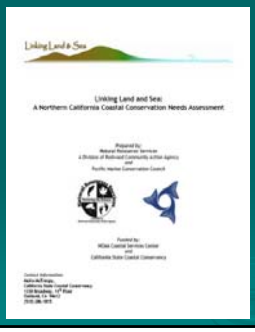
Mad River Watershed Assessment and (TMDL Compliance) Management Plan

Project Lead: Redwood Community Action Agency

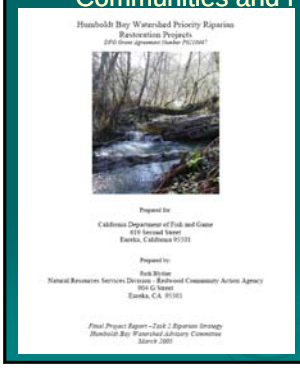
Project Team: Stillwater Sciences, Natural Resources Management, Technical and Public Advisory Teams

Funder: North Coast Regional Water Quality Control Board

RCAA/NRS Mission: Healthy Communities and Healthy Watersheds

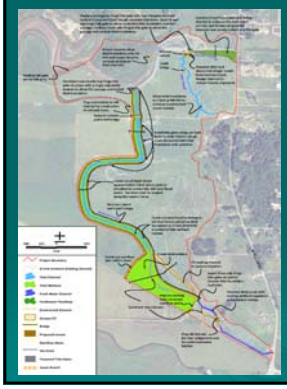


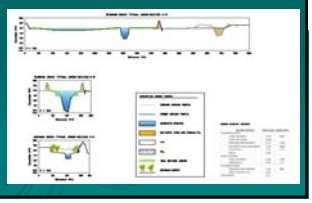
RCAA/NRS Mission: Healthy Communities and Healthy Watersheds



Reclaiming Estuaries: Salt and Brackish Marshes

Cochran/Redmond Creek





Wood Creek Enhancement Project 2009

Northcoast Regional Land Trust & Natural Resources Services of RCAA

Martin Slough: Tidegate Replacement to improve fish passage and flood routing

RCAA/NRS

- Roads Assessment
- Erosion & Sediment Control & Stormwater Compliance
- Active Living Projects (Trails, Safe Routes to School, etc.)
- Community Gardens
- Secure funding to address unmet community needs… predict, anticipate, and be proactive rather than ignore and become reactive

RCAA/NRS

- NRS exists for…
  - Immediate -landowners/land managers
  - Intermediate - agencies/municipalities/other organizations
  - Ultimate - public and resources

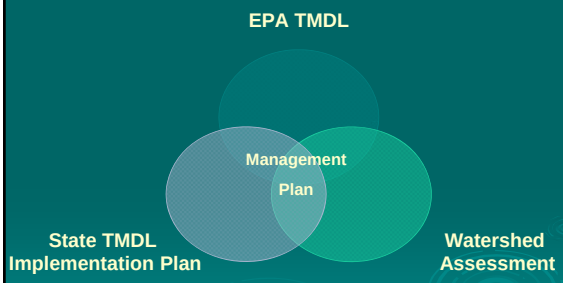
Landowner Assistance with TMDL Compliance

- Prop 40 Mad River (2011)
  - Watershed-wide, multi-stakeholder approach
  - Substantial progress
- Prop 50 Elk River/Freshwater Creek (2012)
  - Lower watershed, parcel by parcel approach
  - Stalls and speedbumps

Goals and Objectives

- In 1992, the Environmental Protection Agency identified the Mad River as impaired by elevated sedimentation and turbidity in accordance with Section 303(d) of the Clean Water Act. Water temperature was identified as an additional impairment in 2002.
- Total Maximum Daily Loads (TMDL) for sediment and turbidity were established by the EPA in December 2007. The State plans to develop a temperature TMDL in the future.
- The Watershed Assessment describes historical and current conditions, provides information for prioritizing areas for future management and restoration activities, and establishes baseline data against which the effectiveness of future actions can be measured.
- The goal of the Mad River Watershed Management Plan is to develop a strategy to protect and restore the beneficial uses of water affected by sediment and temperature. It will serve as a guiding document for the Water Board's Implementation Plan and provide a basis for landowner compliance.

TMDL to Management Plan

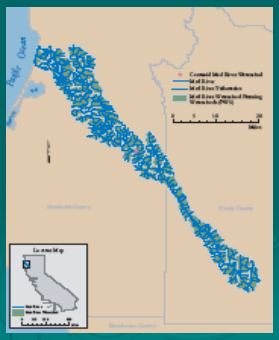


Rationale for Mad River Watershed Mgmt. Plan (MRWMP)

- 500 sq. mile/100 mile long SE to NW trending watershed that flows into a Critical Coastal Area
- Uses include water supply, aggregate extraction, forestry, ranching, recreation, and navigation, among others.
- Nationally important steelhead river as well as habitat for native runs of Coho & Chinook salmon
- EPA 303(d) list as impaired for sediment and temperature (also has nutrient and coliform)
- TMDL = "pollution budget"
- Substantially degraded riparian and in-stream habitat
- Until recently, there has been no watershed specific mgmt. plan or organized stakeholder group pursuing one.

MRWMP

- Prop 40 IWMP via State Water Resources Control Board
- Grant Amount - $355,175
- Timeline – complete by Fall 2011



MRWMP: Primary Goal

- Develop a watershed management plan that sets forth a strategy to protect and restore beneficial uses of the Mad River and its tributaries.

while preserving economic vitality…

…and recreational values

MRWMP: Attributes

- Sediment & temperature focus
- Stakeholder-generated
- Science-based
- Realistic, cost-effective BMPs
- Foundational document for TMDL Implementation Plan

MRWMP: Objectives and Status

- Overview of watershed condition, *completed*
- Targeted watershed assessment, *completed*
- Concrete prioritized methods for achieving and sustaining water quality improvements, *in development*
- Identify entities and individuals responsible *for implementation, mostly completed*

MRWMP: Objectives and Status

- Establish Mad River searchable Database, *after completion of Management Plan*
- Host a Mad River Watershed Symposium, *after completion of Management Plan*
- Develop a Monitoring Plan and Program, *the last component*

Work Completed to Date

- Identify Stakeholders: Convene SAG/PAG
- Database Format Selection & Development
- Complete Watershed Assessment (MRWA)
- Begin Management Plan
  - Convene Working Groups for 9 Specific Land Uses
  - Begin Dev't of BMPs for each landuse

Stakeholder Identification and Participation: SAG & PAG

- Landowners (incl. ranching, timber, small farms, aggregate extraction, residential, etc.)
- Municipalities & Utilities (Blue Lake, McKinleyville, Ruth Lake & Fieldbrook CSDs, HBMWD, etc.)
- Public Agencies (USFS, DFG, NOAA, USFWS, SWRCB, EPA, etc.)
- Blue Lake Rancheria & Whilkut Tribes
- Additional Resource Managers (Buckeye Conservancy, NRCS, RCD)
- PAG: all interested community members

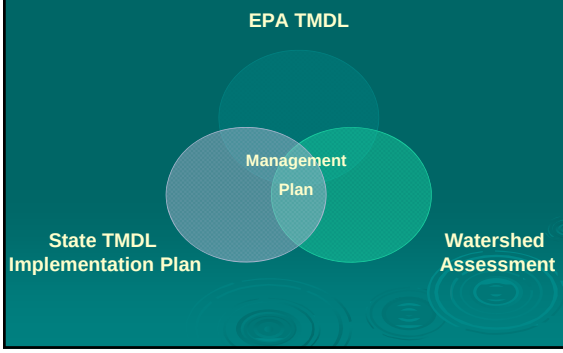
Database Development

- Stillwater format: geo-spatial and topical

Goals and Objectives

- In short, the Mad River Watershed Assessment tells us where and why to apply BMPs.
- The Mad River Watershed Management Plan will tell us which BMPs to implement.

TMDL to Management Plan

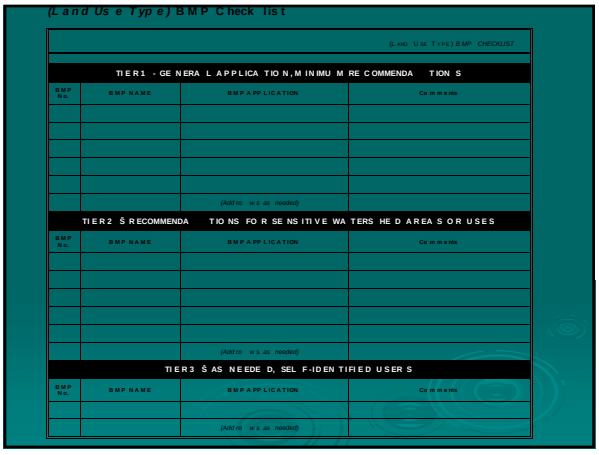


Synthesis: Risk of Sediment Impairment

Sub-basin	Area (mi^2)	Cumulative score		Sum	Risk of sediment impairment
		Sediment delivery hazard	Aquatic habitat sensitivity		
North Fork Mad River	48.8	16	13	29	1
Lower Mad River	64.3	17	10	27	
Cañon Creek	16.3	13	12	25	
Powers Creek	26.7	11	13	24	
Lindsay Creek	17.7	9	13	22	2
Boulder Creek	19.0	13	8	21	
Lower Middle Mad River	81.3	16	4	20	
Upper Middle Mad River	36.2	12	5	17	3
Ruth Lake	55.0	13	4	17	
Maple Creek	15.6	8	8	16	
Mouth of Mad River	17.1	3	13	16	
Pilot Creek	39.7	9	6	15	4
Upper Mad River	65.5	9	4	13	

Mad River Management Plan: Current Task

- *Stakeholder involvement to develop BMPs for different land uses*
  - Construction
  - Roads
  - Forestry
  - Gravel Mining/ Aggregate Extraction
  - Ranching/ Grazing/ Agricultural Operations
  - Municipalities/Public Utilities
  - Recreation, incl. motorized recreation
  - Restoration/ Enhancement Activities


(Land Use Type) BMP Check list

(LAND USE TYPE) BMP CHECKLIST

TIER 1 - GENERAL APPLICATION, MINIMUM RECOMMENDATIONS

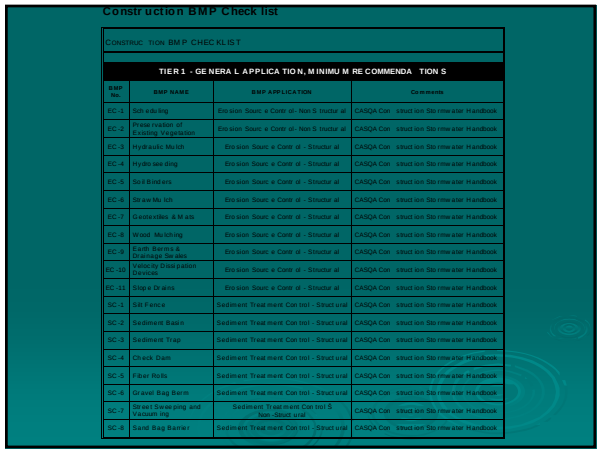
BMP No.	BMP NAME	BMP APPLICATION	Comments
		(Add rows as needed)	

TIER 2 – RECOMMENDATIONS FOR SENSITIVE WATERS HED AREAS OR USES

BMP No.	BMP NAME	BMP APPLICATION	Comments
		(Add rows as needed)	

TIER 3 – AS NEEDED, SELF-IDENTIFIED USERS

BMP No.	BMP NAME	BMP APPLICATION	Comments
		(Add rows as needed)	


Construction BMP Check list

CONSTRUCTION BMP CHECKLIST

TIER 1 - GENERAL APPLICATION, MINIMUM RECOMMENDATIONS

BMP No.	BMP NAME	BMP APPLICATION	Comments
EC-1	Scheduling	Erosion Source Control - Non Structural	CASQA Construction Stormwater Handbook
EC-2	Preservation of Existing Vegetation	Erosion Source Control - Non Structural	CASQA Construction Stormwater Handbook
EC-3	Hydraulic Mulch	Erosion Source Control - Structural	CASQA Construction Stormwater Handbook
EC-4	Hydroseeding	Erosion Source Control - Structural	CASQA Construction Stormwater Handbook
EC-5	Soil Binders	Erosion Source Control - Structural	CASQA Construction Stormwater Handbook
EC-6	Straw Mulch	Erosion Source Control - Structural	CASQA Construction Stormwater Handbook
EC-7	Geotextiles & Mats	Erosion Source Control - Structural	CASQA Construction Stormwater Handbook
EC-8	Wood Mulching	Erosion Source Control - Structural	CASQA Construction Stormwater Handbook
EC-9	Earth Berms & Drainage Swales	Erosion Source Control - Structural	CASQA Construction Stormwater Handbook
EC-10	Velocity Dissipation Devices	Erosion Source Control - Structural	CASQA Construction Stormwater Handbook
EC-11	Slope Drains	Erosion Source Control - Structural	CASQA Construction Stormwater Handbook
SC-1	Silt Fence	Sediment Treatment Control - Structural	CASQA Construction Stormwater Handbook
SC-2	Sediment Basin	Sediment Treatment Control - Structural	CASQA Construction Stormwater Handbook
SC-3	Sediment Trap	Sediment Treatment Control - Structural	CASQA Construction Stormwater Handbook
SC-4	Check Dam	Sediment Treatment Control - Structural	CASQA Construction Stormwater Handbook
SC-5	Fiber Rolls	Sediment Treatment Control - Structural	CASQA Construction Stormwater Handbook
SC-6	Gravel Bag Berm	Sediment Treatment Control - Structural	CASQA Construction Stormwater Handbook
SC-7	Street Sweeping and Vacuuming	Sediment Treatment Control Non-Structural	CASQA Construction Stormwater Handbook
SC-8	Sand Bag Barrier	Sediment Treatment Control - Structural	CASQA Construction Stormwater Handbook

	SC-9	Straw Bale Barrier	Sediment Treatment Control - Structural	CASQA Construction Stormwater Handbook
	SC-10	Storm Drain Inlet Protection	Sediment Treatment Control - Structural	CASQA Construction Stormwater Handbook
	WE-1	Dust Abatement	Sediment Treatment Control S - Non-Structural	CASQA Construction Stormwater Handbook
	TC-1	Stabilized Construction Entrance/Exit	Sediment Source Control - Structural	CASQA Construction Stormwater Handbook
	TC-2	Stabilized Construction Roadway	Sediment Source Control - Structural	CASQA Construction Stormwater Handbook
	TC-3	Entrance/Outlet Tire Wash	Sediment Treatment Control - Structural	CASQA Construction Stormwater Handbook
	NS-1	Water Conservation Practices	Non-Stormwater - Non-Structural	CASQA Construction Stormwater Handbook
	NS-2	Paving and Grinding Operations	Non-Stormwater - Non-Structural	CASQA Construction Stormwater Handbook
	NS-6	Illicit Connections/ Discharge	Non-Stormwater - Non-Structural	CASQA Construction Stormwater Handbook
	NS-7	Potable Water/Irrigation	Non-Stormwater - Non-Structural	CASQA Construction Stormwater Handbook
	NS-8	Vehicle and Equipment Cleaning	Non-Stormwater - Non-Structural	CASQA Construction Stormwater Handbook
	NS-9	Vehicle and Equipment Fueling	Non-Stormwater - Non-Structural	CASQA Construction Stormwater Handbook
	NS-10	Vehicle and Equipment Maintenance	Non-Stormwater - Non-Structural	CASQA Construction Stormwater Handbook
	NS-11	Pile Driving Operations	Non-Stormwater - Non-Structural	CASQA Construction Stormwater Handbook
	NS-12	Concrete Curing	Non-Stormwater - Non-Structural	CASQA Construction Stormwater Handbook
	NS-13	Concrete Finishing	Non-Stormwater - Non-Structural	CASQA Construction Stormwater Handbook
	NS-16	Temporary Batch Plants	Non-Stormwater - Structural	CASQA Construction Stormwater Handbook
	WM-1	Material Delivery and Storage	Waste Management - Structural	CASQA Construction Stormwater Handbook
	WM-2	Material Use	Waste Management S Source Control Non-Structural	CASQA Construction Stormwater Handbook
	WM-3	Stockpile Management	Waste Management - Source Control Structural	CASQA Construction Stormwater Handbook
	WM -4	Spill Prevention and Control	Waste Management S Source and Treatment Control S Structural and Non-Structural	CASQA Construction Stormwater Handbook

WM-7	Contaminated Soil Management	Waste Management S Source and Treatment Control S S tructural and Non-Structural	CASQA Construction Stormwater Handbook
WM-8	Concrete Waste Management	Waste Management S Source Control S Structural	CASQA Construction Stormwater Handbook
WM-9	Sanitary/Septic Waste Management	Waste Management S Source and Treatment Control S S tructural and Non-Structural	CASQA Construction Stormwater Handbook
WM-10	Liquid Waste Management	Waste Management S Source and Treatment Control S S tructural and Non-Structural	CASQA Construction Stormwater Handbook
		(Add rows as needed)	

TIER 2 S RECOMMENDATIONS FOR SENSITIVE WATERSHED AREAS OR USES

BMP No.	BMP NAME	BMP APPLICATION	Comments
EC-12	Preservation of Riparian Vegetation/Buffers	Erosion Source Control - Non S tructural	Forest Practice Rules?
EC-13	Preservation of Wetland Vegetation/Buffers	Erosion Source Control - Non S tructural	USACE Wetland Manual?
EC-14	Earth Dikes and Levees & Drainage Channels	Hydraulic Control - S tructural	??
EC-15	Culvert Outlet Velocity Dissipation Devices	Erosion Source Control S S tructural	CASQA Construction Stormwater Handbook
EC-16	In-Stream S tructures	Erosion Source Control & Sediment Treatment Control S S tructural	DFG S almonid Restoration Manual
EC-17	Streambank Stabilization S tructures	Erosion Source Control & Sediment Treatment Control S S tructural	DFG S almonid Restoration Manual
EC-18	Slope Drains	Hydraulic Control - S tructural	CASQA Construction Stormwater Handbook
EC-19	Geotechnical Slope Stabilization	Erosion Source Control - S tructural	ASCE Manual?
NS-2	Dewatering Operations	Hydraulic Control S Non-S tructural	CASQA Construction Stormwater Handbook
NS-4	Temporary Stream Crossing	Erosion Source Control - S tructural	CASQA Construction Handbook & DFG Salmonid Restoration Manual?
NS-5	Clear Water Diversion	Hydraulic Control	CASQA Construction Stormwater Handbook
NS-14	Material and Equipment Use Over Water	Source and Treatment Control - S tructural	CASQA Construction Stormwater Handbook
NS-15	Demolition Adjacent to Water	Source and Treatment Control - S S tructural and Non-S tructural	CASQA Construction Stormwater Handbook

AE1	Aggregate Extraction	Source and Treatment Controls S Structural and Non-Structural	See Aggregate Extraction BMP Section of this Document
RC1	Road Construction	Source and Treatment Controls S Structural and Non-Structural	See Road BMP Section of this Document
RA	Restoration Activities	Source and Treatment Controls S Structural and Non-Structural	See Restoration BMP Section of this Document
FR1	Forestry Activities	Source and Treatment Controls S Structural and Non-Structural	See Forestry BMP Section of this Document
GR1	Grazing and Ranching	Source and Treatment Controls S Structural and Non-Structural	See Grazing BMP Section of this Document
RC1	Recreation	Source and Treatment Controls S Structural and Non-Structural	See Recreation BMP Section of this Document
		(Add rows as needed)	

TIER 3 AS NEEDED, SEE IDENTIFIED USERS

BMP No.	BMP NAME	BMP APPLICATION	Comments
		(Add rows as needed)