

Section 6: Implementation Strategy & Schedule

This section sets forward a proposed framework for the Storm Water Resource Plan for Yolo County (SWRP or Plan) implementation and performance monitoring to track progress, and it offers recommendations for the first two years of Plan implementation activities. This section is intended to serve as the cornerstone of critical actions the County must take to ensure SWRP program success into the future.

6.1 Implementation Strategy

The SWRP for Yolo County will rely on the Water Resources Association of Yolo County (WRA), Yolo Subbasin Groundwater Agency (YGSA), and Westside Sacramento Regional Water Management Group (RWMG) for implementation of the Plan and incorporation into the Westside Sacramento (Westside) Integrated Regional Water Management (IRWM) Plan. Implementation of the SWRP includes incorporation into the IRWM Plan, maintenance of the Plan, obtaining applicable permits for implementation, tracking project status, and community participation. These activities are described in the subsections below.

6.1.1 Submittal to Applicable IRWM Plan

As described throughout this Plan, the Westside IRWM Region includes Yolo County. Therefore, this SWRP will be submitted to the Westside RWMG for incorporation into the IRWM Plan. This SWRP was developed to be consistent with the current version of the Westside IRWM Plan (2013), incorporating all of the Westside IRWM Plan objectives into the SWRP objectives, which were used to focus and evaluate projects submitted to the Plan. Therefore, implementation of the SWRP and its projects will help to further the Westside IRWM Plan's progress towards attaining its water management goals and objectives.

The Yolo County SWRP will also be submitted to the neighboring IRWM Plan Regions as identified in Section 1, the American River Basin Region and North Sacramento Valley Region.

6.1.1.1 Timeline for Submittal

The SWRP for Yolo County was completed in **March 2018** and submitted to the Westside IRWM RWMG for incorporation in **May 2018**. It is anticipated that the Westside IRWM Plan will be updated to meet the 2016 IRWMP Standards by summer of 2018.

6.1.1.2 Adaptive Management – Maintaining a Living Document

The SWRP is a living document and changes will be required as additional information is collected, as objectives are refined and better understood, as new projects are developed, and as the collaborative relationships among the Westside RWMG, Yolo WRA, YSGA and stakeholders continue to develop. Changes to the SWRP will follow a similar, publicly open and accessible process followed by this Plan and the Westside IRWM Plan's development process. The Westside IRWM will lead in the effort to change and/or update the SWRP with support from the WRA and YGSA, and participation from project proponents and other stakeholders. Specific protocol for changes and updates to the SWRP for Yolo County, as documented in Section 11.6 of the IRWM Plan, are summarized below:

- Making Changes to the SWRP:
 - Changes include revisions or updates to the section narratives.
 - The SWRP will be reviewed a minimum of every five years (or as needed) to determine if its content needs to be changed in a significant way other than the periodic updates or amendments of the objectives and projects.
 - If significant changes are needed, the SWRP will be revised and submitted to the RWMG for adoption into the SWRP and IRWM Plan.
- Updating and Amending the SWRP:
 - Updates and amendments specifically include changes to the project lists and refinements to the Plan objectives.
 - Refinements to the Plan objectives will be submitted to the RWMG for consideration to adopt as an amendment to the existing SWRP. Refinements will be incorporated into the SWRP

and IRWM Plan a minimum of every five years (or as needed).

- New projects from stakeholders are received on a continuous basis, as well as revisions, updates, and removal (completed projects) of existing Projects. The RWMG will review the Project submittals and update the Project list on an annual basis. The updated project list will be posted on the Westside IRWMP website: <http://www.westsideirwm.com/projects.html>

6.1.2 Entities Responsible for Project Implementation

The Westside RWMG, Yolo WRA and YSGA (collectively called Authorizing Agencies) are responsible for implementation of the SWRP, with participation from project proponents and stakeholders.

Consistent with the IRWM Plan, the Authorizing Agencies functions include:

- Authorizing decisions using broad stakeholder agreement;
- Provide leadership for fostering cooperation, continuing coordination, tracking SWRP performance, and updating the SWRP; and
- Aid in identifying willing agencies/organizations (with appropriate authority and financial conditions) to serve as a fiscal agency for each specific funding opportunity that is pursued.

Further description of the responsibilities of individual parties for SWRP implementation is provided in the following subsections and in Table 6-1.

6.1.2.1 Water Resources Association of Yolo County (WRA)

A consortium of public water purveying entities organized in 1993, the ten-member Water Resources Association of Yolo County is a nonprofit, mutual-benefit corporation created to provide a regional forum to coordinate and facilitate solutions to water management issues in Yolo County. Governed by a board of directors with a representative from each of its member agencies. The member agencies include: City of Davis, City of Woodland, City of West Sacramento, City of Winters, University of California Davis, Yolo County, Yolo County Flood Control and Water Conservation District, Reclamation District 108,

Reclamation District 2035 and Dunnigan Water District.

Maintenance and implementation of the SWRP will be led by the Yolo WRA. These responsibilities include:

- Encouraging public engagement and maintain a contacts list of stakeholders;
- Conduct stakeholder meetings to report on and discuss the status of SWRP implementation and achieving SWRP goals and objectives;
- Solicit project updates;
- Administer and maintain web content for public viewing;
- Pursue grant funding for SWRP implementation, including project implementation;
- Select/prioritize projects for inclusion in SWRP-related grant applications and prepare and submit grant applications;
- Working with local county and city officials and project proponent to discuss solutions if local ordinances and laws hinder or prevent implementation of a proposed project;
- Coordinate with related storm water resources management efforts including neighboring IRWM Regions and local, State, and federal agencies;
- Collect, manage and share storm water and project data; and
- Set and manage operating budget.

6.1.2.2 Yolo Subbasin Groundwater Agency (YGSA)

A Joint Exercise of Powers Agreement (JPA) was executed by and among the following public agencies for the purpose of forming a Groundwater Sustainability Agency and achieving groundwater sustainability in the Yolo Subbasin: City of Davis, City of West Sacramento, City of Woodland, City of Winters, Dunnigan Water District, Esparto Community Services District, Madison Community Services District, Reclamation District (RD) 108, RD 537, RD 730, RD 765, RD 785, RD 787, RD 827, RD 1600, RD 2035, Yocha Dehe Wintun Nation, Yolo County Flood Control and Water Conservation District, and County of Yolo.

Maintenance and implementation of the SWRP will be supported by the YGSA for those tasks considered to have a groundwater nexus. These responsibilities include:

- Encouraging public engagement and participation in the SWRP implementation;
- Solicit project updates;
- Select/prioritize projects for inclusion in SWRP-related grant applications and prepare and submit grant applications;
- Pursue grant funding for implementation of groundwater projects;
- Coordinate with related groundwater management efforts;
- Manage and share groundwater data; and
- Set and manage operating budget.

6.1.2.3 Westside RWMG

The RWMG was established through a memorandum of understanding (MOU) between Lake County Watershed Protection District, Napa County Flood Control and Water Conservation District, Solano County Water Agency, and the Water Resources Association of Yolo County.

The RWMG will support the implementation of the SWRP by:

- Leading the effort to update the SWRP, including receiving project submittals, updating project lists, reviewing and updating IRWMP and SWRP objectives, and updating SWRP content;
- Identifying and gathering data related to achieving IRWMP and SWRP goals and objectives;
- Supporting grant applications and other efforts to pursue funds for SWRP implementation; and
- Assist in coordinating with neighboring IRWM Regions and local, State, and federal agencies.

6.1.2.4 Project Proponents

Project proponents include agencies or entities that have submitted projects they intend to sponsor during implementation and have been included in the SWRP. Project proponents, as documented in Section 11.2.1.1 of the IRWM Plan, are expected to have the following responsibilities:

- Provide project-specific information that may aid in advancing the regional objectives;
- Seek opportunities to integrate projects to most efficiently achieve the regional objectives;
- Work with local county and city officials to review all ordinances and laws which are applicable;
- Provide updated project-specific information as necessary to reflect major project milestones (e.g., CEQA completion, 100% design, construction underway, construction complete, and project completion);
- Develop and implement projects, collect performance monitoring data (described in Subsection 6.3.2), and report data to Yolo WRA annually;
- Participate in stakeholder meetings to educate others about the proponent's project(s);
- Identify a point person for each project who will provide requested information for projects for inclusion in grant applications; and
- Comply with grant requirements, as identified by the funding agency, to qualify for grant funding.

6.1.2.5 SWRP Stakeholders

The SWRP Stakeholders are a collection of people who choose to participate in SWRP implementation activities such as:

- Attending and participating in stakeholder outreach meetings;
- Reviewing and updating Plan objectives and content; and
- Assisting in the coordination with local, state, and federal agencies.

6.1.3 Federal, State, and Local Permits

This SWRP and the projects submitted to this Plan must be consistent with applicable federal and state regulations and policies, and permits implementing federal and state regulations and policies, including, but not limited to:

- Federal Permitting:
 - National Environmental Policy Act
 - Section 401 and 404 of the Clean Water Act

Section 6: Implementation Strategy & Schedule

Table 6-1: Yolo County SWRP Implementation Responsibility Matrix

Scope	Frequency	WRA and YSGA	Westside RWMG	Project Proponents	SWRP Stakeholders
1. Conduct Stakeholder Meetings					
Schedule Meetings, Prepare Agendas, Prepare Content, Prepare Meeting Summaries	Annually/As Needed	Lead			Participate
2. Engage Public					
Maintain Email List	Annually/As Needed	Lead			
Send Announcements / Invitations	Annually/As Needed	Lead			
Administer Website, Update Content	Annually/As Needed	Lead			
3. Update SWRP					
Receive Project Submittals, Revise Project List	Annually	Support	Lead	Participate	
Review and Update Objectives	5 Years/As Needed	Support	Lead	Participate	Participate
Revise/Amend Plan Content	5 Years/As Needed	Support	Lead	Participate	Participate
4. Pursue Grant Funds for Implementation					
Identify Grant Opportunities	Quarterly	Lead	Support	Support	
Select Projects for Inclusion in Grant	As Needed	Lead	Support	Lead/Support	
Prepare and Submit Grant Applications	As Needed	Lead	Support	Lead/Support ¹	
Identify One or More Willing Fiscal Agent(s) to Manage Grant Funds (If Received) on Behalf of the SWRP	As Needed	Lead	Support		
5. Coordinate with Related Efforts					
Coordinate with Neighboring IRWM Regions	Annually	Lead	Support		
Coordinate with Local, State, and Federal Agencies	Annually/As Needed	Lead	Support	Support	Participate
6. Manage and Share Related Data and Information					
Gather/Synthesize Data Related to Plan Progress	Annually	Lead	Support	Support	
Report on Plan Progress	Annually	Lead	Support	Support	
Identify Data That Should Be Measured and Managed to Meet Plan Goals and Objectives (b)	Annually	Lead/Support ²	Lead/Support ²	Support	
Gather Data that Should Be Measured and Managed to Meet Plan Goals and Objectives (b)	As Needed	Support	Support	Lead	
Store and Manage Needed Information	Annually/As Needed	Lead	Support	Support	
7. Finance Implementation Activities					
Set Annual Operating Budget for Implementation Coordination	Annually	Lead			
Manage Expenditures of Implementation Coordination Activities	Annually/As Needed	Lead			

1. Depending on the grant solicitation, the project proponent could be the applicant and select projects for inclusion into a single agency grant application.
2. This will be coordinated with the Westside IRWM Plan annual goals and objectives update and will be led by and supported by either party depending on circumstances of the project.

- State Permitting:
 - California Environmental Quality Act
 - California Department of Fish and Wildlife Lake/Streambed Alteration Permit
 - State Water Resources Control Board plans and policies
 - Central Valley Regional Water Quality Control Board Total Maximum Daily Loads (TMDLs), National Pollutant Discharge Elimination System (NPDES), and other plans and policies
- Local Permitting:
 - City/County development and encroachment permits
 - Municipal storm water compliance
 - Local pretreatment programs
 - Other

Environmental document preparation and permitting must occur prior to construction of any project. Project proponents are responsible for obtaining the necessary permits; and they may request for assistance with federal and state permit coordination by the Authorizing Agencies, which includes member agencies that have jurisdiction over local permits.

6.1.4 Community Participation

One of the most important aspects of Plan implementation is processes to ensure that the public and interested stakeholders continue to be involved. This will be accomplished through multiple avenues of communication and engagement between the Authorizing Agencies and stakeholders. Community participation during Plan implementation, will follow the same public involvement process described in Section 11.2.2 of the Westside IRWM Plan. The public involvement process is summarized below:

- Stakeholder meetings will be held annually at a minimum, or as needed to discuss/gather input of relevant topics of progress on implementation or in support of fulfilling Plan objectives.
- Stakeholder meetings will include opportunities for remote participation including conference calls, web interface, and other technologies that allow for reasonable interaction while the meeting is in progress.

- Information related to Plan implementation will be maintained and updated on the Westside IRWM website at: <http://www.westsideirwm.com/>
- In addition to meetings, comments and questions will be accepted via email and phone.
- Updates and meeting invitations will be distributed via the WRA- and YSGA-maintained stakeholder email list. Participants in the development of the SWRP for Yolo County will be added to the IRWM Plan stakeholder list.

6.1.5 Meeting Notices

This summary is not intended to be inclusive of all Brown Act requirements, but merely to provide a discussion of some of the key aspects that appear to apply to Plan implementation. The SWRP meetings will follow the Brown Act provisions. The Brown Act is contained in Section 54950 et seq. of the *California Government Code* and sets forward specific requirements for noticing about meetings, the way meeting agendas are established, and discussions among legislative bodies outside meetings. Brown Act provisions will apply to all Authorizing Agency and stakeholder meetings. Meetings are required to be held within the County boundaries. Remote meetings (such as teleconference calls) are permitted so long as all teleconference locations are identified in the meeting notice and these locations are made available to the public. Meeting notices with agendas must be posted 72 hours prior to the meeting; special and emergency meetings are allowed with shorter notices under special circumstances. The public will be afforded opportunities to comment before or while agenda items are covered, and time will need to be set aside for members of the public to comment on items that are applicable to the Authorizing Agencies but are not otherwise agendaized. All votes of the Authorizing Agencies must be cast in public. There are also special provisions for closed session meetings, such as for dealing with pending litigation and personnel issues. There are many exemptions and other protocols to the Brown Act; details can be found in the California Attorney General's Office pamphlet *The Brown Act: Open Meetings for Local Legislative Bodies*, 2003 and other similar guidance materials.

6.1.6 Decision Making

Decisions during implementation authorized by the Authorizing Agencies will continue to be made using

broad agreement, as during Plan development. All interested participants will be invited to participate as equals during stakeholder input meetings. The Yolo WRA and YGSA will set agendas, interact with stakeholders, and foster collaborative decisions as shown in Table 6-1. If for some reason broad agreement cannot be reached between the Authorizing Agencies and the stakeholder group related to specific items within a reasonable amount of time and effort, the Authorizing Agencies will discuss such item(s) and then decide by majority vote how to proceed.

6.2 Resources for Implementation

Once incorporated into the Westside IRWM Plan, implementation of the SWRP will be a collaborative effort between the Authorizing Agencies. The WRA, YGSA and Project Proponents will lead in the effort to obtain funding for implementation with support from the RWMG.

6.2.1 Financing

Financing of a SWRP is an enormous undertaking and requires the contributions and attention of local, state, and federal agencies to ensure success. Financing of the Plan will follow the same funding strategy as documented in Section 11.4.1 of the Westside IRWM Plan, which includes two district tracts: funding of SWRP administration and coordination and funding of project implementation. This section highlights the anticipated funding needs for both tracks, identifies potential funding sources, and documents some of the activities that the Authorizing Agencies and others will employ to secure additional funding.

6.2.1.1 Funding of SWRP Administration

Development of the SWRP was funded by the WRA and the Storm Water Grant Program from the State Water Resource Control Board. However, these funds cannot be spent on plan implementation activities, so one of the first steps to implement the SWRP is to establish a budget and funding sources to support implementation coordination. These include activities undertaken by the Authorizing Agencies to plan for and conduct stakeholder input meetings, track Plan implementation (including progress towards completing plan objectives and projects), and

conduct ongoing public outreach and engagement as described in the governance sections.

To accomplish these important responsibilities, the Authorizing Agencies will establish an annual operating budget for implementation coordination and manage expenditure and implementation coordination activities. This budget will be approved by the YGSA and RWMG and discussed at a stakeholder input meeting. Members of the Authorizing Agencies (and potentially other agencies/organizations within the region) may provide funds or in-kind services to ensure that the implementation coordination activities are fulfilled. The Authorizing Agencies may direct the expenditure of implementation coordination funds for any of the roles defined for the Authorizing Agencies. It is expected that the specific activities and associated budgets will be prepared by WRA on an annual basis. Many of the roles and activities could be handled by the WRA, YGSA or RWMG staff; therefore, the specific budgetary requirements may change as implementation progresses.

6.2.1.2 Project Implementation Funding

As of November 2017, 26 projects are included in the SWRP. Twenty of the projects provided funding information, with a total estimated funding need of almost \$32 million. Of the 26 projects, 15 are feasibility studies and/or planning-level projects, which suggest that the overall funding needs will only increase as these projects progress and are developed into implementable projects, programs, or actions, and as other projects are added to the SWRP. Table 6-2 summarizes financing needs and the availability of capital and operations and maintenance (O&M) funding sources based on information provided by project proponents. It is recommended that this table be updated and included in the annual report each year.

Throughout the implementation phase of the SWRP, additional grant funding will become available for planning-level projects. The WRA and YGSA will lead in the effort to pursue grant funds for implementation, identifying grant opportunities, selecting projects for inclusion in grant applications, preparation and submittal of grant applications and identifying fiscal agents to manage grant funds on behalf of the Authorizing Agents.

A list of grant opportunities with storm water-related benefits has been generated and is included in Appendix H for reference.

Table 6-2: Yolo County SWRP Implementation Benefits

Project Number	Project	Funding Needs				
		Project Capital		O&M		Land Needed
		Amount	Secured?	Annual Cost	Source Identified?	Secured?
2	Arboretum Waterway Wetland Restoration and Enhancement	\$4,000,000	90%	\$20,000	Yes	Yes
4	Davis Greenbelts Landscape Conversions (Davis Greenbelts Stormwater Improvements)	\$234,819	No	Unknown	Yes	No
6	Dry Creek Bank Stabilization and Wastewater Re-use	\$250,000	No	\$5,000	Yes	Yes
8	Flood Monitoring Network Project	\$350,000	No	Unknown	Yes	Yes
10	Knights Landing Storm Drain		Yes		Yes	Yes
13	Moore Siphon Reliability/Restoration Project (Moore Siphon Stormwater Improvements)	\$1,000,000	No	\$20,000	Yes	Yes
14	North Regional Pond and Pump Station	\$8,000,000	Yes	\$100,000	Yes	Yes
17	Russel Boulevard Demonstration LID Project (Russel Boulevard Stormwater Treatment Project)	\$42,763	Yes	Minimal	Yes	Yes
20	Thompson Canyon Stormwater Management	\$500,000	No	\$10,000	Yes	Yes
22	West Adams Canal Renovation and China Slough Rehabilitation Project	\$15,671,929	No	Unknown	No	No
24	Winters Bioswales Project and Habitat Enhancement	\$195,328	50%	\$5,000	Yes	Yes
Total Implementation Funding Needed:		\$30,244,839				

6.2.2 Decision Support Tools and Methods

Throughout the development of the SWRP for Yolo County, decision support tools and methods for benefit metrics analysis were explored and utilized to optimize opportunities for storm water management and aiding in balancing efforts between resource management and hazard management.

The tools and methodologies presented below will continue to be developed as more data is collected as part of implementation of this SWRP. A reference list of decision support tools, metrics, and data is provided in Appendix I. As the SWRP is implemented, additional decision support tools and methods may be explored and developed based on project needs.

6.2.2.1 Mapping and Geographic Data

Mapping and geographic data was used to aid in identifying existing infrastructure, natural features, and potential project locations for storm water management:

- Base data such as county, tribal and municipal boundaries; waterways and water bodies; and water conveyance infrastructure.
- Publicly-owned lands to show potential project sites that would avoid the additional cost and time of purchasing property or acquiring the right-of-way.
- Soil Agricultural Groundwater Banking Index (SAGBI), developed by the California Soil Resource Lab at UC Davis and University of California Agriculture and Natural Resources. SAGBI is a suitability index for groundwater recharge on

agricultural land based on factors related to deep percolation, root zone residence time, topography, chemical limitations, and soil surface condition.

The intersection of the above data is shown in and can be used to identify locations for potential projects such as detention basins, recharge basins or injection wells, or runoff conveyance systems.

6.2.2.2 Water Evaluation and Planning System (WEAP)

WEAP is an integrated water resources planning tool for resource management and policy analysis using climate-driven water balance. The WEAP model provides a full accounting of water flows throughout the watershed, including rainfall-runoff modeling; climate-driven evapotranspiration; snow accumulation/melt; and groundwater-surface water interaction. Water infrastructure and demands are nested within the underlying hydrological processes which represent water demands from all sectors and programmable operating rules for infrastructure (i.e. reservoirs, weirs, etc.)

In 2015-2016 the Stockholm Environmental Institute (SEI) used WEAP to investigate the potential for using winter runoff to recharge groundwater through YCFC&WCD's unlined canal network. Initial model estimates show that compared to baseline conditions, an average annual additional recharge of about 18,000 AFY for the period 2016-2045 can be expected through the implementation of winter recharge.

Through the SWRP development process, SEI has expanded the WEAP model to incorporate the entire Yolo County boundary. It is anticipated that as more base data and project data is collected, these will be incorporated into the model, and these estimates will be further refined. Improvements to the Yolo County WEAP model include:

- Further spatial disaggregation
- Adding groundwater contribution from storing winter runoff by flooding specific agricultural fields
- Adding groundwater contribution from runoff into canals
- Aggregation and modeling of project benefits

Appendix J provides initial WEAP estimates for the SWRP for Yolo County.

6.2.2.3 The Hydrologic Engineering Center (HEC) Hydrologic Modeling System (HMS)

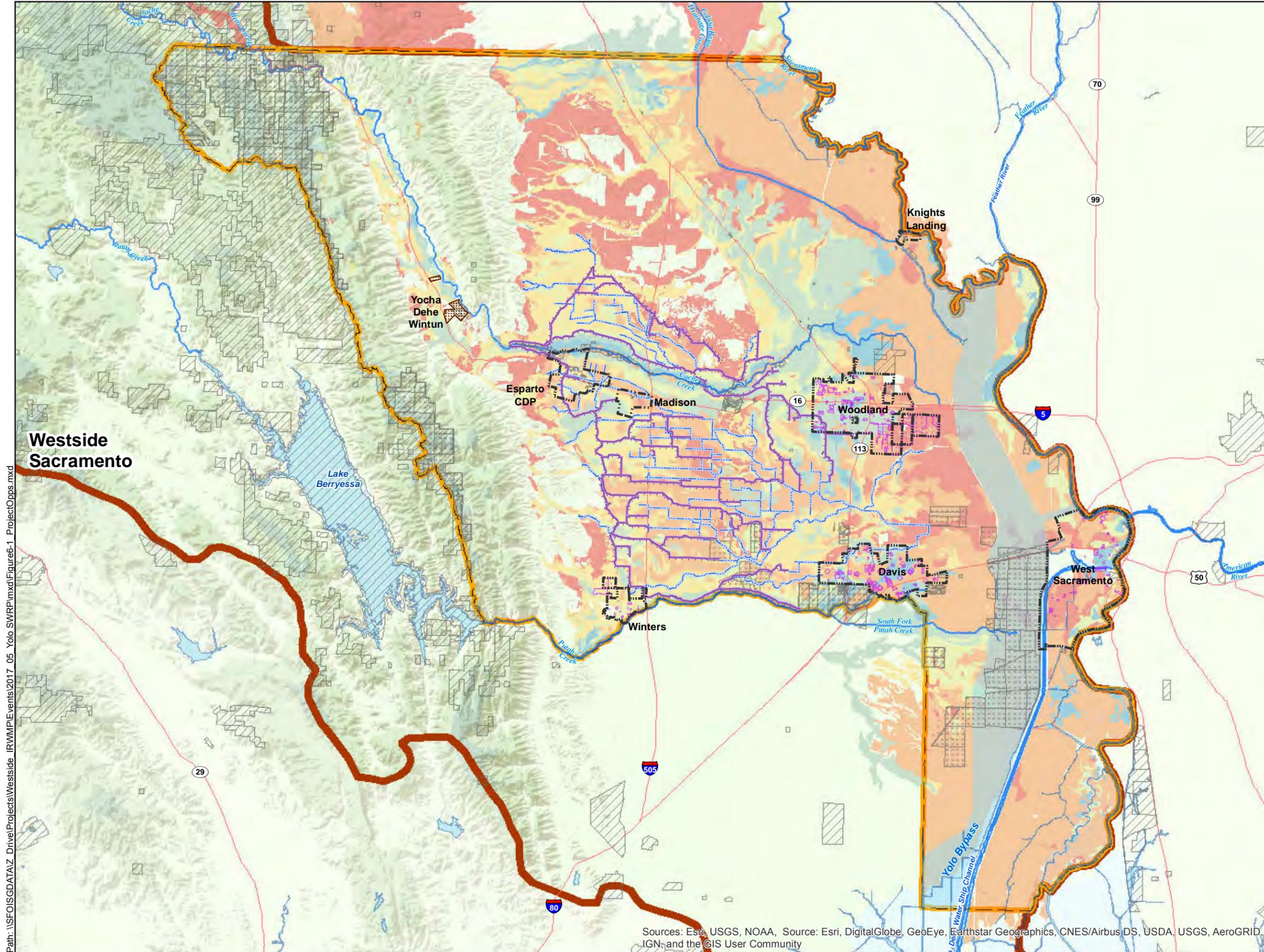
To address reports of consistent localized flooding in the area of Esparto and Madison, SEI conducted HEC-HMS modeling for the Lamb Valley Slough, South Fork Willow Slough, Cottonwood Slough, and a small drainage that feeds into the Madison drain. The intent was to derive first estimates of flows and runoff volume upstream of Esparto and Madison, and compare these with the flows and runoff volumes at the larger catchment scale closer to the urban areas.

HEC-HMS is a hydrologic modeling tool available by the US Army Corps of Engineers. HEC-HMS uses the following input data sets:

- Digital Elevation Mapping (DEM) for the study area;
- Landcover and imperviousness;
- Soils;
- Hourly precipitation; and
- Precipitation-frequency duration.

Initial analysis shows that the majority of runoff with the Cottonwood Slough watershed results from the upstream area, and diverting flows from this slough into Winters Canal or off channel storage may provide the most benefits and the most flood relief downstream of the three watersheds assessed. Based on this assessment, diverting flows from Lamb Valley Slough into Winters Canal or off stream storage before reaching Esparto would also likely provide benefits in flood relief to Esparto and Madison. Other mitigation methods such as capturing floodwater on farm fields for recharge should be considered to reduce flooding caused by water from Willow Slough because the majority of its contributing area is from the downstream area, downstream of potential diversion locations.

As a result of the initial analysis, SEI recommends that the locations where sloughs intersect with the Winters Canal or roads be surveyed for feasible locations at which to implement storm water management measures. Documentation of the HEC-HMS modeling effort for the Yolo County SWRP is provided in Appendix J.



- Sloughs w/in YCFC&WCD Boundary
 - Canals w/in YCFC&WCD Boundary
 - City Public Properties
 - County Zoning - Public
 - Public Agency Jurisdiction
 - Yolo SWRP Boundary
 - Westside Region
- Projects**
- Conceptual/Planning
 - Implementation
 - Implementation
 - Conceptual/Planning
- SAGBI - Modified**
- Excellent
 - Good
 - Moderately Good
 - Moderately Poor
 - Poor
 - Very Poor

The Soil Agricultural Groundwater Banking Index (SAGBI) is a suitability index for groundwater recharge on agricultural land. The SAGBI is based on five major factors that are critical to successful agricultural groundwater banking: deep percolation, root zone residence time, topography, chemical limitations, and soil surface condition.

Modified overlay is theoretical; it shows SAGBI suitability groups when assuming that all soils with restrictive layers have been modified by deep tillage.

Source:
<https://casoilresource.lawr.ucdavis.edu/sagbi/>
 SAGBI overlay provided by
 Toby O'Geen (atogeen@ucdavis.edu),
 Professor & Soil Resource Specialist in
 Cooperative Extension, Dept. of Land,
 Air and Water Resources, UC Davis.



Kennedy/Jenks Consultants

**Storm Water Resource Plan
 For Yolo County**



**Geographic Information for
 Decision Support**

K/J 1770002.00
 January 2018

Figure 6-1

Sources: Esri, USGS, NOAA, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: \\SFOISGDATA\Z_Drive\Projects\Westside_IRWMP\Events\2017_05_Yolo_SWRP\mxd\Figure6-1_ProjectOpps.mxd

THIS PAGE INTENTIONALLY BLANK

6.2.2.4 Other Tools

Other tools and methodologies available for the development of implementation projects include the Rational Method, the Simple Method, and SUSTAIN, described below:

- Yolo City/County Drainage Manual, 2009: The Drainage Manual was prepared to provide consistent criteria and methodology for hydrologic and hydraulic analyses associated with storm runoff between rural and urban areas in Yolo County. This Manual can be accessed from the Yolo County Improvement Standards website (<http://www.yolocounty.org/community-services/planning-public-works/public-works-division/improvement-standards>) and provides the following:
 - Updated design rainfall (depth/duration/frequency and distribution patterns);
 - Rainfall-runoff parameters and methodology;
 - Criteria for addressing storm water quality;
 - Criteria for sizing hydraulic structures associated with roads and other infrastructure affecting storm runoff;
 - Hydrologic and hydraulic design criteria and guidelines for sloughs, creeks, and other anticipated types of storm drainage facilities, including direction for conveyance (peak) and storage (volume) design considerations; and
 - Tools for new development located in the unincorporated areas of the County to reduce pollutant discharge to the maximum extent practicable and to protect the beneficial uses of receiving waters.
- Modified Rational Method: The Modified Rational Method is recommended in the Yolo City/County Drainage Manual for designing local drainage facilities of limited size. The Modified Rational Method can be used to estimate runoff volumes using storm intensity, time of concentration, watershed imperviousness, and watershed size. The Yolo City/County Drainage Manual presents the equation and procedure for application for the recommended 10-year storm event.
- Simple Method: The Simple Method can be applied as a spreadsheet-based model that estimates storm water runoff pollutant loads and volumes for urban areas. Combined with characteristic pollutant removal efficiencies, it can provide a general planning estimate of likely storm pollutant reduction as a result of implementing projects at the scale of a development site, catchment or subwatershed. The technique requires a modest amount of information, including the subwatershed drainage area and impervious cover, storm water runoff pollutant concentrations, and annual precipitation to provide a general estimate of runoff volume and pollutant loading. Appendix I provides a description of the application of the Simple Method to calculate storm water runoff pollutant loads for the purposes of sizing a capture and treatment system.
- SUSTAIN: The US Environmental Protection Agency's (EPA's) System for Urban Stormwater Treatment and Analysis Integration (SUSTAIN) model focuses on the implementation of pollution control measures through green infrastructure, total maximum daily load requirements, and MS4 management practices. This tool was not used in the development of the SWRP but was made available to the SWRP stakeholders and project proponents to assist in quantifying potential project benefits. SUSTAIN and documentation can be downloaded from the EPA website (<https://www.epa.gov/water-research/system-urban-stormwater-treatment-and-analysis-integration-sustain>). Although this system is still available for download from the EPA's website, it is no longer supported; as a result, the SWRP development team opted to utilize the other decision support tools and methods described previously.

6.2.3 Data Management System

Data management includes the collection, storage, processing, and sharing of information that is developed from project-specific performance monitoring. Data management for the Yolo County SWRP will adopt the strategy utilized by the Westside RWMG, as described in Westside IRWMP Section 11.3.2 Data Management. Water-resources data are generated from multiple sources, in countless formats, and is reported in varying frequencies to jurisdictional bodies, nongovernmental agencies, water agencies, and regulators. The data management strategy is not meant to duplicate these efforts and does not serve as the central

clearinghouse for this vast amount of information; rather, it has been developed to meet the following functions:

- Support the collection and sharing of information related to project implementation and progress in meeting objectives;
- Provide a means for interested stakeholders to locate needed information concerning project implementation; and
- Consider avenues to simplify the interconnection and sharing mechanisms between local and statewide data sources.

A list of data collection and monitoring programs that can be used throughout SWRP and project implementation is provided in Appendix I. This list is based on the Technical Memorandum prepared for the Westside IRWMP to identify information needs and potential information sources for tracking progress on the IRWMP objectives.¹ Appendix I is expected to be reviewed annually, and expanded, refined, and updated based on feedback received from SWRP stakeholders and project proponents. Links to access the data and monitoring programs will be maintained on the Yolo WRA website.

6.3 Implementation Projects and Programs

As described in Section 5, to identify and develop projects with clear storm water and dry weather runoff goals that also provide multiple public water quality and supply benefits, all projects submitted for inclusion of the SWRP for Yolo County must result in at least two storm water benefits, which can be achieved by meeting SWRP objectives introduced in Section 1.

6.3.1 Quantification of Storm Water Management

Section 5.4 summarized the projects submitted to the SWRP that were evaluated for implementation, including proposed benefit metrics analyses and expected associated quantification of benefits. In addition, quantitative analysis for the anticipated benefits was also presented.

Benefit quantification is an important measure of SWRP effectiveness. Quantification of storm water management actions show the balance between storm water as a resource and storm water as a hazard. The more that the storm water can be quantified, the more it can be put to use as a resource.

The tools and methods provided in Appendix I and discussed in the previous Subsection can be used to quantify project benefits and Plan overall benefits, as well as identify opportunities, size potential infrastructure, and communicate and educate the public.

6.3.2 Project Status Tracking

Project implementation monitoring data will be used to measure the SWRP's progress towards achieving both plans goals and objectives. As stated in Section 6.1.2, project proponents are responsible for collecting and reporting project monitoring data with the assistance of the Yolo WRA and YSGA.

Project-specific monitoring plans will be developed before the start of project implementation and will include the following components:

- Purpose and background for monitoring,
- Monitoring objectives,
- Description of monitoring site,
- Description of what will be monitored for each project,
- Methods for monitoring problems and their correction,
- Monitoring frequency,
- Monitoring protocols, procedures, and responsibilities,
- Reporting of data collected, and
- Procedures and funding assurances to document that the monitoring will take place during the entire monitoring period.

Additional information may be required depending on the project, and monitoring plans will need to include enough information in order to accurately evaluate project effectiveness.

¹ Westside Sacramento IRWM Consultant Team. Technical Memorandum, Subject: Westside Sacramento IRWM Plan Information Needs, Potential Sources, and Suggested Implementation Steps for Tracking Progress on Plan Objectives. 10 April 2013.

It is intended that the monitoring plans will utilize Appendix I and the existing data collection and monitoring programs therein, as well as assess the ability of the existing programs to meet project monitoring needs. In this way Appendix I will continually be updated and data gaps will be identified.

It is anticipated that information collected as part of project monitoring will be shared and transferred formally through annual reporting and informally during the quarterly meetings. The data contained in the annual report will be shared with local, state, and federal agencies through posting to the Yolo WRA website.

From Section 5.4, implementation of the SWRP for Yolo County and the prioritized projects is anticipated

to result in measurable benefits related to water quality, water supply, flood management, environmental, and community.

Table 6-3 presents the anticipated benefits as a result of implementation of the SWRP for Yolo County and how the projects' benefits will be measured.

Implementation of the prioritized projects is anticipated to extend through 2021, depending on the availability of funding. Figure 6-2 presents the anticipated project timelines for those projects prioritized for implementation. It is assumed that implementation funding will be obtained prior to the Design and Construction/Implementation project phases, as applicable.

Table 6-3: Yolo County SWRP Implementation Benefits

Benefit Category	Project	Quantified Benefit	Performance Measure
Water Quality	2. Arboretum Waterway Wetland Restoration and Enhancement	935 acres of wetland treatment of runoff	Mapping/survey increase in vegetative cover
	6. Dry Creek Bank Stabilization and Wastewater Re-use	2 miles of sediment control	Mapping/survey of survival and growth of native vegetation
	10. Knights Landing Storm Drain		
	14. North Regional Pond and Pump Station	120 cfs treatment prior to discharge	Water quality of WWTP outflow
Water Supply	2. Arboretum Waterway Wetland Restoration and Enhancement	2,000 gpm reclaimed water for arboretum irrigation/habitat	Flowmeter at WWTP discharge to Arboretum
	4. Davis Greenbelts Landscape Conversions	1,000,000 gallons/year/acre water conserved due to turf conversion	Advanced Metering Infrastructure (AMI)
	8. Flood Monitoring Network Project	80 cfs of groundwater recharge when Cache Creek flows are greater than 100 cfs.	Stream gaging at specific locations
	13. Moore Siphon Reliability/Restoration Project	1,000 AFY of leak loss reduction due to repair of the Moore Siphon	Field measurement and engineering project report
		200 AF/day water supply reliability due to repair of Moore Siphon	Field measurement and engineering project report
20. Thompson Canyon Stormwater Management	10,000 square feet of increased infiltration area due to native plantings	Visual monitoring/survey of survival and growth of native plantings	
Flood Management	2. Arboretum Waterway Wetland Restoration and Enhancement	1,800,000 cubic feet capacity to capture runoff	Visual monitoring of Arboretum Waterway to contain runoff
	8. Flood Monitoring Network Project	91-2,686 Acre-Ft of flood flows diverted from the towns of Esparto and Madison per event	Stream gaging at specific locations
	10. Knights Landing Storm Drain		
	17. Russel Boulevard Demonstration LID Project	0.05 AF of infiltration for a 24-hour storm event	Visual monitoring of discharge from swale

Section 6: Implementation Strategy & Schedule

Benefit Category	Project	Quantified Benefit	Performance Measure
Environmental	4. Davis Greenbelts Landscape Conversions	1 acre of enhanced habitat per project site	Visual monitoring/survey of survival and growth of plantings and wildlife
	6. Dry Creek Bank Stabilization and Wastewater Re-use	2 acres of new riparian vegetation	Mapping/survey of survival and growth of native vegetation
	17. Russel Boulevard Demonstration LID Project	6,225 square feet of enhanced habitat	Visual monitoring/survey of survival and growth of plantings and wildlife
		7 trees planted	Visual monitoring/survey of survival and growth of plantings and wildlife
	20. Thompson Canyon Stormwater Management	1 river mile of restored trout spawning habitat for increased fish population	Average time to catch a trout
		10,000 square feet of habitat restoration	Visual monitoring/survey of survival and growth of native plantings
24. Winters Bioswales Project and Habitat Enhancement	5 acres of habitat restoration	Visual monitoring/survey of plant community performance	
Community	4. Davis Greenbelts Landscape Conversions	1 acre of recreation area per project site	Installation of interpretive signage
	17. Russel Boulevard Demonstration LID Project	1,000 volunteer hours and 3 class tours per year	Documentation of volunteers and class participation
	24. Winters Bioswales Project and Habitat Enhancement	3 community tours and 1 class visit per year	Documentation of tours and class participation

Figure 6-2: Yolo County SWRP Implementation Projects Timeline

