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## IV. ENVIRONMENTAL IMPACT ANALYSIS

### J. RECREATION

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#### 1. INTRODUCTION

This section discusses the existing recreational resources near the Proposed Project Site and throughout the Delta and evaluates the potential direct and indirect impacts of the Proposed Project on recreational resources. To determine whether the Proposed Project would result in a significant environmental impact related to recreation, this Draft EIR evaluates impacts related to physical deterioration of recreational facilities and impacts from the need for construction or expansion of recreational facilities. Potential impacts to recreation are assessed in light of existing formal and informal recreation practices and areas in the Delta, plans and policies related to Delta recreation, and easements present in the Proposed Project Site that are pertinent to recreation. This section also includes an evaluation of the Proposed Project on regional fishing opportunities.

#### 2. ENVIRONMENTAL SETTING

##### a. Local Recreation

There are no officially sanctioned, public recreational facilities within the Proposed Project Site; though there are private facilities and access points to public areas with recreational opportunities. Recreational opportunities within the Proposed Project Site are presently limited to waterfowl hunting at the private Liberty Farms Duck Club. Adjacent to the Proposed Project Site, the Shag Slough Bridge provides pedestrian access to the Liberty Island Ecological Reserve (the Reserve), which provides recreational opportunities further detailed below.

The Liberty Farms Duck Club is a privately owned and operated venue for waterfowl hunting. Because the Liberty Farms Duck Club is not open to the public, use data are not available. The Liberty Farms Duck Club was created in 2005 through a 1,634-acre restoration project, which created managed wetland cells throughout the Liberty Farms Property. The project restored approximately 975 acres of seasonal and semi-permanent wetlands, 575 acres of upland grasslands, and 84 acres of riparian habitat, consistent with an easement purchased by the United States Department of Agriculture's Natural Resources Conservation Service (NRCS) and the California Waterfowl Association. The project was designed to create nesting habitat and winter cover for avian species popular for hunting such as mallard (*Anas platyrhynchos*), pheasant (*Phasianus colchicus*), gadwall (*Mareca strepera*), cinnamon teal (*Anas cyanoptera*), and dove (*Columbidae* spp.).

Additionally, fishing occurs on the Shag Slough Levee and from the Shag Slough Bridge. Technically, fishing is not allowed as the Shag Slough Levee is private land and the Shag Slough Bridge has signage posted indicating "no fishing from bridge"; however, anglers park along Liberty Island Road and fish off the side of the road and the bridge into Shag Slough. The Shag Slough

Levee and Bridge are intended for flood control and transportation purposes, respectively (although the bridge is structurally deficient and presently closed to vehicular traffic). As such, they are not maintained for recreational purposes and use data ~~are~~was not available. However, the bridge provides pedestrian access to ~~a small portion of the western~~eastern shoreline of Shag Slough ~~in~~, located on the western side of the Reserve, where ~~bank~~shoreline fishing is allowed.

The Reserve is located on the eastern side of Shag Slough. The Reserve is maintained by CDFW and is open to the public for recreational activities. The Reserve is primarily accessed by boats but can be accessed by pedestrians from the Proposed Project Site via the Liberty Island Bridge.

The interior of the Reserve is open to tidal inundation and is shallow enough to only be accessible by kayak or shallow-water boats. Recreational activities within the interior of the Reserve include fishing, bird watching, and hunting. Activities which may be carried out on foot within the Reserve are limited to a ~~small portion of the shoreline along higher ground and include shoreline fishing and bird watching.~~ These activities occur along the ~~western~~ bank of Shag Slough near the Shag Slough Bridge, which provides the only pedestrian access point.<sup>1</sup>

Fishing occurs year-round at the Reserve. Fishing for Striped Bass is most popular in the fall, winter, and spring, coinciding with the fish migration, but also occurs year-round. Fishing for White Sturgeon also occurs on the Reserve, primarily in the winter and early summer. Most sturgeon anglers fish from the west bank of the Reserve into Shag Slough. Anglers for Striped Bass also fish along Shag Slough from the western side of the Reserve, and from boats in the Reserve's interior. Due to the limited access to recreation land at the Reserve, public use data for Shag Slough ~~are~~was not readily available to incorporate into the Draft EIR. Subsequently, additional data was collected to verify and amplify information on local and regional shoreline fishing opportunities. The results of this additional data collection are described below.

## **b. Regional Recreation**

Recreation is important to the economy and identity of the Delta. Popular recreational activities throughout the region often center on the Delta's waterways, wildlife, and agriculture. The Delta Stewardship Council estimates that approximately 12 million activity days of recreation occur in the Delta annually, capitalizing on recreational opportunities throughout the region such as fishing, boating, birding, and hunting.<sup>2</sup> While other recreational activities are present throughout the Delta, these activities are the primary focus of this analysis due to their presence within and near the Proposed Project Site and their potential to be affected by the Proposed Project.

According to the California Department of Parks and Recreation's 2012-2014 statewide recreation survey, a plurality of adult recreationists in California travel between 21 to 60 minutes to the places they visit most often for recreation.<sup>3</sup> Based on this information, this analysis assumes that a 60-

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<sup>1</sup> [CDFW] California Department of Fish and Wildlife, "Reserve Land Management Plan," July 2015, <https://www.wildlife.ca.gov/Lands/Planning/Liberty-Island-ER>.

<sup>2</sup> Delta Stewardship Council, "The Delta Plan: Ensuring a Reliable Water Supply for California, a Healthy Delta Ecosystem, and a Place of Enduring Value" (Sacramento, April 26, 2018), <http://deltacouncil.ca.gov/delta-plan-0>.

<sup>3</sup> California State Parks, "Survey on Public Opinions and Attitudes on Outdoor Recreation in California," January 2014.

minute driving radius defines the local scale surrounding the Proposed Project Site (i.e., the area within which local residents who recreate at the Proposed Project Site may travel to find alternative recreation opportunities). Therefore, Table IV.J-1 provides a sample of local opportunities to fish from a bank/shoreline or pier within a 60-minute drive of the Proposed Project Site. Information for these recreational inventories was obtained from official documents such as the Delta Protection Commission’s Inventory of recreational facilities in the Delta<sup>4</sup>, the Delta Stewardship Council’s Delta Plan<sup>5</sup>, and City and County Parks Department webpages, as well as unofficial sources such as online angler’s forums and crowd-sourced lists of fishing spots.<sup>6</sup> The latter was included due to the popular use of waterways, levees, and bridges throughout the Delta as informal recreational facilities and includes 28 informal fishing areas and 30 fishing piers, which are included in Table IV.J-1 as appropriate based on distance from the Proposed Project Site and availability of bank fishing opportunities. As noted above, following publication of the EIR, additional research was undertaken to verify and amplify the information included in the Draft EIR describing opportunities to fish from a shoreline or pier within a 60-minute drive of the Proposed Project Site. The sources provided in the Draft EIR were re-examined for additional shoreline fishing opportunities, and new sources were identified, including CDFW’s Ecological Reserves and Wildlife Areas webpage<sup>7</sup> and additional online angler’s forums.<sup>8,9,10,11</sup>

In addition, in order to ground-truth the information on fishing opportunities within a 60-mile drive of the Proposed Project Site, in-person visitor surveys were conducted at the Proposed Project Site in September/October 2021.<sup>12</sup> Question 8 of the 2021 visitor survey asked respondents if they fish in other locations in the Delta; the responses to this question were used to identify additional known shoreline fishing locations within a 60-minute drive of the Proposed Project Site.<sup>13</sup>

Table IV.J-1 represents a limited sample of the total amount/number of area for shoreline and pier fishing opportunities available in the Delta/local area of the Proposed Project Site based on the sources described above. The As shown in Table IV.J-1, the research undertaken subsequent to

<sup>4</sup> Delta Protection Commission, “2015 Inventory of Recreation Facilities in the Sacramento-San Joaquin Delta,” 2015.

<sup>5</sup> Delta Stewardship Council, “The Delta Plan.”

<sup>6</sup> California Delta Chambers & Visitor’s Bureau, “Delta Fishing Holes,” accessed October 17, 2019, <https://californiadelta.org/fishing/delta-fishing-holes/>.

<sup>7</sup> California Department of Fish and Wildlife, “Places to Visit,” accessed January 25, 2023, <https://wildlife.ca.gov/Lands/Places-to-Visit/>.

<sup>8</sup> Sacramento-San Joaquin Delta National Heritage Area, “Delta Fishing,” accessed January 25, 2023, <https://visitcadelta.com/what-to-do/fishing/>.

<sup>9</sup> FISHBRAIN, “Find your best fishing spot” interactive map, accessed January 25, 2023, <https://fishbrain.com/explore/>.

<sup>10</sup> YouTube “Best Bank Fishing Spots on the CA Delta,” accessed January 24, 2023, [https://youtube.com/watch?v=bA\\_5hLaciJo/](https://youtube.com/watch?v=bA_5hLaciJo/).

<sup>11</sup> Fishing Booker Blog, “California Delta Fishing: The Complete Guide,” accessed January 23, 2023, <https://fishingbooker.com/blog/california-delta-fishing/>.

<sup>12</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 2 – Technical Analysis – Consistency with Policy G P1(b)(3) Best Available Science Methods Used to Estimate Recreational Use. December 2021.

<sup>13</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 2E. Additional Detailed Results from On-Site Visitor Surveys. December 2021.

publication of the EIR not only validated the locations included, but also identified an additional 36 sites located within a 60-minute drive of the Proposed Project Site. While this list is still not exhaustive, it provides a more complete context of the scale of shoreline fishing opportunities in the vicinity of the Proposed Project Site.

Table IV.J-1 was further refined to include estimates of the length of bank available within these areas was assessed available shoreline for fishing for each identified shoreline fishing location. Available shoreline includes shoreline that has an absence of dense vegetation such that it will allow access to a fishing site and space for casting and recovery of fish. Updated satellite imagery from Google Earth (taken June 2021) was used to identify the total length of “available shoreline for fishing opportunities” at each potential fishing location examined (in linear feet), based on the absence of vegetation, which was determined by reviewing current Google Earth imagery. Most areas in this table offer about 500 dense vegetation, linear feet for shoreline fishing. Several areas offer substantial amounts of shoreline available for fishing, in particular Brannan Island State Recreation Area (approximately 3,000 linear feet), and an informal area near Rio Vista known as “The Patio” offers about 2,000 linear feet. Informal recreational opportunities are noted here due to the popularity of bank fishing from levee roads and other informal fishing areas throughout the Delta. However, because this practice often takes place on private property, this analysis is based on the availability of formal bank fishing opportunity at publicly managed recreational areas. Pier fishing opportunities were included in this total but accounted for approximately 1.05 miles of the 22.33 miles identified, or 4.7%. More discussion of the methods used to identify and calculate shoreline fishing opportunities is presented below under Impact b.iii.

**Table IV.J-1. Selected Sample of Available Shoreline and Shoreline Fishing and Pier Fishing Locations Sites within a One Hour 60-minute Drive of the Proposed Project Site<sup>1</sup>**

<b>Facility</b>	<b>Managing Entity</b>	<b>Location</b>	<b><u>Available Shoreline (Linear Feet)</u></b>
“The Dairy”	NA – Informal	Near Rio Vista	<u>2,000</u>
“Tennessee’s Spot”	NA – Informal	Near Isleton-B	<u>820</u>
“The Power Lines”	NA – Informal	Near Decker Island	<u>2,000</u>
“The Windmill”	NA – Informal	Near Isleton	<u>50</u>
<u>Big Break Regional Shoreline</u>	East Bay Regional Parks	Oakley	<u>3,280</u>
Cliffhouse Fishing Area	Sacramento County Parks	Near Isleton	<u>250</u>
Hogback Island Recreation Facility	Sacramento County Parks	Near Isleton	<u>2,540</u>
Sandy Beach County Park	Solano County	Rio Vista	<u>1,050</u>
Westgate Landing Regional Park	San Joaquin County	<del>Lodi</del> Near Terminous	<u>360</u>
Garcia Bend Park	City of Sacramento	Sacramento	<u>870</u>
Discovery Park	City of Sacramento	Sacramento	
Sherman Island Public Access Facility	Sacramento County Parks	Near Antioch	<u>2,090</u>
Rio Vista Fishing Pier	City of Rio Vista	Rio Vista	<u>560</u>

<b>Facility</b>	<b>Managing Entity</b>	<b>Location</b>	<b><u>Available Shoreline (Linear Feet)</u></b>
Georgiana Slough Fishing Access	Sacramento County Parks	Near Isleton	<u>4120</u>
Brannan Island State Recreation Area	California State Parks	Near Rio Vista	<u>2,880</u>
Antioch Fishing Pier – Antioch/Oakley Regional Shoreline	East Bay Regional Parks	Antioch	<u>860</u>
Antioch Pier-Downtown Fishing Pier – “Compy’s”	City of Antioch	Antioch	<u>2,150</u>
“The Dump Gate”	NA – Informal	Isleton	<u>650</u>
“The Patio”	NA – Informal	Near Rio Vista	<u>600</u>
<u>Pittsburg Pier</u>	<u>City of Pittsburg</u>	<u>Pittsburg</u>	<u>1,940</u>
<u>Calhoun Cut Ecological Reserve</u>	<u>CDFW</u>	<u>Near Hastings Island</u>	<u>7,790</u>
<u>Isleton River Fishing Spot</u>	<u>NA – Informal</u>	<u>Near Isleton</u>	<u>410</u>
<u>Isleton Public Dock</u>	<u>City of Isleton</u>	<u>Near Isleton</u>	<u>250</u>
<u>760 River Road Shoreline Fishing</u>	<u>NA – Informal</u>	<u>Near Isleton</u>	<u>390</u>
<u>North Point Way River Access</u>	<u>City of Sacramento</u>	<u>Sacramento</u>	<u>3,760</u>
<u>Barge Canal Recreation Access</u>	<u>City of West Sacramento</u>	<u>West Sacramento</u>	<u>120</u>
<u>Miller Regional Park</u>	<u>City of Sacramento</u>	<u>Sacramento</u>	<u>2,120</u>
<u>River Walk Park</u>	<u>City of West Sacramento</u>	<u>West Sacramento</u>	<u>1,250</u>
<u>The Barges</u>	<u>NA – Informal</u>	<u>Jersey Island</u>	<u>7,750</u>
<u>Dutch Slough</u>	<u>NA – Informal</u>	<u>Jersey Island</u>	<u>8,550</u>
<u>Little Franks Tract</u>	<u>NA – Informal</u>	<u>Bethel Island</u>	<u>5,870</u>
<u>Maine Prairie Slough</u>	<u>NA – Informal</u>	<u>Near Hastings Island</u>	<u>520</u>
<u>Alamo Creek</u>	<u>NA – Informal</u>	<u>Near Binghamton</u>	<u>4,590</u>
<u>Kirker Creek</u>	<u>NA – Informal</u>	<u>Near Antioch</u>	<u>1,300</u>
<u>Ulatis Creek</u>	<u>NA – Informal</u>	<u>Near Hastings Island</u>	<u>3,520</u>
<u>Sacramento River Deep Water Ship Channel</u>	<u>Reclamation District 1667</u>	<u>Near Ryer Island</u>	<u>2,560</u>
<u>Egbert Cut</u>	<u>NA – Informal</u>	<u>Near Ryer Island</u>	<u>1,890</u>
<u>Elk Slough</u>	<u>NA – Informal</u>	<u>Near Courtland</u>	<u>700</u>
<u>Sacramento Drainage Canal</u>	<u>Maintenance Area No. 9</u>	<u>Near Stone Lakes National Wildlife Refuge</u>	<u>990</u>
<u>Reclamation District 551 Borrow Canal</u>	<u>Reclamation District 551</u>	<u>Near Courtland</u>	<u>2,430</u>
<u>North Stone Lake</u>	<u>NA – Informal</u>	<u>North Stone Lake</u>	<u>2,740</u>
<u>Big Lake</u>	<u>NA – Informal</u>	<u>Near Clarksburg</u>	<u>3,550</u>
<u>Main Canal</u>	<u>NA – Informal</u>	<u>Near Clarksburg</u>	<u>1,090</u>

<b>Facility</b>	<b>Managing Entity</b>	<b>Location</b>	<b><u>Available Shoreline (Linear Feet)</u></b>
<u>Tule Canal</u>	<u>NA – Informal</u>	<u>Near Clarksburg</u>	<u>2,630</u>
<u>Toe Drain</u>	<u>NA – Informal</u>	<u>Near Clarksburg</u>	<u>4,760</u>
<u>Winchester Lake</u>	<u>NA – Informal</u>	<u>Near Clarksburg</u>	<u>4,370</u>
<u>Greens Lake</u>	<u>NA – Informal</u>	<u>Yolo Bypass Wildlife Area</u>	<u>110</u>
<u>Freeport</u>	<u>NA – Informal</u>	<u>Freeport</u>	<u>930</u>
<u>Prospect Island-Miner Slough</u>	<u>NA – Informal</u>	<u>Prospect Island</u>	<u>4,390</u>
<u>Wimpy's Marina</u>	<u>Private</u>	<u>Near Thornton</u>	<u>300</u>
<u>Arrowhead Launch</u>	<u>Private</u>	<u>Near Ryer Island</u>	<u>490</u>
<u>BW Marina</u>	<u>Private</u>	<u>Near Terminous</u>	<u>470</u>
<u>Hastings Island</u>	<u>NA – Informal</u>	<u>Hastings Island</u>	<u>2,600</u>
<u>Montezuma Day Use Area</u>	<u>Solano County</u>	<u>Near Winter Island</u>	<u>2,460</u>
<u>Ryer Island</u>	<u>NA – Informal</u>	<u>Ryer Island</u>	<u>4,890</u>
<b><u>Total Length of Available Shoreline: 117,910 feet (22.33 miles)</u></b>			

<sup>1</sup> Shoreline fishing sites outlined in this table represent a limited sample of all shoreline fishing sites within a 60-minute drive of the Proposed Project Site. ~~Data presented above do not represent a comprehensive inventory of shoreline fishing areas.~~

### 3. REGULATORY SETTING

#### a. State Regulations

##### i. Delta Plan – Delta Stewardship Council (Council)

The 2013 Delta Plan prepared by the Delta Stewardship Council includes a recreation element, and within that element there is specific language (p. 196) to encourage recreation and tourism. No policies with regulatory effect are included in furtherance of this goal, but the element includes the following recommendations:

- DP R11. Provide New and Protect Existing Recreation Opportunities
- DP R12. Encourage Partnerships to Support Recreation and Tourism
- DP R13. Expand State Recreation Areas
- DP R14. Enhance Nature-based Recreation
- DP R15. Promote Boating Safety
- DP R16. Encourage Recreation on Public Lands
- DP R17. Enhance Opportunities for Visitor-serving Businesses

#### b. Local Regulations

Each of the counties (Alameda, Contra Costa, Solano, Sacramento, San Joaquin, and Yolo counties) that have unincorporated areas that coincide with the Delta Plan area have General



Plans for those areas. These General Plans all have, as a state requirement, an open space element, which includes a discussion of outdoor recreation resources. However, whatever recreation resource goals, policies, and standards are included in each of those General Plans must be consistent with the Delta Plan.

## 4. ENVIRONMENTAL IMPACTS

### a. Thresholds of Significance

Based on CEQA Guidelines Appendix G, a project could have a significant impact on recreational resources if it would cause any of the following conditions to occur:

- a) increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- b) include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

~~Additionally, DWR, as the Lead Agency for the Proposed Project has included the following significance threshold: recognizes that shoreline fishing is important to the identity of the Delta. DWR is aware that the Proposed Project Site (along Liberty Island Road atop Shag Slough Levee) offers an opportunity for shoreline fishing used primarily by local residents and that it also provides pedestrian access to the Reserve, where additional shoreline fishing opportunities are located. In consideration of the importance of local and regional shoreline fishing opportunities, DWR has added the following significance threshold to address the Proposed Project's potential to reduce access to shoreline fishing opportunities for local residents in the vicinity of the Proposed Project Site, and within the Delta region generally:~~

- c) substantially decrease opportunities to fish from the shoreline within the Delta region.

### b. Project Impacts and Mitigation Measures

- i. Increase the Use of Existing Neighborhood and Regional Parks or other Recreational Facilities such that Substantial Physical Deterioration of the Facility Would Occur or be Accelerated from Displacement Impacts to other Shoreline Fishing Opportunities in the Delta*

The Shag Slough Bridge currently provides pedestrian access from the terminus of Liberty Island Road to the eastern shoreline of Shag Slough for bank fishing. However, this section of Liberty Island Road would be closed to the public as a result of the Proposed Project (Figure III-8). This would eliminate pedestrian access to bank fishing along the shoreline of the Reserve. As a result, it is possible that some angling use currently occurring on the Reserve would be shifted to other bank/shoreline fishing areas within the Delta.

Although no public use data are readily available for the Reserve, based on the fact that most Delta residents live on the outer fringes of the Delta in the "secondary zone" and most Californians travel a maximum of an hour to their preferred recreation spots, it is assumed that a relatively

small number of people use the Reserve. It is estimated based on fishing rates of Delta residents<sup>14</sup> and the population of the Proposed Project Site's Census Tract that approximately 200 people across the Tract partake in fishing. Of these, approximately 40% fish from the bank<sup>15</sup>, and a smaller subset use the Reserve for bank fishing purposes. Conservatively assuming that all 80 bank fishers visit the Reserve on a semi-regular basis and assuming that they would evenly disperse to the limited sample of public recreational facilities (Table IV.1-1) upon loss of bank fishing access, any given public recreation facility within an hour of the Proposed Project Site would only absorb approximately six to seven semi-regular users. These users would most likely fish from shoreline areas that had previously experienced bank fishing. Due to the relatively small potential for increased use at other facilities, substantial deterioration or accelerated deterioration would not occur. Therefore, impacts of the Proposed Project would not exceed the applicable threshold of significance related to an increase in the use of recreational facilities such that substantial physical deterioration would occur or be accelerated and the Proposed Project's impact with regard to this threshold would be ***less than significant***.

*ii. Impacts from Recreational Facilities That are Part of the Project or Resulting from any construction or expansion of parks and recreational facilities.*

Although some outdoor recreation opportunities, such as fishing from a boat, may increase on-site due to establishing new tidal channels, the goals of the Proposed Project do not include other improvements related to public access and recreation. Because the Proposed Project does not include the construction of recreational amenities and would not displace recreational facilities that would need to be re-constructed elsewhere, new park and recreation facilities would not be constructed. Therefore, impacts of the Proposed Project would not exceed the applicable threshold of significance related to construction or expansion of recreational facilities and the Proposed Project's impact with regard to this threshold would be ***less than significant***.

*iii. Impacts resulting from a decrease in opportunities to fish from the shoreline within the Delta region.*

The Proposed Project Site is currently used by pedestrians to access ~~the Reserve opportunities for shoreline fishing along on the eastern shoreline west bank of Shag Slough (along Liberty Island Road atop Shag Slough Levee) as well as the east bank of Shag Slough (within the Reserve, accessed via Shag Slough Bridge).~~ shoreline fishing opportunities would be eliminated by the Proposed Project.

~~As noted above, the Delta region (Table IV.J-1) offers multiple locations where anglers can fish from the shoreline or a pier. In order to assess impacts resulting from a decrease in shoreline fishing opportunities in the Delta region resulting from implementation of the Proposed Project, research was undertaken to examine the amount of shoreline fishing opportunities available at the Proposed Project Site, within a 60-minute drive of the Proposed Project Site, and within the Delta region (as defined by the legal Delta boundary). To provide accurate context for the amount~~

<sup>14</sup> Amy Mickel, Stanley Taylor, and Gregory Shaw, "Recreation & Tourism in the Delta," n.d., 81.

<sup>15</sup> Cynthia Thomson and Rosemary Kosaka, "Results of the 2015 economic survey of Central Valley Anglers," p. 20.



of shoreline fishing opportunities available on the Proposed Project Site and Reserve, the availability of shoreline fishing opportunities must be assessed at a local and/or regional scale as well. For the purposes of this analysis, “regional scale” was defined as the area within the legal boundary of the Delta. In addition, as noted in *Environmental Setting, Regional Recreation, a 2014 California Department of Parks and Recreation statewide recreation survey found that the majority of recreationists in California travel between 21 and 60 minutes to the places they visit most often for recreation. Therefore, this analysis has defined “local scale” as the area within a 60-minute drive of the Proposed Project Site.*

There are multiple reasonably foreseeable interpretations of what constitutes an opportunity to fish from the shoreline; therefore, shoreline fishing opportunities at the Proposed Project Site and in the region were identified and evaluated using two distinct methods: one method used a Geographic Information System (GIS) to calculate “total shoreline,” reachable by a combination of vehicle and foot, regardless of whether the degree of vegetation cover provides access to the waterway. The second method identified “available shoreline for fishing opportunities” (i.e., shoreline free of dense vegetation such that it provides a realistic opportunity to fish from the bank)<sup>16</sup>. As described above under *Environmental Setting, Regional Recreation*, the amount of available shoreline was identified through the use of recent satellite imagery from Google Earth (2021). This approach is consistent with the method used in the Draft EIR. Using these two methods provided a reasonable range and characterization of shoreline fishing opportunities available to anglers at the Project Site and in the region. The two methods used, and their respective results are presented in detail in the April 2023 *Technical Memorandum: Assessment of Shoreline Fishing Opportunities at the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project and within the Larger Delta Region* (2023 Technical Memorandum),<sup>17</sup> and they are summarized below.

#### Total Shoreline Analysis

##### *Total Shoreline on the Proposed Project Site and Liberty Island Ecological Reserve*

As noted above, the Proposed Project Site is currently used by pedestrians to access shoreline fishing opportunities on the west bank of Shag Slough (along Liberty Island Road atop Shag Slough Levee) as well as the east bank of Shag Slough (within the Reserve accessed via the Shag Slough Bridge). The total length of the Shag Slough Levee on the Proposed Project Site with the potential to offer shoreline fishing opportunities is approximately 1.5 miles, running from the northern property boundary to the Shag Slough Bridge (there is a vehicular gate at Shag Slough Bridge with signage posted marking “no trespassing” and “private property,” past which fishing is not allowed). The total length of remnant levee within the Reserve with the potential to offer shoreline fishing opportunities is approximately 3 miles. Therefore, the Proposed Project Site provides access to approximately 4.5 miles of “total shoreline” (i.e., shoreline reachable by a combination of vehicle and foot).

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<sup>16</sup> *Environmental Science Associates, 2023. Technical Memorandum: Assessment of Shoreline Fishing Opportunities at the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project and within the Larger Delta Region. April 2023.*

<sup>17</sup> *Ibid.*

Total Shoreline in the Region

Regionally, the length of “total shoreline” (reachable by a combination of vehicle and foot) within the Delta was found to be approximately 380 miles. In addition, the length of “total shoreline” within a 60-minute driving radius was found to be approximately 250 miles. Figure 1 in the 2023 Technical Memorandum shows the miles of “total shoreline” mapped within the Delta region and within a 60-minute driving radius of the Proposed Project Site.

Results of Total Shoreline Analysis

The Proposed Project Site provides access to approximately 4.5 miles of “total shoreline” on Shag Slough Levee and the Reserve. To place this amount in a regional context, the Delta region provides approximately 380 miles of “total shoreline,” approximately 250 miles of which are within a 60-minute drive of the Proposed Project Site. Based on these estimates, the Proposed Project would eliminate vehicular or pedestrian access to approximately 1.2% of “total shoreline” within the Delta  $((4.5/380)*100 = 1.2)$  and approximately 1.8% of “total shoreline” within a 60-minute driving radius  $((4.5/250)*100 = 1.8)$ . Additionally, this method likely underestimates the amount of shoreline available in the region by an order of magnitude by eliminating from the analysis any roadway farther than 200 feet from a waterway<sup>18</sup>; therefore, the estimated reduction in vehicular or pedestrian access to “total shoreline” is likely an overestimate.<sup>19</sup>

Available Shoreline for Fishing Opportunities AnalysisAvailable Shoreline on the Proposed Project Site and Liberty Island Ecological Reserve

Recent satellite imagery from Google Earth (taken June 2021) was used to identify “shoreline fishing locations” along Shag Slough Levee and along the remnant levee in the Reserve based on the absence of dense vegetation that restricts access to the shoreline. On Shag Slough Levee, potential shoreline fishing locations were identified from the Proposed Project Site’s northern property boundary to Shag Slough Bridge, as there is a vehicular gate at this location past which fishing is not allowed. At the Reserve, pedestrian access from the project site is limited to the eastern Shag Slough levee, both north and south of the Shag Slough Bridge. Potential shoreline fishing locations on the Reserve were identified from the northern “stairstep section,” west of a 100-foot breach in the remnant levee (which is impassable to foot traffic) along the remnant levee to a point 0.75 mile south of the Shag Slough Bridge (at this point the informal angler trail becomes overgrown and very difficult to navigate<sup>20,21</sup>). The total length (in linear feet) of vegetation-free

<sup>18</sup> As described in the 2023 Technical Memorandum, the GIS analysis included a “drivable roads” dataset, which was buffered by 200 feet based on an assumption that shoreline reachable by a combination of vehicle and foot would exist within a 200-foot buffer between a drivable roadway and a waterway.

<sup>19</sup> Environmental Science Associates, 2023. Technical Memorandum: Assessment of Shoreline Fishing Opportunities at the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project and within the Larger Delta Region. April 2023.

<sup>20</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 2 – Technical Analysis – Consistency with Policy G P1(b)(3) Best Available Science Methods Used to Estimate Recreational Use. December 2021.

<sup>21</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 2A. Fishing Locations on Liberty Island Ecological Reserve. December 2021.

shoreline was then calculated for each shoreline fishing opportunity identified, rounded to the nearest 10 feet.

As described above under *Environmental Setting, Regional Recreation*, a variety of sources were searched to locate specific shoreline fishing locations along Shag Slough Levee and along the remnant levee in the Reserve to validate the shoreline fishing locations identified using satellite imagery. The only source identified that provided specific shoreline fishing locations accessible from the Proposed Project Site was an exhibit from the group Liberty Island Access (LIA), which identified 18 potential shoreline fishing locations along the Reserve’s shoreline south of Shag Slough Bridge.<sup>22</sup> The length of vegetation-free “available shoreline for fishing opportunities” provided by the potential shoreline fishing locations identified by LIA was calculated and was found to be nearly equivalent to the length of vegetation-free “available shoreline for fishing opportunities” calculated using the recent Google Earth imagery over the same distance.<sup>23</sup>

From the Shag Slough Bridge to a point 0.75 mile south of Shag Slough Bridge, 0.14 mile of vegetation-free shoreline was identified, while LIA identified 0.13 mile of vegetation-free shoreline. The LIA exhibit identified one shoreline fishing location north of Shag Slough Bridge, totaling 0.02 mile of vegetation-free shoreline, while 17 shoreline fishing locations were identified based on the method used in the 2023 Technical Memorandum north of Shag Slough Bridge, totaling 0.14 mile of vegetation-free shoreline. Therefore, the “total available shoreline for fishing opportunities” for the Reserve is 0.28 mile (0.14 mile north of the bridge and 0.14 mile south of the bridge). See Appendix A, *Detailed Calculations of Available Shoreline for Fishing Opportunities*, to the 2023 Technical Memorandum for more information. Figure 2 in the 2023 Technical Memorandum displays the identified shoreline fishing locations along the Shag Slough Levee within the Proposed Project Site and within the Reserve.

#### *Available Shoreline in the Region*

Similar to “total shoreline,” to provide accurate context for “available shoreline for fishing opportunities” on the Proposed Project Site and Reserve, the presence of available shoreline must be assessed at a local and/or regional scale. To obtain this information, known shoreline fishing locations located within a 60-minute driving radius of the Proposed Project Site and within the legal Delta boundary (as the analysis was not focused on potential shoreline fishing opportunities *outside* of the Delta, regardless of whether they were within a 60-minute drive of the Proposed Project Site) were obtained using a variety of sources as described under *Environmental Setting, Regional Recreation*. Figure 3 in the 2023 Technical Memorandum displays the limited sample of identified shoreline fishing locations within a 60-minute drive of the Proposed Project Site. The total length (in linear feet) of vegetation-free shoreline was then calculated at each shoreline fishing location identified, rounded to the nearest 10 feet (displayed in Table IV.J-1 above, and in Table 2 in the 2023 Technical Memorandum).

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<sup>22</sup> *Liberty Island Access, Appeal Letter to the Delta Stewardship Council of the California Department of Water Resources Delta Plan Consistency Certification of the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project, Exhibit A, “Satellite imagery of recreational facilities at Liberty Island Ecological Reserve,” March 2021.*

<sup>23</sup> *Environmental Science Associates, 2023, Technical Memorandum: Assessment of Shoreline Fishing Opportunities at the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project and within the Larger Delta Region, April 2023.*

## Results of Available Shoreline for Fishing Opportunities Analysis

Based on an analysis of “available shoreline for fishing opportunities,” the Proposed Project Site offers approximately 1.46 miles of available shoreline (1.18 miles of shoreline on the west bank of Shag Slough and 0.28 mile on the Reserve), as shown in Table 1 in the 2023 Technical Memorandum. To place this amount in a regional context, there are approximately 22.33 miles of “available shoreline for fishing opportunities” at other known shoreline fishing locations within a 60-minute drive of the Proposed Project Site (Table 2 in the 2023 Technical Memorandum). Because the Proposed Project design will maintain 0.16 mile of the western bank of Shag Slough for shoreline fishing use (between the Proposed Project’s northern property line and the northernmost levee breach),<sup>24</sup> the Proposed Project would reduce access to approximately 6% of “available shoreline for fishing opportunities” within a 60-minute driving radius ( $(1.46 - 0.16) / 22.33 * 100 = 5.8$ ). Additionally, this method likely underestimates the amount of available shoreline located in the 60-minute driving radius by an order of magnitude, as Table 2 in the 2023 Technical Memorandum provides a limited sample of known fishing locations in the area, but there are over 100 more recorded shoreline fishing locations as well.<sup>25</sup> Therefore, the estimated reduction in vehicular or pedestrian access to available shoreline is likely an overestimate.<sup>26</sup>

## Impact Conclusion

As described above, the Proposed Project Site has approximately 4.5 miles of “total shoreline” on Shag Slough Levee and the Reserve,<sup>27</sup> out of which there are approximately 1.46 miles of “available shoreline for fishing opportunities.”

The Delta includes over 80,000 acres and more than 1,000 miles of waterways which provide opportunities for shoreline fishing.<sup>28</sup> Given the hundreds of publicly recorded fishing spots with logged catches, anglers have generated resources to better navigate the fishing opportunities in the Delta, including many websites, online forums, and videos aimed at helping anglers identify ideal fishing opportunities based on various factors, including the availability of shoreline for fishing. The multitude of shoreline fishing opportunities in the Delta, and the knowledge that one can fish from the shore by walking almost any levee one can find,<sup>29</sup> led members of the public recreating at the Proposed Project Site during the 2021 visitor survey to provide 68 alternate

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<sup>24</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 4 – Public Access Summary, December 2021.

<sup>25</sup> FISHBRAIN, “Find your best fishing spot” interactive map, accessed January 25, 2023, <https://fishbrain.com/explore/>.

<sup>26</sup> Environmental Science Associates, 2023. Technical Memorandum: Assessment of Shoreline Fishing Opportunities at the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project and within the Larger Delta Region. April 2023.

<sup>27</sup> Environmental Science Associates, 2023. Technical Memorandum: Assessment of Shoreline Fishing Opportunities at the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project and within the Larger Delta Region. April 2023.

<sup>28</sup> Fishing Booker Blog, “California Delta Fishing: The Complete Guide,” accessed January 23, 2023, <https://fishingbooker.com/blog/california-delta-fishing/>.

<sup>29</sup> Bass Fishing Forum, “Bank Fishing the Delta,” accessed January 23, 2023, <https://www.westernbass.com/forum/bank-fishing-the-delta-t115991.html/>.

unique responses when asked if they fish in other areas of the Delta, including a response of “everywhere in the Delta.”<sup>30</sup>

This sense of abundance from local users of the Proposed Project Site regarding opportunities for shoreline fishing in the Delta is reflected numerically as well. Analysis presented in the 2023 Technical Memorandum shows there are approximately 380 miles of “total shoreline” within the Delta region, 250 miles of which are within a 60-minute drive of the Proposed Project Site and offer approximately 22.33 miles of “available shoreline for fishing opportunities.”

As discussed above, the Proposed Project would reduce pedestrian access to approximately 6% of “available shoreline for fishing opportunities” based on the limited sample of local shoreline and pier fishing opportunities provided in Table IV.J-1. If one were to look just at “total shoreline” and not factor in vegetation that restricts opportunities to “available shoreline for fishing opportunities”, the Proposed Project would reduce pedestrian access even less: approximately 1.2% of “total shoreline” within the Delta region (4.5 miles/380 miles\*100) and approximately 1.8% of “total shoreline” within a 60-minute driving radius of the Proposed Project Site (4.5 miles/250 miles\*100).

In addition, the Proposed Project design includes installation of a new boat ramp in the northeastern portion of the Project Site, on the north side of the northern-most breach of the Shag Slough Levee.<sup>31</sup> The boat ramp would accommodate hand launching of watercraft to provide public access to the Proposed Project’s newly created 20 miles of tidal channels, Shag Slough, and the Reserve; thus, while pedestrian access to Shag Slough Levee and the Reserve would be eliminated, the opportunity to fish from the remnant levee system at the Reserve would be maintained. From the new boat ramp, small watercraft could travel approximately 1.45 miles to the Reserve, where an informal hand-launching site (comprised of an earthen berm) is currently used just south of Shag Slough Bridge, and utilize the shoreline for fishing.<sup>32</sup>

In summary, the Delta region offers many locations where anglers can fish from the shoreline or a pier. The degree of pedestrian access to shoreline fishing opportunities reduced by the Proposed Project is small compared to the opportunities available locally and in the broader Delta region, as reflected in our analysis presented above and in more detail in the 2023 Technical Memorandum, and the attitudes of local survey respondents and Delta residents. In addition, the Proposed Project design includes installation of a boat ramp, which would maintain public access to the shoreline fishing opportunities provided by the Reserve and would provide access to 20 miles of navigable channels created by the Proposed Project that do not exist today.<sup>33</sup> These navigable channels would be accessible to watercraft users for fishing but would not provide any

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<sup>30</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 2E, Additional Detailed Results from On-Site Visitor Surveys, December 2021.

<sup>31</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 4 – Public Access Summary, December 2021.

<sup>32</sup> Liberty Island Access, Appeal Letter to the Delta Stewardship Council of the California Department of Water Resources Delta Plan Consistency Certification of the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project, Exhibit A, “Satellite imagery of recreational facilities at Liberty Island Ecological Reserve,” March 2021.

<sup>33</sup> Department of Water Resources, Delta Plan Consistency Re-Certification for the Lookout Slough Tidal Habitat Restoration and Flood Improvement: Attachment 4 – Public Access Summary, December 2021.

new shoreline fishing opportunities. The loss of shoreline fishing for pedestrians at the Reserve is small in comparison to other opportunities in the Delta for fishing from a bankshoreline or pier. Therefore, impacts of the Proposed Project would not exceed the applicable threshold of significance related to a decrease in opportunities to fish from the shoreline within the Delta region and the Proposed Project's impact with regard to this threshold would be **less than significant**.

## 5. LEVEL OF SIGNIFICANCE AFTER MITIGATION

Proposed Project impacts related to recreation would be **less-than-significant**. No mitigation is required.