NATIVE VEGETATION MANAGEMENT PLAN FOR THE JESUS MARIA REACH OF CACHE CREEK

Prepared for:
Yolo County Resources Division

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BACKGROUND

In 2006 Yolo County contracted (Contract No. 2007-0095) with the Cache Creek Conservancy (CCC) to remove stands of tamarisk (*Tamarix parviflora*), Arundo (*Arundo donax*), and other non-native, invasive vegetation in the Jesus Maria reach of Cache Creek (River Mile 11.4 to 13.4). Tamarisk and Arundo removal improves flow conveyance (due to a decrease in channel roughness) and decreases the rate of bank erosion where vegetation creates channel constrictions and/or deflects flows toward channel banks. In addition, removal enhances native riparian habitat. Tamarisk and Arundo crowd out native vegetation and offer much lower wildlife habitat value than the multi-tiered native riparian canopy structure. Tamarisk and Arundo also use much more water than native riparian vegetation. This project was implemented to help maintain the existing 10-year flood capacity in the Jesus Maria reach.

One task under this contract is to develop guidelines for native vegetation management in the Jesus Maria reach to maintain flood capacity.

CURRENT CONDITIONS

The Cache Creek Conservancy has completed four years of invasive species control in this area, treating specific sites as identified in the contract for removal, follow-up monitoring, and treatment of any resprouts. Both mechanical and chemical methods were used. In addition to tamarisk and Arundo, Ravenna grass (*Ravennae saccharum*) and purple loosestrife (*Lythrum salicaria*) were removed. Ravenna grass is a relatively new invasive in the Cache Creek watershed, and the CCC along with other entities is aggressively controlling this plant. This section of the creek is relatively free of tamarisk, Arundo, purple loosestrife, and Ravenna grass as noted in a June, 2010, survey of the area. There are a few Arundo and tamarisk plants that will be treated by the CCC with the planned spray program for the Cache Creek Resources Management Plan (CCRMP) area in September, 2010. The CCC will continue to monitor this section of the creek and treat as necessary and as resources permit in conjunction with our overall commitment to controlling invasive plants in the CCRMP area.

Under this contract there has been no revegetation with native plants. However, in many areas natural recruitment is occurring due to the removal of competing weeds. Good recruitment of native plants such as sandbar willow, cottonwood, mulefat, coyote bush, wild rose, and wild grape was noted in the June, 2010, survey and is occurring throughout this reach.

MANAGEMENT GOALS

The Cache Creek Area Plan which includes the Cache Creek Resources Management Plan and the Cache Creek Improvement Plan is the guiding document for this area. Any work undertaken should be consistent with the goals and objectives of the plan and conform to the implementation guidelines.

Multiple goals for managing the lower creek were delineated by Questa Engineering Corp.[1] in a letter to Yolo County dated June 30, 2006 (see attached letter). These goals include:

1) Maintain or improve flood conveyance of the channel

[1] Questa Engineering Corp. 2006. Letter to Yolo County Public Works Department; Jesus Maria Channel Assessment and Short Term Management Plan Options

2) Reduce bank erosion and other water quality impacting conditions of the creek
3) Protect existing infrastructure
4) Manage the resource to the benefit of the existing wildlife

Yolo County pursued the strategy of managing in-stream vegetation through exotic plant removal under this contract with CCC. While Questa Engineering recommended removal of certain willow development within the channel viewed during a site visit, Yolo County personnel did not want the CCC to remove any willows.

MANAGEMENT GUIDELINES for NATIVE PLANTS

Monitor Area for Invasive Plant Species and In-stream Vegetation

- Monitoring of this entire reach should occur annually with the primary objective of identifying new growth of the targeted invasive plant species. This should be done in the spring when flows are diminished enough to access the creek channel on foot.

- Monitoring of in-channel vegetation growth should be done also, mainly noting willow and cottonwood development on sand bars.

- Review aerial photography of this site annually, noting any new erosion sites. Usually these sites are more evident from aerial photos, showing a slight curvature along the bank where erosion is beginning.

Manage Area for Invasive Plant Species and In-stream Vegetation

- A maintenance program for continued control of invasive plant species should include annual treatment at the appropriate time of year to prevent reoccurrence of growth of undesired species. If left untreated for only one year, there is the potential for prolific growth, resulting in greater resources needed for control in the future. The upper watershed continues to be a source of propagules for invasive species. Thus, diligent control measures must be implemented continuously. The preferred treatment method at this time is by chemical use appropriate for the area. Foliar spray or cut/stump methods, depending on the specific site, are recommended. Chemical treatment is most effective if foliar spraying is done in the time frame of mid-August to end of September. All regulations involving pesticide use must be followed, including appropriate agency permits.

- It is important to note that vegetation should not be treated at some areas such as steep bank erosion sites. Removal of vegetation, even if it is undesirable, can result in further erosion and loss of property. The particular site that was not treated for invasive removal under this contract, and per the advice of Syd Temple, Questa Engineering, was at RM 13.5 left.

- Managing in-channel vegetation for prevention of bank erosion:
  Two reports speak specifically to this issue. "Technical Report for Hydraulic Analysis Results," April 2002, by MBK Engineers concludes with "Vegetation control should concentrate in the main channel to maximize channel capacity. Vegetation in the overbank should be a second priority. Caution should be used not to increase existing erosion in problem areas due to vegetation removal. Site specific evaluations should be made to identify the extent and

magnitude of vegetation removal. Removal of non-native plants, arundo, and tamarisk should have the highest priority. Clearing lower tree limbs and debris will also help to increase channel capacity."[2]

Questa Engineering Corp. also noted the adverse effects if vegetation establishes in mid-channel areas in their 2006 letter to the Yolo County Public Works Department. "During low flow years large stands of willow and other riparian vegetation can establish within the channel, typically on the inside of bends on low gravel bars. This natural colonization can increase bank erosion by stabilizing sediment transport and redirecting high flows to sensitive or potential unstable bank areas. This can increase erosion and lateral bank retreat. Active management of in-stream vegetation through willow thinning and/or exotic plant removal could reduce erosion pressure at key locations of the banks."[3]

An earlier report prepared by Jones & Stokes Associates (November 30, 1995) also noted that specifically for the Jesus Maria Subreach, "Restoration efforts would be largely confined to invasive exotic plant and debris removal."[4]

Annually, the spring monitoring should note areas of in-stream growth and steps should be taken to remove new willows/cottonwoods/other woody growth during the appropriate summer period by cutting or chemical treatment.

- Huff's Bend Area: This particular site has undergone extensive bank erosion control measures on the south side (right bank). This area needs continual care to prevent vegetation build up on the north (left bank) that would have the potential to direct water flows towards the south bank.

- For areas that may be showing some initial erosion, employ bio-engineering techniques to control this erosion. Specific measures can include planting cuttings of willows along the edge of the channel and also using willow mats on the eroding bank.

Consider Revegetation of Specific Areas

- This reach is marked by a narrower creek channel with almost vertical banks. The left (north) bank is leveed for almost one mile immediately upstream of the I-5 bridges at Yolo. This levee is maintained by Dept. of Water Resources, State of California. Most of the Jesus Maria reach has a thin band of riparian vegetation along the creek channel and abuts agricultural land at the top of the creek banks. There is little opportunity for large-scale revegetation unless farm land is taken out of production.

- Between RM 12.5 and RM 13.1 on the left bank there is a wider broad sloping area that has very sparse vegetation consisting mostly of exotic annual grasses and star thistle. Planting this

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[2] MBK Engineers. 2002. Technical Report for Hydraulic Analysis Results, Cache Creek between County Road 94B and Interstate 5, Yolo County, California

[3] Questa Engineering Corp. *Ibid*

[4] Jones & Stokes Associates. 1995. Lower Cache Creek Riparian Corridor Restoration Recommendations

area with a native grass seed mixture, including creeping wild rye may help to control the current undesirable vegetation. Soil conditions may not be conducive to good plant growth. Deep ripping and soil amendments should be considered. Landowner participation is needed and may be problematic with one property at this time.

Manage Area for Appropriate Uses

- Implement measures to control illegal OHV use
  RM 11.6 left is particularly vulnerable to OHV use for accessing the creek channel. This is a California Dept. of Water Resources levee area, with a nearby county road access. Fencing, obstructions such as large boulders or stumps, heavy plantings, and signage are recommended as deterrents.

- Work with landowner where structures have the potential to fall into the creek channel to prevent the occurrence of more debris in the creek (RM 12.2 right).

- Place more "Habitat Restoration" signs in areas where public can see them to create awareness of habitat improvement in the area and to deter trespassing.

Planning for the Future

The steps in this plan for vegetation management are relatively inexpensive and should prove to be cost effective in maintaining flood capacity and will also benefit habitat. The most important factor is to protect the work that has already been done through annual monitoring followed by removal of undesired vegetation. Long term goals may include greater bank stabilization at specific erosion sites.

REFERENCES

Jones & Stokes Associates. 1995. Lower Cache Creek Riparian Corridor Restoration Recommendations

MBK Engineers. 2002. Technical Report for Hydraulic Analysis Results, Cache Creek between County Road 94B and Interstate 5, Yolo County, California

Questa Engineering Corp. 2006. Letter to Yolo County Public Works Department; Jesus Maria Channel Assessment and Short Term Management Plan Options.

Yolo County. 2002. Cache Creek Area Plan

APPENDIX

1. Potential grassland revegetation sites on Jesus Maria Reach

2. Questa Engineering Corp., Letter to Yolo County Public Works Department, Jesus Maria Channel Assessment and Short Term Management Plan Options. June 30,2006

3. MBK Engineers, Technical Report for Hydraulic Analysis Results: Cache Creek between County Road 94B and Interstate 5, Yolo County, California. April 2002

4. Cache Creek Conservancy, Non-Native, Invasive Vegetation Removal in the Jesus Maria Reach of Cache Creek. Four annual reports for 2006, 2007, 2008 and 2009


Cache Creek Conservancy
Potential grassland revegetation sites on Jesus Maria Reach
RM 12
025 310 23
RM 12.5
025 310 11
RM 13
025 300 22
RM 13.5
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