

CALIFORNIA LAND STEWARDSHIP INSTITUTE

Supervisor Bill Dodd, Chair
Napa County Board of Supervisors
1195 Third St., Suite 310
Napa, CA 94559

October 9, 2006

Honorable Supervisor Dodd:

I am writing to request approval of the attached proposal for matching funds to prepare the Napa River Sediment Reduction and Habitat Enhancement Plan. The State Water Resource Control Board approved our proposal for \$500,000 in funding on Sept. 6, 2006. As part of the preparation of our proposal we met with staff from the Napa County Flood Control and Water Conservation District regarding Measure A funds as a match to the State grant. On September 28, 2006 the Watershed Information Center & Conservancy Board reviewed and recommended our proposal for \$230,000 in funding.

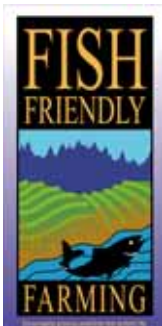
Following the WICC meeting we separated our request into two phases. The first phase involves technical studies and landowner involvement and is urgently needed as matching funds to our state grant. The first phase will also allow for an immediate start of river channel surveys which must be completed this fall in order for us to meet the State deadlines. The second phase involves an analysis of a variety of institutional arrangements for the long term management of the river. This task will require several meetings and discussion between the county, our organization, the landowners and the appellation and agricultural groups to finalize the scope. Therefore at this time we are requesting funding in the amount of \$190,000 for the first phase of the plan and will return with a request for phase two.

Thank you for consideration of our request. We look forward to working closely with county staff on this important project.

Sincerely



Laurel Marcus
Executive Director



Fish Friendly Farming® Environmental Certification Program
Mendocino, Sonoma, Napa and Solano Counties
A project of the California Land Stewardship Institute
707 869 2760 email: info@fishfriendlyfarming.org
www.fishfriendlyfarming.org

CALIFORNIA LAND STEWARDSHIP INSTITUTE

Charles Slutzkin, Chair
Watershed Information Center & Conservancy Board
1195 Third St., Suite 210
Napa, CA 94559

Sept. 10, 2006

Dear Chairman Slutzkin,

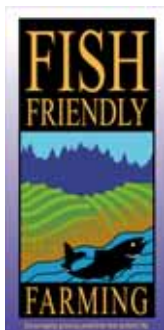
Our organization, the California Land Stewardship Institute (CLSI), operates the Fish Friendly Farming (FFF) Environmental Certification Program in Napa County, also called the Napa Green Program. A number of properties which include the Napa River are enrolled and have been certified under the program. As part of the certification the landowners/managers have agreed to participate in a river planning and stewardship process. In order to address water quality and natural resource improvements and to assure landowner involvement, CLSI applied for a State grant to prepare a Napa River Sediment Reduction and Habitat Enhancement Plan for the Oakville Cross Road to Oak Knoll Ave. reach.

The State Water Resource Control Board approved our proposal for \$500,000 in funding on Sept. 6, 2006. As part of the preparation of our proposal we met with staff from the County Flood Control District regarding Measure A funds as a match to the State grant. We are now requesting that the WICC review and consider our proposal for \$230,000 in funding for a recommendation to the Board of Supervisors.

Project Description

The Napa River Sediment Reduction and Habitat Enhancement Plan will address water quality, flooding, bank erosion problems and natural resources on a 10-mile section of the Napa River stretching from Oakville Cross Road to Oak Knoll Ave (Figure 1). This section of the Napa River is the next reach downstream of the Rutherford Reach project area (Zinfandel Lane to Oakville Cross Road). The 8-mile Rutherford Reach is beginning the implementation of enhancement and restoration efforts following several years of planning.

The Oakville to Oak Knoll Reach suffers from channel incision with bank collapse, erosion of channel bedforms (riffles, bars, pools) important to salmonids and a reduced riparian corridor. Channel incision on the Napa River was studied in the Napa River Limiting Factors Analysis and identified in the 2005 Technical Report on the TMDL for the Napa River as a major source of direct delivery of fine sediment. As a channel incises and downcuts into its alluvial floodplain, most flood flows become confined to the channel and no longer spill out onto the floodplain and slow down. This situation creates higher velocity flows in the channel, inducing further erosion



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and downcutting. This process will continue until the banks of the river channel become tall (20ft+) and unstable and collapse in flood events. For most of this reach of the Napa River, the channel is highly incised with unstable banks of 15-20 feet and large areas of shallow pool/glide habitat. The January 2006 flood caused extensive channel scour and bank collapse, loss of riparian habitat, flooding and property damage. As the banks collapse, they directly contribute fine sediment to the river, impairing beneficial uses. The incision of the main river channel is now progressing up tributaries, increasing erosion and loss of habitat.

The plan will comprehensively assess, inventory and evaluate a significant area of the Napa River. All aspects of the system will be included - hydrology, geomorphology, geology, riparian and aquatic biology, hydraulic engineering, as well as land use and socio-economic concerns. Incising river systems require that the river channel be addressed first to reduce the migration of incision up tributaries and other negative effects. Many habitat issues in tributary creeks in these types of systems can not be addressed through actions in the drainage area, but must be addressed through changes to the incising river channel.

This project will provide a detailed, community-based plan for a 10-mile reach of the Napa River. The TMDL for the Napa River identified incision on the main river channel and migration of incision up tributary channels as a primary source of fine sediment. The TMDL calls for a 50% reduction of sediment from this source. This project will serve to implement the TMDL and, due to the technical approach of re-balancing the channel form and reducing flow velocities also benefit habitats and reduce property damage through creation of a more stable river channel.

Landowner involvement will be a large focus of the plan. The Napa River is privately owned and landowners need to be an integrated part of the plan to assure implementation. We are proposing to have staff which will meet regularly with owners to keep them up to date, answer questions, maintain owner involvement and provide consistent landowner input to the planning process. Agencies, scientists, and organizations will also be involved in a Technical Advisory Group (TAG) will meet quarterly, or more frequently, if needed, to review assessment methods, work products and alternatives.

The goals of the Napa River Plan include:

1. Characterize the natural resources of the Napa River in the 10-mile project area between Oakville Cross Road and Oak Knoll Ave. by evaluating geomorphic, hydrologic and ecological features and processes.
2. Use the scientific characterization as a basis for the plan to assure the proposed improvements reflect the actual river processes and realistic alternatives.
3. Incorporate landowners into the planning process to assure the plan is acceptable and supported by the river's owners.
4. Incorporate local, federal and state resource and regulatory agencies into the planning process to assure the plan is acceptable and supported by the agencies.
5. Complete a plan which provides for a long-term strategy to restore balance to the Napa River, and which protects and enhances beneficial uses of the Napa River.
6. The plan will outline a strategy of measures and responsible public and private parties to implement water quality improvements and sustain these improvements over the long term.

Project Team

The California Land Stewardship Institute (CLSI) will work in partnership with the Napa County Resource Conservation District (RCD) on this plan. Both CLSI and RCD work extensively on resource enhancement and restoration projects on private land. CLSI staff has overseen large natural resource planning efforts. CLSI will carry out the river landowner coordinator task, the riparian biology and GIS work, manage the project and oversee all administrative tasks.

The Napa RCD will carry out the channel surveys, the fisheries evaluation and part of the river landowner coordinator task. The Napa RCD has been a leader in resource protection and restoration programs in Napa County for many years.

The geomorphology evaluation and hydraulic modeling will be carried out by Philip Williams and Associates (PWA). PWA completed the concept plan for the Rutherford Reach.

The Rutherford Dust Restoration Team will be involved in a review of potential organization types and institutional arrangements to manage the river over the long term and provide landowner representation.

Existing Information

There are few existing sources of information specific to the section of the Napa River encompassed by the plan. There are countywide information sources, such as the Napa County Baseline Data Report which we have reviewed. The Natural Diversity Data Base contains records of occurrences of rare and endangered plant and animal species in Napa County. In addition, a number of general digital data layers, such as the CalVeg layer, land use, streams, soils and geology are also available and will be compiled into the GIS. However, the resolution of these digital layers is 30 meters/pixel and is not detailed enough for this plan. All of these information sources generally describe natural resources in the plan area, but are not detailed enough to use as a basis for the river plan.

The Napa RCD has a MIKE-11 model of the entire Napa River channel, which utilizes 1996 surveyed channel cross sections at 1,000 ft intervals. This model can evaluate general hydraulic conditions in the channel and changed conditions created by various measures. Napa County has recently had a LIDAR dataset (1 meter resolution and 0.15 meter vertical accuracy) completed for the Napa River watershed, which can be used to characterize elevations in the plan area. The LIDAR data do not cover the area of the riverbanks. The Napa RCD completed habitat typing and snorkel surveys in the Oakville to Yountville Cross Roads section of the Napa River in 2004 as part of the Central Napa River Watershed Study. The RCD also had one temperature logger at the Yountville Cross Road in 2003-2004.

At the downstream end of this river reach, there is a USGS gaging station (Napa River near Napa #11458000). Upstream of this reach there is another USGS gaging station at the Zinfandel Road Bridge (Napa River near St. Helena #11456000). The Napa Fire Station has a rainfall gaging station with a very long period of record (1905-2006). There are other rainfall stations in other areas of the watershed with shorter but useful rainfall records.

The recent design work completed for the Rutherford Reach for the Napa RCD will be evaluated. The hydraulic model in particular will be reviewed in order to assure consistency in inputs and assumptions between the models for the two reaches. Fish surveys and other studies from the Rutherford Reach will also be reviewed. We will search for additional studies that include this reach of the Napa River and will consult with the San Francisco Estuary Institute on any mapping/historic aerial photos they may have available with the County Planning Dept. and with the California Department of Fish and Game on studies of their reserve on the Napa River in this reach.

There are a few recent studies completed as part of the TMDL which contain trends information for the river and the watershed. These include the Napa River Basin Limiting Factors Analysis (Stillwater Sciences and W. Dietrich, 2002), the Technical Report on the Fine Sediment TMDL and the Technical Report on the Pathogen TMDL (San Francisco Regional Water Quality Control Board 2005). These reports identify the numerous causes of channel incision in the Napa River and identify channel incision as major source of fine sediment loading. The reports document variable incision rates along the length

of the Napa River and calculate the average rate at 0.5 cm/year for the past 40 years as 50 times greater than natural background rates.

Since there are few detailed studies of the plan area, several types of data will need to be collected. These are described in the work plan.

Summary of Work Plan

Task 1 Landowner Involvement

Complete outreach to all landowners in the plan area. Hold monthly meetings for landowners. We will be looking for individuals who have a high level interest in the project who would like to be more involved and act as local leaders. We will also have small group and one on one meetings to assure owner/managers of how their issues will be included and to determine the structure for the landowner involvement. We expect to have several meetings with the landowners and the scientific consultant to explain why we are studying the river in the manner that we are and the type of observations we need to collect from owners/ managers. Present the findings of the major reports and work items for comment including the scientific approach, Opportunities and Constraints Analysis/ Existing Conditions Report; Preliminary Alternatives, Draft Plan and Final Plan.

Task 2 Technical Advisory Group

Organize Technical Advisory Group representatives to serve as an oversight group for the plan. Representatives from the San Francisco Bay Regional Water Quality Control Board, NOAA-Fisheries, California Department of Fish and Game, Napa County Planning Department, Napa County Flood Control District, Town of Yountville, Natural Resource Conservation Service and other organizations. Hold meetings of the TAG at quarterly, or greater, intervals to gain input on major work products including the scientific approach, Opportunities and Constraints/ Existing Conditions Report, Preliminary Alternatives, Draft Plan and Final Plan.

Task 3: Data Collection

GIS Creation

Establish GIS for the plan area, using existing layers for topography, elevation, streams, vegetation, land use, soils and geology. Add layers and database to GIS for spatial data collected in Task 3

Access

Establish access agreements with landowners for field data collection.

River Channel Surveys

In order to supplement the County LIDAR dataset (1-meter resolution and 0.15 meter vertical accuracy) and to provide more accurate topographical information for the channel bottom and banks, cross sectional surveys of the project reach will be completed with an average spacing of one cross section every 500 ft. A sample of the existing cross sections (approximately 5 out of 40) will be resurveyed as closely as possible to verify their representativeness. A longitudinal profile will also be surveyed. Each cross section will be marked with a semi-permanent monument (rebar with plastic cap) to serve as a control point location, and GPS coordinates will be recorded. Each cross section will include grade breaks, channel thalweg, and the edge of the adjacent vineyard or top of bank (on each side of the channel). Survey data will be compiled and graphed in Excel and a format compatible with the hydraulic model.

Landowner Field Mapping

The scientific team will meet with landowners on their property to map problem areas, flood lines, erosion problems and other areas of concern. Areas will be mapped using a GPS/ArcGIS system and compiled into a GIS layer.

Geomorphic Features Survey

The geomorphologist will conduct a field survey of the channel to evaluate the occurrence of various bedforms (pool, riffle, bar, point bar, glide), width to depth ratio, bank erosion, stable areas, areas where the channel is connected to its floodplain and areas where the only floodplain is disconnected, the sinuosity of the channel and bed composition. This task will break the river into a series of distinct reaches with similar conditions, and determine the relative stability of each reach, so that problems can be identified and a prioritized list of solutions developed. In addition the assessment will identify specific 'hot spots' (e.g. eroding banks) and restoration opportunities. The assessment will be compiled into a GIS layer and summary report.

Riparian Habitat Survey

Using the GPS/GIS (Arc-Pad) methodology, record the locations of invasive plant stands, density and extent of riparian forest including species present; diversity in stand age, size and species; an evaluation of understory plant diversity and an evaluation of the regeneration potential of overstory species based upon the particular requirements of the type of tree and the availability of those physical requirements along the river channel. The analysis of regeneration potential allows for a review of the sustainability of the existing riparian habitat under the current physical conditions and identifies the need for a change in those conditions to allow for a self-sustaining riparian system in the future. Canopy cover measurements will be taken throughout the plan area. Data will be compiled into a GIS layer and summary report.

Fish Habitat Survey

Conduct a detailed habitat survey of the 10 mile reach to document the amount and quality of available habitat for native fishes and other aquatic organisms, specifically steelhead trout, Chinook salmon, and California freshwater shrimp. The survey will target key habitat features including substrate composition, in-stream shelter, high-flow refugia, riffle margin and backwater rearing habitat, and spawning patch distribution. A qualitative assessment will be made of several selected pools' ability to provide refuge from high winter flows. This will be based on the location of pools in the channel, location and placement of pool forming elements, and likelihood of backwater eddies and slow-water. A qualitative assessment will be made of other roughness elements within the stream reach (woody debris, boulders, cobble, and in-stream vegetation). These elements may provide in-stream cover, but may not be of sufficient size, placement, or orientation to create high flow refugia. Connectivity to the floodplain will be evaluated as refugia from high flows and also for stranding potential (i.e. side channels or scour holes in the floodplain that fill up during floods, but become isolated shortly after the water recedes). Data will be compiled into a GIS layer and a summary report.

Conduct surveys to document salmon densities and distribution within the reach. These will include escapement (carcass) surveys in the fall for adult Chinook salmon and snorkel surveys in the spring for juvenile Chinook and steelhead. Escapement will be estimated for Chinook salmon using carcass mark-recapture techniques, visual counts of live fish, and counts of constructed redds. Beginning in November and extending through December, surveys will be conducted every 9-13 days. This sampling interval corresponds to published residence times of spawning salmon. In order to evaluate spawning success and rearing conditions, a snorkel survey will be conducted during the spring to assess juvenile abundance and distribution. Juvenile surveys will be carried out using a modified Hankin-Reeves methodology, which has been used extensively in the Napa River basin. Quantitative data on live Chinook salmon densities and distribution, carcass count results with reach population estimates, redd

locations, and an assessment of spawning and juvenile rearing success will be compiled into a GIS layer and summary report.

Water Temperature Monitoring

Conduct water temperature and water quality monitoring at ten sites along the reach. Continuous temperature loggers will be deployed at ten potential salmonid spawning and/or rearing sites to chronicle the full thermal regime of the reach. Water quality will be measured at these ten sites. Parameters will include dissolved oxygen, surface temperature, pH, specific conductance, turbidity, and observations on color and odor. Data will be compiled into the GIS, Excel spreadsheets and a summary report.

Task 4: Hydraulic Model

Set up and calibrate the MIKE FLOOD model for the project area using the LIDAR data and surveyed channel cross sections. MIKE FLOOD is a dynamically linked one-dimensional and two-dimensional flood modeling package. It uses a one-dimensional hydraulic model (MIKE-11) to efficiently simulate the channel flows, and integrates this with a two-dimensional model (MIKE-21) to simulate floodplain flows, allowing these areas to be simulated in more detail as needed. This approach has the advantage of efficiently building upon the existing MIKE-11 model for the Napa River, while expanding it into a more effective and detailed floodplain flood modeling tool. This model package is also well suited to take advantage of existing County topographic information such as the high resolution LIDAR data.

MIKE FLOOD estimates flood inundation level, velocity and direction for the floodplain. It allows several processes to be modeled that are especially relevant to flood protection and floodplain and river restoration. Run preliminary alternatives to simulate the effects of a variety of measures, including creating levee setbacks, bank setbacks, lowered terraces, reconnection of secondary channels, and others. MIKE FLOOD will be used to determine flow depth and velocity in the channel and on the floodplain for a number of alternatives to determine the effects and functions for riparian and fish habitat and reduced channel erosion and sediment loading.

Task 5: Opportunities and Constraints/Existing Conditions Report

Prepare an Opportunities and Constraints/Existing Conditions Report summarizing the results of Tasks 1-4. This task will identify a suite of possible actions that could be taken to restore the river, and the relevant constraints.

Task 6: Preliminary Alternatives

Formulate three preliminary alternatives for the river. This will involve developing estimates of the cost and footprint of project elements for each alternative. The three alternatives will be simulated in the hydraulic model to assess the flood risk/benefit associated with each approach, and the effects on riparian and fish habitats, reductions in sediment loading and property damage. Produce a report and maps depicting the details of each alternative.

Task 7: Institutional Review

Evaluate different options to provide long-term management of the Napa River that allow for landowner representation, on-going maintenance of natural resource and water quality conditions and flood and bank erosion control improvements. A summary report will be produced. A committee of landowners including representatives of the appellation and agricultural groups and others will be

involved in this task with the Rutherford Dust Society, Napa County Flood Control District and the WICC.

Task 8 Draft Concept Plan

Based on input from the various reviews of the preliminary alternatives, formulate one concept alternative and prepare a draft concept plan which incorporates the existing conditions report with 1"=100' drawings, typical grading plans, typical planting plans, typical detail sheets for structures. The Draft Concept Plan will include: the characterization of the natural condition of the plan area completed in the Existing Conditions Report; detailed plans for measurable changes to the channel to provide water quality improvements and the scientific reasoning behind why these changes represent methods for achieving and sustaining water quality improvements, the role and responsibilities of the private landowners, local, state, and federal agencies in implementing the plan, an implementation timeline for the plan and a monitoring program to demonstrate and document the effectiveness of the plan in implementing water quality improvements.

Conduct individual meetings with landowners to review the Draft Concept Plan and proposed changes on their property and revise Plan as needed. Hold TAG meeting to review Draft Concept Plan

Task 9: Public Meeting and Presentation of Draft Concept Plan

Task 10: Final Concept Plan

Based on feedback on the draft plan, revise and create a Final Concept Plan.

Measure A Funds

Specifically, the requested Napa County matching funds will be used to:

1. Complete surveys of channel cross-sections described in Task 3, \$35,000
2. Begin and carry out a portion of the landowner involvement process described in Task 1, \$50,000
3. Set up and operate the MIKE FLOOD hydraulic model to simulate existing conditions and plan alternatives and predict channel flow velocities, floodplain inundation areas and the effects of improvements on downstream flood levels described in Task 4, \$105,000
4. Conduct an institutional evaluation for long term organizations to operate and maintain Napa River projects described in Task 7, \$40,000

I will be available at the September 28, 2006 meeting to answer questions and provide additional information. We look forward to working with the WICC and Napa County on this vital project.

Sincerely



Laurel Marcus
Executive Director

MAP OF PROJECT AREA

FIGURE 1
NAPA RIVER PLAN
PROJECT AREA



Oakville Rd

Rector Creek

CONN CR

NAPA R

Soda Creek

DRY CR

DRY CR

Oak Knoll Ave

