Arizona Water Protection Fund
FY 2014 Grant Application Review

Application # WPF0413 Applicant: University of Arizona Sponsored Project Services/Bursar Office

Title of Project: Arundo Eradication + Riparian Restoration of Sabino + Bear Creek, Tucson AZ

Additional materials were submitted with this application that could not be reproduced and distributed for review. These materials may be reviewed in person at the Arizona Water Protection Fund offices at (3550 N. Central Avenue, 2nd Floor, Phoenix). The additional materials available are the following:

_____ **Maps**
_____ **Photographs**
___✓___ **Disk**
_____ **Other**

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Water Protection Fund

Arizona Water Protection Fund
Application Cover Page
FY 2014

Title of Project: Arundo Eradication & Riparian Restoration of Sabino and Bear Creek, Tucson, AZ

Type of Project:
- [x] Capital or Other
- [ ] Water Conservation
- [ ] Research

Stream Type:
- [ ] Perennial
- [ ] Intermittent
- [x] Ephemeral

Your level of commitment to maintenance of project benefits and capital improvements:
[x] < 5 years [ ] 5-10 years [ ] 11-15 years [ ] 16-20 years

Applicant Information:

Name/Organization: The University of Arizona
Address 1: Sponsored Projects Services
Address 2: PO Box 210158, Rm 510
City: Tucson
State: AZ
ZIP Code: 85721-0158
Phone: 520-626-6000
Fax: 520-626-4137
Tax ID No.: [redacted]

Inside an AMA: Yes [x] No [ ]

If yes, which AMA:
- [ ] Phoenix
- [x] Tucson
- [ ] Prescott
- [ ] Pinal
- [ ] Santa Cruz

Type of Application:
- [x] New
- [ ] Continuation

Contact Person:

Name: James Washburne
Title: Adjunct instructor
Phone: 520-626-4107
Fax: 520-626-4479
e-mail: jwash@hwr.arizona.edu

Any Previous AWPF Grants:
[ ] Yes [x] No

If yes, please provide Grant #(s):

Arizona Water Protection Fund Grant Amount Requested:

$51,262.00

If the application is funded, will the Grantee intend to request an advance:
[x] **Yes** [ ] **No**

Matching Funds Obtained and Secured:

Applicant/Agency/Organization:	Amount ($):
1. Applicant	10,005.00
2.	
3.	
Total:	10,005.00

Has your legal counsel or contracting authority reviewed and accepted the Grant Award Contract General Provisions?
[x] Yes [ ] No [ ] N/A

Signature of the undersigned certifies understanding and compliance with all terms, conditions and specifications in the attached application. Additionally, signature certifies that all information provided by the applicant is true and accurate. The undersigned acknowledges that intentional presentation of any false or fraudulent information, or knowingly concealing a material fact regarding this application is subject to criminal penalties as provided in A.R.S. Title 13. The Arizona Water Protection Fund Commission may approve Grant Awards with modifications to scope items, methodology, schedule, final products and/or budget.

Typed Name of Applicant or Applicant's Authorized Representative	**Title and Telephone Number**
Lee Anne T. Peters Contract Officer	
Signature	**Date Signed** August 28, 2013

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2) Executive Summary

The goal of this effort is to continue a community-based volunteer effort to eradicate Arundo donax or Giant Reed from Sabino and Bear Creeks, outside of Tucson, AZ. This proposal builds on a six year effort that started in Sabino Canyon Recreation Area in 2007 and that has fully removed the Arundo infestation from the Recreation Area and 1.71 miles of mostly private riparian land downstream from the Forest Service boundary.

The bulk of the proposed work involves cutting and bundling the cane and digging out the Arundo rhizomes by hand. In the absence of any funding, we are forced to stack bundled cane above the mean flood level and hope that it degrades before the next 100 year flood washes it downstream. The cane quickly loses resprouting viability but we have found that the rhizomes must dry for at least 9 months before they lose the ability to resprout if entrained by flood waters. With this funding, we will try to chip or haul a bulk of this cane to alleviate this solid waste problem.

Arundo degrades the riparian zone by choking native sycamore and mesquite trees with its phenomena growth rate which consumes vast amounts of water, nutrients and sunlight. Arundo is a fire hazard, stalks can create significant debris dams during floods and it provides no food to riparian dwellers. Areas that have been cleared have shown a rebound in flowering understory plants, the establishment of native trees and a greater abundance of birds. We plan to work with Tucson Audubon and possibly some natural resource professors from the University of Arizona to better evaluate the quality and diversity of riparian habitat and wildlife both before and after cutting.

Over the past six years, we have developed strong relationships with the U.S. Forest Service; Pima County Flood Control District; Pima County Natural Resources, Parks and Recreation; Tucson Audubon; Friends of Sabino Canyon; Salpointe High School; various scout troops and several private riparian land owners. If funded, we will expand our outreach efforts to include other school and community-service clubs or volunteer groups with the goal of hosting monthly volunteer events 9 months of the year.

To date, we have logged 8864 hours of volunteer field work. Still, 2.58 miles of channel remains to be cleared down to the confluence of the Pantano and Rillito Washes. Although 100% participation by private and corporate land owners might leave a few stalks standing, AWPF support is critical for this effort to continue to the confluence and to encompass as much of the creek's riparian zone as possible. For the most part, the support of private land owners has been positive. Still, most land owners seem overwhelmed by the rapid growth of this plant and have failed to act decisively to control its spread on their own. Our project has proven its effectiveness and commitment to eradicate Arundo in Sabino Canyon. We appreciate any support you can provide to complete this task.

3) Project Overview

Background

I began a pilot effort to remove Arundo donax with hand tools from Sabino Canyon Recreation Area six years ago. Since then I have helped lead this effort and built a strong coalition with interested and affected groups to fully eradicate Arundo in this area. ***This project will coordinate and manage the continuation and expansion of this effort downstream across county and private land for 2.6 miles (and a 1 mile stretch of Bear creek)***. This is a critical phase of the project, since much of the earlier participation was based on a strong sense of public ownership and cooperation in the National Forest recreation area. We already have a strong working relationship with the following key groups: the US Forest Service, Sabino Canyon Volunteer Naturalists (SCVN), Friends of Sabino Canyon, Tucson Audubon, Pima County Regional Flood Control District (RFCD) and Pima County Natural Resources, Parks and Recreation Department (NRPR). We have received permission from two primary downstream public agencies (Pima County RFCD and NRPR) to conduct volunteer operations in publicly owned parcels along Sabino Creek but further work is required to engage private land owners, schools and other community groups in this expanded effort.

- **Goals**
  - Remove invasive Arundo donax from Sabino and Bear Creeks
  - Improve conditions for riparian vegetation and wildlife
  - Improve transmission of flood flows
- **Objectives**
  1. clear Pima County parcels in upper and lower Bear Creek
  2. clear Canyon Ranch resort/deBernardis property along middle Sabino Creek
  3. clear Tankersley Estates property along middle Sabino Creek
  4. clear infestations in lower Sabino creek to the confluence of the Rillito
  5. monitor previously cleared reaches of Sabino and Bear Creeks

Statement of Problems/Causes

Arundo donax or giant reed/cane is a non-native plant to the United States that has become invasive along well-watered riparian areas throughout many Western states. This plant looks a little like bamboo and grows rapidly (in a single season) to over 20 feet tall. Monoculture stands of Arundo measured in thousands of acres choke sections of the Rio Grande and Colorado Rivers and many smaller California streams. Several agencies ranging from the U.S. Forest Service to the Arizona Invasive Species Council have designated it as a significant threat. Although it has a prolific-looking seed plume, it spreads mostly by rhizome redistribution during major flooding events. Sabino Canyon Recreation Area (SCRA), located near Tucson, Arizona and managed by the USFS Catalina Ranger District, is a hugely popular destination for hikers, tourists and birders (receiving over a million visits annually). Unfortunately post-forest fire flooding in 2003 and a 500-year return period debris flow event in 2006 undercut a large infestation around Sabino Dam and distributed viable Arundo rhizomes throughout all downstream reaches of Sabino Creek. A similar infestation is present along lower Bear Creek. ***A multi-year effort is needed to expand this program to down-stream areas before the Arundo infestation becomes impossible to handle***. Both the Forest Service and USGS have identified Arundo as an invasive species and the Southwest Biological Science Center ranks Arundo among the 19 most invasive plants in Arizona. A USDA fact sheet explains the ecological threat of Arundo as follows:

> "Giant reed forms dense thickets of distinct clumps which chokes riversides and stream channels, crowds out native plants, interferes with flood control, increases fire potential, and reduces habitat for wildlife... The long, fibrous, interconnecting root mats of giant reed form a framework for debris dams behind bridges, culverts, and other structures that lead to damage. It ignites easily and can create intense fires. Giant reed can float miles downstream where root and stem fragments may take root and initiate new infestations. Due to its rapid growth rate and vegetative reproduction, it is able to quickly invade new areas and form pure stands at the expense of other species. Once established, giant reed has the ability to out-compete and completely suppress native vegetation."

Statement of Solutions

Jim Washburne initiated a pilot effort to remove Arundo manually in December of 2007 working in coordination with Josh Taiz and later Devin Quintana of the Catalina Ranger District of the USFS. Over the last six years, this volunteer effort has systematically worked downstream to remove Arundo and restore the riparian corridor to more natural conditions. Table 1 summarizes the volunteer effort so far.

Table 1: Summary of Sabino Creek Arundo Eradication Volunteer Effort

Period	Dates	Location	People	Field Hrs
2007-2008	12/24 – 3/9	Sabino - SCRA	54	214
2008-2009	10/19 – 6/27	Sabino - SCRA	550	2200
	12/22 – 5/30	Rillito - central	26	93
2009-2010	8/26 – 6/3	Sabino - SCRA	583	3146
	11/28 – 5/31	Rillito - west	143	450
2010-2011	7/31 – 6/9	SC: SCRA - Fenster	313	1230
	7/10 – 4/9	Rillito - central	32	118
2011-2012	7/2 – 5/9	SC: Fenster- HV-hoa	153	602
2012-2013	8/4 – 6/26	SC: confluence	200	811
2007-2013	**Totals**	**all**	**2054**	**8864**

The following story summarizes the impact of these efforts around Sabino Dam and was excerpted from the Summer 2013 Southern Arizona Buffelgrass Coordination Center Newsletter:

> Mark Hengesbaugh (Project Coordinator from 2009-2010) gathered a group of naturalists and identified and counted the plant species re-establishing themselves in seven test plots within the former Giant Reed footprint around Sabino Dam. An initial survey in summer 2010, counted 51 returning species. In summer 2012, they found 33 more species. Of the 84 returning plant species, 35 are nectaring plants for insects and 32 are host plants for butterflies. Giant Reed had killed the last mature Arizona black walnut at Sabino Dam, but today two Arizona black walnuts have returned there along with a dozen velvet mesquites. Arizona sycamores, Bonpland and Goodding willows have also returned to what was formerly over-run by Giant Reed.

Strategy/activities planned - Our strategy is to focus on the riparian sections of Sabino Creek where we will organize and coordinate monthly weekend groups of volunteers to help control and eradicate invasive stands of Arundo by cutting it down and digging it out. Tables 2-3 detail information about each reach that will be worked on. Table 4 (Gantt Chart) details when this work will be accomplished. Where it is appropriate and permissible, glyphosate will be used to reduce regrowth in difficult to dig areas. Our

major partners include the U.S. Forest Service; Pima County Flood Control District; Pima County Natural Resources, Parks and Recreation; Tucson Audubon; The Nature Conservancy and several private riparian land owners. We will organize monthly volunteer events for school and community groups, including a new community service requirement for freshman at the University of Arizona. We will increase public awareness of the adverse impacts of Arundo through lectures, posters, handouts and the education of our volunteer workforce. Finally, we stand ready to deploy a rapid response force after future flood events to control the spread and establishment of new colonies of Arundo from flood- borne rhizomes and stems. Due to heat and snakes, we suspend most volunteer operations during the summer. I have written to all of the land owners along the creek to request permission to work on their land. The next step is to continue to seek out and communicate with land owners so a majority of them will be on board by February.

Table 2: Major Stream reaches along Bear Creek

Reach	Feet	Miles	Acres	Time	Notes
BC-1a	2023	0.383	1.75	~2 mo	just south of SCRA; former Nature Conservancy property and Stilb property; **signif. arundo** infestation
BC-1b	2023	0.383			mostly Pima County; Completed by RFCD -Maintenance only
BC-1c	2023	0.383	2.37	~6 mo	mostly Pima County; **major arundo infestation**; adjacent private land mostly clear
BC-1d			2.68	130 hr	Secondary channel parallel with BC-1c - **Completed**
BC Totals	**6069**	**1.15**	**6.80**	**~8 mo**	

Table 3: Major Stream reaches along Sabino Creek

Reach	Feet	Miles	Acres	Time	Notes
SC-1a			1.29	50 hr	Caplan; Just south of SCRA
SC-1b			3.32	391	Fenster core
SC-1c			7.29	300	Fenster east
SC-1d			4.10	363	Fenster west
SC-1e			9.00	124	Hidden Valley HOA
SC-1	**5538**	**1.05**	**25.00**	**1288 hr**	**--- Completed (24 mo) -Maintenance only ---**
SC-2a			6.45	340	Toll core
SC-2b			5.30	100	Toll NW – just south of Snyder Rd. right-of-way
SC-2c			6.25	240	PC/Leman south
SC-2	**3497**	**0.66**	**18.00**	**680 hr**	**--- Completed (14 mo) -Maintenance only ---**
SC-3a			6.70	~2 mo	DeBernardis & Tankersley N
SC-3b			6.85	~9 mo	Canyon Ranch resort - **major arundo infestation**
SC-3c			9.07	~3 mo	Tankersley S
SC-3d			12.03	~3 mo	Woodland/Tres Lomas Wash
SC-3	**4693**	**0.89**	**34.65**		between Canyon Ranch resort and Al-Marah stables Arundo density varies
SC-4	2537	0.48	15.11	~1 mo	mainly larger properties; almost completely cleared by private landowners
SC-5	6407	1.21	24.42	~6 mo	mainly smaller properties; relatively scattered stands of moderate size
SC Totals	**22,672**	**4.29**	**119.13**	**~24 mo**	

Statement of Project Years of Benefit

Once clear, Sabino and Bear Creek should remain Arundo-free for decades. Unfortunately, there are two properties that have refused to participate in the program so far and they may serve as future source zones (although only during a greater than 50-year return period flood). Humans first introduced Arundo in the area as a landscape plant and over time, it seems to have migrated up streams like Sabino Creek. What future role humans will play in re-introducing this pest is unknown, other than it will probably happen. Hopefully, our outreach and initial clearing efforts along the creek will spark a renewed sense of pride and stewardship by the adjacent property owners and it is their vigilance that will do the most to maintain the creek in its restored, naturalized condition.

Budget Assumptions

- Coordinator – I work 11 months a year, about 8 field hrs/wk @ $26/hr; My ERE rate is 21%.
- Team Leaders – I propose to reimburse these individuals for mileage @ $0.50/mi, 9 mo/yr, 2/wk
- Volunteers – I'm assuming (very conservatively) 9 events/yr with 5 people for 4 hrs/event.
- Outside Services – I will contract out chipping/hauling, the bird survey (talking w/ Tucson Audubon), and I have a contingency for bee removal in case they get into a stack of can
- Consumable supplies – Gloves, twine, glysophate and sharpening loppers
- Durable supplies – hand tools (half-life a of a pick is 1 yr), small chain saw, snake gaitors

Publicity

Mark and Jean Hengesbaugh did a great job getting the word out for volunteers and to local media representatives early in the program. (**Table 5**). Jim Washburne regularly speaks to several groups to promote these efforts and educate the public about Southern Arizona's Arundo problem (**Table6**).

Table 5: Publicity* and Press Releases

Title	Source
Guidelines for removing Arundo	Master Watershed Stewards Fact sheet, Candice Rupprecht
Weed it and Reap – How invasive plant species damage natural landscapes like Sabino Canyon	Arundo Project Fact Sheet
Program to bring "Giant reed Grass" (Arundo donax) under control in Sabino Canyon	Friends of Sabino Canyon, Board Meeting, 8/26/08
Volunteers will be removing Giant reed Grass (Arundo donax) from Sabino Canyon	Invasives – The Arizona Native Plant Society, 9/16/08
Forest Service and Partners to remove giant reed from Sabino Canyon	USFS Press Release, 9/22/08, Heidi Schewel
Volunteers needed to pull non-native plants in Sabino	Tucson Citizen, 9/22/08, B. Poole
Giant reed clogging Sabino Canyon	Tucson Citizen, 9/26/08, B. Poole
Josh Taiz at Sabino Canyon with Tony Paniagua	Arizona Illustrated, tv.azpm.org/kuat/segments/2008/10/21/kuat-giant-reed/
Jim Washburne in studio with Bill Buckmaster	Arizona Illustrated, tv.azpm.org/kuat/segments/2008/10/21/kuat-invasive-species/
Decimating giant reeds – Volunteers to battle Arundo donax on Nov. 2 and 9	NW Explorer News, 10/29/08, Laura Marble

Getting rid of a big bad reed – volunteers needed this Sunday to help clear Sabino of invasive plants	Arizona Daily Star, 10/30/08, Alex Dalenberg
The program to bring "Giant Reed Grass" (Arundo donax) under control in Sabino Canyon Recr. Area	Gneiss News (SCVN), 10/08
Getting rid of a Sabino invader – volunteers pull out giant reed	Arizona Daily Star, 3/6/2009, Janelle Montenegro
Arizonans even the score for underdog trees, plants	Digital Journal, 3/18/09, Kim Hartman, www.digitaljournal.com/print/article/269428
Success Stories: Giant reed Defeated in Sabino Canyon!	Summer 2013 Southern Arizona Buffelgrass Coordination Center Newsletter
** written by Mark and Jean Hengesbough unless otherwise indicated*	

Table 6: Group Presentations*	
Group	**Date**
Sabino Canyon Volunteer Naturalists	10/23/08
Pima Association of Governments – EPAC Comm.	1/9/09
Arizona Riparian Council annual mtg	4/16/09
Tucson Rincon Rotary Club	10/8/09
SW Veg. Mgmt Asso meeting	10/2010
Tucson Native Seed Society	10/2011
** made by Jim Washburne unless otherwise indicated*	

Web site: Jim Washburne developed a project web site at: www.sahra.arizona.edu/education2/arundo

References

- Forest Service (www.invasivespecies.gov/profiles/giantreed.shtml)
- USGS (sbsc.wr.usgs.gov/research/projects/swepic/SWVMA/InvasiveNon-NativePlantsThatThreatenWildlandsInArizona.pdf)
- Southwest Biologic Science center,
- USDA

Tucson Arundo Gantt Timeline

	2014													2015											
Task	J	F	M	A	M	J	J	A	S	O	N	D		J	F	M	A	M	J	J	A	S	O	N	D
1/2 -Prep	x	x																							
3 - BC-1a	x	x																							
4 - BC-1c			x	x	x		x	x	x																
5 - BC-maint.										x							x					x			
6 - SC-3a											x	x													
7 - SC-3b														x	x	x	x	x		x	x	x	x		
8 - SC-3c																								x	x
9 - SC-3d																									
10 - SC maint.				x					x								x					x			
11 - Hab.Survey	x		x		x		x																		
12 - Annual Rpt.												x													x
13 - SC-4																									
14 - SC-5																									

	2016													2017											
Task	J	F	M	A	M	J	J	A	S	O	N	D		J	F	M	A	M	J	J	A	S	O	N	D
1/2 -Prep																									
3 - BC-1a																									
4 - BC-1c																									
5 - BC-maint.				x					x								x								
6 - SC-3a																									
7 - SC-3b																									
8 - SC-3c	x																								
9 - SC-3d		x	x	x																					
10 - SC maint.				x					x								x					x			
11 - Hab.Survey	x		x		x		x																		
12 - Annual Rpt.												x													x
13 - SC-4					x																				
14 - SC-5							x	x	x	x	x	x													

Plans/Methods

- Arundo – Removing Arundo donax or Giant cane is the primary objective. The process of eradicating Arundo is deceptively simple but back-breaking work. We use large loppers to cut the cane. We tie the cane into bundles that can be dragged to a pile or staging area out of the flood plain. Because freshly cut cane is still so heavy with water, we often let it dry for 3 weeks before moving it far but we always stack it above the active channel. Finally we use a mattock trench around, undercut and break-apart the generally shallow (<18") Arundo rhizomes. The rhizomes are also left to dry above the recent flood plain. Established stands near the wash can get repeatedly flooded and buried with sand which can lead to deeper or thicker root masses. Arundo growing from large debris dams is best treated with glyphosate while less than 5 feet tall.

- Other invasives – A secondary objective will be to remove some other invasive species, including Oleander, Tamarisk, Buffelgrass, Fountain grass and Johnson Grass. Except for isolated instances, none of these species are that prevalent. Sometimes it is necessary to cut back Cat claw and Desert broom to better access Arundo stands.

- Job hazards – In order of likely encounters, these include: minor abrasions, twisted ankles, swarming bees, scorpions, snake bites, armed and annoyed property owners, mountain lion attacks. We have had no major injuries so far.

- Channel clearing – Clearing out the Arundo will open up many of the flood channels but in places, long-term drought and Arundo growth has resulted in the death of larger riparian trees. We propose to cut to 4 ft lengths and stack dead, fallen trunks that are clogging active channels. Although it does not seem to be a problem in this area yet, we will consider the potential these clearing operations may have on promoting un-invited recreational off-road vehicles and work in such a way to discourage this kind of traffic.

- Fences – There are many downed fences throughout the flood plain that are particularly hazardous to horse riders and also tend to catch debris during high water. Because of legal complications related to messing with private fences, this effort will leave all fences as they are found.

- Effectiveness Monitoring & Retreatment – Arundo infestations are difficult to completely eradicate because even a small piece of root that is left buried will re-sprout and give rise to new stands if left alone. That is why we propose revisiting the whole work area south of the Sabino Canyon recreation area boundary fence at least twice a year to hunt down and either dig out or spray these re-sprouts. We are currently using 5% glyphosate (Aqua Master or Rodeo) with an additional emulsifier. This formulation has been tested in aquatic environments and has been shown to be safe for most aquatic wildlife.

- Wildlife/Habitat Surveys – we are working with Tucson Audubon to develop a transect-type bird survey protocol that will be used 4 times a year in alternating years to compare bird and habitat richness and diversity both parallel and perpendicular to stream flow.

Photograph Notes

S1 – Lower Sabino creek – The main purpose of these four photos is to illustrate the current state of the active channel and riparian canopy. Some images also show Arundo (black box).

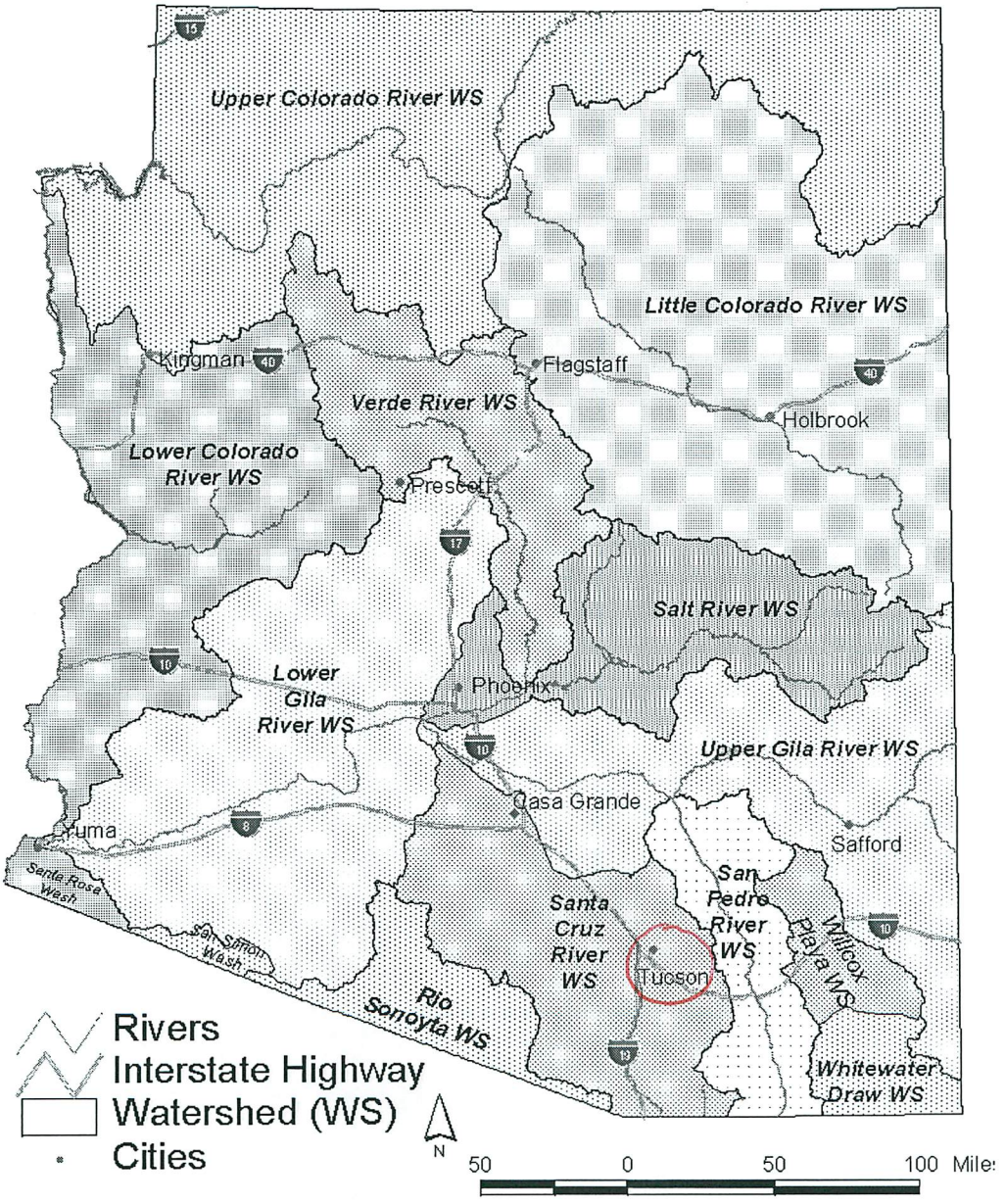
S2 – Bear Creek – Although Pima County RFCD has led numerous work parties to the head of Bear canyon over the past two years, lack of follow-up has resulted in re-growth of some areas that were cut down and many channel side stands have never been touched. As can be seen, the channel in this section is quite laden with large cobbles and rocks.

S3 – Active Work Sites – 2013 – These images show some of the areas we have worked on this past summer although the Reach 2c area has been under attack for closer to 6 months. The upper right photo has several dead riparian tree s in it that were killed by the smothering effects of Arundo.

S4 – Sabino canyon recreation Area – these photos illustrate some of the original areas we worked in. All the Arundo in these photos has now been cleared.

S5 – Community Service – these images just illustrate the variety and typical size of our work crews. In part, we have been unable to accommodate more than a dozen participants because of lack of equipment.

Arizona Watershed Map
FY 2014



Title of Project: Arundo Eradication & Riparian Restoration of Sabino and Bear Ck, Tucson, AZ

Project Location & Environmental Contaminant Information
FY 2014

Project Location Information

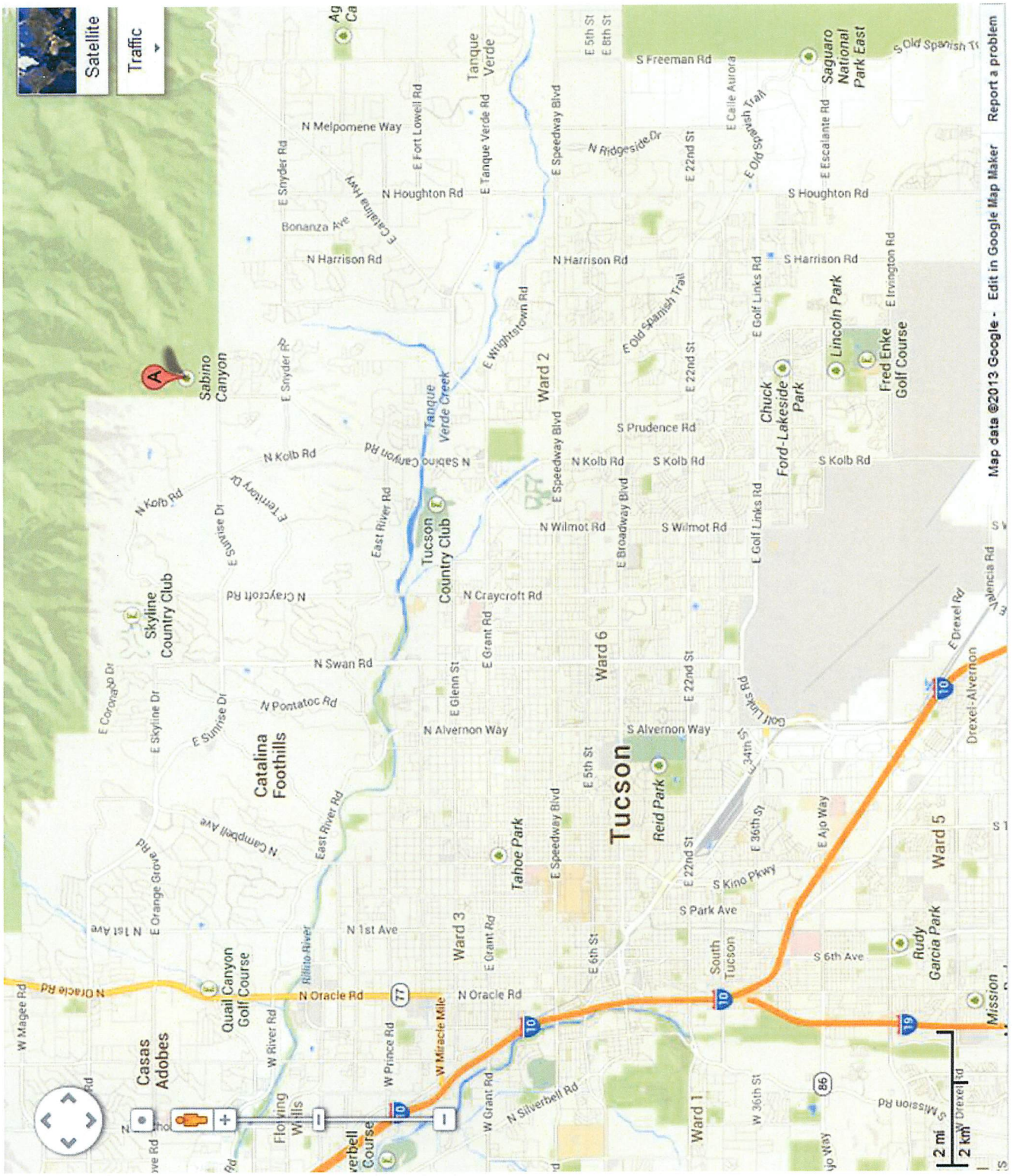
1. County: Pima	2. Section: 15,16,21, 22,27,28,32,33	3. Township: 13S	4. Range: 15E

5. Watershed: Rillito
6. 8 or 10 Digit Hydrologic Unit Code (HUC): 15050302
7. Name of USGS Topographic Map where project area is located: Sabino Canyon
8. State Legislative District: 9 and 10 (on border)
   (Information available at: http://azredistricting.org/districtlocator/
9. Land ownership of project area: Pima County and Private
10. Current land use of project area: Riparian Stream
11. Size of project area (in acres): 126
12. Stream Name: Sabino and Bear creek
13. Length of stream through project area: 5.44
14. Miles of stream benefited: 5.44 miles
15. Acres of riparian habitat: 126 acres will be:
    - ☐ Enhanced
    - ☐ Maintained
    - ☒ Restored
    - ☐ Created

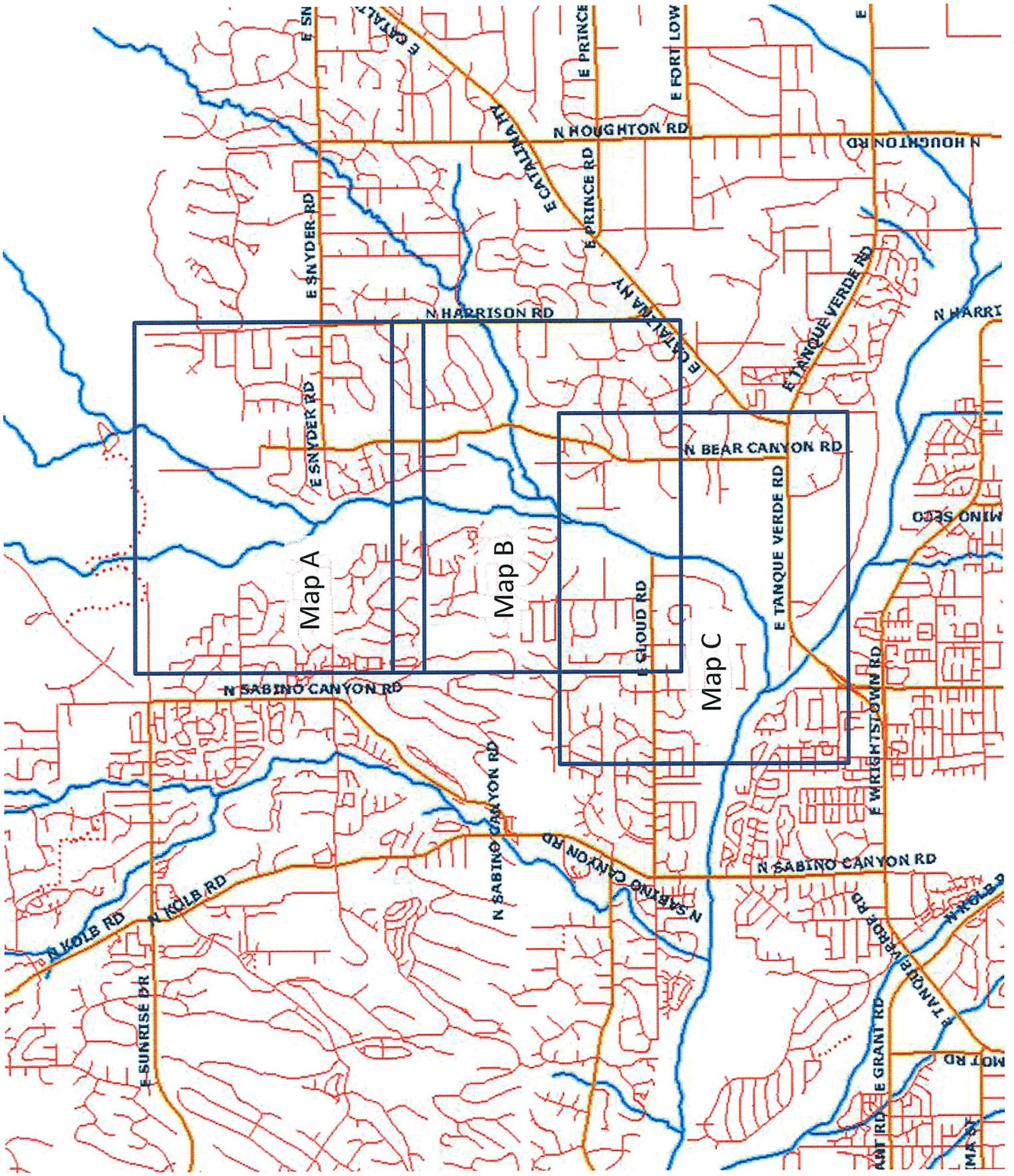
16. Provide directions to the project site from the nearest city or town. List any special access requirements:

Environmental Contaminant Location Information

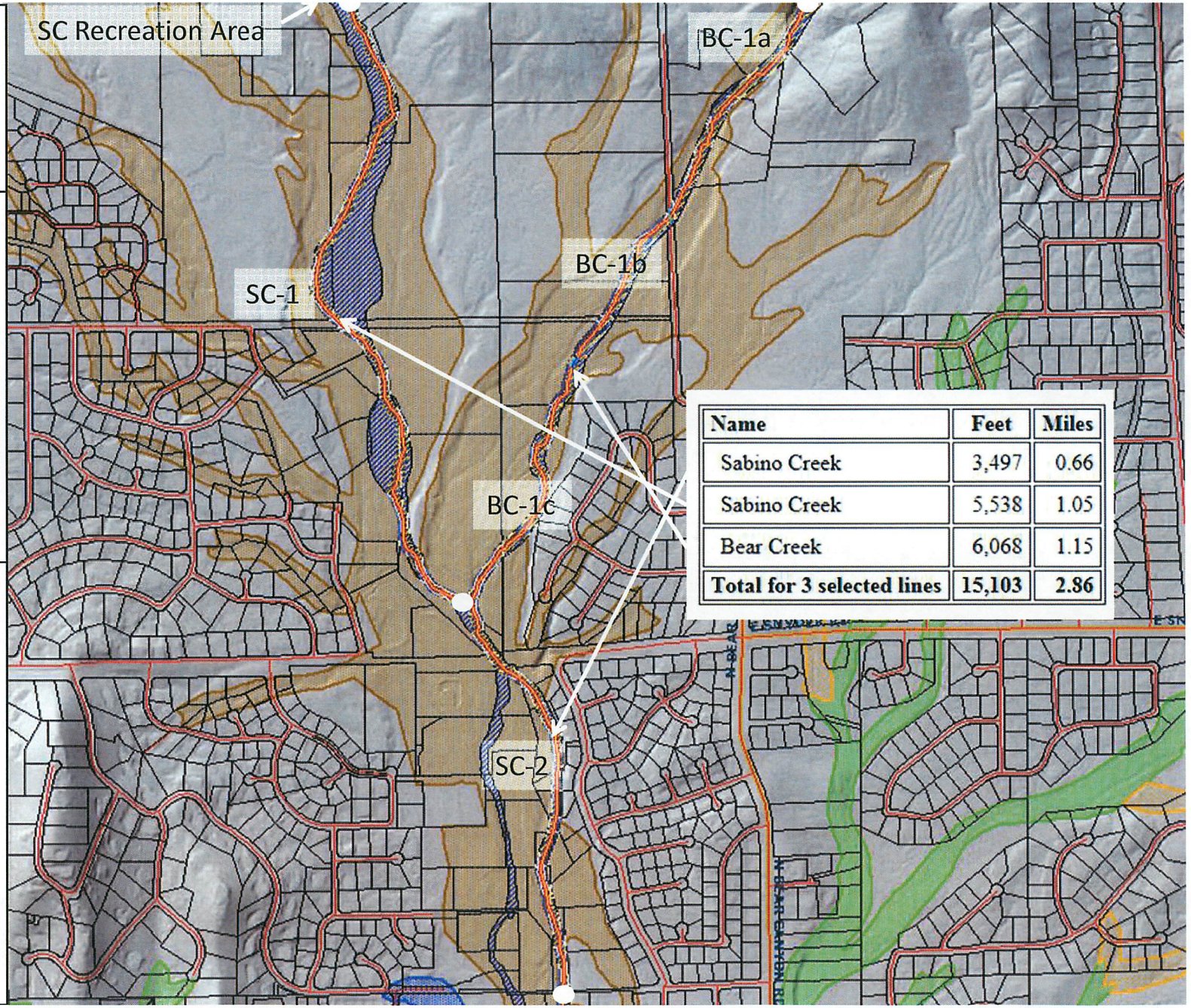
1. Does your project site contain known environmental contaminants? ☐ **YES** ☒ **NO** If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants:
2. Are there known environmental contaminants in the project vicinity? ☐ **YES** ☒ **NO** If yes, please identify the contaminant(s) and enclose data about the location and levels of contaminants:
3. Are you asking for Arizona Water Protection Fund monies to identify whether or not environmental contaminants are present? ☐ **YES** ☒ **NO**



N 1:127,000	Tucson Arundo Project	Sabino Canyon RA, Tucson, AZ
	Year 0 - Background	General Location of Project Area
	Prepared 7/30/2013	*Source: Google Maps*



N 1:46,900	Tucson Arundo Project	Overall Location Map
	Year 0 - Background	
	Prepared 7/30/2013	*Source: Pima County Map Guide*



Name	Feet	Miles
Sabino Creek	3,497	0.66
Sabino Creek	5,538	1.05
Bear Creek	6,068	1.15
Total for 3 selected lines	**15,103**	**2.86**

N

1: 12,200

Tucson Arundo Project

Year 1 - Planning

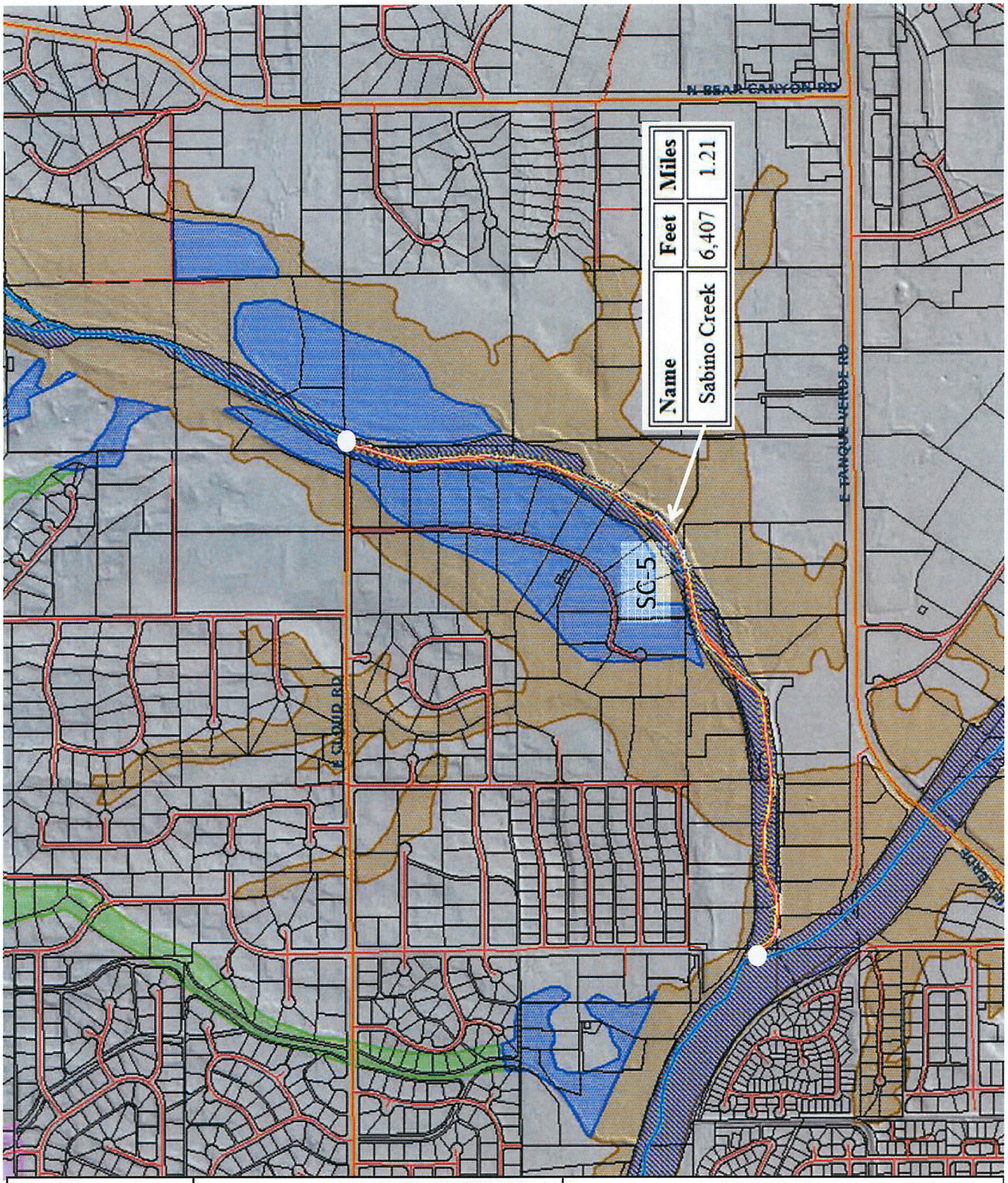
Prepared 7/30/2013

Map A) SCRA to Canyon Ranch

Flood Plain & Reach index

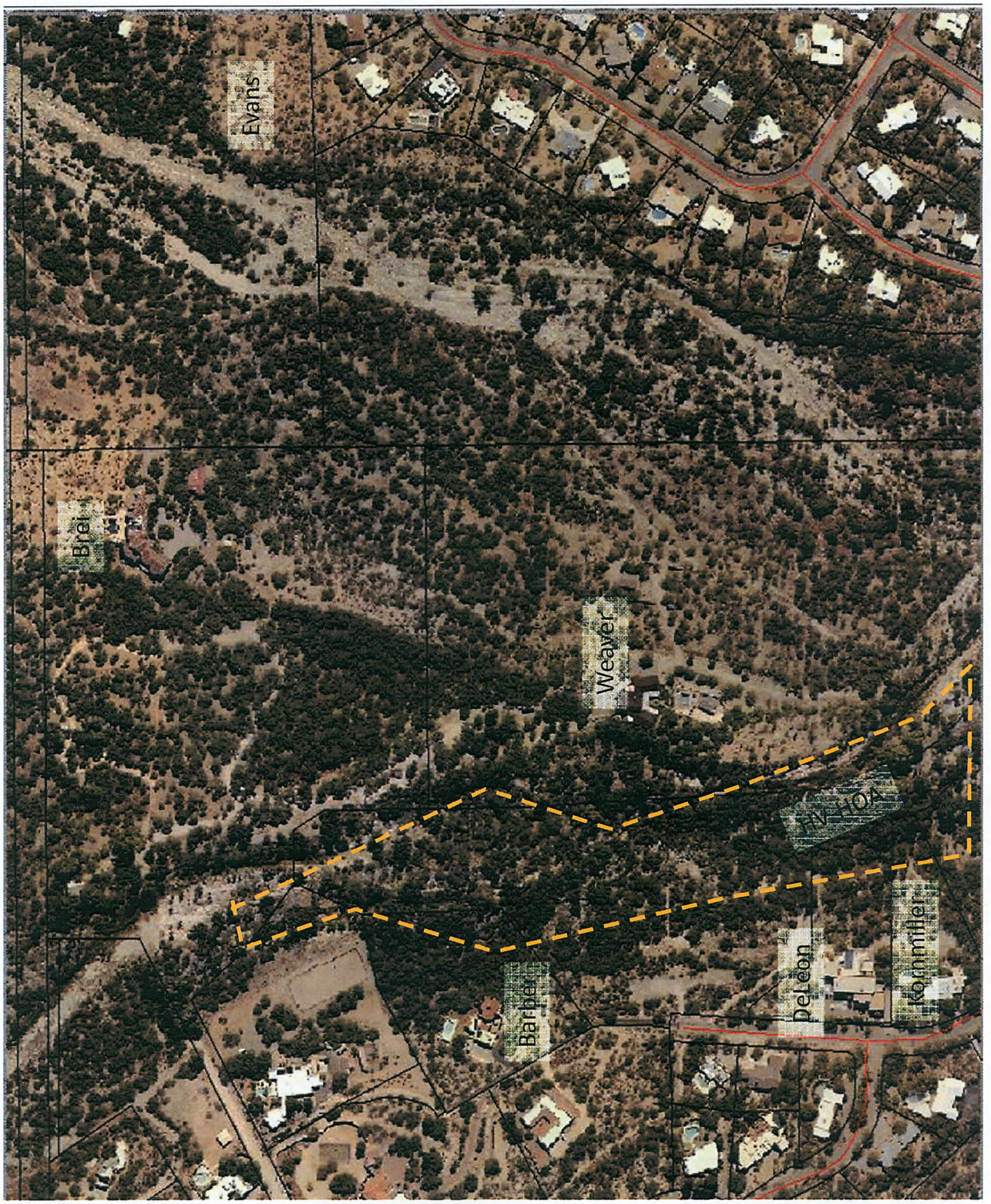
Source: Pima County Map Guide

N	Tucson Arundo Project	Map B) Canyon Ranch to Cloud Rd
1:12,200	Year 2 – Planning	Flood Plain & Reach index
	Prepared 7/30/2013	*Source: Pima County Map Guide*

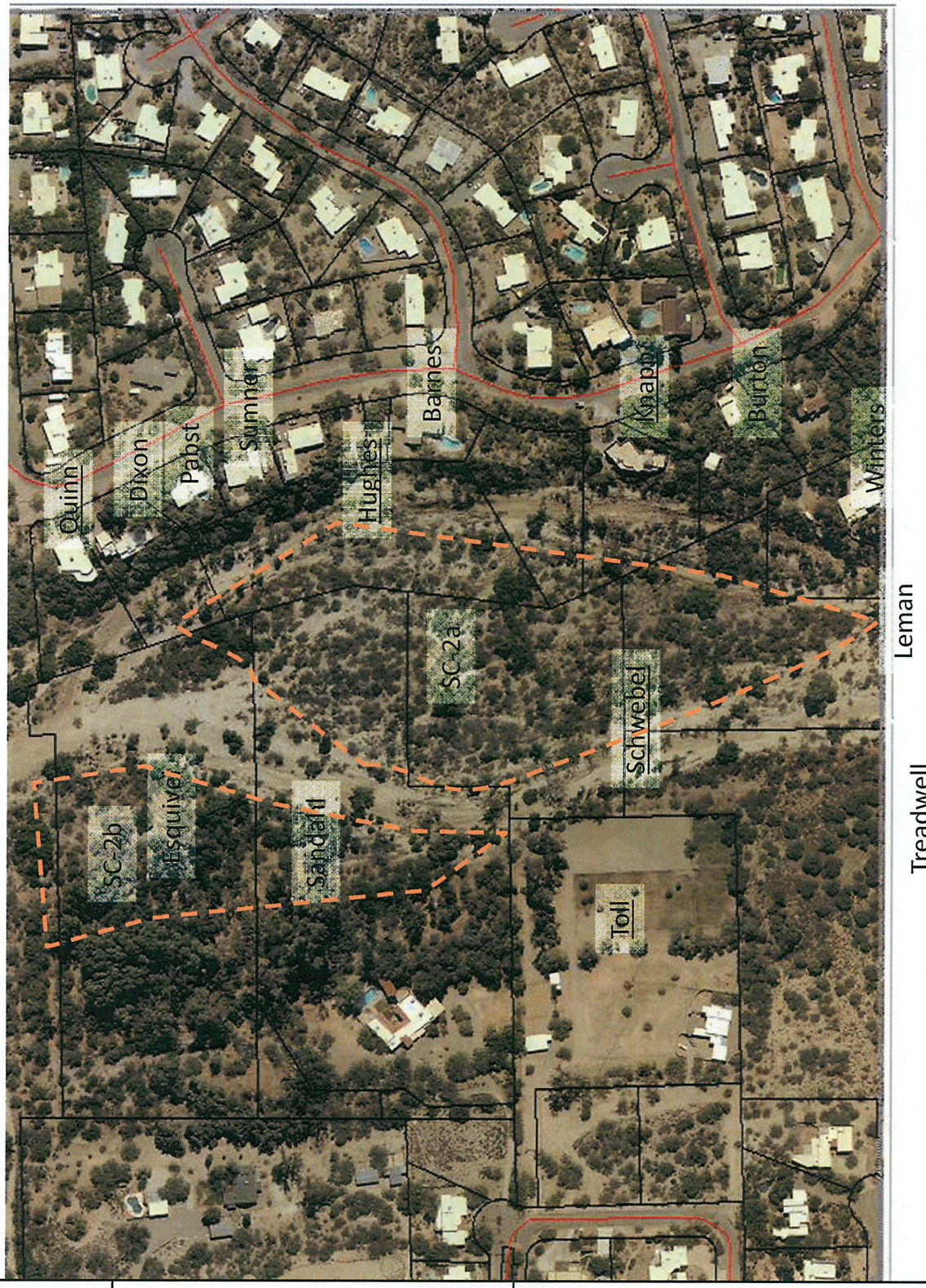


N 1: 12,200	Tucson Arundo Project	Map C) Cloud Rd to Rillito
	Year 3 – Planning	Flood Plain & Reach index
	Prepared 7/30/2013	*Source: Pima County Map Guide*

N 1:4050	Tucson Arundo Project	Sabino Creek
	Year 0 – Complete	SC-1a-d : Fenster Sch. & Private
	Prepared 7/30/2013	*Source: Pima County Map Guide*



N 1: 3400	Tucson Arundo Project	Sabino Creek
	Year 0 – Complete	SC-1e: Hidden Valley HOA
	Prepared 7/30/2013	*Source: Pima County Map Guide*

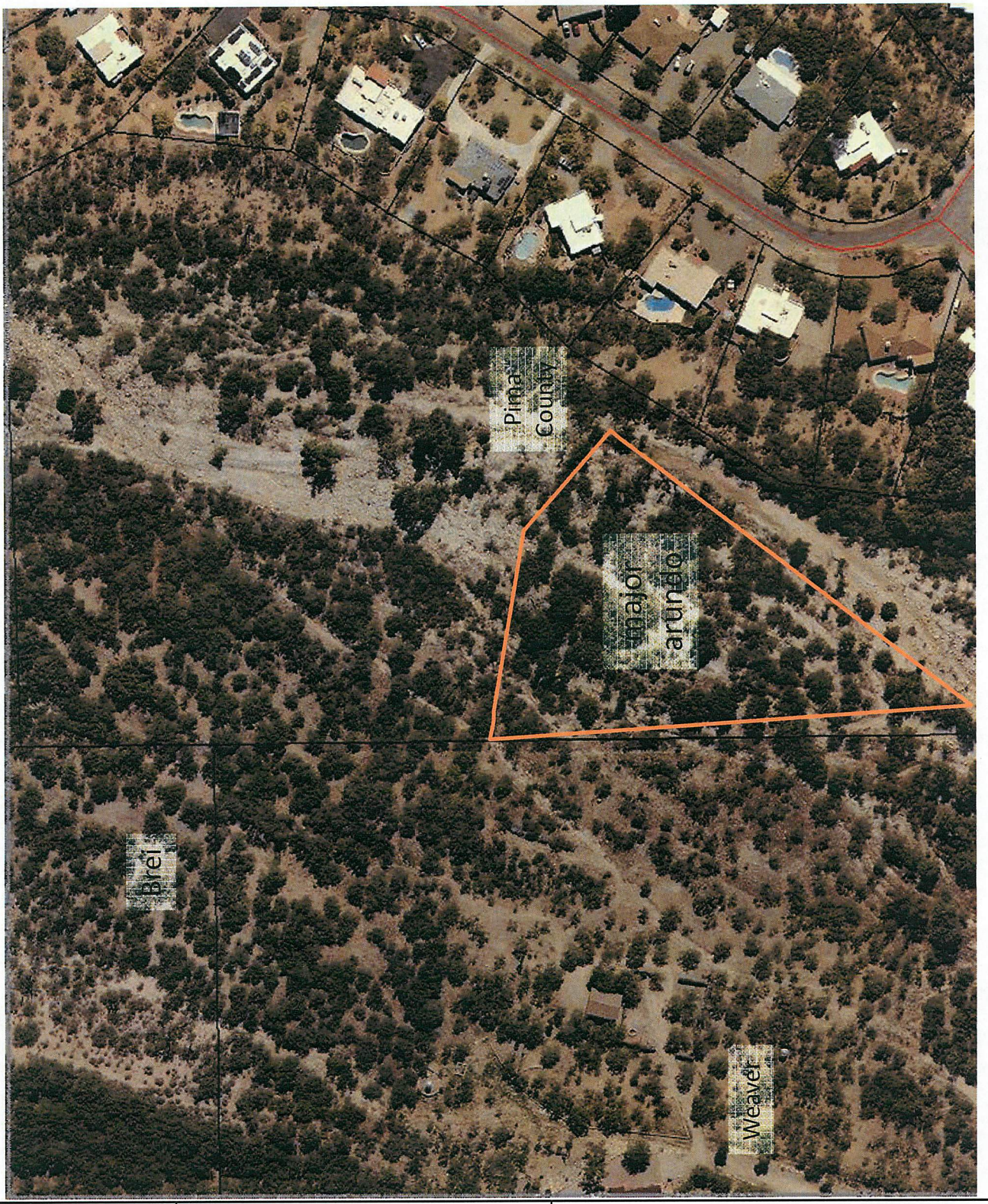


N 1:3400	Tucson Arundo Project	Sabino Creek
	Year 0 – Complete	SC-2-b : Mixed Private
	Prepared 7/30/2013	*Source: Pima County Map Guide*

N 1: 1700	Tucson Arundo Project	Bear Creek
	Year 0 – Complete	BC-1d: Pima County- Snyder Rd
	Prepared 7/30/2013	*Source: Pima County Map Guide*

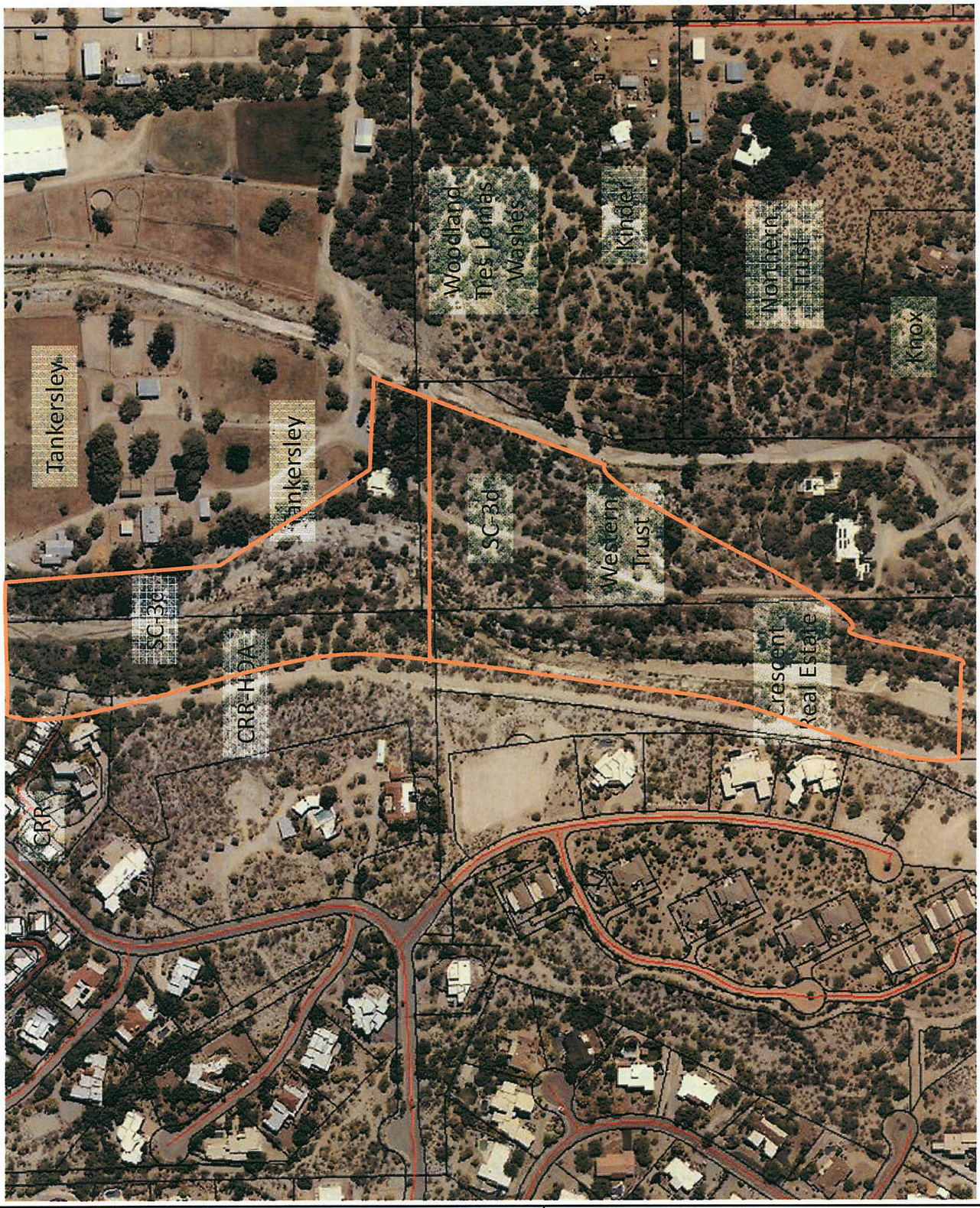
N 1: 1700	Tucson Arundo Project	Sabino Creek
	Year 0 – Complete	SC-2c: Pima County- Leman
	Prepared 7/30/2013	*Source: Pima County Map Guide*

N 1:1700	Tucson Arundo Project	Bear Creek
	Year 1 – Task 1	BC-1a – Pima County & Stilb
	Prepared 7/30/2013	*Source: Pima County Map Guide*

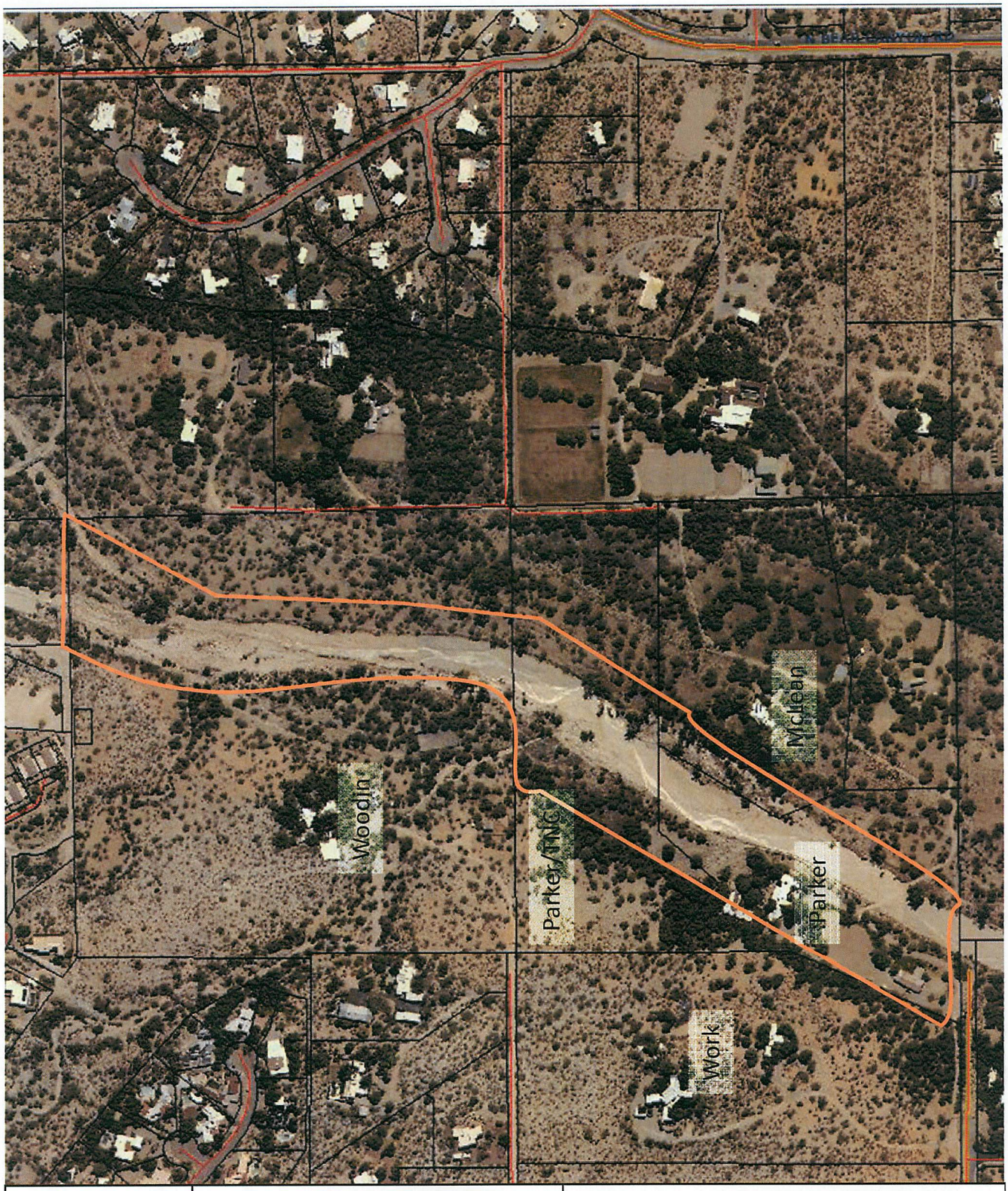


N 1:1700	Tucson Arundo Project	Bear Creek
	Year 1 – Task 2	BC-1c – Pima County & Weaver
	Prepared 7/30/2013	*Source: Pima County Map Guide*

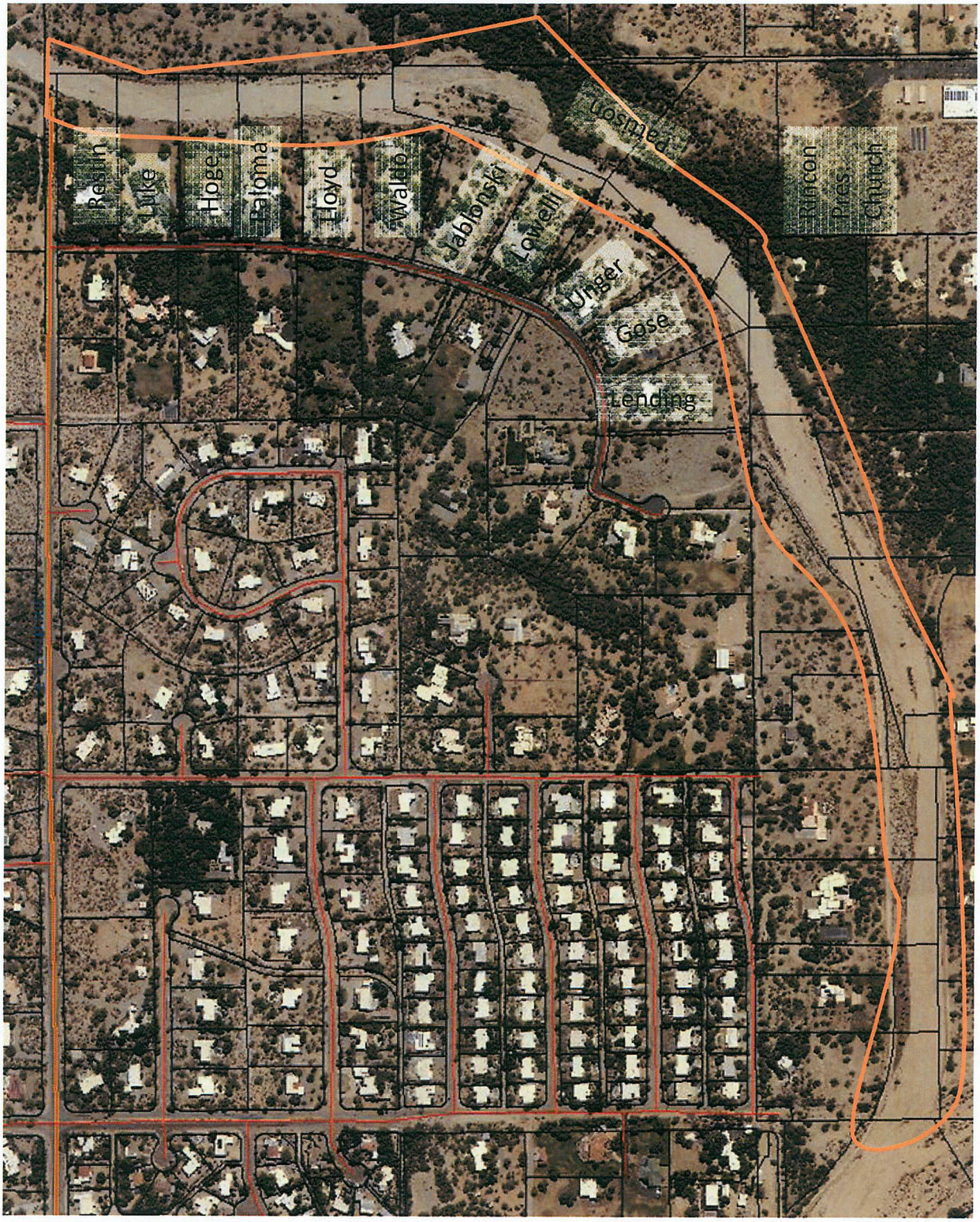
N 1:3400	Tucson Arundo Project	Sabino Creek
	Year 1 – Task 3-4	SC-3a-b: Canyon Ranch resort
	Prepared 7/30/2013	*Source: Pima County Map Guide*



N 1:3400	Tucson Arundo Project	Sabino Creek
	Year 2-3 – Task 5-6	SC-3c-d: Canyon Ranch resort
	Prepared 8/5/2013	*Source: Pima County Map Guide*



N 1:4600	Tucson Arundo Project	Sabino Creek
	Year 3 – Task 7	SC-4: CRR to Cloud Rd
	Prepared 8/5/2013	*Source: Pima County Map Guide*



N 1:5800	Tucson Arundo Project	Sabino Creek
	Year 3 – Task 8	SC-5: Cloud Rd to Rillito
	Prepared 7/30/2013	*Source: Pima County Map Guide*

N 1: 12,200	Tucson Arundo Project	Catalina Foothills, Tucson, AZ
	Year 0 - Background	TV Wash/Sabino Canyon IBA
	Prepared 7/30/2013	*Source: Tucson Audubon*

N ⇦ 1: 13,400	Tucson Arundo Project	Upper Sabino Creek
	Year 1 – Planning	Permission obtained as of 8/16/13
	Prepared 8/16/2013	*Source: Pima County Map Guide*

N 1: 13,400	Tucson Arundo Project	Lower Sabino Creek
	Year 1 – Planning	Permission obtained as of 8/16/13
	Prepared 8/16/2013	*Source: Pima County Map Guide*

5) Scope of Work

Task 1: Permits & Equipment Preparation
Description: Complete a Pesticide Management Plan for designated Aquatic and Wildlife Waters and Outstanding AZ waters. Obtain additional training needed to become a county licensed sprayer.
Purpose: Comply with all local, state and federal permit requirements.
Deliverable: Pesticide Management Plan
Target Date: Feb. 2014
Reimbursable Cost: $1260

Task 2: Access Agreements
Description: Obtain land access agreements in the areas of interest
Purpose: Continue to contact riparian landholders to obtain legal access to the project area.
Deliverable: 90% of Permission to work forms
Target Date: Feb. 2014
Reimbursable Cost: $477

Task 3: Bear Creek – Reach 1a
Description: Remove invasive Arundo and Oleander from flood plain (2 mo)
Purpose: Restore riparian flood plain to more natural conditions
Deliverable: 95% removal (cut & dug) of Arundo stands
Target Date: Feb. 2014
Reimbursable Cost: $1882

Task 4: Bear Creek – Reach 1c
Description: Remove invasive Arundo and Oleander from flood plain (6 mo)
Purpose: Restore riparian flood plain to more natural conditions
Deliverable: 95% removal (cut & dug) of Arundo stands
Target Date: Sep. 2014
Reimbursable Cost: $8251

Task 5: Bear Creek – Maintenance
Description: Revisit previous work sites to treat (dig/spray) resprouting Arundo
Purpose: Remove or spray all sprouts to complete the eradication process
Deliverable: 80% removal of remaining sprouts
Target Date: Twice annually in April and September
Reimbursable Cost: $854

Task 6: Sabino Creek – Reach 3a
Description: Remove invasive Arundo from flood plain (2 mo)
Purpose: Restore riparian flood plain to more natural conditions
Deliverable: 95% removal (cut & dug) of Arundo stands
Target Date: Dec. 2014
Reimbursable Cost: $2951

Task 7: Sabino Creek – Reach 3b
Description: Remove invasive Arundo from flood plain (9 mo)
Purpose: Restore riparian flood plain to more natural conditions
Deliverable: 95% removal (cut & dug) of Arundo stands
Target Date: Oct. 2015
Reimbursable Cost: $12,689

Task 8: Sabino Creek – Reach 3c
Description: Remove invasive Arundo from flood plain (3 mo)
Purpose: Restore riparian flood plain to more natural conditions
Deliverable: 95% removal (cut & dug) of Arundo stands
Target Date: Jan. 2016
Reimbursable Cost: $4138

Task 9: Sabino Creek – Reach 3d
Description: Remove invasive Arundo from flood plain (3 mo)
Purpose: Restore riparian flood plain to more natural conditions
Deliverable: 95% removal (cut & dug) of Arundo stands
Target Date: Apr. 2016
Reimbursable Cost: $3561

Task 10: Sabino Creek – Maintenance
Description: Revisit previous work sites to treat (dig/spray) resprouting Arundo
Purpose: Remove or spray all sprouts to complete the eradication process
Deliverable: 80% removal of remaining sprouts
Target Date: Twice annually in April and September
Reimbursable Cost: $1174

Task 11: Riparian/Habitat Survey
Description: Subcontract with Tucson Audubon to conduct bird surveys. Repeatable walking transects of 50-200 meters parallel and perpendicular to the direction of flow will be conducted in Jan, Mar, May and June in alternating years.
Purpose: Contrast the diversity of bird life in cleared and uncleared areas
Deliverable: addendum to annual report in 2014 and 2016
Target Date: Dec. 2014 and 2016
Reimbursable Cost: $2687

Task 12: Annual reports
Description: Report on work completed in last 12 months
Purpose: Keep AWPF up-to-date on project activities
Deliverable: Annual report
Target Date: Dec. 31 annually
Reimbursable Cost: $2936

Task 13: Sabino Creek – Reach 4
Description: Remove invasive Arundo from flood plain (1 mo)
Purpose: Restore riparian flood plain to more natural conditions
Deliverable: 95% removal (cut & dug) of Arundo stands
Target Date: May 2016
Reimbursable Cost: $1397

Task 14: Sabino Creek – Reach 5
Description: Remove invasive Arundo from flood plain (6 mo)
Purpose: Restore riparian flood plain to more natural conditions
Deliverable: 95% removal (cut & dug) of Arundo stands
Target Date: Dec. 2016
Reimbursable Cost: $7960

Detailed Budget Breakdown

	Rates	1 -Prep	2 - Prep	3 - BC-1a	4 - BC-1c	5 - BC-mai	6 - SC-3a	7 - SC-3b	8 - SC-3c	9 - SC-3d	10 - SC ma	11 - Hab.S	12 - Annua	13 - SC-4	14 - SC-5	Total
Time on task (mo)		1	1	2	6	3	2	9	3	3	4	4	4	1	6	49
Direct Labor																
Proj.Coord.	$ 26	208	208	832	4992	624	1664	7072	2496	2496	832	416	2080	832	4576	$ 29,328
ERE	$ 0.21	44	44	175	1048	131	349	1485	524	524	175	87	437	175	961	$ 6,159
Outside Services																
Cane Chipping	$ 550	0	0	550	1100	0	550	1650	550	0	0	0	0	0	1100	$ 5,500
Wildlife Survey	$ 250	0	0	0	0	0	0	0	0	0	0	2000	0	0	0	$ 2,000
Bee removal	$ 100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	$ 100
Other Direct Costs																
Local Mileage	$ 13	0	0	200	400	100	200	700	300	300	0	0	0	100	400	$ 2,700
Hand gloves	$ 100	100	0	0	0	0	0	100	0	0	0	0	0	0	100	$ 300
Twine	$ 120	120	0	0	0	0	0	120	0	0	0	0	0	0	120	$ 360
Spraying supplies	$ 75	75	0	0	0	0	0	75	0	0	0	0	0	0	0	$ 150
Tool maintenance	$ 50	0	0	0	0	50	0	0	0	0	100	0	0	50	0	$ 200
Printing & Postage	$ 50	0	100	0	0	0	0	50	0	0	0	50	50	0	0	$ 250
Annual reporting costs	$ 50	0	0	0	0	0	0	0	0	0	0	0	200	0	0	$ 200
Water for volunteers	$ 12	0	0	24	48	0	24	84	36	36	0	0	0	12	60	$ 324
Capital & Equipment Costs																
Hand tools	$ 30	300	0	0	0	0	0	300	0	0	0	0	0	150	0	$ 750
Chain saw	$ 200	200	0	0	0	0	0	0	0	0	0	0	0	0	0	$ 200
Snake Gaitors	$ 75	150	0	0	0	0	0	150	0	0	0	0	0	0	0	$ 300
Subtotal		1197	452	1781	7588	905	2787	11786	3906	3356	1107	2553	2767	1319	7317	$ 48,821
Administrative Costs		60	23	89	379	45	139	589	195	168	55	128	138	66	366	$ 2,441
Total		$ 1,257	$ 474	$ 1,870	$ 7,968	$ 950	$ 2,927	$ 12,375	$ 4,101	$ 3,524	$ 1,162	$ 2,681	$ 2,905	$ 1,385	$ 7,683	$ 51,262

Detailed Matching Funds Breakdown

EffortA				64	128	12	64	224	96	96	16			32	128	
EffortB				40	80		40	140	60	60				20	80	
Direct Labor-Proj.Coord.																
Team leaders hours	$ 7.25			$ 464	$ 928	$ 87	$ 464	$ 1,624	$ 696	$ 696	$ 116			$ 232	$ 928	$ 6,235
Volunteer hours	$ 7.25			$ 290	$ 580	$ -	$ 290	$ 1,015	$ 435	$ 435	$ -			$ 145	$ 580	$ 3,770
Outside Services																
none																
Other Direct Costs																
none																
Capital & Equipment Costs																
none																
Total				$ 754	$ 1,508	$ 87	$ 754	$ 2,639	$ 1,131	$ 1,131	$ 116			$ 377	$ 1,508	$ 10,005

Detailed Budget Table

Time on task (mo)		1		1		2		6		3	
	Rates	mult.	1 -Prep	mult.	2 - Prep	mult.	3 - BC-1a	mult.	4 - BC-1c	mult.	5 - BC-maint.
Direct Labor											
Proj.Coord.	26	8	$ 208	8	$ 208	32	$ 832	192	$ 4,992	24	$ 624
ERE	0.21		$ 44		$ 44		$ 175		$ 1,048		$ 131
Outside Services											
Cane Chipping	550		$ -		$ -	1	$ 550	2	$ 1,100		$ -
Wildlife Survey	250		$ -		$ -		$ -		$ -		$ -
Bee removal	100		$ -	1	$ 100		$ -		$ -		$ -
Other Direct Costs											
Local Mileage	12.5		$ -		$ -	16	$ 200	32	$ 400	8	$ 100
Hand gloves	100	1	$ 100		$ -		$ -		$ -		$ -
Twine	120	1	$ 120		$ -		$ -		$ -		$ -
Spraying supplies	75	1	$ 75		$ -		$ -		$ -		$ -
Tool maintenance	50		$ -		$ -		$ -		$ -	1	$ 50
Printing & Postage	50		$ -	2	$ 100		$ -		$ -		$ -
Annual reporting costs	50		$ -		$ -		$ -		$ -		$ -
Water for volunteers	12		$ -		$ -	2	$ 24	4	$ 48		$ -
Capital & Equipment Costs			$ -		$ -		$ -		$ -		$ -
Hand tools	30	10	$ 300		$ -		$ -		$ -		$ -
Chain saw	200	1	$ 200		$ -		$ -		$ -		$ -
Snake Gaitors	75	2	$ 150		$ -		$ -		$ -		$ -
Subtotal			$ 1,197		$ 452		$ 1,781		$ 7,588		$ 905
Administrative Costs	0.05		$ 60		$ 23		$ 89		$ 379		$ 45
Total			$ 1,257		$ 474		$ 1,870		$ 7,968		$ 950

Time on Task (mo)		2		9		3		3		4	
	Rates	mult.	6 - SC-3a	mult.	7 - SC-3b	mult.	8 - SC-3c	mult.	9 - SC-3d	multi	10 - SC maint.
Direct Labor											
Proj.Coord.	26	64	$ 1,664	272	$ 7,072	96	$ 2,496	96	$ 2,496	32	$ 832
ERE	0.21		$ 349		$ 1,485		$ 524		$ 524		$ 175
Outside Services											
Cane Chipping	550	1	$ 550	3	$ 1,650	1	$ 550		$ -		$ -
Wildlife Survey	250		$ -		$ -		$ -		$ -		$ -
Bee removal	100		$ -		$ -		$ -		$ -		$ -
Other Direct Costs											
Local Mileage	12.5	16	$ 200	56	$ 700	24	$ 300	24	$ 300		$ -
Hand gloves	100		$ -	1	$ 100		$ -		$ -		$ -
Twine	120		$ -	1	$ 120		$ -		$ -		$ -
Spraying supplies	75		$ -	1	$ 75		$ -		$ -		$ -
Tool maintenance	50		$ -		$ -		$ -		$ -	2	$ 100
Printing & Postage	50		$ -	1	$ 50		$ -		$ -		$ -
Annual reporting costs	50		$ -		$ -		$ -		$ -		$ -
Water for volunteers	12	2	$ 24	7	$ 84	3	$ 36	3	$ 36		$ -
Capital & Equipment Costs			$ -		$ -		$ -		$ -		$ -
Hand tools	30		$ -	10	$ 300		$ -		$ -		$ -
Chain saw	200		$ -		$ -		$ -		$ -		$ -
Snake Gaitors	75		$ -	2	$ 150		$ -		$ -		$ -
Subtotal			$ 2,787		$ 11,786		$ 3,906		$ 3,356		$ 1,107
Administrative Costs	0.05		$ 139		$ 589		$ 195		$ 168		$ 55
Total			$ 2,927		$ 12,375		$ 4,101		$ 3,524		$ 1,162

Time on Task (mo)		2		4		1		6			
	Rates	multi	11 - Hab.Survey	multi	12 - Annual Rpt.	multi	13 - SC-4	multi	14 - SC-5		
Direct Labor											
Proj.Coord.	26	16	$ 416	80	$ 2,080	32	$ 832	176	$ 4,576		
ERE	0.21		$ 87		$ 437		$ 175		$ 961		
Outside Services											
Cane Chipping	550		$ -		$ -		$ -	2	$ 1,100		
Wildlife Survey	250	8	$ 2,000		$ -		$ -		$ -		
Bee removal	100		$ -		$ -		$ -		$ -		
Other Direct Costs											
Local Mileage	12.5		$ -		$ -	8	$ 100	32	$ 400		
Hand gloves	100		$ -		$ -		$ -	1	$ 100		
Twine	120		$ -		$ -		$ -	1	$ 120		
Spraying supplies	75		$ -		$ -		$ -		$ -		
Tool maintenance	50		$ -		$ -	1	$ 50		$ -		
Printing & Postage	50	1	$ 50	1	$ 50		$ -		$ -		
Annual reporting costs	50		$ -	4	$ 200		$ -		$ -		
Water for volunteers	12		$ -		$ -	1	$ 12	5	$ 60		
Capital & Equipment Costs			$ -		$ -		$ -		$ -		
Hand tools	30		$ -		$ -	5	$ 150		$ -		
Chain saw	200		$ -		$ -		$ -		$ -		
Snake Gaitors	75		$ -		$ -		$ -		$ -		
Subtotal			$ 2,553		$ 2,767		$ 1,319		$ 7,317		
Administrative Costs	0.05		$ 128		$ 138		$ 66		$ 366		
Total			$ 2,681		$ 2,905		$ 1,385		$ 7,683		

Cummulative Budget Justificatic AWPF- Tucson Arundo Removal

Direct Labor				2014	2015	2016	2017	Total
Senior Personnel		Role	Rate	Request	Request	Request	Request	Request
1	James Washburne	Program Coord.	$ 26.00	$ 8,944	$ 9,672	$ 9,880	$ 832	$ 29,328
		ERE	0.21	$ 1,878	$ 2,031	$ 2,075	$ 175	$ 6,159
1	Team Leaders		$ 7.25	$ -	$ -	$ -	$ -	$ -
Other Personnel								
5	Volunteer hours		$ 7.25	$ -	$ -	$ -	$ -	$ -
				$ 10,822	$ **11,703**	$ 11,955	$ **1,007**	$ 35,487
Outside Services				$ -	$ -	$ -	$ -	$ -
4	Cane chipping		$ 550	$ 2,200	$ 2,200	$ 1,100	$ -	$ 5,500
4	Wildlife survey		$ 250	$ 1,000	$ -	$ 1,000	$ -	$ 2,000
1	Emergency bee removal		$ 100	$ 100	$ -	$ -	$ -	$ 100
				$ 3,300	$ **2,200**	$ 2,100	$ -	$ 7,600
Other Direct Costs				$ -	$ -	$ -	$ -	$ -
Local Travel				$ -	$ -	$ -	$ -	$ -
1	Team Leader Mileage @ 0.50/mi x 25		$ 12.50	$ 900	$ 900	$ 900	$ -	$ 2,700
Field Materials				$ -	$ -	$ -	$ -	$ -
25	Hand gloves		$ 4	$ 100	$ 100	$ 100	$ -	$ 300
4	Twine		$ 30	$ 120	$ 120	$ 120	$ -	$ 360
1	Spraying supplies		$ 75	$ 75	$ 75	$ -	$ -	$ 150
1	Tool maintenance		$ 50	$ 50	$ 100	$ 50	$ -	$ 200
Supplies				$ -	$ -	$ -	$ -	$ -
2	Stakeholder Comm. -Printing & Postage		$ 50	$ 100	$ 50	$ 50	$ 50	$ 250
1	Annual reporting costs		$ 50	$ 50	$ 50	$ 50	$ 50	$ 200
9	Water for volunteers @ $12/event		$ 12	$ 108	$ 108	$ 108	$ -	$ 324
				$ 1,503	$ **1,503**	$ 1,378	$ **100**	$ 4,484
				$ -	$ -	$ -	$ -	$ -
Capital & Equipment Costs				$ -	$ -	$ -	$ -	$ -
10	Hand tools		$ 30	$ 300	$ 300	$ 150	$ -	$ 750
1	Chain saw		$ 200	$ 200	$ -	$ -	$ -	$ 200
2	Snake Gaitors		$ 75	$ 150	$ 150	$ -	$ -	$ 300
				$ 650	$ **450**	$ 150	$ -	$ 1,250
				$ -	$ -	$ -	$ -	$ -
				$ 16,275	$ **15,856**	$ 15,583	$ **1,107**	$ 48,821
Administrative Costs		@ 5%		$ 814	$ 793	$ 779	$ 55	$ 2,441
UA Institutional Allowance - required to be 5%				$ 17,089	$ 16,649	$ 16,362	$ 1,162	$ 51,262

Yr 1 Budget Justification: AWPF- Tucson Arundo Removal 2014

Direct Labor												
Senior Personnel		Role	Rate	hours	Salary	ERE rate	ERE		NFWF Request		Match & In-kind
1	James Washburne	Program Coord.	$ 26	344	$ 8,944	0.21	$ 1,878		$ 10,822		
1	Team Leaders		$ 7.25	268	$ 1,943						$ 1,943
Other Personnel											
1	Volunteer hours		$ 7.25	160	$ 1,160						$ 1,160
								sub-total	$ 10,822		$ 3,103
Outside Services											
4	Cane chipping		$ 550						$ 2,200		
4	Wildlife survey		$ 250						$ 1,000		
1	Emergency bee removal		$ 100						$ 100		
								sub-total	$ 3,300		$ -
Other Direct Costs											
Local Travel											
1	Team Leader Mileage @ 0.50/mi x 25		$ 12.50	72					$ 900		
Field Materials											
25	Hand gloves		$ 4						$ 100		
4	Twine		$ 30						$ 120		
1	Spraying supplies		$ 75						$ 75		
1	Tool maintenance		$ 50						$ 50		
Supplies											
2	Stakeholder Comm. -Printing & Postage		$ 50						$ 100		
1	Annual reporting costs		$ 50						$ 50		
9	Water for volunteers @ $12/event		$ 12						$ 108		
								sub-total	$ 1,503		$ -
Capital & Equipment Costs											
10	Hand tools		$ 30						$ 300		
1	Chain saw		$ 200						$ 200		
2	Snake Gaitors		$ 75						$ 150		
								sub-total	$ 650		$ -
								Costs	$ 16,275		$ 3,103
Administrative Costs									$ 814		
UA Institutional Allowance - required to be 5%								Total	$ 17,089		

Yr 2 Budget Justification: AWPF- Tucson Arundo Removal 2015

Direct Labor												
Senior Personnel		Role	Rate	hours	Salary	ERE rate	ERE		NFWF Request		Match & In-kind
1	James Washburne	Program Coord.	$ 26	372	$ 9,672	0.21	$ 2,031		$ 11,703		
1	Team Leaders		$ 7.25	288	$ 2,088						$ 2,088
Other Personnel											
1	Volunteer hours		$ 7.25	180	$ 1,305						$ 1,305
								sub-total	$ 11,703		$ 3,393
Outside Services											
4	Cane chipping		$ 550						$ 2,200		
	Wildlife survey		$ 250						$ -		
	Emergency bee removal		$ 100						$ -		
								sub-total	$ 2,200		$ -
Other Direct Costs											
Local Travel											
1	Team Leader Mileage @ 0.50/mi x 25		$ 12.50	72					$ 900		
Field Materials											
25	Hand gloves		$ 4						$ 100		
4	Twine		$ 30						$ 120		
1	Spraying supplies		$ 75						$ 75		
2	Tool maintenance		$ 50						$ 100		
Supplies											
1	Stakeholder Comm. -Printing & Postage		$ 50						$ 50		
1	Annual reporting costs		$ 50						$ 50		
9	Water for volunteers @ $12/event		$ 12						$ 108		
								sub-total	$ 1,503		$ -
Capital & Equipment Costs											
10	Hand tools		$ 30						$ 300		
	Chain saw		$ 200						$ -		
2	Snake Gaitors		$ 75						$ 150		
								sub-total	$ 450		$ -
								Costs	$ 15,856		$ 3,393
Administrative Costs									$ 793		
UA Institutional Allowance - required to be 5%								Total	$ 16,649		

Yr 3 Budget Justification: AWPF- Tucson Arundo Removal 2016

Direct Labor												
Senior Personnel		Role	Rate	hours	Salary	ERE rate	ERE		NFWF Request		Match & In-kind
1	James Washburne	Program Coord.	$ 26	380	$ 9,880	0.21	$ 2,075		$ 11,955		
1	Team Leaders		$ 7.25	304	$ 2,204						$ 2,204
Other Personnel											
1	Volunteer hours		$ 7.25	180	$ 1,305						$ 1,305
								sub-total	$ 11,955		$ 3,509
Outside Services											
2	Cane chipping		$ 550						$ 1,100		
4	Wildlife survey		$ 250						$ 1,000		
	Emergency bee removal		$ 100						$ -		
								sub-total	$ 2,100		$ -
Other Direct Costs											
Local Travel											
1	Team Leader Mileage @ 0.50/mi x 25		$ 12.50	72					$ 900		
Field Materials											
25	Hand gloves		$ 4						$ 100		
4	Twine		$ 30						$ 120		
	Spraying supplies		$ 75						$ -		
1	Tool maintenance		$ 50						$ 50		
Supplies											
1	Stakeholder Comm. -Printing & Postage		$ 50						$ 50		
1	Annual reporting costs		$ 50						$ 50		
9	Water for volunteers @ $12/event		$ 12						$ 108		
								sub-total	$ 1,378		$ -
Capital & Equipment Costs											
5	Hand tools		$ 30						$ 150		
	Chain saw		$ 200						$ -		
	Snake Gaitors		$ 75						$ -		
								sub-total	$ 150		$ -
								Costs	$ 15,583		$ 3,509
Administrative Costs									$ 779		
UA Institutional Allowance - required to be 5%								Total	$ 16,362		

Yr4 Budget Justification: AWPF- Tucson Arundo Removal 2017

Direct Labor									
Senior Personnel	Role	Rate	hours	Salary	ERE rate	ERE	NFWF Request	Match & In-kind
1 James Washburne	Program Coord.	$ 26	32	$ 832	0.21	$ 175	$ 1,007	
1 Team Leaders		$ 7.25		$ -				$ -
Other Personnel								
1 Volunteer hours		$ 7.25		$ -				$ -
						sub-total	$ 1,007	$ -
Outside Services								
Cane chipping		$ 550					$ -	
Wildlife survey		$ 250					$ -	
Emergency bee removal		$ 100					$ -	
						sub-total	$ -	$ -
Other Direct Costs								
Local Travel								
1 Team Leader Mileage @ 0.50/mi x 25		$ 12.50					$ -	
Field Materials								
Hand gloves		$ 4					$ -	
Twine		$ 30					$ -	
Spraying supplies		$ 75					$ -	
Tool maintenance		$ 50					$ -	
Supplies								
1 Stakeholder Comm. -Printing & Postage		$ 50					$ 50	
1 Annual reporting costs		$ 50					$ 50	
Water for volunteers @ $12/event		$ 12					$ -	
						sub-total	$ 100	$ -
Capital & Equipment Costs								
Hand tools		$ 30					$ -	
Chain saw		$ 200					$ -	
Snake Gaitors		$ 75					$ -	
						sub-total	$ -	$ -
						Costs	$ 1,107	$ -
Administrative Costs							$ 55	
UA Institutional Allowance - required to be 5%						Total	$ 1,162	

STATE HISTORIC PRESERVATION OFFICE
Review Form

In accordance with the State Historic Preservation Act (SHPO), A.R.S. 41-861 *et seq*, effective July 24, 1982, each State agency must consider the potential of activities or projects to impact significant cultural resources. Also, each State agency is required to consult with the State Historic Preservation Officer with regard to those activities or projects that may impact cultural resources. Therefore, it is understood that **recipients of state funds are required to comply with this law** throughout the project period. All projects that affect the ground-surface that are funded by AWPF require SHPO clearance, **including those on private and federal lands.**

The State Historic Preservation Office (SHPO) must review each grant application recommended for funding in order to determine the effect, if any, a proposed project may have on archaeological or cultural resources. To assist the SHPO in this review, the following information MUST be submitted with each application for funding assistance:

- A completed copy of this form, and
- A United States Geological Survey (USGS) 7.5 minute map
- A copy of the cultural resources survey report if a survey of the property has been conducted, and
- A copy of any comments of the land managing agency/landowner (i.e., state, federal, county, municipal) on potential impacts of the project on historic properties.
  NOTE: If a federal agency is involved, the agency must consult with SHPO pursuant to the National Historic Preservation Act (NHPA); a state agency must consult with SHPO pursuant to the State Historic Preservation Act (SHPA),
  OR
- A copy of SHPO comments if the survey report has already been reviewed by SHPO.

Please answer the following questions:

1. Grant Program: AWPF
2. Project Title: Arundo Eradication & Riparian Restoration of Sabino and Bear Creek, Tucson, AZ
3. Applicant Name and Address: University of Arizona, POB 210011, Tucson, AZ 85721
4. Current Land Owner/Manager(s): Pima Co & private
5. Project Location, including Township, Range, Section: T13S, R15E, 15,16,21,22,27,28,32,33
6. Total Project Area in Acres (or total miles if trail): 126
7. Does the proposed project have the potential to disturb the surface and/or subsurface of the ground? ☒ YES ☐ NO
8. Please provide a brief description of the proposed project and specifically identify any surface or subsurface impacts that are expected: The project will cut down invasive Arundo donax (Giant reed) and dig out its shallow rhizomes. The rhizomes typically are in the top 6-18" of sand from recent flood flows.

9. Describe the condition of the current ground surface within the entire project boundary area (for example, is the ground in a natural undisturbed condition, or has it been bladed, paved, graded, etc.). Estimate horizontal and vertical extent of existing disturbance. Also, attach photographs of project area to document condition: The project area is within the 100 year flood plain of Sabino and Bear Creeks, which is covered by patchy riparian vegetation underlain by flood sand and gravel deposits.We will dig out Arundo rhizomes, typically no deeper than 6-18".

10. Are there any known prehistoric and/or historic archaeological sites in or near the project area?
☐ YES ☒ NO

11. Has the project area been previously surveyed for cultural resources by a qualified archaeologist?
☐ YES ☐ NO ☒ UNKOWN

If YES, submit a copy of the survey report. Please attach any comments on the survey report made by the managing agency and/or SHPO

12. Are there any buildings or structures (including mines, bridges, dams, canals, etc.), which are 50-years or older in or adjacent to the project area? ☐ YES ☒ NO

If YES, complete an Arizona Historic Property Inventory Form for each building or structure, attach it to this form and submit it with your application.

13. Is your project area within or near a historic district? ☐YES ☒ NO

If YES, name of the district:

Please sign on the line below certifying all information provided for this application is accurate to the best of your knowledge.

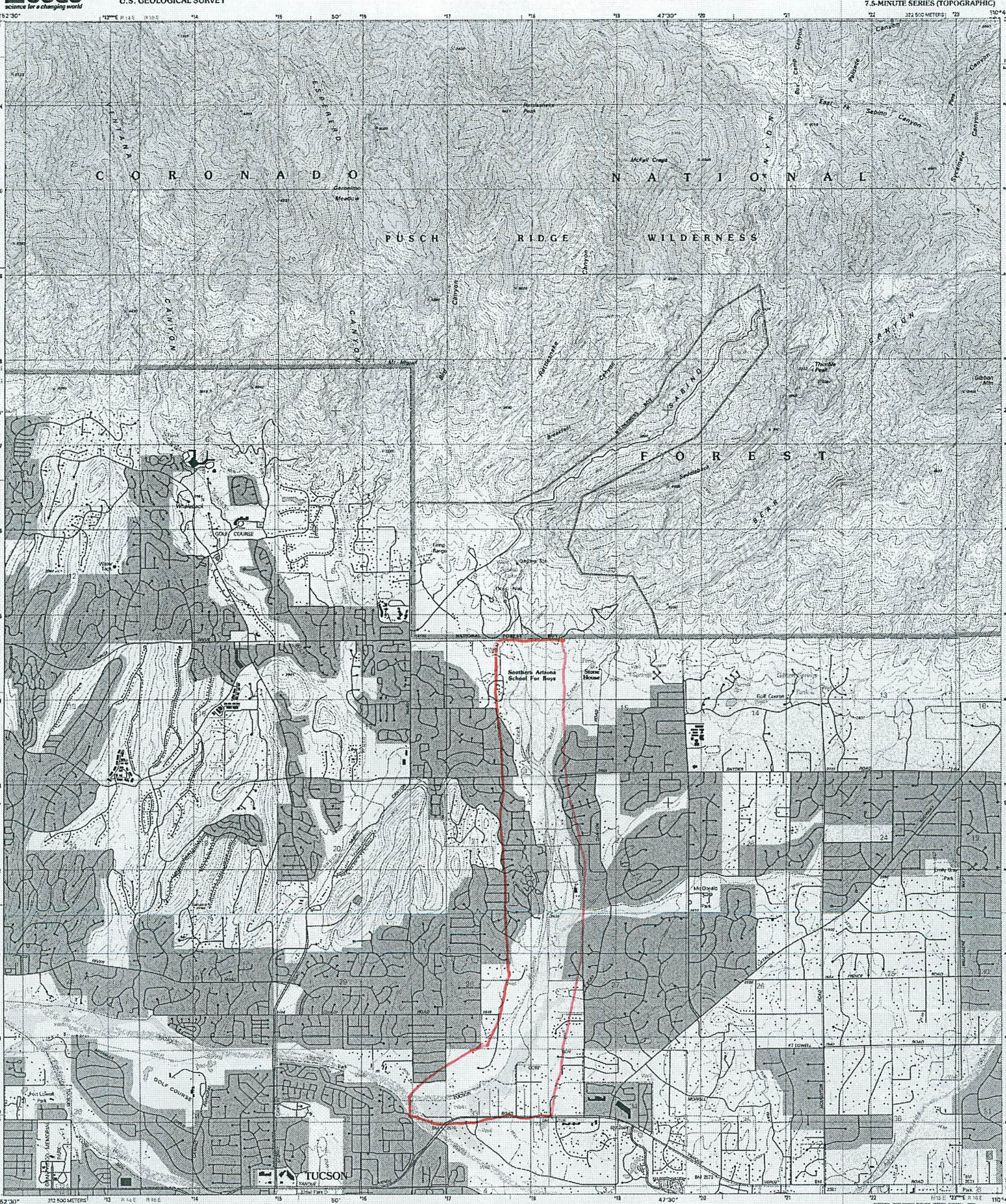
James Washburne / 8/27/13 James Washburne

Applicant Signature /Date Applicant Printed Name

FOR SHPO USE ONLY
SHPO Finding: ☐ Funding this project will not affect historic properties. ☐ Survey necessary – further GRANTS/SHPO consultation required (*grant funds will not be released until consultation has been completed*) ☐ Cultural resources present – further GRANTS/SHPO consultation required (*grant funds will not be released until consultation has been completed*)
SHPO Comments
For State Historic Preservation Office: Date:

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

SABINO CANYON QUADRANGLE
ARIZONA-PIMA CO.
7.5-MINUTE SERIES (TOPOGRAPHIC)



Produced by the United States Geological Survey

Topography compiled 1954. Planimetry derived from imagery taken 1996 and other sources. Public Land Survey System and survey control current as of 1957. Boundaries current as of 2001

North American Datum of 1983 (NAD 83). Projection and 1 000-meter grid: Universal Transverse Mercator, zone 12. 2 500-meter ticks: Arizona Coordinate System of 1983 (central zone)

North American Datum of 1927 (NAD 27) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 27 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software

There may be private inholdings within the boundaries of the National or State reservations shown on this map

Where omitted, land lines have not been established

Houses of worship, schools, and other labeled buildings verified 1957

UTM GRID AND 2001 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
SUPPLEMENTARY CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
(TO CONVERT ELEVATIONS TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, ADD 2 FEET)
TO CONVERT FROM FEET TO METERS, MULTIPLY BY 0.3048

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—2002

ROAD CLASSIFICATION

Primary highway hard surface
Secondary highway hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route
U.S. Route
State Route

ARIZONA
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 Oro Valley
2 Mount Lemmon
3 Mount Bigelow
4 Tucson North
5 Agua Caliente Hill
6 Tucson
7 Tucson East
8 Tanque Verde Peak

ADJOINING 7.5' QUADRANGLES

RECEIVED
MAY 30 2002
HISTORICAL MAP ARCHIVES

SABINO CANYON, AZ
1996
NIMA 3848 IV SE-SERIES V898

JAMES CLARKE WASHBURNE
Department of Hydrology & Water Resources
University of Arizona, POB 210158b, Tucson, AZ 85721-0158
(520) 626-4107; FAX: 626-4479
jwash@hwr.arizona.edu

Education:

Ph.D. Hydrology, University of Arizona, Tucson, AZ
1987-1994, Remote Sensing minor, Dissertation: Multi-scale land-surface thermal modeling

M.S. Geophysics, Colorado School of Mines, Golden, CO
1978-1982, Thesis - Spectral Induced Polarization

B.A. Physics and Geology, Colgate University, Hamilton, NY
1974-1978

Education & Research Interests:

- Promoting hydrologic literacy through the development of K-16 and public programs.
- Development of water-related research experiences and support networks for K-16 teachers.
- Assessment and assimilation of soil moisture in hydrologic models.
- Modeling basin-scale hydrology and runoff using remotely sensed data.

Experience:

Instructor 8/2011-Present
Pima Community College – NW campus (Algebra, Phys. Geography 101/102)

Asst. Adjunct Professor 8/1996 – Present
Dept. of Hydrology & Water Resources, Univ. of Arizona

- Course Developer: fully on-line and hybrid designs featuring data mining and active learning for UG.
- Instructor: *Arizona Water Issues* – exploring critical water resource issues throughout the Southwest (50 non-science undergraduate students) <web.sahra.arizona.edu/hwr203/azwater>.
- Instructor: Water Policy and Management, HWR 415/515 (20 students)
- Instructor: Introduction to Engineering (Engr102 – 1 section of 10, 40 students)
- Associate Director of Education - Sustainability of semi-Arid Hydrology and Riparian Areas (SAHRA), an NSF funded Science and Technology Center, Univ. of Arizona 1/2000 – 12/2010
  - Design, develop, coordinate, and budget all aspects of NSF science/education proposal.
  - Promote Center to regional water educators, school districts, agencies and universities.
- Co-PI of Arizona Rivers – an effort to get students involved in watershed monitoring in coordination with watershed monitoring groups, water agencies and scientists. 7/2007 – 12/2010

GLOBE Soil Moisture & Temperature PI, University of Arizona 9/1995 – 8/2006

- Global Learning and Observations to Benefit the Environment (GLOBE) -- an International K-12 environmental monitoring and education effort <www.globe.gov>.
- Design, develop and pilot new science and education materials

Asst. Research Scientist, Department of Hydrology, Univ. of Arizona 7/1994-8/1996

- Distributed modeling and assimilation of GCIP, CART/ARM and NMC Eta model data.

Research Assistant

- Department of Hydrology, Univ. of Arizona 1/89-6/90, 7/93-6/94
- Department of Mining and Geol. Eng. (LASI lab), Univ. of Arizona 7/1987-12/1988

Asst. Mgr. for Controlled Source Methods, Phoenix Geophysics, Denver, CO 6/1982-6/1986

- All aspects of job: field, personnel, programming, interpretation, & reporting.

Affiliations:

- American Geophysical Union (AGU); Arizona/National Science Teachers Association (NSTA)

Proposals, Awards and Skills:

- Proposal team member: NSF MSP02, NSF Water Sustainability STC; NSF Graduate-K12 fellowships; NSF GLOBE Science PI; NASA Eos Hydrology IDS; NOAA Center for Global Climate Change.
- Recipient, NASA Graduate Student Research Program (GSRP) Fellowship, 7/90-6/93.
- Software and Hardware - MS Office, ERDAS Imagine, ESRI ArcView, SUN and IBM-PC
- Programming –Drupel/CSS, Powersim, UNIX (shell scripts), FORTRAN, HP-BASIC, HTML

Committee/Community Work

- Tucson Arundo Removal – Volunteer project coordinator (2008-current)
- Biosphere 2 Outreach & Education Steering Committee (2007-11)
- CUAHSI Education Steering Committee (2007-2008)
- AGU Committee on Education and Human Resources (2000-02); Public Information (02-04)
- UA-HWR Undergraduate and Admissions committees
- UA-HWR El Dia del Agua Student Research Symposium organizing committee
- UA - CATTS (Collab. for the Advancement of Teaching Technology and Science) advisory board,
- UA - SAMEC (K12 Science and Mathematics Education Committee) advisory board
- Tucson Unified School District DESERT Project (professional development) participant
- SARSEF (S. Arizona Regional Science and Engineering Fair) judge, annually
- Science Olympics, Water Quality Event Supervisor, annually
- MESA Day, event sponsor and judge (2007)

DVD's/Chapters/Theses:

- Washburne, J, Watershed Visualization - Verde River, DVD and web site, SAHRA, web.sahra.arizona.edu/education2/wsviz/, 2009.
- Running, S., Washburne, J., Sorooshian, S. and Collatz, J., 1999, EOS Science Plan – Chapter 7 (Land Ecosystems and Hydrology), NASA EOS PO, 97 p.
- Washburne, J.C., 1994, A distributed surface temperature and energy balance model of a semi-arid watershed, Ph.D. Dissertation, Univ. of Arizona, 412 p.
- Washburne, J.C., 1982, Parameterization of spectral IP data and laboratory and insitu spectral IP measurements: West Shasta copper-zinc district, Shasta, CA, M.S. Thesis, Colo. School of Mines, 444 p.

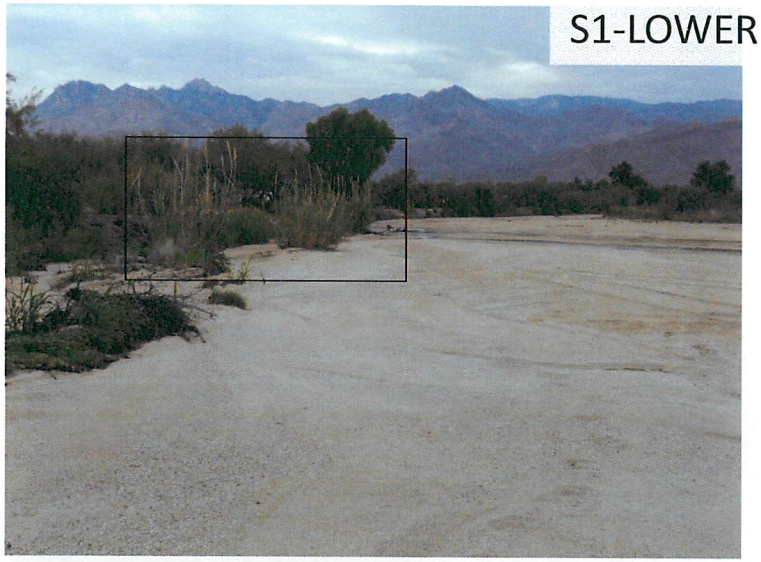
Papers

- Williams, A, Lansey, K., Washburne, J., A Dynamic Simulation Based Water Resources Education Tool, J. Env. Mgmt., Feb. 8, 2008.
- Yucel, I., Shuttleworth, W.J., Washburne, J. and Chen, F., 1998, Evaluating NCEP ETA model-derived data against observations, Mon.Weather Review, 126:1977-1991.
- Miller, D., Washburne, J. and Wood, E., 1995, EOS Workshop on land surface evaporation and transpiration, Earth Observer, 7(4):52-56.
- Moran, M.S., Rahman, A.F., Washburne, J.C., Goodrich, D.C., Weltz, M.A. and Kustas, W.P., 1995, Combining the Penman-Monteith equation with measurements of surface temperature and reflectance to map evaporation rates of semiarid grassland, Ag. Forest Meteor..

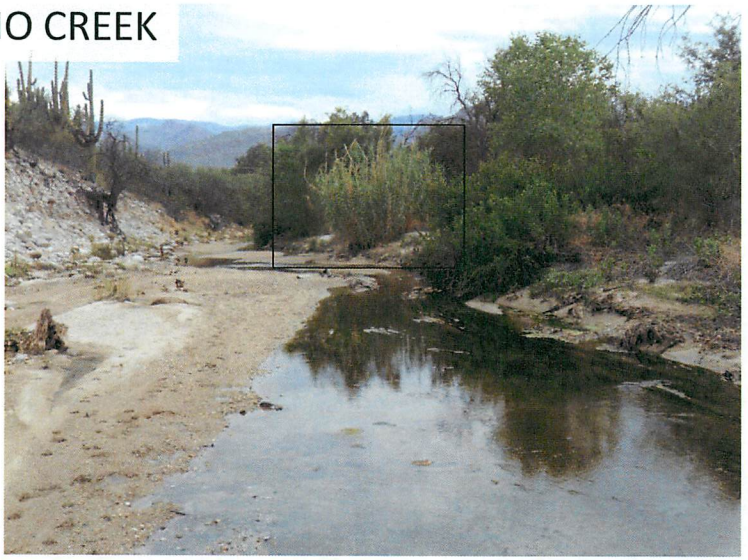
Talks/Posters:

- Washburne, J.C, 1999-1996, Soil Moisture and Temperature pilot studies, sampling justification and operational status, Presented at: GLOBE Annual Science Meeting, various locations.
- Moran, M.S., Rahman, A.F., Washburne, J.C., Goodrich, D.C. and Weltz, M.A., 1994, Combining the Penman-Monteith equation with measurements of surface temperature and reflectance to map regional evaporation rates, Presented at: Fall 1994 AGU Meeting, San Francisco, CA, Talk H22E-09, p. 239.
- Washburne, J.C. and Sorooshian, S., 1994 Some problems with data assimilation in a distributed model of surface temperature and energy fluxes, Presented at: IGARSS, Pasadena, CA.
- Washburne, J.C. and Sorooshian, S., 1992, Surface temperature modeling in semi-arid regions, Presented at: Fall 1992 AGU Meeting, San Francisco, CA, Talk H22C-04, abstract p. 183.
- Washburne, J.C., 1991, Selection of thermal infrared satellite data for generating thermal inertia images, Proc. of 10th Conf. on Biometeorology and Aerobiology, Special session on Hydrometeorology, AMS, Salt Lake City, UT, Sept. 10-13, 218-220.

S1-LOWER SABINO CREEK



Lower Sabino Creek, Reach 5, ~North



Lower Sabino Creek, Reach 4, ~North

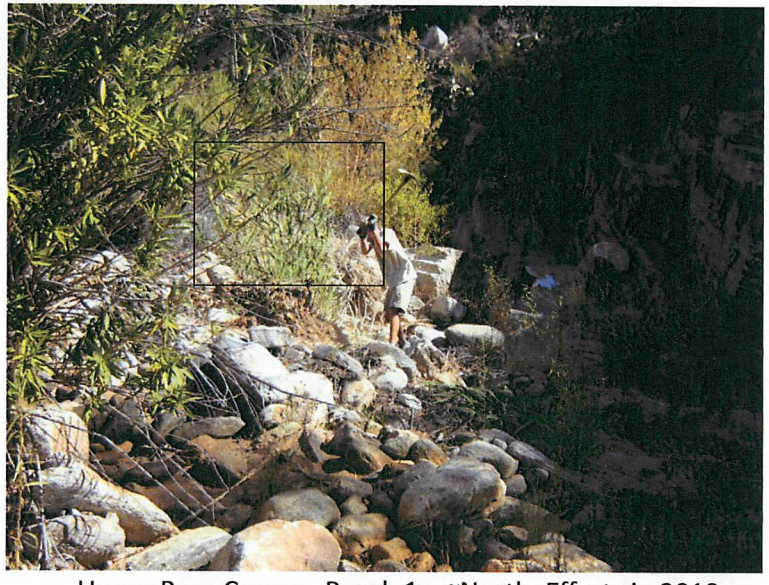
Lower Sabino Creek, Reach 3b, ~North

Lower Sabino Creek, Reach 3c, ~North

S2-BEAR CREEK

Upper Bear Canyon, Reach 1a, ~West, Oleander and Arundo

Upper Bear Canyon, Reach 1b, ~North, RFCD Volunteers



Upper Bear Canyon, Reach 1a, ~North, Efforts in 2010

Upper Bear Canyon, Pima Co. RFCD work "party"

S3-ACTIVE WORK SITES - 2013

Lower Sabino Creek, Reach 2c, ~North, Drying roots and cane

Lower Sabino Creek, Reach 2c, ~North; Formerly solid Arundo

Lower Sabino Creek, Reach 2c, ~South

Arundo Rhizome Mass

S4-SABINO CANYON REC AREA

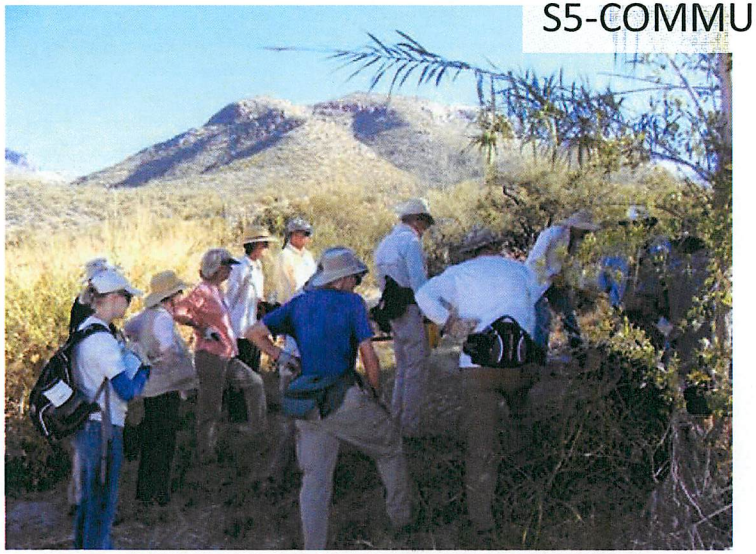
Sabino Canyon Rec. Area, ~West, Unusually thick root mass

Sabino Canyon Rec. Area, ~East, Regrowth near dam, 2009

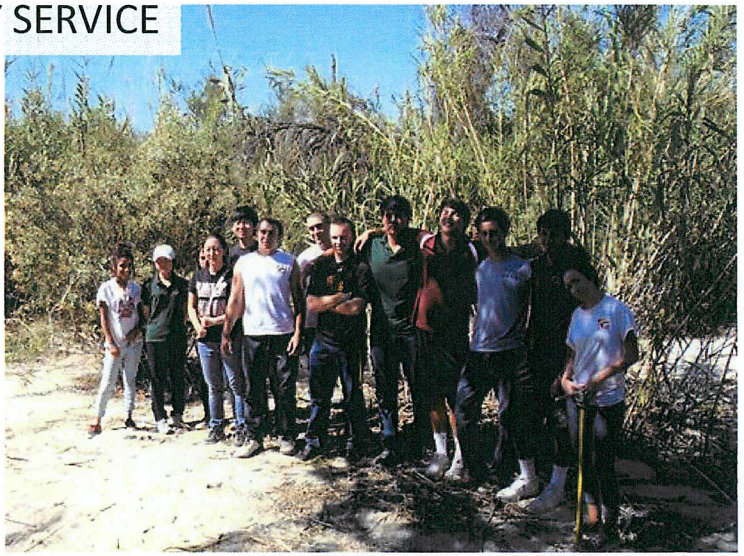
Sabino Canyon Rec. Area, Typical regrowth if rhizomes left

Sabino Canyon Rec. Area, ~North, Glysophate sprayed stand

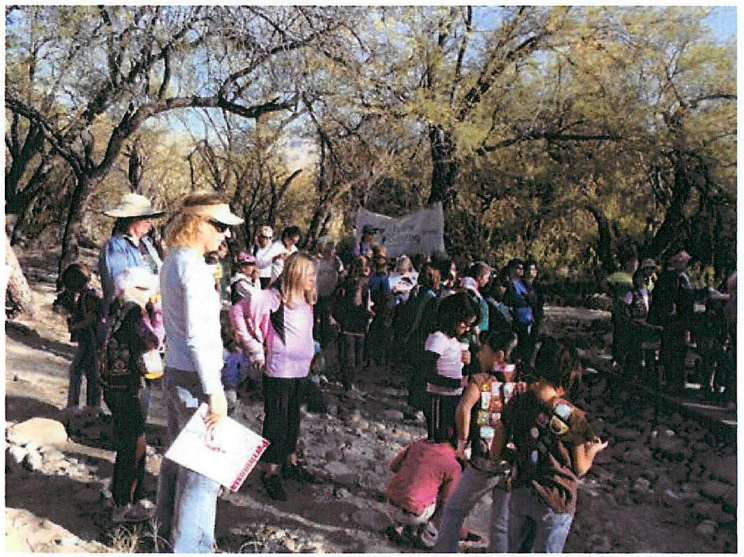
S5-COMMUNITY SERVICE



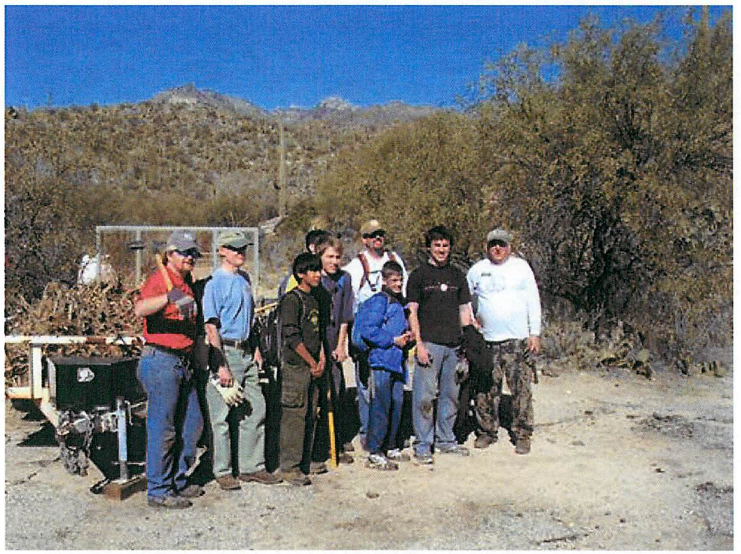
SCRA, SC Volunteer Naturalists Training, 2008



Fenster Sch, Reach 1b, Salpointe HS Volunteers, 2011



Hidden Valley HOA, Reach 1e, Girl Scout Volunteers, 2010



SCRA, Boy Scout Volunteers, 2011

Pima County Regional
FLOOD CONTROL
DISTRICT

PIMA COUNTY
REGIONAL FLOOD CONTROL DISTRICT
97 EAST CONGRESS STREET, THIRD FLOOR
TUCSON, ARIZONA 85701-1797

SUZANNE SHIELDS, P.E.
DIRECTOR

PHONE (520) 724-4600
FAX (520) 724-4621

August 27, 2013

Arizona Water Protection Fund
c/o Department of Water Resources
3550 N. Central Avenue
Phoenix, AZ 85012

Subject: AWPF Grant for Removal of *Arundo donax* Along Sabino Creek & Bear Canyon Wash

To Whom It May Concern:

The Pima County Regional Flood Control District (District) is responsible for monitoring and maintaining viable flood channels throughout the Tucson area. In particular, many of our urban washes have been lined with soil cement embankments to control lateral flood channel migration and protect private and public property. Between floods, many shrubs manage to take root in our waterways but the growth of Arundo over the past ten years has been particularly troublesome. The District appreciates the hard work the Tucson Arundo Project is doing to remove this invasive plant from the streambed.

Jim Washburne has worked closely with us in our efforts to control Arundo in Bear Canyon Wash and on various Pima County-owned parcels along Sabino Creek. The District has been supporting Jim's efforts on Pima County lands by transporting Arundo removed from the washes to the landfill or chipping onsite. We understand that almost 9,000 hours of volunteer time has gone into this effort so far, therefore it is critical to support follow-up efforts to continue removal and eradication of Arundo throughout Sabino Creek and Bear Canyon Wash.

We want to encourage the Arizona Water Protection Fund to support this grant application. Please don't hesitate to contact me if you have any questions regarding our role in this community effort.

Sincerely,

William E. Zimmerman
Deputy Director
bill.zimmerman@pima.gov

WEZ/mr

TUCSON
AUDUBON
SOCIETY

Leaders in conservation and education since 1949

Main Office
300 E. University Blvd., #120
Tucson AZ 85705
TEL 520.629.0510
FAX 520.623.3476

Kendall Kroesen
Habitats Program Manager
520.629.0510 x7006 office
520.971-2385 cell
kkroesen@tucsonaudubon.org

August 26, 2013

To Whom It May Concern:

Tucson Audubon Society supports this grant proposal for continuing removal of *Arundo donax* from Sabino and Bear Creeks. We look forward to supporting the implementation of this grant.

Tucson Audubon is an independent 501(c) 3 non-profit organization. We have worked in southern Arizona since 1949 to connect people to their natural environment. We are the third largest independent Audubon chapter in the nation, and we focus on birds and other wildlife to inspire and motivate people to conserve natural resources in southern Arizona for use and enjoyment by all. We serve around 5000 members in our region.

Tucson Audubon for several years has been a partner organization in the effort to remove *Arundo* along these two streams. Sabino and Bear Creeks have been recognized as an Important Bird Area as part of a global effort to identify areas key to a wide diversity of bird species, or that are key to the survival of one or more rare species. Allowing the recovery of native vegetation in this Important Bird Area through removal of competition from *Arundo* is a significant step toward protecting the health of many bird species.

It is imperative that the *Arundo* removal effort along these streams be finished, to make sure it does not recolonize. The proposed project would continue and complete the removal effort.

In these changing times this effort is unsurpassed in its urgency and priority. Tucson Audubon very strongly supports the proposed project and looks forward to working with grant partners to achieve these goals.

Sincerely,

Kendall Kroesen

SALPOINTE CATHOLIC HIGH SCHOOL

Aug. 27, 2013

Re: AWPF grant for removing Arundo along Sabino & Bear Creek

Salpointe Catholic High School believes that its students should start early to develop a strong sense of community involvement and commitment. One of the ways we do this is through a "Junior day of Service" every spring and fall. We have sent a van load of students to work with Mr. Washburne's Arundo removal effort for the past 3-4 years. We appreciate Jim's efforts to help facilitate our students contributions to this community based initiative that, in total, has amassed almost 9000 hours of volunteer time since it was begun.

We want to encourage the Arizona Water Protection Fund to support this grant application. Please don't hesitate to contact me if you have any questions regarding our role in this community effort.

Sincerely,

Phil Becker

Phil Becker
Director of Campus Ministry
Salpointe Catholic High School
1545 E. Copper St.
Tucson, AZ 85719

TUCSON ARUNDO REMOVAL – LAND OWNER PERMISSION FORM

-- -- -- -- -- -- -- -- -- -- -- --

I give Jim Washburne and Mike McGrath and any volunteers working with them permission to cut down and dig-up Arundo donax (Giant Cane) from the riparian or flood-prone area of my property along Sabino or Bear Creek. Unless other specific arrangements are made, we will access the streambed from another point.

Property Owner: _____ Date: _____

or

Current non-owner resident: _____ Date: 8-5-13

My Pima Co Parcel number is: ___ 114-19-0200 / 114-27-4380
114-19-014A
TANKERSLEY RUTH MC CORMICK;
ATTN: CHARLES R PLAYER
PO BOX 401
BARNESVILLE MD 20838

114-27-4380
TANKERSLEY RUTH MC CORMICK;
ATT: CHARLES R PLAYER JR CPA
PO BOX 401
BARNESVILLE MD 20838

The best contact for me is: _____

Special Conditions:

__ Please speak with me before working on my property. Best time (circle) AM PM

✓ Please just leave a message before working on my property @ Marvin 940-5635 Rick 940-5633

✓ Glyphosate/Roundup can be used to treat re-sprouts (circle). yes (no)

__ There are some buried pipes/wire that I need to point out to you (circle). yes no

__ Other: _____

Questions or Comments: _____

_____

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POB 210011, Harshbarger 122, Tucson, AZ 85721; jwash@hwr.arizona.edu; 520-626-4107

TUCSON ARUNDO REMOVAL – LAND OWNER PERMISSION FORM

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I give Jim Washburne and Mike McGrath and any volunteers working with them permission to cut down and dig-up Arundo donax (Giant Cane) from the riparian or flood-prone area of my property along Sabino or Bear Creek. Unless other specific arrangements are made, we will access the streambed from another point.

Property Owner: Richard DeBernardis Date: 08-12-13

or

Current non-owner resident: _____ Date: _____

My Pima Co Parcel number is: 114-19-014C
DE BERNARDIS RICHARD
8740 E SUMMER TRL
TUCSON AZ 85749

The best contact for me is: 520-745 2033 (office)

Special Conditions:

__ Please speak with me before working on my property. Best time (circle) AM PM

✓ Please just leave a message before working on my property @ _____ → PRESIDENT@PERIMETERBIOLOGY.COM

__ Glyphosate/Roundup can be used to treat re-sprouts (circle). yes no

✓ There are some buried pipes/wire that I need to point out to you (circle) yes no

__ Other: _____

Questions or Comments: Do you need to see where water pipes are routed? → MAYBE! My water pipes travel 1/4-mile across my property and across creek to my house

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POB 210011, Harshbarger 122, Tucson, AZ 85721; jwash@hwr.arizona.edu; 520-626-4107

TUCSON ARUNDO REMOVAL – LAND OWNER PERMISSION FORM

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I give Jim Washburne and Mike McGrath and any volunteers working with them permission to cut down and dig-up Arundo donax (Giant Cane) from the riparian or flood-prone area of my property along Sabino or Bear Creek. Unless other specific arrangements are made, we will access the streambed from another point.

Property Owner: CAROL PARKER ~~MICHAEL PARKER~~ Michael N Parker Date: 5/5/13

or

Current non-owner resident: _____ Date: _____

My Pima Co Parcel number is: ___ 114-28-015A PARKER FAMILY TR 8525 E CLOUD RD TUCSON AZ 85750-2913 114-28-016B PARKER MICHAEL N & CAROL A 8525 E CLOUD RD TUCSON AZ 85750-2912

The best contact for me is: Lisa Anderson 275-6436

Special Conditions:

✓ Please speak with me before working on my property. Best time (circle) AM PM

___ Please just leave a message before working on my property @ _____

___ Glyphosate/Roundup can be used to treat re-sprouts (circle). yes no

___ There are some buried pipes/wire that I need to point out to you (circle). yes no

___ Other: _____

Questions or Comments: NATURE CONSERVANCY HAS AN EASEMENT ON 015A

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POB 210011, Harshbarger 122, Tucson, AZ 85721; jwash@hwr.arizona.edu; 520-626-4107

TUCSON ARUNDO REMOVAL – LAND OWNER PERMISSION FORM

Thank you for doing this!

I give Jim Washburne and Mike McGrath and any volunteers working with them permission to cut down and dig-up Arundo donax (Giant Cane) from the riparian or flood-prone area of my property along Sabino or Bear Creek. Unless other specific arrangements are made, we will access the streambed from another point.

Property Owner: William H. Woodin Date: Aug. 5, 2013

or

Current non-owner resident: _____ Date: _____

My Pima Co Parcel number is: 114-28-014A
WOODIN W H III
3600 N LARREA LN
TUCSON AZ 85750-2474

The best contact for me is: (520) 298-2954

Special Conditions:

✓ Please speak with me or my wife, Beth, or son, Michael before working on my property. Best time (circle) AM PM

__ Please just leave a message before working on my property @ _____

✓ Glyphosate/Roundup can be used to treat re-sprouts (circle). yes (no)

✓ There are some buried pipes/wire that I need to point out to you (circle). yes (no) If I find some will let you know.

__ Other: _____

Questions or Comments: Please do call and let us know when you want to visit.

Thank you, Bill, Beth + Michael Woodin

8/5/2013

POB 210011, Harshbarger 122, Tucson, AZ 85721; jwash@hwr.arizona.edu; 520-626-4107

TUCSON ARUNDO REMOVAL – LAND OWNER PERMISSION FORM

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I give Jim Washburne and Mike McGrath and any volunteers working with them permission to cut down and dig-up Arundo donax (Giant Cane) from the riparian or flood-prone area of my property along Sabino or Bear Creek. Unless other specific arrangements are made, we will access the streambed from another point.

Property Owner: John McLean Date: 6 August 2013

or

Current non-owner resident: _____ Date: _____

My Pima Co Parcel number is: 114-28-015D
MC LEAN LIVING TR;
ATTN: J W & BARBARA MC LEAN TR
3537 N CAMINO SECO
TUCSON AZ 85749-8879

The best contact for me is: jmclean@arete.com
749-0223 (home)
770-6101 (office)

Special Conditions:

__ Please speak with me before working on my property. Best time (circle) AM PM

✓ Please just leave a message before working on my property @ jmclean@arete.com

__ Glyphosate/Roundup can be used to treat re-sprouts (circle). (yes) no

__ There are some buried pipes/wire that I need to point out to you (circle). yes (no)

✓ Other: Keep me posted on volunteer opportunities – I'd like to participate

Questions or Comments: _____

_____

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POB 210011, Harshbarger 122, Tucson, AZ 85721; jwash@hwr.arizona.edu; 520-626-4107

TUCSON ARUNDO REMOVAL – LAND OWNER PERMISSION FORM

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I give Jim Washburne and Mike McGrath and any volunteers working with them permission to cut down and dig-up Arundo donax (Giant Cane) from the riparian or flood-prone area of my property along Sabino or Bear Creek. **We are seeking landowners who will allow us to stack cut Arundo bundles (cut from the immediate vicinity) on their property.** It needs to stay there for 6-9 months to dry out.

Property Owner: RESTIN Date: 08/12/2013

or

Current non-owner resident: _____ Date: _____

My Pima Co Parcel number is: _____ 114-28-0320
RESTIN JAMES E & BARBARA J TR
3390 N ELENA MARIA
TUCSON AZ 85750

The best contact for me is: _____

Special Conditions:

✓ You have my permission to stack cut Arundo cane on my embankment. yes no

__ Please speak with me before working on my property. Best time (circle) AM PM

__ Please just leave a message before working on my property @ 5209912006

__ Glyphosate/Roundup can be used to treat re-sprouts (circle). yes (no)

__ There are some buried pipes/wire that I need to point out to you (circle). yes (no)

__ Other: _____

Questions or Comments: Thank you for your gargantuan efforts!

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POB 210011, Harshbarger 122, Tucson, AZ 85721; jwash@hwr.arizona.edu; 520-626-4107

TUCSON ARUNDO REMOVAL – LAND OWNER PERMISSION FORM

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I give Jim Washburne and Mike McGrath and any volunteers working with them permission to cut down and dig-up Arundo donax (Giant Cane) from the riparian or flood-prone area of my property along Sabino or Bear Creek. **We are seeking landowners who will allow us to stack cut Arundo bundles (cut from the immediate vicinity) on their property.** It needs to stay there for 6-9 months to dry out.

Property Owner: Janet Cohn Date: 8/8/13
or

Current non-owner resident: _____ Date: _____

My Pima Co Parcel number is: 169 ?

114-28-0370
WALDO LIVING TR;ATTN: JANET L
COHN TR
3190 N ELENA MARIA
TUCSON AZ 85750-2903

The best contact for me is: 520.298.5866

Special Conditions:

__ You have my permission to stack cut Arundo cane on my embankment. (yes) no

__ Please speak with me before working on my property. Best time (circle) AM (PM)

__ Please just leave a message before working on my property @ 298.5866

__ Glyphosate/Roundup can be used to treat re-sprouts (circle). yes (no) how harmful is this to wildlife?

__ There are some buried pipes/wire that I need to point out to you (circle). yes no

__ Other: _____

Questions or Comments: _____

_____

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POB 210011, Harshbarger 122, Tucson, AZ 85721; jwash@hwr.arizona.edu; 520-626-4107