The Water Quality, Supply, and Infrastructure Improvement Act of 2014 (also known as Proposition 1 [Prop 1]) established grant and loan programs for public agencies, nonprofit organizations, public utilities, state and federally recognized Indian tribes, and mutual water companies to support planning and implementation of water projects. One of the programs created by Prop 1 is the Storm Water Grant Program (SWGP) administered by the State Water Resources Control Board (State Water Board). Senate Bill 985 (SB 985), the Storm Water Resource Planning Act, amended the California Water Code to require development of a Storm Water Resource Plan (SWRP or Plan) in order to be eligible for grants from a bond act approved after January 1, 2014; therefore, SB 985 applies to Prop 1 and applicants seeking funding from the SWGP are required to develop a SWRP or functionally equivalent plan(s). The State Water Board developed the Proposition 1 Storm Water Resource Plan Guidelines (SWRP Guidelines; State Water Board 2015) to assist applicants with the development of their SWRP.

The Water Resources Association of Yolo County (Yolo WRA) have developed this SWRP to inform future water management decisions and promote effective conjunctive use as well as alleviate flooding, groundwater, and water quality issues through storm water management throughout Yolo County. This SWRP was developed in accordance with the SWRP Guidelines (see Checklist and Self-Certification in Appendix A).

1.1 Plan Development

The selected boundary for this SWRP is Yolo County (shown in Figure 1-1), located in northern California. Yolo County falls within Westside-Sacramento Integrated Regional Water Management (Westside IRWM) Planning Region, which also includes four other Counties: Colusa, Lake, Solano, and Napa. Yolo County also borders the North Sacramento Valley and American River Basin IRWM Planning Regions. Coordination between the IRWM Regions and the SWRP development occurs through joint participation in meetings as well as in specific outreach.

The boundary selection for this SWRP originated with a discussion initiated by the Westside IRWM

Coordinating Committee on 15 January 2016 to discuss general interest in preparation of a SWRP. A follow-up Coordinating Committee Special Business Meeting on 29 January 2016 resulted in the Yolo WRA as the only entity that had sufficient stakeholder interest and resources to pursue preparation of a SWRP. Therefore, the selected boundary focuses on the Yolo County drainages within the Westside IRWM.

1.1.1 Relation to Other Planning Efforts

There are many on-going efforts to address water quantity and quality issues in the SWRP area. First and foremost is the initiation of the WRA in 1993. In 2007, the WRA completed a local Yolo County IRWM Plan which describes Yolo County-specific topics and foundational action items, and continues to inform water management in Yolo County. Other efforts to address storm water issues include:

- FloodSAFE Yolo;
- City of Woodland's Water Recycling Program;
- Yolo WRA's Groundwater Monitoring Network;
- Yolo WRA's Subsidence Network Monitoring
- Westside IRWM grant to address mercury contamination in watersheds above the SWRP area; and
- Continued participation in the broader Westside IRWM

The Westside Sacramento Integrated Regional Water Management (IRWM) Plan, published in 2013, is the most current of these documents. This plan presents a comprehensive overview of the SWRP area as well as the much larger IRWM Plan area, discusses the history and hydrology of the area, as well as its regulatory framework and water quality/quantity challenges. It also identifies water needs in the IRWM Plan area and assesses a wide variety of approaches to determine potential strategies to meet water quality and quantity goals.

The Westside Sacramento IRWM Plan draws on previous water management plans, including the Yolo County IRWM Plan developed in 2007, which discusses water issues specific to Yolo County. The Yolo County IRWM Plan was developed by the Water Resources Association of Yolo County and represents the specific water quantity (e.g. flood and fluctuating groundwater levels) issues as well as quality issues such as mercury sediments from upstream abandoned mines.

The SWRP builds on flood management modelling and planning documents created by FloodSAFE Yolo, a pilot program led by the Central Valley Flood Protection Board that includes a number of agencies in the SWRP area. The FloodSAFE Yolo Program coordinated the flood management efforts associated with the Cache Creek Integrated Action and the Yolo County Sloughs, Canals, and Creeks Management Program identified in the Yolo County IRWM Plan. This program includes analysis of historical floods and modelling of flood scenarios in the SWRP area to identify areas that are vulnerable to flood.

Part of the SWRP area is also included in the Lower Sacramento River/Delta North Regional Flood Management Plan (FloodProtect), a study of flood preparedness in a region consisting of parts of Solano, Yolo, Sacramento, and Sutter Counties. This study provides a discussion of flood management problems and lists flood infrastructure improvements needed in each county included in the region of study. This document will help identify critical flood control needs in the SWRP area of the proposed SWRP.

Other documents related to flood preparedness within the SWRP area include:

- Flood Protect. Lower Sacramento River/Delta North Regional Flood Management Plan. July 2014. <u>http://www.yolocounty.org/home/showdocument?</u> id=28753
 - Covers parts of Solano, Yolo, Sacramento, and Sutter Counties. Identifies flood infrastructure needs and potential vulnerabilities in the SWRP area.
- FloodSAFE Yolo Pilot Program. "1st Annual Report (2008-2009)." September 2008.
 <u>http://www.yolowra.org/irwmp_integrated_actions/</u> <u>1st-Annual-Report_floodSAFE_2008.pdf</u>

- Covers Yolo County. Discusses the formation and goals of the FloodSAFE Yolo consortium of agencies and presents results of the first few years of the program and describes planned future work. Contains maps analyzing areas impacted in various flood scenarios.
- Borcalli, Francis E. "Cache Creek and Cache Creek Settling Basin." FloodSAFE Yolo. Presentation delivered 21 November 2008.
 - Covers City of Woodland and adjacent area. Discusses flood vulnerabilities and mitigation strategies in the vicinity of Woodland, CA. Introduces the Lower Cache Creek Feasibility Investigation.
- Various flood maps covering University of California Davis Campus, Interstate 5 corridor, the City of Madison, and other areas in the vicinity show extensive flood monitoring efforts throughout the SWRP area as well as results of models of predicted and historic floods.

In addition to these large-scale planning documents, watershed-scale analysis has been conducted targeting smaller watersheds within the SWRP area:

- Yolo County Resource Conservation District conducted an in-depth study on the Willow Creek Watershed in the sourthwest portion of the SWRP area and included a detailed analysis of the water, soil, and ecological resources in the basin, as well as discussion of water quality problems to address.
- The City of Winters completed reports discussing storm water projects needed in the Moody Slough and Putah Creek/Dry Creek subbasins.
- The City of Woodland has completed in-depth analysis and hydrologic modeling of stormwater infrastructure and natural drainage in the vicinity of the City, which has resulted in a detailed report presenting necessary stormwater infrastructure improvements.

Additional reports and documents used in the development of this SWRP are listed in Section 8: References.

Figure 1-1:IRWM Plan Boundary and Yolo County SWRP Boundary



Storm Water Resource Plan for Yolo County, January 2018

1.1.1.1 Other IRWM Plan Regions

The American River Basin Region and North Sacramento Valley Region are also embarking on SWRPs under the SWGP planning grant. Coordination between the IRWM Regions and the SWRP development occurred through solicitation to participate in meetings and provide comments on plan sections.

The Yolo County SWRP area is located at the most downstream end of the extensive Sacramento River watershed and is hydrologically connected to the Sacramento-San Joaquin Delta and the San Francisco Bay. The American River Basin IRWM Plan area is located adjacent to the Yolo County SWRP area and consists primarily of the greater part of Sacramento County directly east of Yolo County and portions of Placer and El Dorado Counties. Therefore, projects implemented as part of the SWRP for Yolo County are likely to directly impact SWRP efforts in the neighboring American River Basin SWRP area.

The Yolo County SWRP area is bounded to the north by North Sacramento Valley IRWM Region. In this Region, are two SWRP efforts: The City of Chico SWRP and the City of Redding SWRP. Both of these planning areas drain into the Sacramento River; therefore, the SWRP for Yolo County will coordinate with the two North Sacramento Valley Region SWRPs when appropriate.

1.1.1.2 Yolo Subbasin Groundwater Agency

The Yolo Subbasin Groundwater Agency (YSGA) was formed on June 19, 2017 as the Groundwater Sustainability Agency (GSA) for the Yolo Subbasin. The mission of the Yolo Subbasin Groundwater Agency is to provide a dynamic, cost-effective, flexible collegial organization to ensure compliance with State of California Sustainable Groundwater Management Act (SGMA) within the Yolo Subbasin. The YSGA will serve a coordinating and administrative role for developing the Groundwater Sustainability Plan, which is anticipated to be completed by January 1, 2022. More information on the YSGA can be found on their website:

https://yologroundwater.org/index.php/yolosubbasin-groundwater-agency/

As described in Section 4: Coordination and Collaboration, many of the members and affiliates

of the YSGA are also stakeholders of the SWRP. Where there is a nexus between groundwater and storm water, the YSGA will support the implementation activities of the SWRP. See Section 6: Implementation Strategy and Schedule for additional details.

1.1.1.3 Storm Water Management Plans

Five agencies within the SWRP area are included in the Phase 2 Municipal Separate Storm Sewer System (MS4) permit:

- City of Davis
- University of California, Davis
- City of West Sacramento
- City of Woodland
- Yolo County

These agencies are each required to maintain an individual storm water management plan (SWMP) documenting their approach to local storm water management. Further discussion on how these agencies are complying with their individual storm water permits is provided in Section 3: Water Quality Compliance. It is anticipated that implementation of the SWRP will aid these agencies in meeting the requirements of their MS4 permits.

1.1.1.4 Concurrent Studies

There are currently two grant-funded projects underway in or near the SWRP area:

- A project funded through the EPA's Brownfields Assessment Program and led by the Westside IRWM will involve investigating abandoned mines in the Cache and Putah Creek watersheds and developing remediation plans for sites that pose the greatest threat to water quality. This project may help elucidate and mitigate upstream contamination sources outside of the SWRP area that could facilitate meeting the Total Mass Daily Load (TMDL) for mercury within the planning area. Work on the project commenced in early 2016, and a report on brownfields is expected to be available in early 2017.
- 2. Funded by the Watershed Restoration and Delta Water Quality and Ecosystem Restoration Grant Programs, this project will involve

collecting streamflow data in multiple tributaries to the Yolo Bypass region. The project team includes UC Davis faculty, as well as two local consulting firms with experience in environmental compliance and watershedscale environmental management. This study will fill provide useful data to support hydrologic modeling of this portion of the SWRP area.

1.2 SWRP Objectives

The SWRP Guidelines (p. 17) include several mentions of the need for storm water management objectives as follows:

"Storm water management on a watershed basis provides for a combination of storm water management objectives and multiple benefits throughout the watershed or subwatershed. Therefore, the Plan should discuss how the **various storm water management objectives** within the watershed will protect or improve water quality, water supply reliability, and/or achieve other objectives. The Plan should include a discussion of the added benefits to integration of multiple storm water management strategies, as compared to stand-alone projects.

The Plan must discuss how its objectives and projects fit into the broader water management goals of the applicable IRWM plan. For the purposes of receiving project implementation funding, submittal of a Storm Water Resource Plan to the applicable IRWM group (for further incorporation into an existing IRWM plan) fulfills the public agency's requirement for "incorporation." However, the State Water Board recognizes that further collaboration and coordination with other agencies within the IRWM group is essential for long-term incorporation."

This portion of the plan describes the development of SWRP objectives and their relationship to the Westside IRWM Plan objectives. One of the key elements of SWRP projects are that they provide multiple-benefits; therefore, acknowledgement of these multiple benefits is important to establishment of SWRP objectives. Potential storm water benefits include:

- 1. creation and restoration of wetlands,
- 2. riverside [riparian] habitats;
- 3. instream flows,
- 4. increase in park and recreation lands,
- 5. urban green space,
- 6. augments recreation opportunities for communities,
- 7. increases tree canopy,
- 8. reduces heat island effect,
- 9. improves air quality,
- 10. maximizes water quality,
- 11. maximizes water supply,
- 12. maximizes flood management,
- 13. maximizes environmental benefits, and
- 14. maximizes other community benefits.

1.2.1 Westside IRWM Plan Objectives

According to Water Code section 79743, the projects implemented as a result of the SWRP should also address the priorities of the local regional water management group. The Westside IRWM Plan was developed based on the Integrated Regional Water Management Guidelines for Proposition 84 and 1E, and includes 24 objectives related to water management, as described in Westside IRWM Plan Section 6.4 (page 6-4 to 6-18, Yolo WRA 2013). The Westside IRWM Plan goals and objectives were identified as the major water resource issues in the region and as such, reflect water resource management values and overall priorities for the SWRP area. Therefore, it is natural that the SWRP utilizes the Westside IRWM Plan goals and objectives to further define the storm water management strategies that meet the SWRP Objectives.

1.2.1.1 Basin Plan Objectives Relevant to Storm Water

The Sacramento and San Joaquin River Basins Plan is the water quality control plan formulated and adopted by the Regional Water Quality Control Board for the Central Valley region (Central Valley RWQCB), which regulates water quality in the Westside IRWM region. The objective of the Basin Plan is to show how the quality of the surface and ground waters in the Central Valley Region should be managed to provide the highest water quality reasonably possible. The Basin Plan lists various water uses (Beneficial Uses), describes the water quality which must be maintained to allow those uses (Water Quality Objectives), and outlines an implementation plan for achieving those standards.

The objectives for the Westside IRWM region include meeting the water quality standards outlined in the Central Valley Basin Plan, and are consistent with the overarching planning goals promulgated by the Central Valley RWQCB.

1.2.2 SWRP Objectives

The SWRP Objectives incorporate all 24 Westside IRWM Plan Objectives, as well as three additional objectives specific to storm water management that will be adopted by the Westside WRA:

- Objective 25. Convert paved and/or impervious areas and increase tree canopy and vegetation, reducing urban heat island effects.
- Objective 26. Optimize the rural storm water conveyance system to drain and retain storm water flows as necessary. Provide proper rural drainage and keep conveyance systems clear of debris to minimize county road flooding during storm events.

 Objective 27. Enable proper rural retention and modify rural landscape to maximize groundwater recharge of excess storm water.

Appendix B presents a detailed table that shows the relationship between the IRWM Plan objectives, objectives identified by the Water Code (page 9, SWRP Guidelines), and SWRP Guideline Objectives. The SWRP Objectives will be considered in the prioritization and selection of projects in Section 5.

The SWRP Objectives will be used to achieve the following Benefit Categories:

- Water Quality
- Water Supply
- Flood Management
- Environmental
- Community

The following sections summarize the SWRP objectives and possible combination of strategies that will be result in multiple storm water benefits for the SWRP. Projects that result in multiple tangible and intangible storm water benefits minimize the resources needed to achieve these benefits, while maximizing the effective area of benefits. As described in the sections below, many of the SWRP Objectives will result in multiple benefits; this SWRP prioritizes projects that employ multiple storm water management strategies and/or can achieve multiple benefits. A discussion of how SWRP Objectives relate to individual projects is included in Section 5.2.

15.

1.2.2.1 Water Quality Benefit Category

The main benefit of the Water Quality (WQ) Benefit Category is increased filtration and/or treatment of runoff. There are nine SWRP Objectives that result in water quality benefits. Of these, eight can contribute to at least one additional Benefit Category:

- 1. WQ.1 can result in environmental benefits in addition to water quality benefits.
- 2. WQ.2 can result in water supply benefits in addition to water quality benefits.
- WQ.3 can result in flood management and environmental benefits in addition to water quality benefits.

- 4. WQ.4 can result in environmental and community benefits in addition to water quality benefit category.
- 5. WQ.5 can result in water supply and community benefits in addition to water quality benefits.
- 6. WQ.6 can result in water supply, environmental, and community benefits in addition to water quality benefits.
- 7. WQ.8 can result in water supply and flood management benefits in water quality benefits.
- 8. WQ.9 can result in water supply and flood management benefits in addition to water quality benefits.

Benefits	Yolo County Storm Water Resource Plan Water Quality (WQ) Objectives
	WQ.1* Restore native vegetation/form/function along riparian/aquatic corridors
Water quality	WQ.2* Increase adoption of agricultural Best Management Practices
while contributing to compliance	WQ.3* Manage watershed activities to reduce large erosion events
TMDL requirements	WQ.4* Monitor state/federal Delta programs
 <u>Main Benefit:</u> Increased filtration and/or treatment of runoff 	WQ.5 * Monitor conditions/improve understanding to support sustainable groundwater basins
Secondary Benefits: Nonpoint source pollution	WQ.6* Maintain/enhance watershed and natural resource monitoring network and information sharing
control Reestablish natural water drainage and treatment 	WQ.7 Address pollutant sources to meet runoff standards and Total Maximum Daily Load (TMDL) targets
drainage and iteatment	WQ.8* Reduce public health risks by reducing contaminants in drinking water sources
	WQ.9* Meet all drinking water and wastewater discharge standards

Note:

1.2.2.2 Water Supply Benefit Category

The main benefits of the Water Supply (WS) Benefit Category is water supply reliability and conjunctive use. There are 11 SWRP Objectives that result in water supply benefits. Of these, seven can contribute to at least one additional Benefit Category:

- 1. WS.3 can result in water quality and community benefits in addition to water supply benefits.
- 2. WS.4 can result in water quality, environmental, and community benefits in addition to water supply benefits.
- WS.5 can result in water quality, environmental, and community benefits in addition to water supply benefits.

- 4. WS.6 can result in water quality and flood management benefits in addition to water supply benefits.
- 5. WS.7 can result in water quality and flood management benefits in addition to water supply benefits.
- 6. WS. 10 can result in flood management benefits in addition to water supply benefits.
- 7. WS. 11 can result in flood management benefits in addition to water supply benefits.

Benefits	Yolo County Storm Water Resource Plan Water Supply (WS) Objectives
	WS.1 Create asset management plan for key water management infrastructure
	WS.2 Meet 20% by 2020 conservation targets
	WS.3* Increase adoption of agricultural Best Management Practices
Water supply	WS.4* Monitor conditions/improve understanding to support sustainable groundwater basins
through groundwater management and/or runoff capture and use	WS.5 * Maintain/enhance watershed and natural resource monitoring network and information sharing
Main Benefit:	WS.6* Reduce public health risks by reducing contaminants in drinking water sources
 Water supply reliability Conjunctive use 	WS.7* Meet all drinking water and wastewater discharge standards
Secondary Benefit:	WS.8 Provide 100% reliability of municipal and industrial water supplies
 Water conservation 	WS.9 Provide agricultural water supplies to support a robust agricultural industry
	WS.10* Optimize the rural storm water conveyance system to drain and retain storm water flows as necessary. Provide proper rural drainage and keep conveyance systems clear of debris to minimize county road flooding during storm events.
	WS.11* Enable proper rural retention and modify rural landscape to maximize groundwater recharge of excess storm water.

Note:

1.2.2.3 Flood Management Benefit Category

The main benefit of the Flood Management (FM) Benefit Category is decreased flood risk by reducing runoff rate and/or volume. There are seven SWRP Objectives that result in flood management benefits. Of these, five can contribute to at least one additional Benefit Category:

- 1. FM.2 can result in water quality benefits in addition to flood management benefits.
- 2. FM.4 can result in water quality and water supply benefits in addition to flood management benefits.

- 3. FM.5 can result in water quality and water supply benefits in addition to flood management benefits.
- 4. FM.6 can result in water supply benefits in addition to flood management benefits.
- 5. FM.7 can result in water supply benefits in addition to flood management benefits.

Benefits	Yolo County Storm Water Resource Plan Flood Management (FM) Objectives
	FM.1 Provide adequate flood protection
	FM.2* Manage watershed activities to reduce large erosion events
Main Benefit:	FM.3 Minimize accidental wastewater spillage/discharges
 Decreased flood risk by reducing runoff 	FM.4* Reduce public health risks by reducing contaminants in drinking water sources.
rate and/or volume	FM.5* Meet all drinking water and wastewater discharge standards.
 Secondary Benefit: Reduced sanitary sewer overflows 	FM.6 * Optimize the rural storm water conveyance system to drain and retain storm water flows as necessary. Provide proper rural drainage and keep conveyance systems clear of debris to minimize county road flooding during storm events.
	FM.7 * Enable proper rural retention and modify rural landscape to maximize groundwater recharge of excess storm water.

Note:

1.2.2.4 Environmental Benefit Category

The main benefit of the Environmental (EN) Benefit Category is environmental and habitat protection and improvement and increased urban green space. There are 11 SWRP Objectives that result in environmental benefits. Of these, five can contribute to at least one additional Benefit Category:

- 6. EN.1 can result in water quality benefits in addition to environmental benefits.
- 7. EN.8 can result in water quality and flood management benefits in addition to environmental benefits.

- 8. EN.9 can result in water supply and community benefits in addition to environmental benefits.
- 9. EN.10 can result in water quality, water supply, and community benefits in addition to environmental benefits.

10. EN.11 can result in community benefits in addition to environmental benefits.

	Benefits	Yolo County Storm Water Resource Plan Environmental (EN) Objectives
м	ain Benefit:	EN.1* Restore native vegetation/form/function along riparian/aquatic corridors
•	Environmental and habitat protection and improvement,	EN.2 Quantify the extent of suitable life-cycle habitat for Threatened/Endangered/Imperiled native fish
including;	including;	EN.3 Prioritize/plan/schedule improvements to suitable life-cycle habitat for T/E/I
• wetland enhancemen		native fish
	creation;	EN.4 Increase availability of suitable life-cycle babitat for
•	riparian enhancement; and/or	Threatened/Endangered/Imperiled native fish identified
•	instream flow improvement	EN.5 Prevent colonization by quagga mussels/zebra mussels and eliminate/prevent spread of New Zealand mud snails
•	Increased urban green space	EN.6 Establish invasive plant management plan
 Secondary E Reduce e greenhou emissions a carbon 	condary Benefit:	EN.7 Implement invasive plant management plan
	Reduce energy use,	EN.8* Manage watershed activities to reduce large erosion events
	emissions, or provide a carbon sink	EN.9* Monitor state/federal Delta programs
•	Reestablish of the natural hydrograph	EN.10* Maintain/enhance watershed and natural resource monitoring network and information sharing
•	Water temperature improvements	EN.11 * Convert paved and/or impervious areas and increase tree canopy and vegetation, reducing urban heat island effects

Note:

1.2.2.5 Community Benefit Category

The main benefit of the Community (CO) Benefit Category is employment opportunities provided and public education. There are seven SWRP Objectives that result in community benefits. Of these, four can contribute to at least one additional Benefit Category:

- 1. CO.4 can result in water quality and environmental benefits in addition to community benefits.
- 2. CO.5 can result in water quality and water supply benefits in addition to community benefits.
- 3. CO.6 can result in water quality, water supply, and environmental benefits in addition to community benefits.
- 4. CO.7 can result in environmental benefits in addition to community benefits.

Benefits	Yolo County Storm Water Resource Plan Community (CO) Objectives
	CO.1 Provide and promote use of educational curricula for K-12 students
Main Benefit: Employment	CO.2 Provide educational information to encourage stewardship by public
opportunities	CO.3 Maintain and increase water-related recreational opportunities
Public education	CO.4* Monitor state/federal Delta programs
Secondary Benefit: Community	CO.5* Monitor conditions/improve understanding to support sustainable groundwater basins
 involvement Enhance and/or create recreational and public 	CO.6* Maintain/enhance watershed and natural resource monitoring network and information sharing
use areas	C0.7* Convert paved and/or impervious areas and increase tree canopy and vegetation, reducing urban heat island effects

Note:

1.4 Plan Organization

This SWRP is divided into the following sections as outlined below:

- Section 1 Introduction and SWRP Objectives: provides an overview of the document and identifies the storm water management objectives of this SWRP.
- Section 2 Watershed Identification: identifies the SWRP boundary and watersheds within the planning area.
- Section 3 Water Quality Compliance: identifies water quality issues within the major watersheds, including pollutants identified on the 303(d) list of impaired water bodies or with relevant TMDLs. This section also includes discussion of the SWRP in relation to applicable TMDL Implementation Plans (IPs) and MS4 Permits.
- Section 4 Organization, Coordination, and Collaboration: describes the community engagement process that occurred during plan development, including identification of stakeholders, an overview of the existing Westside IRWM group, and the mechanisms used to engage stakeholders and the public in plan development.

- Section 5 Identification and Prioritization of Projects: includes a list of previously identified projects, the process of site selection and development of SWRP projects, conceptual designs for each SWRP project, the methodology and results for quantification of water supply and water quality benefits of proposed projects, and prioritization of both SWRP and previously identified projects.
- Section 6 Implementation Strategy and Schedule: outlines programs to assist in implementation of strategies identified in this SWRP, including community outreach during project development. This section also discusses how current monitoring required by the MS4 Permits will be utilized as part of the adaptive management process, in addition to a general schedule of SWRP milestones.
- Section 7: Education, Outreach and Public Participation.
- Section 8: References

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