

## Report

# Funding Analysis of the Clark County Desert Conservation Program MSHCP Amendment

*The Economics of Land Use*



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# 1. Introduction and Findings

## Background

The Clark County Desert Conservation Program (DCP) manages Endangered Species Compliance on behalf of Clark County and the cities of Boulder City, Henderson, Las Vegas, North Las Vegas, Mesquite, and the Nevada Department of Transportation (the Permittees). This occurs through the implementation of the Clark County Multi-Species Habitat Conservation Plan (MSHCP) and associated Section 10(a)(1)(B) incidental take permit. Clark County serves as the implementing agent and the Desert Conservation Program (DCP) is the Plan Administrator for the MSHCP.

The MSHCP and incidental take permit became effective on February 1, 2001, and carries a term of 30 years and covers 167,650 acres of non-federal development activities. With over 20 years of the permit term completed and more than 70 percent of the permitted development activity used, the County has begun work on securing an amendment to the MSHCP and incidental take permit. The amended MSHCP will support continued development activities in Clark County.

The Clark County DCP has drafted an amendment to their MSHCP to take effect when the original plan's term ends. This amendment will continue the streamlined regulatory process/ incidental take permitting for development in Clark County for an additional 50-year period, expected to start in approximately 2030/1.

A critical component of the application for an amended ITP is a funding analysis of the costs to implement the proposed conservation strategy. This report documents the results of an analysis to estimate the costs of implementing the proposed MSHCP Amendment based on a review of the current draft document<sup>1</sup> and input from the DCP about costs for existing and future management.

## Amended Plan

The Permittee objectives for the amended Plan include:

- Obtain Endangered Species Act authorization to develop up to 215,000 additional acres in Clark County.
- Extend the permit term by an additional 50 years in order to provide long-term certainty to the region's development processes.

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<sup>1</sup> Wetland Research Associates, 2022.

- Reduce the number of covered species to focus effort and funding on those species that are most likely to be impacted by covered activities.
- Revise the conservation strategy to improve mitigation effectiveness and accountability.
- Reform the implementation structure of the MSHCP to obtain a more balanced representation of all Permittees, improve efficiency, and reduce bureaucracy.

The draft amended MSHCP was prepared by WRA in collaboration with Clark County DCP staff. The draft amended MSHCP describes the broad set of conservation actions required during the amended permit term. In addition to funding these permit term conservation activities, the funding plan must also develop an endowment that will be available and sufficient at the end of the amended permit term to fund the management of the reserves in perpetuity.

## Methodology

This amended MSHCP funding analysis and associated cost estimates are based on information from a number of sources. Existing DCP costs are used where conservation actions will be continued from the existing DCP. For new and expanded conservation actions, DCP staff identified the additional staffing and contractor services required to conduct these actions. Clark County DCP staff and the consulting team then worked together to identify the best available sources of cost data. The consulting team then developed a detailed financial spreadsheet model to compile the costs and funding requirements associated with the implementation of the amended MSHCP. This estimate of total Plan implementation costs was then used to estimate the mitigation fee required from development (covered activities).

The cost analysis relies on many data sources including:

1. The draft MSHCP amendment, which describes the conservation program and aspects of implementation which were used to estimate costs;
2. Budgets and other cost information for implementation of the current MSHCP plan, which includes many similar conservation strategies including habitat management and monitoring, were used to estimate future costs for the conservation program;
3. Records of land valuation and acquisition costs associated with riparian land<sup>2</sup>, which is anticipated to be acquired from willing sellers as part of the MSHCP Amendment;
4. Input from program director; and

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<sup>2</sup> DCP 2022b.

5. Professional assumptions made by the DCP staff, anticipated partners in the conservation strategy including the Bureau of Land Management, and members of the consultant team who have prior experience in conservation and mitigation finance including for habitat conservation plans (HCPs).

It is important to note that all cost estimates included in this analysis are presented in constant (uninflated) 2023 dollars. As a result, annual inflationary increases will need to be applied to the mitigation fee to ensure funding keeps pace with cost increases. Because of the inherent uncertainty in cost estimates and development forecasts, periodic review of the estimates in this analysis should be undertaken to determine whether adjustments are required to account for changes over time.

## Summary of Findings

- **Total Amended MSHCP Implementation Costs estimated to total \$474 million (2023 constant dollars).** Total amended Plan implementation costs for the new 50-year permit term are estimated at about \$474 million (2023 constant dollars), an annual average of about \$8.9 million. As shown in **Table 1**, this includes about \$415 million to cover conservation actions during the permit term and a \$59 million endowment fund to cover ongoing post-permit management activities.
- **An updated mitigation fee of \$2,204 per acre (2023 constant dollars) is estimated to be required to cover the implementation costs.** The amended permit will provide streamlined incidental take permitting for new development in Clark County for an additional 50-year period. The permit will allow for up to 215,000 acres of additional development in Clark County. Based on the County's historical and projected pace of development, it is forecast that this full level of take could be used during the 50-year period. As a result, as shown in **Table 2**, the required mitigation fee on new development (the average funding required per developed acre over the 50-year permit period) is \$2,204.
- **The mitigation fee will require annual inflationary adjustments as well as periodic, more detailed review.** The estimated implementation costs and mitigation fee are provided in constant 2023-dollar terms. Inflation will change the costs each year and the estimated 2023 mitigation fee should be automatically and annually indexed to inflation to avoid funding shortfalls. In addition to cost inflation, other factors, including business and real estate cycles, may result in actual annual implementation costs and fee revenues being above or below the forecasts included in this analysis. A periodic, detailed review of costs, development, and fee levels will be important to determine whether any changes in the funding strategy are appropriate.

- Upfront amended Plan implementation costs are expected to be higher than during the rest of the new permit period requiring some upfront funding.** The implementation of the amended permit, and in particular the inclusion of the Special Management Areas, requires greater upfront funding (first five years) – in 2023-dollar terms – than for the remaining permit period (see **Appendix C**). Because the mitigation fee is set at specific rate for the whole period (excluding inflationary adjustments), some additional funding may be required to support upfront Plan implementation. At this point, the DCP expects to have sufficient revenues remaining at the end of the original permit term to be able to fund these additional upfront costs.

**Table 1 MSHCP Implementation Cost Summary (2023 Dollars)**

Item	50-Year Total		Average Annual Cost (3)
	Cost	%	
<u>Permit Term Costs</u>			
General Administration	\$50,955,564	11%	\$1,019,111
Adaptive Management Program/ Monitoring	\$98,721,970	21%	\$1,974,439
Avoidance and Minimization Measures/ Outreach	\$56,273,825	12%	\$1,125,476
Vehicles	\$2,750,000	1%	\$55,000
Habitat Restoration and Enhancement (1)	\$20,902,767	4%	\$418,055
Reserve Assembly	\$4,961,250	1%	\$99,225
Reserve Management	\$164,112,723	35%	\$3,282,254
Changed Circumstances	\$16,411,272	3%	\$328,225
<b>Subtotal</b>	<b>\$415,089,371</b>	<b>88%</b>	<b>\$8,301,787</b>
<u>Post-Permit Endowment (2)</u>	\$58,876,284	12%	\$1,177,526
<b>Total DCP Implementation Costs</b>	<b>\$473,965,654</b>	<b>100%</b>	<b>\$9,479,313</b>

\* All cost estimates in 2023 dollar terms. Actual costs will increase over time due to cost inflation.

(1) Includes staff costs only. Additional restoration and enhancement costs assumed to be funded by other sources.

(2) Assumes endowment provided to non-profit entity at end of permit term and set to provide sufficient annual revenues for ongoing post-permit reserve management.

(3) For some cost categories, costs will vary by year due to required upfront (1st 5 year) investments or periodic requirements (e.g. actions required every 5 or 10 years).

Sources: Clark County, Jodi McGraw Consulting; Economic & Planning Systems, Inc.



**Table 2 Mitigation Fee Estimate (2023 Dollars)**

Item	Amount
<b>DCP Implementation Costs (50 Years)</b>	
Permit Term Costs	\$415,089,371
Post-Permit Endowment Costs	\$58,876,284
<b>Total Implementation Costs</b>	<b>\$473,965,654</b>
<b>Development Acres (50 Years) (1)</b>	<b>215,000</b>
<b>DCP Mitigation Fee (Per Acre)</b>	
Permit Term Costs	\$1,931
Post-Permit Endowment Costs	\$274
<b>Total Mitigation Fee per Acre *</b>	<b>\$2,204</b>

\* Mitigation Fee per Acre in 2023 dollar terms. Actual costs will increase over time due to cost inflation both prior to adoption of updated DCP and during 50-year permit term. Fee will need to be adjusted annually to account for cost inflation and reviewed more comprehensively periodically to determine if larger adjustments required to cost estimates or development forecasts.

(1) There is substantial uncertainty over the number of acres that will be developed over 50-year permit term. The permitted take is expected to be 215,000 acres; this represents an annual average of 4,300 acres each year. A review of historical annual development and UNLV forecasts indicates that 215,000 acres over 50 years, 4,300 acres annually, is a reasonable average annual development forecast. The County will carefully track annual development and associated fee revenues over time to determine whether any changes in this assumption are necessary.

Sources: Clark County; UNLV CBER Forecasting; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

## 2. Plan Amendment Cost Components

The cost analysis was developed based on the current draft MSHCP Amendment, which was developed between 2020 and 2022.<sup>3</sup> The chapters presenting the Conservation Program (Chapter 6) and describing Implementation (Chapter 7), which were most relevant to the cost analysis, were developed in 2021 and 2022.

The MSHCP Amendment broadly outlines the actions that will be taken to achieve the MSHCP goals and objectives. Additional details about the actions required to estimate costs for plan implementation were obtained through interviews and correspondence with DCP staff responsible for implementation of the current MSHCP and knowledgeable about the draft plan amendment, including Kimberley Jenkins, Principal Environmental Specialist of the Desert Conservation Program.

For the purposes of this analysis, the costs to implement the MSHCP Amendment were divided into nine categories. They generally reflect the components of the plan's conservation program as outlined in the plan, with some cost items pulled out because they apply to multiple plan components (e.g., vehicles). Additionally, components of the conservation program were subdivided when their costs analysis required a separate approach; for example, the costs to establish and manage the Special Management Areas (SMAs) were calculated separate from the management of existing upland and riparian reserves. Some elements of the conservation program could be classified into multiple categories; for example, DCP staff and contractors may be engaged to assist with monitoring and surveys to implement aspects of the Avoidance and Minimization Measures as well as the Adaptive Management and Monitoring Program. In such cases, costs were allocated to the most applicable category, to avoid duplication.

**Table 3** summarizes the categories and identifies the primary source(s) of information that were used to develop the costs. Chapter 3 of this report identifies the costs associated with these components of plan implementation.

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<sup>3</sup> Wetland Research Associates, 2022.

**Table 3 Cost Categories used to estimate costs to implement the MSHCP Amendment**

Cost Category	Description	Information Source(s)	Model Cost Components
<p><b>General Administration</b></p>	<p>Administer the plan including, including but not limited to:</p> <ul style="list-style-type: none"> <li>• Outside legal counsel;</li> <li>• Updating the GIS/Species Distribution models;</li> <li>• GIS and technology support and imagery acquisition;</li> <li>• Budget, finance, and administrative support;</li> <li>• Grants and mitigation fee management;</li> <li>• Contract management and purchasing; and</li> <li>• Overall program administration.</li> </ul>	<ul style="list-style-type: none"> <li>• DCP organizational chart for MSHCP Amendment implementation.</li> <li>• DCP staff salaries and associated costs for 2023-2025 budget.</li> </ul>	<ul style="list-style-type: none"> <li>• DCP Staff Requirements including Salaries and Operations and Administration (Tables 5 and 6)</li> <li>• Non-staff costs (Table 7 and Appendix A)</li> </ul>
<p><b>Adaptive Management and Monitoring Program</b></p>	<p>Implement monitoring and adaptive management as part of the MSHCP Amendment.</p> <p><b>Monitoring</b> is anticipated to include baseline, compliance, and effectiveness monitoring, as described in Section 6.4 of the MSHCP amendment, which calls for monitoring of the following:</p> <ul style="list-style-type: none"> <li>• Habitat quality for covered species, including invasive species, covered plant species sediment</li> </ul>	<ul style="list-style-type: none"> <li>• MSHCP Amendment- <i>Monitoring and Adaptive Management Plan</i> (Section 6.4).</li> <li>• DCP organizational chart for implementation of MSHCP Amendment.</li> <li>• DCP staff salaries and associated costs for 2023-2025 budget.</li> <li>• DCP estimates for non-staff costs including science advisory</li> </ul>	<ul style="list-style-type: none"> <li>• DCP Staff Requirements including Salaries and Operations and Administration (Tables 5 and 6)</li> <li>• Non-staff costs (Table 7 and Appendix A)</li> </ul>

Cost Category	Description	Information Source(s)	Model Cost Components
	<p>source habitat monitoring, and habitat quality monitoring;</p> <ul style="list-style-type: none"> <li>• Connectivity</li> <li>• Species-specific monitoring for 29 covered species.</li> </ul> <p><b>Adaptive Management</b> includes a suite of coordinated actions to evaluate and improve effectiveness of the MSHCP over time including:</p> <ul style="list-style-type: none"> <li>• Preparation of annual Adaptive Management Reports and implementation of an Adaptive Management Evaluation every five years;</li> <li>• Stakeholder engagement and coordination including an annual symposia;</li> <li>• Updates to the Monitoring and Adaptive Management Plan at least every five years; and</li> </ul> <p>Engaging the science advisory panel to inform the adaptive management process.</p>	<p>panel engagement, consultant and contractor-led monitoring, and development of the connectivity plan, etc.</p>	
<p><b>Avoidance and Minimization Measures</b> (AMMs) (including Public Outreach)</p>	<p>Measures to avoid and minimize impacts to covered species including:</p> <ul style="list-style-type: none"> <li>• Project Design Measures</li> <li>• General Construction Measures including fencing and best management practices;</li> </ul>	<ul style="list-style-type: none"> <li>• MSHP Amendment <i>Conservation Measures-Avoidance and Minimization</i> (Section 6.2)</li> <li>• DCP Avoidance and Minimization Workbook identifying</li> </ul>	<ul style="list-style-type: none"> <li>• DCP Staff Requirements including Salaries and Operations and Administration (Tables 5 and 6)</li> </ul>

Cost Category	Description	Information Source(s)	Model Cost Components
	<ul style="list-style-type: none"> <li>Species Protection Measures including pre-project surveys, seed collection and transplantation, and salvage and translocation of desert tortoise;</li> <li>Outreach programs for Developers and the Public</li> </ul>	<ul style="list-style-type: none"> <li>roles/responsibilities for AMM implementation (i.e., developer, DCP staff, consultants or contractors)</li> <li>DCP organizational chart for implementation of MSHCP Amendment</li> <li>DCP staff salaries and associated costs for 2023-2025 budget</li> </ul>	<ul style="list-style-type: none"> <li>Non-staff costs including Consultants and Contractors (Table 7 and Appendix A)</li> <li>See also <i>Vehicles</i> category below</li> </ul>
<b>Vehicles</b>	Purchase vehicles to implement all aspects of the conservation program.	<ul style="list-style-type: none"> <li>Vehicle needs estimated by DCP for the funding analysis</li> </ul>	<ul style="list-style-type: none"> <li>Non-staff costs (Table 7 and Appendix A)</li> </ul>
<b>Reserve Assembly</b>	Protect an estimated 700 acres of additional riparian habitat to mitigate impacts of riparian habitat at a 1:1 ratio. Protection of 700 acres of riparian habitat is anticipated to require 1,050 total of land, based on an analysis that parcels containing riparian habitat average 33% other habitat, such that three acres must be acquired to protect 2 acres of riparian habitat.	<ul style="list-style-type: none"> <li>Land appraisals and acquisition costs provided by DCP (2022b)</li> <li>DCP analysis of habitat composition on parcels with riparian habitat.</li> </ul>	<ul style="list-style-type: none"> <li>Time Series Analysis for Riparian Reserve Acquisition (Appendix B)</li> <li>DCP Staff including Operations and Administration (Tables 5 and 6)</li> <li>Reserve Assembly (Table 8)</li> </ul>

Cost Category	Description	Information Source(s)	Model Cost Components
<p><b>Restoration and Enhancement</b></p>	<p>Restoration and enhancement are key components to maintaining habitat quality in the Reserve for mitigation impacts on the Covered Species in the MSHCP Amendment.</p> <p>The management plans developed for the Special Management Areas (described below) will identify the restoration and enhancement activities, which will also be conducted per the Riparian Reserves Management Plan and BCCE Management Plan.</p>	<ul style="list-style-type: none"> <li>MSHCP Amendment- <i>Measures to Mitigate Unavoidable Take</i> (Section 6.3)</li> <li>DCP organizational chart for implementation of MSHCP Amendment</li> <li>DCP staff salaries and associated costs for 2023-2025 budget</li> </ul>	<ul style="list-style-type: none"> <li>DCP Staff including Operations and Administration (Tables 5 and 6)</li> </ul>
<p><b>Reserve Management:</b></p> <p>Management of Existing Reserves</p>	<p>Manage the 88,095 acres of existing reserves, which include the 87,310-acre Boulder City Conservation Easement (BCCE) per the BCCE Management Plan, and the 785 acres of existing riparian reserve units per Riparian Reserves Management Plan. Management includes (but is not limited to):</p> <ul style="list-style-type: none"> <li>general land management (e.g., fence repair, debris clean up);</li> <li>weed management; and</li> <li>law enforcement.</li> </ul>	<ul style="list-style-type: none"> <li>MSHCP Amendment- <i>Measures to Mitigate Unavoidable Take</i> (Section 6.3)</li> <li>DCP budget for BCCE management for 2023-2025 contracts for land management, weed management and law enforcement</li> <li>DCP organizational chart for implementation of MSHCP Amendment</li> <li>DCP staff salaries and associated costs for 2023-2025 budget</li> </ul>	<ul style="list-style-type: none"> <li>DCP Staff Requirements including Salaries and Operations and Administration (Tables 5 and 6)</li> <li>Non-staff costs including Contractors and Law Enforcement (Table 7 and Appendix A)</li> </ul>

Cost Category	Description	Information Source(s)	Model Cost Components
<p><b>Reserve Management:</b></p> <p>Management of Special Management Areas</p>	<p>Establish and then conduct ongoing management within the 353,718 acres contained with the nine Special Management Areas (SMAs) that will be located within land currently management by the Bureau of Land Management, and that will serve as reserves as part of the MSHCP Amendment conservation program.</p> <p><b>Reserve establishment</b> is anticipated to include the following:</p> <ul style="list-style-type: none"> <li>• preparation and public review and approval of planning documents, including:                             <ul style="list-style-type: none"> <li>○ Resource Management Plan amendment;</li> <li>○ Special Management Area Management plans, including travel and transportation plans;</li> <li>○ National Environmental Policy Act (NEPA) compliance;</li> <li>○ Legal descriptions and maps;</li> </ul> </li> <li>• Baseline surveys of the reserves to document initial conditions of the habitat and species populations;</li> </ul>	<ul style="list-style-type: none"> <li>• MSHCP Amendment- <i>Measures to Mitigate Unavoidable Take</i> (Section 6.3)</li> <li>• Estimated costs from the BLM to establish the reserves including:                             <ul style="list-style-type: none"> <li>○ Resource Management Plan amendment;</li> <li>○ Special Management Area Management plans, including travel and transportation plans;</li> <li>○ National Environmental Policy Act (NEPA) compliance;</li> <li>○ Legal descriptions and maps;</li> <li>○ Baseline surveys; and</li> <li>○ Initial management costs including exotic plant control, debris removal, and fence installation.</li> </ul> </li> <li>• Estimated costs to conduct ongoing habitat management in the SMAs, which were based on</li> </ul>	<ul style="list-style-type: none"> <li>• DCP Staff Requirements including Salaries and Operations and Administration (Tables 5 and 6)</li> <li>• Non-staff costs including Contractors and Law Enforcement (Table 7 and Appendix A)</li> <li>• SMA Planning Studies (Table 11)</li> <li>• SMA Initial Management Costs (Table 10)</li> </ul>

Cost Category	Description	Information Source(s)	Model Cost Components
	<ul style="list-style-type: none"> <li>Initial management including exotic plant control, debris removal, and fence installation.</li> </ul> <p><b>Reserve management</b> includes implementation of the SMA Management Plans which are anticipated to include fence repair and new fence installation, exotic plant management, and ongoing debris removal.</p>	<p>the per-acre costs to manage the BCCE which features similar upland habitat but were increased to reflect anticipated degraded condition due to lack of intensive, prior management.</p>	
<p><b>Reserve Management:</b></p> <p>Management of New Riparian Reserves</p>	<p>Manage an estimated 1,050 acres of land that is projected to be acquired to protect 700 acres of new riparian habitat to offset the anticipated impacts of 700 acres of impacts of the covered activities to riparian communities at a 1:1 ratio.</p>	<ul style="list-style-type: none"> <li>MSHCP Amendment- <i>Measures to Mitigate Unavoidable Take</i> (Section 6.3)</li> <li>DCP costs to manage existing riparian reserves</li> <li>DCP organizational chart for implementation of MSHCP Amendment</li> <li>DCP staff salaries and associated costs for 2023-2025 budget</li> </ul>	<ul style="list-style-type: none"> <li>Summary of New Riparian Reserve Management Costs (Appendix B)</li> <li>DCP Staff Requirements including Operations and Administration (Tables 5 and 6)</li> </ul>
<p><b>Changed Circumstances</b></p>	<p>Conduct management actions to address changed circumstances identified in the MSHCP, which are:</p> <ul style="list-style-type: none"> <li>Extreme Temperature and Heat Waves;</li> </ul>	<ul style="list-style-type: none"> <li>MSHCP Amendment- <i>Changed and Unforeseen Circumstances</i> (Section 7.2)</li> </ul>	<ul style="list-style-type: none"> <li>Total Plan Implementation Costs (Table 4)</li> </ul>



Cost Category	Description	Information Source(s)	Model Cost Components
	<ul style="list-style-type: none"> <li>• Precipitation Changes;</li> <li>• Repetitive and Severe Fire;</li> <li>• Invasion by Invasive Species;</li> <li>• New Species Listing; and</li> <li>• Disease.</li> </ul> <p>The MSHCP identifies the planned responses including monitoring and additional management actions, as well as preventative actions, to address each of these circumstances.</p>		
<b>Endowment</b>	Establish a non-wasting account that will be used to fund ongoing management and monitoring in perpetuity.	<ul style="list-style-type: none"> <li>• MSHCP Amendment- <i>Measures to Mitigate Unavoidable Take</i> (Section 6.3)</li> <li>• MSHCP Amendment- <i>Implementation</i> (Section 9)</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing Post-Permit Management Costs (Table 14)</li> </ul>

### 3. Implementation Costs

The updated MSHCP will be implemented by Clark County which serves as the implementing agent on behalf of the Permittees, and the Desert Conservation Program, which is the Plan Administrator for the MSHCP. MSHCP implementation has been divided into the nine (9) implementation activities/ cost categories, which are described in **Table 3** in Chapter 2.

1. General Administration
2. Adaptive Management Program & Monitoring
3. Avoidance and Minimization Measures & Public Outreach
4. Vehicles
5. Habitat Restoration and Enhancement
6. Habitat Acquisition
7. Reserve Management
8. Changed Circumstances
9. Endowment

Much of the work will be implemented by DCP staff, with support from specialized contractors. This chapter indicates the DCP staffing required and associated costs by implementation activity/ cost category as well as the non-staffing expenditures required to complement the staffing efforts in plan implementation.

**Table 4** provides a summary of the 50-Year plan implementation costs for staff and non-staff for each implementation activity.

**Table 4 Total Plan Implementation Costs: Staffing and Non-Staff Costs (2023 Dollars)**

<b>Cost Category</b>	<b>Total Staffing Costs (1)</b>	<b>Total Non-Staff Costs</b>	<b>Total Plan Costs</b>
General Administration	\$46,705,564	\$4,250,000	\$50,955,564
Adaptive Management Program/ Monitoring	\$29,506,970	\$69,215,000	\$98,721,970
Avoidance and Minimization Measures/ Public Outreach	\$36,673,825	\$19,600,000	\$56,273,825
Vehicles	\$0	\$2,750,000	\$2,750,000
Habitat Restoration and Enhancement	\$15,902,767	\$5,000,000	\$20,902,767
Reserve Assembly	\$0	\$4,961,250	\$4,961,250
Reserve Management	\$16,011,567	\$148,101,156	\$164,112,723
Changed Circumstances	\$1,601,157	\$14,810,116	\$16,411,272
Endowment	\$0	\$58,876,284	\$58,876,284
<b>Total</b>	<b>\$146,401,849</b>	<b>\$327,563,805</b>	<b>\$473,965,654</b>

(1) Staffing costs are allocated to the cost category associated with the position's primary responsibilities. DCP staff will be involved in the purchase of vehicles, purchasing land for additional reserves, and the initial administrative tasks associated with setting up an endowment fund, but those tasks will not be the primary focus of their work.

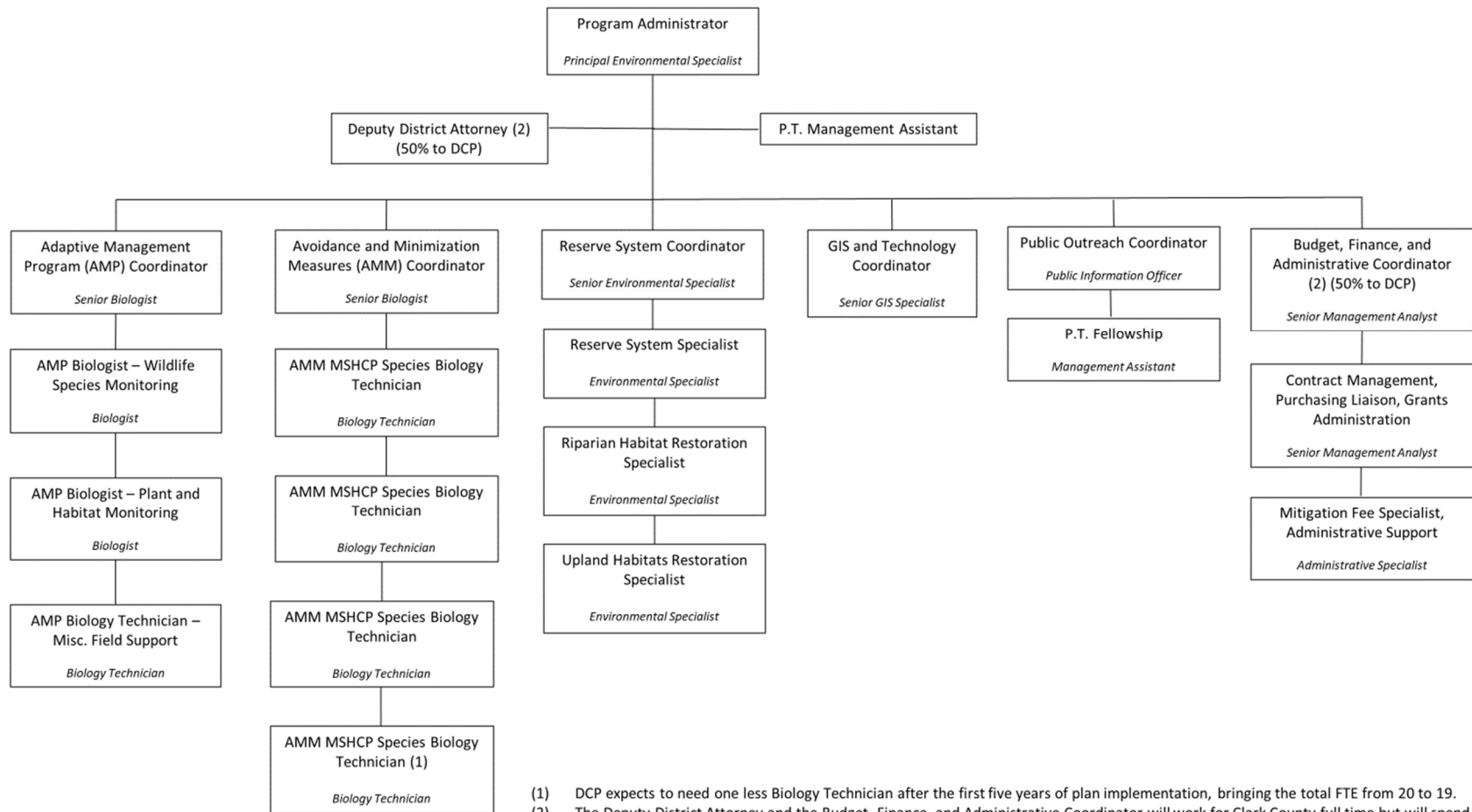
Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

## Staffing Costs

Clark County identified a DCP staffing requirement chart for updated plan implementation (see **Figure 1**). As shown, DCP implementation will initially require the full-time equivalent (FTE) of 20 employees to support general administration, adaptive management and monitoring, avoidance and minimization including public outreach, and reserve management activities. The staffing need is expected to decrease to an FTE of 19 after the first five years for the remaining 45 years of the permit term, when one less biology technician will be needed to conduct Avoidance and Minimization Measures such as pre-construction tortoise clearance surveys and seed collection. The DCP anticipates that these actions will be needed less frequently after the first five years of the permit term.

As shown in **Table 4**, staffing costs were estimated using the mid-point of the current salary range published by the Clark County Human Resources Department for each job position or their equivalent. Consistent with typical Clark County expenditures, a 45 percent multiplier is applied to staff salaries to account for employer-provided benefits. To account for operational overhead, including materials and expenses related to general operations (as opposed to specific projects), an additional 30 percent multiplier is applied to the salary and benefit costs.

**Figure 1 Desert Conservation Program Staff Organizational Chart for the MSHCP Amendment (DCP 2023)**



- (1) DCP expects to need one less Biology Technician after the first five years of plan implementation, bringing the total FTE from 20 to 19.
- (2) The Deputy District Attorney and the Budget, Finance, and Administrative Coordinator will work for Clark County full time but will spend 50% of their time with the Desert Conservation Program and 50% of their time with another department or division.

**Table 5 Staffing Costs (2023 Dollars)**

Title	General Cost Category	Midpoint Salary	Required FTEs (1)	Salary + Benefits (with 45% Benefit Multiplier)	Operations & Admin (30% Multiplier)	Total Staffing Cost (with 30% Operational Overhead Multiplier)
PT Management Assistant	General Administration	\$42,599	0.5	\$30,884	\$9,265	\$40,149
Mitigation Fee Specialist, Administrative Support	General Administration	\$64,439	1	\$93,436	\$28,031	\$121,467
GIS and Technology Coordinator	General Administration	\$91,135	1	\$132,146	\$39,644	\$171,790
Budget, Finance, and Administrative Coordinator	General Administration	\$91,135	0.5	\$66,073	\$19,822	\$85,895
Contract Management, Purchasing Liason, Grants Administration	General Administration	\$91,135	1	\$132,146	\$39,644	\$171,790
Deputy District Attorney	General Administration	\$116,054	0.5	\$84,139	\$25,242	\$109,381
Program Administrator	General Administration	\$123,947	1	\$179,723	\$53,917	\$233,640
AMP Biology Technician - Misc Field Support	Adaptive Management Program	\$64,439	1	\$93,436	\$28,031	\$121,467
AMP Biologist - Wildlife Species Monitoring	Adaptive Management Program	\$78,749	1	\$114,186	\$34,256	\$148,441
AMP Biologist - Plant and Habitat Monitoring	Adaptive Management Program	\$78,749	1	\$114,186	\$34,256	\$148,441
Adaptive Management Program Coordinator	Adaptive Management Program	\$91,135	1	\$132,146	\$39,644	\$171,790
AMM MSHCP Species Biology Technician	General Avoidance and Minimization Measures	\$64,439	1	\$93,436	\$28,031	\$121,467
AMM MSHCP Species Biology Technician	General Avoidance and Minimization Measures	\$64,439	1	\$93,436	\$28,031	\$121,467
AMM MSHCP Species Biology Technician	General Avoidance and Minimization Measures	\$64,439	1	\$93,436	\$28,031	\$121,467
AMM MSHCP Species Biology Technician (1)	General Avoidance and Minimization Measures	\$64,439	1	\$93,436	\$28,031	\$121,467
Avoidance and Minimization Measures Coordinator	General Avoidance and Minimization Measures	\$91,135	1	\$132,146	\$39,644	\$171,790
Riparian Habitat Restoration Specialist	Habitat Restoration & Enhancement	\$84,365	1	\$122,329	\$36,699	\$159,028
Upland Habitats Restoration Specialist	Habitat Restoration & Enhancement	\$84,365	1	\$122,329	\$36,699	\$159,028
Public Outreach Fellowship	Public Outreach	\$42,599	0.5	\$30,884	\$9,265	\$40,149
Public Outreach Coordinator	Public Outreach	\$76,918	1	\$111,532	\$33,460	\$144,991
Reserve System Specialist	Reserve System Management	\$78,749	1	\$114,186	\$34,256	\$148,441
Reserve System/ Reserve Assembly Coordinator	Reserve System Management	\$91,135	1	\$132,146	\$39,644	\$171,790
<b>Total</b>		<b>\$1,740,534</b>	<b>20.00</b>	<b>\$2,311,795</b>	<b>\$693,539</b>	<b>\$3,005,334</b>

(1) FTE = Full Time Equivalent. After the first five years under the new permit, staffing needs (and associated costs) will reduce by one (1) biological technician, slightly reducing the average annual staffing cost. The annual staffing cost in years 6-50 will be \$2,748,932, bringing the weighted average annual staffing cost to \$2,761,078.

Sources: DCP Staffing Needs Assessment for Updated Plan; Clark County HR Department Salary Information; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

As shown in **Table 5**, each of the required staff positions has been allocated to one of the implementation cost categories. **Table 6** provides a summary of DCP staffing costs, including average annual and total 50-year implementation costs.

**Table 6 Staff Cost Summary (2023 Dollars)**

Staff Function/ Role	FTE Count (1)	Total Staffing Cost (50-Year)	Avg. Annual Staffing Cost
General Administration	5.5	\$46,705,564	\$934,111
Adaptive Management Program	4	\$29,506,970	\$590,139
Avoidance and Minimization Measures			
General Avoidance and Minimization Measures	5	\$27,416,811	\$548,336
Public Outreach	1.5	\$9,257,014	\$185,140
Habitat Restoration & Enhancement	2	\$15,902,767	\$318,055
Reserve System Management	2	\$16,011,567	\$320,231
Changed Circumstances (2)	--	\$1,601,157	\$32,023
<b>Total</b>	<b>20</b>	<b>\$146,401,849</b>	<b>\$2,928,037</b>

(1) After 1st 5 years, one Avoidance and Minimization Measures Biological Technician is no longer required, reducing that staff allocation to 3 and overall FTE staffing to 18.5.

(2) The staffing costs for Changed Circumstances is 10 percent of the Reserve System Management staffing cost. Staff will likely be implementing the measures for Changed Circumstances, but the FTE will depend on the measures themselves

Sources: DCP Staffing Needs Assessment for Updated Plan; Clark County HR Department Salary Information; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

## Non-Staffing Costs

A broad range of additional expenditures are required to implement the updated MSHCP Amendment. As described in this section, some of these represent specific expenditures (e.g., land acquisition, vehicle purchase) and funding reserve set-asides (i.e., endowment), while others represent ongoing or periodic contracts with service providers assisting with activities such as reserve law enforcement, reserve clean-up, and specialized biological services including monitoring and adaptive management, as detailed in **Appendix A**.

**Table 7** provides a summary of non-staff DPC implementation costs divided into two categories: ongoing costs and one-time/periodic costs. Ongoing costs refer to the expenditures which are expected to remain generally consistent year to year, such as annual contracts and maintenance. One-time/periodic costs include those associated with startup projects at the beginning of the permit term as well as periodic studies or reports occurring throughout the permit term. **Table 7** summarizes both cost categories and indicates, for non-staffing elements of the plan amendment, an estimated 50-year plan implementation cost of about \$328 million and an average annual cost of about \$6.5 million. As shown, the largest non-staffing expenditures are associated with the adaptive management program and monitoring and with the reserve system management. An additional non-

staffing cost of about \$59 million is required to establish the non-wasting endowment that will be used to manage the reserves in perpetuity following the 50-year permit term.

**Table 7 Summary of Non-Staffing Costs (2023 Dollars)**

Cost Category	Annual Ongoing Cost	Total Ongoing Cost (50-Year)	One-Time/ Periodic Cost (50-Year)	Total Cost (50-Year)	Average Annual Cost
General Administration	\$70,000	\$3,500,000	\$750,000	\$4,250,000	\$85,000
Adaptive Management Program	\$1,295,300	\$64,765,000	\$4,450,000	\$69,215,000	\$1,384,300
Avoidance and Minimization Measures (exc. Public Outreach) (1)	\$175,000	\$8,750,000	\$300,000	\$9,050,000	\$181,000
Public Outreach (1)	\$206,000	\$10,300,000	\$250,000	\$10,550,000	\$211,000
Vehicles	\$55,000	\$2,750,000	\$0	\$2,750,000	\$55,000
Habitat Restoration & Enhancement (2)	\$100,000	\$5,000,000	\$0	\$5,000,000	\$100,000
Reserve Assembly	\$99,225	\$4,961,250	\$0	\$4,961,250	\$99,225
Reserve System Management	\$2,637,023	\$131,851,156	\$16,250,000	\$148,101,156	\$2,962,023
Changed Circumstances	\$263,702	\$13,185,116	\$1,625,000	\$14,810,116	\$296,202
Endowment	\$1,177,526	\$58,876,284	\$0	\$58,876,284	\$1,177,526
<b>Total</b>	<b>\$6,078,776</b>	<b>\$303,938,806</b>	<b>\$23,625,000</b>	<b>\$327,563,806</b>	<b>\$6,551,276</b>

(1) Public Outreach costs are shown separately in this table, though represent a subset of Avoidance and Minimization Measures and appear combined in other tables.

(2) Assumes non-staff Restoration and Enhancement Costs covered by other funding sources.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

### Contractor and Program Costs

The majority of non-staffing costs falling in the General Administration, Adaptive Management Program, Avoidance and Minimization Measures (incl. Public Outreach) Categories are from outside contracts.

- *General Administration Costs* - \$70,000 in annual ongoing costs (such as outside legal counsel) and \$750,000 in periodic costs for a GIS/Species Distribution Model that will be conducted every 10 years.
- *Adaptive Management Program* - \$1,295,300 in annual ongoing costs (such as contracts for a Science Advisor and BCCE Occupancy Sampling) and \$4,450,000 in periodic costs such as the Connectivity Management Plan and Sediment Source Contract.
- *Avoidance and Minimization Measures*
  - General AMMs - \$175,000 in annual ongoing costs for a Pick-up/Health Assessment Contract, fence maintenance, a regional plant nursery and cacti and yucca salvage.
  - Public Outreach (a subcategory within AMM's)- \$206,000 in annual ongoing costs, such as contracts for Mojave Max Education Program and miscellaneous outreach programs, and \$250,000 in periodic costs for Construction Worker Training Videos updated every 10 years.



## **Vehicles**

To implement various aspects of the MSHCP Amendment, including the Avoidance and Minimization Measures, Reserve Management, and Adaptive Management and Monitoring, DCP staff will require a total of five (5) vehicles, costing \$55,000 per vehicle, each with a lifespan of approximately 5 years. For purposes of this analysis, one vehicle will be purchased each year for the first five years, and then each vehicle will be replaced after five years, such that implementation of the MSHCP Amendment will require the purchase of one new vehicle per year for the entire (50-year) term of the plan.

## **Habitat Restoration**

This cost analysis assumes that non-staff costs associated with habitat restoration and enhancement efforts will be covered by other funding sources. The DCP has had success with grant programs such as SNEDA and SNPLMA in the past.

## **Reserve Assembly**

While impacts of the covered activities to desert habitat will be mitigated in the MSHCP Amendment through management, restoration, and enhancement of existing protected and public lands, the conservation program includes protection of one acre of riparian habitat for every acre of such habitat impacted by the covered activities. If riparian habitat cannot be acquired from willing sellers, then riparian habitat mitigation will be achieved through restoration and enhancement. For purposes of this analysis, the riparian habitat mitigation requirement was assumed to be fulfilled entirely through land acquisition.

The DCP records from 2015-2021 show an average annual development/ take of about 14 acres of riparian habitat; as a result, the covered activities are anticipated to impact 700 acres of riparian habitat.<sup>4</sup> Therefore, the MSHCP Amendment is anticipated to protect, on average, 14 acres of riparian habitat each year during the 50-year permit term.

It is typically infeasible to acquire parcels of land that are made up of entirely riparian land, such that this analysis utilizes the current density of riparian acres within existing riparian reserve parcels based on data provided by the DCP.<sup>5</sup> Based on this data, it is estimated that to acquire 14 acres of riparian land annually, the DCP must purchase 21 acres of land. The average per acre cost of this type of land acquisition is estimated at \$4,500 per acre based on DCP land

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<sup>4</sup> DCP 2022b.

<sup>5</sup> DCP 2023b.

acquisition costs over the past five years adjusted for inflation.<sup>6</sup> An additional 5 percent transaction cost is added to the base land acquisition cost to account for associated administrative costs such as appraisals, title, and other documents, based on EPS professional assumptions.

**Table 8 Reserve Assembly Costs**

Item	Annual	Total (50-Year)
Acres of Riparian Impact (1)	14	700
Acres of Riparian Acquisition Required (2)	14	700
Acquisition Multiplier (3)	1.47	--
Total Acres of Land Acquisition	21	1050
Land Acquisition Cost per Acre (Riparian Habitat) (4)	\$4,500	--
Annual Cost	\$94,500	\$4,725,000
Transaction Costs (5)	5%	--
<b>Total Annual Reserve Assembly Cost</b>	<b>\$99,225</b>	<b>\$4,961,250</b>

1) The annual take of riparian acres is based on the average acres of riparian land impacted from 2015-2021, provided by the DCP

2) DCP requires 1:1 mitigation for riparian impacts which can be accomplished through land acquisition or restoration and enhancement. For purposes of this analysis all mitigation is assumed to occur through land acquisition.

3) This calculation uses the proportion of actual riparian acres located in the existing riparian reserve. Of the 785 acres acquired to date, about 68 percent are riparian.

4) This estimate is based on DCP Land Acquisition Costs over the last 5 years adjusted for inflation.

5) Transaction costs are non-land costs associated with land acquisitions, including appraisal, title, and other documents.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

## Reserve Management

The costs to manage the reserves in the MSHCP Amendment include the ongoing costs of the existing reserves, the Boulder City Conservation Easement (BCCE)

<sup>6</sup> DCP, 2022b

and Muddy and Virgin River riparian reserves, as well as costs associated with the new reserves, which will include new riparian reserves acquired mitigation and the approximately 353,000 acres in the nine (9) Special Managements Areas within Bureau of Land Management lands (**Table 3**).

#### *Existing Reserve Management Costs*

**Table 9** shows the ongoing management costs for the BCCE and existing riparian reserves, which were based upon records provided by the DCP. These costs were incorporated into the cost analysis and used to inform the reserve management costs of the new reserve lands.

**Table 9 Existing BCCE and Riparian Reserve Management Costs (2023 Dollars)**

Management Type	Annual Cost	Estimated Annual Cost per Acre (1), (2)
<b>BCCE Reserve Management</b>		
BCCE Law Enforcement Contract	\$90,000	\$1.03
BCCE Land Management Contract	\$60,000	\$0.69
BCCE Weed Management Contract	<u>\$67,000</u>	<u>\$0.77</u>
<b>Total</b>	<b>\$217,000</b>	<b>\$2.49</b>
<b>Riparian Reserve Management Reserve Management</b>		
Riparian Land Management Contract	\$100,000	\$127.39
Riparian Weed Management Contract	<u>\$100,000</u>	<u>\$127.39</u>
<b>Total</b>	<b>\$200,000</b>	<b>\$254.78</b>
<b>Total/ Weighted Average</b>	<b>\$417,000</b>	<b>\$4.73</b>

(1) Existing BCCE acreage: 87,310 acres

(2) Existing Riparian acreage 785 acres

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

This analysis anticipates the costs associated with managing the BCCE and existing riparian reserves will remain consistent with current ongoing costs in constant dollar terms. While conditions in the habitat may improve, new factors necessitating management are anticipated to emerge.

#### *Additional Riparian Reserve Management Costs*

**Table 9** estimates the additional average annual management costs associated with the newly protected riparian lands, which are based on the expected new riparian land acquisition (1,050 acres of total habitat to protect 700 acres of riparian habitat) and the existing annual management cost per riparian acre (\$254.78 per acre). A more detailed time series showing the incremental increase

in additional riparian management costs over the 50-year permit term is provided in **Appendix B**.

**Table 10 New Riparian Management Costs (2023 Dollars)**

Item	Amount
Average Annual New Acres	21
Total New Acres by Year 50	1,050
Average Annual Management Cost per Acre (1)	\$255
Total Cost over 50 Years	\$6,821,656
Average Annual Cost (Permit Term)	\$136,433
Annual Cost in Year 50 (and beyond) (2)	\$267,516

(1) Existing average annual management cost per acre for existing riparian reserves.

(2) New annual management costs increase over time through Year 50 as new riparian land is acquired. See **Appendix B** for details.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc

*New SMA Reserve Management Costs*

Costs to manage the new Special Management Areas (SMAs) include initial costs to establish the reserves, and ongoing reserve management costs. As described in **Chapter 2**, the initial costs will include:

- Initial development of plans, map, and legal descriptions necessary to establish the reserves; and
- Initial, more intensive land management activities, such as weed management, debris removal, and initial fence installation.

Estimated SMA planning activities and costs are shown in **Table 11**. The cost estimates were based on DCP and consultant experience, as well as Bureau of Land Management staff estimates for the initial planning costs.<sup>7</sup> As shown, SMA

<sup>7</sup> Bureau of Land Management correspondence, 2023.

planning costs are estimated to be \$4.8 million and are assumed to occur over the first five years of the MSHCP Amendment implementation.

**Table 11 SMA Planning Activities Costs (2023 Dollars)**

Planning Activity	New Cost Per Plan/ Study	# of Studies	Total DCP Cost
Baseline Surveys (1)	na	na	na
RMP Amendment and EIS	\$1,200,000	1	\$1,200,000
SMA Plans (2)	\$350,000	9	\$3,150,000
Legal Description and Maps	\$88,889	9	\$800,000
<b>Total SMA Planning Costs</b>			<b>\$5,150,000</b>

1) This analysis assumes the baseline surveys will be conducted prior to the new permit term

2) Includes Special Management Area Plan, Travel and Transportation Plan, and Environmental Assessment

Sources: Bureau of Land Management; Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

The integration of the new SMAs into the DCP will also require extensive initial investments in fencing, clean-up, and weed management during the first 5 years, when habitat conditions are anticipated to be more degraded and thus initial costs will be higher than that in the BCCE, which has been subject to annual management for decades. The initial investment to improve the habitat condition will increase the efficiency of ongoing management after the initial five-year period. **Table 12** provides estimates of initial costs over this five-year period associated with initial management.

- **Fencing:** The SMAs will require new fencing which the DCA estimates will cost \$10 million. This amount could cover a total of 65 miles of new fencing in the nine (9) SMAs at a cost of \$150,000 per mile, which represents a blended average of recent DCP fencing costs for post-and-cable fencing as well as desert tortoise fencing. To the extent that fencing can be more focused on desert tortoise fencing and less on the more expensive post-and-cable fencing, more miles of new fencing could be constructed for the same investment.
- **Clean-Up Costs:** Upfront costs to clean up debris in the SMAs are estimated at a total of \$450,000. This reflects current DCA costs of \$10,000 per cleanup site and an average of one cleanup site in each of the

nine SMAs each year for five years for a total of 45 cleanup sites costing \$450,000.

- Weed Management:** National Park Service ecologist staff who conduct weed management at the BCCE estimate that initial weed management of the SMAs will cost \$50,000 per year for two years, to control initially dense or widespread infestations, after which the SMAs would be subject to annual weed management.

**Table 12 Initial Reserve Management Costs (2023 Dollars)**

Item	1	2	3	4	5	Total Cost
<b>Fencing</b>						
Miles	13.0	13.0	13.0	13.0	13.0	65.0
Cost (1)	\$1,950,000	\$1,950,000	\$1,950,000	\$1,950,000	\$1,950,000	\$9,750,000
<b>Clean Up</b>						
Sites	9	9	9	9	9	45
Cost (2)	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$450,000
<b>Weed Management</b>						
Management Areas	9	9				
Cost (3)	\$450,000	\$450,000	\$0	\$0	\$0	\$900,000
<b>Total Initial Cost</b>	<b>\$2,490,000</b>	<b>\$2,490,000</b>	<b>\$2,040,000</b>	<b>\$2,040,000</b>	<b>\$2,040,000</b>	<b>\$11,100,000</b>

- 1) Estimated fencing cost per mile based on blend of recent DCP fencing projects: \$150,000 per Mile  
 2) Based on current County costs: \$10,000 per Site  
 3) Estimate cost per area per year \$50,000 per Unit

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

Ongoing management of the SMAs was estimated based on the weighted average of existing reserve management costs (see **Table 9**) as well as a review of other regional HCP management costs. These resources were used to develop the following per-acre annual estimates for management of the approximately 353,000 acres in the nine SMAs, which is assumed to cost less over time as habitat conditions improve, management issues are abated, and the work becomes more efficient:

- Years 1-10: \$5 per acre per year;
- Years 11-30: \$4 per acre per year; and
- Years 31-50: \$3 per acre per year.

**Table 13 SMA Management Costs**

<b>SMA</b>	<b>Acres</b>	<b>Annual Reserve Management Costs (1) Year 1-10</b>	<b>Annual Reserve Management Costs (2) Year 11-30</b>	<b>Annual Reserve Management Costs (3) Year 31-50</b>	<b>50-Year Total Cost</b>
Mesa Milkvetch	8,430	\$42,150	\$33,720	\$25,290	\$1,601,700
Tortoise Corridor	42,974	\$214,870	\$171,896	\$128,922	\$8,165,060
Bird Spring Valley	39,282	\$196,410	\$157,128	\$117,846	\$7,463,580
Muddy Mountains	32,250	\$161,250	\$129,000	\$96,750	\$6,127,500
Bitter Springs	61,711	\$308,555	\$246,844	\$185,133	\$11,725,090
Gale Hills	16,411	\$82,055	\$65,644	\$49,233	\$3,118,090
Jean Lake	2,669	\$13,345	\$10,676	\$8,007	\$507,110
California Wash	8,205	\$41,025	\$32,820	\$24,615	\$1,558,950
Stump Springs	141,786	\$708,930	\$567,144	\$425,358	\$26,939,340
<b>Total</b>	<b>353,718</b>	<b>\$1,768,590</b>	<b>\$1,414,872</b>	<b>\$1,061,154</b>	<b>\$67,206,420</b>

1) Assumes average per acre per year management cost of \$5.00 per acre.  
 2) Assumes average per acre per year management cost of \$4.00 per acre.  
 3) Assumes average per acre per year management cost of \$3.00 per acre

This is similar to the current weighted average for existing reserves (BCCE and Riparian) of \$4.73 per acre per year and is about twice the annual management cost of the BCCE reserves. The BCCE reserve management costs are modest due to the long period for which they have been managed; a review of information on other regional HCP's and preserves indicates that \$5.00 per acre per year is at the lower end of estimated management costs.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

## Changed Circumstances

The costs analysis assumes that planned responses to address changed circumstances as described in Section 7.2 of the MSHCP Amendment and summarized in **Table 3** will cost 10 percent of the ongoing reserve management costs. This funding is intended to cover monitoring and habitat restoration, enhancement, and management. The exact costs to address changed circumstances are difficult to estimate precisely for a variety of reasons, including: 1) the change that will occur is uncertain, and 2) in many costs initial monitoring or assessment will be needed to determine the response. If costs associated with Changed Circumstances begin to exceed this assumption, additional cost and funding analysis may be required.

## Endowment

An endowment will be needed to fund management of the MSHCP Amendment reserves in perpetuity. To determine the level of endowment funding that should be set aside during the permit term to fund management post-permit, it is necessary to estimate:

- The annual management and monitoring costs post permit;
- The level of return on endowment funds that might be received over and above inflation (i.e., the net capitalization rate); and
- The net capitalization rate for the endowment post-permit.

**Table 14** shows the estimated DCP endowment funding requirement at about \$58.9 million which is based on the following assumptions:

- The County will hold the endowment funds during the permit period. Given expected limitations on the types of investments that the County will be able to make using the endowment funds, this analysis assumes that the endowment funds will not accrue interest over-and-above inflation during the permit term (i.e., the net capitalization rate is 0 percent). As a result, all required endowment funding must be generated through mitigation fees.
- At the end of the permit term, it is assumed that the reserves and their management will be turned over to a non-profit who will also receive the endowment to support the ongoing management costs.
- Post-permit, interest from the endowment will be required to cover the ongoing reserve management costs of slightly over \$2.0 million each year (2023 constant dollar terms). It is assumed that the endowment will not need to fund any ongoing monitoring or staffing costs.
- Based on consultant experience with other regional Habitat Conservation Plans (HCPs) that are building post-permit endowments, a non-depleting pos-permit endowment interest rate of 3.5 percent is assumed. A total



post-permit endowment of \$58.9 million is required to generate \$2.1 million annually at a 3.5 percent interest rate.

**Table 14 Ongoing Post-Permit Management Costs and Endowment Calculation**

<b>Cost Category</b>	<b>Annual Costs</b>
BCCE Non-Staff Management Costs	\$217,000
Riparian Non-Staff Management Costs (1)	\$467,516
SMA Management	\$1,061,154
Water Rights Consultant	\$15,000
Early Detection Rapid Response	\$100,000
Ongoing Cleanup (all reserves)	\$50,000
Ongoing Fencing Maintenance (all reserves)	\$150,000
<b>Total</b>	<b>\$2,060,670</b>
<b>Required Post-Permit Endowment Amount (2)</b>	<b>\$58,876,284</b>
Accrued Interest Revenues during Permit Period (3) (over and above inflation)	\$0
<b>Required Post-Permit Endowment Fee-Funding (4)</b>	<b>\$58,876,284</b>

\* Non-staff annual costs associated with reserve management at end of permit term (Constant 2023 Dollars)  
Assumes non-profit entity takes on management responsibilities at end of permit term with endowment.

(1) Includes cost to manage existing and new riparian reserve land.

(2) Endowment required to generate non-depleting annual revenues to cover ongoing costs assuming average annual net interest rate return of 3.5% (after inflation and charges).

(3) Assumes County investment of Post-Permit Endowment funds obtains interest at the rate of inflation and not above it.

(4) Endowment funding required from mitigation fees.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

## 4. Development Forecast

As with the current permit, a mitigation fee will be the primary source of funding for Plan implementation. To calculate the required mitigation fee per acre of development the estimated amended Plan implementation costs over the 50-year permit term must be spread across the expected level of new development.

The amended MSHCP will seek Endangered Species Act authorization for development of an additional 215,000 acres in Clark County. It is, nevertheless, important to forecast the level of expected new development over this 50-year period, as substantially lower levels of development would mean a higher per-acre mitigation fee would be required to cover the Plan implementation costs.

The anticipated acres of development over the 50-year permit term were estimated based on the historic fee-paying land development ranging from 2001-2021 and the University of Nevada Las Vegas Center for Business and Economic Research 2022 Population Forecast.

**Table 15** summarizes the UNLV population forecast and its conversion into a land development forecast. The conversion of population growth into land development assumes the current ratio of 7.8 persons per acre of development land in Clark County remains constant. As shown, the population forecasts between 2022 and 2035 indicate an annual population growth of about 43,400 or about 5,600 acres annually. The UNLV population forecasts do show a substantial decrease in the pace of population growth for the 2035 to 2060 period, such that the overall estimated annual average for 2022 to 2060 is about 27,000 persons each or about 3,500 acres annually.

**Table 15 Population Forecast**

Year	Population Forecast	Total Acres Developed	New Population	Additional Acres Developed
2022	2,375,000	304,487	41,908	5,373
2023	2,427,000	311,154	52,000	6,667
2024	2,485,000	318,590	58,000	7,436
2025	2,540,000	325,641	55,000	7,051
2026	2,593,000	332,436	53,000	6,795
2027	2,644,000	338,974	51,000	6,538
2028	2,691,000	345,000	47,000	6,026
2029	2,733,000	350,385	42,000	5,385
2030	2,773,000	355,513	40,000	5,128
2031	2,810,000	360,256	37,000	4,744
2032	2,845,000	364,744	35,000	4,487
2033	2,879,000	369,103	34,000	4,359
2034	2,910,000	373,077	31,000	3,974
2035	2,940,000	376,923	30,000	3,846
2040	3,073,000	393,974	133,000	17,051
2045	3,181,000	407,821	108,000	13,846
2050	3,266,000	418,718	85,000	10,897
2055	3,334,000	427,436	68,000	8,718
2060	3,387,000	434,231	53,000	6,795
<b>Total New Acres (2022 - 2060)</b>			<b>1,053,908</b>	<b>135,116</b>
Annual			27,023	3,465
<b>Total New Acres (2022 - 2035)</b>			<b>606,908</b>	<b>250,757</b>
Annual			43,351	5,558

\* UNLV CBER Population Forecast (2022) provides annual population through 2035 and then five-year forecasts through 2060. Population growth is converted to land development estimate based on current average of 7.8 persons per acre per Clark County.

Source: UNLV CBER Forecast 2022; Clark County

**Table 16** shows four potential forecast scenarios. Scenario 1 is based on the UNLV population forecast for 2022 to 2060 and assumes an average annual of 3,500 acres of new development each year and a 50-year permit period total of about 173,000 acres. Scenario 2 is based on the pace of forecast growth between 2022 and 2035 (on the basis that even greater uncertainty exists when conducting longer term forecasts) and reflects an annual average growth of 5,600 acres and a 50-year permit period total of about 278,000 acres.

Because the existing permit has been in place for over 20 years, there is also strong historical data on permitted development in Clark County. As shown in **Table 16** and reflected in Scenario 4, the average annual development between 2001 and 2021 was 4,773 acres, which if continued, would result in a 50-year permit period total of 238,650 acres. A more conservative history-based scenario was also developed, Scenario 3, that only considered the pace of historical development between 2012 and 2021, 3,719 acres per year, representing a 50-year permit period total of 185,950 acres.

**Table 16 Development Estimates**

Item	Average Annual Acres	50-Year Total
Scenario 1: UNLV Forecast 2023 - 2060	3,465	173,226
Scenario 2: UNLV Forecast 2023 - 2035	5,558	277,888
Scenario 3: Historical Fee-Paying Land Development (2012 - 2021)	3,719	185,950
Scenario 4: Historical Fee-Paying Land Development (2001 - 2021)	4,773	238,650
<b>Average of All 4 Scenarios (1)</b>	<b>4,379</b>	<b>218,929</b>

(1) A low and high average annual acres of development was established based on the UNLV forecast data as well as based on actual historical on development. The average of these four scenarios is about 4,380 acres annually or 218,9000 over 50 years. Given that the new permit is for 50 years and is expected to allow for 215,000 acres of development, a total of 215,000 acres is used as the development forecast, an average annual of 4,300 acres of development.

Sources: UNLV CBER Forecast 2022; Clark County; Economic and Planing Systems, Inc.

In reality, the level of development will vary each year based on real estate conditions and other factors and the long-range pace of growth will be strongly influenced by the availability of infrastructure and resources to support continued growth and development. The scenarios shown provide a range of between 173,000 and 278,000 acres of development for a 50-year period, with an average of about 219,000 acres over the 50-year permit term.

This average is similar to the 215,000 acres of coverage sought under the amended MSHCP. As a result, an assumption that the full 215,000 acres – or an annual average of 4,300 acres of land development – over the new permit period was considered reasonable and applied in estimating the appropriate mitigation fee. Due to the uncertainties around the pace of development through time, this is one of the key variables the DCP should track through time. To the extent, the

pace of new development is consistently above or below this forecast, an adjustment in the mitigation fee calculation will be necessary.

## 5. Fee Calculation

**Table 17** shows the calculation of the required mitigation fee in 2023 constant dollars to cover the total amended MSHCP implementation costs. It shows the implementation costs by conservation activity/ cost category developed in Chapter 3 and converts them into a per-acre mitigation fee based on the expected 215,000 acres of development over this period as discussed in Chapter 4.

As shown, the total 50-year implementation cost sums to about \$443 million, including about \$384 million in permit term costs and an additional \$59 million required in an endowment to cover on-going post-permit management costs. Among the permit term costs, Reserve Management costs are the highest, representing about 43 percent of permit term costs. Adaptive Management Program and Monitoring Costs are the second highest cost category representing about 21 percent of permit term costs.

**Table 17 Detailed Fee Estimate (2023 Dollars)**

Item	50-Year Total	Per Acre (1)
<u>Permit Term Costs</u>		
General Administration	\$50,955,564	\$237
Adaptive Management Program/ Monitoring	\$98,721,970	\$459
Avoidance and Minimization Measures/ Outreach	\$56,273,825	\$262
Reserve Management	\$164,112,723	\$763
Changed Circumstances	\$16,411,272	\$76
Habitat Restoration and Enhancement	\$20,902,767	\$97
Vehicles	\$2,750,000	\$13
Reserve Assembly	\$4,961,250	\$23
<b>Subtotal</b>	<b>\$415,089,371</b>	<b>\$1,931</b>
<u>Post-Permit Endowment</u>	\$58,876,284	\$274
<b>Total Cost</b>	<b>\$473,965,654</b>	<b>\$2,204</b>

(1) Acres of Development: 215,000

As shown in **Table 17**, the total mitigation fee in 2023 constant dollar terms is estimated at \$2,204 per acre. \$1,931 per acre of this funding is required to fund the MSHCP implementation costs over the 50-year permit term with the remaining \$274 per acre required to fund the post-permit endowment.

## 6. References

- Bureau of Land Management (BLM). 2023. Estimated costs to prepare map and legal descriptions and develop initial plans to establish the 9 Special Management Areas. Email correspondence with K. Jenkins, DCP Principal Environmental Scientist. April and May 2023.
- Desert Conservation Program (DCP). 2022a. Request for proposals for the Funding Analysis of the MSHCP Amendment. June 27, 2022. 7 pages,
- Desert Conservation Program (DCP). 2022b. Acquisition tracking workbook. Provided to EPS and JMc. October 19, 2022.
- Desert Conservation Program (DCP). 2022a. Acres of Disturbance by Calendar Year. Provided to EPS and JMc. February 9, 2023.
- Desert Conservation Program (DCP). 2023a. Riparian habitat acquisition acreages relative to total property acreage. Data provided to EPS and JMc. March 23, 2023.
- National Park Service. 2023. Estimated costs to conduct initial weed management in the 9 Special Management Areas. Email correspondence between Curt Deuser, NPS and K. Jenkins, DCP Principal Environmental Scientist. April 2023.
- University of Nevada Las Vegas (UNLV). 2022. 2022-2060 Population Forecasts: Long-Term Projections For Clark County, Nevada. January 2023.
- Wetland Research Associates (WRA). 2022. Draft chapters for the Clark County Multi-Species Habitat Conservation Plan Amendment. Submitted to the Desert Conservation Program in 2020-2022.



# Appendices



## Appendix A: Detailed Non-Staff Costs

**DCP Non-Staffing Costs: Ongoing Annual and Periodic Costs (Constant 2023 dollars)**

Cost Category	Ongoing Annual Costs		Periodic/ One-Time Costs			Total 50-Year	Annual Average
	Avg. Annual	50 Year Total	Item Cost	No. of Occurrences	50-Year Total		
<b>General Administration</b>							
Outside Legal Counsel	\$50,000	\$2,500,000	\$0		\$0	\$2,500,000	\$50,000
GIS/ Species Distribution Model	\$0	\$0	\$150,000	5	\$750,000	\$750,000	\$15,000
Imagery Acquisition	\$20,000	\$1,000,000	\$0		\$0	\$1,000,000	\$20,000
<b>Subtotal</b>	<b>\$70,000</b>	<b>\$3,500,000</b>			<b>\$750,000</b>	<b>\$4,250,000</b>	<b>\$85,000</b>
<b>Adaptive Management Program</b>							
Science Advisor Panel Contract	\$280,000	\$14,000,000	\$0		\$0	\$14,000,000	\$280,000
Translocation Costs	\$0	\$0	\$550,000	5	\$2,750,000	\$2,750,000	\$55,000
BCCE Occupancy Sampling Contract	\$100,300	\$5,015,000	\$0		\$0	\$5,015,000	\$100,300
TCA Line Distance Sampling Contract	\$375,000	\$18,750,000	\$0		\$0	\$18,750,000	\$375,000
Connectivity Management Plan	\$0	\$0	\$250,000	1	\$250,000	\$250,000	\$5,000
Protocol Level Survey (T&E Birds) Contract	\$65,000	\$3,250,000	\$0		\$0	\$3,250,000	\$65,000
Connectivity Management Project Implementation	\$100,000	\$5,000,000	\$0		\$0	\$5,000,000	\$100,000
Burrowing Owl Monitoring Survey Contracts	\$0	\$0	\$100,000	12	\$1,200,000	\$1,200,000	\$24,000
Sediment Source Contract	\$0	\$0	\$250,000	1	\$250,000	\$250,000	\$5,000
Mark-recapture Demography Surveys	\$275,000	\$13,750,000	\$0		\$0	\$13,750,000	\$275,000
Desert Tortoise Conservation Center	\$100,000	\$5,000,000			\$0	\$5,000,000	\$100,000
<b>Subtotal</b>	<b>\$1,295,300</b>	<b>\$64,765,000</b>			<b>\$4,450,000</b>	<b>\$69,215,000</b>	<b>\$1,384,300</b>
<b>Avoidance and Minimization Measures (exc. Public Outreach)</b>							
Pick-Up/ Health Assessment Contract	\$25,000	\$1,250,000	\$0		\$0	\$1,250,000	\$25,000
NDOT ROW Fence Maintenance	\$50,000	\$2,500,000	\$0		\$0	\$2,500,000	\$50,000
Regional Restoration Materials Program	\$25,000	\$1,250,000	\$0		\$0	\$1,250,000	\$25,000
Plant Nursery	\$25,000	\$1,250,000	\$300,000	1	\$300,000	\$1,550,000	\$31,000
Cacti and Yucca Salvage	\$50,000	\$2,500,000			\$0	\$2,500,000	\$50,000
<b>Subtotal</b>	<b>\$175,000</b>	<b>\$8,750,000</b>			<b>\$300,000</b>	<b>\$9,050,000</b>	<b>\$181,000</b>

**DCP Non-Staffing Costs: Ongoing Annual and Periodic Costs (Constant 2023 dollars)**

Cost Category	Ongoing Annual Costs		Periodic/ One-Time Costs			Total 50-Year	Annual Average
	Avg. Annual	50 Year Total	Item Cost	No. of Occurances	50-Year Total		
<b>Public Outreach</b>							
Mojave Max Education Contract	\$100,000	\$5,000,000	\$0		\$0	\$5,000,000	\$100,000
Give-aways/ Merchandise Acquisition	\$10,000	\$500,000	\$0		\$0	\$500,000	\$10,000
DRI Travel Trunk Coordination	\$10,000	\$500,000	\$0		\$0	\$500,000	\$10,000
Mojave Max Mascot Contract	\$10,000	\$500,000	\$0		\$0	\$500,000	\$10,000
Miscellaneous Outreach Programs	\$50,000	\$2,500,000	\$0		\$0	\$2,500,000	\$50,000
Construction Worker Training Videos	\$0	\$0	\$50,000	5	\$250,000	\$250,000	\$5,000
Annual Symposium	\$1,000	\$50,000	\$0		\$0	\$50,000	\$1,000
OHV Education and Outreach	\$25,000	\$1,250,000	\$0		\$0	\$1,250,000	\$25,000
<b>Subtotal</b>	<b>\$206,000</b>	<b>\$10,300,000</b>			<b>\$250,000</b>	<b>\$10,550,000</b>	<b>\$211,000</b>
<b>Vehicles (4)</b>	\$55,000	\$2,750,000	\$0		\$0	\$2,750,000	\$55,000
<b>Habitat Restoration &amp; Enhancement (5)</b>							
Riparian Restoration Project Implementation	\$50,000	\$2,500,000	\$0		\$0	\$2,500,000	\$50,000
Uplands Restoration Project Implementation	\$50,000	\$2,500,000	\$0		\$0	\$2,500,000	\$50,000
<b>Subtotal</b>	<b>\$100,000</b>	<b>\$5,000,000</b>			<b>\$0</b>	<b>\$5,000,000</b>	<b>\$100,000</b>
<b>Reserve Assembly (6)</b>	\$99,225	\$4,961,250	\$0		\$0	\$4,961,250	\$99,225
<b>Reserve System Management</b>							
Water Rights Consultant	\$15,000	\$750,000	\$0		\$0	\$750,000	\$15,000
Early Detection Rapid Response	\$100,000	\$5,000,000	\$0		\$0	\$5,000,000	\$100,000
Ongoing Cleanup (all reserves) (1)	\$50,000	\$2,500,000	\$0		\$0	\$2,500,000	\$50,000
Ongoing Fencing (all reserves) (1)	\$150,000	\$7,500,000	\$0		\$0	\$7,500,000	\$150,000
<u>Existing BCCE Reserves</u>							
BCCE Law Enforcement Contract	\$90,000	\$4,500,000	\$0		\$0	\$4,500,000	\$90,000
BCCE Land Management Contract	\$60,000	\$3,000,000	\$0		\$0	\$3,000,000	\$60,000
BCCE Weed Management Contract	\$67,000	\$3,350,000	\$0		\$0	\$3,350,000	\$67,000
<u>Existing Riparian Reserves</u>							

**DCP Non-Staffing Costs: Ongoing Annual and Periodic Costs (Constant 2023 dollars)**

Cost Category	Ongoing Annual Costs		Periodic/ One-Time Costs			Total 50-Year	Annual Average
	Avg. Annual	50 Year Total	Item Cost	No. of Occurances	50-Year Total		
Riparian Land Management Contract	\$100,000	\$5,000,000	\$0		\$0	\$5,000,000	\$100,000
Riparian Weed Management Contract	\$100,000	\$5,000,000	\$0		\$0	\$5,000,000	\$100,000
New Riparian Reserves (2)	\$136,433	\$6,821,656	\$0		\$0	\$6,821,656	
<u>Special Management Areas (3)</u>							\$136,433
Initial Planning Efforts			\$5,150,000	1	\$5,150,000	\$5,150,000	\$103,000
Start Up Management Costs			\$11,100,000	1	\$11,100,000	\$11,100,000	\$222,000
Ongoing Land, Law Enforcement, Weed Management	\$1,768,590	\$88,429,500				\$88,429,500	\$1,768,590
<b>Subtotal</b>	<b>\$2,637,023</b>	<b>\$131,851,156</b>			<b>\$16,250,000</b>	<b>\$148,101,156</b>	<b>\$2,962,023</b>
<b>Endowment</b>	\$1,177,526	\$58,876,284	\$0		\$0	\$58,876,284	\$1,177,526
<b>Total</b>	<b>\$4,487,548</b>	<b>\$224,377,406</b>			<b>\$21,700,000</b>	<b>\$246,077,406</b>	<b>\$5,077,548</b>

(1) Covers Existing Reserves and New Reserve Areas.

(2) Additional management costs associated with new riparian land acquisition. Annual cost changes over permit term as new acquisition occur.

Total of 1,050 new acres acquired during permit term.

(3) Special Management Areas include a total of about 353,700 acres across nine (9) areas. It is assumed that DCP takes on management of this land at the start of the new permit period, invests in substantial upfront planning and initial reserve management efforts as well as ongoing SMA reserve management efforts beyond the upfront efforts.

(4) Assumes one new vehicle acquired required each year (for start-up and then replacement).

(5) Assumes non-staff Restoration and Enhancement Costs covered by other funding sources.

(6) Land acquisition costs associated with additional riparian acreage.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.



## Appendix B: New Riparian Acquisition Time Series

**Time Series: Additional Reserve Management Costs  
associated with New Riparian Land Acquisitions (Constant  
2023 Dollars)**

<b>Year</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<u>Annual Land Acquisition</u>							
Direct Impact	14	14	14	14	14	14	14
Additional	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>
Total Acquisition	21	21	21	21	21	21	21
Cumulative New Land Management	21	42	63	84	105	126	147
Annual Management Cost (1)	\$5,350	\$10,701	\$16,051	\$21,401	\$26,752	\$32,102	\$37,452

(1) Based on new acreage and annual average riparian management cost (2023 Constant Dollars) of \$254.80 per Acre.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

**Time Series: Additional Reserve Management Costs  
associated with New Riparian Land Acquisitions (Constant  
2023 Dollars)**

<b>Year</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>
<u>Annual Land Acquisition</u>								
Direct Impact	14	14	14	14	14	14	14	14
Additional	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>
Total Acquisition	21	21	21	21	21	21	21	21
Cumulative New Land Management	168	189	210	231	252	273	294	315
Annual Management Cost (1)	\$42,803	\$48,153	\$53,503	\$58,854	\$64,204	\$69,554	\$74,904	\$80,255

(1) Based on new acreage and annual average riparian management cost (2023 Constant Dollars) of \$254.80 per Acre.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.



**Time Series: Additional Reserve Management Costs  
associated with New Riparian Land Acquisitions (Constant  
2023 Dollars)**

<b>Year</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>
<u>Annual Land Acquisition</u>								
Direct Impact	14	14	14	14	14	14	14	14
Additional	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>
Total Acquisition	21	21	21	21	21	21	21	21
Cumulative New Land Management	336	357	378	399	420	441	462	483
Annual Management Cost (1)	\$85,605	\$90,955	\$96,306	\$101,656	\$107,006	\$112,357	\$117,707	\$123,057

(1) Based on new acreage and annual average riparian management cost (2023 Constant Dollars) of \$254.80 per Acre.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

**Time Series: Additional Reserve Management Costs  
associated with New Riparian Land Acquisitions (Constant  
2023 Dollars)**

<b>Year</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>31</b>
<u>Annual Land Acquisition</u>								
Direct Impact	14	14	14	14	14	14	14	14
Additional	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>
Total Acquisition	21	21	21	21	21	21	21	21
Cumulative New Land Management	504	525	546	567	588	609	630	651
Annual Management Cost (1)	\$128,408	\$133,758	\$139,108	\$144,459	\$149,809	\$155,159	\$160,510	\$165,860

(1) Based on new acreage and annual average riparian management cost (2023 Constant Dollars) of \$254.80 per Acre.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

**Time Series: Additional Reserve Management Costs  
associated with New Riparian Land Acquisitions (Constant  
2023 Dollars)**

<b>Year</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>
<u>Annual Land Acquisition</u>								
Direct Impact	14	14	14	14	14	14	14	14
Additional	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>
Total Acquisition	21	21	21	21	21	21	21	21
Cumulative New Land Management	672	693	714	735	756	777	798	819
Annual Management Cost (1)	\$171,210	\$176,561	\$181,911	\$187,261	\$192,611	\$197,962	\$203,312	\$208,662

(1) Based on new acreage and annual average riparian management cost (2023 Constant Dollars) of \$254.80 per Acre.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

**Time Series: Additional Reserve Management Costs  
associated with New Riparian Land Acquisitions (Constant  
2023 Dollars)**

<b>Year</b>	<b>40</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>45</b>	<b>46</b>	<b>47</b>
<u>Annual Land Acquisition</u>								
Direct Impact	14	14	14	14	14	14	14	14
Additional	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>
Total Acquisition	21	21	21	21	21	21	21	21
Cumulative New Land Management	840	861	882	903	924	945	966	987
Annual Management Cost (1)	\$214,013	\$219,363	\$224,713	\$230,064	\$235,414	\$240,764	\$246,115	\$251,465

(1) Based on new acreage and annual average riparian management cost (2023 Constant Dollars) of \$254.80 per Acre.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.

**Time Series: Additional Reserve Management Costs  
associated with New Riparian Land Acquisitions (Constant  
2023 Dollars)**

<b>Year</b>	<b>48</b>	<b>49</b>	<b>50</b>	<b>Total (50-Year)</b>
<u>Annual Land Acquisition</u>				
Direct Impact	14	14	14	700
Additional	<u>7</u>	<u>7</u>	<u>7</u>	<u>350</u>
Total Acquisition	21	21	21	1050
Cumulative New Land Management	1008	1029	1050	--
Annual Management Cost (1)	\$256,815	\$262,166	\$267,516	\$6,821,656

(1) Based on new acreage and annual average riparian management cost (2023 Constant Dollars) of \$254.80 per Acre.

Sources: Clark County; Jodi McGraw Consulting; Economic & Planning Systems, Inc.



## Appendix C: Cash Flow and Upfront Funding Needs

**Implementation Costs and Habitat Mitigation Fee Revenues  
Cashflow (Constant 2023 Dollars)**

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<b>Item</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Habitat Mitigation Fee Revenues</b>					
Development Forecast	4,300	4,300	4,300	4,300	4,300
Mitigation Fee Revenue	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313
<b>Implementation Costs</b>					
Total Implementation Costs	\$12,696,942	\$12,702,827	\$12,558,713	\$12,664,598	\$13,070,483
Annual Cashflow	(\$3,217,629)	(\$3,223,514)	(\$3,079,400)	(\$3,185,285)	(\$3,591,170)
Cumulative Cashflow	(\$3,217,629)	(\$6,441,143)	(\$9,520,543)	(\$12,705,827)	(\$16,296,998)

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**Implementation Costs and Habitat Mitigation Fee Revenues  
Cashflow (Constant 2023 Dollars)**

<b>Item</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>Habitat Mitigation Fee Revenues</b>					
Development Forecast	4,300	4,300	4,300	4,300	4,300
Mitigation Fee Revenue	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313
<b>Implementation Costs</b>					
Total Implementation Costs	\$8,879,902	\$8,885,787	\$8,991,673	\$8,897,558	\$9,053,444
Annual Cashflow	\$599,411	\$593,526	\$487,640	\$581,755	\$425,870
Cumulative Cashflow	(\$15,697,587)	(\$15,104,061)	(\$14,616,421)	(\$14,034,666)	(\$13,608,796)



**Implementation Costs and Habitat Mitigation Fee Revenues  
Cashflow (Constant 2023 Dollars)**

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<b>Item</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>
<b>Habitat Mitigation Fee Revenues</b>					
Development Forecast	4,300	4,300	4,300	4,300	4,300
Mitigation Fee Revenue	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313
<b>Implementation Costs</b>					
Total Implementation Costs	\$8,909,329	\$9,615,214	\$8,921,100	\$8,926,985	\$8,932,870
Annual Cashflow	\$569,984	(\$135,901)	\$558,214	\$552,328	\$546,443
Cumulative Cashflow	(\$13,038,812)	(\$13,174,713)	(\$12,616,500)	(\$12,064,171)	(\$11,517,729)

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**Implementation Costs and Habitat Mitigation Fee Revenues  
Cashflow (Constant 2023 Dollars)**

<b>Item</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
<b>Habitat Mitigation Fee Revenues</b>					
Development Forecast	4,300	4,300	4,300	4,300	4,300
Mitigation Fee Revenue	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313
<b>Implementation Costs</b>					
Total Implementation Costs	\$9,038,756	\$8,944,641	\$8,950,526	\$8,956,412	\$9,812,297
Annual Cashflow	\$440,557	\$534,672	\$528,787	\$522,901	(\$332,984)
Cumulative Cashflow	(\$11,077,171)	(\$10,542,499)	(\$10,013,712)	(\$9,490,811)	(\$9,823,795)

**Implementation Costs and Habitat Mitigation Fee Revenues  
Cashflow (Constant 2023 Dollars)**

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<b>Item</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
<b>Habitat Mitigation Fee Revenues</b>					
Development Forecast	4,300	4,300	4,300	4,300	4,300
Mitigation Fee Revenue	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313
<b>Implementation Costs</b>					
Total Implementation Costs	\$8,968,182	\$8,974,068	\$8,979,953	\$9,085,838	\$8,991,724
Annual Cashflow	\$511,131	\$505,245	\$499,360	\$393,475	\$487,589
Cumulative Cashflow	(\$9,312,664)	(\$8,807,419)	(\$8,308,058)	(\$7,914,584)	(\$7,426,994)

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**Implementation Costs and Habitat Mitigation Fee Revenues  
Cashflow (Constant 2023 Dollars)**

<b>Item</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>
<b>Habitat Mitigation Fee Revenues</b>					
Development Forecast	4,300	4,300	4,300	4,300	4,300
Mitigation Fee Revenue	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313
<b>Implementation Costs</b>					
Total Implementation Costs	\$8,997,609	\$9,003,494	\$9,109,380	\$9,015,265	\$9,771,151
Annual Cashflow	\$481,704	\$475,819	\$369,933	\$464,048	(\$291,837)
Cumulative Cashflow	(\$6,945,290)	(\$6,469,472)	(\$6,099,539)	(\$5,635,491)	(\$5,927,328)

**Implementation Costs and Habitat Mitigation Fee Revenues  
Cashflow (Constant 2023 Dollars)**

<b>Item</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>
<b>Habitat Mitigation Fee Revenues</b>					
Development Forecast	4,300	4,300	4,300	4,300	4,300
Mitigation Fee Revenue	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313
<b>Implementation Costs</b>					
Total Implementation Costs	\$9,027,036	\$9,132,921	\$9,038,807	\$9,044,692	\$9,050,577
Annual Cashflow	\$452,277	\$346,392	\$440,507	\$434,621	\$428,736
Cumulative Cashflow	(\$5,475,051)	(\$5,128,659)	(\$4,688,152)	(\$4,253,531)	(\$3,824,795)

**Implementation Costs and Habitat Mitigation Fee Revenues  
Cashflow (Constant 2023 Dollars)**

<b>Item</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>
<b>Habitat Mitigation Fee Revenues</b>					
Development Forecast	4,300	4,300	4,300	4,300	4,300
Mitigation Fee Revenue	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313
<b>Implementation Costs</b>					
Total Implementation Costs	\$9,156,463	\$9,062,348	\$9,068,233	\$9,074,119	\$9,930,004
Annual Cashflow	\$322,850	\$416,965	\$411,080	\$405,194	(\$450,691)
Cumulative Cashflow	(\$3,501,945)	(\$3,084,980)	(\$2,673,900)	(\$2,268,706)	(\$2,719,397)

**Implementation Costs and Habitat Mitigation Fee Revenues  
Cashflow (Constant 2023 Dollars)**

<b>Item</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>45</b>	<b>46</b>
<b>Habitat Mitigation Fee Revenues</b>						
Development Forecast	4,300	4,300	4,300	4,300	4,300	4,300
Mitigation Fee Revenue	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313
<b>Implementation Costs</b>						
Total Implementation Costs	\$9,085,889	\$9,091,775	\$9,097,660	\$9,203,545	\$9,109,431	\$9,115,316
Annual Cashflow	\$393,424	\$387,538	\$381,653	\$275,768	\$369,882	\$363,997
Cumulative Cashflow	(\$2,325,973)	(\$1,938,434)	(\$1,556,781)	(\$1,281,014)	(\$911,131)	(\$547,134)

**Implementation Costs and Habitat Mitigation Fee Revenues  
Cashflow (Constant 2023 Dollars)**

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<b>Item</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>50</b>	<b>Total</b>
<b>Habitat Mitigation Fee Revenues</b>					
Development Forecast	4,300	4,300	4,300	4,300	215,000
Mitigation Fee Revenue	\$9,479,313	\$9,479,313	\$9,479,313	\$9,479,313	\$473,965,654
<b>Implementation Costs</b>					
Total Implementation Costs	\$9,121,201	\$9,227,087	\$9,132,972	\$9,888,858	\$473,965,654
Annual Cashflow	\$358,112	\$252,226	\$346,341	(\$409,544)	
Cumulative Cashflow	(\$189,023)	\$63,204	\$409,544	(\$0)	

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