 123 80.79 PAD
LOT 124 81.02 PAD
LOT 125 81.07 PAD
LOT 126
LOT 145 80.38 PAD
LOT 146 80.53 PAD
LOT 147 80.50 PAD
LOT 148 80.50 PAD
LOT 149 80.50 PAD
LOT 150 80.50 PAD
LOT 151 80.72 PAD

LEGEND

GENERAL DIRECTION OF RUNOFF

BIORETENTION

OVERLAND RELEASE PATH

SCALE: 1"=40'

EMERGENCY STORAGE VAULT FOR PHILLIP ROAD SITE
REQUIRED STORAGE VOLUME FOR 4 HR = 215,367 GAL

EMERGENCY STORAGE VAULT
(72'X38'X13' DEEP**) = 225,118 GAL
** ASSUMES 13' DEEP STRUCTURE BUT ONLY UTILIZING 11' DEPTH FOR STORAGE (1 FOOT FOR FREEBOARD TO TOP OF STRUCTURE AND 1 FOOT FOR SLOPE OF BOTTOM OF CONCRETE STRUCTURE)

EMERGENCY STORAGE VAULT = 225,118 GAL > 215,367 GAL

REGISTERED PROFESSIONAL ENGINEER
BRYAN P. MONTES
No. 41804
CIVIL
STATE OF CALIFORNIA

CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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SEPTEMBER 26, 2025

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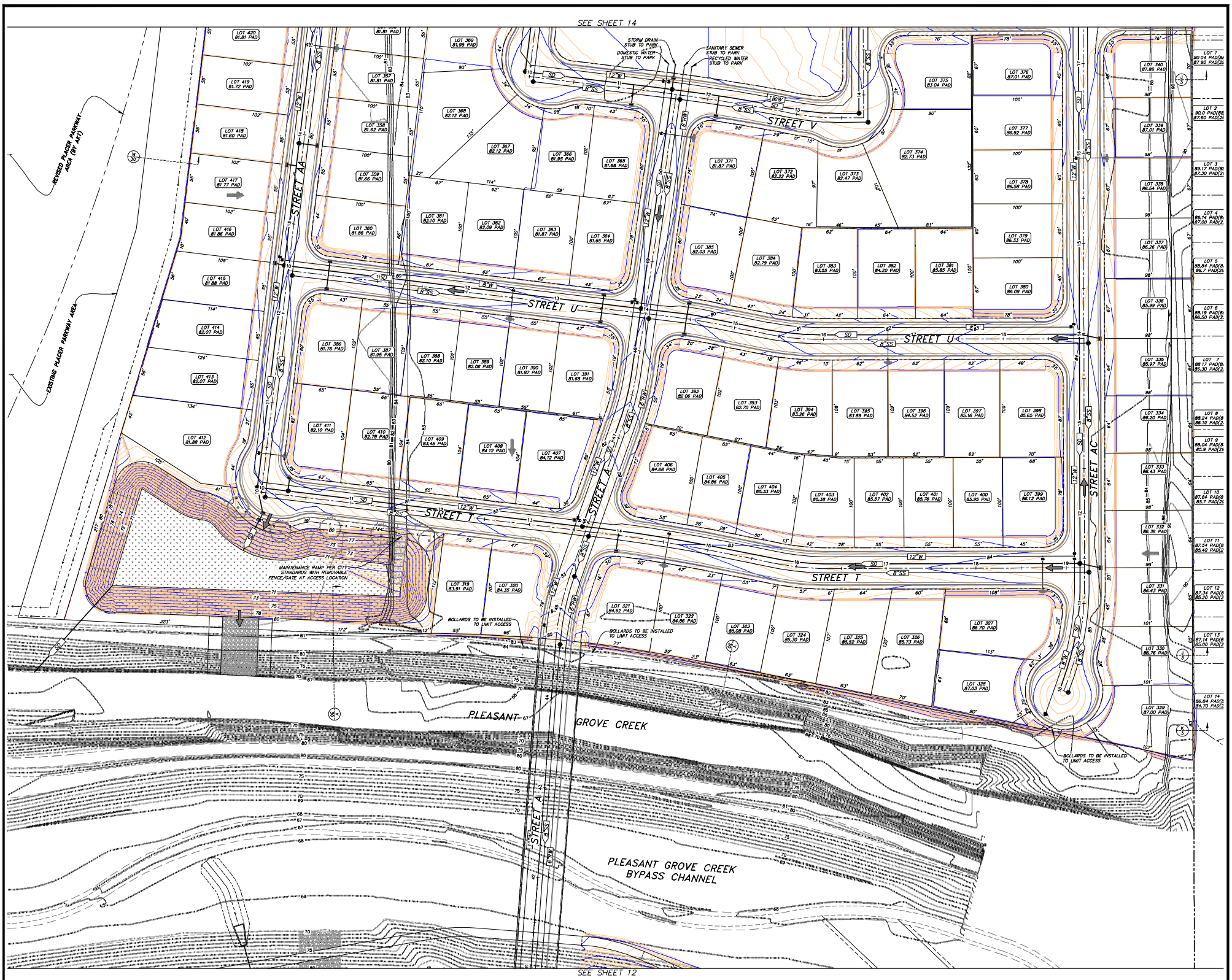
SEE SHEET 14



SEE SHEET 12

LEGEND

- GENERAL DIRECTION OF RUNOFF
- BIORETENTION
- OVERLAND RELEASE PATH

0 20 40 80
SCALE: 1"=40'

CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN,
CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

REGISTERED PROFESSIONAL ENGINEER
GRIFFIN P. MONROE
No. 41804
CIVIL
STATE OF CALIFORNIA

LM LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
608 COURT STREET, WOODLAND, CALIFORNIA 95695 PHONE: (530) 662-1755
P.O. BOX 828, WOODLAND, CALIFORNIA 95776 FAX: (530) 662-4602

SEPTEMBER 26, 2025

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CONCEPTUAL GRADING, DRAINAGE, & UTILITIES PLAN

TENTATIVE MAP

FOR

PHILLIP ROAD SITE

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SEPTEMBER 26, 2025

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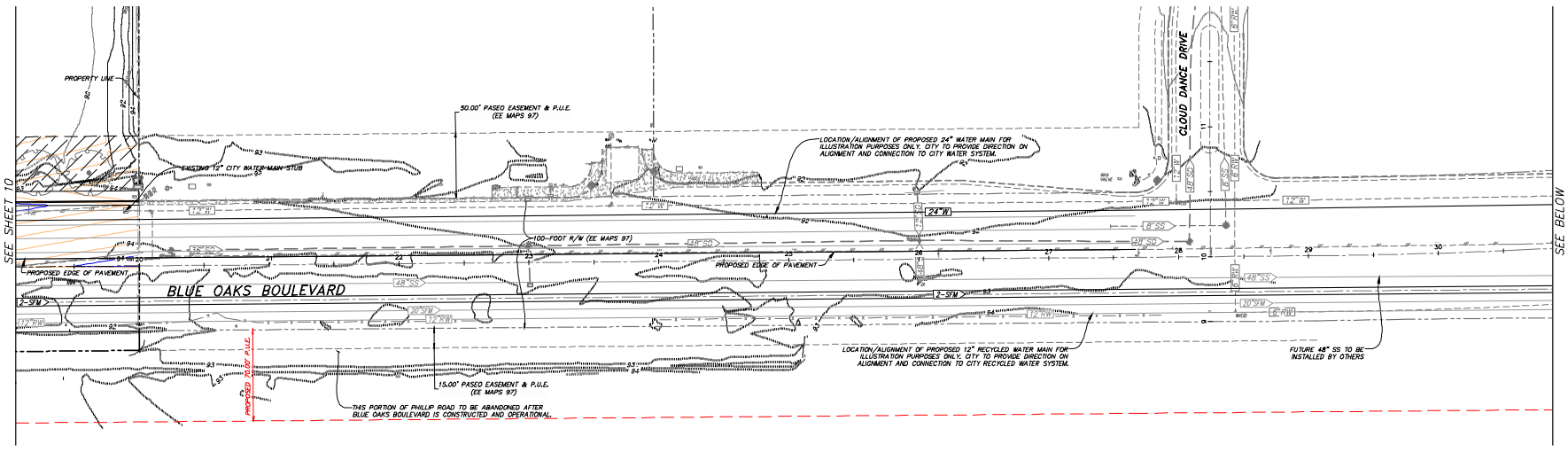

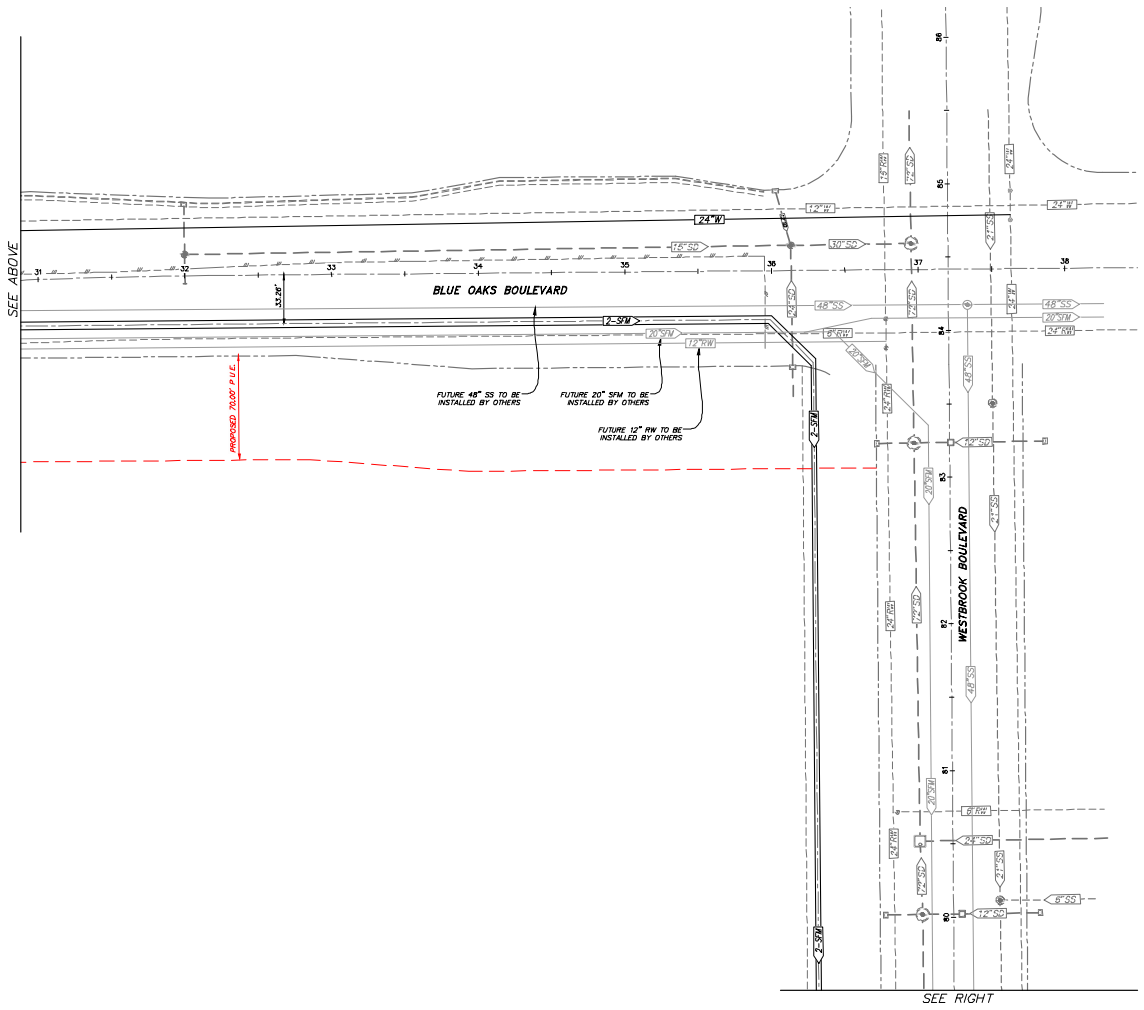

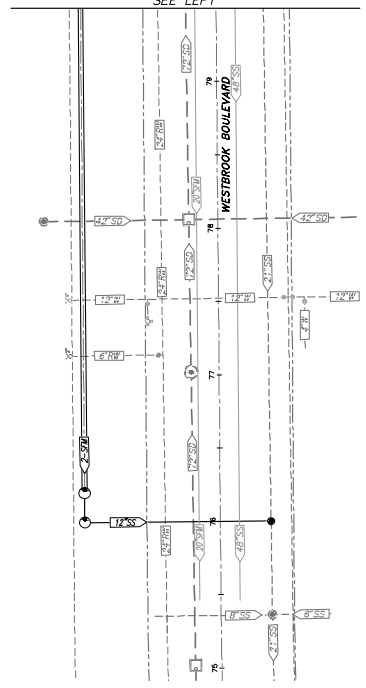

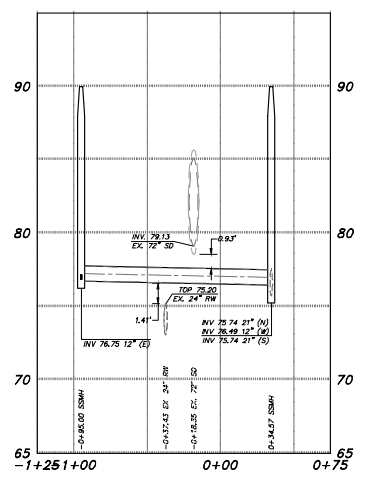

SEWER CROSSING
(A) @ STA. 76+00±
H: 1"=40'; V: 1"=4'

SCALE: 1"=40'

REGISTERED PROFESSIONAL ENGINEER
GRETA P. ROLLO
No. 41804
CIVIL
STATE OF CALIFORNIA

CONCEPTUAL GRADING DRAINAGE & UTILITIES PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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SEPTEMBER 26, 2025

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STORMWATER CONTROL PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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SHEET 16 OF 30 SEPTEMBER 26, 2025

SCALE: 1"=100'

0 50 100 200

TREE PLANTING AND PRESERVATION SITE DESIGN MEASURES PROVIDE RUNOFF REDUCTION FOR DMA'S ALONG BLUE OAKS BOULEVARD

BLUE OAKS BOULEVARD

VILLAGE 5
135 UNITS
MDR
5.90± AC.

LOT PR-1
PARK
3.0± AC.

DMA SR 1&2
37.02± AC
2,432,841 SF

DMA SR2 REPRESENTS IMPERVIOUSNESS IN PUBLIC RIGHT OF WAY, APPROX. 12± ACRES. DMA SR1 REPRESENTS PRIVATE PROPERTY IMPERVIOUSNESS ESTIMATED BY OVERALL LAND USES SHALL BE REDUCED BY END OF PIPE MITIGATION. SR2 TREATED FOR VARIOUS IMPERVIOUSNESS ASSUMED. SR1 ALSO REPRESENTS IMPERVIOUSNESS DISCONNECTED BY DISCONNECTED IMPERVIOUSNESS.

INNOVATION CENTER

STREET A

GRASSCREEK DRIVE

IMPERVIOUSNESS HARD FROM PHASE 4H RESIDENTIAL AREAS DISCONNECTED

DISC SR 01
35,799 CU FT

PLEASANT GROVE CREEK BYPASS CHANNEL

PLEASANT GROVE CREEK

OUTLET SR 1
SOUTHERN RESIDENTIAL

OUTLET NR1
NORTHERN RESIDENTIAL

OUTLET PH1
PHILLIP ROAD

OUTLET INNOVATION CENTER

VEGETATED SWALE TREATS PHILLIP ROAD PROPOSED AND FUTURE

EXISTING PLACER PARKWAY AREA

PROPOSED PLACER PARKWAY AREA (BY AKT)

VEGETATED SWALE TREATS PHILLIP ROAD AND FUTURE PROPOSED PLACER PARKWAY AREA

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SCALE: 1"=100'

0 50 100 200

SHEET 17 OF 30 SEPTEMBER 26, 2025

LM LAUGENOUR AND MEIKLE
CIVIL ENGINEERING - LAND SURVEYING - PLANNING
608 COURT STREET, WOODLAND, CALIFORNIA 95695 PHONE: (530) 662-1760
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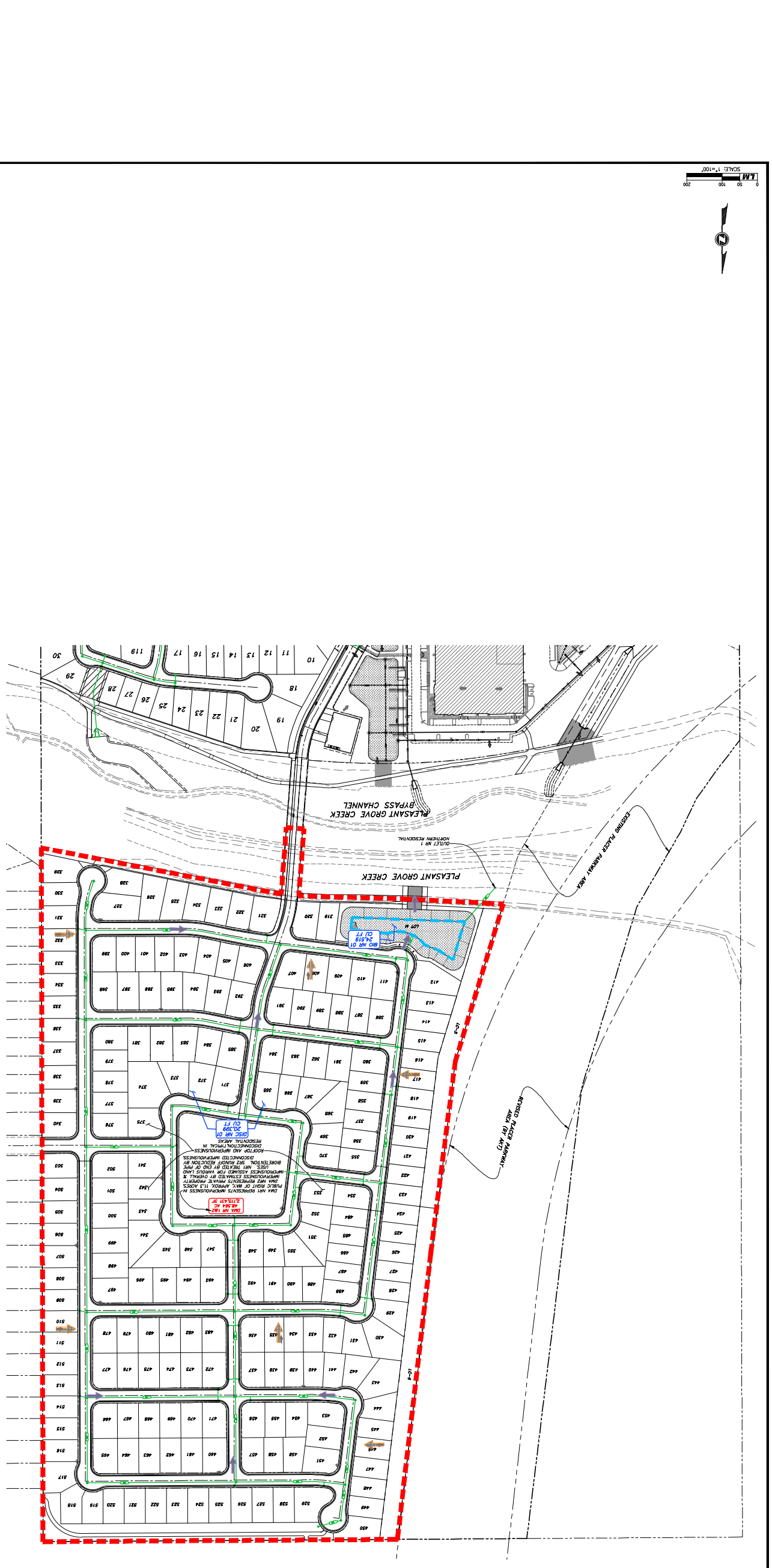
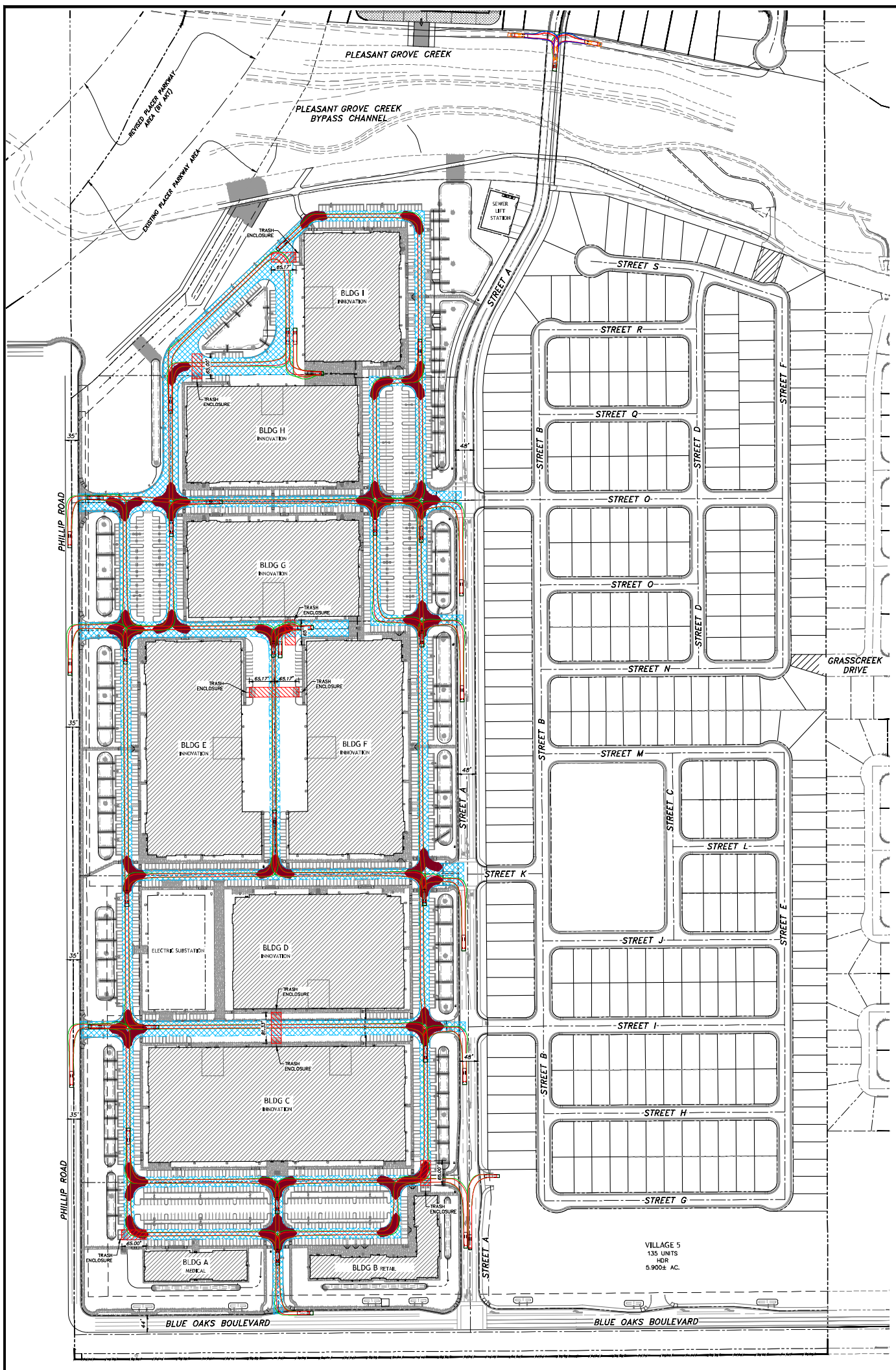
STORMWATER CONTROL PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE SOUTHWEST QUARTER OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

PROFESSIONAL ENGINEER BRIAN P. ROLLINS No. 41804 CIVIL STATE OF CALIFORNIA





GENERAL NOTES:

A. FIRE LANES SHALL BE A MINIMUM OF 20 FEET CLEAR WIDTH AND 13 ½ FEET CLEAR HEIGHT.

B. SEE SHEETS C401–C413 FOR WATER MAIN, FIRE MAIN, APPURTENANCES, WATER CONNECTIONS, AND CONSTRUCTION SPECIFICATIONS.

C. FINAL FIRE ACCESS LANE AFTER CONSTRUCTION.

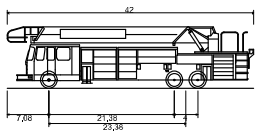
D. NO GATES SHALL BE INSTALLED ACROSS THE PROPOSED FIRE ACCESS LANES WITHIN THE LIMITS OF PROJECT IMPROVEMENTS.

E. CURBS ALONG FIRE LANE SHALL BE PAINTED RED, TYPICAL. (▬▬▬▬)

F. ALL TRASH ENCLOSURES SHALL HAVE A CLEAR 65' APPROACH.

0 50 100 200
SCALE: 1"=100'

1 MINIMUM TURNING RADIUS IN FIRE LANE (30' INSIDE & 50' OUTSIDE)
NTS



Overall Length	42.000ft
Overall Width	10.000ft
Overall Body Height	10.495ft
Min Body Ground Clearance	0.925ft
Track Width	8.360ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	41.20°

2 DESIGN VEHICLE
NTS

REGISTERED PROFESSIONAL ENGINEER BRYAN P. BONDO No 41804 CIVIL STATE OF CALIFORNIA

FIRE & GARBAGE ACCESS PLAN
TENTATIVE MAP
FOR
PHILLIP ROAD SITE

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SEPTEMBER 26, 2025

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PROFILE GRADE

NO SCALE

ELEVATION

1" = 40'

* 200 YR WATER SURFACE ELEVATION = 78.50'

** 100 YR WATER SURFACE ELEVATION = 77.75'

LEGEND

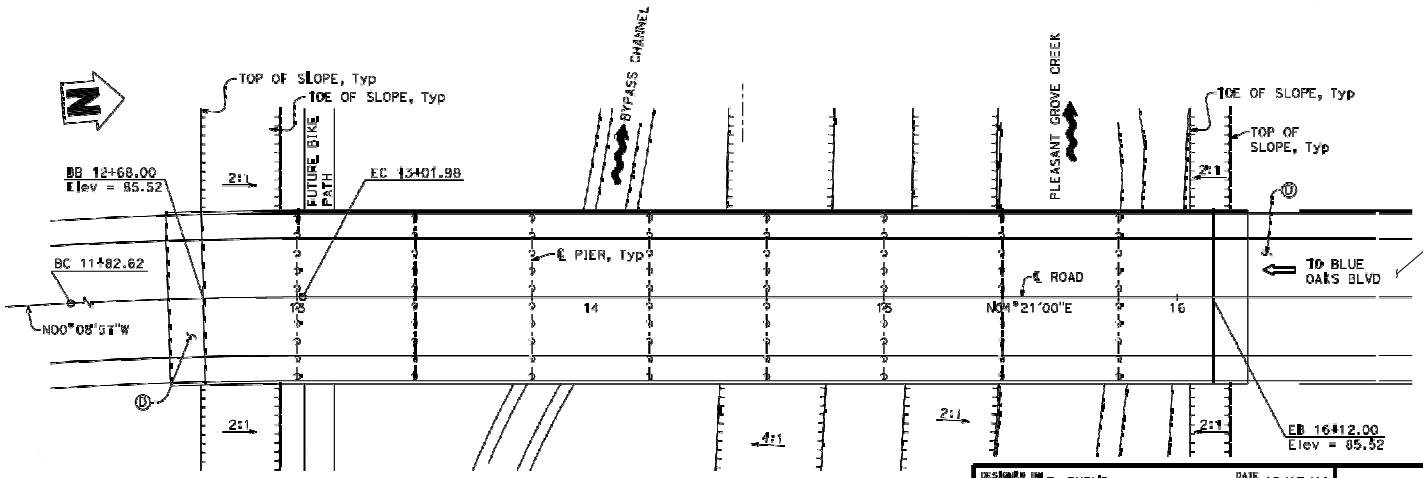
Ⓐ FUTURE 6" RECLAIMER WATER

Ⓑ FUTURE 12" WATER

Ⓒ FUTURE 8" SANITARY SEWER

Ⓓ STRUCTURE APPROACH SLAB TYPE N (30)

Ⓔ FUTURE 2-6" CONDUITS FOR ROSEVILLE ELECTRIC



PLAN

1" = 20'

DESIGNED BY R. BURNS	DATE 12/17/21
DRAWN BY K. DANG	DATE 12/17/21
DOKKEN ENGINEERING 110 BLUE RAVINE ROAD, SUITE 200 FOLSOM, CA 95630	**GENERAL PLAN**
	PLEASANT GROVE CREEK AND BYPASS BRIDGE

REGISTERED PROFESSIONAL ENGINEER BRIAN P. BOILARD No 41804 CIVIL STATE OF CALIFORNIA

PRELIMINARY BRIDGE DESIGN

TENTATIVE MAP

FOR

PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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 SEPTEMBER 26, 2025

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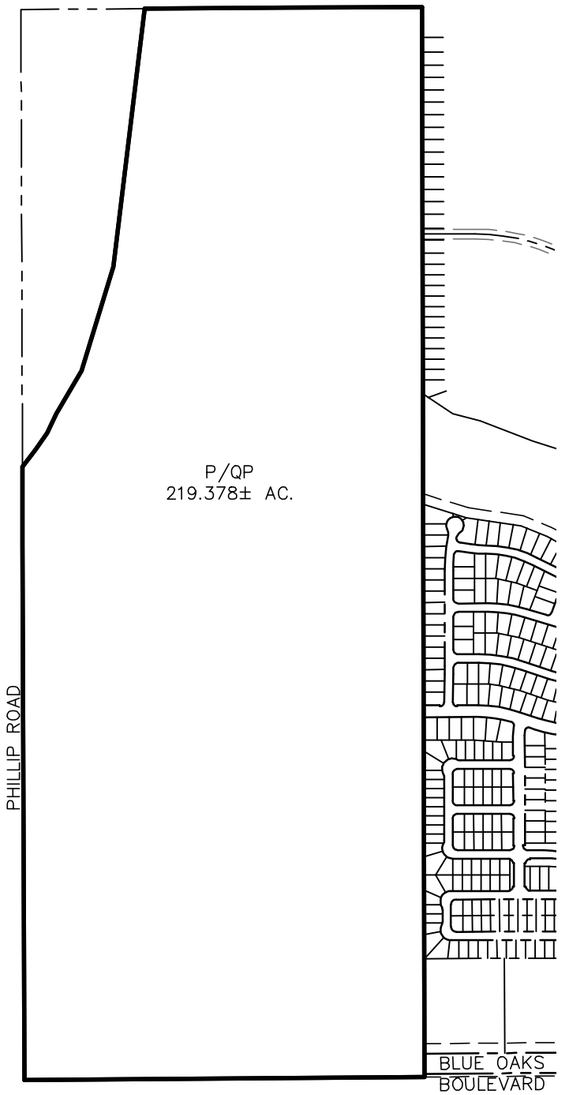
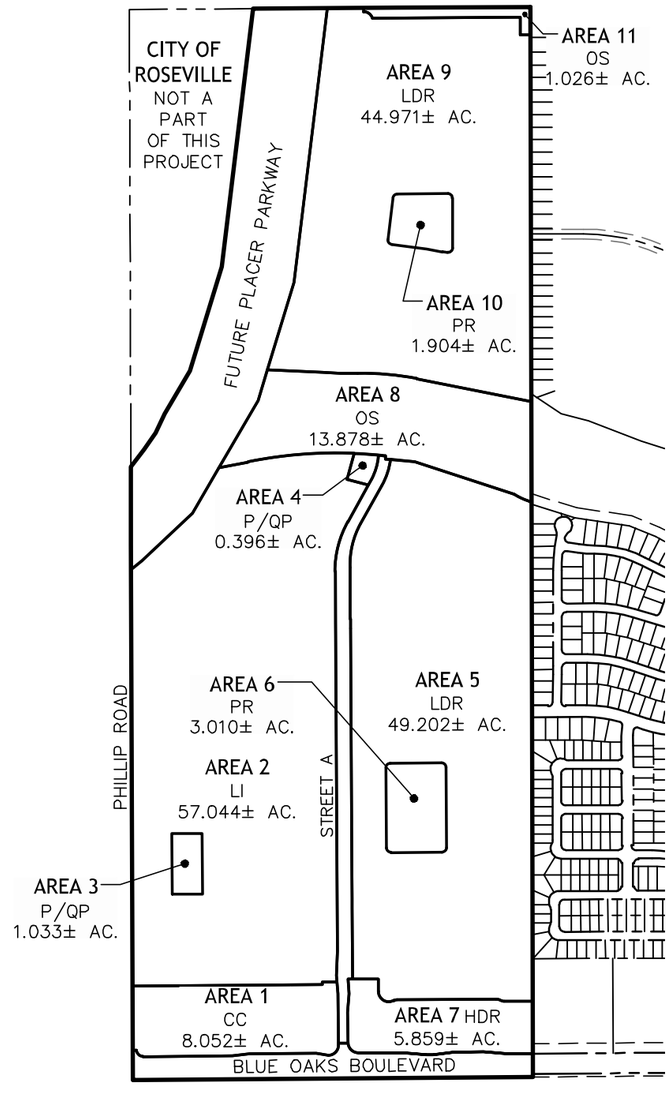


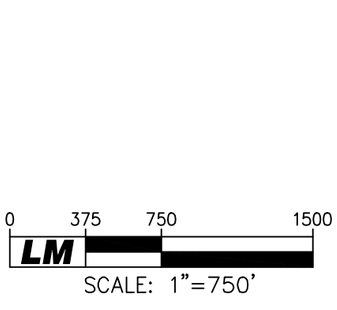
EXISTING LAND USE

EXISTING LAND USE		
AREA	LAND USE	ACRES
TOTAL	P/QP	219.38



PROPOSED LAND USE

PROPOSED LAND USE				
AREA	GENERAL PLAN DESIGNATION	GROSS ACRES±	DWELLING UNITS	DENSITY
1	CC	8.052	–	–
2	LI	57.044	–	–
3	P/QP	1.033	–	–
4	P/QP	0.396	–	–
5	LDR	49.202	318	6.46 DU/AC.
6	PR	3.010	–	–
7	HDR	5.859	135	23.04 DU/AC.
8	OS	13.878	–	–
9	LDR	44.971	211	4.69 DU/AC.
10	PR	1.904	–	–
11	OS	1.026	–	–
ROW/LC	RIGHT–OF–WAY/ LANDSCAPE CORRIDOR	33.000		
TOTAL		219.38	664	



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GENERAL PLAN AMENDMENT
FOR
PHILLIP ROAD SITE
CITY OF ROSEVILLE, PLACER COUNTY, CA

SHEET 1 OF 1 *SEPTEMBER 26, 2025*

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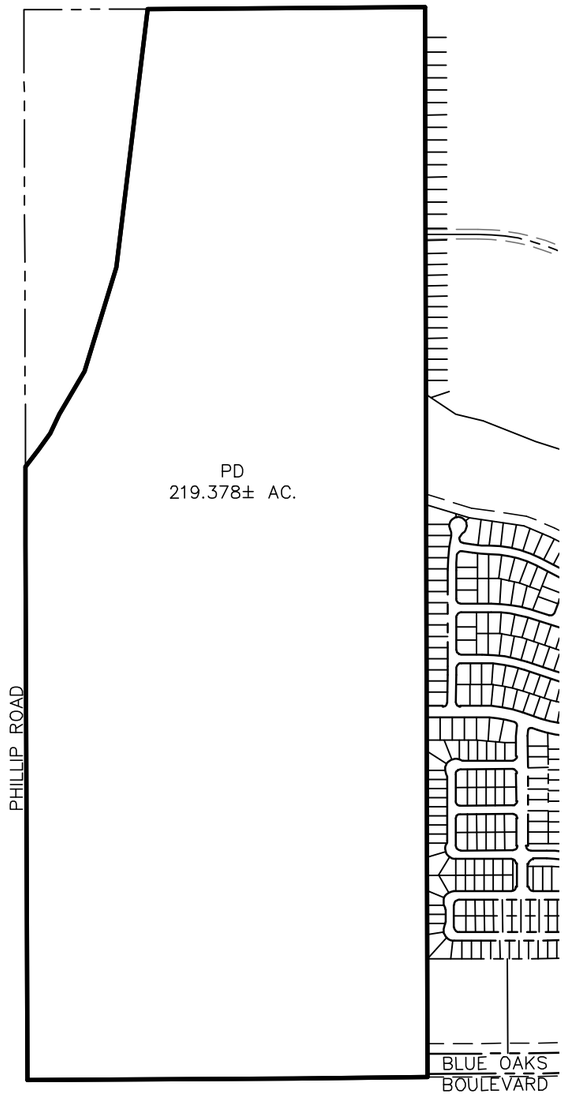
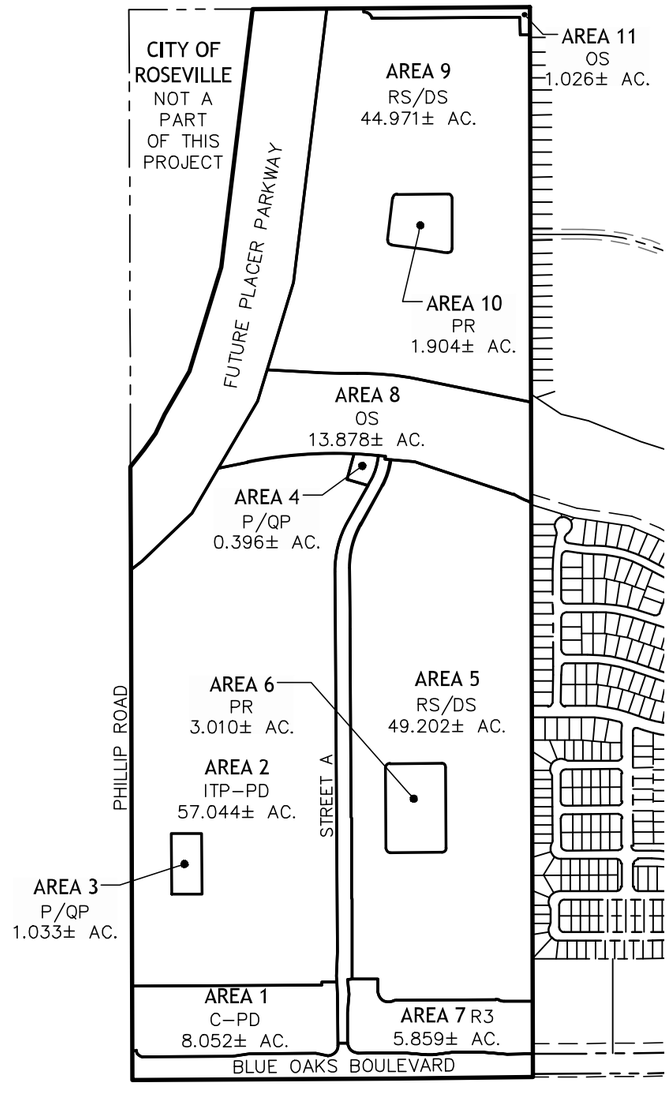


EXISTING LAND USE

EXISTING ZONING		
AREA	ZONING	ACRES
TOTAL	PD	219.38



PROPOSED LAND USE

PROPOSED ZONING				
AREA	ZONING	GROSS ACRES±	DWELLING UNITS	DENSITY
1	C-PD	8.052	–	–
2	ITP-PD	57.044	–	–
3	P/QP	1.033	–	–
4	P/QP	0.396	–	–
5	RS/DS	49.202	318	6.46 DU/AC.
6	PR	3.010	–	–
7	R3	5.859	135	23.04 DU/AC.
8	OS	13.878	–	–
9	RS/DS	44.971	211	4.69 DU/AC.
10	PR	1.904	–	–
11	OS	1.026	–	–
ROW/LC	RIGHT-OF-WAY/ LANDSCAPE CORRIDOR	33.000		
TOTAL		219.38	664	

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0 375 750 1500
SCALE: 1"=750'

REZONING EXHIBIT
FOR
PHILLIP ROAD SITE
CITY OF ROSEVILLE, PLACER COUNTY, CA

SHEET 1 OF 1 *SEPTEMBER 26, 2025*

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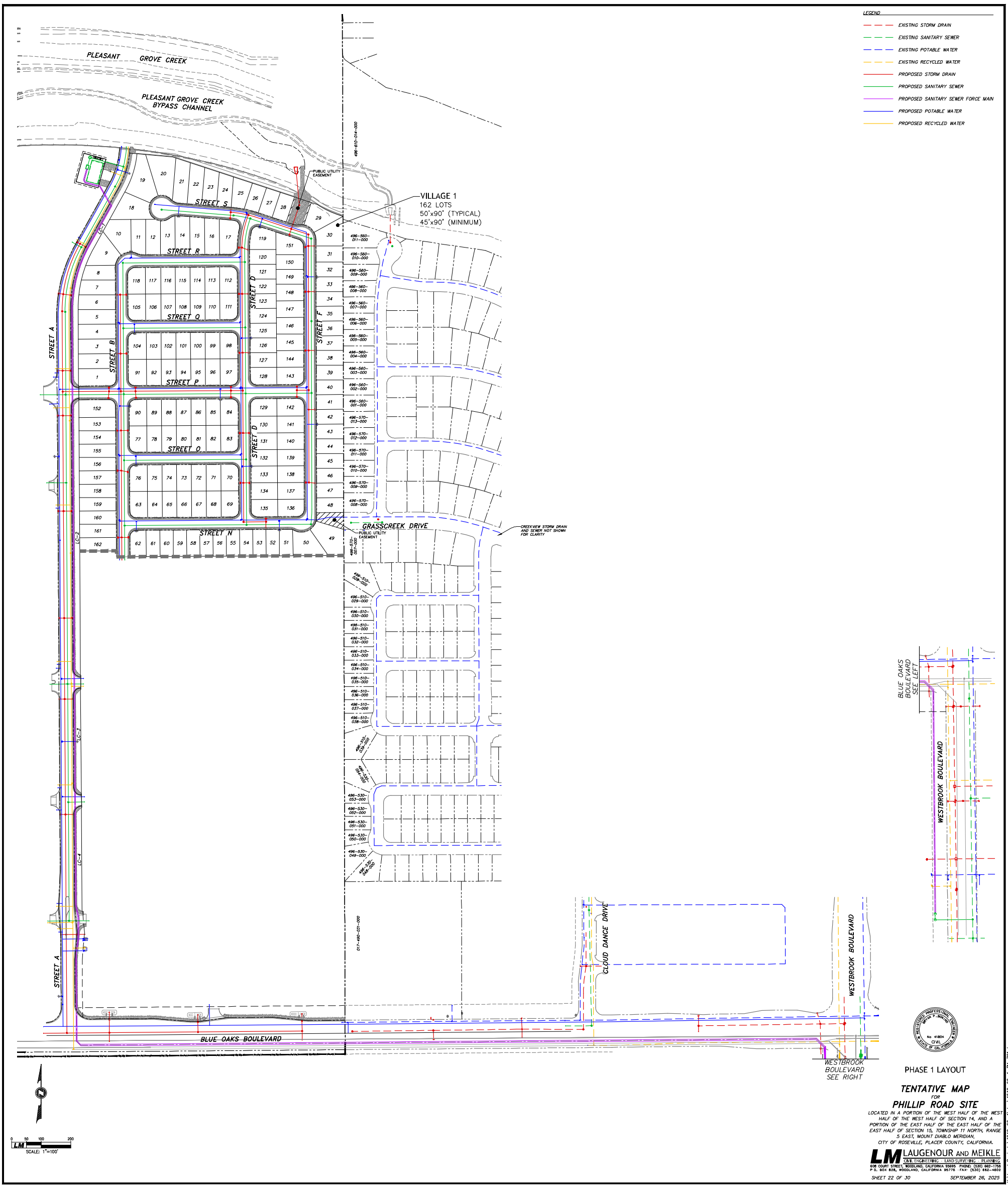

PHASE 1 LAYOUT

TENTATIVE MAP

FOR

PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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SEPTEMBER 26, 2025

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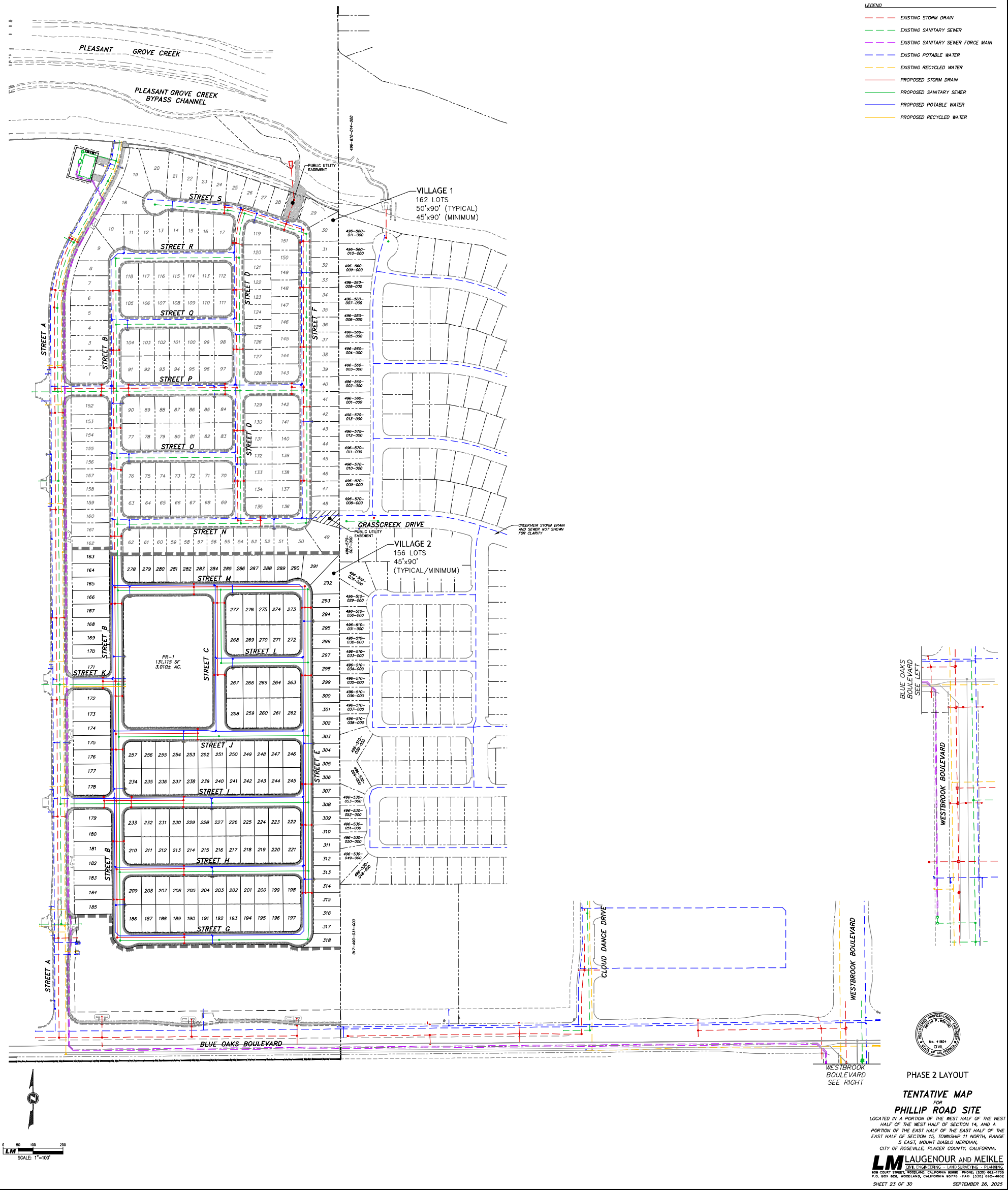

REGISTERED PROFESSIONAL ENGINEER — BRITTON P. WONG — No. 41804 — CIVIL — STATE OF CALIFORNIA

PHASE 2 LAYOUT

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

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SEPTEMBER 26, 2025

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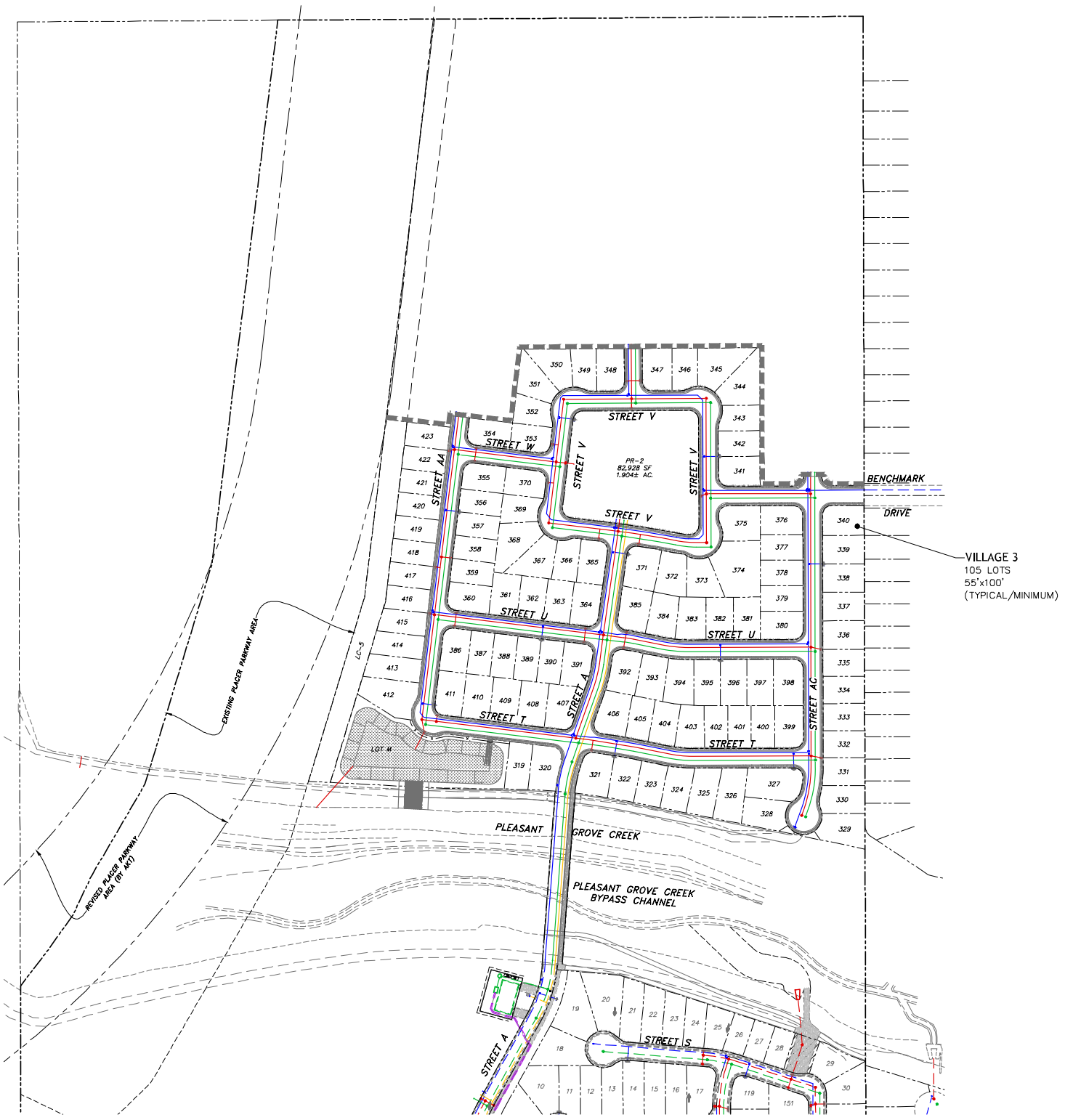

0 50 100 200
SCALE: 1"=100'

PHASE 3 LAYOUT

TENTATIVE MAP

FOR

PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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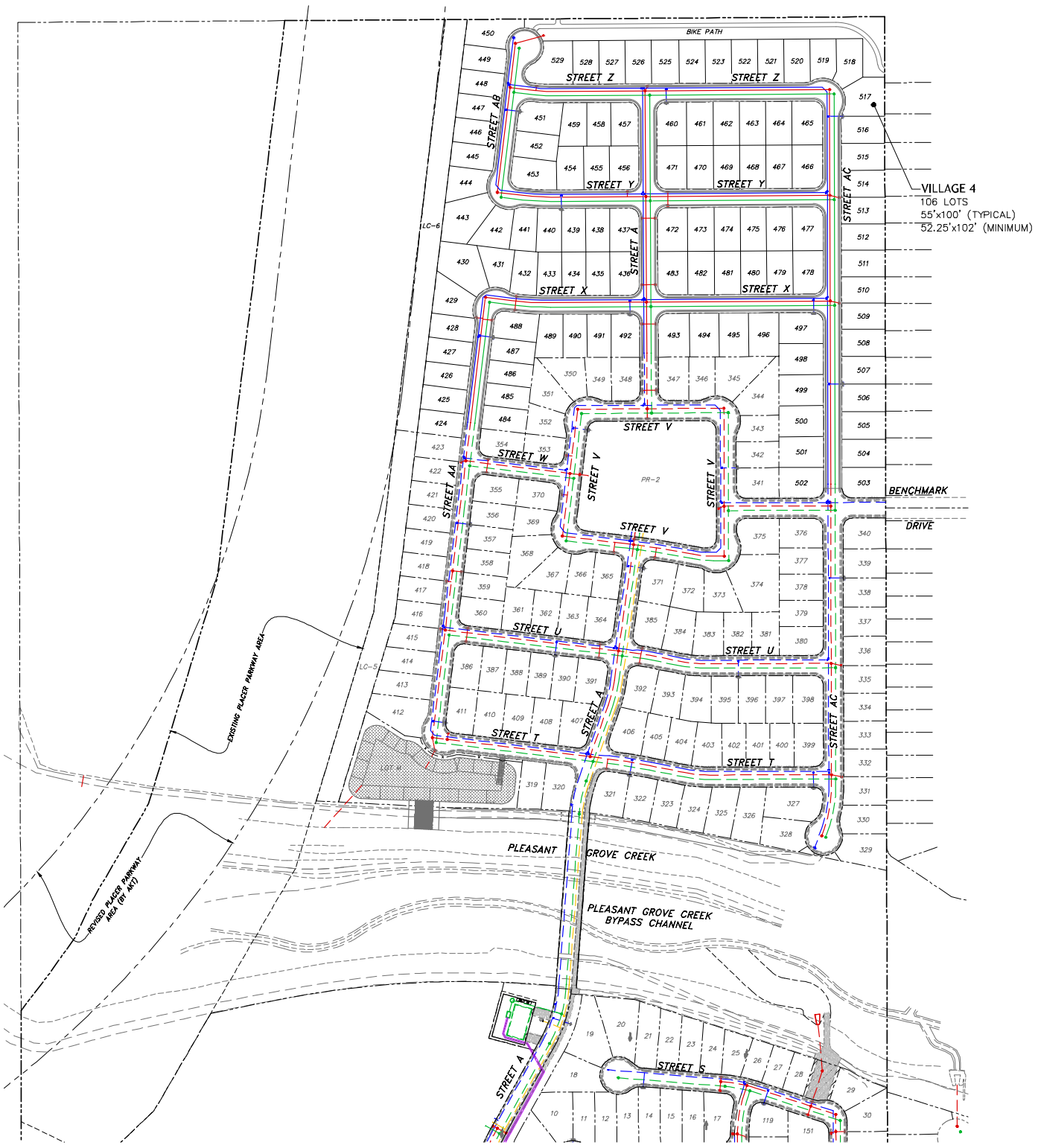

LEGEND

- EXISTING STORM DRAIN
- EXISTING SANITARY SEWER
- EXISTING SANITARY SEWER FORCE MAIN
- EXISTING POTABLE WATER
- EXISTING RECYCLED WATER
- PROPOSED STORM DRAIN
- PROPOSED SANITARY SEWER
- PROPOSED POTABLE WATER
- PROPOSED RECYCLED WATER

0 50 100 200
SCALE: 1"=100'

REGISTERED PROFESSIONAL ENGINEER
GRIFFIN P. MOORE
No. 41804
CIVIL
STATE OF CALIFORNIA

PHASE 4 LAYOUT

TENTATIVE MAP

FOR

PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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 SEPTEMBER 26, 2025

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SEE SHEET 6

PLEASANT GROVE CREEK

PLEASANT GROVE CREEK BYPASS CHANNEL

REVISED PLACER PARKWAY AREA (BY MT)

EXISTING PLACER PARKWAY AREA

SEWER LIFT STATION

BLDG I INNOVATION

BLDG H INNOVATION

BLDG G INNOVATION

BLDG E INNOVATION

BLDG F INNOVATION

BLDG D INNOVATION

ELECTRIC SUBSTATION

BLDG C INNOVATION

BLDG A MEDICAL

BLDG B RETAIL

PHILLIP ROAD

PROPERTY LINE

STREET A

STREET B

STREET C

STREET D

STREET E

STREET F

STREET G

STREET H

STREET I

STREET J

STREET K

STREET L

STREET M

STREET N

STREET O

STREET P

STREET Q

STREET R

STREET S

PR-1

GRASSCREEK DRIVE

BLUE OAKS BOULEVARD

VILLAGE 5
135 UNITS
HDR
5.859± AC.

LEGEND

- EXISTING STORM DRAIN
- EXISTING SANITARY SEWER
- EXISTING SANITARY SEWER FORCE MAIN
- EXISTING POTABLE WATER
- EXISTING RECYCLED WATER
- PROPOSED STORM DRAIN
- PROPOSED SANITARY SEWER
- PROPOSED POTABLE WATER
- PROPOSED RECYCLED WATER

0 50 100 200
SCALE: 1"=100'

PHASE 5 LAYOUT

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

LAUGENOUR AND MEIKLE
CIVIL ENGINEERING · LAND SURVEYING · PLANNING
608 COURT STREET, WOODLAND, CALIFORNIA 95695 PHONE: (530) 662-1755
P.O. BOX 828, WOODLAND, CALIFORNIA 95776 FAX: (530) 662-4602

SEPTEMBER 26, 2025

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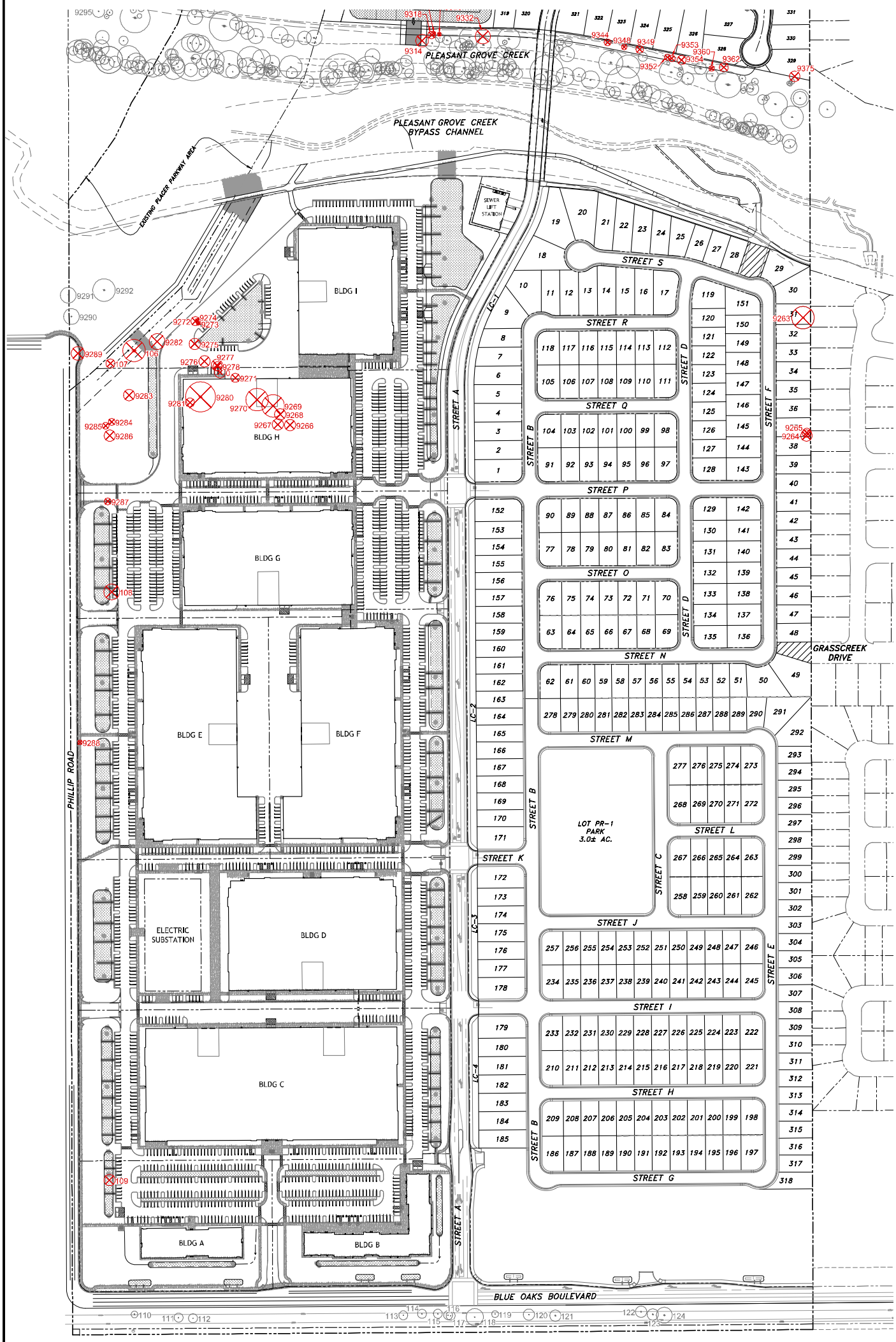

LEGEND

9275 EXISTING TREE TO REMAIN

9275 EXISTING TREE TO BE REMOVED

NOTE
TREES TO REMAIN WITHIN PLEASANT GROVE CREEK NOT LABELED FOR CLARITY:
100–105
114–115
500
9101–9146
9148–9261
9296–9313
9315
9321–9331
9333–9337
9339–9341
9345–9347
9350–9351
9355–9359
9361
9363–9374
9376–9377
9381

SCALE: 1"=100'

TREE PRESERVATION PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA.

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SEPTEMBER 26, 2025

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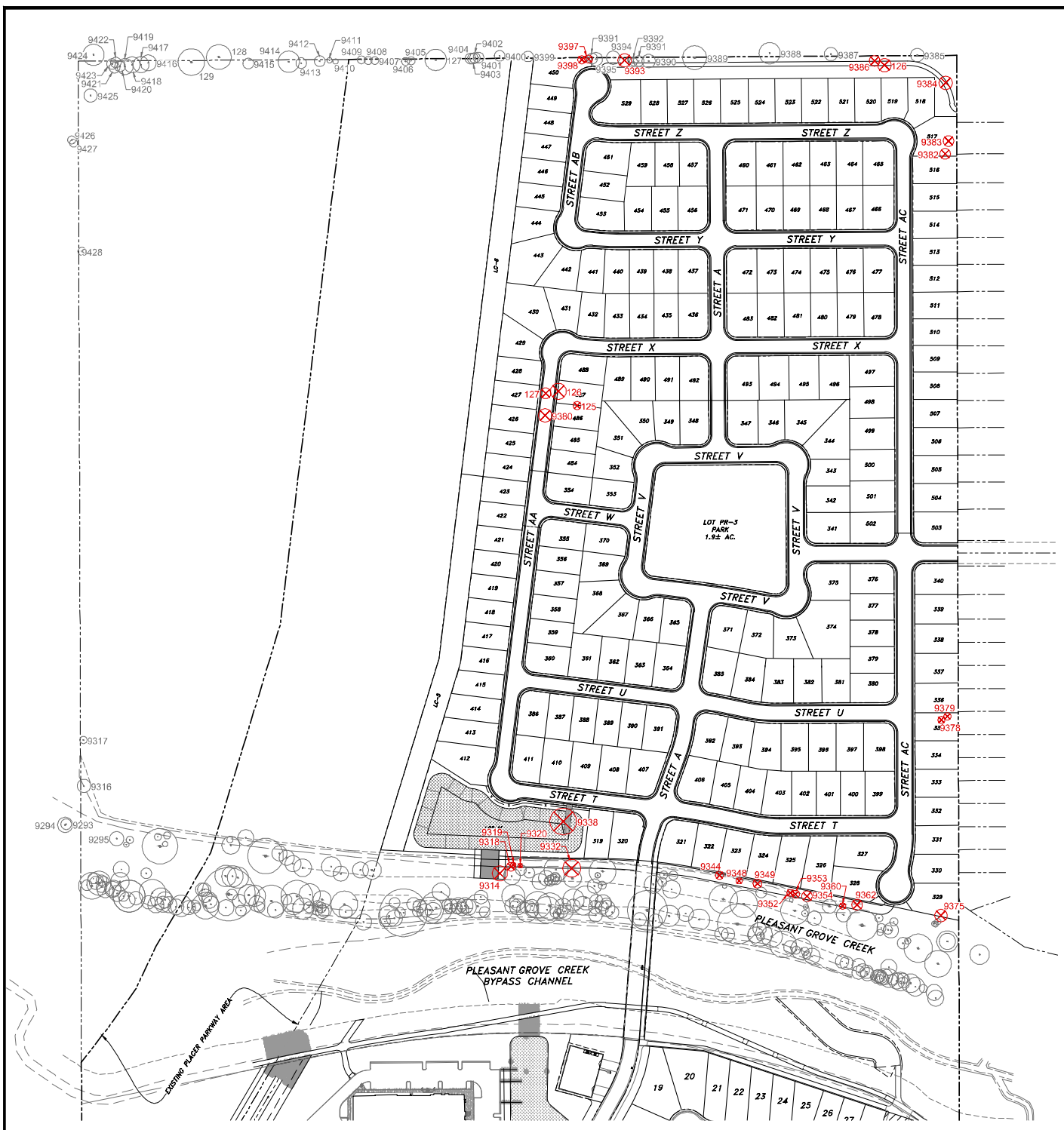

LEGEND

⊙9275 EXISTING TREE TO REMAIN

⊗9275 EXISTING TREE TO BE REMOVED

NOTE
TREES TO REMAIN WITHIN PLEASANT GROVE CREEK NOT LABELED FOR CLARITY:
100–105
114–115
500
9101–9146
9148–9261
9296–9313
9315
9321–9331
9333–9337
9339–9341
9345–9347
9350–9351
9355–9359
9361
9363–9374
9376–9377
9391

0 50 100 200
SCALE: 1"=100'

REGISTERED PROFESSIONAL ENGINEER
BRIAN P. BOUND
No 41804
CIVIL
STATE OF CALIFORNIA

TREE PRESERVATION PLAN

TENTATIVE MAP
FOR
PHILLIP ROAD SITE

LOCATED IN A PORTION OF THE WEST HALF OF THE WEST HALF OF THE WEST HALF OF SECTION 14, AND A PORTION OF THE EAST HALF OF THE EAST HALF OF THE EAST HALF OF SECTION 15, TOWNSHIP 11 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN,
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SHEET 28 OF 30 SEPTEMBER 26, 2025

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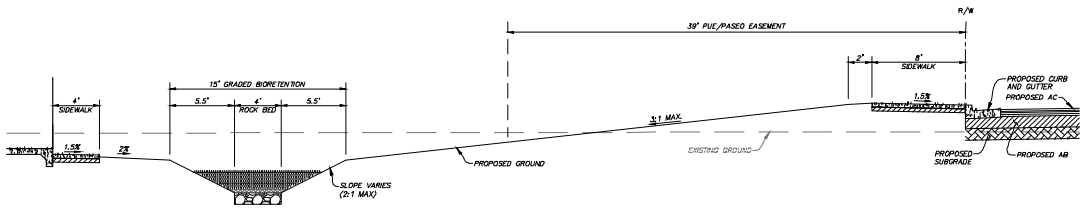
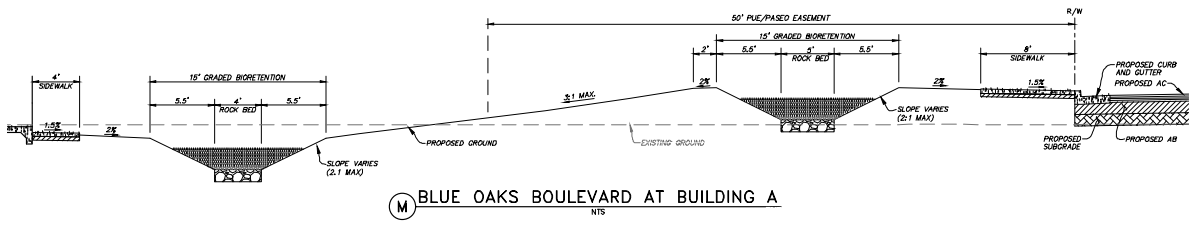
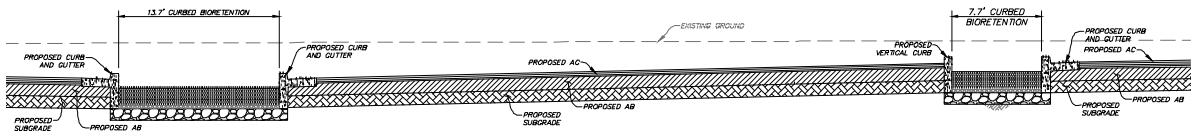


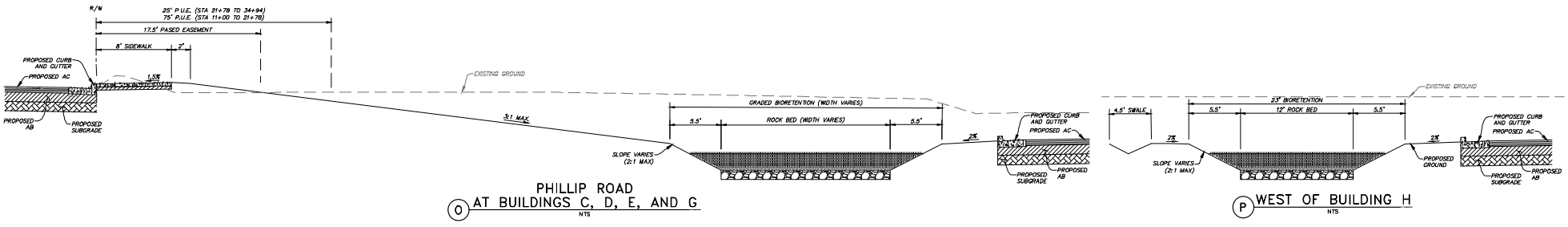
L BLUE OAKS BOULEVARD AT BUILDING B
NTS



M BLUE OAKS BOULEVARD AT BUILDING A
NTS

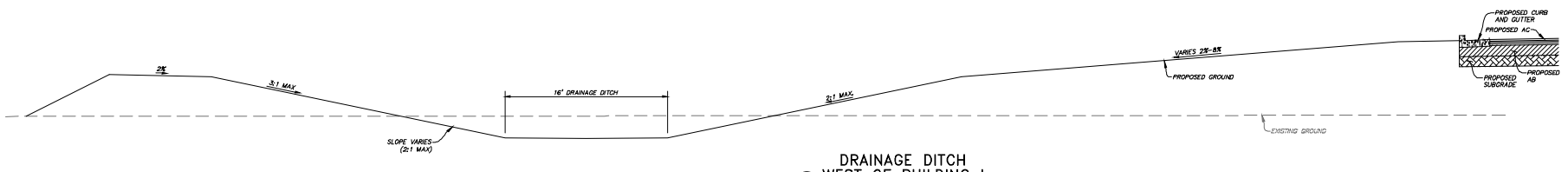


N CROSS SECTION BETWEEN BUILDING C & BUILDING A
NTS

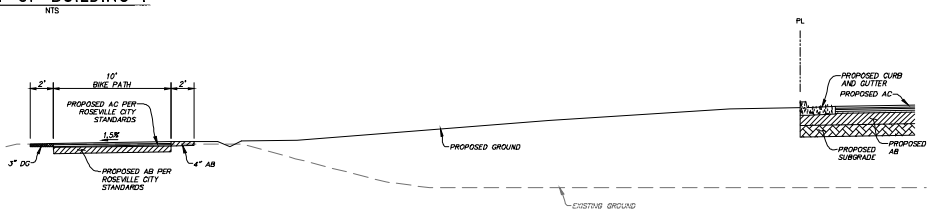


O PHILLIP ROAD AT BUILDINGS C, D, E, AND G
NTS

P WEST OF BUILDING H
NTS

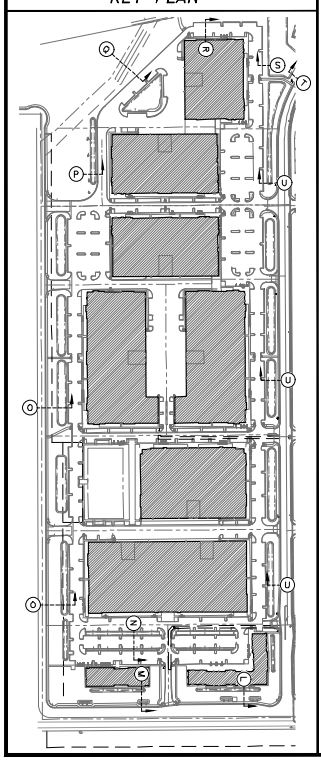


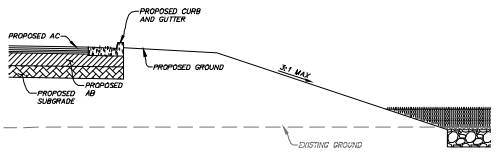
Q DRAINAGE DITCH WEST OF BUILDING I
NTS



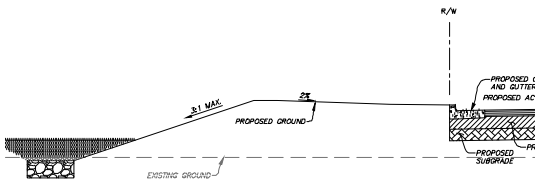
R NORTH OF BUILDING I
NTS

KEY PLAN

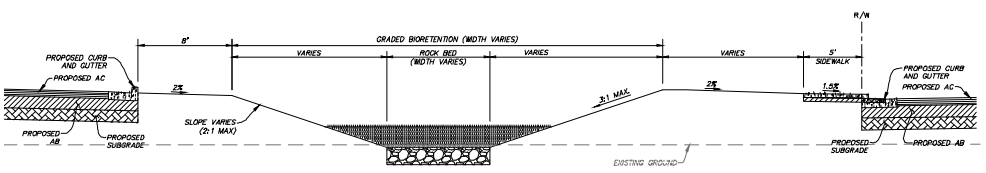




S GRADED BIORETENTION EAST OF BUILDING I
NTS



T STREET A AT BUILDING I
NTS



U STREET A AT BUILDINGS C, D, F, G, AND H
NTS

REGISTERED PROFESSIONAL ENGINEER
BRIAN P. BOUND
No. 41804
CIVIL
STATE OF CALIFORNIA

CROSS SECTIONS

TENTATIVE MAP
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SEPTEMBER 26, 2025

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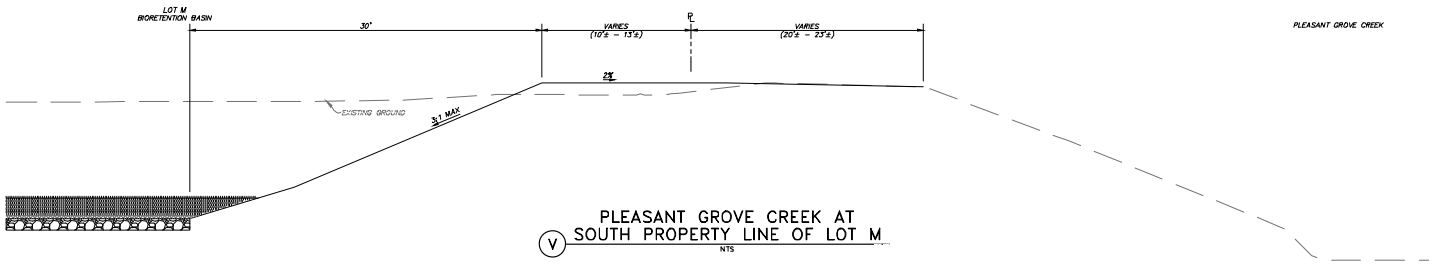
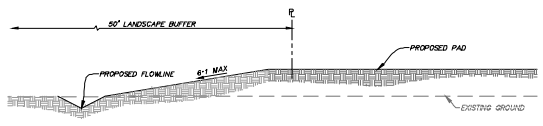
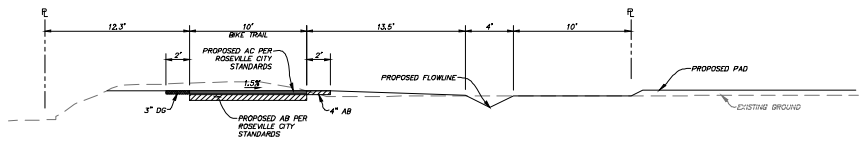


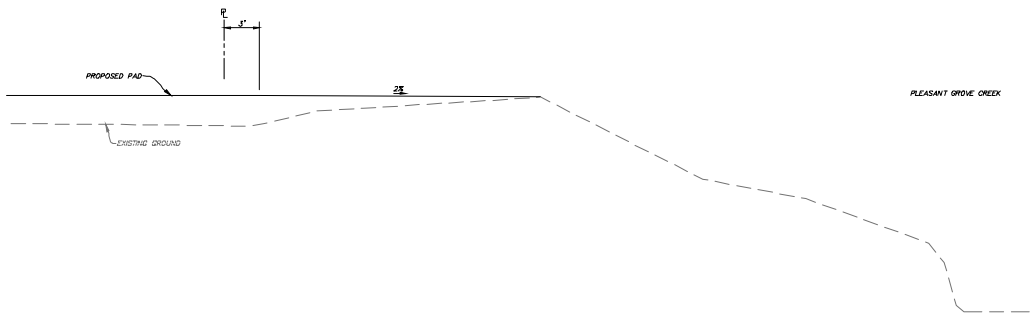
PLEASANT GROVE CREEK AT
SOUTH PROPERTY LINE OF LOT M (V)
NTS



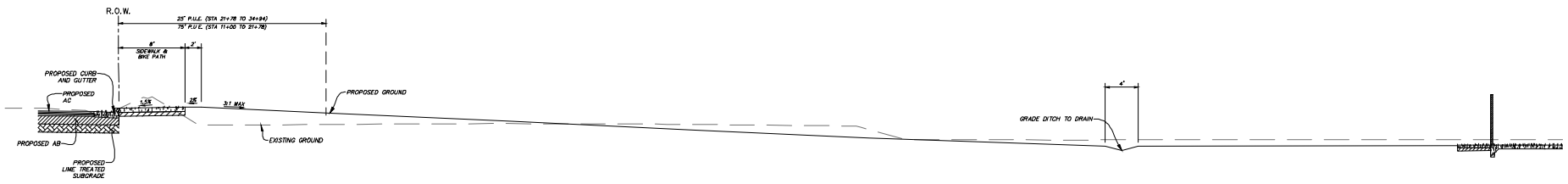
TYPICAL RESIDENTIAL LINE SECTION
AT WEST SIDE PROPERTY LINE (W)
NTS



NORTH PROPERTY LINE
AT BIKE TRAIL (X)
NTS

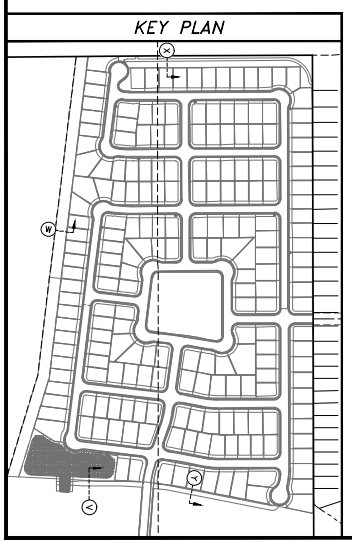


SOUTH PROPERTY LINE
AT PLEASANT GROVE CREEK (Y)
NTS



WEST PROPERTY LINE
AT BUILDING A (Z)
NTS

KEY PLAN



REGISTERED PROFESSIONAL ENGINEER
BRYAN P. BOUCHER
No. 41804
CIVIL
STATE OF CALIFORNIA

CROSS SECTIONS

TENTATIVE MAP
FOR
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 SEPTEMBER 26, 2025

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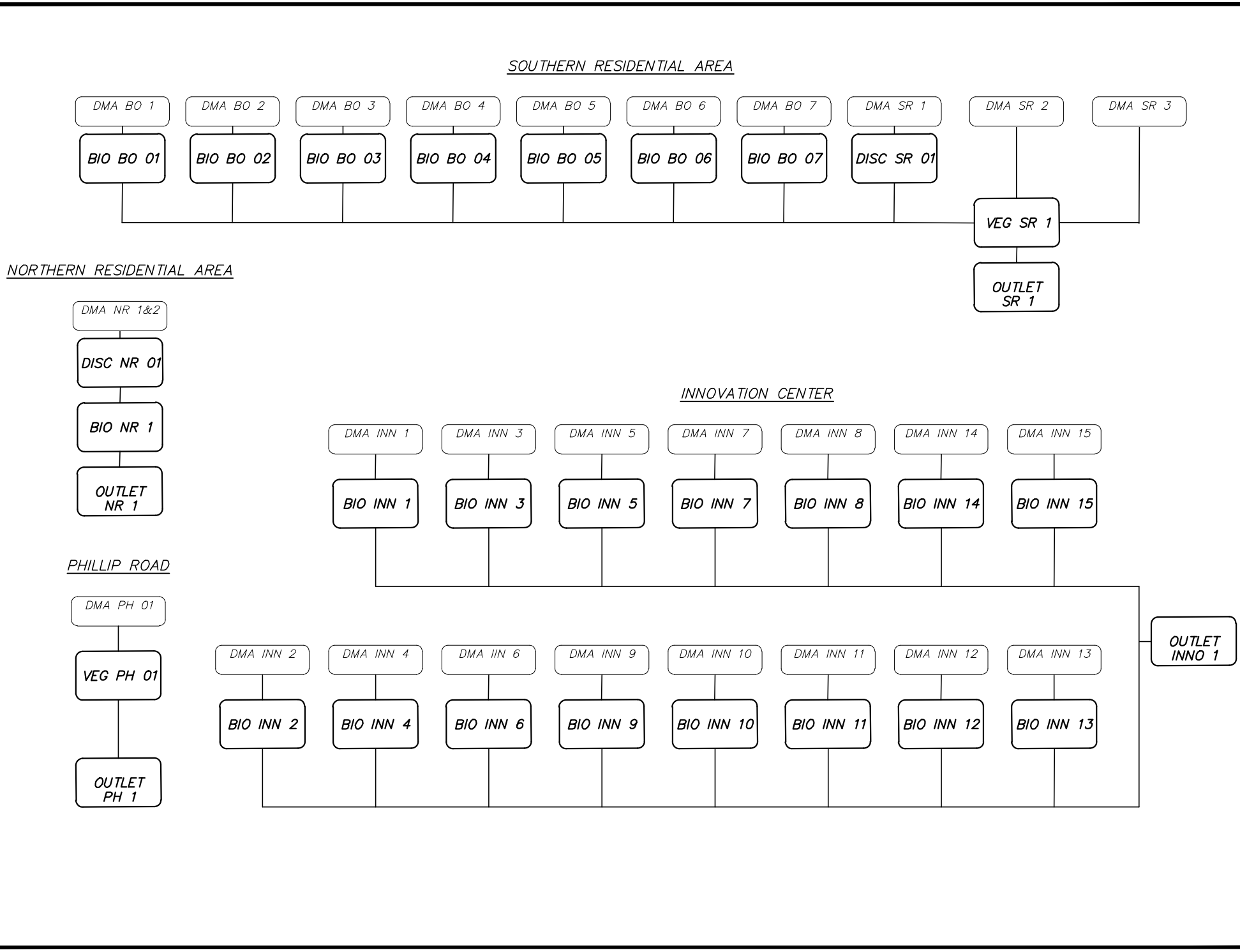
APPENDIX B-1

SWQP WORKSHEETS FOR THE INNOVATION CENTER


SOUTHERN RESIDENTIAL AREA
DMA BO 1
DMA BO 2
DMA BO 3
DMA BO 4
DMA BO 5
DMA BO 6
DMA BO 7
DMA SR 1
DMA SR 2
DMA SR 3
BIO BO 01
BIO BO 02
BIO BO 03
BIO BO 04
BIO BO 05
BIO BO 06
BIO BO 07
DISC SR 01
VEG SR 1
OUTLET SR 1
NORTHERN RESIDENTIAL AREA
DMA NR 1&2
DISC NR 01
BIO NR 1
OUTLET NR 1
INNOVATION CENTER
DMA INN 1
DMA INN 3
DMA INN 5
DMA INN 7
DMA INN 8
DMA INN 14
DMA INN 15
BIO INN 1
BIO INN 3
BIO INN 5
BIO INN 7
BIO INN 8
BIO INN 14
BIO INN 15
PHILLIP ROAD
DMA PH 01
VEG PH 01
OUTLET PH 1
DMA INN 2
DMA INN 4
DMA IIN 6
DMA INN 9
DMA INN 10
DMA INN 11
DMA INN 12
DMA INN 13
BIO INN 2
BIO INN 4
BIO INN 6
BIO INN 9
BIO INN 10
BIO INN 11
BIO INN 12
BIO INN 13
OUTLET INNO 1

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures

DMA ID No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
[1]Total impervious area requiring treatment	13,518	15,012	30,951	44,471	92,731	101,764	10,895	702,770	5,233	25,336	163,010	374,764	219,717	173,165	44,609							
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	13518	15012	30951	44471	92731	101764	10895	702770	5233	25336	163010	374764	219717	173165	44609	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)	34632	19041	5213	9865	10833	10956	20297	193771	7955	22087	23337	63403	107344	24020	18920				0	0	0	0
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*	0.47	0.56	0.81	0.79	0.84	0.84	0.51	0.77	0.54	0.62	0.82	0.81	0.70	0.83	0.72	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	1222	1041	1594	2328	4697	5139	861	37409	384	1594	8326	19300	12456	8832	2482	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.104	0.089	0.136	0.199	0.401	0.439	0.074	3.197	0.033	0.136	0.712	1.650	1.065	0.755	0.212	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

DMA ID No.	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
[1]Total impervious area requiring treatment	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81					
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**1**	**2**	**3**	**4**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	2113	1491	1587	2384
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	2515	2955	2410	1858
[5]Infiltration rate of underlying soils (in/hr)	0.05	0.05	0.05	0.05
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	1.00	1.00	1.00	1.00
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.2	0.2	0.2	0.2
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	893	1052	2410	1858
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.35	0.35	0.35	0.35
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	4.70	2.00	1.00	1.60
[12]Gravel porosity	0.35	0.35	0.35	0.35
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	2,122.0	1,505.7	2,605.8	2,399.1
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15]Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.2911	0.3420	0.2789	0.2150
[16]Total Treated Flow Rate for Project (ft^3/s) Q_{total} *= Sum of Item 15 for all DMAs*				
[17]**Is WQV for each DMA treated on-site?** *Check Yes if Item 14 equals 0 for all DMAs*	**Yes**	**X**	**No**	

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**5**	**6**	**7**	**8**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	4544	4946	1369	39128
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	4298	3315	3191	46748
[5]Infiltration rate of underlying soils (in/hr)	0.05	0.05	0.05	0.05
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	1.00	1.00	1.00	1.00
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.2	0.2	0.2	0.2
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	4298	3315	1949	36350
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.35	0.35	0.35	0.35
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	1.00	2.20	1.00	1.00
[12]Gravel porosity	0.35	0.35	0.35	0.35
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	4,647.2	4,976.6	2,107.5	39,303.4
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15]Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.4975	0.3837	0.3693	5.4106

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**9**	**10**	**11**	**12**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	578	2081	8173	19225
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	1841	7223	9854	23464
[5]Infiltration rate of underlying soils (in/hr)	0.05	0.05	0.05	0.05
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	1.00	1.00	1.00	1.00
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.2	0.2	0.2	0.2
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	740	4937	7911	18728
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.35	0.35	0.35	0.35
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	1.00	1.00	1.00	1.00
[12]Gravel porosity	0.35	0.35	0.35	0.35
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	799.7	5,338.1	8,553.8	20,249.7
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15]Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.2131	0.8360	1.1405	2.7157

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**13**	**14**	**15**	**16**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	14350	8651	2773	0
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	39341	13880	5250	
[5]Infiltration rate of underlying soils (in/hr)	0.05	0.05	0.05	0.05
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	1.00	1.00	1.00	1.00
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.2	0.2	0.2	0.2
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	32972	11777	3250	
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.35	0.35	0.35	0.35
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	1.00	1.00	1.50	1.00
[12]Gravel porosity	0.35	0.35	0.35	0.35
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	35,651.0	12,733.6	4,083.0	-
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15]Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	4.5534	1.6065	0.6077	0.0000

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1]Length of longest overland flow path *Not to exceed 100 ft*	100				100			
[2]Slope of overland flow path (ft/ft)	0.0013				0.0050			
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.2400				0.1100			
[4]Overland flow response time (min) (0.355*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	17.41	0.00	0.00	0.00	7.33	0.00	0.00	0.00
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D				D			
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	Small Grain				Comm. Landsc.			
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	Good				Good			
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.05				0.05			
[9]Length of collector flow (ft)	3,100				4,600			
[10]Cross-sectional area of collector flow facility (ft^2)	1				7.00			
[11]Wetted perimeter of collector flow facility (ft)	2				9.40			
[12]Manning's roughness of collector flow facility	0.150				0.015			
[13]Slope of collector flow facility (ft/ft)	0.0013				0.0025			
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11)^0.67 * (Item 13)^0.5*	0.23	0.00	0.00	0.00	4.08	0.00	0.00	0.00
[15]Collector flow facility response time (min) *T_c = Item 9 /(Item 14 * 60)*	226.12	0.00	0.00	0.00	18.79	0.00	0.00	0.00
[16]Total runoff response time or T_t (min) *T_t = Item 4 + Item 15*	243.53	0.00	0.00	0.00	26.12	0.00	0.00	0.00

Form 4-2 Hydromodification Target for Peak Runoff

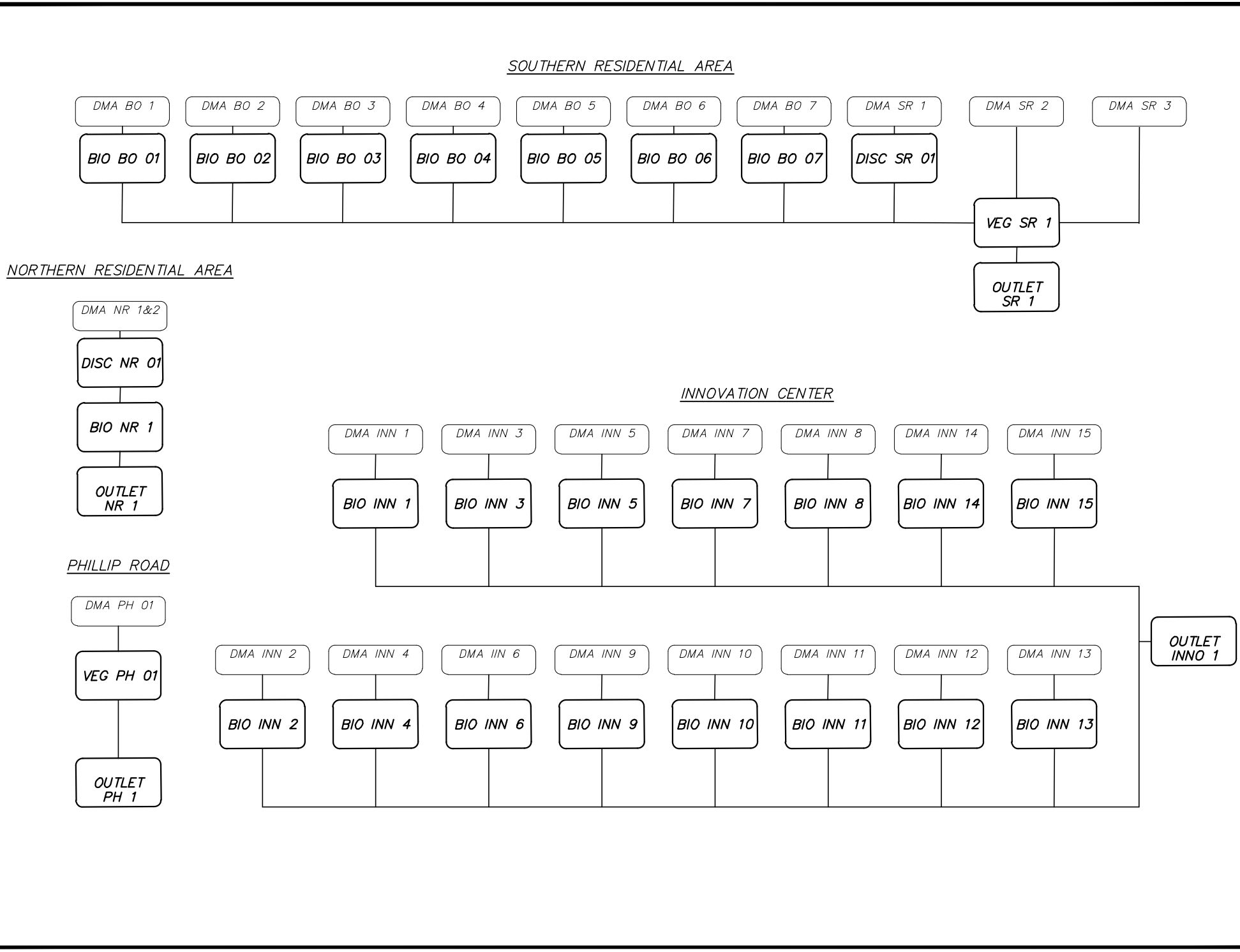
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	2,589,620				2,589,620			
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0				2,017,946			
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.92				0.32			
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	0.23	-	-	-	0.73	-	-	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.09	-	-	-	0.09	-	-	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	8.28	-	-	-	42.90	-	-	-
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*	8.28							
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 14.*	**YES**							

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	2	3	4
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	Industrial			
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	-	-	-
[3] Drainage Area (A) (ft^2)	2,589,620	-	-	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	93			
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.8	#DIV/0!	#DIV/0!	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90			
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	263,968	#DIV/0!	#DIV/0!	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.19	#DIV/0!	#DIV/0!	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.38			
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	100308	#DIV/0!	#DIV/0!	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*	0			
[12] Bioretention Volume (ft3): *Sum of Item 13 in Form 3-6 for all bioretention measures in this DMA.*	146331			
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*	0			
[14] Supplemental Detention Volume (ft^3):	0			
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	146,331	-	-	-
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15 for each DMA. If not provide additional storage capacity with appropriate flow controls at the discharge.*	**Yes**	**X**	**No**	

APPENDIX B-2

SWQP WORKSHEETS FOR BLUE OAKS BOULEVARD


SOUTHERN RESIDENTIAL AREA
DMA BO 1
DMA BO 2
DMA BO 3
DMA BO 4
DMA BO 5
DMA BO 6
DMA BO 7
DMA SR 1
DMA SR 2
DMA SR 3
BIO BO 01
BIO BO 02
BIO BO 03
BIO BO 04
BIO BO 05
BIO BO 06
BIO BO 07
DISC SR 01
VEG SR 1
OUTLET SR 1
NORTHERN RESIDENTIAL AREA
DMA NR 1&2
DISC NR 01
BIO NR 1
OUTLET NR 1
INNOVATION CENTER
DMA INN 1
DMA INN 3
DMA INN 5
DMA INN 7
DMA INN 8
DMA INN 14
DMA INN 15
BIO INN 1
BIO INN 3
BIO INN 5
BIO INN 7
BIO INN 8
BIO INN 14
BIO INN 15
PHILLIP ROAD
DMA PH 01
VEG PH 01
OUTLET PH 1
DMA INN 2
DMA INN 4
DMA IIN 6
DMA INN 9
DMA INN 10
DMA INN 11
DMA INN 12
DMA INN 13
BIO INN 2
BIO INN 4
BIO INN 6
BIO INN 9
BIO INN 10
BIO INN 11
BIO INN 12
BIO INN 13
OUTLET INNO 1

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

[1]DMA ID No.			1		2		3		4	
Site Design Measure	**Runoff Reduction Parameters**			**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		0
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*	2	96	2	66	2	59		15
	n_d	*number of new deciduous trees*	9		5		4		2	
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*								
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*		0		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*								
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					Yes	N/A	No			
[10] Total Volume Reduction (ft^3)			**96**		**66**		**59**		**15**	
[11] Effective Treated Impervious Area (ft^2)			**1417**		**981**		**872**		**218**	

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

DMA ID No.	5		6		7		8		9		10		11		12	
Runoff Reduction Parameters		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
ponding area		0		0		0		0		0		0		0		0
ponding depth																
soil amendment area																
depth of amended soil																
porosity of amended soil																
number of new evergreen trees	1	44		66		44		0		0		0		0		0
number of new deciduous trees	4		9		6											
canopy area of existing trees to remain on the property																
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
area of gravel storage layer		0		0		0		0		0		0		0		0
depth of gravel storage layer																
porosity of aggregate																
efficiency factor																
impervious drainage area		0		0		0		0		0		0		0		0
runoff volume from 85th percentile, 24-hour storm	0.8		0.8		0.8		0.8		0.8		0.8		0.8		0.8	
number of rain barrels and/or cisterns		0		0		0		0		0		0		0		0
volume of each rain barrel and/or cistern																
Total Volume Reduction	**44**		**66**		**44**		**0**		**0**		**0**		**0**		**0**	
Effective Treated Impervious Area	**654**		**981**		**654**		**0**		**0**		**0**		**0**		**0**	

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures

DMA ID No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
[1]Total impervious area requiring treatment	19,170	10,255	26,678	10,587	17,601	23,399	18,549															
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	17753	9274	25806	10369	16947	22418	17895	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)	11813	7365	10079	3356	6931	10196	11073												0	0	0	0
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*	0.67	0.65	0.74	0.76	0.73	0.72	0.68	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	1075	585	1430	562	945	1268	1060	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.092	0.050	0.122	0.048	0.081	0.108	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

DMA ID No.	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
[1]Total impervious area requiring treatment																		1				
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)																						
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*																						
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**1**	**2**	**3**	**4**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	1075	585	1430	562
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	1237	888	1413	1014
[5]Infiltration rate of underlying soils (in/hr)	0.05	0.05	0.05	0.05
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	1.00	1.00	1.00	1.00
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.2	0.2	0.2	0.2
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	493	315	630	391
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.35	0.35	0.35	0.35
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	4.5	4.0	4.6	4.0
[12]Gravel porosity	0.35	0.35	0.35	0.35
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	1,137.0	671.3	1,475.0	833.3
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15]Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.1432	0.1028	0.1635	0.1174
[16]Total Treated Flow Rate for Project (ft^3/s) Q_{total} *= Sum of Item 15 for all DMAs*	1.0051			
[17]**Is WQV for each DMA treated on-site?** *Check Yes if Item 14 equals 0 for all DMAs*	**Yes**	**X**	**No**	

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**5**	**6**	**7**	**8**
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	945	1268	1060	0
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5	5	5
[4]BMP Surface Area (ft^2) *Top of BMP*	1236	1518	1378	
[5]Infiltration rate of underlying soils (in/hr)	0.05	0.05	0.05	0.05
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	1.00	1.00	1.00	1.00
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.2	0.2	0.2	0.2
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	493	720	600	
[9]Planting media depth, d_{media} (ft)	1.5	1.5	1.5	1.5
[10]Planting media porosity	0.35	0.35	0.35	0.35
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	4.0	4.0	4.0	
[12]Gravel porosity	0.35	0.35	0.35	0.35
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	1,050.7	1,534.5	1,278.8	-
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15]Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.1431	0.1757	0.1595	0.0000

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1]Length of longest overland flow path *Not to exceed 100 ft*	100				100			
[2]Slope of overland flow path (ft/ft)	0.0013				0.0050			
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.2400				0.1100			
[4]Overland flow response time (min) (0.355*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	17.41	0.00	0.00	0.00	7.33	0.00	0.00	0.00
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D				D			
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	Small Grain				Comm. Landsc./ Road			
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	Good				Good			
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.05				0.05			
[9]Length of collector flow (ft)	900				900			
[10]Cross-sectional area of collector flow facility (ft^2)	1				1.00			
[11]Wetted perimeter of collector flow facility (ft)	2				2.00			
[12]Manning's roughness of collector flow facility	0.050				0.015			
[13]Slope of collector flow facility (ft/ft)	0.0013				0.0020			
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11)$^{\wedge 0.67}$ * (Item 13)$^{\wedge 0.5}$*	0.69	0.00	0.00	0.00	2.80	0.00	0.00	0.00
[15]Collector flow facility response time (min) *T_c = Item 9 /(Item 14 * 60)*	21.88	0.00	0.00	0.00	5.36	0.00	0.00	0.00
[16]Total runoff response time or T_t (min) *T_t = Item 4 + Item 15*	39.30	0.00	0.00	0.00	12.69	0.00	0.00	0.00

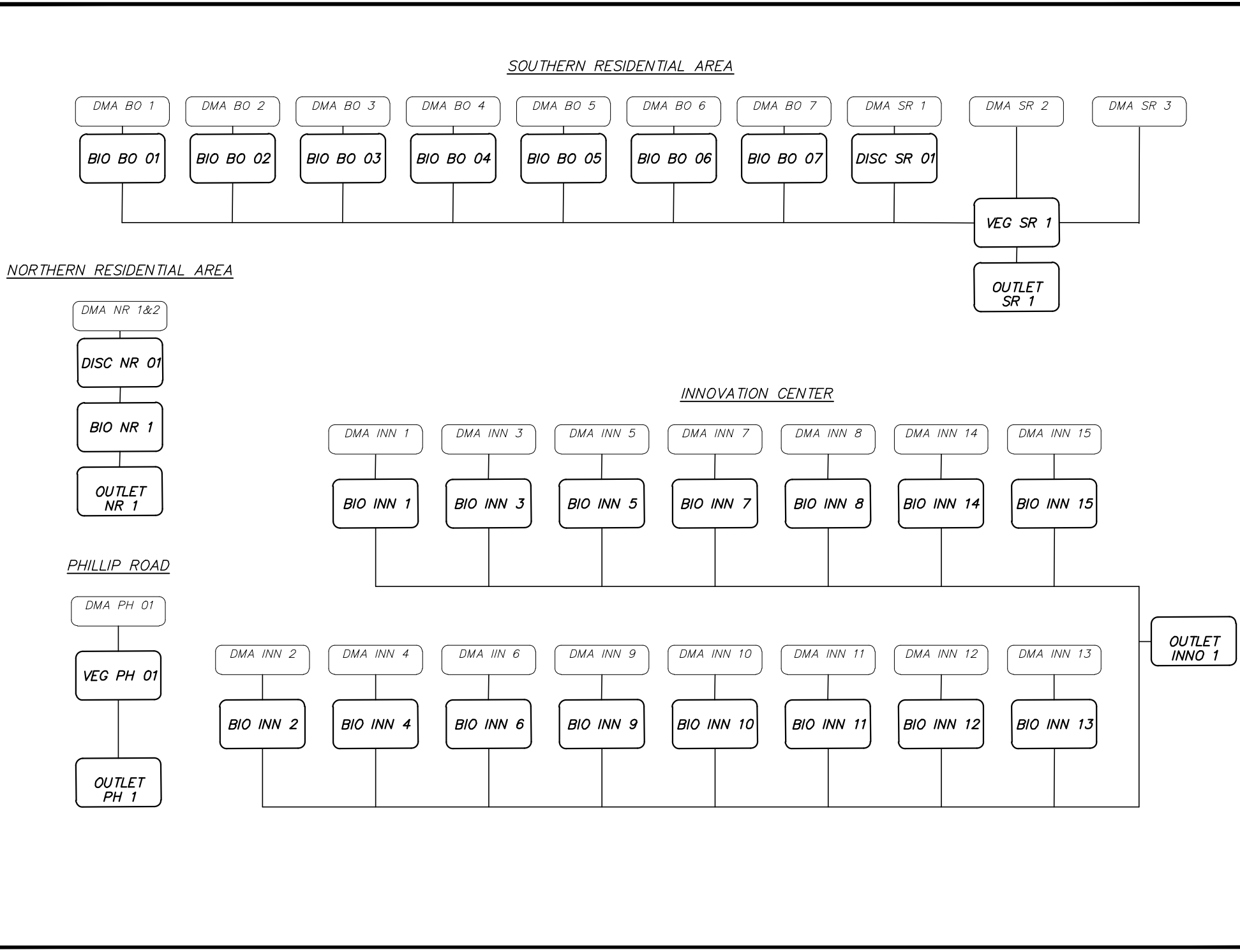
Form 4-2 Hydromodification Target for Peak Runoff								
Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	187,052				187,052			
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0				120,462			
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.36				0.23			
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	0.55	-	-	-	1.09	-	-	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.09	-	-	-	0.09	-	-	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	2.02	-	-	-	4.57	-	-	-
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*	2.02							
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 14.*	**YES**							

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	2	3	4
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	Road			
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	-	-	-
[3] Drainage Area (A) (ft^2)	187,052	-	-	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	98			
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.2	#DIV/0!	#DIV/0!	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90			
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	26,114	#DIV/0!	#DIV/0!	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.44	#DIV/0!	#DIV/0!	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.20			
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	5223	#DIV/0!	#DIV/0!	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*	0			
[12] Bioretention Volume (ft3): *Sum of Item 13 in Form 3-6 for all bioretention measures in this DMA.*	7981			
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*	0			
[14] Supplemental Detention Volume (ft^3):	0			
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	7,981	-	-	-
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15 for each DMA. If not provide additional storage capacity with appropriate flow controls at the discharge.*	**Yes**	**X**	**No**	

APPENDIX B-3

SWQP WORKSHEETS FOR THE SOUTHERN RESIDENTIAL AREA AND STREET "A"


SOUTHERN RESIDENTIAL AREA
DMA BO 1
DMA BO 2
DMA BO 3
DMA BO 4
DMA BO 5
DMA BO 6
DMA BO 7
DMA SR 1
DMA SR 2
DMA SR 3
BIO BO 01
BIO BO 02
BIO BO 03
BIO BO 04
BIO BO 05
BIO BO 06
BIO BO 07
DISC SR 01
VEG SR 1
OUTLET SR 1
NORTHERN RESIDENTIAL AREA
DMA NR 1&2
DISC NR 01
BIO NR 1
OUTLET NR 1
INNOVATION CENTER
DMA INN 1
DMA INN 3
DMA INN 5
DMA INN 7
DMA INN 8
DMA INN 14
DMA INN 15
BIO INN 1
BIO INN 3
BIO INN 5
BIO INN 7
BIO INN 8
BIO INN 14
BIO INN 15
PHILLIP ROAD
DMA PH 01
VEG PH 01
OUTLET PH 1
DMA INN 2
DMA INN 4
DMA IIN 6
DMA INN 9
DMA INN 10
DMA INN 11
DMA INN 12
DMA INN 13
BIO INN 2
BIO INN 4
BIO INN 6
BIO INN 9
BIO INN 10
BIO INN 11
BIO INN 12
BIO INN 13
OUTLET INNO 1

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

[1]DMA ID No.			1		2		3		4	
Site Design Measure	**Runoff Reduction Parameters**			**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		0
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*		0		0		0		0
	n_d	*number of new deciduous trees*								
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*								
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*	530354	35799		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*		0	548595	37030	224215	15134		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*		0		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*								
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					Yes	X	No			
[10] Total Volume Reduction (ft^3)			**35799**		**37030**		**15134**		**0**	
[11] Effective Treated Impervious Area (ft^2)			**530354**		**548595**		**224215**		**0**	

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures

DMA ID No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
[1]Total impervious area requiring treatment	530,354	548,595	224,215		4042-60-4_TM-401.dwg	4/4/2025		imperv	0.47											DMAs 21&22 to calc WQF for DMAs 2&3.	548,595	224,215
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	#VALUE!	45751	0	#VALUE!	0	0	0	0	0	0	0	0	0	0	0	#VALUE!	548595	224215
[3]Additional pervious area draining to BMP (ft^2)	1,404,892		84,922																		0	84922
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*	0.46	0.90	0.74																		0.90	0.74
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	#VALUE!	0	0	#VALUE!	0	0	0	0	0	0	0	0	0	0	0	#VALUE!	26744	12310
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	#VALUE!	0.000	0.000	#VALUE!	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	#VALUE!	2.286	1.052

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

DMA ID No.	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
[1]Total impervious area requiring treatment		0			0		0															
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)																						
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*																						
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1]Length of longest overland flow path *Not to exceed 100 ft*	100				100			
[2]Slope of overland flow path (ft/ft)	0.0013				0.0050			
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.2400				0.2400			
[4]Overland flow response time (min) (0.355*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	17.41	0.00	0.00	0.00	11.71	0.00	0.00	0.00
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D				D			
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	Small Grain				Comm. Landsc.			
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	Good				Good			
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.05				0.05			
[9]Length of collector flow (ft)	3,000				3,500			
[10]Cross-sectional area of collector flow facility (ft^2)	1				1.00			
[11]Wetted perimeter of collector flow facility (ft)	2				2.00			
[12]Manning's roughness of collector flow facility	0.035				0.015			
[13]Slope of collector flow facility (ft/ft)	0.0013				0.0025			
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11) ^0.67 * (Item 13) ^0.5*	0.98	0.00	0.00	0.00	3.13	0.00	0.00	0.00
[15]Collector flow facility response time (min) *T_c = Item 9 /(Item 14 * 60)*	51.06	0.00	0.00	0.00	18.64	0.00	0.00	0.00
[16]Total runoff response time or T_t (min) *T_t = Item 4 + Item 15*	68.47	0.00	0.00	0.00	30.36	0.00	0.00	0.00

Form 4-2 Hydromodification Target for Peak Runoff

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Projec		
	1	2	3	4	1	2	3
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	2,792,978				2,838,729		
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0				1,348,915		
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.46				0.32		
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	0.41	-	-	-	0.63	-	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.09	-	-	-	0.09	-	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	20.62	-	-	-	38.57	-	-
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*							
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 14.*							

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	Residential			
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	-	-	-
[3] Drainage Area (A) (ft^2)	2,838,729	-	-	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	90	1/6 acre/lot		
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	1.1	#VALUE!	#DIV/0!	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90			
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	238,770	#VALUE!	#DIV/0!	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.53	#DIV/0!	#DIV/0!	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.18			
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	42979	#VALUE!	#DIV/0!	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*	87964			
[12] Bioretention Volume (ft3): *Sum of Item 13 in Form 3-6 for all bioretention measures in this DMA.*				
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3):				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	87,964	-	-	-
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15 for each DMA. If not provide additional storage capacity with appropriate flow controls at the discharge.*	**Yes**		**No**	

PROJECT: Phillip Road Project
PROJECT #: 4042-60-4
LOCATION: Roseville, CA
FILE:

DATE: 4-Apr-25
CALC BY: BRD
CHECKED BY: DRAFT
SHEETS:

LAUGENOUR AND MEIKLE
CIVIL ENGINEERS
608 COURT STREET
WOODLAND, CA 95695

Purpose: Calculate contact time of vegetated swales.

Table 1. Contact time for Post-Contruction Stormwater Quality Treatment

			Contact Time	
DMA/BMP	Length of Swale (ft)	Velocity (ft/sec)	(Seconds)	(Minutes)
SR 2&3	225	0.190	1184	19.7
PH 1	225	0.202	1114	18.6

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Monday, March 27, 2023

Project Units: U.S. Customary Units

Notes:

Channel Analysis: BMP 1 Southern Residential-SWALE-SWQ

Notes:

Input Parameters

Channel Type: Trapezoidal

Side Slope 1 (Z1): 4.0000 ft/ft

Side Slope 2 (Z2): 4.0000 ft/ft

Channel Width 55.00 ft

Longitudinal Slope: 0.0050 ft/ft

Manning's n: 0.2500

Flow 3.3400 cfs

Result Parameters

Depth 0.3120 ft

Area of Flow 17.5474 ft^2

Wetted Perimeter 57.5725 ft

Hydraulic Radius 0.3048 ft

Average Velocity 0.1903 ft/s

Top Width 57.4957 ft

Froude Number: 0.0607

Critical Depth 0.0485 ft

Critical Velocity 1.2475 ft/s

Critical Slope: 2.5025 ft/ft

Critical Top Width 55.39 ft

Calculated Max Shear Stress 0.0973 lb/ft^2

Calculated Avg Shear Stress 0.0951 lb/ft^2

Channel Analysis: BMP 1 Phillip Road-SWALE-SWQ

Notes:

Input Parameters

Channel Type: Trapezoidal

Side Slope 1 (Z1): 4.0000 ft/ft

Side Slope 2 (Z2): 4.0000 ft/ft

Channel Width 15.00 ft

Longitudinal Slope: 0.0100 ft/ft

Manning's n: 0.2500

Flow 0.6730 cfs

Result Parameters

Depth 0.2099 ft

Area of Flow 3.3245 ft^2

Wetted Perimeter 16.7308 ft

Hydraulic Radius 0.1987 ft

Average Velocity 0.2024 ft/s

Top Width 16.6791 ft

Froude Number: 0.0799

Critical Depth 0.0396 ft

Critical Velocity 1.1226 ft/s

Critical Slope: 2.6860 ft/ft

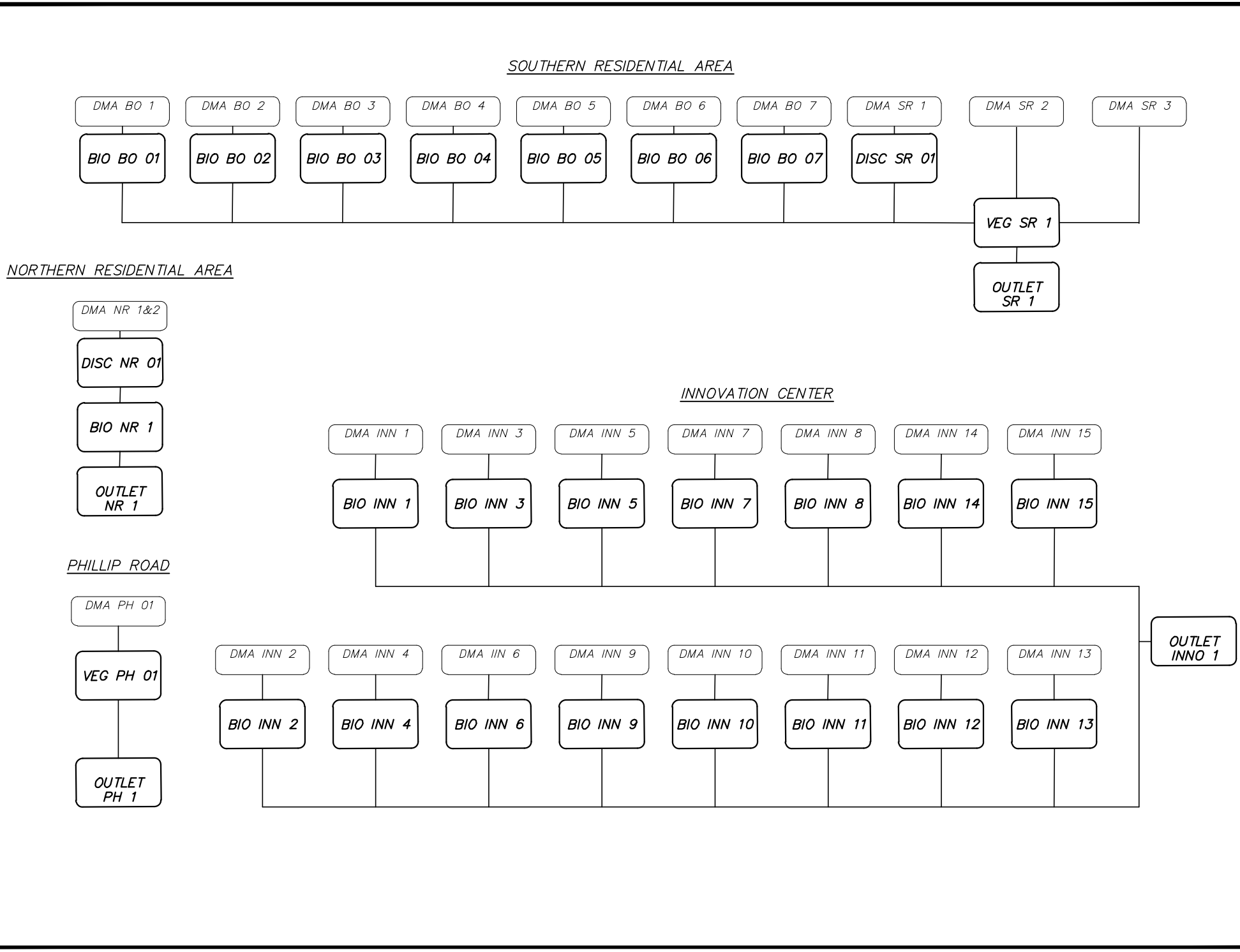
Critical Top Width 15.32 ft

Calculated Max Shear Stress 0.1310 lb/ft^2

Calculated Avg Shear Stress 0.1240 lb/ft^2

APPENDIX B-4

SWQP WORKSHEETS FOR PHILLIP ROAD


SOUTHERN RESIDENTIAL AREA
DMA BO 1
DMA BO 2
DMA BO 3
DMA BO 4
DMA BO 5
DMA BO 6
DMA BO 7
DMA SR 1
DMA SR 2
DMA SR 3
BIO BO 01
BIO BO 02
BIO BO 03
BIO BO 04
BIO BO 05
BIO BO 06
BIO BO 07
DISC SR 01
VEG SR 1
OUTLET SR 1
NORTHERN RESIDENTIAL AREA
DMA NR 1&2
DISC NR 01
BIO NR 1
OUTLET NR 1
INNOVATION CENTER
DMA INN 1
DMA INN 3
DMA INN 5
DMA INN 7
DMA INN 8
DMA INN 14
DMA INN 15
BIO INN 1
BIO INN 3
BIO INN 5
BIO INN 7
BIO INN 8
BIO INN 14
BIO INN 15
PHILLIP ROAD
DMA PH 01
VEG PH 01
OUTLET PH 1
DMA INN 2
DMA INN 4
DMA IIN 6
DMA INN 9
DMA INN 10
DMA INN 11
DMA INN 12
DMA INN 13
BIO INN 2
BIO INN 4
BIO INN 6
BIO INN 9
BIO INN 10
BIO INN 11
BIO INN 12
BIO INN 13
OUTLET INNO 1

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

[1]DMA ID No.			1		2		3		4	
Site Design Measure	**Runoff Reduction Parameters**			**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		0
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*		0		0		0		0
	n_d	*number of new deciduous trees*								
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*								
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*	155352	10486		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*		0		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*								
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					Yes	X	No			
[10] Total Volume Reduction (ft^3)			**10486**		**0**		**0**		**0**	
[11] Effective Treated Impervious Area (ft^2)			**155352**		**0**		**0**		**0**	

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures																						
DMA ID No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
[1]Total impervious area requiring treatment	155,352																			DMA 21 to calc WQF for DMA 1	155,352	-
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#VALUE!	155352	0
[3]Additional pervious area draining to BMP (ft^2)	-																				0	0
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*	0.90																				0.90	0.00
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#VALUE!	7573	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	#VALUE!	0.647	0.000

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

DMA ID No.	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**
[1]Total impervious area requiring treatment		0	0	0	0	0	0	0														
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)																						
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*																						
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1]Length of longest overland flow path *Not to exceed 100 ft*	100				100			
[2]Slope of overland flow path (ft/ft)	0.0013				0.0050			
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.2400				0.1100			
[4]Overland flow response time (min) (0.355*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	17.41	0.00	0.00	0.00	7.33	0.00	0.00	0.00
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D				D			
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	Small Grain				Comm. Landsc.			
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	Good				Good			
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.05				0.05			
[9]Length of collector flow (ft)	3,300				3,300			
[10]Cross-sectional area of collector flow facility (ft^2)	1				1.00			
[11]Wetted perimeter of collector flow facility (ft)	2				2.00			
[12]Manning's roughness of collector flow facility	0.015				0.015			
[13]Slope of collector flow facility (ft/ft)	0.0058				0.0058			
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11) ^0.67 * (Item 13) ^0.5*	4.76	0.00	0.00	0.00	4.76	0.00	0.00	0.00
[15]Collector flow facility response time (min) T_c = Item 9 /(Item 14 * 60)	11.55	0.00	0.00	0.00	11.55	0.00	0.00	0.00
[16]Total runoff response time or T_t (min) T_t = Item 4 + Item 15	28.97	0.00	0.00	0.00	18.89	0.00	0.00	0.00

Form 4-2 Hydromodification Target for Peak Runoff

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Projec		
	1	2	3	4	1	2	3
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	155,352				155,352		
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	108,746				155,352		
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.32				0.25		
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	0.66	-	-	-	0.81	-	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.09	-	-	-	0.09	-	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	2.29	-	-	-	2.90	-	-
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*	2.29						
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 14.*	**YES**						

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	Road			
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	-	-	-
[3] Drainage Area (A) (ft^2)	155,352	-	-	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	98			
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.2	#DIV/0!	#DIV/0!	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90			
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	21,688	#DIV/0!	#DIV/0!	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.79	#DIV/0!	#DIV/0!	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.14			
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	3036	#DIV/0!	#DIV/0!	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*	10486			
[12] Bioretention Volume (ft3): *Sum of Item 13 in Form 3-6 for all bioretention measures in this DMA.*				
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3):				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	10,486	-	-	-
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15 for each DMA. If not provide additional storage capacity with appropriate flow controls at the discharge.*	**Yes**		**No**	

PROJECT: Phillip Road Project
PROJECT #: 4042-60-4
LOCATION: Roseville, CA
FILE:

DATE: 4-Apr-25
CALC BY: BRD
CHECKED BY: DRAFT
SHEETS:

LAUGENOUR AND MEIKLE
CIVIL ENGINEERS
608 COURT STREET
WOODLAND, CA 95695

Purpose: Calculate contact time of vegetated swales.

Table 1. Contact time for Post-Contruction Stormwater Quality Treatment

			Contact Time	
DMA/BMP	Length of Swale (ft)	Velocity (ft/sec)	(Seconds)	(Minutes)
SR 2&3	225	0.190	1184	19.7
PH 1	225	0.202	1114	18.6

Hydraulic Analysis Report

Project Data

Project Title:

Designer:

Project Date: Monday, March 27, 2023

Project Units: U.S. Customary Units

Notes:

Channel Analysis: BMP 1 Southern Residential-SWALE-SWQ

Notes:

Input Parameters

Channel Type: Trapezoidal

Side Slope 1 (Z1): 4.0000 ft/ft

Side Slope 2 (Z2): 4.0000 ft/ft

Channel Width 55.00 ft

Longitudinal Slope: 0.0050 ft/ft

Manning's n: 0.2500

Flow 3.3400 cfs

Result Parameters

Depth 0.3120 ft

Area of Flow 17.5474 ft^2

Wetted Perimeter 57.5725 ft

Hydraulic Radius 0.3048 ft

Average Velocity 0.1903 ft/s

Top Width 57.4957 ft

Froude Number: 0.0607

Critical Depth 0.0485 ft

Critical Velocity 1.2475 ft/s

Critical Slope: 2.5025 ft/ft

Critical Top Width 55.39 ft

Calculated Max Shear Stress 0.0973 lb/ft^2

Calculated Avg Shear Stress 0.0951 lb/ft^2

Channel Analysis: BMP 1 Phillip Road-SWALE-SWQ

Notes:

Input Parameters

Channel Type: Trapezoidal

Side Slope 1 (Z1): 4.0000 ft/ft

Side Slope 2 (Z2): 4.0000 ft/ft

Channel Width 15.00 ft

Longitudinal Slope: 0.0100 ft/ft

Manning's n: 0.2500

Flow 0.6730 cfs

Result Parameters

Depth 0.2099 ft

Area of Flow 3.3245 ft^2

Wetted Perimeter 16.7308 ft

Hydraulic Radius 0.1987 ft

Average Velocity 0.2024 ft/s

Top Width 16.6791 ft

Froude Number: 0.0799

Critical Depth 0.0396 ft

Critical Velocity 1.1226 ft/s

Critical Slope: 2.6860 ft/ft

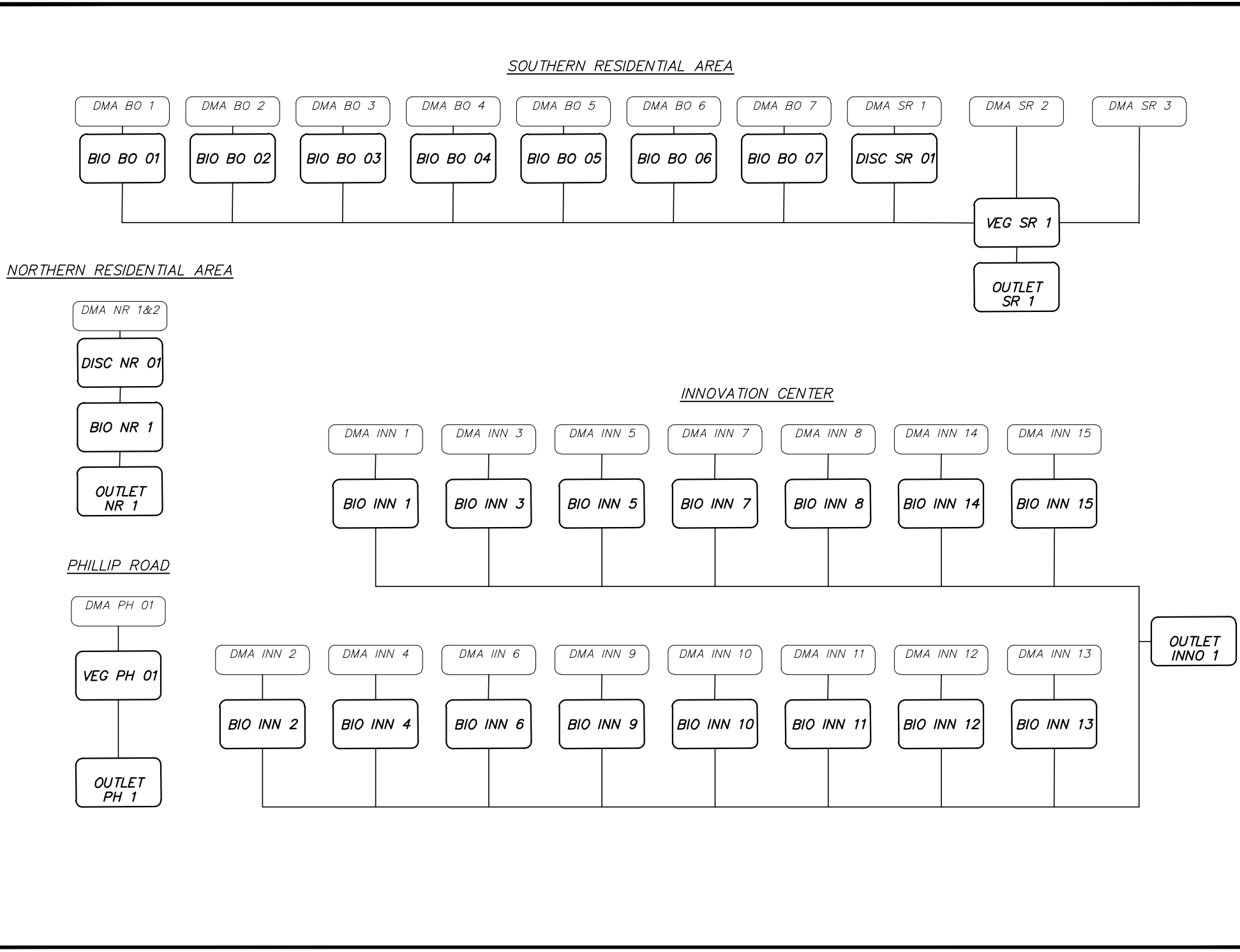
Critical Top Width 15.32 ft

Calculated Max Shear Stress 0.1310 lb/ft^2

Calculated Avg Shear Stress 0.1240 lb/ft^2

APPENDIX B-5

SWQP WORKSHEETS FOR THE NORTHERN RESIDENTIAL AREA


SOUTHERN RESIDENTIAL AREA
DMA BO 1
DMA BO 2
DMA BO 3
DMA BO 4
DMA BO 5
DMA BO 6
DMA BO 7
DMA SR 1
DMA SR 2
DMA SR 3
BIO BO 01
BIO BO 02
BIO BO 03
BIO BO 04
BIO BO 05
BIO BO 06
BIO BO 07
DISC SR 01
VEG SR 1
OUTLET SR 1
NORTHERN RESIDENTIAL AREA
DMA NR 1&2
DISC NR 01
BIO NR 1
OUTLET NR 1
INNOVATION CENTER
DMA INN 1
DMA INN 3
DMA INN 5
DMA INN 7
DMA INN 8
DMA INN 14
DMA INN 15
BIO INN 1
BIO INN 3
BIO INN 5
BIO INN 7
BIO INN 8
BIO INN 14
BIO INN 15
PHILLIP ROAD
DMA PH 01
VEG PH 01
OUTLET PH 1
DMA INN 2
DMA INN 4
DMA IIN 6
DMA INN 9
DMA INN 10
DMA INN 11
DMA INN 12
DMA INN 13
BIO INN 2
BIO INN 4
BIO INN 6
BIO INN 9
BIO INN 10
BIO INN 11
BIO INN 12
BIO INN 13
OUTLET INNO 1

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

[1]DMA ID No.			1		2		3		4	
Site Design Measure	**Runoff Reduction Parameters**			**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**		**Runoff Reduction (ft^3)**
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		0
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*		0		0		0		0
	n_d	*number of new deciduous trees*								
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*								
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*		0	302201	20399		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*		0		0		0	0	0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*		0		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*								
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					Yes	X	No			
[10] Total Volume Reduction (ft^3)			0		20399		0		0	
[11] Effective Treated Impervious Area (ft^2)			0		302201		0		0	

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures																						
DMA ID No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
[1]Total impervious area requiring treatment	493,198	302,201																				-
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	493198	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)	-	1,320,032																			0	
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*	0.90	0.41																			0.90	
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	24043	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	2.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

DMA ID No.	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**
[1]Total impervious area requiring treatment		0	0	0	0	0	0	0														
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)																						
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*																						
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

[5, 6] Values will equal zero if all impervious area has been treated by Site Design Measures.

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**1**			
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	24043			
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5			
[4]BMP Surface Area (ft^2) *Top of BMP*	17185			
[5]Infiltration rate of underlying soils (in/hr)	0.05			
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	1.0			
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.2	-	-	-
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	13765			
[9]Planting media depth, d_{media} (ft)	1.5			
[10]Planting media porosity	0.35			
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	3.0			
[12]Gravel porosity	0.35			
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	24,518.9	-	-	-
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15]Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	1.9890	0.0000	0.0000	0.0000
[16]Total Treated Flow Rate for Project (ft^3/s) Q_{total} *= Sum of Item 15 for all DMAs*				
[17]Is WQV for each DMA treated on-site? *Check Yes if Item 14 equals 0 for all DMAs*	**Yes**		**No**	

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1]Length of longest overland flow path *Not to exceed 100 ft*	100				100			
[2]Slope of overland flow path (ft/ft)	0.0011				0.0050			
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.2400				0.2400			
[4]Overland flow response time (min) (0.355*(Item 1*Item 3)$^{0.6}$)/(Item 2$^{0.3}$)	18.71	0.00	0.00	0.00	11.71	0.00	0.00	0.00
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D				D			
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	Small Grain				Comm. Landsc.			
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	Good				Good			
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.05				0.05			
[9]Length of collector flow (ft)	2,100				2,200			
[10]Cross-sectional area of collector flow facility (ft^2)	1				1.00			
[11]Wetted perimeter of collector flow facility (ft)	2				2.00			
[12]Manning's roughness of collector flow facility	0.035				0.015			
[13]Slope of collector flow facility (ft/ft)	0.0011				0.0025			
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11) ^0.67 * (Item 13) ^0.5*	0.87	0.00	0.00	0.00	3.13	0.00	0.00	0.00
[15]Collector flow facility response time (min) *T_c = Item 9 /(Item 14 * 60)*	40.28	0.00	0.00	0.00	11.72	0.00	0.00	0.00
[16]Total runoff response time or T_t (min) *T_t = Item 4 + Item 15*	58.98	0.00	0.00	0.00	23.43	0.00	0.00	0.00

Form 4-2 Hydromodification Target for Peak Runoff

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Projec		
	1	2	3	4	1	2	3
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	2,115,431				2,115,431		
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0				795,399		
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.45				0.27		
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	0.46	-	-	-	0.70	-	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.09	-	-	-	0.09	-	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	18.17	-	-	-	31.68	-	-
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*							
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 14.*							

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	**2**	**3**	**4**
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	Residential			
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D	-	-	-
[3] Drainage Area (A) (ft^2)	2,115,431	-	-	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	90	1/6 acre/lot		
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	1.1	#VALUE!	#DIV/0!	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90			
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	177,933	#VALUE!	#DIV/0!	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.57	#DIV/0!	#DIV/0!	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.16			
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	28469	#VALUE!	#DIV/0!	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*	20399			
[12] Bioretention Volume (ft3): *Sum of Item 13 in Form 3-6 for all bioretention measures in this DMA.*	24519			
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*				
[14] Supplemental Detention Volume (ft^3):				
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	44,917	-	-	-
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15 for each DMA. If not provide additional storage capacity with appropriate flow controls at the discharge.*	**Yes**		**No**	

APPENDIX C

HEC-HMS MODEL INPUT CHANGES

PROJECT: Philip Road Project
PROJECT #: 4042-60-4
LOCATION: Roseville, CA
FILE:

11-Apr-25
BRD
PF

AUGENOUR AND MEIKL
CIVIL ENGINEERS
608 COURT STREET
WOODLAND, CA 95695

Purpose: Calculate/list hydrologic model input changes made to the Creekview master plan hydrology model.

Table 1 - Hydrologic Input Data[a]

				Losses 1				Plane 1[c]					Channel Flow[c]						Collector[c]					
Condition	Shed	A, acres	A, sq mi	% Imperv.	Initial Infiltration[b1]	Pervious Cover Type	Constant Rate Infiltration, in./hr[b2]	Ave L, ft	Ave. Slope, ft/f	Cover	n[d]	Area, %	L, ft	n[d]	S, ft/ft	Shape	Z, ft/ft[e]	Width/Diam, ft	Ave L, ft	Ave. Slope, ft/f	n[d]	Ave Area, sq mi	Shape	Ave. Diam. ft
Existing																								
	PL10E	354.69	0.55420	2.0	0.1		0.09	350	0.001		0.40	100	5500	0.08	0.001	Trap	5	2						
Existing - Refined																								
	PL10E1	172.22	0.26909	2.0	0.1		0.09	350	0.001		0.40	100	3500	0.08	0.001	Trap	5	2						
	PL10EPE	182.47	0.28511	2.0	0.1		0.09	350	0.001		0.40	100	2000	0.08	0.001	Trap	5	2						
Proposed																								
	PL10E1	172.22	0.26909	2.0	0.1		0.09	350	0.001		0.40	100	3500	0.08	0.001	Trap	5	2						
	PL10ENR	49.10	0.07672	40.0	0.1	Commercial Landscaping	0.12	160	0.001		0.24	100	1700	0.015	0.0025	Trap	5	2	550	0.0025	0.015	0.0384	Circular	1.25
	PL10ESR	69.89	0.10920	46.7	0.1	Commercial Landscaping	0.12	160	0.001		0.24	100	2500	0.015	0.0025	Trap	5	2	450	0.0025	0.015	0.0546	Circular	1.25
	PL10ESI	63.48	0.10008	85.0	0.1	Commercial Landscaping	0.12	40	0.001		0.24	100	2500	0.015	0.0025	Trap	5	3	500	0.0025	0.015	0.0500	Circular	1.5

(a) Based on Stormwater Management Manual (SWMM, 1996), Placer County Flood Control and Water Conservation District
(b1) Based on Roseville City model for Pleasant Grove Creek watershed developed for the Creekview development drainage master plan.
(b2) Based on Table 5-3 of SWMM.
(c) Parameters chosen for elements are typical of the watershed and do not necessarily represent specific, physical elements. Representation of some short routing segments were neglected.
(d) N-values for shallow overland sheet flow are based on Table 5-5 of SWMM. Others values are typical of pipe, channel, or gutter flow.
(e) For "channel" elements, shallow overland flow represented as triangular ditch with flatter side slopes.

APPENDIX D

CLOMR-F FOR THE PROJECT

Federal Emergency Management Agency
Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION BASED ON FILL
COMMENT DOCUMENT

COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION
COMMUNITY	CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA	A portion of Sections 14 and 15, Township 11 North, Range 5 East, as described in Individual Grant Deed recorded as Document No. 2004-0137897, in the Office of the Recorder, Placer County, California The portion of property is more particularly described by the following metes and bounds:
	COMMUNITY NO.: 060243	
AFFECTED MAP PANEL	NUMBER: 06061C0920H	
	DATE: 11/2/2018	
FLOODING SOURCE: PLEASANT GROVE CREEK; PLEASANT GROVE CREEK (BYPASS CHANNEL)		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY:38.799466, -121.396886 SOURCE OF LAT & LONG: LOMA LOGIC DATUM: NAD 83

COMMENT TABLE REGARDING THE PROPOSED PROPERTY (PLEASE NOTE THAT THIS IS NOT A FINAL DETERMINATION. A FINAL DETERMINATION WILL BE MADE UPON RECEIPT OF AS-BUILT INFORMATION REGARDING THIS PROPERTY.)

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT WOULD BE REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
--	--	--	6382 Phillip Road	Portion of Property	X (unshaded)	78.1 feet	--	80.0 feet

Special Flood Hazard Area (SFHA) - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled o exceeded in any given year (base flood).

ADDITIONAL CONSIDERATIONS (Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.)

LEGAL PROPERTY DESCRIPTION
PORTIONS REMAIN IN THE FLOODWAY
CONDITIONAL LOMR-F DETERMINATION
REVISED BY LETTER OF MAP REVISION
STATE LOCAL CONSIDERATIONS

This document provides the Federal Emergency Management Agency's comment regarding a request for a Conditional Letter of Map Revision based on Fill for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the proposed described portion(s) of the property(ies) would not be located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood) if built as proposed. Our final determination will be made upon receipt of a copy of this document, as-built elevations, and a completed Community Acknowledgement form. Proper completion of this form certifies the subject property is reasonably safe from flooding in accordance with Part 65.5(a)(4) of our regulations. Further guidance on determining if the subject property is reasonably safe from flooding may be found in FEMA Technical Bulletin 10-01. A copy of this bulletin can be obtained by calling the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or from our web site at http://www.fema.gov/mit/tb1001.pdf. This document is not a final determination; it only provides our comment on the proposed project in relation to the SFHA shown on the effective NFIP map.

This comment document is based on the flood data presently available. The enclosed documents provide additional information regarding this request. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange (FMIX) toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION BASED ON FILL
COMMENT DOCUMENT

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

LEGAL PROPERTY DESCRIPTION (CONTINUED)

BEGINNING at the Southeast corner of said Section 15; thence, from said POINT OF BEGINNING, along the South line of said Section 15, South 89°37'55" West 1,319.74 feet; thence, leaving said South line, North 00°11'26" West 2,940.40 feet; thence North 78°34'46"East 591.45 feet; thence, along a curve to the right concave Southerly, having a radius of 2,200.00 feet, through a central angle of 31°04'33", and having an arc length of 1,193.22 feet; thence, along a compound curve to the right concave Southwesterly, having a radius of 500.00 feet, through a central angle of 13°37'43", and having an arc length of 118.93 feet; thence, along a reverse curve to the left concave Northeasterly, having a radius of 500.00 feet, through a central angle of 15°26'46", and having an arc length of 134.79 feet; thence South 00°08'57" East 2,847.82 feet to the South line of said Section 14; thence, along said South line, South 89°30'13"West 660.75 feet to the POINT OF BEGINNING.

If development occurs within the regulatory floodway, the response from FEMA for an as-built request for a LOMR-F may be a Potential Violation letter. In accordance with Subparagraph 60.3(d)(3) of the NFIP regulations, no encroachment or other development may take place within the regulatory floodway if the development would cause any increase in flood levels. Revisions to the BFEs and/or regulatory floodway must be coordinated by community officials and submitted to our Regional Office for review and approval. For reference, development is defined at CFR 44 59.1 as; "any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials". Please note that a CLOMR-F comment document does not constitute a permit and therefore does not negate the requirement to comply with all Federal, State, and local requirements for development within the Special Flood Hazard Area.

PORTIONS OF THE PROPERTY REMAIN IN THE FLOODWAY (This Additional Consideration applies to the preceding 1 Property.)

A portion of this property is located within the Special Flood Hazard Area and the National Flood Insurance Program (NFIP) regulatory floodway for the flooding source indicated on the Determination/Comment Document while the subject of this determination is not. The NFIP regulatory floodway is the area that must remain unobstructed in order to prevent unacceptable increases in base flood elevations. Therefore, no construction may take place in an NFIP regulatory floodway that may cause an increase in the base flood elevation, and any future construction or substantial improvement on the property remains subject to Federal, State/Commonwealth, and local regulations for floodplain management. The NFIP regulatory floodway is provided to the community as a tool to regulate floodplain development. Modifications to the NFIP regulatory floodway must be accepted by both the Federal Emergency Management Agency (FEMA) and the community involved. Appropriate community actions are defined in Paragraph 60.3(d) of the NFIP regulations. Any proposed revision to the NFIP regulatory floodway must be submitted to FEMA by community officials. The community should contact either the Regional Director (for those communities in Regions I-IV, and VI-X), or the Regional Engineer (for those communities in Region V) for guidance on the data which must be submitted for a revision to the NFIP regulatory floodway. Contact information for each regional office can be obtained by calling the FEMA Mapping and Insurance eXchange toll free at (877) 336-2627 (877-FEMA MAP) or from our web site at http://www.fema.gov/about/regoff.htm.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Mapping and Insurance eXchange (FMIX) toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION BASED ON FILL COMMENT DOCUMENT

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

CONDITIONAL LOMR-F DETERMINATION (This Additional Consideration applies to the preceding 1 Property.)

Comments regarding this conditional request are based on the flood data presently available. Our final determination will be made upon receipt of this Comment Document, certified as-built elevations and/or certified as-built survey. Since this request is for a Conditional Letter of Map Revision based on Fill, we will also require the applicable processing fee, and the "Community Acknowledgement" form. Please note that additional items may be required before a final as-built determination is issued.

This letter does not relieve Federal agencies of the need to comply with Executive Order 11988 on Floodplain Management in carrying out their responsibilities and providing Federally undertaken, financed, or assisted construction and improvements, or in their regulating or licensing activities.

REVISED BY LETTER OF MAP REVISION (This Additional Consideration applies to the preceding 1 Property.)

The effective National Flood Insurance Program map for the subject property, has since been revised by a Letter of Map Revision (LOMR) dated 11/23/2020. The 11/23/2020 LOMR has been used in making the determination/comment for the subject property.

STATE AND LOCAL CONSIDERATIONS (This Additional Consideration applies to all properties in the CLOMR-F COMMENT DOCUMENT)

Please note that this document does not override or supersede any State or local procedural or substantive provisions which may apply to floodplain management requirements associated with amendments to State or local floodplain zoning ordinances, maps, or State or local procedures adopted under the National Flood Insurance Program.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Mapping and Insurance eXchange (FMIX) toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
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