

This chapter provides planning-level estimates of the costs to implement the Habitat Conservation Plan (HCP), identifies funding sources to pay for implementation, and describes the rationale for funding assurances.

7.1 Cost and Benefit of the HCP

The HCP is estimated to cost approximately \$185.3 million, paid incrementally over the 50-year permit term and excluding inflation, and shared among the Permittee Agencies.

Over 50 years, the \$185.3 million in HCP costs will allow Permittee Agencies to develop over 4 million acre-feet of water for local use, or approximately 87,000 acre-feet per year (afy) by year 15 of HCP implementation. These water resources will reduce reliance on imports from other parts of the State, increasing the area's resilience to drought and regulatory restrictions that hamper water deliveries from the State Water Project, while also keeping more of the project spending in the local economy.

While the price tag of the HCP may appear surprisingly high upon first glance, the economic benefits of the plan to water users and the local economy as a whole are substantially greater than the costs. Without the HCP in place, Permittee Agencies would need to acquire this additional 87,000 afy of water supply from more costly alternative sources. Even with a conservative assumption that it would be possible to purchase that volume of water either from wholesalers or elsewhere in the market, the HCP is projected to save the region approximately \$955 million over the life of the HCP on a net present value basis¹, and create secondary benefits from investment in the local economy.² This total net benefit illustrates the enormity and importance of this effort and represents a benefit-cost ratio over 1.4:1.³

7.2 HCP Benefits

Although the cost of the HCP may seem high, the net benefits to water users and the local economy from this investment amount to an estimated \$955 million, generating a benefit-cost ratio in excess of 1.4:1. This means that for every \$100 spent on the project, the local economy will see an estimated \$140 in benefits and avoided costs.

Over the 50-year life of the HCP, the \$185.3 million investment will allow Permittee Agencies to develop over 4 million acre-feet of water cumulatively for local use, or approximately 87,000 afy by

¹ When comparing scenarios that include capital costs and a future stream of annual O&M costs, it is necessary to use net present value calculations, which discount future year expenditures so that all values are in equivalent units. The HCP cost is presented as \$185.3 million on an undiscounted basis, equivalent to \$126.5 million in net present value.

² Refer to Section 7.2, *HCP Benefits*, for a detailed accounting of this estimate. Net present value (NPV) calculations are made using an interest rate of 4.61% based on the rate used by the State Water Project in calculating water prices. A general inflation rate is assumed to be 2%. The net discount rate is 2.61%.

³ The benefit-cost ratio is the net present value of the benefits divided by the net present value of the costs. In this case, the benefits are the avoided future costs of more expensive water sources. A ratio above 1:1 indicates net positive benefits over the life of a project or program.

year 15. These water resources will reduce reliance on imported water from other parts of the State, increasing the area's resilience to drought and the increasing uncertainty and volatility that hamper water deliveries from the State Water Project and Colorado River Aqueduct.

Without the Covered Activities enabled by the HCP and associated incidental take permits, the Permittee Agencies would not be able to optimize the use of local water resources. Instead, their best options for obtaining such a large volume of water at the same level of reliability are to purchase additional imported water or develop new supplies through desalination. It is true that in some years, particularly wet hydrologic years, a fraction of the 87,000 acre-feet of water may be available for Permittee Agencies to purchase through San Bernardino Valley Municipal Water District's (Valley District's) State Water Project allotment. However, this water would not be available in other drier years, so it would not be reliable or predictable. This reliability benefit is part of the reason that Permittee Agencies are pursuing the HCP.

Potential alternatives to meet the full 87,000 acre-feet of water include purchasing additional water or adding desalination. These options are costly compared to both current water supplies and to alternatives facilitated by the HCP. Imported water from the Metropolitan Water District of Southern California (Metropolitan), which represents the going rate of buying additional water supplies through the market, currently costs \$2,007 per acre-foot for treated Tier 2 water. This Tier 2 rate is set at Metropolitan's cost of purchasing water transfers north of the Sacramento-San Joaquin Delta and includes all costs associated with moving that water to Southern California. Individual water districts could pursue their own water transfers from north of the Delta, but would be competing against Metropolitan. For this reason, the Tier 2 rate is the best proxy for the price Permittee Agencies would have to pay if they pursued their own private water transfers. Desalination is the other alternative water supply option available to Southern California that does not depend on moving water through the Delta. It is estimated to cost about \$2,019 per acre-foot based on the midpoint of existing desalination projects in Southern California. Using the lower Metropolitan price as a proxy for what HCP partner agencies would need to spend to acquire new supplies, the same volume of water would cost \$3.2 billion over the life of the HCP, on a net present value basis.⁴ However, there is no guarantee that such a large volume of water would even be reliably available for purchase, and developing sufficient equivalent capacity of desalination projects presents its own regulatory and geographic hurdles. For these reasons, the \$3.2 billion cost for an alternative portfolio is considered to be conservative and biased toward a low estimate of projected savings made possible by the HCP.

Based on the planned mix of Covered Activity water supply projects, Permittee Agencies will be able to develop the same amount of water at a net present value cost of approximately \$2.2 billion. To estimate this cost, for conventional and groundwater supply Covered Activity projects, a value of \$829 per acre-foot is used, based on average costs for managed aquifer recharge projects in California State grant applications (Perrone and Rhode 2016). For recycled water and indirect potable reuse projects, an average cost of \$1,269 per acre-foot was used, based on the cost of the Water Replenishment District of Southern California's Groundwater Reliability Improvement Program Advanced Water Treatment Facility (Metropolitan 2016), Orange County Water District's Groundwater Replenishment System (Metropolitan 2016), and cost estimates developed by the Pacific Institute for Indirect Potable Reuse (Cooley and Phurisamban 2016).

⁴ Net present value (NPV) calculations are made using an interest rate of 4.61% based on the rate used by the State Water Project in calculating water prices. The general inflation rate is assumed to be 2%. The net discount rate is 2.61%.

The net present value (NPV) of water supply costs without the HCP is \$3.2 billion, compared to an NPV of \$2.2 billion in water supply costs with the HCP. This is an estimated savings of \$1.08 billion from water supply projects alone.

This potential savings puts the HCP total cost in perspective. The \$185.3 million undiscounted total HCP cost translates to an NPV of \$126.5 million. Based on the savings estimated from water supply projects and the cost of the HCP, pursuing the HCP over alternative water supply options could result in net savings of \$955 million or more in net present value. This cost saving will be passed on to commercial and residential water customers throughout the HCP area.

Table 7-1. HCP Net Savings Estimate in Net Present Value (\$1,000s)

	Water Supply Cost	HCP Cost	Net Savings (cost)
Without HCP	\$3,243	\$0	
With HCP	\$2,162	\$126.5 ¹	
Total savings (cost)	\$1,081	-\$126.5	\$955

¹ Note that this total HCP cost is presented in net present value (NPV). It is equivalent to the \$185.3 million undiscounted total cost presented elsewhere in this chapter, but shown in NPV so that it can be compared to alternative scenarios on a comparable basis.

The project also helps the region move forward in addressing the threat of climate change by mitigating greenhouse gas (GHG) emissions. The habitat restoration leads to sequestering 130 metric tons in CO₂-equivalence according to the U.S. Department of Agriculture's COMET calculator.⁵

The increased local water resources reduce emissions in two ways. The first is a greater reliance on in-basin sources. This avoids emissions associated with pumping water through the State Water Project over the Tehachapi Mountains. The second is greater flexibility in storing imported water, which allows for higher deliveries in wet years and reduced deliveries in dry ones. Wet and dry conditions correspond with higher and lower output from the State's hydropower system, so GHG emissions are lower in wet years when imports can be increased. Conversely, imports are avoided in dry years when GHG emissions are higher. Because this analysis has not identified the breakdown in new supplies between local and imported sources, and deriving the differences in GHG emissions for importing in wet versus dry years requires extensive electricity system production cost modeling, those emission reductions are not quantified here.

In addition, developing new water supplies through investment in local water supply projects as well as local investment in habitat conservation creates secondary impacts in the Planning Area economy similar to an economic stimulus, when compared to purchasing imported water from Metropolitan. Using IMPLAN⁶ economic modeling software, if the HCP and water project costs are spent in the local economy each year over the life of the project, the result would be an additional \$402 million in economic activity,⁷ and \$132 million in additional income to local residents, in addition to the creation of approximately 85 jobs annually.

⁵ USDA COMET Planner. <http://comet-planner-cdfahsp.com/>.

⁶ IMPLAN software is an industry standard input-output model that allows users to estimate how regional economic impacts flow through the economy.

⁷ Defined as economic output, equivalent to \$195 million in value added to the economy.

7.3 Purpose of Cost Estimate and Annual HCP Implementation Budget

The cost estimates presented in this chapter have been developed for the purpose of budgeting and are not to be confused with legally authorized or required cost expenditures. Actual year-to-year expenditures will be based on HCP implementation priorities as developed in the preserve management plans and annual reports, and as determined by the Upper Santa Ana River Sustainable Resource Alliance (Alliance), technical committee, and preserve management committee. This budget is based on a projected HCP implementation schedule that may not conform with how the HCP will be implemented in response to the actual timing of Covered Activity implementation. As the HCP is adapted to changing environmental conditions and schedules and scale of Covered Activities, this budgeted amount will also change. In addition, the budget will be updated to reflect general inflation and cost escalation that cannot be readily forecasted today. Using constant dollar budget estimates instead allows more readily for comparisons across years.

7.4 HCP Cost Estimate

The HCP is estimated to cost approximately \$185.3 million in 2020 dollars, including costs over 50 years without discounting and inflation. Table 7-2 to Table 7-4 summarize the total, capital, and operational costs estimated to be necessary to carry out the HCP.

The cost analysis is based on a number of assumptions regarding the timing of implementation of various components of the HCP and the estimated unit costs of land, labor, and materials. Unit cost estimates were based on the best available information and represent average unit costs. The costs of individual items will fluctuate above and below these averages. The total cost presented herein should therefore be regarded as a planning-level estimate to aid in the determination of the approximate amount of funding needed to implement the HCP. Specific costs will be refined as they are ascertained during the first years of HCP implementation, and any adjustments to the overall costs, cost-sharing agreements among Permittee Agencies, and endowment requirements will be made as needed.

Costs are organized by the following cost categories:

- Land acquisition and easements
- Habitat improvement (restoration and/or rehabilitation)
- Fish translocation
- Management and maintenance
- Monitoring and reporting
- Staffing and Program administration
- Endowment fund
- Changed Circumstance Reserve

All cost categories are mutually exclusive so that summing the category costs yields the total expected cost to implement the HCP. Note, however, that some cost items are allocated across the

categories. For example, Implementing Entity (Alliance) staff salaries and overhead are apportioned across the categories because staff will perform a range of functions. Each cost category is divided into capital and operational costs. Capital costs are typically one-time costs for land, equipment, structures, or improvements. Operational costs are ongoing costs such as staff salaries and contractor fees. Costs are summarized by 5-year periods for Phases 1 through 3, and then for the remaining 35 years to encompass the 50-year permit period except for pre-permit and startup costs, which are shown as lump sums for Permit Year 0 (costs that will have been incurred prior to the initiation of HCP implementation). Costs are in 2020 dollars unless noted otherwise.

Table 7-2. Summary of Upper SAR HCP Capital Costs (1,000s 2020 dollars)

Capital Costs ¹	Implementation Period (Years)					Total Costs ³
	Initial	Phase 1	Phase 2	Phase 3	Phase 4	
	0 ²	1-5	6-10	11-15	16-50	
Land Acquisition & Easements	\$60	\$18,520	\$11,132	\$0	\$0	\$29,712
Habitat Improvement	\$24,350	\$3,711	\$800	\$750	\$0	\$29,611
Fish Translocation	\$255	\$0	\$0	\$0	\$0	\$255
Management and Maintenance	\$0	\$0	\$751	\$206	\$0	\$957
Monitoring and Reporting	\$0	\$0	\$0	\$0	\$0	\$0
Staffing and Program Administration	\$0	\$0	\$0	\$0	\$0	\$0
Endowment Fund	\$0	\$0	\$0	\$0	\$0	\$0
Changed Circumstance Reserve	\$0	\$6,069	\$1,233	\$113	\$0	\$7,415
Total	\$24,671	\$28,300	\$13,916	\$1,069	\$0	\$67,956
Total Per Year		\$5,660	\$2,783	\$214	\$0	\$1,359

¹ All costs rounded to the nearest \$1,000.

² Year 0 costs are costs that will have been incurred prior to the start of the HCP.

³ Total Costs sum across all years with no discounting.

Table 7-3. Summary of Upper SAR HCP Operating Costs (1,000s 2020 dollars)

Operating Costs ¹	Implementation Period (Years)					Total Costs ³
	Initial	Phase 1	Phase 2	Phase 3	Phase 4	
	0 ²	1-5	6-10	11-15	16-50	
Land Acquisition & Easements	\$0	\$0	\$0	\$0	\$0	\$0
Habitat Improvement	\$0	\$3,298	\$4,854	\$949	\$6,646	\$15,747
Fish Translocation	\$0	\$1,135	\$876	\$565	\$3,958	\$6,535
Management and Maintenance	\$0	\$2,693	\$3,035	\$3,513	\$24,589	\$33,830
Monitoring and Reporting	\$0	\$1,797	\$1,797	\$2,026	\$13,930	\$19,551

Operating Costs ¹	Implementation Period (Years)					Total Costs ³
	Initial	Phase 1	Phase 2	Phase 3	Phase 4	
	0 ²	1-5	6-10	11-15	16-50	
Staffing and Program Administration	\$0	\$2,442	\$2,442	\$2,307	\$16,148	\$23,339
Endowment Fund	\$0	\$1,378	\$1,378	\$1,378	\$9,645	\$13,779
Changed Circumstance Reserve	\$0	\$656	\$881	\$289	\$2,018	\$3,845
Total	\$0	\$13,399	\$15,263	\$11,028	\$76,934	\$116,626
Total Per Year		\$2,680	\$3,053	\$2,206	\$2,198	\$2,333

¹ All costs rounded to the nearest \$1,000.

² Year 0 costs are costs that will have been incurred prior to the start of the HCP.

³ Total Costs sum across all years with no discounting.

Table 7-4. Summary of Upper SAR HCP Total Implementation Costs (1,000s 2020 dollars)

Total Costs ¹	Implementation Period (Years)					Total Costs ³
	Initial	Phase 1	Phase 2	Phase 3	Phase 4	
	0 ²	1-5	6-10	11-15	16-50	
Land Acquisition & Easements	\$60	\$18,520	\$11,132	\$0	\$0	\$29,712
Habitat Improvement	\$24,350	\$6,003	\$4,647	\$973	\$1,561	\$37,534
Fish Translocation	\$255	\$381	\$122	\$72	\$504	\$1,334
Management and Maintenance	\$0	\$1,422	\$2,515	\$2,137	\$13,515	\$19,589
Monitoring and Reporting	\$722	\$722	\$722	\$722	\$4,798	\$7,686
Staffing and Program Administration	\$0	\$6,549	\$6,549	\$6,413	\$44,891	\$64,402
Endowment Fund	\$0	\$1,378	\$1,378	\$1,378	\$9,646	\$13,780
Changed Circumstance Reserve	\$0	\$6,725	\$2,115	\$402	\$2,017	\$11,259
Total	\$25,393	\$41,700	\$29,180	\$12,097	\$76,932	\$185,302
Total Per Year		\$8,340	\$5,836	\$2,419	\$2,198	\$3,706

¹ All costs rounded to the nearest \$1,000.

² Year 0 costs are costs that will have been incurred prior to the start of the HCP.

³ Total Costs sum across all years with no discounting.

7.5 Cost Estimate Methodology

This section provides an explanation of each cost category and the methods that were used to develop the HCP cost estimate. The spreadsheets used to develop the HCP cost estimate are provided in Appendix H, *Upper Santa Ana River HCP Cost*.

7.5.1 Land Acquisition and Easements

Land acquisition and easement cost estimates are based on a geographic information system (GIS) database of parcels within the HCP Preserve System. Note however that the total acreage of these parcels may differ compared to the acreage suitable for Covered Species habitat. Consequently, actual useable acreage for the HCP is sometimes smaller than the total acreage of each parcel. This section provides conservative cost estimates based on total land area. For more precise information on the actual planned areas of habitat improvement activities, refer to Chapter 5, *Conservation Strategy*.

The HCP conservation strategy consists of the acquisition of approximately 1,428 acres. The land parcels identified for acquisition or easements include small amounts of developed (78 acres) and agricultural (2 acres) land.

Conservation Areas

Lands proposed for acquisition will be purchased in fee title, or acquired via the recordation of a conservation easement. A total of 1,428 acres will be acquired, restored and/or rehabilitated, and monitored and managed in perpetuity. Lands proposed for acquisition include those that contain aquatic, riparian, and floodplain habitat and those supporting alluvial fan habitat. Table 7-5. shows the type and timing of all planned transactions for land acquisition. All land acquisition costs are proposed to occur within the first 10 years of HCP implementation (by Phase 2).

Table 7-5. Conservation Area Acreages¹ within Each Preserve Unit

	Transaction Type	Phase 0	Phase 1	Phase 2	Total Acres
Santa Ana River Preserve Unit: Aquatic, Riparian, and Floodplain Conservation Areas					
Anza Creek	Easement	7	0	0	7
Evans Lake	Easement	0	115	0	115
Hidden Valley Creek ²	Easement	11	0	102	112
Hidden Valley Ponds ²	Easement	0	13	55	69
Lower Hole Creek ²	Easement	0	6	0	6
Management of Santa Ana Sucker Restoration on Sunnyslope Creek	Easement	0	10	0	10
Old Ranch Creek	Easement	0	18	0	18
Subtotal		18	163	157	338
Alluvial Fan Preserve Unit A: Alluvial Fan Conservation Areas					
Drainage A Woolly-Star	Acquisition and Easement	0	0	21	21
Enhanced Recharge Basins	Easement	0	295	0	295
Redlands Airport Parcels	Acquisition and Easement	40	0	0	40
Santa Ana River Refugia	Easement (HCP Partner-Owned)	0	102	0	102
San Bernardino Avenue	Acquisition and Easement	6	0	0	6

	Transaction Type	Phase 0	Phase 1	Phase 2	Total Acres
Weaver	Acquisition and Easement	17	0	0	17
Subtotal		63	397	21	481
Alluvial Fan Preserve Unit B: Alluvial Fan Conservation Areas					
Devil Creek	Easement (HCP Partner-Owned)	0	345	0	345
Subtotal		0	345	0	345
Santa Ana Sucker Translocation Preserve Unit A Conservation Areas					
City Creek	Easement (HCP Partner-Owned)	0	0	264	264
Subtotal		0	0	264	264
Total		81	905	442	1,428

¹ Acquisition of conservation lands is contingent upon successful land acquisition/conservation easement recordation. If a conservation area cannot be acquired the Alliance will pursue alternate lands with similar potential to support Covered Species. Additional lands will continue to be pursued by the Alliance, consequently the Conservation Areas listed in Table 7-6 are not reflective of the final Conservation Area list proposed for incorporation in the HCP Preserve System.

² CDFW retains ownership, no cost per acre. Easement transaction costs included for budgeting purposes.

The cost of land varies and is primarily dependent on location and land use zoning; however, other factors may also influence costs, including the type and quality of onsite habitat. It is anticipated that where HCP-partner agencies own lands that may be suitable for Covered Species mitigation, these lands will be offered to the HCP via recordation of conservation easements as in-kind contributions to the HCP. In other cases, easements may have already been established, so going-forward additional land acquisition costs to the HCP for those parcels are zero. In addition to the per acre cost of land, the HCP has assumed a \$12,000 transaction fee for establishing an easement (on a per-property basis).

Table 7-6 outlines the acquisition costs of the Conservation Areas. Aquatic/riparian/floodplain parcels are anticipated to cost a total of \$84,000, while alluvial fan lands will cost \$25.1 million. In addition to the 1,428 acres comprising the HCP strategy, for the purpose of estimating land acquisition costs, Table 7-6 also includes a contingency cost for 15 additional acres of land. Total land costs are estimated at \$29.7 million.

Table 7-6. Conservation Area Land Acquisition Costs¹

	Cost Per Acre	Total Acres	Additional Easement Transaction Cost	Total Cost
Santa Ana River Preserve Unit: Aquatic, Riparian, and Floodplain Conservation Areas				
Anza Creek	\$0 ²	7	\$12,000	\$12,000
Evans Lake	\$0 ²	115	\$12,000	\$12,000
Hidden Valley Creek	\$0 ³	112	\$12,000	\$12,000
Hidden Valley Ponds	\$0 ³	69	\$12,000	\$12,000
Lower Hole Creek	\$0 ³	6	\$12,000	\$12,000
Management of Santa Ana Sucker Restoration on Sunnyslope Creek	\$0 ⁴	10	\$12,000	\$12,000

	Cost Per Acre	Total Acres	Additional Easement Transaction Cost	Total Cost
Old Ranch Creek	\$0 ²	18	\$12,000	\$12,000
Subtotal		338	\$84,000	\$84,000
Alluvial Fan Preserve Unit A: Alluvial Fan Preserve Unit A Conservation Areas				
Drainage A Woolly-Star	\$315,000	21	\$12,000	\$6,620,000
Enhanced Recharge Basins	\$125,000	295	\$12,000	\$18,436,005
Redlands Airport Parcels	\$0	40	\$12,000	\$12,000
San Bernardino Avenue	\$0	102	\$12,000	\$12,000
Santa Ana River Refugia	\$0	6	\$12,000	\$12,000
Weaver	\$0	17	\$12,000	\$12,000
Subtotal		481	\$72,000	\$25,104,000
Alluvial Fan Preserve Unit B: Alluvial Fan Preserve Unit B Conservation Areas				
Devil Creek	\$0	345	\$12,000	\$12,000
Subtotal		345	\$12,000	\$12,000
Santa Ana Sucker Translocation Preserve Unit A Conservation Areas				
City Creek	\$0	264	\$12,000	\$12,000
Subtotal	\$0	264	\$12,000	\$12,000
Subtotal All Planned Acquisition		1,428	\$180,000	\$25,212,000
Contingency Land Acquisition ⁶	\$300,000	15	\$0	\$4,500,000
Total		1,443	\$180,000	\$29,712,000

¹ Acquisition of conservation lands is contingent upon successful land acquisition/conservation easement recordation. If a conservation area cannot be acquired the Alliance will pursue alternate lands with similar potential to support Covered Species. Additional lands will continue to be pursued by the Alliance; consequently, the Conservation Areas listed in Table 7-6 are not reflective of the final Conservation Area list proposed for incorporation in the HCP Preserve System.

² In-kind contribution from Permittee Agency

³ CDFW/County of Riverside retains ownership, no cost per acre. Easement transaction costs included for budgeting purposes.

⁴ Long-term lease at \$5/year. Rounded to zero for this analysis; easement transaction costs included for budgeting purposes.

⁵ Approximately half of the 295 acres have already been purchased.

⁶ Contingency land acquisition is based on the Cajon Mitigation Bank credit cost, approximately \$300,000 per acre.

Land Acquisition and Easements Summary

The total land acquisition costs are estimated at \$29.7 million. These costs are summarized by phase in Table 7-7..

Table 7-7. Summary of Total Land Acquisition Costs

	Phase 0	Phase 1	Phase 2	Phase 3	Phase 4	Total
Santa Ana River Preserve Unit	\$24,000	\$60,000	\$0	\$0	\$0	\$84,000
Alluvial Fan Preserve Unit A	\$36,000	\$18,448,000	\$6,620,000	\$0	\$0	\$25,104,000

	Phase 0	Phase 1	Phase 2	Phase 3	Phase 4	Total
Alluvial Fan Preserve Unit B	\$0	\$12,000	\$0	\$0	\$0	\$12,000
Santa Ana Sucker Translocation Preserve Unit A	\$0	\$0	\$12,000	\$0	\$0	\$12,000
Contingency	\$0	\$0	\$4,500,000	\$0	\$0	\$4,500,000
Total	\$60,000	\$18,520,000	\$11,132,000	\$0	\$0	\$29,712,000

7.5.2 Habitat Improvement Activities

Under the HCP Conservation Strategy all of the Conservation Areas will be subject to habitat improvement activities (restoration and/or rehabilitation) for the benefit of Covered Species. See Chapter 5, Section 5.4.3, *Conservation Areas*, for more detail on the specific habitat improvement activities planned at each site. Habitat improvement project costs are divided into the following four categories:

- Major restoration project costs
- Habitat Management and Monitoring Plan (HMMP) implementation costs
- Santa Ana River microhabitat restoration project costs
- Supplemental streamflow costs

HMMP costs take place for 5 years following habitat improvement activity implementation. Long-term maintenance and monitoring costs for all Conservation Areas are accounted for in Sections 7.5.4, *Preserve Management and Maintenance*, and 7.5.5, *Monitoring and Reporting*.

Major Restoration Project Costs

Major restoration project costs are estimated at \$1.6 million.

Restoration project costs have been estimated for each restoration site. Major restoration project costs include design, planning, permitting, and construction costs for the specific restoration project (Santa Ana River tributary restoration including creek channel and riparian floodplain, as well as alluvial fan restoration projects). These costs may occur over the four phases of the HCP period but are all considered capital costs. These costs are summarized by phase and restoration site in Table 7-8.

Five of the sites listed in Table 7-8, have been identified for tributary restoration to increase the amount and quality of Santa Ana sucker habitat. Restoration has been initiated at three of these sites. Restoration of the other two sites is expected to take place within the first 5 years of the permit term. The cost estimates in Table 7-8 are based on already incurred and expected costs at each restoration site.

Table 7-8. Restoration Implementation Capital Costs

	Phase 1	Phase 2	Phase 3 or 4	Total
Santa Ana River Preserve Unit				
Anza Creek	\$0	\$0	\$0	\$0
Evans Lake	\$0	\$0	\$0	\$0
Hidden Valley Creek	\$0	\$600,000	\$0	\$600,000
Hidden Valley Ponds	\$0	\$0	\$750,000	\$750,000
Lower Hole Creek	\$0	\$50,000	\$0	\$50,000
Management of Santa Ana Sucker Restoration on Sunnyslope Creek	\$0	\$0	\$0	\$0
Old Ranch Creek	\$0	\$0	\$0	\$0
Subtotal	\$0	\$650,000	\$750,000	\$1,400,000
Alluvial Fan Preserve Unit A				
Drainage A Woolly-Star	\$0	\$150,000	\$0	\$150,000
Subtotal	\$0	\$150,000	\$0	\$150,000
Total	\$0	\$800,000	\$750,000	\$1,550,000

Habitat Management and Monitoring Plan Implementation

HMMP implementation covers 5 years of maintenance and monitoring costs after restoration activities are complete. ICF staff created estimates for HMMP implementation based on their experience with other management and monitoring efforts. However, because precise plans have not yet been developed estimates are broad but conservative. HMMP costs are also included for those Conservation Areas where habitat improvement activities will consist primarily of rehabilitation. The estimated \$5.9 million HMMP costs are included as an operations and maintenance (O&M) cost and are summarized by phase and conservation site in Table 7-9.

Table 7-9. HMMP Costs

	Phase 1	Phase 2	Phase 3 or 4	Total
Santa Ana River Preserve Unit				
Anza Creek	\$500,000	\$0	\$0	\$500,000
Evans Lake	\$0	\$1,750,000	\$0	\$1,750,000
Hidden Valley Creek	\$500,000	\$1,050,000	\$0	\$1,550,000
Hidden Valley Ponds	\$0	\$300,000	\$0	\$300,000
Lower Hole Creek	\$350,000	\$250,000	\$0	\$600,000
Management of Santa Ana Sucker Restoration on Sunnyslope Creek	\$0	\$0	\$0	\$0
Old Ranch Creek	\$500,000	\$0	\$0	\$500,000
Subtotal	\$1,850,000	\$3,350,000	\$0	\$5,200,000
Alluvial Fan Preserve Unit A				
Drainage A Woolly-Star	\$0	\$75,000	\$0	\$75,000
Enhanced Recharge Basins	\$250,000	\$100,000	\$0	\$350,000

	Phase 1	Phase 2	Phase 3 or 4	Total
Redlands Airport Parcels	\$15,000	\$0	\$0	\$15,000
Santa Ana River Refugia	\$39,000	\$0	\$0	\$39,000
San Bernardino Avenue	\$2,000	\$0	\$0	\$2,000
Weaver	\$6,000	\$0	\$0	\$6,000
Subtotal	\$312,000	\$175,000	\$0	\$487,000
Alluvial Fan Preserve Unit B				
Devil Creek	\$130,000	\$0	\$0	\$130,000
Subtotal	\$130,000	\$0	\$0	\$130,000
Santa Ana Sucker Translocation Unit A				
City Creek	\$0	\$99,000	\$0	\$99,000
Subtotal	\$0	\$99,000	\$0	\$99,000
Total	\$2,292,000	\$3,624,000	\$0	\$5,916,000

Santa Ana River Microhabitat Enhancement

The costs for Santa Ana River microhabitat enhancement correspond to the following Santa Ana sucker (SAS) Actions associated with SAS Objective 2, as described in Chapter 5:

SAS Objective 2: Increase the amount and quality of available foraging, refugia, and spawning habitat in the mainstem of the Santa Ana River through restoration and rehabilitation. A portion of this area is included in the modeled habitat for the species, while other portions are not currently suitable habitat but would be enhanced to be suitable through habitat improvement activities (e.g., restoration and/or rehabilitation).

SAS Action 2A: Enhance sucker habitat in the mainstem of the Santa Ana River with the addition of at least six habitat nodes and/or stream bifurcation structures, enhancing at least 1.5 acres of habitat (see Section 5.5.1, *Mainstem Santa Ana River Microhabitat Creation*). Successful implementation of this measure includes increasing the relative bed coarseness (increase in exposed gravel and cobble), when compared to the baseline condition or an unmanipulated control site(s), over the cumulative habitat enhancement area equivalent to or exceeding 1.5 acres. The appropriate timing for this measurement should be when surface flow is dominated by discharged wastewater during the summer and fall months, prior to the start of the rainy season (late fall). Survey methodology for this measure will be developed as part of the CAMMP.

Santa Ana River microhabitat enhancement entails the installation of in-stream habitat structures designed to increase bed scour and habitat complexity in order to provide suitable Santa Ana sucker habitat and shelter. Unit costs for these structures are based on preliminary designs prepared by Scheevel Engineering. The costs are summarized in Table 7-10. In addition to the initial design, permitting, and construction costs, it is assumed that, on average, one habitat node will need to be rebuilt every 5 years due to washout or other event rendering the damaged node unsuitable as Santa Ana sucker habitat. The replacement cost is set to the average cost per habitat node for the three habitat structures listed in Table 7-10.

Table 7-10. Santa Ana Sucker Microhabitat Enhancement Cost Estimate by Microhabitat Type

	Elevated Inverts	Open Water Runners	Partially Submerged Groins	Total
Number of Microhabitat Nodes	4	6	6	
Total Habitat Created – low end (acres)	0.05	0.09	0.12	0.26
Total Habitat Created – high end (acres)	0.47	0.87	1.19	2.53
Construction Costs				
Design & Permitting	\$76,000	\$76,000	\$76,000	\$228,000
Construction	\$976,000	\$1,276,000	\$1,186,000	\$3,438,000
Total Capital Cost	\$1,052,000	\$1,352,000	\$1,262,000	\$3,666,000
Node replacement cost every 5 years ¹				\$223,000
Expected Implementation	Years 1–5	Years 1–5	Years 1–5	

¹ Cost estimate assumes one habitat node will need to be rebuilt every 5 years due to washout or other event rendering the damaged node unsuitable Santa Ana sucker habitat.

Supplemental Streamflow Cost

To support Santa Ana sucker habitat restoration, approximately 4,272 afy of water is proposed to be supplied to Hidden Valley Creek, Hidden Valley Wetlands, and Lower Hole Creek, and approximately 5,076 afy is proposed to be conveyed to Anza Drain, Old Ranch Creek, Tequesquite Creek, and Evans Lake channel. Valley District plans to use recycled water supplies to meet these water needs. Pending approval from the State Water Resources Control Board, Division of Water Rights, tributary restoration sites will receive continuous flows using recycled water from the existing Riverside Regional Water Quality Control Plant. The City of Riverside Public Utilities Water Division has proposed the Santa Ana River Sustainable Parks and Tributaries Water Reuse Project (RPU.10) to expand the existing recycled water system to provide water to both Riverside Public Utilities (RPU) customers as well as providing water to tributary restoration sites.

According to the preliminary cost estimates developed for RPU.10 in their Habitat-Parks Recycled Water Preliminary Planning Report (RPU 2018), planning scenarios to supply water to both RPU customers and the HCP including capital costs are estimated at \$48.7 million. This investment would be split evenly between the HCP and RPU, so the total capital cost included here is \$24.4 million. Annual operations and maintenance costs, which include maintenance and electricity for the recycled water pump station, dechlorination, and labor, are estimated at \$608,000, which would also be split evenly. For the estimated 4,272 afy needed annually, the cost share is \$303,000 per year. However, it is also anticipated that the HCP would receive approximately \$312,000 per year in revenue from the Inland Empire Utilities Agency (IEUA) for sending water down the Santa Ana River to meet their legal requirements. Considering the offsetting revenue from IEUA, annual operation and maintenance costs for the water source are estimated at zero with only capital costs remaining.⁸

Table 7-11 summarizes the cost of supplemental water.

⁸ The parties are planning to use a water exchange, where for every acre-foot of water that is discharged to Evans Creek, Tequesquite Arroyo, Old Ranch Creek, and Anza Creek, the HCP would work with SBVWCD to provide access to a like amount of water out of the Bunker Hill Basin that RPU would extract. In addition, the water proposed to be discharged to Hole Creek and Hidden Valley would be provided to the HCP at no charge under the current proposal.

Table 7-11. Summary of Supplemental Water Costs

	Summary	Total Capital	Total Annual	Total-5-Year Period
Capital Cost	0.5 x \$48.7 million	\$24,400,000		
Annual O&M Cost	0.5 x \$608,000		\$304,000	\$1,520,000
Additional Annual Capital Recovery Charge Cost	4,272 afy x \$71/acre-foot		\$303,000	\$1,515,000
IEUA Revenue			-\$625,000	-\$3,125,000
Total Annual Cost			\$0	\$0

Summary of Habitat Improvement Cost Estimates

Table 7-12 summarizes all habitat improvement costs included in the HCP strategy. Capital investment costs for restoration projects are estimated to be \$29.6 million in total; \$24.4 million of which occurs prior to issuance of the HCP permit to expand the Riverside Regional Water Quality Control Plant. The remaining \$5.2 million is spread out over the different phases to construct habitat improvements.

O&M costs range from \$2.3 million in Phase 1, \$3.8 million in Phase 2, and \$1.8 million over the remainder of the 50-year permit.

The cost estimate in Table 7-12 does not include the long-term costs for management and monitoring of the Conservation Areas. As noted above, those costs are accounted for in Sections 7.5.4 *Preserve Management and Maintenance* and 7.5.5 *Monitoring and Reporting*.

Table 7-12. Summary of Total Habitat Improvement Costs (\$1,000s)

	Pre-Permit	Phase 1	Phase 2	Phases 3 and 4	Total
Restoration	\$0	\$0	\$800	\$750	\$1,550
HMMP					\$0
Microhabitat Enhancement		\$3,711			\$3,711
Supplemental Streamflow (Expansion of RPU Regional Water Quality Control Plant)	\$24,350				\$24,350
Capital Subtotal	\$24,350	\$3,711	\$800	\$750	\$29,611
Restoration					\$0 ¹
HMMP	\$0	\$2,292	\$3,624	\$0	\$5,916
Microhabitat Enhancement		\$0	\$223	\$1,784	\$2,007
Supplemental Streamflow		\$0	\$0	\$0	\$0
O&M Subtotal	\$0	\$2,292	\$3,847	\$1,784	\$7,923
Total²	\$24,350	\$6,003	\$4,647	\$2,534	\$37,534

¹ O&M costs are zero because after construction, restoration sites will be managed as part of Conservation Areas in the preserve system. See Section 7.5.4, *Preserve Management and Maintenance*, for information on these costs.

² Note that total cost corresponds to total Restoration costs in Table 7-4. Numbers may not sum to total due to rounding.

7.5.3 Fish Translocation

Fish translocation entails creating new local populations of sucker in the mountain tributaries of the Santa Ana River, per Santa Ana sucker Objective 6, as described in Chapter 5. The costs presented in this subsection pertain to the following SAS Action:

- **SAS Action 6A:** Conduct a minimum of three translocations of Santa Ana sucker into mountain tributary streams following techniques and methodology outlined in the Santa Ana sucker Translocation Plan and CAMMP. Successfully re-introduce and maintain a minimum of three Santa Ana sucker populations over the life of the permit duration in at least three mountain streams tributary to the Santa Ana River.

Costs for fish translocation activities are divided into the following four categories:

- Fish translocation plan development
- Captive holding facility construction and O&M
- Translocation contractor services
- U.S. Forest Service (USFS) coordinating agreement costs

Monitoring costs associated with fish translocation are accounted for in Section 7.5.5, *Monitoring and Reporting*.

Fish Translocation Plan Development

The cost for development of the fish translocation plan that has been prepared was \$255,000.

Captive Holding Facility

Construction of the Santa Ana sucker captive holding facility has already been paid for pre-permit, and is therefore not included as a going-forward HCP cost in this analysis. Annual O&M is estimated at \$32,500 per fish raceway. For purposes of cost estimation, it is assumed the facility will operate two raceways for fish translocation during the first 5 years of the permit. For the remainder of the permit period, it is assumed the facility will, on average, operate one raceway in 2 out of 5 years in order to provide sufficient Santa Ana sucker stock for replacement of diminished or extirpated translocated Santa Ana sucker populations.

Translocation Contractor Services

Translocation of Santa Ana sucker populations is expected to be performed by an outside contractor. For purposes of cost estimation, it is assumed that the contractor will complete eight translocations at a cost of \$7,000 per translocation during the first 5 permit years. For the remainder of the permit period, it is assumed the contractor will complete one translocation every 5 years to replace diminished or extirpated translocated Santa Ana sucker populations.

USFS Coordinating Agreement Costs

Fish translocation is expected to require coordinating agreements with and support from the USFS. Fees and other costs associated with USFS coordination are estimated to average \$10,000 annually for the first 10 years of the project. However, because Valley District has an existing contract with

USFS that should last for the 5 years of the project, additional coordinating agreement costs are only anticipated for years 6 through 10.

Summary of Fish Translocation Cost Estimate

Table 7-13 summarizes the fish translocation cost estimate. Lump sum capital costs for fish translocation are estimated to be approximately \$255,000 for preparation of the translocation plan prior to issuance of the HCP permits. Translocation implementation, operations, and maintenance costs are approximately \$1.3 million over the life of the HCP.

The cost estimate in Table 7-13 does not include fish translocation monitoring costs. As noted above, those costs are accounted for in Section 7.5.5.

Table 7-13. Summary of Total Fish Translocation Costs

	Pre-Permit Capital Costs	O&M Costs				Total
		Phase 1	Phase 2	Phase 3	Phase 4	
Fish Translocation Plan Preparation	\$255,000					\$255,000
Captive Holding Facility	\$0	\$325,000	\$65,000	\$65,000	\$455,000	\$910,000
Translocation Contractor Services		\$56,000	\$7,000	\$7,000	\$49,000	\$119,000
USFS Coordinating Agreement Costs		\$0	\$50,000	\$0	\$0	\$50,000
O&M Subtotal		\$381,000	\$122,000	\$72,000	\$504,000	\$1,079,000
Total	\$255,000	\$381,000	\$122,000	\$72,000	\$504,000	\$1,334,000

7.5.4 Preserve Management and Maintenance

Preserve Management and Maintenance costs are estimated at \$19.6 million over the permit term. Costs cover the long-term management and maintenance of the HCP Preserve System. They also include the long-term management of restoration areas and rehabilitation areas after success criteria have been met during the 5-year HMMP period. Preserve management and maintenance costs are divided into the following categories:

- General land stewardship costs
- Restoration areas long-term management
- Rehabilitation areas long-term management

Of the 1,428 acres that will be acquired to mitigate impacts on Covered Species, approximately 78 acres are classified as urban and will not enter into the long-term management cost estimates. The remaining 1,351 acres will be managed in the long term as habitat after the 5-year HMMP monitoring period is completed.

It is assumed that management and maintenance costs will be similar, on a per acre basis, to the management and maintenance costs estimated for the Upper Santa Ana River Wash Plan HCP; therefore, those costs are used here for estimation purposes.

Some management and maintenance tasks will be required in perpetuity. These post-permit management and maintenance costs are addressed in Section 7.5.7, *Post-Permit Endowment*.

General Land Stewardship Costs

General land stewardship activities include:

- Restricting unauthorized access
- Minimization and clean-up of illegal dumping
- Maintenance of facilities and equipment needed for habitat management

These activities will be implemented primarily through contracts with the counties for ranger patrol and maintenance worker services. The costs for general land stewardship are summarized in Table 7-14 and are estimated to average \$285,000 annually, or \$1.4 million per 5-year period.

Table 7-14. General Land Stewardship Cost Estimate

Stewardship Activities	Assumptions	Average Annual Cost	Cost per 5-Year Period
County Parks Ranger Patrols	1 full-time employee (FTE) County Ranger Class I at fully burdened rate of \$65/hour and 1 FTE County Ranger Class II at fully burdened rate of \$70/hour	\$254,000	\$1,270,000
Maintenance	0.25 FTE County Maintenance Worker at fully burdened rate of \$65/hour	\$31,000	\$153,000
Total		\$285,000	\$1,422,000

Long-Term Conservation Management

Basic habitat management activities include trash removal, thinning, and nonnative invasive plant control, including herbicide use and grazing. It is assumed that these management costs will be similar, on a per acre basis, to the management and maintenance costs estimated for the Wash Plan HCP. These costs are summarized on a per acre basis in Table 7-15. Cost estimates for fencing portions of conserved areas were also estimated based on the anticipated type, and approximate length, of fencing necessary.

Table 7-15 identifies long-term management costs for each 5-year phase of the HCP. Total costs for managing the habitat land over the long-term are \$5.4 million over the life of the HCP.

Table 7-15. Long-Term Conservation Management Costs

	Phase 1	Phase 2	Phase 3	Phase 4	Total	
Acres phased in	0	909	442	0	1,351	
Total acres	0	909	1,351	1,351		
	Cost/ Acre	Cost	Cost	Cost	Total Cost	
Trash removal	\$11	\$0	\$52,000	\$77,000	\$537,000	\$665,000
Thinning	\$13	\$0	\$59,000	\$88,000	\$615,000	\$761,000
Invasive plant control – herbicide	\$46	\$0	\$209,000	\$311,000	\$2,175,000	\$2,694,000
Invasive plant control – grazing	\$5	\$0	\$23,000	\$34,000	\$236,000	\$293,000
Fencing	variable	\$0	\$751,000	\$206,000	\$0	\$957,000
Total		\$0	\$1,094,000	\$716,000	\$3,563,000	\$5,371,000

Summary of Management and Maintenance Cost Estimate

Table 7-16 summarizes the estimate for preserve management and maintenance costs. Over the permit term, costs are estimated at \$19.6 million.

Table 7-16. Summary of Total Management and Maintenance Costs

	Phase 1	Phase 2	Phase 3	Phase 4	Total
General Land Stewardship	\$1,422,000	\$1,422,000	\$1,422,000	\$9,952,000	\$14,218,000
Conservation Areas Management	\$0	\$1,094,000	\$716,000	\$3,563,000	\$5,371,000
Total¹	\$1,422,000	\$2,516,000	\$2,138,000	\$13,515,000	\$19,589,000

¹ Note that total cost corresponds to total Management and Maintenance costs in Table 7-4. Numbers may not sum to total due to rounding. All costs are classified as O&M costs, with the exception of fencing which is a capital cost.

7.5.5 Monitoring and Reporting

Monitoring and reporting costs are estimated to total \$7.7 million over the permit term. Some monitoring and adaptive management tasks will be required in perpetuity. These post-permit monitoring and adaptive management costs are addressed in Section 7.5.7.

Monitoring and reporting are described fully in Chapter 6, *Plan Implementation*. Monitoring and reporting costs cover the following items:

- Planning, conducting, analyzing, and reporting on monitoring of ecosystems, natural communities, and Covered Species.
- Planning, conducting, analyzing, and reporting on the effectiveness of conservation measures and habitat improvement (including restoration and/or rehabilitation) activities.
- Planning surveys to assess properties prior to land acquisition.

- Preconstruction surveys and construction monitoring, if needed, prior to implementing projects such as habitat restoration and/or rehabilitation.
- Research directed at management and conservation needs of the HCP.

It is assumed that Alliance staff will plan, coordinate, and oversee all compliance, monitoring, directed research, and adaptive management functions, while outside contractors will be selectively used as needed to conduct field surveys, collect and process monitoring data, and prepare field reports.

Contractor and Other Costs

Contractor costs for collecting monitoring data are based on the frequency and type of field surveys expected to be needed for effectiveness and compliance monitoring. Contracted surveys will be carried out on an assumed 5-year frequency interval for each of the following species categories: amphibians and reptiles, rare plant species, mammals, and bird species. Surveys of fish species will be carried out in-house by program staff and therefore do not have any additional contractor costs. Surveys will take place in year 1 and every 5 years thereafter. Including both the costs of the baseline survey and the costs of monitoring surveys every 5 years, total contractor survey costs are summarized in Table 7-17 and are expected to average \$594,000 annually, or \$2.97 million for every 5-year period. Survey type and frequency will ultimately be determined by the Comprehensive Adaptive Management and Monitoring Program for each Covered Species.

Table 7-17. Estimated Costs for Field Surveys Grouped by Similar Covered Species

Field Survey	Survey Costs Every 5-Year Period
Amphibians and Reptiles	\$180,000
Plants	\$16,000
Mammals	\$94,000
Birds	\$304,000
Fishes ¹	\$0
Total Annual Cost	\$594,000

¹ Fish surveys will be carried out by HCP Staff and are therefore covered under staff costs. To prevent double counting the costs are not included in this table.

Vegetation Mapping

The HCP Preserve System will require periodic vegetation mapping in order to monitor changes to Covered Species habitat. Vegetation mapping will require having LiDAR flown over the Conservation Areas, as well as collection of aerial imagery to support the periodic update of vegetation maps. Collection of LiDAR data is estimated to cost \$45,000, based on Valley District's past experience. Collection of aerial imagery is estimated at \$47,000, but costs will be split between the HCP and RPU at a 70/30 cost share. Accordingly, \$33,000 of the total cost will fall on the HCP.

Staff time to conduct the field surveys for vegetation mapping and to digitize the information into the HCP GIS database is conservatively estimated to be \$50,000 based on the consulting team's analysis.⁹

⁹ Makela Mangrich -ICF Biologist, June 16, 2020.

It is estimated that vegetation mapping will be required every five years for the first five years, and 10 years thereafter, i.e. in years 0, 5, 10, and 15, 25, 35, 45. In addition, mapping will also be required after a large flooding event (defined as a 20-year recurrence interval event). For cost estimation purposes it is assumed that two additional mappings will be required after flooding events in years 20 and 30.

Table 7-18 summarizes the vegetation mapping costs.

Table 7-18. Vegetation Mapping Costs

	Year 0 (pre-permit)	Phase 1	Phase 2	Phase 3	Phase 4	Total
LiDAR	\$45,000	\$45,000	\$45,000	\$45,000	224000	\$404,000
Aerial Imaging	\$33,000	\$33,000	\$33,000	\$33,000	165000	\$297,000
Labor	\$50,000	\$50,000	\$50,000	\$50,000	250000	\$450,000
Total	\$128,000	\$128,000	\$128,000	\$128,000	\$639,000	\$1,151,000

Summary of Monitoring and Reporting Cost Estimate

Table 7-19 summarizes the estimate for monitoring and reporting costs. Over the permit term, costs are estimated to total \$7.7 million.

Table 7-19. Summary of Total Monitoring and Reporting Costs

	Year 0 (pre-permit)	Phase 1	Phase 2	Phase 3	Phase 4	Total
Contractor Surveys and Field Reports	\$594,000	\$594,000	\$594,000	\$594,000	\$4,158,000	\$6,534,000
Vegetation Mapping	\$128,000	\$128,000	\$128,000	\$128,000	\$639,000	\$1,151,000
Total¹	\$722,000	\$722,000	\$722,000	\$722,000	\$4,797,000	\$7,686,000

¹Note that total cost corresponds to total Monitoring and Reporting costs in Table 7-4. Numbers may not sum to total due to rounding.

7.5.6 Program Administration

Program administration costs involve the support of employees, facilities, equipment, and vehicles to operate the office of the Alliance, the Joint Powers Authority (JPA) that will be the Implementing Entity of the HCP and associated regulatory compliance programs. Program administration costs also include associated costs such as travel, legal, and financial administrative assistance. Program administration costs are estimated to be, on average, \$1.3 million annually during the permit term. Some program administration costs will continue beyond the permit term. These post-permit administration costs are addressed in subsection 7.5.7, *Post-Permit Endowment*.

Staffing and Overhead

Employee costs comprise the annual salaries for program administration personnel. For the purposes of the cost estimate, it is assumed that the following positions would be staffed within the Upper Santa Ana River Sustainable Resource Alliance according to the roles described in Chapter 6. There are four full-time positions and three part-time positions. The four full-time positions that will support implementation of the HCP are:

- Executive Director/Principal Scientist
- HCP Program Manager/Lead Biologist
- Preserve System and Mitigation Reserve Program Manager
- GIS Analyst/Database Manager

Three additional part-time or seasonal positions may be required to meet the obligations of the incidental take permits (ITPs) and HCP. These positions are:

- Budget Analyst/Accountant ($\frac{3}{4}$ time in Years 1–10 and $\frac{1}{2}$ time thereafter)
- Senior Environmental Scientist ($\frac{3}{4}$ time)
- Associate Environmental Scientist ($\frac{1}{2}$ time)

The annual salaries and associated overhead costs for these positions are allocated across the cost categories discussed above according to the amount of time each position is expected to devote to the different HCP functions. These allocations are shown in Table 7-20 for permit years 1–10 and in Table 7-21 for permit years 11–50. Overall, 25–30% of staff time is expected to be needed for general program administration, and the remainder will be devoted to program implementation functions. This split between general administration and program implementation functions is consistent with staffing allocations in other HCPs reviewed as part of the cost analysis.

Table 7-20. Staffing Allocation by Cost Category in Full-Time Equivalents, Permit Years 1–10

Staff Position	Program Admin Labor (FTEs)	Program Implementation Labor (FTEs)					Total FTEs
		Tributaries Restoration	Fish Translocation	Terrestrial Habitat	Compliance & Monitoring	Preserve Management	
Executive Director/Principal Scientist	0.50	0.10	0.05	0.15	0.15	0.05	1.00
HCP Program Manager/Lead Biologist	0.15	0.20	0.20	0.20	0.20	0.05	1.00
GIS Analyst/Database Manager	0.15	0.20	0.10	0.20	0.30	0.05	1.00
Preserve System and Mitigation Reserve Program Manager	0.20	0.15	0.05	0.15	0.20	0.25	1.00
Budget Analyst/Accountant	0.75	0.00	0.00	0.00	0.00	0.00	0.75
Senior Environmental Scientist	0.00	0.25	0.25	0.00	0.25	0.00	0.75
Associate Environmental Scientist	0.00	0.20	0.20	0.10	0.00	0.00	0.50
Total FTEs	1.75	1.10	0.85	0.80	1.10	0.40	6.00

Table 7-21. Staffing Allocation by Cost Category in Full-Time Equivalents, Permit Years 11–50

Staff Position	Program Admin Labor (FTEs)	Program Implementation Labor (FTEs)					Total FTEs
		Tributaries Restoration	Fish Translocation	Terrestrial Habitat	Compliance & Monitoring	Preserve Management	
Executive Director/Principal Scientist	0.50	0.10	0.05	0.15	0.15	0.05	1.00
HCP Program Manager/Lead Biologist	0.15	0.10	0.10	0.25	0.25	0.15	1.00
GIS Analyst/Database Manager	0.15	0.20	0.10	0.20	0.30	0.05	1.00
Preserve System and Mitigation Reserve Program Manager	0.20	0.10	0.05	0.15	0.25	0.25	1.00
Budget Analyst/Accountant	0.50	0.00	0.00	0.00	0.00	0.00	0.50
Senior Environmental Scientist	0.00	0.20	0.15	0.00	0.35	0.05	0.75
Associate Environmental Scientist	0.00	0.10	0.10	0.20	0.05	0.05	0.50
Total FTEs	1.50	0.80	0.55	0.95	1.35	0.60	5.75

Bureau of Labor Statistics (BLS) data on occupational wages in California were used to estimate annual salary costs for all positions other than the GIS Analyst (BLS 2020). In the case of the GIS Analyst, data from Transparent California was used to estimate the salary cost (Transparent California 2019), then inflated to 2020 dollars using BLS' Consumer Price Index. Table 7-22 shows the estimated base annual salary for each position. The salary percentile column in the table indicates the percentile of the reference position salary range used for the base salary estimate. Two positions are set to the 75th percentile of their reference salary range, reflecting the need to recruit senior and highly qualified candidates for these positions. The other three positions are set to the 50th percentile (median) of the reference salary range. Note that actual salary costs will depend on labor market conditions at the time of hiring and may differ from the values in the table.

Table 7-22. Base Annual Salary Cost Estimates

Staffing Position	BLS Code	BLS Title	Salary Percentile	Annual Salary (\$/FTE)	Direct Labor Hours ²	Direct Hourly Rate
Executive Director/ Principal Scientist			75 th	\$188,640	1,880	\$100.34
HCP Program Manager/ Lead Biologist	11-9121	Natural Science Manager	50 th	\$160,040	1,880	\$85.13
Preserve System and Mitigation Reserve Program Manager			50 th	\$160,040	1,880	\$85.13
GIS Analyst/ Database Manager ¹	N/A	N/A	50 th	\$86,300	1,880	\$45.90
Budget Analyst/ Accountant	13-2031	Budget Analyst	50 th	\$73,070	1,880	\$38.87

Staffing Position	BLS Code	BLS Title	Salary Percentile	Annual Salary (\$/FTE)	Direct Labor Hours ²	Direct Hourly Rate
Senior Environmental Scientist	19-2041	Environmental Scientist	75 th	\$108,050	1,880	\$57.47
Associate Environmental Scientist			50 th	\$83,770	1,880	\$44.56

¹GIS Analyst salary set to the 50th percentile for a sample of 153 California public sector GIS Analyst positions; data are from Transparent California 2019, and inflated to 2020 dollars using BLS Consumer Price Index.

²Direct labor hours exclude paid holiday, vacation, and sick time, which are assumed to average 200 hours per year (5 weeks).

A cost multiplier of 1.48 was used to estimate non-wage staffing costs, which include benefits, paid leave, insurance, retirement, and legally required benefits.¹⁰ The overhead multiplier is based on 10 years of published national survey data on overhead rates for architectural, engineering, and environmental planning firms.

Multiplying the base salary costs in Table 7-22 by the overhead multiplier yields the fully burdened cost of each salaried position. The fully burdened annual salary costs are summarized in Table 7-23.

Table 7-23. Fully Burdened Annual Salary Cost Estimates

Staffing Position	Base Annual Salary (\$/FTE)		Overhead Multiplier		Fully Burdened Annual Cost per FTE ¹
Executive Director/Principal Scientist	\$188,640	x	1.48	=	\$279,000
HCP Program Manager/Lead Biologist	\$160,040	x	1.48	=	\$237,000
Preserve Manager	\$160,040	x	1.48	=	\$237,000
GIS Analyst/Database Manager	\$86,300	x	1.48	=	\$128,000
Budget Analyst/Accountant	\$73,070	x	1.48	=	\$108,000
Senior Environmental Scientist	\$108,050	x	1.48	=	\$160,000
Associate Environmental Scientist	\$83,770	x	1.48	=	\$124,000

¹Inclusive of direct and indirect labor expenses for primary and support staff and costs for space and utilities, office furniture, equipment, and general supplies.

Annual staffing and overhead costs are estimated by multiplying the fully burdened salary costs in Table 7-23 by the FTE allocations in Table 7-21 and Table 7-22. These costs are summarized in Table 7-24.

Table 7-24. Annual Staffing and Overhead Cost Estimate

	Phase 1	Phase 2	Phase 3	Phase 4	Total
Program Administration	\$1,615,000	\$1,615,000	\$1,480,000	\$10,360,000	\$15,070,000
Restoration	\$1,005,000	\$1,005,000	\$725,000	\$5,075,000	\$7,810,000

¹⁰ This analysis uses average employer cost ratios for management, professional, and related positions, office and administrative support, and natural resources, construction, and maintenance. See: <https://www.bls.gov/news.release/pdf/ecec.pdf>

	Phase 1	Phase 2	Phase 3	Phase 4	Total
Fish Translocation	\$755,000	\$755,000	\$495,000	\$3,465,000	\$5,470,000
Preserve Management	\$1,270,000	\$1,270,000	\$1,580,000	\$11,060,000	\$15,180,000
Monitoring and Reporting	\$1,075,000	\$1,075,000	\$1,305,000	\$9,135,000	\$12,590,000
Total	\$5,720,000	\$5,720,000	\$5,585,000	\$39,095,000	\$56,120,000

Other Program Administration Allowances

In addition to staffing and overhead costs, the program administration cost estimate includes annual allowances for other anticipated expenditures, including vehicle use, travel, outside legal and accounting services, and public outreach. Allowances for each cost item are summarized in Table 7-25 and are based on a review of projected and incurred costs for these items by other HCPs.

Table 7-25. Annual Allowances for Other Program Administration Expenses

	Cost per Year	Cost per 5-Year Period
Vehicle/Mileage Reimbursement	\$1,500	\$7,500
Travel (non-vehicular)	\$6,000	\$30,000
Legal & Accounting	\$133,000	\$665,000
Public Relations/Outreach	\$25,000	\$125,000
Total	\$165,500	\$827,500

Summary of Program Administration Cost Estimate

Table 7-26 summarizes the program administration cost estimate. The estimated cost of program administration is \$64.4 million over the life of the HCP, or from \$6.4 to \$6.5 million per 5-year period.

Table 7-26. Summary of HCP Program Administration Costs

	Phase 1	Phase 2	Phase 3	Phase 4	Total
Staff	\$5,721,000	\$5,721,000	\$5,586,000	\$39,102,000	\$56,120,000
Vehicle/Mileage Allowance	\$7,500	\$7,500	\$7,500	\$52,500	\$75,000
Travel	\$30,000	\$30,000	\$30,000	\$210,000	\$300,000
Legal & Accounting	\$665,000	\$665,000	\$665,000	\$4,655,000	\$6,650,000
Public Relations/ Outreach	\$125,000	\$125,000	\$125,000	\$875,000	\$1,250,000
Total	\$6,548,500	\$6,548,500	\$6,413,500	\$44,894,500	\$64,402,000

¹Note that total cost corresponds to total Program Administration costs in Table 7-4. Numbers may not sum to total due to rounding.

7.5.7 Post-Permit Endowment

During the duration of the HCP permit, capital and operating costs of the program will be directly funded by the Permittee Agencies. As already noted, certain management and monitoring costs will

continue after the permit expires. The purpose of the endowment will be to fund these post-permit costs in perpetuity. Post-permit costs are estimated to average \$572,000 annually and are summarized in Table 7-27. Note that staffing costs are not included in the post-permit endowment costs because the JPA (Alliance) and JPA staff would no longer be needed after the permit expires. At that time Valley District will assume the responsibility for contracting qualified biologists and preserve management experts to conduct monitoring, management, and reporting in the post-permit period. The final calculation of post-permit costs includes a 3% contingency, bringing the annual cost to \$589,000.

To account for real inflation over the life of the permit, this annual cost is inflated by 2% per year to estimate the amount that will be necessary to fund the program at the end of the permit term. The required endowment by the end of the permit term to fund these costs is \$43.8 million (in 2020 dollars). It is assumed that the Permittee Agencies will pay into the endowment at the beginning of each year commencing in the first year of the permit and each year thereafter until the last year of the permit and that the endowment will be held and prudently managed by the San Bernardino Valley Conservation Trust¹¹ and will earn an annual real rate of return of 4% on average. Under these assumptions, the annual contribution rate to the endowment over the term of the permit is \$276,000 (in 2020 dollars).

Table 7-27. Estimated Post-Permit Annual Costs

Post-Permit Cost Items	Assumptions	Average Annual Cost
SAR Microhabitat	Average annual replacement cost for SAR microhabitat structures, per Table 7-12	\$45,000
Management and Maintenance	Average annual land stewardship and habitat management costs, per Table 7-17 and Table 7-18	\$405,000
Monitoring and Reporting	Average annual monitoring and reporting costs, per Table 7-22	\$119,000
Conservation Easement Compliance	Based on annual fees estimated by Center for Natural Lands Management staff	\$3,000
Total		\$572,000

7.5.8 Cost Uncertainties and Changed Circumstances

Due to cost uncertainties and the possibility of changed circumstances that could affect annual program requirements and expenditures, contingency values are included in total cost calculations. Restoration costs, including upland tributaries restoration, alluvial fan restoration, and microhabitat creation include the greatest contingency at 15% to account for the greater level of uncertainty in these costs. A contingency of 10% is applied to land acquisition. The remaining cost categories,

¹¹ The San Bernardino Valley Conservation Trust (Conservation Trust) will be charged with holding fee title to, or conservation easements covering, land secured as mitigation for Covered Activities. The Conservation Trust is a 501(c)(3) charitable corporation qualified to hold conservation easements, endowments and other forms of security in accordance with Section 815 et seq. of the California Government Code. Financial management of the Conservation Trust will be in accordance with the prudent investor standards set forth in the California Probate Code, and the overall activities of the Conservation Trust will be governed by SB 1094, codified at Sections 65965-98 of the California Government Code. The Conservation Trust has an independent board of directors and management separate from the managers of the HCP. It is anticipated that there will be some form of Memorandum of Agreement (MOA) or Memorandum of Understanding (MOU) between the Conservation Trust and the JPA establishing a long-term relationship for the purposes of plan compliance and implementation.

including administration and overhead, general maintenance, and monitoring all use a 3% contingency because their costs are reasonably certain over time. The average cost of the contingency is \$225,000 annually.

7.6 Funding Sources and Assurances

The single joint ITP permit structure was determined to be the best arrangement to facilitate ongoing coordination among the Permittee Agencies. In particular, this structure will allow the Permittees to enter into enforceable arrangements to allocate operational and funding responsibilities, and rectify any occurrence of non-compliance by a Permittee Agency. For more details on the joint ITP arrangement, refer to Section 6.2, *HCP Permit Structure*, of this report.

The structure and organization of the JPA operating under the name of Upper Santa Ana River Sustainable Resources Alliance is described in Chapter 6, and will be executed between the Permittee Agencies prior to finalization of the HCP. The costs of the HCP will be borne by the Permittee Agencies in accordance with the Joint Powers Authority Agreement, and a separate “Participation and Financing Agreement” (PFA) that fully accounts for and assigns financial responsibility of the Alliance among the Permittee Agencies. The PFA will describe the financial responsibilities of each of the Permittee Agencies with respect to the HCP and the Alliance. The cost of plan implementation will be shared among the Permittee Agencies, based on a cost-sharing mechanism developed and approved by all agencies. The cost-sharing mechanism will account for impacts of the individual Covered Activity as well as both the financial and in-kind contributions by the Permittee Agencies.

Each of the Permittee Agencies will be fully responsible for any Covered Activity undertaken by that agency under the HCP and will be required to coordinate with the Alliance staff in order to ensure consistency of the Covered Activity with the Plan. Any cost resulting from non-compliance with the terms of the ITP by any Permittee Agency will be the responsibility of the non-complying Agency.