EXECUTIVE OFFICER'S REPORT
North Coast Regional Water Quality Control Board
May 2015

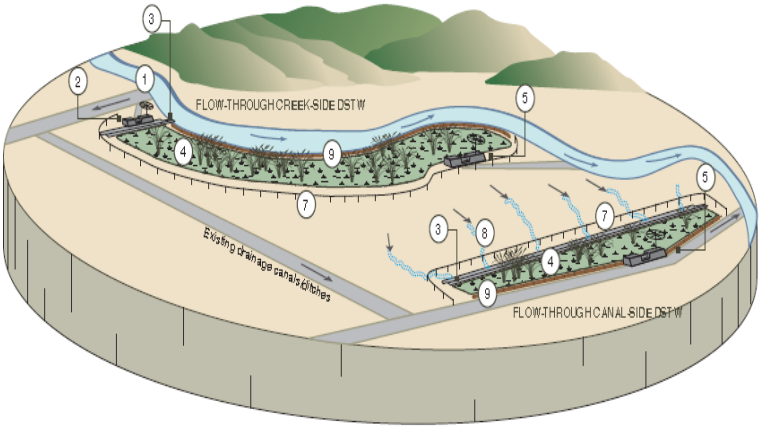
Update on the Upper Klamath Basin Diffuse Source Treatment Wetlands (DSTWs) Pilot Study *Clayton Creager*

The North Coast Regional Water Quality Control Board (NCRWQCB) and the California State Coastal Conservancy are collaborating on the development of pilot Diffuse Source Treatment Wetlands (DSTWs) in the Wood River watershed (OR) to reduce phosphorous levels in Upper Klamath Lake. Improved water quality in Upper Klamath Lake, located in Oregon, is essential to improving water quality in the Klamath River in California.

The DSTWs were selected at the Water Board sponsored 2012 Upper Klamath Basin Water Quality Improvement Projects Workshop (held in Sacramento, CA) as a practical and cost-effective tool for improving water quality in Upper Klamath Lake and improving riparian habitat conditions in these biologically rich tributaries.

Photo by: Jerrod Botcher, Klamath Basin Rangeland Trust

The NCRWQCB and California State Coastal Conservancy are in the final stages of contract approval and hope to initiate construction of three to four DSTWs in May 2015. Construction is planned to be completed by September 2015, with three years of monitoring to evaluate: 1) pollutant removal effectiveness; 2) water balance / water consumption; 3) effect on agriculture operations; and 4) biodiversity impacts / benefits. If successful, several hundred sites in the Upper Klamath Basin have been identified where DSTWs could be built to restore lost ecosystem functions of pollutant removal and habitat biodiversity and achieve TMDL targets.



Stillwater Sciences. Maia Singer, PhD

1. **EXISTING POINT OF DIVERSION** - Water is diverted from the creek by way of existing drainage canals/ditches adjacent to or near the proposed site.
2. **OVERFLOW WEIR AND DIVERSION BOX** - Water flows over the weir and into the diversion box to control inflow. The diversion box can be shut off completely if necessary.
3. **DISTRIBUTION TRENCH** - Constructed at the head of the wetland, the distribution trench ensures the water is 4 feet deep and at right angles to the direction of flow.
4. **VEGETATION** - DSTW is planted with primary species such as cattail (*Typha spp.*), bulrush (*Scirpus spp.*), bur-reed (*Sparganium eurycarpum)*, and spike rush (*Eleocharis spp.*) for water treatment; secondary species such as pond lilies (*Nuphar lutea* ssp.*polysepala*) for food and habitat.
5. **ADJUSTABLE DISCHARGE WEIR** - Maintains water levels in the vegetated area at 2 feet or less for a system with a designated discharge.
6. **LEVEL CONTROL STRUCTURE** - Maintains water levels in the vegetated area at 2 feet or less for a terminal system.
7. **EXCLUSION FENCING** - Keeps grazing animals out of the wetlands.
8. **VEGETATED SWALE** - Diverts run-off from higher elevations on the parcel.
9. **EARTHEN BERMS** - Generally to be avoided, since the site is likely to be wet and difficult to work with using typical earth moving equipment. If required, berms should have two feet of freeboard and should be higher at the discharge end of the wetlands.

Conceptual feasibility design for the Diffuse Source Treatment Wetlands to be built in the Wood River valley during the summer of 2015 are depicted in the figure above.

≈ ≈ ≈ ≈ ≈ ≈ ≈ ><((((º> ≈ ≈ ≈ ≈ ≈ ≈ ≈ ≈ ≈
><((((º> ><((((º>

Russian River Watershed Association's Environmental Column – April 2015

Riparian Buffers and Corridors

This article was authored by William Stockard of Sonoma County, on behalf of RRWA. Reprinted with permission.

If you look at our waterways from above, you can see a rolling and flowing patchwork of managed lands and natural landscapes, including urbanized neighborhoods, agricultural fields, riparian forest, seasonal channels, and open water. More and more we are seeing how our management of these lands influences the others. Over time we have seen how the growth of our agricultural, timber and gravel harvesting, urban and suburban development have shrunk the forest-vegetated areas next to rivers and streams. These riparian areas have a special significance in this patchwork and are increasingly recognized for their ecological and social benefits. Riparian areas are not just patches of green next to water.

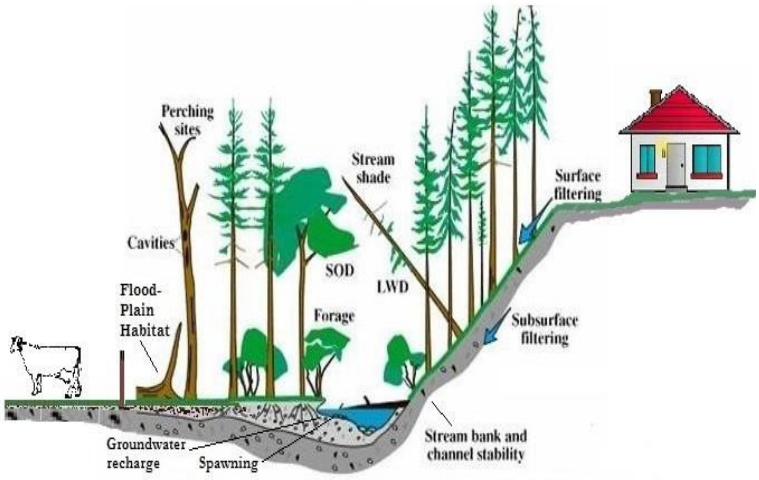
> *"Riparian areas are 3 dimensional zones of direct interaction between terrestrial and aquatic ecosystems …and occur along all types of waterways, including streams, meadows, flood plains, peatlands, marshes, springs, and lake shores…."* *– Moyle et al (1996)*

> *"They extend down into the groundwater, up above the forest canopy, outward across the floodplain, laterally into the near-slopes to various distances into terrestrial areas, and along watercourses" – (Ilhardt et al. 2000).*

The ecological benefits of riparian areas are often referred to as ecosystem services or ecosystem functions. They include:

- Reducing erosion by stabilizing stream banks,
- Supporting nesting, feeding, resting, and reproductive habitat for birds, fish, and terrestrial animals,
- Filtering overland flow from upland land uses before it enters a stream,
- Providing shade to lower water temperature,
- Supplying large woody debris cover for fish and freshwater shrimp, and
- Filtering and recharging groundwater.

In effect they protect or *buffer* the living environment along waterways from the impacts of development.



Ecological functioning of riparian areas (Adapted from Koning. 1999.)

"Riparian areas and corridors will be critical in adapting to climate change, yet they are one of our most heavily degraded ecosystems."
— Mike Chrisman, CA. Secretary for Resources, 2007

Trees, shrubs, and soils in riparian areas also help to mitigate global warming and greenhouse gas emissions. Their increased biomass helps carbon sequestration and increases soil carbon stocks (NRCS 2015). In the future we might see riparian areas being restored, purchased, and maintained for carbon credits.

In terms of social benefit, riparian areas are a great place to enjoy outdoor recreation and scenery. On a river, trail, or on a road, there is nothing like

paddling, pedaling, walking, or driving through a mature riparian forest. Less fun but extremely important is the flood damage protection that riparian areas provide. During heavy rainfall and runoff events the extra undeveloped space around a river is a buffer protecting our homes and property.

The longer, wider, and taller the riparian area, the better the ecosystem function. In fact, if a riparian area is too small and too isolated, it may not offer enough ecosystem services for animals to survive, reproduce, or migrate. These ecosystem services work on another dimension as well: time. The older and more mature a riparian area is, the greater the value of the ecosystem services it provides and the greater social return. Restoration is very important to riparian corridor management, but conserving and maintaining existing mature riparian areas have more inherent value.

> *"Establishing riparian management zones (or "bufferstrips") of adequate width is probably the single most effective strategy for protection and maintenance of the ecological values of riparian areas" - (Kondolf et al. 1996).*
>
> *"Supervisors unanimously approved the measure shielding 82,000 acres of land outside city limits, most of it on private property, from future farming and development."* - The Press Democrat, November 24, 2014.

The challenge inherent to land use planning for riparian buffers is how to balance the need to protect threatened, endangered, and more common species with our need to maintain our means to grow food, to earn a living, and to sustain our traditions and values. A number of local agencies have taken up this challenge. In November 2014, the Sonoma County Board of Supervisors adopted zoning code changes to implement the stream protection policies and rezoned properties to add the *Riparian Corridor Combining Zone* to all designated streams shown on the General Plan Open Space maps. The protected area includes the streambed, the stream bank, and a 50, 100, or 200 foot streamside conservation area on each side of the stream, as measured from the top of the higher bank. Within each streamside conservation area only the practices defined in the County Ordinance are allowed.

Sonoma County Department of Agriculture has provided best management practices (BMPs) for agricultural cultivation within riparian corridors and streamside conservation areas (SCAs). The intent of the BMPs is to prevent controllable sources of sediment, nutrients, pathogens, and pesticides from discharging into streams.

Also, *Mendocino County code Sec. 20.496.035 - Riparian Corridors and other Riparian Resource Areas,* was adopted to protect and maintain riparian habitat. The code section applies buffer areas and widths adjacent to all environmentally sensitive habitats from possible significant disruption caused by a proposed development.

The Sonoma County Water Agency performs a significant amount of habitat restoration and channel maintenance throughout Sonoma County to protect endangered native species and increase flood protection. In most cases, activities include bank stabilization and replanting of native species, and may include grading and installation of in-stream structures to improve refuge and spawning habitat for protected species.

For References and Further Reading go to: *www.rrwatershed.org*

Russian River Watershed Association
300 Seminary Ave, Ukiah, CA 95482
(707)833-2553.

The Watershed Stewards Program Placement Site:
North Coast Regional Water Quality Control Board
Brandon Stevens

Photo taken at the Salmon Restoration Federation. Lance Le explaining the anatomy of a coho salmon *(Oncorhynchus kisutch)* while Brandon Stevens is dissecting.

The Watershed Stewards Program (WSP) is a comprehensive, community-based watershed restoration and education program. Members serve throughout California's coastal watersheds, supporting the WSP mission to conserve, restore and enhance anadromous (salmon and trout-bearing) watersheds for future generations.

In collaboration with private landowners, timber companies, tribal communities, commercial and sport fishing industry representatives, teachers, community members, non-profit organizations, and public agencies, the WSP's partnerships work to revitalize watersheds that contain endangered and threatened species by using state-of-the-art data collection and watershed recovery techniques.

As a second year placement site, the North Coast Regional Water Quality Control Board has provided a limitless exposure to water quality, conservation, and restoration to two aspiring environmental scientists: Brandon Stevens and Lance Le. Together they have assisted in numerous Water Board projects, including TMDL implementation, nutrient assessment, watershed modelling, water quality data analysis, outreach and education, and restoration projects to insure future water resource protections. The partnership between the Water Board and the WSP is vital to the mission and success of both organizations.

≈ ≈ ≈ ≈ ≈ ≈ ≈ ≈ ><((((º> ≈ ≈ ≈ ≈ ≈ ≈ ≈ ≈ ≈
><((((º> ><((((º>

Enforcement Report for May 2015 Executive Officer's Report

Diana Henrioulle

Date Issued	Discharger	Action Type	Violation Type	Status as of March 27, 2015
1/28/15	Mendocino Redwood Company, LLC	NOV	WDR permit violation	In compliance

Comments: On January 28, 2015, the chief of the Nonpoint Source and Surface Water Protection Division issued a Notice of Violation to Mendocino Redwood Company, LLC for failure to identify and treat controllable sediment discharge sources under the General WDR for Discharges Related to Timber Harvest Activities. A site inspection identified several areas where corrective measures are needed to prevent or minimize sediment discharges. The NOV directed the Discharger to revise the Erosion Control Plan including corrective actions for Controllable Sediment Discharge Sources by February 15, 2015. The Discharger submitted an acceptable revised ECP, received February 17, 2015.

Date Issued	Discharger	Action Type	Violation Type	Status as of March 27, 2015
2/24/15	Allen Henderson	CAO and 13267	Unauthorized discharge of fill material into waters of the state	Ongoing

Comments: On February 24, 2015, the Executive Officer (EO) issued Cleanup and Abatement (CAO) and 13267 Order No. R1-2015-0016, to Allen Henderson for discharge of fill material into waters of the state. The CAO directs the Discharger obtain all necessary permits, to clean up and abate the discharges and threatened discharges, and submit various technical and monitoring reports, with the first deliverable, a restoration, mitigation and monitoring plan, due by mid-April, 2015.

Date Issued	Discharger	Action Type	Violation Type	Status as of April 16, 2015
3/10/15	The City of Santa Rosa Wastewater Treatment Facilities	ACLO	Unauthorized discharges of treated or partially treated wastewater to receiving waters	Ongoing

Comments: On March 10, 2015, the EO issued a Stipulated Administrative Civil Liability Order (Stipulated Order) No R1-2014-0052 to the City of Santa Rosa Wastewater treatment Facilities for unauthorized discharge of treated or partially treated wastewater to receiving waters in the amount of $74,776. The Stipulated Order states that the Discharger will implement a Supplemental Environmental Project (SEP) that will provide exclusionary fencing to reduce pollutants at three creek crossings (brides) in the Santa Rosa area. The

cost will be at least $37,388 and the remaining $37,388 is to be paid to the Cleanup and Abatement Account.

Date Issued	Discharger	Action Type	Violation Type	Status as of April 16, 2015
4/8/2015	Niles Ranch	NOV	Failure to submit 2014 Annual Report as required by WDR Order for cow dairies	Ongoing

Comments: On April 8, 2015, the EO issued a Notice of Violation (NOV) to Niles Ranch for failure to submit a 2014 Annual Report as required by WDR Order No. R1-2012-0003 for Existing Cow Dairies. The Annual report is due November 30th of each year. The NOV requests submittal of the past due report by May 7, 2015.

Date Issued	Discharger	Action Type	Violation Type	Status as of April 16, 2015
4/8/2015	Del Biaggio Dairy	NOV	Failure to submit 2014 Annual Report as required by WDR Order for cow dairies	Ongoing

Comments: On April 8, 2015, the EO issued a Notice of Violation (NOV) to Del Biaggio Dairy for failure to submit their 2014 Annual Report as required by WDR Order No. R1-2012-0003 for Existing Cow Dairies. The Annual report is due November 30th of each year. The NOV requests submittal of the past due report by May 7, 2015.

CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS