



TECHNICAL MEMORANDUM

To: The City of Woodland

Cc: Woodland Research Park Owners Group

From: Steve Greenfield - Cunningham Engineering Corporation

Date: 31 March 2020

Subject: Woodland Research and Technology Park
Reclaimed Water Distribution

INTRODUCTION:

The proposed Woodland Research and Technology Park (WRTP) will be comprised of 349 developable acres, to be annexed into the City of Woodland. Previous planning documents have identified the area as a portion of the Spring Lake Master Plan Remainder Area and as SP-1A in the 2017 General Plan Update. The property is generally bounded by SR113 on the west, Harry Lorenzo Ave on the east, the westerly projection of Farmers Central Road on the north and CR 25A on the south (with an additional 48 acres located south of CR 25A). The proposed land-use plan is included herein as Attachment 1.

EXISTING CONDITIONS:

Existing Facilities

Reclaimed water refers to wastewater treatment plant effluent which has received a level of treatment such that it meets the State requirements for direct non-potable use. Reclaimed water use is regulated by the Woodland-Davis Clean Water Agency which applies stringent water quality, treatment, and disinfection standards. The City of Woodland Public Works Department does not currently provide a continuous reclaimed water main connection from the boundary of the WRTP to the Water Pollution Control Facility (WPCF). The City of Woodland evaluated the feasibility of recycled water and confirmed the need for a new recycled water utility. The initial recycled water program extended purple pipe to the Industrial Area of the City and also serves two City parks with recycled water. Additional connections to the recycled water system have been deemed feasible. The project was constructed in 2016 and began recycled water deliveries in fall 2016. The recycled water utility was planned to be expanded to serve primarily industrial uses and landscape irrigation.

Supply

Table 5-10 of the City of Woodland General Plan Update 2035 states that the City of Woodland will have a constant recycled water demand of 800 acre-ft per year, or 0.7-million gallons per day (mgd), until 2035 based on projected water use for Woodland BioMass customers and park irrigation needs. With approximately 5-mgd of average flow to the WPCF – with projections of 6.6-mgd by 2020 to 8.3-mgd by 2035 – there should be sufficient flow to meet these recycled water demands. (Dyett & Bhatia, May 2017)

Existing Adjacent Facilities

Existing facilities in the general vicinity of the site include the following:

- 8” north-to-south reclaimed water main in Harry Lorenzo Avenue, from Gibson Road to Patriot Way
- 8” north-to-south reclaimed water main in Osborne Drive, connecting to the above-referenced 8” pipe, extending to the north boundary of the WRTP

Neither of these pipelines are currently connected to a reclaimed water supply transmission main.

DEMANDS:

Average day reclaimed water use demand factors used for the WRTP are based on the 2016 City of Woodland Engineering Standards, Water Demand Coefficients by Land Use Classifications table.

Table 1 – Reclaimed Water Demand Coefficients by Land Use Classification		
Land Use Code	Land Use Classification	GPM/Gross-Acre
OS	Open Space	1.5

With this demand coefficient – Average Day, Max Day and Peak Hour Demands were calculated – as seen in Table 2.



Table 2 – Average Day, Max Day and Peak Hour Demands								
Land Use	Acres	Average Day Demand Factor (gpd/acre)	Average Day Demand (gpd)	Average Day Demand (gpm)	Peaking Factor (Average Day to Max Day)	Maximum Day Demand (gpm)	Peaking Factor (Max Day to Peak Hr)	Peak Hour Demand (gpm)
Park (OS)	10.8	2,160	23,263	16.2	2.2	35.5	3.5	56.5
Greenway (OS)	6.0	2,160	12,982	9.0	2.2	19.8	3.5	31.6
Median (OS)	1.6	2,160	3,456	2.4	2.2	5.3	3.5	8.4
Total	18.4		39,701	27.6		60.7		96.5

PROPOSED FACILITIES:

Proposed Distribution System

The preliminary Reclaimed Water Layout, Attachment 2, depicts the backbone infrastructure designed to connect to the existing transmission mains and to distribute reclaimed water throughout the WRTP. The proposed point-of-connection for the system is at the existing 8-inch main south of Osborn Drive and Farmers Central Road. The main will then be routed south down the greenway along the west side of Harry Lorenzo Avenue, terminating at CR 25A. From Harry Lorenzo, the WRTP network will connect at Parkland Avenue, Marston Drive, and the greenway extending from the corner of Road E and Road D.

The network leading from these connections was designed to provide service to typical areas with irrigation demands: medians, parks, and greenways. Due to the nature of this development, a main was also extended south of CR 25A to provide service for potential future demands of the agricultural research that is anticipated to be conducted in the Research Flex land use. The public reclaimed water supply pipelines are all located within the right-of-way of public streets and greenways.

Once the WRTP network and adjoining main is implemented, it will go unused until the main currently terminated at the intersection of Harry Lorenzo Avenue and Gibson Road is connected to the WPCF effluent by others. The backbone infrastructure distributing domestic water was designed considering these additional interim irrigation demands. Refer to the Woodland Research and Technology Park – Water Distribution technical memorandum for more details.

ATTACHMENTS:

1. Proposed Land Use Plan
2. Reclaimed Water Layout

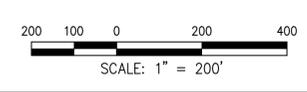
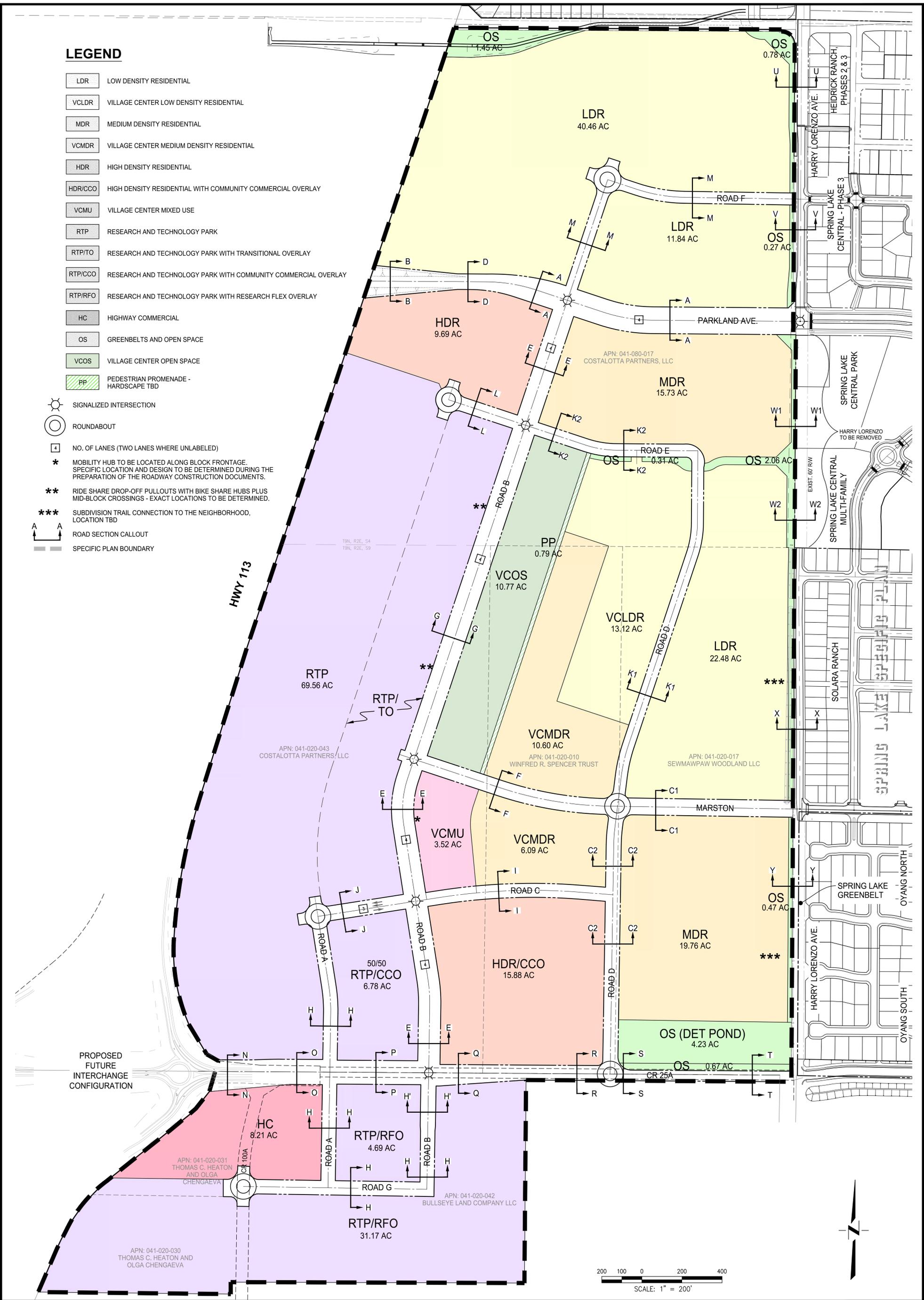
REFERENCES:

1. City of Woodland General Plan Update 2035 (Dyett & Bhatia, May 2017)

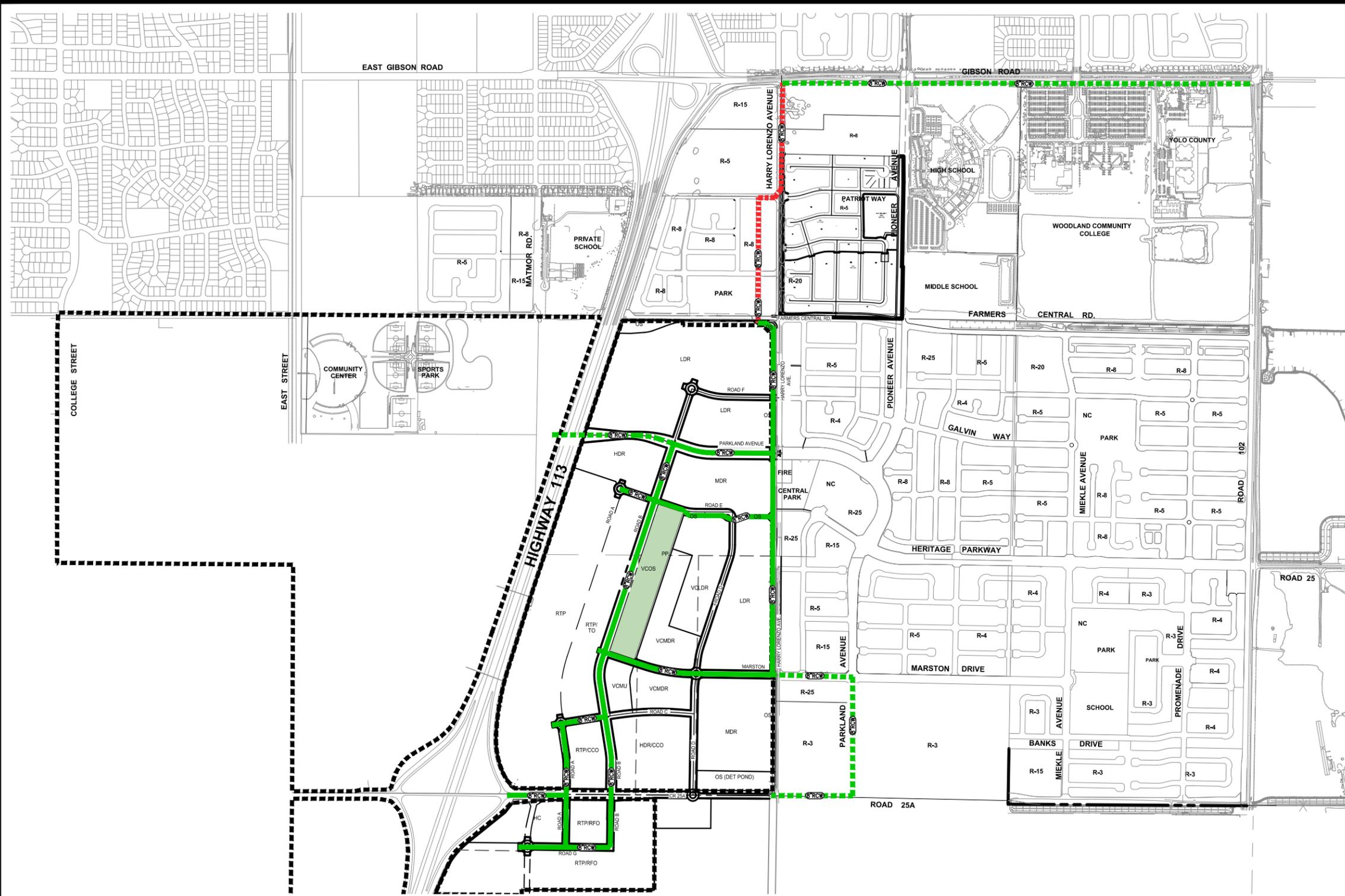


LEGEND

- LDR LOW DENSITY RESIDENTIAL
 - VCLDR VILLAGE CENTER LOW DENSITY RESIDENTIAL
 - MDR MEDIUM DENSITY RESIDENTIAL
 - VCMDR VILLAGE CENTER MEDIUM DENSITY RESIDENTIAL
 - HDR HIGH DENSITY RESIDENTIAL
 - HDR/CCO HIGH DENSITY RESIDENTIAL WITH COMMUNITY COMMERCIAL OVERLAY
 - VCMU VILLAGE CENTER MIXED USE
 - RTP RESEARCH AND TECHNOLOGY PARK
 - RTP/TO RESEARCH AND TECHNOLOGY PARK WITH TRANSITIONAL OVERLAY
 - RTP/CCO RESEARCH AND TECHNOLOGY PARK WITH COMMUNITY COMMERCIAL OVERLAY
 - RTP/RFO RESEARCH AND TECHNOLOGY PARK WITH RESEARCH FLEX OVERLAY
 - HC HIGHWAY COMMERCIAL
 - OS GREENBELTS AND OPEN SPACE
 - VCOS VILLAGE CENTER OPEN SPACE
 - PP PEDESTRIAN PROMENADE - HARDSCAPE TBD
-
- SIGNALIZED INTERSECTION
 - ROUNDABOUT
 - NO. OF LANES (TWO LANES WHERE UNLABELED)
 - MOBILITY HUB TO BE LOCATED ALONG BLOCK FRONTAGE. SPECIFIC LOCATION AND DESIGN TO BE DETERMINED DURING THE PREPARATION OF THE ROADWAY CONSTRUCTION DOCUMENTS.
 - RIDE SHARE DROP-OFF PULLOUTS WITH BIKE SHARE HUBS PLUS MID-BLOCK CROSSINGS - EXACT LOCATIONS TO BE DETERMINED.
 - SUBDIVISION TRAIL CONNECTION TO THE NEIGHBORHOOD, LOCATION TBD
 - ROAD SECTION CALLOUT
 - SPECIFIC PLAN BOUNDARY

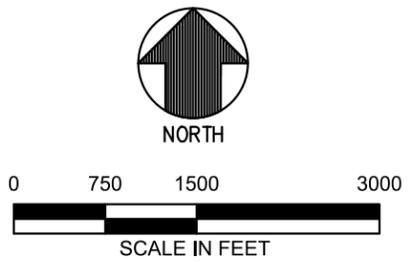


DESIGNED BY: SG DRAWN BY: LE CHECKED BY: SG	<h2 style="margin: 0;">WOODLAND RESEARCH AND TECHNOLOGY PARK</h2> <h3 style="margin: 0;">LAND USE PLAN LAYOUT</h3>	<p>Project Planning ■ Civil Engineering ■ Landscape Architecture</p> <p>■ Sacramento Office ■ Davis Office 2120 20th Street, Suite Three 2940 Spafford Street, Suite 200 Sacramento, CA 95818 Davis, CA 95618 (916) 455-2026 (530) 758-2026</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NO.</th> <th>DATE</th> <th>REVISIONS</th> <th>BY</th> <th>APPD.</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	NO.	DATE	REVISIONS	BY	APPD.						SHEET <h1 style="margin: 0;">1</h1> OF <h1 style="margin: 0;">1</h1> DATE: 11/15/2019 PROJECT NO: 1593.03
NO.	DATE	REVISIONS	BY	APPD.										



- LEGEND:**
- — — — — SPECIFIC PLAN BOUNDARY
 - - - - - SP-1 BOUNDARY
 - (8"RCW)--- EXISTING RECYCLED WATER MAIN
 - (8"RCW)--- PROPOSED RECYCLED WATER
 - (8"RCW)--- PROPOSED RECYCLED WATER (TO BE CONSTRUCTED BY OTHERS)

- NOTES:**
1. WATERLINE SIZING SUBJECT TO CHANGE BASED ON FUTURE DEMAND PROJECTIONS AND WATER MODELING.



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FEBRUARY 2020

WOODLAND RESEARCH AND TECHNOLOGY PARK (SP-1A)

INFRASTRUCTURE STUDY

ATTACHMENT 2: RECYCLED WATER LAYOUT