

# **Friends of San Ramon Creek**



2021 Arundo Removal Efforts

Report to  
California Department of Fish and  
Wildlife

Ref: Notification #1600-2018-0287-R3

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## Executive Summary

This report is follow-up to the last report in January of 2020.

A record 30,000 sf of Arundo was removed from the San Ramon Creek subwatershed. This was almost double the amount removed in the previous year. There is approximately 82,000 sf of Arundo identified but not yet removed or treated. Eradication of Arundo in this subwatershed is a real possibility in the next 5 years.

We removed and treated the Arundo in 16 sites primarily in four locations in Danville and Alamo. We gave priority in removal to those patches located furthest upstream including a very large and highly visible site located across from Front St in downtown Danville.

The work was done by a combination of a small team (5 to 10) of volunteers who worked one or two days each week, three large community group events, two contractors and several homeowners.

We continue to inspect and treat all of the sites that we have treated since 2013. The initial treatment seems to kill around 90% of the Arundo. Each month for several years we see some small regrowth that we treat immediately.

We are thankful for donations and grants from the Walnut Creek Watershed Council, Republic Services, and the Contra Costa County Fish and Wildlife Propagation Fund.



## 2021 Goals and Results

2021 Goal	2021 Progress Against Goal
Reach out to private property owners. Identify those interested in participating, investing time and/or money in Arundo removal and restoration; work with them first.	We had very successful mailing and PR campaigns which generated homeowners interested in working with us and volunteers who wanted to help
Continue working on furthest upstream patches, and a massive, visible patch in downtown Danville.	We removed the most upstream patch in Shawn Ct and made great progress on the patches across from Front St
Refine techniques for more efficient removal.	We made many small improvements that resulted in increased homeowner interest and more efficient Arundo removal
Continue working with contractors as grant funds allow	Our “we pay half” offer was successful. We used one new contractor with success on several patches. We used a previous contractor on another patch. We need to improve in this area and get more grant money to fund more contractor work.

Table 1. 2021 FSRC Goals and Results

## 2021 Arundo Removal - by the Numbers

FSRC had outstanding success at removing Arundo from the San Ramon Creek Watershed this year. We doubled the amount of Arundo removed in 2020.

### Arundo Removal By Year

<i>Start Year</i>	Patches	Area (sq ft)
2013	3	760
2014	2	2130
2016	2	972
2018	3	2871
2019	3	5849
2020	19	16296
2021	16	30509
Future	99	82221
<b>Grand Total</b>	<b>147</b>	<b>141606</b>

Table 2. Arundo Removal By Year

In 2021 we removed 30,000 sf of Arundo or about 20% of the total Arundo mapped along San Ramon Creek. It is almost twice as much as last year.

At this rate we certainly should be able to do an initial treatment of just about all of the Arundo in our sub-watershed in 5 years. This is an amazing accomplishment for a task that seemed endless just a short time ago! Note however that the actual amount of Arundo remaining will probably exceed the listed 82,000 sf. As we look closely at patches we are finding that there are some additional patches and many of the patches have grown significantly since the original mapping.

### 2021 Removals By Type

<i>Initial Treatment By</i>	Patches	Area (sq ft)
Contractor	4	7351
Homeowner	1	2216
Volunteers - FSRC Crew	10	15858
Volunteers - Other Group	1	5083
<b>Grand Total</b>	<b>16</b>	<b>30509</b>

Table 3. 2021 Removals By Type

We used a variety of sources of manpower to remove the Arundo. We are very thankful to the funding provided by the Walnut Creek Watershed Council that allowed us to hire contractors. We are making some headway on getting homeowners to remove their own Arundo. But most of all we appreciate our volunteers who removed about 2/3 of the Arundo this year. What a great team they have been all year. It has been a joy to work with all of them!

## Volunteers Are VERY Valuable

Removing Arundo with contractors is expensive. We removed about 7300 sf at a cost of about \$25,000. Roughly half of this was paid by property owners through our “we’ll split the cost” offering.

Volunteers removed about 21000 sf or nearly 3 times as much as contractors did. If we had to pay contractors to do the work that the volunteers did it would have cost an additional \$72,000. Wow!

Note that this works out to about \$3.50 per sf for large sites which is in line with what we had been estimating.

FSRC volunteers have provided almost 800 hours of volunteer time this year, 650 just on Arundo removal labor. On average, for a 3 hour shift, volunteers each removed and treated about 100 sf of Arundo. And, even better, you saved FSRC about \$110 for each hour you worked (\$72,000 savings for 650 hours.)

## Arundo Patch Size

<i>Treated</i>	<i>Grouped Area (sq ft)</i>	<i>Patches</i>
Treated	0 - 1000	33
	1000 - 2000	9
	2000 - 3000	5
	3000 - 4000	1
	4000 - 5000	1
	> 5000	2
Treated Total		51
Untreated	0 - 1000	64
	1000 - 2000	25
	2000 - 3000	6
	3000 - 4000	1

Untreated	
Total	96
<b>Grand Total</b>	<b>147</b>

Table 4. Arundo Patch Size

The numbers show that we have done all of the 4000 sf and over patches and only have one 3000-4000 sf patch left. Next year we will continue working on the largest and most upstream patches. But, at some point we will have to start working on smaller patches. We may lose some efficiencies of scale and become a bit less efficient when we have to work on the smaller patches..

## Our Progress Is Visible On The Walnut Creek Watershed Arundo Survey Map

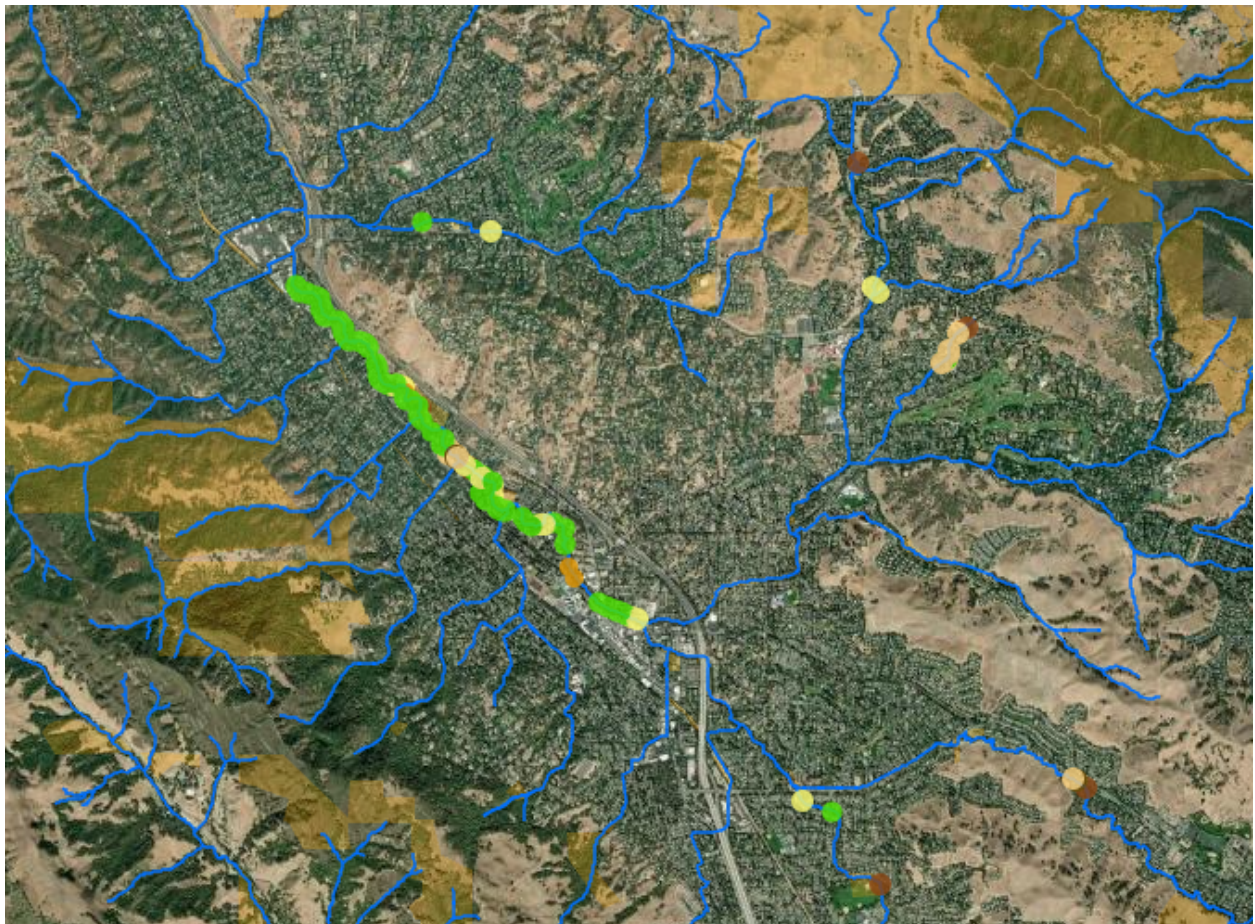


Figure 1. San Ramon Creek Arundo Map

Notice the brown and yellow symbols on the most upstream patches. We are definitely making progress! You can play with this map by going to:  
<https://friendsofcreeks.maps.arcgis.com/apps/webappviewer/index.html?id=a30d8c8c894740e2992a73cfc20e7dc>

## 2021 Arundo Removal Projects

### Front Street/West El Pintado, Danville, CA

Across the stream from Front St in Danville was a long, deep and tall patch that was easily visible to anyone on Front St. The Arundo continued for the length of Front Street and beyond all the way to La Gonda Way. In 2021 we approached the property owners at 233, 235 and 249 West El Pintado Rd and received permission to access and remove their Arundo using a volunteer crew.

Starting June 15, 2021 a crew of 5 to 10 people worked each Friday morning to remove the Arundo. Over the summer the crew removed and treated approximately 10,000 sf of Arundo. The stalks were hauled up ramps to one of two access points. The Arundo was chipped into dumpsters provided by Republic Services. The stumps were recut within a few hours of the initial cut and immediately treated with a 4% solution of Round-Up custom with MarkIt dye.

The Arundo had killed all other plants and most trees where it had been growing. We are hopeful that some of the trees that were taller than the Arundo will survive. There were a great deal of dead Arundo stalks indicating that this patch had been there for ten years or more.

This infestation continues downstream towards La Gonda. There is at least another 5,000 sf on the 249 West El Pintado Rd property. FSRC expects to continue work on this in 2022.





Figure 2. Treated Patches Near Front St, Danville



Figure 3. Front Street/West El Pintado Before Treatment - 2019



Figure 4. Front Street/West El Pintado After Treatment - Aug 2021

## Gentle Creek Place, Danville, CA

In July of 2021 the owners of 42 Gentle Creek Pl contacted FSRC in response to a mailer offering them a subsidy if they used a contractor to remove their Arundo. The homeowners and their upstream neighbor, at 800 Danville Blvd, were particularly interested in removing their

Arundo because they had experienced serious erosion on their stream bank that was at least in part caused by the Arundo redirecting the flow of the creek.

FSRC and the 42 Gentle Creek PI homeowner jointly hired a contractor to remove as much Arundo as budget would allow and then the FSRC volunteer crew added extra work days to finish what the contractor could not complete and also removed the Arundo at 800 Danville Blvd.

Over 9000 sf of Arundo was removed from the 5 patches marked in yellow below. This included the patch that was changing the course of the stream.

The Arundo from the 42 Gentle Creek PI property was hauled out, chipped and removed from the site. The Arundo on the 800 Danville property was accessed through the open space behind the Briar Knolls development. The Arundo was chipped onto the edge of the plateau above the creek. All patches were recut and the stumps treated with Roundup Custom with MarkIt dye.



Figure 5. Map Showing Treated Patches Near Gentle Creek Place



Figure 6. Gentle Creek Place After Treatment - October 2021

## Sandra Ct, Alamo, CA

Several years ago FSRC had worked with a homeowner at 8 Sandra Ct to remove her Arundo. This year FSRC sent mailers to other property owners on Sandra Ct who had Arundo on their property and suggested they get rid of it. FSRC offered a subsidy to help hire a contractor to remove the Arundo.

The homeowner at 14 Sandra Ct hired their gardener on their own to remove their Arundo. The homeowners at 20 and 26 Sandra court jointly hired a contractor with FSRC to remove their Arundo. Approximately 3600 sf of dense Arundo was removed, chipped and shipped off site. The remaining stumps were treated with Roundup Custom. The homeowner has agreed to do ongoing treatments.





Figure 7. Map showing treated patches on Sandra Ct properties



Figure 8. Sandra Ct, After Treatment - August 2021

## Shawn Ct, Danville CA

The Shawn Ct patch was a large (5000 sf) patch, far upstream in the watershed. There are very few other instances of Arundo in this area. It appears to have been planted by a landowner many years ago and has been allowed to expand to this large patch by inattention for many years.

FSRC approached the landowner early in the summer of 2021 to understand what it would take to remove the Arundo. FSRC decided that the best approach would be to use large community groups to work on this patch. A group of Boy Scouts (16 scouts) and two Church groups (23 and 25 people) almost eliminated it. The regular volunteer crew finished it up and cleaned up the debris. The canes were chipped into an open field on the property that was well above the waterline.

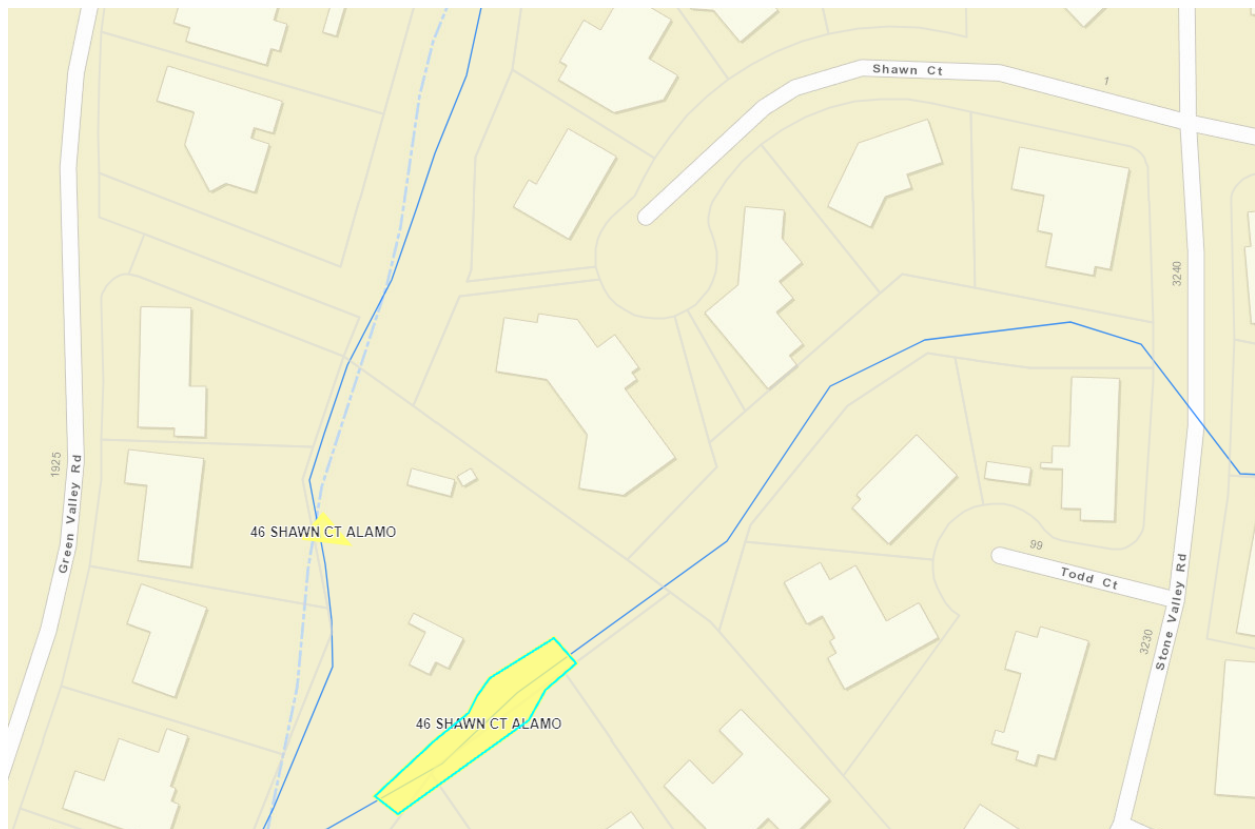


Figure 9. Map showing treated patches near Shawn Ct in Danville.



Figure 10. Shawn Ct, Before Treatment - June 2021



Figure 12. Shawn Ct After Treatment - August 2021



Figure 11. Shawn Ct, Before Treatment - June 2021

## Other Small Sites

FSRC also removed and treated two small upstream patches on Nelda Ct in Alamo and Everett Dr in Danville.

## 2021 Arundo Removal Process and Improvements

Many of the volunteers had great suggestions throughout the season. These suggested improvements made the team's job easier and more efficient. The list below contains some of the improvements that the FSRC volunteers made this season. Many seem quite small but when put together they make the teams much more productive.

### Outreach and Marketing Improvements

- Articles in Danville Today and Next Door generated homeowner and volunteer interest.
- Mailings to targeted homeowners with known Arundo patches on their properties generated interest in removing Arundo.
- Offer to pay half of contractor cost in articles and mailings resulted in 4 homeowners accepting our offer and removing Arundo.
- Improved memorandum of understanding with homeowners generated more commitment to maintaining the sites after initial removal.

#### Staffing Improvements

- 5 new regular volunteers as well as some occasional volunteers joined our team.
- Additional weekly Tuesday sessions were added late in the season to the regular Friday workdays.
- The Save Mount Diablo Trail Dogs joined us as their schedule allowed.

#### Process and Equipment Improvements

- Bundles - we standardized on a bundle size that could be created at the cutting point, hauled to a ramp, lifted up a ramp and run into the chipper without taking the bundle apart.
- Ramps - we expanded the use of ramps that we pioneered in 2020, using as many as 3 ramps at 3 separate sites at the same time.
- Straps and carabiners - we used short straps with a carabiner to wrap the bundles for hauling eliminating the need to tie and untie bundles.
- Chipper - we had a chipper available for most workdays which eliminated the need to create staging piles and handle the material twice.
- Staging - when we didn't have a chipper we staged the bundles in criss-cross piles that made it easy to pick up the bundles without getting them tangled and we made sure to not block access to the chipper for new bundles on the day when the chipper arrived.
- Narrow rakes - we bought narrow cultivator style rakes to take out the duff between the canes.
- Tarps - we bought tough canvas tarps to haul duff from the cutting point to the chipper without ripping.
- Backpack sprayer - we bought a backpack sprayer which made us more efficient at treating the stumps.
- MarkIt - we added MarkIt, a temporary blue dye, to our herbicide to make it easier to see what has already been treated.

But most of our success was due to the fantastic hardworking folks who worked well as a team. Every person was able to see where the process was slowing down and move to the spot that needed the most help at a given time. And everyone tried to find ways to make it work better.



# Follow-up Treatment of Arundo Removal Sites

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Figure 13. Spreadsheet of Follow-up Treatment of Arundo Removal Sites

The above is a snapshot of a spreadsheet used to track follow-up herbicide treatment of 17 past Arundo sites. 1.5% (4oz concentrate per gal water) glyphosate is sprayed directly onto leaves of re-growth without cutting. By returning monthly, cutting and removal with disturbance of the area is minimized; ideally, re-growth is treated before it reaches 20" in height. This work dates back to 2013; no sites can clearly be declared completely free of Arundo, but 10 of the 14 sites have little to no growth. At three sites, the Arundo did not show any growth for a year, then came back the next year. The most mature sites, those with large dense growth and large rhizomes, are the most difficult to kill. The 3 sites that had the most mature stands require about 90% of the herbicide used.

## Replanting



Figure 14. November 6, 2021, 134 El Portal, Danville. Planting Plan



Figure 15. December 4, 2021, 134 El Portal, Danville. Caged and tubed plantings

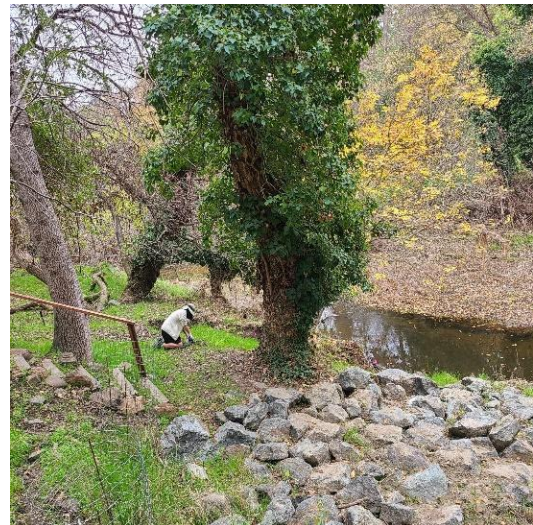


Figure 16. December 4, 2021, 134 El Portal, Danville. A volunteer plants a tree near the high-water line





Figure 17. December 11, 2021, 235 West El Pintado, Danville. Planting Plan.



Figure 18. December 18, 2021, 42 Gentle Creek Pl, Danville. Planting bushes along a steep bank

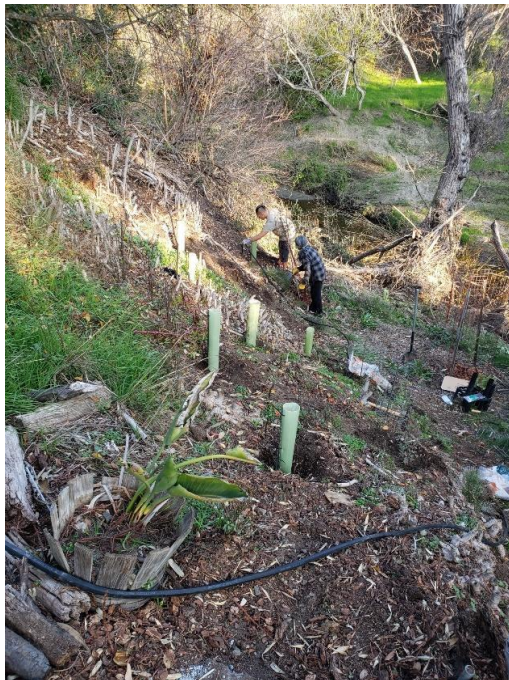


Figure 19. December 4, 2021, 20 Sandra Ct, Alamo



Figure 20. December 4, 2021, 20 Sandra Ct, Alamo. Red-Flowering Currant caged and mulched.

## Distribution List:

Melissa Farinha, CDFW

Jennifer Rippert, CDFW

Clint Garrett, CDFW

Katie Hart, RWQCB

Bob Simmons, Walnut Creek Watershed Council

Chris Lim, Contra Costa Resource Conservation District

Elissa Robinson, Contra Costa Resource Conservation District

Lisa Damerel, Contra Costa Resource Conservation District

John Zentner, The Restoration Trust

Ave Brown, Contra Costa County Public Works