Appendix H
Cost Estimates and Assumptions

Yolo HCP / NCCP
Review Draft Implementation Cost Estimates and Assumptions

Oct-2015

Subject to Revision

This cost model calculates implementation cost estimates through the permit term for the Yolo HCP/NCCP .
The model takes input from the conservation strategy (acres of land acquired and restored by natural community), develops assumptions to estimate cost factors, and generates costs per period and cumulative total costs over the permit term. The model also generates an estimate of annual average post-permit costs.

	HEG/ICF 2014/2015
	HEG/ICF earlier
	Yolo Land Trust
	Yolo Habitat Conservancy and other Yolo County Sources, i.e., Yolo RCD
	Local Partners: Yolo County Cache Creek Area Plan Program and Lower Putah Creek Coordinating Committee
	Other Plans
	Guesstimate/Placeholder

link to other cell(s) in workbook

cost variable Changing these cells will change the cost model output

plan input assumption

Yolo HCP/NCCP Review Draft 10/2015	Indicates Conservation Strategy / Plan Status
Oct-15	Cost Model Date
2014	Enter year for constant dollar values

Table 1a

Yolo HCP / NCCP Cost Summary by Cost Category, 50-year Permit Term

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

	Permit Period (years)												
Cost Category[1]	**Start up**	**1 - 5**	**6 - 10**	**11 - 15**	**16 - 20**	**21 - 25**	**26 - 30**	**31 - 35**	**36 - 40**	**41 - 45**	**46 - 50**	**50 Year Total**	**Average Annual Cost**
Establish Reserve System, except restored lands[2]	$0	$21,101,443	$20,855,110	$20,855,110	$20,855,110	$20,855,110	$20,855,110	$20,855,110	$20,694,110	$20,688,043	$0	**$187,614,258**	$3,752,285
Restore Natural Communities[3]	$0	$6,820,606	$7,017,289	$7,152,491	$7,264,916	$7,350,023	$7,451,060	$7,597,650	$7,732,851	$1,024,671	$1,115,776	**$60,527,332**	$1,210,547
Manage and Enhance Easement & Pre-Permit Reserve Lands[4]	$0	$1,336,173	$1,415,498	$1,307,032	$1,378,981	$1,340,138	$1,412,087	$1,485,121	$1,557,070	$1,634,607	$1,344,660	**$14,211,367**	$284,227
Monitoring, Research & Scientific Review, except restored lands[4]	$0	$1,124,062	$1,279,840	$1,485,618	$1,521,666	$1,727,444	$1,753,742	$1,959,520	$2,165,297	$2,126,345	$1,792,061	**$16,935,594**	$338,712
Plan Administration	$0	$2,824,000	$2,824,000	$2,878,500	$2,878,500	$2,970,500	$2,832,500	$2,832,500	$2,740,500	$2,602,500	$2,464,500	**$27,848,000**	$556,960
Local Partner Activities in Riparian Corridors	$0	$2,055,110	$2,055,110	$2,055,110	$2,055,110	$2,055,110	$2,055,110	$2,055,110	$2,055,110	$2,055,110	$2,055,110	**$20,551,100**	$411,022
Contingency	$0	$2,769,903	$2,788,448	$2,817,149	$2,839,191	$2,873,596	$2,879,724	$2,922,264	$2,954,357	$2,791,517	$671,700	**$26,307,849**	$526,157
Total	**$0**	**$38,031,297**	**$38,235,296**	**$38,551,010**	**$38,793,474**	**$39,171,921**	**$39,239,333**	**$39,707,275**	**$39,899,296**	**$32,922,792**	**$9,443,806**	**$353,995,500**	**$7,079,910**

Notes:

[1] Includes permit term implementation costs only; does not include additional costs of plan preparation and endowment.

[2] Reserve assembly is assumed to occur at an even pace throughout the first 45 years of Plan implementation. Actual reserve assembly may differ in order to meet the rough proportionality standard or due to other factors.

[3] Includes costs of fee title acquisition of land on which restoration activity occurs, costs to restore, as well as on-going management and monitoring of restored lands.

[4] Management and monitoring on restored lands is included in the Restore Natural Communities line item.

Table 1b

Yolo HCP / NCCP Cost Summary by Cost Category, 50-year Permit Term (rounded to thousands)

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

	Permit Period (years)												
Cost Category[1]	**Start up**	**1 - 5**	**6 - 10**	**11 - 15**	**16 - 20**	**21 - 25**	**26 - 30**	**31 - 35**	**36 - 40**	**41 - 45**	**46 - 50**	**50 Year Total**	**Average Annual Cost**
Establish Reserve System, except restored lands[2]	$0	$21,101,000	$20,855,000	$20,855,000	$20,855,000	$20,855,000	$20,855,000	$20,855,000	$20,694,000	$20,688,000	$0	**$187,613,000**	$3,752,260
Restore Natural Communities[3]	$0	$6,821,000	$7,017,000	$7,152,000	$7,265,000	$7,350,000	$7,451,000	$7,598,000	$7,733,000	$1,025,000	$1,116,000	**$60,528,000**	$1,210,560
Manage and Enhance Easement & Pre-Permit Reserve Lands[4]	$0	$1,336,000	$1,415,000	$1,307,000	$1,379,000	$1,340,000	$1,412,000	$1,485,000	$1,557,000	$1,635,000	$1,345,000	**$14,211,000**	$284,220
Monitoring, Research & Scientific Review, except restored lands[4]	$0	$1,124,000	$1,280,000	$1,486,000	$1,522,000	$1,727,000	$1,754,000	$1,960,000	$2,165,000	$2,126,000	$1,792,000	**$16,936,000**	$338,720
Plan Administration	$0	$2,824,000	$2,824,000	$2,879,000	$2,879,000	$2,971,000	$2,833,000	$2,833,000	$2,741,000	$2,603,000	$2,465,000	**$27,852,000**	$557,040
Local Partner Activities in Riparian Corridors	$0	$2,055,000	$2,055,000	$2,055,000	$2,055,000	$2,055,000	$2,055,000	$2,055,000	$2,055,000	$2,055,000	$2,055,000	**$20,550,000**	$411,000
Contingency	$0	$2,770,000	$2,788,000	$2,817,000	$2,839,000	$2,874,000	$2,880,000	$2,922,000	$2,954,000	$2,792,000	$672,000	**$26,308,000**	$526,160
Total	**$0**	**$38,031,000**	**$38,234,000**	**$38,551,000**	**$38,794,000**	**$39,172,000**	**$39,240,000**	**$39,708,000**	**$39,899,000**	**$32,924,000**	**$9,445,000**	**$353,998,000**	**$7,079,960**

Notes:

[1] Includes permit term implementation costs only; does not include additional costs of plan preparation and endowment.

[2] Reserve assembly is assumed to occur at an even pace throughout the first 45 years of Plan implementation. Actual reserve assembly may differ in order to meet the rough proportionality standard or due to other factors.

[3] Includes costs of fee title acquisition of land on which restoration activity occurs, costs to restore, as well as on-going management and monitoring of restored lands.

[4] Management and monitoring on restored lands is included in the Restore Natural Communities line item.

Table 2

Yolo HCP/NCCP - Protection and Restoration by Natural Community

Yolo HCP/NCCP Review Draft 10/2015

Natural Community	Vegetation / Land Cover Detail	Crop Type	HCP/NCCP New Protection Requirement	Acres Restored	
Cultivated lands					
Agriculture: wetland	Rice	Rice	2,800		
Agriculture: non-wetland			14,362		
Grassland			4,430		
Serpentine			0		
Chamise			0		
Mixed chaparral			0		
Blue oak and foothill pine			0		
Blue oak woodland	Blue oak alliance		10		
Closed-cone pine-cypress			0		
Montane hardwood			0		
Valley oak woodland	Valley oak alliance		20		
Alkali prairie	Alkali sink		34		
Vernal pool complex	Vernal pool complex		0		
Fresh emergent wetland			500	88	
Valley foothill riparian			1,600	608	includes 20 acres independent of effect
Lacustrine and riverine	Open water		600	260	includes 24 acres independent of effect
Bank swallow	*not technically a natural semi natural comm.*		*50*		
Total natural and seminatural communities + bank swallow			**24,406**	**956**	
		pre-permit reserve lands	**8,000**		
		restored (additive)	*956*		
			33,362		

Source: ICF, 10/1/2015, Table 5-5_Oct_2015_10_1

Table 3
Yolo HCP/NCCP - Fee Title and Easement Acquisition Input
Yolo HCP/NCCP Review Draft 10/2015

	A	B	C	D = A+B	E = C+D		
Natural Community	**Newly Protected Lands Commitment (Table 5-5)**	**Additional Acquisition to Ensure Commitment of Sensitive Habitats[1]**	**Additional Fee Title Acquisition (for restoration)**	**New Easement Acquisition**	**Total Acres Acquired**	minimum patch size (6.4.1.4.1; Table 6-5)	number of parcels acquired (rough estimate)
Cultivated lands							
Agriculture - rice	*2,800*		*-*	2,800	2,800	160	18
Agriculture - non-rice	*14,362*		*741*	14,362	15,103	160	94
Grassland[2]	*4,364*		*215*	4,364	4,579	400	50
Blue oak woodland	*10*		*-*	10	10		1
Valley oak woodland	*20*			20	20		1
Alkali prairie[2]	*100*			100	100		1
Fresh emergent wetland	*500*	*25*	*-*	525	525	160	3
Valley foothill riparian	*1,600*	*80*	*-*	1,680	1,680	25	67
Lacustrine and riverine	*600*	*30*	*-*	630	630	160	4
Other - Barren							
Bank swallow habitat	*50*		*-*	50	50		
Total newly protected lands	***24,406***	**135**	***956***	**24,541**	**25,497**		**239**
			[incl as CM2 cost]				

Assumptions/Notes:

Percent increase in acres acquired	**5%**				
Number of transactions/parcels acquired		**10**	**230**	**240**	(rounded)

[1.] Because of parcel size boundaries and limitations regarding available acquisitions from willing sellers, land acquisition to meet the small acreage targets for sensitive habitats will most likely be greater than the underlying newly protected lands commitment. For the purpose of the cost analysis, the Conservancy assumes that 5 percent more acreage for sensitive habitats will be acquired to meet the sensitive habitat targets exactly.

[2.] A total of 100 acres are managed as part of the alkali prairie reserve lands. This consists of 34 acres of alkali prairie habitat, plus 66 acres of grassland upland habitat.

Table 4
Yolo HCP/NCCP - Restoration Detail
Yolo HCP/NCCP Review Draft 10/2015

	Restored from:		
Natural communities	Cultivated lands (non-rice)	Grassland	**Total**
Restored to:			
Fresh emergent wetland			88
Valley foothill riparian			608
Lacustrine and riverine			260
Total	**741**	**215**	**956**
		956	

Table 5

Yolo HCP/NCCP - Acres by species and habitat type for use in monitoring cost estimates

Yolo HCP/NCCP Review Draft 10/2015

			NEWLY PROTECTED LANDS		PRE-PERMIT RESERVE LANDS Sites 20 - 42
			Table 5-7 10/1/2015		
Species	**Unit**	**Habitat Type that is monitored annually**	**Acres of protection**	**Acres of restoration**	**GIS analysis provided by ICF 7/14/2015**
Valley elderberry longhorn beetle	acres	Valley foothill riparian	*1,600*	*531*	*105*
California tiger salamander	acres				
Upland dispersal		Annual grassland	*2,000*	*-*	*222*
Aquatic breeding	acres	Lacustrine & riverine	*36*	*36*	*35*
Western pond turtle	acres	Grassland, fresh emergent wetland, lacustrine	*2,400*	*369*	*42*
Giant garter snake	acres				
Rice			*2,800*	*-*	*-*
Aquatic		Annual grassland	*420*	*109*	*18*
Freshwater emergent wetland			*500*	*76*	*-*
Active upland		Grassland	*1,160*	*-*	*18*
Overwintering upland		Other uplands	*2,315*	*-*	*39*
Swainson's hawk	acres				
Nesting		Riparian	*1,600*	*598*	*184*
Foraging		Grassland/cultivated lands	*18,792*	*-*	*2,937*
White-tailed kite	acres				
Nesting		Riparian	*1,600*	*598*	*184*
Foraging		Grassland/cultivated lands	*18,797*	*-*	*2,843*
Western yellow-billed cuckoo	acres	Valley foothill riparian	500	100	*112*
Western burrowing owl	acres	Cultivated lands, grassland	5,500	-	*730*
Least Bell's vireo	acres	Valley foothill riparian	600	80	*83*
Bank swallow	acres	Barren	50	-	*-*
Tricolored blackbird	acres				
Nesting		Wetland	*200*	*86*	*-*
Foraging		Grassland/cultivated lands	*16,610*	*-*	*1,809*
Palmate-bracted bird's beak	acres	Alkali prairie	*34*	*-*	*55*

VELB Assumptions Monitoring is different than that which would be done for valley riparian community (i.e., percent canopy, structural diversity).

Table 6
Yolo Habitat Conservancy
Local Cost Share Sources and Potential Approaches
Source: June 26, 2015 memorandum "Yolo HCP / NCCP Local Cost Share Source Assessment"
Pre-Permit Reserve Lands

Number	Site	Managing agency	Acres	Actions needed to qualify as pre-permit reserve lands	Factors determining on-going cost estimates
Category 1: Baseline public and easement lands					
1	River Ranch - VELB conservation bank phase 2	Wildlands/Wildlife Heritage Foundation	35.5		
2	River Ranch - VELB conservation bank phase 3	Wildlands/Wildlife Heritage Foundation	99.7		
3	Teal Ridge - Ridge Cut Farms mitigation bank	Wildlands	185.9		
4	Pope Ranch - giant garter snake	Wildlands	391.0	Baseline public and easement lands with endowments:No additional actions: to be enrolled as is	
5	River Ranch - VELB conservation bank phase 1	Wildlands/Wildlife Heritage Foundation	76.0		
6	River Ranch - wetlands mitigation bank	Wildlands/Wildlife Heritage Foundation	113.4		
7	Grasslands Regional Park - burrowing owl mitigation	County of Yolo/City of Davis	33.0		
8	Conaway - giant garter snake	American West Conservation	1,000.0		
9	Conaway - Swainson's hawk	American West Conservation	1,000.0		
10	Conaway - tri colored blackbird	American West Conservation	224.2		Sites have endowments or agricultural income to cover management and monitoring costs
11	SWHA Mitigation - Bogle	Yolo Land Trust	76.0		
12	SWHA Mitigation - Chickahominy Creek	Yolo NHP JPA	148.9		
13	SWHA Mitigation - Lara West	Yolo NHP JPA	83.1	Baseline public and easement lands with endowments:Need management plan to qualify	
14	SWHA Mitigation - Lara East	Yolo NHP JPA	41.0		
15	SWHA Mitigation - Los Rios	Yolo NHP JPA	80.2		
16	SWHA Mitigation - Schmid	Yolo NHP JPA	80.2		
17	SWHA Mitigation - Tule Ranch	Yolo Land Trust	143.4		
18	SWHA Mitigation - Virgin	Yolo NHP JPA	347.0		
19	SWHA - Kerr	Yolo Land Trust	87.3		
20	Gateway Preserve - City of Woodland SWHA mitigation	Wildlife Heritage Foundation	74.8		
21	Spring Lake - City of Woodland Brauner	Center for Natural Lands Management	75.3		
22	Spring Lake - City of Woodland WWTP	Center for Natural Lands Management	48.5		
23	Spring Lake - Dowling	Center for Natural Lands Management	57.1	Baseline public and easement lands that are missing endowments and/or management plans: Need easement modifications, management plan and/or endowment to qualify	
24	Cache Creek - Best Ranch	Yolo Land Trust	36.4		
25	Eoff - Central	Yolo Land Trust	157.3		
26	Eoff Farm	Yolo Land Trust	387.0		
27	Barger - City of Davis Wildhorse nitigation	Yolo Land Trust	76.6		
28	McIsaac - City of Davis Wildhorse mitigation	Yolo Land Trust	80.4		
29	Wasserman - City of Davis Wildhorse mitigation	Yolo Land Trust	68.0		
30	Capay Farm	Yolo Land Trust	109.4		
31	Los Rios North	Yolo Habitat Conservancy	778.0		
32	Welfare Ranch	Yolo Land Trust	249.0		
33	Heidrick - Swainson's hawk	Yolo Land Trust	216.3		
34	Hershey Woods	Yolo Land Trust	350.0		
35	Spring Lake - Merritt Ranch	Yolo Land Trust	641.0		
Category 2: Baseline Public Lands that are held in fee title					
36	Davis Communication Facility	NPS/Yolo County	320		
37	Helvetia Oak Grove	County of Yolo	11		
38	Howatt/Clayton Ranch	City of Davis	769		
39	Los Rios South	City of Davis	252		
40	South Fork Preserve	City of Davis	191		
41	Wildhorse Ag Buffer	City of Davis	40		
42	Elkhorn Regional Park	County of Yolo	49		
		Subtotal acres Sites 1 - 10	**3,158.7**		
		Subtotal acres Sites 11 - 19	**1,087.0**		
		Subtotal acres Sites 1 - 19	**4,245.76**		
23	**Site count Sites 20 - 53**	**Subtotal acres Sites 20 - 53**	**5,037.1**		
		Average acres per site, Sites 20 - 53	**220**		
		Grand Total Categories 1 & 2	**9,282.9**		

Pre-permit reserve land, by natural community

Natural community (Table 6-2(b))	All sites (acres)
Cultivated lands (rice)	1,775
Cultivated lands (non-rice)	3,649
Grassland	335
Alkali prairie	140
Fresh emergent wetland	750
Other land cover types	1,351
Total	**8,000**

Natural community (ICF GIS analysis)	Sites 20 - 42 (acres)
Cultivated lands (rice)	-
Cultivated lands (non-rice)	2,629
Grassland	254
Alkali prairie	55
Vernal pool complex	27
Fresh emergent wetland	-
Valley foothill riparian	153
Lacustrine and riverine	41
Other land cover types	599
Total	**3,758**

Table 7a
Reserve Acquisition and Restoration Schedules - Percent by Five-Year Period
Yolo HCP/NCCP Review Draft 10/2015

		Permit Period (years)											
		Start up	1 - 5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	50 Year Total
CM1	**Newly Protected Lands**												
Natural community		**Conservation Easement Acquisition Schedule**											
Cultivated lands: rice		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
Cultivated lands: non-rice		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
Grassland		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
Blue oak woodland		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
Valley oak woodland		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
Alkali prairie		0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Fresh emergent wetland		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
Valley foothill riparian		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
Lacustrine and riverine		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
Other - Barren													
Bank swallow habitat		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
Overall average		0%	20%	10%	10%	10%	10%	10%	10%	10%	10%	0%	100%
Natural community		**Fee Title Acquisition Schedule**											
Cultivated lands: non-rice		0%	13%	13%	13%	13%	13%	13%	13%	13%	0%	0%	100%
Grassland		0%	13%	13%	13%	13%	13%	13%	13%	13%	0%	0%	100%
Overall average		0%	13%	13%	13%	13%	13%	13%	13%	13%	0%	0%	100%
CM1	**Pre-Permit Reserve Lands**	**Enrollment Schedule**											
Sites 1-10 (as-is)		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
Sites 11-19 (as-is)		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
From Sites 20 - 42		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
Overall average		0%	11%	11%	11%	11%	11%	11%	11%	11%	11%	0%	100%
CM2	**Natural community**	**Restoration Schedule**											
Fresh emergent wetland		0%	13%	13%	13%	13%	13%	13%	13%	13%	0%	0%	100%
Valley foothill riparian		0%	13%	13%	13%	13%	13%	13%	13%	13%	0%	0%	100%
Lacustrine and riverine		0%	13%	13%	13%	13%	13%	13%	13%	13%	0%	0%	100%

Assumptions:

All conservation easements acquired by year 45.

All fee title acquisitions and restoration projects complete by year 40.

Pre-permit reserve lands enrolled evenly over 50-year permit term

9	number of easement acquisition periods
8	number of fee title acquisition periods
9	number of pre-permit reserve acquisition periods

Table 7b
Reserve Acquisition and Restoration Schedules - Acres by Five-Year Period
Yolo HCP/NCCP Review Draft 10/2015

		Permit Period (years)											
		Start up	1 - 5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	50 Year Total
CM1	**Newly Protected Lands**												
Natural community						**Conservation Easement Acquisition (acres per period)**							
Cultivated lands: rice		-	311	311	311	311	311	311	311	311	311	-	2,800
Cultivated lands: non-rice		-	1,596	1,596	1,596	1,596	1,596	1,596	1,596	1,596	1,596	-	14,362
Grassland		-	485	485	485	485	485	485	485	485	485	-	4,364
Blue oak woodland		-	1	1	1	1	1	1	1	1	1	-	10
Valley oak woodland		-	2	2	2	2	2	2	2	2	2	-	20
Alkali prairie		-	100	-	-	-	-	-	-	-	-	-	100
Fresh emergent wetland		-	58	58	58	58	58	58	58	58	58	-	525
Valley foothill riparian		-	187	187	187	187	187	187	187	187	187	-	1,680
Lacustrine and riverine		-	70	70	70	70	70	70	70	70	70	-	630
Other - Barren													
Bank swallow habitat		-	6	6	6	6	6	6	6	6	6	-	50
Total		**-**	**2,816**	**2,716**	**2,716**	**2,716**	**2,716**	**2,716**	**2,716**	**2,716**	**2,716**	**-**	**24,541**
Number of transactions		-	*26*	*26*	*26*	*26*	*26*	*26*	*26*	*26*	*26*	-	*230*
Natural community						**Fee Title Acquisition for Restoration (acres per period)**							
Cultivated lands: non-rice		-	93	93	93	93	93	93	93	93	-	-	741
Grassland		-	27	27	27	27	27	27	27	27	-	-	215
Total		**-**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**-**	**-**	**956**
Number of transactions		-	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	-	-	*10*
CM1	**Pre-permit Reserve Lands**						**Enrollment (acres per period)**						
Sites 1-10 (as-is)		-	351	351	351	351	351	351	351	351	351	-	3,159
Sites 11-19 (as-is)		-	121	121	121	121	121	121	121	121	121	-	1,087
From Sites 20 - 42		-	417	417	417	417	417	417	417	417	417	-	3,754
Total		**-**	**889**	**889**	**889**	**889**	**889**	**889**	**889**	**889**	**889**	**-**	**8,000**
Number of transactions Sites 1 - 10		-	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*2.0*	-	*10*
Number of transactions Sites 11 - 19		-	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	-	*9*
Number of transactions from Sites 20 - 42		-	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	-	*18*
CM2	**Natural community**						**Restoration (acres per period)**						
Fresh emergent wetland		-	11	11	11	11	11	11	11	11	-	-	88
Valley foothill riparian		-	76	76	76	76	76	76	76	76	-	-	608
Lacustrine and riverine		-	33	33	33	33	33	33	33	33	-	-	260
Total		**-**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**-**	**-**	**956**

Cumulative Total Newly Protected Lands by Natural Community

Natural community	Start up	1 - 5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	50 Year Total
Cultivated lands: rice	-	311	622	933	1,244	1,556	1,867	2,178	2,489	2,800	2,800	2,800
Cultivated lands: non-rice	-	1,596	3,192	4,787	6,383	7,979	9,575	11,170	12,766	14,362	14,362	14,362
Grassland	-	485	970	1,455	1,940	2,424	2,909	3,394	3,879	4,364	4,364	4,364
Blue oak woodland	-	1	2	3	4	6	7	8	9	10	10	10
Valley oak woodland	-	2	4	7	9	11	13	16	18	20	20	20
Alkali prairie	-	100	100	100	100	100	100	100	100	100	100	100
Fresh emergent wetland	-	69	139	208	277	347	416	485	555	613	613	613
Valley foothill riparian	-	263	525	788	1,051	1,313	1,576	1,839	2,101	2,288	2,288	2,288
Lacustrine and riverine	-	103	205	308	410	513	615	718	820	890	890	890
Other - Barren												
Bank swallow habitat	-	6	11	17	22	28	33	39	44	50	50	50
Total	**-**	**2,935**	**5,770**	**8,606**	**11,441**	**14,276**	**17,111**	**19,946**	**22,781**	**25,497**	**25,497**	**25,497**

Table 8

Qualified biologist rate assumption

Base cost per hour	**$160**	$ per hour
Direct expenses (meals) per day	**$15**	$ per day
Travel	**$56**	$ per day
assuming	**100**	miles
and	**$0.56**	$ per mile
Hours per day	**8**	hours per day
Total cost per hour including travel	**$169**	$ per hour

Assumptions:

Sr. Consultant II billing rate; assumes all work will be conducted from a local office (no per diem needed).

Table 9

Establish Reserve System

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

Reserve Assembly Cost	**Permit Period (years)**											
	Start up	**1 - 5**	**6 - 10**	**11 - 15**	**16 - 20**	**21 - 25**	**26 - 30**	**31 - 35**	**36 - 40**	**41 - 45**	**46 - 50**	**50 Year Total**
YHC oversight and management (staff & overhead)	$0	$322,000	$322,000	$322,000	$322,000	$322,000	$322,000	$322,000	$161,000	$161,000	$0	**$2,576,000**
Acquire conservation easements on newly protected lands	$0	$18,710,720	$18,470,720	$18,470,720	$18,470,720	$18,470,720	$18,470,720	$18,470,720	$18,470,720	$18,470,720	$0	**$166,476,480**
Enroll pre-permit reserve lands as-is	$0	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$0	**$13,500**
Enroll other pre-permit reserve lands	$0	$1,042,844	$1,042,844	$1,042,844	$1,042,844	$1,042,844	$1,042,844	$1,042,844	$1,042,844	$1,042,844	$0	**$9,385,600**
Pre-acquisition surveys on newly protected lands	$0	$185,879	$179,546	$179,546	$179,546	$179,546	$179,546	$179,546	$179,546	$171,978	$0	**$1,614,677**
Transaction costs - newly protected lands	$0	$805,000	$805,000	$805,000	$805,000	$805,000	$805,000	$805,000	$805,000	$805,000	$0	**$7,245,000**
Transaction costs - pre-permit reserve lands	$0	$33,500	$33,500	$33,500	$33,500	$33,500	$33,500	$33,500	$33,500	$35,000	$0	**$303,000**
Total	**$0**	**$21,101,443**	**$20,855,110**	**$20,855,110**	**$20,855,110**	**$20,855,110**	**$20,855,110**	**$20,855,110**	**$20,694,110**	**$20,688,043**	**$0**	**$187,614,258**

YHC oversight and management

100%	percent of Real Estate Specialist time and associated overhead allocated to Establish Reserve

Acquisition cost factors by natural community for newly protected lands

Per acre, fee title (2014)

$8,000	cultivated agriculture: rice
$2,500	annual grassland, large parcels > 160 acres in Dunnigan Hills planning unit
$4,000	annual grassland and alkali prairie, in the Valley, assuming small parcels 50 - 160 acres that have homesite value
$1,000	blue oak woodland
$1,000	valley oak woodland
$1,000	fresh emergent wetland
$1,000	valley foothill riparian
$1,000	lacustrine and riverine
$1,000	bank swallow habitat

Per acre, cost of easement restricting conversion to orchard/vineyard (2014)

$9,500	cultivated agriculture: non-rice
5%	additional cost to reflect price for easement encumbrances, i.e., access for monitoring and various prohibitions

Assumptions/Notes:

The fee title values are used to support the cost of acquiring conservation easements. The YHC will not acquire land in fee title except in the case of cultivated agriculture (non-rice) and grassland parcels acquired for restoration (see Table 5).
These cost factors are solely for the purposes of developing planning level estimates of the reserve assembly component of implementation costs. Actual land costs may vary significantly around this average, depending on parcel-specific factors.
Actual costs will be determined by qualified appraisals of each potential acquisition site.

The following sources informed these cost factors: *2014 Trends in Agricultural Land and Lease Values* , California and Nevada, American Society of Farm Managers and Rural Appraisers (ASFMRA), California; Scott Stone, California Agricultural Properties, Inc.; and Ron Garland, MAI, SRA.

The mid-point of the ASFMRA 2014 values for rice is $7,000. Higher values in the range of $9,000 - $10,000 per acre are justified in the area served by RD 108 (Colusa Basin).
The cost factor assumption reflects a mix of values across this range.

60%	easement percent of fee title acquisition cost for rice
68%	percent of annual grassland acquired in Dunnigan Hills (Planning Unit 5) **Table 6-2(a)**
32%	percent of annual grassland acquired elsewhere in the plan area, assuming in smaller scattered parcels in the Valley

The $1,000 value for all other land covers assumes no grazing or farming value.

60%	Easement percent of fee title acquisition cost, grassland and all other non-agricultural natural communities

The acquisition cost for all other cultivated agricultural lands except rice is estimated based on the differential in value between orchard land and irrigated cropland/field crop land.
Orchard and vineyard values are the key factor in the current agricultural land market in Yolo County. The Yolo HCP/NCCP conservation easement, similar to the Swainson's Hawk easement, would restrict conversion to orchards and vineyards, allowing all other agricultural use.

For planning purposes at this time, given the current spike in agricultural land prices and the predominance of investor-fueled demand based on expectations of high orchard/vineyard values, it is reasonable to use this differential as an estimate of the price the YHC would have to offer for conservation easements on the majority of the newly protected lands. In these market conditions, the cost for easement acquisition is essentially the same as the cost for fee title acquisition.

Transaction costs (appraisal, preliminary title report, legal description, boundary surveys, negotiating easement terms, perhaps Phase 1 site assessment, and site-specific management plan)

Assumptions/Notes:

Newly protected lands will require a full suite of transaction costs.
Newly protected lands will require site-specific management plans, based on reserve unit management plan guidelines.

$30,000	per transaction for newly protected lands
$1,500	per transaction cost for site-specific management plans

Table 9

Establish Reserve System

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Cost to enroll pre-permit reserve lands

Assumptions/Notes:

Sites 1-19 of the pre-permit reserve lands have existing in-perpetuity conservation easements and endowments or agricultural income to support management and monitoring in perpetuity. Relatively minor updates to easements are assumed covered in Plan Administration staff and legal services costs.

Of these sites, Sites 1 - 10 have management plans in place; Sites 11 - 19 will require site-specific management plans to be enrolled as pre-permit reserve lands.

The balance of the pre-permit reserve lands would come from among Sites 20 - 42--lands that are protected under conservation easements or held in fee title by YHC member agencies but would require easement modifications to be added to the Yolo HCP/NCCP reserve. These costs are likely to vary based on the specifics of the property.

$0	cost per acre to enroll pre-permit reserve lands from Sites 1 - 10
$1,500	per site cost for site-specific management plans for Sites 11 - 19
$2,500	cost per acre to enroll other pre-permit reserve lands

Transaction costs for pre-permit reserve lands

Assumptions/Notes:

Costs would be substantially lower for pre-permit reserves, consisting of research of existing documents and preparing modifications as needed.

Some sites would require more intensive easement acquisition services to be conducted under contract or by YHC staff/legal services.

5%	percent of per transaction cost for newly protected lands required to enroll Sites 1 - 19 pre-permit reserve lands
$1,500	per transaction to enroll Sites 1 - 19 pre-permit reserve lands
15%	percent of per transaction cost for newly protected lands required to enroll all other pre-permit reserve lands
$4,500	per transaction to enroll all other pre-permit reserve lands
50%	percent of the pre-permit reserve sites from Sites 20 - 42 requiring easement acquisition/modification services
$23,000	cost per site for easement acquisition services, based on CNLM contract for easement acquisition services (if have to contract out; otherwise do this in house with Plan Administration staff) includes identifying appraisers, review of title report, drafting easement and management plan, conducting PAR analysis

Pre-acquisition assessment and evaluation (contractor cost)

Assumptions/Notes:

Covers costs to verify biological resources in the field to determine the degree to which they are suitable for achieving Yolo HCP/NCCP biological goals and objectives.

Includes evaluation of infrastructure and other site conditions.

The work will be completed by qualified biologists and includes field work, data collection, and report writing.

Land cover type surveys include surveys for federal and state jurisdictional waters, and submitting of a report to the USACE and obtaining a verification.

Covered wildlife surveys include surveys at a protocol level.

160	assumed average parcel size
24	hours per parcel for land cover type and habitat assessment surveys
24	hours per parcel for covered species surveys
1.25	due diligence premium to account for land surveyed but not acquired.
0.38	average hours per acre, with due diligence premium
$63	average cost per acre, with due diligence premium
$10,133	average cost per 160 acre parcel, with due diligence premium
$169	hourly cost for biologist

Table 10

Restore Natural Communities

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

Cost to restore natural communities (acquisition, restoration, management & monitoring)	**Permit Period (years)**											
	Start up	**1 - 5**	**6 - 10**	**11 - 15**	**16 - 20**	**21 - 25**	**26 - 30**	**31 - 35**	**36 - 40**	**41 - 45**	**46 - 50**	**50 Year Total**
YHC oversight and management (staff & overhead)	$0	$50,094	$100,188	$100,188	$100,188	$50,094	$50,094	$50,094	$50,094	$0	$0	**$551,034**
Acquire fee title interest for restoration	$0	$848,316	$848,316	$848,316	$848,316	$848,316	$848,316	$848,316	$848,316	$0	$0	**$6,786,528**
Pre acquisition surveys	$0	$7,568	$7,568	$7,568	$7,568	$7,568	$7,568	$7,568	$7,568	$0	$0	**$60,542**
Transaction cost	$0	$39,375	$39,375	$39,375	$39,375	$39,375	$39,375	$39,375	$39,375	$0	$0	**$315,000**
Site improvements	$0	$87,743	$87,743	$87,743	$87,743	$87,743	$87,743	$87,743	$87,743	$0	$0	**$701,943**
Cost to restore fresh emergent wetlands	$0	$457,931	$457,931	$457,931	$457,931	$457,931	$457,931	$457,931	$457,931	$0	$0	**$3,663,451**
Cost to restore valley foothill riparian	$0	$3,822,657	$3,822,657	$3,822,657	$3,822,657	$3,822,657	$3,822,657	$3,822,657	$3,822,657	$0	$0	**$30,581,259**
Cost to restore lacustrine and riverine	$0	$904,669	$904,669	$904,669	$904,669	$904,669	$904,669	$904,669	$904,669	$0	$0	**$7,237,354**
Environmental compliance for restoration projects	$0	$155,558	$155,558	$155,558	$155,558	$155,558	$155,558	$155,558	$155,558	$0	$0	**$1,244,462**
Water management for restored GGS habitat	$0	$14,353	$28,706	$43,059	$57,413	$71,766	$86,119	$100,472	$114,825	$114,825	$114,825	**$746,363**
Other management cost on fee title restored lands	$0	$25,734	$51,469	$77,203	$102,938	$128,672	$154,407	$180,141	$205,876	$205,876	$205,876	**$1,338,191**
Remedial measures	$0	$4,009	$8,018	$12,026	$16,035	$20,044	$24,053	$28,061	$32,070	$32,070	$32,070	**$208,455**
Species monitoring - restored lands	$0	$402,598	$505,091	$596,196	$664,525	$755,630	$812,571	$915,064	$1,006,169	$671,900	$763,005	**$7,092,750**
Total	**$0**	**$6,820,606**	**$7,017,289**	**$7,152,491**	**$7,264,916**	**$7,350,023**	**$7,451,060**	**$7,597,650**	**$7,732,851**	**$1,024,671**	**$1,115,776**	**$60,527,332**

11.2%

YHC oversight and management

33%	percent of Restoration/Reserve Project Manager time allocated to Restoration, until restoration projects are complete in year 40.

Acquisition cost factors by natural community

Per acre, fee title (2014)

$8,000	cultivated agriculture: non-rice
$4,000	annual grassland, assuming small parcels 50 - 160 acres that have homesite value

Assumptions/Notes:

These cost factors are solely for the purposes of developing planning level estimates of the reserve assembly component of implementation costs. Actual land costs vary signficantly around this average, depending on parcel-specific factors.
Actual costs will be determined by qualified appraisals of each potential acquisition site.
The mid-point of the range for Class I & II irrigated vegetable crop soils in ASFMRA 2014 is $12,000 per acre; the midpoint for Class II & III field crop soils is $6,000 per acre.
Weighting these two values by the percentage of Yolo County Crop land in irrigated vegetable crops vs. field crops (per the 2013 Yolo County Crop Report) results in a weighted average of $7,600 per acre which is rounded up to $8,000 per acre.
The use of a lower average value is justified based on the greater likelihood of finding willing sellers among those owning land of lower value soil types with more constraints on use or properties subject to flooding.

Transaction costs (appraisal, preliminary title report, legal description, boundary surveys, negotiating easement terms, Phase 1 site assessment, and site-specific management plan)

$30,000	per transaction for newly protected lands
$1,500	per transaction cost for site-specific management plans

Pre-acquisition survey and evaluation (contractor cost)

Assumptions/Notes:

Covers costs to verify biological resources in the field to determine the degree to which they are suitable for achieving Yolo HCP/NCCP biological goals and objectives.
Includes evaluation of infrastructure and other site conditions.
The work will be completed by Qualified Biologists and includes field work, data collection, and report writing.
Land cover type surveys include surveys for federal and state jurisdictional waters, and submitting of a report to the USACE and obtaining a verification.
Covered wildlife surveys include surveys at a protocol level.

160	assumed average parcel size
24	hours per parcel for land cover type and habitat assessment surveys
24	hours per parcel for covered species surveys
1.25	due diligence premium to account for land surveyed but not acquired.
0.38	average hours per acre, with due diligence premium
$63	average cost per acre, with due diligence premium
$10,133	average cost per 160 acre parcel, with due diligence premium
$169	hourly cost for biologist

Table 10

Restore Natural Communities

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
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Site improvements on land acquired in fee title for restoration

Assumptions/Notes:

Covers building demolition and stabilization, road removal/repair, gate repair/replacement, signage, fencing, and other security measures.

Includes labor and necessary materials.

Fencing

10,560	parcel perimeter, quarter section of 160 acres (0.5 miles wide by 0.5 miles long)
100%	percent of existing fence that needs repair/replacement at acquisition
$8.00	cost per linear foot for fence repair/replacement
$528	cost of fence repair/replacement per parcel acre

Components of other site improvement cost, per parcel (assume 160 acre average)

$1,500	demolition/stabilization of old facilities
$25,000	road removal/repair
$4,000	gate repair replacement
$1,000	signage
$1,500	other security
$206	cost of other site improvements per parcel acre

Cost per acre for restoration by natural community type

	Fresh Emergent Wetland (wetlands only)	Valley Foothill Riparian	Lacustrine & Riverine
Pre-construction restoration planning surveys	$405	$405	$225
Bid assistance	$180	$160	$120
Plans, specifications, and engineering	$4,500	$4,000	$3,000
Construction activity	**$18,000**	**$16,000**	**$12,000**
Construction biological monitoring	$360	$360	$360
Construction oversight	$900	$800	$600
Post-construction restoration monitoring & maintenance	$13,500	$24,000	$9,000
Total per acre, before contingency	**$37,846**	**$45,726**	**$25,305**
Restoration contingency	$3,785	$4,573	$2,531
Total per acre, including contingency	**$41,630**	**$50,298**	**$27,836**

Assumptions/Notes:

Pre-construction planning surveys include, as needed: site selection, wetland delineation, detailed habitat mapping and species surveys, soil or geomorphological sampling and mapping. Planning surveys for restoration sites are more intensive and site-specific than planning surveys under "Reserve Management".

Plan, specification, and engineering work, bid assistance, and restoration oversight will be conducted in the 5-year period in which restoration takes place. The estimate of restoration costs is a planning tool to assess the level of effort required to perform the work. Actual restoration costs will vary from the above estimates because of competitive bidding, negotiations with the client, or fluctuations in market prices.

Construction activity cost for fresh emergent wetland is the cost per acre for project sites that include wetland restoration as well as associated uplands.

Construction monitoring includes, as needed: on-site biologist conducting training for construction personnel regarding avoidance and minimization measures, verification during construction of implementation of avoidance/minimization measures, identification and translocation of covered species.

Construction oversight includes managing the overall construction of the restoration project to ensure that plans are constructed as designed.

Post-construction restoration monitoring and maintenance is a 5 - 10 year period of staff monitoring and contractor remediation following construction, to ensure successful implementation. Work includes including plant replacement, irrigation maintenance, weed control, erosion control, and repair of any substandard work.

Restoration planning surveys	Hours per acre	**75**	assumed average parcel size
for fresh emergent wetland	**2.40**	**180**	total hours per parcel for field work and reporting
for valley foothill riparian	**2.40**	**180**	total hours per parcel for field work and reporting
for lacustrine/riverine	**1.33**	**100**	total hours per parcel for field work and reporting
Construction monitoring for sensitive species and habitats, all land covers	**2.13**	**160**	total hours per parcel for construction monitoring, one month of oversight, 40 hours per week
Bid assistance all land covers	**1.0%**	of construction cost, all land covers	
Plans, specifications, and engineering, all land covers	**25%**	of construction cost, all land covers	
Construction oversight, all land covers	**5%**	of construction cost, all land covers	
Restoration contingency	**10%**		
Post-construction restoration monitoring & maintenance cost as percent of total construction costs			
All wetland land covers	**15%**		
Years of post-construction monitoring & maintenance following installation of restoration project			
Emergent wetland, riverine, and lacustrine	**5**	coincides with 5-year period in which restoration occurs	
Valley foothill riparian	**10**	coincides with 5-year period in which restoration occurs and 5 years thereafter	

Table 10

Restore Natural Communities

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

Environmental compliance for restoration projects

Assumptions/Notes:

Covers costs to comply with environmental laws and regulations such as the National Environmental Policy Act (NEPA), the California Environmental Quality Act (CEQA), Clean Water Act (CWA), and National Historic Preservation Act (NHPA), as well as California Department of Fish and Game Section 1602 Streambed Alteration permitting, and other permits and approvals such as County grading, road encroachment or other permitting requirements.

Not all projects would require the same level of effort; some projects would be covered by general permits.

Costs include all permit and application fees.

3.0%	percent of restoration cost budgeted for various environmental compliance reporting and permit and application fees

Natural community management and enhancement - 6.4.3.5.3 and 6.4.3.5.5

Newly Protected Lands:

Assumptions/Notes:

Active reserve land management is limited to the acres acquired in fee title for the purpose of habitat restoration.

Active reserve land management activities include: signage installation and repair, trash/debris removal, and vegetation and pest management, including invasive species control.

Labor is contracted and vehicles and equipment are rented. Supervision provided by YHC staff.

Costs to manage water in restored GGS habitat estimated as a separate line item.

$51	annualized cost per acre to manage valley foothill riparian acres, including costs for labor, supplies, equipment and vehicles
$29	annualized cost per acre to manage fresh emergent wetland, lacustrine and riverine acres, including costs for labor, supplies, equipment and vehicles
$124	annualized cost per acre to manage water supply in aquatic habitat for giant garter snake. Includes water supply cost, electricity, well and pump maintenance/repair, berm and flashboard maintenance and repair.

Sources: On-going task and cost analyses prepared in 2005 and 2009 for mitigation banks in Yolo County, updated to 2014 dollars.

185	acres of restored aquatic habitat flooded for GGS, complete reserve system (**Table 5 -7)**

Remedial measures to address changed circumstances (7.7.1)

Assumptions/Notes:

Covers costs associated with responses to adaptive management findings as well as costs for restoration or maintenance of reserve areas in response to other changed circumstances such as new species listings, climate change, wildfire, nonnative invasive species or disease, flooding, drought, or earthquakes.

Remedial measures for restored lands are included as a restoration cost.

10%	percent of all management costs on restored lands budgeted for remedial measures on the reserve lands

Table 10

Restore Natural Communities

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

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Species biological monitoring on restored lands - 6.5.3.2

2.0	survey crew: number of qualified biologist contractors per survey visit, all surveys
$169	qualified biologist hourly rate, including meals and travel for 8 hour day

			Baseline Surveys					Status and Trends Monitoring				ANNUAL TOTALS	
Species	Restored Acres Monitored for Species	Acres Restored every Five Years (Per "Input Schedule")	Survey Days for Survey Crew (Annually, per parcel)	Data Summary/ Reporting for Survey Crew (Annually, per parcel)	Number of Years to Establish Baseline, per parcel	Person Hours Needed to Establish Baseline, per parcel	Total Person Hours Needed to Establish the Baseline over the Permit Term	Survey Recurrence After Baseline (Years)	Total Person Hours for Every Recurring Survey	Total Surveys Needed for the Permit Term	Total Person Hours for Trends Surveys	Average Number of Monitoring Days per Year	Total person hours per year (8 hour days)
Valley elderberry longhorn beetle	531	66	5	2	5	560	4,480	5	112	45	5,040	16	190
California tiger salamander													
Upland dispersal	-	-				-	-		-	-	-	-	-
Aquatic breeding	36	5	2	1	5	240	1,920	3	48	31	1,488	6	68
Western pond turtle													
Aquatic	369	46	3	1	5	320	2,560	7	64	67	4,288	11	137
Upland dispersal	-	-				-	-		-	-	-	-	-
Giant garter snake													
Rice	-	-				-	-		-	-	-	-	-
Aquatic	109	14	3	1	5	320	2,560	5	64	45	2,880	9	109
Freshwater emergent wetland	76	10	3	1	5	320	2,560	5	64	45	2,880	9	109
Active upland	-	-				-	-		-	-	-	-	-
Overwintering upland	-	-				-	-		-	-	-	-	-
Swainson's hawk													
Nesting	598	75	3	1	3	192	1,536	5	64	45	2,880	7	88
Foraging (covered in cultivated lands monitoring cost)	-	-				-	-		-	-	-	-	-
White-tailed kite													
Nesting	598	75				-	-		-	-	-	-	-
Foraging (covered in cultivated lands monitoring cost)	-	-				-	-		-	-	-	-	-
Western yellow-billed cuckoo	100	13	2	2	3	192	1,536	3	64	31	1,984	6	70
Western burrowing owl	-	-				-	-		-	-	-	-	-
Least Bell's vireo	80	10				-	-		-	-	-	-	-
Bank swallow	-	-				-	-		-	-	-	-	-
Tricolored blackbird													
Nesting	86	11	2	1	5	240	1,920	3	48	31	1,488	6	68
Foraging (covered in cultivated lands monitoring cost)	-	-				-	-		-	-	-	-	-

total person hours for baseline surveys, per period in which restoration occurs	**2,384**	total person hours for recurring surveys, per permit term	**22,928**
number of periods for baseline surveys	**8**	total contractor cost for recurring surveys, per permit term	**$3,871,966**

Table 11

Manage and Enhance the Reserve System

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

Cost for management planning and on-going management and enhancement of the reserve system	**Permit Period (years)**											
	Start up	**1 - 5**	**6 - 10**	**11 - 15**	**16 - 20**	**21 - 25**	**26 - 30**	**31 - 35**	**36 - 40**	**41 - 45**	**46 - 50**	**50 Year Total**
YHC oversight and management (staff & overhead)	$0	$285,706	$387,412	$387,412	$387,412	$285,706	$285,706	$285,706	$285,706	$289,800	$289,800	**$3,170,366**
Reserve unit management plans	$0	$300,000	$305,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	$140,000	**$1,725,000**
Invasive species control program	$0	$100,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$100,000**
Management cost on pre-permit lands/existing endowments	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Management cost on other pre-permit reserve lands	$0	$52,142	$104,284	$156,427	$208,569	$260,711	$312,853	$364,996	$417,138	$469,280	$469,280	**$2,815,680**
Management cost for alkali prairie reserve lands	$0	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	**$1,000,000**
Cost to establish hedgerows on newly protected cultivated lands	$0	$135,641	$135,641	$135,641	$135,641	$135,641	$135,641	$135,641	$135,641	$135,641	$0	**$1,220,770**
Cost manage hedgerows on newly protected cultivated lands	$0	$10,578	$21,156	$31,734	$42,312	$52,890	$63,468	$74,047	$84,625	$95,203	$95,203	**$571,216**
Cost to establish hedgerows on pre-permit reserve cultivated lands	$0	$34,463	$34,463	$34,463	$34,463	$34,463	$34,463	$34,463	$34,463	$34,463	$0	**$310,165**
Cost manage hedgerows on pre-permit reserve cultivated lands	$0	$2,688	$5,375	$8,063	$10,750	$13,438	$16,126	$18,813	$21,501	$24,188	$24,188	**$145,131**
Planting nest trees on newly protected cultivated lands	$0	$68,889	$68,889	$68,889	$68,889	$68,889	$68,889	$68,889	$68,889	$68,889	$0	**$619,999**
Planting nest trees on pre-permit reserve cultivated lands	$0	$17,503	$17,503	$17,503	$17,503	$17,503	$17,503	$17,503	$17,503	$17,503	$0	**$157,525**
Western burrowing owl enhancements on grassland preserves	$0	$7,093	$7,093	$8,080	$8,080	$9,067	$9,067	$10,053	$10,053	$11,040	$3,947	**$83,573**
Remedial measures	$0	$111,470	$118,682	$108,821	$115,362	$111,831	$118,372	$125,011	$131,552	$138,601	$112,242	**$1,191,942**
Remedial measures to address regional loss of SWHA foraging habitat	$0	$110,000	$110,000	$110,000	$110,000	$110,000	$110,000	$110,000	$110,000	$110,000	$110,000	**$1,100,000**
Total	**$0**	**$1,336,173**	**$1,415,498**	**$1,307,032**	**$1,378,981**	**$1,340,138**	**$1,412,087**	**$1,485,121**	**$1,557,070**	**$1,634,607**	**$1,344,660**	**$14,211,367**

YHC oversight and management

Assumptions/Notes:

Includes costs associated with the adaptive management decision-making process.

25%	percent of Senior Environmental Scientist time allocated to Reserve Management
67%	percent of Restoration/Reserve Project Manager time allocated to Reserve Management until restoration projects are complete in year 40
100%	percent of Restoration/Reserve Project Manager time allocated to Reserve Management after year 40

Reserve management plans - 6.4.3.3 (prepared/updated by contractors)

Assumptions/Notes:

One for each of 7 reserve management units. Initial cost and periodic updates during permit term. Includes costs for a management plan that incorporates existing protected lands in reserve management units.
Management plans will address actions under 5.4.3.4.2 Management and Enhancement of Connectivity, identifying measures, strategies, and implementing responsibilities.
Management plans will cover newly protected lands and pre-permit reserve lands enrolled in the reserve.
Site-specific management plans will be prepared based on guidelines in reserve unit management plans. The costs are included in the reserve assembly cost category.
Baseline ecological surveys are covered as a monitoring cost.

$75,000	initial cost for reserve management plan, per reserve management unit. Four completed in first 5-year period. Three completed in second 5-year period.
$20,000	cost per reserve management unit to update the management plan every 5 years

Invasive species control program - 6.4.3.4.1 (prepared by contractors/updated by staff)

$100,000	initial cost incurred during first 5-year period. Subsequently updated by staff; included as a Plan Administration cost.

Pollinator strategy - 6.4.3.4.3

This is largely a coordination and communication effort that will be the responsibility of Plan Administration staff.

Table 11

Manage and Enhance the Reserve System

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
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Natural community management and enhancement - 6.4.3.5

Newly protected lands:

Assumptions/Notes:

Active reserve land management is limited to the acres acquired in fee title for the purpose of habitat restoration.
Active reserve land management activities include: fencing, gate, and signage installation and repair; trash/debris removal; and vegetation and pest management, including invasive species control.
Labor is contracted and vehicles and equipment are rented. Supervision provided by YHC staff.
Costs to manage water in restored GGS habitat estimated as a separate line item.
All other newly protected lands in the reserve are assumed acquired by means of conservation easements. The landowner retains responsibility for management, according to the terms of the easement.
Management and enhancement activities would not incur significant environmental compliance costs. Any environmental compliance costs for these management activities are covered in Plan Administration.

Pre-permit reserve lands:

Assumptions/Notes:

Many of the pre-permit reserve acres that will be enrolled have existing endowments and/or agricultural income that cover reserve management costs.
Management and enhancement activities would not incur significant environmental compliance costs. Any environmental complicance costs for these management activities are covered in Plan Administration.
Other pre-permit reserve lands do not have existing endowments or income to support these activities and enrollment will be contingent on upgraded and standardized management to provide a cohesive reserve system.

4,246	acres in pre-permit reserve lands that have endowments or agricultural income (Sites 1 - 19)
$0	annualized cost to YHC to manage these pre-permit reserve lands
3,754	acres in pre-permit reserve lands that are enrolled that do not have existing endowments or agricultural income or may require enhanced HCP/NCCP management
$25	annualized cost per acre to YHC to manage these pre-permit reserve lands (NOMINAL PLACEHOLDER ESTIMATE)

Alkali prairie - 6.4.3.5.4:

Assumptions/Notes:

The YHC will manage alkali prairie habitat and associated uplands for covered and other native species by improving hydrologic conditions and reducing adverse effects of nonnative plants and human activities.
Note that cost factor includes monitoring as well as reserve management activities.

$200	cost per acre for management/monitoring activities on alkali prairie and associated uplands; based on Alkali Grasslands Preserve Management Plan, 12/30/2014

Enhance Swainson's hawk foraging and nesting habitat on cultivated lands reserve lands - 6.4.3.6.1

Assumptions/Notes:

Cultivated reserve lands will be enhanced by providing uncultivated habitat strips adjacent to cultivated fields.
There will be some opportunity cost as a result of the loss of productive land, and there might be some longer-term higher costs associated with on-going management practices, compared to a situation without hedgerows.
These longer-term effects are likely to be relatively small, however. Offsetting economic benefits may include enhanced weed control, soil erosion control, and increased beneficial insect activity.
Hedgerows would be established at parcel edges along existing roads, canals, or drainage ditches.

This cost estimate is for a hedgerow native grasses, forbs, shrubs and trees for purposes of demarcation as well as nesting habitat. A less intensive hedgerow of largely native perennial grassland with a limted number of trees would be less costly.
The cost estimates include site analysis and design, site preparation, installation, and three years of maintenance to ensure establishment.

160	average easement parcel size (quarter section)
2,640	hedgerow length, assuming along one perimeter edge
20	hedgerow width
1.21	hedgerow area in acres, per parcel
$11,200	cost per hedgerow acre to plan, prepare, and install a hedgerow and maintain the hedgerow for three years.
$13,600	hedgerow cost per easement parcel
$175	cost per hedgerow acre for perpetual maintenance
$212	cost of perpetual maintenance per easement parcel
14,362	newly protected non-rice cultivated lands in the reserve system
3,649	acres of pre-permit reserve lands that are non-rice cultivated lands

Table 11

Manage and Enhance the Reserve System

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
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Plant Swainson's hawk nest trees - 6.4.3.6.1

Assumptions/Notes:

YHC will establish native trees within the cultivated lands reserve system at a density of at least 1 tree per 10 acres (protected existing trees count towards the density requirement).
Associated surveying and monitoring costs are covered in the Monitoring and Research cost category.

14,362	newly protected non-rice cultivated lands in the reserve system
3,649	acres of pre-permit reserve lands that are non-rice cultivated lands
18,011	total non-rice cultivated lands in the reserve system
1,801	total nest trees at 1 per 10 acres
(34)	credit for existing protected nest trees (**6.3.4.6.3)**
1,767	net new nest trees to be established in the cultivated lands reserve system
50%	percent of net new nest trees included in hedgerow cost
705	net new nest trees on newly protected lands (based on percent of total cultivated reserve acres that are newly protected)
179	net new nest trees on pre-permit reserve lands (based on percent of total cultivated reserve acres that are pre-permit reserve sites)
$800	cost per tree including planting, fertilizer, irrigation, and three years of maintenance to establish
10%	replacement allowance to ensure success of tree planting

Enhancements for the western burrowing owl - 6.4.3.5.2

Assumptions/Notes:

YHC will enhance grassland preserves to encourage occupancy by burrowing owls. Enhancements include artificial nest boxes and debris piles

3,000	acres of grassland habitat
2	nest boxes per 100 acres of grassland habitat
60	total number of nest boxes installed
$314	cost per nest box, initial installation, including materials, labor, and equipment
$148	cost per nest box, replacement every 10 years, including materials, labor and equipment
1	debris piles per 200 acres of grassland habitat
15	total number of debris piles
$3,000	cost per debris pile, materials (labor and equipment included in nest box installation cost). No replacement required.

Remedial measures to address changed circumstances (7.7.1)

Assumptions/Notes:

Covers costs associated with responses to adaptive management findings as well as costs for restoration or maintenance of reserve areas in response to other changed circumstances such as new species listings, climate change, wildfire, nonnative invasive species or disease, flooding, drought, or earthquakes.
Remedial measures for restored lands are included as a restoration cost.

10%	percent of all other reserve management costs budgeted for remedial measures on these reserve lands

Remedial measures for regional loss of Swainson's hawk habitat

Assumptions/Notes:

Covers costs to implement a menu of activities to address the potential regional loss of Swainson's hawk foraging habitat below identified thresholds. Could fund additional enhancements, land acquisition, or incentives to discourage crop conversions.

$110,000	anticipated cost per 5-year period, including plan preparation at about $100,000

Table 12

Species and Natural Community Monitoring, Research, and Scientific Review

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

Cost for biological monitoring and adaptive management studies	**Permit Period (years)**											
	Start up	**1 - 5**	**6 - 10**	**11 - 15**	**16 - 20**	**21 - 25**	**26 - 30**	**31 - 35**	**36 - 40**	**41 - 45**	**46 - 50**	**50 Year Total**
Natural community monitoring - newly protected lands	$0	$66,875	$107,911	$148,948	$148,948	$189,984	$189,984	$231,021	$272,058	$272,058	$246,220	**$1,874,006**
Natural community monitoring - pre-permit reserve lands	$0	$44,583	$70,928	$97,272	$97,272	$123,617	$123,617	$149,961	$176,306	$176,306	$158,067	**$1,217,927**
Species monitoring - newly protected lands	$0	$340,452	$447,698	$554,943	$623,191	$730,437	$788,934	$896,180	$1,003,426	$1,071,673	$838,467	**$7,295,400**
Species monitoring - pre-permit reserve lands	$0	$88,153	$119,304	$150,455	$168,255	$199,406	$217,207	$248,358	$279,509	$297,309	$240,307	**$2,008,262**
YHC oversight and management (staff & overhead)	$0	$368,000	$368,000	$368,000	$368,000	$368,000	$368,000	$368,000	$368,000	$276,000	$276,000	**$3,496,000**
Research	$0	$150,000	$100,000	$100,000	$50,000	$50,000	$0	$0	$0	$0	$0	**$450,000**
Science advisors	$0	$66,000	$66,000	$66,000	$66,000	$66,000	$66,000	$66,000	$66,000	$33,000	$33,000	**$594,000**
Total	**$0**	**$1,124,062**	**$1,279,840**	**$1,485,618**	**$1,521,666**	**$1,727,444**	**$1,753,742**	**$1,959,520**	**$2,165,297**	**$2,126,345**	**$1,792,061**	**$16,935,594**

Assumptions/Notes:

Costs to conduct biological monitoring to evaluate the effectiveness of the conservation strategy over time and to conduct targeted studies to inform adaptive management efforts.
YHC staff will conduct long-term landscape level monitoring, including updating GIS/aerials and analyzing status and trends at the landscape level at least every 5 years.
YHC staff will plan, coordinate, and report on the monitoring categories described below.
Contractors will conduct the field monitoring and data analysis.
Monitoring tasks consists of baseline surveys, data analysis and reporting within 3 years of reserve site acquisition, followed by periodic status and trends surveys, data analysis, and reporting for the duration of the permit term.
Species monitoring on restored lands is included as a Habitat Restoration cost.
Compliance monitoring to track the status of HCP/NCCP implementation is covered as a Plan Administration cost.
Pre-construction surveys are assumed to occur prior to construction of covered activites on the reserve system, and costs are estimated as a component of those restoration and management costs.
Construction monitoring is assumed to occur periodically during construction of covered activities and conservation measures, and costs are estimated as a component of those restoration and management costs.

50%	percent of Senior Environmental Scientist time allocated to Monitoring & Research
1.5	survey crew: number of qualified biologist contractors per survey visit, all surveys
$169	qualified biologist hourly rate, including meals and travel for 8 hour day

Natural community biological monitoring on newly protected lands - 6.5.3.2

			Baseline Surveys					**Status and Trends Surveys**				**ANNUAL TOTALS**	
Natural Communities	Newly Protected Lands by Natural Community	Acres Acquired every Five Years (Per "Input Schedule")	Survey Days for Survey Crew (Annually, per parcel)	Data Summary/ Reporting for Survey Crew (Annually, per parcel)	Number of Years to Establish Baseline, per parcel	Person Hours Needed to Establish Baseline, per parcel	Total Person Hours Needed to Establish the Baseline over the Permit Term	Survey Recurrence After Baseline (Years)	Total Person Hours for Every Recurring Survey	Total Surveys Needed for the Permit Term	Total Person Hours for Trends Surveys	Average Number of Monitoring Days per Year	Total person hours per year (8 hour days)
Cultivated lands: wetland (rice)	2,800	311	**0.50**	**0.25**	**2.00**	18	162	**3**	9	31	279	1	9
Cultivated lands: non-wetland	14,362	1,596	**2.00**	**1.50**	**1.00**	42	378	**3**	42	31	1,302	3	34
Grassland	4,364	485	**2.00**	**1.00**	**3.00**	108	972	**3**	36	31	1,116	3	42
Blue oak woodland	10	1	**0.50**	**0.50**	**1.00**	12	108	**3**	12	31	372	1	10
Valley oak woodland	20	2	**0.50**	**0.50**	**1.00**	12	108	**3**	12	31	372	1	10
Alkali prairie (covered in management cost factor)	100	11	-	-	-	-	-	-	-	-	-	-	-
Fresh emergent wetland	500	56	**2.00**	**1.00**	**2.00**	72	648	**3**	36	31	1,116	3	35
Valley foothill riparian	1,600	178	**3.00**	**2.00**	**1.00**	60	540	**3**	60	31	1,860	4	48
Lacustrine and riverine	600	67	**1.50**	**1.50**	**2.00**	72	648	**3**	36	31	1,116	3	35
total person hours for baseline surveys, per period in which acquisition occurs						**396**		total person hours for trends surveys, permit term			**7,533**		
number of periods for baseline surveys						**9**		total contractor cost for trends surveys, permit term			**$1,272,135**		

Table 12

Species and Natural Community Monitoring, Research, and Scientific Review

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
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Natural community biological monitoring on pre-permit reserve lands - 6.5.3.2

Assumptions/Notes:

Many of the pre-permit reserve acres that will be enrolled have existing endowments and/or agricultural income that cover natural community and species biological monitoring costs.

Other pre-permit reserve lands do not have existing endowments or income to support these activities and enrollment will be contingent on upgraded and standardized monitoring to provide a cohesive reserve system.

4,246	acres in pre-permit reserve lands that have endowments or agricultural income (Sites 1 - 19)
$0	annualized cost to YHC to monitor these pre-permit reserve lands
3,754	acres in pre-permit reserve lands that are enrolled that do not have existing endowments or agricultural income or that may require enhanced NCP/NCCP monitoring

Natural community biological monitoring on pre-permit reserve lands without endowments or income

			Baseline Surveys					Status and Trends Surveys				ANNUAL TOTALS	
Natural Communities	Pre-permit Reserve Lands Sites 20 - 42 by Natural Community	Acres Acquired every Five Years (Per "Input Schedule")	Survey Days for Survey Crew (Annually, per parcel)	Data Summary/ Reporting for Survey Crew (Annually, per parcel)	Number of Years to Establish Baseline, per parcel	Person Hours Needed to Establish Baseline, per parcel	Total Person Hours Needed to Establish the Baseline over the Permit Term	Survey Recurrence After Baseline (Years)	Total Person Hours for Every Recurring Survey	Total Surveys Needed for the Permit Term	Total Person Hours for Trends Surveys	Average Number of Monitoring Days per Year	Total person hours per year (8 hour days)
Cultivated lands: wetland (rice)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cultivated lands: non-wetland	2,629	292	1.00	1.50	1.00	30	270	3	30	31	930	2	24
Grassland	254	28	1.00	1.00	3.00	72	648	3	24	31	744	2	28
Alkali prairie (covered by existing endowment)	55	6	-	-	-	-	-	-	-	-	-	-	-
Vernal pool complex	27	3	1.00	1.00	2.00	48	432	3	24	31	744	2	24
Fresh emergent wetland	-	-	-	-	-	-	-	-	-	-	-	-	-
Valley foothill riparian	153	17	1.50	2.00	1.00	42	378	3	42	31	1,302	3	34
Lacustrine and riverine	41	5	1.50	1.50	2.00	72	648	3	36	31	1,116	3	35
			total person hours for baseline surveys, per period in which acquisition occurs			**264**		total person hours for trends surveys, permit term			**4,836**		
			number of periods for baseline surveys			9		total contractor cost for trends surveys, permit term			**$816,680**		

Species Biological Monitoring on Newly Protected Lands - 6.5.3.2

			Baseline Surveys					Status and Trends Monitoring				ANNUAL TOTALS	
Species	Newly Protected Lands Monitored for Species	Acres Acquired every Five Years (Per "Input Schedule")	Survey Days for Survey Crew (Annually, per parcel)	Data Summary/ Reporting for Survey Crew (Annually, per parcel)	Number of Years to Establish Baseline, per parcel	Person Hours Needed to Establish Baseline, per parcel	Total Person Hours Needed to Establish the Baseline over the Permit Term	Survey Recurrence After Baseline (Years)	Total Person Hours for Every Recurring Survey	Total Surveys Needed for the Permit Term	Total Person Hours for Trends Surveys	Average Number of Monitoring Days per Year	Total person hours per year (8 hour days)
Valley elderberry longhorn beetle	1,600	178	3.0	2.0	3.0	180	1,620	5	60	45	2,700	7	86
California tiger salamander													
Upland dispersal	2,000	222	-	-	-	-	-	-	-	-	-	-	-
Aquatic Breeding	36	4	3.0	2.0	3.0	180	1,620	3	60	31	1,860	6	70
Western pond turtle													
Aquatic	2,400	267	8.0	2.0	1.0	120	1,080	3	120	31	3,720	8	96
Upland dispersal	-	-	-	-	-	-	-	-	-	-	-	-	-
Giant garter snake													
Rice	2,800	311	4.0	3.0	5.0	420	3,780	5	84	45	3,780	13	151
Aquatic	420	47	2.0	1.0	5.0	180	1,620	5	36	45	1,620	5	65
Freshwater emergent wetland	500	56	2.0	1.0	5.0	180	1,620	5	36	45	1,620	5	65
Active upland	1,160	129	-	-	-	-	-	-	-	-	-	-	-
Overwintering upland	2,315	257	-	-	-	-	-	-	-	-	-	-	-
Swainson's hawk													
Nesting	1,600	178	3.0	1.0	3.0	144	1,296	5	48	45	2,160	6	69
Foraging (covered in cultivated lands monitoring cost)	18,792	2,088	-	-	-	-	-	-	-	-	-	-	-
White-tailed kite													
Nesting (covered in Swainson's hawk nesting cost)	1,600	178	-	-	-	-	-	-	-	-	-	-	-
Foraging (covered in cultivated lands monitoring cost)	18,797	2,089	-	-	-	-	-	-	-	-	-	-	-
Western yellow-billed cuckoo	500	56	3.0	2.0	3.0	180	1,620	3	60	31	1,860	6	70
Western burrowing owl	5,500	611	3.0	2.0	3.0	180	1,620	5	60	45	2,700	7	86
Least Bell's vireo	600	67	-			-	-		-	-	-	-	-
Bank swallow	50	6	2.0	2.0	3.0	144	1,296	4	48	40	1,920	5	64
Tricolored blackbird													
Nesting	200	22	2.0	1.0	3.0	108	972	3	36	31	1,116	3	42
Foraging (covered in cultivated lands monitoring cost)	16,610	1,846	-	-	-	-	-	-	-	-	-	-	-
Palmate-bracted bird's beak (covered in mngmt cost factor)	34		-	-	-	-		-	-				
			Total person hours for baseline surveys, per period in which acquisition occurs			**2,016**		Total person hours for recurring surveys, per permit term			**25,056**		
			number of periods for baseline surveys			9		Total contractor cost for recurring surveys, per permit term			**$4,231,332**		

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Species biological monitoring on pre-permit reserve lands - 6.5.3.2

Assumptions/Notes:

Many of the pre-permit reserve acres that will be enrolled have existing endowments and/or agricultural income that cover natural community and species biological monitoring costs.

Other pre-permit reserve lands do not have existing endowments or income to support these activities and enrollment will be contingent on upgraded and standardized monitoring to provide a cohesive reserve system.

Species biological monitoring on pre-permit reserve lands without endowments or income

			Baseline Surveys					Status and Trends Monitoring				ANNUAL TOTALS	
Species	Pre-permit Reserve Lands Monitored for Species	Acres Enrolled every Five Years (Per "Input Schedule")	Survey Days for Survey Crew (Annually, per parcel)	Data Summary/ Reporting for Survey Crew (Annually, per parcel)	Number of Years to Establish Baseline, per parcel	Person Hours Needed to Establish Baseline, per parcel	Total Person Hours Needed to Establish the Baseline over the Permit Term	Survey Recurrence After Baseline (Years)	Total Person Hours for Every Recurring Survey	Total Surveys Needed for the Permit Term	Total Person Hours for Trends Surveys	Average Number of Monitoring Days per Year	Total person hours per year (8 hour days)
Valley elderberry longhorn beetle	105	12	1.0	1	3	72	648	5	24	45	1,080	3	35
California tiger salamander													
Upland dispersal	222	25				-	-	-	-	-	-	-	-
Aquatic Breeding	35	4	1.5	1	3	90	810	3	30	31	930	3	35
Western pond turtle													
Aquatic	42	5	2.0	1	1	36	324	3	36	31	1,116	2	29
Upland dispersal	-	-	-	-	-	-	-	-	-	-	-	-	-
Giant garter snake													
Rice	-	-	-	-	-	-	-	-	-	-	-	-	-
Aquatic	18	2	0.5	1	5	90	810	5	18	45	810	3	32
Freshwater emergent wetland	-	-		-	-	-	-	-	-	-	-	-	-
Active upland	18	2	-	-	-	-	-	-	-	-	-	-	-
Overwintering upland	39	4	-	-	-	-	-	-	-	-	-	-	-
Swainson's hawk													
Nesting	184	20	1.0	1.0	3.0	72	648	5	24	45	1,080	3	35
Foraging (covered in cultivated lands monitoring cost)	2,937	326	-	-	-	-	-	-	-	-	-	-	-
White-tailed kite													
Nesting (covered in Swainson's hawk nesting cost)	-	-	-	-	-	-	-	-	-	-	-	-	-
Foraging (covered in cultivated lands monitoring cost)	-	-	-	-	-	-	-	-	-	-	-	-	-
Western yellow-billed cuckoo	112	12	1.0	0.5	3.0	54	486	3	18	31	558	2	21
Western burrowing owl	730	81	2.0	1.0	3.0	108	972	5	36	45	1,620	4	52
Least Bell's vireo	83	9	-	-	-	-	-	-	-	-	-	-	-
Bank swallow	-	-	-	-	-	-	-	-	-	-	-	-	-
Tricolored blackbird													
Nesting	-	-	-	-	-	-	-	-	-	-	-	-	-
Foraging (covered in cultivated lands monitoring cost)	-	-	-	-	-	-	-	-	-	-	-	-	-
Palmate-bracted bird's beak (covered by existing endowment)	55		-	-	-			-					

Total person hours for baseline surveys, per period in which acquisition occurs	**522**	Total person hours for recurring surveys, per permit term	**7,194**
number of periods for baseline surveys	**9**	Total contractor cost for recurring surveys, per permit term	**$1,214,887**

4,246	acres in pre-permit reserve lands that have endowments or agricultural income (Sites 1 - 19)
$0	annualized cost to YHC to monitor these pre-permit reserve lands
3,754	acres in pre-permit reserve lands that are enrolled that do not have existing endowments or agricultural income or that may require enhanced NCP/NCCP monitoring

Table 12

Species and Natural Community Monitoring, Research, and Scientific Review

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

Research - 6.5.3.3 and 6.5.4.2

Assumptions/Notes:

The YHC will conduct and/or fund studies to identify preferred methods for monitoring, pilot projects to evaluate management techniques, and directed studies to resolve uncertainties to improve management for systems and species.
The YHC may use graduate students, university researchers, or other scientists to conduct these studies.
Research activities are complete by year 25.

$150,000	per period cost for research studies, years 1 - 5
$100,000	per period cost for research studies, years 6 - 15
$50,000	per period cost for research studies, years 16 - 25

Science and Technical Advisory Committee (STAC) - 6.5.5.3

Assumptions/Notes:

Science advisors are scientists and resource management experts providing the YHC with science-based expert opinion and recommendations, "white papers", peer review and feedback regarding scientific aspects of plan implementation.

Average annual cost for STAC, Years 1-40	**$13,200**
Average annual cost for STAC, Years 41-50	**$6,600**
Number of members	**5**
Travel cost compensation per member per meeting (non chair)	**$100**
Travel cost compensation per member per meeting (chair)	**$150**
Number of meetings per year Years 1 - 40	**24**
Number of meetings per year Years 41 - 50	**12**

Table 13

Plan Administration

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

Cost for administration and documentation of program compliance	**Permit Period (years)**											
	Start up	**1 - 5**	**6 - 10**	**11 - 15**	**16 - 20**	**21 - 25**	**26 - 30**	**31 - 35**	**36 - 40**	**41 - 45**	**46 - 50**	**50 Year Total**
Staff Salaries and Benefits	$0	$1,930,000	$1,930,000	$2,010,000	$2,010,000	$2,090,000	$1,970,000	$1,970,000	$1,890,000	$1,770,000	$1,650,000	**$19,220,000**
Services, Supplies	$0	$289,500	$289,500	$301,500	$301,500	$313,500	$295,500	$295,500	$283,500	$265,500	$247,500	**$2,883,000**
Legal Services	$0	$167,500	$167,500	$130,000	$130,000	$130,000	$130,000	$130,000	$130,000	$130,000	$130,000	**$1,375,000**
Financial Services	$0	$125,000	$125,000	$125,000	$125,000	$125,000	$125,000	$125,000	$125,000	$125,000	$125,000	**$1,250,000**
Advocacy/Public Outreach	$0	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	**$2,000,000**
GIS/Database updates	$0	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	**$150,000**
Insurance	$0	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	**$250,000**
Rent	$0	$72,000	$72,000	$72,000	$72,000	$72,000	$72,000	$72,000	$72,000	$72,000	$72,000	**$720,000**
Total	**$0**	**$2,824,000**	**$2,824,000**	**$2,878,500**	**$2,878,500**	**$2,970,500**	**$2,832,500**	**$2,832,500**	**$2,740,500**	**$2,602,500**	**$2,464,500**	**$27,848,000**

See 11_Staffing Plan and Costs for description of staff responsibilities and detail on cost assumptions

Legal services

1,000	hours per period years 1-10
750	hours per period years after year 10
$150	hourly rate, for in-house counsel
50	hours per period for outside special counsel
$350	hourly rate, for outside special counsel

Financial services

$15,000	annual financial review/audit
$50,000	cost per period for annual adjustment of fees; 5-year review of costs and funding

Advocacy/public outreach

$40,000	annual cost for advocacy/public outreach services

GIS and database updates

$15,000	cost per period to update GIS land cover layers with aerial photographs, satellite imagery and other relevant data sources

Liability insurance/director's and officers/professional liability insurance

$5,000	annual premium, per YHC budget is $2,500; multiply by 2

Occupancy

1,000	square feet of office space leased
$1.20	monthly rental rate, includes utilities (Loopnet, office rent listings in Woodland, December 2014)
$14,400	annual rent

Table 14

Costs associated with Local Partner activities

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

Cost for Local Partner activities in riparian corridors	Permit Period (years)											
	Start up	**1 - 5**	**6 - 10**	**11 - 15**	**16 - 20**	**21 - 25**	**26 - 30**	**31 - 35**	**36 - 40**	**41 - 45**	**46 - 50**	**50 Year Total**
Activities in Cache Creek riparian corridor	$0	$1,058,430	$1,058,430	$1,058,430	$1,058,430	$1,058,430	$1,058,430	$1,058,430	$1,058,430	$1,058,430	$1,058,430	**$10,584,300**
Activities in Lower Putah Creek riparian corridor	$0	$996,680	$996,680	$996,680	$996,680	$996,680	$996,680	$996,680	$996,680	$996,680	$996,680	**$9,966,800**
Total	**$0**	**$2,055,110**	**$2,055,110**	**$2,055,110**	**$2,055,110**	**$2,055,110**	**$2,055,110**	**$2,055,110**	**$2,055,110**	**$2,055,110**	**$2,055,110**	**$20,551,100**

Assumptions/Notes:

See Yolo Habitat Conservancy, Local Cost Share Sources and Potential Approaches, Yolo HCP/NCCP Local Cost Share Source Assessment, June 26, 2015

These activities will contribute to the conservation of habitat for species to be protected by the Yolo HCP/NCCP.

CCRMP activities in the Cache Creek riparian corridor - 6.4.3.7.1

$51,500	Invasive species control
$12,300	Elderberry surveys
$48,000	Aerial survey
$27,810	Creek Walk (monitor invasive species, special status species habitat, etc.)
$11,797	Riparian vegetation mappting and analysis
$31,630	OHV creekwide enforcement and restoraiton
$28,649	Restoration and management of sites to enrolled as newly protected lands (Millsap, Correll, and Capay Open Space Preserve)
$211,686	**Total annual cost**

SCWA activities in the Putah Creek riparian corridor - 6.4.3.7.2

$13,651	Invasive species control
$75,081	Wildlife monitoring and assessment throughout Putah Creek corridor
$22,000	Riparian and wetland restoration: supplies and materials
$54,604	Riparian and wetland restoration: portion of Streamkeeper position (≈ 40%)
$20,000	Riparian and wetland restoration: SCWA engineering and permitting support
$10,000	Native plant propagation
$4,000	equipment loan for HCP/NCCP activities
$199,336	**Total annual cost**

Table 15

Contingency

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

	Permit Period (years)											
	Start up	**1 - 5**	**6 - 10**	**11 - 15**	**16 - 20**	**21 - 25**	**26 - 30**	**31 - 35**	**36 - 40**	**41 - 45**	**46 - 50**	**50 Year Total**
Reserve acquisition capital cost	$0	$20,691,123	$20,451,123	$20,451,123	$20,451,123	$20,451,123	$20,451,123	$20,451,123	$20,451,123	$19,515,064	$0	**$183,364,051**
Acquisition contingency	$0	$2,069,112	$2,045,112	$2,045,112	$2,045,112	$2,045,112	$2,045,112	$2,045,112	$2,045,112	$1,951,506	$0	**$18,336,405**
All other program costs, except restoration	$0	$7,007,903	$7,433,356	$7,720,370	$7,940,791	$8,284,834	$8,346,118	$8,771,519	$9,092,447	$8,400,101	$6,716,996	**$79,714,436**
General operating contingency	$0	$700,790	$743,336	$772,037	$794,079	$828,483	$834,612	$877,152	$909,245	$840,010	$671,700	**$7,971,444**
Total contingency fund	**$0**	**$2,769,903**	**$2,788,448**	**$2,817,149**	**$2,839,191**	**$2,873,596**	**$2,879,724**	**$2,922,264**	**$2,954,357**	**$2,791,517**	**$671,700**	**$26,307,849**

Assumptions / Notes:

Restoration contingency is included in restored lands costs.

No contingency factor is applied to the costs for local partner activities in riparian corridors.

10%	contingency factor for acquisition capital costs, including site improvements
10%	contingency factor for all other program costs, exclusive of acquisition capital and restoration costs and local partner activity costs

Table 16

Yolo HCP / NCCP Post-Permit Costs, Annual Average Costs in Perpetuity

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Detail may not add to total due to independent rounding.

Cost Category	Annual Average Cost	Assumptions:
Assemble reserve, except restored lands	$0	Reserve assembly complete in year 45
Restored lands, ongoing management	$48,000	75 percent of annual average level of effort in year 50 is maintained on average in perpetuity
Restored lands, ongoing species monitoring	$45,900	30 percent of annual average level of effort in year 50 is maintained on average in perpetuity
YHC reserve management staff and overhead	$29,000	50 percent of annual average level of effort in year 50 is maintained on average in perpetuity
Reserve unit management plans	$35,000	7 plans updated every 20 years, annualized cost
Other management costs	$69,000	50 percent of annual average level of effort in year 50 is maintained on average in perpetuity
Natural communities monitoring, rest of reserve	$0	not required after permit term
Species monitoring, rest of reserve	$54,000	25 percent of annual average level of effort in year 50 is maintained on average in perpetuity
Plan administration	$123,250	25 percent of annual average level of effort in year 50 is maintained on average in perpetuity
Local partner activities in riparian corridors	$0	not required
Contingency fund	$0	not required
Total	**$404,150**	
Percent of average annual cost, years 46 - 50	**21%**	

Table 17
Staffing Plan and Cost Factors

Yolo HCP/NCCP Review Draft 10/2015	Conservation Strategy / Plan Status
Oct-15	Cost Model date
2014	constant dollars

Responsibliities of program staff include the following:

Day-to-day management of the HCP/NCCP. This includes managing reserve acquisition, restoration, management and monitoring activities, reporting to the YHC Board and state and federal agencies.
HCP/NCCP annual compliance reporting to state and federal agencies, including setting up and maintaining GIS and other databases.
Coordination with other agencies and conservation programs on invasive species control programs (6.4.3.4.1)
Coordination and communication with Plan Area agricultural programs on pollinator strategy, including assistance to secure funding and related public outreach (6.4.3.4.3)
YHC staff responsibilities include monitoring to assess Cache Creek Resource Management Plan and Lower Putah Creek program progress towards meeting Yolo HCP/NCCP biological goals and objectives and benefitting covered species (6.4.3.7.1 and 6.4.3.7.2)
Supervision of specialized contractor services as well as labor for restoration projects and reserve management.
With Science and Technical Advisory Committee, specify targeted studies and review and direct the work of monitoring contractors.
With Science and Technical Advisory Committee, implement adaptive management in response to findings of monitoring activities and reports.

Staffing plan

		Permit period (years)									
Staff category	**Start up**	**1 - 5**	**6 - 10**	**11 - 15**	**16 - 20**	**21 - 25**	**26 - 30**	**31 - 35**	**36 - 40**	**41 - 45**	**46 - 50**
Executive Director	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sr. Environmental Scientist, Specialist	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.75
Restoration/Reserve Project Manager	-	0.25	0.50	0.50	0.50	0.25	0.25	0.25	0.25	0.25	0.25
Data Analyst/GIS Specialist	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Real Estate Specialist	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.25	0.25	-
Planner/Grant Specialist	-	0.50	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25	-
Accountant/Budget Analyst	-	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Administrative Support	-	0.50	0.50	0.75	0.75	1.00	1.00	1.00	0.75	0.50	0.50
Total FTE	**-**	**4.50**	**4.75**	**5.00**	**5.00**	**5.00**	**4.75**	**4.75**	**4.25**	**3.75**	**3.25**

50%	percent of Senior Environmental Scientist time allocated to Monitoring & Research
25%	percent of Senior Environmental Scientist time allocated to Reserve Management
33%	percent of Restoration/Reserve Project Manager time and associated overhead allocated to Restoration, until restoration projects are completed in year 40.
67%	percent of Restoration/Reserve Project Manager time and associated overhead allocated to Reserve Management through year 40
100%	percent of Restoration/Reserve Project Manager time and associated overhead allocated to Reserve Management after year 40
100%	percent of Real Estate Specialist time and associated overhead allocated to Establish Reserve

All other staff time allocated to Plan Administration.

Staff cost assumptions

Annual salary per FTE	
$120,000	Executive Director (Yolo County Cache Creek Area Plan, Manager of Natural Resources is $110,000 at the high end of the range)
$80,000	Sr. Environmental Scientist, Specialist (State of California , Senior Environmental Scientist, Specialist at high end of salary range)
$66,000	Restoration/Reserve Project Manager (Cache Creek Conservancy, Habitat Restoration Manager, job announcement 10/2014 (range $45K - 60K))
$75,000	Data Analysis and Management/GIS Specialist (Yolo County General Services/Information Technology, Senior Business Systems Analyst)
$70,000	Real Estate Specialist (Yolo County Assessor, Principal Appraiser)
$60,000	Planner/Grant Specialist (Yolo County Cache Creek Area Plan, Natural Resources Program Coordinator)
$55,000	Accountant/Budget Analysis (Yolo County General Services, Accountant)
$40,000	Administrative Support (Yolo County Planning and Public Works, Office Support Specialist)

Assumptions/Notes:

60%	Benefit multiplier applied to annual salary across all staff categories
15%	Services and supplies as percent of salaries and benefits, based on analysis of 2014/15 YHC budget