

Regional Water Quality Control Board
North Coast Region

Executive Officer's Summary Report
Thursday, February 21, 2019
Regional Water Board Office
5550 Skylane Blvd, Suite A
Santa Rosa, CA

ITEM: 12

SUBJECT: Update on the findings of the Elk River Recovery Assessment (Chuck Striplen, Darren Mierau, Bonnie Pryor).

BOARD ACTION: This is an informational item. No action will be taken by the Regional Water Board.

INTRODUCTION:

On May 12, 2016 the North Coast Regional Water Quality Control Board (Regional Water Board) adopted the Action Plan for the Upper Elk River Sediment TMDL (TMDL Action Plan) as an amendment to the Water Quality Control Plan for the North Coast Region (Basin Plan). The TMDL Action Plan was approved by the State Water Resources Control Board (State Water Board) on August 1, 2017; the Office of Administrative Law (OAL) on March 8, 2018; and by the US Environmental Protection Agency (US EPA) on April 4, 2018. The purpose of this item is to update the Board on the findings of the Elk River Recovery Assessment and how this work will inform other work designed to restore beneficial uses in the Elk River. The update will be presented by Regional Water Board staff Chuck Striplen, Darren Mierau of California Trout, and Bonnie Pryor of Northern Hydrology and Engineering.

The Program of Implementation in the TMDL Action Plan contains three main components: Waste Discharge Requirements (WDRs) or waivers to minimize sediment loads from new and existing sediment sources in lands in the Upper Elk River Watershed, and two non-regulatory components designed to be integrated, adaptive, and leveraged to inform an effective restoration strategy. These are: the Elk River Recovery Assessment and the Elk River Watershed Stewardship Program. On November 30, 2016 the Regional Water Board adopted Order No. R1-2016-0004, a WDR for Humboldt Redwood Company (HRC), which is now being reviewed as directed by the State Water Board. The revised WDR is tentatively scheduled to come before the Regional Water Board for consideration in June 2019. Staff are also revising Green Diamond Resource Company's WDR which is expected to come before the Regional Water Board in the first quarter of Fiscal Year 2019-20, to be codified in an updated South Fork Elk River Management Plan.

The Elk River Recovery Assessment (ERRA) was implemented by California Trout, Inc. (CalTrout), Northern Hydrology & Engineering, and Stillwater Sciences (ERRA Project

team) through a contract with the State Water Board using Cleanup and Abatement Account funds. ERRRA is a feasibility and computational modeling study to investigate the current conditions of Elk River and to identify potential remediation actions to support beneficial uses and abate nuisance flooding conditions. The project domain for the ERRRA extends from the mouth of Elk River at Humboldt Bay and into the South and North Forks, whose upper bounds are at the confluences of Tom Gulch and Bridge Creek, respectively.

BACKGROUND:

The Program of Implementation, one of the key components of the TMDL Action Plan, identifies a combination of regulatory and non-regulatory actions that will lead to the attainment of water quality objectives, recovery of beneficial uses, protection of high-quality waters, and abatement of nuisance conditions in the Upper Elk River Watershed. Due to continued impairments in the watershed and the inherent uncertainty with existing sediment transport processes, the Program of Implementation is an adaptive management program that includes sophisticated watershed modeling, collaborative watershed stewardship, and experimental pilot remediation projects. While the TMDL Action Plan delineates the Upper Elk River for sediment source analysis and load allocations, the entire watershed is listed as impaired and the Program of Implementation is designed to also address influences from the lower Elk River. To that end, the ERRRA modeling domain starts at the top of the impacted reaches in the South and North Fork Elk River and extends to the outlet at Humboldt Bay. Similarly, the Stewardship Program includes stakeholders from the whole watershed.

DISCUSSION:

In November 2018, Regional Water Board received the report *Elk River Recovery Assessment: Recovery Framework* from the ERRRA Project Team. The ERRRA contract included the following tasks: update and revision of existing data, topographic and water quality data collection, and hydrodynamic sediment transport modeling. Following review and discussion of the Technical Advisory Committee (TAC) in 5 separate meetings a final report on the modeling and recovery implementation framework was submitted.

A pilot sediment remediation project was also required and has been completed. The pilot project was co-funded by the Coastal Conservancy, with cost shares from CalTrout and HRC. This project involved the removal of the road base at the Elk River Steel Bridge and removal of trees and sediment from a portion of the connected floodplain. CalTrout and its subcontractors successfully completed construction of this project in September 2017. The Regional Water Board serves as the lead agency for two additional sediment remediation pilot projects in the impacted reach of the Elk which are currently in the CEQA permitting phase. The Initial Study and Mitigated Negative Declaration for these projects will come before the Regional Water Board in April 2019, with construction to take place between August and October 2019.

The Elk River Hydrodynamic and Sediment Transport model (HST model) was developed to refine our understanding of flow and sedimentation patterns in the impacted reaches of Elk River. The HST model broadly enables a better understanding of: (1) existing channel

and floodplain nuisance flooding and sediment impairments; (2) the effects of sediment recovery actions with respect to attainment of water quality objectives, recovering beneficial uses, and reducing nuisance flooding; and, (3) future long-term trends in channel and floodplain sedimentation under a range of potential recovery actions. The ERRA hydrodynamic and sediment transport analyses were implemented with Environmental Fluid Dynamics Code (EFDC). EFDC is a public-domain model for simulating one-, two- and three-dimensional flow, transport, and biogeochemical processes in surface waters. The configured HST model simulates the following state variables and physical processes: depth and velocity; multiple size classes of cohesive and non-cohesive suspended sediment transport; bedload transport of multiple size classes of non-cohesive sediment; vegetation resistance; wetting and drying of grid cells; multi-layer sediment bed with bed armoring; sediment bed geomechanics for grain size distribution, porosity, and bulk density; and bed morphological change (scour and deposition).

Funding allowed for the running of 3 model scenarios: current conditions, reduced suspended sediment concentration and loads, and channel modifications. The recovery scenarios simulate the watershed response to actions intended to alleviate sediment-related impairments. The scenarios fall under two categories: (1) reduced suspended sediment concentrations and loads from the Upper Elk River and (2) simulation of a suite of remediation and hydromodifications based on recommendations from the ERRA with TAC review. Scenarios test which category of actions would lead to recovery of beneficial uses and abatement of nuisance conditions, including whether recovery would occur without any change to the watershed (i.e. existing conditions scenario). The current conditions scenario essentially represents a no project alternative, evaluating the likelihood of beneficial uses being recovered with no modification to the existing channel or reduction in sediment entering the system.

Applying the HST model to these scenarios did not result in a “silver bullet” solution to the various impairments. In other words, neither modifying the channel alone, nor reducing sediment alone, nor leaving the system in its present condition will solve the problems experienced by fish and residents alike. The findings do indicate, however, that some combination of actions may have a higher probability of improving conditions. In addition, all recovery scenarios present some short-term risk to endangered salmon populations before realizing long-term hydrologic and habitat improvements for the river.

A total of five TAC meetings were convened, including the participation of representatives from the BLM, NOAA National Marine Fisheries Service, USFWS, USGS, CDFW, Regional Water Board, County of Humboldt, Humboldt State University, CalTrout, Salmon Forever, Green Diamond Resource Company, Humboldt Redwood Company, McBain Associates, Northern Hydrology and Engineering, and Stillwater Sciences. The ERRA contract provided for three TAC meetings, but additional funding from a CWA 205(j) grant was awarded to CalTrout to bridge the highly technical ERRA to the stakeholder-driven Stewardship Program. The 205(j) grant funded the refinement of the conceptual model, the additional TAC meetings, and the meetings with the Stewardship Program Steering Committee.

Looking forward, staff are currently developing a new contract using State Water Board discretionary funds to provide for additional model runs, a climate change analysis, and provide additional support for reporting the findings of the Stewardship program.

The Elk River Watershed Stewardship program will now consider the extensive list of actions recommended by the ERRA as the work of the Stewardship program resumes this month. With contract assistance from CalTrout, the Stewardship program will work with residents, businesses, specialists, regulatory agencies, and stakeholders to take the products and recommendations of the ERRA report and develop remediation and restoration action plans for sediment, health and safety, and science and monitoring.

SUPPORTING DOCUMENTS:

Elk River Recovery Assessment: Recovery Framework (already provided to Regional Board members under separate cover):

[https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/elk_river/pdf/181203/ERRA%20Framework%20with%20appendices_181202%20\(large\).pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/elk_river/pdf/181203/ERRA%20Framework%20with%20appendices_181202%20(large).pdf)