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CITY OF
CHULA VISTA

City of Chula Vista

Parks Management System

Asset Management Plan

2016

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9641 Irvine Center Drive Irvine CA 92618
Kayugasolution.com

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1 Introduction

The City of Chula Vista (City) is currently enhancing its asset management practices to promote effective use of financial and physical resources and to develop a proactive approach to managing its infrastructure assets. As part of this effort, the City embarked on developing a comprehensive, citywide Asset Management Program (AM Program) that includes the following asset management systems:

- Wastewater Management System
- Urban Forestry Management System
- Building Management System
- Drainage Management System
- Parks Management System
- Roadway Management System
- Fleet Management System

The AM Program began with the Wastewater Management System as the pilot asset management program. The Wastewater Management System helped to educate the City staff on asset management processes and practices and acted as a template for other asset management systems. The Wastewater Management System demonstrated the benefits of asset management, and the City decided to expand its asset management improvement efforts to its other systems, listed above.

In addition to the above asset management systems, the City plans to include the following asset management systems to develop a comprehensive citywide asset management program:

- Fleet Management System
- Open Space Management System
- General Government Management System

This document, Parks Management System Asset Management Plan, will only focus on the Parks Management System assets.

The City owns and manages 55 parks that cover approximately 560 acres. The largest park, Rohr Park, covers nearly 60 acres. The City has 5 additional parks that have been planned or are under construction. These additional parks will be added at the conclusion of construction. Figure 1-1 below shows the locations of the City's parks covered in this report in green.

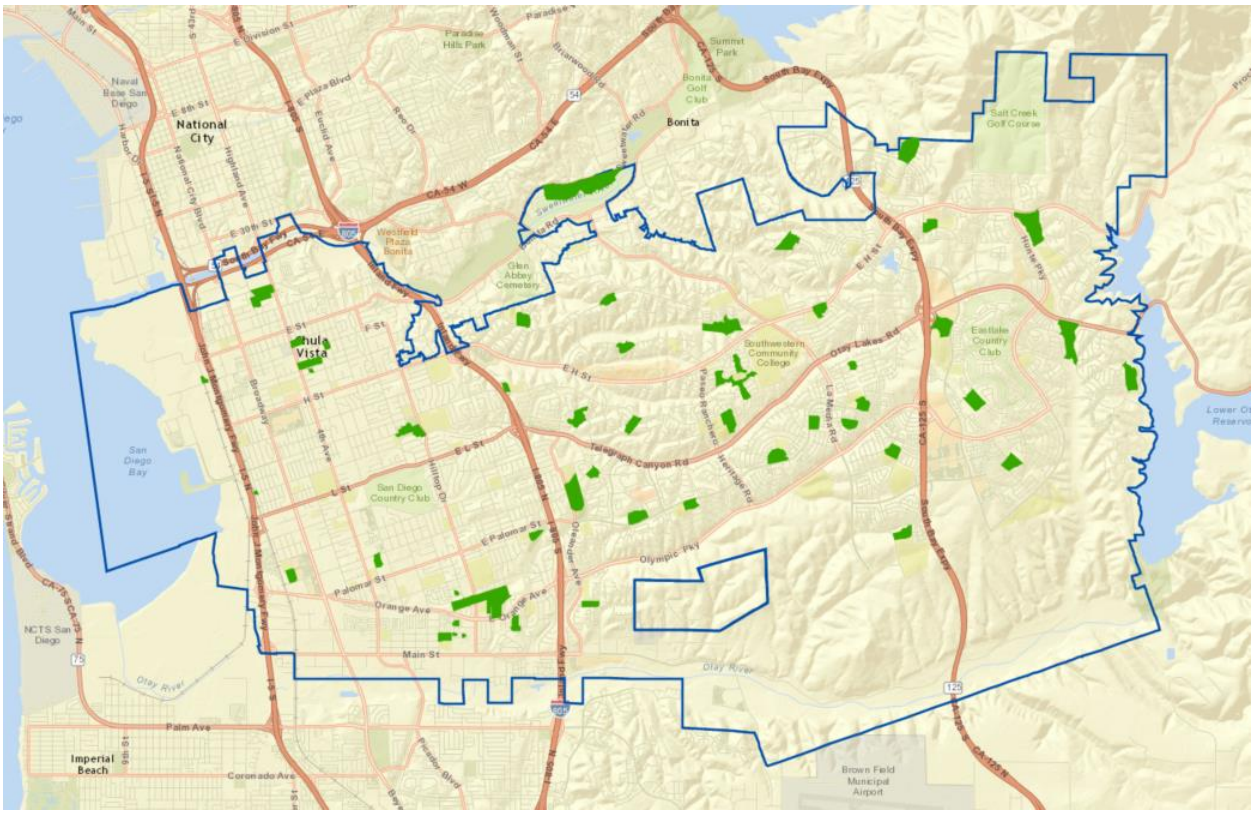


Figure 1-1 Map of Chula Vista Parks

The Parks Management System also includes assets that are owned and/or managed by the Parks department, but are not located within the parks. These assets are located within medians and parkways that have landscaping and near City-owned buildings, and they include irrigation system assets and weather stations.

1.1 Asset Management Program Goal

The goal of the City's AM Program was to shift from reactive to proactive planning and management of its infrastructure assets. Specifically, the City wanted to do the following:

- Gain better understanding of the current state of the infrastructure and its future needs
- Proactively identify the asset replacement and rehabilitation needs and plan the budget and resources accordingly
- Understand the probability and consequence of failure of each asset so that the City can manage high risk assets before failure and minimize the City's overall risk profile
- Minimize the life cycle cost by incorporating the latest technological advances in infrastructure to develop efficient and effective preservation and restoration strategies
- Develop a consistent and defendable methodology for prioritizing work and budget expenditure
- Focus on high benefit-to-cost ratio to ensure the budget is spent in the right place, for the right reason, at the right time, at the right cost
- Be transparent by involving the Council and the Public in the development of the asset management program and the associated decisions

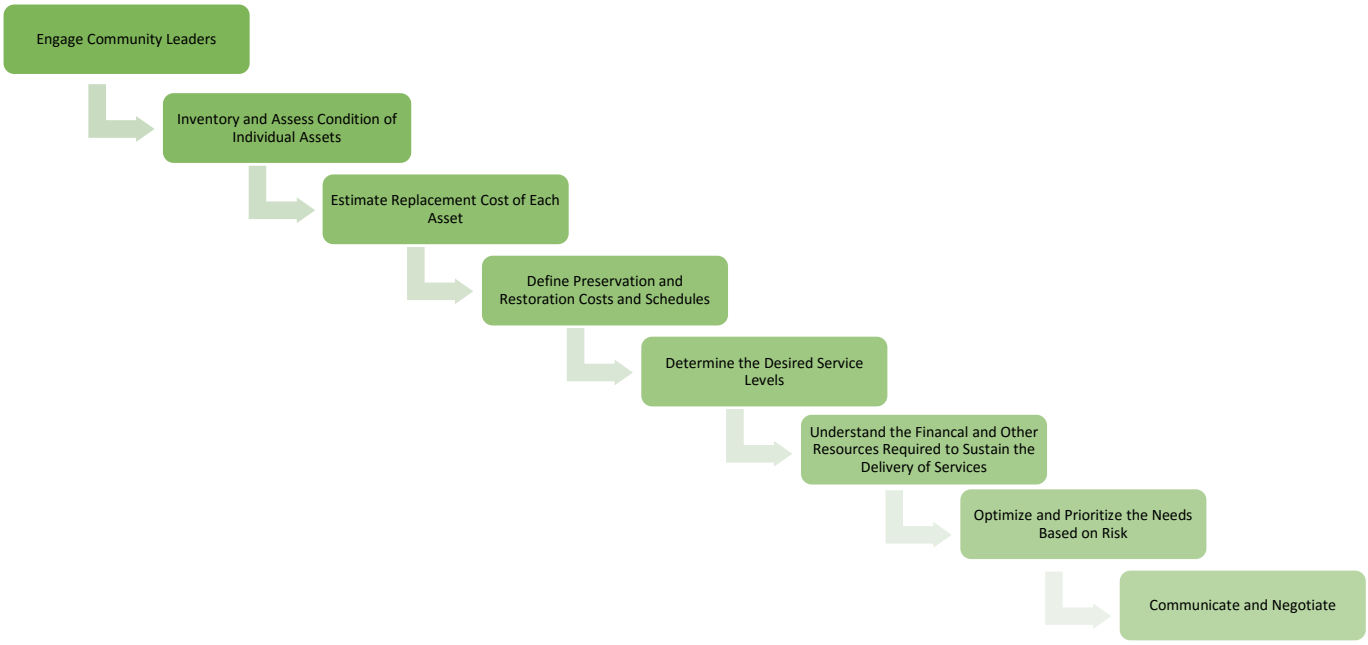
In essence, the City wanted to gain a better understanding of the current and future asset needs, asset risk profile, appropriate levels of service, cost to provide services, and financial requirements to sustain the delivery of services. The City then intends to communicate this improved understanding of the infrastructure status with the public and the decision makers. The City wanted to use the results of this new understanding to develop management strategies that deliver the established levels of service while managing individual assets to minimize life cycle cost with an acceptable level of risk.

Key objectives of the City's AM Program were to identify answers for each asset management system to the following questions:

- *Catch Up* – What levels of work, resources, and budget are required to raise the asset condition back to the required level to meet the safety, regulatory, and level of service requirements
- *Keep Up* – Once the asset is caught up, what levels of work, resources, and budget are required to maintain or keep up the level of service?
- *Moving Forward* – What levels of work, resources, and budget are required to sustain the level of service?

1.2 Asset Management Program Methodology

The following diagram illustrates the methodology the City utilized to develop the AM Program.



In order to promote education, communication, and transparency, the City established two committees: the Asset Management Program Advisory Committee (AMPAC) and the Asset Management Program Technical Advisory Committee (AMPTAC). Members of the AMPAC are residents, business owners, community leaders, and stakeholders. AMPAC visited various asset management systems and observed and discussed the issues associated with each asset management system. AMPAC oversaw the City's overall AM Program methodology and helped to

guide and reach consensus.

AMPTAC is a technical committee formed within AMPAC to further engage the public in the understanding and review of the asset management methodologies and logic used to define the preservation and restoration costs and schedules.

A comprehensive inventory of assets took place for each asset management system. Where accessible, assets were visited and their conditions were assessed. Based on the condition, actions required to restore the asset were identified, and the cost and timing were estimated. Through assessment of risk (probability and consequence of failure), activities were prioritized and communicated regarding urgency and the financial and resource requirements.

1.3 Asset Management Definition

The City defined asset management as

"Delivering an established level of service while managing individual assets to minimize the life cycle cost with an acceptable level of risk."

The City's asset management definition formed the fundamental basis of the City's AM Program.

1.4 Asset Management Plan

An asset management plan is a long-range planning document that provides a framework for understanding the assets an organization owns, services it provides, risks it assumes, and financial investments it requires. An asset management plan can help an organization move from reactive to proactive management of its physical and financial resources. This transition requires answers to the following questions:

- What is an asset? What is not an asset?
- Which assets need to be managed?
- What are the conditions of the assets?
- What maintenance and capital work is required? When and how much?
- How long until the assets need to be renewed?
- Which assets are critical?
- What levels of service must be provided?
- Are the current maintenance practices sufficient to sustain the service level?
- How should the assets be managed to provide services in the most efficient way?
- How can the asset data and maintenance system be updated to better facilitate maintenance practices?
- How much funding is necessary to sustain the delivery of services?
- Are there adequate resources to provide the services?

The answers to these questions help in the development of an asset management plan. An asset management plan is meant to grow and change with the organization and system for which it is written. In the spirit of continuous improvement, recommendations for future improvement activities were also developed and presented.

2 Asset Register

The asset register is a key component of the asset management plan. It establishes the data foundation of the asset management plan by consolidating all data pertaining to the assets in the asset management system. For the Parks Management System, the asset register includes the following park assets:

- Benches
- Drinking fountains
- Gazebos
- Irrigation controllers
- Irrigation control valves
- Lights
- Parking lots
- Picnic tables
- Play structures
- Signage
- Sports fields
- Trash bins

The initial step in developing an asset register was to consolidate all previously existing asset data in the City's various information systems (e.g., GIS, Lucity, Excel spreadsheets) into the asset register, creating a centralized database. Once the data was gathered, a data gap analysis was performed to determine which assets or asset attributes (e.g., size, material) were missing from the register. This data gap analysis built a foundation for the data collection part of the project. Each asset that was safely accessible was visited, photographed, and assessed for condition and missing attributes.

The development of the asset register required establishing the following key components:

- **Asset Definition** – Helps to define what is an asset versus what is not an asset. With the asset definition established, the City is able to separate assets from components and filter assets depending on how they should be managed.
- **Asset Hierarchy** - Organizes the thousands of assets in the asset register. With the asset hierarchy, the City is able easily find and support asset management decisions at any level within the asset hierarchy.
- **Asset Classes** – Groups the assets to allow the City to characterize the life cycle behavior of thousands of assets in the register. An asset class is developed by grouping assets with similar characteristics, such as type, function, useful life, material, and size. It is used these asset classes to help model the life cycle cost of the assets.

2.1 Asset Definition

A Parks Management System asset is defined as an asset that is owned and managed by the City with a value that requires the asset to be capitalized (e.g., $ 1,000). However, some assets not meeting the financial requirements (i.e., lower replacement costs) are also included (e.g., signage, irrigation control valves). These assets are critical for management with respect to meeting safety, criticality, regulatory, and/or level of service requirements. Examples of assets that met the park asset definition included:

- Barbeque grills
- Benches
- Drinking fountains
- Irrigation controllers
- Irrigation control valves
- Lights
- Picnic tables
- Play structures
- Playground surfacing
- Signage
- Trash bins

Examples of assets that did not meet the definition included:

- Sprinkler heads
- Trash bin lids
- Dog waste bag dispensers
- Drainage caps

2.2 Asset Hierarchy

The asset hierarchy allows for easy navigation in the asset register. The assets in the Parks Management System are organized into landscape areas and parks. The main assets in the landscape areas are the irrigation system assets. The bulk of the assets are nested in the Park hierarchy.

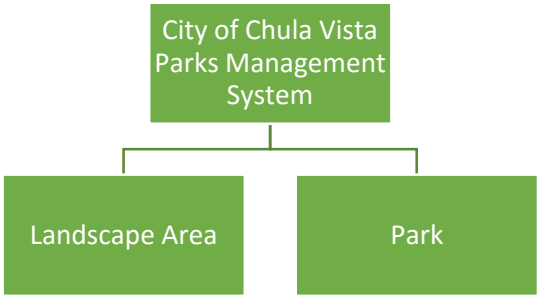


Figure 2-1 Parks Management System Hierarchy

The hierarchy starts with the City, the Parks Management System, and then breaks down to the level of each individual park. The following figure illustrates the asset hierarchy for the individual park. A complete list of the Chula Vista parks is included in Appendix A.

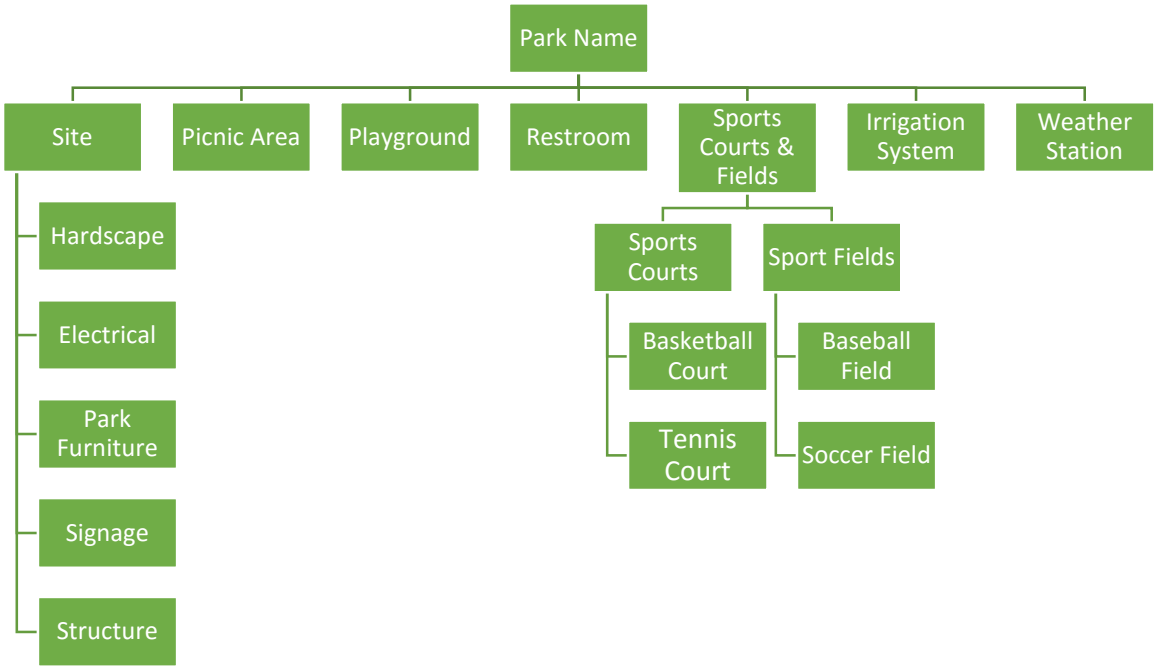


Figure 2-2 Park Asset Hierarchy

2.3 Asset Class

Assets are grouped into classes to more efficiently model and manage the assets. An asset class generally refers to a group of assets that behave similarly. Grouping the assets into these classes allows easier modeling of life cycle behavior. A full list of the asset classes is provided in Appendix B.

2.4 Asset Inventory

Once the asset definition, hierarchy, and classes were set, the City began compiling the asset register. A combination of data consolidation and on-site assessment took place to complete the asset inventory process. The following images show some of the assets captured during on-site assessment.

Figure 2-3 Examples of Park Assets

During the asset inventory process, GPS coordinates of each asset were taken to locate the assets. The following images show an overhead view of the park with the coordinates taken for the various assets in the parks. Each red dot represents an asset's location. These locations assist in the maintenance of these assets.

Figure 2-4 Asset Locations at Rohr Park

The total number of assets within the parks recorded during inventory is approximately 11,600. The following table shows the number of assets within each park.

Table 2-1 Number of Assets by Park

Park	Number of Assets	Park	Number of Assets	Park	Number of Assets
Rohr Park	882	Harvest Park	225	Sunbow Park	88
Mount San Miguel Park	730	Cottonwood Park	224	Lauderbach Park	77
Montevalle Park	721	Otay Park	222	Loma Verde Park	68
Salt Creek Park	652	Terra Nova Park	212	Valle Lindo Park	65
Veterans Park	538	Windingwalk Park	207	Friendship Park	50
Mountain Hawk Park	522	Marisol Park	194	Rancho Del Ray Park - North	50
Sunset View Park	478	Hilltop Park	167	SDG&E East	49
Heritage Park	410	Breezewood Park	142	Connoley Park	44
Voyager Park	378	Explorer Park	141	Norman Park	41
Santa Cora Park	321	Memorial Park	134	Bay Boulevard Park	37
Santa Venetia Park	320	Rancho Del Ray Park - South	131	Paseo Del Rey Park	36
Discovery Park	292	Rienstra Sports Complex	127	Independence Park	28
Eucalyptus Park	290	SDG&E West	124	Palomar Park	21
Chula Vista Community Park	289	Bonita Long Canyon Park	122	Lancerlot Park	15
All Seasons Park	281	Sunridge Park	105	Rancho Del Ray Park - Finger	14
MacKenzie Creek Park	270	Los Ninos Park	97	Sherwood Park	12
Horizon Park	259	Tiffany Park	96	Holiday Estates I Park	9
Greg Rogers Park	238	Gayle L McCandliss Park	94	Holiday Estates II Park	7
Harborside Park	237				

The following table shows the total quantity of assets by asset class. This table shows the general distribution of the parks assets amongst the asset classes. Assets such as irrigation control valves, lighting, and signage were much more numerous than assets in other classes.

Table 2-2 Number of Assets by Asset Class

Asset Class	Asset Count	Asset Class	Asset Count	Asset Class	Asset Count
ADA Ramp	108	Dumpster Structure	28	Playground Surfacing	83
Amphitheater Seating	5	Fencing	178	Pull Up Bar	2
Announcement Board	7	Fitness Course Structure	15	Ramp	21
Asphalt Pad (For picnic area)	4	Flag Pole	15	Recycling Bin	9
Backflow	113	Foul Pole	23	Retaining Wall	53
Backstop	25	Gate	75	Rock Climbing Structure	1
Banner Pole	2	Gazebo	104	Scoreboard	5
Barbeque Grill	150	Guardrails	1	Sculpture	6
Barbeque Prep Table	10	Handrails	68	Signage	1,287
Baseball Field	34	Hockey Field	1	Sink	62
Basketball Court	36	Horse Tie-Off Posts	13	Skating Court	7
Basketball Hoop	69	Horseshoes Field	2	Soccer Field	25
Bench	493	Horseshoes Set	9	Sports Lighting	168
Bike Rack	64	Hot Coal Bin	101	Sports Net	21
Bleachers	72	Irrigation Antenna	1	Stage	2
Bollards	486	Irrigation Control Valve	3,567	Stairs	56
Building	61	Irrigation Controller	111	Storage	5
Bullpen	12	Irrigation Controller Box	1	Support Pole & Net Set	1
Coach Bench	4	Irrigation Pump	11	Tennis Court	22
Concrete Pad	314	Lighting	1,193	Toilet	90
Concrete Wall	10	Monument	61	Trail Monument	23
Curb and Gutter	78	Net Poles	3	Trash Bin	760
Decorative Pillar	11	Parking Lot	47	Trash Compactor	4
Decorative Structure	7	Pedestrian Bridge	17	Urinals	45
Decorative Wall	2	Pergola	21	Volleyball Court	2
Dedication Plaque	23	Picnic Table	568	Walkway	88
Dog Park	3	Planters	8	Wall	2
Drainage	16	Play Structure	74	Water Pump	1
Drinking Fountain	90	Players Bench	52	Weather Station	3
Dugout	52				

2.5 Replacement Cost

After the asset inventory process, each asset was assigned an estimated replacement cost. The estimated replacement cost the present value that the City will budget to replace the asset, including material, labor, and other indirect costs. The estimated replacement costs were based on City's historical cost database, City staff estimate, or a cost database from other comparable cities.

The images below provide examples of the park assets and their associated replacement costs.

Sports Lighting Estimated Replacement Cost: $30,000 each

Figure 2-5 Sports Lighting

Play Structure Estimated Replacement Cost: $100,000[1]

Figure 2-6 Play Structure

Weather Station Estimated Replacement Cost: $16,000 each

Figure 2-7 Weather Station

[1] Play structure costs vary depending on the size of the equipment.

Concrete Picnic Table Estimated Replacement Cost: $2,000 each

Figure 2-8 Concrete Picnic Table

Steel/Aluminum (approximately 400 sqft) Gazebo Estimated Replacement Cost: $16,000

Figure 2-9 Steel/Aluminum Gazebo

Concrete Trash Bin Estimated Replacement Cost: $2,200

Figure 2-10 Concrete Trash Bin

The overall valuation of the Parks Management System is determined by aggregating the asset by asset replacement costs. The total value of the Parks Management System is approximately $71 million. The total replacement cost of the assets that are located in the landscape areas is approximately $562,000. It should be noted that this valuation does not include the land, turf, and tree costs. Land was not included as an asset as it will never be replaced. Turf was tracked separately by the Parks. The cost of trees was accounted for in the Urban Forestry Management System.

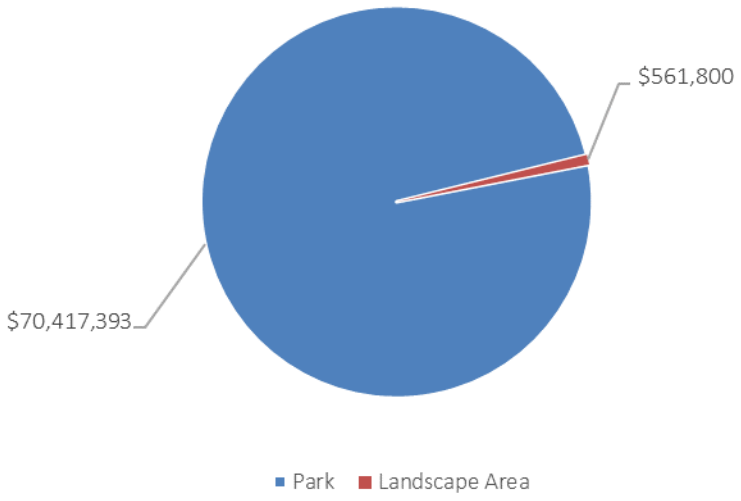


Figure 2-11 Total Parks Valuation

The following table shows the valuation based on the hierarchy within the parks. The highest replacement cost area is sports courts and fields, followed by hardscape.

Table 2-3 Replacement Cost by Asset Type

Asset Type	Replacement Cost	Asset Type	Replacement Cost
Electrical	$ 6,558,200	Playground	$ 7,878,811
Hardscape	$ 16,905,372	Restroom	$ 3,356,600
Irrigation System	$ 4,404,505	Signage	$ 1,741,850
Park Furniture	$ 2,002,380	Sports Court & Field	$ 21,616,918
Parking Lot	$ 85,075	Structure	$ 2,581,760
Picnic Area	$ 3,237,922	Weather Station	$ 48,000

The replacement cost of the asset may differ from the financial investment the asset requires. For example, sports fields such as soccer fields and baseball fields rarely replaced and are instead rehabilitated. In this case, the rehabilitation and maintenance costs characterize the investment the asset will require. Sculptures and some decorative structures also receive maintenance or rehabilitation, but do not get replaced.

The table below presents the total asset replacement costs by park to illustrate the distribution of the total system replacement cost amongst the parks. Assets that are owned and managed by Parks but are not located within the parks are not included in this table.

Table 2-4 Asset Replacement Costs by Park

Park	Estimated Total Replacement Cost	Park	Estimated Total Replacement Cost
Parks Total	**$ 70,417,393**		
All Seasons Park	$ 1,095,210	Montevalle Park	$ 4,089,603
Bay Boulevard Park	$ 192,980	Mount San Miguel Park	$ 4,115,675
Bonita Long Canyon Park	$ 667,598	Mountain Hawk Park	$ 1,694,001
Breezewood Park	$ 510,098	Norman Park	$ 134,099
Chula Vista Community Park	$ 2,260,102	Otay Park	$ 1,306,621
Connoley Park	$ 269,327	Palomar Park	$ 181,162
Cottonwood Park	$ 1,292,780	Paseo Del Rey Park	$ 362,363
Discovery Park	$ 3,019,993	Rancho Del Ray Park - Finger	$ 52,230
Eucalyptus Park	$ 4,077,270	Rancho Del Ray Park - North	$ 245,939
Explorer Park	$ 754,182	Rancho Del Ray Park - South	$ 534,740
Friendship Park	$ 271,665	Rienstra Sports Complex	$ 2,236,135
Gayle L McCandliss Park	$ 350,060	Rohr Park	$ 5,665,052
Greg Rogers Park	$ 2,478,754	Salt Creek Park	$ 3,305,247
Harborside Park	$ 1,483,473	Santa Cora Park	$ 892,087
Harvest Park	$ 836,560	Santa Venetia Park	$ 1,896,218
Heritage Park	$ 1,744,932	SDG&E East	$ 80,374
Hilltop Park	$ 1,988,530	SDG&E West	$ 708,412
Holiday Estates I Park	$ 39,205	Sherwood Park	$ 24,410
Holiday Estates II Park	$ 8,220	Sunbow Park	$ 1,247,462
Horizon Park	$ 1,152,329	Sunridge Park	$ 764,270
Independence Park	$ 48,550	Sunset View Park	$ 2,626,855
Lancerlot Park	$ 127,585	Terra Nova Park	$ 1,339,260
Lauderbach Park	$ 908,681	Tiffany Park	$ 425,050
Loma Verde Park	$ 583,651	Valle Lindo Park	$ 343,155
Los Ninos Park	$ 716,195	Veterans Park	$ 2,418,855
MacKenzie Creek Park	$ 1,477,625	Voyager Park	$ 1,803,916
Marisol Park	$ 923,442	Windingwalk Park	$ 1,341,340
Memorial Park	$ 1,303,865		

2.6 Installation and Consumption Profile

The installation profile provides an understanding of when the assets were constructed and installed. It also helps to give an indication of the age of the assets. Every asset in the asset register was assigned an installation year based on historical data, park dedication year, or through City staff knowledge.

The figure below presents the installation profile for the Parks Management System. The graph illustrates the amount of investment (asset installation) per year, represented in 2016 dollars, dating back to the earliest asset installation. It does not represent the actual capital investment that took place in any given year. As is shown in the figure, the first park in Chula Vista, Eucalyptus Park, was constructed in 1950. Park development accelerated in the 1970s in the western part of the City (i.e., west of Interstate 805). Peaks in the late 1990's and 2000's represent the rapid development that took place in the eastern part of the City (i.e., east of Interstate 805).

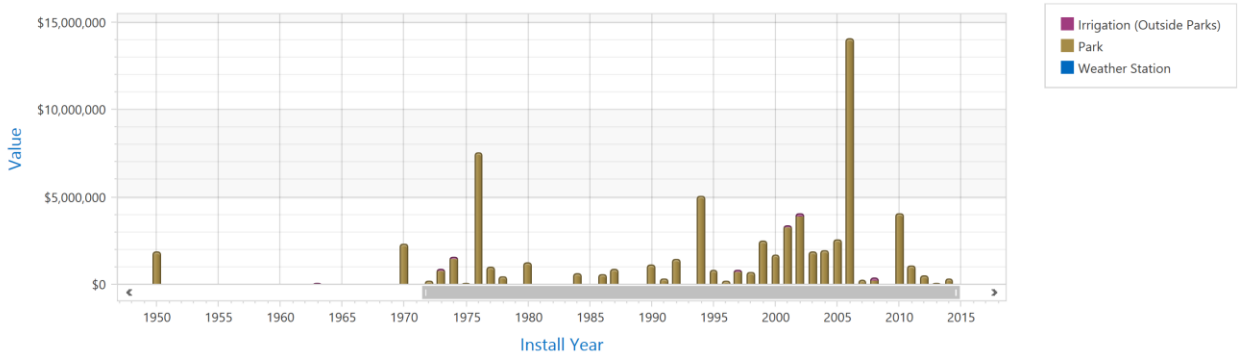


Figure 2-12 Asset Installation Profile

More important than the historical data is the current state of the assets. Consumption estimates the percentage of an asset's expected life that it has used up. Most of the assets have consumed approximately 70% or less of their useful lives. Although 70% may seem high, these assets may be in relatively good condition with years of life left, as covered in the next section. However, there are approximately $ 7.1 million worth of assets that have been estimated to be fully consumed. The replacement or rehabilitation of these assets should be addressed in the near future.

2.7 Condition Assessment

Condition is one of the best indicators for estimation of immediate or future restoration work. During the asset inventory field visits, each asset's condition was assessed and recorded. Assets were visually assessed. Where condition was much worse than expected, it was recommended that the City investigate the cause to prevent further abnormal deterioration of the asset condition.

Condition scores were assigned to each asset. Visual assessment scoring criteria is presented in the table below. Condition was assessed with respect to visual, functional, and safety performances. Condition was the primary indicator of timing to failure and/or remaining life of the asset. Condition was also the primary indicator of probability of failure in the risk assessment part of the asset management plan.

Table 2-5 Condition Score Logic

Condition Score	Description	Required Action
1	New, excellent condition (Brand new asset)	No action required
2	Very good condition (Asset condition better than expected)	No action required
3	Good condition (Asset condition as expected from the age and usage of the asset)	No immediate action required
4	Fair condition (Asset condition below expectation from age and usage)	Renewal required within 1-2 years
5	Very poor condition (Asset needs to be replaced or rehabilitated very soon to prevent failure)	Immediate action required/ action required within 1 year

Because condition scores were based on visual inspection, the condition score is based on external factors (e.g., safety hazard, rust, cracks, rot) and does not reflect the condition of the internal, non-visible components.

The following images show examples of various condition assessment results.

The images below show the different examples of sports court surfacing conditions. As is shown in the images, the condition 1 court is new. On the other end of the spectrum, the condition 4 and 5 courts have deteriorated to the point where they no longer serve their functions or present serious safety hazards.

Table 2-6 Sports Court Condition Samples

Condition Score	Image		
1		2	
3		4	
5			

The images below show samples of walkway conditions. Figure 2-13 shows a walkway with condition 2. The asphalt walkway below received a condition score of 5 as it has multiple cracks that are filled with grass, which may present a trip hazard.

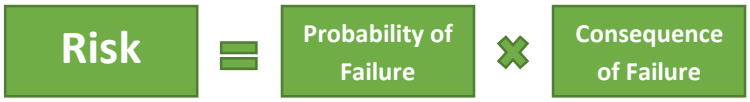
Figure 2-14 Pedestrian Walkway - Condition 2

Figure 2-13 Pedestrian Walkway - Condition 5

3 Risk Analysis

Risk is a key component of asset management. Risk is used for effective prioritization of limited resources. The two main components of risk are Probability of Failure (PoF) and Consequence of Failure (CoF). PoF provides an indication of timing to failure. CoF provides an indication of the impact of a failure.

Asset risk is calculated based on the following formula:



3.1 Probability of Failure

The PoF score indicates the projected time until the asset fails to function at the established levels of service. The PoF score for each asset was based on the condition score and/or age of the asset. The remaining useful life was driven by consideration of multiple asset failure modes (i.e., mortality, capacity, level of service, financial efficiency). The imminent failure mode (i.e., the most likely mode of failure) was used to identify as the PoF of the asset. PoF was calculated on a score of 0 (low probability of failure) to 1 (extremely high probability of failure).

For most of the assets, PoF was determined by the condition score given during visual inspection. In cases where the assets were not visible or where visual assessment was not a good representation of the asset's condition, PoF was calculated based on age by comparing the installation year and estimated useful life based on the City's historical usage. For example, this age-based method was used for irrigation control valves and lighting where visual assessment may not correctly represent the true condition of the asset.

A combination of visual and age-based PoF score was applied to playground play structures. Play structures are regulated to be replaced every 15 years; however, visual condition assessment also identified immediate safety needs for those play structures that are not ready to be retired.

3.2 Consequence of Failure

CoF was also determined for each asset. CoF is a numerical measurement of the criticality of the asset, that is, how large an impact the asset will have when it fails to function. The impact of failure was assessed with respect to the triple bottom line factors of sustainability: economic, social, and environmental.

CoF assessment took place through a multi-tier logic. The logic was based on each asset class' importance to the park relative to other asset classes. Play structures, sports courts, and other assets that directly impact safety were considered to be critical. In addition, not all parks have the same level of criticality. Parks with high social impacts (e.g., community parks, long duration of usage, high volume of user traffic) received a higher criticality score compared to a neighborhood park with low usage.

Criticality was first assigned by asset class. CoF scores ranged from 5 (most critical) to 1 (least critical). One of the main considerations in assessing the criticality of an asset was safety. Any asset with direct impact on public safety received the highest CoF score of 5. The table below shows the most critical asset classes as a sample of the asset class criticality. A full list of the CoF scores by asset class is provided in Appendix C.

Table 3-1 Highest CoF Scores by Asset Class

Asset Class	CoF Score	Asset Class	CoF Score
ADA Ramp	5	Playground Surfacing	5
Baseball Field	5	Rock Climbing Structure	5
Basketball Court	5	Skating Court	5
Bleachers	5	Soccer Arena Wall	5
Handrails	5	Soccer Field	5
Hockey Arena Support Pole & Net Set	5	Tennis Court	5
Lighting	5	Walkway	5
Pedestrian Bridge	5	Water Pump	5
Play Structure	5	Weather Station	5

The next factor in the CoF score was the amount of usage of each park. The parks were divided into three categories: high usage community parks, high usage neighborhood parks, and low usage parks/areas. The categorization of the parks into these categories depended on the volume and duration of traffic, as well as the level of exposure.

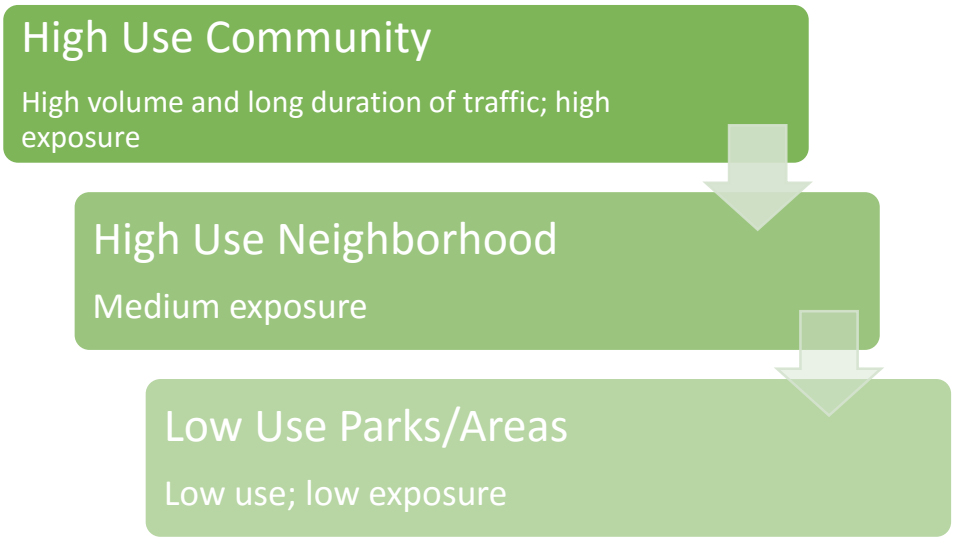


Figure 3-1 CoF by Park Usage

Within each park category, the parks were further ranked in order of criticality. The table below shows a sample of the High Use Community park rankings for CoF scores. The full table of park rankings is provided in Appendix D.

Table 3-2 Park CoF Scores Sample

Park Usage	Park Name	Criticality Rating Within Usage
High Use Community	Chula Vista Community Park	5
High Use Community	Discovery Park	5
High Use Community	Heritage Park	5
High Use Community	Montevalle Park	5
High Use Community	Mount San Miguel Park	5
High Use Community	Rohr Park	5
High Use Community	Salt Creek Park	5
High Use Community	Veterans Park	5
High Use Community	All Seasons Park	4
High Use Community	Eucalyptus Park	4
High Use Community	Memorial Park	4
High Use Community	Sunset View Park	4
High Use Community	Greg Rogers Park	3
High Use Community	Rienstra Sports Complex	3
High Use Community	Friendship Park	1
High Use Community	Norman Park	1

The rankings of the park within each area were used to determine the overall ranking of the park, which was then combined with the CoF scores at the asset class level.

3.3 Risk Assessment

The following figure shows the resulting risk profile for the Parks Management System. This profile incorporates both the PoF and CoF scores to prioritize the assets. The assets in the red zone (i.e., Catch Up) of the risk matrix are the highest risk assets that are have both a high probability and high impact of failure. The assets in the red zone also include the backlog work (i.e., activities from previous years that have yet to take place).

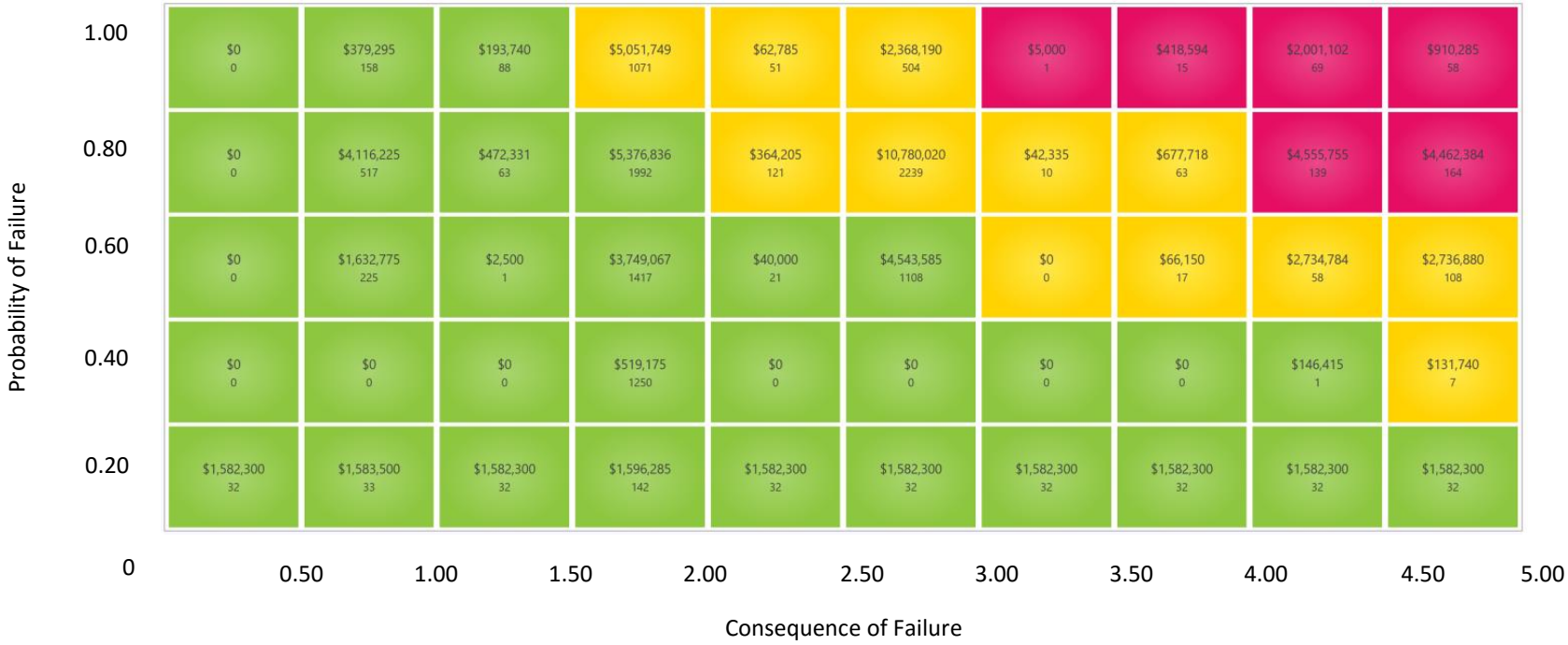


Figure 3-2 Risk Matrix

The assets in the red zone present the highest risk to the City. The summation of replacement cost for all assets in the red zone equated to approximately $11 million. The park with highest concentration of red zone assets was Rohr Park; this is expected as it is a high use, large regional park. The following figures show the parks ranked by criticality. The high, medium, and low risk assets are presented by quantity and replacement cost for each park.

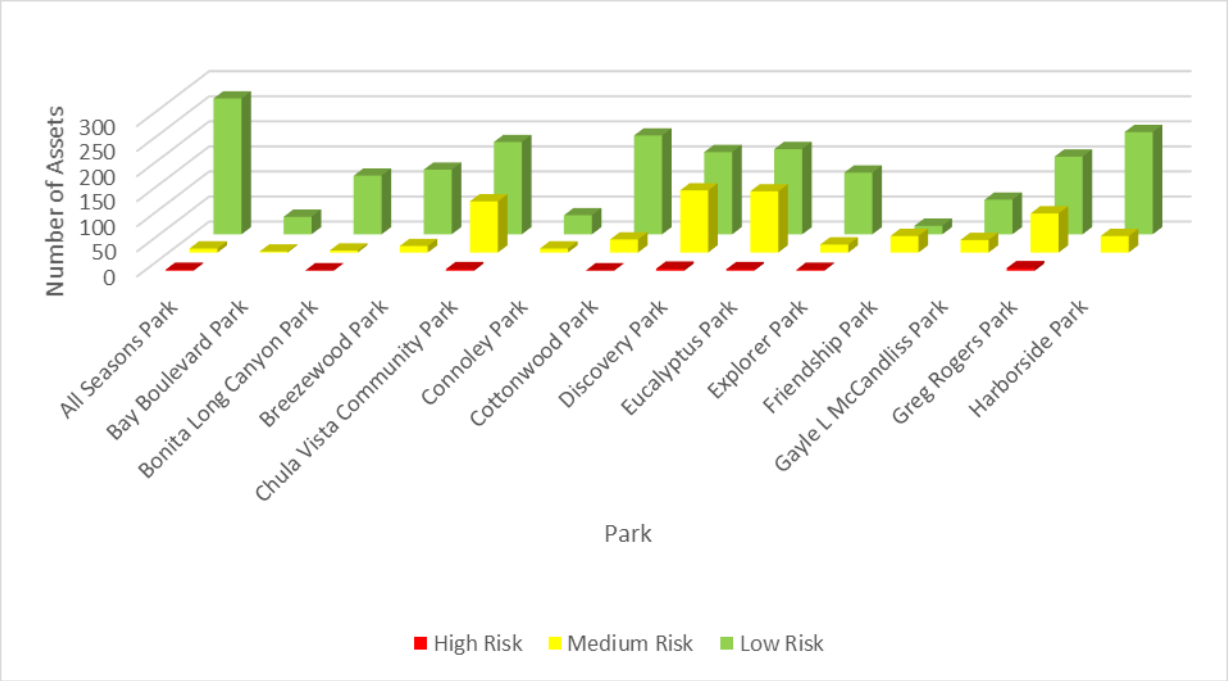


Figure 3-3 Risk Profile Park Ranking by Number of Assets

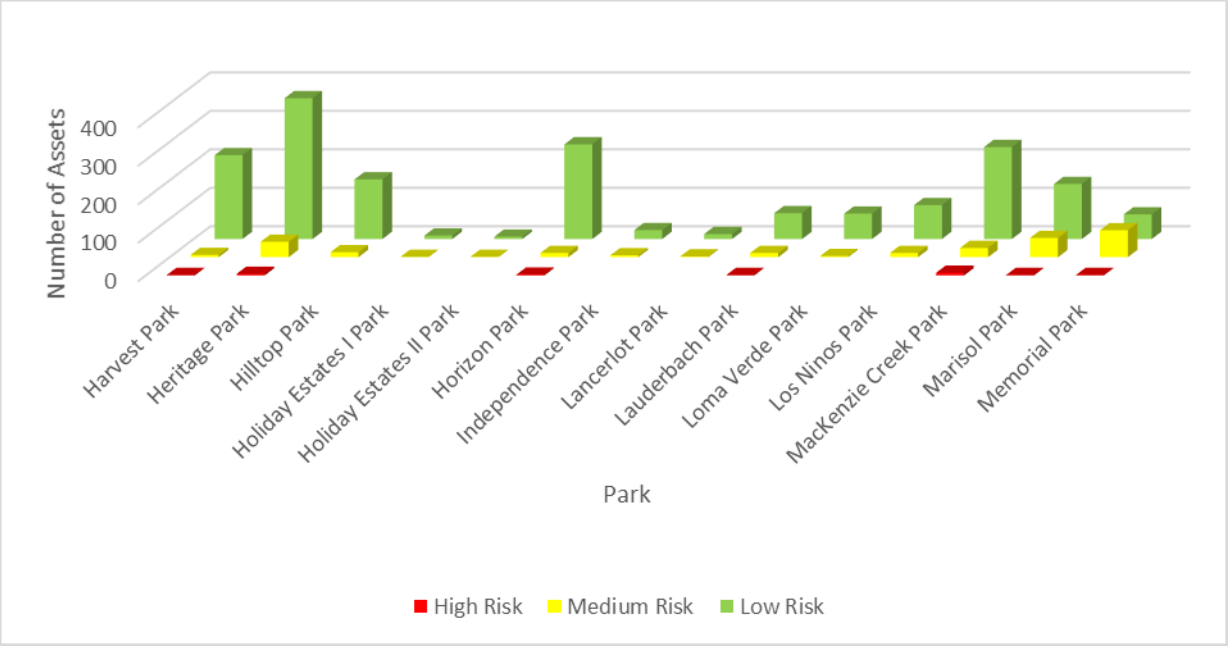


Figure 3-4 Risk Profile Park Ranking by Number of Assets Continued

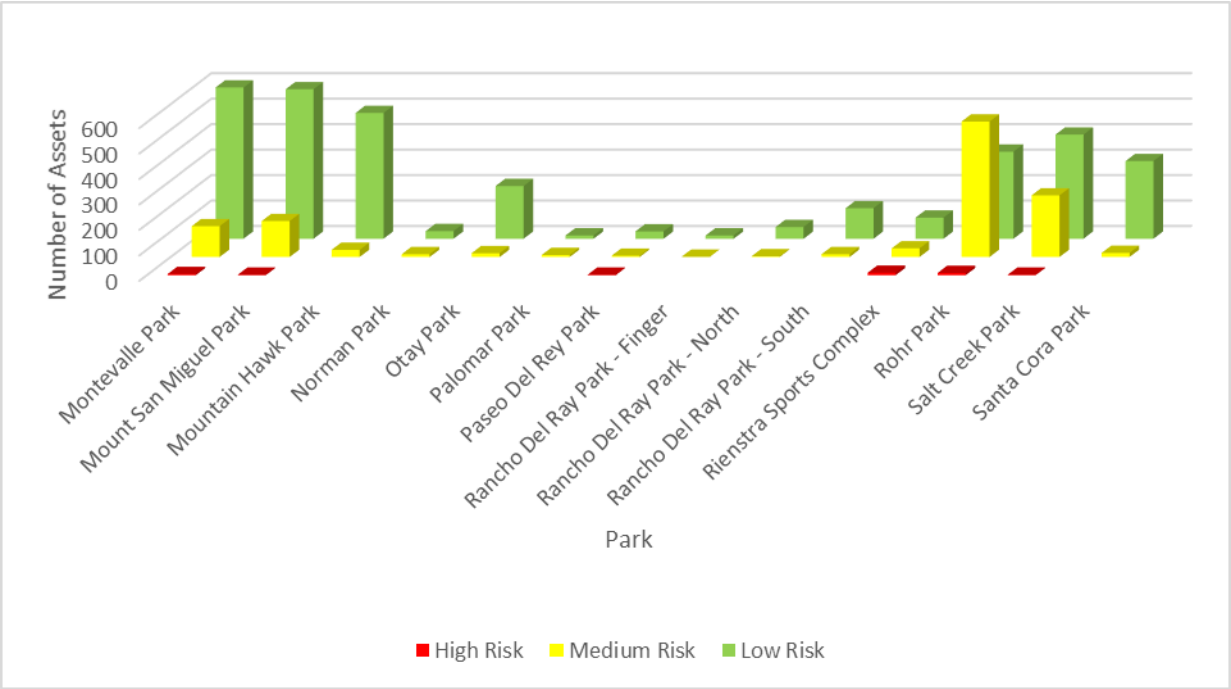


Figure 3-5 Risk Profile Park Ranking by Number of Assets Continued

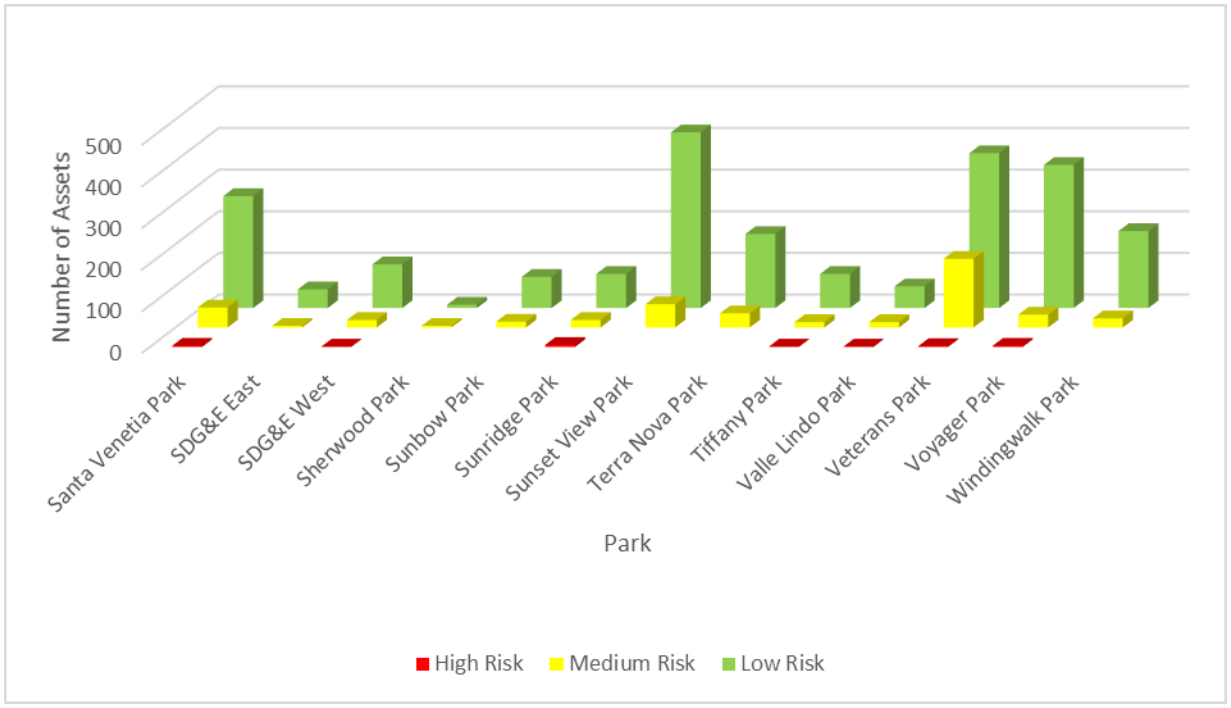


Figure 3-6 Risk Profile Park Ranking by Number of Assets Continued

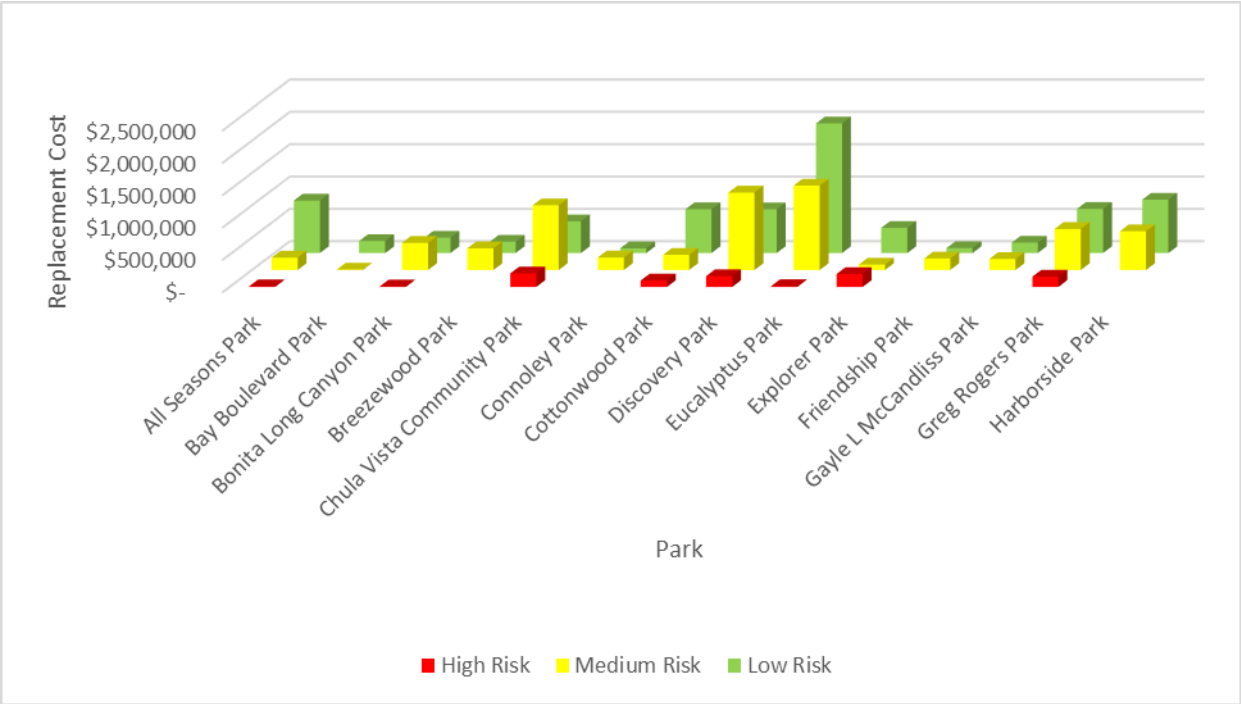


Figure 3-7 Risk Profile Park Ranking by Replacement Cost

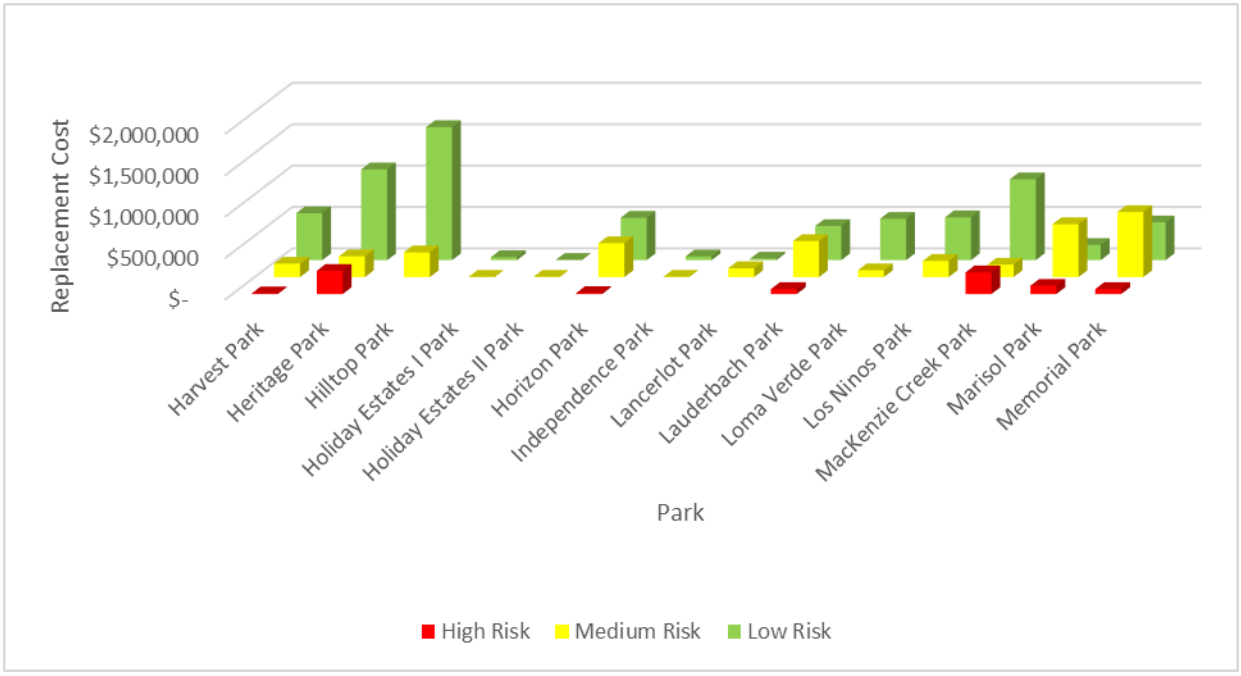


Figure 3-8 Risk Profile Park Ranking by Replacement Cost Continued

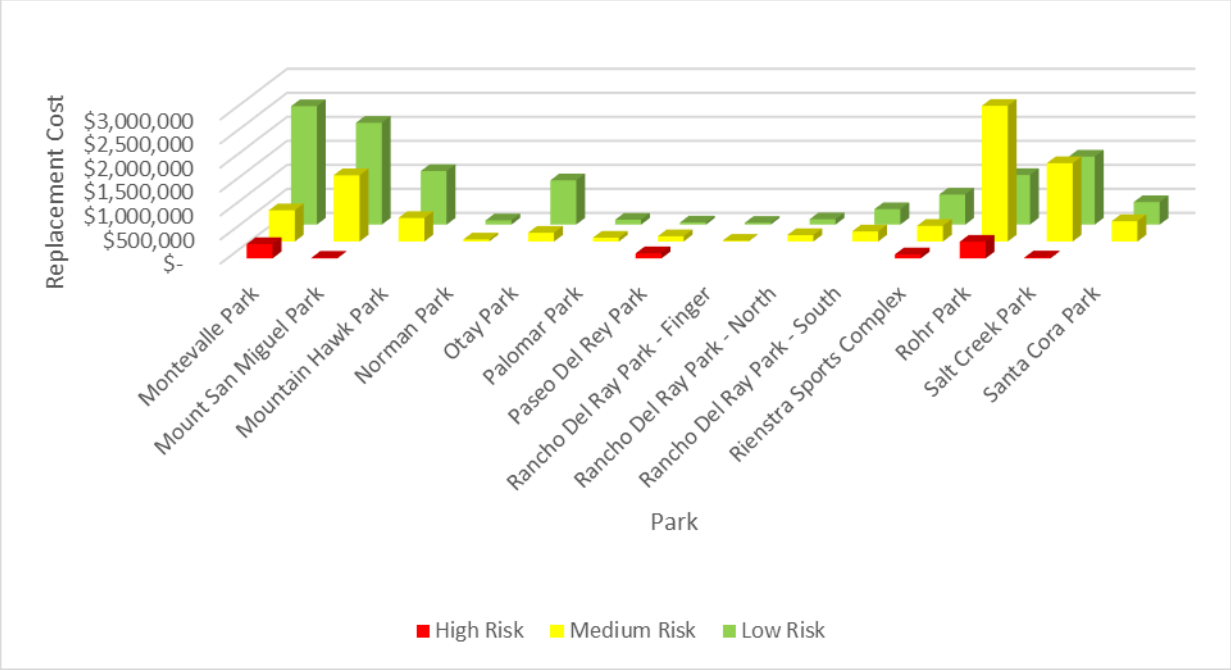


Figure 3-9 Risk Profile Park Ranking by Replacement Cost Continued

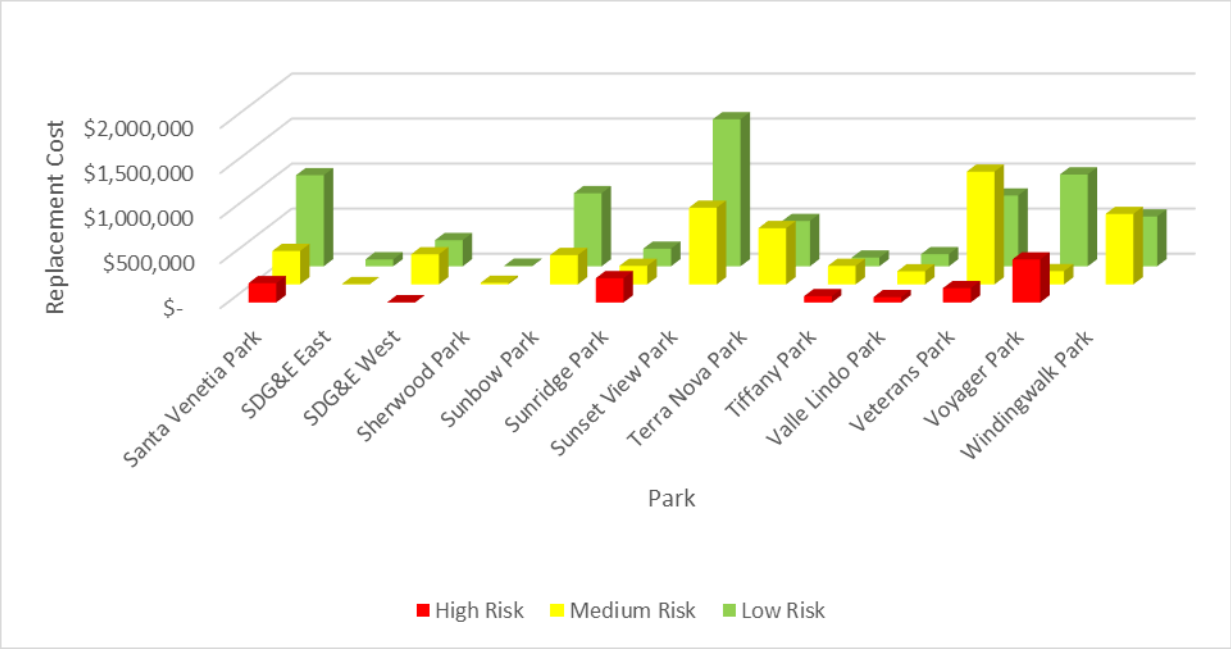


Figure 3-10 Risk Profile Park Ranking by Replacement Cost Continued

4 Future Needs

The following section details the future needs of the assets in the Parks Management System.

4.1 Immediate Needs

The highest risk assets in the red zone are the assets that need replacement or rehabilitation in the near future. In order to make the best use of its financial resources, the highest risk assets were considered immediate needs or catch up. The immediate needs were determined to be assets with a risk score of 4 or higher.

The total value of the immediate need assets is approximately $4 million. While the replacement cost of the assets is $4 million, the risk can be mitigated by maintenance or rehabilitation, so the cost to lower the risk scores may be significantly less than the total value.

Figure 4-1 and Figure 4-2 present the distribution of these immediate needs among the parks in which they are located. Figure 4-1 shows the high risk asset quantity by park. Rienstra Sports Complex has the highest number of high risk assets; these assets include the play structures, which are aging, and several bleachers that are in poor condition. In contrast, Valle Lindo Park has one asset, the basketball court surfacing, that is in poor condition.

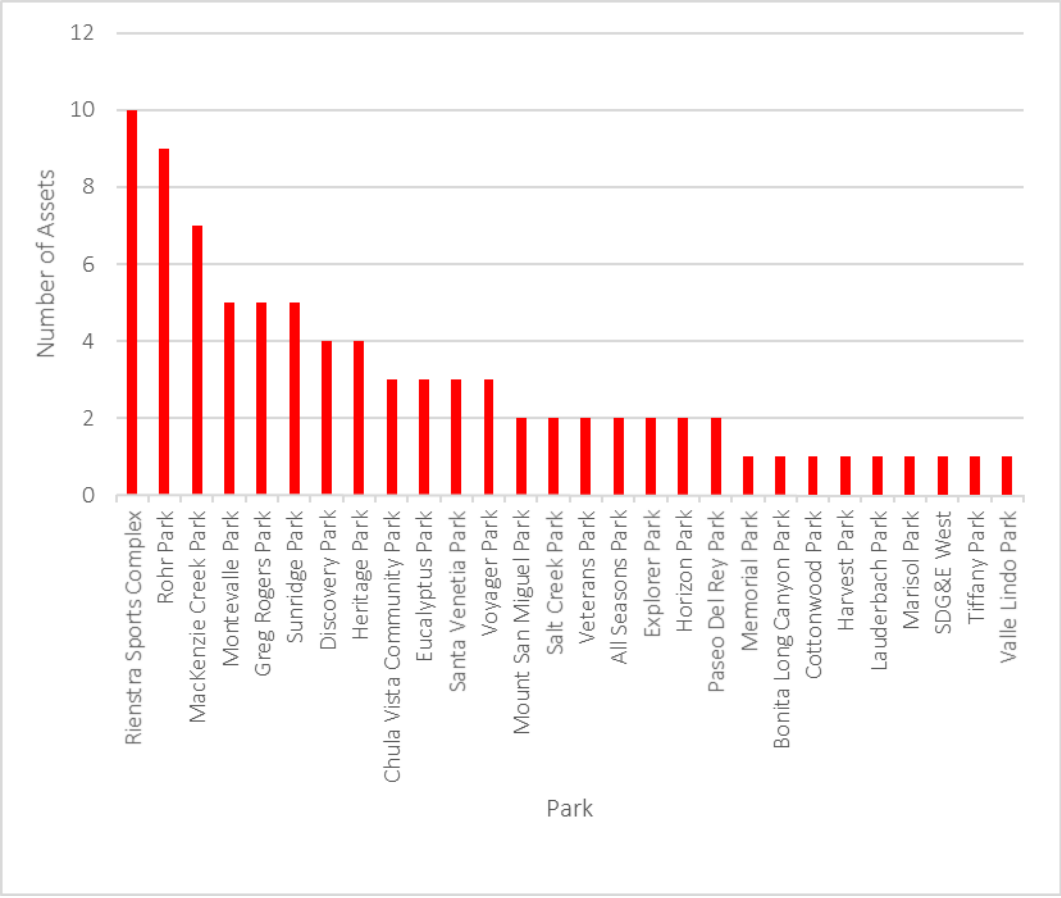


Figure 4-1 Immediate Needs by Park

Figure 4-2 shows the high risk asset replacement cost by park from high to low total replacement cost. Although Rienstra Sports Complex has the highest number of assets that need replacement, those assets do not present the highest replacement cost. Voyager Park has three high risk assets, but these assets (i.e., play structures, walkway) have a high replacement cost.

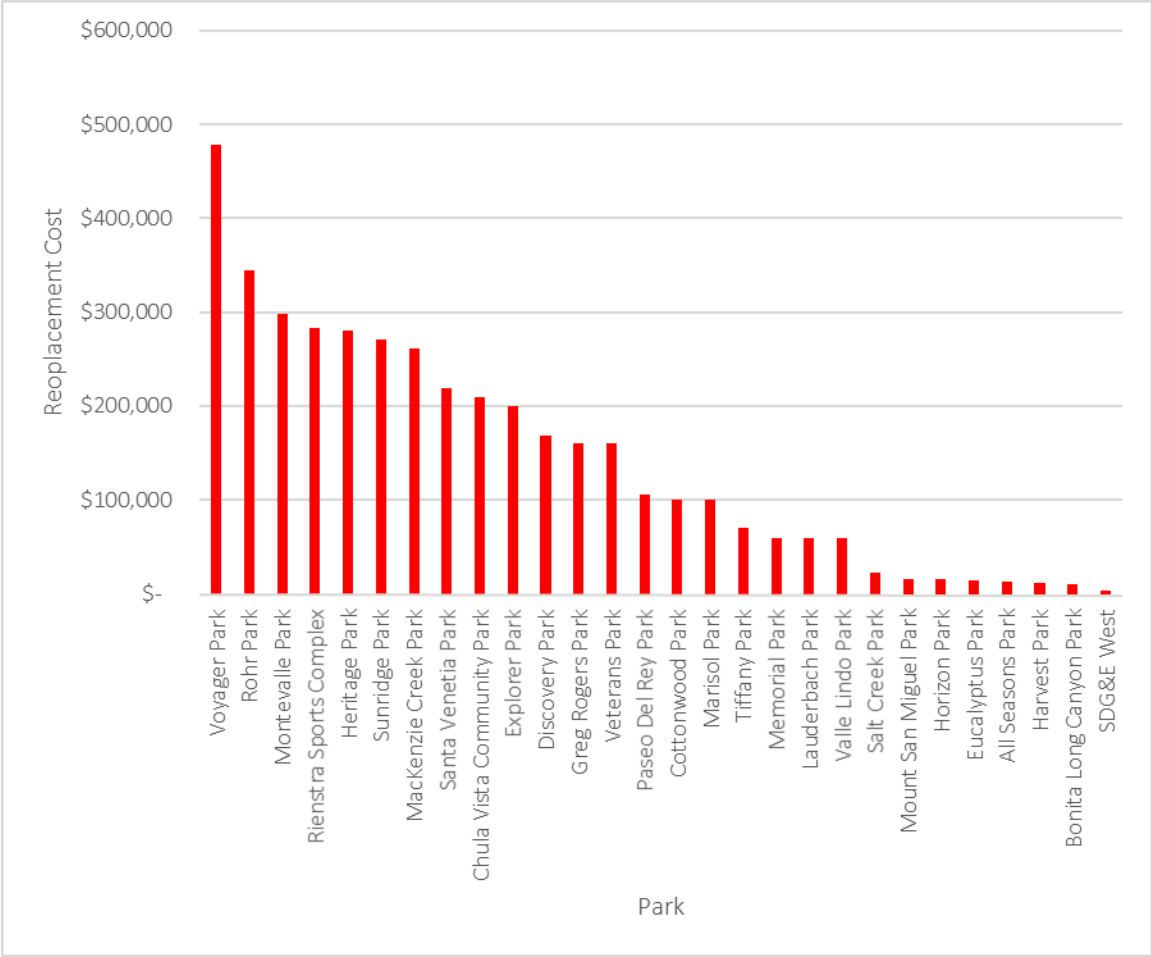


Figure 4-2 Immediate Needs Cost by Park

4.2 Preservation and Restoration Profile

The preservation and restoration profile estimates the future financial needs for managing the assets. Preservation and restoration refers to the activities needed to maintain the assets, whether the activity is replacement, rehabilitation, or maintenance. Each asset in the register was assigned a life cycle cost. The life cycle cost logic was developed based on cost of the activities necessary to keep the asset at the desired level of service.

The life cycle cost of each asset was calculated for a 100-year planning horizon. Every year, those assets requiring investment are identified and summed to generate the preservation and restoration profile. The life cycle assessment allows the City to proactively manage the assets. The City will be able to proactively plan for replacement of high risk assets to prevent failure. The City will also have an understanding of the work and investment required for future years. These estimations will be used to prepare the budget and resources required to sustain the delivery of services. When budget and resource limitations exist, the City will be able to prioritize the needs by risk to ensure the budget is first spent on high risk assets. In essence, the City will be able to ensure that minimum funds are spent to maximize risk reduction.

Figure 4-3 100-Year Preservation and Restoration Profile below presents the future needs of the park assets over 100 years. These costs are presented in 2016 dollars. The annual average need of the assets is $3.9 million.

The various peaks in the preservation and restoration results are caused by a high number of high-cost assets that are due for replacement in that year. The peak in 2016 includes catch up work. These activities include replacements of play structures, walkways, and restroom buildings that are estimated to be in need of replacement. The first significant peak in 2030 is caused by a large amount of concrete walkways and lighting fixtures that are predicted to need replacement in that year. The next peak in 2041 includes walkway and lighting replacement, as well as the replacement of many tennis courts and parking lots.

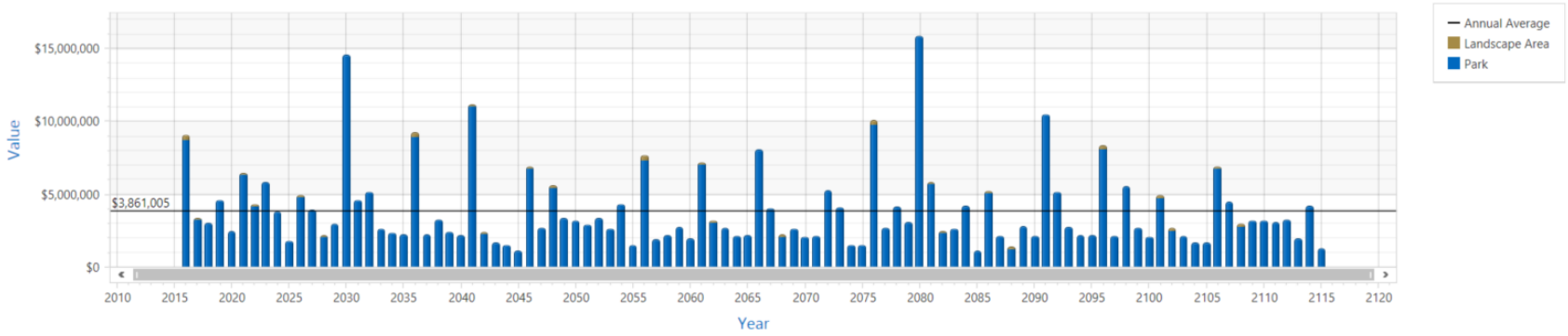


Figure 4-3 100-Year Preservation and Restoration Profile

Figure 4-4, Figure 4-5, and Figure 4-6 show the preservation and restoration profiles over shorter planning horizons (i.e., 10 years, 20 years, 30 years). The planning horizon gives a more practical indication of the financial needs of the assets in the near future.

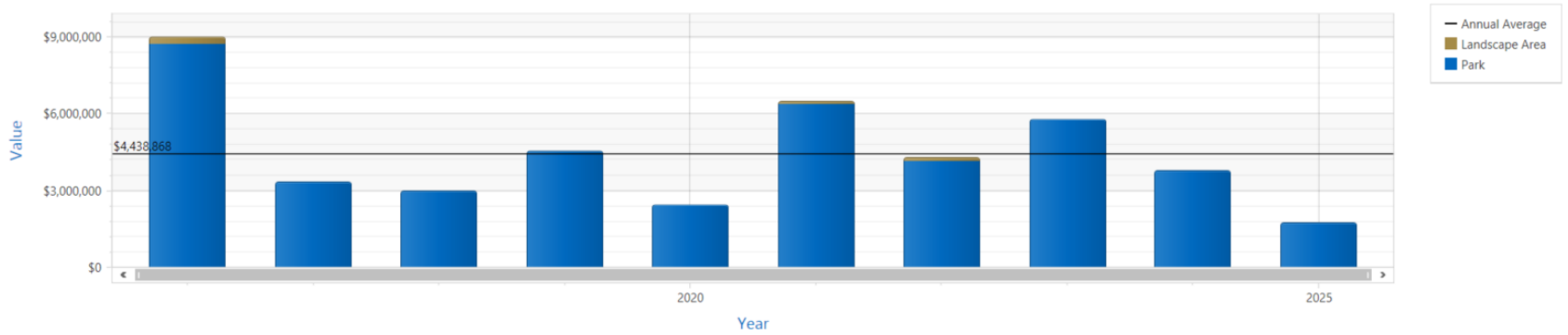


Figure 4-4 10-Year Preservation and Restoration Profile

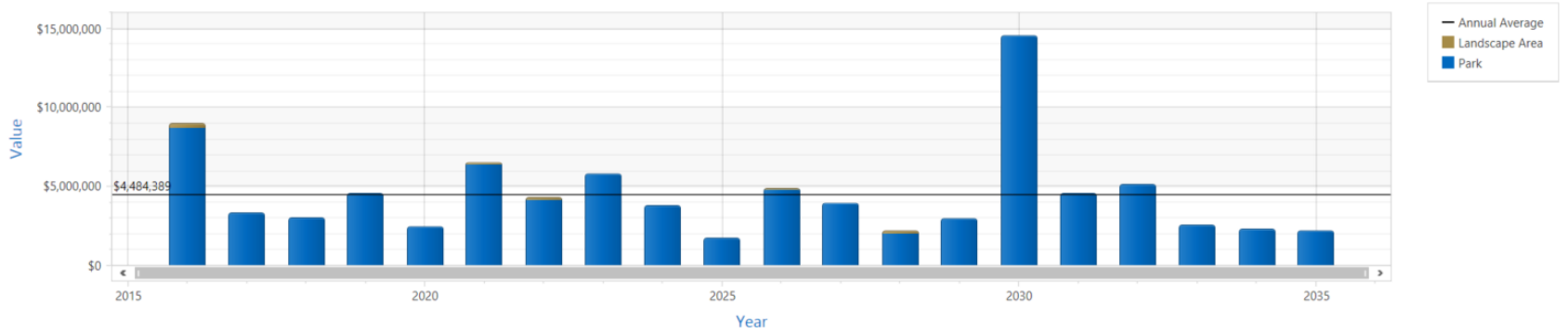


Figure 4-5 20-Year Preservation and Restoration Profile

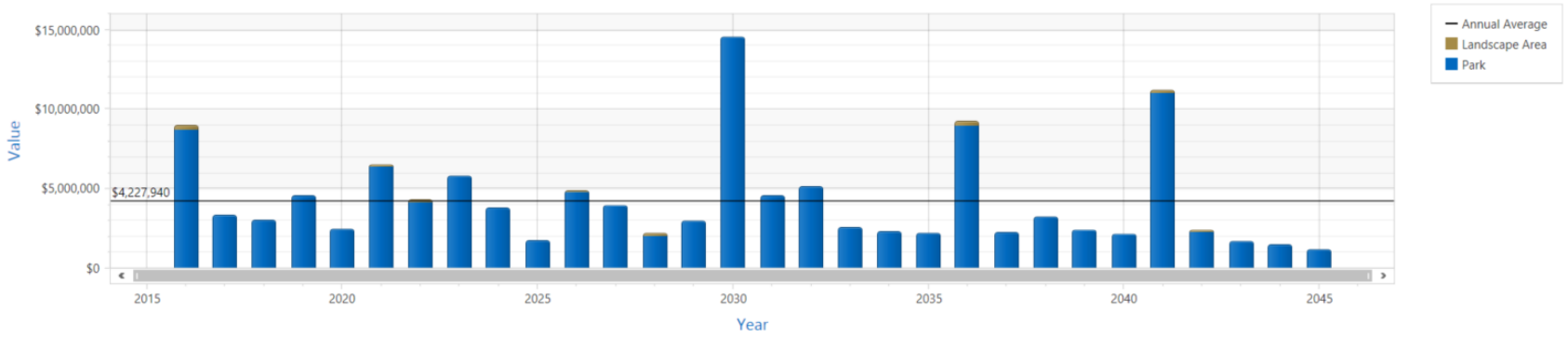


Figure 4-6 30-Year Preservation and Restoration Profile

The following table shows a summary of the average annual preservation and restoration needs for the Parks Management System. While the annual average for other systems (e.g., Drainage Management System) may rise over longer planning horizons, the Parks Management System remains relatively constant over the different planning horizons. This is because the Parks Management System assets have relatively short useful lives (e.g., 10 years, 15 years, 20 years) and are replaced accordingly. The constant replacement of assets leads to a relatively constant annual average for preservation and restoration needs.

Table 4-1 Average Annual Preservation and Restoration Needs

Planning Horizon	Average Annual Preservation and Restoration Needs
10 years	$ 4.2 million
20 years	$ 4.4 million
30 years	$ 4.2 million
100 years	$ 3.9 million

5 Confidence Level

Once the asset management plan has been established, it is important to examine the work that has been done in order to identify future improvement opportunities. In this section, the asset management system is rated on the confidence level of the data and methodology developed throughout the project.

The confidence level is rated based on the following factors:

1. Asset Inventory – examines the completeness of the asset data
2. Data Quality – examines the quality and completeness of the asset attribute data used to develop the asset management plan
3. Condition Assessment – examines the quality and completeness of the condition assessment data
4. Asset Valuation – examines the accuracy of the methodology used to calculate asset value
5. Life-cycle Cost Logic – examines the accuracy and completeness of the methodology used to calculate the life-cycle cost and the results
6. Risk – examines the accuracy of the risk assessment methodology and results
7. Staff Review – examines the staff involvement in the development and review of the asset management plan
8. Technical Committee Review – represents the review by the asset management program technical advisory committee

The following table presents the confidence level factors and their respective weights used to calculate the confidence level.

Table 5-1 Confidence Level Logic

Confidence Level Factor	Weight
Asset Inventory	20%
Data Quality	15%
Condition Assessment	20%
Asset Valuation	10%
Life-cycle Cost Logic	10%
Risk	10%
Staff Review	5%
Technical Committee Review	10%

The confidence level factor weights are based on the City's specific goals for the project. Completing the asset inventory and condition assessment were of particular interest to the City in this phase of the development of the asset management program. As such, these areas had a high weight in the overall confidence level rating. Another of the City's main goals was to encourage buy-in on the part of its and stakeholders, so the technical committee review was given a significant weight.

Table 5-2 Park Confidence Level

Confidence Level Factor	Confidence Level Rating Score	Weighting Factor	Weighted Confidence Level Rating Score
Asset Inventory	75%	20%	15%
Data Quality	75%	15%	11.3%
Condition Assessment	75%	20%	15%
Asset Valuation	70%	10%	7%
Life-cycle Cost Logic	70%	10%	7%
Risk	80%	10%	8%
Staff Review	90%	5%	4.5%
Technical Committee Review	0%	10%	0%
Total Score			**67.8%**

Asset Inventory (Unweighted Score - 75%)

Extensive efforts were made to inventory the assets in the existing parks. However, the City has plans to add several more parks. When the inventory for the parks management system is more complete, the asset inventory confidence level will rise.

Data Quality (Unweighted Score - 75%)

The data quality for the data that has been collected has a very high confidence level. When the inventory for the parks management system is more complete, the data quality confidence level will rise.

Condition Assessment (Unweighted Score - 75%)

The condition assessment confidence level factor measures how well the overall condition assessment results reflect the condition of the entire asset management system. For some assets, (e.g., signage), replacement has been in progress since the assessment, and the asset's current condition may need to be updated. When the inventory of the parks is more complete, the confidence level in the overall condition assessment data will rise.

Asset Valuation (Unweighted Score - 70%)

The asset values were assigned with the staff, and the replacement costs estimates were based on recent records, so confidence in the valuation estimates is high.

Life-cycle Cost Logic (Unweighted Score - 70%)

The life-cycle cost logic was driven by knowledge from City staff, and confidence in the life-cycle cost logic is relatively high.

Risk (Unweighted Score - 80%)

Condition assessment was performed during this phase with a relatively high confidence in its accuracy, which

translated into the PoF scores. A robust CoF calculation methodology was also developed with input from City staff. The resulting risk scores have a high confidence level. As the asset inventory becomes more complete, the risk level confidence score will rise.

Staff Review (Unweighted Score - 90%)

City staff were involved in the development of the parks asset management program through workshops to review the data (e.g., overall inventory, condition) and methodology (e.g., CoF logic), which led to a high confidence level rating.

Technical Committee Review (Unweighted Score - 0%)

The technical committee will review the results of this asset management plan and its analysis.

5.1 Next Steps

Asset Inventory

As mentioned in the beginning of this asset management plan, the asset inventory of all the parks the City owns and manages is not yet complete. Orange Park is currently under construction and will be added to the asset inventory once construction is finished. As other planned parks are constructed in the future, the assets will be added to the inventory.

Condition Assessment

The visual condition assessment that took place was very thorough, so confidence in that aspect is high. For mechanical and electrical assets (e.g., irrigation control valves, lights), the maintenance condition of the asset was not taken into account. That is, condition assessment took place during daylight hours, so while the structural condition of the light was recorded, whether or not the light was working could not be assessed.

Additionally, irrigation assets were not tested. As information on the maintenance of these assets becomes available and is incorporated into the asset data, the confidence in the condition assessment will rise.

Level of Service and Resources

Levels of service are specific activities developed to meet the City's objectives, and they include specific performance metrics to allow the City to measure how well they are achieving the target performance. Defined levels of service can be used to track performance of the City's activities and identify areas where activities are not in alignment with the mission or goals of the organization. These levels also help to determine the levels of resources needed for the management of the system. Part of the next steps for the Park Management System will be to establish levels of service.

Risk

In most cases, the PoF was calculated by the condition. However, the PoF of some assets were calculated using an age-based method using assumed installation years. In these cases, the PoF score may not accurately reflect the probability of failure. For example, irrigation control valves were assumed to have been installed with the park, and they have a useful life of 12 years. The resulting PoF score is very high for many of these assets and may not accurately represent the ability of the irrigation system to function. The actual installation dates of these valves or the actual condition should be further assessed.

6 Appendix A – List of City of Chula Vista Parks

Parks	
All Seasons Park	Montevalle Park
Bay Boulevard Park	Mount San Miguel Park
Bonita Long Canyon Park	Mountain Hawk Park
Breezewood Park	Norman Park
Chula Vista Community Park	Otay Park
Connoley Park	Palomar Park
Cottonwood Park	Paseo Del Rey Park
Discovery Park	Rancho Del Rey Park Finger
Eucalyptus Park	Rancho Del Rey Park North
Explorer Park	Rancho Del Rey Park South
Friendship Park	Rienstra Sports Complex
Gayle L McCandliss Park	Rohr Park
Greg Rogers Park	Salt Creek Park
Harborside Park	Santa Cora Park
Harvest Park	Santa Venetia Park
Heritage Park	SDG&E East
Hilltop Park	SDG&E West
Holiday Estates I Park	Sherwood Park
Holiday Estates II Park	Sunbow Park
Horizon Park	Sunridge Park
Independence Park	Sunset View Park
Lancerlot Park	Terra Nova Park
Lauderbach Park	Tiffany Park
Loma Verde Park	Valle Lindo Park
Los Ninos Park	Veterans Park
Mackenzie Creek Park	Voyager Park
Marisol Park	Windingwalk Park
Memorial Park	

7 Appendix B – Asset Classes

Asset Classes		
ADA Ramp	Dumpster Structure	Playground Surfacing
Amphitheater Seating	Fencing	Pole
Announcement Board	Fitness Course Structure	Pull Up Bar
Arena Wall	Flag Pole	Ramp
Asphalt Pad	Foul Pole	Recycling Bin
Backflow	Gate	Retaining Wall
Backstop	Gazebo	Rock Climbing Structure
Barbeque Grill	Guardrails	Scoreboard
Barbeque Table	Handrails	Sculpture
Baseball Field	Hockey Field	Signage
Basketball Court	Horse Tie-Off Posts	Sink
Basketball Hoop	Horseshoes Field	Skating Court
Bench	Horseshoes Set	Soccer Field
Bike Rack	Hot Coal Bin	Sports Lighting
Bleachers	Irrigation Antenna	Stage
Bollards	Irrigation Control Valve	Stairs
Bridge	Irrigation Controller	Statue
Building	Irrigation Controller Box	Storage
Bullpen	Irrigation Pump	Support Pole & Net Set
Coach Bench	Lighting	Tennis Court
Concrete Pad	Monument	Toilet
Concrete Wall	Net	Trail Monument
Curb and Gutter	Net Poles	Trash Bin
Decorative Pillar	Parking Lot	Trash Compactor
Decorative Structure	Parking Meter	Urinals
Decorative Wall	Pergola	Volleyball Court
Dedication Plaque	Picnic Table	Walkway
Dog Park	Planters	Wall
Drainage	Play Structure	Water Pump
Drinking Fountain	Players Bench	Weather Station
Dugout		

8 Appendix C – CoF Scores by Asset Class

Asset Class	CoF	Asset Class	CoF	Asset Class	CoF
ADA Ramp	5	Bullpen	3	Net Poles	2
Arena Wall	5	Drainage	3	Parking Lot	2
Baseball Field	5	Drinking Fountain	3	Parking Meter	2
Basketball Court	5	Dumpster Structure	3	Players Bench	2
Bleachers	5	Gazebo	3	Pole	2
Bridge	5	Hockey Field	3	Ramp	2
Handrails	5	Irrigation Antenna	3	Recycling Bin	2
Lighting	5	Pergola	3	Sink	2
Play Structure	5	Picnic Table	3	Storage	2
Rock Climbing Structure	5	Retaining Wall	3	Toilet	2
Skating Court	5	Scoreboard	3	Trail Monument	2
Soccer Field	5	Signage	3	Trash Bin	2
Support Pole & Net Set	5	Stage	3	Trash Compactor	2
Surfacing	5	Asphalt Pad	2	Urinals	2
Tennis Court	5	Barbeque Grill	2	Wall	2
Walkway	5	Bike Rack	2	Announcement Board	1
Water Pump	5	Coach Bench	2	Bollards	1
Weather Station	5	Concrete Pad	2	Decorative Pillar	1
Backflow	4	Concrete Wall	2	Decorative Structure	1
Fitness Course Structure	4	Curb and Gutter	2	Dedication Plaque	1
Irrigation Control Valve	4	Decorative Wall	2	Foul Pole	1
Irrigation Controller	4	Dog Park	2	Gate	1
Irrigation Pump	4	Dugout	2	Horse Tie-Off Posts	1
Pull Up Bar	4	Dugout	2	Horseshoes Field	1
Stairs	4	Fencing	2	Horseshoes Set	1
Amphitheater Seating	3	Flag Pole	2	Monument	1
Backstop	3	Guardrails	2	Planters	1
Barbeque Table	3	Hot Coal Bin	2	Sculpture	1
Basketball Hoop	3	Irrigation Controller Box	2	Sports Lighting	1
Bench	3	Net	2	Volleyball Court	1
Building	3				

9 Appendix D – CoF Scoring by Parks

Park Usage	Park Name	Criticality Rating Within Usage
High Use Community	Chula Vista Community Park	5
High Use Community	Discovery Park	5
High Use Community	Heritage Park	5
High Use Community	Montevalle Park	5
High Use Community	Mount San Miguel Park	5
High Use Community	Rohr Park	5
High Use Community	Salt Creek Park	5
High Use Community	Veterans Park	5
High Use Community	All Seasons Park	4
High Use Community	Eucalyptus Park	4
High Use Community	Memorial Park	4
High Use Community	Sunset View Park	4
High Use Community	Greg Rogers Park	3
High Use Community	Rienstra Sports Complex	3
High Use Community	Friendship Park	1
High Use Community	Norman Park	1
High Use Neighborhood	Bonita Long Canyon Park	5
High Use Neighborhood	Cottonwood Park	5
High Use Neighborhood	Explorer Park	5
High Use Neighborhood	Harborside Park	5
High Use Neighborhood	Harvest Park	5
High Use Neighborhood	Horizon Park	5
High Use Neighborhood	Lauderbach Park	5
High Use Neighborhood	Los Ninos Park	5
High Use Neighborhood	MacKenzie Creek Park	5
High Use Neighborhood	Marisol Park	5
High Use Neighborhood	Mountain Hawk Park	5
High Use Neighborhood	Otay Park	5
High Use Neighborhood	Santa Venetia Park	5
High Use Neighborhood	Sunbow Park	5

Park Usage	Park Name	Criticality Rating Within Usage
High Use Neighborhood	Sunridge Park	5
High Use Neighborhood	Terra Nova Park	5
High Use Neighborhood	Voyager Park	5
High Use Neighborhood	Windingwalk Park	5
High Use Neighborhood	Gayle L McCandliss Park	4
High Use Neighborhood	Hilltop Park	4
High Use Neighborhood	Paseo Del Rey Park	4
High Use Neighborhood	Santa Cora Park	4
High Use Neighborhood	SDG&E West	3
High Use Neighborhood	Tiffany Park	3
High Use Neighborhood	Valle Lindo Park	3
High Use Neighborhood	Breezewood Park	1
High Use Neighborhood	Lancerlot Park	1
Low Use Parks/Areas	Chula Vista Women's Club	5
Low Use Parks/Areas	SDG&E East	5
Low Use Parks/Areas	Bay Boulevard Park	4
Low Use Parks/Areas	Connoley Park	4
Low Use Parks/Areas	Independence Park	4
Low Use Parks/Areas	Palomar Park	4
Low Use Parks/Areas	Loma Verde Park	3
Low Use Parks/Areas	Rancho Del Rey Park North	3
Low Use Parks/Areas	Rancho Del Rey South	3
Low Use Parks/Areas	Holiday Estates I Park	1
Low Use Parks/Areas	Holiday Estates II Park	1
Low Use Parks/Areas	Rancho Del Rey Finger	1
Low Use Parks/Areas	Sherwood Park	1