

Table 4-1: Upper Pajaro Watershed Priority Actions

Number	Watershed Actions	Description	Activity Type	Potential Partner Agencies	Involved Valley Water Department	Implementation Timeframe (years)	Valley Water Cost Estimate *
Climate Change (CC) - Short Term Actions							
CC-01	Complete Reservoir Greenhouse Emission Study and evaluate results.	Valley Water is conducting a collaborative project with the University of California, Davis, to study greenhouse gas emissions from the surfaces of Almaden, Chesbro, Stevens Creek, and Uvas reservoirs. The primary goal of the study is to better estimate greenhouse gas emissions from all Valley Water reservoirs. Since January 2021, researchers have completed quarterly sampling to measure gas storage in reservoir sediments and greenhouse gas fluxes from reservoir surfaces in conjunction with monthly measurements of atmospheric and water quality data. Data collection will continue through 2023, and results will be synthesized in a final report. Valley Water will evaluate the inclusion of reservoir-related emissions into its agencywide greenhouse gas inventory and other potential next steps after the completion of this study.	Assessment/ Study; Partnership	UC Davis	Environmental Planning Unit	0-10	\$\$
Ecological Resources Actions (ECO) - Short Term Actions							
ECO-01	Partner with Santa Clara Valley Open Space Authority and other organizations to expand and enhance floodplain at Pajaro River Agricultural Preserve.	The VHA and OSA are planning ecosystem enhancements in collaboration with The Nature Conservancy at OSA's Pajaro River Agricultural Preserve that could increase jurisdictional water acres and contribute to multiple One Water metrics. Part of the planning area is on and adjacent to Valley Water property. Valley Water's Carnadero Preserve and Pajaro Freshwater Wetland are award-winning examples of habitat creation, enhancement, and farmland conservation that could serve to inform efforts on the Pajaro River Agricultural Preserve. This action is to support the planning, design, and implementation of this project through technical assistance and streamlined encroachment permitting for access to Valley Water property.	Project; Partnership	Pajaro River Watershed Flood Prevention Authority, VHA, OSA, RCDs, non-profit organizations, native tribes, San Benito County	Environmental Mitigation and Monitoring Unit, Community Projects Review Unit	0-10	\$\$
ECO-02	Partner with organizations in San Benito County to conserve and enhance San Felipe Lake.	San Felipe Lake is a critical wetland, rare plant, and wildlife resource that needs additional conservation and enhancement. Although it is in San Benito County, it receives water from and discharges into Santa Clara County via Pacheco Creek and Pajaro River, respectively. There is significant potential to allow to channels meander more, while restoring ecological function and increasing their capacity to slow, spread, and sink. Only parts of the lake are under conservation easement, and this easement may be restricted to an agricultural easement, but a land management conservation easement is important for maximizing habitat for rare species. The current management of natural areas surrounding San Felipe Lake is geared towards ranching and agriculture, and unnaturally-timed summer water releases, along with discing (for agriculture) and cattle trampling and compaction, negatively impact the fragile wetlands and adjacent alkaline grassland that fringe San Felipe Lake and its flood plain. This action includes planning, design and implementation.	Assessment/ Study; Project; Partnership	San Benito County, RCDs, native tribes, land trusts, other non-profit organizations	Environmental Mitigation and Monitoring Unit	0-10	\$\$\$
ECO-03	Develop a program and best management practices to incorporate tribal involvement, traditional ecological knowledge, and cultural resource protection into Priority Actions.	Open space preservation and ecological enhancement actions provide opportunities to preserve and enhance tribal cultural resources. These opportunities can be most fully realized when tribes are engaged members of planning, implementing, and using such actions. Tribes can benefit from the reconnection with their ancestral homeland, and the land can benefit from their traditional management practices. This action includes planning and program development, led by Valley Water's Office of Racial Equity, Diversity, and Inclusion.	Partnership; Policy	Native tribes (Amah Mutsun, Tamien Nation)	Office of Racial Equity, Diversity, and Inclusion	0-10	\$
ECO-04	Expand and enhance riparian and wetland habitat at the Carnadero Preserve.	Valley Water's 170-acre Carnadero Preserve is for habitat enhancement and compatible farming. Some riparian and wetland habitats have been successfully restored and created at the Preserve already. There are approximately 60 acres of farmland present within the Preserve that do not have a water supply or that frequently flood for prolonged periods in the winter. These areas are suitable for the creation and expansion of riparian and perennial and seasonal wetland habitat that can contribute to wildlife habitat and connectivity, help store high flows and reduce downstream flow magnitude, and buffer creeks from runoff and associated water quality impairment.	Project	VHA, Regional Board, USFWS, CDFW, native tribes	Environmental Mitigation and Monitoring Unit	0-10	\$\$

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Number	Watershed Actions	Description	Activity Type	Potential Partner Agencies	Involved Valley Water Department	Implementation Timeline (years)	Valley Water Cost Estimate*
ECO-05	Continue and expand the temperature monitoring program on Llagas, Uvas, and Pacheco Creeks and use results to inform future habitat enhancement actions.	Temperature monitoring is critical to understanding the steelhead life history stage(s) that creeks can support and making informed aquatic habitat enhancement decisions. Monitoring by Valley Water is ongoing along these creeks but will need to be continued, expanded, and analyzed to select appropriate enhancement actions and areas. Partners could play an important role in expanding the monitoring program, and applying the results to aquatic habitat enhancement plans. This action is a study and program.	Program; Partnership	NMFS, CDFW, non-profit organizations	Environmental Mitigation and Monitoring Unit, Environmental Planning Unit	0-10	\$
ECO-06	Assess modified channels to identify strategies and priorities to enhance ecological conditions.	Straightened, trapezoidal channels, many of which are owned and/or maintained by Valley Water, reduce the ecological condition of riverine habitat in the watershed. The form and function of modified channels and other low scoring riverine/riparian reaches (based on CRAM scores) can be improved by expanding floodplains, adding aquatic habitat complexity, allowing for or planting more native vegetation, reducing the amount of invasive plants, and expanding and improving buffers around creeks. Valley Water can prioritize this work where it would also provide community benefits, such as trails, shade, and views of nature, and/or where channels or adjacent access roads are failing or at risk of doing so. This action includes planning and design.	Assessment/ Study	USACE, non-profit organizations, municipalities, native tribe	Environmental Mitigation and Monitoring Unit, Watershed Field Operations Unit	0-10	\$\$
ECO-07	Identify locations and strategies to remove non-native vegetation that has encroached upon and is stabilizing gravel bars.	Gravel bars are important features of suitable habitat for steelhead, but must be able to mobilize periodically to be usable and beneficial. Drought and other environmental conditions can contribute to the expansion of non-native riparian vegetation and the armoring of historically mobile stream features. Removal of such vegetation is a relatively low-effort way of enhancing aquatic habitat, and should be prioritized on gravel bars that are in accessible reaches and otherwise highly suitable habitat for various salmonid life-stages and where the encroaching vegetation is a non-native invasive species. This action is a study to identify these locations and plan for doing the work.	Assessment/ Study; Partnership	CDFW, NMFS, non-profit organizations	Environmental Mitigation and Monitoring Unit	0-10	\$\$
ECO-08	Protect and restore natural hydrologic and ecological processes for the recruitment, establishment, and management of Sycamore Alluvial Woodland on Pacheco Creek.	Pacheco Creek has one of the largest remaining and highest quality stands of SAW in California, which depend on periodic and episodic high pulse flow events (estimated to be a 10 to 20 year flood event at 9,000-12,000 cfs) to maximize sediment redistribution and scour, form coarse sediment bars and braided and cobbled-bedded channels, and to remove other woody vegetation that competes with sycamores. These conditions, coupled with natural summer dry backs, are necessary to create the substrate conditions and water availability for sycamore recruitment and establishment. Providing a natural hydroperiod for sycamore recruitment and maintenance of existing SAW stands, and the infrastructure necessary to manage both pulse flows and dry backs at the appropriate times, should be a critical part of Pacheco Creek flow management decisions, given the statewide importance of this occurrence. While other stands of SAW occur in Santa Clara County, the Pacheco Creek SAW occurrence is by far the most critical for conservation.	Assessment/ Study, Project, Program, Partnership	Santa Clara Valley Habitat Agency, The Nature Conservancy	Environmental Mitigation and Monitoring Unit, Watershed Field Operations Unit	0-10	\$\$\$\$
ECO-09	Participate in development of the Pacheco Pass Wildlife Overpass Planning Project by providing technical support to Santa Clara Valley Habitat Agency and other project partners.	The Santa Clara Valley Habitat Agency and partners including Valley Water are working to install a wildlife overpass of Hwy 152 at Pacheco Pass. This project will use past and future scientific studies, including roadkill monitoring and tracking of collared mountain lion and tule elk, to identify suitable locations for a wildlife overpass. Valley Water can support this effort through information sharing and technical support. VW staff are participating in the Pacheco Pass working group.	Partnership; Project	VHA, Caltrans, Valley Transportation Authority, CDFW, USFWS	Environmental Mitigation and Monitoring Unit	0-10	\$\$\$\$

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ECO-10	Assess fish passage barriers and impediments throughout watershed and prioritize their remediation.	Physical fish passage barriers have been inventoried and should be removed or remediated, generally from downstream to upstream. Passage impediments from water extraction should also be addressed, potentially through landowner education and technical support. Llagas Creek subwatershed has the most passage impediments; Uvas Creek subwatershed has the most valuable habitat for steelhead. Prioritization depends on landowner permission and funding availability. Valley Water should remediate those that they own and in partnership with public landowners, but should also support the efforts of partners to remediate those on private property. This action includes improvements to existing wet crossings on Uvas-Carnadero Creek, some of which Trout Unlimited has already developed plans for. Wet crossing improvements also have the potential to address sediment and water quality issues.	Assessment/ Study	NMFS, CDFW, VHA, County Parks, RCDs, native tribes, Trout Unlimited	Environmental Mitigation and Monitoring Unit	0-10	\$\$
ECO-11	Assess and prioritize opportunities to expand and connect riparian corridors around channels, particularly where they are missing or only very narrow.	Vegetated buffers around channels, typically referred to as riparian corridors, provide myriad ecosystem services, but have been removed or are only very narrow along many miles of channel. Forest, shrubland, grassland, and wetland communities can all be appropriate to establish, depending upon physical, groundwater, and land use conditions, and could be incorporated into multiple-benefit efforts for wildlife connectivity, groundwater recharge, and/ or flood risk reduction. Such efforts would need to be balanced with agricultural land uses and landowner needs, and farmland that floods frequently could be used to focus landowner outreach efforts. Valley Water should implement this action on its land and in association with other projects, but can also support the efforts of partners to implement this action on private property. This action includes planning, design, and implementation.	Assessment/ Study	VHA, OSA, RCDs, native tribes, POST, Point Blue, non-profit organizations	Environmental Mitigation and Monitoring Uni	0-10	\$\$
ECO-13	Partner to protect and conserve sensitive natural communities.	The Upper Pajaro River Watershed still supports relics of once expansive alkali meadows, seasonal wetlands, alkaline wetlands, SAW and other sensitive natural communities. They provide critical habitat for a variety of protected plant and animal species, wildlife connectivity, and other ecosystem services. These areas should be priorities for preservation, as well as protective buffers around them. Currently very few to none of these sensitive communities are protected and many are threatened by altered hydrology, ranching and farming. By identifying conservation partners and providing funding for conservation easements, land acquisition, or other measures, Valley Water can maintain and restore these fragile areas and their ecological relationships. Examples of conservation strategies include maintaining the natural hydrology and not diverting water for agricultural or other land use in the vicinity of fragile alkaline wetlands; timing of cattle grazing/ranching activities to avoid compaction, trampling or overgrazing of wetland and adjacent upland areas; and avoiding alkali meadows during agriculture and discing activities.	Partnership	VHA, County Parks, OSA, San Benito County, land trusts, native tribes, non-profit organizations	Environmental Mitigation and Monitoring Unit	0-10	\$\$\$
ECO-14	Improve suitable spawning and rearing habitat for steelhead trout and salmon by adding coarse sediment and large wood to creeks where physically appropriate and most ecologically valuable in the Upper Pajaro Watershed.	The addition of gravel, other coarse sediment, large wood, pools >1.5 ft deep, and restoration of pool-riffle morphology would improve habitat conditions especially in the Uvas Creek subwatershed and mitigate the effects of Uvas Dam on sediment supply. The Study of Santa Clara County Steelhead Streams to Identify Priority Locations for Gravel Augmentation and Large Woody Debris Placement Santa Clara County, California (Balance Hydrologics, 2018) projects #UC1-1, UC4-3, and UC4-5 have already been identified as feasible and appropriate, but still require design and construction. Additional locations (such as UC4-1) will require planning, design, and construction.	Assessment/ Study; Partnership	NMFS, CDFW, Water Board, RCDs, native tribes, non-profit organizations	Environmental Mitigation and Monitoring Unit	0-10	\$\$
ECO-14.1	Design and construct Uvas Creek project UC1-1 from the Study of Santa Clara County Steelhead Streams to Identify Priority Locations for Gravel Augmentation and Large Woody Debris Placement.	The Study of Santa Clara County Steelhead Streams to Identify Locations for Gravel Augmentation and Large Woody Debris Placement (Balance Hydrologics, 2018) identified Uvas Creek project UC1-1 as feasible and appropriate to add both gravel and large woody debris to increase spawning habitat, sediment mobility, and channel complexity. A gravel injection project at this location still requires design and construction.	Project	NMFS, CDFW, Water Board, RCDs, native tribes, non-profit organizations	Environmental Mitigation and Monitoring Unit	0-10	\$\$

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ECO-14.2	Design and construct Uvas Creek project UC4-3 from the Study of Santa Clara County Steelhead Streams to Identify Priority Locations for Gravel Augmentation and Large Woody Debris Placement.	The Study of Santa Clara County Steelhead Streams to Identify Locations for Gravel Augmentation and Large Woody Debris Placement (Balance Hydrologics, 2018) identified Uvas Creek project UC4-3 as a feasible and appropriate location to add both gravel and large woody debris to increase spawning habitat, sediment mobility, and channel complexity. Valley Water’s Stream Maintenance Program completed Project #2 at UC4-3 (installation of large woody debris) in 2021 to increase channel cover and complexity. Downstream reaches may also benefit from gravel placement as gravel is transported. A gravel injection project at this location still requires design and construction.	Project	NMFS, CDFW, Water Board, RCDs, native tribes, non-profit organizations	Environmental Mitigation and Monitoring Unit	0-10	\$\$
ECO-14.3	Design and construct Uvas Creek project UC4-5 from the Study of Santa Clara County Steelhead Streams to Identify Priority Locations for Gravel Augmentation and Large Woody Debris Placement.	The Study of Santa Clara County Steelhead Streams to Identify Locations for Gravel Augmentation and Large Woody Debris Placement (Balance Hydrologics, 2018) identified Uvas Creek project UC4-5 as a feasible and appropriate location to add gravel and large woody debris to increase spawning habitat, sediment mobility, and channel complexity. Valley Water’s Stream Maintenance Program completed Project #2 and Project #3 at UC4-5 (installation of large woody debris) in 2021 to increase channel cover and complexity. A gravel injection and/or gravel bar construction project at this location still requires design and construction.	Project	NMFS, CDFW, Water Board, RCDs, native tribes, non-profit organizations	Environmental Mitigation and Monitoring Unit	0-10	\$\$
ECO-14.4	Design and construct Llagas Creek Site 01 from the Second Phase Study of Santa Clara County Steelhead Streams to Identify Priority Locations for Gravel Augmentation and Large Woody Debris Placement Project.	The Second Phase Study of Santa Clara County Steelhead Streams to Identify Priority Locations for Gravel Augmentation and Large Woody Debris Placement Project (AECOM, 2024) identified Llagas Creek Site 01 as feasible and appropriate location to add gravel and large woody debris to increase instream shelter and complexity. The site is located immediately downstream of confluence of the channels flowing from the Chesbro Dam spillway and piped outlet pool. Habitat at the site includes a sequence of short runs, riffles and glides. Design includes removal of invasive Arundo donax, injection of a 12 cubic yard gravel pile, addition of 2 rootwad logs, and development of a permanent access path off the existing access road. Project still requires further design and construction prior to action implementation.	Project	NMFS, CDFW, Water Board, RCDs, native tribes, non-profit organization	Environmental Mitigation and Monitoring Unit	0-10	\$\$
ECO-14.5	Design and construct Pacheco Creek Site 01 from the Second Phase Study of Santa Clara County Steelhead Streams to Identify Priority Locations for Gravel Augmentation and Large Woody Debris Placement Project.	The Second Phase Study of Santa Clara County Steelhead Streams to Identify Priority Locations for Gravel Augmentation and Large Woody Debris Placement Project (AECOM, 2024) identified Pacheco Creek Site 01 as feasible and appropriate location to add gravel and large woody debris to improve spawning habitat, instream shelter, and complexity. Site is located immediately downstream of the Pacheco Dam spillway plunge pool. Habitat at the site includes a 91 foot long high gradient riffle and a 77 foot long glide. Design includes replenishable gravel injection pile at the head of the existing riffle and the addition of 2 rootwad logs. Project still requires further design and construction prior to action implementation.	Project	NMFS, CDFW, Water Board, RCDs, native tribes, non-profit organizations	Environmental Mitigation and Monitoring Unit	0-10	\$\$
ECO-15	Develop Upper Pajaro Native Ecosystem Enhancement Tool to coordinate and inform long term habitat conservation planning.	There are many opportunities for conservation and ecological enhancement that can safeguard against incompatible development, reduce flood risk, improve water quality and wildlife connectivity, among other benefits and that could be undertaken by a variety of organizations. A watershed-scale tool that provides more specific guidance on where different enhancement actions should be physically and ecologically appropriate, given land ownership and the value of agricultural land uses in the watershed, will be instrumental to coordinating, prioritizing, planning, and eventually implementing such actions. The Pajaro Compass is an important step in this direction, and the Coyote Creek Native Ecosystem Enhancement Tool is an example of such a resource that is publicly available, updated, and maintained. This action includes study and planning.	Assessment/ Study; Partnership	VHA, RCDs, CDFW, Water Board, NMFS, USFWS, non-profit organizations, County Parks, OSA, land trusts, native tribes	Environmental Mitigation and Monitoring Unit, Stream Maintenance Program	0-10	\$\$

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ECO-16	Incorporate restoration of areas impacted by unsheltered encampments into Stream Maintenance Program.	Existing creekside encampment locations are tracked and mapped by Valley Water staff. After working with partners to reduce the prevalence of encampments within waterways and provide new housing for unsheltered individuals, impacted areas must be remediated and restored by removing trash and pollutants and replanting disturbed vegetation. A program to restore impacted areas can be integrated into the Stream Maintenance Program. Restoration of areas impacted by encampments can be utilized as mitigation credit for other Valley Water activities.	Program	VW, municipalities, Santa Clara County, non-profit organizations	Unhoused Task Force	0-10	\$
ECO-17	Develop and incorporate vegetation cover guidelines for use when developing project mitigation to decrease wildfire risk to native habitats.	Complying with permit requirements for vegetation cover can result in plant and canopy densities that exacerbate the risk and severity of wildlife in riparian habitats, which are typically more resistant to wildfire, and nearby residential and commercial areas. Technical information should be evaluated to identify vegetation cover goals that result in environmental benefits without significantly increasing wildfire risks. Permitting agencies should be involved in this evaluation so that there is trust when the guidance is used in mitigation and revegetation plans. This action is a study and plan/program.	Policy	N/A	Environmental Mitigation and Monitoring Unit, Vegetation Field Operations Unit	0-10	\$
Flood Risk Reduction (FRR) - Short Term Actions							
FRR-01	Identify and assess open space areas adjacent to creeks compatible with flood detention and environmental protection for incorporation into future flood protection projects.	<p>The Pajaro Watershed does not drain into the San Francisco Bay as the other watersheds in Santa Clara County, but instead drains southwest to Santa Cruz and Watsonville where Pajaro River ultimately enters the Pacific Ocean. There is concern for potential induced flooding in those downstream areas with any flood protection measures in the Pajaro Watershed that increase the flows downstream. Flood detention measures reduce flows downstream and could provide flood risk reduction benefits for not only Santa Clara County but San Benito and Santa Cruz counties as well.</p> <p>Instead of raising floodwalls and/or levees, identifying and utilizing recreational areas for potential flood risk reduction projects (i.e., McKelvey Park Baseball detention basin), will resolve various issues such as higher construction, operations, and maintenance costs and reducing significant environmental impacts and mitigation costs. Feasibility and planning studies will need to be developed as well as coordinating support from city/county entities that may share right-of-way/land rights to determine appropriate maintenance operations post design and construction.</p> <p>Valley Water has begun coordinating with the Santa Clara Valley Open Space Authority to pursue this concept at the Pajaro River Agricultural Preserve (see ECO-1)</p>	Assessment/ Study	Santa Clara County Parks and Recreation Department, City of Morgan Hill, City of Gilroy, OSA, Loma Prieta RCD, Farm Bureau, Santa Clara County Planning, PRWFPA	Watersheds Stewardship and Planning Division, Hydrology, Hydraulics, and Geomorphology Unit	0-10	\$\$
FRR-02	Complete planning and design and implement Lower Llagas Creek Capacity Restoration Project.	<p>This project plans, designs, and constructs improvements on 7.15 miles of Lower Llagas Creek, from Buena Vista Avenue to Pajaro River, to accomplish the following objectives:</p> <ol style="list-style-type: none"> 1. Evaluate the current flood risk in the area surrounding the project versus the design level flood risk 2. Develop options to provide flood protection for Lower Llagas Creek Reaches 2 and 3 in accordance with Federal Emergency Management Agency criteria where applicable 3. Identify feasible opportunities for environmental restoration and corridor preservation 4. Coordinate planning, design, and construction efforts with the South County Regional Wastewater Authority 	Project	City of Gilroy	Business Planning and Analysis, Watersheds Design and Construction Unit 6	0-10	\$\$\$\$
FRR-03	Support Valley Transportation Authority's implementation of US 101/SR 25 Interchange Project - Phase 1	Valley Transportation Authority and Caltrans are working to resolve the traffic congestion issues at the intersection of Highway 101 and State Route 25. Phase 1 of the project will reconstruct the US 101/SR 25 interchange slightly north of the current interchange. Construction of culverts and detention basins are included in the project, which would alleviate recurrent flooding of Highway 101 in the vicinity. There is risk of flooding in this area from Gavilan Creek which crosses under Highway 101 near the intersection as well as from Uvas Creek further north. This project would reduce the flood risk coming from Gavilan Creek. Valley Water coordinated with Valley Transportation Authority during project planning and design. Project also includes wildlife passage improvements including fencing, jump-outs, median retrofits, and a new undercrossing to reduce roadkill. Construction is expected to begin in 2024 and finish in 2027.	Project; Partnership	VTA, CalTrans	Community Projects Review Unit	0-10	\$

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FRR-04	Analyze flood risk by completing hydraulic modeling for the Upper Pajaro Watershed.	<p>The Pajaro watershed is the most outdated of the major watersheds when it comes to hydraulic modeling and determining the existing flood risk. There are many channels that have not been modeled and others with outdated flood risk data. Although much of the watershed is rural and agricultural, it is still necessary to have an understanding of the true flood risk. As well as structures, it is vital to protect our roadways (Highway 101 has flooding issues), critical facilities (there is a wastewater treatment plant within the Uvas Creek floodplain), and farmland from flood waters.</p> <p>Channels with outdated, minimal or no flood risk analysis include: the Soap Lake region with Pajaro River, Miller’s Canal, some agricultural canals, and portions of Uvas Creek, Pacheco Creek, Tesquisquita Slough, and Ortega Creek; Pacheco Creek; Tesquisquita Slough; Jones Creek and its tributaries; Uvas Creek upstream of Santa Teresa Blvd.; Lower Miller Slough; Princeville drain; and several Upper Llagas Creek tributaries in the eastern portion of the watershed.</p> <p>Once the flood risk has been analyzed and updated, the next step can be to remap the FEMA flood maps and update the flood zone designations where necessary. This work can be done by Valley Water under Safe, Clean Water Program Priority F3 and submitted to FEMA for potential updates to their flood mapping and Flood Insurance Studies (FIS).</p>	Assessment/ Study	San Benito County, Pajaro River Watershed Flood Prevention Authority	Watersheds Stewardship and Planning Division, Hydrology, Hydraulics, and Geomorphology Unit	0-10	\$\$
FRR-05	Request updates to FEMA flood maps and flood zone designations upon completion of hydraulic modeling.	Once the flood risk has been analyzed and updated, the next step is to partner with cities and FEMA to update the flood zone designations as appropriate. Much of the watershed is designated as Zone D in the FEMA flood maps, which is used to designate areas with possible but undetermined flood hazards. By updating the hydraulic analysis in the watershed, Valley Water can provide a more accurate picture of what the existing flood risk is in the watershed, and better prepare and inform the public of this flood risk. This action can occur as progress is made on flood modeling called for in FRR-04.	Partnership	FEMA, Cities of Morgan Hill and Gilroy	Watersheds Stewardship and Planning Division, Hydrology, Hydraulics, and Geomorphology Unit	0-10	\$\$
FRR-06	Complete Upper Llagas Creek Flood Protection Project.	<p>In April 2022, Valley Water completed Phase 1 construction. It included channel excavation, construction of the on-site compensatory mitigation, Lake Silveira wetlands, Masten Avenue Bridge concrete underpinning, Monterey Road Bridge concrete lining, installation of rock slope protection, storm drain outfall modifications, removal of concrete rubble, debris and legacy trash, and destruction of monitoring wells. It also included the installation of bat boxes, as well as removal of 12.5 acres of invasive blackberry at Lake Silveira and excavation to restore 2,000 linear feet of Llagas Creek from Lake Silveira towards Monterey Highway.</p> <p>Phase 2A construction began in June 2021 within a portion of Reach 8 in downtown City of Morgan Hill. Phase 2A includes approximately 2,300 linear feet of a horseshoe-shaped underground tunnel and approximately 1,600 linear feet of twin Reinforced Concrete Box Culverts (RCBs) upstream and downstream of the proposed tunnel to carry high water flows. Low flows will remain within the existing creek that winds through downtown Morgan Hill. Construction is expected to be completed in FY24.</p> <p>Phase 2B construction consists of approximately 1,900 linear feet of twin reinforced concrete box culverts, creek modifications and excavation by widening and deepening, installation of culverts at various street crossings, construction of an inlet basin weir split-flow structure and bridge underpinning work. It also includes installation of instream complexities, removal of plantings and non-native plantings, habitat enhancements, revegetation, utility relocations and coordination, outfall modifications, aggregate base maintenance roads, access ramps, and community outreach and coordination. Upon completion of Phases 1, 2A and Phase 2B, the project will provide flood protection to 1,100 homes, 500 businesses and 1,300 agricultural acres while improving stream habitat.</p>	Project	USACE, City of Morgan Hill	Business Planning and Analysis, Watersheds Design and Construction Unit 3	0-10	\$\$\$\$\$
FRR-10	Improve coordination for intercounty flood protection and by maintaining communication and information sharing with partner agencies.	The Pajaro Watershed is managed for many purposes at many scales by numerous agencies. Additional assessment of flood vulnerabilities and dynamics are required to comprehensively understand flood risks throughout the Pajaro Watershed and the downstream impacts of upstream actions. In addition to Valley Water, San Benito, Monterey and Santa Cruz counties are considering flood control actions along the Pajaro River and Pacheco Creek. Valley Water can improve coordination and ensure its projects are compatible by sharing information about its flood vulnerability analyses, communicating about its management of flood risk, and participating in Pajaro River Watershed Flood Prevention Authority meetings.	Partnership	Pajaro River Watershed Flood Prevention Authority, San Benito County, Santa Cruz County, Monterey County, Central Coast Regional Water Quality Control Board, Pajaro River Watershed Flood Prevention Authority	Watersheds Stewardship and Planning Division, Hydrology, Hydraulics, and Geomorphology Unit	0-10	\$

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FRR-11	Complete Planning Study for Uvas-Carnadero Creek from Luchessa Avenue to Highway 25.	<p>This planning study would assess opportunities to construct flood risk reduction measures along approximately 4.5 miles of Uvas Creek from Highway 25 up to Luchessa Avenue. Portions of this reach have less than 10-year capacity and have frequently flooded Highway 101 just north of where Uvas Creek crosses under the highway. Highway 101 is the major throughway in this area and its flooding creates significant transportation challenges. There are approximately 400 acres and 5,466 parcels at risk of flooding from a 25-year flood event.</p> <p>The creek upstream of this reach has 100-year protection with levees up to Santa Teresa Blvd. The creek downstream of this reach floods but is actually a part of the San Felipe Lake flooding issues and should be considered as part of ECO-2. The cost estimate provided includes the cost to complete a planning study for the project.</p>	Assessment/ Study	USACE	Hydrology, Hydraulics, and Geomorphology Unit; Design and Construction Unit 6	0-10	\$\$\$
FRR-12	Complete Planning Study for East/West Little Llagas Creek from Watsonville Road to Highway 101.	<p>This planning study would assess opportunities to construct flood risk reduction measures along approximately 1.5 miles of West Little Llagas Creek from Watsonville Road to Highway 101. Rural areas surrounding this portion of creek in San Martin and Morgan Hill experience recurrent flooding with approximately 460 acres and 180 parcels at risk of flooding from a 25-year flood event.</p> <p>The flooding area immediately adjacent to the creek is within a disadvantaged community and experiences recurrent flooding with high depths and velocities due to the limited capacity of the channel. The flood flows would continue traveling south during a 25-year flood event, becoming shallow sheet flow between Upper Llagas Creek and Highway 101.</p>	Assessment/ Study	USACE	Hydrology, Hydraulics, and Geomorphology Unit; Design and Construction Unit 6	0-10	\$\$\$
Water Quality (WQ) - Short Term Actions							
WQ-01	Support efforts led by University of California Cooperative Extension, Resource Conservation Districts, Natural Resource Conservation Service, and Santa Clara County Division of Agriculture to educate and assist farmers and landowners in implementing land management practices to improve water quality and enhance natural resources.	Outreach and incentive programs (funding and technical assistance) can help private landowners and farmers manage their lands and incorporate practices that can benefit them and the environment. The focus of such efforts should include pesticide and nutrient management and mitigation; agricultural runoff and fine sediment control, such as furrow alignment and vegetated buffers; water conservation; vegetation management for habitat and wildlife movement; and rodenticide reduction. Valley Water can explore ways in which it can provide funding and technical assistance in partnership with RCDs, NRCS and the Santa Clara County Division of Agriculture to promote the adoption of practices such as those listed above.	Partnership	UC Cooperative Extension, RCDs, NRCS, Farm Bureaus, Water Board, non-profit organizations, municipalities	Environmental Planning Unit	0-10	\$
WQ-02	Partner with Santa Clara County, cities, and other organizations to reach a functional zero number of unsheltered people residing on Valley Water lands along waterways.	Encampments within and adjacent to waterways and Valley Water facilities pose numerous human health, safety, operational, and environmental challenges. Valley Water can play an important role in assisting unsheltered individuals residing on its land and addressing the associated impacts to water quality, ecological resources, recreational facilities, and others. Staff are developing a framework to address these challenges, which may include enhancing services to remove trash and pollutants generated by encampments, participation in countywide collaboration to address the lack of housing and creekside encampments, utilizing Valley Water-owned property for housing development, and other efforts. This action will be implemented in a manner consistent with Board Ends Policy E-6 once it is approved.	Partnership	RCDs, Farm Bureaus, Water Board, non-profit organizations, municipalities	Watersheds Operations and Maintenance Unit	0-10	\$\$
WQ-03	Expand water quality monitoring program to close critical data gaps.	This action seeks to address existing gaps in water quality data identified by staff. In the Upper Pajaro River Watershed, including Chesbro and Uvas Reservoirs. Monitoring activities could include quarterly surface and depth profile measurements for general water quality, seasonal sampling for algal toxins, and annual or every other year fish monitoring for mercury and other contaminants.	Program	N/A	Environmental Mitigation and Monitoring Unit, Environmental Planning Unit	0-10	\$\$
WQ-04	Continue to partner with the Cities of Gilroy and Morgan Hill and Santa Clara County to identify opportunities and actions to reduce bacteria and sediment loads within the Llagas and Uvas Creeks.	Partner with Cities of Gilroy and Morgan Hill and Santa Clara County (South County) on special studies, structural, and non-structural actions to improve water quality in Llagas and Uvas Creeks. Building off past sampling events, a special study was recently completed at 15 sites to understand/ find the source of bacteria. This was sponsored by the South County agencies. The municipalities need additional resources to continue with future studies to help determine best solutions for bacteria and sediment in the Upper Pajaro River watershed.	Partnership	City of Morgan Hill, Santa Clara County	Environmental Planning Unit	0-10	\$

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Number	Watershed Actions	Description	Activity Type	Potential Partner Agencies	Involved Valley Water Departments	Implementation Timeline (Years)	Valley Water Cost Estimate *
WQ-05	Partner with cities to reduce and prevent specific trash dumping areas.	Valley Water has recorded areas along Llagas Creek, Uvas-Carnadero Creek, West Branch Llagas Creek, and Jones Creek in the Pajaro Watershed that experience recurring trash dumping. Partner with cities to identify dumping areas (unrelated to encampments) and track hotspots to prevent dumping and contamination.	Partnership	Cities	Watershed Field Operations Unit	0-10	\$
WQ-06	Partner to construct free span crossings at Carnadero Preserve to enhance water quality and fish passage conditions in Uvas-Carnadero Creek.	There are two wet ford crossings—one across Uvas-Carnadero Creek and another across Gavilan Ditch that drains to the creek—that connect farmland in and around Valley Water’s Carnadero Preserve. At high flows and for much of the winter and spring, these crossings are unpassable, seasonally restricting farmers’ access to certain portions of land. When they are passable, the crossings degrade water quality due to the release of fine sediment as farm equipment passes through the creek. In addition, the Uvas-Carnadero Creek crossing may impede fish passage. This action would construct free span crossings over Uvas-Carnadero Creek and Gavilan Ditch to allow year-round access to farmland and enhance aquatic habitat by improving water quality and remedying a fish passage impediment. Trout Unlimited, in cooperation with Valley Water and other affected landowners, prepared a design for a free span crossing of Uvas-Carnadero Creek, but the effort still requires permitting, coordination with multiple landowners, and construction funding.	Project	Trout Unlimited, CDFW, National Marine Fisheries Service, CHEER, Willoughby Farms, Dorado Leasing LLC	Environmental Mitigation and Monitoring Unit, Environmental Planning Unit	0-10	\$\$
Water Supply (WS) - Short Term Actions							
WS-01	Implement recommendations from pre-feasibility study on Flood Managed Aquifer Recharge (Flood-MAR).	Flood-MAR feasibility is being analyzed within the Santa Clara County context. Given the rural nature of the Upper Pajaro River Watershed, the majority of potential Flood-MAR sites are expected to be in this watershed in areas that overlie the Llagas Subbasin. A Pre-feasibility report is complete.	Assessment/ Study	Santa Clara County, California Department of Water Resources	Water Supply Planning and Conservation Unit, Groundwater Management Unit	0-10	\$
WS-04	Assess areas within Llagas subbasin suitable for additional groundwater recharge projects.	Llagas Subbasin has the potential for additional groundwater recharge. This action evaluates additional locations with potential for managed recharge ponds or in-stream facilities as part of the Water Supply Master Plan with collaboration from Water Supply and Raw Water Operations teams. Identification includes assessment of existing facilities, groundwater data, and a feasibility studies. The San Pedro Ponds, an existing recharge facility in the Llagas Subbasin, were found to have potential for enhancement of recharge capacity in a feasibility study. Improvements may be implemented as part of a future capital improvement project.	Assessment/ Study	N/A	Raw Water Field Operations & Pipeline Maintenance Units, Groundwater Mangement Unit, Water Supply Planning and Conservation Unit	0-10	\$\$\$\$
WS-05	Continue design and environmental impact analysis for Pacheco Reservoir Expansion Project.	The Pacheco Reservoir Expansion Project would expand the storage capacity of the existing Pacheco Reservoir to 140,000 acre-feet through construction and operation of a new dam, conveyance facilities, and related appurtenant structures. Benefits of this project include a more reliable water source, improving fish habitat, and provide incidental flood risk reductions along Pacheco Creek. Action includes continuation of project planning, design, and environmental impact analysis.	Project	Pacheco Pass Water District	Business Planning and Analysis Unit, Pacheco Project Delivery Unit	0-10	\$\$\$\$\$
Ecological Resources Actions (ECO) - Medium Term Actions							
ECO-12	Partner to support efforts to assess, enhance, and manage livestock ponds for habitat benefit.	Stock ponds are important not only for livestock but also can provide critical habitat for native wildlife that have come to depend on these reliable sources of water and wetland habitat. They help maintain biodiversity and can provide for important habitat areas if designed and managed for native species correctly. Valley Water does not own stock ponds, but can support this effort through information and cost sharing and technical support. Management techniques that can promote their use by special-status species may include periodic dredging of sediment filled ponds to increase their hydroperiods (i.e., how long they hold water), eradication of fish originally stocked by ranchers, control of nonnative American bullfrog, installation of basking structures, and fencing of the pond or a portion of the pond (depends on grazing pressures and which special-status species is being managed for).	Partnership	VHA, County Parks, State Parks, USFWS, CDFW, RCDs, native tribes	Environmental Mitigation and Monitoring Uni	11-20	\$

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Number	Watershed Actions	Description	Activity Type	Potential Partner Agencies	Involved Valley Water Department	Implementation Timeframe (years)	Valley Water Cost Estimate*
Flood Risk Reduction (FRR) - Medium Term Actions							
FRR-07	Prepare Asset Management Plan for Uvas Creek.	Currently, Uvas Creek possesses creek assets in the moderate risk zone and should be monitored over time. The creek reaches between Highway 25 to Union Pacific Railroad, Babbs Canyon Creek Confluence to Miller Ave, Miller Ave to Santa Teresa Blvd, and Highway 25 to Bloomfield have the most inspection data and moderate risk assets. Fine sediment, erosion, and vegetation in and around the creek pose issues to creek capacity and flood control. Valley Water will create an asset management plan to provide a more proactive approach to managing infrastructure and projects.	Project	N/A	Business Support and Asset Management Unit	11-20	\$\$
FRR-08	Prepare Asset Management Plan for Lower Llagas Creek.	Lower Llagas Creek from Pajaro River to Buena Vista Ave has large quantities of in stream vegetation larger than Valley Water’s Stream Maintenance Program can remove. This vegetation is contributing towards flood risk and the disappearance of access roads. Previous inspections of the creek have also found erosion due to rodent damage. Valley Water will create an asset management plan to provide a more proactive approach to managing infrastructure and projects.	Project	N/A	Business Support and Asset Management Unit	11-20	\$\$
FRR-09	Prepare Asset Management Plan for Upper Llagas Creek.	Upper Llagas Creek from Rucker Avenue to Monterey Road has conditions that lower creek capacity and should be monitored over time. Opportunities for improvements include bank stabilization, vegetation control, and sediment reduction to reduce flood risk. Valley Water will create an asset management plan to provide a more proactive approach to managing infrastructure and projects.	Project	N/A	Business Support and Asset Management Unit	11-20	\$\$
Water Supply (WS) - Medium Term Actions							
WS-03	Expand the production and use of recycled water in the South County watershed by studying projects identified in the 2021 Countywide Water Reuse Master Plan and the 2015 South County Recycled Water Master Plan Update.	The Upper Pajaro watershed relies on groundwater to meet its water supply needs and there is a need to diversify the water supply portfolio of this area. The 2021 Countywide Water Reuse Master Plan and the 2015 South County Recycled Water Master Plan update provide potential projects to increase the use of recycled and purified water, such as a raw water augmentation projects in Morgan Hill and expanding the South County Recycled Water system.	Project	City of Gilroy, Santa Clara County	Recycled Water Unit, Groundwater Management Unit	11-20	\$\$\$
Water Supply (WS) - Long Term Actions							
WS-02	Complete Uvas-Llagas Transfer Pipeline condition assessment and implement recommendations.	The Uvas-Llagas Transfer Pipeline was installed in 1957. The corrugated metal pipe consists of a 39-inch diameter, 14,850-foot-long reach and a 27-inch diameter, 2,375-foot-long reach. It was last inspected in 2022, where 85% of the pipeline was inspected and found to be in good condition. It is recommended to install an additional 1-2 maintenance holes in the pipeline as the current distance between access points is too far. The pipeline is a critical facility that increases redundancy in the system and provides flexibility with regards to water supply sources.	Assessment/ Study; Project	N/A	Raw Water Operations Unit	21-50	\$\$\$\$
WS-06	Evaluate improvements to San Felipe Division Infrastructure and consider replacement projects for parts of the system.	This project implements a systematic approach to the renewal and replacement of infrastructure within the San Felipe Division, by designing and constructing improvements identified through Valley Water’s 10-year Asset Management Program. Infrastructure within this project includes tunnels, large diameter pipelines, pumps, valves and other appurtenances, vaults, and associated support equipment. Reach 1 renewal and replacement activities are conducted in coordination and cooperation with San Felipe Division Reach 1 contractors and other agencies. Reaches 2 and 3 renewal and replacement are the sole responsibility of Valley Water, in coordination with USBR (as the owner of the facilities) and regulatory agencies.	Assessment/ Study; Project	San Benito County Water District, United States Bureau of Reclamation	Business Planning and Analysis Unit, Raw Water Operations Unit	21-50	\$\$\$\$\$
WS-07	Implement the Pacheco/ Santa Clara Conduit Right of Way Acquisition.	Pacheco and Santa Clara Conduits provide raw water supply to Valley Water and San Benito County Water District. Regular access to pipeline vaults is needed by Valley Water for maintenance which requires crews and vehicles to go through private land. While verbal agreements have been established with local landowners, no formal easements are in place. This project plans, designs, and constructs improvements related to the acquisition of right-of-way along the South County pipelines to provide unlimited access to Valley Water-owned pipelines and reduce conflicts with local land owners to improve response time for emergency repairs or operations.	Partnership	San Benito County Water District	Business Planning and Analysis Unit, Pipelines Project Delivery Unit	21-50	\$\$\$

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