HCP FUNDING STRATEGIES REVIEW

Clark County Desert Conservation Program

December 21, 2022



Economic & Planning Systems, Inc. The Economics of Land Use

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ORGANIZATION

- Purpose of Review
- Selected Case Studies
- Case Study Components
- HCP Background and Conservation Plan
- Plan Implementation Costs
- Funding Sources
- Case Study Findings

PURPOSE OF REVIEW

- Conduct Case Studies of Regional Habitat Conservation Plans
- Identify Implementation Costs and Differences
- Identify Different Approaches to Plan Funding
- Draw Lessons Learned from Case Study Comparisons concerning:
 - Key Drivers of Implementation Costs
 - Approaches to Plan Funding
 - Other Issues for Sustainable Plan Funding

CASE STUDY SELECTION

- Six (6) Case Studies selected (see next slide)
- Case study selection focused on approved HCPs that:
 - Cover large geographic areas
 - Streamline incidental take permitting for private land/real estate development activities among others
 - Provide cost estimates and funding strategy
 - Typically cover multiple species (though one single species plan was included)
 - Were approved in past 2 decades (2004 2022)
 - Are located in different geographies in the western U.S.
- Limited number of HCPs meet these criteria, most of which are in California
- Case studies analyzed HCP updates or funding plan updates (remaining costs and funding) when available
 - Washington County Amendment
 - W. Riverside County Funding Update

SELECTED CASE STUDIES



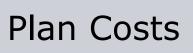
CASE STUDY COMPONENTS



Scale of Conservation

Understand how large of a conservation effort each plan is undertaking and the parameters within which they are operating.

\$



Identify total anticipated costs of plan and how those costs are distributed across plan activities, both annually and by impact acre.



Funding Sources

Review funding sources for each plan, determining how much of anticipated revenue is derived from private developers versus how much is contributed by public entities.

HCP BACKGROUND & CONSERVATION PROGRAM

HCP BACKGROUND

Element	Pima	Thurston	Washington	Ft. Ord	South Sac.	W. Riverside
Location	Pima Co., Az	Thurston Co., WA	Washington Co., Ut	Coastal Monterey Co., CA	So. Sacramento Co., CA	W. Riverside Co., CA
Permittees	 Pima Co. Pima Co. Flood Control District [Cities not included] 	Thurston Co. [Cities not included]	 Washington Co. Cities therein (except 1) 	Entities involved in reuse of the former Fort Ord Army Base • Fort Ord Reuse Authority • Monterey Co. • 4 cities • Univ. of CA • Cal State Univ. • Community College • Regional Park District • Water District • CA. State Parks	 Sacramento Co. 2 cities Sacramento Co Water Agency Southeast Connector Joint Powers Authority 	 Riverside Co. 18 cities in Plan area Flood Control District Transportation Commission Caltrans CA State Parks Regional Conservation Authority
Permit Term: Years/ Period	30 years (2016-2046)	30 years (2022-2051)	25 years (2020-2045)	50 years	50 years (2019-2069)	75 years (2004-2079)
Plan Area	5,879,669 ac.	471,304 ac.	1,555,200 ac.	27,832 ac.	317,655 ac.	1.26 million ac.
Permit Area	~1.3 million ac.	412,228 ac.	1,372,743 ac.	~13,000 ac.	317,655 ac.	1.26 million ac.
Impact Area	36,000 ac.	5,216 ac.	66,301 ac.	6,278 ac.	30,176 ac.	54,040 ac. (expected development 2020 - 2044)
Covered Species	44 species • 4 Plants • 40 animals	6 species • 0 Plants • 6 Animals	1 species • 0 plants • 1 animal	8 species: • 4 plants • 4 animals	28 species:8 plants20 animals	146 species
Covered Species Status	9 federally Listed 1 Petitioned for listing 34 unlisted	5 Listed 1 Fed. Candidate	1 listed 0 unlisted	7 federally listed 1 state listed (only)	7 federally listed 4 state listed (only)	30 federally listed 11 state listed (only)
Desert Tortoise Covered?	Yes	No	Yes	No	No	No

SUMMARY OF HCP BACKGROUND

- **Permit Terms**: 30–75 years
- HCP Areas
 - <u>Plan</u>: analyzed entire counties or sections or large counties 27,832 ac. 5.9 million ac.
 - <u>Permit:</u> take permitted in 13,000 ac ~1.3 million ac. (excludes federal and tribal land)
 - Impact: 6,278 ac. to 54,040 ac. of habitat impacts permitted
- Permittees
 - 4 Plans permit activities by multiple government entities (cities, state agencies) in the Plan Area
 - 2 Plans (Pima and Thurston) permit only county-controlled activities

Covered Species

- Vary greatly across the plans: 1 146 species
- Thurston and Washington county plans are very focused: just listed animal species
- 3 cover unlisted species as well as listed species (W. Riverside, S. Sac, Pima Co.) while the others cover just listed species.
- 2 plans cover desert tortoise: Pima County and Washington County

HCP AVOIDANCE AND MINIMIZATION MEASURES

Element	Pima	Thurston	Washington	Ft. Ord	South Sacramento	Western Riverside
Locate Projects Away from Species (clustering, etc.)	✓	✓	✓	\checkmark	\checkmark	\checkmark
Protect Species during Construction (fences, training, etc.)		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Pre-Project Surveys			\checkmark	\checkmark	\checkmark	✓ (some species)
Biological Monitoring During Construction			\checkmark	\checkmark	\checkmark	✓ (some species)
Salvage and Relocation of Plants and/or Animals			\checkmark	\checkmark	\checkmark	✓
Other	 Ordinances Native Plant conservation 	Best management practices	 Seasonal restrictions 		Additional measures for certain types of activities	 Wetland and aquatic resource protection Narrowly endemic plant species protection
Responsible Party(ies) for Implementing On- Site Avoidance and Minimization Measures	N/A (largely county codes)	Landowners and Project Proponents	 HCP provides biologist for clearance surveys Landowners implement other requirements (e.g., Biological Monitoring) 	 Landowners (or other project proponents) implement measures in Development Areas JPA implements measures adjacent to Preserves 	Landowners and Project Proponents	Landowners and Project Proponents

Economic & Planning Systems and Jodi McGraw Consulting

Clark County Multispecies HCP Funding Strategies Review 9

SUMMARY OF AVOIDANCE AND MINIMIZATION

Plans vary greatly in AMMs, based on level of species protection measures

- Pima County relies primarily on modified county ordinances to avoid/minimize impacts (e.g., site development away from species)
- Thurston County incudes avoidance and adds construction BMPs (fences, training), with additional species protection during prior to and during construction for 1 species
- Washington County includes species protection measures (salvage and relocation) for its single covered species (desert tortoise)
- 3 Plans include species protection for multiple species
 - Fort Ord, South Sacramento, and Western Riverside
 - Pre-project surveys, construction monitoring, and species salvage and relocation

Project Proponents (e.g., developers) separately fund species protection except in Washington County, where HCP provides biologist conducts the tortoise clearance surveys

HCP COMPENSATORY MITIGATION: PRESERVES

Element	Pima	Thurston	Washington	Ft. Ord	South Sacramento	Western Riverside
Land Acquisition (acres)	None [Land acquired prior to plan]	3,131 ac.	61,022 ac.	None [Former army base lands constitute reserve]	36,282 ac.	56,800 ac. (total plan protection of 153,000 ac.)
Manage Existing Protected Land (acres)	116,000 ac.	339 ac.	None	 18,570 ac. 14,645 ac. BLM 3,895 ac. other 	None	347,000 ac. [USFS, BLM, CDFW, etc.]
Total Preserve System (acres)	116,000 ac.	3,470 ac.	61,022 ac.	18,540 ac.	36,282 ac.	500,000 ac.
Impact Area (acres)	36,000 ac.	5,216 ac.	66,301 ac.	6,278 ac.	30,176 ac.	54,040 ac. (expected development 2020 - 2044)
HCP Funds Preserve System Management and Monitoring Post-Permit	No. Most HCP management is already occurring; HCP adds monitoring, suggesting management but not monitoring might occur post-permit. No formal endowment being established.	Yes. Non-wasting stewardship endowments are established to fund perpetual management and maintenance of conservation lands.	No. BLM will manage the reserve post- permit, though acknowledges BLM's discretion since neither management nor monitoring are funded by the plan post-permit.	management and monitoring occur in perpetuity and will be funded by	Yes. Habitat management and maintenance will continue in perpetuity and will be funded by an endowment.	Yes. Preserves are managed in perpetuity and funded by an endowment.

SUMMARY OF HCP PRESERVE SYSTEMS

Preserve Systems vary in size and method of creation

Thurston and Washington County

- preserve systems smaller than permitted impact area
- greater habitat condition/function of Preserves relative to impact areas used to conclude that Preserves fully mitigate covered activities
- South Sacramento and Western Riverside
 - Acquired preserves slightly more than impacted acres
 - Western Riverside HCP also includes monitoring of additional existing protected land
- Fort Ord
 - Preserve system ~ 3x as large as impact area
 - Preserve land provided to permittees through base closure (no acquisition in HCP)
 - HCP funds management for federal (BLM) land as well as preserves dedicated by permittees

Pima County

- large preserve system >3X more than impact area
- Preserves acquired prior to HCP permit (but credited to HCP with USFWS approval)

HCP MANAGEMENT AND MONITORING

Element	Pima	Thurston	Washington	Ft. Ord	South Sacramento	Western Riverside		
Management	Management							
Site-Specific Management Plans	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Site Maintenance (Fences, trash, etc.)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Invasive Plant and/or Animal Control	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Vegetation management (grazing, fire)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Habitat Enhancement (Road closures, revegetation, etc.)	\checkmark	\checkmark	✓	\checkmark	\checkmark	\checkmark		
New Populations (some of the species)				\checkmark		\checkmark		
Monitoring								
Compliance	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Communities	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Species	\checkmark	\checkmark	✓ (single species focus)	\checkmark	✓	✓ (infrequent)		
Threats (exotic plants, climate change, etc.)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Post-Permit Management and Monitoring		~		\checkmark	~	✓		

SUMMARY OF MANAGEMENT AND MONITORING

<u>Management</u>

- Plans include similar management tasks though Fort Ord and Western Riverside provide species management and enhancement
- Level of management varies, as reflected in cost estimates (as outlined in next section)
- Post-permit management and monitoring included in all plans except Pima County and Washington County

Monitoring

- Compliance and effectiveness monitoring included in all plans
- Level of monitoring varies, particularly for species
 - Number of species and frequency of monitoring
 - E.g., Fort Ord incudes robust species monitoring while Pima County includes general habitat condition monitoring
 - Thurston County includes systematic monitoring of species habitat using credit-debit methodology
- Washington County included tortoise surveys prior to amendment, when discontinued

Element	Pima County , AZ	Washington County, UT
Compensation	 Habitat impacts mitigated at ~5:1 ratio: 9,473 ac. of modeled habitat impacted 52,069 ac. of modeled habitat in reserves 37,509 ac. fee title lands 15,009 ac. of lands leased by County from the State 	 Habitat impacts mitigated at ~1:1 ratio 66,301 ac. of modeled habitat impacted 61,022 ac. of modeled habitat in reserves
Other Measures	 Minimize development on slopes that support tortoises Building setbacks from channels to reduce habitat impacts on tortoises Active preserve habitat management per site-specific plans Species monitoring (15 sites every 3 years) 	 Tortoise translocation from impacted lands based on area-wide surveys, into reserve and elsewhere (incl. adoptions) Assembly and management of a reserve that substantively meets the recovery plan objectives Outreach and education including visitor center Adoption and head-start program (potential)

PLAN IMPLEMENATION COSTS

COST OVERVIEW AND CATEGORIES

HCPs show plan implementation costs in different ways; for comparison purposes costs are grouped as follows:

- Program Administration
- Land Acquisition
- Habitat Restoration
- Preserve Management
- Monitoring and Adaptive Management
- Endowment (Post–Permit)
- Changed Circumstances

In some cases, some of these cost categories are not reported separately; e.g., preserve management and monitoring are not distinguished for Thurston County; Fort Ord is unique as most revenues are placed in endowments that cover permit term and post-permit term costs for different cost categories.

COST CATEGORY DEFINITIONS

HCP Implementation Costs were categorized into 7 components

Components	Included Costs
Program Administration	Costs for staff to oversee HCP implementation
Land Acquisition	Costs to acquire land in fee title or through conservation easements, including associated transaction costs
Habitat Restoration	Costs to re-create or significantly enhance habitat
Preserve Management	Costs to manage preserves to maintain habitat conditions
Monitoring and Adaptive Management	Costs to examine conditions of communities and species in preserves and implement additional management efforts as needed to achieve biological goals and objectives
Endowment (Post-Permit)	Costs to establish a distinct fund from which revenues (interest on non-depleting principal) are used to support ongoing habitat management and monitoring post-permit
Changed Circumstances	Cost to address the changed conditions identified the HCP

HCPs show plan costs in different ways, with some cost categories not reported separately

- E.g., Preserve management and monitoring are not distinguished for Thurston County
- Fort Ord is unique as most revenues are placed in endowments that cover permit term and post-permit term costs for different cost categories.

TOTAL COSTS BY COST CATEGORY

	Pima	Thurston	Washington	Fort Ord	South Sacramento	Western Riverside
Plan Administration	\$17,022,000	\$12,000,000	\$3,643,297	\$27,949,942	\$51,718,000	\$99,715,465
Land Acquisition	\$0	\$70,521,181	\$3,550,699	\$0	\$427,854,000	\$793,931,902
Habitat Restoration	\$0	\$0	\$0	\$4,771,427	\$183,098,000	\$0
Management	\$105,407,000	\$10,740,622	\$15,232,589	\$48,771,138	\$16,914,402	\$59,687,668
Monitoring and Adaptive Management	\$50,155,000	\$0	\$5,254,072	\$22,150,969	\$49,095,598	\$28,088,315
Endowment (Post Permit)	\$0	\$31,897,188	\$0	\$0	\$30,039,000	\$157,001,144
Changed Circumstances	\$0	\$0	\$0	\$16,169,057	\$8,231,000	\$0
Total	\$172,584,000	\$125,158,991	\$27,680,957	\$119,812,533	\$766,950,000	\$1,048,424,494

TOTAL COSTS BY COST CATEGORY

- Total Plan costs vary from \$27 million to \$1.05 billion, a 40x factor.
- Plans with large habitat acquisitions requirements most expensive
- Restoration needs and cost are unique depending on species; especially high in South Sacramento HCP due to wetlands
- Management and Monitoring costs are present and substantial in all the Plans, though not always clearly differentiated
- Generally, preserve management costs are greater than monitoring/ adaptive management costs
- Endowment Costs can be substantial, though some Plans (Pima County and Washington County) do not establish specific endowments to cover post-permit costs
- Changed circumstances are established by some plans, generally an addto management costs to account for cost uncertainties
- Management, Monitoring, Endowment, and Changed Circumstances can all be seen as part of overall adaptive management process for preserves.

% DISTRIBUTION OF COSTS BY CATEGORY

	Pima	Thurston	Washington	Fort Ord (1)	South Sacramento	Western Riverside
Plan Administration	10%	10%	13%	23%	7%	10%
Land Acquisition	0%	56%	13%	0%	56%	67%
Habitat Restoration	0%	0%	0%	4%	24%	0%
Management	61%	9%	55%	41%	2%	6%
Monitoring and Adaptive Management (2)	29%	0%	19%	18%	6%	3%
Endowment	0%	25%	0%	0%	4%	15%
Changed Circumstances	0%	0%	0%	13%	1%	0%
Total	100%	100%	100%	100%	100%	100%

1) Fort Ord incorporates endowment costs into other categories.

2)Thurston County does not distinguish between Management and Monitoring and Adaptive Management, so all costs have been categorized as "Management".

% DISTRIBUTION OF COSTS BY CATEGORY

- Distribution of costs by category vary widely.
- Land acquisition costs are majority for Thurston, South Sacramento, and Western Riverside Plans.
- Management and monitoring cost majority for plans with no to minimal land acquisition: Pima, Washington, and Ford Ord.
- Endowment is substantial proportion of costs for Thurston and Western Riverside.

Pima	Thurston	Washington	Fort Ord	South Sacramento	Western Riverside
\$4,794	\$23,995	\$637	\$19,085	\$25,416	\$19,401
\$0	\$22,524	\$501	\$0	\$11,792	\$12,358
\$1,341	\$12,288	\$336	\$4,697	\$2,874	\$2,523
	\$4,794 \$0	\$4,794 \$23,995 \$0 \$22,524	\$4,794 \$23,995 \$637 \$0 \$22,524 \$501	\$4,794 \$23,995 \$637 \$19,085 \$0 \$22,524 \$501 \$0	Pima Thurston Washington Fort Ord Sacramento \$4,794 \$23,995 \$637 \$19,085 \$25,416 \$0 \$22,524 \$501 \$0 \$11,792

1) Cost Per Acre Managed includes all management related costs, including Management, Monitoring, Endowment and Changed Circumstances.

COMPARATIVE COST METRICS

Total Implementation Cost per Acre Take

- Comparison of total costs per acres of land development/ take allowed.
- Four of the six plans are substantially more expensive on a per-acre basis: Thurston, Fort Ord, South Sacramento, and Western Riverside are all in the <u>\$19,000 - \$26,000/ acre</u> of take range.
- Pima County is substantially lower cost at about <u>\$4,800 per acre</u> of take and the single-species Washington County plan is by far the lowest at about <u>\$640</u> <u>per acre</u> of take.

Acquisition Cost per Acre Acquired

- Land acquisition drives costs for several plans with cost per acre also being an important factor
- Land cost per acre vary considerable by regional market with a range from \$500/ acre in Washington County to \$22,500 per acre in Thurston County

All Management Costs per Acre

- Considering the broad set of management costs (management, monitoring, endowment, changed circumstances) per acre of preserve indicates variation in overall investments in management during and after the permit term.
- For most plans, management costs per acre are between \$1,000 and \$5,000 per acre though also reach as high as \$12,300 and as low as \$340 per acre.

FUNDING SOURCES

FUNDING SOURCE OVERVIEW AND CATEGORIES

Funding sources among the different plans are varied and are affected by different State laws/ statutes. For comparison purposes funding sources were divided into three (3) main categories:

- 1. Local Project Proponent/ Land Developers
- 2. Local/ Regional Tax Base
- 3. Other Party/ Beneficiary

Importantly, public investments prior to the establishment of some HCPs reduce the costs and thus required funding.

- Fort Ord and Pima County benefit from focused conservation efforts on existing public lands.
- Western Riverside County land acquisitions are combined with larger public preserves.

FUNDING CATEGORY DEFINITIONS/ EXAMPLES

1. Local Project Proponent/Land Developers

- Payments specifically by developers (private or public) in exchange for incidental take permits
- Payments typically in form of habitat mitigation fee or one-time tax on new Development (Construction Tax/ Special Tax)

2. Local/ Regional Tax Base

- In some cases, costs of HCP implementation are spread to local/ regional taxpayers
- Property Tax and Sales and Use Taxes most common
- Sometimes specific to HCP, sometimes from General Fund, and sometimes a part of infrastructure funding mechanisms

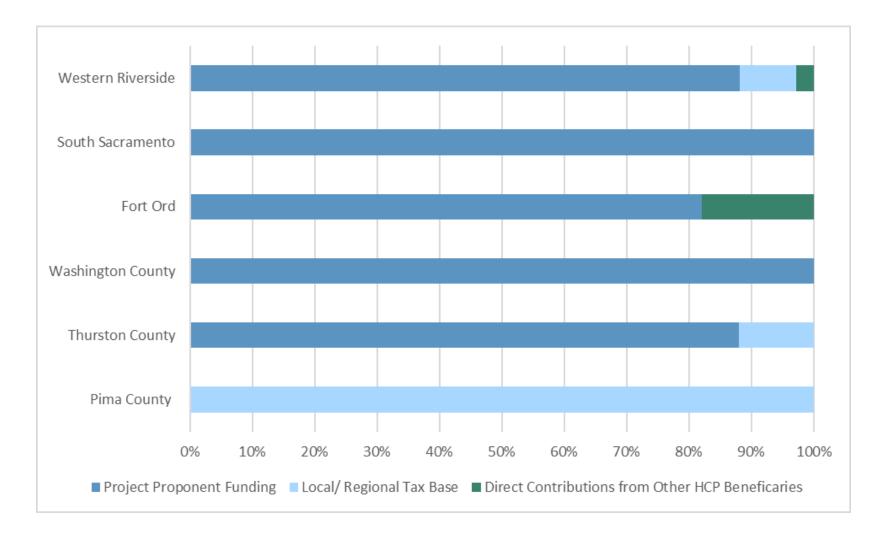
3. Other Parties/ Beneficiaries

 In some cases, State or Federal agencies may have projects requiring their involvement/ investment; in other cases, opportunities exist for other types of development projects to receive take permits if they contribute financially

TOTAL FUNDING BY SOURCE

	Pima	Thurston	Washington	Fort Ord	South Sacramento	Western Riverside
Project Proponent Funding	\$0	\$110,136,820	\$27,680,957	\$119,240,487	\$766,948,000	\$924,139,269
Local/Regional Tax Base	\$172,584,000	\$15,022,171	\$0	\$0	\$0	\$95,671,825
Contributions from Other Beneficiaries	\$0	\$0	\$0	\$25,922,262	\$0	\$28,613,400
Total	\$172,584,000	\$125,158,991	\$27,680,957	\$145,162,749	\$766,948,000	\$1,048,424,494

% DISTRIBUTION OF FUNDING BY SOURCE



FUNDING BY COST CATEGORY

- In most Plans, local project proponents/ land developers fund the large majority of all of the Plan Costs
- In two cases, South Sacramento and Washington County, Plan costs are fully funded by local project proponents through mitigation fees
- Pima County is unique in funding all its costs through the local/ regional tax base; through General Fund property tax revenues
- Western Riverside County, Thurston County, and Fort Ord all obtain the majority of their funding from local project proponent, though funding under with a portion from other sources
- In its early years of implementation, Western Riverside County received substantial funding through sales and use tax revenues; current funding plan has lower proportion from local/ regional taxes

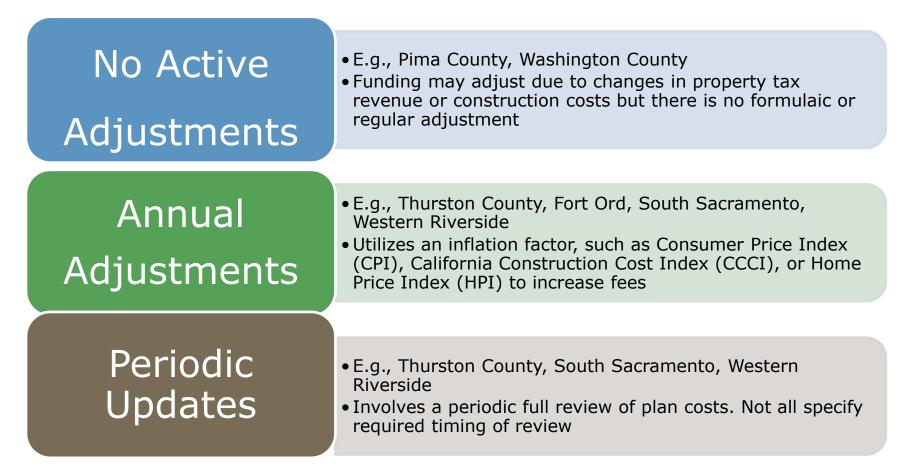
LAND DEVELOPMENT COST BURDEN METRICS

- Focus on costs funded by local project proponents per acre of take shows cost burden directly placed on local development activity
- Highest for South Sacramento County and Thurston County, followed by Fort Ord and Western Riverside County; lowest for Pima County (no direct developer costs), followed by Washington County (very low-cost plan)

	Pima County	Thurston County	Washington County	Fort Ord	South Sacramento	Western Riverside
Total Cost	\$172,584,000	\$125,158,991	\$27,680,957	\$119,812,533	\$766,950,000	\$1,048,424,494
Percent of Funds from Project Proponents	0%	88%	100%	82%	100%	88%
Cost Sourced from Project Proponents	\$0	\$110,136,820	\$27,680,957	\$98,417,155	\$766,950,000	\$924,139,269
Acres of Take	36,000	5,216	43,479	6,278	30,176	54,050
Cost to Developers per Acre of Take	\$0	\$21,115	\$637	\$15,677	\$25,416	\$17,101

FUNDING PROGRAM MANAGEMENT

- Many HCPs struggle to increase funding as Plan costs increase
- Some Plans make no adjustments until required to keep permits, while others use automatic annual adjustments or periodic funding reviews



CASE STUDY FINDINGS

KEY FINDINGS: KEY DRIVERS OF HCP COSTS

Case studies indicate five (5) key drivers of differences in relative Plan Costs:

- 1. Covered Species: Generally speaking, multispecies plans are more costly due to greater extent of conservation program.
- 2. Conservation Program. The level of effort required for management, monitoring, and restoration for species and habitat.
- **3. Endowment.** Need to establish non-depleting endowment to fund ongoing costs beyond the permit term.
- **4. Land Acquisition**. Focus on managing previously conserved lands removes need for investment in land acquisition.
- 5. Regional Markets. Land costs in particular vary depending on regional real estate market, though location also affects other cost categories.

KEY FINDINGS – 3 GENERAL FUNDING STRATEGIES

- 1. 100% funded by Project Proponents/ Land Developers
- 2. Use of Broader Tax base/ Other Sources to reduce Land Developer Costs
- 3. Full shift of costs to taxpayers from land developers

Element	#1: Project Proponents Fund Plan	#2: Broader Apportionment of Mitigation Costs	#3: Local Taxpayers Fund Mitigation Costs
Approach	 Costs paid by project proponents (e.g., developers, etc.) Per-Acre Mitigation Fees or Similar Funding Mechanism, often varies by the affected habitat or land cover 	 Some costs funded by project proponents Some costs funded by: HCP beneficiaries or non-local public land developers (e.g., the State, Local Agencies) Local taxpayers (property, sales, or other broad-based taxes) reduce the direct cost burden on project proponents (sometimes tied to local infrastructure funding) 	 Plan fully funded through broader tax base: Annual appropriations from County / Local Agency General Fund Dedicated Tax
Representative Plans	South Sacramento County Washington County	Western Riverside County Thurston County Fort Ord	Pima County

KEY FINDINGS: ADAPTIVE FUNDING

Many Plans struggle to adapt to Plan Cost Inflation:

- All Plans challenged by need to increase funding in response to common cost increases
- Fixed Fees on Project Proponents can often result in Plan under-funding over time
- Use of funding sources that will directly adjust with real estate conditions/ costs (such as Washington County's construction tax as % of permit value) may be ideal
- Automatic inflationary increases along with periodic comprehensive reviews can help ensure Plans funded by Fees remains viable and avoid major one-time increases in taxes/ fees

APPENDIX: CASE STUDY HCP MATRIX

Clark County Desert Conservation Program Habitat Conservation Plan Funding Strategies Review Case Study Matrix

This document tabulates information about the six habitat conservation plans (HCP) analyzed for the HCP Funding Strategies Review for the Clark County Desert Conservation Program.

Element	Pima County	Thurston County	Washington County	Fort Ord	South Sacramento	Western Riverside County
Habitat Conservation Plan (Year)	Multi-Species Conservation Plan for	Thurston County Habitat Conservation	Habitat Conservation Plan for	Fort Ord Multi-Species Habitat	South Sacramento Habitat	Western Riverside County Multiple
	Pima County (2016)	<u>Plan (2022)</u>	Washington County, Utah: Restated and Amended October 2020	Conservation Plan (2019)	Conservation Plan (2018)	Species Habitat Conservation Plan (2004)
Location	Pima County, Arizona	Thurston County, Washington	Washington County, Utah	Coastal Monterey County, CA	Southern Sacramento County, CA	Western Riverside County, CA
Permittee(s)	 Pima County Pima County Flood Control District [Cities are not permittees nor are their activities otherwise covered.] 	Thurston County [Cities are not permittees nor are their activities otherwise covered.]	 Washington County Cities therein (except 1) participating as Municipal Partners 	 Entities involved in reuse of the former Fort Ord Army Base Fort Ord Reuse Authority County of Monterey Cities of Marina, Seaside, Del Rey Oaks, and Monterey University of California California State University Monterey Peninsula College Monterey Peninsula Regional Park District Marina Coast Water District California State Parks 	 County of Sacramento City of Rancho Cordova City of Galt Sacramento County Water Agency Southeast Connector Joint Powers Authority 	 County of Riverside 18 cities west of San Jacinto Mountain ridgeline Riverside County Flood Control and Water Conservation District Riverside County Transportation Commission Caltrans State Parks Regional Conservation Authority
Area (Acres)						
Plan Area	Entirety Pima County (5,879,669 ac.)	Entirety of Thurston County (471,304 ac.)	Entirety of Washington County (1,555,200 ac.)	Former Fort Ord (27,832 ac.)	Southern portion of Sacramento County (317,655 ac.)	Unincorporated Riverside County west of the San Jacinto Mtns, as well as 14 cities in that area (1.26 million ac. of which 871,000 ac. supports natural vegetation)
Permit Area	Lands subject to County and Flood Control (~1.3 million ac.) (incl. some land in adjacent counties) [Cities, federal, and tribal lands are excluded].	County permitting jurisdiction (412,228 ac.) [Cities, federal, and tribal lands are excluded].	1,372,743 acres (portion of the county [88%] that is within the tortoise recovery unit). [Includes cities that signed on, which are all except one.]	Non-federal lands in the plan area (acres not identified in the HCP)	Same as the plan area	Same as the plan area
Impact Area	36,000 ac.31,000 ac. for development5,000 ac. for reserve management	5,216 ac. of 'functional habitat' [discounts degraded habitat so is less than the total impact acres]	66,301 ac. total (43,479 ac. additional with amendment)	6,278 ac.5,501 ac. for development777 ac. for habitat management	30,176 ac.	54,040 ac. (for 2020 2044 implementation period covered by updated funding plan)
Permit Term: Years/ Period	30 years (2016-2046)	30 years (2022-2051)	25 years (2020-2045)	50 years (TBD)	50 years (2019-2069)	75 years (2004-2079)
Covered Species						
Total: Plants/Animals	44 species: 4 Plants, 40 animals	6 species: 0 Plants, 6 Animals	1 species: 0 plants, 1 animal	8 species: 4 plants and 4 animals	28 species: 8 plants and 20 animals	146 species of which 118 were considered adequately conserved; others required MOU with USFS and other species-specific objectives to authorize take
Federally Listed/Unlisted	9 Listed, 1 Petitioned for listing, and 34 unlisted	5 Listed, 1 Fed. Candidate	1 listed , 0 unlisted	7 federally listed 1 state listed (only)	7 federally listed 4 state listed (only)	30 federally listed 11 state listed (only)
Desert tortoise?	Yes	No	Yes	No	No	No

Element	Pima County	Thurston County	Washington County	Fort Ord	South Sacramento	Western Riverside County
Covered Activities	 Subject to County authority, including: County maintenance and construction Reserve management Private sector development impacting >14,000 sf/lot Subdivisions and other private development subject to a site construction permit (Grading < 14,000 sf is explicitly <i>not</i> covered, though the rational and implications are not provided.) 	 Subject to County authority, including: Residential development Commercial, industrial development Public service facility construction Transportation capital projects and right-of-way maintenance Landfill and solid waste management Water resources management County parks, trails, and land management 	 Subject to County direct control, including: Land clearing and building Grazing and farming Utilities and infrastructure Resource extraction Renewable energy development Reserve activities including utility, water development, and flood control 	 Base reuse activities Development Habitat Management Borderlands (lands between Development and Habitat Management Areas that are managed to reduce development effects) 	 Development, infrastructure, and instream maintenance, some of which are only allowed inside the designated Urban Development Area (UDA) Urban development (UDA only) Mining (UDA only) Rural transportation projects Recycled water projects Covered Activities in Preserve Setbacks in the UDA Covered Activities in Stream Setbacks in the UDA SSHCP Preserve System Covered Activities Covered Activities in the Laguna Creek Wildlife Corridor of the Preserve System. 	 Development Infrastructure and facilities development and maintenance including roads, highways, flood control, and waste management Agricultural land use and conversion Reserve management and uses including public access Wildlife crossing structures
CONSERVATION PROGRAM						
Avoidance and Minimization Measures	 Largely existing and modified county codes related to: Control exotic plants Avoid riparian resources (and mitigate for unavoidable impacts) Minimize alterations to channels Minimize development on slopes that support covered species Native plant conservation 	 Required and enhanced (voluntary) BMPs, which include avoidance and minimization measures. Additional measures (not listed) for the covered frog. Avoid nabitat, where possible Avoid grading, where possible Reduce roads (e.g., site development near existing roads) Cluster structures Maximize area of undisturbed habitat Maintain connectivity to adjacent undeveloped habitat Fence limits of work Erosion control and SWPPP Use lightest equipment needed (to reduce compaction) Seasonally-time vegetation management to reduce impacts 	 Development protocols, which require the following for certain covered activities (based on case-by-base review): Clearance protocols Tortoise translocations Biological monitors Seasonal restrictions Minimization of disturbance footprints Construction personnel training 	 53 measures for the Development Areas, Borderlands, and Habitat Management Areas (HMAs). Robust AMMs for individual covered species, including Pre-construction surveys Weather and timing restrictions Construction monitoring Work area/exclusion area fencing Education program Salvage and seed collection for plants Salvage, relocation, and related mortality reduction measures for animals AMMs for development in Borderlands (adjacent to HMAs) AMMs for HMA management and monitoring Site planning Stay-ahead provision 	 Species-specific measures incl.: Species surveys Pre-construction surveys Construction monitoring Additional measures for specific covered activities to avoid and minimize impacts: to watershed hydrology to existing Preserves and SSHCP Preserves during transportation projects from public use of Preserves when re-establishing or establishing vernal pool wetlands to streams and creeks from utility projects from breaching levees to establish or re-establish riparian habitat from contamination of and hazardous materials. 	 Species-specific AMMs for some species (e.g., pre-construction surveys for burrowing owl) and habitats (e.g., riparian/riverine and vernal pools) Guidelines to promote avoidance of impacts to: Wetlands and aquatic resources Narrow endemic plant species
Responsible Party(ies) for Avoidance and Minimization Measures	Largely county codes (rather than preconstruction surveys or other)	Landowners (or other project proponents)	 County provides HCP biologists to conduct initial clearance determinations Landowners (or other project proponents) subject to 	 Landowners (or other project proponents) implement measures in Development Areas The Cooperative (a JPA of the permittees) will implement 	Landowners (or other project proponents)	Landowners (or other project proponents)

Case Study Matrix

Clark County Desert Conservation Program Habitat Conservation Plan Funding Strategies Review

Element	Pima County	Thurston County	Washington County	Fort Ord	South Sacramento	Western Riverside County
			Development Protocols may need to retain biologists for clearance surveys on on-site biological monitoring	measures in Borderlands (e.g., exotic plant control, fuel reduction) using a "Borderlands Fund" established by the community facilities district (CFD).		
Compensatory Mitigation						
Reserve System						
Land Acquisition (land acquired in fee simple title or conservation easement using HCP funds)	None . (No new lands acquired using the funds in the HCP budget, as the land protection was done pre-permit.)	 3,131 ac. Reserves (2,698 ac.) Working Lands Easements (433 ac.) 	 61,022 ac. 38,787 ac. of tortoise habitat and 22,254 ac. or other land acquired during the original plan 7,091 ac. to be added to the Preserve System as part of the amended plan 	None. The conservation strategy relies on permanent protection and management of 3,895 ac. of land transferred to the permittees when the base was closed. No new land will be acquired through the plan.	 36,282 ac. 34,495 ac of existing habitat 1,787 of habitat to be restored Acquisition of Fee title or conservation easements 	56,800 ac. (from 2020-2044 funding update)
Management of Existing Land (land in the HCP Preserve System that was not acquired using HCP funds)	 116,000 ac. 74,000 ac. of fee-owned lands Additional leased lands (State lands leased to the County for grazing) which are credited at 25% of the mitigation value of fee-owned lands 	339 ac. of habitat enhancement (Performance standards must be met to receive mitigation credit per detailed methodology)	None. The Preserve System includes BLM, State School lands agency (SITLA), County, city, and private lands, these acquired as part of the HCP.	 18,540 ac. 3,895 ac. of non-federal land 14,645 ac. of BLM land 	None	Existing protected lands managed by state and federal landowners are subject to additional monitoring by HCP implementation agency.
Total Reserve Systems (ac.)	116,000 ac.	3,470 ac.	61,022 ac.	18,540 ac.	36,282 ac.	97,000 ac. (Managed and funded by HCP the implementation agency)
Habitat Restoration (habitat credited to the conservation program based on restoration)	None	None	None	This plan features numerous restoration objectives that are not credited separately from other aspects of reserve management	1,787 ac. of restoration (establishment or re-establishment)	None
Habitat Management Activities	 Site-specific management plans for properties greater than 100 acres (and properties <100 acres were prudent to do so). Management plans address: Invasive species Riparian and aquatic systems management and restoration Upland restoration Recreation management Trash and illegal dumping clean up Fencing Grazing management 	Must be implemented per site management plan which includes provisions for: • Invasive species management • Allowable grazing practices • Prescribe fire • Native seeding, etc.	 Pre-amendment activities included: Road closures Trash clean up Exotic plant removal Post-amendment activities include: Maintain fences Access use regulations Recreation management Fire prevention and post-fire rehabilitation 	 Manage per Resource Management Plans for Specific HMAs and Base- Wide Management Strategies. Manage beach and dunes Use prescribed burning and mechanized thinning to maintain habitat Control invasive species and erosion Establish new occurrences of rare plants 	 Managed per a Preserve Management Plan which must include: Fire, grazing, or other methods of vegetation management Invasive plant management Invasive animal control Facilities maintenance Monitoring for the covered species and their habitat 	 Managed per a Reserve Management Plan General habitat management Some species-specific management strategies
Monitoring	 Compliance monitoring Effectiveness monitoring Species Habitat Vegetation Water Resources 	 Site Management Plans include: Compliance monitoring Effectiveness monitoring to evaluate achievement of performance standards per the Credit-Debit Methodology 	 Pre-amendment actions included: Tortoise monitoring in preserve Research on translocation program Other research incl. telemetry, fire-effects, use of undercrossings (culverts) 	 Compliance Monitoring Robust Effectiveness Monitoring including baseline surveys and monitoring for: Natural communities HCP plant species 	 Compliance Monitoring for the HCP overall and for AMMs Effectiveness Monitoring for the AMMs and the preserve system 	 Initial assessments and inventories Vegetation surveys and mapping Long-term vegetation monitoring and habitat condition assessment monitoring

Clark County Desert Conservation Program Habitat Conservation Plan Funding Strategies Review

Element	Pima County	Thurston County	Washington County	Fort Ord	South Sacramento	Western Riverside County
	 Caves, mines, and adits Threats Climate 		 Raven and other human impact monitoring Weather stations Post-Amendment actions will be limited to providing funds to SITLA and private lands to fund monitoring (as County met monitoring requirements in original HCP) BLM and UDWR will implement as funds allow 	 HCP animal species Threats (erosion, non-native species) 		 Wildlife community rapid assessment protocol surveys Covered species baseline surveys and long-term distribution monitoring every 8 years
Adaptive Management	 Review avoidance and minimization measures and practices Adjust the land acquisition program Revisions to regulatory programs on County-owned mitigation lands Removal of non-native species Restoration activities 	 Program-level Adaptive Management to address effectiveness of overall conservation program Site-level adaptive management to address uncertainty related to effects of conservation strategy 	 County HCP biologist and HCP administrator lead adjustments Committee guides adaptive management of reserve and Development Protocols 	 Mechanisms to adapt management based on results of monitoring Remedial measures to enhance effectiveness 	 Process for adapting preserve management plans based on effectiveness identified through monitoring and special studies Process for adapting AMMs based on effectiveness 	 Adaptive management at the program and site level Funding provided (\$3.5 million per year) to undertake adaptive management activities including pilot projects for best management tools
Management and Monitoring Reserves Post-Permit: (Does the HCP fund it?)	_	Yes . Non-wasting stewardship endowments are established to fund perpetual management and maintenance of conservation lands.	No. The HCP indicates that BLM will manage the reserve post-permit, though acknowledges BLM's discretion since neither management nor monitoring are is funded by the plan post-permit.	Yes. Habitat management and monitoring occur in perpetuity and will be funded by endowments (one for UC and the rest for other permittees).	Yes. Habitat management and maintenance will continue in perpetuity and be funded by an endowment.	Yes. Reserves are managed in perpetuity
Changed Circumstances	 Involuntary loss of land Climate change Habitat loss/degradation due to development, agricultural conversion, off-road vehicles, roads, Loss/degradation of vegetation due to freezes, reduction in stream flows, desiccation of groundwater dependent systems, arrival of fire ants, invasive plants, exotic and feral animals New species listing or designation of critical habitat 	 New listed species Designation of new critical habitat Involuntary loss of conservation land (e.g., due to eminent domain) Natural catastrophes, incl. drought, wildfire, windstorm on multiple sites (preserves) Toxic or hazardous spill 	 Approval of a four-lane highway across the Reserve, will lead to increasing the reserve size by 10% and other management, reduce take in one authorized zone, and provide support for tortoise passages Wildfire, which will be addressed through dedicated fund Exceptional drought, which may suspend translocations into Reserve Tortoise disease, which may suspend translocations into Reserve or lead to possible treatments Development of private reserve lands, which would be offset by additional land or management fees Non-payment of fees by cities, which would suspend ITP coverage in cities (though developers can pay separately) 	 New listed species Global climate change Catastrophic fire Coastal erosion New non-native species or disease Management changes at the Fort Ord National Monument (BLM) 	 Climate Change and its impacts on covered species Floods Wildfire Drought Invasive plant and animal species Disease Listing of existing covered species (that are not already listed) Listing of new species (not covered in the plan) 	 Short-interval return fire Flood Drought Invasion by exotic species New listings of species not covered
Desert Tortoise Conservation Strategy	• Compensation: Habitat impacts mitigated at ~5:1 ratio: 9,473 ac. of	NA	 Compensation: Habitat impacts mitigated at ~1:1 ratio: 66,301 ac. of 	NA	NA	NA

Case Study Matrix

Element	Pima County	Thurston County	Washington County	Fort Ord	South Sacramento	Western Riverside County
	 modeled habitat impacted and a total of 52,069 ac. of reserves (37,509 ac. fee title and 15,009 ac. of leases) Other Measures: Minimize development on slopes that support tortoises Building setbacks from channels to reduce habitat impacts on tortoises Active preserve habitat management per site-specific plans Species monitoring (15 sites every 3 years) 		 modeled habitat offset with 61,022 ac. of reserves. Other Measures Tortoise translocation from impacted lands based on area- wide surveys, into Reserve and elsewhere (incl. adoptions) Assembly and management of a reserve that substantively meets the recovery plan objectives Outreach and education including visitor center MDT adoption and head-start program (potential) Development protocols for certain projects, as described in Avoidance and Minimization Measures (above) 			
Costs						
Overall Cost	\$172,586,000	\$125,158,991	\$27,680,957	\$119,812,533	\$766,948,000	\$1,048,424,494
Annual Cost	\$5,752,867	\$4,171,966	\$1,107,238	\$2,552,331	\$15,339,000	\$43,684,354
Total Implementation Costs per Acre of Take	\$4,794	\$23,995	\$637	\$19,085	\$25,416	\$19,401
Land Acquisition Costs per Acre of Land Acquisition	\$0	\$22,524	\$501	\$0	\$11,792	\$12,358
Management and Monitoring Costs per Acre of Managed Preserve (includes costs for endowment and changed circumstances as related to management)	\$1,341	\$12,288	\$336	\$4,697	\$2,874	\$2,523
Funding Sources	 General Fund (property tax) General Obligation Bonds 	 Mitigation Fee (per acre) Yelm Pocket Gopher North - \$20,215 Yelm Pocket Gopher East - \$17,137 Yelm Pocket Gopher South - \$14,644 Olympia Pocket Gopher - \$51,111 Tenino Pocket Gopher - \$12,910 Taylor's Checkerspot Butterfly - \$38,054 Oregon Vesper Sparrow - \$20,636 Oregon Spotted Frog - \$15,203 Conservation Futures property tax) 	• 0.2% tax on construction costs	 CFD Special Tax State budget appropriations 	 Mitigation Fee Agriculture - \$17,759 Valley Grassland - \$19,394 Vernal Pool (Direct) - \$209,567 Vernal Pool (Indirect) - \$36,503 Blue Oak - \$129,752 Riparian - \$156,232 Mine Tailing Riparian Woodland - \$156,516 Seasonal Wetland - \$151,416 Freshwater Marsh - \$152,366 Swale (Direct) - \$143,475 Swale (Indirect) - \$21,106 Stream/Creeks VPIH (Direct) - \$158,557 	 Mitigation Fee Low Density Residential - \$3,635 Medium Density Residential - \$1,515 High Density Residential - \$670 Commercial/Industrial - \$16,358 Transportation Impact Fee Tipping Fees, Regional Infrastructure Funding

Clark County Desert Conservation Program Habitat Conservation Plan Funding Strategies Review

Element	Pima County	Thurston County	Washington County	Fort Ord	South Sacramento	Western Riverside County
					 Streams/Creeks VPIH (Indirect) - \$42,590 Open Water - \$124,492 Streams/Creeks - \$130,843 Land Dedication in Lieu of Development Fee 	
Escalation Method	 No escalation built in General fund revenues will be responsive to inflation 	 Full cost review years 2, 3, 6, 10, 15, 20, and 25 During non-review years the fee will increase by April CPI for Seattle-Tacoma area, up to maximum of 3.5% 	 No escalation built in Will be responsive to changes in construction costs 	• CFD is to be revised yearly by either 5% or the Construction Cost Index, whichever is lower	 Annual Inflation Adjustment Land Acquisition – Home Price Index for the Sacramento-Arden- Arcade-Roseville MSA Other Costs – California Construction Cost Index Comprehensive development fee audit ever 3 years for first 15 years of the Plan, and at least every 5 years thereafter 	 Automatic annual adjustment to fees based on the Riverside-San Bernadino-Ontario CPI or a similar inflation factor Nexus Study update ever 5 years is recommended
NOTES	 Multiple species but strategy is largely habitat based. Large reserve system relative to impacts (high mitigation ratios) 	 Relatively focused plan (just animals) Rigorous process for crediting mitigation benefits (habitat protection and enhancement of existing protected habitat) 'Functional habitat' acres are calculated by multiplying the acres of land by its habitat value, which ranges from 0-1 such that the functional acres underestimate the actual acres. 	 Plan reauthorized/extended in 2020. Single species HCP, though some limited actions conducted for rare plants and Virgin River Basin fishes Reserve is comprised of individual lands managed by BLM and private landowners 	 Preserve system includes land given to permittees when base was closed, hence no acquisition costs. Habitat management and monitoring are robust. The Plan may ultimately not be implemented and jurisdictions may instead seek separate permits. 		 California Natural Communities Conservation Program (NCCP) as well as an HCP. State and Federal Government agencies are also acquiring and managing 56,000 ac. and managing an additional 347,000 ac. of existing protected lands as part of this HCP/NCCP. This plan is old and does not follow the HCP template or general approach to most HCPs, so it is hard to locate the comparable information Case study and fee program focused on Local/ Regional obligations; distinct set of obligations of State/ Federal government