

APPENDIX F RECREATION

Table of Contents

F	RECREATION PLAN	F-1
F.1	Authorization	F-1
F.2	Introduction	F-1
F.3	Benefit Categories	F-4
F.3.1	Study Area.....	F-4
F.3.2	Sites A and B Public Access Areas.....	F-4
F.3.3	Total Planning-Level Construction Cost Estimate.....	F-7
F.3.4	Determining Value per Visit.....	F-8
F.3.5	Estimating Visitation	F-11
F.4	Economic Justification of Recreation	F-15
F.5	Sensitivity Analysis	F-16

List of Tables

Table F-1.	Planning-level Cost Estimate for Site A Recreation Features (FY2023 Dollars).....	F-6
Table F-2.	Planning-level Cost Estimate for Site B Recreation Features (FY20223 Dollars).	F-7
Table F-3.	Summary of Planning-level Cost Estimates for All Recreation Features (FY23 Dollars), Rounded.....	F-7
Table F-4.	Guidelines for Assigning Points for General Recreation.	F-8
Table F-5.	Unit Day Value Point Conversion.	F-10
Table F-6.	SCORP Carrying Capacity Guidelines.	F-11
Table F-7.	LOCAR Recreation Study Area by County and SCORP Region.	F-12
Table F-8.	LOCAR Recreation Household Participation Estimation.	F-14
Table F-9.	LOCAR Recreation Average Daily Visitation Estimation.....	F-14
Table F-10.	Corps-certified Cost Estimate–Benefit-to-Cost Summary (FY23 Dollars).	F-15
Table F-11.	Corps-certified Cost Estimate–Benefit-to-Cost Summary.....	F-16

List of Figures

Figure F-1.	Conceptual locations of the recreational public use Access Sites A and B on the Lake Okeechobee storage reservoir.....	F-3
Figure F-2.	LOCAR recreation study area.....	F-13

F RECREATION PLAN

This appendix outlines the proposed recreation plan.

F.1 Authorization

The Comprehensive Everglades Restoration Plan (CERP), authorized in the Water Resources Development Act of 2000 (WRDA 2000), will involve modifying the Central and Southern Florida (C&SF) Project, which was constructed with extensive congressional authorizations from the 1944 Flood Control Act to the Water Resources Development Act of 1996. The Federal Water Project Recreation Act (P.L. 89-72) and the Water Resources Development Act of 1986 (P.L. 99-662) provide additional guidance. Further specific CERP design guidance was signed on May 12, 2000, in the form of the Department of the Army and South Florida Water Management District (SFWMD) Design Agreement for Everglades and South Florida Ecosystem Restoration Project.

Additional authorization and guidance for the proposed ancillary recreation resources development is contained in CECW-AG, 11 June 1998 Memorandum, Policy Guidance Letter No. 59, Recreation Development at Ecosystem Restoration Projects, and EP 1165-2-502. Although they have austere budgets and policy requirements, recreational developments can and do contribute to community health and well-being (CECW 1998). The recreation resources proposed as part of the Lake Okeechobee Storage Reservoir Section 203 Study (LOCAR or Project) comply with the philosophy and inclusion of the CESAD-PD-J 15 SEP 2004 Memorandum, are economically justified, and fall within the 10 percent rule.

Additional supporting documentation for public access and recreational opportunities is found in the Presidential Memorandum: America's Great Outdoors (April 2010), and the subsequent report published jointly by the major federal land management agencies: America's Great Outdoors Report (February 2011). These documents recommend that land managers maintain or improve public access and recreational opportunities on government-owned lands and waters.

F.2 Introduction

This appendix contains a description of the conceptual recreation plan proposed for the LOCAR at two sites around the perimeter of the reservoir. This analysis will determine the net benefits for the recreation sites proposed within the Recommended Plan features. Recreation features are being included in the LOCAR as an incidental Project benefit and were not used in the justification of the Recommended Plan. Due to the incidental effect of the recreation elements, a determination of acceptable design to meet U.S. Army Corps of Engineers (Corps) standards has not been completed during the study phase.

In accordance with Engineering Regulation (ER) 1105-2-100, the recreation feature benefit-to-cost ratio analysis was based on costs provided in the LOCAR Total Project Cost Estimate certified by the Walla Walla Cost Engineering Center of Expertise in February 2024. The Corps certified an estimate of LOCAR recreation feature costs at \$2,965,000 in FY2024 dollars. Recreation Planning, Engineering, and Design (PED) and Construction Management (CM) costs were estimated by contract based on the proportions of recreation feature construction costs out of total construction costs, which were applied to each

contract's total PED and CM costs and then summed. Using this method, total Project recreation PED and CM are estimated to be \$552,000 and \$203,000 respectively, in FY2024 dollars.

The LOCAR Project would consist of two large reservoir cells that total approximately 11,354 acres (ac) (East Cell 6,563 ac; West Cell 4,791 ac). The reservoir would be contained by a perimeter dam and an interior divider dam approximately 33 feet (ft) above the ground. The East and West Cells are split by the interior divider dam to reduce wave runup. The perimeter dam and divider dam, approximately 21 miles (mi) in length, would allow for recreation opportunities such as hiking, biking, wildlife viewing, boating, fishing, and hunting. The scale of the proposed impoundment cells and the potential associated fishing and boating opportunities could attract users from points across South Florida. As available adjacent lands become increasingly developed, the local draw of visitors to the LOCAR may increase, and the impoundment would likely experience an increase in both local, regional, and national visitation.

The proposed features of the LOCAR recreation plan would not require additional real estate acquisition. All features would be compatible with the environmental purposes of the Project and might increase socioeconomic benefits generated by the Project. The activities that would be permitted in the Project include walking, hiking, bicycling, nature study, wildlife viewing, canoeing/kayaking, motorboating, fishing, and hunting. To ensure that Project goals are being met and public safety maintained, the reservoir may be operational for a period of time before boating access is allowed within the filled cells to evaluate compatibility. A tentative boating schedule may be tied to certain thresholds within the water regulation schedule. For example, boating could be allowed during the wet season when there is ample water in the reservoir and prohibited below a particular stage during the dry season when less water is available.

A major recreation attraction of the LOCAR would be the approximately 21-mi multi-use trail atop the dam constructed as part of the Project that would form three loop routes using the internal divider dam. Public access to the perimeter dam would be via a paved entrance road off Highway 70 that would lead to two paved parking areas atop the perimeter dam at the southeastern corner of each cell (**Figure F-1**). Both paved parking areas would be located on top of the perimeter dam and would each include a boat ramp, dual-gender vault bathroom, stand-alone informational kiosk, large shelter with picnic benches, Americans with Disabilities Act (ADA) accessible parking, trailer parking, bike rack, pedestrian gate, and safety fencing. Two handicapped-accessible public boat ramps would be provided; one into the southeastern corner of each of the two reservoir cells. Boat traffic-control buoys would keep boaters clear of the reservoir structures. Signage would post warnings. Ample overflow public parking would be developed outside of the southeastern dam and perimeter canal in the general area of the construction staging location off Highway 70.

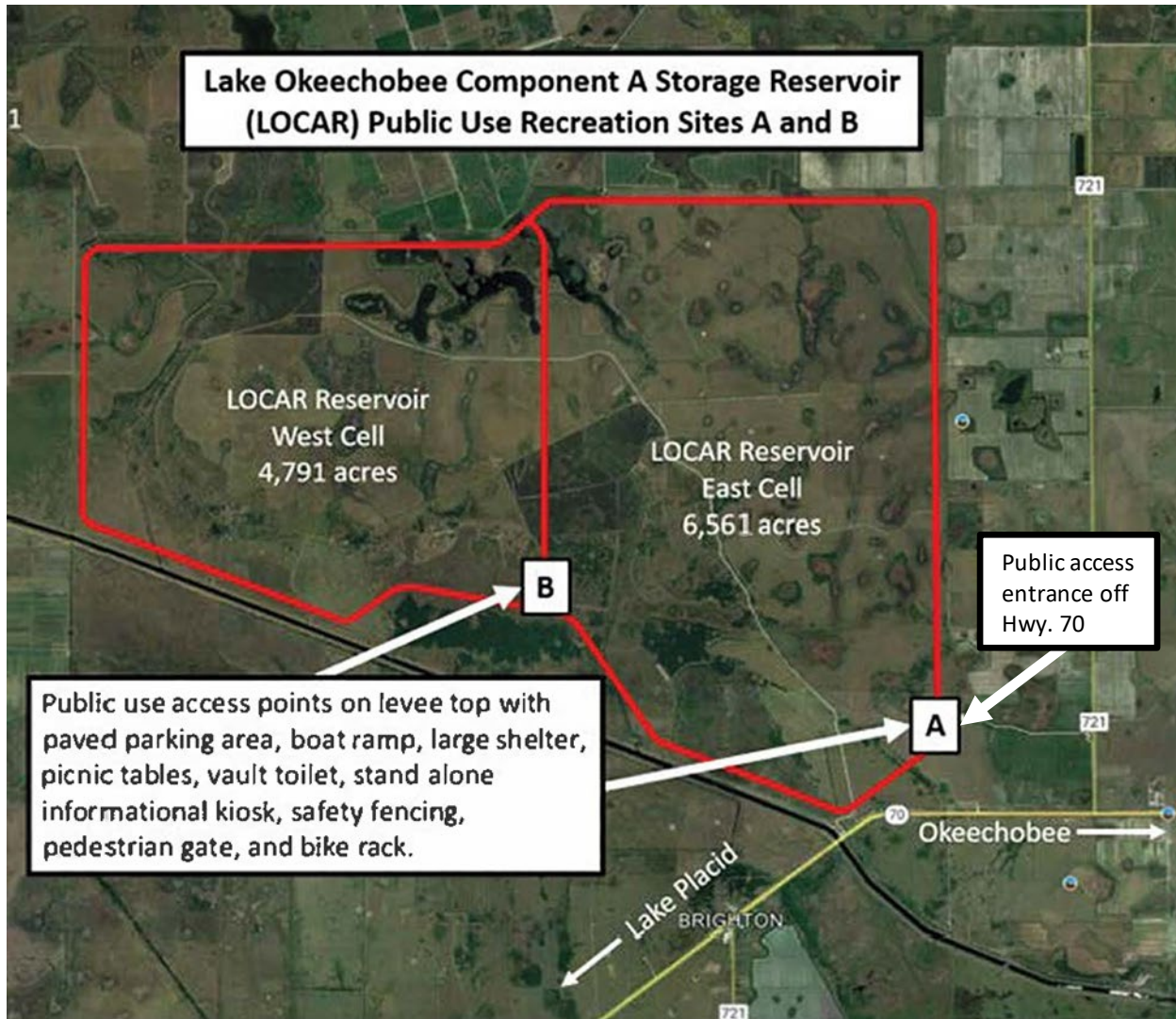


Figure F-1. Conceptual locations of the recreational public use Access Sites A and B on the Lake Okeechobee storage reservoir.

The adjacent Lake Istokpoga, Kissimmee River, Lake Okeechobee, and state and federal Wildlife Management Areas currently receive visitors from all over the state and nation. The LOCAR would experience increased visitation rates through its geographic proximity to these areas and due to the large public interest in resource-based outdoor recreation opportunities. The dam would provide many recreational activities to include in Florida's Statewide Comprehensive Outdoor Recreation Plan (SCORP).

The recreation appendix considers the planned structures with dam and strives to maintain proposed access throughout the lifespan of the Project. The new structures envisioned would accommodate public access across these features or provide a means to reach the same destinations as much as reasonably possible. While these structure types may change in future designs, access or reasonable routes across would be maintained to the extent possible.

F.3 Benefit Categories

This section outlines the benefit categories.

F.3.1 Study Area

The 2019 Florida SCORP divides the state into eight planning regions to assess the demand and need for outdoor recreation. In south central Florida, two of these regions essentially meet on the shores of Lake Okeechobee and the Kissimmee River. This Project would primarily serve the needs of these two regions. User-oriented recreation activity deficits identified by the SCORP for these regions include multiple resource-based outdoor activities. The rapid population growth of south Florida will only add to the existing recreation deficits.

For the purposes of LOCAR recreational benefit estimation, the Study Area population is limited to census block groups that intersect a 2-mi buffer of the main Project site. This is a highly conservative approach, as the recreation opportunities provided by LOCAR would likely be utilized by out-of-state tourists and Florida households located further away.

Figure F-1 provides the conceptual locations for the proposed LOCAR recreational features. Approximately 21 mi of dam would provide access for biking, hiking, jogging, hunting, fishing, nature study, and wildlife viewing, while over 11,000 ac of reservoir would provide opportunities for water-based recreation, such as motorboating, canoeing/kayaking, fishing, and hunting at certain times of the year when water levels are suitable. During Project design, earthwork needed for public access facilities will be incorporated. Retaining construction staging areas and sharing boat ramps with staff are strategies used during Project design to efficiently provide for recreation. These strategies are consistent with the planning approach in other restoration projects.

The recreation planning for the LOCAR would incorporate an adaptive management strategy to address uncertainty regarding what vegetation would occur within the cells. The vegetation types and resulting wildlife found in different habitats greatly change the resource-based recreational interests. The Project would also provide for blueways and greenways to circulate on the project dam and canals and form connections between adjacent lands and water.

F.3.2 Sites A and B Public Access Areas

Sites A and B would be similar, each having a boat ramp, paved parking area with ADA accessibility, trailer parking, a large shelter, picnic tables, a dual-gender vault toilet, stand-alone informational kiosk, pedestrian gate, safety fencing, and bike rack. Sites A and B provide points of access to the water in each of the two reservoir cells (East and West) for staff and the public. Access to the site would be provided from Highway SR-70. A 24-ft, 2-lane paved road from an asphalt public road to the recreation facility is desired. The boat ramp facility would also act as a trailhead to the dam for the multi-use trail providing accessible parking at crest elevation and nearby public parking for vehicles and trailers. The perimeter of the parking area would have a post-and-rail fence unless along a deep canal or steep drop-off where a guardrail would be used. The parking surface would be asphalt, and entrances to the tops of the dam would be controlled by standard vehicle gates with pedestrian pass-throughs. Interpretive kiosks, shelters, and picnic tables would be located as close as possible to the reservoir to allow for unobstructed panoramic views of the water. Project design should not inhibit public access to

circumnavigate the impoundment dam as pedestrians or bikers. Structures and pumps would incorporate pedestrian bypass routes as much as possible. The SFWMD recreation program would control public access.

Typical boats permitted within the reservoir would be smaller, non-motorized boats with the potential exception of electric trolling motors or low-horsepower outboards (e.g., less than 25 horsepower). The SFWMD would own the fee title to this site. The cost estimates for Sites A and B recreation features are provided in **Table F-1** and **Table F-2**

Table F-2.

Table F-1. Cost Estimate for Site A Recreation Features (FY2024 Dollars).

Feature	Quantity	Unit Cost	Total Cost
Vehicle gate (electric, main entrance)	1	\$13,828.98	\$13,828.98
Vehicle gate with pedestrian pass-through	6	\$4,245.57	\$25,473.42
Large shelter (18'x30', includes concrete pad)	1	\$97,149.71	\$97,149.71
6' picnic tables	2	\$3,222.83	\$6,445.65
8' ADA accessible picnic tables	2	\$3,985.18	\$7,970.36
Standalone kiosk	1	\$1,445.69	\$1,445.69
Kiosk signs	2	\$236.94	\$9,714.68
Bike rack (9 bike)	1	\$101,166.90	\$101,166.90
Parking space wheel stops	41	\$374.87	\$374.87
Vault toilet, 2 gender	1	\$317.06	\$1,268.25
Recreation area rules sign	1	\$374.87	\$1,124.61
ADA accessible parking sign	4	\$287.72	\$287.72
Parking area rules sign	3	\$287.72	\$287.72
Entrance sign	1	\$3.94	\$4,066.36
Entrance gate sign	1	\$12.99	\$146,286.39
Pavement marking (linear feet)	1,032	\$13.00	\$34,663.64
Improved vehicle access road (square yards asphalt, 2-way) at entrance off Highway 70 (0.8 mile)	11,264	\$12.99	\$196,266.27
Ramp to dam top parking lot (square yards asphalt, 2 lanes, 1,000')	2,667	\$92.41	\$55,445.15
Dam top parking area (200'x680', square yards asphalt)	15,111	\$73,147.78	\$73,147.78
Guard rails (linear feet in parking area)	600	\$97,149.71	\$97,149.71
Boat ramp (concrete, 32'x180')	1	\$3,222.83	\$6,445.65
Construction Cost Sub-Total	-	-	\$776,414.16
Contingency	55.0%		\$427,027.79
Total Construction Cost			\$1,203,441.95
Planning, Engineering and Design (25% plus 55% contingency)	25.0%		\$300,860.49
Construction Management (9.2% plus 55% contingency)	9.2%		\$110,716.66
Site A - Total Recreation Project Cost			\$1,615,019.09

ADA—Americans with Disabilities Act

Table F-2. Cost Estimate for Site B Recreation Features (FY2024 Dollars).

Feature	Quantity	Unit Cost	Total Cost
Large shelter (18'x30', includes concrete pad)	1	\$97,149.71	\$97,149.71
6' picnic tables	2	\$3,222.83	\$6,445.65
8' ADA accessible picnic tables	2	\$3,985.18	\$7,970.36
Standalone kiosk	1	\$58,963.11	\$58,963.11
Kiosk signs	2	\$1,445.69	\$1,445.69
Bike rack (9 bike)	1	\$236.94	\$9,714.68
Parking space wheel stops	41	\$101,166.90	\$101,166.90
Vault toilet, 2 gender	1	\$374.87	\$374.87
Recreation area rules sign	1	\$317.06	\$1,268.25
ADA accessible parking sign	4	\$374.87	\$1,124.61
Parking area rules sign	3	\$3.94	\$4,066.36
Pavement marking (linear feet)	1,032	\$13.00	\$34,663.64
Ramp to dam top parking lot (square yards asphalt, 2 lanes, 1,000')	2,667	\$12.99	\$196,266.27
Dam top parking area (200'x680', square yards asphalt)	15,111	\$92.41	\$55,445.15
Guard rails (linear feet in parking area)	600	\$73,147.78	\$73,147.78
Boat ramp (concrete, 32'x180')	1	\$97,149.71	\$97,149.71
Construction Cost Sub-Total	-	-	\$649,213.03
Contingency	55.0%		\$357,067.17
Total Construction Cost			\$1,006,280.20
Planning, Engineering and Design (25% plus 55% contingency)	25.0%		\$251,570.05
Construction Management (9.2% plus 55% contingency)	9.2%		\$92,577.78
Site B - Total Recreation Project Cost			\$1,350,428.03

ADA—Americans with Disabilities Act

F.3.3 Total Construction Cost Estimate

. Construction cost estimates are totaled in **Table F-3**.

Table F-3. Summary of Cost Estimates for All Recreation Features (FY24 Dollars), Rounded.

Site	Cost
Site A Recreation Features Construction	\$776,400
Site B Recreation Features Construction	\$649,200
Sub-Total of Recreation Construction	\$1,425,600
Contingency (55% from CSRA)	\$784,100
Total Construction Costs	\$2,210,000
Planning, Engineering, and Design Costs	\$552,000
Construction Management Costs	\$203,000
Total Recreation Costs	\$2,965,000

In accordance with ER 1105-2-100, the recreation feature benefit-to-cost ratio analysis was based on costs provided in the LOCAR Total Project Cost Estimate certified by the Walla Walla Cost Engineering Center of Expertise in February 2024 (**Section F.6**).

The national economic development (NED) benefit evaluation procedures contained in ER 1105-2-100 (April 22, 2000), Appendix E, Section VII, include three methods of evaluating the beneficial and adverse NED effects of project recreation: travel cost method (TCM), contingent valuation method (CVM), and unit day value (UDV) method.

The UDV method was selected for estimating recreation benefits associated with the creation of the LOCAR. The UDV approach in recreation benefit analysis consists of two parts: determining value per visit and estimating visitation.

F.3.4 Determining Value per Visit

When the UDV method is used for economic evaluations, planners select a specific value from the range of values provided annually. Application of the selected value to estimate annual use over the project lifespan, in the context of the with- and without-project frameworks of analysis, provides the estimate of recreation benefits.

To capture additional recreation benefits from this Project Area, we must consider the existing recreational features and visitations against the Future Without Project (FWO). In the case of LOCAR, the FWO-condition recreational benefits are assumed to be negligible. The Project Area is privately owned and not accessible to the public. The Future With Project (FWP) condition would be the expected value of the recreational activity based on the UDV method.

Table F-4 illustrates the method of assigning a point rating to a particular activity. The table also shows the point values assigned based on measurement standards described for the five criteria: Recreation Experience, Availability of Opportunity, Carrying Capacity, Accessibility, and Environmental.

Table F-4. Guidelines for Assigning Points for General Recreation.

Criteria	Judgment Factors				
Recreation experience (Total Points: 30)	2 general activities	Several general activities	Several general activities; 1 high quality value activity	Several general activities; more than 1 high quality activity	Numerous high quality value activities; some general activities
	0-4	5-10	11-16	17-23	24-30
Recreational Point Value Assigned: 19					
Availability of opportunity (Total Points: 18)	Several within 1 hr. travel time; a few within 30 min. travel time	Several within 1 hr. travel time; none within 30 min travel time	1 or 2 within 1 hr. travel time; none within 45 min. travel time	None within 1 hr. travel time	None within 2 hr. travel time
	0-3	4-6	7-10	11-14	15-18
Availability of Opportunity Point Value Assigned: 3					
Carrying capacity (Total Points: 14)	Minimum facility for development for public health and safety	Basic facility to conduct activities	Adequate facilities to conduct without deterioration of the resource or activity experience	Optimum facilities to conduct activity at site potential	Ultimate facilities to achieve intent of selected activities
	0-2	3-5	6-8	9-11	12-14
Carrying Capacity Point Value Assigned: 8					

Criteria	Judgment Factors				
Accessibility (Total Points: 18)	Limited access by any means to site or within site	Fair access, poor quality roads to site; limited access within site	Fair access, fair road to site; fair access, good roads within site	Good access, good roads to site; fair access, good roads within site	Good access, high standard road to site; good access within site
	0-3	4-6	7-10	11-14	15-18
Accessibility Point Value Assigned: 12					
Environmental (Total Points: 20)	Low aesthetic factors that significantly lower quality	Average aesthetic quality: factors exist that lower quality to minor degree	Above average aesthetic quality: any limiting factors can be reasonably rectified	High aesthetic quality: no factors exist that lower quality	Outstanding aesthetic quality: no factors exist that lower quality
	0-2	3-6	7-10	11-15	16-20
Environmental Point Value Assigned: 7					
SUM OF ALL POINTS: 49					

Point value assignments shown above are based on Economic Guidance Memorandum (EGM) 23-03. The Criteria and Judgment Factors for General Recreation were specifically used as the basis of the estimated point values for the proposed recreation areas. Judgment factors were based on site visits and coordination with local agencies. The following selection factors were used for the criteria outlined in **Table F-4**.

The proposed LOCAR recreation features would provide several general activities that would be afforded by the Project setting and dam. The proposed LOCAR site offers solitude and panoramic views in a growing metropolitan region and would provide specific recreation amenities for expanding local populations and increasing recreation demands. The environmental restoration component (dense marshlands, water storage and release) could help to provide an increase of quality freshwater boat and bank fishing for the region on Project lands. The boat ramps, shelters, informational kiosks, and multi-purpose trail experiences would be enhanced by panoramic views of the reservoir and wildlife viewing opportunities.

The proposed recreation sites would provide several general recreation activities and more than one high-quality activity. Likely high-quality recreational opportunities include alligator and waterfowl hunting. The managed water levels and potential presence of aquatic vegetation may provide ideal conditions for quality waterfowl hunting and bass fishing at certain times of the year.

The availability of opportunity rating is based upon current local recreation facilities near the Project Area in the proposed recreation resource location. A 20-mi radius around the proposed Project Area includes the Brighton Reservation, the town of Okeechobee, and several Wildlife Management Areas, and is primarily agricultural land. A 50-mi radius would include all of the urban areas on Lake Okeechobee, a portion of the US-27 urban corridor, a segment of the Florida east coast from Stuart through Sebastian, more agricultural lands, several more Wildlife Management Areas, and regional parks and greenways with similar resources occurring in the east urban setting. The proposed multi-use trail, freshwater bank fishing and boat launching opportunities, interpretive kiosk, and shelters and benches would provide unique opportunities in the proposed areas. The proposed recreation resources

would help to provide facilities for current and projected populations within the Central and Central East regions identified in SCORP and beyond.

The proposed LOCAR recreation resource carrying capacity values are based on optimum use of the site without overuse of the proposed recreation resources. Boat and non-boat fishing, multi-use trail hiking/walking, and environmental observation comprise a balanced use of the proposed recreation resource. Adequate facilities would be constructed to support these activities without deteriorating the resource or activity experience. Peak use is expected to occur during half of the calendar year from approximately November through May.

The accessibility rating is based upon the availability of the local highways, roads, and streets in good condition that would provide access to the proposed recreation facilities. A new access point would be developed for the public and staff off SR-70. The dam would provide approximately 21 mi of good multi-use trail access around and through the reservoir. Open water within the Project would provide approximately 11,885 ac of potential boating, hunting, and fishing area to access via canoes, kayaks, or small boats.

The environmental quality rating is based upon the existing natural resources and aesthetic quality of the proposed Project Area. The proposed reservoir site features possess moderate aesthetic resources, which would be slightly improved with the LOCAR construction. These areas would provide panoramic views of open water and potentially some wetland vegetation at certain times of the year. The best aesthetic values of the proposed Project Area are views from the dam inward over the open water and marsh lands within the reservoir. Views from LOCAR dam to the outside of the reservoir perimeter would be of improved pasture, orange groves (both active and abandoned), with some areas of wet prairie, dry prairie, oak hammocks, and scrub habitat.

The value of a day of general recreation at the proposed recreation sites for LOCAR was determined using the guidelines for Assigning Points for the General Recreation in **Table F-4**. The points were then converted to dollar values using conversion factors included in the Economic Guidance Memorandum 23-03, which is the most current as of the writing of this report. **Table F-5** was used to convert points to a UDV dollar value. Using linear interpolation, the total point value for the recreation sites was determined to be 49. The user day value conversion equivalent is \$10.23.

Table F-5. Unit Day Value Point Conversion.

Point Values	General Recreation Values
0	\$4.87
10	\$5.78
20	\$6.39
30	\$7.31
40	\$9.13
50	\$10.35
60	\$11.26
70	\$11.87
80	\$13.09
90	\$14.00
100	\$14.61

F.3.5 Estimating Visitation

The State of Florida Department of Environmental Protection’s (FDEP) Division of Recreation and Parks coordinated and developed the Florida SCORP in 2019 and prior years. The 2019 SCORP indicates low levels of service compared to other regions for all evaluated activities based on user participation surveys. The primary activities associated with lower levels of service proposed for LOCAR recreation activities are bicycling, hiking, boating, nature study, and non-boat freshwater fishing. These low levels of service would likely continue as the population is projected to increase in coming decades.

The Central, Central East, Southeast, and Southwest Regions share the shores of Lake Istokpoga, Lake Okeechobee, and the Kissimmee River. These three resources draw the public from those regions. The LOCAR reservoir would be a large inland body of open water and freshwater marsh accessible from Highway SR-70. The Project features are in an area of the state where Lake Istokpoga, Lake Okeechobee, and the Kissimmee River are central to resource-based recreation.

The carrying-capacity guidelines established by the SCORP of 2019 (**Table F-6**) were used to inform the visitation analysis. These guidelines are based on maximum carrying capacity levels developed by the FDEP Division of Recreation and Parks for use and protection of state park resources. In every case, LOCAR visitation rates were estimated to be substantially lower than the SCORP’s published rates.

Table F-6. SCORP Carrying Capacity Guidelines.

Activity	Units Provided	Maximum Area Requirements	Guidelines Capacity	Regions with Below Average Levels of Service
Hiking Unpaved Biking	21 miles of dam top	10-20 per mile	40-80 users per mile per day	Central Southeast
Boating (motorized & non)	17.7 square miles of impoundment (11,354 acres)	1-2 users per boat	1-2 boats per square mile	Central Southwest Southeast
Nature Study	21 miles	5-20 groups per mile	40 -160 users per mile of trail/day	Central Southwest Southeast
Freshwater Bank Fishing	110,880 feet	10-linear feet of bank per person	5-linear feet of bank per user mile	Central Southwest Southeast

The use guidelines designated for biking, hiking, fishing, and nature-study trails were based on carrying-capacity guidelines adopted by the SCORP and used by the state park system. The bicycle trail use guidelines are 40 to 80 users per mile per day and assume 10 to 20 riders per mile per day with a daily turnover rate of four. The use guideline for hiking trails is 4 to 20 hikers per mile per day with a daily turnover rate of four. The LOCAR consists of approximately 21 mi of proposed dam top, multi-purpose trails available for use. Multi-purpose trails close to the community of Okeechobee would see use as urban exercising opportunities as well as resource-based use.

It is assumed that 10 linear ft of LOCAR shoreline is required for each person fishing at any given time. It is assumed that this space would be used twice per day and therefore the use guideline was established

at 5 linear ft per person per day. It is assumed that bank fishing would be most popular adjacent to the inflow and outflow structures. It is also assumed bank fishing would occur up to .25 mi away from the structures on either side. Nine such structures are relatively close to the trailheads, totaling 4.5 mi (23,760 linear ft) of bank fishing associated with the LOCAR for benefit estimation purposes.

These activities are planned in the LOCAR Recreation Appendix because they are compatible with the Project, and there are greater state recreation deficits with projected population growth. With ensuing development in the immediate area and region and an increase in population projected for the State of Florida, the study team believes there would be ample use of the proposed recreation facilities and expects a continued shortage in some of the existing activities in this area by 2070.

User visitation rates were estimated using relevant results from the SCORP 2016-2017 Participation Study, which catalogued over 4,000 completed surveys from Florida residents representing each of the state's 67 counties. The SCORP 2016-2017 Participation Study identifies what activities Florida residents have participated in during the last 12 months and where they participated. The research also analyzes frequency of participation and calculates resident and tourist demand indices for activities, which simultaneously account for both volume and frequency of demand. SCORP research projects typically analyze data at a statewide level and sometimes at the regional level within a state. County-specific results are not utilized because county-level sample sizes are often too small to be interpreted with adequate confidence.

Due to the LOCAR's relatively rural location and rustic/minimal recreation features proposed, it was determined that an extremely conservative usage rate would be projected. For the purposes of this analysis, regional and statewide participation rates were applied to a Study Area including only the census block groups directly bordering the Project Area (**Table F-7** and **Figure F-2**).

Table F-7. LOCAR Recreation Study Area by County and SCORP Region.

SCORP Region	Central	Southwest
LOCAR County	Highlands	Okeechobee
Census Block Groups	9215.1, 9617.02.2	0001.1, 0003.2
Total Households	638	892

LOCAR–Lake Okeechobee Storage Reservoir Section 203 Study; SCORP–Statewide Comprehensive Outdoor Recreation Plan

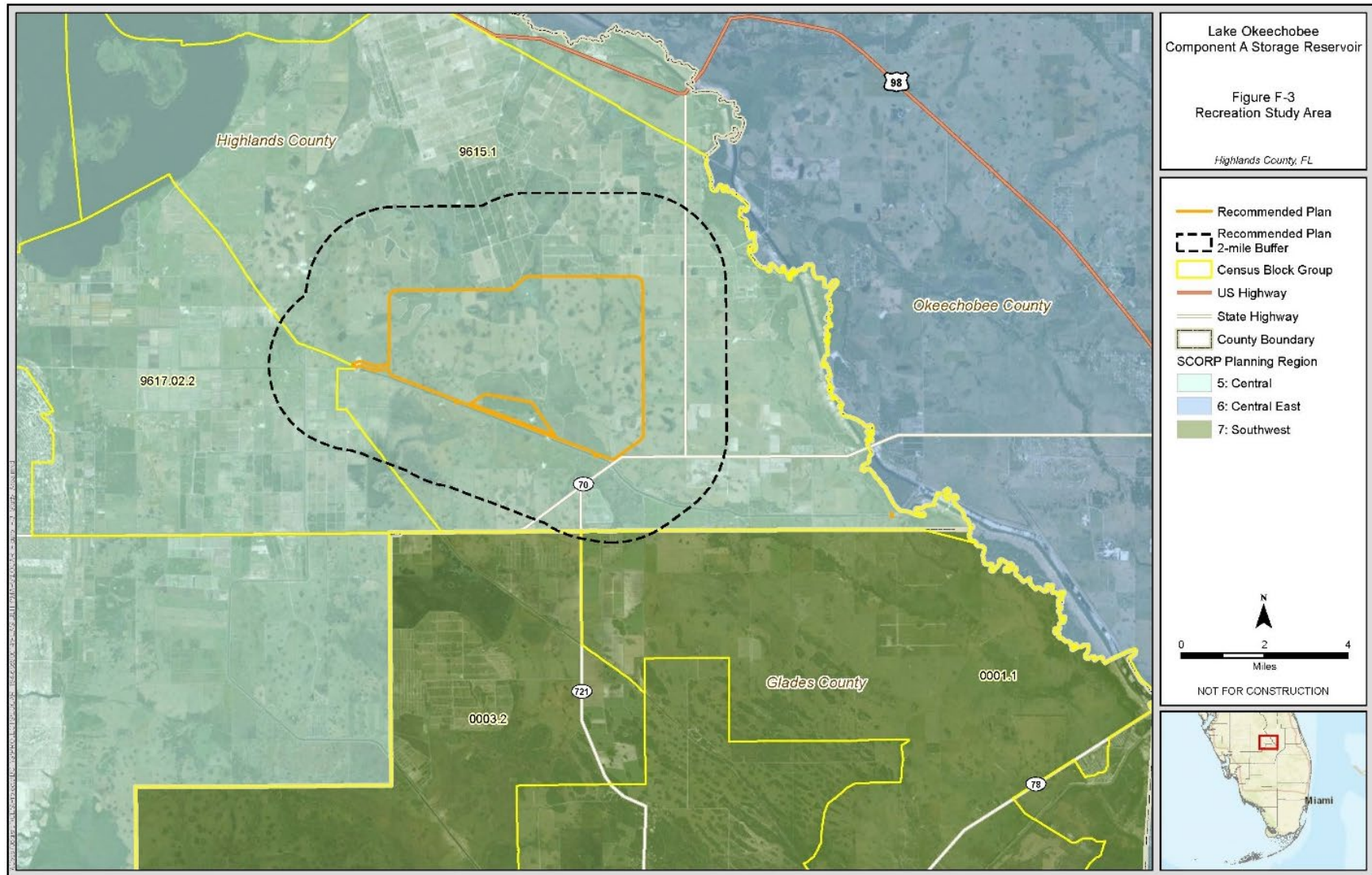


Figure F-2. LOCAR recreation study area.

The following steps were taken to express total recreation participation of the market on a daily basis:

- SCORP regional household participation estimates were applied to the LOCAR recreation Study Area to estimate the number of households participating in a given recreational activity per year (Table F-8).

Table F-8. LOCAR Recreation Household Participation Estimation.

Household Participation in Recreational Activities in Florida in Past 12 Months by SCORP Region (Resident Survey Results)			
Category	Central Region	Southwest Region	Estimated Number LOCAR Recreation Study Area Households Participating per Year
Unpaved Bicycling	15.5%	13.20%	217
Hiking	40%	39%	603
Freshwater Boat Ramp	19%	13%	237
Nature Study	25%	30%	427
Freshwater Bank Fishing	19.5%	17.10%	277
Canoe/Kayak/SUP	28%	32%	464

LOCAR–Lake Okeechobee Storage Reservoir Section 203 Study; SCORP–Statewide Comprehensive Outdoor Recreation Plan; SUP–stand-up paddleboard

- The mean SCORP statewide participation durations for households engaging in each respective activity were converted to yearly percentages. These yearly percentages were applied to the LOCAR’s estimated number of households participating per year.
- Lacking individual-level participation data, the minimum number of participants that SCORP household data could represent was assumed. Converting at one person per household, this approach yields a total daily recreation participation of 97 persons (Table F-9).

Table F-9. LOCAR Recreation Average Daily Visitation Estimation.

Category	Mean Days of Participation (Florida Households with Participation >0)	Percent of Year Participating (Florida Households with Participation >0)	Estimated LOCAR Average Daily Participation
Unpaved Bicycling	40.1	11.01%	24
Hiking	16	4.39%	26
Freshwater Boat Ramp	14	3.84%	9
Nature Study	13.9	3.82%	16
Freshwater Bank Fishing	12.8	3.51%	10
Canoe/Kayak/SUP	9.3	2.55%	12
TOTAL	-	-	97

LOCAR–Lake Okeechobee Storage Reservoir Section 203 Study; SUP–stand-up paddleboard

The projected usage rates follow the resource needs and guidelines published by the SCORP, but in every case, rates were estimated to be substantially lower than the SCORP’s published rates. It is also anticipated that the water-based recreation opportunities could be reduced during the dry periods, and only several miles on either side of access points would be utilized to their potential. This the most practical scenario for justifying the proposed recreation features for the LOCAR.

F.4 Economic Justification of Recreation

The justification of incurring additional costs for recreation features is derived by utilizing a benefit-to-cost ratio. The tangible economic justification of the proposed ancillary recreation Project component can be determined by comparing the equivalent average annual charges (facility costs) against the estimate of the equivalent average annual benefits, which would be realized over the period of analysis (Project lifespan). These average annual recreation benefits and costs are summarized in **Table F-10**.

Engineering Regulation 1105-2-100 (The Planning Guidance Notebook) provides economic evaluation procedures to be used in all federal water resources planning studies. The guidelines specified in the regulation were observed in preparing this cost analysis. The construction cost estimates for recreation features presented throughout **Section F.3** of this appendix were developed in coordination with SFWMD. In accordance with ER 1105-2-100, the recreation feature benefit-to-cost ratio analysis would be based on costs provided in the LOCAR Total Project Cost Estimate certified by the Walla Walla Cost Engineering Center of Expertise in February 2024. Costs are presented at the FY2024 price level. The federally mandated FY2024 project evaluation interest rate of 2.75 percent was applied over a 50-year period of analysis. The results of this analysis are compared against the project recreation benefits (**Section F.4**) in **Table F-10**.

Table F-10. Corps-certified Cost Estimate–Benefit-to-Cost Summary (FY24 Dollars).

Recreation Feature	Cost (FY23 Dollars)
Construction	\$2,210,000
Lands and Damages	\$0
PED ¹	\$552,000
Construction Management ²	\$203,000
Interest During Construction ³	\$30,000
Total Investment	\$2,995,000
Amortized	\$110,938
OMRR&R	\$24,600
Average Annual Cost	\$135,538
Unit Day Value	\$10.23
Average Daily Users	97
Average Annual Users	35,405
Average Annual Benefits	\$362,193
Benefit to Cost Ratio	2.7
Net Annual Benefits	\$226,656

^{1/} Recreation Pre-construction, Engineering, and Design (PED) costs presented here constitute estimate external to Total Project Cost Sheet. The proportion of total Project recreation construction cost out of total Project construction cost is applied to total Project PED cost to estimate total Project recreation Construction Management (CM) cost.

^{2/} Recreation CM costs presented here constitute estimate external to Total Project Cost Sheet. The proportion of total Project recreation construction cost out of total Project construction cost is applied to total Project CM cost to estimate total Project recreation CM cost.

^{3/} Recreation Interest During Construction (IDC) was calculated by contract and summed. Contract-by-contract recreation CM and recreation PED costs estimated using the methodology described above, substituting total Project construction costs for contract-by-contract Project construction costs and total Project recreation construction costs for contract-by-contract Project recreation costs, as applicable. IDC calculated over the following Rough Order of Magnitude (ROM) schedule estimates by feature site and Civil Works Sub-feature Description: C&CM (Paradise Run & Kissimmee River-Center – 12 months; WAF – 96 months) and PED (Paradise Run & Kissimmee River Center – 24 months; WAF – 48 months)

Corps–U.S. Army Corps of Engineers; OMRR&R–operation, maintenance, repair, replacement, and rehabilitation; PED–preconstruction engineering and design

This analysis concludes that the Recommended Plan (Alternative 1) incidental NED total project recreation features benefit-to-cost ratio is 2.7. FY24 average annual recreation NED benefits of \$362,193 and average annual costs of \$135,538 amount to net annual benefits of \$226,655 over a 50-year period of analysis.

F.5 Sensitivity Analysis

A sensitivity analysis was conducted to further reinforce expected benefits and provide extra support for the justification of recreation features. **Table F-11** presents a sensitivity analysis that contains the expected average annual benefits from the above table and a worst-case scenario depicting the minimum number of annual visitors required for benefits to equal costs.

Table F-11. Corps-certified Cost Estimate–Benefit-to-Cost Summary.

Scenario	Annual Users	Average Daily Users	Annual Benefit
Projected	35,405	97	\$349,620
Minimum to Match AAE Costs	13,249	36	\$135,538

A minimum average rate of 36 users per day would be required to generate enough average annual benefits to justify the proposed costs for recreation.