Napa River Rutherford Reach Restoration Project
Annual Stream Maintenance Survey

Confluence of Round Pond Secondary Channel with Mainstem Napa River, Reach 5, May 2019

June 2019

Prepared by:
Napa County Flood Control and Water Conservation District
Napa County, California

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1.0 Background

The maintenance program for the Napa River Rutherford Restoration Project (Project) was developed by the Rutherford Landowner Advisory Committee (LAC) and the Napa County Flood Control and Water Conservation District (District) to support the Project and to guide implementation of routine maintenance activities within the Rutherford Reach of the Napa River. The maintenance program was developed to balance the needs of landowners while protecting and enhancing the natural resources of the Napa River. As a result, landowners formed the Rutherford Dust Napa River Restoration Team and worked with Napa County and its affiliate agencies to design and implement a comprehensive reach-scale restoration project known as the Napa River Rutherford Reach Restoration Project. The Project area is comprised of privately-held property adjacent to a 4.5-mile reach of the Napa River south of the city of Saint Helena, extending from Zinfandel Lane in the north, downstream to Oakville Cross Road in the south (**Figure 1**). For further details regarding the maintenance program refer to "*Final Maintenance Plan for the Napa River Rutherford Reach Restoration Project*" (Jones and Stokes) http://www.napawatersheds.org/files/managed/Document/3590/Rutherford%20Reach%20Maintenance%20Plan.pdf).

As part of the maintenance program, District staff in coordination with the LAC, conduct an annual stream survey to identify and assess issues of maintenance concern and monitor Project resources. The survey, data analysis, and implementation of maintenance activities are facilitated by the District's Rutherford Reach Maintenance Coordinator (contact information below). This report presents the results and initial maintenance recommendations of the Survey conducted during the summer of 2019.

River restoration construction activities were completed in the fall of 2014 and the Project is now in the maintenance and monitoring phase. For monitoring and maintenance tracking purposes the 4.5 mile Project reach has been divided into sub-reaches numbered from 1 to 9 starting from the Zinfandel Lane Bridge and ending at Oakville Cross Road. As a result of construction and completion of the Project in 2014, 26 floodplain benches measuring a total of 8,580 linear feet were constructed in Reaches 1-9. A total of 6 side channel, wetland and alcove features were built including the secondary channels constructed at the Round Pond and Wilsey Properties and the backwater alcove features constructed at Rutherford Wine Studios and Cakebread properties. 13 bank stabilization areas were constructed and approximately 14,303 linear feet of setback berms were created in order to widen the distance between agricultural activities and the river channel.

As in previous surveys the focus of the 2019 stream maintenance survey included identifying and documenting target invasive and Pierce Disease host plant species, potentially erosive LWD accumulations, active bank erosion sites and accumulated trash or debris needing removal form the channel. The annual stream maintenance survey was conducted between May 7 - 9th , 2019; typical weather conditions included sunny to partly cloudy skies with 10%- 25% cloud cover and air temperatures ranging between 53° - 68° Fahrenheit. Stream flow measured at the USGS stream gage (ID#11456000) located on the Pope Street Bridge ranged from 28.8 – 20.9 cubic feet per second (cfs) during the survey. Total precipitation reordered at the Mt. St. Helena rain gage within the Napa river watershed for water year 2018-2019 is 60.2 inches to date with the peak flow event for the year occurring on February 27, 2018 (stage height =19.50 feet, flow = 9,570 cfs) measured at USGS stream gauge 11456000.

Maintenance activities must be in compliance with applicable resource agency permits in conjunction with best management practices (BMPs) specified in the final Maintenance Plan. Permitted activities include:

- Debris (trash, etc.) removal;
- Downed tree (also referred to as large woody debris or LWD) relocation and/or stabilization;
- Vegetation management, including removal of invasive non-native and Pierce's disease host vegetation, management of emergent (young) in-channel vegetation, and planting for erosion control management;
- Installation of erosion control fabric or coir logs, willow pole cuttings;
- Maintenance of constructed features including floodplain benches, vegetative buffers, aquatic habitat enhancement structures and bank stabilization structures.

1.1 Annual Stream Survey Objectives:

The stream survey begins the maintenance season by collecting and providing field data that will inform the creation of the annual stream maintenance work plan. Depending on the monitoring year the annual stream survey also captures data to be utilized in the annual Project monitoring report required to comply with funding and regulatory agency requirements. The

additional monitoring data collected is presented in a separate annual monitoring report. A team of resource specialists including an ecologist, fisheries biologist and hydrologist conduct the survey with assistance from District interns.
The essential aspects of the annual stream survey are:

- Identify and prioritize maintenance actions, including vegetation management, large woody debris (LWD) realignment and/or relocation, debris (e.g. tires, irrigation lines, etc.) and trash removal, and biotechnical stream bank stabilization;
- Evaluate the status of and define any steps needed to maintain the function of constructed features and in-stream habitat structures;
- Identify infestations of non-native high priority invasive and Pierce's disease host plants and define control treatments to the extent practicable;
- Respond to Landowners requests for maintenance actions within the riparian corridor on their property.

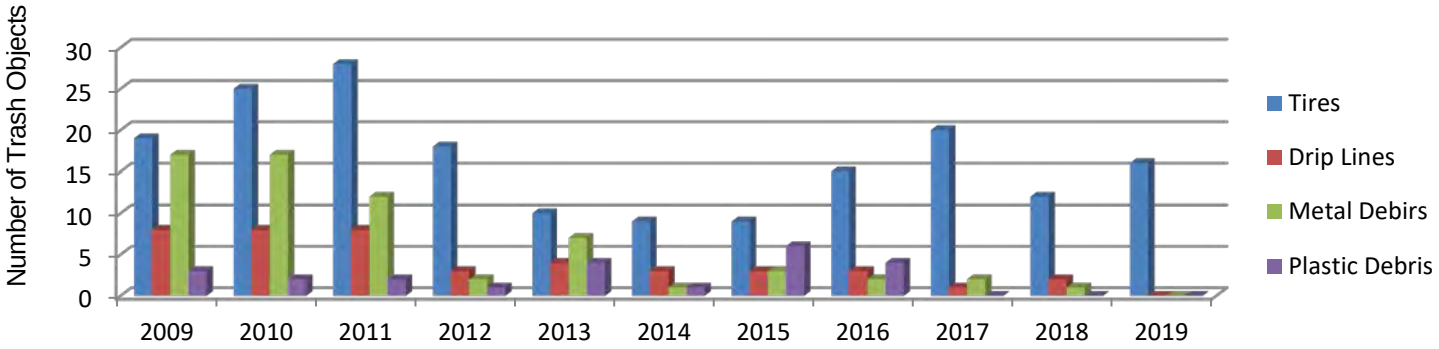
For further details regarding parameters measured please refer to the monitoring and maintenance plans prepared for the Project; both can being view and downloaded from the Napa Watershed Information and Conservation Council (WICC) http://www.napawatersheds.org/app_folders/view/3577.

2.0 Results

Trash and Debris:

16 significant occurrences of trash and debris were documented in the Project area during the 2019 survey. **Graph 1** Illustrates the number and types of trash documented during the stream survey. Since surveys began in 2009, tires have consistently been the dominant trash type documented in the channel; this year all occurrences of trash noted were tires. **Figure 2** shows the location of the surveyed trash and debris.

Graph 1: Trash and Debris (2009-2019)



2.1 Invasive Non-Native and Pierce Host Plants

Figure 3 at the end of the report depicts the location of significant occurrences of invasive and Pierce host vegetation that was documented during the 2019 survey. Himalayan blackberry, native and hybridized grape and Mugwort were the dominant target plants identified for management; other target species documented included giant reed (*Arundo sp.*), Periwinkle (*Vinca sp.*), black locust and red sesbania but were limited in distribution.

A total of 56,410 square feet (1.29 acres) of non-native invasive and Pierce host vegetation was documented during the 2019 survey. Species documented in 2019 include 20,734 sqft of Himalayan blackberry, 25,989 sqft of native/hybrid CA grape, 5,955 sqft of vinca, 3,632 sqft of mugwort and 100 sqft of Giant reed. As in previous years, the District encourages landowners to contact maintenance staff with any additional requests for management of invasive and/or Pierce host vegetation in the riparian zone beyond the top of bank that may have not been documented during the channel maintenance survey. Management of the surveyed non-native invasive and Pierce host vegetation has already begun and will continue through the end of summer 2019.

Table 1 below summarizes the invasive non-native and Pierce host plants documented during the 2019 stream survey. Further, **Table 1** lists if the species is a Pierce Disease host and ranks each species as a "high" or "moderate" impact invasive species as defined by the California Invasive Plant council (Cal-IPC); the Cal-IPC list primarily includes plants exhibiting some

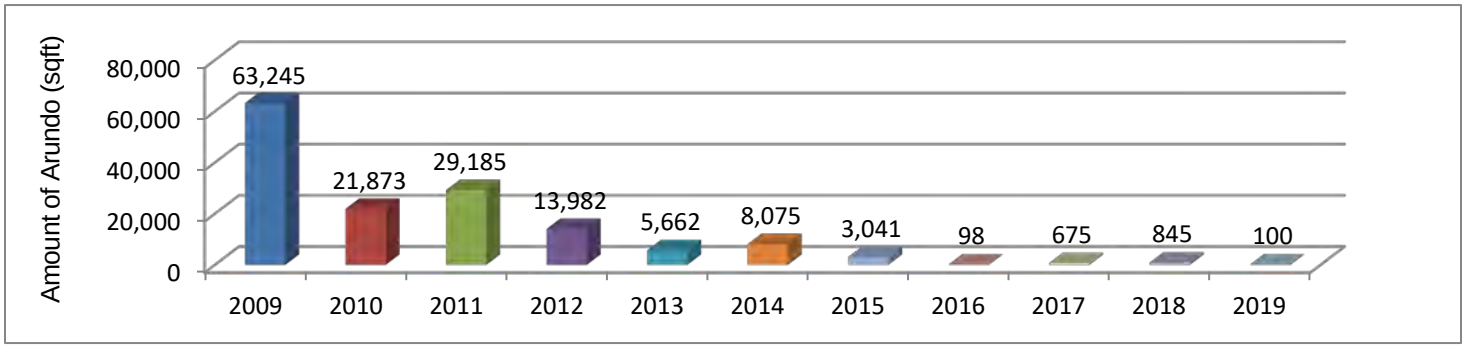
level of invasiveness in native habitats. A revised table will be included in the spring 2020 final maintenance memo reflecting the total square footage of invasive and Pierce host vegetation treated during calendar year 2019.

Table 1: Invasive Non-Native and Pierce Host Plants documented during 2019 survey

Common Name	Scientific Name	Infested Area (SqFt)	Native?	Pierce Disease host	Cal-IPC Ranking
Giant reed	*Arundo donax*	100	No	No	High
Mugwort	*Artemisia douglasiana*	3,632	Yes	Yes	None
Periwinkle	*Vinca major*	5,955	No	Yes	Moderate
CA & Hybrid Grape	*Vitus sp.*	25,989	Yes/No	Yes	None
Himalayan Blackberry	*Rubus armeniacus*	20,734	No	Yes	High
Total		**56,410 (1.29 acres)**			

Previous and ongoing efforts to manage and remove Giant reed have been successful in significantly reducing the quantity within the Project area; **Graph 2** below depicts the decline of Arundo throughout the Project area since monitoring and management began in 2009. The area of Giant reed documented this year (100 sqft) was the second least documented since surveys began; all areas will be treated in the fall of 2018.

Graph 2: Arundo mapped and treated (2009-2019)



2.2 Stream bank erosion and woody debris (LWD) jams

As mentioned previously in section 1 of this report the Napa river watershed received 60.2 inches of rain during the winter of 2018-2019 with a peak flow event occurring on February 27, 2018 (stage height =19.50 ft, flow = 9,570 cfs) measured at USGS stream gauge 11456000. This peak flow event was equivalent to the 10 year reoccurrence interval and was the highest flow recorded in the river since the 2005 New Year's Eve flood. As a result of the high flows significant stream bank erosion occurred throughout the Napa River and two significant sites needing repair within the Project reach were documented during the survey (**Picture 1 and 2**). The District intends to work with landowners to stabilize and remediate the bank erosion at both sites. See **Table 2** for the location and details of the proposed bank stabilization work to be conducted.

Table 2: Proposed bank stabilization sites

River Station/Reach	Description	Proposed Work
55+00 (Reach 8)	Bank Erosion Site adjacent to home/undermined existing concrete wall	Construct solider pile wall, funds provided primarily from landowner/NRCS with some assessment District funds.
51+50 (Reach 8)	Bank Erosion Site, lower- bank high flow scour	Fabricate live willow brush mattress at lower 1/3 of river bank, pole planting.

Picture 1: Bank Erosion Site Reach 8

Picture 2: Bank Erosion Site reach 8

1 LWD significant LWD jam in reach 8, related to the bank erosion site shown above in Picture 1, was identified during the Survey that will require management action. County staff will thin out/remove the significant portions of the tree trunk and branches within the channel in order to restore high flow conveyance and prevent potential bank erosion on the adjacent right river bank.

2.3 Irrigation and Vegetation Maintenance

Annual mowing, invasive/Pierce host vegetation management, watering, mulching, periodic watering and other activities at restored sites is conducted annually and as needed/requested to ensure that the restoration areas are being sufficiently maintained for their habitat value and PD host plants are suppressed. In general, sites that have been planted and established for more than three years no longer require supplemental watering as the California native plants installed have adapted to the natural hydrologic patterns for the region.

2.4 Landowner Requests for Maintenance

In additional to the regular maintenance work (invasive/Pierce host plant management, irrigation, LWD management, etc.) that takes places throughout the entire 4.5 mile Project reach landowners are encouraged to contact the District directly if specific tasks relative to river maintenance are desired that are not part of the routine maintenance conducted annually. Several specific requests from landowners have been received by the District to conduct riverside property maintenance tasks. The District has already begun conducting requested work pursuant to this report as well as specific landowners requests submitted to the District either verbally, via email or by phone. Additionally, the District would like to remind landowners that maintenance requests are accepted throughout the year. A copy of the channel maintenance request form is included at the end of this report.

2.5 Recommendations and Work Plan:

Pursuant to this Report, the RDRT maintenance survey team recommends the following work be conducted in 2019:

- Remove of all trash and debris from the stream channel that can be readily accessed and accomplished with hand labor, pulley or winch assisted mechanisms,
- Remove/thin/realign the LWD jam within Reach 8,
- Treat large accessible patches of non-native invasive and Pierce host vegetation with mechanical and chemical (glyphosate) methods including Himalayan blackberry, mugwort, vinca, California grape and Arundo; this task also includes appropriate re-vegetation and irrigation of treatment sites where treatment has left significant gaps in the riparian under story canopy,
- Repair and stabilize exposed stream bank erosion areas as proposed in Table 2,

- Conducted annual summer mowing of non-native grasses and broadleaf vegetation on constructed flood plain benches as needed,
- Complete maintenance work requested by landowners; continue to respond to maintenance requests for landowners through the calendar year,

This report and a final summary memo of work conducted each year can be accessed and downloaded from the Watershed Information Center & Conservancy of Napa County (WICC) https://www.napawatersheds.org/app_folders/view/5501. All maintenance work will be conducted in accordance with the regulatory permits issued for the Napa River Rutherford Reach Restoration Project.

3.0 Budget:

The Maintenance Assessment District (MAD) has been in place since June, 2008 and generates annual revenues of $98,160. Funds pay for annual vegetation and debris management and maintenance work, the annual river survey, report production and periodic resource monitoring surveys to gather data against which to track changes in channel and habitat conditions and comply with Project permits. Remaining funds accumulate for future annual maintenance and monitoring work. A draft cost estimate to complete the maintenance *and* monitoring tasks for fiscal year 2019/20 using funds generated from the MAD is provided in **Table 3** below. **Table 3** also includes an accounting of actual expenditures for the last two fiscal years as well as the fund balance as of June 1st, 2019. Maintenance tasks will be conducted by the Napa County Flood Control and Water Conservation District and contractors. A statement of the actual expenditures for fiscal year 2019/20 will be provided in the spring 2020 final maintenance memo.

Table 3: Actual expenditures from past two fiscal years and estimated expenditures for fiscal year 2019/2020

Tasks	Budget Item per Engineers Report	2017/18	2018/19	Proposed 2019/20
Annual surveys & development of work plans, report, monitoring, administration*	4, 5	$28,274	$10,474	$20,480
Vegetation/ invasive plant management of floodplain benches, irrigation	1	$27,513	$14,134	$28,220
Streambank erosion and habitat structure maintenance	3	$3,020	$20,900	$31,880
Debris/LWD Thinning and/or removal	2	$960	$781	$2,520
Total expenditures		**$59,767**	**$46,290**	**$83,100**
Annual assessment balance		$38,393	$51,870	$15,060
Cumulative fund balance (with interest) 6/01/2019	**$530,611**			

*Includes Napa County and Napa Resource Conservation District services

Contact: Jeremy Sarrow, Watershed & Flood Control Resources Specialist, NCFCWCD, jeremy.sarrow@countyofnapa.org

4.0 References:

Jones and Stokes, August 2008. *Final Maintenance Plan for the Napa River Rutherford Reach Restoration Project*; 2015.

USGS Real-Time Water Data Web Site for stream gage #11456000 accessed on 05-30-2019: http://waterdata.usgs.gov/nwis/uv?11456000

Stream Survey Team:
Leif Bryant, NCFCWCD, Jeremy Sarrow, NCFCWCD

Figure 1: Project Location Map

Figure 2: LWD, Trash and Debris Map

Figure 3: Invasive/ Pierce Host Plant Occurrence Map

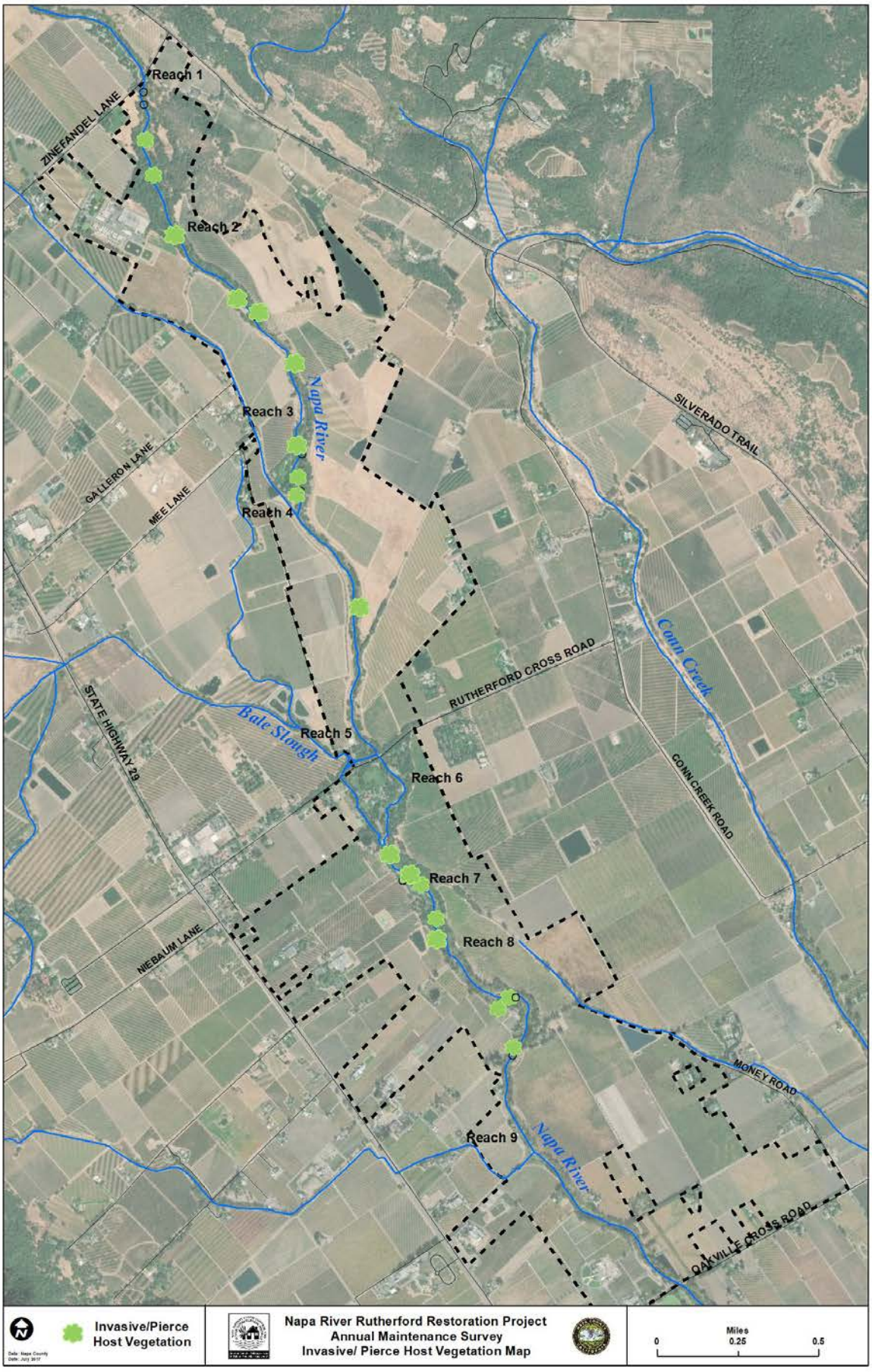
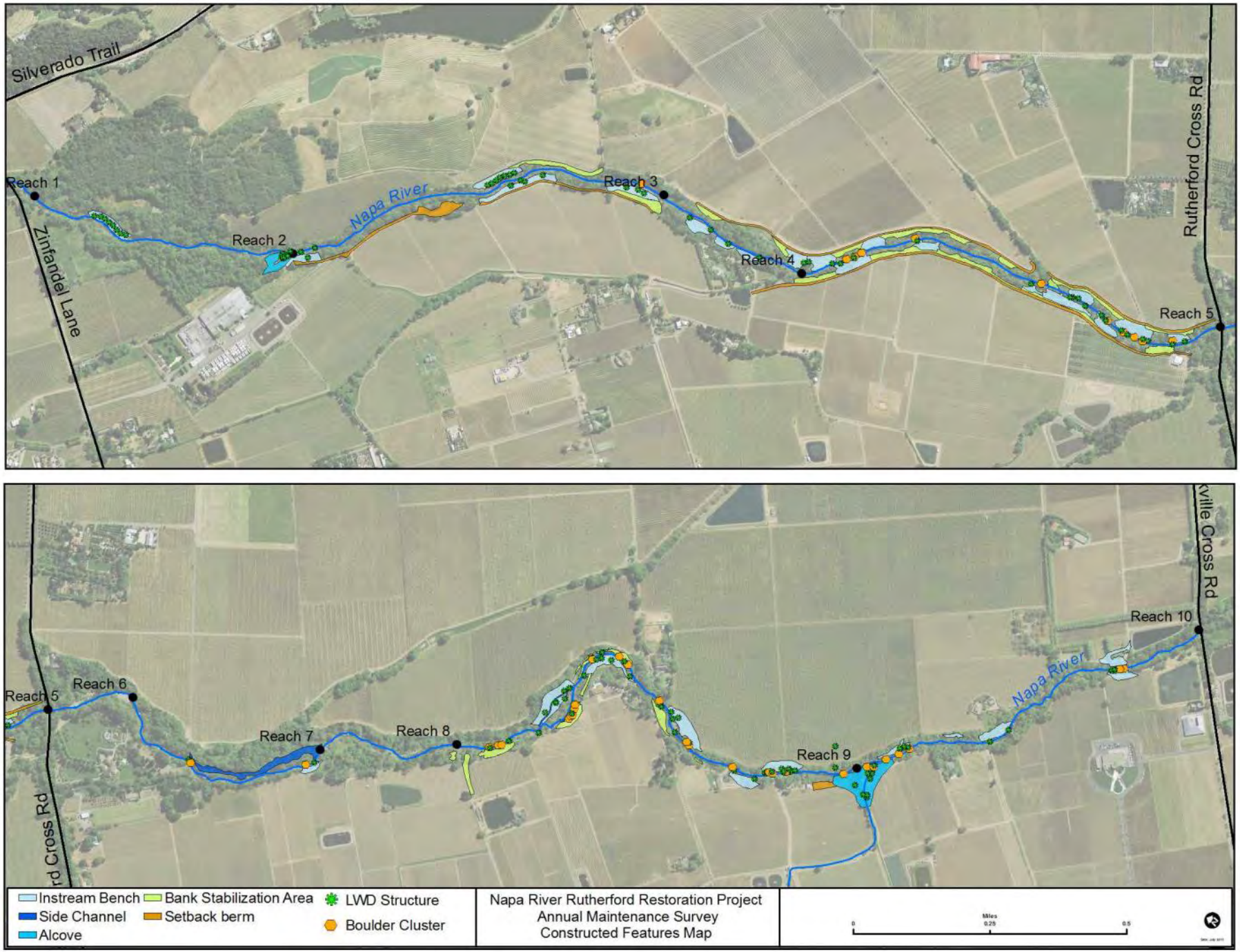


Figure 4: Constructed Features Map



Napa River Rutherford Reach Special Benefit Zone
Channel Maintenance Assessment District

RIVER CHANNEL MAINTENANCE REQUEST FORM

The Napa County Flood Control and Water Conservation District holds the regulatory permits to conduct all river channel maintenance activities for participants in the Napa River Rutherford Reach Special Benefit Zone Channel Maintenance Assessment District, which includes all river front property owners between Zinfandel Lane and the Oakville Cross Road.

PERMITTED CHANNEL MAINTENANCE ACTIVITIES:

1) Control of Pierce's disease host plant and other noxious weed infestations
2) Removal of trash and debris
3) Maintenance of downed trees, log jams, and accumulated woody debris
4) Repair and stabilization of eroding stream banks
5) Repair and maintenance of installed River Restoration Project features

SUBMIT CHANNEL MAINTENANCE REQUESTS TO:

Jeremy Sarrow,
Channel Maintenance Coordinator
jeremy.sarrow@countyofnapa.org
(707) 259-8204

Napa County
Flood Control and Water Conservation District
804 First Street
Napa, CA 94559

CONTACT INFORMATION:

PROPERTY: _____

NAME: _____

EMAIL: _____

PHONE: _____

SITE CONTACT NAME: _____

SITE CONTACT EMAIL: _____

SITE CONTACT PHONE: _____

CHANNEL MAINTENANCE REQUEST

Please provide a brief summary of your river channel maintenance request including: type of permitted problem to be addressed, location, access instructions, constraints on timing or type of treatment, and any other relevant information.

_____

_____

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_____

REQUEST DATE _____

Landowners are invited to participate in the Landowner Advisory Committee (LAC) meetings to review and comment on the channel maintenance activity and budget priorities for the year. Annual channel maintenance reports are online at the Napa County Watershed Information Center and Conservancy: www.napawatersheds.org.