Project title: Eightmile Valley Sediment Reduction and Habitat Enhancement Project Design

Geographic Area of Interest: Central Valley Region, Upper Cache Creek Watershed, Clear Lake subwatershed

Name of responsible entity: West Lake Resource Conservation District

Organization Description and Background:

The West Lake Resource Conservation District (District) was formed in 1961 by the consolidation of three Lake County Soil Conservation Districts. Resource Conservation Districts are legal subdivisions of the State, formed under Division 9 of the California Public Resources Code. The District works collaboratively with landowners, governmental agencies, organizations, tribes, watershed groups, and stakeholders to implement natural resource protection and enhancement projects that occur within 497,960 acres of the northwestern part of Lake County. The District provides its constituents technical assistance, project design, funding identification, grant writing, and education and outreach activities. The District has maintained a successful grant program over the past eleven consecutive years. For more information, please visit our website at http://www.lakecountyrcds.org/nodes/aboutus/.

Estimated cost for project completion: $176,975. Amount requested $164,975. See Attachment A for detailed cost breakdown.

Contact information:

Name: Greg Dills, District Manager/Watershed Coordinator
Organization: West Lake Resource Conservation District
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Phone: (707) 263-4180
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Brief description of the project:

Eightmile Valley, approximately 16 acres in area, is located in the United States Bureau of Land Management's (USBLM) South Cow Mountain Recreation Area, in the mountains west of Clear Lake. (See Attachment B.)

The Eightmile Valley region was originally impacted by historic agriculture practices and in modern times, was susceptible to severe winter storms and subsequent flood events. During the summer of 2005, the USBLM implemented a Plug & Pond Restoration Project that was later inundated by severe winter storms in 2005/2006. The storms inundated the area, causing catastrophic failure of control structures and the development of a new gulley system on the valley floor. This introduced sediments into a system of headwater tributaries of Scotts Creek which flow through the valley into Clear Lake. This portion of the Clear Lake Watershed contributes a major portion of sediments to the lake, which impacts water quality. USBLM has no funding to restore this region at this time.

The Eightmile Valley Sediment Reduction and Habitat Enhancement Project will design and implement restoration management practices to reduce sediment loading to Clear Lake. The project is composed of two phases consisting of (1) design planning and (2) implementation of restoration practices to capture upstream sediment and impede active erosion from developing gullies in the valley. This application is seeking funding for the design planning phase only. Once the design planning phase is completed, further funding will be sought for the implementation phase from grant sources.

Waterbody, beneficial use, and/or pollutant addressed by this project:

The proposed project is located in the Clear Lake watershed, which is within the Upper Cache Creek Watershed (HUC 18020116). Eightmile Valley serves as the headwaters of Scotts Creek, which is a subwatershed of Clear Lake. Several drainages, flowing through the project site, are headwater tributaries of Scotts Creek. Scotts Creek joins Middle Creek in the Middle Creek marsh area before draining to the Upper Arm of Clear Lake through Rodman Slough. Scotts Creek and Middle Creek drain 30% of the Clear Lake Watershed.

Clear Lake is the largest, natural freshwater lake in California with 68 square miles of surface area and an average depth of 26 feet. Clear Lake is located within the Coastal Ranges, approximately 100 miles north of San Francisco Bay. Clear Lake was listed to the Clean Water Act Section 303(d) List of Impaired Waterbodies for nutrients in 1986 and for mercury in 1988. Accordingly, the Central Valley Water Board developed Total Maximum Daily Loads (TMDL) for nutrients (i.e., phosphorus) and mercury for Clear Lake. In particular, the Clear Lake Nutrient TMDL states that "nuisance algae blooms impair beneficial uses in Clear Lake."

According to Table II-1 (Surface Water Bodies and Beneficial Uses) in the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised September 2009, Clear Lake has several existing beneficial uses, including municipal and domestic water supply (MUN), irrigation and stock watering (AGR), water contact and non-water contact recreation (REC-1 and REC-2), warm water freshwater habitat (WARM), spawning (SPWN), wildlife (WLD), and commercial and sport fishing (COMM). Cold water freshwater habitat (COLD) is a potential beneficial use.

Beneficial uses of Clear Lake will be improved by the reduction of phosphorus and mercury-bound sediments. Municipal and domestic users of Clear Lake water will benefit by lower water treatment costs and improved water quality; cold freshwater habitat by lower turbidity, cleaner gravels and pool depths; warm freshwater habitat by reduced algal blooms, maintenance of pool and lake depths, and cleaner gravels; wildlife by promoting higher quality instream and lake conditions for aquatic organisms; human, fish, and wildlife health by reduced mercury levels; recreation by reduced nuisance algal blooms, maintenance of lake depth, and improved fisheries habitat; and commercial and sport fishing by improved fisheries habitat. The benefits of the completed Eightmile Valley project will contribute to improving the beneficial uses, as described above.

In order to attain beneficial uses, the Clear Lake Nutrient and Mercury TMDLs provide direction for reduction of sediment loading to the lake to lower phosphorus and mercury levels, respectively. Sediment erosion control is essential since erosion control retains phosphorus- and mercury-bound sediments from entering the lake. Implementation of the Clear Lake Nutrient TMDL requires a 40% reduction in phosphorus loads to Clear Lake, while the Clear Lake Mercury TMDL specifies the need for a 20% reduction in mercury inputs from tributaries.

The restoration of Eightmile Valley would reduce sediment erosion, accounting for 10% of the sediment load reduction for Scotts and Middle Creeks as specified in the Clear Lake Nutrient TMDL. Given that Scotts Creek and Middle Creek drain 30% of the Clear Lake Watershed, the sediment reduction of phosphorus- and mercury bound sediments from project implementation would be significant. For example, it is estimated in the Clear Lake Nutrient TMDL that Scotts and Middle Creeks contribute 41% of phosphorus loads to Clear Lake.

This project parallels other USBLM and watershed wide efforts in and around the Eightmile Valley region, including, but not limited to, annual trail maintenance to reduce sediment erosion and enforcement of the Wet Weather OHV Policy which is intended to reduce sediment entering the lake. The project will enhance previous and ongoing restoration efforts in the Eightmile Valley. It will build on a successful 2001 restoration project lower in Eightmile Valley where bioengineering was used to stabilize vertical streambanks.

This project will augment the Middle Creek Flood Damage Reduction and Ecosystem System Restoration Project below the confluence of Scotts and Middle Creeks. The Ecosystem Restoration Project will re-unite Scotts and Middle Creek with historic wetlands before entering Clear Lake. The wetlands were reclaimed for agriculture in the early 1900s, allowing sediments to flow directly into the lake. The Eightmile Valley project will reduce sediments from the upper watershed, thereby increasing the reserve capacity of the restored wetlands. It is estimated that the two projects will account for a significant portion of the load reduction requirements in the Clear Lake Mercury and Nutrient TMDLs for both Scotts and Middle Creeks.

(a) This project is not independently required of any discharger, nor is it proposed as mitigation to offset the impacts of a discharger's projects.

(b) Benefits to water quality and beneficial uses of waters of the State are described above.

(c) This project would not directly benefit the State Water Board or Regional Water Board functions or staff.

(d) See Attachment C for schedule of activities and deliverables.

(e) The District will provide oversight at a cost of $15,000.

(f) SEP funding is additive to and not duplicative of any other potential matching funding sources listed on this project.

(g) USBLM will provide $12,000 of in-kind match. Project area delineation, meetings, and outreach will total 240 hours (240 hours x $50 per hr. = $12,000).

(h) Qualifications and experience for key personnel are shown in attachment D.

Public support for the project:

Recognition of the need for this project came through the stakeholder process, and the Scotts Creek Watershed Council adopted the project in 2000. Agencies and organizations supporting Eightmile Valley restoration include:

County of Lake
Scotts Valley Band of Pomo Indians
Pinoleville Band of Pomo Indians
Elem Pomo Tribe
Robinson Rancheria Band of Pomo Indians
Scotts Creek Watershed Council
Responsible OHV User groups
Lake County Fish and Wildlife Advisory Committee
Sierra Club, Lake Group
Chi Council
Natural Resources Conservation Service

CEQA requirements: Not applicable for project design planning phase. For the implementation phase, USBLM completed an environmental review under NEPA, Finding of No Significant Impact, DOI-BLM-CA-C0500-2010-0003.

Measurement of project success:

Success of the project will be determined by a plan that will:

- measure baseline hydrology and sediment loading
- involve stakeholders in project design
- use sound engineering principles emphasizing bioengineering techniques to restore natural hydrologic function
- provide clear engineering design for successful project implementation
- provide clear concept so that stakeholders can envision final project conditions
- stimulate stakeholder interest and involvement in the project

A successful plan will provide designs to:

- protect or restore approximately 7,920 linear feet of streambank
- improve 16 acres of land
- minimize gully and streambank erosion

Long-term monitoring: USBLM plans to implement long-term sediment load reduction monitoring and water quality monitoring once the project is completed. This monitoring will be conducted to assure that the restoration efforts are effective and that the anticipated load reductions were achieved. USBLM will be responsible for long term maintenance of the restored region, including, but not limited to enforcement of OHV policies and plans, OHV user education and outreach, and implementation of other sediment erosion control reduction strategies in and around the Eightmile Valley region.

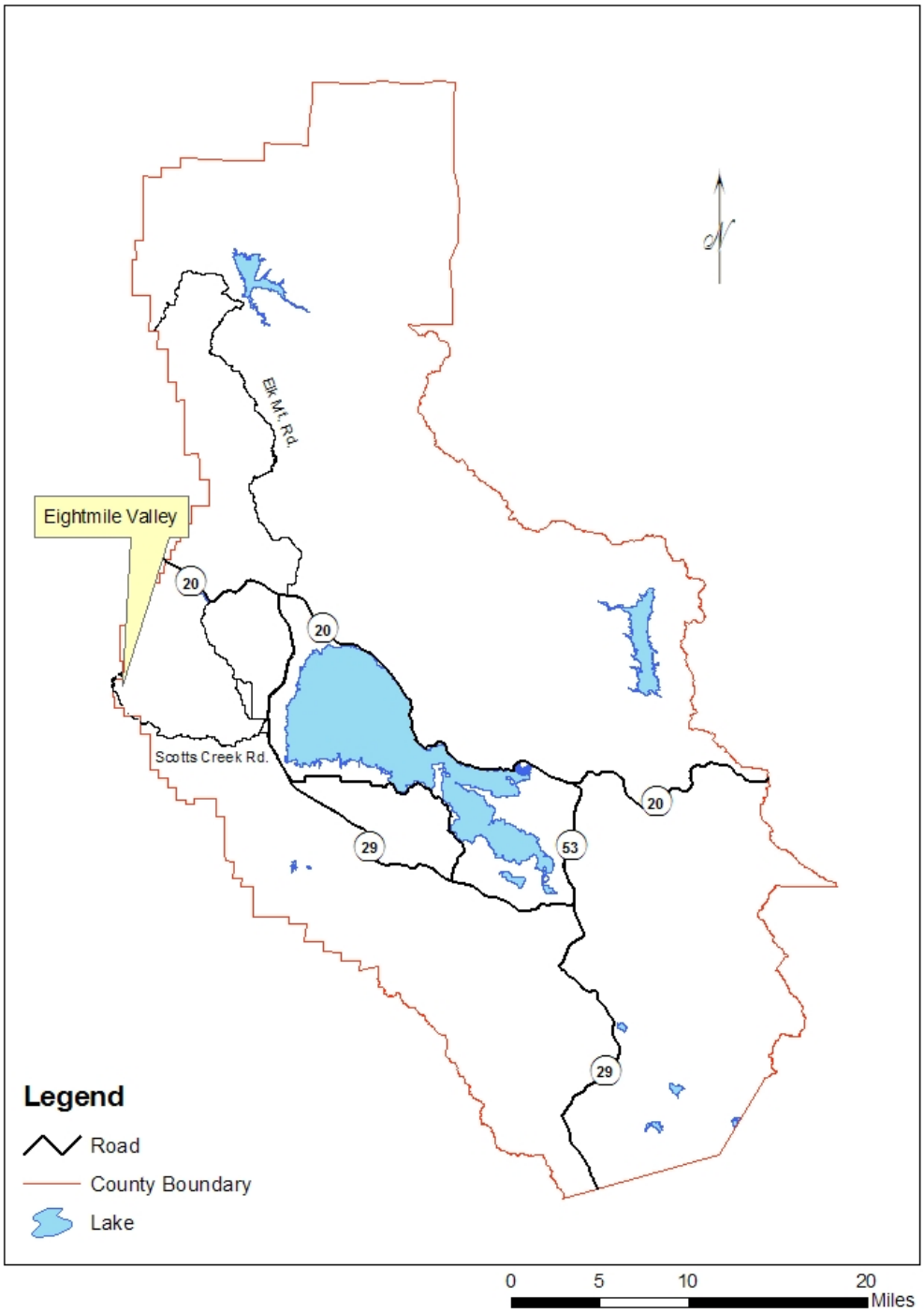
Attachment A

Detailed Cost Breakdown for Eightmile Valley Sediment Reduction and Habitat Enhancement Project Design

	Total Number of hours	Amount Requested	Hourly Rate	Task 1 Existing topgraphy/bathymetry surveying		Task 2 Hydrologic, hydraulic, and sediment mobility analysis		Task 3 Water quality and hydrology monitoring		Task 4 Engineering designs		Task 5 Project meetings/management	
Expense Categories	(hours)	Amount ($)	($/hour)	(hours)	Amount ($)	(hours)	Amount ($)	(hours)	Amount ($)	(hours)	Amount ($)	(hours)	Amount ($)
Staff													
Water Resources Engineer	469	$46,900	$100			106	$10,600	154	$15,400	132	$13,200	77	$7,700
Senior Civil Engineer	52	$6,240	$120			9	$1,080			25	$3,000	18	$2,160
Certified Engineering Geologist	73	$9,855	$135							20	$2,700	53	$7,155
Staff Engineer	136	$12,240	$90			62	$5,580			71	$6,390	3	$270
Project Geologist	205	$16,400	$80			88	$7,040	66	$5,280	18	$1,440	33	$2,640
Senior Survey Chief	39	$4,680	$120	9	$1,080	5	$600			9	$1,080	16	$1,920
Survey Crew	71	$10,650	$150	71	$10,650								
Engineering Technician (CAD)	220	$17,600	$80							220	$17,600		
Clerical/Admin	46	$2,530	$55	5	$275			9	$495	14	$770	18	$990
Other													
Travel		$1,430			$110				$440				$880
Laboratory Expenses		$1,650							$1,650				
Water Quality/Flow Monitoring Equipment		$19,800							$19,800				
Total and Task Breakdown Engineering Firm		**$149,975**			**$12,115**		**$24,900**		**$43,065**		**$46,180**		**$23,715**
USBLM In-kind contribution		**$12,000**											
West Lake Resource Conservation District Project Oversight		**$15,000**											
Total Project Cost		**$176,975**											
Total Amount Requested		**$164,975**											

Attachment B

Eightmile Valley Location Map



Attachment C

Schedule of Activities Eightmile Valley Sediment Reduction and Habitat Enhancement Project Design

	Weeks												
Activities	1	2	3	4	5	6	7	8	9	10	11	12	13
Survey of existing topography/bathymetry													
Hydrologic, hydraulic, and sediment mobility analysis													
Water quality and hydrology monitoring*													
Preliminary design													
60% Design													
90% Design													
100% Design, construction plans and specifications													
Project management													
Final report													

*Dependent on timing of stream flows. Must occur when flows are moving sediment.

Deliverables for Eightmile Valley Sediment Reduction and Habitat Enhancement Project Design

1. Survey of existing topography/bathymetry.
2. Analysis of hydrologic, hydraulic, and sediment mobility.
3. Water quality and hydrology monitoring to establish baseline sediment loading and flow characteristics.
4. Post-concept design meeting- conceptual design drawings and discussion for review, acceptance, and alterations.
5. 90% Design meeting- 90% design drawings for review.
6. Construction plans and specifications.
7. Final report

Attachment D

Qualifications and Experience for Key Project Team Members

SHN Consulting Engineers & Geologists, Inc. (SHN) is a privately held California Corporation. Founded in 1979, SHN meets the engineering needs of both public and private clients throughout the Pacific Northwest and is known for providing quality civil, environmental, and geotechnical engineering, as well as planning, permitting, and community development services. SHN has worked successfully with government and industry on a wide variety of both public and private projects.

Roland Johnson C.E.G., SHN Senior Engineering Geologist, has more than 40 years of experience in soil and groundwater characterization evaluations; erosion control structures, roadways, wastewater disposal systems, drainage systems, and specialty structures; landslide, coastal bluff, and slope rehabilitation systems; open pit mines, and related structures; landfills and related geotechnical systems; environmental assessments and EIRs; a wide variety of public buildings, power plant, commercial and industrial facilities; and other site developments. He has performed as a principal in two consulting engineering firms including SHN.

Tom Herman P.L.S., SHN Principal Surveyor, Regional Manager, has more than 32 years of experience providing professional engineering and surveying services throughout northern California. He specializes in land surveying, municipal engineering, and utility engineering for private and public sector clients including City of Willits, County of Mendocino, University of California, and City of Ukiah, among others.

Rose Patenaude P.E., SHN Water Resources Engineer, is a civil engineer with expertise in fluvial ecosystems, specializing in fisheries habitat stream channel design. Her experience includes engineering design, hydrologic and hydraulic modeling, water quality collection and analysis, and fine-sediment management. In addition to her technical knowledge, Ms. Patenaude is a project manager, a technical writer, and has extensive field experience organizing crews for surveying and sampling events.