

Appendix E

PRELIMINARY ENGINEER'S REPORT FOR WALNUT AVENUE SPECIFIC PLAN

Preliminary Engineer's Report

For

Walnut Avenue Specific Plan

Greenfield, California

March 5, 2012

Updated April 11, 2012

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Preliminary Engineer’s Report

Walnut Avenue Specific Plan: Greenfield, CA

Table of Contents

1	Introduction	1-1
1.1.	Purpose of Report	1-1
1.2.	Study Limitations	1-1
1.3.	Scope of Work	1-1
2	Study Area	2-1
2.1.	Location	2-1
2.2.	Existing Conditions and Topography	2-1
2.3.	Existing Properties and Easements	2-3
2.4.	Existing Utilities	2-3
2.5.	Land Use	2-6
3	Circulation	3-1
4	Proposed Site Grading	4-1
5	Storm Water	5-1
5.1.	Existing Hydrology and Drainage	5-1
5.2.	Proposed Drainage	5-1
5.3.	Storm Water Management	5-4
5.3.1.	Local Agency Permits and Requirements	5-4
5.3.2.	Construction Storm Water Management	5-4
5.3.3.	Post-Construction Storm Water Management	5-5
6	Sanitary Sewer	6-1
6.1.	Sewer Generation	6-1
6.2.	Collection and Conveyance	6-3
6.3.	Treatment	6-3
7	Domestic Water	7-1
7.1.	Water Demand	7-1
7.2.	Supply and Distribution	7-1
8	Dry Utilities	8-1
8.1.	Electric	8-1
8.2.	Natural Gas	8-1
8.3.	Telecommunications	8-1

Preliminary Engineer's Report

Walnut Avenue Specific Plan: Greenfield, CA

List of Figures

2.1	Local Area Map	2-2
2.2	Specific Plan Boundary	2-3
2.3	Existing Site Topography	2-4
2.4	Existing Property Easements	2-6
2.5	Existing Utilities	2-7
2.6	Proposed Land Use Map.....	2-9
3.1	Vehicular Circulation Plan	3-2
3.2	Pedestrian Circulation Plan	3-3
3.3	Bicycle Circulation Plan.....	3-4
3.4	Street Sections.....	3-5
4.1	Conceptual Grading Plan	4-2
5.1	Conceptual Storm Drainage Layout.....	5-3
6.1	Conceptual Sanitary Sewer Layout.....	6-2
7.1	Conceptual Domestic Water Layout.....	7-3

List of Tables

2.1	Walnut Avenue Specific Plan Illustrative Site Plan Land Use Summary Table	2-8
5.1	Post-Development Storm Water Runoff Volumes and Peak Flows	5-2
6.1	Projected Sewer Generation	6-1
7.1	Projected Water Demand.....	7-1

References

1. NRCS Soil Survey Map. January 2012 (internet)
2. Alquist-Priolo Earthquake Fault Zone Maps. January 2012 (internet)
3. City of Greenfield General Plan, 2005
4. FEMA FIRM Panel 06053C0850G, April 2, 2009
5. Drainage Study for Walnut Avenue Widening at Third Street. April 2011
6. City of Greenfield IDF curves
7. City of Salinas 2008 Design Standards, 2008

Preliminary Engineer's Report

Walnut Avenue Specific Plan: Greenfield, CA

1 Introduction

1.1 Purpose of the Report

This report is prompted by the intent of the Project Applicant to develop a Specific Plan and Environmental Impact Report for the Walnut Avenue Commercial Area. The Applicant has retained Ruggeri-Jensen-Azar (RJA) to conduct preliminary engineering design, incorporating the proposed grading concept, circulation plan, storm water management and conveyance plans, sanitary sewer system, and domestic water system for the Plan Area. This report summarizes the findings of these efforts and is intended to be used as a technical reference for the Walnut Avenue entitlement applications and associated environmental documents.

1.2 Study Limitations

This report is limited to identification of the backbone infrastructure and general site grading needed to support development of the Property. All calculations are based on the "Preferred Alternative" (by EMC), City of Greenfield development guidelines and design criteria at the time of preparation this report. This report and calculations are for preliminary purposes only and should not be used for final design or construction.

1.3 Scope of Work

The scope of this report includes and is limited to the following:

- Develop a circulation system that serves the needs of the plan while at the same time enhances the plan design objectives.
- Preliminarily, study the site grading and establish conceptual limits of disturbance, cut and fill areas, and preliminary finished grades.
- Preliminarily, study the existing storm water drainage system, identify conceptual drainage areas, and develop a conceptual storm drainage system including detention/retention strategies.
- Develop preliminary LID strategies for onsite storm water management.
- Preliminarily, study the existing sanitary sewer system and develop a conceptual collection and conveyance system.
- Preliminarily, study the existing domestic water system and develop a conceptual distribution system.

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Walnut Avenue Specific Plan: Greenfield, CA

2 Study Area

2.1 Location

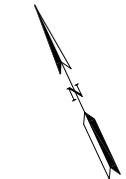
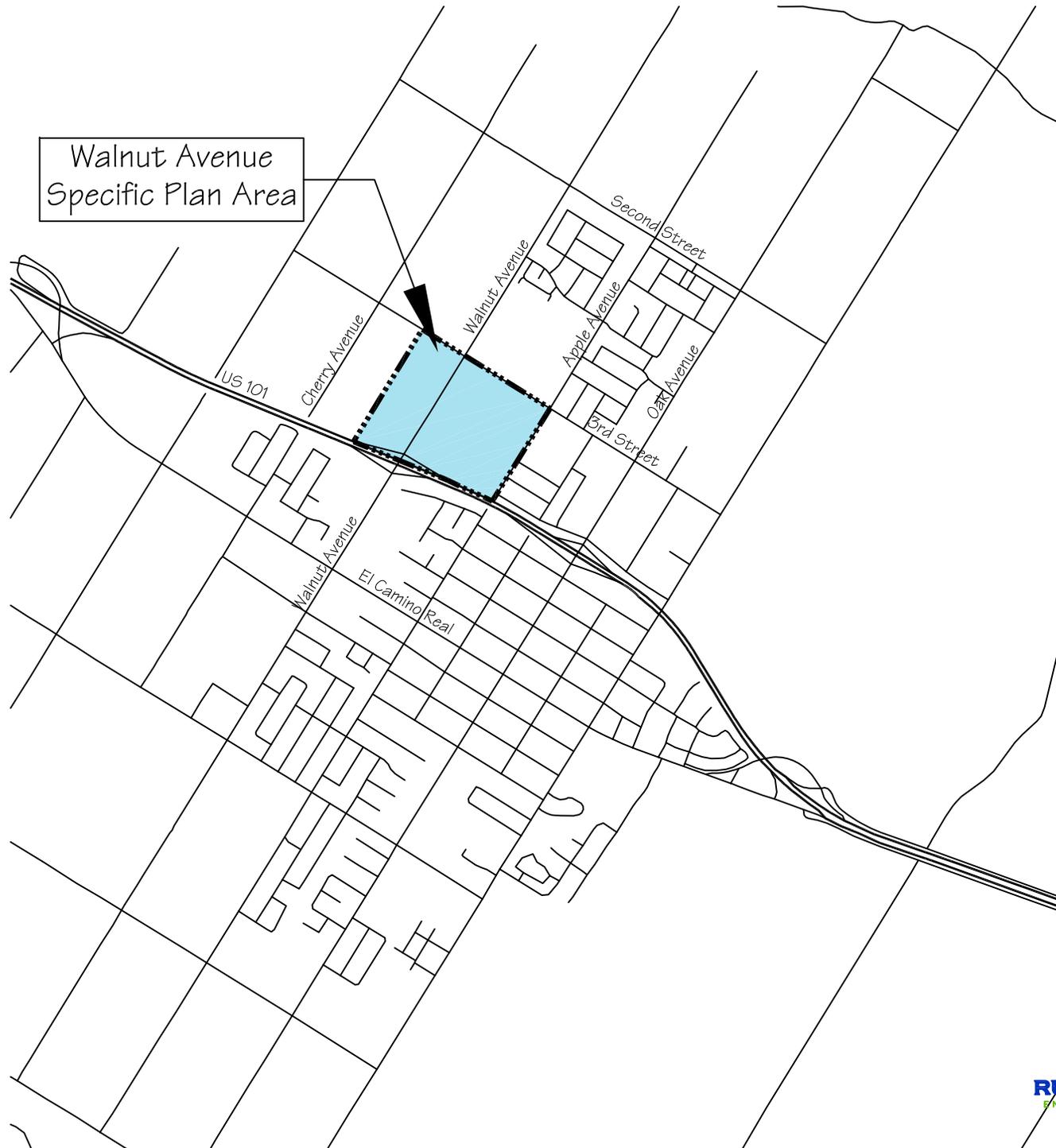
The plan area comprises approximately 60 acres located within the City of Greenfield. The site is bounded by agricultural operations to the north, and to the east (north of Walnut Avenue) and existing residential to the east (south of Walnut Avenue) and south of the project, and US 101 to the west. Figure 2.1 shows the Local Area Map while Figure 2.2 shows the Specific Plan Boundaries relative to the existing City Limit.

2.2 Existing Conditions and Topography

The property is currently being used for agricultural farming operations. The site consists of mainly row crops and two small houses with associated structures. The site is generally clear of trees with the exception of a few trees near the existing structures. There is one percolation basin located in the southeast corner of the site that was recently constructed as part of the Walnut Avenue Widening project.

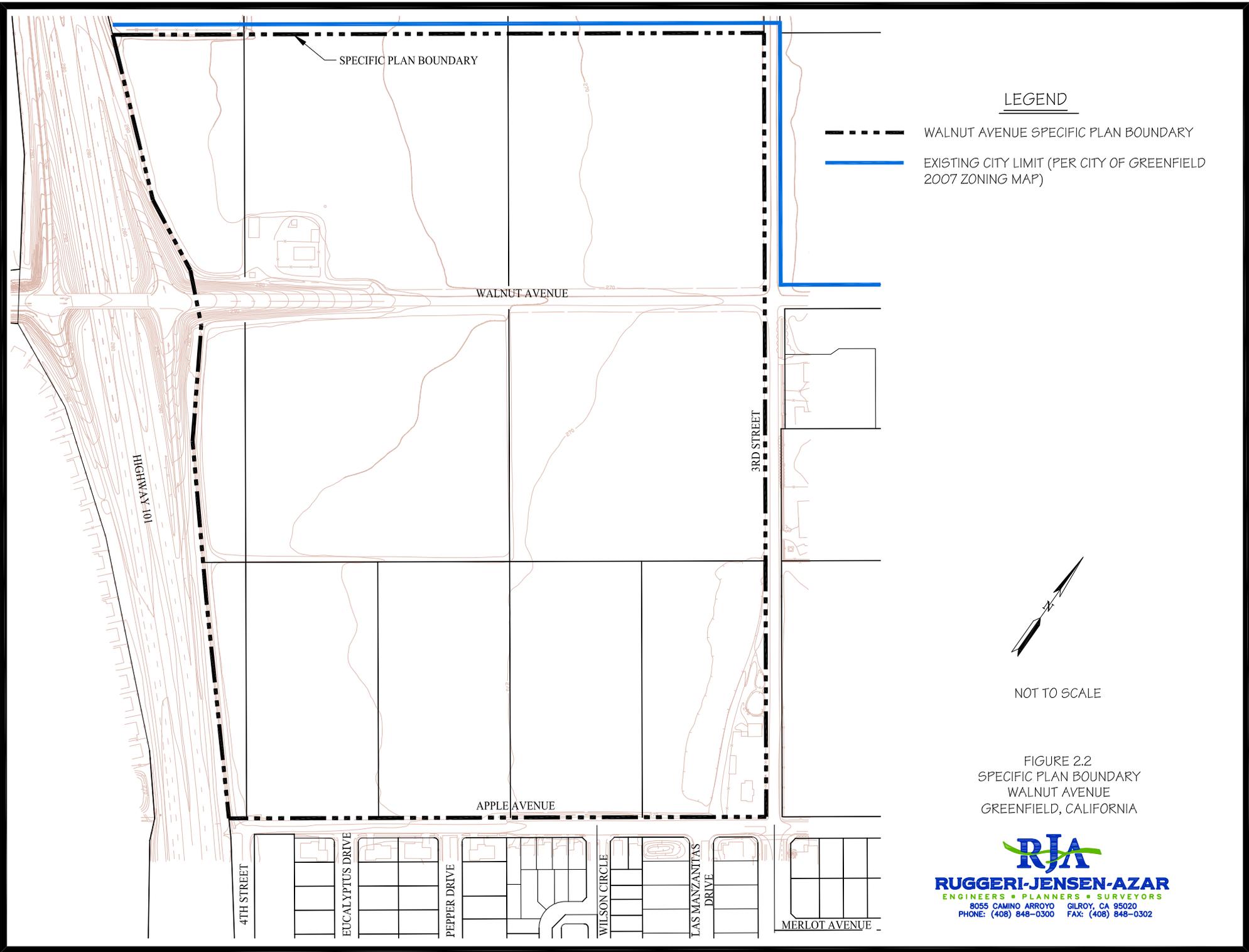
The existing site topography slopes from west to east towards 3rd Street with the lowest elevations occurring near the intersection of 3rd Street and Apple Avenue. The land is relatively flat with slopes ranging from 0.2% to 0.3%. The adjacent grades on all sides of the site are equivalent to those of the site except where US 101 and associated interchange for Walnut Avenue range from 5-25 feet above the project site. Because Walnut Avenue rises in elevation to cross over US 101, it creates a condition in which Walnut Avenue does not conform to the adjacent site grades until is it approximately 700 feet east of the freeway. Figure 2.3 shows the Existing Site Topography.

Walnut Avenue
Specific Plan Area



NOT TO SCALE

FIGURE 2.1
LOCAL AREA MAP
WALNUT AVENUE
GREENFIELD, CALIFORNIA



SPECIFIC PLAN BOUNDARY

LEGEND

-  WALNUT AVENUE SPECIFIC PLAN BOUNDARY
-  EXISTING CITY LIMIT (PER CITY OF GREENFIELD 2007 ZONING MAP)



NOT TO SCALE

FIGURE 2.2
 SPECIFIC PLAN BOUNDARY
 WALNUT AVENUE
 GREENFIELD, CALIFORNIA

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LEGEND

----- WALNUT AVENUE SPECIFIC PLAN BOUNDARY



NOT TO SCALE

FIGURE 2.3
 EXISTING SITE TOPOGRAPHY
 WALNUT AVENUE
 GREENFIELD, CALIFORNIA

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2.3 Existing Properties and Easements

The project site is comprised of 11 separate parcels with varying ownerships. Many of the parcels are encumbered by access or slope easements, most of which were granted to the City of Greenfield as part of the Walnut Avenue widening project.

In addition to easements the abutters' rights along the freeway and the western portion of the Walnut Ave frontage have been relinquished thereby preventing direct access to the adjacent roadways at these locations. In the future it is anticipated that the US101/Walnut Ave interchange will need to be expanded and will require additional right of way. Figure 2.4 shows the existing property lines, easements, and anticipated future right-of-way for a new US 101/Walnut Ave interchange.

2.4 Existing Utilities

The project site is surrounded by existing utilities mainly located in or along the public street frontage of the project site. Below is a summary of the utilities that exist on or adjacent to the project site. The Existing utilities are also shown on Figure 2.5.

- City of Greenfield owned and maintained 12-inch water mains in Apple Avenue, Third Street, and Walnut Avenue.
- City of Greenfield owned and maintained 8-inch sanitary sewer main in Walnut Avenue.
- City of Greenfield owned and maintained 12-inch sanitary sewer main in Apple Avenue.
- City of Greenfield owned and maintained 18-inch sanitary sewer main in Third Street, north of Walnut Avenue.
- City of Greenfield owned and maintained 21-inch sanitary sewer main in Apple Avenue and Third Street, south of Walnut Avenue.
- City of Greenfield owned and maintained 24-inch sanitary sewer main in Walnut Avenue, from the intersection of Third Street in an easterly direction.
- PG&E owned and maintained gas line in a portion of Apple Avenue and a portion of Third Street.
- Clark Colony Irrigation District owned and maintained 15-inch irrigation lines in Walnut Avenue and a portion of Third Street south of Walnut Avenue.
- Overhead utility lines exist along Apple Avenue, Third Street, and Walnut Avenue.

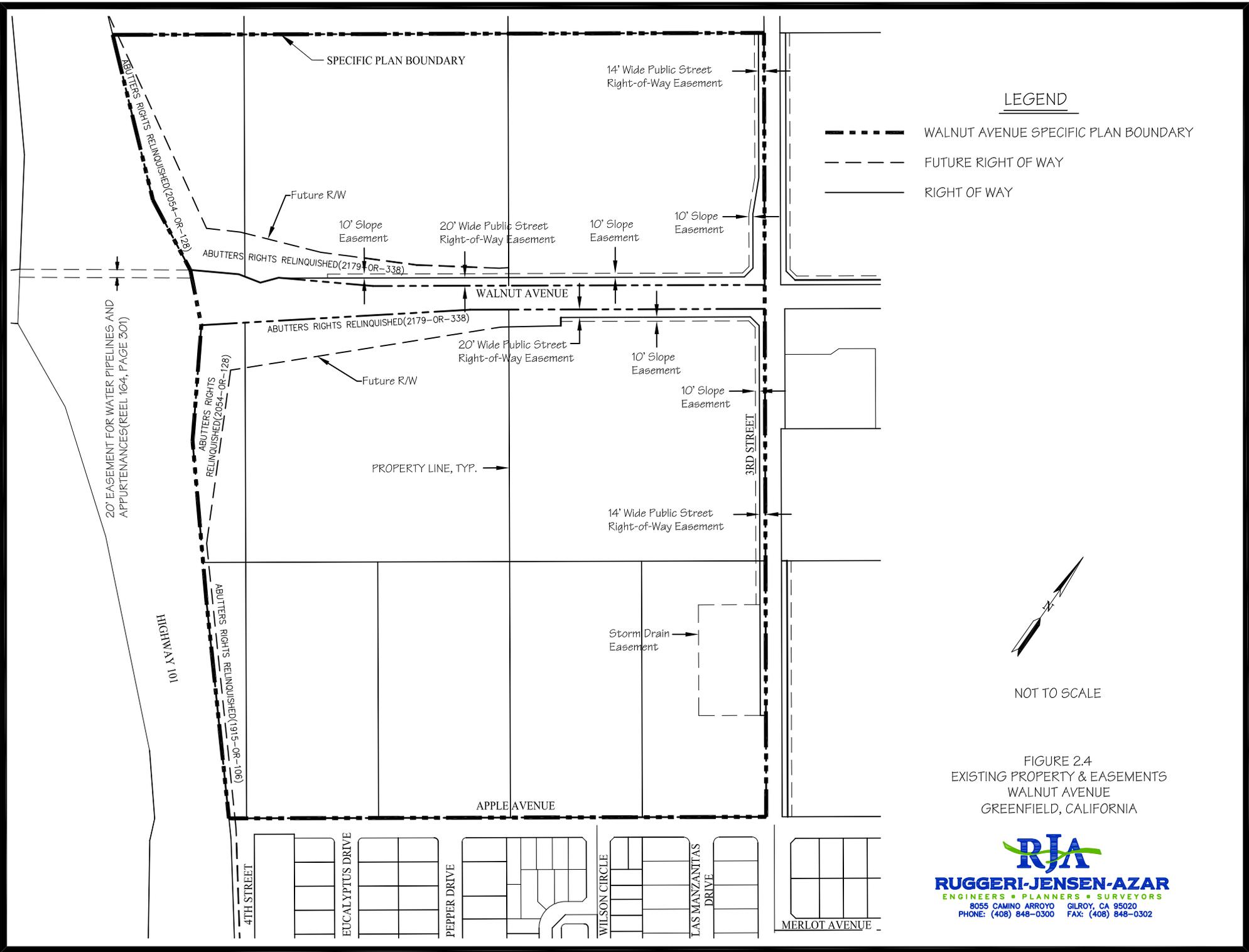
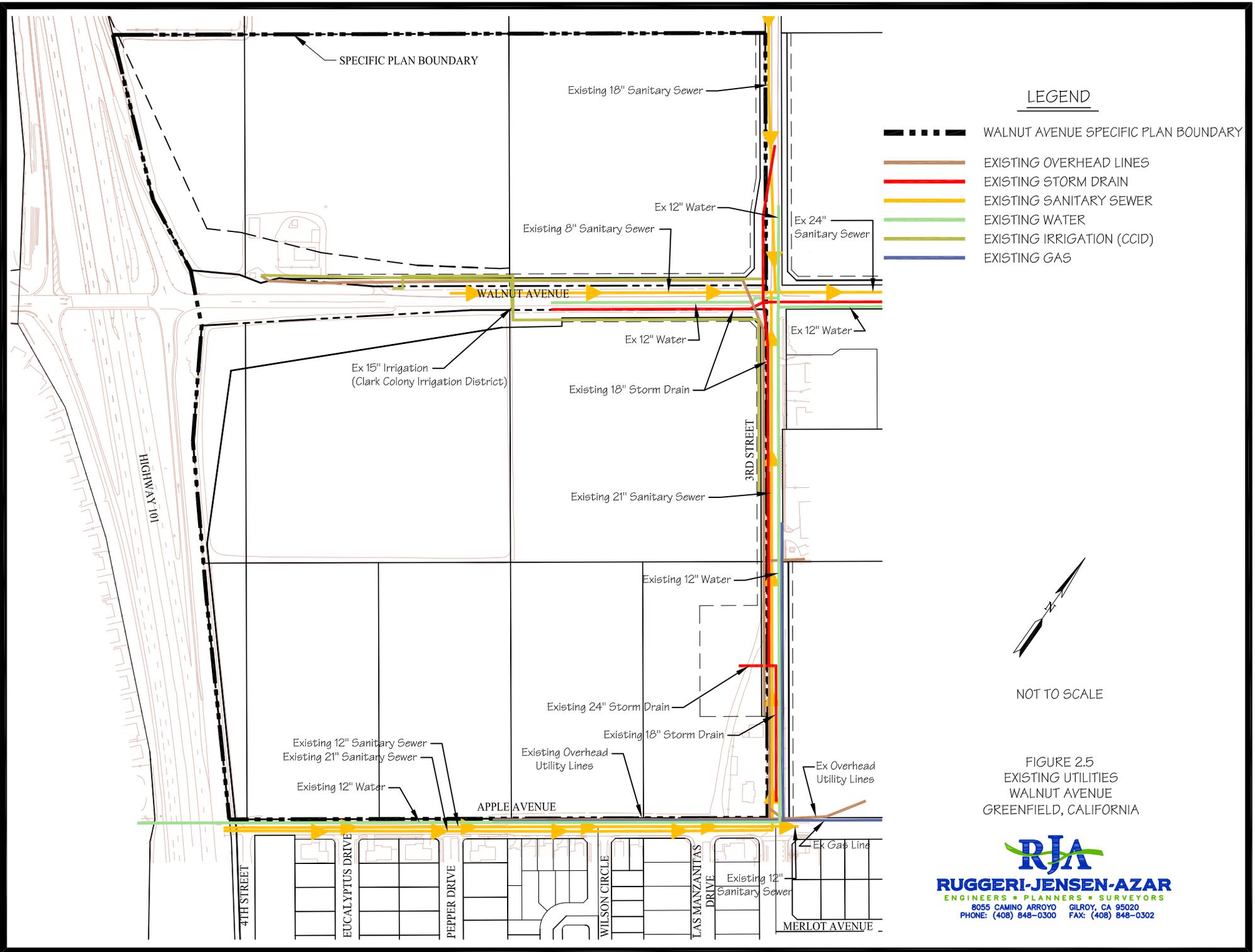


FIGURE 2.4
 EXISTING PROPERTY & EASEMENTS
 WALNUT AVENUE
 GREENFIELD, CALIFORNIA



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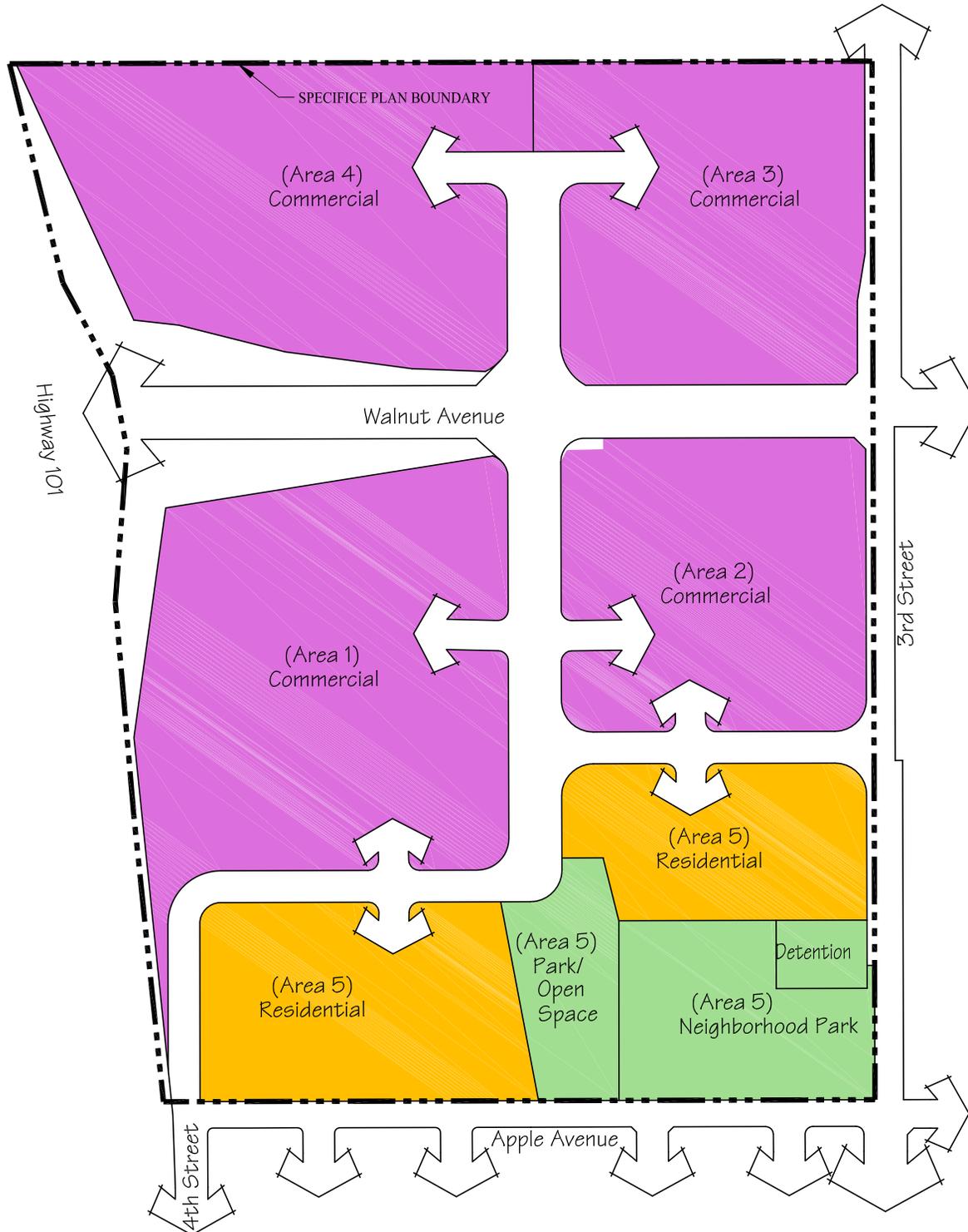
2.5 Land Use

The property is currently zoned as Highway Commercial (C-H) with a Regional Commercial Center Design overlay. The Applicant is proposing to develop the property into five separate areas that will include both commercial and residential components. Commercial buildings are anticipated to range from 5,000 square-feet to 105,000 square-feet and high density residential areas are proposed in the southern portion of the project. In addition, the development will include internal public collector streets, open space areas, parks, and detention facilities. Figure 2.6 shows the current Proposed Land Use and Table 2.1 summarizes the land uses for each area.

Table 2.1 - Walnut Avenue Specific Plan Illustrative Site Plan Land Use Summary Table

Alternative 3	Area 1 15.79 Ac 687,930 sf	Area 2 8.82 Ac 384,310 sf	Area 3 9.26 Ac 403,480 sf	Area 4 12.85 Ac 560,010 sf	Area 5 15.87 Ac 691,300 sf	TOTAL
Right of Way	155,230 sf	61,555 sf	42,025 sf	108,635 sf	80,830 sf	448,275 sf
Highway Commercial (Retail)	145,000 sf	80,000 sf	90,000 sf	130,000 sf	N/A	445,000 sf
High Density Residential (dwelling units)	N/A	N/A	N/A	N/A	328,295 sf (220 du)	328,295 sf (220 du)
Landscaping	62,540 sf	48,000 sf	36,880 sf	45,075 sf	47,240 sf	239,735 sf
Net%	12%	15%	10%	10%	10%	11% (ave)
Storm Water Detention	N/A	N/A	N/A	N/A	21,880 sf	21,880 sf
Neighborhood Park (Public)	N/A	N/A	N/A	N/A	130,720 sf	130,720 sf
Park Amenity/Open Space	N/A	N/A	N/A	N/A	70,660 sf	70,660 sf
Parking	231,840 sf	129,810 sf	156,210 sf	202,120 sf	N/A	719,980 sf
Spaces (based on 325 sf)	713	399	480	622	N/A	2,214
Ratio (%)	(4.9)	(5.0)	(5.3)	(4.8)		5.0 (ave)
Service/Loading	49,960 sf	29,045 sf	30,425 sf	28,845 sf	N/A	135,275 sf
Setback-building (curb/walk)	27,600 sf	19,200 sf	26,200 sf	27,085 sf	N/A	100,085 sf
Plaza	18,760 sf	16,700 sf	21,740 sf	18,250 sf	11,670 sf	87,120 sf
FAR (Gross)	0.21	0.21	0.22	0.23	N/A	0.22 (ave)
FAR (Net)	0.27	0.25	0.25	0.29	N/A	0.27 (ave)

*Illustrative Site Plan Land Use Summary Table updated 6/29/2012 by EMC.



LEGEND

----- WALNUT AVENUE SPECIFIC PLAN BOUNDARY



NOT TO SCALE

FIGURE 2.6
PROPOSED LAND USES
WALNUT AVENUE
GREENFIELD, CALIFORNIA

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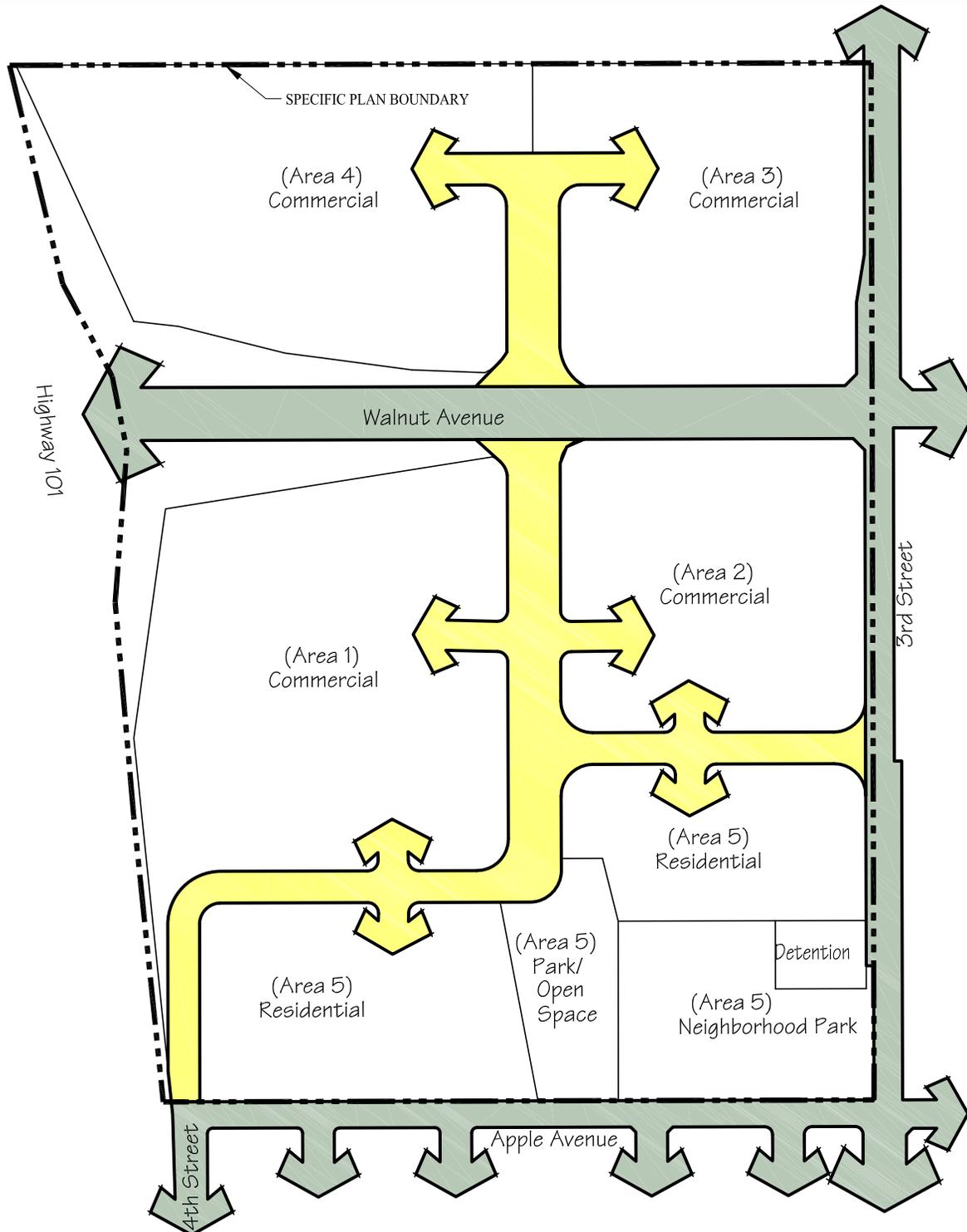
Walnut Avenue Specific Plan: Greenfield, CA

3 Circulation

The primary access to the plan area is intended to be from Walnut Avenue. Walnut Avenue is an east west cross town arterial with direct access to Highway 101. Secondary access will be provided by 3rd and 4th Streets. There are several other potential secondary points of connection along Apple Avenue and 3rd Street. These secondary points of connection may be vehicular or restricted to bike and pedestrian access only. These secondary points of connection should be aligned with the existing streets that project into the plan area. It is anticipated that the project will improve the existing public streets along the project frontage to comply with the current City of Greenfield General Plan. This includes portions of Walnut Ave, Apple Ave, and 3rd Street. Portions of Walnut and 3rd Street are being widened by the Walnut Avenue Widening Project, which is currently under construction.

The onsite circulation plan is designed to provide a safe and efficient travel network. Figure 3.1 shows the proposed Vehicular Circulation Plan. The internal circulation consists of a north/south major collector and a east/west minor collector. The proposed street sections are shown in Figure 3.4.

Alternative modes of transportation including bicycles and pedestrians have been incorporated into the conceptual design of the project. Internal streets provide Class II bike lanes as well as wide sidewalks for pedestrian use (See Figures 3.2 & 3.3). The internal bike lanes and sidewalks are planned to connect to existing or planned bike and pedestrian infrastructure as identified in the City of Greenfield General Plan.



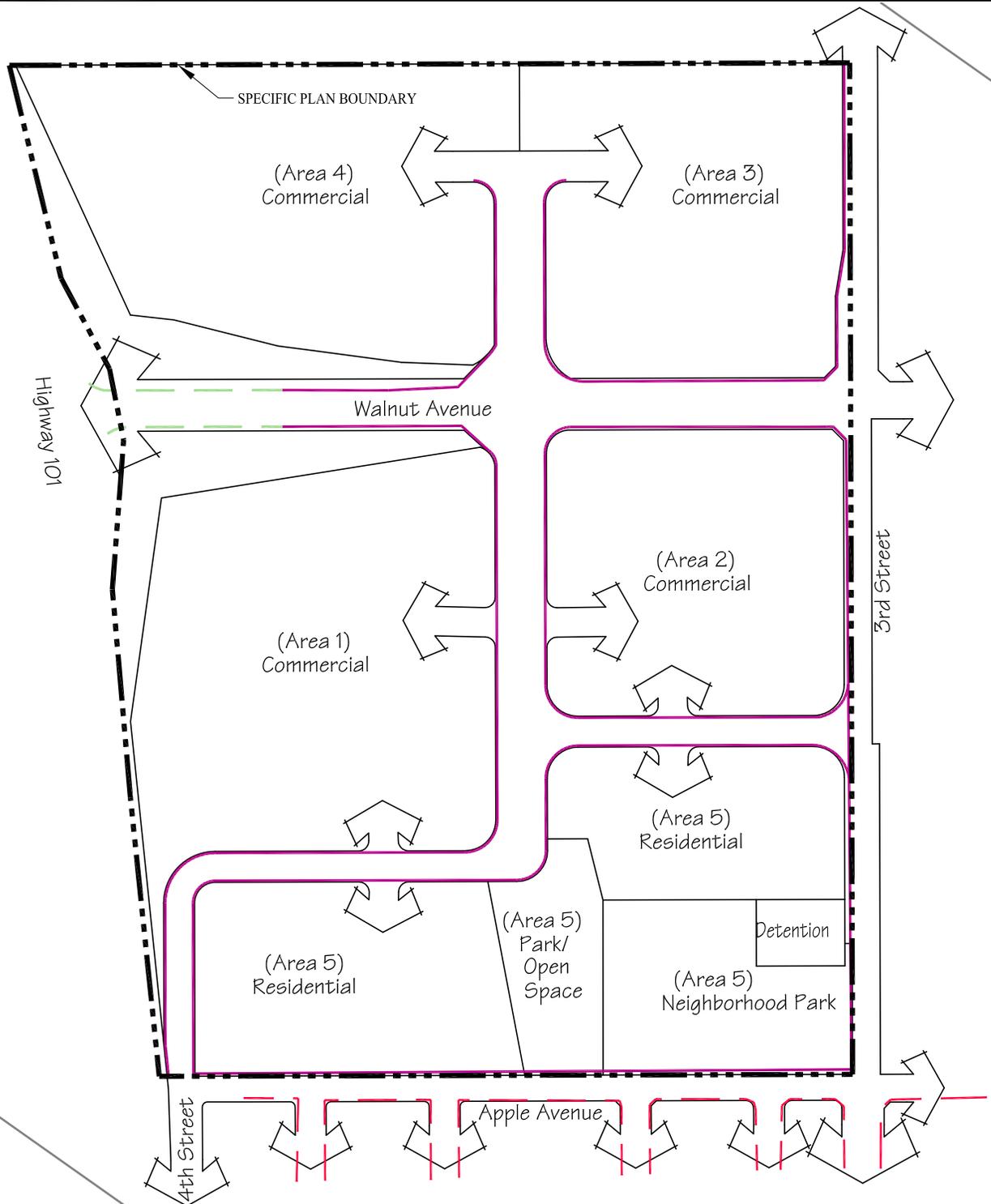
LEGEND

-  WALNUT AVENUE SPECIFIC PLAN BOUNDARY
-  EXISTING STREET
-  PROPOSED STREET



NOT TO SCALE

FIGURE 3.1
VEHICULAR CIRCULATION PLAN
WALNUT AVENUE
GREENFIELD, CALIFORNIA



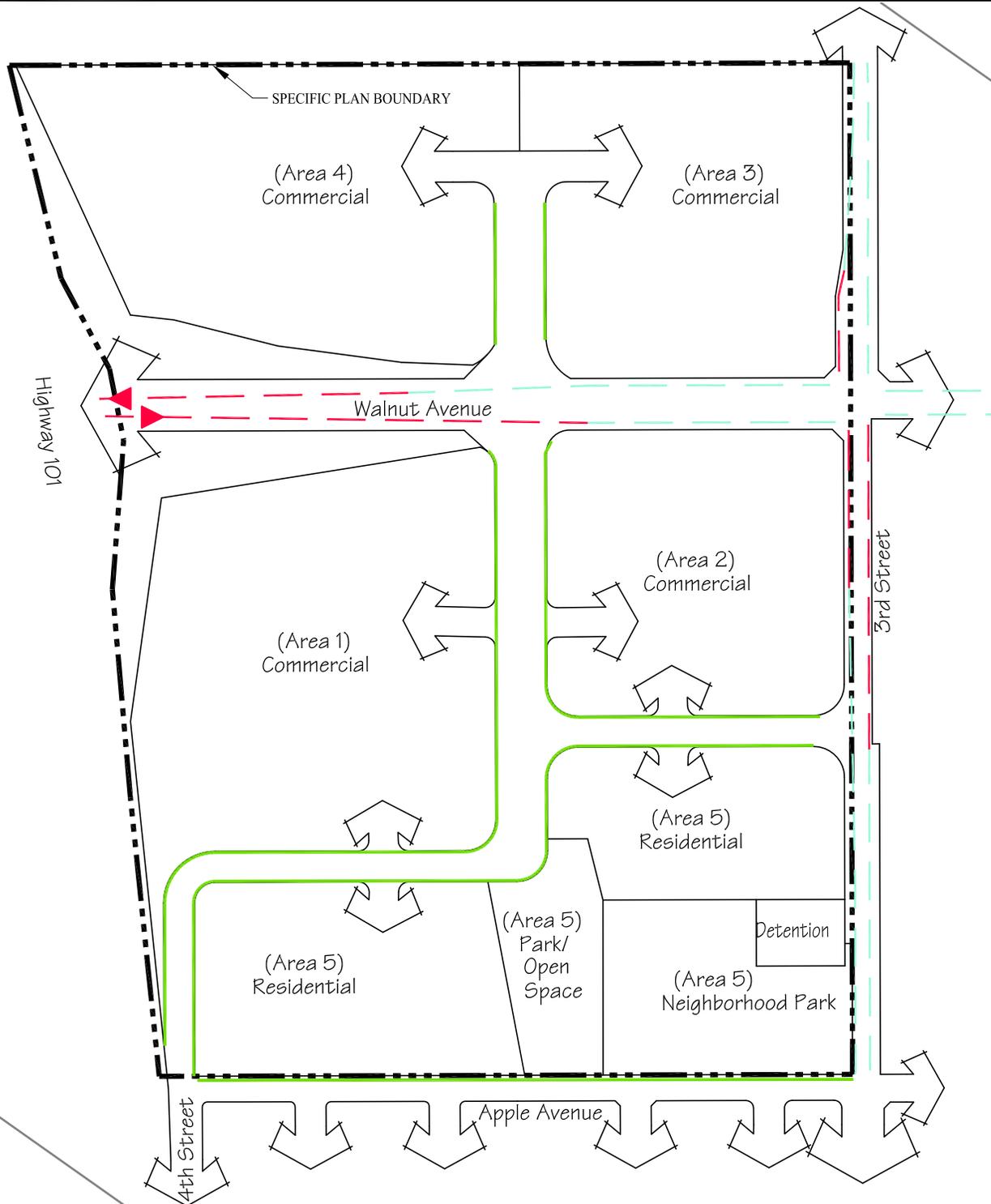
LEGEND

- WALNUT AVENUE SPECIFIC PLAN BOUNDARY
- EXISTING PEDESTRIAN PATH/SIDEWALK
- PROPOSED PEDESTRIAN PATH/SIDEWALK
- FUTURE PATH/SIDEWALK BY CITY



NOT TO SCALE

FIGURE 3.2
PEDESTRIAN CIRCULATION
WALNUT AVENUE
GREENFIELD, CALIFORNIA



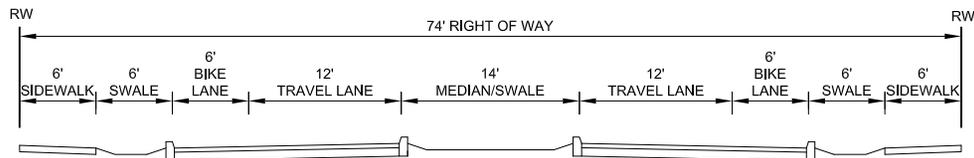
LEGEND

-  WALNUT AVENUE SPECIFIC PLAN BOUNDARY
-  EXISTING CLASS 3 BIKE PATH
-  EXISTING CLASS II BIKE LANE
-  PROPOSED CLASS II BIKE LANE

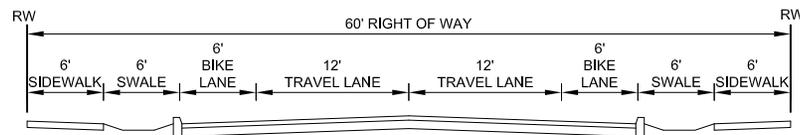


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FIGURE 3.3
BICYCLE CIRCULATION
WALNUT AVENUE
GREENFIELD, CALIFORNIA



INTERNAL MAJOR COLLECTOR
NOT TO SCALE



INTERNAL MINOR COLLECTOR
NOT TO SCALE

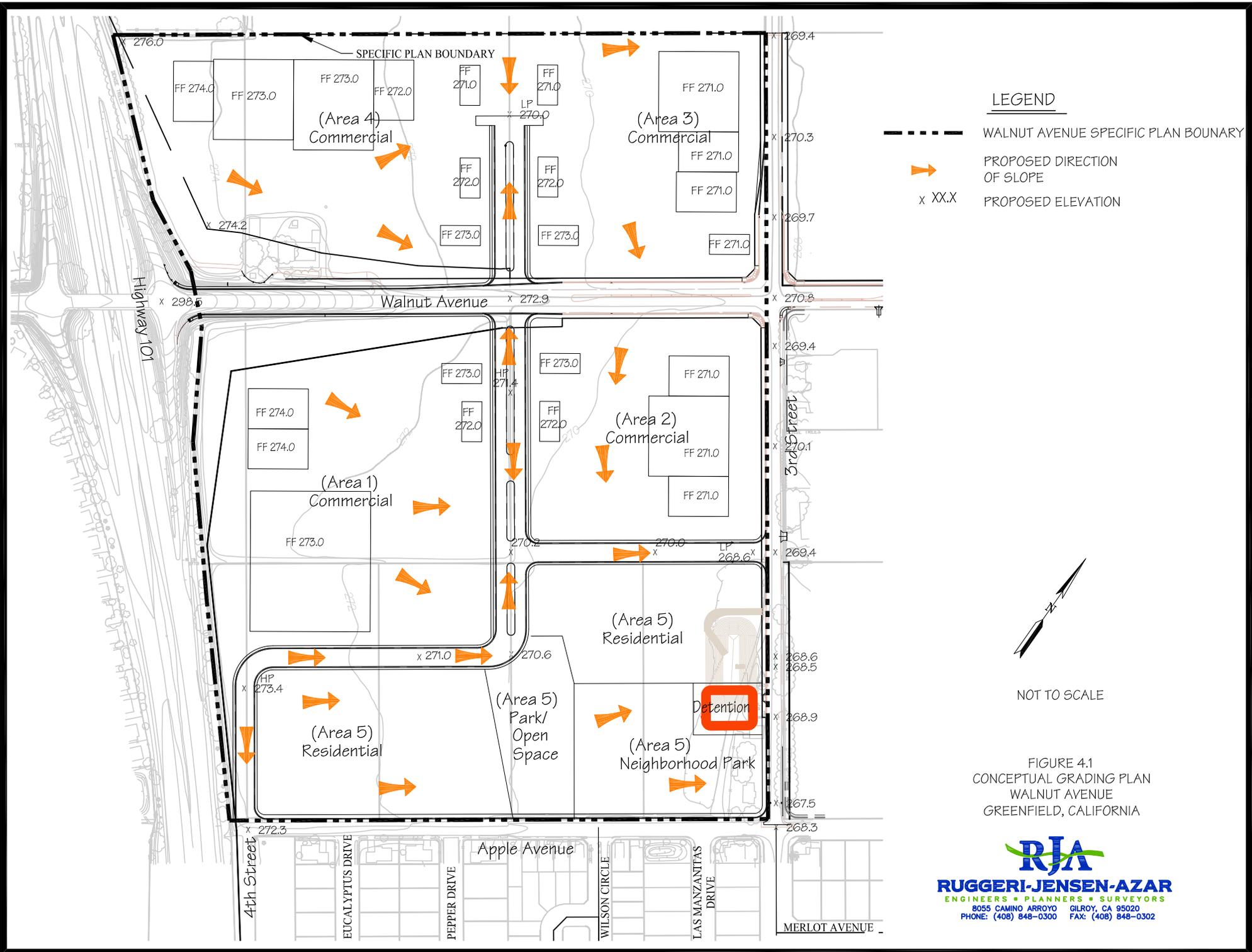
FIGURE 3.4
STREET SECTIONS
WALNUT AVENUE
GREENFIELD, CALIFORNIA

4 Proposed Site Grading

Figure 4.1 shows the proposed conceptual grading plan for the development. The grading plan was designed to optimize the quality of the development while meeting the following goals to the maximum extent practicable:

- Minimize the quantity of earth moved,
- Achieve a balanced earthwork condition,
- Maintain existing drainage patterns and overland release

The grading concept generally requires cuts and fills less than 2-feet, with maximum cuts and fills of approximately 5-feet (see Figure 4.1). The grading conform slopes around the perimeter of the site and between adjacent pads are expected to be 3:1 maximum (horizontal to vertical) and ranging in height from 0 to 2-feet. Retaining walls are not anticipated due to the flat topography and uniform slopes. There is expected to be 250,000 to 450,000 cubic yards of earth moved within the project site. The final grading plan should be designed to balance cuts and fills and minimize earth movement during the various phases of development.



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Walnut Avenue Specific Plan: Greenfield, CA

5 Storm Water

5.1 Existing Hydrology and Drainage

Under existing conditions, rainfall appears to percolate into the soils with larger rain events producing runoff that is ultimately collected in a percolation pond at the southeast corner of the plan area. There are no defined creeks or channels on or adjacent to the site. The only storm water related infrastructure that exists within the plan area is the recently constructed storm drain improvements that were recently installed with the Walnut Ave and 3rd Street roadway improvements. This new infrastructure collects the runoff from these roadways and conveys it to a newly constructed percolation basin located in the southeast portion of the project site.

The preliminary grading design divides the site into two drainage areas, mimicking existing watershed boundaries to the maximum extent practicable, with approximately 22.1-acres draining towards Third Street (area north of Walnut Avenue), and 40.5-acres draining towards Third Street (area south of Walnut Avenue). The north area includes Areas 3 and 4 of the plan, and the south area includes Areas 1, 2 and 5 of the plan.

The site is located west of the Salinas River at the eastern limit of the City of Greenfield. Per FEMA FIRM Panel 06053C0850G the site is located in Zone X, which is outside of the 100-year floodplain limits.

5.2 Proposed Drainage

The existing percolation pond that was recently designed and constructed with the Walnut Ave widening project was designed with a percolation rate of 2"/hr. (the City of Greenfield's standard engineering design requirement for percolation basins). However, after reviewing the percolation tests completed with the construction of the 3rd Street basin the City of Greenfield agreed to accept a percolation rate of 12"/hour for the project. Percolation tests conducted by Pacific Crest Engineering, Inc. confirmed percolation rates of over 100 inches per hour in the plan area. Furthermore, the Natural Resources Conservation Service soil survey identifies the soils as Elder Loam which has a Hydrologic Soil Group rating of "A", which is given to soils having a high infiltration rate when thoroughly wet. The infiltration rate range for Hydrologic Soil Group A, ranges from 20-100 inches per hour.

Given the relatively high amount of impervious surfaces that are associated with the construction of a typical commercial project, storm drain infrastructure is often a large and costly infrastructure component. However, due to the highly pervious soils underlying the site, the project design intends to incorporate the natural properties of the existing soils to reduce the runoff from the site and provide maximum ground water recharge. The

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Walnut Avenue Specific Plan: Greenfield, CA

proposed preliminary drainage design will direct runoff from impervious surfaces directly to pervious areas such as landscape medians for storm water treatment and ultimately percolation. In areas where the available landscape areas may not be sufficient to percolate the tributary areas other methods such as subsurface disposal (perforated pipe, or open bottom storage chambers) may be used. Because of this innovative approach to storm water collection and disposal the commercial areas of the project are not planned to have backbone storm drain infrastructure that would collect and convey storm water to a large percolation facility serving the entire project. In addition, because the City has agreed that a higher percolation rate for the existing 3rd street percolation basin would be more appropriate, the basin will be consolidated and the volume of the basin will be reduced to support its tributary area.

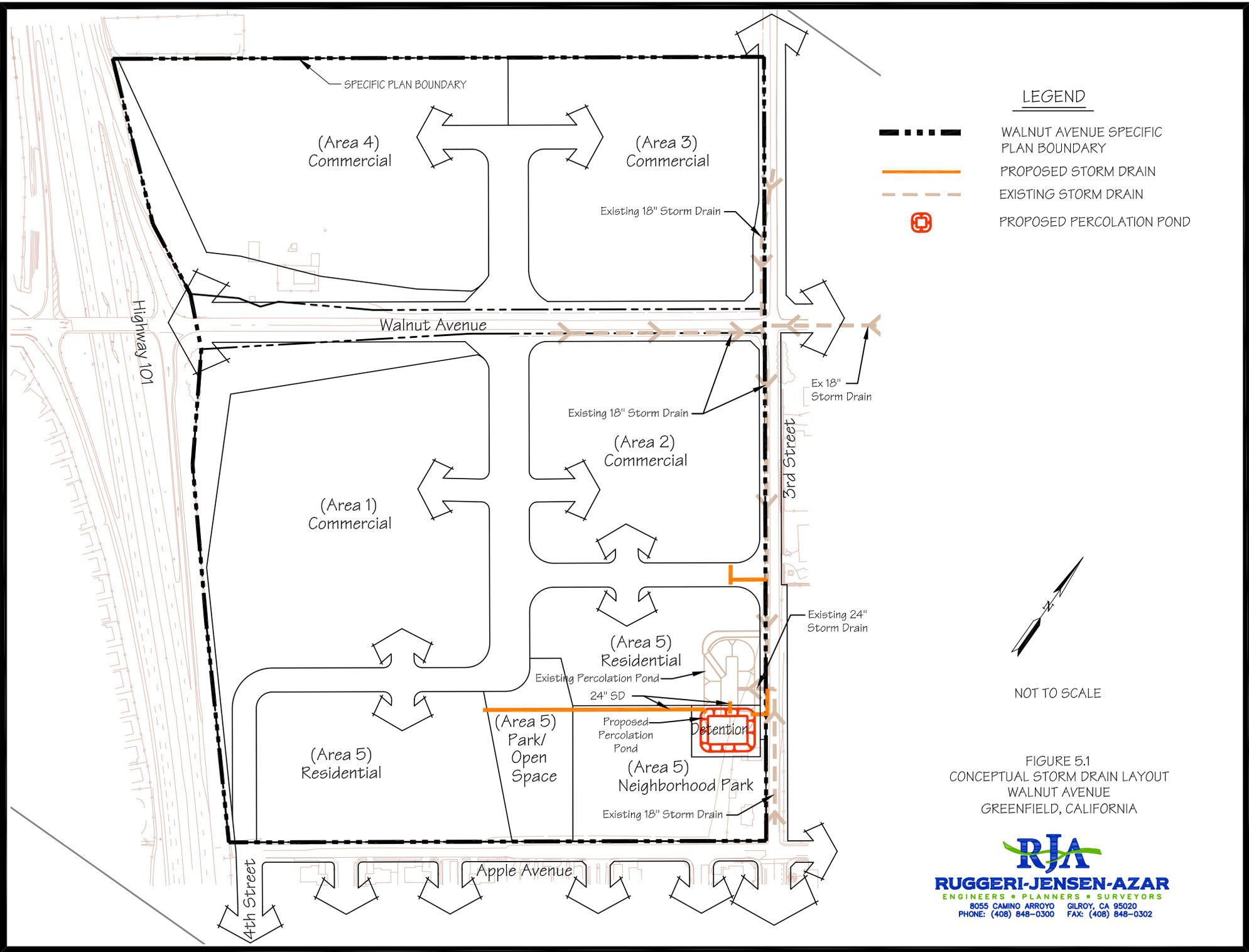
The relatively high density of the residential component of the project and its location relative to the existing 3rd street basin make it a more practical candidate for traditional storm water collection, conveyance and disposal methods. Therefore it is planned that the storm water from the residential areas of the project will be collected in traditional storm water collection systems and conveyed to the percolation basin located along 3rd Street.

All streets and parking lots should be graded to direct runoff to storm water retention/percolation areas. These areas should be designed to allow infiltration of storm water with overflow relief to existing overland release points at the eastern boundary of the site.

Table 5.1 summarizes the Preliminary Post-Development Hydrologic Results, and indicates that runoff can be efficiently percolated on-site through the use of pervious surfaces. The City of Greenfield IDF curves and the rational method was used to estimate peak runoff rates and volumes generated for the project.

Table 5.1 - Preliminary Post-Development Hydrologic Results					
Drainage Area	Area (Ac)	100-year (3.26 - inches)			
		Peak Flow (cfs)	24-hr Storm Volume (ac-ft)	Percolation Storage Required (cf)	Percolation Area Required (sf)
1	15.78	17.45	3.5	11,000	22,440
2	8.82	9.76	2.0	6,130	12,590
3	9.26	10.24	2.1	6,440	13,210
4	12.87	14.24	2.9	8,960	18,320
5 (Residential)	15.87	16.92	3.4	26,610	8,700

Note: Percolation areas/volumes are calculated assuming 6" depth of ponding for commercial areas and 4' depth of ponding for residential.



LEGEND

- WALNUT AVENUE SPECIFIC PLAN BOUNDARY
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED PERCOLATION POND



NOT TO SCALE

FIGURE 5.1
 CONCEPTUAL STORM DRAIN LAYOUT
 WALNUT AVENUE
 GREENFIELD, CALIFORNIA

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5.3 Storm Water Management

5.3.1 Local Agency Permits & Requirements

The State Water Resources Control Board has implemented a National Pollution Discharge Elimination System (NPDES) Program to control and enforce storm water pollutant discharge reduction per the Clean Water Act. The Central Coast Regional Water Quality Control Board (RWQCB) issues and enforces the NPDES permits for discharges to water bodies in Monterey County, including the City of Greenfield. As part of their current NPDES Phase II Storm Water Permit, the RWQCB requires Cities to reduce the volume, rate, and pollutant loading of urban runoff. The RWQCB stipulates that Cities establish development standards to be used in new development and redevelopment to help achieve the goals of the NPDES permit.

LID is defined as principles and techniques used in designing sites (starting from site layout, and grading and compaction phases of construction) that disturb only the smallest area necessary, minimize soil compaction and imperviousness, preserve natural drainages, vegetation, and buffer zones, and utilize on-site, lot sized storm water treatment techniques. LID sites reduce and compensate for development impacts on hydrology and water quality in order to preserve and protect existing water bodies. Post-Construction storm water BMPs are small-scale facilities integrated into the site layout, landscaping, and drainage design of urban development to provide long-term management and treatment of storm water runoff. They typically treat runoff from relatively small drainage areas (less than 5-acres) and include elements such as vegetated swales, filter strips, bioretention and bioswale systems, and permeable pavement. If designed correctly, LID and IMP elements can be key amenities for a property, providing both aesthetic qualities and functional storm water management benefits.

5.3.2 Construction Storm Water Management

Development of this project has the potential to increase discharge of storm water pollutants during construction due to ground disturbance. Projects disturbing more than 1-acre of land during construction, or disturb less than 1-acre but are part of a larger common development greater than 1-acre, are required to obtain coverage under the State of California NPDES General Construction Permit, Order No. 2009-0009-DWQ, NPDES No. CAS000002 (General Permit). The General Permit requires the project applicant to file a Notice of Intent (NOI) with the State Water Resources Control Board and develop and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is designed to address the following five (5) objectives:

- Identify and control all pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity;

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Walnut Avenue Specific Plan: Greenfield, CA

- Where not otherwise required to be under a Regional Water Board permit, identify and either eliminate, control, or treat all non-storm water discharges;
- Select and identify site BMPs that are effective and result in the reduction or elimination of pollutants in storm water discharges and authorized non-storm water discharges from construction activity to the Best Available Technology Economically Achievable (BAT) or Best Conventional Pollutant Control Technology (BCT) standard;
- Provide complete and correct calculations and design details and identify BMP controls for site run-on; and
- Select and identify stabilization BMPs to reduce or eliminate pollutants after construction is complete.

A separate NOI and SWPPP will be prepared and filed with each significant project phase prior to the start of construction per the requirements of the General Permit and RWQCB. Developers will be required to submit all permit documentation, including but not limited to the NOI, SWPPP, annual reports, pollutant exceedance reports, notice of termination, via the Storm Water Multiple Application and Report Tracking System (SMARTS) website (smarts.waterboards.ca.gov).

5.3.3 Post-Construction Storm Water Management

Development of the Walnut Avenue project has the potential to increase the volume, rate, and pollutant loading of storm water runoff after construction due to increased imperviousness. The proposed drainage system will be designed to reduce pollutant discharges and lower the post-development storm water runoff volume and rate to pre-development levels to the maximum extent practicable by implementing LID and BMP planning and design strategies. The project will select and design BMPs and develop a long-term maintenance plan per the requirements of the City's standards or subsequently adopted standards at the time of final design.

The conceptual grading and drainage plan prepared for project seeks to mimic the sites pre-development hydrologic features through the following practices:

- Incorporating significant landscaped areas into the layout design,
- Maintaining existing watershed drainage areas to the maximum extent practicable,
- Maintaining surface flow through the use of roadside vegetated swales, which will in turn slow runoff and increase time of concentration, and
- Locating storm water infiltration areas with good soil percolation ability to promote infiltration of runoff.

Preliminary Engineer's Report

Walnut Avenue Specific Plan: Greenfield, CA

Additional LID and BMP elements that may be incorporated into the design of the project where practicable include:

- Minimize soil compaction,
- Minimize disturbance to existing topography and vegetation,
- Plant new trees and shrubs to increase evapotranspiration,
- Disconnect rooftop and pavement surfaces by directing runoff to landscaped areas,
- Consider use of alternative paving surfaces, such as permeable interlocking concrete pavers at driveways and parking stalls, and coarse aggregate trail surfaces,
- Incorporate efficient irrigation methods including use of drought resistant plants, and
- Install storm drain labeling on drain inlets.

Preliminary Engineer's Report

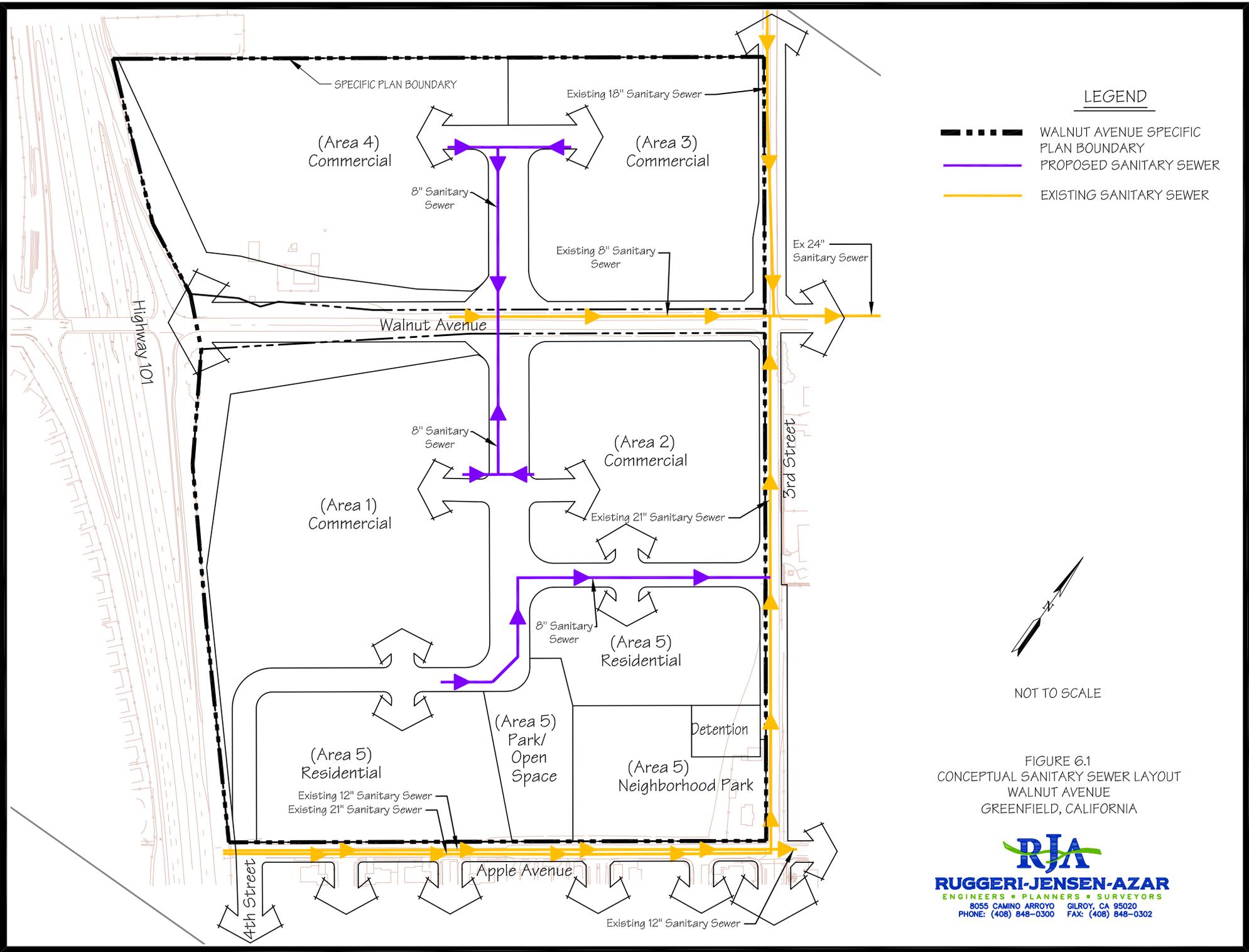
Walnut Avenue Specific Plan: Greenfield, CA

6 Sanitary Sewer

6.1 Sewer Generation

The proposed development is expected to generate an Average Dry Weather Flow (ADWF) of approximately 80,020 gallons per day (gpd) based on the preliminary land use assumptions and City of Salinas design criteria. Table 6.1 summarizes the projected sewer generation from the project.

Land Use	Approximate Total Acreage	Residential Units	ADWF (gpd)
High-Density Residential	7.8	220	66,000
Commercial	33.9		14,020
Streets	10.3		
Open Space/Parks/Ponds	10.6		
Total	62.6	220	80,020
Peak Flow = 0.36 cfs			
<i>Notes:</i>			
<i>1. Sewer generation assumptions were taken from the City of Salinas Design Standards. The sewer generation factor assumes 90 gpcd and 3.0 people per dwelling unit.</i>			
<i>3. The sewer peaking factor was taken from City of Salinas 2008 Design Standards. PF = ADF x 2.5 (Peak flow includes RDII)</i>			
<i>4. Rainfall dependant Inflow and Infiltration (RDII) assumed to be 500 gallons per acre from City of Salinas 2008 Design Standards.</i>			



Preliminary Engineer's Report

Walnut Avenue Specific Plan: Greenfield, CA

6.2 Collection and Conveyance

The City of Greenfield owns and maintains the sewer collection system surrounding the project, which consists of approximately 108,125 feet of gravity sewer ranging from 6-inch through 24-inch diameter. The project sewer collection system is proposed to connect to the existing 8-inch main currently stubbed in Walnut Avenue, and consist of 8-inch pipes designed in accordance with City standards at the time of final design. The backbone infrastructure pipes will be located within the public street right-of-ways or utility easements. Figure 6.1 shows the conceptual sanitary sewer layout.

The existing sewer system available along the site frontage has the capacity to serve the project, assuming cumulative General Plan Buildout Conditions. The existing 8" main in Walnut Avenue connects directly to the City's 24" trunk main which flows to the wastewater treatment plant to the east of Greenfield.

6.3 Treatment

The City operates the Greenfield Wastewater Treatment plant that is located at the eastern terminus of Walnut Avenue. The City of Greenfield was approved by the Central Coast Regional Water Quality Control Board (CCRWQCB) to increase the Wastewater Treatment Plant capacity to 2.0 MGD as part of a 3-phase expansion project (Phases I & II have been completed). From discussions with the City Engineer it is believed that the plant currently receives 1.0-1.2 MGD. The wastewater treatment plant should be able to provide adequate treatment and disposal of wastewater generated by the proposed development.

Preliminary Engineer's Report

Walnut Avenue Specific Plan: Greenfield, CA

7 Domestic Water

7.1 Water Demand

The proposed development is expected to have an Average Daily Water Demand (ADD) of approximately 181,090 gallons per day (gpd), and a Maximum Daily Demand (MDD) of 312,370-gpd based on the preliminary land use assumptions and the City of Salinas design criteria. Table 7.1 summarizes the projected water demand for the project.

Land Use	Approximate Total Acreage	Residential Units Primary	ADD (gpd)
High-Density Residential	7.8	220	118,800
Commercial	33.9		37,390
Streets	10.3		
Open Space/Parks/Ponds ³	10.6		24,900
Total	62.6	220	181,090
			Maximum Daily Demand = 312,370 gpd
			Peak Hour Demand = 451 gpm
			Average Yearly Demand = 203 ac-ft/yr
<i>Notes:</i>			
1. Water demand assumptions are taken from the City of Salinas standards and Greenfield 2005 General Plan. The water demand assumes 180 gpcd and 3.0 people per primary dwelling unit.			
2. The Maximum Daily Demand (MDD) and Peak Hour Demand (PHD) factors are taken from the City of Salinas 2008 design standards. MDD = ADD x 2.0, PHD = ADD x 4.0			
3. Landscape Demand Calculation method based on California Dept. of Water Resources published Model. Landscape Ordinance per following equation: $Landscape\ Water = (ET_o) \times (0.62) \times (Area) \times (ETAF)$			

7.2 Supply and Distribution

The Monterey County Water Resources Agency manages the groundwater basin that the City uses for water supply. The City of Greenfield receives all of its raw water supply from the Lower Aquifer sub-basin in the Salinas River Basin. The City has 7 wells which extract groundwater from the sub-basin to the City's storage tanks. The City's water system is pressurized by variable frequency drive pumps located at 13th Street and Oak Avenue that maintain pressures during demand fluctuations. Currently there are 3 water mains that cross Highway 101 and serve the eastern portion of the City. Per discussions with the City's Engineering Staff it is believed that adequate water supply, storage, and pumping infrastructure is in place to serve the project.

Existing domestic water infrastructure is available in the streets adjacent to the project. There is an existing 12-inch water line in Third Street that runs approximately 400 feet north of the intersection of Walnut Avenue and Third Street to the intersection of Third Street and Apple Avenue, where it crosses another 12-inch line that runs east-west on Apple Avenue that crosses Highway 101 and runs directly to one of the City's wells. A 12-inch line is also currently being constructed in Walnut Avenue from the intersection of Walnut Avenue and 3rd Street to approximately 560-feet west of the intersection. The City plans to extend a

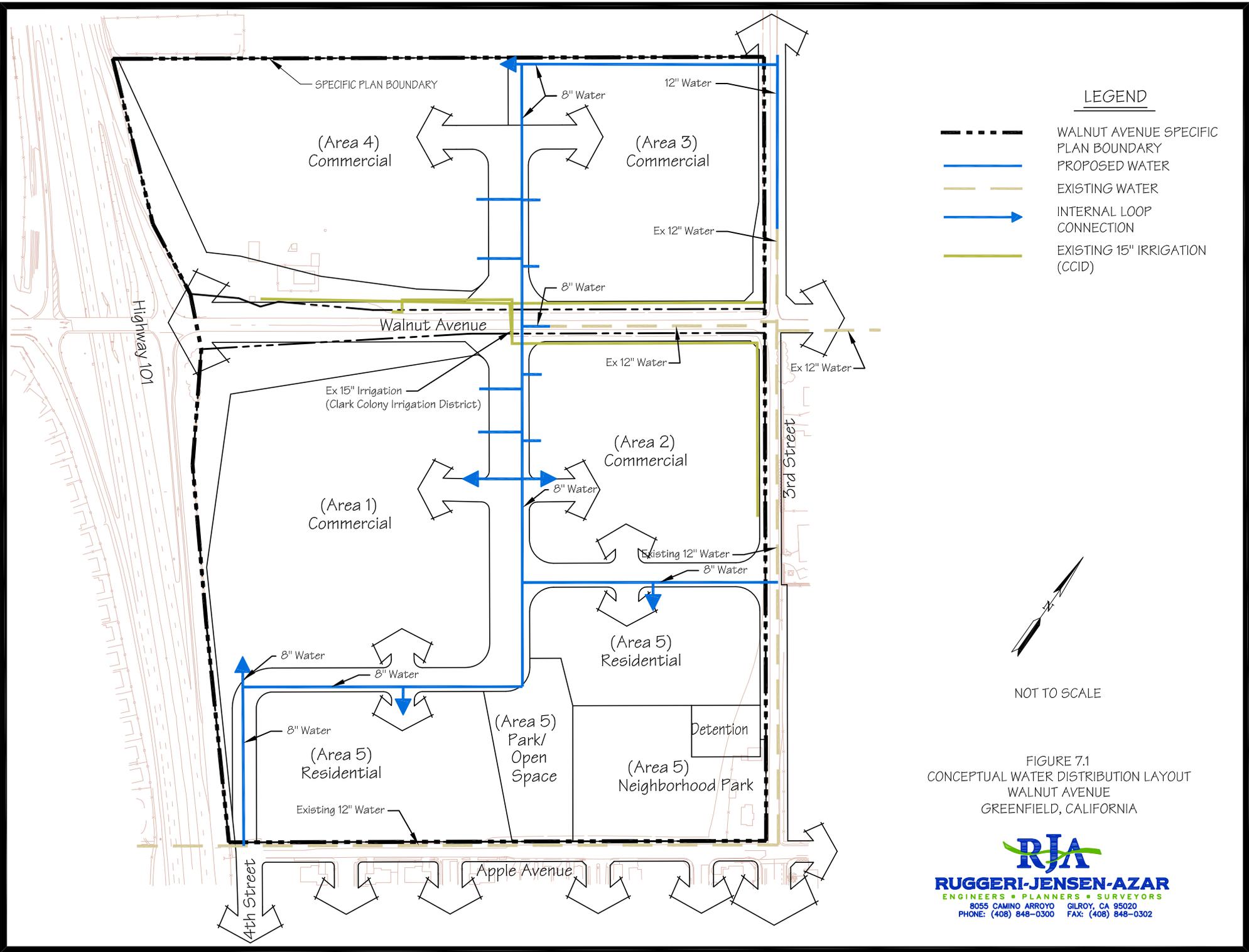
Preliminary Engineer's Report

Walnut Avenue Specific Plan: Greenfield, CA

12" main in Walnut Avenue, which is slated for construction with the Walnut Avenue/Route 101 Interchange project. This 12" water main would add redundancy to the existing system, and help to meet Cumulative General Plan Buildout Conditions.

The proposed in-tract project water distribution system consists of 8" water lines that will loop and connect to the other existing water lines that surround the site to better serve the water demands of potential future tenants. Backbone infrastructure will include the water proposed in the public streets, and stubbed services at the right of way of each developable area in the plan. The onsite water system is proposed to be publicly maintained by the City of Greenfield. Figure 7.1 shows the conceptual water system layout.

Current pressure tests to confirm actual pressures in the vicinity of the site were not available at the time this report was prepared. Pressure tests should be performed to at the appropriate locations prior to the development of each phase of the project to identify the water infrastructure needed to support each phase of the development. The infrastructure needed to support each phase of the development will need to be examined once a phasing plan has been developed.



Preliminary Engineer's Report

Walnut Avenue Specific Plan: Greenfield, CA

8 Dry Utilities

This section provides an overview of the dry utility service providers in the City of Greenfield including electricity, natural gas, and telecommunications.

8.1. Electric

Pacific Gas and Electric Company (PG&E) provides electrical services to the City of Greenfield. PG&E has primary power service lines in close proximity to the property, including service lines along 3rd Street, south of Walnut Avenue, Walnut Avenue, and Apple Avenue. Further investigation will be required to determine if PG&E has the infrastructure in place to serve the project.

8.2. Natural Gas

PG&E provides natural gas service to the City of Greenfield. PG&E has gas service lines adjacent to the property, including gas lines along a portion of Apple Avenue and a portion of 3rd Street. Further investigation will be required to determine if PG&E has the infrastructure in place to serve the project.

8.3. Telecommunications

Comcast provides cable television services and AT&T provides local and long distance telecommunications services to the City of Greenfield. Further investigation will be required to determine if the service providers have the infrastructure in place to serve the project.

