Appendix B

Sunset Area Water, Wastewater, and Recycled Water Technical Report

SUNSET AREA

WATER, WASTEWATER AND RECYCLED WATER

TECHNICAL REPORT

October 19, 2017

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Project No. 2HAR110100

TABLE OF CONTENTS

I. Introduction 1

A. Purpose 1

B. Background 1

C. Existing Documents 1

II. Land Use Plan Summary 2

A. Map and Description 2

B. Phasing 5

C. Land Use Statistics 7

III. Demands 7

A. Wastewater Flows (Indoor Water Demand) 7

B. Potable Water Demand (Indoor plus Local Outdoor) 9

C. Recycled Water Demand (Common Area) 10

IV. Wastewater System 11

A. Service Agency 11

B. Existing System 12

C. Future Collection System Analysis (Buildout) 14

D. Wastewater Treatment 17

E. Improvement Phasing 17

V. Potable Water System 18

A. Service Agency 18

B. Existing System 18

C. Future System Analysis (Buildout) 20

D. Improvement Phasing 20

VI. Recycled Water System 24

A. Service Agency 24

B. Existing System 24

C. Future System Analysis (Buildout) 24

D. Improvement Phasing 29

TABLES

Table 1 Sunset Area Land Use Plan Statistics 7
Table 2 Wastewater Flows by Land Use Designation 8
Table 3 Potable Water Demand by Land Use Designation 10
Table 4 Recycled Water Demand by Land Use Designation 11
Table 5 Wastewater Flows by Point of Connection 15
Table 6 Summary of Average and Peak Flows to Point of Connections 17
Table 7 Potable Water Demands by Pressure Zone 22
Table 8 Potable Water Demands by Point Of Connection 23
Table 9 Recycled Water Demands by Junction 28
Table 10 Recycled Water Demands by Point of Connection 29

FIGURES

Figure 1 – Sunset Area Land Use Plan 3
Figure 2 – Sunset Area Project Phasing 6
Figure 3 – Sunset Area Wastewater System 13
Figure 4 – Sunset Area Wastewater System POC Basins 16
Figure 5 – Sunset Area Potable Water System 19
Figure 6 – Sunset Area Potable Water System Junction Map 21
Figure 7 – Sunset Area Recycled Water System 26
Figure 8 – Sunset Area Recycled Water System Junction Map 27

I. Introduction

This Sunset Area Water, Wastewater and Recycled Water Technical Report was prepared by Psomas in support of the Sunset Area Plan. This section summarizes the purpose, background and scope for this Technical Report.

A. Purpose

This document summarizes the land use plan (see Sunset Area Plan for details) and develops recommended infrastructure requirements to provide water, wastewater and recycled water service to the project. The purpose is to:

- Develop integrated demands for wastewater (inside water demand), potable water (inside plus local outside water use), and recycled water.
- Evaluate alternatives and document the planning assumptions for developing the recommended infrastructure to provide wastewater, water and recycled water service to customers within the project.
- Provide a description of required on- and off-project infrastructure requirements by project phase
- Provide background information for the Environmental Impact Report

B. Background

The Sunset Area Plan encompasses a total of approximately 8,101 acres, of which approximately 2,213 acres is the Placer Ranch Specific Plan. This technical report covers the remaining 5,888-acre area referenced herein as the Sunset Area. As a specific plan, the Placer Ranch area has developed more detailed master plans, which are referenced in the following section, for development of demands and infrastructure requirements for the Specific Plan area. The Sunset Area Plan is located north and east of the City of Roseville, west of State Route (SR) 65 and south of the City of Lincoln.

C. Existing Documents

In order to ensure this Technical Report is coordinated with other planning efforts, previous studies were reviewed and utilized in the planning and design of the water, wastewater and recycled water systems for the Sunset Area. Each of these studies are listed and summarized below.

Placer County Water Agency (PCWA) 2015 Urban Water Management Plan, adopted June 2, 2016. PCWA prepared the UWMP to comply with the Urban Water Management Planning Act to meet the water supply demands over the next 30 years.

Placer Ranch Specific Plan Potable Water Master Plan prepared by MacKay & Somps, dated July 18, 2017. This master plan developed the potable water demands and infrastructure requirements for providing potable water service to the specific plan area, including demands from areas of the Sunset Area that are to be served off the same water system.

South Placer Regional Wastewater and Recycled Water Systems Evaluation, Updated Final Report prepared by RMC, dated December 2009. This report developed wastewater flow projections and evaluated the regional wastewater collection facilities for the watershed tributary

to the two treatment plants operated by the South Placer Wastewater Authority (SPWA) including the Dry Creek and Pleasant Grove Wastewater Treatment Plants.

Sewer Service Analysis for the Area Surrounding Athens Avenue prepared by Stantec, dated April 2017. This study analyzed numerous alternatives for sewering the subject area of the Sunset Area and developed a recommended sewer solution, which was effectively to direct all wastewater generated within the Sunset Area to the south through connections to the proposed Placer Ranch system and to the existing Pleasant Grove Creek Trunk Sewer. The areas tributary to the existing connections within the eastern portion of the Sunset Area would continue to sewer to these locations.

Placer Ranch Specific Plan Sanitary Sewer Master Plan prepared by MacKay & Somps, dated July 18, 2017. This master plan developed the wastewater demands and infrastructure requirements for providing sewer collection to the specific plan area, including flows tributary to their proposed sewer collection system from the Sunset Area.

Placer Ranch Specific Plan Recycled Water Master Plan prepared by MacKay & Somps, dated July 18, 2017. This master plan developed the recycled water demands and infrastructure requirements for the Placer Ranch, including demands from areas of the Sunset Area that are to be served off the same system.

II. Land Use Plan Summary

A. Map and Description

There are ten different land use designations within the Sunset Area boundary as shown in Figure 1. A brief description of the land use designations with types of uses permitted is included below.

General Commercial (GC)

The GC designation provides for retail and service commercial uses along Sunset Boulevard near SR 65. It is intended to provide goods and services to the businesses and the employees working within the Sunset Area as well as travelers using SR 65. Typical uses under the GC designation include retail stores, restaurants, and service commercial uses.

Entertainment Mixed-Use (EMU)

The EMU designation provides for entertainment oriented and visitor-serving uses that would draw customers from beyond South Placer County. It is intended to leverage the excellent transportation access at the future Placer Parkway/Foothills Boulevard interchange, visibility from Placer Parkway and SR 65, and proximity to Thunder Valley Casino. The EMU designation also anticipates the potential need for residential uses to support the workforce employed in the area. Typical uses permitted under the EMU designation include entertainment venues, theme parks, super-regional destination retail, shopping, restaurants, recreational facilities, lodging, healthcare-related services, and residential uses ancillary to or supportive of employment uses.

Business Park (BP)

The BP designation provides for employee-intensive industrial and professional uses, including a campus-like setting. The business Park designation is intended to provide for businesses that involve large numbers of employees and facilities that are attractive and environmentally

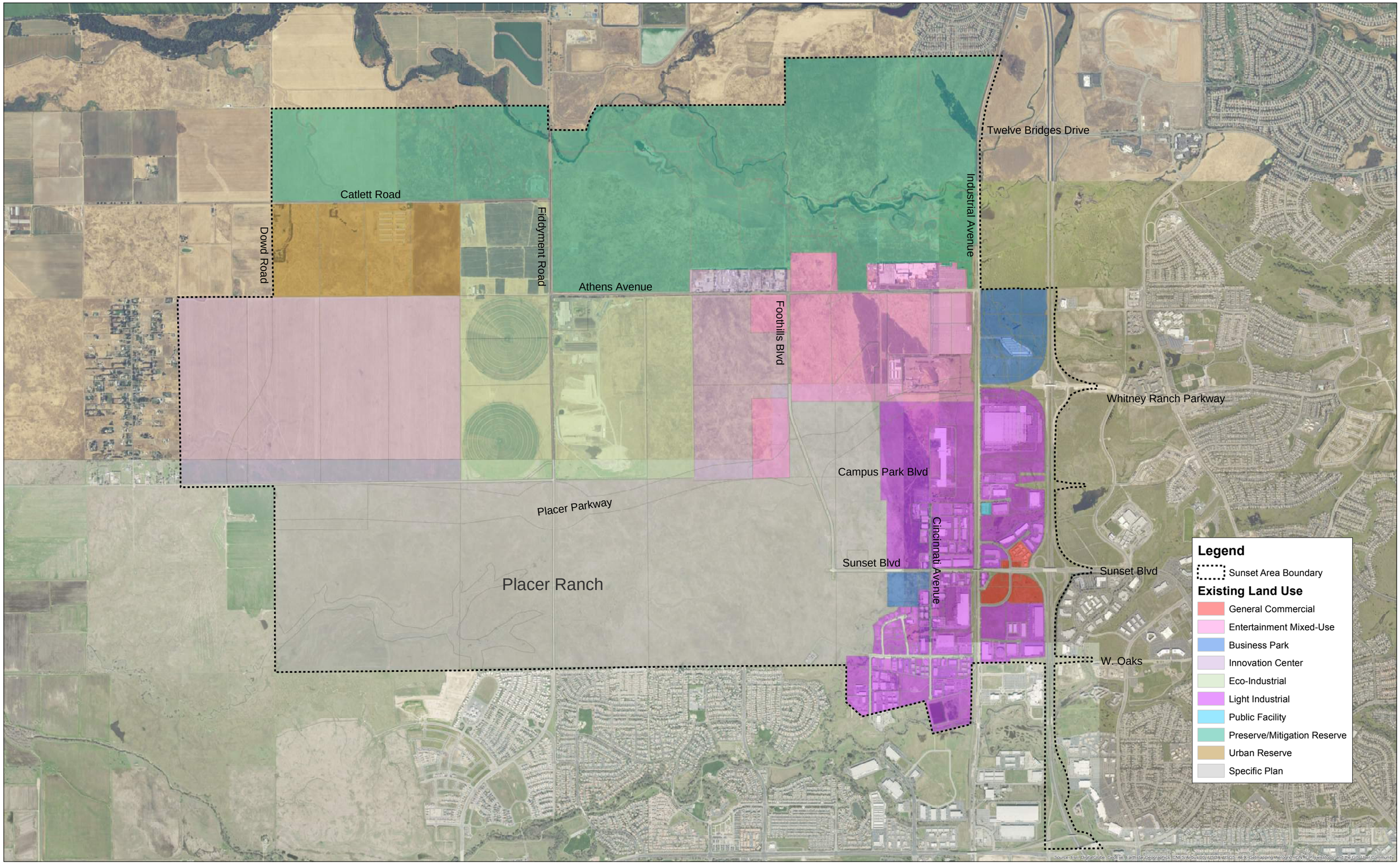

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Figure 1
Sunset Area Land Use Plan

sensitive. The BP designation is applied to areas with high visibility and good access to major transportation routes. Uses that involve outdoor manufacturing or storage, or that emit any appreciable amount of visible gasses, particulates, steam, heat, odors, vibrations, glare, dust, or excessive noise are discouraged within this designation. Typical uses permitted under the BP designation include professional offices, research and development facilities, light manufacturing and assembly, and retail and service commercial uses necessary to support other allowed uses.

Innovation Center (IC)

The IC designation accommodates a mix of industry clusters (e.g., information technology, life sciences, knowledge-based, creative), with a mix of small and large operations, in an amenity-rich setting with a high level of finish. It also provides the flexibility to integrate innovative residential uses developed in otherwise non-residential projects. The proximity to the CSUS campus in Placer Ranch and Warwick University to the west provides an opportunity to academically-related businesses with the preference for vital and dynamic town center surroundings. Typical uses permitted under the IC designation include light industrial/flex, office, laboratories, research and development, retail and other services catering to other tenants/uses in the area, and residential uses ancillary to or supportive of employment uses.

Eco-Industrial (EI)

The EI designation provides for ongoing operation of the landfill, as well as for industrial and manufacturing uses focused on alternative waste-to-energy technologies, recovery and reuse of materials, solid waste-related research and development, and related advanced manufacturing, perhaps in conjunction with nearby universities. The viability of these uses would be enhanced by reorientation of the West Placer Waste Management Authority (WPWMA) operations within its property to minimize nuisances. Typical uses permitted under the EI designation include manufacturing and remanufacturing including advanced materials, construction and demolition debris recycling, plastics processing (grinding, washing pelletizing, molding), paper conversion, wood salvage and re-milling, glass processing/manufacturing, scrap tire recycling/bailing, electronics repair/de-manufacturing/recycling, non-profit/small industry incubator, and landfill operations.

Light Industrial (LI)

The LI designation provides for a wide variety of uses including office/flex, research and development, light manufacturing, assembly, and distribution activities. This designation is applied to areas with good access to major truck transportation routes and rail lines, located near concentrated residential areas so that employee commute times and distances are minimized. The range of uses within this designation may call for the identification of sub-districts to minimize car/truck conflicts. Typical uses permitted under the LI designation include light manufacturing and assembly, storage and distribution, research and development activities, business support service, retail and service commercial uses necessary to support other allowed uses, and necessary public utility and safety facilities. Much of this area is developed with existing uses. It is assumed that many of the existing uses are considered to be underutilized and will be redeveloped as the area develops, therefore existing demands are not broken out separately from the build out demands.

Public Facility (PF)

The PF designation is applied to government-owned faculties and quasi-public facilities in a variety of rural and urban settings. In the Sunset Area, this designation is applied to areas with existing public or quasi-public facilities and land uses, or to publically-owned lands intended for

development with public facilities. Typical uses permitted under the PF designation include government offices and service centers and other institutional facilities.

Preserve/Mitigation Reserve (P/MR)

The P/MR designation is applied to lands specifically reserved or proposed for watershed preservation, passive outdoor recreation, wilderness or wildlife/environmental preserves; sites or portions of sites with natural features such as unique topography, vegetation, habitat, or stream courses; areas providing buffers between different, potentially incompatible types of land use such as intensive agricultural operations and residential uses, hazardous areas and/or land uses and areas with concentrations of population, and residential areas and important community facilities that may be viewed as nuisances, such as the Western Regional Sanitary Landfill; and areas intended to preserve community identity by providing separation between communities. Structural development is restricted to accessory structures necessary to support the primary allowed uses. This designation includes three existing reserves—Orchard Creek Conservation Bank, Warm Springs Mitigation Bank, and Moore Ranch Conservancy. Typical uses permitted under the P/MR designation include mitigation banks, natural resurface conservation areas, and necessary public utility and safety facilities.

Urban Reserve (UR)

The UR designation is applied to land to be developed beyond the timeframe of the Plan. In the short- and mid-term, these areas will remain in a reserve designation that allows interim agricultural uses. In advance of these areas being planned and developed for urban uses, typical uses permitted in the UR designation include crop production, orchard and vineyards, grazing, pasture and rangeland, necessary public utility and safety facilities, allowable residential development in areas used for agriculture includes one principal dwelling and one secondary dwelling per lot.

Placer Ranch Specific Plan (PRSP)

The PRSP designation applies to Placer Ranch, which covers approximately 2,200 acres in the southern part of the Sunset Area, mostly south of Placer Parkway. Placer Ranch is envisioned to develop with a mixture of residential, commercial, employment, educations, and public uses, with a new CSU Sacramento satellite campus as the centerpiece. At buildout, the area is expected to accommodate approximately 6,000 dwelling units and 14,000 residents. In addition, it has capacity to accommodate over nine million square feet of commercial, employment, and university-related non-residential uses. Development within Placer Ranch will be guided by the Placer Ranch Specific Plan.

B. Phasing

The Sunset Area will likely build out in two major phases, as shown on Figure 2. Phase 1 will include everything east of Foothills Boulevard North plus the entire Preserve/Mitigation Reserve land use designation. This includes the Light Industrial, General Commercial, Business Park, Public Facility, part of the Entertainment Mixed-Use (east of Foothills Boulevard North), and the previously mentioned Preserve/Mitigation Reserve land use designations. Phase 2 will include everything west of Foothills Boulevard North, except for the Preserve/Mitigation Reserve land use designation, which is in Phase 1. This includes the Entertainment Mixed-Use (west of Foothills Boulevard North), Eco-Industrial, Innovation Center, and Urban Reserve land use designations.

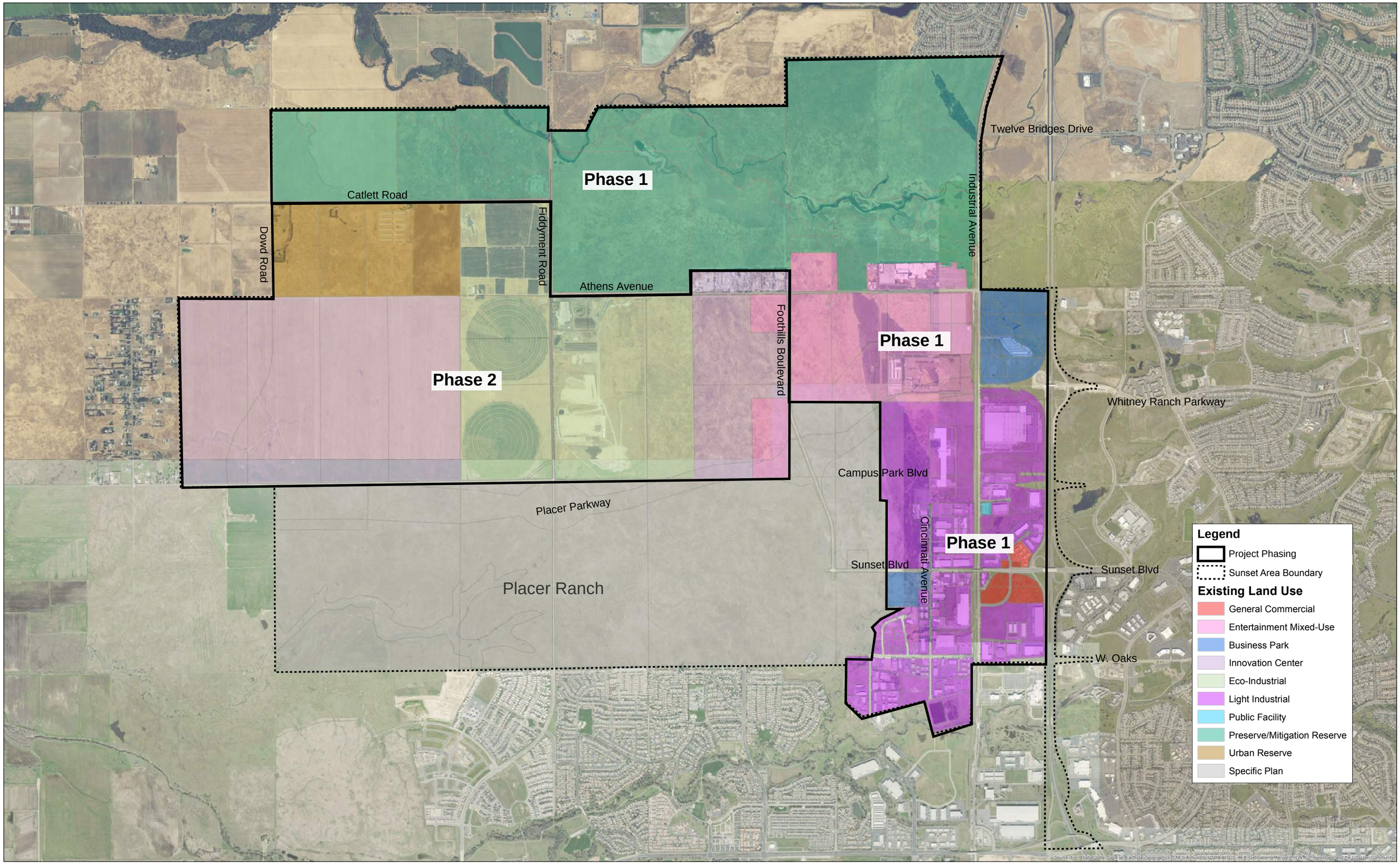

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Figure 2
Sunset Area Project Phasing

C. Land Use Statistics

The land use statistics for the Sunset Area are detailed below in Table 1. These statistics include acreage, dwelling units, and building square footage for each land use designation. Placer Parkway acreage (roadway right-of-way from GIS shapefiles) has been listed separately from the total Business Park, Entertainment Mixed-Use, Innovation Center, and Light industrial land use designations. Also, there are residential areas within both the Entertainment Mixed-Use and Innovation Center land uses, and EDUs in the Eco-Industrial Center to represent Landfill leachate as shown in Table 2.

Table 1
Sunset Area Land Use Plan Statistics

Land Use Designation	Land Use Area (ac)	Dwelling Units	Building Square Footage
Business Park	131		929,600
Placer Parkway	11		
Eco-Industrial	927		7,916,600
Entertainment Mixed-Use	427		3,061,600
Residential	52	375	
Placer Parkway	38		
General Commercial	34		218,900
Innovation Center	1,042		11,998,500
Residential	187	2,083	
Placer Parkway	17		
Light Industrial	727		3,525,300
Placer Parkway	18		
Public Facility	2		
Preserve/Mitigation Reserve	1,955		
Urban Reserve	320		
Placer Ranch Specific Plan[1]	2,213		
Total	**8,101**	**2,458**	**27,650,500**

1) See Placer Ranch Specific Plan for detailed land use breakdown

III. Demands

A. Wastewater Flows (Indoor Water Demand)

The wastewater flows by land use designation for the Sunset Area are summarized in Table 2. The wastewater generation rates consist of indoor water demands that generate sewage. The generation rates in Table 2 are from the Sewer Analysis for the Area Surrounding Athens Avenue (Athens Ave Sewer Study) prepared by Stantec Consulting Services, Inc. and dated April, 2017. A generation rate of 850 gallons per day per acre (gpd/acre) was used for the all the following land

use designations: Business Park, Eco-Industrial, Innovation Center, Light Industrial, General Commercial, and Public Facility. The Entertainment Mixed-Use land use designation uses a generation rate of 2,300 gpd/acre. The residential areas in the Entertainment Mixed-Use and Innovation Center areas use a generation rate of 190 gallons per day per dwelling unit (gpd/DU). The Average Dry Weather Flows for the Casino and Area L270, are taken from the Athens Avenue Sewer Study (AASS). Area L270 is a County area east of the Sunset Area that is currently pumped to the City of Lincoln wastewater treatment facility but was recommended to be re-directed to flow by gravity to the Sunset Area in the AASS. It should be noted that only 200 acres of the Eco-Industrial land use designation generate sewage due to the Landfill site taking up the majority of this area. The sewage flow from the Landfill itself includes a total of 200 equivalent dwelling units (EDU) at buildout, 143 EDUs of which are allocated in the current condition for leachate flows entering the sewer system. As shown below in Table 2, the total average dry weather wastewater flow for the Sunset Area is 3.57 million gallons per day (mgd) with another 0.23 mgd from outside the Sunset Area (Area L270), making a total of 3.80 mgd to flow into various connection points and into the Pleasant Grove Sewer Trunk for treatment at the Pleasant Grove Wastewater Treatment Plant. Table 2 also shows the EDUs by land use and totals based on a flow of 190 gpd/EDU.

Table 2
Wastewater Flows by Land Use Designation

Land Use Designation	Acres	Resid. Dwelling Units (DUs)	Generation Rate (gpd/acre) or (gpd/DU)	ADWF (mgd)	EDUs
Business Park	142		850	0.12	635
Eco-Industrial[1]	200		850	0.17	895
EDUs[2]		200	190	0.04	200
Entertainment Mixed-Use	418		2,300	0.96	5,060
Residential	52	375	190	0.07	375
Casino[3]	47		-	0.25	1,316
General Commercial	34		850	0.03	152
Innovation Center	1,058		850	0.90	4,733
Residential	187	2,083	190	0.40	2,083
Light Industrial	744		850	0.63	3,328
Public Facility	2		850	0.00	9
Total Sunset Area	**2,884**	**2,458**		**3.57**	**18,786**
L270[3]			-	0.23	1,211
Total	**2,884**	**4,916**		**3.80**	**19,997**

1) Only 200 acres of the Eco-Industrial land use designation generate sewage

2) EDUs not included in Total Residential Dwelling Units

3) Area outside Sunset Area, Average Dry Weather Flow (ADWF) from Athens Ave. Sewer Study

B. Potable Water Demand (Indoor plus Local Outdoor)

The total potable water demand by land use designation for the Sunset Area is summarized in Table 3. These demands include both indoor (wastewater) plus local outdoor water demands. The water demand factors for the Sunset Area were generated consistent with Placer County Water Agency (PCWA) policies using their 2015 UWMP as a guideline as well as the Placer Ranch Specific Plan Potable Water Master Plan. A demand factor of 1,121 gpd/acre was used for all the following land use designations: Business Park, Eco-Industrial, General Commercial, Innovation Center and Light Industrial. Table 4-6 of PCWA's 2015 UWMP includes factors for estimating new retail customers' water demands; however, there are only four non-residential categories listed – Commercial, Industrial, Municipal and Landscape-Greenbelt. The 1,121 gpd/acre factor equates to 1.25 acre-feet (AF) per acre, which is PCWA's factor for Commercial. All of the above uses are envisioned to be more reflective of that Commercial use and demand factor. Entertainment Mixed-Use and Public Facility land use designations use demand factors of 2,443 gpd/acre and 964 gpd/acre, respectively. These factors equate to approximately 2.75 and 1.10 AF/acre. The Entertainment Mixed-Use factor is higher than the highest PCWA factor (2.40 AF/acre) but is consistent with the wastewater generation rate of 2,300 gpd/acre factor developed from the SPWA master plan (Table 2, above) plus some potable demand for local outside use. The Public Facility factor of is also similarly consistent with the wastewater generation rate and very close to the PCWA factor for Municipal land use of 1.15 AF/acre. The residential areas in the Entertainment Mixed-Use and Innovation Center areas use demand factors of 312 gallons per day per dwelling unit (gpd/DU). The demand factors in terms of gpd/acre for the Entertainment Mixed-Use and Innovation Center Areas have been increased for each acre to account for the pro-rated residential dwelling units that will be constructed within these Districts. This pro-ration is necessary because the locations of the residential development clusters within these uses are not known at this time. For this analysis, the Urban Reserve potable water demand is set to zero. It should be noted that only 200 acres of the Eco-Industrial land use designation have a potable water demand due to the Landfill.

As shown below in Table 3, the total water demand for the Sunset Area is 4.35 mgd or 4,872 acre-feet per year (AFY). This amount would be the potable water demand if there is no recycled water system to serve the common area irrigation needs within the Sunset Area. The recycled water demands are discussed in the following section and as shown below, with a recycled water system implemented in the Sunset Area, potable water demands would be reduced to 3.58 mgd (4,010 AFY).

Table 3
Potable Water Demand by Land Use Designation

Land Use Designation	Acres	Dwelling Units (DUs)	Average Demand Factor (gpd/ac) or (gpd/DU)	Average Total Demand[2] (mgd)	Average Recycled Demand (mgd)	Average Potable Demand[3] (mgd)
Business Park	142		1,121	0.159	0.036	0.123
Eco-Industrial[1]	200		1,121	0.224	0.088	0.136
Entertainment Mixed-Use	465		2,443	1.136	0.118	1.018
Residential	52	375	312	0.117	0.013	0.104
General Commercial	34		1,121	0.038	0.009	0.030
Innovation Center	1,058		1,121	1.186	0.267	0.919
Residential	187	2,083	312	0.650	0.047	0.603
Light Industrial	744		1,121	0.834	0.188	0.646
Public Facility	2		964	0.002	0.000	0.002
Urban Reserve	320		0	0.000	0.000	0.000
Total[4]	**3,204**	**2,458**		**4.346**	**0.767**	**3.580**

1) Only 200 acres of the Eco-Industrial land use designation generate potable water demand

2) Average Demand without Recycled Water System

3) Average Potable Demand (Total minus Recycled)

4) Numbers may not total exactly due to Excel rounding

C. Recycled Water Demand (Common Area)

The recycled water demand was developed separately as shown in Table 4, below. However for purposes of sizing potable water system facilities and consistent with the Placer Ranch Potable Water Master Plan, these recycled water demands are factored into and included in the total potable water demands reported above in Table 3. A demand factor of 1,685 gallons per day per acre (gpd/acre) irrigated was used for all land use designations. This factor was calculated based on an Evapotranspiration Adjustment Factor (ETAF) of 0.45, pursuant to the State's Model Water Efficient Landscape Ordinance (MWELO), and an Evapotranspiration of 50.6 inches/year. The Evapotranspiration (ETo) is taken from the nearby Auburn-Sierra Foothill California Irrigation Management Information System (CIMIS) Station (Station 195). The MWELO specifies the ETAF value that must be achieved on an overall landscape plan depending on the type of land use and water supply. For potable water supply, residential landscapes must achieve an ETAF of 0.55 and non-residential uses must achieve an ETAF of 0.45. Parks with athletic fields and other qualifying uses and areas using recycled water are considered special landscape areas and are allowed an ETAF of up to 1.0. Even though recycled water is assumed to be the water source, the landscaping within the Sunset Area is assumed to be consistent with drought tolerant plantings and water conservation goals and achieve an ETAF of 0.45, consistent with the MWELO for non-residential areas.

The 1,695 gpd/acre demand factor or Irrigation Rate is calculated as shown below;

Irrigation Rate (gpd/acre) = (0.62 x ETo x ETAF x 43,560 sf/acre) / 365 days/year,

where 0.62 is conversion factor and ETo is in inches per year.

15% of the gross area of all land use designations are assumed to be irrigated with recycled water, with the exception of the Landfill and Public Tipping Area within the Eco-Industrial area. For these two areas, an effective irrigation area of 10% is assumed for dust control and minor grading purposes. It should be noted that in the Eco-Industrial land use designation, only the Landfill, Public Tipping Area, and 200 additional acres generate recycled water demand. For this analysis, the Urban Reserve recycled water demand is set to zero. As shown below in Table 4, the total recycled water demand for the Sunset Area is 0.77 mgd (862 AFY).

Table 4
Recycled Water Demand by Land Use Designation

Land Use Designation	Acres	Average Demand Factor (gpd/ac)	Percent Irrigated	Average Demand (mgd)
Business Park	142	1,685	15%	0.036
Eco-Industrial[1]	200	1,685	15%	0.051
Landfill[2]	175	1,685	10%	0.029
Public Tipping Area[3]	50	1,685	10%	0.008
Entertainment Mixed-Use	517	1,685	15%	0.131
General Commercial	34	1,685	15%	0.009
Innovation Center	1,245	1,685	15%	0.315
Light Industrial	744	1,685	15%	0.188
Public Facility	2	1,685	10%	0.000
Urban Reserve	320	0	0%	0.000
Total[4]	**3,429**			**0.767**

1) Only 200 additional acres (besides the Landfill and Public Tipping Area) of the Eco-Industrial land use designation generate recycled water demand

2) The Landfill is assumed to be irrigated at 10% for dust control

3) The Public Tipping Area is assumed to be irrigated at 10% for dust control

4) Numbers may not total exactly due to Excel rounding

IV. Wastewater System

A. Service Agency

Wastewater collection/disposal services in the Sunset Area are provided through County Service Area 28, Zone 2A3. County Service Areas (CSAs) were developed to own and operate utility systems in separate specific areas so that the customers within that specific area can be assessed charges based upon the costs to provide specific services to that particular area. CSAs were created in Placer County in the mid-1960s under the County Service Area Law of 1953, as amended. CSA 28, Zone 2A3 was established to deliver sewer services to the Sunset Industrial Area.

B. Existing System

Existing wastewater collection facilities are in place to serve existing land uses within the Sunset Area as shown on Figure 3, which also shows the proposed improvements. The existing facilities were evaluated to determine the most effective method to extend service to and provide capacity for collection of wastewater flow from proposed uses within the remainder of the Sunset Area in the future.

A combination of gravity and force main sewer pipes currently handle the wastewater collection services in the Sunset Area or CSA 28, Zone 2A3. Figure 3 shows the existing sewer collection facilities within the Sunset Area and the two points where they discharge to the regional Pleasant Grove Sewer Trunk Line (Existing POC 1 and POC 2). This wastewater is conveyed from the CSA to the Pleasant Grove Wastewater Treatment Plant via the Pleasant Grove Sewer Trunk Line. These two regional facilities are shown on Figure 3. Wastewater treatment and disposal/water reclamation services for the Sunset Area are provided at the Pleasant Grove Wastewater Treatment Plant. Created in 2000, the South Placer Wastewater Authority (SPWA) owns these regional facilities along with an older Dry Creek Wastewater Treatment Plant. SPWA is a Joint Powers Authority comprised of three separate agencies: Placer County, the City of Roseville, and South Placer Municipal Utilities District. The City of Roseville operates these regional facilities.

The South Placer Regional Wastewater and Recycled Water Systems Evaluation Updated Final Report prepared by RMC dated December 2009 determined that there was adequate capacity in the existing Pleasant Grove Sewer Trunk Line to handle the Sunset Area and other tributary areas based on the General Plan land uses in place at that time and using certain flow factors.

The current boundary of CSA 28, Zone 2A3 basically covers all existing developed property. As new development comes on line, it is required to annex to the CSA and pay annexation fees for the privilege of utilizing existing local sewer collection facilities previously constructed. New development also must pay local and regional connection fees. The local connection fee is retained by the CSA and the regional fee is forwarded to SPWA as the CSA's contribution toward payment of the bond debt related to the construction of the regional wastewater facilities.

All the Sunset Area west of Fiddyment is currently outside the tributary watershed area included in the SPWA RMC master plan, which area is projected to generate an average dry weather flow (ADWF) of 1.14 mgd. However, there are areas within the studied watershed that will generate little or no flow and some existing areas may be generating less flow than assumed in that 2009 master plan. The sewer model for the Pleasant Grove Trunk Sewer should be updated using proposed flows from the Sunset Area and Placer Ranch based on the respective recent studies to determine if adequate capacity exists in all downstream reaches of that facility.

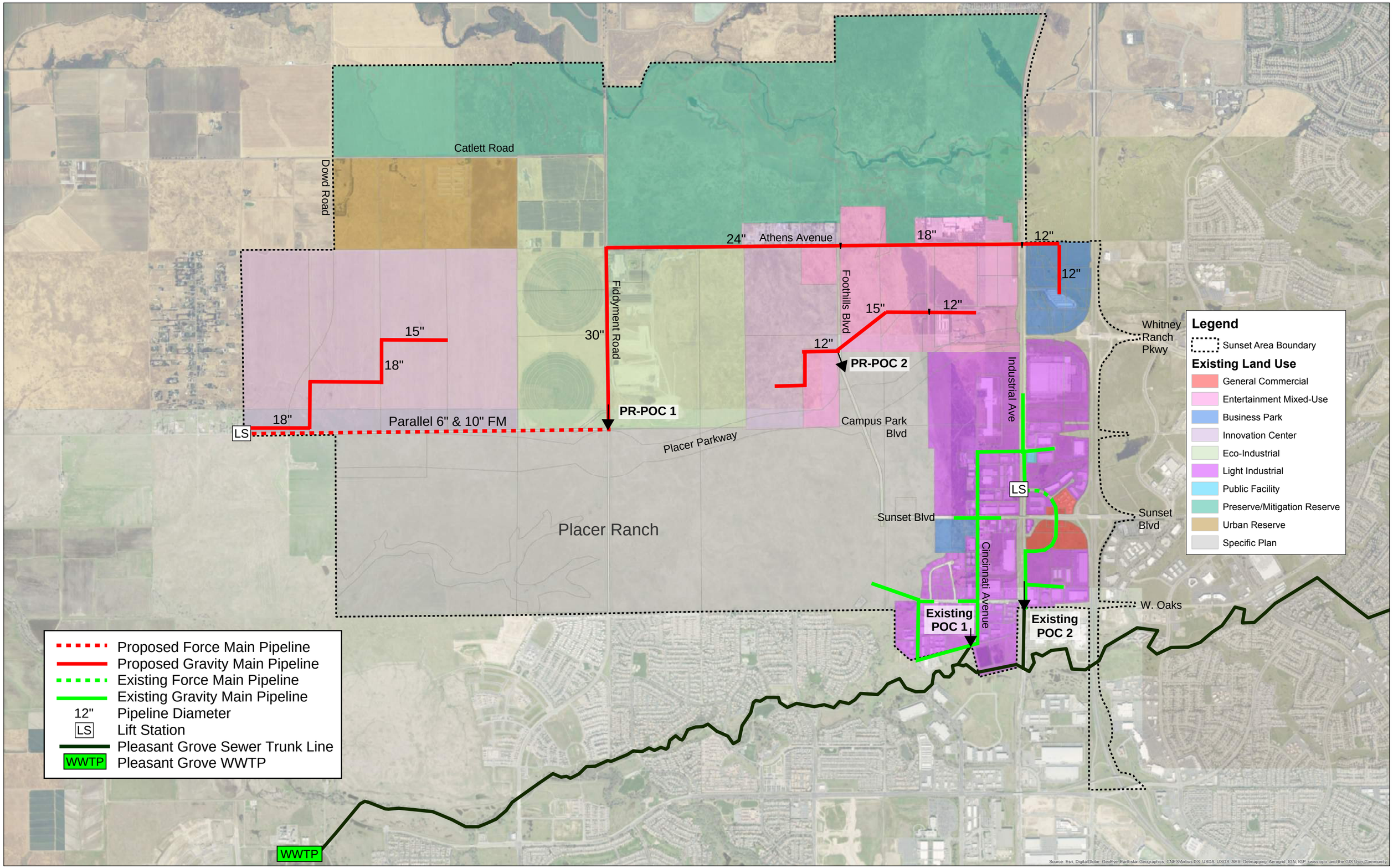

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Figure 3
Sunset Area Wastewater System

C. Future Collection System Analysis (Buildout)

The future Sunset Area wastewater system will have four point of connections (POCs) to the existing and proposed wastewater collection system. Figure 4 shows the area of the basins that drain to each POC. Table 5 details wastewater flows by land use designation to each POC. The summary of the total average and peak flows to each POC is shown in Table 6. Table 6 also includes the pipe size, minimum slope, and invert depth by POC based on the peak flow. Figure 3 shows the proposed wastewater system for the buildout of the Sunset Area. The location of the two future and two existing POCs are shown on Figure 3 and 4 as well, including:

- PR-POC 1 - The connection to a Placer Ranch Trunk Sewer at Placer Parkway and Fiddyment Road, north of the Placer Ranch Specific Plan Boundary.
- PR-POC 2 - The connection to a Placer Ranch Trunk Sewer at Foothills Blvd, north of the Placer Ranch Specific Plan Boundary.
- Existing POC 1 - The existing sewer system POC to the Pleasant Grove Trunk Sewer coming from the existing Cincinnati Avenue sewer just south of the Sunset Area Boundary.
- Existing POC 2 - The existing sewer system POC to the Pleasant Grove Trunk Sewer coming from the Industrial Avenue sewer, just south of the Sunset Area Boundary.

The Athens Avenue Sewer Study (AASS), discussed previously, analyzed flow and pipe sizing for various alternative alignments with Alignment 3c being the recommended alternative. The sewer analysis for buildout of the Sunset Area conducted herein confirmed the recommended pipe sizing of the AASS with the exception of the last reach down Fiddyment Road from Athens Avenue to the connection with the proposed Placer Ranch wastewater collection system. In the AASS, the assumption was that the flow from the Innovation Center parcel west of the Landfill would be pumped and discharge to the system at Athens Avenue and Fiddyment Road, which justifies the need for a 30” pipe. However, the Innovation Center parcel drains to the southwest and it makes more sense to put the lift station in the southwest corner and pump the flow along the southerly Sunset Area boundary to discharge to the system at Fiddyment Road and Placer Parkway. Even though a 24” sewer is adequate for the flow in this reach, a 30” has been shown because the 24” would have a steeper minimum slope and would put the sewer deeper than the AASS depth, which was coordinated with the planning for the Placer Ranch wastewater collection system downstream. During preliminary design this can be analyzed in more detail to see if reducing the diameter and lowering the depth would be acceptable.

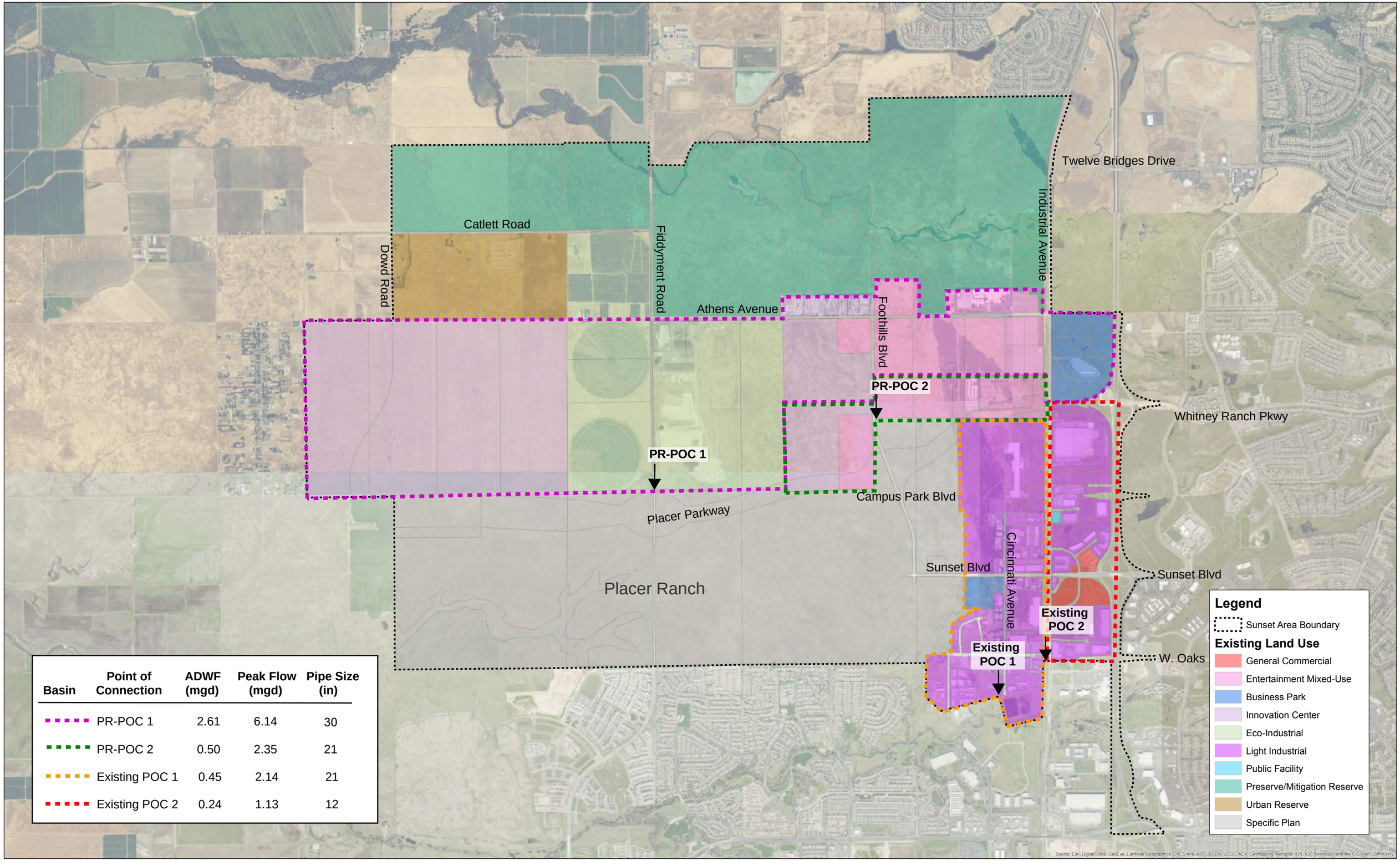
For the sewer system in that Innovation Center parcel west of the Landfill, Figure 3 shows a stair step gravity sewer system collecting sewage to the southwest to a proposed sewer lift station and then a parallel 6” and 10” force main running easterly to the point of connection. The dual force main system is recommended since initial flows will be substantially lower than the peak flow at buildout of the area so the smaller force main can be used initially (for interim purposes) to maintain scouring velocities. At buildout the 10” force main would be needed and the 6" could serve as a standby or emergency line. A potential alternative to this sewer lift station could be sending sewage off site through existing or proposed City of Roseville sewers serving Amoruso Ranch and other areas in the vicinity. Connecting to the proposed Placer Ranch collection system near the northwest corner of Placer Ranch (area PR-41 from PRSP Sanitary Sewer Master Plan) was analyzed to avoid the lift station but the invert elevation of the proposed Placer Ranch sewer in that area is 90.07’ and the invert elevation of the sewer in the Sunset Area near the low point at the southwest corner of the Innovation Center parcel where the lift station is shown on Figure 3 would be approximately 85’. Additionally, this area of Placer Ranch sewers to a downstream lift

station where it is pumped to another line that sewers to the Fiddyment sewer. Therefore, it makes more sense to pump this portion of the Sunset Area directly through a force main system to the Fiddyment sewer.

Table 5
Wastewater Flows by Point of Connection

	Acres	Resid. DUs	Generation Rate (gpd/acre) or (gpd/DU)	ADWF (mgd)	Peaking Factor[1]	Peak Flow (mgd)
PR-POC 1						
Innovation Center West	818		850	0.70		
Residential	145	1,615	190	0.31		
Eco-Industrial[2]	200		850	0.17		
EDUs[3]		200	190	0.04		
Innovation Center East	155		850	0.13		
Residential	27	301	190	0.06		
Entertainment Mixed-Use	257		2,300	0.59		
Residential	34	245	190	0.05		
Casino[4]	47		-	0.25		
L270[4]	-		-	0.23		
Business Park	114		850	0.10		
Total PR-POC 1	**1,797**	**2,161**		**2.61**	**2.35**	**6.14**
PR-POC 2						
Innovation Center East	85		850	0.07		
Residential	15	167	190	0.03		
Entertainment Mixed-Use	161		2,300	0.37		
Residential	18	130	190	0.02		
Total PR-POC 2	**279**	**297**		**0.50**	***4.70***	**2.35**
Existing POC 1						
Business Park	28		850	0.02		
Light Industrial	503		850	0.43		
Total Existing POC 1	**531**	**0**		**0.45**	***4.75***	**2.14**
Existing POC 2						
Public Facility	2		850	0.00		
General Commercial	34		850	0.03		
Light Industrial	241		850	0.20		
Total Existing POC 2	**277**	**0**		**0.24**	***4.80***	**1.13**
Total	**2,884**	**2,458**		**3.80**		**11.76**

1) Peaking Factor was determined by the SPWA Design Peaking Factor Curve from TM 3a. Values in *italics* include a factored flow of 2.0, then use the peaking curve so value in *italics* is actually a combined factored/peaked value (factored flow times peaking factor)
2) Only 200 acres of the Eco-Industrial land use designation generate sewage
3) EDUs not included in Total Residential Dwelling Units
4) ADWF from Athens Ave. Sewer Study



Basin	Point of Connection	ADWF (mgd)	Peak Flow (mgd)	Pipe Size (in)
	PR-POC 1	2.61	6.14	30
	PR-POC 2	0.50	2.35	21
	Existing POC 1	0.45	2.14	21
	Existing POC 2	0.24	1.13	12

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2,300 1,150 0 2,300 Feet

PSOMAS

Figure 4
Sunset Area Wastewater System POC Basins

Table 6
Summary of Average and Peak Flows to Point of Connections

Point of Connection	ADWF (mgd)	Peak Flow (mgd)	Minimum Slope (ft/ft)	Pipe Size (in)	Invert Depth (ft)
PR-POC 1	2.61	6.14	0.00057	30	13
PR-POC 2	0.50	2.35	0.00092	21	28
Existing POC 1	0.45	2.14		21	
Existing POC 2	0.24	1.13		12	

See Figure 4 for location of POCs

D. Wastewater Treatment

The Pleasant Grove Wastewater Treatment Plant (PGWWTP) is owned and operated by the City of Roseville for the benefit of the SPWA. Wastewater flows from the Sunset Area and Placer Ranch will be tributary to the PBWWTP. The SPWA uses ADWF when analyzing wastewater treatment plant capacity. The PGWWTP is presently authorized to discharge treated effluent into Pleasant Grove Creek under the NPDES Permit No. CA0084573/WDR No. R5-2014-0051 adopted on March 28, 2014. Under the permit, PGWWTP can discharge an ADWF of 12.0 MGD. A construction project was approved through the PGWWTP Expansion and Energy Recovery Project environmental documentation dated December 2016, that will take the PGWWTP to a reliable 12.0 MGD (it was currently supposed to be able to handle that flow but due to higher than anticipated organic loading from water conservation and other factors the effective capacity is closer to 9.5 MGD currently). The City is planning to start construction on this project later this year or early in 2018.

The December 2016 environmental documentation listed the existing ADWF at the PGWWTP at 7.4 mgd but current flow is running at 7.1 mgd due to conservation efforts, according to Bryan Buchanan of the City of Roseville (September 2017). The City also indicated the buildout capacity for the PGWWTP is 24 mgd (ADWF).

E. Improvement Phasing

Based on the Sunset Area land use projected phasing described previously and shown on Figure 2, the wastewater collection system will be built out in two major phases. Reference is made to Figure 3 to follow the descriptions in this section. Phase 1 will consist of the extension of sewers for infill development within the Light Industrial, Business Park and General Commercial land use areas between Placer Ranch and SR-65. These areas can all sewer to the two existing POCs. The southerly portions of the Entertainment Mixed-Use area in Phase 1 will be able to sewer by gravity to the Placer Ranch POC 2 at Foothills Boulevard. However, the Business Park parcel between Industrial Avenue and SR-65 and the remainder of the Entertainment Mixed-Use area within Phase 1 is planned to be sewered to the proposed Athens Avenue/Fiddyment Road trunk sewer and Placer Ranch POC 1, per the AASS and as shown on Figure 3. Based on current Placer Ranch Specific Plan phasing, the Fiddyment Road trunk sewer would not need to be extended this far north until Placer Ranch Phase 2 is implemented, so either it would have to be constructed through about the northerly half of Placer Ranch and across Placer Parkway before the Placer Ranch Phase 2, or an interim sewer lift station or stations and force main systems would have to be employed in the Sunset Area pumping wastewater to other points of connection to provide

sewer collection service to the entire Sunset Area Phase 1. This will all depend on how the Sunset Area and Placer Ranch phases coincide.

For Phase 2, the remainder of the wastewater collection system west of Foothills Boulevard North as shown on Figure 3 would be constructed. And as mentioned previously, the sewer lift station and dual force system proposed for the Innovation Center on the west end of the Sunset Area would be phased in accordance with development flows.

V. Potable Water System

A. Service Agency

Placer County Water Agency (PCWA) is the water retailer for customers within the Sunset Area. The Sunset Area is located within PCWA lower Zone 6 and within the Sunset Industrial Pressure Zone with a 350 hydraulic grade line (HGL). The primary water supply for lower Zone 6 is PG&E water from the Drum-Spaulding hydroelectric system. PCWA also uses water from the Middle Fork of the American River pursuant to its own water rights. PCWA pumps American River water near Auburn into the Auburn Tunnel, which connects to the Auburn Ravine where it can be distributed to lower Zone 6 irrigation water customers or pumped by the Ophir Pump Station and treated and distributed to customers within lower Zone 6. The lower Zone 6 water treatment plants providing service to the Sunset Area are the Foothill and Sunset plants which have treatment capacities of 58 mgd and 8 mgd, respectively, and serve existing customers in western Placer County. Based on the PCWA 2015 Urban Water Management Plan (UWMP), PCWA has adequate surface water entitlements and infrastructure capacity to deliver treated surface water to existing customers in western Placer County, including the Sunset Area, from these water treatment plants through existing PCWA transmission pipelines. The Agency's Capital Infrastructure Plan outlines planned infrastructure necessary to provide safe drinking water to new areas with the Sunset Area.

B. Existing System

Existing potable water system facilities are in place to serve existing land uses within the Sunset Area as shown on Figure 5. These facilities were evaluated to determine the most effective method to extend service to and provide capacity for serving potable water to proposed uses within the remainder of the Sunset Area in the future.

Treated water enters the Sunset Area from the PCWA distribution system within the City of Rocklin, east of the Sunset Area, through a 24-inch PCWA pipeline in Sunset Boulevard. Currently this connection point is the only source of water supply into the Sunset Area. There is an emergency intertie with the City of Roseville located at Industrial Avenue near the southeast corner of the Sunset Area. PCWA has an 18-inch line in Athens Avenue that provides service to the Casino and other existing uses. There is an existing 36-inch PCWA transmission main located in Whitney Ranch Parkway that terminates east of Highway 65, just outside the eastern edge of the Sunset Area in the City of Rocklin. Future planned PCWA improvements include the extension of this transmission pipeline across Highway 65 westerly in phases as three 24-inch mains. On the west side of Highway 65, these 24-inch mains will manifold back together into the 42-inch main that will serve as the primary Placer Ranch and Sunset Area treated water supply. PCWA has plans to extend this major transmission pipeline westerly and southerly to a proposed treatment plant off of the Sacramento River, which would supply water from the opposite direction as the current supply system. This added source will greatly improve supply reliability to the region and the

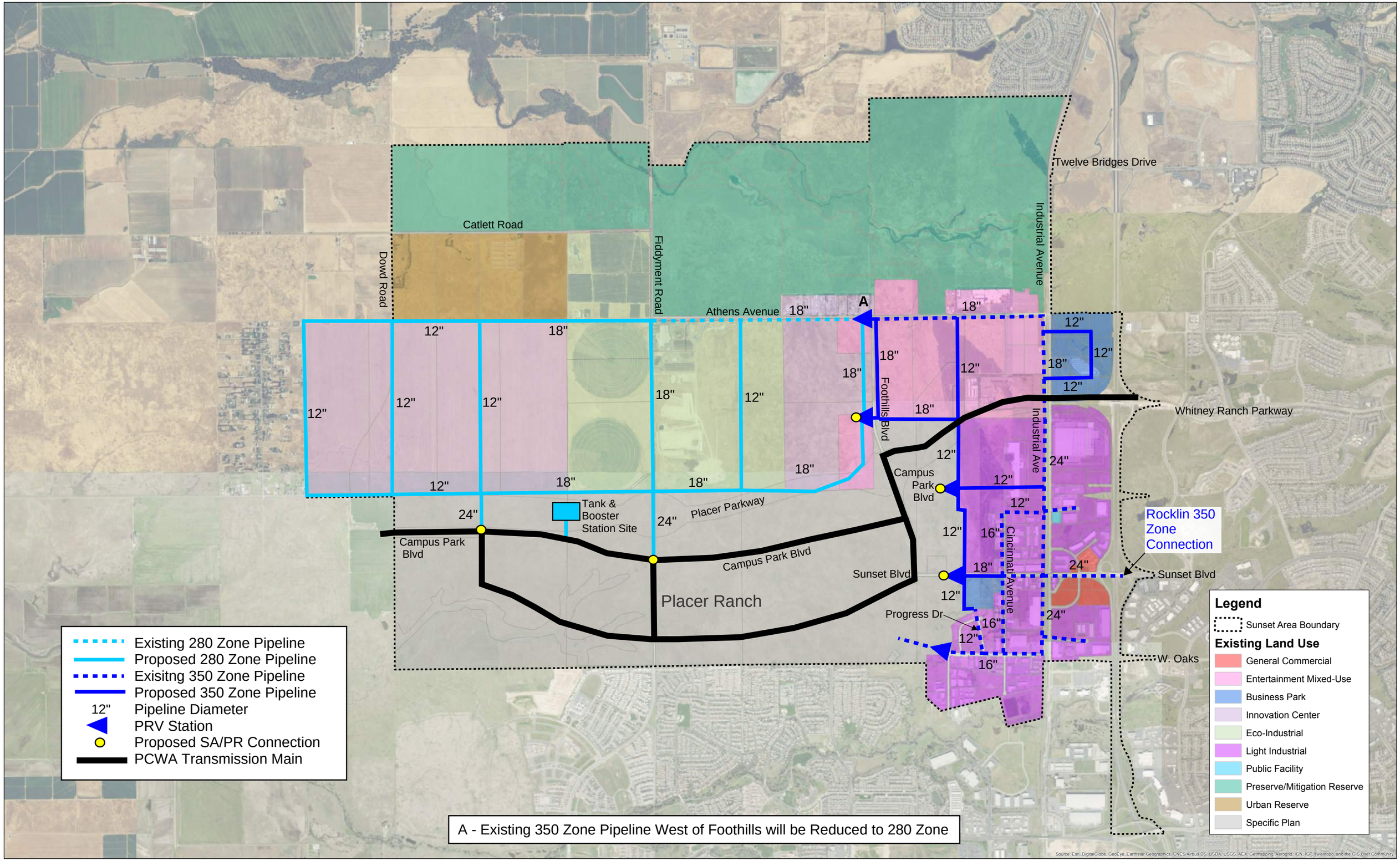

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Figure 5
Sunset Area Potable Water System

Sunset Area. There is also an existing 16-inch pipeline in West Oaks Boulevard that terminates east of Highway 65 at the southeastern corner of the Sunset Area.

Existing distribution facilities within the Sunset Area are within PCWA's lower Zone 1 service area and the Sunset Industrial Pressure Zone. The sources of supply from PCWA and the existing PCWA distribution pipelines that currently provide service to existing land uses within the Sunset Area are shown on Figure 5. Based on a HGL of 350 within the existing service area and the maximum and minimum elevations within this area of approximately 150' and 105', respectively, the static service pressure within the existing Sunset Area is between approximately 87 psi and 106 psi.

C. Future System Analysis (Buildout)

PCWA characterizes its pressure zones by the maximum HGL, which is governed by the overflow elevation of the tank(s) serving that zone. The future water system will be split into two zones, the 280 Zone and the 350 Zone, as shown on Figure 5. As illustrated on Figure 5, everything east of Foothills Boulevard will be in the 350 Zone, PCWA's currently designated Sunset Industrial Zone, and everything west of Foothills Boulevard will be in the 280 Zone. The HGL of 280 was selected during modeling of the Placer Ranch system in order to closely match the City of Roseville's HGL to allow for interties while delivering a minimum of 60 psi to parcels within the zone. Because elevations within the proposed 280 Zone in the Sunset Area, generally located west of Foothills Boulevard North, are similar to the Placer Ranch area, this zone should provide appropriate pressure throughout the service area. As detailed grading plans are developed in the future, this can be verified by hydraulic modeling.

There will need to be pressure reducing stations constructed between the zones. The proposed 350 Zone will be an extension of the existing 350 Zone, which connects to the 350 Zone east of the Sunset Area. There are eventually proposed to be 5 points where the Sunset Area water system is connected to the Placer Ranch system. Three of these POCs will be on the 350 Zone at Sunset Boulevard, Campus Park Boulevard and Foothills Boulevard and two on the 280 Zone at Fiddyment Road and somewhere west of Fiddyment Road near the western boundary of the Sunset Area, where the pipeline would need to cross Placer Parkway. Figure 6 details the locations of these blocks and junctions, as well as demand distribution arrows. The potable water demands by pressure zone for the Sunset Area are shown in Table 7. As indicated previously, these demands include common area irrigation demands that could be served by recycled water but are used to size the potable water system to be conservative and for consistency with the assumptions used in the Placer Ranch Potable Water Master Plan. Table 8 shows how these potable water demands were assembled by Junction to generate the demands at the connection points to the Placer Ranch system used in their hydraulic modeling of the potable water system.

D. Improvement Phasing

Based on the Sunset Area land use phasing described previously and shown on Figure 2, the potable water system will be constructed in two major phases. Phase 1 will consist entirely of pipeline improvements within the existing 350 pressure zone east of Foothills Boulevard to the north and the Placer Ranch easterly boundary (refer to Figure 5 to follow these improvement descriptions provided below).

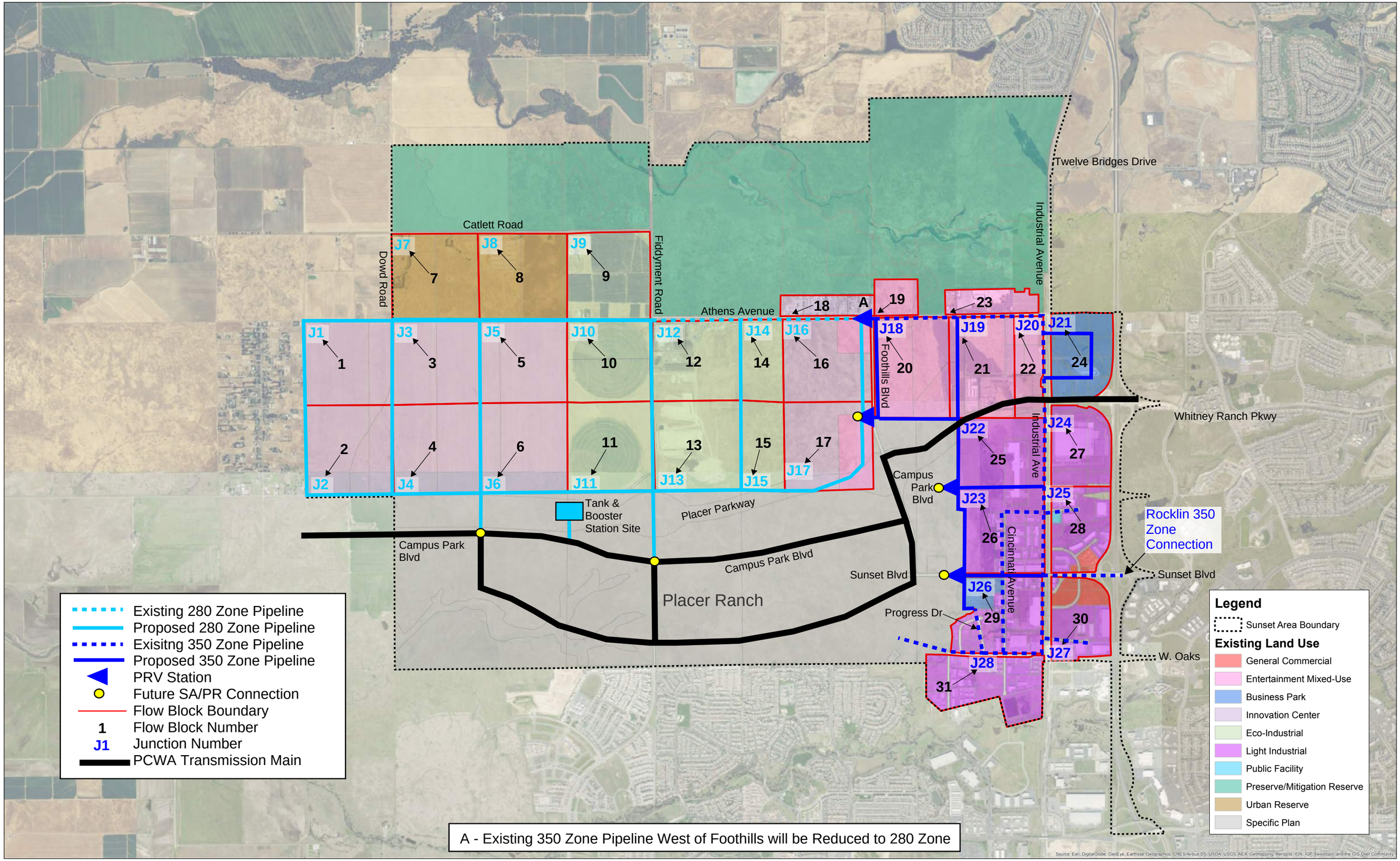

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Figure 6
Sunset Area Potable Water System Junction Map

Table 7
Potable Water Demands by Pressure Zone

Junction	Block	Land Use	Acres	Demand Factor (gpd/ac)	Demand (mgd)	Junction Demand
280 Zone						
J1	1	Innovation Center	157	1,475	0.23	0.23
J2	2	Innovation Center	165	1,475	0.24	0.24
J3	3	Innovation Center	156	1,475	0.23	0.23
J4	4	Innovation Center	167	1,475	0.25	0.25
J5	5	Innovation Center	154	1,475	0.23	0.23
J6	6	Innovation Center	164	1,475	0.24	0.24
J7	7	Urban Reserve	159	0	0.00	0.00
J8	8	Urban Reserve	161	0	0.00	0.00
J9	9	Eco-Industrial	0	1,121	0.00	0.00
J10	10	Eco-Industrial	10	1,121	0.01	0.01
J11	11	Eco-Industrial	160	1,121	0.18	0.18
J12	12	Eco-Industrial	0	1,121	0.00	0.00
J13	13	Eco-Industrial	30	1,121	0.03	0.03
J14	14	Eco-Industrial	0	1,121	0.00	0.00
J15	15	Eco-Industrial	0	1,121	0.00	0.00
J16	16	Innovation Center	136	1,475	0.20	0.33
		Entertainment Mixed-Use	25	2,425	0.06	
	18	Innovation Center	46	1,475	0.07	
J17	17	Innovation Center	100	1,475	0.15	0.28
		Entertainment Mixed-Use	54	2,425	0.13	
Total 280 Zone					**2.25**	**2.25**
350 Zone						
J18	19	Entertainment Mixed-Use	33	2,425	0.08	0.46
	20	Entertainment Mixed-Use	158	2,425	0.38	
J19	21	Entertainment Mixed-Use	138	2,425	0.33	0.45
	23	Entertainment Mixed-Use	47	2,425	0.11	
J20	22	Entertainment Mixed-Use	62	2,425	0.15	0.15
J21	24	Business Park	114	1,121	0.13	0.13
J22	25	Light Industrial	126	1,121	0.14	0.14
J23	26	Light Industrial	145	1,121	0.16	0.16
J24	27	Light Industrial	94	1,121	0.11	0.11
J25	28	Light Industrial	82	1,121	0.09	0.11
		General Commercial	10	1,121	0.01	
		Public Facility	2	964	0.00	
J26	29	Light Industrial	101	1,121	0.11	0.14
		Business Park	28	1,121	0.03	
J27	30	Light Industrial	65	1,121	0.07	0.10
		General Commercial	24	1,121	0.03	
J28	31	Light Industrial	131	1,121	0.15	0.15
Total 350 Zone					**2.10**	**2.10**
TOTAL					**4.35**	**4.35**

Notes:
• Refer to Figure 6 for locations of Blocks and Junctions. Demand distribution to Junctions shown by arrows on this Figure
• Potable Demand includes recycled water for consistency with PRSP and to be conservative

Table 8
Potable Water Demands by Point Of Connection

Point of Connection Location	Junctions	Average Demand (mgd)
Sunset Blvd.	J26-J28	0.391
Campus Park Blvd.	J23-J25	0.373
Foothills Blvd.	J18-J22	1.331
Fiddyment Road	J9-J17	0.832
West of Fiddyment	J1-J8	1.420
Total		**4.348**

It should be noted the on-site pipeline network was developed based on providing typical fire flow requirements within the backbone system but without detailed computer modeling due to the limited circulation element and large land use parcels. As more detailed development information becomes available water network analysis can be performed to finalize pipe network layout including additional on-site piping within the larger land use parcels.

- A 12” pipeline will be connected to the existing 18” in Industrial Avenue at two points and looped through the Business Park parcel located between Industrial Avenue and SR-65 to serve that parcel.
- A 12” pipeline will connect to the existing 18” in Athens Avenue and run southerly then within future roadways along the westerly boundary of the Light Industrial land uses to connect to the exiting 12” in Progress Drive.
- An 18” line in Foothills Boulevard will connect to the existing 18” pipeline in Athens Avenue and run southerly to a future roadway near the boundary between Sunset Area and Placer Ranch and then run easterly to the 12” pipeline described immediately above.
- An 18” line in Sunset Boulevard connecting to the Placer Ranch system and running easterly to an existing 16” at Cincinnati Avenue.
- A 12” line in Campus Park Boulevard connecting to the Placer Ranch system and running easterly to an existing 24” at Industrial Avenue.

Phase 2 improvements will consist of construction of two pressure reducing stations along Foothills Boulevard to reduce pressure from the 350 to the 280 zone and a series of 12” and 18” pipelines looped as shown on Figure 5 within the Innovation Center and Eco-Industrial land uses. Additionally, two 24” pipelines will be constructed from the southerly east-west 18” pipeline and cross Placer Parkway to connect with the 280 zone system within Placer Ranch, also as shown on Figure 5.

All of the Phase 1 development area within Sunset Area is within the 350 Zone so development is not dependent on constructing any of the proposed pressure regulating stations. However, they will be necessary for providing service to Phase 1 Placer Ranch development. Providing at least one of these connections to the Placer Ranch 280 Zone fairly early on in the Phase 2 Sunset Area development will be important as it will provide integration with the operational tank and booster pump station to be constructed in Placer Ranch (see Figure 5 for approximate location of that site).

VI. Recycled Water System

A. Service Agency

The Placer County Board of Supervisors has directed staff to begin discussions with PCWA regarding a recycled water operations agreement (within PCWA's service areas) per the *Amended and Restated Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities* dated October 1, 2012 (Amended Agreement). This process is currently ongoing. PCWA has indicated they may be the agency to provide recycled water service within the Placer Ranch Specific Plan and Sunset Area. PCWA does not currently have any recycled water facilities in the area, but facilities are proposed to be extended from existing City of Roseville pipelines south of Placer Ranch into and through the Placer Ranch community with the City of Roseville serving as the recycled water wholesaler. Alternatively, as discussed below, wholesale recycled water service could potentially be provided by the City of Lincoln.

B. Existing System

As stated above, recycled water facilities do not currently exist in the Sunset Area. SPWA recycles water at its regional Pleasant Grove Wastewater Treatment Plant (PGWWTP) and distributes it within its service area. As a member agency of SPWA, the County discharges wastewater to SPWA but does not currently share in the ability to reuse any of the recycled water generated at the PGWWTP. If recycled water capacity is available, the City of Roseville has indicated they would make recycled water available to the County for Placer Ranch and the Sunset Area, on a wholesale basis.

C. Future System Analysis (Buildout)

Since current wastewater flows from the Sunset Area and future flows from Placer Ranch and Sunset Area will be treated at the PGWWTP, it makes sense that the recycled water demands of both Placer Ranch and Sunset Area are served by an extension of the existing recycled water system to the south of Placer Ranch. The PRSP has assumed this will be the case and necessary transmission capacity for providing service through Placer Ranch to the Sunset Area has been provided for in the Placer Ranch recycled water infrastructure system.

The City of Roseville, who currently distributes water from the SPWA plants, has stated they will wholesale recycled water to another entity to retail to Placer Ranch and the Sunset Area. However, this is not a commitment or a will-serve letter from the City of Roseville, and the City and retailer will have to confirm the availability of recycled water, design details, delivery pressures, diurnal supply availability, and other considerations at the time the project is being designed. The recycled water retailer is expected to be either PCWA or Placer County.

Consistent with the Placer Ranch Recycled Water Master Plan, it is assumed the existing City of Roseville North Zone Tank and Pump Station will supply recycled water to a storage tank at Placer Ranch at a nominal pressure during off-peak periods, which are typically between 6:00 AM and 9:00 PM. The Placer Ranch Pump Station will pump out of the Placer Ranch Storage Tank to provide recycled water to customers within Placer Ranch and the Sunset Area at appropriate pressure and flow. If upgrades to the City of Roseville's existing recycled water infrastructure including pump stations are required to serve Placer Ranch and the Sunset Area, these upgrades or enhancements to the City's recycled water system would be at the expense of these new developments.

The future recycled water system is shown on Figure 7. As shown in Figure 7, the future recycled water system will have five point of connections (POCs) to the proposed Placer Ranch system. These five points are located at Sunset Boulevard, Campus Park Boulevard, Foothills Boulevard, Fiddyment Road, and West of Fiddyment Road near the western boundary of the Sunset Area. The recycled water demands were broken into blocks and junctions to ultimately determine the demand to each POC and for pipeline sizing within the Sunset Area. Figure 8 details the locations of these blocks and junctions, as well as demand distribution arrows. The recycled water demands by block and junction for the Sunset Area are shown in Table 9. Table 10 shows how the junctions were combined to develop the demands by POC that were utilized in the hydraulic modeling of the PRSP recycled water system for providing recycled water through their recycled water distribution system to serve the Sunset Area demands. Operational storage and pumping capacity to supply the Sunset Area could be provided by expanding the storage and pumping capacity at the site currently planned within Placer Ranch or at a separate site within the Sunset Area. Operational storage should be provided for one maximum day demand or about 1.5 million gallons using a factor of approximately 2.0 times average demand. Pumping capacity should be provided for peak demand using a factor of 3.0 times maximum day demand, assuming most all recycled water irrigation must occur during 8 hours at night, resulting in pumping capacity of 4.6 mgd.

While the development of the recycled water system is assumed to be supplied from effluent treated at the PGWWTP, an alternative source could be the City of Lincoln's wastewater treatment plant which is located adjacent to Fiddyment Road approximately 1.5 miles north of Athens Avenue. An existing pipeline from Lincoln's plant runs down Fiddyment Road and currently provides recycled water to the irrigation pivots on the Landfill property to the east of Fiddyment Road and south of Athens Avenue. Placer County currently has over a million gallons a day being treated at the Lincoln plant and projections are this will be as high as 4 mgd at buildout of the County areas tributary to this plant. Therefore, tertiary treated wastewater from the Lincoln plant could be distributed south into the Sunset Area recycled water system. To accommodate this potential, a larger pipeline is assumed to be constructed the entire length of Fiddyment Road from Placer Parkway to Athens Avenue, rather than downsizing it as flows reduce going north. If Sunset Area recycled water demands are supplied from the City of Lincoln's plant, then an operational storage reservoir should be constructed near the City's treatment plant to take advantage of the higher elevation and then a booster station to match the hydraulic grade of the Placer Ranch system could be constructed adjacent to this storage reservoir enabling the retailer to interconnect the two systems for reliability.

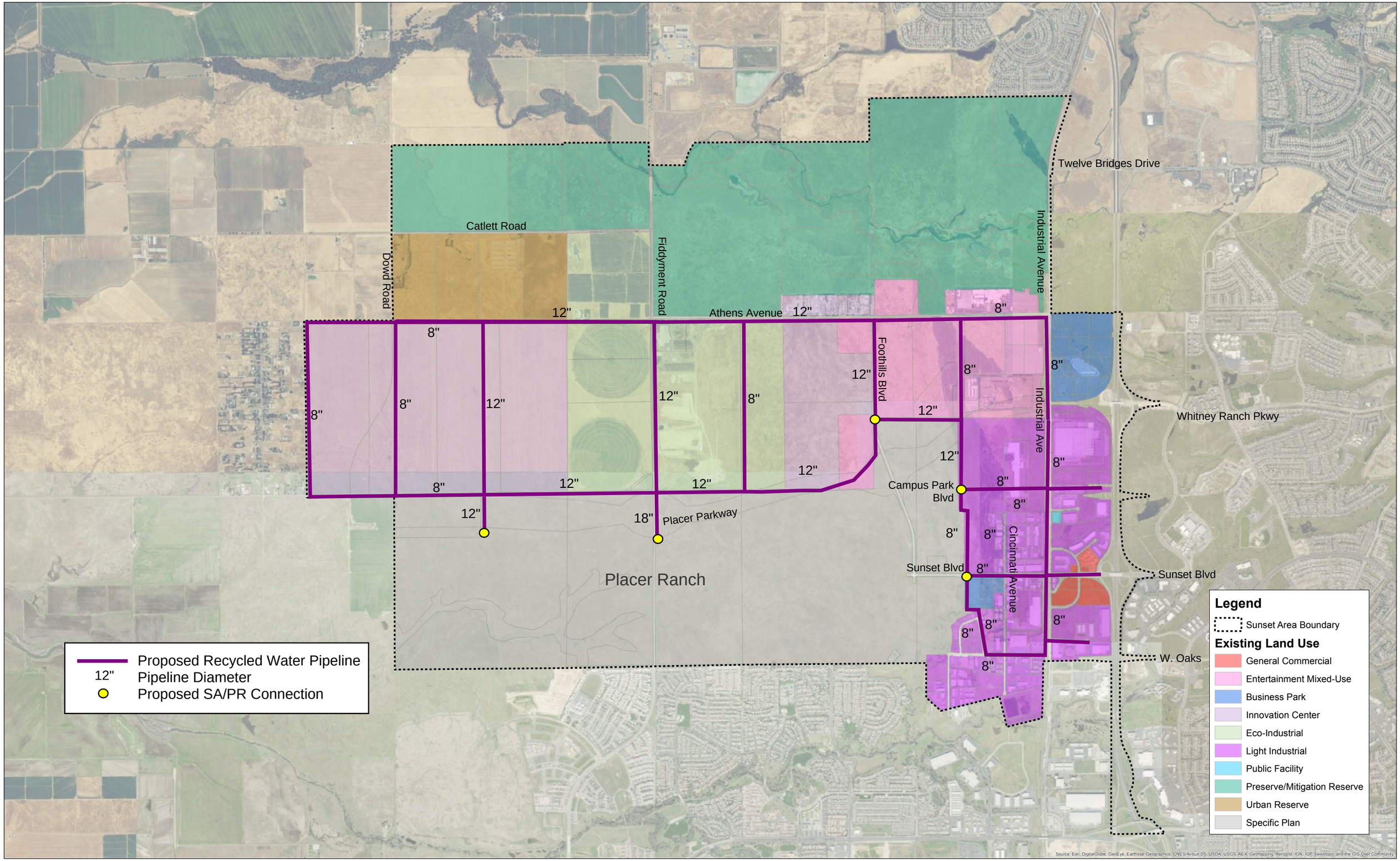

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Figure 7
Sunset Area Recycled Water System

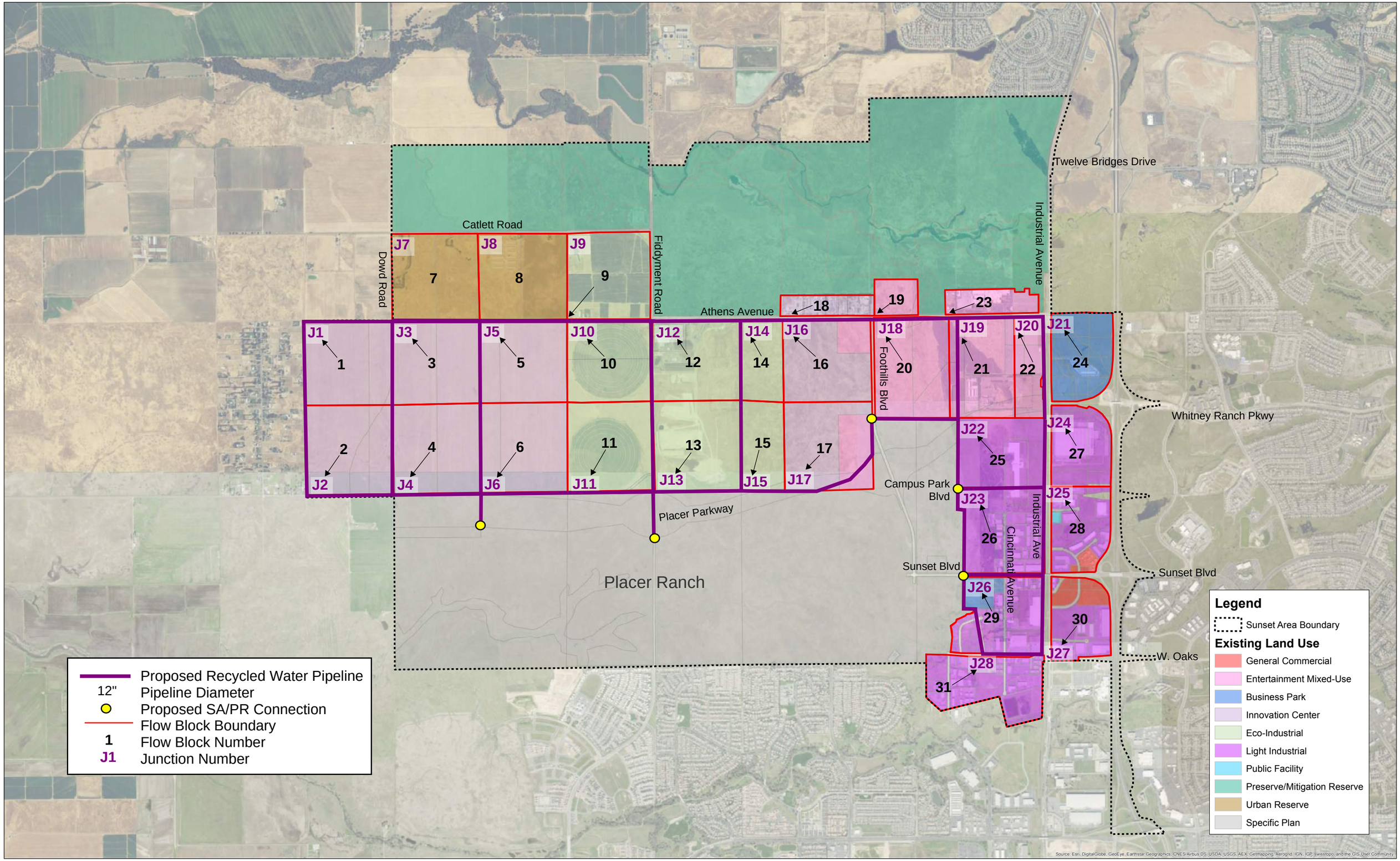

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Figure 8
Sunset Area Recycled Water System Junction Map

Table 9
Recycled Water Demands by Junction

Junction	Block	Land Use	Acres	Demand Factor (gpd/ac)	Percent Irrigated	Demand (mgd)	Junction Demand (mgd)
J1	1	Innovation Center	157	1,685	15%	0.040	0.040
J2	2	Innovation Center	165	1,685	15%	0.042	0.042
J3	3	Innovation Center	156	1,685	15%	0.039	0.039
J4	4	Innovation Center	167	1,685	15%	0.042	0.042
J5	5	Innovation Center	154	1,685	15%	0.039	0.039
J6	6	Innovation Center	164	1,685	15%	0.041	0.041
J7	7	Urban Reserve	159	0	0%	0.000	0.000
J8	8	Urban Reserve	161	0	0%	0.000	0.000
J10	9	Eco-Industrial	50	1,685	10%	0.008	0.011
	10	Eco-Industrial	10	1,685	15%	0.003	
J11	11	Eco-Industrial	190	1,685	15%	0.048	0.048
J12	12	Eco-Industrial	0	1,685	15%	0.000	0.000
J13	13	Eco-Industrial	175	1,685	10%	0.029	0.029
J14	14	Eco-Industrial	0	1,685	15%	0.000	0.000
J15	15	Eco-Industrial	0	1,685	15%	0.000	0.000
J16	16	Innovation Center	136	1,685	15%	0.034	0.052
		Entertainment Mixed-Use	25	1,685	15%	0.006	
	18	Innovation Center	46	1,685	15%	0.012	
J17	17	Innovation Center	100	1,685	15%	0.025	0.039
		Entertainment Mixed-Use	54	1,685	15%	0.014	
J18	19	Entertainment Mixed-Use	33	1,685	15%	0.008	0.008
	20	Entertainment Mixed-Use	158	1,685	15%	0.040	0.040
J19	21	Entertainment Mixed-Use	138	1,685	15%	0.035	0.035
	23	Entertainment Mixed-Use	47	1,685	15%	0.012	0.012
J20	22	Entertainment Mixed-Use	62	1,685	15%	0.016	0.016
J21	24	Business Park	114	1,685	15%	0.029	0.029
J22	25	Light Industrial	126	1,685	15%	0.032	0.032
J23	26	Light Industrial	145	1,685	15%	0.037	0.037
J24	27	Light Industrial	94	1,685	15%	0.024	0.024
J25	28	Light Industrial	82	1,685	15%	0.021	0.024
		General Commercial	10	1,685	15%	0.003	
		Public Facility	2	1,685	10%	0.000	
J26	29	Light Industrial	101	1,685	15%	0.026	0.033
		Business Park	28	1,685	15%	0.007	
J27	30	Light Industrial	65	1,685	15%	0.016	0.022
		General Commercial	24	1,685	15%	0.006	
J28	31	Light Industrial	131	1,685	15%	0.033	0.033
TOTAL						**0.77**	**0.77**

Notes:
• Refer to Figure 8 for locations of Blocks and Junctions. Demand distribution to Junctions shown by arrows on this Figure.
• Recycled water demand factor assumes 0.45 ETAF and 50.6 inches/year ETo from CIMIS Station 195.

Table 10
Recycled Water Demands by Point of Connection

Point of Connection Location	Junctions	Average Demand (mgd)
Sunset Blvd.	J26-J28	0.088
Campus Park Blvd.	J23-J25	0.084
Foothills Blvd.	J18-J22	0.171
Fiddyment Road	J9-J17	0.180
West of Fiddyment	J1-J8	0.243
Total		**0.767**

D. Improvement Phasing

Based on the Sunset Area land use phasing described previously and shown on Figure 2, the recycled water system will be built out in two major phases. Since there are currently no recycled water facilities in the area, Phase 1 will consist of a system of 8” and 12” looped lines with three connections to the proposed Placer Ranch recycled water system at Foothills Boulevard, Campus Park Boulevard and Sunset Boulevard, all as shown on Figure 7.

Phase 2 improvements will consist of a system of 8” and 12” looped lines in the area west of Foothills Boulevard with two connections, with crossings of Placer Parkway, to the proposed Placer Ranch recycled water system at Fiddyment Road and at a point west of Fiddyment near the westerly boundary of Placer Ranch. It should be noted that the recycled water distribution system pipeline network shown on Figure 7 was developed based on supplying peak hour demands to the nodes in the network with acceptable velocities, but without the benefit of computer modeling due to the limited circulation element and large land use parcels. As more detailed development information becomes available computer network analysis can be performed to finalize pipe network layout including additional on-site piping within the larger land use parcels.