



Boulder Parks and Recreation



BOULDER RESERVOIR - SOUTH SHORE

CAPITAL STRATEGY AND CONCEPT PLAN

BOULDER, COLORADO / JANUARY 2020

命脉相通

/ Acknowledgments



Boulder Parks and Recreation Department

3198 N. Broadway
Boulder, CO 80304

Boulder Parks and Recreation Staff

Yvette Bowden, Director

Ali Rhodes, Deputy Director

Jeff Haley, Planning, Design & Community Engagement Manager

Tina Briggs, Project Manager, Parks and Recreation Planner

Morgan Gardner, Associate Planner

Stephanie Munro, Regional Facilities Manager

Stacy Cole, Boulder Reservoir Facility Supervisor

Parks and Recreation Advisory Board

Charles Brock

Allison Fronzaglia

Jennifer Kovarik

Mary Scott

Ray Seymour

Valerie Yates

Pamela Yugar

Concepts and analysis informed in part by Farnsworth.

Table of Contents

	page
/I	
Executive Summary	1.1
/II	
Project Background	2.1
A. Overview	2.1
B. Intent	2.2
C. Funding	2.2
D. Operational Characteristics	2.3
/III	
Concept Plan and Strategy Development	3.1
A. Data Collection and Research	3.2
B. Access and Circulation Analysis	3.2
C. Site and Facility Analysis	3.2
D. Comprehensive Community Engagement and Analysis	3.7
E. Define Goals and Improvement Categories	3.8
F. Make and Prioritize Recommendations	3.9
G. Develop Concept Plans	3.9
H. Estimate Capital Costs	3.10
/IV	
Capital Improvement Strategy	4.1
A. Improvement Category Charts	4.2
B. Concept Plan Maps	4.8
C. Capital Improvement Costs	4.18
/V	
Economic Overview and Recommendations	5.1
A. Comparative Analysis of Boulder Reservoir and Other Recreation Sites	5.1
B. Summary of Operational Analysis and Recommendations	5.2
C. Partnership and Contractor Observations and Opportunities	5.3
D. Boulder Reservoir South Shore Management Plan Financial Analysis	5.5
/VI	
Appendix	A.1

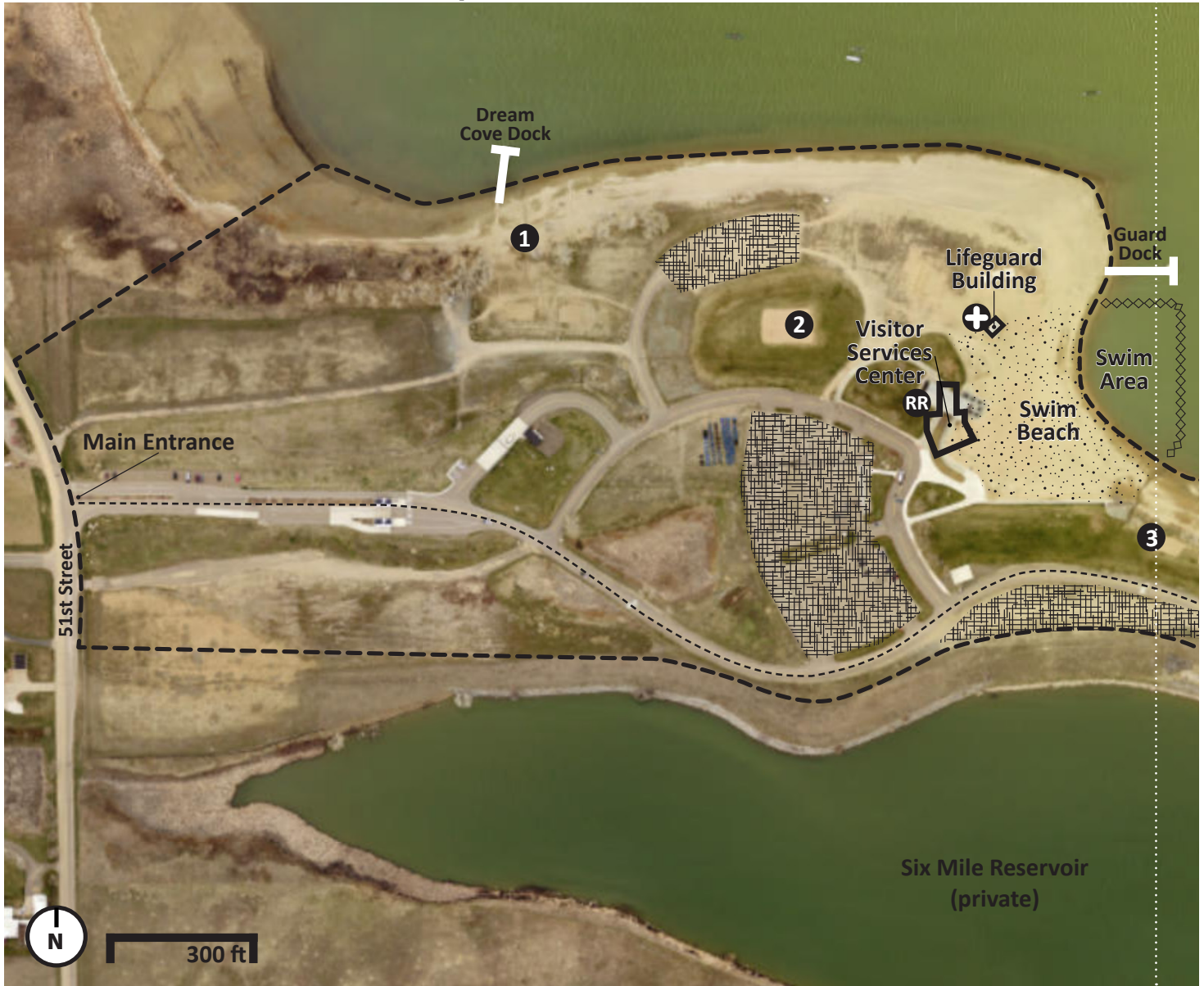


/ Figures, and Maps









	page
Map 0.1 South Shore Site Map	i
Map 2.1 Management Areas	2.1
Figure 2.1 South Shore Site Management Plan Phase Descriptions	2.2
Figure 2.2 Boulder Parks and Recreation Budget by Fund and Use, 2019	2.3
Figure 2.3 Monthly Boulder Reservoir Visitation, 2018	2.4
Figure 2.4 Annual Boulder Reservoir Boating Revenues, by Activity	2.4
Figure 2.5 Annual Boulder Reservoir Watercraft Permits Issued, by Type	2.5
Figure 2.6 Share of Annual Boulder Reservoir Moorings, by Type	2.6
Figure 2.7 Special Events, Participation, and Revenues at Boulder Reservoir, 2013-2016	2.6
Figure 2.8 Camp Reservations, Participation, and Revenues at Boulder Reservoir, 2013-2018	2.6
Figure 2.9 Picnic Reservations, Participation, and Revenues at Boulder Reservoir, 2013-2018	2.7
Figure 2.10 Staffing Requirements for Structures/Facilities	2.8
Figure 3.1 Project Timeline	3.1
Map 3.1 Access and Circulation Diagram	3.4
Figure 3.2 Descriptions of Funding Alternatives	3.9
Map 4.1 Fiscally Constrained Plan	4.8
Map 4.2 Action Plan	4.10
Map 4.3 Vision Plan	4.12
Map 4.4 Complete Implementation	4.14
Map 4.5 Trail Plan	4.16
Figure 4.1 Capital Improvement Costs	4.18
Figure 5.1 Capital Costs by Plan	5.6
Figure 5.2 Operating Expenditures by Plan	5.7
Figure 5.3 Visitation and Operating Revenue by Plan	5.8



MAP 0.1 South Shore Site Map



LEGEND

-  South Shore Area
-  Bike/Walking Trail
-  Mooring
-  Building
-  Restrooms
-  First Aid
-  Swim Area
-  Parking

PICNIC SITE LOCATIONS

- | | |
|--------------------------|-----------------------|
| 1 Dream Cove | 6 Sailor Point |
| 2 Pro Hill | 7 Hobie Haven |
| 3 Beachview | 8 Marina Hill |
| 4 Chandler Beach | 9 Sunset |
| 5 Cottonwood Cove | 10 Sunrise |



BOAT MOORING

Wet

- Ⓢ Snapper
- Ⓑ Bluegill
- Ⓣ Trout

Dry

- Ⓞ Osprey
- Ⓚ Kestrel
- Ⓜ Mallard
- Ⓜ Hawk
- ⓔ Eagle
- Ⓒ Coot
- Ⓠ Quail



/I. Executive Summary

The City of Boulder Parks and Recreation Department (BPR) completed the Boulder Reservoir Master Plan (BRMP) in 2012. The intent of the BRMP was to establish the long-range vision, goals and objectives for the BPR-managed land and activities at Boulder Reservoir. One of the key objectives from the BRMP was to develop a site management plan for each of the four management areas that make up the 1109-acre reservoir. The 76-acre South Shore Management Area (“South Shore”) was prioritized because it is a popular fee-based facility with aging infrastructure.

The site management plan for the South Shore will be addressed in two phases. The Capital Strategy and Concept Plan (CSCP) is the first phase which will address sustainable physical improvements for short and long-term prioritization capital funding. Capital funding is approximately \$7.1 million of BPR’s \$29.6 million annual budget. Capital funding must be allocated across the entire department, including the reservoir. The second phase, the South Shore Management Plan, will address management, programming and partnership from an operational perspective.

The CSCP achieves understanding of current deficiencies, defining a strategy to address those issues and establishing a clear budget and prioritization necessary to maintain the community expectation of high-level service, accounting for aging infrastructure and facilities, as well as planning for increasing visitation.

Process

- | | |
|---|--|
| A. Data Collection & Research | E. Define Goals & Improvement Categories |
| B. Access & Circulation Analysis | F. Make & Prioritize Recommendations |
| C. Site & Facility Analysis | G. Develop Concept Plans |
| D. Robust Community Engagement and Analysis | H. Estimate Capital Costs |

Tools were developed to demonstrate and communicate the process and logic for the outcomes of the CSCP. The tools provide opportunities to discuss future community support, fundraising efforts and potential partnerships necessary to achieve future action and vision alternatives. In addition, the tools will inform Phase II for analysis of future operation needs based on larger facilities and more users.

Tools

Improvement Category Charts with Goals and Recommendations

- | | |
|------------------------------------|---|
| 1. Access & Circulation | 4. Adaptable Community Space, Events & Programs |
| 2. Maintenance & Operations | 5. Education & Interpretation |
| 3. Facilities & Boating Activities | 6. Environmental Control and Sustainability |

Concept Plans to Visually Represent the Goals and Recommendations

- | | |
|-----------------------------|--------------------------------|
| • Fiscally Constrained Plan | • Complete Implementation Plan |
| • Action Plan | • Trail Plan |
| • Vision Plan | |

Cost Estimate

- Capital cost estimates for recommendations under each improvement category sorted by funding alternative (Fiscally Constrained, Action and Vision)

The CSCP wraps up with an economic analysis of operational research findings, overview of financial projections and management recommendations captured throughout the process to support Phase II for the completion of the Site Management Plan for the South Shore.



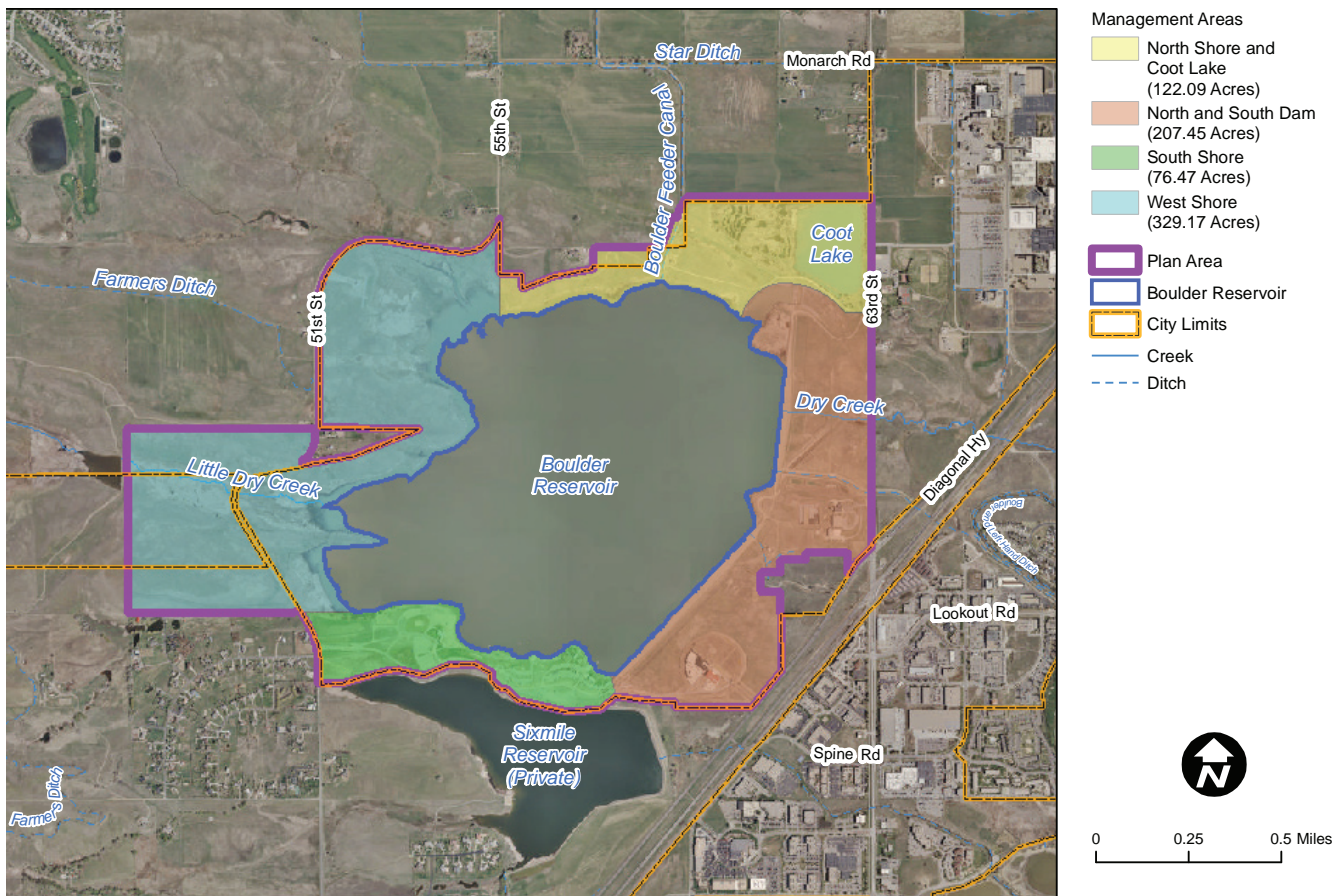
II. Project Background

A. Overview

The City of Boulder Reservoir (“the reservoir”) is one of the most popular and heavily visited park facilities in the city and region. It is also one of only six northern Front Range facilities supporting water-based and power boating recreation opportunities and though smaller than other area facilities, the reservoir offers a significant range of services to the community and maintains one of the highest visitation rates of approximately 300,000 per year.

Constructed in 1950, the reservoir collects and retains water for municipal, domestic, agricultural and industrial uses for member of the Northern Water Conservancy District. The reservoir is, first and foremost, a valuable water supply source. Recreational activities at the reservoir must be managed in a manner that prioritizes protection and management of the water supply contained in the 560 acres of water surface.

The 1190 acres of land surrounding the reservoir are divided into four management areas (Map 2.1). The South Shore Management Area (“South Shore”) consists of roughly 76 acres and is the location of the most intensive active



MAP 2.1

Management Areas

From the 2012 Boulder Reservoir Master Plan

recreational uses at the reservoir. Facilities on the South Shore include gate house buildings, Aquatic Nuisance Species (ANS) inspection building, a new Visitor Services Center (currently under construction), lifeguard station, boat house maintenance building. Popular amenities are the swim beach, boat parking, boat moorings, boat ramps, a variety of docks, reservable picnic site locations and numerous vehicle parking areas.

B. Intent

The 2012 Boulder Reservoir Master Plan (BRMP) outlined a set of goals and objectives intended to achieve a vision for future the reservoir. That vision states:

“Recognizing that the Boulder Reservoir is first and foremost a source of clean water and valuable natural resources, the community envisions a Reservoir where high quality and appropriate recreation activities are managed and sustained in a manner consistent with preserving and enhancing the environment.”

Among many objectives, the BRMP sets forth an objective to develop a site management plan for the South Shore to address programmatic opportunities, operation and management thresholds, sustainable business model(s), vehicle and trail access, capital improvements, a site plan, as well as traffic and noise impacts of the South Shore facilities and supported activities.

This Capital Strategy and Concept Plan (CSCP) is the first phase of the Site Management Plan for the South Shore. It will focus on sustainable physical improvements of the reservoir, addressing the short and long-term physical improvements and prioritization of capital funding in anticipation of Phase II that will complete the South Shore Management Plan by addressing management, programming and partnerships from an operational perspective. As capital and operational improvements are inherently closely tied together, the CSCP will provide limited management recommendations to inform the second phase as they are related to capital improvements. Figure 2.1 outlines the phased site management plan process.

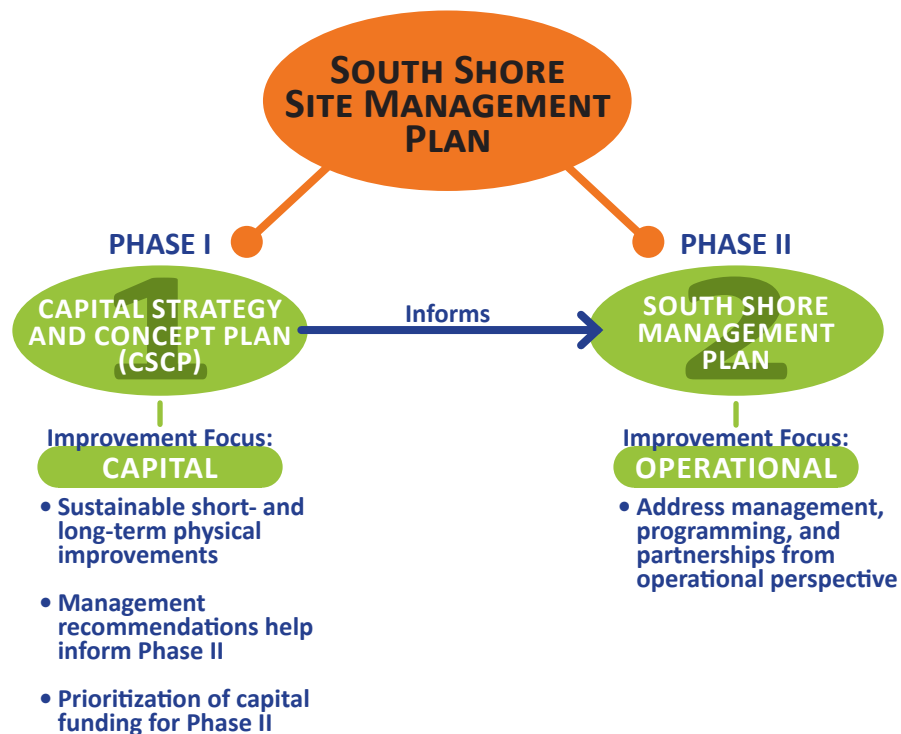


FIGURE 2.1

South Shore Site Management Plan Phase Descriptions

C. Funding

The Boulder Parks and Recreation Department (BPR) operates on a \$29.6 million budget in 2019. About 24 percent of the budget (\$7.1 million) is allocated for capital improvements across the entire department, including the

reservoir. The remaining \$22.5 million is allocated to cover department operations, including maintenance.

BPR is funded by multiple sources that vary in stability and required uses. Currently, BPR has direct financial management responsibilities of \$29M for operating and capital purposes and has potential access to other funding sources for one-time growth-related capital expenses. These funds and their contribution to the BPR budget are presented below in Figure 2.2.

Fund	Operations & Maintenance	Capital	Total
General Fund	\$ 4,474,930	\$ -	\$ 4,474,930
Lottery Fund	-	428,000	428,000
.25 Cent Sales Tax Fund	6,123,339	1,000,000	7,123,339
Recreation Activity Fund	10,757,257	-	10,757,257
Permanent Park and Recreation Fund	1,114,170	2,928,000	4,042,170
Boulder Junction Improvement Fund	-	350,000	350,000
Capital Improvement CCS Fund	-	2,393,333	2,393,333
Total	\$ 22,469,696	\$ 7,099,333	\$ 29,569,029

FIGURE 2.2

Boulder Parks and Recreation Budget by Fund and Use, 2019

Source: City of Boulder, BBC Research and Consulting.

Recreation Activity Fund

The Recreation Activity Fund (RAF) is characterized as a quasi-enterprise fund where the department manages all expenses, receives revenues from user and participation fees, and relies on a subsidy from the General Fund to support community benefit programming. In alignment with city guidance, the RAF includes a 10% reserve, intended to mitigate current and future risks (e.g. revenue shortfalls and unanticipated expenses). Over 80 percent of RAF revenue is generated from recreation program and facility revenues, which include user fees.

All revenue generated through reservoir user and event fees is deposited to the RAF. The reservoir contributes about \$1 million per year to the RAF. That contribution has historically recovered all operational costs through fees; annual operating expenditures (excluding major maintenance and indirect department expenses) are generally between two percent and 15 percent less than annual revenue. RAF revenue from the reservoir is expected to increase with an adult daily fee increase planned for 2020 from \$7.00 to \$9.00, and the introduction of a non-resident facility access fee of \$11.00. There are also monthly and annual pass products available that provide access to the reservoir and other BPR recreation facilities.

Other Department Funding Sources and Capital Planning

BPR receives contributions from several other funds, including the Permanent Parks and Recreation sourced from property tax and a Parks and Recreation-dedicated .25 Sales Tax Fund. Both of these funds are dedicated to Parks and Recreation and provide capital funding to projects throughout the department and at the reservoir. The most recent capital budgeting processes identified the South Shore for \$2.4 million in funding through 2024 for Master Plan and South Shore related improvements, including the Visitor Services Center (VSC). The improvements outlined in this plan will need to be considered through the established capital planning process.

D. Operational Characteristics

Based upon detailed historical data, this section examines current financial and operational characteristics and is organized based on the existing activity areas that are primary drivers of visitation and revenue on the South Shore. Map 0.1 at the beginning of this document can be referenced for a site plan of South Shore activity.

Visitation and Gate Fees

- The South Shore is visited by 300,000 visitors each year, a large majority of which occurs during the high season from Memorial Day to Labor Day.
- During the high season, all visitors are charged an entry fee for access to the swim beach, lake, and other amenities on the South Shore and visitation numbers are carefully recorded. Outside of high season, visitors can use the South Shore without paying a gate fee.
- The South Shore is one of the most visited public recreational sites in the area and gate fees represent 34% of the facility's revenue.

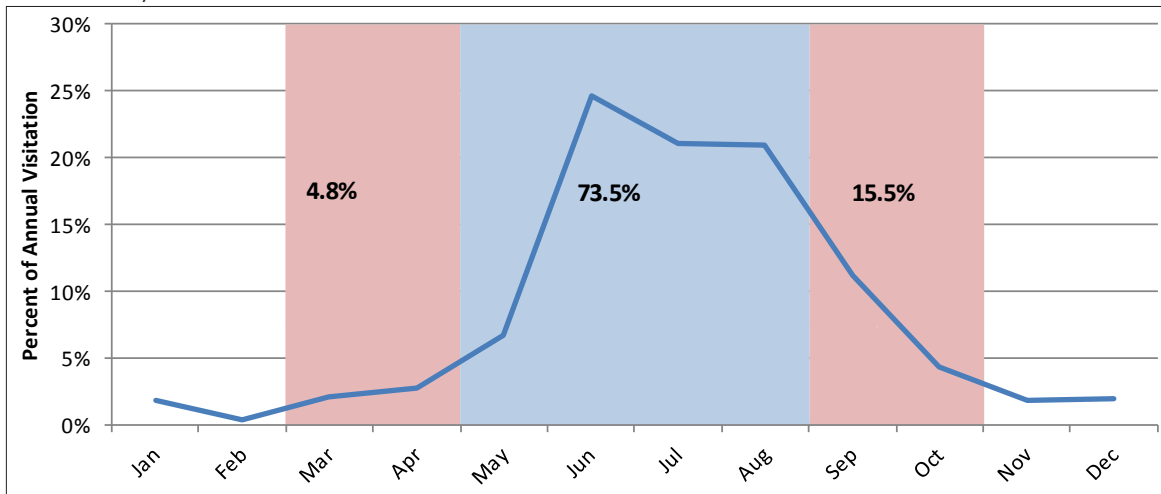


FIGURE 2.3

Monthly Boulder Reservoir Visitation, 2018

Source: Boulder Parks and Recreation; Boulder Reservoir; BBC Research and Consulting.

- Figure 2.3 presents the monthly visitation data for 2018, indicating that 73.5 percent of all recorded annual visitation occurred during the high season (blue), with an additional 4.8 percent in the spring flank season (March 1 – Memorial Day), and another 15.5 percent in the fall flank season (Labor Day – October 31). Visitation during the flank seasons currently represents lost gate fee revenues.

Boating

- Boating is one of the most popular activities with 299 power boat and 1,098 small craft permits in 2018.

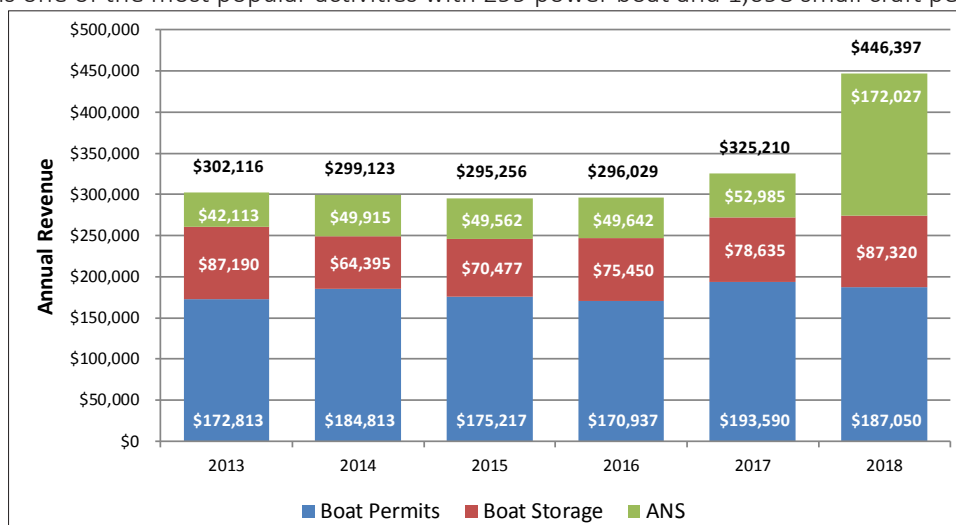


FIGURE 2.4

Annual Boulder Reservoir Boating Revenues, by Activity

Source: Boulder Parks and Recreation; Boulder Reservoir; BBC Research and Consulting.

- In a 2018 survey of 257 watercraft permit holders, 49 percent reported that they have purchased a boating permit in five or more seasons indicating high satisfaction.
- Boating activities (permits, storage, and ANS) represented 40 percent of all annual revenues in 2018.
- Watercraft permit sales have historically comprised the largest share of boating revenue, accounting for nearly 60 percent of all boating-related revenues until 2018. Figure 2.4 illustrates the annual revenues from each primary boating activity from 2013-2018.
- The Aquatic Nuisance Species (ANS) program, designed to prevent reservoir contamination by invasive, non-native animals and plants, operates at full cost recovery per direction of the BRMP. ANS revenue dramatically increased in 2018, reflecting the expanded program and increased fees.
- As ANS contamination spreads in the region and across the country, the boating program will regularly be evaluated to mitigate the risks of ANS contamination at the Boulder Reservoir. The 2020 program includes a classification system where watercraft are categorized by risk based upon ability, or not, to carry nuisance species and the BPR’s ability to address ANS contamination on that type of craft.
- Boat permit and boat storage revenue have remained relatively steady over the past few years, which indicates well-used near-capacity programs. This trend also indicates the potential for boat storage program expansion, expansion of complimentary services, and expansion of permit sales subject to water surface capacity.
- Among the three types of boat permits available to the public (small craft, power boat, and sailboat), small craft permits are the most common. In recent years, the popularity and number of permitted small craft have increased significantly, compared to other permit types. Figure 2.5 illustrates the annual number of permits for each watercraft.

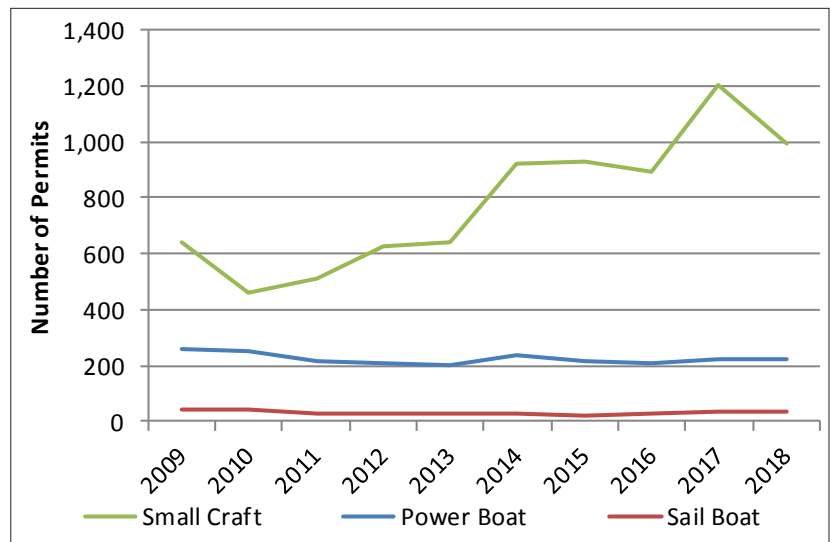


FIGURE 2.5
Annual Boulder Reservoir Watercraft Permits Issued, by Type
 Source: Boulder Parks and Recreation; Boulder Reservoir; BBC Research and Consulting.

- While they account for a majority of all boat permits, the revenues from small craft are small in comparison to those from power boat permits, which are significantly more expensive.
- In 2010, power boat permit revenues have accounted for 89.2 percent of all boat permit revenues, while small craft accounted for just nine percent. However, in 2018 small crafts grew to account for 23.7 percent of all permit revenue, while the power boat share shrank to 72.2 percent.
- Boaters report that the reservoir is particularly attractive because:
 - It is less busy than Cherry Creek or Chatfield State Parks;
 - The physical entry for boats is easier to navigate on busy days; and
 - The amount of on-water patrol creating more of a friendly environment.

Boat Storage

- Many boaters utilize one of Boulder Reservoir’s three mooring options (dry, wet, shore, and rack storage) to store their permitted watercraft throughout the year, with fees ranging from \$215 to \$635 for residents. From 2013 through 2016, there was an average of 151 mooring reservations per year. In 2018, there were

212 mooring reservations, indicating the growing potential for this revenue source. Figure 2.6 illustrates the distribution of moorings by type.

- Dry mooring includes both paved and gravel options, with a total of five dedicated lots. Paved lots are by far the most popular choice among boaters. The two paved lots are often at capacity with a waiting list. Gravel mooring is much less popular; the gravel lots are generally about 25 percent full.
- The burgeoning small craft storage program is showing promise, increasing from five storage reservations in 2017 to 19 reservations in 2018. In just two years, small craft storage reservations represent nearly 10 percent of reservations by volume and five percent of mooring revenue. This represents a continued revenue-generating opportunity with infrastructure investment.

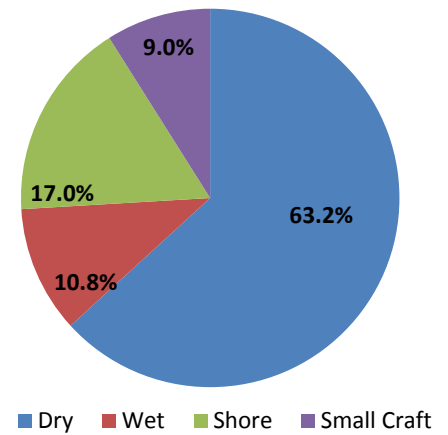


FIGURE 2.6
Share of Annual Boulder Reservoir Moorings, by Type
Source: Boulder Parks and Recreation; Boulder Reservoir; BBC Research and Consulting.

Special Events

- Boulder Reservoir hosts numerous special events each year, drawing large crowds and generating substantial revenue. In a recent visitor survey, nearly 30 percent of respondents reported attending special events such as races and triathlons.
- 27 special events in 2018 drew 13,736 participants (not including observers) and accounted for about 21 percent of all reservoir revenue. Figure 2.7 provides a description of special events, participants, and revenues.
- In recent years the reservoir has hosted just under 30 events per year, with an average of 608 participants and revenues of \$5,951 per event. In general, events have generated about \$180,000-\$200,000 per year in the past three years, a significant increase over the previous three years.
- Event fees have increased steadily over the past ten years to cover the full costs of special event operations, including set-up and other additional services. Despite increases in the fee system, demand for events at the reservoir has remained strong.

Fiscal Year	Special Events	Participants	Revenue
2013	28	16,999	\$160,913
2014	32	15,673	\$143,155
2015	26	9,443	\$105,383
2016	26	25,045	\$200,259
2017	28	20,637	\$183,022
2018	27	13,736	\$201,019
Average per Event:		608	\$5,951

FIGURE 2.7
Special Events, Participation, and Revenues at Boulder Reservoir, 2013-2016
Source: Boulder Parks and Recreation; Boulder Reservoir; BBC Research and Consulting.

Camps

- Camps hosted at Boulder Reservoir represent another driver of visitation and revenue. Figure 2.8 provides an overview of annual participation and revenue for camps organized by the BPR.
- In 2018 there were around 276 camp participants per year, down from 948 participants in 2013 reflecting the

Fiscal Year	Participants	Total Revenue	Revenue per Participant
2013	948	\$188,227	\$199
2014	666	\$132,758	\$199
2015	689	\$142,722	\$207
2016	N/A	\$150,632	N/A
2017	447	\$127,587	\$285
2018	276	\$94,021	\$341

FIGURE 2.8
Camp Reservations, Participation, and Revenues at Boulder Reservoir, 2013-2018
Source: Boulder Parks and Recreation; Boulder Reservoir; BBC Research and Consulting.

outsourcing of several watersport camps. The fees to attend these camps vary based on the provider, length, size, and equipment required, and the partnership agreements include a combination of revenue sharing, boat permit, rental and storage fees, and per-participant fees.

- Revenue per participant has increased (see Figure 2.8). This trend indicates that camp participants are willing to pay increasing amounts for the service, and that there could be potential to market additional camps and return attendance to historic levels.

Picnics

- Picnics at the reservoir are another attraction for visitors. Over one third of the 2017 survey respondents (36 percent) identified picnics as an activity they have enjoyed at the reservoir, and in 2018 picnic-related revenue accounted for 10 percent of all reservoir revenue. Figure 2.9 shows the number of reservations, participants, and reservation revenues for the past six years.
- In recent years the reservoir has hosted over 120 picnics per year at 9 available sites, with an average attendance of 81 participants and average revenues of \$534 per picnic. The number of participants per reservation has trended downward in recent years, while per event revenues have remained around \$758. Fees are based on four tiers of size and service levels.

Fiscal Year	Picnic Reservations	Participants	Revenue
2013	N/A	7,376	N/A
2014	140	9,931	\$61,887
2015	178	14,820	\$71,173
2016	175	18,200	\$73,825
2017	128	9,809	\$96,988
2018	123	7,427	\$93,174
Average per Picnic:		81	\$534

FIGURE 2.9

Picnic Reservations, Participation, and Revenues at Boulder Reservoir, 2013-2018

Source: Boulder Parks and Recreation; Boulder Reservoir; BBC Research and Consulting.

Facilities and Services

- The South Shore currently provides several facilities to support both water and land-based activities. Most of the South Shore facilities were built in the 1980s. There have been limited renovations to the original structures on the South Shore which are aging, outdated and, in some cases, inadequate in meeting current demand and current building code requirements. As use of the reservoir increases, there is a need for increased operations and maintenance services, renovation and refurbishment of existing facilities, and construction of new facilities to replace aging ones. Refurbishment and replacement of South Shore buildings presents an opportunity to meet the city’s green building requirements and to incorporate renewable energy sources, water quality best management practices and water conservation measures in redevelopment of the site. A Maintenance Schedule for the facilities can be found in Appendix A.
- A good example of those practices is the 2019 construction of the new VSC to replace the previous Administration Building. The new building includes concessions, dining area, restrooms and locker facilities and office space. Included in the project are exterior improvements such as a public plaza space, children’s play area, boardwalk, shade, landscaping, and walkways.

Access and Parking

- The main entry gate to the South Shore is on 51st Street on the west side. The entryway provides separated ingress and egress lanes for vehicles accessing and exiting the South Shore. It also includes two gate houses, one of which is staffed year round during business hours, and a lockable gate to prevent vehicles and boat trailers from entering the reservoir when the park is closed.
- There are several parking areas at the South Shore of the reservoir, with a total capacity of approximately 3,000 vehicles. A majority of these parking areas are unpaved surfaces with a gravel or grass surface. The paved lots are primarily for autos and are located near the VSC and the Boat House building. There are 102 paved boat parking spaces, 82 gravel boat parking spaces, and 72 small craft storage spaces at present time.

Environmental Resources

- The forested area on the northwest corner of the South Shore serves as a buffer to the adjacent high functioning wetlands found on the West Shore. The wetlands on the West Shore are considered one of the most exemplary wetlands in the City of Boulder due to size, diversity, lack of fragmentation and water quality.
- Canadian Geese and Prairie Dogs are an ongoing management concern. Both species require a protected level of management. The Environmental Summary of the South Shore can be found in Appendix B.

Staffing Levels

STRUCTURES/FACILITIES	FULL TIME EMPLOYEE	SEASONAL STAFF
Visitor Services Center	4.75 FTE including:	5 staff
	1 Reservoir Manager	
	1 Assistant Manager	
	1 Program Coordinator	
	1 Maintenance Worker	
	.75 Water Safety Services Coordinator	
	* concessions staffed by vendor	
Lifeguard Station	0 FTE	20 staff including lake patrol
Boat House	* concessions staffed by vendor	
Maintenance Building	0 FTE	15 staff
Gate House Buildings	0 FTE	8 staff
ANS Inspection Building	0 FTE	5 staff

FIGURE 2.10

Staffing Requirements for Structures/Facilities

Figure 2.10 shows a breakdown of 2019 staffing levels by building, reflecting both standard and non-standard seasonal employees. The human capital at the reservoir provides context for the current level of services, and also a baseline to consider should site or service enhancements be explored.



SPECIAL EVENTS AT THE RESERVOIR



/III. Concept Plan and Strategy Development

The Capital Strategy and Concept Plan (CSCP) is primarily intended to aid BPR in identifying and prioritizing areas for capital improvement. The CSCP will also provide recommendations for maintenance and operation needs as related to capital investment for the South Shore. This will be achieved through understanding current deficiencies, defining a strategy to address these issues, and establishing a clear budget necessary to maintain the reservoir at a high-level, accounting for aging structures and facilities, as well as planning for improvements being considered for addition to the reservoir in future.

A master planning process was applied to develop the CSCP for the South Shore. The process included research of existing information, access and circulation analysis, facility and operation analysis, robust community engagement and analysis, build improvement categories, define goals, make recommendations, develop concept plans and estimate capital investment cost. Figure 3.1 provides a general timeline for the public engagement, and more detailed review of the steps in the process are described throughout this chapter.



FIGURE 3.1
Project Timeline

A. Data Collection and Research

Background and information pertaining to the reservoir were provided at the outset of this project in the form of various past plans, studies and maps, including but not limited to:

<i>2012 Boulder Reservoir Master Plan</i>	<i>2016 Boulder Parks and Recreation Facility Assessment Plan</i>
<i>2014 Parks and Recreation Master Plan</i>	<i>2010-2018 Boulder Reservoir Internal Financial Usage Data</i>
<i>2015 Final Aquatics Feasibility Plan</i>	<i>2019 Budget for City of Boulder</i>
<i>2016 Draft Reservoir Business Plan</i>	<i>2019-2024 City of Boulder Capital Improvement Program</i>
<i>Land Surveys</i>	<i>Utilities and Infrastructure Improvements</i>

Review and analysis of the provided documents were critical to forming a baseline of knowledge. Based on this information, a thorough review of the site and facilities within the South Shore was conducted, including but not limited to structures, roads, parking, shoreline access, and infrastructure. This evaluation established an initial understanding of the existing conditions of reservoir site and facilities and provided a baseline from which to consider all proposed improvements. Below are the primary findings that were identified from the analysis described above:

- Reservoir facilities are well maintained
- Some structures need to be repaired or replaced
- Limited budget resources for major replacement
- Usage demands, in some areas, outpace available facility upkeep
- Potentially insufficient labor resources with the expansion of facilities and services

Of these findings, several relate to the maintenance efforts of the staff and have influenced the recommendations contained in this report. Specifically, the key recommendations that follow were developed from the context that Reservoir facilities are currently maintained in a high-quality manner, but insufficient labor and budget resources may inhibit maintaining current standards with the addition of future development of facilities.

B. Access and Circulation Analysis

After data collection and research, the next action in the planning process was to conduct an access and circulation analysis. In June 2017, an examination of the South Shore and facilities highlighted some initial opportunities and challenges related to both physical and operational improvements.

Primary access points were identified and mapped, including: the main entry, the VSC, boat ramps, boat house and Fire Training Center access. Evaluation of access and circulation to these elements identified opportunity for improved circulation and understanding of parking demand. These findings are illustrated in the Access and Circulation Diagram (Map 3.1).

Given the site size, shape and other development limitations such as flood plains, it was determined that the underlying framework of the reservoir works well. Most of the major existing structures are in appropriate locations to support current use and that the existing infrastructure has capacity to support the structures. A further analysis of the facilities and operations are outlined in the following section.

C. Site and Facility Analysis

Existing Site and Facility Deficiencies

Buildings, infrastructure, landscaping and user amenities require ongoing maintenance and staff resources. Some of the issues are related to outdated structures or antiquated designs. Most of the buildings within the South Shore are over thirty years old and demonstrate examples of both design and aging issues. Other issues noted are access, drainage, utilities and over-use are mentioned in this plan. Similar issues are generally associated with almost all older recreation facilities that are popular and well used. Developing a strategy to resolve the deficiencies will improve the overall quality and experience as well as reduce general maintenance requirements.

Visitor Services Center (VSC) – In the summer of 2019, the Administration Building was demolished and construction began on the new VSC with completion expected in the summer of 2020. This project will include locker rooms, changing areas, restroom facilities, concessions area, gathering space, staff offices, play areas, and a boardwalk with Reservoir views. The new construction is built to current standards with energy efficiency and user safety at the forefront. This will alleviate many deficiencies previously found in the building while providing additional amenities for an increasing number of visitors. Considerations for long-range repair and maintenance should be included to keep the building in optimal condition.

Lifeguard Station– The existing Lifeguard Station is located on the swim beach just below the VSC and was considered for replacement during the design effort for the VSC, however it was left out due to budget constraints. The existing building is little more than a storage room with a small office and does not meet the needs of lifeguard staff. The lack of a restroom, water, and proper amount of storage and office space were points of discussion during the design process.

Boat House– The existing Boat House currently has an office and storage for small watercraft that is primarily used by vendor for rentals. The building’s location in relation to the shoreline where the program activities happen is not ideal. The building has some material deterioration due to its age. Primary issues with the building are lack of space to expand program or add other boating uses and a restroom that is out of date and not ADA accessible.



BOAT HOUSE

Maintenance Building – The existing Maintenance Building, located at the eastern end of South Shore, is the center of maintenance activities for the entire 1,190-acre reservoir. All maintenance vehicles, staff, and activities are staged from this location. The current building lacks adequate office space, maintenance work space, and proper storage for both equipment and vehicles. At present, staff moves all maintenance vehicles into the primary working area of the building each evening at closing time to secure them and protect them from the weather. On inclement days, there is no space to work inside the building because the maintenance vehicles fill the space.

Gate House Buildings – The Gate House Buildings were built in 2016 and don’t have any immediate problems that are known at this time. Considerations for long-range repair and maintenance should be included to keep the building in optimal condition.

ANS Inspection Building – The ANS Inspection Building was built in 2016 and doesn’t have any immediate problems that are known at this time. Considerations for long-range repair and maintenance should be included to keep the building in optimal condition.

Primary Road– The primary road has developed significant wear and tear since the addition of the Boulder County Regional Fire Training Station. This is the main entry and egress for the active Fire Training Center.

Secondary Road – The secondary road has significant asphalt wear and tear.

Paved Parking Areas – The paved parking areas have typical wear and tear for asphalt.

Unpaved Parking Areas – The unpaved parking areas are primarily gravel and have normal issues with erosion and compaction of materials.

Paved Areas – The concrete paving has common issues with cracking, heaving, and settling in places.










Soft-Surface Paths – There are some unplanned paths that lead from parking to structures, to the shoreline or other destinations. These paths can be muddy and are difficult to maintain.

Landscape Areas (Irrigated) – Primary irrigated landscape areas at South Shore are at the entry, at the VSC, at the event area west of the VSC, along the shoreline to the east, and around the boat house. There is also a small

MAP 3.1 Access and Circulation Diagram



LEGEND

-  ACTIVITY NODES AT PRIMARY STRUCTURES
-  PRIMARY ACCESS (AUTO)
-  SECONDARY ACCESS (BIKE, PEDESTRIAN)
-  PRIMARY ACCESS/CIRCULATION (AUTO)
-  SECONDARY ACCESS/CIRCULATION (AUTO)
-  SHORELINE AND WATER ACCESS (PEDESTRIAN)
-  ACTIVE SHORELINE
-  RAMP ACCESS TO WATER (LARGE VESSELS)
-  PRIMARY RECREATION ACTIVITY ZONE



irrigated area north of the Maintenance Building. These irrigated areas are composed primarily of irrigated lawn with large shade trees. Systems should be replaced with more efficient systems. The future redevelopment of other existing structures in the site may warrant an upgrade in these areas.

Landscape Areas (Non-Irrigated) – A majority of the South Shore site is non-irrigated. Much of this non-irrigated area is composed of native grasses. There are also some areas that have invasive weed species especially at the eastern boundary where the storage lot is next to the access gate to the fire training center.

Signage and Monumentation – There is a monument sign at the main entrance that was installed in 2014. There is insufficient directional signs along the main road which are undersized and not clear. Wayfinding, rules and regulations should be included in future improvements.

Site Furniture – There are some picnic tables and benches throughout the site but there is not a common style or character for these elements. Replacement of existing and additional seating should be added as visitation has increased.

Boat Storage Racks – There are some small craft storage racks in a couple of areas but they are not placed in an ideal configuration or close enough to water. Small craft storage has revenue potential based on existing demand for additional small craft storage.



ADJUSTABLE DOCK

Utilities – Generally the current utilities in the South Shore are sufficient for existing buildings. The future redevelopment of other existing structures in the site may warrant an upgrade in some of the utilities.

Irrigation – The irrigation system is aging and has issues in some areas. Due to the age, the overall system is not very efficient and a more “water-wise” system should be incorporated with new development or in areas where irrigation is replaced.

Lighting – The reservoir has been considered a “day-use” park in a rural setting throughout its existence with very few lights that are related mainly to the existing buildings. New development and an extended season and/or hours of operation may require additional lighting. The expanded lighting will need to adhere to “Dark Sky” standards for rural developments primarily due to the affect on wildlife and adjacent residential neighborhoods.

Fueling Station – The existing fueling station (pump and storage tank) is past its lifecycle. Future expansion of the boat house and maintenance facilities should include consideration of the fueling station location.

Main Security Gates – The main gates were installed in 2014 and show no signs of wear and tear. Considerations for long-range repair and maintenance should be included to keep the building in optimal condition.

Docks – The docks along the shoreline are all temporary docks that are raised and lowered by staff depending on the fluctuating water level. Some of these need to be repaired or replaced. The dock that is used for crew boat access has to be constantly adjusted by staff so that it remains usable. The replacement of some docks with ADA accessible docks is necessary.

Boat Ramps – There are two boat ramps in the South Shore. The first ramp located midway along the shoreline is used for sailboat access and the second ramp located near the Maintenance Building is used for powerboats. Renovation/replacement is defined in the list of deficiencies.

West Shore Interface – There is currently an issue with South Shore users venturing into the environmentally sensitive West Shore. There is some signage to deter use. Future signage along a new interpretive trail to educate users and preserve this sensitive area.

Erosion Control along Shoreline – Erosion is a concern because it adds to the existing struggle with water quality issues. The fluctuation of the water level and influx of tributary water contribute to erosion problems. Rip rap rock and other erosion control methods are recommended.

Goose Control- The control of geese waste is a daily challenge. Canadian Geese are protected by city Wildlife Protection Ordinances, which prohibits “harassment” of the birds and the destruction of their nests, as well as the federal Migratory Bird Treaty Act. This is an ongoing issue to define measures to control.

General Maintenance- The maintenance level is acceptable with current buildings. Establishing a baseline for maintenance requirements will be a critical step toward estimating new requirements for expanded facilities.

Operating Costs

Staffing, standard equipment and supplies that are currently required to maintain and operate the existing South Shore should also be considered when establishing a baseline. These costs are typically accounted for in the annual budget for operations and will likely increase with the development of the capital improvements that are projected for the park. The CSCP is the first of two phases of the Site Management Plan for the South Shore. It will focus on sustainable physical improvements addressing the short and long-term physical improvements and prioritization of capital funding in anticipation of Phase II that will complete the South Shore Management Plan by addressing management, programming and partnerships from an operational perspective. The capital and operational improvements are inherently closely tied together. The CSCP will provide some management recommendations to inform Phase II as they are related to capital improvements.

Phase II will provide more specific information on required staffing, equipment and supplies to maintain and operate the South Shore. The equipment that may be necessary ranges from office equipment like computers and point of sales software to maintenance vehicles and construction equipment. The supplies necessary for daily operation range from cleaning products and office supplies to items for vehicle maintenance and landscape upkeep. Some round projections have been provided in Figure 5.2 of Chapter V, but should be reviewed as part of Phase II.



SWIM BEACH

Carrying Capacity

Carrying capacity, the number of users that can be supported without degradation, is always a factor in the overall condition of Parks and Recreation destinations like the reservoir. Popular park destinations are over-used at a rate that cannot be overcome by standard maintenance and operation. For most parks, this measurement is limited by the amount of parking spaces that are available.

There is a large capacity for parking with the potential to handle approximately 3,000 cars including unpaved overflow lots. The reservoir currently hosts around 30 events per year but only one or two of these events reach the capacity limit for parking. Another method for determining carrying capacity has to do with the boating capacity on the 560-acre body of water. Currently, staff limits the number of boats that can be on the water at one time to 25 to 30 boats, which has been determined as a reasonable number for safe and comfortable operation. A third contributing factor is staffing. There are currently only 4.75 permanent employees and 50-65 seasonal employees. The seasonal staff is present during peak season and during events. Many of the event organizers also bring in staff to help manage their particular event but reservoir staff are also necessary to ensure safety and security. It is difficult to determine the true carrying capacity by only considering one contributing element; a standard system that monitors all factors with indicators for each contributing element should be established.

D. Comprehensive Community Engagement and Analysis

With fresh understanding of the existing conditions and potential opportunities, stakeholder outreach began (see Figure 3.1 for a timeline). The process included a variety of meetings and interviews with BPR and county staff and various user groups along with open house events to engage the general public. Survey questionnaires were also provided at events and online to ensure optimum stakeholder input. The insight gained from this outreach was invaluable, shedding light on current activity, use, and management.

The following is a list of public engagement and stakeholder meetings/events that were held during the project:

- Kick-off meeting with BPR staff/advisory team
- Interview meeting and tour with staff
- Meeting with city/county environmental groups
- Meeting with Fire and Rescue group
- Stakeholder meeting with BPR-sponsored program groups
- Meeting with city/county water quality groups
- Conference call with Northern Water
- Stakeholder meeting with adjacent neighbors
- Stakeholder meeting with interest groups – clubs, camps, vendors
- Stakeholder meeting with boating/water recreation groups
- Open house meeting at North Boulder Rec Center
- Open house at Reservoir during triathlon event
- Developed specific survey questions for the various groups.
- Questionnaire provided at events and on BPR’s website
- Boat user survey

A summary of these meetings, events and associated input, as well as detailed response information, is included in the Public Engagement Attachment. Stakeholder input throughout the planning process was of great value to the planning process and helped shape the planning program for capital improvements.

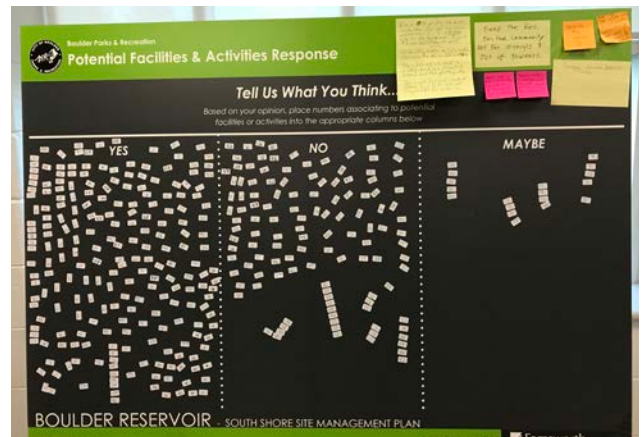
E. Define Goals and Improvement Categories

Developing the goals for the South Shore was a cumulative process, built step by step as each new piece of information was received. The goals were heavily influenced by the comprehensive public engagement process described above. The goals were also shaped by other groups with environmental expertise, such as wildlife and water quality. And finally, the goals were influenced by a large cross-section of community input through online questionnaires. Based on the information obtained during the planning process and collective input, a clear set of goals emerged. A clear pattern of improvements was revealed, and all the goals were then organized into the following six categories:

Improvement Categories

1. Access and Circulation
2. Maintenance and Operations
3. Facilities and Boating Activities
4. Adaptable Community Spaces, Events and Programs
5. Education and Interpretation
6. Environmental Control and Sustainability

Once the goals were categorized, a matrix was prepared to determine several factors related to each goal. It was important to understand which ideas had the most support from the facility users, which ideas were supported by



PREFERENCING EXERCISE DURING OPEN HOUSE



PUBLIC OPEN HOUSE EVENT

various stakeholder groups, and which ideas were most popular with the general public, who may not have a direct stake in the project. The goals were measured as related to their economic and operational impact, as well as if they would require a project partner. The results were organized in a matrix that identifies all the goals under each Improvement Category and begins to demonstrate the prioritization (see Appendix C). This matrix is used in the analysis in Chapter V.

F. Make and Prioritize Recommendations

Based on the knowledge gained throughout the process, each goal was translated into more specific site and management recommendations (see Improvement Category Charts in Chapter IV). As part of the CSCP, the site recommendations were prioritized into three capital improvement funding alternatives. The management recommendations will be considered and prioritized in the development of the South Shore Management Plan in Phase II.

Each funding alternative, the Fiscally Constrained, the Action, and Vision, makes different assumptions about available resources. As summarized below in Figure 3.2, these capital improvement funding alternatives follow a model used in the 2014 Parks and Recreation Master Plan and begin by addressing immediate needs within current budgets (Fiscally Constrained), then push for marked improvements that require additional funding sources such a bond funding (Action) and provide future long-term improvements that will require multiple sources of additional funding, often including all of the previous funding plus grants and donations (Vision).

FISCALLY CONSTRAINED	ACTION	VISION
<p>The Fiscally Constrained alternative plans for prioritized spending within existing funding. This targets funding for renovations and capital improvements related to existing facilities. This plan facilitates the prioritization of available funding to reduce the deferred maintenance backlog and identifies annual operations and maintenance needs to maintain assets. Recreation and administration would be largely funded at current levels necessitating the redirection of existing resources over time, from current programs to the highest priority community programs.</p>	<p>The Action alternative describes the additional services or capital improvement that could be undertaken when additional funding is available. The additional capital investment required to accomplish this varies depending on the projects that are funded and must include funding for O&M as well as annual repair and renovation to maintain facilities for the full life cycle costs.</p>	<p>The Vision alternative represents the complete set of services and facilities desired by the community. This scenario increases Levels of Service (LOS) to comparable levels of surrounding benchmark communities, replaces aging facilities such as the Boat House with a new facility with meeting/event spaces, creates new trails and designated spaces for storage and maintenance, and expands facilities and infrastructure for programming and operations. The costs for these investments vary widely and require both increases in CIP funding and operating funds to cover the full life cycle costs.</p>

FIGURE 3.2
Descriptions of Funding Alternatives

G. Develop Concept Plans

Once the goals and recommendations were prioritized into funding alternatives, it was critical to gain a full understanding of the potential physical improvements and their relation to each other. A logical strategy for implementation grew from understanding the priority of recommendations and the logical order of development. For example, pedestrian access gates are not required prior to building the new regional trail. A concept plan was developed to show all potential improvements as implemented to completion: the Complete Implementation Concept Plan (Map 4.4). This plan was reviewed and compared with the research, analysis and community feedback to ensure that it was complete and viable. Additional factors were considered such as economics, funding, and potential partnerships, especially related to the Boat House.

The Complete Implementation Concept was broken into three alternative concept plans correlating with the three funding alternatives as modeled in the 2014 Parks and Recreation Master Plan (described in Figure 3.2).

Each concept plan visually demonstrates the site recommendations from all Improvement Categories in each funding alternative: Fiscally Constrained, Action, and Vision (Map 4.1 - 4.3). The improvements for each concept are illustrated in color for easy identification. A concept trail plan (Map 4.5) is included to identify the access and circulation flow that is important in the development but not as easily identified in the concept plan alternatives. Multiple levels of circulation demonstrate the hierarchy of pedestrian circulation.

The concept plans are a graphical representation of drawings and locations intended to illustrate the ideas for future improvements and their general location within the site. The plans are not meant to prescribe an exact location, size or design of the improvements, as the actual form and final design will be developed in subsequent projects when the amenities are approved for funding and implementation per the prioritization schedule. At that time, a final design process with construction documentation will be developed.

H. Estimate Capital Costs

Once the concept plans were vetted through the community engagement process, including public meetings, online opportunities and the Parks and Recreation Advisory Board, preliminary estimates were calculated. Many of the costs were derived from the VSC that was underway during the development of the CSCP.

The Capital Improvements Costs estimate contains costs for all recommendations under each Improvement Category (Figure 4.1). The figure is sorted by the funding alternative and correlates directly to each concept plan. The estimate is in current calculations and does not account for many factors such as escalation, climate action goals or future energy conservation requirements. Re-evaluation of each figure must be considered as funding for development is identified.



POWER BOAT RAMP



IV. Capital Improvement Strategy

As outlined in Chapter III, three funding alternatives for potential re-development were identified: Fiscally Constrained, Action, and Vision (Figure 3.2). These progressive plans began by addressing immediate needs within current budgets through a long-term vision that greatly increases levels of service and requires multiple additional funding sources.

It was determined that the basic underlying framework of the South Shore works well and most of the major planning elements are in the ideal location. The plans demonstrate balance with the sensitive West Shore habitat and support of the active shoreline area. The existing roadway system along with infrastructure and utilities provides an organized sub-structure for future improvement while maintaining the current function.

The following Improvement Category charts define the goals, recommendations and prioritization for each funding alternative (Improvement Category Charts 1 to 6, pages 4.2 to 4.7). The concept plans visually demonstrate the recommendations (Map 4.1 to 4.3). Additional maps are included to show the complete implementation of all three alternatives, as well as a trail concept plan (Map 4.4 and 4.5). And finally, cost for each recommendation were calculated by Improvement Category and funding alternative (Figure 4.1).

In summary, the Fiscally Constrained concept plan represents a positive impact on South Shore activities and operations with a lesser economic impact and satisfies all major health, safety and welfare issues as a priority. The Action concept plan represents additional or upgraded elements to include a few larger development items that will be of great value to the activities and operations. The Vision concept plan represents the ultimate “build-out” that would include all proposed improvements. This plan would have a major economic impact and it is assumed that a project partner(s) would be required to realize this plan.

The tools in this chapter can be used to discuss community support, fundraising efforts and potential partnership opportunities for the South Shore. In addition, the tools will inform the second phase of the management plan for analysis of future maintenance and operation needs based on larger facilities and more users.

Tools in this chapter:

Improvement Category Charts with Goals and Recommendations

1. Access and Circulation
2. Maintenance and Operations
3. Facilities and Boating Activities
4. Adaptable Community Space, Events and Programs
5. Education and Interpretation
6. Environmental Control and Sustainability

Concept Plans

- Fiscally Constrained Plan
- Action Plan
- Vision Plan
- Complete Implementation Plan
- Trail Plan

Cost Estimate



1. ACCESS AND CIRCULATION

GOALS

- A. Connection to regional trails
- B. ADA accessible beach
- C. Connection along South Shore linking activities
- D. Efficient traffic circulation and parking
- E. Establish better connectivity and accessibility throughout site (Internal loop trail)
- F. Separate access for Fire Training Center
- G. Trail throughout existing wetland area
- H. Additional paved boat parking

SITE RECOMMENDATIONS

Recommendation	Fiscally Constrained	Action	Vision
Create accessible connections to beach areas	•	•	
Develop additional paved boat parking areas and pave existing areas	•	•	
Create promenade along the south shoreline of the reservoir	•		
Create safe pedestrian crossings from parking to shoreline	•		
Create trail connection to regional trails	•		
Pave regional trail connection		•	
Develop a more efficient traffic circulation and parking plan		•	
Develop a separate gate for Fire Training Center		•	
Create a multipurpose loop trail system within South Shore			•
Create designated loading and parking area for activities and staff in central drop off area	•	•	•



2. MAINTENANCE AND OPERATIONS

GOALS

- A. Upgrade or expand utilities and infrastructure
- B. Efficient irrigation system with lower water use
- C. Improve facility standards to justify high fees (boat permit, storage, etc.)

SITE RECOMMENDATIONS

Recommendation	Fiscally Constrained	Action	Vision
Establish “low level” outdoor light plan that ensures safety and security as needed for new or upgraded facilities		•	•
Assess existing irrigation system and upgrade to be water wise			
New areas	•		
All areas as needed		•	•
Utilities			
Upgrade as needed for permanent restroom at central drop off area		•	
Expand as needed for new Marina Building, Central Programming Building, Maintenance Building, and Boat Maintenance Building			•



3. FACILITIES AND BOATING ACTIVITIES

GOALS

- A. New Boat House/event facility
- B. Improved and/or expanded dry boat storage (small/large craft)
- C. Improved and/or expanded boat mooring and docking
- D. Boat maintenance facilities and services
- E. Permanent docks (adjustable) and accessible docks
- F. Update fueling area
- G. New or upgraded maintenance and operations facility
- H. Covered parking/storage for maintenance vehicles
- I. ADA accessible and family restrooms

SITE RECOMMENDATIONS

Recommendation	Fiscally Constrained	Action	Vision
Create covered parking/storage for maintenance vehicles	•		
Create accessible restrooms		•	
Create family restrooms		•	
Develop additional areas for boat mooring and docking		•	
Create area for boat maintenance and service			•
Create permanent docks that are adjustable			•
Boat House			
Remodel restroom for accessibility	•		
Upgrade		•	
Replace with new Marina facility with meeting/event spaces			•
New Accessible Docks			
Modify location and convert existing	•		
Create new accessible dock locations		•	
Fueling Station			
New pump and holding tank	•		
Relocate fueling station to Upper Boat Parking area		•	
Relocate pump and tank during Boat Maintenance Building upgrade			•
Maintenance and Operations Facility			
Upgrade existing		•	
Develop new facility			•



4. ADAPTABLE COMMUNITY SPACE, EVENTS, AND PROGRAMS

GOALS

- A. Shade structures and shaded group picnic areas, benches, and plaza areas
- B. Shaded flexible events space near Visitor Services Center
- C. Shaded seating along shoreline
- D. Natural-style play areas
- E. Wind/weather protection in South Shore
- F. Multi-use facilities adaptable for different events, meetings, classes, etc.

SITE RECOMMENDATIONS

Recommendation	Fiscally Constrained	Action	Vision
Create additional designated areas for wind/weather protection	•		
Create additional shade structures and/or group picnic areas		•	
Create areas with shaded seating along the shoreline (with trees or structure)	•	•	
Develop more picnic shelters within South Shore	•	•	
Create natural-style play areas near Boat House/new Marina Facility			•
Develop additional areas for children’s activities and education		•	•
Expand facilities for community/day programs		•	•



5. EDUCATION AND INTERPRETATION

GOALS

- A. Xeriscape garden and/or "Story of Water" interpretive exhibit (with Northern Water)
- B. Display screen with real-time information about reservoir
- C. Outdoor classroom/education Areas
- D. Environmental education signage about habitat sensitivity of West Shore
- E. Interpretive signage on wildlife and natural resource ecology
- F. Update wayfinding signage

SITE RECOMMENDATIONS

Recommendation	Fiscally Constrained	Action	Vision
Create xeriscape garden/interpretive exhibit in wetland area			•
Create flexible areas that can be used for outdoor education		•	•
Create interpretive signage based on wildlife and natural resource ecology		•	•
Add signage about habitat sensitivity of the West Shore area		•	
Wayfinding signage for boating activities and services			
Update	•		
Develop new wayfinding signage package		•	
Wayfinding Signage			
Update	•		
Develop new package		•	



6. ENVIRONMENTAL CONTROL AND SUSTAINABILITY

GOALS

- A. Control/manage geese
- B. Improve stormwater quality
- C. Mitigate impacts of new impervious parking areas
- D. Promote wildland restoration in West Native area
- E. Screen maintenance and storage areas
- F. Create shade in all pedestrian areas

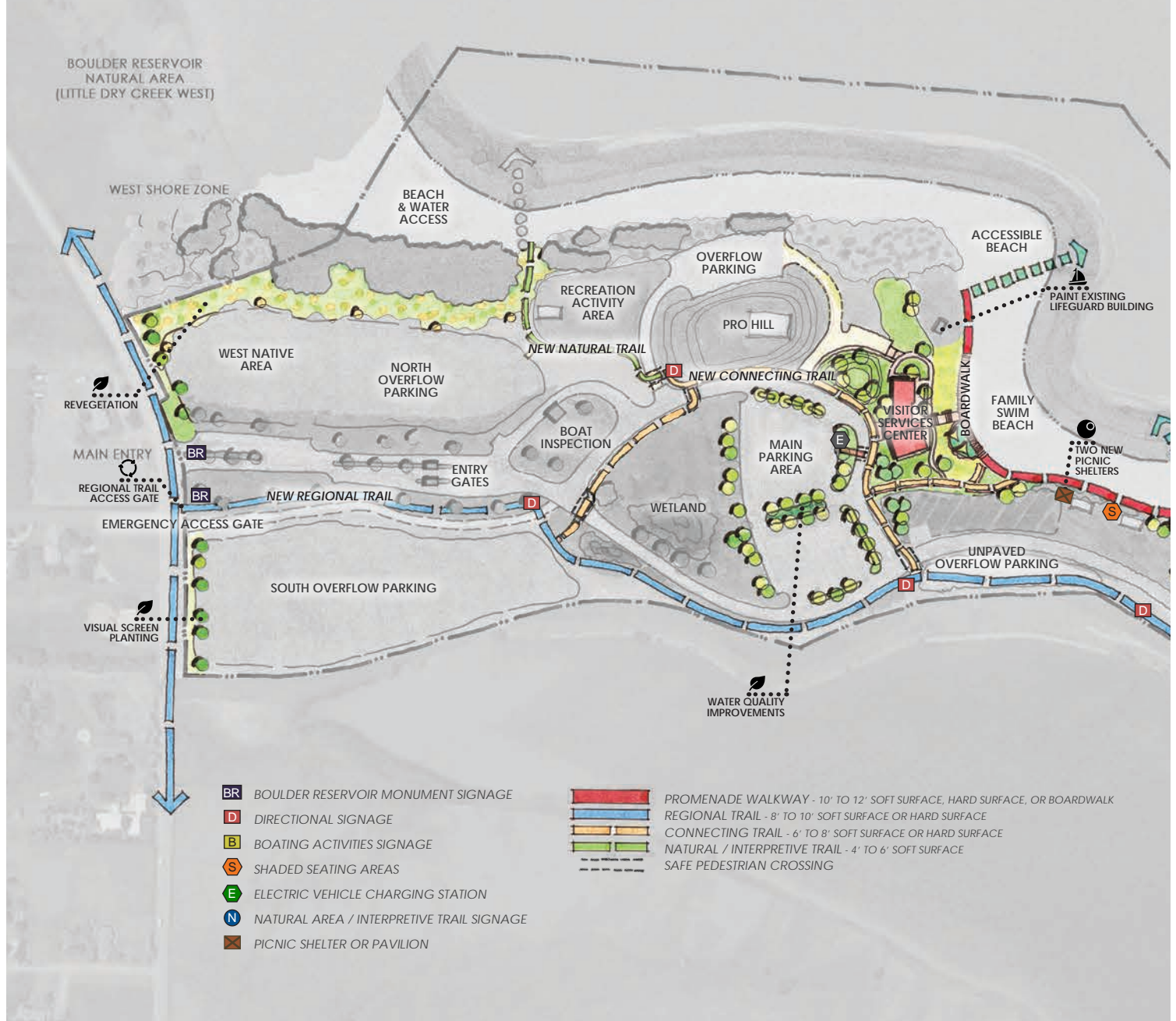
SITE RECOMMENDATIONS

Recommendation	Fiscally Constrained	Action	Vision
Establish taller native grass and plant areas to deter geese	•		
Add mitigation for new parking	•		
Add landscape screen of east storage area	•		
Plant trees for shade in all pedestrian areas	•		
Add stormwater quality improvements to the site	•	•	
Create “Natural Oasis” or wildland restoration (with Boulder County) in West Native area	•	•	•







Map 4.1

FISCALLY CONSTRAINED PLAN

(Full implementation of plan recommendations)



IMPROVEMENT CATEGORIES

-  Access and Circulation
-  Maintenance and Operations
-  Facilities and Boating Activities
-  Adaptable Community Space, Events, and Programs
-  Education and Interpretation
-  Environmental Control and Sustainability



Map 4.2

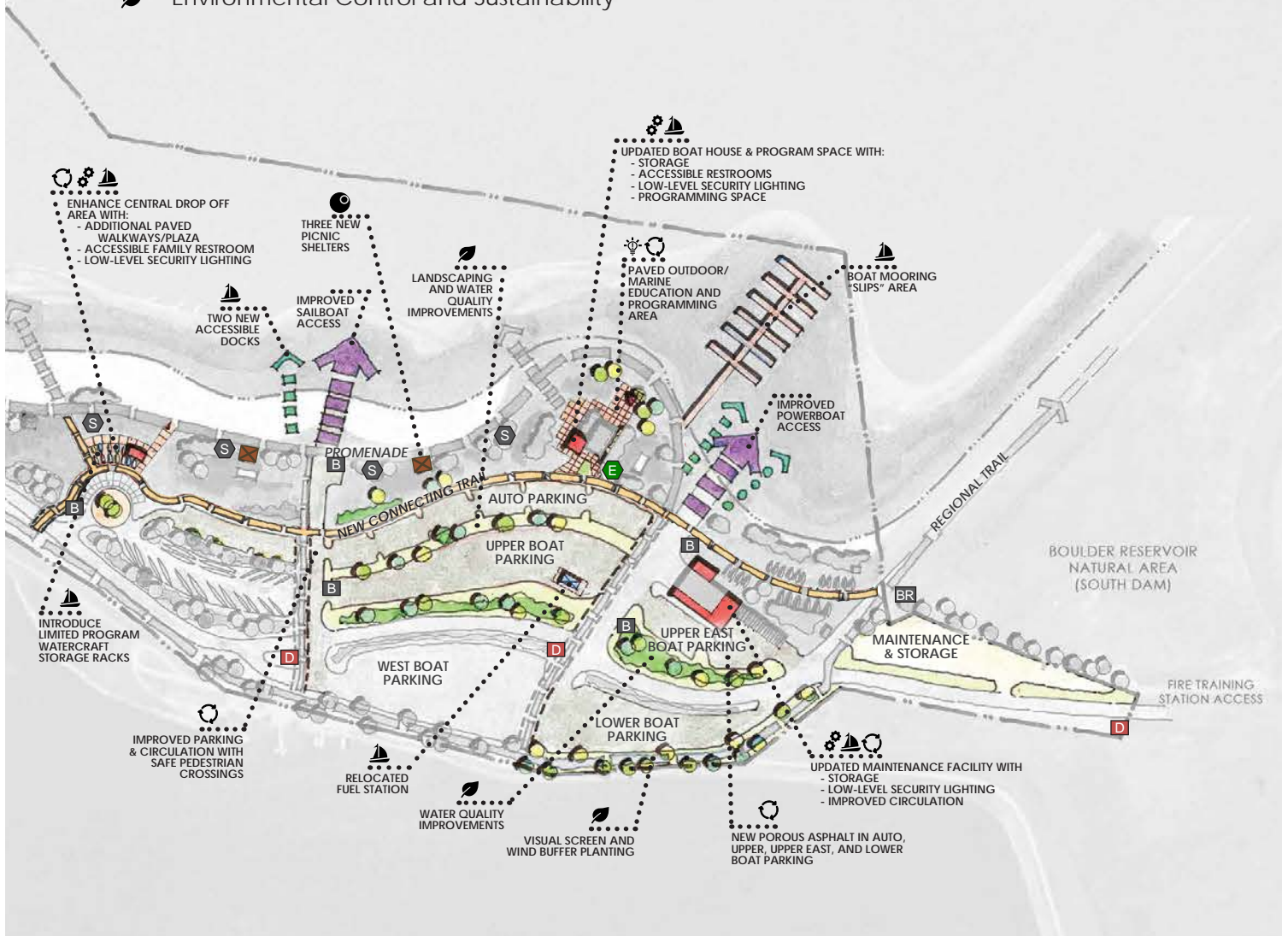
ACTION PLAN

(Full implementation of plan recommendations)



IMPROVEMENT CATEGORIES

-  Access and Circulation
-  Maintenance and Operations
-  Facilities and Boating Activities
-  Adaptable Community Space, Events, and Programs
-  Education and Interpretation
-  Environmental Control and Sustainability









Map 4.3

VISION PLAN

(Full implementation of plan recommendations)



IMPROVEMENT CATEGORIES

-  Access and Circulation
-  Maintenance and Operations
-  Facilities and Boating Activities
-  Adaptable Community Space, Events, and Programs
-  Education and Interpretation
-  Environmental Control and Sustainability

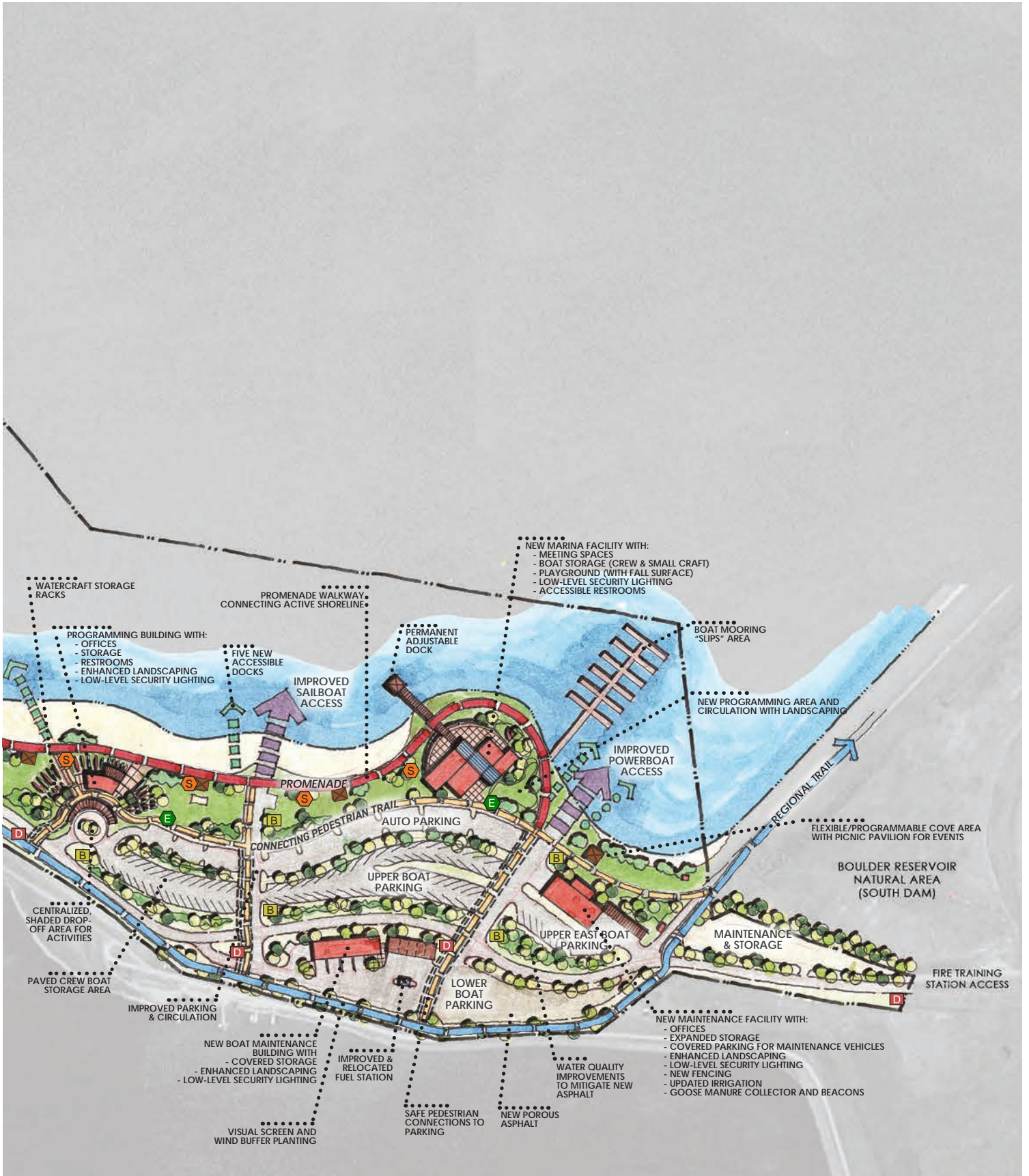


Map 4.4

COMPLETE IMPLEMENTATION

(Fiscally Constrained + Action + Vision Plan)

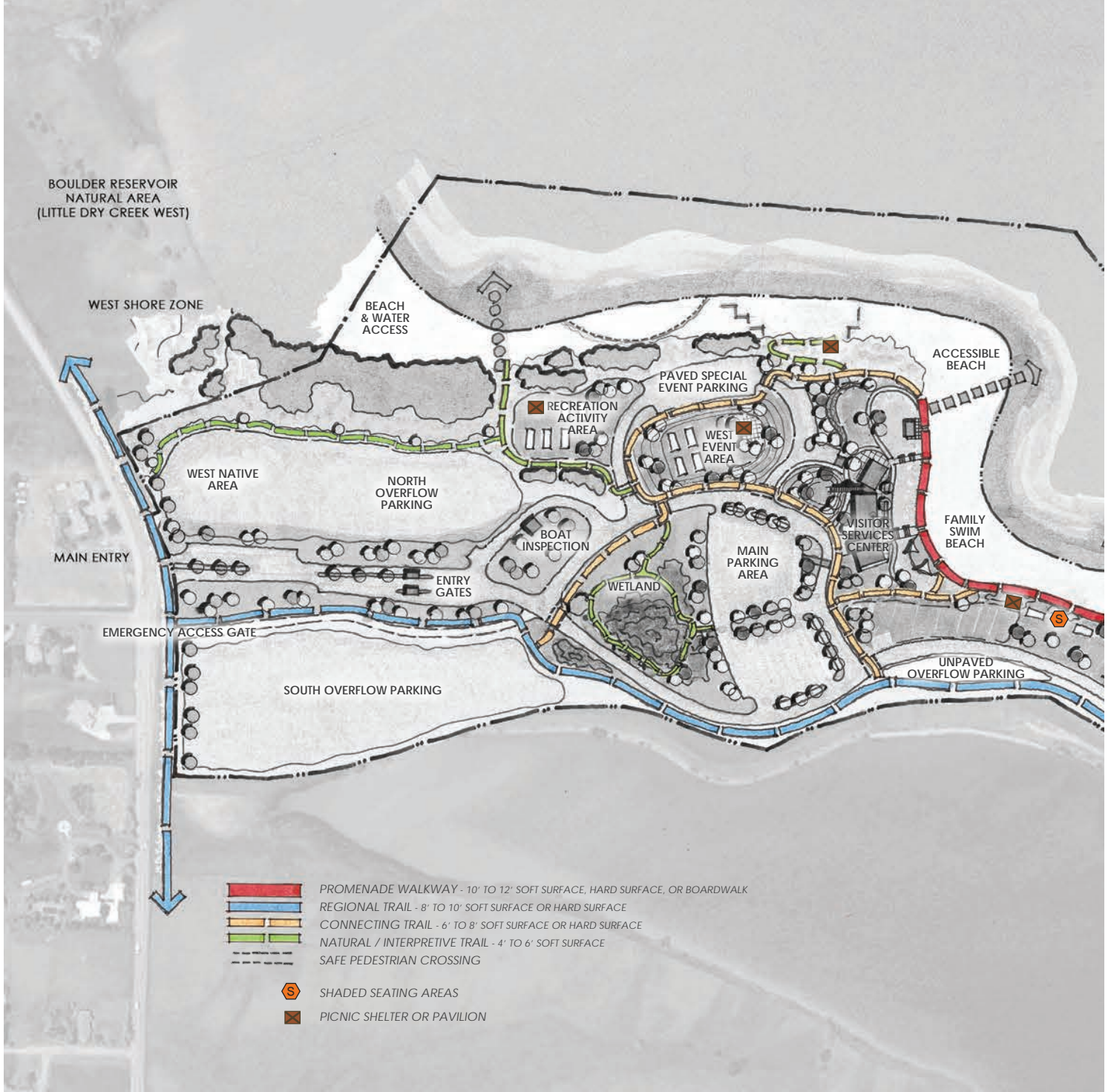




Map 4.5

TRAIL PLAN

(All Trails from Fiscally Constrained + Action + Vision Plans)





PROMENADE WALKWAY - 10' to 12' SOFT SURFACE, HARD SURFACE or BOARDWALK



REGIONAL TRAIL - 8' to 10' SOFT SURFACE or HARD SURFACE





CONNECTING TRAIL - 6' to 8' SOFT SURFACE or HARD SURFACE




NATURAL TRAIL - 4' to 6' SOFT SURFACE






Figure 4.1 Capital Improvement Costs

Recommendations for Improvement Categories		Funding Alternatives and Estimated Cost					
1	Access and Circulation 	Fiscally Constrained (approximately 3-6 years)	Estimated Cost	Action (approximately 6-12 years)	Estimated Cost	Vision (approximately 12+ years)	Estimated Cost
	Ped/Bike Access Gates	1 East and 1 West Access to New Regional Trail	\$4,000				
	Main Security Gates			Repair & Maintenance	\$10,000		
	Primary Road (existing asphalt)	Major Repair & Maintenance Possible Cost Share with FTC	\$1,275,000	Repair & Maintenance	\$50,000	Repair & Maintenance	\$50,000
	Secondary Road (existing asphalt)	Repair & Maintenance	\$25,000	Repair & Maintenance	\$25,000	Repair & Maintenance	\$25,000
	Paved Parking (existing asphalt)	Repair & Maintenance	\$50,000	Repair & Maintenance	\$50,000	Repair & Maintenance, Including Restriping for New Sailboat/Powerboat Parking and Storage	\$50,000
	Boat Parking (new porous asphalt)	Central Crew Area and West Boat Parking	\$1,008,000	Upper, Upper East, and Lower Boat Parking	\$460,000	Repair & Maintenance	\$50,000
	Auto Parking (new porous asphalt)			Replace Auto and Lower Boat Parking Near Upgraded Boat House with New Circulation, Add Parking to Improved West Event Area	\$966,000		
	Unpaved Road	Grade to overflow lot	\$10,000				
	Unpaved Parking	Repair & Maintenance	\$25,000	Repair & Maintenance	\$25,000	Repair & Maintenance	\$25,000
	Paved Walkway & Plazas (concrete)	Create Central Drop-off	\$43,800	Enhance Central Drop-off	\$4,500		
	Paved Walkway & Plazas (concrete)			Programming and Education Space Around Upgraded Boat House	\$117,000	Circulation and Programming Around New Marina Facility	\$100,000
	Paved Walkways, Steps & Plaza (concrete)			Expanded Pathway from New Lifeguard Building to Promenade and Flexible Space at VSC	\$68,000	Additional Flexible Outdoor Space at New Event Facility at VSC and Walkway Connections	\$30,000
	Paved Trails (asphalt)			Connecting Trails and Pedestrian Connections	\$77,400		
	Paved Trails (asphalt)			Paved Regional Trail Replacing Soft Surface	\$338,000		
	Soft-Surface Trail 1 (decomposed granite)	New Regional Trail	\$169,000	Connecting Trail from West Event Green to Accessible Beach	\$18,900		
	Soft-Surface Trail 2 (decomposed granite)	Connecting Trails from New Regional Trail to Active Recreation Areas	\$29,000	Interpretive/Natural Trail at Edge of West Native Area	\$18,360	Interpretive/Natural Trail around Wetland West of Main Parking Lot	\$13,200
	Promenade Paved Walkway (concrete or asphalt)	New Connection from Boat House to Visitor Services Center	\$180,000	Repair & Maintenance	\$25,000	Repair & Maintenance	\$25,000
	Pedestrian crossings (paint, bump, markers)	Add Crossings for Existing and New Connecting Trails from the Regional Trail and Parking	\$27,000	Add Crossings for Connecting Trails and West Event Trail	\$8,100		
	Boardwalk (wood with concrete curb)			Extension of Boardwalk in Front of New Life guard Station	\$50,000	Repair & Maintenance	\$25,000
	Subtotal		\$2,845,800		\$2,311,260		\$393,200
2	Maintenance and Operations 	Fiscally Constrained (approximately 3-6 years)	Estimated Cost	Action (approximately 6-12 years)	Estimated Cost	Vision (approximately 12+ years)	Estimated Cost
	Outdoor Maintenance Storage	Fence in Storage Area	\$15,000				
	Overflow from 6-mile Reservoir	Add Riprap for Erosion Control	\$50,000				
	Goose Manure Collector	New Equipment	\$8,000				
	Goose Beacons	New Equipment	\$15,000				
	Erosion Control along Shoreline	Maintain Existing Shoreline	\$20,000	Maintain Existing Shoreline	\$20,000	Maintain Existing Shoreline	\$20,000
	Beach Sanitizer	Regular sanitization	\$18,500	Regular sanitization	\$18,500	Regular sanitization	\$18,500
	Irrigation	Upgrades and Reconfiguration as Needed for New or Upgraded Facilities, Roads, Walkways and Landscaping	\$50,000	Upgrades and Reconfiguration as Needed for New or Upgraded Facilities, Roads, Walkways and Landscaping	\$50,000	Upgrades and Reconfiguration as Needed for New or Upgraded Facilities, Roads, Walkways and Landscaping	\$50,000

Recommendations for Improvement Categories		Funding Alternatives and Estimated Cost				
Low-Level Security Lighting			On or Around New Lifeguard Station, New Central Drop-off, Upgraded Boat House and Upgraded Maintenance Building	\$50,000	On or Around New Marina Facility, Maintenance Building, VSC Event Center and Boat Maintenance Building	\$50,000
Utilities (Water, Sewer)			As needed for Permanent Restroom at Central Drop-off	\$80,000	As needed for New Marina Facility, Central Programming Building, Maintenance Building, and Boat Maintenance Building	\$1,200,000
Temporary Restrooms	Rental and Maintenance	\$2,700				
Subtotal		\$179,200		\$218,500		\$1,338,500

3	Facilities and Boating Activities 	Fiscally Constrained (approximately 3-6 years)	Estimated Cost	Action (approximately 6-12 years)	Estimated Cost	Vision (approximately 12+ years)	Estimated Cost
		Covered Parking for Maintenance Vehicles	East Side of Existing Maintenance Building	\$40,000			
Lifeguard Station	Paint Existing Building	\$9,000	New Life Guard Station	\$450,000	Repair & Maintenance	\$5,000	
Boat House and Marina Facility	Remodel Restroom for Accessibility in Existing Boat House	\$50,000	Add New Storage, Accessible Restrooms, and Programming Space to Existing Building	\$400,000	Build New Marina Facility	\$16,800,000	
Maintenance Building	Repair, Paint & Electrical	\$30,000	Upgrade Existing Building	\$1,070,000	Build New Maintenance Building	\$3,400,000	
Gate House Buildings			Repair & Maintenance	\$5,000	Repair & Maintenance	\$10,000	
ANS Inspection Building			Repair & Maintenance	\$10,000	Repair & Maintenance	\$5,000	
Visitor Services Center			Repair & Maintenance	\$5,000	Repair & Maintenance	\$10,000	
Visitor Services Center Event Facilities					Build New Event Facility Addition to VSC	\$1,200,000	
Programming and Restroom Building			Build Permanent, Accessible Family Restroom at Central Drop-off	\$150,000	Build New Programming Building at Central Drop-off	\$450,000	
Boat Maintenance Building					Build New Boat Maintenance and Storage Building (partnership leverage anticipated)	\$4,250,000	
Boat Access Maintenance (Ramp and Launching Areas)	Add Riprap for Erosion Control	\$123,000					
Boat Ramp Maintenance	Repair or Replace	\$50,000					
Accessible Docks (New)	Add 3 Docks	\$225,000	Add 2 Docks	\$150,000			
Docks Maintenance	Repair & Maintenance	\$15,000	Repair & Maintenance	\$25,000	Repair & Maintenance	\$35,000	
Boat Storage Racks	Add Racks for Small Craft on East End	\$20,000	Add Limited Program Storage Racks at Central Drop-off	\$20,000	Add and Replace Racks at Central Drop-off near New Programming Building	\$20,000	
Fueling Station	Upgraded existing	\$18,000	Relocation to Upper Boat Parking Lot	\$25,000	Relocation to New Boat Maintenance Building	\$35,000	
Boat Mooring Slips			Add Slips at Upgraded Boat House	\$150,000			
Permanent Adjustable Dock					New at the New Marina Facility	\$500,000	
Subtotal		\$580,000		\$2,460,000		\$26,720,000	

4	Adaptable Community Space, Events and Programs 	Fiscally Constrained (approximately 3-6 years)	Estimated Cost	Action (approximately 6-12 years)	Estimated Cost	Vision (approximately 12+ years)	Estimated Cost
		Picnic Tables	Replacement of Existing	\$15,000			
Shaded Bench Areas	At Locations Along the New Promenade	\$7,500					
Picnic Shelters	Add 2 Along the New Promenade	\$50,000	Add 3 Along the Improved Circulation System	\$75,000	Add 1 Near the West Beach Access	\$25,000	
Event/Picnic Pavilions			Add 1 New Pavilion in West Event Area	\$85,000	Add 1 New Pavilion in East Cove Area	\$85,000	
Playground with Fall Surface					Add to New Marina Facility	\$250,000	
Trellis					New Trellis to Provide Shade at Central Drop-off	\$75,000	
Subtotal		\$72,500		\$160,000		\$435,000	

Recommendations for Improvement Categories		Funding Alternatives and Estimated Cost					
5	Education and Interpretation 	Fiscally Constrained (approximately 3-6 years)	Estimated Cost	Action (approximately 6-12 years)	Estimated Cost	Vision (approximately 12+ years)	Estimated Cost
	Signage for South Shore	New Sign Package for Wayfinding, Rules and Information	\$160,000				
	Signage for North Shore	New Signage as Related to New Regional Trail	\$5,000				
	Interpretive or Educational Signage			Add 5 Interpretive Signs for New Trail at Edge of West Native Area	\$5,000	Add 3 Interpretive Signs Near New Trail around Wetland, West of Main Parking Lot	\$3,000
	Subtotal		\$165,000		\$5,000		\$3,000
6	Environmental Control and Sustainability 	Fiscally Constrained (approximately 3-6 years)	Estimated Cost	Action (approximately 6-12 years)	Estimated Cost	Vision (approximately 12+ years)	Estimated Cost
	Landscape Improvements - Native Vegetation	Revegetation in West Native Area and New Trees and Shrub Screening at West Boundary	\$57,000	Enhance Wetland West of Main Parking for Water Quality	\$22,500		
	Prairie Dog Fence	Improvements at West Boundary to Accommodate New Regional Trail Access	\$10,000				
	Landscape Improvements - Mitigation for Parking Areas and Other Non-Permeable Surfaces	Trees & Shrubs Along New Regional Trail for Shade and Separation from Boat Parking. Visual and Wind Screening of New Asphalt in Crew Parking. Water Quality Improvements Above the New Asphalt in Upper Boat Parking.	\$184,950	Landscaping and Water Quality Improvements to Mitigate New Asphalt Parking and Circulation Near Upgraded Boat House	\$175,500	Landscape as needed for New Marina Facility	\$37,500
	Landscape Improvements - Screen	Planting Grouped Trees Along New Promenade and Near Central Drop-off to Provide Shade and Frame Views to and from Water. Visual Screen of Maintenance and Storage Area.	\$140,400	Additional Wind and Visual Buffer Between New Asphalt Upper East Boat Parking and Eastern Portion of the Regional Trail	\$45,000	Additional Screening for Maintenance and Storage	\$21,900
	Landscape Improvements for Upgraded Recreation Areas			Enhancements at the Entry, Boat Inspection and West Event Green.	\$350,000	Enhance West Recreation Activity Area, Add Landscaping for New Event Center and New Programming Building, New Maintenance Buildings and Storage	\$415,000
	EV Charging Stations			Add 2 (or current requirement) at Upgraded Boat House	\$22,000	Add 2 (or current requirement) at New Program Building	\$22,000
	Subtotal		\$392,350		\$615,000		\$496,400
TOTAL			\$4,234,850		\$5,769,760		\$29,386,100

Escalation, Climate Action Goals and Future Energy Conservation Needs Consideration in Long-range Estimates



V. Economic Overview and Recommendations

This chapter provides an analysis of operational research findings and financial projections developed as part of the site plan analysis, including:

- Comparison of Boulder Reservoir with other recreational sites in the area;
- Discussion and review of management findings,
- Description of the financial characteristics of plan alternatives; and
- Financial projections of annual operating cost and revenue associated with the capital improvements and select management changes.

The primary purpose of this section is to provide a foundation for implementation of the plan, including the Phase II effort: the South Shore Management Plan.

A. Comparative Analysis of Boulder Reservoir and Other Recreation Sites

A detailed market analysis of site characteristics, offerings, and prices provides an understanding of the competitive advantages and disadvantages of Boulder Reservoir relative to other recreational sites in the area. Appendix D provides a detailed comparison across 11 recreation sites on the Front Range.

Summary of Comparative Findings

Boulder Reservoir has the highest gate fees of all sites included in the analysis. According to a recent survey,

- 14.5 percent of respondents noted cost as a reason for not visiting in the past year. For a family of four, total gate fees at Boulder are typically two to three times more expensive than most other sites. High gate fees will likely be a major challenge for increasing visitation, disregarding visitation for specific uses or events. A limited review of other operating budgets reveals that state operated facilities operate with a very high subsidy from tax dollars, and other municipal (city/county) facilities are also highly subsidized.
- Boulder Reservoir's peak season tends to start one month later than and end one month earlier than other comparison sites. For flank season visitors, this represents two months per year that other sites are fully operational, including collecting revenue, while Boulder Reservoir is operating under a reduced program.
- Annual boating permit fees at the reservoir are significantly higher than at state parks, but similar or lower than other municipal sites. Despite higher fees, boating at Boulder Reservoir remains very popular and is considered by many to be a premium experience. Boat storage options at the reservoir are more plentiful than other sites, with majority not offering any dry storage at all.
- Boulder Reservoir features the highest number of picnic package options of all sites, but also has the highest picnic fees. These higher fees afford picnickers nicer amenities, more flexibility, and more staff assistance, as well as customization options for higher-tier options.
- The reservoir lags in terms of facility quality. To better justify the high gate fees, BPR should work to improve facilities to meet or exceed the standard offered at competing sites. The completion of the VSC will aid in this goal.
- Boulder Reservoir offers a similar array of activities as other sites, with most providing swimming, fishing, kites/wind/sail boarding, sand volleyball, and various boating. Some also provide specialty activities such as cross-country skiing/snowboarding, model airplane flying, and archery.

B. Summary of Operational Analysis and Recommendations

The section below outlines considerations and recommendations for improving various aspects of certain operations and activities based on the planning process, including public engagement and economic analysis. These recommendations are based on the internal operating characteristics of the reservoir and are organized by the Improvement Areas developed in the planning process.

Access and Circulation Management Recommendations

- Establish community shuttle to reservoir through a partnership with RTD or Via Transit. As the reservoir is currently inaccessible via public transportation, a community shuttle would limit vehicle miles traveled to the facility and promote community access.
- Explore option to collect gate fees at pedestrian or bike entry on regional trail and dam entry. As entry is currently unmonitored, a pay station would facilitate revenue collection from those entering to enjoy South Shore activities, while allowing those commuting through or circumnavigating the reservoir via bicycle or foot to do so unhindered.

Maintenance and Operations Management Recommendations

- Update the asset management system to track replacement needs, costs for assets and equipment, including maintenance, to inform operations and capital budgets.
- Review staffing needs for maintenance and operations. Establish a baseline number for both permanent and seasonal employees. Apply this number to proposed improvements and consider potential expansion of facilities.
- Establish a set of design standards for typical improvements and facilities at the South Shore. This may apply to any number of design elements (benches, picnic shelters, signage, trails, etc) that may be replicated over time. This can streamline the decision-making process and ensure design continuity through future phases of development. These standards will also help with budgeting for future improvements.
- As suggested in the 2016 Business Plan, expanding the season from March through October would significantly increase annual gate fee revenues. Based on the available visitation data presented in Figure 5.3, with average 2015-2018 gate fee revenues of \$239,039 and a \$5 per person flank season gate fee (versus \$9.00 during peak season in 2020), gate fee revenues could increase by 15.9 percent, or \$38,075 per year.

Facilities and Boating Activities Management Recommendations

- Fluctuations in permit revenues reflect shifts in the distribution of permit sales, where some options are significantly more expensive than others. For example, resident power boat permits can cost up to \$705, while small craft permits are \$50. Therefore, a small increase in power boat permits will have much more significant effect on revenues than a similar increase in small craft permits. Figure 2.4 provides an annual breakdown of revenues by activity type.
- The rapid growth in small craft permits and revenues represents an opportunity for the reservoir to target these growing uses with improved facilities and experiences. Given the apparent increase in demand over time, the reservoir could also continue increases in small craft permit fees, although recent surveys indicated that some visitors thought small craft permits were already too expensive.
- Boat permit fees at Boulder Reservoir are currently higher than many other recreational water sites in the area. However, boaters have indicated that Boulder offers a more exclusive and enjoyable boating experience. Given that the reservoir is often near capacity for boats on the water during summer weekends, BPR should continue to monitor boat permit fee levels and use them as a tool to increase revenues and potentially reduce congestion when appropriate. This observation/recommendation is especially applicable to small craft boating, which has grown substantially in popularity in recent years.
- Create additional dry paved mooring capacity to accommodate the most popular and over-capacity boat storage option, incenting onsite storage and reducing ANS risks. Paved storage is full and boat owners clearly

prefer a paved option to a gravel dry mooring option. The conversion of underutilized gravel lots to paved dry mooring spaces with weather protection would provide an opportunity for the reservoir to generate additional moorings and revenue throughout the year, while increasing the quality and capacity of the most popular boat storage option. Further program development could include segmenting storage options for both the short- and long-term, as well as covered and open-air options.

- The popularity and growth of small craft boat permits indicates a potential opportunity to offer small craft boat storage. BPR should evaluate the potential for storage by surveying current small craft permit holders regarding their current modes of storage. Based on the results, the BPR should incrementally invest in small craft storage infrastructure (i.e., secure racks or a secure storage area) and potentially combine small craft storage with the broader paved mooring expansion project.

Adaptable Community Space, Events, and Programs Management Recommendations

- Schedule programs and camps during non-peak use times. Given space limitations during peak times, non-peak programming would optimize space and could generate new revenue.
- Boulder Reservoir currently offers more options for picnic packages and amenities than most other sites (see the Comparative Analysis in Appendix D). Fee increases could be applied to maintain a range of affordable to highly-customized picnic options while eliminating specialty and/or discounted packages.
- As prior fee increases have demonstrated, organizers are willing to pay a premium for events at Boulder Reservoir. Continue increasing special event fees according to a regular schedule to recover costs and to increase revenue. Demand for special events has shown to be steady and the unique setting of the reservoir will help retain event producers. It is unlikely that a continued schedule of modest fee increases would substantially decrease demand for events at the reservoir.
- The sustained popularity of events and inelasticity of event demand also indicates the opportunity to expand event facilities and deliver a premium service. The investment in the VSC is an example of this, and the Action and Vision Plans contained in this document provide a framework to capture additional demand for events and associated concessions through facility investment in the VSC and marina areas of the South Shore.
- Schedule special events during non-peak use times. Given the disruption that special events can cause on normal reservoir operations and activities, BPR should continue to encourage special events during non-peak times such as summer weekdays or during the flank season if possible, and continue to incentivize using fees. BPR could promote the addition of flank season events through existing high-season event producers.

Education and Interpretation Management Recommendations

- Seek partnership/sponsorship from Northern Water for a xeriscape garden and “Story of Water” installation.
- Seek partnership with Boulder Open Space and Mountain Parks to develop educational or interpretive installations and programs.
- Seek sponsorship for development of a web-based display of real-time reservoir and city information.

Environmental Control and Sustainability Management Recommendations

- Add environmental and sustainability education programs through partnerships with environmental education groups.

C. Partnership and Contractor Observations and Opportunities

Boulder Reservoir has recently entered into several public-private partnerships to provide complimentary services or activities related to existing operations. One example is a partnership with Rocky Mountain Paddleboard, described in this section.

Partnerships serve to improve areas of staffing and resource inefficiencies, reduce costs borne by the reservoir, and potentially generate revenue. This section provides an overview of current and potential partnerships and contractor

relationships related to reservoir operations and activities – additional partnerships for new activities or facilities will be explored in subsequent reports. BPR would likely hold a competitive bid process to select vendors and could potentially require the selected partner to construct additional facilities or provide materials.

Boat House - Current Partnership

- The reservoir is currently in a concessionaire agreement with Rocky Mountain Paddleboard (RMP) to operate all aspects of watercraft rentals. This partnership has significantly reduced staff costs previously associated with providing boat rental services, freeing staff to provide other essential services. However, the agreement also results in lower revenues, since the reservoir no longer collects all rental revenue.
- The agreement has allowed the reservoir to more efficiently allocate staff while yielding an improved boat rental experience provided by boating specialists.

Staff Training – Current Partnership

- The reservoir currently has 4.75 full time employee (FTE) positions, and about 53 seasonal staff each year.
- BPR should consider the ability of other departments to provide more consistent and higher-quality training to reservoir staff. Departments such as Fire and Police have unique knowledge and ability to provide thorough training with potentially little cost.
- One potential approach might involve an agreement to provide training efforts from other city departments in exchange for discounts from BPR to reservoir space events or picnics.

Landscaping – Potential Contractor

- One of the most common complaints reported by Boulder Reservoir visitors in recent survey analysis is the perennial presence of goose droppings throughout the South Shore area. Cleaning up these droppings currently requires significant staff hours from seasonal workers. Other landscaping activities such as mowing, weeding, and general grounds maintenance also require significant staff time.
- Seasonal staff are not specifically skilled in general landscaping duties, making use of their labor less than efficient for these activities. It is likely that there are local landscaping and grounds maintenance professionals that could more efficiently provide these services at the reservoir at a similar or lower cost.
- An internal organization that is skilled in landscaping maintenance is BPR's Urban Park Operations division. While capacity may not currently exist, collaboration could be explored. Reimbursing for internal services provided by the Operations division or contracting with another local organization to provide landscaping and maintenance services would likely result in a cleaner reservoir, more efficient operations, and reduced staff costs. A contractor would free up reservoir staff to provide other, more customer-oriented services.

Boat Maintenance Services – Potential Partnership

- While many boaters store their watercraft year-round at the reservoir's mooring options, the reservoir does not currently offer boat maintenance services. As a result, some boaters hire a third-party to come to the reservoir to perform these services on site, as often as twice a year.
- Boat maintenance providers currently work independently of the reservoir, providing no revenue shareback or community benefits beyond gate fees.
- Given the robust boating activities and facilities at Boulder Reservoir, a partnership with a maintenance provider would be a natural extension of the boating services already provided at the reservoir. A boat maintenance contractor would become the sole provider of those services at the reservoir, in exchange for a share of revenues. They could also potentially be responsible for constructing a new boat maintenance facility with a boat lift.

Next Steps and Phase II Needs

To capture the value of the research, outreach, and analysis done in this Capital Strategy and Concept Plan, Phase II will explore implementation of the above recommendations as an element. This Phase II effort, the South Shore Management Plan, will be a tool to facilitate further alignment of reservoir operations with larger departmental and

community goals. The goals of the plan are to:

- Evaluate activity areas and establish delivery and cost recovery goals for each that consider the BPR’s financial context, Recreation Priority Index (RPI) and service delivery model to ensure sustainable provision of services and alignment with community goals;
- Optimize the usage of the various activity areas of the site;
- Identify and develop programs to meet the needs of the community;
- Develop operating and business models to achieve all of the above.

In summary, the management plan will serve as the reservoir’s business plan to enhance its ability to contribute to community goals and promote financial sustainability.

D. Boulder Reservoir South Shore Management Plan Financial Analysis

The following financial analysis provides annual estimates of major reservoir operating costs and revenues associated with major park improvements and management initiatives described in Chapter IV of this plan. The analysis is divided into three major components, including capital costs, operating expenditures, and revenues in Figures 5.1, 5.2, and 5.3.

The objective is to ensure that facility improvements do not adversely affect the reservoir’s financial performance, and that the current financial sustainability of the reservoir is preserved in the management plan. The projections demonstrate the financial viability of each plan under conservative visitation and pricing increase scenarios. BPR could exceed these projections with targeted and active marketing campaigns and the addition of alternative pricing plans.

The analysis is based on 2018 budget information and operating data collected between 2015 and 2019 – labeled “Baseline” in Figures 5.2 and 5.3. There are three phases of development detailed in this chapter: the Fiscally Constrained Plan, the Action Plan and the Vision Plan.

Baseline

A financial analysis baseline represents a typical year in Boulder Reservoir operations. The baseline provides the staffing, visitation, revenue and expenditure characteristics that future construction and management changes are based on. The data used to create the baseline comes from the 2016 Draft Reservoir Business Plan, 2015-2018 operating budgets, and visitation and usage data from 2015 through 2018. The following are items to note:

- When the baseline was established, there were 4.75 full time workers at the reservoir that earn about \$413,000 in combined salary and benefits.
- When the baseline was established in 2018 there were 53 seasonal workers with an average hourly wage of \$13. Each worker worked approximately 435 hours on average per season.
- Baseline staff costs are approximately \$837,000 per year and account for about 79 percent of all annual expenditure.
- The baseline staffing levels and costs are used to project future needs. About six full time staff are expected if the Vision Plan is implemented.
- All other operating costs total about \$225,000 according to the 2018 operating budget. The categories were developed by aggregating individual line items. These operating costs are projected forward as a percentage of gross revenue, e.g., supplies and materials are about 3.3 percent of revenue in 2018, projected forward.
- Total baseline operating expenditure – for a typical year – is estimated at \$1.06 million.
- Revenue-producing visitation is estimated at 179,000 per year based on the last several years of visitation scans and the 2016 Draft Reservoir Business Plan. A breakdown of baseline visitation is shown in Figure 5.3. Visitation includes 11,000 flank season drop-in visitors, based on observed data.
- All other baseline revenue amounts were obtained from operating and budget data collected between 2015 and 2018. The figures are rounded to reflect the inherent uncertainties in financial projections.
- Total baseline operating revenue – for a typical year – is estimated at \$1.1 million.

Planning Scenario Assumptions

Several baseline assumptions are necessary to provide a financial projection:

- Visitation increases: A conservative 10 percent visitation growth rate is assumed in the implementation of each of the management plans. Boating visitation is not increased due to capacity concerns.
- Pricing increases: In early 2020, BPR raised prices for many services and activities at the reservoir. Fee increases are typically evaluated on a regular basis and could be included in the Fiscally Constrained Plan as expenses or other conditions require. For the implementation of the Action and Vision Plans, a five percent increase is assumed in all fees in each plan – gate, picnic, event, camp, boat permit, boat storage, and ANS.

Fiscally Constrained Plan

This plan includes the ongoing construction of the new VSC, which began in 2019. This plan also includes projects that will generally make a positive impact on reservoir activities and operations with a minimal capital budget impact. These improvements also correct most of the health, safety, and welfare issues at the reservoir as a priority. Major capital improvements include a shoreline trail, west event lawn, a regional trail connection, and picnic shelters. The Fiscally Constrained Plan also includes the following management alterations:

- A \$5.00 per person fee in flank season, in addition to the \$9.00 per person standard fee.
- Increased events associated with addition of flank season scheduling (March 1 – October 31).

The Fiscally Constrained Plan anticipates a 10 percent increase in all types of visitation (except boating) due to the reinvestment in the VSC and the upgrades in park amenities and connectivity. The visitation increase also includes 12,000 paying flank season guests and the increased visitation associated with flank season events.

	Fiscally Constrained	Action Plan	Vision Plan
Capital Costs	\$ 8,967,150	\$ 5,481,260	\$ 29,104,600

FIGURE 5.1

Capital Costs by Plan

Source: Boulder Parks and Recreation; Boulder Reservoir; BBC Research and Consulting.

As seen in Figure 5.1, capital costs for the Fiscally Constrained Plan are about \$8.9 million, and it would generate about \$1.2 million in annual revenue and \$1.2 million in annual direct expenditure. Please refer to Figure 5.2 for detailed operating expenditures and Figure 5.3 for more detailed projections for each plan.

Action Plan

This phase includes all the Fiscally Constrained Plan elements, with the addition or upgrade of elements to include a few larger development items that will be of great value to the activities and operations of the reservoir. These elements would have some capital budget impact. Major capital improvements include a more developed west lawn event area, a lifeguard building and better shoreline connectivity, an upgraded boat house, additional picnic shelters, and expanded boat storage moorings and slips. The Action Plan also includes a 10 percent increase in boat storage revenue to reflect the additional space.

The Action Plan includes slip rental revenue based on 48 slip spaces and \$2,800 per season rental rate. All visitation (except boating) is projected at a 10 percent increase due to the enhancements at the park. A five percent fee increase for all fee types is also included in the projection. There is an expected increase in seasonal staff of five part time positions.

The Action Plan would generate about \$1.5 million in annual revenue and \$1.3 million in annual expenditure.

Phase	Baseline (2019)	Fiscally Constrained	Action	Vision
Labor Costs				
Full Time Staff	4.75	7	8	10
Average Annual Salary Paid (\$87,027/yr)	317,984	468,608	535,552	669,440
Benefits (35%)	111,294	164,013	187,443	234,304
<i>Subtotal Full Time Labor Cost</i>	<i>429,278</i>	<i>632,621</i>	<i>722,995</i>	<i>903,744</i>
Seasonal Workers	53	77	88	110
Average Seasonal Hours Worked	32,595	47,355	63,360	79,200
Average Seasonal Labor Cost (\$13/hr)	423,735	615,615	823,680	1,029,600
Benefits (18%)	76,272	110,811	148,262	185,328
<i>Subtotal Seasonal Labor Costs</i>	<i>500,007</i>	<i>726,426</i>	<i>971,942</i>	<i>1,214,928</i>
Subtotal Labor Costs	\$929,286	\$1,359,047	\$1,694,938	\$2,118,672
Operating Costs				
Supplies and Materials (3.3%)	39,050	41,784	53,065	132,663
Repairs and Maintenance (1.3%)	15,000	16,050	20,384	50,959
Purchased Services (1.1%)	13,570	14,520	18,440	46,101
Misc. Fees and Charges (0.8%)	10,100	10,807	13,725	34,312
Utilities (3.6%)	42,350	45,315	57,549	143,874
Fleet (7.1%)	85,000	90,950	115,507	288,766
Fuel (1.7%)	20,000	21,400	27,178	67,945
Subtotal Operating Cost	\$225,070	\$240,825	\$305,848	\$764,619
TOTAL OPERATING COSTS	1,154,356	1,599,871	2,000,785	2,883,291
*Note that labor and material projections are at current market rate. Must calculate for current labor and material rates.				

FIGURE 5.2

Operating Expenditures by Plan

Source: Boulder Parks and Recreation; Boulder Reservoir; BBC Research and Consulting.

Vision Plan

This plan includes all the elements in the prior two plans, plus the full buildout of all proposed improvements. It would have a major budget impact and it is assumed that a project partner(s) would be required to realize this plan. Major capital improvements include a marina facility with community event space; an addition on the VSC with conference space; active recreation improvements; boat maintenance facility; park maintenance facility; boat storage areas; and a waterfront picnic pavilion. The Vision Plan also includes a five percent fee increase over the previous phase and an additional 20 percent increase in boat storage revenue to reflect the additional space.

The Vision Plan includes a conservative 10 percent increase in all visitation (except boating) due to the general enhancements at the park. Revenue from a concessionaire-led boat maintenance enterprise is included based on a 15 percent share of gross revenue. Gross revenue is based on 200 boats serviced at an average ticket of \$3,000 per boat. There is an expected increase in seasonal staff of 11 part time positions over current seasonal staff numbers.

The Vision Plan would generate about \$1.7 million in annual revenue and \$1.5 million in annual expenditure.

Implementation

With acceptance of this plan by the Parks and Recreation Advisory Board (PRAB), staff commit that it will be used to steward the future of the Boulder Reservoir. The capital recommendations for the site's long-term maintenance, modernization or enhanced service will be considered as part of the larger departmental capital planning process and will be funded in alignment with the City of Boulder's Capital Improvement Program (CIP) guiding principles and as dollars are available.

Management recommendations will be considered in the context of the Phase II effort, the South Shore Management Plan.

Phase	Fiscally			
	Baseline	Constrained	Action Plan	Vision Plan
Annual Visitation				
Drop-In Visitation High Season	40,000	44,000	48,400	53,240
Drop-In Visitation Flank Season	11,000	12,100	13,310	14,641
Event Visitation	50,000	55,000	60,500	66,550
Picnic Visitation	7,500	8,250	9,075	9,983
Group Visitation	55,000	60,500	66,550	73,205
Camp Visitation	700	770	847	932
Boating Visitation	15,000	15,000	15,000	15,000
Total Annual Visitation	179,200	195,620	213,682	233,550
Revenues				
Gate Revenue	\$385,000	\$ 423,500	\$ 489,143	\$ 564,960
Boat Permits	\$187,000	\$ 187,000	\$ 196,350	\$ 206,168
Boat Storage	\$87,000	\$ 87,000	\$ 100,485	\$ 105,509
Slip Rentals			\$ 134,400	\$ 134,400
ANS	\$170,000	\$ 170,000	\$ 178,500	\$ 187,425
Boat Maintenance				\$ 90,000
Special Events	\$200,000	\$ 220,000	\$ 254,100	\$ 293,486
Camps	\$95,000	\$ 104,500	\$ 120,698	\$ 139,406
Picnics	\$75,000	\$ 82,500	\$ 95,288	\$ 110,057
Merchandise & Concession Sales	\$10,000	\$ 10,916	\$ 12,520	\$ 14,369
TOTAL OPERATING REVENUES*	\$1,114,000	\$1,180,916	\$1,460,785	\$1,706,373
Net Revenue (Loss)	\$ 51,953	\$ 18,323	\$ 174,977	\$ 219,573

FIGURE 5.3

Visitation and Operating Revenue by Plan

Source: Boulder Parks and Recreation; Boulder Reservoir; BBC Research and Consulting.

VI. APPENDIX

- APPENDIX A** Maintenance Schedule
- APPENDIX B** Environmental Assessment Summary
- APPENDIX C** Potential Programming Elements Matrix
- APPENDIX D** Comparative Analysis



Appendix A Maintenance Schedule

STRUCTURES/FACILITIES	MAINTENANCE TYPE	FREQUENCY
VSC (former Admin/Bathhouse)	General Building Maintenance	Weekly
	Grounds Maintenance	Daily
	Cleaning/Painting/Repair	Monthly
	Unexpected Occurrence	Yearly
Lifeguard Building	General Building Maintenance	Yearly
	Grounds Maintenance	Weekly (in season)
	Cleaning/Painting/Repair	Every 2 Years
	Unexpected Occurrence	As Needed
Boat House Building	General Building Maintenance	Weekly (in season)
	Grounds Maintenance	Daily (in season)
	Cleaning/Painting/Repair	Monthly
	Unexpected Occurrence	Yearly
Maintenance Building	General Building Maintenance	Weekly
	Grounds Maintenance	Daily
	Cleaning/Painting/Repair	Monthly
	Unexpected Occurrence	Yearly
Gate House Building	General Building Maintenance	Yearly
	Grounds Maintenance	Weekly
	Cleaning/Painting/Repair	Every 2 Years
	Unexpected Occurrence	As Needed
ANS Inspection Building	General Building Maintenance	Yearly
	Grounds Maintenance	Weekly (in season)
	Cleaning/Painting/Repair	Every 2 Years
	Unexpected Occurrence	As Needed
*Janitorial tasks and bird mitigation would be included for all buildings at the reservoir.		

ROADS, PARKING, PAVING and TRAILS	MAINTENANCE TYPE	FREQUENCY
Primary Road	Maintenance and Repair	Yearly
Secondary Road	Maintenance and Repair	Yearly
Paved Parking Areas	Maintenance and Repair	Yearly
Unpaved Parking Areas	Maintenance and Repair	Yearly
Paved Walkways/Plazas	Maintenance and Repair	Yearly
Trails	Maintenance and Repair	Yearly

SITE AMENITIES and SIGNAGE	MAINTENANCE TYPE	FREQUENCY
General Landscape- Irrigated	Maintenance and Repair	Weekly
General Landscape – Native	Maintenance and Repair	Monthly
Signage and Monumentation	Maintenance and Repair	Yearly
Site Furniture	Maintenance and Replacement	Yearly
Paved Walkways/Plazas	Maintenance and Repair	Yearly

INFRASTRUCTURE	MAINTENANCE TYPE	FREQUENCY
Irrigation	Maintenance and Repair	Monthly (in season)
Lighting	Maintenance and Repair	Yearly
Utilities	Maintenance and Repair	Yearly
Fueling Station	Maintenance and Replacement	On occurrence

SAFETY/SECURITY/ACCESS	MAINTENANCE TYPE	FREQUENCY
Main Security Gates	Maintenance and Repair	Yearly
Docks	Maintenance and Repair	Monthly (in season)
Boat Ramps	Maintenance and Repair	Monthly (in season)
Building Security	Maintenance and Updates	On occurrence

WATER QUALITY and ENVIRONMENTAL	MAINTENANCE TYPE	FREQUENCY
West Shore Interface	Maintenance	Yearly
Erosion Control at Shoreline	Maintenance and Replacement	Yearly
Goose Waste Control	Maintenance and Clean-up	Daily (in season) Weekly (off)

ENVIRONMENTAL SUMMARY

Summary of Environmental Assessment for the South Shore of the Boulder Reservoir by ERO Resources

Vegetation types and conditions:

The vegetation can be broken down into four community types; disturbed uplands, exotic grass uplands, emergent wetlands, and forested wetlands.

The disturbed uplands are dominated by cheatgrass (*Bromus tectorum*), diffuse knapweed (*Centaurea diffusa*), kochia (*Bassia scoparia*), slender wheatgrass (*Elymus trachycaulus*), and crested wheatgrass (*Agropyron cristatum*). Vegetation is sparse in the majority of the disturbed upland.

The exotic grass uplands are dominated by Kentucky blugrass (*Poa pratensis*), smooth brome (*Bromus inermis*), narrowleaf plantain (*Plantago lanceolata*), black medick (*Medicago lupulina*), and red clover (*Trifolium pratense*). The exotic grass uplands appeared to be watered, mowed, and generally well maintained.

The emergent wetlands were dominated by reed canarygrass (*Phalaris arundinacea*), Baltic rush (*Juncus arcticus*), common three-square (*Schoenoplectus pungens*), broadleaf cattails (*Typha latifolia*), and inland rush (*Juncus interior*). Both emergent wetlands are healthy, though the wetland near the reservoir shore could be greatly affected by changes in the water level of the reservoir.

The forested wetland on the west section of the project area is dominated by reed canarygrass, spiny sowthistle (*Sonchus arvensis*), plains cottonwoods (*Populus deltoides*), narrowleaf cottonwood (*Populus angustifolia*), coyote willow (*Salix amygdaloides*), and sandbar willow (*Salix exigua*). This area is currently a wildlife closure. The forested wetland has a healthy herbaceous, shrub, and tree layer, conducive to supporting wildlife.

Wetlands:

There are 3 wetlands in the project area, one along the south shore of Boulder Reservoir near Cottonwood Cove and Chandle Beach, one near aquatic invasive species inspection building, and the forested wetland in the wildlife closure in the western portion of the project area.

The wetland near Cottonwood Cove and Chandle Beach begins just beyond the sandbar along the shore and continues into the reservoir approximately 5-8 feet. This wetland is dominated by reed canarygrass, Baltic rush, and common three-square.

The wetland near the aquatic invasive species inspection (AISI) building is fed by water flowing through culverts. The wetland occurs along Reservoir Road to the north and south of the road. The wetland is dominated by broadleaf cattails, inland rush, and common three-square.

The forested wetlands in the western portion of the project are well developed. The understory consists primarily of reed canarygrass with Canada thistle (*Cirsium arvense*) and spiny sowthistle interspersed throughout along the edges of the wetland. The tree stratum is dominated by plains cottonwood and narrowleaf cottonwood. The shrub stratum is dominated by sandbar willow and coyote willow.

Weeds:

No list A species were observed during the site visit.

Three list B species were observed within the project area, diffuse knapweed, Fuller's teasel (*Dipsacus fullonum*), and Canada thistle.

Four list A species were observed within the project area, field bindweed (*Convolvulus arvensis*), redstem filaree (*Erodium cicutarium*), cheatgrass, and spiny sowthistle.

Wildlife:

Canada geese (*Branta canadensis*) are ubiquitous throughout the project area.

Within the uplands, killdeer (*Charadrius vociferus*), northern flicker (*Colaptes auratus*), common grackle (*Quiscalus quiscula*), European starling (*Sturnus vulgaris*), and mountain cottontails (*Sylvilagus nuttallii*) were observed during the site visit. A few small mammal burrows were observed and no nests were observed during the site visit. In the southwest section of the project area, in the overflow parking area south of the entrance, evidence of test burrowing was observed, though no active burrows were found.

In the AISI building adjacent wetland, sora (*Porzana Carolina*) and marsh wren (*Cistothorus palustris*) were observed within the cattails.

In the forested wetland, fox sparrow (*Passerella iliaca*), American bittern (*Botaurus lentiginosus*), and western kingbird (*Tyrannus verticalis*) were observed in the canopy.

Potential problem areas/Impacts on wildlife/social trails, etc./dog use/water quality:

A dock is positioned near the edge of the wildlife closure and could facilitate potential disturbances of the migratory birds within the closure. Mowing along the southern edge of the closure may also potentially disturb wildlife in the closure. The area around the wetland near the aquatic invasive species inspection building has been mowed and the most recent mowing was through the edges of the wetland. Disturbed uplands north of the marina are sparsely vegetated and could potentially run sediment off into the reservoir in a heavy rain event.

The silt fences and prairie dog barrier fences look to be properly installed and in working order. Some litter was observed in the overflow parking lot south of the entrance and in the Eagle Boat Parking lot.

Reservoir Road and the trail above the east dam appeared to be the main social trail being used during the site visit. Both looked to be in good condition.

There was little evidence of dog use during the site visit. The only dogs observed were on leashes and on either Reservoir Road or the east dam trail.

There is a potential for noxious weed seed dispersal and migration of prairie dogs coming from the Six Mile Reservoir property to the south.



Throughout the exotic grass uplands, Canada geese are defecating along the shoreline of Boulder Reservoir. This could lead to unhealthy bacteria levels in the swimming and boat launch areas of Boulder Reservoir. Geese use/population management is recommended.

Appendix C Potential Programming Elements Matrix

BOULDER RESERVOIR - SOUTH SHORE

Potential Programming Elements

Item #	Program Item	Top 20 Pick	Stakeholder Input	Public OH Input	Staff Input
I. Access & Circulation Goals					
1	Connection to regional trails	✓	✓	✓	✓
2	ADA accessible beach and accessible docks	✓	✓	✓	✓
3	ADA accessible & family restrooms	✓	✓	✓	✓
4	Connection along South Shore linking activities	✓		✓	✓
5	Efficient traffic circulation and parking		✓	✓	✓
6	Establish better connectivity and accessibility throughout site (Internal loop trail)		✓	✓	✓
7	Separated access for Fire Training Center		✓		✓
Site Planning Recommendations					
	Create trail connection to regional trails	✓	✓	✓	✓
	Create accessible connections to beach areas	✓	✓	✓	✓
	Create accessible dock locations	✓	✓	✓	✓
	Create accessible restrooms	✓	✓	✓	✓
	Create family restrooms	✓	✓	✓	✓
	Create pedestrian trail connection along the south shoreline of the reservoir	✓		✓	✓
	Develop a more efficient traffic circulation and parking plan		✓	✓	✓
	Create a multipurpose loop trail within South Shore		✓	✓	✓
	Develop a separate gate for Fire Training Center		✓		✓
	Create restrooms closer to beach	✓	✓	✓	✓
	Create safe pedestrian crossings from parking to shoreline		✓	✓	✓
	Create bus drop-off and parking areas		✓	✓	✓
	Create designated loading and parking area for program staff		✓		✓
Action/Management Items					
	Establish shuttle service to outlying parking for events		✓	✓	✓
	Establish community shuttle to reservoir	✓	✓	✓	✓
	Extend front gate and operations into flank seasons				
	Install pay station to collect gate fees				✓
	Allow dogs during peak season for an additional fee				✓
	Eliminate free access points				✓
Item #	Program Item	Top 20 Pick	Stakeholder Input	Public OH Input	Staff Input
II. Maintenance and Operations Goals					
1	Updated wayfinding signage		✓	✓	✓
2	Updated fueling area		✓	✓	✓
3	New or upgraded maintenance & operations facility		✓		✓
4	Upgraded or expanded utilities & infrastructure		✓		✓
5	Covered parking/storage for maintenance vehicles				✓
6	Efficient irrigation system with lower water use				✓
7	Improve facility standards to justify high fees (boat permit, storage, etc.)	✓	✓	✓	✓
Site Planning Recommendations					
	Develop new wayfinding signage package		✓	✓	✓
	Develop updated fueling area		✓	✓	✓
	Develop new or upgrade existing maintenance & operations facility		✓		✓
	Expand utilities as needed		✓		✓
	Create covered parking/storage for maintenance vehicles				✓
	Assess existing irrigation system and upgrade to be water wise				✓
	Establish "low level" outdoor light plan that ensures safety and security				
Action/Management Items					
	Extend season for activities				
	Extend hours of operation for certain evening events				✓
	Seek partnership to provide landscaping and site maintenance services				✓

Symbology - Revenue - Cost - Staffing			
High Increase	+++	---	High Decrease
Medium Increase	++	--	Medium Decrease
Low Increase	+	-	Low Decrease
Positive Budget Impact			Negative Budget Impact

Symbology - Partnership/Op synergy	
H	High benefit from opportunity/synergy
M	Medium benefit from opportunity/synergy
L	Low benefit from opportunity

Revenue Impact	Capital Cost	O/M Cost Impact	Staffing Impact	Partnership Opportunity	Synergy with Current Operations	Master Plan Support	Business Plan Support
					M	✓	
					H	✓	
					H	✓	
					H	✓	
					H	✓	✓
					H	✓	
					M	✓	
	+	+			M	✓	
+	++	+			H	✓	
+	++	+			H	✓	
	+				H	✓	
	+				H	✓	
	++	+			H	✓	
+	++	-	-		H	✓	✓
+	++	++	+		H	✓	
	+	+			M	✓	
	++	+				✓	
	+					✓	
	++	+	+		H	✓	
	+					✓	
+	+	+	+	H	H	✓	✓
+	+	+	+	H	H	✓	✓
+++		+	++		H		✓
+	+	--	--		H		✓
+	+	+	+		M		
+	+	-			M		✓
					M	✓	
				M	H	✓	
				H	H	✓	✓
					M	✓	
					H	✓	
					H	✓	
				M	H		✓
	+				M	✓	
	++	+	+	M	H	✓	
	+++	+	+	H	H	✓	✓
	++	+			M	✓	
	++	-			H	✓	
	+	-			H	✓	
+	++	+	+		M		
+++		+	++		H		✓
+		+	+		H	✓	✓
		---	---	H	H		✓

Appendix C Potential Programming Elements Matrix (continued)

BOULDER RESERVOIR - SOUTH SHORE

Potential Programming Elements

Item #	Program Item	Top 20 Pick	Stakeholder Input	Public OH Input	Staff Input
III. Boating Activities and Facilities Goals					
1	New Boat House/Event Facility	✓	✓	✓	✓
2	Shaded outdoor plaza spaces	✓	✓	✓	
3	Improved and/or expanded dry Boat Storage (small/large craft)	✓	✓	✓	
4	Improved and/or expanded boat mooring and docking		✓	✓	✓
5	Boat maintenance facilities and services		✓	✓	✓
6	Permanent docks (adjustable)	✓		✓	
7	Additional paved boat parking		✓		✓
Site Planning Recommendations					
	Develop new boat house facility with meeting/event spaces	✓	✓	✓	✓
	Create shaded plaza areas for activities and events	✓	✓	✓	
	Create new boat storage areas for large and small boats	✓	✓	✓	
	Develop additional areas for boat mooring and docking		✓	✓	✓
	Create area for boat maintenance and service		✓	✓	✓
	Create permanent docks that are adjustable	✓		✓	
	Develop additional paved boat parking areas		✓		✓
	Develop wayfinding signage package related to the boating activities and services		✓	✓	✓
Action/Management Items					
	Expand concessions in boat house area	✓		✓	✓
	Seek partnership to provide small craft storage facilities and services				✓
	Seek partnership to provide boat maintenance facilities and services				✓
	Increase boat permit fees				
IV. Adapatable Community Space, Events and Programs Goals					
1	Shade Structures/Group Picnic Areas	✓	✓	✓	✓
2	Shaded flexible events space near Visitor Services Center	✓		✓	✓
3	Shaded seating along shoreline	✓		✓	✓
4	Natural style play areas	✓		✓	✓
5	Wind/weather protection in South Shore		✓	✓	✓
6	Multi-use Facilities adaptable for different events, meetings, classes, etc		✓	✓	✓
Site Planning Recommendations					
	Create additional shade structures and/or group picnic areas	✓	✓	✓	✓
	Create a shaded events space near the Visitor Services Center	✓		✓	✓
	Create areas with shaded seating along the shoreline (with trees or structure)	✓		✓	✓
	Create natural style play areas (near both the VSC and Boat House areas)	✓		✓	✓
	Create designated areas for wind/weather protection (throughout South Shore)		✓	✓	✓
	Create open flexible spaces indoor and outdoor that can be used by the public		✓	✓	✓
	Develop more picnic table areas within South Shore			✓	✓
	Develop additional areas for children's activities and education	✓		✓	✓
	Expand facilities for community/day programs		✓	✓	✓
Action/Management Items					
	Schedule programs and camps during non-peak use times				
	Reduce or eliminate discounted picnic events				
	Increase picnic fees to full cost recovery levels				
	Increase special event fees				
	Schedule special events during non-peak use times				

Symbology - Revenue - Cost - Staffing			
High Increase	+++	---	High Decrease
Medium Increase	++	--	Medium Decrease
Low Increase	+	-	Low Decrease
Positive Budget Impact			Negative Budget Impact

Symbology - Partnership/Op synergy	
H	High benefit from opportunity/synergy
M	Medium benefit from opportunity/synergy
L	Low benefit from opportunity



Revenue Impact	Capital Cost	O/M Cost Impact	Staffing Impact	Partnership Opportunity	Synergy with Current Operations	Master Plan Support	Business Plan Support
				H	H	✓	✓
					H	✓	
				H	H	✓	✓
				H	H	✓	✓
				H	H		✓
					M	✓	
					H	✓	✓
+++	+++	+++	++	H	H	✓	✓
	++	+			H	✓	
++	++	--	--	H	H		
++	+++	++	+	H	H	✓	✓
++	++	--	--	H	H		
	++	+			M	✓	
++	+	+			H	✓	✓
	+			M	H		
++	+	+	+	H	H		✓
++	++	--	--	H	H		
++	++	--	--	H	H		
+++					H		✓
Revenue Impact	Capital Cost	O/M Cost Impact	Staffing Impact	Partnership Opportunity	Synergy with Current Operations	Master Plan Support	Business Plan Support
					H	✓	✓
					H	✓	✓
					H		✓
				L	M		
					H		
				L	H	✓	✓
++	+	+	+		H	✓	✓
++	++	+	+		H	✓	✓
+	+	+			H		✓
+	++	+	+	L	M		
+	++				H		
+++	+++	++	+	L	H	✓	✓
+	++	+	+		H		
+	++	+	+	M	M	✓	
+++	+++	++	+	M	H	✓	✓
++		+	+		M		✓
++		--	-		H		✓
+++					H		✓
+++					H		✓
++		+	+		M		✓

Appendix C Potential Programming Elements Matrix (continued)

BOULDER RESERVOIR - SOUTH SHORE

Potential Programming Elements

Item #	Program Item	Top 20 Pick	Stakeholder Input	Public OH Input	Staff Input
V. Education and Interpretation Goals					
1	Xeriscape garden and/or "Story of Water" interpretive exhibit (with Northern Water)		✓	✓	✓
2	Display screen with real-time information about reservoir		✓	✓	✓
3	Outdoor Classroom/ Education Areas	✓		✓	
4	Environmental Education signage about habitat sensitivity of West Shore		✓		✓
5	Interpretive signage on wildlife and natural resource ecology		✓	✓	
Site Planning Recommendations					
	Partner with Northern Water to create xeriscape garden/interpretive exhibit		✓	✓	✓
	Develop a system to display real-time information about the reservoir and city		✓	✓	✓
	Create flexible areas that can be used for outdoor education	✓		✓	
	Create interpretive signage based on wildlife and natural resource ecology		✓	✓	
	Add signage about habitat sensitivity of the West Shore area		✓		✓
Action/Management Items					
	Seek partnership/sponsorship from Northern Water				
	Seek partnership with Boulder Open Space				
	Seek partnership/sponsorship for display screen installation				
Item #	Program Item	Top 20 Pick	Stakeholder Input	Public OH Input	Staff Input
VI. Environmental Control and Sustainability Goals					
1	Control/manage geese	✓		✓	✓
2	Boardwalk at existing wetland areas	✓		✓	
3	Improve stormwater quality		✓		✓
4	Minimize impervious parking areas		✓		✓
5	Promote wildland restoration		✓		✓
6	Screen maintenance and storage areas			✓	✓
7	Create shade in all pedestrian areas		✓	✓	
Site Planning Recommendations					
	Establish taller native grass and plant areas to deter geese	✓		✓	✓
	Create trail or boardwalk around existing wetland area	✓		✓	
	Add stormwater quality improvements to the site		✓		✓
	Reduce impervious parking areas		✓		✓
	Create "Natural Oasis" or wildland restoration (with Boulder County)		✓		✓
	Add landscape screen of east storage area			✓	✓
	Plant trees for shade in all pedestrian areas		✓	✓	
Action/Management Items					
	Partnership with environmental education groups				
	Add environmental and sustainability education programs				
Item #	Program Item	Top 20 Pick	Stakeholder Input	Public OH Input	Staff Input
Other Action/Management Items					
1	Partner with City departments to provide safety training and materials for staff				
2	Establish year-round restaurant				

Symbology - Revenue - Cost - Staffing			
High Increase	+++	---	High Decrease
Medium Increase	++	--	Medium Decrease
Low Increase	+	-	Low Decrease
Positive Budget Impact			Negative Budget Impact

Symbology - Partnership/Op synergy	
H	High benefit from opportunity/synergy
M	Medium benefit from opportunity/synergy
L	Low benefit from opportunity

Revenue Impact	Capital Cost	O/M Cost Impact	Staffing Impact	Partnership Opportunity	Synergy with Current Operations	Master Plan Support	Business Plan Support
				M	L		
				M	M	✓	
				H	H	✓	
				M	M	✓	
				M	M	✓	
	+	+		M	L		
	+	+		M	M	✓	
+	++	+	+	H	H	✓	
	+	+		M	M	✓	
	+			M	M	✓	
	-	-		H	H		
	-	-		H	H		
	-	-		H	M		
Revenue Impact	Capital Cost	O/M Cost Impact	Staffing Impact	Partnership Opportunity	Synergy with Current Operations	Master Plan Support	Business Plan Support
					H	✓	
					M		
					M	✓	
					M	✓	
				H	M		
				M			
				L	H		
	+	-			H	✓	
+	++	+	+		M		
	++	-			M	✓	
	+				M	✓	
	+	+		H	M		
	+			M			
	+	+		L	H	✓	
+		-	-	H	H	✓	
+		-	-	H	M	✓	
Revenue Impact	Capital Cost	O/M Cost Impact	Staffing Impact	Partnership Opportunity	Synergy with Current Operations	Master Plan Support	Business Plan Support
		--	--	H	H		
++	+	+	+	H	L		✓

Appendix D Comparative Analysis

	Boulder Reservoir	Aurora Reservoir	Cherry Creek Reservoir	Chatfield Reservoir	Horsetooth Reservoir
Watercraft					
Access & Fees (resident)					
Own watercraft allowed?	Yes	Yes	Yes	Yes	Yes
Watercraft Restrictions	<500HP; No personal watercraft;	Electric trolling motors only (no gas motors)			
Watercraft Registration (season, resident)	Powerboat (50-499 HP)- \$705 Powerboat (50-499 HP, weekdays only) - \$405 Powerboat (<50 HP) - \$350 Sailboat - \$350 Small Craft - \$50	\$10/year For any vessel that contains a compartment capable of holding water OR any vessel launched or landed via a trailer	<20ft - \$35.25 20-30ft- \$45.25 >30ft - \$75.25	<20ft - \$35.25 20-30ft - \$45.25 >30ft - \$75.25	<20ft - \$35.25 20-30ft - \$45.25 >30ft - \$75.25
Rentals (resident)					
Fishing Boat Rental Fee	N/A	\$15/hr (2hr min)	N/A	\$120/hr (4 hr min.)	\$70/hr
Canoe Rental Fee	\$20/hr	\$10/hr	\$40/hr (\$60 for 2hr)	\$20/hr	\$10/hr
Kayak Rental Fee	\$20/hr	\$15/hr	\$30/hr (single); \$40/hr (double)	\$25/hr	\$20/hr
Paddle Board Rental Fee	\$20/hr (standard) \$50/hr (XL)	\$15/hr	\$30/hr (standard); \$80/hr (XL)	\$20/hr	\$20/hr
Pontoons	\$125/hr	N/A	\$100/hr	\$280/4hrs (4hr min; \$850 deposit)	\$110-150/hr
Pedal Boat Rental Fee	N/A	\$10/hr	N/A	N/A	N/A
Jet Skis	N/A		\$165/2hrs	N/A	\$75/hr
HydroBikes	N/A	N/A	N/A	N/A	\$25/hr
Life Jacket Rental Fee	Come with rentals	Included in watercraft rentals (or \$10/day solo)	Come with rentals	Come with rentals	N/A
Storage (resident)					
Dry Boat Storage (covered)	N/A	\$50/mo (year-round)	N/A	\$252-612/6 mos	N/A
Wet Mooring	\$635/year (May-Oct only)	\$120/mo (Apr-Oct)	\$81-\$142/ft/year	\$2,300-\$2,400/season (slip)	\$1400-2200/season (slip)
Dry Mooring (Paved)	\$540/year	N/A	\$71/ft/year	N/A	N/A
Dry Mooring (Gravel)	\$475/year	N/A	N/A	N/A	\$135/month
Shore Mooring	\$285/year	N/A	N/A	N/A	N/A
Small Craft Storage	\$215/year	N/A	\$350/year	N/A	N/A

Source: BBC Research & Consulting.

Lake Dillon	Lake Pueblo	Carter Lake	Union Reservoir	Standley Lake	Boyd Lake
Yes	Yes	Yes	Yes	Yes	Yes
Personal watercraft, including jet skis, are not permitted	Personal watercraft, including jet skis, are not permitted		No motorized boating; wakeless boating only	"Trailered boats" restricted for summer 2019 to mitigate ANS concerns	Must observe Colorado Boating Statutes and Regulations
<20ft - \$35.25 20-30ft - \$45.25 >30ft - \$75.25	<20ft - \$35.25 20-30ft - \$45.25 >30ft - \$75.25	<20ft - \$35.25 20-30ft - \$45.25 >30ft - \$75.25	<20ft - \$35.25 20-30ft - \$45.25 >30ft - \$75.25	Power Boat (>20HP) - \$950 Motor Boat Permits (<20HP) - \$300 Boating & Paddle Permits (No Motors) - \$200	<20ft - \$35.25 20-30ft - \$45.25 >30ft - \$75.25
\$70/hr	\$70/hr	\$20/hr \$100/day	N/A	N/A	\$15/hr
\$25/hr	\$10/hr	\$10/hr	N/A	\$10	\$20/hr - \$30/2hrs
\$25/hr	\$20/hr	\$20/hr	\$20	\$11	\$20/hr - \$30/2hrs
\$25/hr	\$20/hr	\$25/hr	\$20/hr (standard) \$50/hr (XL)	\$15	\$15/hr
\$110/hr	\$325-\$425/day	\$150/2hrs \$450/day	N/A	N/A	\$60/hr
N/A	N/A	N/A	\$45	N/A	N/A
N/A	\$239/2hrs	\$75/hr	N/A	N/A	N/A
N/A	\$25/hr	\$25/hr	N/A	\$15	N/A
N/A	N/A	N/A	N/A	Come with rentals	Come with rentals
N/A	N/A	N/A	\$490-\$1,074/year	N/A	\$45/mo (winter only)
<19ft: \$1,255 20-23ft: \$1,410 24-26ft: \$1,655 >26ft: Add \$70.00/ft	\$275/mo	\$1,056-\$1,420/season	N/A	N/A	16-20ft. \$180/mo 21-25ft. \$215/mo
N/A	\$125/mo	N/A	N/A	N/A	N/A
N/A	\$125/mo	\$200-\$330/season	N/A	N/A	N/A
\$315/yr	N/A	N/A	\$325-\$405 /yr	N/A	Non-Power - \$290 Power - \$365
\$145 (rack space only- no beach space available)	\$600/year	N/A	\$100/year \$125 for non-residents	N/A	N/A

Appendix D Comparative Analysis (continued)

	Boulder Reservoir	Aurora Reservoir	Cherry Creek Reservoir	Chatfield Reservoir	Horsetooth Reservoir
One-Day Cost for Family of Four	\$25.50	\$10	\$10	\$9	\$9
Gate / Entry					
Peak Season Dates	5/27 to 9/4	5/31 to 9/4	5/1 to 9/30	5/1 -9/30	5/1 to 9/4
Entrance Gates	1 gate	1 gate	1 gate	1 gate+Self Service Station	2 gates+Self Service Station
Daily Gate Fee (adult resident)	\$8.25/person	\$10/vehicle	\$9/vehicle	\$9/vehicle	\$9/vehicle \$9/boat trailer
Daily Gate Fee (minor)	\$4.50	N/A	N/A	N/A	N/A
Daily Gate Fee (senior)	\$5.00	N/A	N/A	N/A	N/A
Monthly Pass (adult resident)	\$139- Summer Splash Fee	N/A	N/A	N/A	N/A
Monthly Pass (adult non-resident)	\$174- Summer Splash Fee	N/A	N/A	N/A	N/A
Annual Pass (adult resident)	N/A	\$55/vehicle	\$80/vehicle	\$80/vehicle	\$90/vehicle
Annual Pass (adult non-resident)	N/A	\$65/vehicle	\$80/vehicle	\$80/vehicle	\$120/vehicle
Gate Hours (peak season)	5:30am - 9:00pm	5:00am - 9:30pm	5:00am - 10:00pm	5:00am - 10:00pm	24 hr Self-service stations
Dogs Allowed?	Not during peak season - Off-season only	Yes - must be leashed, not allowed on beaches, in water	Yes - \$3/day or \$25/yr	Yes - \$3/day or \$25/yr	Yes
Free Entrance Gate Available?	Yes	5 walk-in gates with no fee	No	No	No
Separate Fee for Walk-ins / Bikers?	No	No	N/A	N/A	N/A
Activities					
Water					
Swimming	Yes	Yes	Yes	Yes	Yes
Fishing	Yes	Yes	Yes	Yes	Yes
Scuba	No	Yes (4/1 to 10/31)	No	No	Yes
Kite/Wind Surfing/Sailboarding	Yes	Yes	Yes	Yes	Yes
Water Skiing / Wakeboarding	Yes	No	Yes	Yes	Yes
Ice Fishing	No	No	Yes	Yes	No
Waterfront					
Sand Volleyball	Yes	Yes	Yes	Yes	Yes
Other					
Cycling	Yes	Yes - Rentals \$10/day (incl. helmet)	Yes	Yes	Yes
Archery	No	Yes	Yes	No	No
Rock Climbing	No	No	No	No	Yes
Model Airplane Flying	Yes	No	No	Yes	No
Hot Air Ballooning	No	No	No	Yes	No
Cross Country Skiing / Snoeshowing	Yes	Yes	Yes	Yes	No

Source: BBC Research & Consulting.

Lake Dillon	Lake Pueblo	Carter Lake	Union Reservoir	Standley Lake	Boyd Lake
\$0	\$8	\$9	\$10	\$7	\$9
5/31 to 9/15	3/20 to 10/14	4/1-10/1	5/1 to Labor Day	5/1 to 9/30	3/1 to 9/30
2 gates	1 gate	2 gates+Self Service Station	1 gate	1 gate	1 gate + Self-Service Station
No Daily Fees	\$8/vehicle	\$9/vehicle \$9/boat trailer	\$10/vehicle \$8/boat trailer	\$7/vehicle	\$9/vehicle
N/A	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	
N/A	\$80/vehicle	\$90/vehicle	\$65/vehicle	\$60/vehicle	\$80/vehicle
N/A	\$80/vehicle	\$120/vehicle	\$150/vehicle	\$60/vehicle	\$80/vehicle
Open year round, 24 hours a day	5:00am - 11:00pm	24 hr Self-service stations	6:00am - 9:00pm	7:30am - 1 hour before sunset	24 hr Self-service stations
Yes	Yes	Yes	Yes	Yes	Yes
Yes	No	No	No	Yes	No
N/A	N/A	N/A	\$2/person	No	N/A
No	Yes	Yes	Yes	No	Yes
Yes	Yes	Yes	Yes	Yes	Yes
No	Yes	Yes	No	No	No
Yes	Yes	Yes	Yes	Yes	Yes
No	Yes	Yes	No	Yes	Yes
Yes	No	No	No	No	Yes
No	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes
No	No	No	No	No	No
No	No	Yes	No	No	No
No	No	No	No	No	Yes
No	No	No	No	No	No
Yes	No	No	No	No	No

Appendix D Comparative Analysis (continued)

	Boulder Reservoir	Aurora Reservoir	Cherry Creek Reservoir	Chatfield Reservoir	Horsetooth Reservoir
Trails					
Miles of Hiking/Biking Trail	5.2 miles Boulder Reservoir Loop (paved, dirt, gravel)	8.5mi concrete trail; 5k dirt trail (also used for maintenance)	12mi of multi-use trails.	26mi (12mi paved)	3mi
Horse Trails	N/A	N/A	Yes. 12 Mile Stables offer horse rentals, hay rides, day camps, riding lessons, and horse boarding	~24mi	No
Picnicking					
Sites	Bronze- 20-75 people Silver-50-100 people Gold- 100-200 people Platinum- 150-300 people Five Star - 75-300 people	4 small - 20 people 1 med - 30 people 2 large - 300 people	2 small - 50 people 2 med - 100 people 2 large - 250 people	1 small - 75 people 2 med - 125 people 1 large - 350 people	3 small - 50 people 2 med- 100 people 1 large - 175 people
Rental / Reservation Fee	Bronze-\$250 Silver-\$350 Gold-\$575 Platinum-\$725 Five Star -\$1200	Small-\$75 Med-\$125 Large-\$350	Small-\$40 Med-\$150 Large\$250 \$10 reservation fee	\$10 reservation fee \$30-\$90 facility fee (first 50 people) Additonal \$0.50/person over 50	small- \$25-\$50 medium-\$50-\$250 large- \$500

Source: BBC Research & Consulting.

Lake Dillon	Lake Pueblo	Carter Lake	Union Reservoir	Standley Lake	Boyd Lake
7mi	15mi	4mi	N/A	14mi	18.5mi
No	1.5mi	No	No	No	No
2 sites	348 sites (3 Group Pavillons)	2 group pavilions 3 teepees - (50-100 people)	1 major site	5 sites	67 sites total One group picnic area (200 people)
\$800-1,500 (up to 100 people)	\$125/day (up to 110 people)	Pavillions-\$50/day Teepees- \$35/night	\$75/day	8am-9pm access: \$150	67 sites- First come, first serve Group Pavillon Area \$90M-F \$180-Sat-Sun