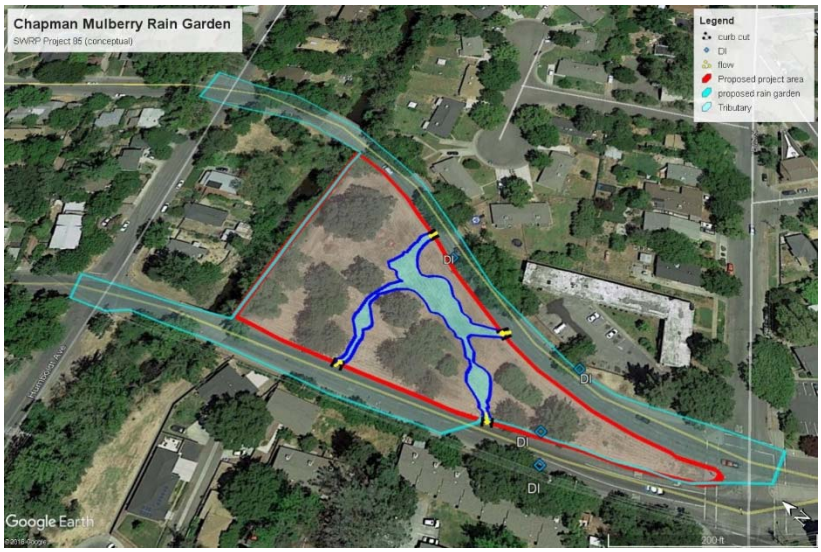
# CHAPMAN MULBERRY RAIN GARDEN (SWRP PROJECT 85)

## General Project Information

The proposed project involves the construction of a rain garden that can benefit Little Chico Creek by intercepting nonpoint pollution and infiltrating it in basins mulched with appropriate species of fungus for mycoremediation. This project is intended to capture and treat stormwater and dry weather runoff, beautify the open space for nearby residents, and serve as a demonstration garden for water-wise native landscaping.

The project will include several (probably five) curb cuts along Cypress Street. Existing turf within the rain garden boundaries (shaded with blue in the figure) will be removed at the depth of the "O-horizon" (the soil layer with a high percentage of organic matter) to allow street runoff to enter the site, as well as to capture the fertility and microbiota therein to accommodate native plantings, allowing for more water to infiltrate. In general, the natural topographic variation in the site will be utilized for basins, variation of habitat types, and to reduce equipment use. The site will be mulched appropriately to facilitate growth of fungus.




Imagery: Google © 2018, Map Data: Google © 2018

Using citizen monitoring, water data will be collected and compared to show the effectiveness of the rain garden along with myco-remediation. Wood or arbor chips could be used could be used due to the little to no cost to obtain the material. The area will be planted with water wise, California-native vegetation in appropriate areas. Existing trees will be protected in place. Excess soil will be used to shape an Americans with Disabilities Act-compliant trail and create a level area in the shade of the pine trees on the western edge which will facilitate future picnic areas. Landscape design will include areas for installations of public art. A pervious walking path will be constructed using stone or woodchips and will run the perimeter of the proposed rain garden. Educational signs will be installed along the walking path to educate residents and visitors of water wise landscaping, fungus remediation, and pollution in stormwater runoff. Volunteers will help install site grading, curb cuts, mulching, planting of vegetation, and concepts for educational signs for the project.

This project description is conceptual and has the capacity to be scaled up or down based on available funding.

- **Watershed and Location:** The proposed project is located on the Little Chico Creek watershed in an open space area at East 12th Street between Cypress Street and Pine Street.

- **Tributary Watershed Area**: The approximate area of the tributaries flowing into the project area is 2.74 acres.

## Benefits Resulting from this Project

- **Flood Management:** Flood management is expected to be improved because directing street runoff into this area for infiltration will help reduce street flooding.

- **Water Quality:** Water quality is expected to be improved because directing runoff into an area for infiltration and remediation via fungus is expected help reduce stormwater volume and pollutant

loading by pre-treating water prior to entering storm drains and Little Chico Creek. The water quality in Chico's creeks are declining because of urban development and increasing stormwater runoff. Use of infiltration and passive treatment techniques can reduce pollutants such as sediment, organic material, trash, nutrients, pathogens, heavy metals, and other toxic substances, as well as urban runoff entering major waterways.

- **Water Supply:** Water supply is expected to be improved because implementing infiltration areas will allow some flows to recharge groundwater, and planting native vegetation will reduce landscape irrigation requirements which will conserve potable water.

- **Environmental:** The environment will be improved because project implementation will help improve receiving waters. Urban stormwater is a leading cause of pollution to fresh and brackish receiving waters. This project will reduce and filter street runoff, improving receiving water quality. Control of sediment and erosion is critical. The development of the project will reduce sediment from entering storm drains. Additionally, the project will include a demonstration garden with native landscaping which will provide quality habitat for a number of species.

- **Community:** The community is expected to be improved because implementation of the project will create educational and community engagement opportunities for area residents since the project will serve as a demonstration garden where area residents can learn about low impact development techniques and their benefits, the importance of stormwater management, and landscaping with native species.

### Project Costs

- The estimated cost of this project is $TBD.

### Project Photographs

**Photograph 1. Facing south overlooking proposed project area**

**Photograph 2. Proposed project site, viewed from the corner of Cypress Street and Mulberry**

**Photograph 3. Facing east overlooking proposed project area along Cypress Street**

### Initial Projects Included

This project does not include other initial projects.

### Additional Project Information

*The following information was received during the public comment period.p*

To emphasize, the intent of this project is NOT move water but free it to enter the land where it can infiltrate. There is considerable natural topographical variation and we intend to utilize existing basins (as

evidenced through observation and as indicated by the distribution of Plantago and Rumex species). These existing variations will reduce total equipment time, and will make an attractive series of basins.

We would make several (five tentatively, depending on utility pole setbacks) curb cuts in the low spots in the gutter where water slows and pools and these cuts will only remove the riser and not the curb footing and can be accomplished using a rotary hammer and concrete saw. To maintain ADA accessibility, our inlets and outlets will be wide enough to provide a gentle slope and our paths will simply cross this channel.

These curb cuts would then open to a level sill for further slowing water and allowing solid waste to settle out before continuing into the basins at a slope no greater than 1%. Based on the high point in the collection area (the intersection of Mulberry and 12$^{th}$) and our gentle slope (essential for infiltration and erosion prevention), we will not need to excavate more than six inches below the lowest curb sill. With the area available for infiltration and the soils as indicated in the UC Davis Soil Web, we do not expect water to leave the site, nor fail to infiltrate in 48 hours preventing mosquito issues. However, our series of basins slowing, spreading and sinking water will connect to a curb cut outlet just above the storm drain on the Southwest edge of the site to compensate for extreme events.

Implementing the project will be somewhat straight forward. The entire site design intends to minimize labor and equipment use taking advantage of existing slopes and topographical variation. We ask the city to waive the cost of lane closure and curb cutting permits and consider making equipment available. We estimate we will need one day or less to survey and prepare the site. We will need one day with one lane closed on both Pine and Cypress (we would do this work on a weekend to minimize disruption to the arterial road) to make the cuts and run a backhoe and bobcat. After cutting the channels and modifying the existing basins to add capacity, volunteers with hand tools would do sculpting work. The third day would be planting and mulching. We estimate our total equipment time will be less than 18 hours. Excess soil will be used to shape the trail and create a level area in the shade of the pine trees on the western edge which can be used in the future to make a picnic area, and we intend to include space in the rain garden landscape design to facilitate later installation of public art.