

TO: Interested Persons

FROM: Rich Marovich, Streamkeeper (SK)

DATE: November 8, 2018

SUBJECT: Agenda for Thursday, November 8, 2018: Decision Meeting of the Lower Putah Creek Coordinating Committee – Davis Police Department Community Room 2600 Fifth Street, Davis from 3:30 to 5:00 PM.

No.	Time	me Item	Item						
1	3:30-3:40	0-3:40 Public Comment: The	Public Comment: The public is welcome to comment on items not on the agenda.						
2	3:40-3:45	0-3:45 Approval of Minutes:	Approval of Minutes: Minutes of the October meeting will be reviewed.						
			Operational Budget	Patt Cal					
3	3:45-4:00		Grants Budget	Patterned Calendar					
		review:	Riparian Diversions	. –					
4	4:00-4:10	0-4:10 Streamkeeper Report	Streamkeeper Report: SK will report on current and future work.						
5	4:10-4:25	0-4:25 Third Winters Salmo	Third Winters Salmon Festival: SK will report on the salmon festival.						
6	4:25-4:45		Dry Creek Confluence Post Fire Assessment: SK will report on a post fire assessment.						
7	4:45-4:55	5-4:55 Member Reports: Me	Member Reports: Members will have an opportunity to report.						
8	4:55-5:00	5-5:00 Correspondence: SK	Correspondence: SK will discuss any significant correspondence.						
		13 at the Monticello Ro	Next Meeting: The LPCCC will hold a discussion meeting on Thursday, December 13 at the Monticello Room, Solano Irrigation District, 810 Vaca Valley Parkway, Vacaville from 3:30 to 5:00 PM.						

810 Vaca Valley Parkway, Suite 203, Vacaville, California 95688 Phone: (530) 902-1794 Fax: (707) 451-6099 http://www.watershedportals.org/lpccc

The Lower Putah Creek Coordinating Committee consists of: Cities of Davis, Fairfield, Suisun City, Vacaville, Vallejo and Winters; Counties of Solano and Yolo; Solano and Yolo Riparian Landowners; Maine Prairie Water District; Solano County Water Agency;
Solano Irrigation District; Putah Creek Council and University of California, Davis



TO: Interested Persons

FROM: Rich Marovich, Streamkeeper (SK)

DATE: October 11, 2018

SUBJECT: Minutes of Thursday, October 11, 2018 Discussion Meeting of the Lower Putah Creek Coordinating Committee – Monticello Room, Solano Irrigation District, 810 Vaca Valley Parkway, Suite 201, Vacaville from 3:30 to 5:00 PM.

No.	Item						
1	Public Comment: Maura Metz cited a book from the early history of Yolo County when the Winters Percolation Dam was perceived as beneficial to groundwater recharge.						
2	Approval of Minutes: Minutes of the July and August meetings were approved.						
	Nursery Ops: Amy Williams of Putah Creek Council reviewed nursery operations.						
3	Riparian Diversion Updates: Mark Snyder reviewed riparian diversions. There was one instantaneous flow violation this year after several years of no violations. The cause was likely beaver activity.						
	Interagency Comm. Updates: SK reported on interagency communications.	Patterned Calendar					
4	Streamkeeper Report: SK reviewed progress on current projects.						
5	Coastal Cleanup Day: Amy Williams reported on the latest cleanup day.						
6	Correspondence: There was no significant correspondence.						
7	Member Reports: Andrew Fulks thanked SCWA for funding the One Creek Internship. Dennis Kilkenny complimented SCWA on the salmon article in the Winters Express.						
8	Next Meeting: The November LPCCC meeting will be held on Thursday, November 8 th at the Davis Police Department Community Room, 2600 Fifth Street from 3:30 to 5:00 PM.						

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LPCCC Board Meeting

October 11, 2018

1. Public Comment

Maura Metz:

- I have this Yolo County book by Joanne Larkey
- Jeff Tenpas talks about concerns of groundwater and the rechannelling effects on groundwater
- The percolation dam: backs up waters to restore areas groundwater and a recreation area was created
 - Back then there were groundwater problems, so a dam was made
- There were beavers, and trappers came through because people think they're a huge problem
 - In 1937 the beaver population was destroyed
 - Pools made as a historic practice
 - There is new stuff out of science magazine that talks about beavers

2. Approval of Minutes

Motion to approve

yes

second

Discussion? No.

All in favor? Yes

Opposed? None

3. Updates

a. Nursery Operations

Amy Williams:

- Update of activities 2017 fiscal year.
- The nursery is Rich's baby, and the day to day management is done by Putah Creek Council
 - The goals were to engage the community
- Learn how to grow native plants how they grow, learn habitat value and engage people

• We grow plants for partner projects and grow responsibly, and use best management processes to ensure there are no pathogens

Funding sources for the nursery

- 2/3 grant from SCWA
- 17% Yocha Dehe tribe
- 3.4% Raleys
- 13% Plant sales
- 500 community volunteers
- 1,200 hours donated by volunteers comes out to a value of \$36,000
- 15,000 plants are grown yearly
- The public buys plants too (RCD, City of Davis, UCD, Solano County Parks, Bobcat Ranch)
 - Trees are donated as well
 - The tree prices have been adjusted as well

The project also created

- Seed bank: done now except for new seeds
- GIS map for collection
- Plant Propagation recipe cards funded by Raleys
- How to plant and care for them

Patrick: Does Yoche Dehe fund this grant? Do you use money from plant sales?

Amy: Just the grant.

Patrick: Do you track where the seeds come from and go?

Amy: In a parallel universe yes, the plan is to give info to people buying plants, and we can give more info if needed. We can expand, but we are just getting started. We do note where the seeds are collected from.

Patrick: It would be good to see where they go too.

Roland: Is there anything you want to change or expand? Looking forward five years

Amy: We are heading there, all of this is new

• Educate ourselves about mold pathogens, hold workshops, and people come out

- All Extra time last year was spent on that
- Now the seed bank
- Getting everything organized and able to provide more info

Herb: Have you looked more in future to expand plant numbers or menu of plants?

Amy: yes have been doing that, we are in close contact with those who knows the watershed like myles and craig. I would like to see moving and planning ahead for projects and offering more plants for that. We have more species, but there's always something more to be done

Herb: Do you need any more tools or anything to make it safer and more productive?

Any: That can be answered day to day

Herb: I'd like to look at before compared to where we are now. Moved to a big viable facility, with more people. Do you have enough equiptment or things to increase efficiency?

Amy: Yes, Rich's crew is great for great at getting supplies, we are working with calfire and they're ramping up so we need to be helpful and out of the way. They've been good about keeping us around, and we want to help them evolve.

Herb: In a year or five years we should challenge you to be doing the following: ask yourself and others where we are heading. LPCCC isn't going away or PCC Or the creek. We should spend some time in long term planning

Amy: This is all making me very inspired.

Kent: Our time at calfire will expire eventually. LPCCC and PCC needs to consider while expanding, the long and short term, and our relationship with calfire and how can we make it happen

Andrew: We need to have a conversation about the arboretum having SCWA and PCC as partners, because everything is there, and need to talk about that. The facility there is great.

Rich: The change has been our ability putting plants into the ground. Some have expired of old age. That is not a limiting factor anymore, we are 3x more efficient. We planted 700 trees in couple of hours this year.

Amy: This encourages us to be productive

Rich: You've done a great job managing the nursery.

Herb: We can make a strategic and scenario plan, some ways to lay things out to decide what scenarios can happen and how to deal with those scenarios.

B. Riparian Diversion Updates

Mark Snyder:

- This map shows locations of diversions active along creek, the pumps are red dots
 - 16 pumps at least 2CFS, this is an all time low
- It's important the creek is more heavily weighted diversions downstream, minimum flow interstate 80, anything downstream doesn't give us flow violations compliance

Patrick: How does the flow look? Why is it weighted heavily downstream?

Mark: The higher pumps pump more volume

- Years show the benefit of deeper and cooler water, and there's less sediment accumulation with higher flow
 - There are Agriculture diversions along the creek
 - 4CFS per average agriculture pump
 - The largest one is 9CFS

JD: Is that fuel tank leaking?

Mark: It is residue from refilling. Flow violations decreased since the riparian accommodation program, improvement in flow violations due to program, beavers caused the last flow violation

C. Interagency Communication Updates

Rich:

- The central valley flood protection board loves the Phase 3 and NAWCA3 projects
- extended the Phase 3 Grant by three years, so we won't run out of time
- DFW new director of Yolo Wildlife Area will coordinate pulling check boards out Oct 26
 - PG&E donating gravel
 - 6000 cubic yards
 - left over from operations from Antioch
 - appeals to support restoration, and they may get mitigation credit

Dan Martinez:

• Donated 3,000 cubic yards of wood grindings

- Only 1/3 of cogeneration energy plants still licensed
- farmers donate and get a write-off
- We can use it to line walking trails and cover gravel road
- We can also use wood grindings for soil amendments and mulch

4. Stream keeper Report

Rich:

- Here are maps showing operations
- phase 3 and NAWCA are substantially complete
- other projects are continuing
- gravel scarifications for salmon habitat, ongoing planting, and weed control in the next month or two
 - upland erosion control IRWM

Patrick: Is the cluster at phase 3 two different things in same place?

Is it purposeful coordination?

Rich: This is gravel Scarification and turbidity monitoring.

- Phase 3: the creek transitions to a central flow now
- Weir beautiful, lots of rocks to sit on them, informal seating, good place to hang out
- Downstream end flowing up to trap turbidity, minimized turbidity contributions
 - Started revegetation
 - T-posts and cages have been put in place to keep beavers out
 - A few got chewed before, now they're caged, and now doing well
 - Ramp put in to north bank trail, it is not ada but is a nice gradient

Patrick: Are there ADA requirements?

Rich: No because it's a trail on a floodplain, it doesn't need to meet every specification

- Bioswale: 60 inch outfall, dumped storm runoff into Putah Creek
- rock has been beefed up to protect outflow for high runoff

- Wood grindings to put into soil to enhance percolation before runoff into creek
 - NAWCA 3 graded floodplain to 1%
 - The flood board loved it, better for planting and habitat
- Eucalyptus logs used as revetments to hold bank until vegetation grows in, re-use on site lowers cost of eucalyptus removal
- Side channel is part of the project, narrow channels attract fish because they have more cover in narrow channels

Thomas Pate: The natural gravels have come in already, I'm impressed

Rich: We will also add more to that. Minor maintenance will be needed to keep it from plugging up

5. Creek Cleanup Day

Amy Williams:

- This year marks 30 years of clean ups
- In 2004 we started coordinating with coastal cleanup that is international, the biggest single day volunteer day in the world
 - We had 21 site captains
- cleaned as much of creek and surrounding roads as we can and engage the community
 - good for first time volunteers to get involved
 - We provide accurate data for coastal commission
- Supported by SCWA primarily and a small grant from the city of winters
 - 130 volunteers participated
 - The site captains split up safely and efficiently
- 30 days before we showed garbage, that reached 6,000 people on social media

Herb: With everything going on, how did that chair even get there?

Amy: The services performed 3.5 miles of Putah Creek cleaned up, part of the channel by a boat crew, down to I 505. Putah Creek road down to Mcnamara property, including the side roads in downtown Winters, because it flows into Putah Creek. 300 pounds of trash

was collected, and properly disposed of. Recology hauls all of the trash and we haul everything harmful.

Herb: Do you have to pay for that?

Amy: Cache Creek Conservancy has an account with them

- 415 hours donated by volunteers, valued at \$12,000 dollars
- Our goal was to send in trash data, volunteers fill out data form, coordinators compile the data and call it into county for a statewide press release
 - top 3: food wrappers, beverage bottles, and cigarette butts
 - any questions?

Rich: I have a few comments:

- The volume of trash removed is less than in the early years, due to diminishing of illegal dumping, more limited to littering now
- It is gateway volunteer event, this is how to introduce people, it's a good way to bring people in, and requires no particular skills
 - Exchange students want to start doing the same in their country

Dennis Killkenny: I appreciate PCC cleaning up my property, you do a wonderful job and appreciate it

Rich: You did a great job matching volunteers to suitable sites, it was well organized.

6. Correspondence

Rich: Extension of river parkway grant, that's it received in mail

7. Member Reports

John Vickery: What the flow for salmon and release of the dam? Will there be a high flow at the diversion dam at the same time?

Rich: Yes a week before

Mark: 90 cfs released from dam

Andrew: Our interns have been vocal about their experience with PCC One creek, which has been very positive. They loved interacting with interns, and went with Rich to Phase 3 to look at the beginning of the project.

Dennis Killkenny: Thank you to the water agency for supporting salmon, there was a great article written about that

8. Next Meeting: Davis, November 8th.



LPCCC Operations Budget Report FY 2018-2019*

(does not include grants) Operations Budget

As of 9/30/18 = 3/12 = 25.% of FY

^ These funds come from LPCCC operations (variable) # These funds come from SCWA as funding (Fixed)

			Initial Annual Budget		30/2018	%	YTD Remain	
Item	ACCORD REQUIRED CONTRIBUTIONS							
	# SCWA Contribution Vegetation - 6130SC	\$	14,176	\$	8,371	59%	\$	5,805
	# SCWA Contribution Wildlife - 6148SC	\$	77,968	\$	77,036	99%	\$	932
	# SCWA Contribution Fish Monitoring - 6149SC	\$	77,968	\$	32,299	41%	\$	45,669
	#SCWA Contribution Misc Supplies - 6199SC	\$	27,000	\$	9,334	35%	\$	17,666
	# SCWA Contribution Streamkeeper Salary&Benefits	\$	56,704	\$	14,176	25%	\$	42,528
	TOTAL ACCORD REQUIRED CONTRIBUTIONS	\$	253,816	\$	141,216	56%	\$	112,600
	ADDITIONAL SCWA SUPPORT - NON-ACCORD ITEMS							
SK	# SCWA Contribution Streamkeeper Salary&Benefits	\$	112,546	\$	28,137	25%	\$	84,410
	#SCWA Contribution Nursery -6183SC	\$	45,000	\$	(952)	-2%	\$	45,952
*	#SCWA LPCCC Services-billable -6179SC	\$	790,000	\$	31,882	4%	\$	758,118
	#SCWA Equipment -Purchase/repairs less recycle reimb	\$	50,000	\$	18,550	37%	\$	31,450
	#Labor - SCWA- LPCCC + LPCCC Equip+LPCCC Others(Non SK)	\$	201,871	\$	12,699	6%	\$	189,172
	#Labor SCWA LPCCC Non-Reimbursable grant support(Non SK)	\$	167,954	\$	4,425	3%	\$	163,529
	Lower Putah Creek-Non Accord Support Consultants -6620SC	\$	1,361,218	\$	184,939	14%	\$	1,176,279
	Capital Assets	\$	80,000					
	^ Nursery 3rd Party Sales Income -4922SC	\$	(25,000)	\$	-	0%	\$	(25,000)
*	^LPCCC Services Invoiced - 4978SC	\$	(790,000)			0%	\$	(790,000)
	^Equipment Rental 3rd Party - 4981SC	\$	(30,000)	\$		0%	\$	(30,000)
	^ Grant Equipment Reimbursement-Usage -4150SC	\$	(100,000)	\$	(21,245)	21%	\$	(78,755)
SK	^Grant Labor Streamkeeper-Reimbursement	\$	(112,546)			0%	\$	(112,546)
	Net Addtl SCWA Non-Accord Contributions	\$	1,751,043	\$	258,435	15%	\$	2,448,909

Total Net LPCCC Costs \$ 2,004,859 \$ 399,651 \$ 2,561,509

Debt(Surplus) Amortization Value as of 06/30/17

\$ (3,236)

Item	GRANT ACTIVITY-CURRENT YEAR	Annual	Budget	9/:	30/2018	%	YTI	D Remain
	IRWM- LPCCC WESTSIDE	\$	150,000	\$	21,675	14%	\$	128,325
	RIVER PARK V	\$	300,000	\$	236,456	79%	\$	63,544
	LPCCC PROP 1 PLANNING	\$	300,000			0%	\$	300,000
	COASTAL CONSERVANCY	\$	25,000	\$	200	1%	\$	24,800
	TOTAL ACCORD REQUIRED CONTRIBUTIONS	\$	775,000	\$	258,331	33%	\$	516,669

			Grant	AR BALA	NCE
CURRENT GRANT PROJECTS	TERM	GRANT AMT	Balance	6/18	
IRWM- LPCCC WESTSIDE	1/17/14-10/01/19	\$ 415,000	213K	\$ 55	,716
RIVER PARK V	11/12-6/2021	\$ 1,162,640	10K	\$ 855	,205
LPCCC PROP 1 PLANNING	9/16-6/19	\$ 990,312	436K	\$ 511	,971
COASTAL CONSERVANCY	6/17-3/19	\$ 50,000	43K	\$ 6	,466

^{*} FY = July 1 through June 30

LPCCC Grant Budget Report

Grant Budget * As of 9/30/18

These funds come from grants and are spent on labor , materials , and contracts for restoration projects

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Subtotal \$ 2,978 \$ 579 \$ 379 \$ 634 \$ 259 \$ 1,851 \$ 1,127	
Subtotal to Date \$13,633 \$10,524 \$379 \$634 \$259 \$12,378 \$1,127	
FEMA Wragg Fire 7-18 \$442 \$442	
Subtotal \$442 \$0 \$0 \$442	
GRAND TOTAL \$14,075 \$10,524 \$379 \$12,378 \$1,569	

<u>Footnotes</u>

^{*} Amounts rounded to nearest \$ 1000 in this report - to nearest cent in actual accounting

[&]amp; Status: C = Completed and closed; A = Active; F= Future (awarded but not contracted); P = Prospective (applied for but not awarded) Fiscal Years July 1 through June 30:

^{**} Grant award reduced due to State budget of



TO: Interested Persons

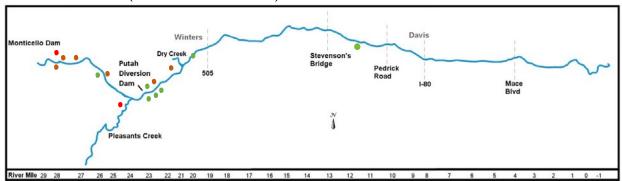
FROM: Rich Marovich, Streamkeeper

DATE: November 8, 2018

SUBJECT: STREAMKEEPER REPORT

Phase 3 – Winters Putah Creek Park and NAWCA 3: Work continues at Winters Putah Creek Park and NAWCA 3 with emphasis on seeding erosion control grasses and planting trees and shrubs. The ramp at WPCP Phase 3 is now connected to the north bank trail.

Current Field Work (November - December):

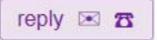


Legend

- Upland erosion control projects
- Trails for weed control
- Planting/irrigating native vegetation

Donations of wood grindings: Three local orchard owners/managers have offered us wood grindings free for the hauling. We've contracted with Old Durham Wood to custom haul the grindings with their walking bed trailers. We are using wood grindings as mulch and to line trails on current projects so that wheeled equipment and foot traffic does not cause compaction in planting areas.

Purchase of three used greenhouses: Our October discussion of contingency plans for the nursery proved to be prescient. CALFIRE asked us to prepare contingency plans to do without the glasshouse next year and agreed to let us set up a temporary greenhouse on the same property. Then they gave us two weeks to move out so that they could upgrade it to grow a crop next spring. We found three used 30 x 96 foot greenhouses for \$10,000 total out of the SCWA nursery fund. The expense is covered by this year's plant sales. They could easily be converted to shade houses if needed. We will disassemble and move them from Copperopolis (Calaveras County) this month.





prohibited [2] Posted a day ago

☆ GREENHOUSE - \$3500 (CALAVERAS) ®



6 GREENHOUSES 30X96

EACH ONE HAS 6 36 INCH FANS AND 1 BIG HEATER

GREENHOUSES ARE ASSEMBLED AND WILL NEED TO BE TAKEN DOWN BY BU \$3500.00 EACH OR BEST OFFER

PLEASE TEXT FOR FASTER RESPONSE

show contact info



To: LPCCC Board Members

From: Rich Marovich, Streamkeeper

Date: November 8, 2018

RE: DRY CREEK CONFLUENCE POST FIRE ASSESSMENT

BUDGET IMPACT: Undetermined

RECOMMENDATION: Use post fire recovery as a study site for adaptive management, focus on weed control and passive recovery; discuss management options with landowners.

SUMMARY: On October 25, Rich Marovich, Vic Claassen, Craig Thomsen, Amy Williams, Melanie Truan and Nicolle Herr walked the north bank of Putah Creek to assess impacts of a wildfire that burned 20 acres centered on the Dry Creek Confluence and next steps in post fire management.

BACKGROUND: On Monday, October 15 at approximately 1:30 PM our 314 excavator on the way to loosen gravel for spawning habitat had an engine fire that quickly spread to 20 acres centered on the Dry Creek Confluence on properties owned by Giovannoni, Bertinoia and Ramos. Winters Fire Department responded to protect buildings but otherwise let the fire burn until a CALFIRE helicopter dropped several loads of water and achieved containment by approximately 4 PM. The excavator is a total loss but there were no injuries or other reports of property loss. The excavator was fully insured.

Putah Creek at Dry Creek Confluence Post-Fire Walk-through and Initial Fire-recovery Planning Meeting, October 25, 2018

Objectives:

- Formulate next steps
- Create a Framework Plan to present at the upcoming LPCCC meeting November 8th, 2018.

Participants:

Rich Marovich Amy Williams
Vic Claassen Melanie Truan
Craig Thomsen Nicolle Herr

Historical Background

This site lies at the confluence of Putah Creek and one of its major tributaries, Dry Creek. Dry Creek brings cobbles and other coarse sediments to Putah Creek, an important source of salmon spawning gravels. This heterogeneous site contained a narrow corridor of mixed riparian woodland, dense groves of black walnut, orchards of cultivated walnuts, and a backwater pond complex. Additionally, there were willow thickets, mixed shrub communities, and an abundance of weedy vegetation. Intermittent watercourses, swales, and undulating topography are also notable features in the landscape. (Truan et al. 2010, Putah Creek Terrestrial Monitoring Program report 1997-2009)

The site also contains a 500-foot long open-water backwater pond, resulting from historical gravel mining, that was once connected to the creek at its upstream end. Circa 2006, the backwater pond became separated from the creek by what appears to be a naturally-deposited sediment levee. This levee has essentially isolated the backwater pond we see today. Melanie Truan has observed that the backwater pond has become more stagnant in recent years and that wildlife diversity has declined. Moreover, a cottonwood stand at the downstream end of the backwater pond, now completely destroyed by the fire, was declining prior to the fire, possibly from a drop in the water table or declines in water quality. In addition, recent lowering of sandstone boulders at the Dry Creek confluence has lowered the water surface elevation in the creek above the confluence.

2018 Fire

The approximately 20-acre fire burned parts of properties owned by Giovannoni, Bertinoia, and Neal or Ramos

Melanie Truan conducted a post-fire avian transect survey and took photos on Friday, October 19th, 2018. She has also amassed long-term plant and wildlife monitoring data since 1999. SCWA also has prefire baseline data from Prop 1 assessments and bird monitoring survey reporting.

The fire presents an opportunity to use Integrated Weed Management practices to control invasive species and to monitor facilitated post-fire ecological succession. The principles underlying IWM in the context of ecological restoration have been described elsewhere and are being implemented on the McNamara property in collaboration with SCWA staff, Melanie Truan, Sean McNamara and Craig Thomsen. The burn provides us with a relatively clean slate to access the floodplain, consider enhancing floodplain elevations to improve ecosystem structure and function, and aid in native species recruitment and recolonization.

Lessons Learned

Implement Fire Suppression and Prevention Methods

- We weren't expecting an engine fire: consider and plan for possible threats we wouldn't expect.
- Follow equipment with the water truck to extinguish engine fires as they start.
- Install adequate fire suppression devices in the engine of the equipment.
- Dry chemical from fire extinguishers is not useful outside because it blows away. Water is best.

Post-fire Restoration Planning/Mapping

- Come to group agreement on vision for site.
- Develop collective management protocols and develop a preliminary Management Plan.
- Define clear goals and objectives.
- Optimize habitat value.
- Use established best-science protocols for this situation at this site.

Public Relations

- If landowners are willing, the burn will provide an excellent opportunity to establish a case study in site recovery and ecological restoration.
- Front load involvement with landowners and ensure they know the full extent of activities before they are implemented.
- Clarify landowner goals for individual properties and determine whether their interests are aligned with ours. If not, this would take the work in an entirely different direction. If they give our team a green light to begin implementing ecosystem restoration actions, we should first develop a map of what we might envision as our "Desired Outcomes" for post-burn recovery. This map would function as a communication tool for landowners, ourselves, members of the community that may want to know what is being planned, and potential funding entities. Sources of data for this map include:
 - o Pre-burn Google Earth images and aerial photographs
 - LIDAR assessments
 - Pre-burn vegetation sampling by MWFB that provides detailed information on species composition, % cover of species, and horizontal and vertical structure at multiple sample sites.
 - o MWFB long-term bird research
 - Unburned reference areas immediately adjacent to burn sites
 - Post-burn inventories (initiated)
- Where the public helps with plant installation, success is a higher priority.

Wood and Debris Management Plan

- Leave all woody debris in place wherever possible, minimizing disturbance to the ground surface will decrease soil compaction and erosion.
- Leave snags for wildlife habitat. Clear only widow-makers or other dangerous debris.
- Strategically place cleared debris in brush and habitat piles.
- Leave large downed woody debris to serve as "nurse" material. Woody debris offers wildlife habitat and recruitment niches for native plants
- Utilize wood on banks, edges, and in the water
- Add instream woody debris to the backwater pond to create wildlife basking locations.
- Use mulch to increase infiltration, stabilize banks and suppress weed regrowth.

Soil and Hydrological Considerations

- Identify site hydrology and develop water movement guidelines.
 - There may be a clay bench under the soil surface in places, which may be preventing roots from accessing water when the water table falls below the bench.
- Consider the utility of lowering creekside and floodplain soil elevations to reconnect the creek with its floodplain and improve ecosystem structure and function.
- Backwater pond: Consider transporting soil from areas of lowered creek margins to create undulating shorelines and/or a matrix of islands and peninsulas to introduce ecosystem diversity and lower surface water temperatures.
- Prior to planting, wherever possible, assess soil depth to water and conduct soil profile analysis to identify suitable planting sites and evaluate irrigation needs.
 - Evaluate and compare soil pit data from locations with cottonwoods with locations without cottonwoods (historically).
- Determine how to manage the high flow channel.
- Hydrological heterogeneity: the subsurface gravel lens is not continuous.

Weed Management (To be determined)

- Monitor what comes up and control invasive species as needed.
- The ash from the fire is expected to be high in nutrients (N, P) which will facilitate weed colonization. Native species tend to respond less-strongly to fertilization. Applying a carbon-rich mulch will help pull excess nutrients from the soil for use in mulch decomposition.
- Some of the weeds that were documented prior to the burn include: perennial pepper weed, Himalayan blackberry, *Arundo donax*, black walnut, mustard, *Tamarix* spp., johnsongrass, sweetclover, Bermuda grass, Italian ryegrass and other miscellaneous annual grasses, barb goatgrass, wild lettuce, milk thistle, Italian thistle and yellow star thistle, ditchgrass, smilo, tree tobacco, and pokeweed.
- Take advantage of fire-cleared-areas to access and control invasive plants, especially stands of Arundo and Tamarisk which will likely recover strongly post-fire.
- Spot-spray weeds and clear strategically to release native plants.
- Avoid blanket foliar spraying anywhere it is possible to cut down plants and treat the stumps effectively.

- Cut or spray Arundo in spring to minimize rampant regrowth. Depending on where Arundo is growing, cut and selectively treat stems in the fall with 50% glyphosate or foliar treat uncut regrowth with a 2-5% glyphosate. Use small excavators as strategically and sparingly as possible to minimize soil compaction, formation of large trails, and collateral damage to native plants
- Walnuts readily stump-sprout after fire: discourage walnut monocultures by controlling regrowth with herbicide. Dense walnut monocultures do not make good habitat.
- Assemble equipment for broad leaf maintenance.

Revegetation Plan

- What, when & where to plant decisions should be based on project goals (AKA Desired Outcomes) and objectives, ecological conditions, and post-burn vegetation responses.
- In drier sites, use species that are drought tolerant; consider species and genotypes that may be better adapted to conditions expected to occur under climate change.
- Practice principles of "release and increase"; replant native species among existing stands.
- Pair irrigated planting sites with non-irrigated control sites to allow analysis of tolerances (some loss will occur).
- There is pressure to plant the high-volume stock of cottonwoods located in the nursery.
- Use an ATV to seed native grasses and forbs.
- Clear relatively open areas for reseeding with natives (eg. Creeping wild rye).

Implementation: Order of operations: (To be determined)

- 1. Weed control
- 2. Promote native grass and forb cover to suppress secondary weeds; seed as necessary
- 3. Erosion control/floodplain regrading
- 4. Release and increase

Monitoring

- What do we know?
- What can we learn?
- An instant forest is horticulture: ecosystem management is an opportunity to improve consensual relations and collaborate.
- Evaluate and monitor
 - Photo points/transects at designated or key points
 - Continue plant and wildlife surveys

Conclusion

Rich's Recap:

- 1. Monitor: what recovers naturally?
- 2. Small scale equipment for minimal removal and weed control.
- 3. Soil and depth to ground water analysis.
- 4. Plant and nurture cottonwoods in appropriate sites.