

Napa River Rutherford Reach Restoration Project
Final Memorandum Report for Annual Maintenance Activities
2014 Field Season



Willow Wall, East Bank, Reach 9, December 2014

Prepared by: Napa County Flood Control and Water Conservation District

Napa County, California

March 2015



This memorandum provides a *brief* final summary report of maintenance work conducted pursuant to the recommendations in the July 2014 Napa River Rutherford Reach Restoration Project (Project) Annual Maintenance Survey Report (Report). The Report, which was prepared by Napa County Flood Control and Water Conservation District (District), contained prioritized recommendations for maintenance issues identified during the summer 2014 survey along the 4.5 mile Project reach, such as removal of trash and debris, treatment of invasive and Pierce host plants, preservation and management of large woody debris (LWD) and replanting and general maintenance of treated areas. The Napa County Flood Control and Water Conservation District (District) completed the recommended maintenance activities outlined below between September 1st, 2014 and March 1st, 2015 including repair and maintenance at significant erosion areas, maintenance of installed plants and debris removal and management. The July 2014 Report, and the final recommendations contained therein, can be accessed electronically from the Watershed Information Center & Conservancy of Napa County (WICC) website at http://www.napawatersheds.org/app_folders/view/3577 or via a hard copy obtained upon request from the District.

Trash and Debris

A total of 13 occurrences of significant trash and debris were initially documented in the Report, but a total of 16 items were ultimately removed from the river channel (12 tires and 4 other items [irrigations lines, other agricultural equipment, etc.] were removed). **Table 1** and **figure 1** below lists a tally of the types and number of occurrences of trash ultimately removed since the surveys began in 2009. Data suggests that this work is contributing to a general decrease in the amount of accumulated trash and debris that is found in the Project reach.

Table 1: Trash and debris removed from 2009-2013 maintenance seasons

Maintenance Year	Trash/Debris Type Removed		
	Tires	Large Appliances/Drip Lines/etc.	Total Items Removed
2009	19	28	47
2010	33	27	60
2011	28	26	54
2012	25	6	31
2013	13	15	28
2014	12	4	16

Invasive Plants

A total of 410,581 square feet (9.4 acres) of invasive and Pierce host's plants (arundo, vinca, grape, Himalayan blackberry and mugwort) were ultimately treated by District staff and contractors during the summer and fall of 2014; the largest amount treated to date. Species such as fennel, poison hemlock, etc. were observed during the June survey but not treated as a result of land owners requests to prioritize the maintenance funds use for only treatment of invasive plants that are considered Pierce host's species as well giant reed which is not a Pierce host. **Table 2** and **figure 1** shows the total area and general location of invasive and Pierce host plants treated by species in 2014 and since the inception of the maintenance surveys in 2009. Areas of invasive plants that were treated in 2014 that had the potential to cause streambank erosion were replanted with willow stakes and broad cast seeded with native species during the winter and spring of 2014 and 2015; Photo 1 below.

Table 2: Invasive/Pierce host plant species treated during 2009-2014 maintenance seasons

Invasive/Pierce host plant species treated (Square Feet)							
Maintenance Year	Giant Reed	Himalayan Blackberry	Periwinkle (<i>Vinca sp.</i>)	Mugwort	CA Grape	Other Species (Red Sesbania, Tree of Heaven, etc.)	Total Area Treated (Sqft)
2009	73,180	-	-	-	-	-	73,180
2010	23,599	952	17,389	-	-	86	42,026
2011	30,749	35,809	9,163	-	7,447	49,138	132,306
2012	14,502	2,668	6,951	20,330	-	17,636	62,087
2013	5,662	42,688	1,901	143,959	5,070	17,903	217,183
2014	8,075	206,182	2,620	169,155	23,753	796	410,581
Total Treated to Date							937,393 (21.5 acres)

Irrigation

Approximately 25.5 acres of restored areas were maintained with Maintenance Assessment District (MAD) funds in 2014. This will increase to approximately 38.39 acres in the spring of 2018 when all three year vegetation maintenance contracts have expired and the MAD is responsible for maintenance for the entire Project area. Due to the 2014 drought conditions, District staff scheduled several watering events of these restored sites during the late fall; during a normal water year this expense would typically not be incurred. Average costs to truck in water to maintain these sites, depending on water source (re-cycled vs. potable water), ranged from \$1200-\$1600 per/watering event. Additional costs were also incurred with measures that were implemented to reduce water use and maintain the installed vegetation including mulching around installed plants and repairing drip irrigation lines. See Tasks 2-4 in the budget table below (**Table 4**) for costs associated with work involving trash removal, invasive and Pierce host's plant management and irrigation.

Large Woody Debris (LWD) and Beaver Activity

A total of 5 large woody debris (LWD) accumulations were managed in 2014 that were considered to have a high need for monitoring and potential maintenance a. The July 2014 Report recommended monitoring four of these areas as they did not present an issue at the time but could become an issue if additional debris accumulated within them. Following the December 11, 2014 high flows 3 of the 5 LWD accumulations were thinned out in order to prevent localized flooding. Additionally, the District responded to 2 management request by a landowner to manage several large downed trees in reach 9 associated with beaver activity. **Table 3** and **figure 1** represent the number of LWD accumulations treated in 2014 and over the life of the Project to date. Three (3) of the managed areas were in locations where LWD tends to accumulate (one related to Project construction) after high flow events while the other two were in the vicinity of large beaver dams. Managed LWD is either repositioned in the channel such that it will not create hydraulic constrictions or bank erosion or the wood is removed from the channel and chipped on site to be later used as mulch for the Project.

As, noted in previous reports, increasing amounts of beaver activity (dam building, downing of large significant native trees) necessitated management measures to protect large cottonwood trees. Similar to 2013, the District wrapped several cottonwood tree trunks in Reach 9 with wire mesh in an effort to protect them from further beaver related damage and to maintain sufficient riparian canopy and bank stability; Photo 2 below. It should be noted that District staff documents several beaver dams in the Project reach annually but generally does not view these as a significant issue. Generally, the beaver dams are small and wash away during high winter flows. During low flow, the dams impound slow water, providing cool pool habitat. However, should a beaver dam become a significant problem the District will manage the dam appropriately.

Table 3: LWD occurrences documented and treated over 2009-2014 maintenance seasons

Maintenance Year	LWD Identified for Potential Maintenance or High Flow Monitoring in Survey Report	Total LWD Ultimately Maintained
2009	9	2
2010	16	4
2011	7	2
2012	5	4*
2013	2	4*
2014	4	5*

*Includes LWD managed at landowners request



Photo 1: Revegetation Work, Reach 5 Bale Slough



Photo 2: Damaged Cottonwoods Related to Beaver Activity, Reach 9

Installed LWD Structures, Constructed Benches and Erosion Areas

As indicated in the July 2014 Report, none of the installed LWD or boulder cluster structures that were surveyed required maintenance in 2014. However, the Report did recommend repair of localized bank erosion at three sites primarily related to previously treated giant reed (*Arundo*) areas and one site related to stream scour from an adjacent LWD structures. The three sites were repaired during the winter by District staff using MAD funds. Work included one or all of the following: re-grading slopes (3:1) to a stable profile, broad cast seeding, and installation of erosion control fabric, planting with willow stakes and sedge plugs and physical removal of dead *Arundo* canes.

Landowner Requests for Maintenance

A total of 4 landowner requests were initially received by the District for maintenance activities during the 2014 field season; several additional requests were also made via email and telephone in the fall and winter. Landowner requests included the following: removal of Pierce host plants, realignment/ removal of large woody debris accumulations and management of several beaver dams. All landowner maintenance requests were addressed during the 2014 maintenance season.

Budget

The Maintenance Assessment District (MAD) has been in place since June 1, 2008. With annual revenues of \$98,160, the total estimated fund balance including encumbrances as of March 2015 was \$358,404, **Table 4**. Funds pay for the annual river maintenance survey, report production, maintenance and repair or restored areas and periodic monitoring surveys to gather data against which to track changes in channel and habitat conditions and comply with permit conditions. Remaining funds accumulate for future annual maintenance and monitoring work.

As the District assumes greater responsibility of restored areas (i.e. when three year vegetation maintenance contracts expire) additional costs will be assumed by the MAD fund. The District now has fully responsibility for Reaches 1-4 respectively (approximately 25.5 acres). Tasks once paid for under the three year maintenance contracts (invasive/Pierce host plant management, watering, etc) are now paid for under the MAD. Significant additional costs were accrued in the habitat maintenance category for this reason in 2014. In particular, because of the 2014 drought conditions costs for general maintenance (including watering, mulching, etc) of restored areas increased and is reflected in **Table 4**.

Table 4: Budget and expenditures through fiscal year 2014/2015

Task	Annual Expenditures by Fiscal Year (FY)						
	2009	2010	2011	2012	2013	2014	2015
Annual surveys & development of work plans, report and monitoring	20,954	37,495	27,440	28,008	16,201	32,155	25,520
Trash removal & disposal fees	0	2,144	2,144	3,013	120	258	262
Invasive plant management	1,320	8,027	8,479	10,519	12,722	7,495	11,600
LWD Thinning and/or removal	0	1,760	1,496	2,867	17,913	923	3,000
Habitat structure maintenance, re-vegetation, watering, erosion repair	0	0	1,320	3,995	2,642	20,327	22,960
Field equipment, supplies, administration, misc.	314	826	392	875	175	1,220	900
Engineers report, public notice, legal	23,933	1,655	1,655	1,655	1,655	352	568
Total expenditures	46,521	51,907	42,926	50,932	51,428	62,730	64,810*
Remaining balance	90,389	47,728	56,484	48,291	46,732	35,430	33,350
Cumulative fund balance (with interest) to date	\$358,404**						

*Expenditures through FY 2014/2015 as of March 2015 including encumbrances. ** Assumes full assessment of \$98,160 collected for FY 2014/2015.

References:




Napa County Flood Control and Water Conservation District. July 2014. Napa River Rutherford Reach Restoration Project Annual Maintenance Survey.

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Figure 1



-  LWD management
-  Invasive/Pierce management
-  Trash and Debris

Napa River Rutherford Restoration Project
Annual Maintenance Survey
Areas of Completed Work

