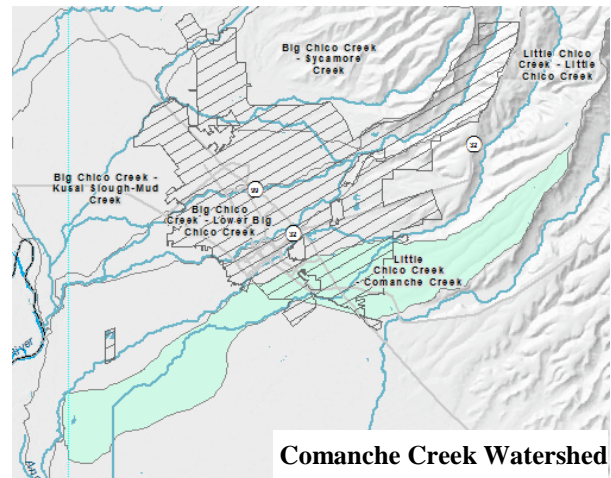


## COMANCHE CREEK MANAGEMENT PLAN (SWRP PROJECT O)

### General Project Information:

This project includes a plan to manage the Comanche Creek watershed as a holistic system. The public will be encouraged to participate in the development of the plan through identification of problems to be addressed in the plan, providing input on the identified causes, and recommended solutions to the problems. The plan development will be coordinated with the City of Chico, Butte County, the California Department of Fish and Wildlife, the California Department of Water Resources, the US Army Corps of Engineers, and other appropriate agencies. The plan will include at least the following topics:

- **Flooding:** The plan will assess existing and buildout flooding, identify the causes of the flooding, and develop solutions to reduce or eliminate the flooding. Surveying, geographical information system (GIS) mapping, and light detection and ranging (LiDAR) topographic mapping will be used to collect data for existing conditions. The study will cover Comanche Creek from upstream of the City through the City to at least Ord Ferry Road. The study will identify capacities of culverts, bridges, levees, and other conveyance facilities and will compare the capacities with the design storm flows to identify flood risks along Comanche Creek. Computer-based hydrologic and hydraulic modeling will be used to evaluate one historical storm event and the 2-year, 10-year, and 100-year storm design storm events. Flows and water surface elevations will be identified and the current floodplain will be delineated for each design storm. Existing areas of concern include several bridges west of Chico where flows from recent, small storms have reached bridge decks.



Future land uses based on the City's then-current general plan will be incorporated into the model without mitigation to document the impacts of future growth on Comanche Creek through and downstream of the City. Flood control improvements such as detention basins; enlargement of channels, floodplain restoration, bridges, and culverts; low impact development (LID) techniques; and other structural and non-structural approaches will be identified. The diversion to Butte Creek will also be evaluated to optimize the overall system level of flood protection. The flood control improvements will prevent increased flooding through and downstream of the City. The flood control improvements will ensure that the flood flows are not simply conveyed through the City and onto downstream properties. Flows and water surface elevations will be identified and the floodplain will be delineated for each design storm for buildout land uses. Cost estimates will be prepared for the recommended flood control improvements that could serve as a basis for a Capital Improvement Plan and development impact fees to ensure the flood control improvements can be funded and constructed.

Future climate change related to frequency and intensity of design storms will be addressed. Stage and flow gages with telemetry can be used to record actual flow data and an existing stream gage can be improved to measure flood flows. The flood flow data can be used for "real-time" management of flood warnings and flood management operations. There is currently a low-flow gaging station on Comanche Creek just west of Crouch Avenue that may soon be improved so it will also measure flood flows. When available, this flood flow data will be used for the hydraulic model calibration and for planning and sizing flood control improvements.

- **Water Quality:** Opportunities for LID techniques will be identified, including modifying the southwest outlet at Midway Bridge to discharge to a bioswale, and providing passive treatment (such as filtration) of storm water runoff at the northwest outlet at Midway Bridge, Valine Lane, and Wrex Court. Other LID techniques that will be evaluated include pervious pavement, infiltration trenches,

vegetated buffer strips, bioretention, media filters, constructed wetlands, and green streets. Additional, nonstructural techniques to improve water quality through public education will be evaluated in the plan, including pet waste bags and providing water quality public education workshops. The plan will also identify opportunities to collaborate with existing watershed protection groups, such as Butte Environmental Council, Stream Team, etc., to evaluate the efficacy of the projects for improving water quality. If flood control detention basins are needed, they will be designed to also provide water quality treatment such as treatment swales and wetlands in the bottom of basins.

- **Water Supply:** Opportunities to increase groundwater recharge will be evaluated. The potential for storm water capture and reuse projects will be identified and evaluated, which could reduce demands on the potable water system. If flood control detention basins are needed, they will be designed to also provide infiltration.
- **Recreation:** Recreation opportunities will be identified, such as pedestrian and bike trails, parks, and sports fields located in or adjacent to detention basins or LID projects, paths along the creek, and wildlife viewing. The plan will emphasize community input on recreational opportunities.
- **Gravel, Erosion, and Sediment Management:** The plan will include a comprehensive gravel, erosion, and sediment management evaluation. Management of gravel, erosion, and sediment is critical to protect and improve the quality of the Comanche Creek habitat. Areas of erosion along the banks and bed of Comanche Creek will be mapped. Solutions to control the erosion and reduce the sediment in the creek will be developed.
- **Ecosystem:** The plan will also evaluate the ecosystem health and identify ways to improve the ecosystem; including management of gravel and sediment deposition, evaluation of the health of floodplain habitats, removal of invasive plants (such as yellow flag iris), installation of native plants, and protection of endangered species such as the Sacramento Valley Long-horned Beetle. The water quality impacts and management approaches of illegal camping (such as disposal of human waste, sharps, and other biohazards) along waterways will be identified. The plan will identify approaches for long-term monitoring of ecosystem health using citizen monitoring and involvement where appropriate.
- **Public Outreach and Education:** The plan will summarize existing education and outreach programs and will evaluate improvements to these existing programs to protect watershed health, including in disadvantaged communities. Examples of existing programs include the Clean Water Science Ambassadors, Clean Creeks in the Classroom, and the Citizen Monitoring Program. This plan will involve preparing an education and outreach plan and budget that includes: 1) opportunities to collaborate with existing watershed protection groups, such as Butte Environmental Council, Stream Team, Friends of Bidwell Park, *etc.* 2) evaluates and monitors the efficacy of the projects for reducing erosion and improving water quality, and 3) provides public education and outreach events. Some topics for education include residential landscaping to conserve water, dry weather runoff capture, river-friendly landscaping, and residential pesticides and fertilizer management.
- **Funding:** Existing storm water programs and projects will be integrated in the projects where applicable, and where appropriate grant program local match funding requirements can be met by volunteer hours. The plan will also identify specific project elements and programs that can be implemented relatively easily and at relatively low cost.
- **Watershed and Location:** This project includes the Comanche Creek Watershed.
- **Watershed Area:** Comanche Creek watershed is approximately 12,008 acres.

## Benefits Resulting from this Project

When the Comanche Creek 21<sup>st</sup> Century Management Plan is fully implemented, the following benefits are expected to occur:

- **Water Quality:** Water Quality is expected to be improved because implementing LID and minimizing erosion and scour will reduce the amount of sediment and other pollutants in receiving waters.
- **Water Supply:** Water supply is expected to be improved because implementing infiltration areas will allow some flows to recharge groundwater.
- **Flood Management:** Flood Management is expected to be improved because solutions identified in this plan will help reduce flooding problems.
- **Environmental:** The environment is expected to be improved because implementing this plan will help remove invasive species, plant native species, and improve aquatic habitat.
- **Community:** The community is expected to be improved because the plan enhances recreational opportunities and expands education and outreach regarding storm water.

### Project Costs

- **Estimated Plan Preparation Cost:** The estimated cost of preparing this plan is \$TBD. This cost does not include the costs of designing and constructing the improvements that will be identified in the plan.

### Photos



**Photo 1. Comanche Creek**



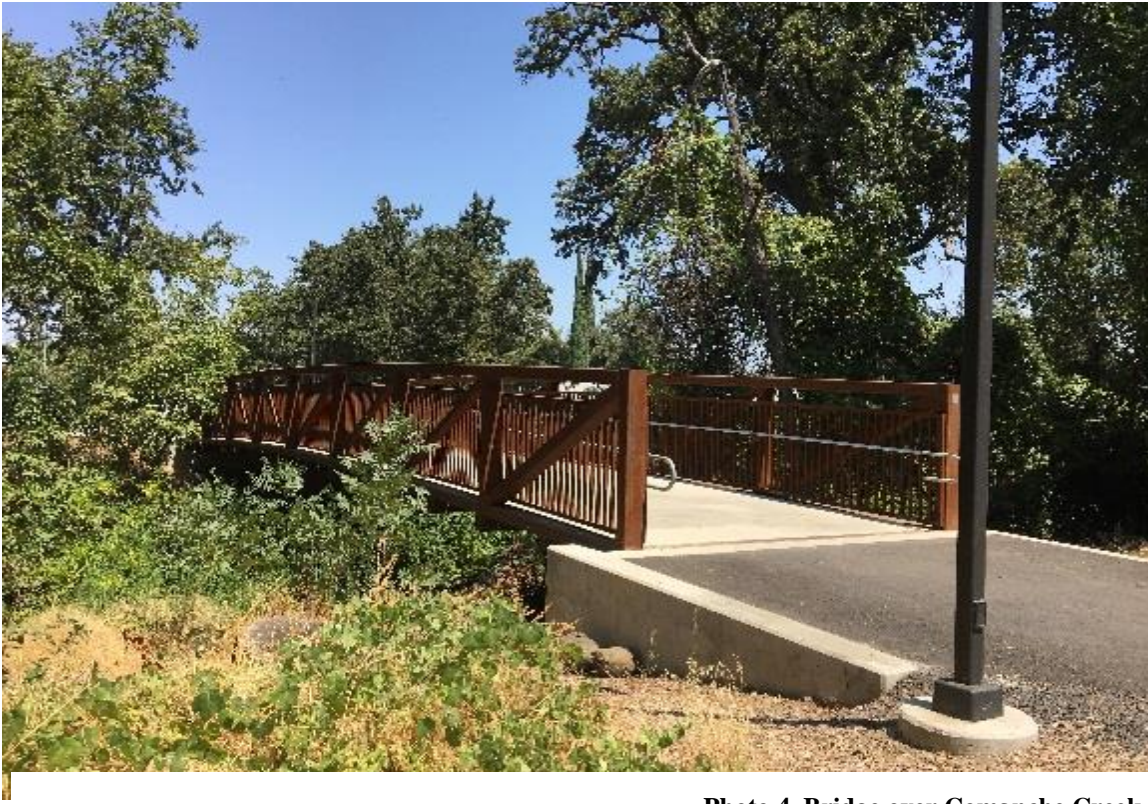


**Photo 2. Comanche Creek Greenway**



**Photo 3. Bike path along Comanche Creek**





**Photo 4. Bridge over Comanche Creek**

### **Initial Projects Included in this Project**

This project includes the following Initial Projects in whole or in part:

- SWRP 6: Comanche Creek Flow Improvements
- SWRP 7: Comanche Creek Water Quality
- SWRP 17: Detention Basins on Comanche Creek
- SWRP 35: Flood Detention Pond (Comanche, Fair Street, Home Depot, Teichert) Enhancement and LID Implementation Project
- SWRP 62: Meyers Industrial Park, Otterson Business Park
- SWRP 84: Comanche Creek Flood Control Study
- SWRP E: Homeless Camping Reduction Program
- SWRP J: Detention Basin Implementation and Modification Plan