



Comparative Analysis for Reduced Water Demand & Recharge

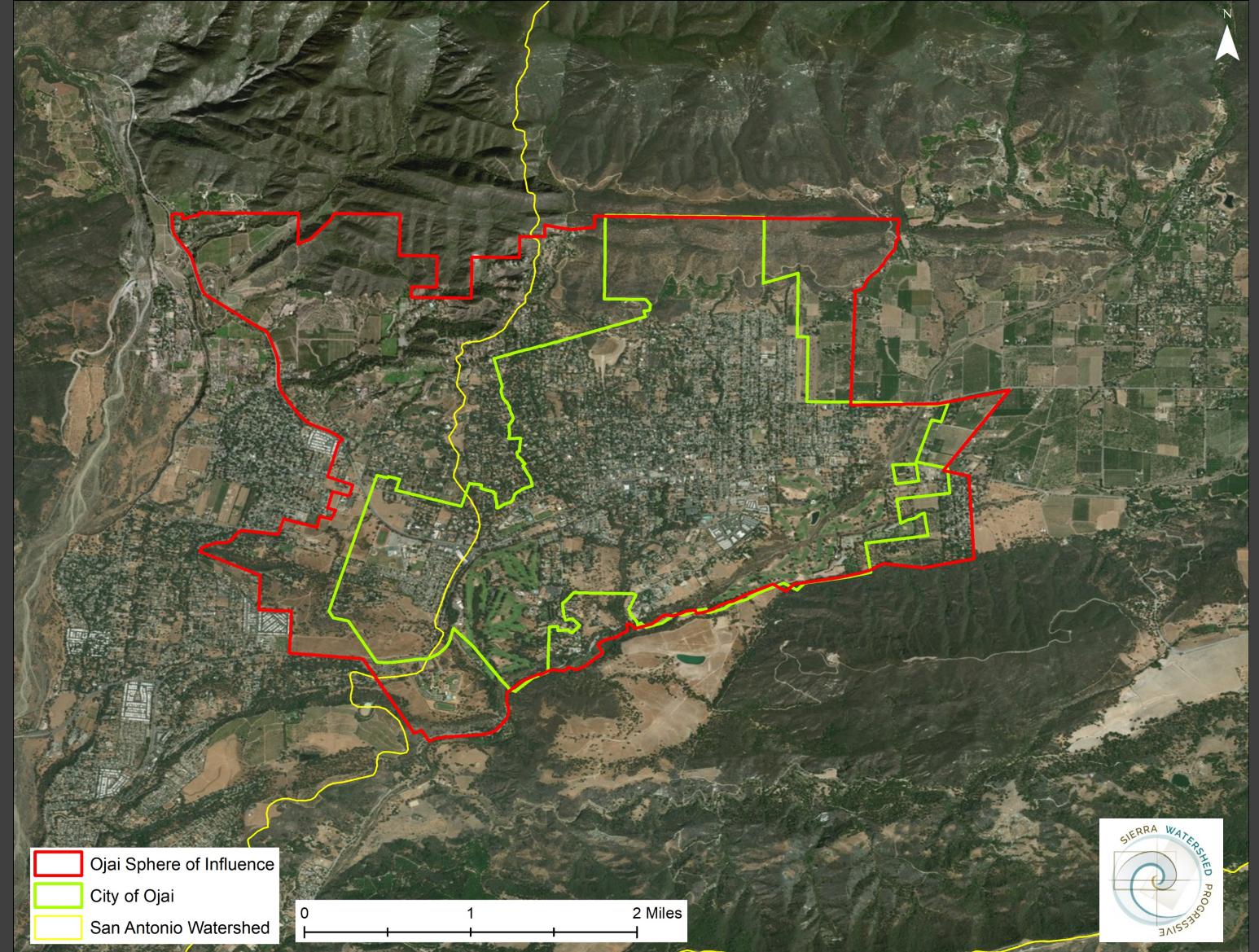
Phase I Deliverables and Report

Ojai City and Sphere of Influence

Focus Area

MAJOR OUTCOMES

- Complete quantification of potential for reduced water demand for each parcel
- Complete quantification for potential for groundwater recharge for each parcel
- Prioritization of City/Sphere of Influence Project Sites
- Catalog of Projects (conceptual)
- External Discussions with Recommendation
- Understanding of City's optimized role in Regional Water Management



Final Phase I Deliverables

- Task 1.1

Kick Off Meeting and Data Acquisition

- Task 1.2

Water Vision Statements

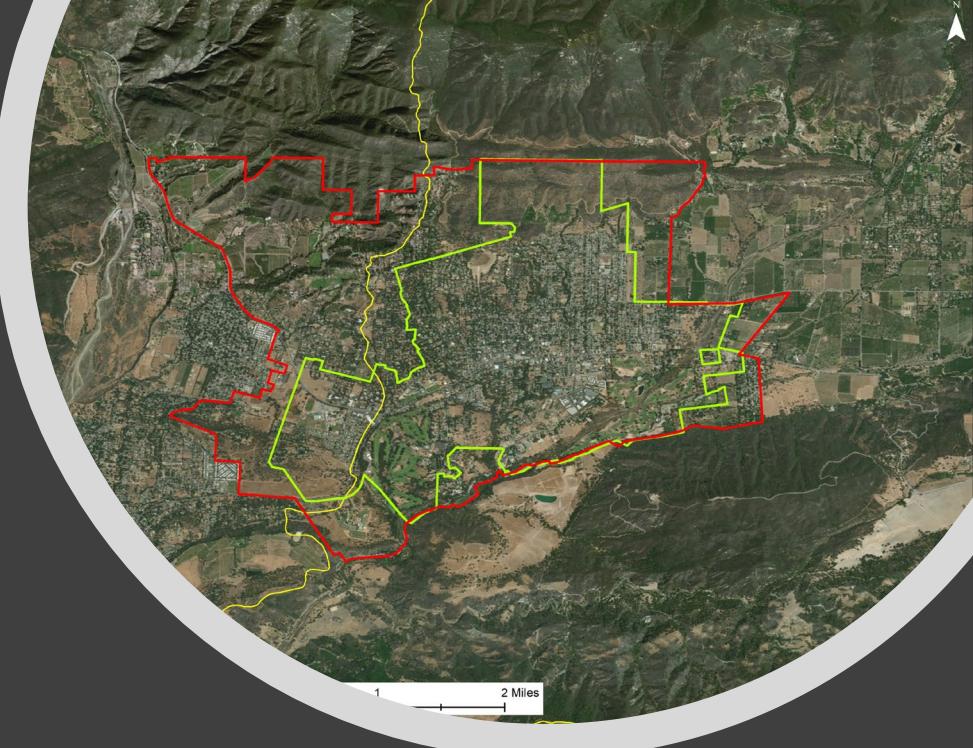
- Task 2.1

Water Efficiency Toolkits: Definitions/Metrics

- Task 2.2

Water Savings/Recharge Analysis

(by Land Use Type, to be Groundtrutched in Phase II)



Phase II Deliverables

(to be complete fall 2018)

- Task 2.3 Spatial Identification of Opportunities

Includes Groundtruthing of Phase I data

- Task 3.1 Project Prioritization Methodology

- Task 3.2 Project Prioritization by Land Use

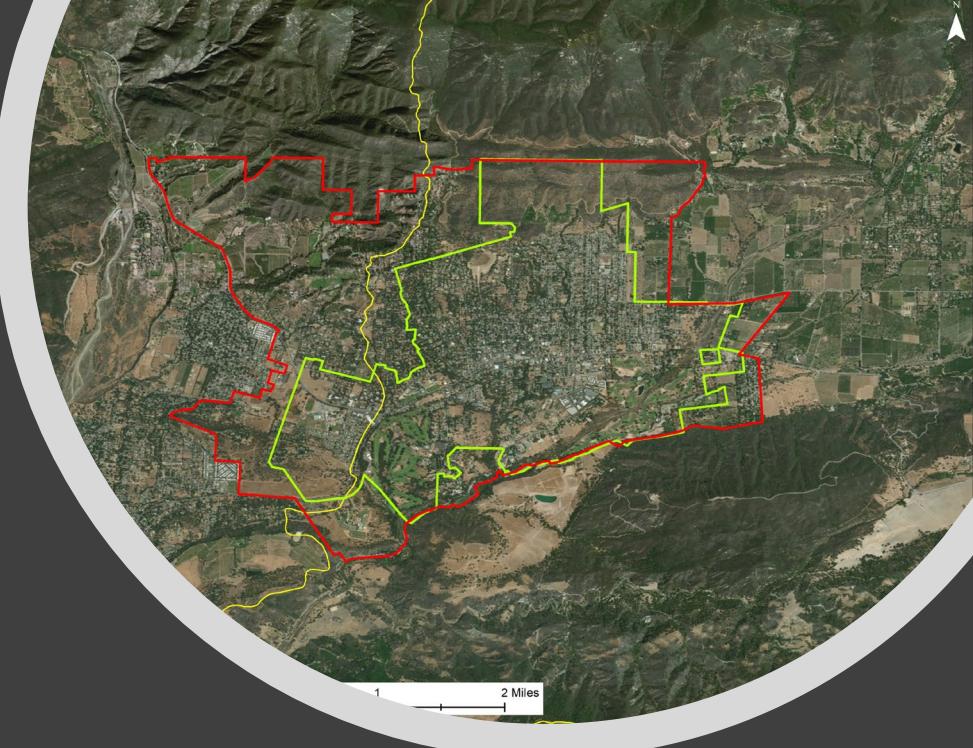
- Task 3.3 Project Catalog

(in progress, Draft November)

- Task 4.0 Climate Scenario Analysis

- Task 5.0 External Demand Analysis

(General Plan Update, New Sources, Agency Collaboration, Funding Strategy, Messaging Strategy, and Programmatic Collaboration)



Task 1.1 Kick-off Meeting and Data Acquisition

Kick-off Meetings:

- Kick Off Meetings (2) with Public Works and City Manager
- Kick Off Meeting (1) with Technical Advisors
- (Kear Groundwater, Hicks Law, Ash Consulting, Eagle Aerial)

Data Acquisition:

- Eagle Aerial transferred delineated data to Watershed Progressive

Related to Phase II:

- Spatial Identification of Opportunities, Catalog of Projects, Climate Scenario Analysis
- General Plan Update language for Elements to be updated



Task 1.2

Vision Statements

- Distributed to City Manager and City Engineer for input.

Related to Phase II:

- Public Outreach Strategy for Vision Statement
- General Plan Update language for Elements to be updated

IN ALL FUTURE DECISIONS IT SHALL BE THE GOAL OF THE CITY OF OJAI TO DEVELOP SUSTAINABLE ALTERNATIVES TO OPTIMIZE LOCAL, SELF-RELIANT, AND ENERGY EFFICIENT WATER MANAGEMENT BY:



WATER DEMAND

IMPLEMENTING PRACTICES AND PROGRAMS TO REDUCE WATER DEMANDS TO EFFICIENCY TARGETS.



WATER SUPPLY/RECHARGE

DEVELOPING A DIVERSE PORTFOLIO OF SUSTAINABLE WATER SUPPLY ALTERNATIVES TO ENSURE RESILIENCY DUE TO CLIMATE UNCERTAINTY AND CATASTROPHIC EVENTS.



WATER CONSERVATION

ENCOURAGING WATER-CONSERVING PRACTICES IN BUSINESSES, HOMES AND INSTITUTIONS.



MASTER GENERAL PLANNING

INTEGRATING MULTIPLE BENEFITS SUCH AS WATER QUALITY AND WATERSHED PROTECTION WITH WATER SUPPLY, FLOOD CONTROL, HABITAT PROTECTION, BIOLOGICAL RESOURCE PROTECTION, GROUNDWATER RECHARGE, ECONOMIC DEVELOPMENT, ENVIRONMENTAL JUSTICE, AND OTHER SUSTAINABLE DEVELOPMENT PRINCIPLES AND POLICIES. THESE MULTIPLE BENEFITS WILL BE TIED TO CONSERVATION, HOUSING, LAND USE, RECREATION, AND OPEN SPACE ELEMENTS IN SUBSEQUENT UPDATES.



WATERSHED SHARED VISION

MEASURES WILL BE TAKEN WITH THE OBJECTIVE OF RE-HYDRATING THE VALLEY FLOOR TO SUSTAIN A HEALTHY ENVIRONMENT, GROUNDWATER BASIN, AND COMMUNITY IN THE VALLEY FOR FUTURE GENERATIONS.



Task 2.1

Water Efficiency Toolkits

Related to Phase II:

- Catalog of Projects
- Project Prioritization
- Water Demand Analysis
- External Recommendations
- Irrigation Efficiencies
- Greywater
- Blackwater Reuse
- Rainwater Reuse
- Mechanical Water Reuse
- Stormwater Reuse
- Stormwater Recharge
- Ocean Friendly Gardens

Task 2.2

Water Savings/Recharge Analysis *(by land use type)*



Related to Phase II:



Catalog of Projects



Project Prioritization



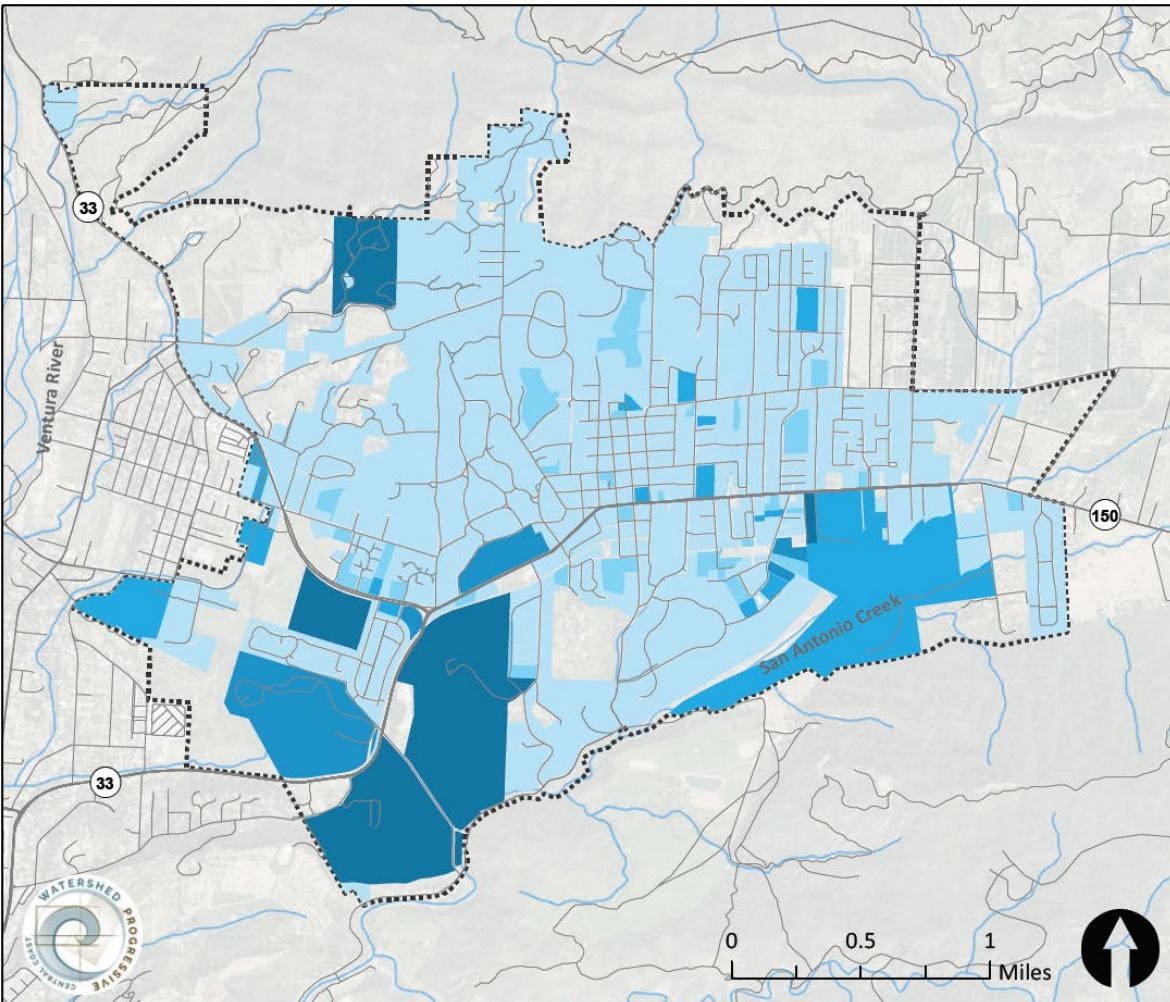
Water Demand Analysis



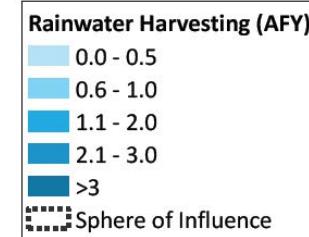
External Recommendations

4. IDENTIFICATION OF OPPORTUNITIES

RAINWATER HARVESTING POTENTIAL



All of the data inputs, assumptions, and the estimated potential benefit identified in the spatial opportunities analysis is under review, and additional error analysis and ground truthing of this data is expected.



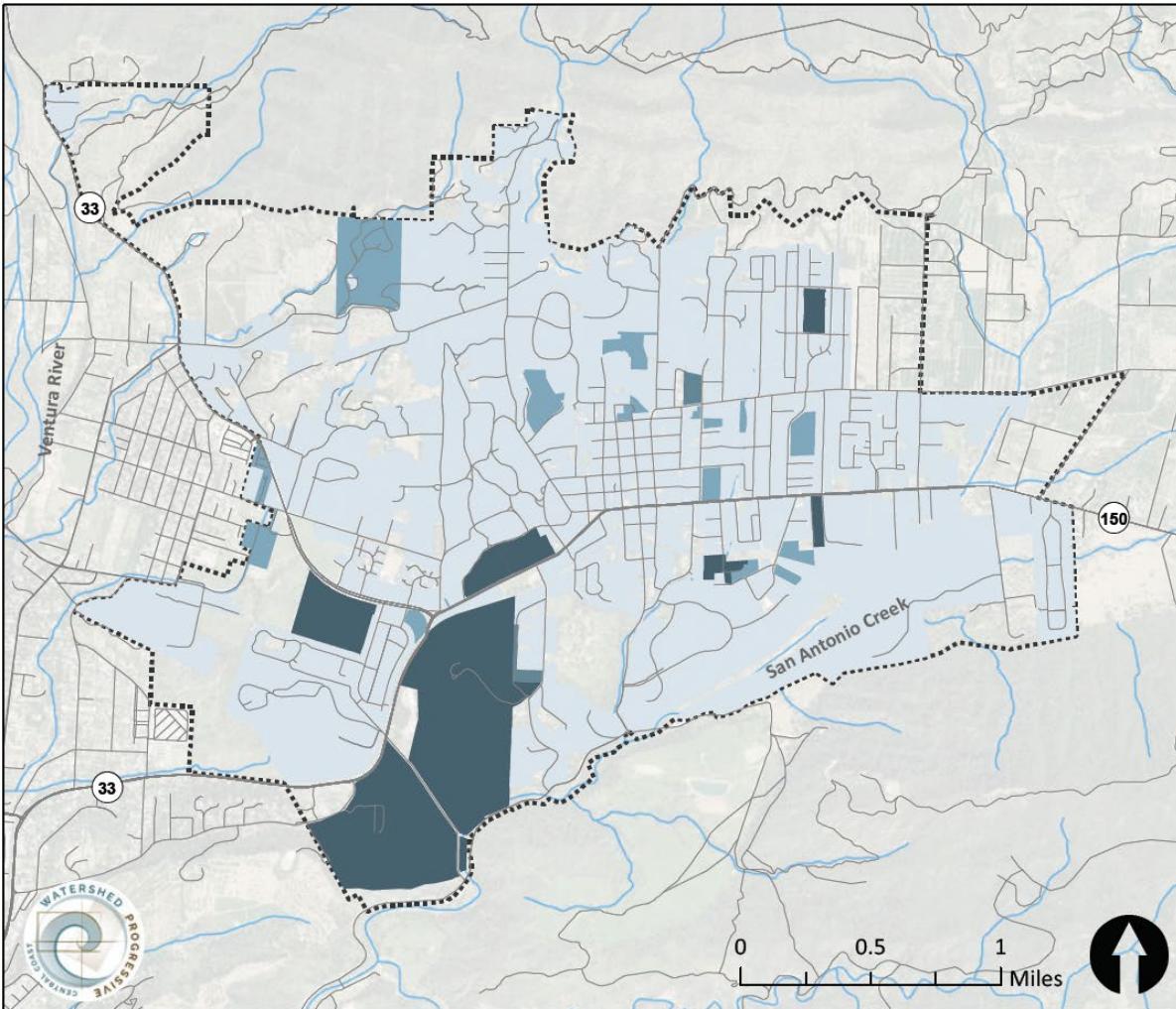
LAND USE TYPE	Water Conservation Potential (acre feet per year, AFY)
Residential	350
Schools	25
Public Facilities	10
Commercial/Industrial	70
City-Owned	2
Total	457

Water conservation and recharge estimates for rainwater harvesting in the City of Ojai are based on assumptions described in Chapter 3.

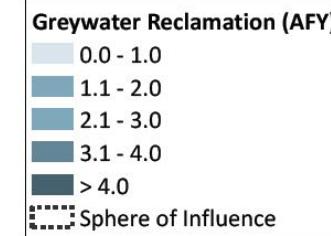
- A total of 2,912 buildings in the City of Ojai were identified for rainwater harvesting;
- 100% of the average annual rainfall (21.49") upon the identified buildings' roof area is diverted to storage and available for reuse; and
- There is no overflow from the rainwater storage cisterns.

4. IDENTIFICATION OF OPPORTUNITIES

GREYWATER RECLAMATION & REUSE POTENTIAL



All of the data inputs, assumptions, and the estimated potential benefit identified in the spatial opportunities analysis is under review, and additional error analysis and ground truthing of this data is expected.



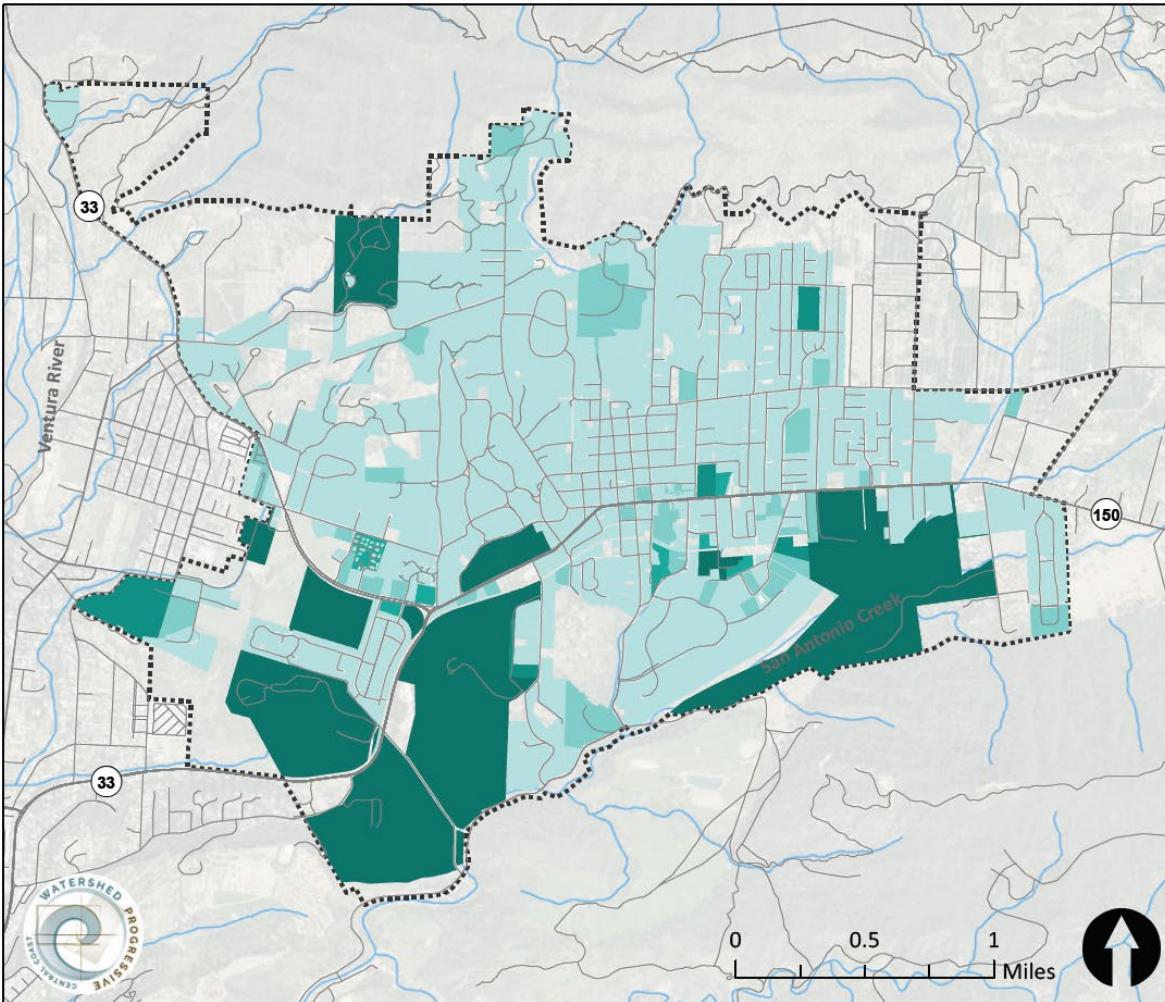
LAND USE TYPE	Groundwater Recharge Conservation Potential (acre feet per year, AFY)
Residential	620
Schools	55
Public Facilities	4
Commercial/Industrial	95
City-Owned	2
Total	776

Water recharge estimates for greywater reclamation and reuse are based upon the following assumptions:

- Residential greywater reuse potential is based on estimates for number of people per household;
- For schools, greywater reuse potential is based upon student enrollment and number of staff;
- For commercial/industrial, city owned, and other public facilities, greywater reuse potential is based upon estimated number of people using the structure and greywater production from bathroom sinks only.

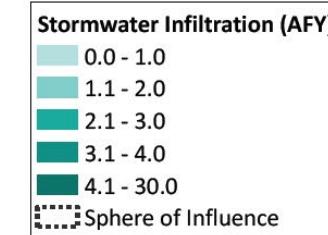
4. IDENTIFICATION OF OPPORTUNITIES

STORMWATER TO INFILTRATION POTENTIAL



All of the data inputs, assumptions, and the estimated potential benefit identified in the spatial opportunities analysis is under review, and additional error analysis and ground truthing of this data is expected.

Infiltration estimates are for the areas within a parcel only, and do not include inputs, or run-on, from off-site and are not yet matched with percolation criteria (slope, soils, depth to groundwater, etc).



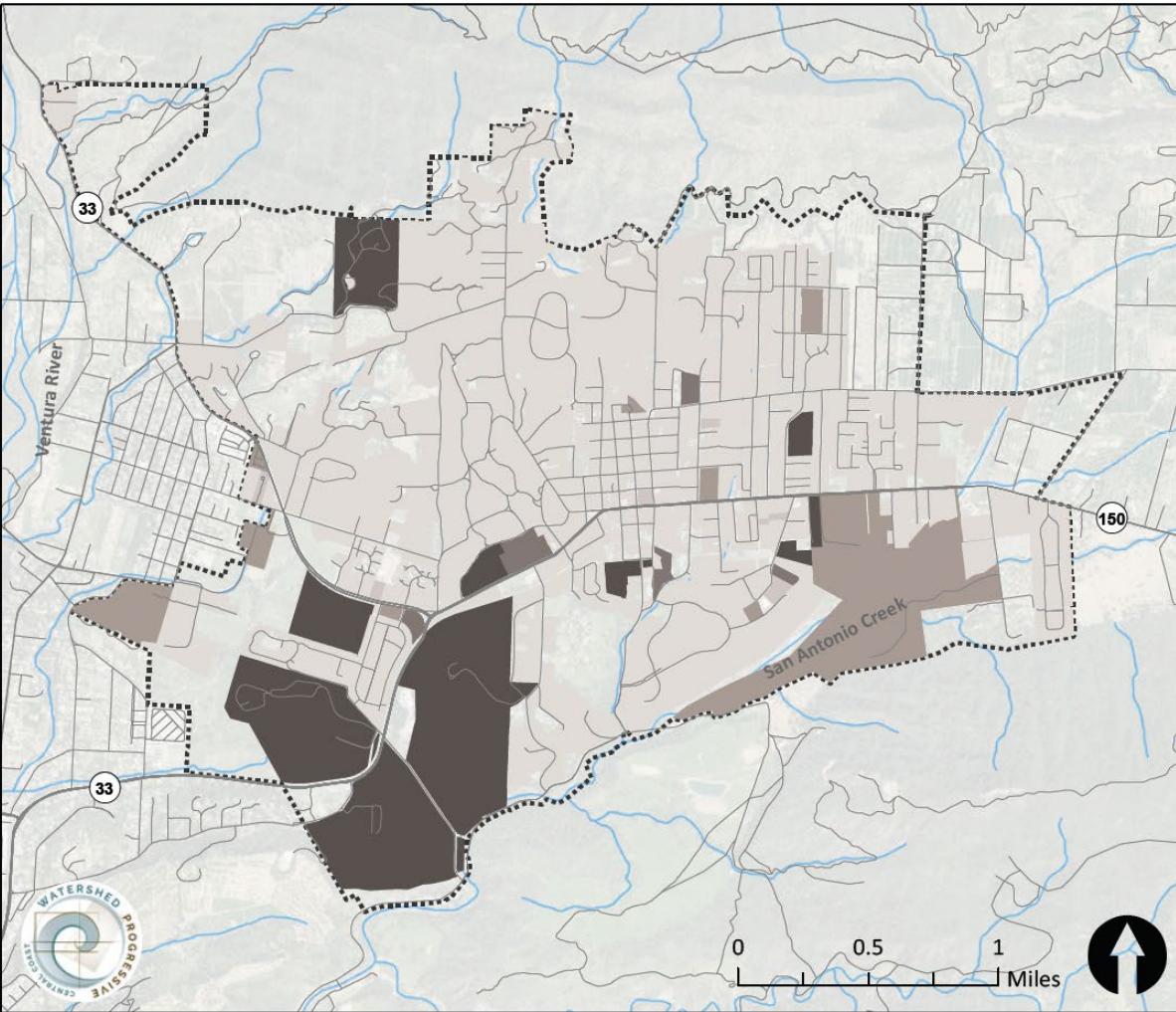
LAND USE TYPE	Groundwater Recharge Potential (acre feet per year, AFY)
Residential	315
Schools	70
Public Facilities	30
Commercial/Industrial	155
City Owned	15
Roads & Sidewalks	400
Total	985

Recharge estimates for stormwater infiltration in the City of Ojai are based upon the following assumptions:

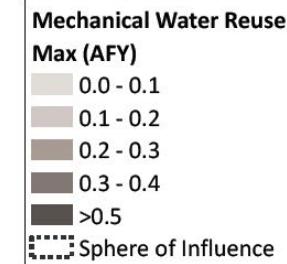
- 100% of captured stormwater is converted to infiltrated and recharged groundwater;
- Average annual wet weather precipitation of 21.5 inches per year;
- Green infrastructure is designed to capture the 95th percentile annual rainfall event of 2.0 inches; and
- Estimates for potential stormwater runoff for infiltration exclude rooftops.

4. IDENTIFICATION OF OPPORTUNITIES

MECHANICAL WATER REUSE POTENTIAL



All of the data inputs, assumptions, and the estimated potential benefit identified in the spatial opportunities analysis is under review, and additional error analysis and ground truthing of this data is expected.



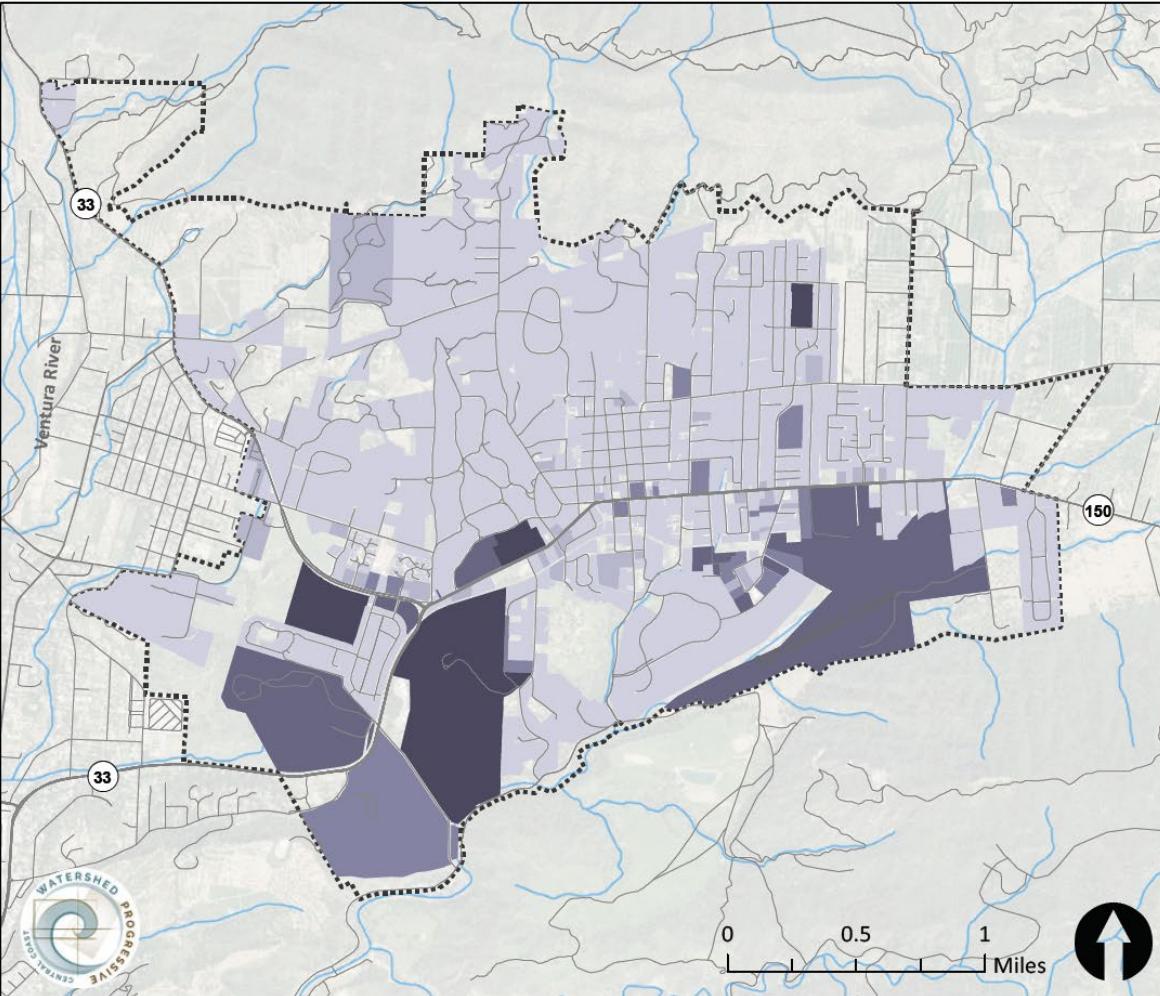
LAND USE TYPE	Water Conservation Potential (acre feet per year, AFY)
Residential	53
Schools	4
Public Facilities	1
Commercial/Industrial	10
City-Owned	3
Total	71

HVAC condensate collection and reuse potential is based upon the following assumptions:

- A central AC for an entire home can collect 5 to 20 gallons of condensate water per day;
- The amount of condensate water can range from 3 to 10 gallons/day per 1,000 square feet of air-conditioned space;
- In the City of Ojai, air conditioning is assumed to be in use 8 hours per day for half the days of the year.

4. IDENTIFICATION OF OPPORTUNITIES

BLACKWATER TREATMENT AND REUSE POTENTIAL



All of the data inputs, assumptions, and the estimated potential benefit identified in the spatial opportunities analysis is under review, and additional error analysis and ground truthing of this data is expected.

Blackwater Reuse (AFY)	
0.0 - 0.3	
0.3 - 0.5	
0.6 - 1.0	
1.1 - 3.0	
>3	
Sphere of Influence	

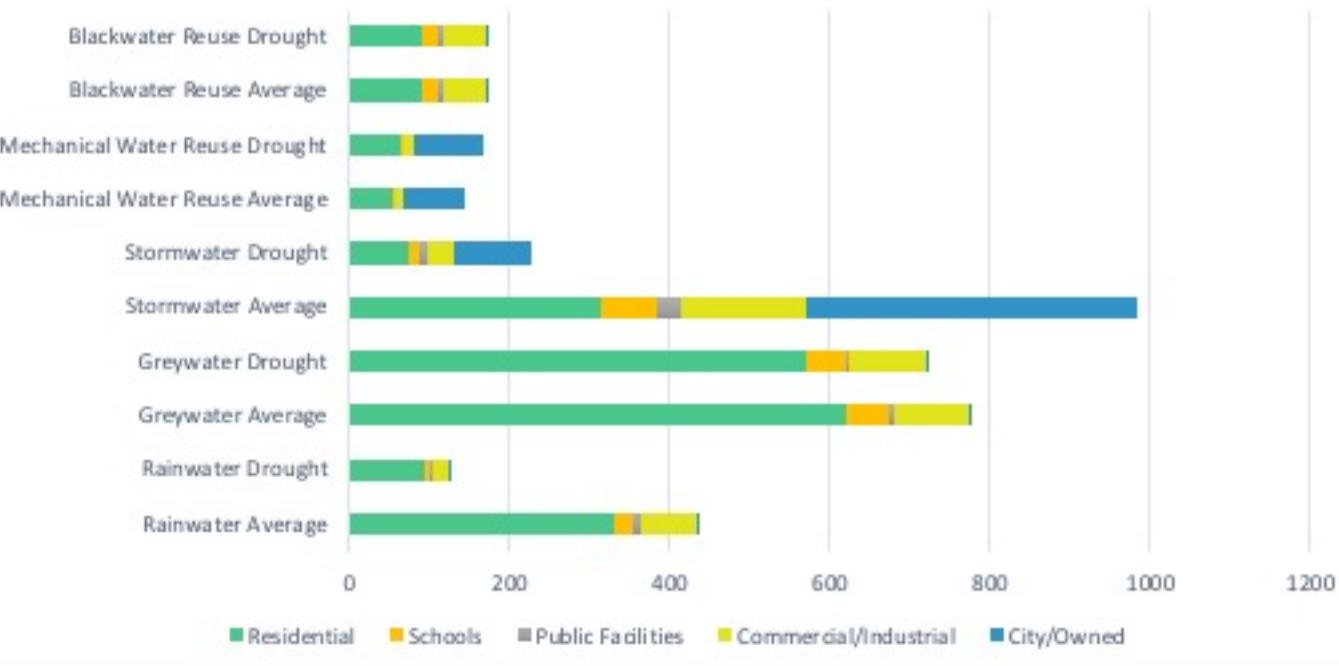


LAND USE TYPE	Water Conservation Potential (acre feet per year, AFY)
Residential	90
Schools	20
Public Facilities	6
Commercial/Industrial	55
City-Owned	2
Total	173

Blackwater treatment and reuse potential is based upon the following assumptions:

- Blackwater is collected from toilets only (bathroom sinks, showers, bathtubs and laundry machines are diverted for greywater reuse);
- Low-flow toilets produce 1.6 gallons of wastewater per flush and are flushed 5 times per day per person; and
- The average number of people living in each household is 2.54 people (USCB, persons per household, 2012-2016).

Identification of Opportunities (afy) City of Ojai (SOI) 2018



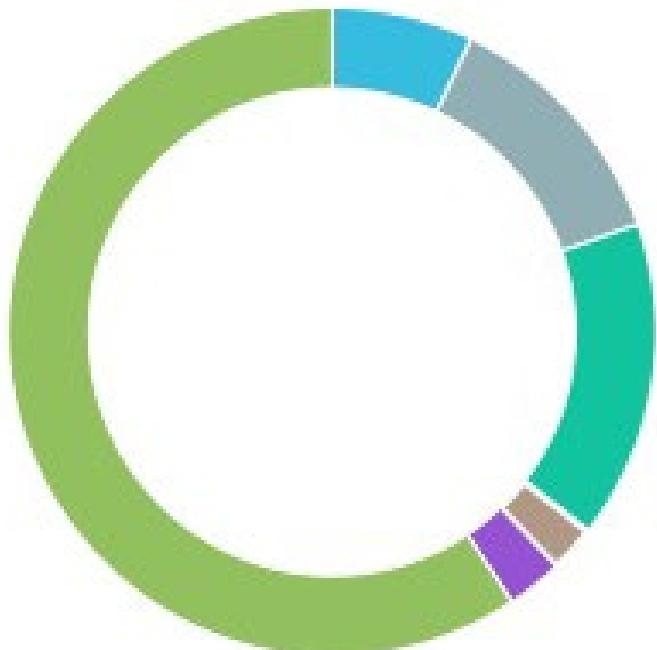
Land Use Zones:

- Hotel
- Schools
- Residential
- Commercial
- Urban
- Golf Courses
- Parks
- Home-Ag
- Commercial-Ag

Task 2.2
Water Savings/Recharge Analysis
(*by land use type*)

Identification of Opportunities 6182* AFY

Average Precipitation 21.5"



Rainwater Average

■ Greywater Average

■ Stormwater Average

■ Rainwater Drought

■ Greywater Drought

Mechanical Water Reuse Average

■ Blackwater Reuse Average

■ Irrigation/Ag+Residential

■ Stormwater Drought

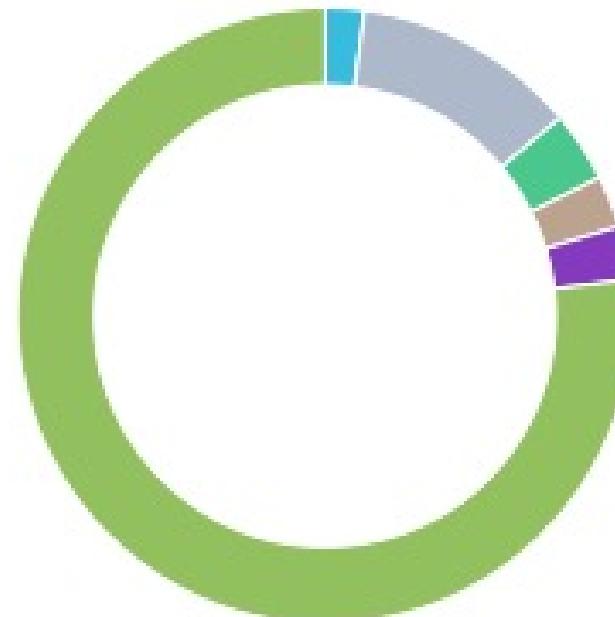
■ Mechanical Water Reuse Drought

■ Blackwater Reuse Drought

■ Irrigation/Ag+Residential*

Identification of Opportunities 6110* AFY

Drought Precipitation 3.88"



■ Rainwater Drought

■ Greywater Drought

■ Stormwater Drought

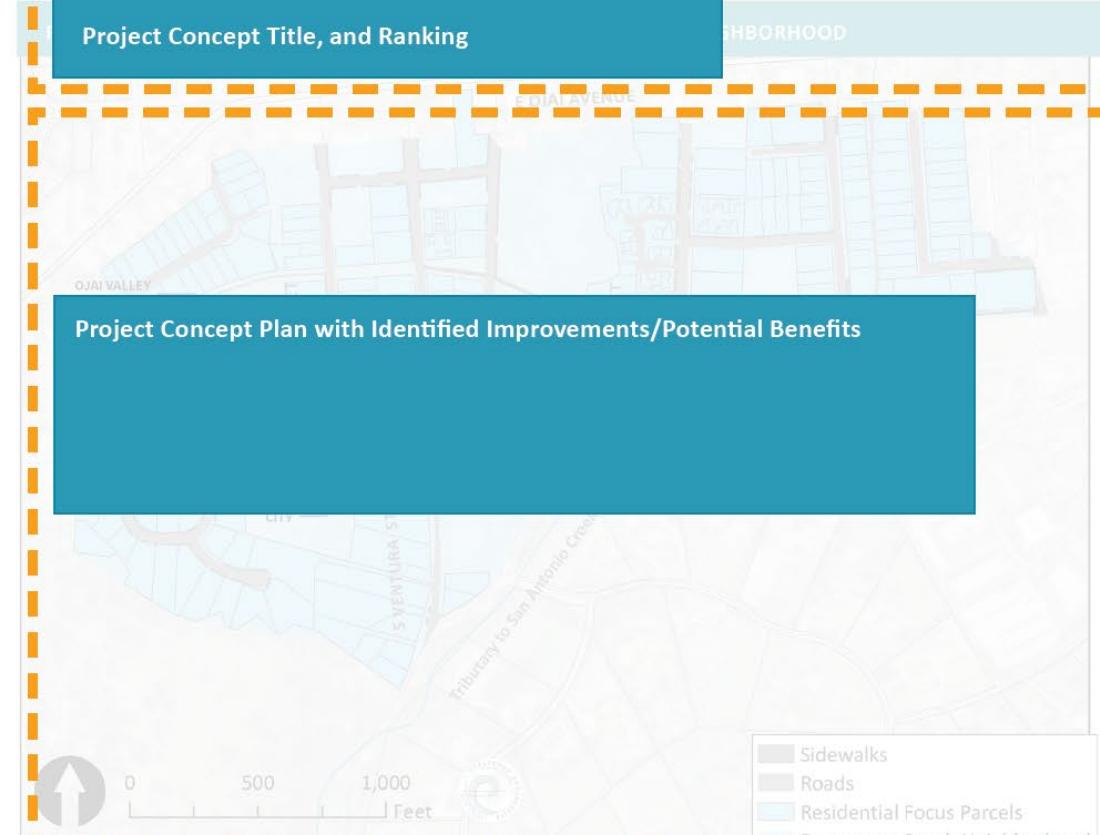
■ Mechanical Water Reuse Drought

■ Blackwater Reuse Drought

■ Irrigation/Ag+Residential*



Project Concept Title, and Ranking



Project Concept Plan with Identified Improvements/Potential Benefits

Short Project Description

Setting on-site reuse within a group of residential homes in the Downtown South Neighborhood. The project will include rainwater capture and reuse, greywater reuse, and mechanical water reuse. The projects will be decentralized to (1) capture runoff from streets and sidewalks, while providing urban greening and reducing heat island effects, (2) infiltrate, treat, and slow runoff prior to discharge to San Antonio Creek, and (3) benefit instream flow in San Antonio Creek. The project will pilot a City-wide policy encouraging and supporting residents to adopt on-site reuse.

Estimated Planning/Implementation Costs:

Known Data Gaps	Next Steps
Low flow Soils	Domestic, Commercial, Commercial
Soil	Commercial
Runoff	Commercial
Water	Commercial
Total	Commercial

Total Recharge and Conservation Potential

Estimated Planning/Implementation Costs

Potential Funding Sources

Known Data Gaps

Next Steps

Summary of Benefits

Quantification of Potential Water Savings

Typical Details and/or Photos of Examples

***Note: See water efficiency toolkits for additional information on details and implementation considerations**

Multi-Benefit Icons Key

	EDUCATION
	WATER SECURITY
	GROUNDWATER RECHARGE
	WATER QUALITY
	HEAT ISLAND REDUCTION
	WATER RE-USE
	DEMONSTRATION PROJECTS
	CLIMATE CHANGE RESILIENCY
	WATER EFFICIENCY
	HABITAT
	FIRE MANAGEMENT
	COMMUNITY STAKEHOLDERS
	FLOOD REDUCTION
	INSTREAM FLOW ENHANCEMENT
	ALTERNATIVE TRANSPORTATION



Value Added Future Recommendations

1. Complete Streets Chapter Addition
2. Design Guideline Treatments
(*proposal pending*)
3. Bike Path Recharge Learning Lab
(*Collaboration with Ventura County/City*)

As a living document, SWP proposes to draft a new chapter for incorporation into the Master Plan that provides additional details and guidelines for green infrastructure strategies that can be evaluated for inclusion into future Complete Street projects. The specific treatments would be linked to (1) the general Complete Street recommendations and (2) specific locations where the Master Plan recommends improvements. The outcome will allow the City to integrate planned CIP projects with water supply, flood control, habitat protection, groundwater recharge, and other sustainable development principles and policies.



Next Steps

- Reach out to identified site partners to understand willingness to be included in planning.
- Finalize Climate Scenario modeling on toolkits.
- Finalize quantification of Catalog of Projects (top 30 projects), based on prioritization criteria.
- Finalize External Recommendations for Ojai City collaborative actions with existing plans and partnerships.
- Apply for regional grants, with City and Partners approval to create 100% implementation ready plans.