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Watershed Sediment Reduction Plan and Master Reassessment and Treatment Schedule

North Fork Elk River CAO

NCRWQCB R1-2006-0055

February 10, 2012

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PROJECT TITLE: NORTH FORK ELK RIVER WATERSHED SEDIMENT REDUCTION PLAN AND MASTER REASSESSMENT AND TREATMENT SCHEDULE

ORGANIZATION IMPLEMENTING THE PROJECT:

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PHYSICAL SCIENCES MANAGER

_____Date _____

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Background

A master treatment schedule was originally submitted on August 7, 2007 as required per the North Fork Elk River Clean Up and Abatement Order # R1-2006-0055. The schedule set a treatment goal of 80% of the top 100 sites with the greatest potential for environmental impact by 2011. The 2007 schedule stated that a revised master treatment schedule would be submitted by 2012 to schedule the remaining sediment sources in the watershed. This report fulfills that obligation by providing a reassessment plan and schedule for the remaining treatable sediment source sites in North Fork Elk River.

Overview

The Master Treatment Schedule provides measurable implementation goals for achieving a specific amount of treatment work within a specified timeline. The Master Treatment Schedule for the watershed is the long-term plan that lays out the timetable and implementation milestones for treating the controllable sites and any other elements of the program that need to be completed in the watershed and that may vary each year. Each year HRC treats sediment sources on its roads and property in North Fork Elk River. The Sediment Source database provides a catalogue from which to select sites when developing each year's annual work plan.

The master treatment schedule addresses:

- Sediment Source Inventories
- Source Treatment

All details of HRC's Sediment Treatment Program are carried out according to the General Sediment Source Treatment Plan that explains the steps and methods for sediment inventory of sediment sources, road standards and treatment priority mechanisms.

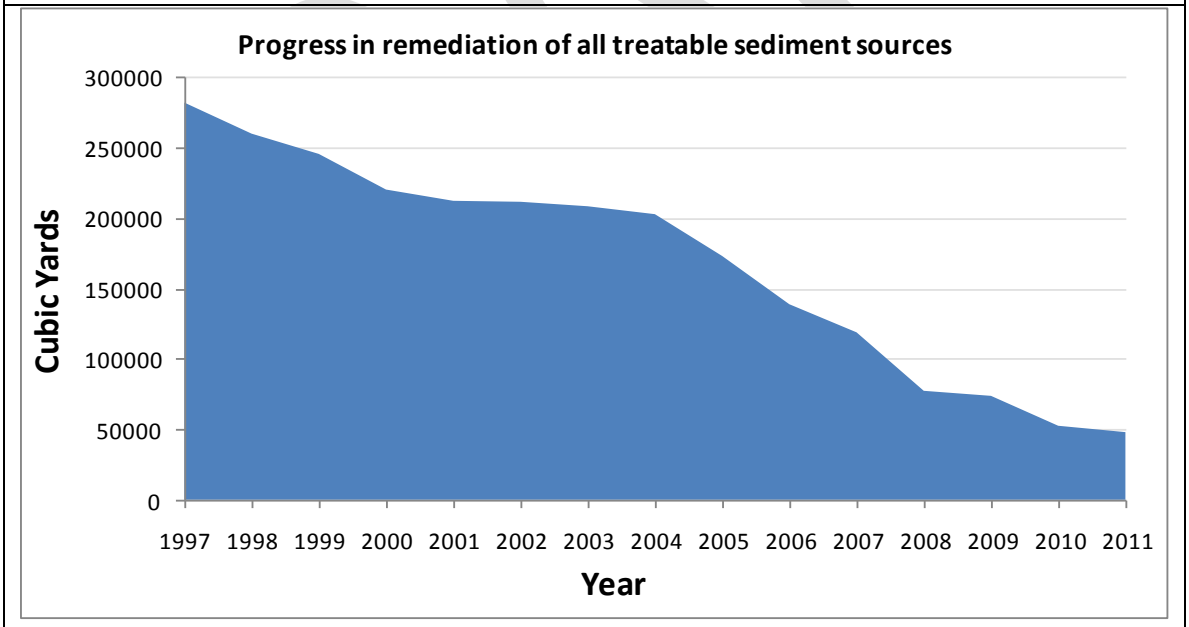
Sediment Source Treatment Progress to Date

Stormproofing and related sediment control activities from 1998 to date (end of 2011) have been substantial in the North Fork Elk River watershed. A map of the completion status of individual sites is shown in Appendix A. The future potential volume of sediment in the sediment source inventory is considered retired when the site treatment is complete and is termed "sediment savings". The summation of sediment volume saved at the end of 2011 is listed by sub-basin in Table 1. Since 1998, a total of 1, 530 skid trail and road related sediment sources (421,883 yd^3) have been identified. Of those sites, 728 (142,703 yd^3) were not feasible to treat. At the end of 15 years of the restoration program, a total of 235,103 yd^3 of material have been "saved" at 647 sites. This is 84% of the treatable volume in the watershed (Figure 1). Since 2000, 66 landslides have been identified. Of those sites, 14 were considered infeasible to treat, 33 require further assessment, and 18 have been treated.

Table 1. Summary of all road and skid trail related sediment source treatment in North Fork Elk River by number and sub-basin from 1998-2011.

Sub basin	Total #	Total Volume	Complete #	Complete Volume	Pending #	Pending Volume	No Treat #	No Treat Volume
Upper NF	176	32218	76	23362	15	2977	85	5879
South Branch NF	166	63136	84	43236	8	2056	74	17844
North Fork Elk	265	82563	205	77785	13	3047	47	1731
North Branch NF	298	97990	114	48538	20	5454	164	43998
Lower NF	180	40707	127	36255	28	2679	25	1773
Lake Creek	339	75884	22	1339	54	27671	263	46874
Dunlap	39	18625	8	2332	1	26	30	16267
Browns	36	9102	11	1501	0	0	25	7601
Bridge Creek	31	1658	0	756	0	166	15	736
Total	1530	421883	647	235104	139	44076	728	142703

Figure 1. Progress in remediation of all road and skid trail related treatable sediment source volume in North Fork Elk River.



Sediment Source Inventory Plan

Roads

A watershed-scale inventory of all existing roads was completed in North Fork Elk River in 1999. The inventory has been updated during Timber Harvesting Plan development and road maintenance activities. The road inventory will continue to be updated in the future during these activities.

Landslides

The inventory of landslides in North Fork Elk River was first completed by PWA in 1999. The inventory was last updated by HRC in 2010 and provided to the NCRWQCB staff. The landslide inventory will be updated following triggering storm events as defined in the Watershed Wide Waste Discharge Permit (R1-2006-0039).

Skid Trails

The North Fork Elk River Cleanup and Abatement Order (R1-2006-0055) requires that skid trails be inventoried for sediment sources. Skid trail-related sediment sources have been identified during the 1999 PWA inventory and subsequent THP inventories and are included in the sediment source database for the watershed. This plan outlines the long-term plan for completing the inventory.

The skid trail inventory strategy has been driven by past land use history of tractor yarding. Knowledge of land use history was derived from PWA assessments including historical aerial photograph analysis, field surveys, and personal communications with resource managers knowledgeable about the area. Areas inventoried since 2006 are shown on the map in Appendix B.

Skid Trail Inventory Scheduling

Surveys will be conducted annually in coordination with the planning of other projects. These projects include THP layout, in which areas within and surrounding future harvest units will be surveyed; and road decommissioning projects, in which areas surrounding planned road decommissioning will be surveyed to avoid orphaning controllable sediment sources by removing potential access roads. WOP-56 is used to search for all sediment sources, including skid trail associated sources such as stream crossings, mechanically filled channels and landings.

These surveys would characterize all skid trail sources found, and would be on the alert for identifying high value mitigation opportunities. Off-road skid trail sites not in THPs must have a beneficial ecological effect (e.g. larger sediment potential either singly or in a cluster), and must pass an access/disturbance feasibility planning process to ensure HRC can develop feasible treatment plans and does not create more problems than treatment is worth. Although these may be a relatively small percentage of the sites that are found, they could have a disproportionately large payoff in sediment saved. It should be assumed that only some fraction of the opportunities identified will ultimately be treated.

All non-tractored areas within THPs will be inventoried during THP preparation. HRC will work with the NCRWQCB to determine priorities on an annual basis.

Master Reassessment and Treatment Schedule

Reassessment and Treatment of Sediment Sources

Treatment of road, off road and landslide sediment sources will ultimately be based on feasibility of treatment. During the planning phase for an annual plan, each scheduled site will be reassessed for appropriateness of treatment, using lessons learned from previous work in the drainage. If more damage will incur accessing or remediating the site, no treatment or delaying treatment will be proposed. If treatment is proposed, the current prescription will be reevaluated based on HRC's anticipated use of the road and success of similar treatments in the watershed. The determination as to whether a site can be treated/delayed or not will ultimately depend on the Area Forester's decision. Results of the re-assessment will be included with each annual plan.

Decisions on treatment of a site will be based the following key factors

- Future use of the road – Is the road necessary for current or future operations? If so the site will likely be treated.
- Stability of site – Is the site stable, contributing minor amounts of sediment annually or likely to deliver large amounts in the near future?
- Risk of adjustment – Is there a strong likelihood proposed treatment will be effective at controlling sediment at the site?
- Sensitivity of adjustment – Can downstream beneficial uses handle post treatment site adjustment delivery rates which are significantly greater than existing pretreatment delivery rates?

Stable sites on roads that are not planned to be used and have a high potential for post activity adjustment will not be treated or delayed. Sites that are contributing minor amounts of sediment, with a low risk of adjustment will likely be treated.

Roads

The Master Treatment Plan for roads establishes the performance milestones based on the environmental sensitivity scoring system. The system assigns a score to each site based on

environmental risk. The scoring system has a wide point spread (0-1400), and can be used to rank the sites within the watershed. The score contains the treatment immediacy call used in the HCP, but enhances the overall priority by including several watershed and stream-related parameters that place each site in the context of its impact on public resources.

HRC has scheduled the remaining five years of work (Appendix C). The schedule front loads the higher ranked sites in the first two years of treatment. Ten (10) of the 13 sites with the highest environmental scores (500 to 1200) will be treated by 2013 (Figure 2). Table 2 indicates 5 of the 8 remaining top 100 sites will be treated by 2014. Seventy-three (73) percent of the remaining treatable sediments source volume will be treated by 2014. This strategy guarantees that some sites are selected based on environmental considerations rather than operational considerations.

Minor adjustments in the schedule may occur annually due to weather or market conditions. These adjustments will be reported to the NCRWQCB in the annual work plan and summary reports.

Skid Trails

For skid trail sediment sources where treatment is deemed beneficial and feasible, scheduling of actual treatment will be coordinated with the project which dictated the initial survey. All skid trail-related controllable sediment sources found within or surrounding the THP project will be addressed in the Erosion Control Plan for the THP. All sites will be completed within 5 years of THP approval, and in certain circumstances, where justified by imminent failure.

All skid-trail related controllable sediment sources whose treatment may be affected by road decommissioning projects will be addressed prior to or in coordination with the road decommissioning project.

THP-related sediment sources will typically use the THP to obtain necessary CDFG streambed alteration agreement (SAA) permits, while road decommissioning related sediment sources will typically be amended to the road decommissioning project as necessary to obtain SAA permits. Off-road sites not covered by these permitting mechanisms will have to have a permitting vehicle before the work can be scheduled.

Twenty (20) skid trail sites are scheduled to be completed by 2017 (Appendix D). Twenty three (23) off road sites are pending and will be reassessed or treated by 2017. More skid trail sites will likely be treated as THP's are prepared.

Landslides

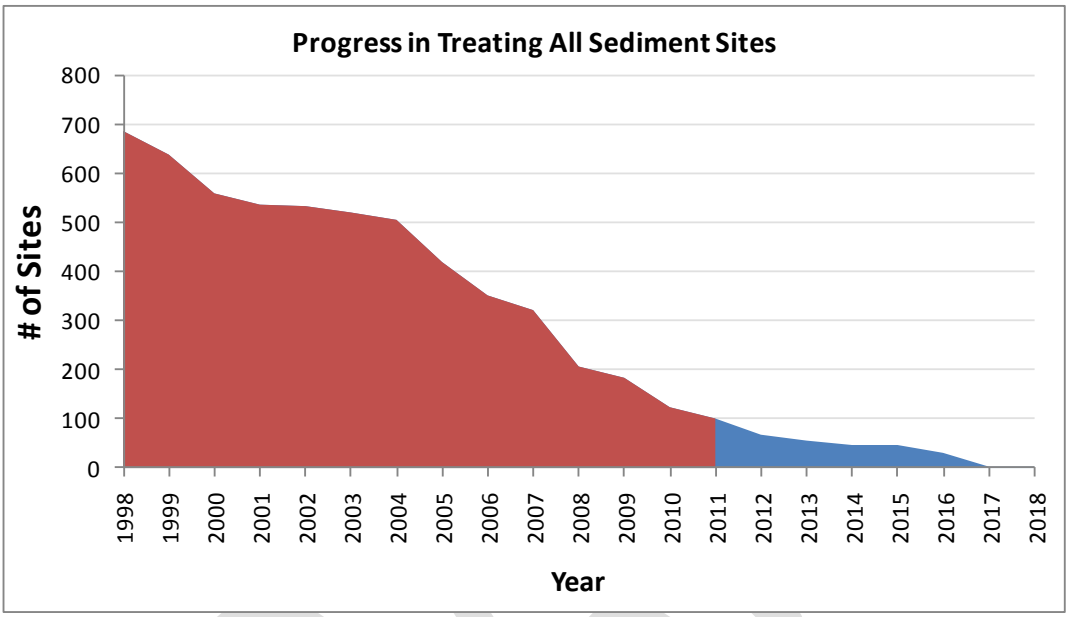
Potential landslides identified during inventories will be evaluated for treatment before the next summer operational period. If treatment is deemed feasible, sites will be treated within 2 years.

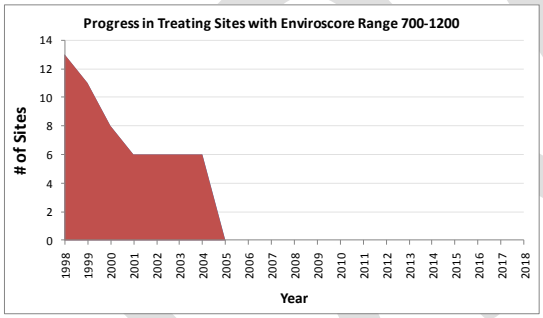
Thirty three (33) sites are scheduled to be assessed for treatment by 2013 (Appendix E).

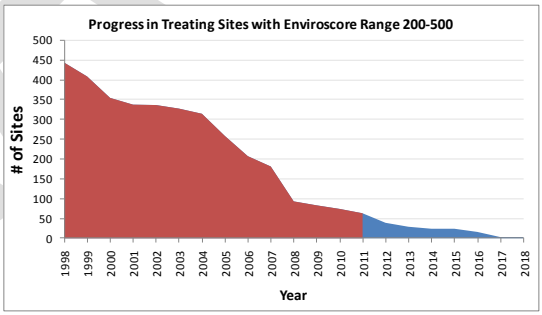
Table 2. Treatment schedule totals for remaining sediment source sites occurring in North Fork Elk River.

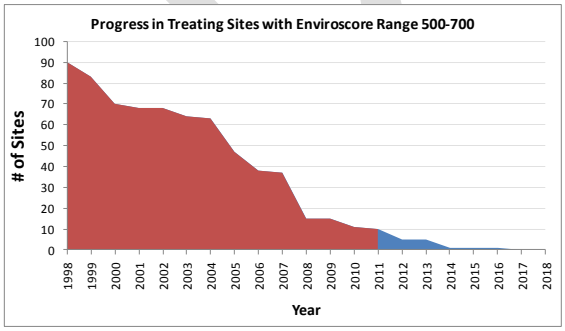
Year	Total #	Total Volume (cubic yards)	Total # of Top 100 Sites
2012	33	16223	3
2013	12	1699	0
2014	9	2907	2
2015	0	0	0
2016	16	1780	3
2017	28	5763	0

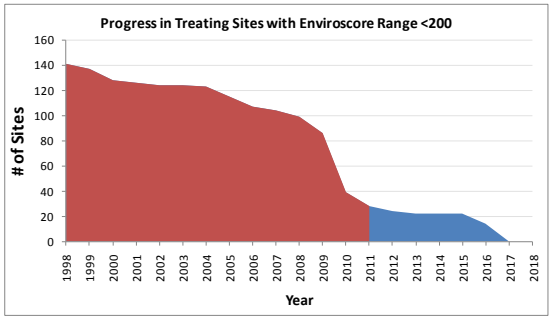
Figure 2. Progress in treating all sediment sites and sites within a particular environmental score range. Red shade indicates sites which have been treated. Blue shade indicates projected treatment schedule.











Appendices

Appendix A. Map of site treatment status in North Fork Elk River.

Appendix B. Map of skid trail inventories in North Fork Elk River.

Appendix C. Reassessment and treatment schedule for pending road related sediment sources in the North Fork Elk River watershed.

Appendix D. Reassessment and treatment schedule for pending off road sediment sources in the North Fork Elk River watershed.

Appendix E. Assessment schedule for landslide sediment sources in the North Fork Elk River watershed.