

DPC March 9, 2023, meeting – Agenda Item 12a (Draft Survey of Cultural Resources in the Delta Conveyance Project Area) - Attachment 1

DRAFT SURVEY OF CULTURAL RESOURCES OF THE SACRAMENTO-SAN JOAQUIN DELTA IN THE DELTA CONVEYANCE PROJECT AREA

Prepared by the Delta Protection Commission

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1.0 Introduction and Purpose

This report is a preliminary reconnaissance-level survey of cultural resources for the U.S. Army Corps of Engineers (Corps) review of the Department of Water Resources (DWR) Delta Conveyance Project (DCP). It has been prepared as background for assessing the impacts of the DCP as part of the Delta Protection Commission (Commission) comments on the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) reviews of the project. The research also informs the Commission's ongoing participation in the National Historic Preservation Act (NHPA) Section 106 review by the Corps.

The primary purpose is to inform potential impact assessment, protection, and further investigation of cultural resources as appropriate under CEQA, NEPA, and the NHPA Section 106. As a result, the survey focuses on historic and cultural resources at or near areas along the DWR preferred alignment, rather than more distant parts of the Delta. The report draws on previous Commission publications such as the *Delta Narratives* and other published resources. It is not intended to be definitive, but suggests a starting point for DWR, the permitting agencies, and interested parties to build and improve on during the permitting process.

The Delta's historic resources are significant assets. They contribute to the Delta's special character and cultural depth. Some contain information that can provide unique insights into its past, help answer broad questions about history and prehistory, and perhaps suggest ways to address the Delta's challenges in the future. In more practical terms, they reward residents, attract visitors; and continue to support important sectors of the Delta economy. Further study is needed to evaluate these resources, assess the integrity of historic properties, identify historic districts' boundaries, and determine their eligibility for the National Register of Historic Places (NRHP).

2.0 Cultural Significance of the Sacramento-San Joaquin Delta Landscape

In designating the Sacramento-San Joaquin Delta (Delta) as a National Heritage Area (NHA), Congress concluded that the area's historic, cultural, and natural resources combine to form a cohesive, nationally important landscape. In its testimony endorsing the NHA designation, the National Park Service (NPS) associate director for cultural resources called the Delta "a hidden

gem located at a key geographic and historic crossroads of our country. It is a land of ethnic diversity, innovation, industry, enduring history, and fragile and robust physical features”. Our examination of the Delta’s cultural significance shows it to exemplify the American experience, founded in nature’s bounty and its multicultural immigrants’ pursuit of the American dream. The Delta’s natural and built environment provides a unique, complex and multi-layered view of California’s transformation over the past three centuries.

These cultural values will need to be protected from adverse effects if the proposed DCP is constructed. The Delta’s features deserve careful documentation and assessment, consistent with the Secretary of the Interior’s *Guidelines for Treatment of Cultural Landscapes* and its *Guidelines for Treatment of Rural Historic Landscapes*, and proper consideration pursuant to the NHPA and other statutes.

2.1 A Significant Cultural Landscape

The Delta’s cultural resources represent far more than a simple list of historic buildings and archaeological sites, but rather inhabit hundreds of thousands of acres of river channels, sloughs, remnant marshes and riverside woodlands, islands and tracts, flood control and drainage works, orchards, vineyards, and other farms, historic villages of native California Indians and immigrants from around the world, waterside landings, scenic drives, developed and undeveloped recreation areas, and other significant features. The modern Delta is a human-created landscape, a new landscape, a transformation of the land. It has evolved through its use by many peoples – native California Indians, Mexican-era pioneers, 19th century immigrants from Europe and Asia, as well as emigrants from other parts of the country, family farmers, agricultural entrepreneurs, farm workers from the Pacific and Latin America, inventive engineers, and more recent residents and visitors drawn by its landscape, quiet, relaxation, and free spiritedness. These generations’ pursuit of homes, sustenance, and reward for their labor and innovation transformed the Delta from a vast and complex wetland to today’s region of agriculture, recreation, and history.

As defined by the NPS, a cultural landscape is a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or that exhibits other cultural or aesthetic values. The Delta is a landscape that has evolved through use by the people whose activities or occupancy shaped that landscape, which the NPS calls a “historic vernacular landscape.” Example descriptions provided by the NPS match those of the Delta areas affected by the DCP including rural villages, agricultural landscapes such as farms and ranches, landscapes with a total absence of buildings, and landscapes with linear resources such as transportation systems like the Sacramento River or the River Road. A district of historic farms along a river may be an example of a significant cultural landscape. Scenic highways are also potential examples.

In many ways, the Delta is a collection of historic districts of vast scale, linked by its waterways and scenic highways, replete with significant features related to exploration, maritime history, engineering, commerce, conservation, invention, government, and transportation. For Native

California Indians, the Delta is a sacred landscape – their home and the heart of their cultures. It's significance also extends to both a national historic context, as an example of national land and water management from the 1850s through the 1950s, and a state historic context as an example of California's exploration, settlement, agricultural development, and ethnic diversity during that period.

The Delta is the largest, most diverse, and best protected of the California regions located on reclaimed tidelands. At San Francisco Bay, most reclaimed lands have either been urbanized or are being repurposed into wildlife and fish habitat. Humboldt County's reclaimed farmland in the Eel River Delta and around Humboldt Bay is smaller and lacks the diversity of both crops and ethnic settlements found in the Delta. Other reclaimed farmlands at minor estuaries on other coastal areas are much smaller than the Delta and lack its distinct culture.

The Delta's early 20th-century landscape is largely intact, with only scattered more recent development. It is, a recent New York Times travelogue observed, "70 years and 70 miles from San Francisco." Its levees and drainage works recall the region's post-Gold Rush reclamation and the efforts of the California Debris Commission, an early landmark in national flood control. The Delta's orchards today occupy much the same lands as they did 75 years ago, and many crops that made the Delta a 19th and 20th century agricultural hotspot are still grown. Its multi-generational farms often operate from century-old farmsteads. The packing sheds and remnant wharves along the rivers and sloughs were developed to transport these farms' products to market. The legacy communities, from Freeport to Isleton, several of which are listed national and state historic districts or contain listed historic buildings, sprang up to serve the region's commerce. They became home to Asian, European, and Mexican immigrants drawn to work in Delta farms and agricultural businesses. Asian New Year celebrations, Portuguese *festas*, Juneteenth commemorations, and other ethnic festivals, as well as Courtland's Pear Fair and other celebrations of agriculture, demonstrate these cultures' continuing vitality. Railroads and later auto routes, with their assortment of historic swing and lift bridges, extended into the region with the advance of trains, cars, and trucks, bringing anglers, boaters, and other recreationists.

The resulting Delta landscape observed fabled landscape architect Frederick Law Olmsted, Jr. in his 1928 report to California's State Park Commission, "commanded delightful views of the river and its margins and of miles of beautiful orchards and farming lands outside of and below the levees.... Along the course of this great system of waterways, levees, and roads there are numerous delightful spots...and the route as a whole is in effect, even at present, a river parkway on a vast scale, of great landscape beauty, and enjoyed by thousands of people." And indeed, today State Route 160 and Sacramento County's River Road are designated [State Scenic Highways](#). Other local routes and corridors have been similarly recognized by Sacramento, San Joaquin, and Contra Costa counties.

The Delta landscape has inspired the artistic imagination, including great American writers from Bret Harte, John Muir, and Jack London to Earl Stanley Gardner, Joan Didion, Maxine Hong Kingston, and Maya Angelou. Well-known local authors include Richard Dillon, Hal Schell, Bob

Waters, Roger Minick, James Motlow, and Jeff Gillick. Renowned artists have depicted its scenery, including John Ross Key, William Marple, Gregory Kondos, Ning Hou, Marty Stanley, and Wayne Thiebaud.

2.2 The Delta Landscape as Context

The cultural landscape described above provides important context for individual buildings or historic districts there that have been listed on the National Register of Historic Sites or recognized as eligible for listing. Degrading this surrounding landscape would diminish the integrity of specific sites, districts, or landmarks. For example, the orchards and farms surrounding the Locke National Historic Landmark were the sites where many of Locke's Chinese residents worked, including lands owned by George Locke, the community's proprietor, and provided much of the products packed in Locke's packing shed. The value of the Alma, the national historic landmark schooner in the San Francisco Marine National Historic Park, is enhanced by the Delta sloughs that it was built to sail. Damage to significant parts of this cultural landscape can reduce the value of both individual properties and the larger area, impairing their integrity, their ability to inform residents and visitors about the region's history and culture, and Americans' appreciation of the Delta.

The Delta landscape retains a high degree of integrity in comparison to other areas of reclaimed tidelands in California. Once-similar areas bordering San Francisco and San Pedro Bays have been restored to wetland or urbanized. In Suisun Marsh, marshes originally reclaimed for farming are now managed as private hunt clubs. Reclaimed tidelands in Humboldt Bay and the Eel River Delta lack the diverse agriculture and communities that characterize the Delta. Other reclaimed coastal tidelands are typically small, often with either extensive urbanization or ongoing wetland restoration programs.

3.0 Approach to Identifying Cultural Resources Potentially Affected by Delta Conveyance Project

This report surveys culturally significant places, structures, and significant features, such as reclamation works and crops, that shaped and defined the character of the Delta landscape. The cultural resources listed below are potentially affected by the construction of a DCP using the diversion points and preferred tunnel alignment described in the project's Draft Environmental Impact Report (DEIR) and the corresponding Draft Environmental Impact Statement (DEIS). In addition, we have reviewed more detailed information about the potential features of those facilities presented in materials distributed by the Delta Conveyance and Design Authority at meetings of its Stakeholder Engagement Committee. We have also relied on information from the Bay-Delta Conservation Plan (BDCP) EIR about construction impacts, such as visual blight, land use changes, noise, and traffic. These may ultimately vary from those analyzed in the BDCP EIR if new measures to mitigate these impacts are incorporated into the project. Other resources that we have not included could be affected, should DWR choose to select other points of diversion or an alternative central alignment for its tunnel.

To describe these cultural resources, we have divided the narrative that follows into sections that correspond to the five themes of the Sacramento-San Joaquin Delta National Heritage Area Feasibility Study. Each section begins with an explanation of the historical context and significance of the cultural resources the section describes. Brief accounts of individual resources follow. The cultural resources described were identified by reviewing the references listed at the end of this survey. Peer review was provided both by academic experts on the Delta's history and landscape and by Delta residents.

This is an initial reconnaissance of key regional cultural resources that the project may affect. But further research, investigation, and documentation of affected resources, informed by more detailed information about the proposed project and its impacts, is needed. This is not a job for only landscape historians, architects, and other experts, but rather each step in the investigation and evaluation of these resources should involve residents familiar with the area's history and culture. Because these interviews may reveal further unnoticed cultural resources that should be protected, they should not be delayed or rely on the assumption that residents will make public comments but should proceed simultaneously with professional research and field investigation, in an iterative fashion.

References are listed at the end of this survey report. Some of the text in this survey was imported from these sources with only minimal editing.

4.0 Delta Rivers, Sloughs, Marshes, and Riverside Woodlands

The cultural resources of the Delta begin with its more than 1,000 miles of rivers and sloughs and the remnants of its primordial landscape of marshes and streamside woodlands. These features, together with settlements of native California Indians, defined the character of the pre-Gold Rush Delta.

The unique Delta landscape of sloughs and river channels, meandering through its horizontal plane, backed by Mount Diablo on the western horizon, is unrivaled. Investigations of the Delta's historic ecology confirm that the location of these physical features is little changed from before the Delta's settlement. The waterways pulse twice daily in response to tides flooding in from San Francisco Bay and seasonally, as snowmelt and rains pour into Delta tributaries from the Sierra Nevada and Coast Range. Tidal rivers, sloughs, and the former wetlands set the Delta apart from the surrounding uplands and foothills, underpinning the region's history of reclamation, settlement, farming, and water management.

Before the Gold Rush, this natural landscape provided a haven for native California Indians' settlements and then routes of exploration and colonization under Spanish and Mexican governments. During the Gold Rush, the rivers were travelled on journeys toward the Mother Lode mines from San Francisco. Later, they provided navigation routes to carry produce to markets. The *Alma*, an 1891 scow schooner and national historic landmark in the collection of the San Francisco Maritime National Historic Park, is the last of the flat-bottomed boats that sailed the Delta to riverside farms and communities. Some of the finest steamboats in America

plied Delta waters, including the Delta King, a National Register property now moored at Old Sacramento State Historic Park. Landings for these boats provided the origin for the Delta's historic legacy communities.

In addition, these waterways are migratory channels for commercially valuable anadromous fish and opportunities for recreation. Fishing, game bird hunting, speed boating, and family outings aboard houseboats became popular on these channels in the 1920s as motors replaced oars and sails. These relaxing pastimes remain popular today, providing hundreds of thousands of visitor recreation days annually.

Twice daily tides pulsing in and out from San Francisco Bay characterize the natural Delta. Summer evenings bring the cooling "Delta breeze" drawn inland from the coast. In winter, atmospheric rivers storm in from the Pacific, carrying drenching rain. In spring, floods of rain and snowmelt drains from the Sierra watershed. When rain and snow do not fall, runoff diminishes, and summer droughts sear the uplands. These annual patterns trigger the migrations of salmon, steelhead, and sturgeon. Waterfowl, cranes, and migratory birds of the Pacific Flyway arrive each autumn and depart in spring, while year-round resident songbirds and raptors shelter in riverside woodlands and shorebirds stalk prey in the shallows and from the docks of marinas.

Much of the Delta story is about how this natural bounty was transformed through reclamation and water management to create opportunities for agriculture and settlement. The rivers' periodic floods deposited fertile alluvial soils but also limited development and necessitated construction of the region's flood control facilities. The Delta's current condition reflects each successive era's judgments about how best to live with and utilize the waterways. Today's remaining natural areas are only remnants of the once extensive native habitats, but still reward visitors with skies filled with waterfowl and cranes calling in flight, runs of salmon and sturgeon beckoning anglers, or quiet evenings beneath starry skies. In recent decades, in response to changing attitudes about the natural environment, attempts to protect and even restore the Delta's wildlife and fish and their habitats have been prioritized at conservation sites such as Stone Lakes National Wildlife Refuge or the Cosumnes River Preserve. Aerial photos of the Delta's winding channels are signature images in agency publications, websites, and other media, including those of the DCP's sponsors. Understanding these waterways is important both to protecting their cultural value and avoiding damage to other historic features linked to them.

Key features of the cultural landscape in the project area include:

- Sacramento River. The broad river was a route for historic exploration and transportation. It was first reconnoitered by Spanish military expeditions, explored by fur traders, and traveled by John Sutter to establish and sustain Sutter's Fort. Sutter traveled in the schooner *Isabella*, a yacht that once belonged to Hawaiian King Kamehameha, a small pinnace, and a schooner acquired from the Russians at Fort Ross, which he renamed the *Sacramento*. During the Gold Rush, side-wheel steamboats, barges, and sailing craft carried miners and the tools they required as they journeyed toward the gold fields, as well as

staples and dry goods, from San Francisco to Sacramento and Stockton. Wood cut from riverside forests fueled the steamboats' boilers. In the 1860s, construction supplies for the transcontinental railroad, and then locomotives to run on it were important cargoes. As farms became established in the north Delta, the Sacramento River became an important route for transporting their produce to San Francisco.

For the 19th century river pilots, merchants sending freight, and passengers going both directions, the Sacramento was a floating hazard through which to pass, not a comfortable place to stop or to make a living. Even with better maps and nautical charts, the river claimed boats that hit snags and obstacles in the murky waters. To aid navigation, the Corps began removing snags from the river in 1875. The river remained an important transportation route until the 1920s, when autos and improved roads took over most transportation.

The Sacramento River's runs of anadromous fish were important foods for native California Indians. Sutter caught and preserved its salmon to feed his workers and export to Hawaii. Later, as early as 1864 and then continuously from the mid-1870s to 1916, riverside canneries, including a former national historic landmark in West Sacramento, supplied markets across the nation for decades. With the advent of small marine motors, recreational boaters began fishing for salmon, sturgeon, striped bass, and steelhead.

Today, the remnants of old wharves and landings, sometimes only thickets of pilings, an occasional excursion boat, and the Delta's heavy recreational boating traffic provide echoes of the Sacramento River's historic role. In Sacramento, the historic *Delta King* riverboat is preserved as a dockside restaurant and hotel. Vistas of the meandering river from State Route 160 and the River Road, designated Scenic Highways, offer pleasant views to residents and visitors.

- Snodgrass Slough. This channel between Pierson District and Glanville Tract, lined with marshes and streamside woodlands, is a remnant of the natural Delta that sustained native California Indians and greeted early settlers. It provided a natural area where residents of Locke and Walnut Grove could fish or hunt for waterfowl. Today, recreational boaters enjoy sportfishing and the anchorage at "The Meadows" amid this natural landscape. Delta Meadows, a California State Park property on the slough, is an example of the riparian habitat prevalent on the Delta's natural levees prior to reclamation.
- Stone Lakes National Wildlife Refuge (NWR). The refuge's marshes, vernal pools, and grasslands are remnants of the landscape that sustained native California Indians and greeted early settlers. The Beach-Stone Lakes Basin was a magnet for wildlife. Elk, pronghorn, and even grizzly bear inhabited the grasslands. During winter storms, the flooded basin could stretch for 10 miles from lower Morrison Creek south to the Mokelumne River, expanding lakes and seasonal wetlands that supported tens of thousands of migratory birds. Although much of the area has been altered for flood control, agriculture, and other development, Stone Lakes NWR was established in 1994 to preserve the open space that remained for wildlife.

- Cosumnes River Preserve. This 50,000-acre area, including the McCormack-Williamson Tract habitat restoration project, includes an 11,500-acre Bureau of Land Management National Natural Landmark. It includes a mix of remnant and restored wetlands, riparian woodlands, and habitat for waterfowl and cranes, mimicking the pre-drainage alluvial fan deposited at the confluence of the Cosumnes and Mokelumne rivers.
- Mokelumne River. The Mokelumne River enters the Delta as a broad alluvial fan that extends from the Cosumnes River Preserve and Grizzly Slough west toward New Hope Landing before turning south towards its confluence with the San Joaquin River. Spanish military explorers descended the river's north fork in 1817 returning from the Sacramento River. Sloughs draining to the Mokelumne River from the east, including Beaver, Hog, Sycamore (formerly called Otter Slough), and White Sloughs retain in-channel islands and remnants of farm landings and are popular with boaters.
- Woodbridge Ecological Reserve. This California Department of Fish and Wildlife property protects sandhill cranes and other waterfowl that greeted early residents of the Delta. The 353-acre reserve and nearby Delta wetlands provide one of the largest freshwater marsh habitats for wintering sandhill cranes and waterfowl in the state.
- San Joaquin River. The San Joaquin River enters the Delta near Mossdale and flows north before turning west near Twitchell Island to its confluence with the Sacramento in Suisun Bay. Its flows are lower than the Sacramento's, in part because of diversions upstream of the Delta. Spanish military expeditions began the river's exploration in the 1770's, followed by fur trappers in the 1830s. By the 1840s, sail boats, beginning with Charles Weber's sailing sloop, the *Maria*, passed periodically between Stockton and San Francisco, followed by steamboats beginning in 1849. Along its banks, camps of Chinese fishermen netted perch, steelhead, salmon, and other fish to salt for sale in the gold mines. To aid navigation, the Corps began removing snags from the river in 1876. To further stimulate maritime trade with Stockton's port, in 1913 the Corps began maintaining a 9-foot channel from Suisun Bay to Stockton, deepening it to 26 feet in 1933 and to 30 feet in 1950. Today the channel is 37 feet deep.

The San Joaquin River also discharges to the Delta through a series of three shallow distributaries that deposited fertile alluvial soil across the south Delta's islands. Whiskey Slough is a shallow channel that separates Jones Tract from Roberts Island. It was a popular anchorage for houseboats in the past. To the west are the Middle and Old River channels. Much of these channels are lined with emergent freshwater wetlands that recall their pre-reclamation vegetation. Mid-channel islands also provide valuable habitat. Spanish military expeditions, under the command of José Joaquín Moraga, Comandante of Presidio San Francisco, accompanied by friars seeking potential mission sites, ascended the Old River in 1806-1811. Today both Old and Middle River are popular with recreational boaters.

5.0 Islands, Tracts, and Drainage and Flood Control Works

Over 1,100 miles of levees and associated drains were constructed to reclaim the Delta's 57 islands and tracts. Construction of the Delta's levees is among the most significant land reclamation projects in U.S. history. They reflect the integrated labor and knowledge of the region's American and Asian immigrants applied to reclamation of native wetlands and sloughs from 1850 through completion of the Sacramento River Flood Control Project in 1957. The pattern of sinuous levees, tracing the banks of rivers and sloughs, and the agricultural fields and drainage works they bound, are a character-defining feature of the Delta, connecting the native landscape through the history of reclamation and settlement to today's geography of agriculture, recreation, and legacy towns.

Building this vast network of levees and drainage channels played a critical role in the development of California's engineering and construction capacity, including the development of ground-breaking construction equipment. The levees along the Sacramento River are elements of the historic federal Sacramento River Flood Control Project, a landmark in national flood control policy. Through hard work and perseverance, Delta residents and landowners reclaimed more than 685 square miles of land, recovering from repeated floods, and improving local levee organizations and their levee maintenance and flood fighting practices. Fortunes won through Delta land reclamation contributed to development of foundational State institutions, including the University of California.

5.1 Levees – Labor, Equity, Technology, and Innovation

Today, these levees are not simply historical features, but more importantly critical to the safety of the Delta's residents, farms, businesses, cities, and legacy communities. They define the Delta's physical character, reduce flood risk for approximately 339,000 acres of land in the Delta, and influence the reliability of its water supply infrastructure and the health of its ecosystem. Because many Delta levees protect land that have subsided to elevations below sea level, they hold back water all day, year-round, rather than only during floods, and so are called "the hardest working levees" in America. The key aspects of how the landscape was molded to manage the flood regime are described below.

Nature's flood management system. Natural levees of alluvial deposits bordered the Delta's principal rivers but provided little protection from the region's periodic floods. Away from the rivers' banks, extensive tule marshes emerged on peaty tidal lowlands submerged at high tides and floods. Along the Sacramento River, backwater marshes, swamps and lakes also occupied flood basins spreading beyond the river's natural levees to surrounding uplands. Native California Indians adapted to this waterlogged landscape by settling on mounds elevated above the surrounding channels and wetlands.

Delta reclamation and land use reflect historic federal and State policies. In 1850, the Arkansas Act, also known as the Swampland Act, granted California and other new states with extensive wetlands the unpatented federal swamp and overflowed lands within their borders. Congress'

intent was to encourage settlement by authorizing sale of these wetlands to private owners for reclamation that would boost the new states' economies. About 500,000 acres of these swamp and overflowed lands, almost a quarter of the total granted to California, were in the Delta, where they now comprise the preponderance of the region's farmland.

Initially, to prevent monopolies, California limited each purchaser to 320 acres, with no more than one half mile of river frontage, and a requirement that the purchaser reside on the property. Riverside lands in Pierson District and across the river on Merritt Island near the proposed DCP points of diversion provide many examples of parcels acquired under these terms, which can be distinguished by their size, relatively short river frontage, and shape perpendicular to the riverbank and extending away from the river toward the former backswamp. But reclamation proceeded slowly, hindered by landowners' limited access to capital, weak organization, poor understanding of potential flood flows, and inadequate technology.

In 1868, these acreage limitations were removed by the Green Act, as was the requirement that the purchaser reside on the property. With removal of acreage limitations on land sales, large land development companies controlled by absentee investors began to play a leading role in organizing and financing reclamation. As a result, large tracts of tens of thousands of acres were sometimes acquired, often in anticipation of leasing them to sharecropping tenants once their reclamation was complete. Between 1868 and 1871, nearly 300,000 acres – virtually all the wetlands remaining in the five Delta counties -- were sold under these terms. Brack Tract, Roberts Island, and Jones Tract in San Joaquin County exemplify this pattern. Owners of reclaimed land had little interest in subdividing and selling their holdings, in part worrying about loss of control of the special districts that oversaw reclamation or because smaller farmers frequently lacked the resources to support reclamation district decisions and assessments. Owners of large holdings also avoided divisions that separated land from the river, which could impair riparian water rights. Between 1870 and 1920, the years of peak reclamation, some 402,000 acres were reclaimed in the Delta. Adding 15,000 acres of early reclamation between 1860 and 1870, and another 24,000 acres of late reclamation between 1920 and 1930, the cumulative total reaches 441,000 acres.

The Delta levee network rests on foundations laid by American and Chinese immigrants. To control the region's periodic floods, the Delta's new landowners, primarily Anglo settlers, and reclamation companies, began improving Delta rivers' natural levees, which were raised and widened to resist overtopping or failures. Following the region's first reported flood in 1850 and more flooding in 1852, landowners on Merritt Island and along the Sacramento River's east bank through the Pierson District began building simple, low levees, scraping riverside deposits of alluvial soil into place to improve the natural levees. Along backswamps and in the south Delta, early levees were often constructed of tule sod excavated with a peat spade from borrow ditches or an island's interior, carried by wheelbarrows over plank paths, and placed atop natural levees, where it was compacted by trampling by men or livestock. Sloughs draining an island were sometimes dammed or gated to create a larger area for reclamation or were integrated into internal drainage works.

The bulk of the manual labor was done by Chinese immigrants recruited from boarding houses in Stockton, Sacramento, and San Francisco. Some Hawaiians were also hired. Anglo Americans were managers, carpenters, teamsters operating scrapers and plows, or labor contractors. Many Chinese laborers had immigrated from the Pearl River Delta, a region with similar characteristics, and introduced levee-building techniques from there. These laborers also introduced the tulle shoe, an oversized horseshoe fitted with wire over a horse's hoof to distribute weight on soft, marshy, or peaty soils.

The availability of Chinese labor, when combined with their expertise in delta environments, provided the perfect opportunity for land developers in the California Delta to launch large-scale reclamation projects. Between 1860 and 1880, Chinese laborers are estimated to have reclaimed at least 88,000 acres of Delta land. Over time, total Delta reclamation by the Chinese is estimated to be 538,000 acres. It is principally upon this foundation of Chinese labor and American capital and management that the Delta's levees were raised.

Delta tides powered early irrigation and drainage. At first, reclaimed Delta farmland was at the elevation of the tides that had shaped its wetlands and sloughs. Opening a tide gate at high tide would allow the Delta's abundant freshwater to flood over land in need of irrigation. Opening a tide gate at low tide would drain away excess water through sloughs and ditches. Working with the Delta's natural tidal cycle allowed landowners to create California's first extensive irrigated farming region. When other California regions suffered during droughts in the 1870-1880s, the Delta's irrigated farms remained green and productive.

Adapting to subsidence, floods, and mine debris. Over time, subsidence caused by oxidation of the Delta's peat soils lowered the natural elevations on many reclaimed islands and tracts, requiring further improvement of levees and drainage systems. Today, on the most subsided islands, surface elevations may be 9 to 26 feet below sea level, providing motorists on levee-top roads an unsettling view of water levels in the waterways on one side that are significantly above those of the farmland on the other side of the levee. Moreover, floods in 1871, 1873, 1874, 1875, 1877, 1878, 1879, 1880, 1886, 1889, and 1890 revealed the inadequacy of early levee building and drainage methods. Yet in response, innovative, locally developed machinery - much of it crafted by inventors in Stockton - was used to construct larger, more resilient levees. Innovation in governmental organizations and programs also fostered improved levees.

- *Dredges.* With the introduction of steam-powered dredges and ditchers in the 1870s, levees could be built with sands and clay dug from the channels of rivers and sloughs adjoining islands and tracts. The sediments were dumped in piles atop earlier natural or peat levees, leveled, harrowed, and planted with barley, then grazed by sheep to compact them. Repeated placement of dredged material built up levees gradually. The names bestowed on dredges, like *Samson* and *Goliath*, reflected their power to transform the natural landscape to meet reclamation and flood control goals. Local innovators and reclamation companies improved dredge designs and capabilities throughout the 1870s-1880s. Companies in Stockton, San Francisco, and elsewhere in the Delta deployed four main types of dredges in the region's reclamation through the

late nineteenth and early twentieth centuries: dipper dredges, hydraulic pipeline dredges, bucket-ladder or endless-chain dredges, and clamshell dredges. Most widely used was the clamshell dredge, with its hinged shells that closed around the material to be excavated, suspended from a movable boom supported by an A-frame. The machinery for a substantial number of the clamshell dredges was built by the Stockton Iron Works, which was established in 1868. Over the course of three decades beginning in 1885, the company produced more than 30 clamshell dredges and over 600 dredge and ditcher buckets. Its dredges were so ubiquitous and successful that they became synonymous with the California dredge and the Stockton bucket. By the early 1900s, locally made mechanical ditchers were also in wide use. These firms played an important part in Stockton's development as a center for equipment manufacturing and industry.

By the 1920s, the work required to reclaim the Delta was sufficiently complete that most of the dredges and other special machinery used were disposed of. Rio Vista's Dutra Museum helps preserve and tell the story of the Delta's reclamation, including the role of the Dutra family's dredging business.

- *Caterpillar tractors.* Another local innovation, the tracked bulldozer and its cousin, the backhoe, were also essential tools for Delta levee construction and maintenance, as well as clearing land and laying out ditches. In 1904 Benjamin Holt, president of Stockton's Holt Manufacturing, first added a caterpillar tread to a steam tractor, allowing it to travel more easily across peat soils. In 1906, after replacing the steam engine and boiler of earlier models with a gasoline engine, Holt sold his first Caterpillar tractor, which would soon revolutionize farming, not only throughout the Delta, but throughout the United States and the world.
- *LeTourneau earthmovers.* Improved earthmovers also helped further Delta reclamation. Beginning in 1922, Stockton mechanic and construction contractor Robert G. LeTourneau invented a series of innovative scrapers, earthmovers, and grading equipment to better level Delta and other Central Valley land for irrigation and drainage. By the 1940s, his company had grown so that LeTourneau machines represented nearly 70 percent of the earthmoving and engineering equipment used by the Allied forces during World War II.
- *Erosion protection.* Initially, to break waves that might erode levees, a fringe of willows or tule was often retained on the levees' waterside. At the turn of the 19th century, bundles of brush called fascines, cabled to concrete anchor blocks, were used. By the 1950s, rock riprap came into wide use.
- *Pumps and drains.* At first, water was drained from reclaimed land through sluiceways and gates at low tides. Land with elevations at or near low tide drained well, but as lands subsided, drainage became impaired. Horse powered pumps were introduced in

the late 1870s, followed by steam-powered pumps. Flanged tubes of boiler iron and cast-iron tide gates also came into use.

- *Reclamation districts.* Initial attempts to build levees were uncoordinated efforts of private individuals with minimal government involvement and little effect on flood protection or drainage. To construct and maintain more effective levees and ditches to drain flood basins and backswamps, in 1861 California's legislature enacted Assembly Bill (AB) 54 which authorized the formation of reclamation districts. Districts were assigned numbers in accordance with the order of their formation. An early district in the project area is Reclamation District No. 3, on Grand Island opposite Locke and Pierson District. A generation later, experience with reclamation districts provided the administrative model for irrigation districts, which were first authorized in 1887, and ultimately for California's more than 3,000 other special districts.

AB 54 also created a central government authority, the Board of Swamp Land Commissioners, a centralized governmental authority to oversee reclamation districts' creation and their plans for flood control and drainage. This was the first public commission established in the state – a second major innovation in state government. The board was short-lived however, swept aside by 1868's Green Act.

Since reclamation, each of the Delta's islands and tracts has flooded at least once. These periodic floods and repeated levee breaks led reclamation districts to become active in high water levee patrols, flood fighting, and recovery. Early levee breaks were attacked by placing brush fascines within lattices of piles driven into the breach, topped with rock or sandbags. In the 1930s, some breaches were repaired by scuttling rock-filled barges in the crevasse. When deeply subsided islands flood, further work is required to drain flood water, restore scoured fields, restore ditches and drains, and repair damaged buildings.

In 1973, California began the Delta levees subventions program to help reclamation districts fund the maintenance and rehabilitation of Delta levees. Over time, it has helped districts improve levee conditions to resist failures without significantly modifying their location, setting, appearance, or function. Beginning In 1988, reclamation districts were provided additional help through the Delta levees special flood control projects program, which has helped to fund more significant levee improvements, primarily in the western Delta.

- *California Debris Commission and the origins of Federal Flood Control Programs.* Some Delta levees were improved in response to the deposition of debris washed into rivers from upstream mines. Prior to heavy siltation of the Sacramento River, primarily the result of hydraulic mining operations, it was not uncommon to have a two-foot tide at Sacramento's wharf. By 1890, mining debris had raised the Sacramento River's water level in the northern Delta by 10 feet or more, hindering navigation and increasing flood risks. After decades of studies and controversy, the federally authorized California Debris Commission recommended a plan to manage the mines' debris and improve

navigation that in the Delta included large levees along the Sacramento River, including the levees at the project's diversion sites, and Steamboat Slough to contain river flows and flush sediment toward Suisun Bay. California approved the plan in the state Flood Control Act of 1911. Federal authorization for the project was secured in 1917 in the nation's first flood control project, launching the Corps' flood control program that reshaped the nation's rivers and floodplains and funding the landmark Sacramento River Flood Control Project, an engineering feat on an unprecedented scale at that time.

5.2 Islands and Tracts – Reshaping the Delta

The following Delta islands and tracts are key components of the Delta's cultural landscape within the project area:

- Pierson District. Levee building in this 8,980-acre district on the Sacramento River's east bank, between the head of Snodgrass Slough and Walnut Grove, began in 1850. Much of its Sacramento River frontage reflects parcels acquired under pre-1868 acreage and frontage limitations, with long narrow lots arranged perpendicular to the river. Areas away from the river along Snodgrass Slough were acquired by the Tide Land Reclamation Company created by John Roberts and Bay area investors, which at its height owned 250,000 acres of land in the Delta and Yolo Basin. Josiah Buckman Greene was among early settlers responsible for building the district's first levees. Its reclamation district, No. 551, was organized in 1872-74. Steam-powered centrifugal pumps were added to speed drainage in the 1880s. By 1885, reclamation was largely complete, making the district the first in the Delta where reclamation was completed. The district flooded in 1878, 1881, and 1907. As part of the Sacramento River Flood Control Project its riverside levees were massively enlarged, beginning in 1917 with the hydraulic dredge *Natoma*, and completed by the suction dredge *San Pedro*.
- New Hope Tract. The 9,300-acre tract is named for a historic village once located near nearby Thornton. Mokelumne City, another historical settlement on the tract, was swept away in the great flood of 1861-62. New Hope Tract's reclamation began in 1865 with formation of a reclamation district to levee 24,500 acres. A ditch was extended south to convey floodwaters ponded at the Mokelumne-Cosumnes confluence to Beaver Slough. Levee building on the tract's north bank began the following year. It is in Reclamation District 348. Reclamation was largely completed between 1880-1884. The tract flooded in 1886, 1899, 1904, 1907, 1928, 1955 and 1986.
- Brack Tract. The 4,873-acre tract is named for its first owner, Jacob Brack, a German immigrant. Joel Parker Whitney's dipper dredges *Samson* and *Goliath*, reputed to be among the largest in the world, with a shovel mounted to a 55-foot-long dipper arm, assisted in dredging Hog Slough, and building levees along the Mokelumne River here. Reclamation was largely complete by 1886. To ship his farm products, Brack built a small town, Brack's Landing, near Hog Slough's confluence with the Mokelumne, with docks and warehouses served by narrow gauge railroad, the San Joaquin & Sierra Nevada,

extending east. After the tract flooded in 1886, Brack built his own clamshell dredge, the *J. Brack*, to assist a team of Chinese laborers in replacing the prior levee. When the dredge burned, he had an even larger replacement built in 1890. Nine years later, a massive flood on the Mokelumne destroyed the landing. Further flooding occurred in 1904. The tract's Reclamation District 2033 was finally formed in 1917, when ownership of the tract had been divided among Brack's son and close friends, the Frankenheimers.

- Terminous Tract. Reclamation of Terminous Tract began in 1860s. It was part of extensive acreage owned by Ross Sargent, a Gold Rush stockman. In 1878 levees were built along the Mokelumne River and the sloughs flanking the tract. Reclamation was complete in 1886, despite flooding in 1880, 1886, 1899, 1900, 1904, and 1907. The Upland Canal, a dredged cut, separated the property from the Shin Kee Tract, which was farmed by Chin Lung, known as the Chinese potato king. He grew potatoes, beans, onions, asparagus, and hay there. The town of Terminous owes its founding to a water-rail connection point, located at the confluence of Potato Slough and the Mokelumne River. The town earned its name, as it was the "end of the road" for the Western Pacific Railroad's spur into the Delta. It was an especially important trans-shipment point for asparagus from Bouldin Island and became the focus of vegetables brought in on barges from a wide area for washing, trimming, and crating. At the height of the season, it is estimated that 350 laborers were on hand to process the region's agricultural bounty with most workers living in the "box car city," made up of de-wheeled wooden box cars set up on old railroad ties. By the late 1930s, the town's freight business was made obsolete by the introduction of refrigerated trucks and smaller packing sheds distributed throughout the area. A three-story culling chute adjoining Little Potato Slough remains as a reminder of landing's heyday. In 1983, it was nominated to the National Register of Historic Places.
- King Island. This 3,260-acre tract was acquired by the Tide Land Reclamation Company. It is protected in Reclamation District 2044. Reclamation was largely completed between 1900-1920.
- Roberts Island. Northern portions of this 32,547-acre island bordering the San Joaquin River were acquired by Tide Land Reclamation Company. It is named for John Roberts, a San Francisco mining speculator and the company's founder. To promote investment in the company, in 1871 Roberts hosted a steamer expedition through the Delta for 50 friends, potential investors, and journalists, several of whom became investors in Delta reclamation. Roberts Island's first levees were built by Chinese laborers, using carefully laid peat blocks, with a core of solidly packed material deposited in a ditch excavated in the peat. Later, an endless-chain bucket ladder-machine traveling on wheels over a planked track, adapted from machinery used in the peatlands of Wisconsin, was used to cut the peat blocks. A crew of as many as 1300 Chinese laborers and an array of horse-drawn scrapers and ditchers assisted in levee building.

In 1875, further improvements utilized the steam-powered dipper dredges *Samson* and *Goliath*. To speed drainage, two large cuts, bordered by cross levees, were dredged,

cutting the island into three: 8,260-acre Upper Roberts Island, 13,687 Middle Roberts Island, and 10,600-acre Lower Roberts Island. In 1875, the company's Roberts Island holdings, including the dredges, were sold to Joel Parker Whitney after damage in earlier floods. By 1876/77, M.C. Fisher's Glasgow-California Land and Reclamation had acquired most of the island and continued reclamation activities.

The levees built on Roberts Island after 1876 were far more massive than the levees of the previous decade, averaging thirty feet wide at the base, ten to fifteen feet high, and five feet wide at the crown. Their unique design set the levee back from the river by up to 100-200 feet, with soil excavated from the intervening area used to construct the levee and leaving behind distinctive in-channel islands in Middle River and borrow pits on Trapper Slough which are still visible today. An indication of the scale of effort required is that teams of 200 scrapers were employed at one time, as well as bespoke inventions to transport fill and place it on the levee. Steam-powered drainage pumps were added about 1887. By 1880-1890, reclamation was largely complete, despite levee breaks in 1880 and 1893, and land was leased to tenants for grain farming. The island flooded in 1880, 1886, 1890, 1893, and 1906. Reclamation District 684 comprises Lower Roberts Island.

- Jones Tract. The 12,153-acre island was acquired by the S.C. Hastings Company. Its founder, Serranus C. Hastings, was an early California Supreme Court justice (1849-51), attorney general (1852-54), and real estate speculator. Today, increased attention is also paid to his role in organizing and financing a private militia that killed and imprisoned Yuki Indians on land he had acquired in Mendocino County.

To speed drainage from the Jones Tract, a cut bordered by cross levees was dredged, cutting it in half: 6,259-acre Upper Jones Tract and 5,894-acre Lower Jones Tract. The Rindge Land and Navigation Company managed subleasing to tenants. Reclamation was largely complete by 1900-1910. The tract flooded in 1906 1907, 1980, and 2004. Jones Tract is protected with Reclamation District's 2038 and 2039.

At typical swampland purchase prices of \$1 per acre, restoration costs of \$75-\$125 per acre and land resale values of \$250 acres per acre, Jones Tract's reclamation may have gained Hastings' company \$2 million (\$26.3 million in 2020 dollars). One beneficiary was the University of California (UC), whose Hastings School of Law was founded with \$100,000 made from Hastings' real estate investments.

- Bacon Island. Bacon Island is among the lands reclaimed by the S.C. Hastings Company. Its reclamation was largely complete by 1916.
- Union Island. Union Island originally was comprised of present-day Union Island, the Fabian Tract, Victoria Island, and the upper half of Woodward Island. Much of the island was owned by the Tideland Reclamation Company. Its reclamation began in earnest in 1876, under the supervision of G.W. Walker, the company's general superintendent. Over 1000 Chinese laborers were employed in building the island's massive levees,

which were eight to ten feet high, 50 feet wide at the base, and 5 to 20 feet at their crown. Cross levees were constructed in 1878-1880, and with the aid of the Old River Reclamation Company, the levees were enlarged and the Grant Line and North canals that separate Union Island from Victoria Island and Fabian Tract.

- Victoria Island. These 7,250 acres, originally a northern extension of Union Island, were initially acquired by the Tide Land Reclamation Company, and subsequently obtained by former California Attorney General Thomas Williams in settlement of debts owed to him by the company. It is protected within Reclamation District 2040. Williams employed hundreds of Chinese laborers, many carpenters, and scores of teamsters, as well as dredges, to build large sand filled peat levees set back from the river. The large canal separating it from the remainder of Union Island was cut in 1885. After 1890, it was leased to the Old River Land and Reclamation Company, controlled by John Herd, a former grain merchant and immigrant from Britain, who named the island for the British queen. Using steam-powered clamshell dredges and other equipment, Herd completed the island's reclamation by 1898, shortly before its sale. I.L. Borden managed subleasing to tenants. The tract flooded in 1901 and 1907.
- Byron Tract. Reclamation of this 6,933-acre tract began in 1870 but was interrupted by flooding in 1875. About 1890, John Herd purchased the tract. By 1900, he had completed its reclamation. About 1907, he sold the tract to Frank West and Eugene Willhoit, owners of the dredge *Columbia*, a clam shell dredge with an extraordinary 135-foot-long boom. By 1909, using the *Columbia* and the dipper dredge *Big Dipper*, they restored the tract's levees over several months. The tract is protected in Reclamation District 800.

6.0 Orchards, Vineyards, and Farms

Agriculture is central to the culture of the Delta and plays a dominant role in defining the character of its landscape. Its origins in both family farms and large agricultural corporations, including historic irrigated agribusinesses that rival the biggest in California today, reflect the variety of agriculture in the state from the 1850s to the current era.

The Delta's flat terrain, coupled with year-round availability of fresh water, made growing crops in the Delta cheaper and simpler than other regions of California. With fertile soils, a benevolent Mediterranean climate cooled by breezes from San Francisco Bay, abundant water resources, and ready waterborne access to San Francisco, Sacramento, and Stockton, the Delta provided extraordinary opportunities for agriculture. The locally adapted agricultural systems developed there are testimony to the inventiveness and ingenuity of the region's culturally diverse farmers. Crops vary based on the soils deposited on riverbanks and marshes and the success of drainage and reclamation, as well as farming systems, markets, and farmers' preferences. Some early products, such as dairies and sugar beets have declined, while replaced by others, such as wine grapes. Since 1900 the specialty crops familiar to most Californians, including asparagus, pears, and tomatoes, have become iconic of Delta agriculture.

Today, agriculture occupies 415,000 farmed acres in the Delta, producing \$965 million in gross farm revenue in 2016, supporting 12,400 jobs and \$1.7 billion in economic output in the five Delta counties. Its orchards, vineyards, and crops have been the region's predominant vegetation for a century, shifting in variety as Delta farmers adapt to changing conditions, markets, and innovations, but constant in their significance in the landscape. The farmlands provide the setting, too often unacknowledged in national register nominations and other documentation, for the Delta's historic landmarks, districts, sites, and other properties, contributing to their authenticity and integrity. The Delta's current productivity is testimony to its farmers' generations of hard work and innovation to bring it into production.

6.1 Formation of California Delta Farming Culture

Early farming practices and technology. Early farms of gardens and orchards were established on the mineral soils of natural levees along the Sacramento River from Rio Vista to Sacramento and on upper Roberts Islands' sandy natural levees and progressed to other lands with their reclamation. In the 1860's fire was used to clear tules and break up the fibrous peat soil in preparation for farming, followed by seeding wheat or other grain which was trampled into the ash by flocks of sheep. Even after a first harvest of grain, the tough sod could be broken only with difficulty by four to six-horse teams drawing locally developed "tule cutters". Large, coal-fired steam traction engines replaced horse teams by 1900.

Locally invented farming innovations. To prevent miring in the soft soils, wheels on the steam tractors used on Delta farms became ever wider and higher, reaching a width of 18 feet and a height of 12 feet. Still, they were not completely effective in the peat soil. As described in Section 4 above, in 1906 Benjamin Holt sold the first Caterpillar tractor, revolutionizing farming in the Delta, and throughout the United States and the world.

Crops. Delta agriculture experienced several phases of development as the popularity of different crops rose and fell, and new crops and processing methods were introduced. During the first decades of reclamation, wheat, potatoes, beans, and onions were the staple crops, although a variety of other vegetables and grains were harvested too. To control fungus and other infestations, high value crops like potatoes or onions were rotated with beans or barley. Fruit and vegetable growing expanded with completion of the transcontinental railroad to serve eastern markets. Canneries were established at the turn of the 19th century to pack and ship produce to distant markets.

Potatoes and asparagus have long been signature crops in the Delta. On Roberts Island, Jones Tract, and other large holdings, asparagus, tomatoes, and celery began to replace beans and potatoes by 1900. During the second quarter of the 20th century, the most important Delta crops in acreage were winter grains (primarily barley), asparagus, field corn, and alfalfa. Together, they occupied well over half of the acreage cultivated. By the 1950s, Lower Roberts Island included potatoes, barley, alfalfa, tomatoes, sunflowers, walnut orchards, and field corn, while Jones Tract was planted in field corn, barley, celery, and asparagus. Lands bordering the Mokelumne River historically grew vegetables and grain.

Today, the garden of the Delta grows over 70 different crops. In spring and summer, their verdure wraps the Delta in green. Squads of farm workers in broad-brimmed hats irrigate and cultivate crops under the summer sun. In fall, harvesters crisscross Delta fields, combining grain, harvesting crops, and mowing hay, leaving fields of stubble and crop residue interspersed with tilled and bare acreage. In winter, workers return to prune orchards and vineyards and prepare for spring planting. Regional residents and visitors appreciate vistas of the Delta's farmlands from its state and locally designated and candidate scenic highways and routes. These include pear orchards along State Route 160 and the River Road adjacent to the Sacramento River, vineyards bordering Twin Cities Road across Glanville Tract from the Delta's boundary to the Sacramento River, croplands overlooked from I-5 east of the Mokelumne River, including New Hope and Brack tracts, fields bordering Eight Mile Road across King Island, the truck and field crops and hay pastures seen from State Route 4 and Holt, Neugeber, and McDonald Roads on Lower Roberts Island, and Byron Tract's farmland west of the Byron Highway.

Delta residents believe in the value of farming as an economic activity, a contribution to the nutrition of the nation and world, and a way of life. Throughout the Delta, a variety of community-based organizations support agriculture. These include local farm bureaus in each county, agricultural marketing organizations and other trade groups for Delta grown commodities, like CalPear, and regional groups such as the Clarksburg Wine Growers and Vintners Association and the Sacramento River Delta Grown farm trail. Other organizations support the region's farm workers. County general plans and zoning, including extensive agricultural preserves, protect the Delta's islands and tracts for agriculture. The state Delta Protection Act of 1992, which protects rural Delta farmland from urban development, is an expression of the State's commitment to maintaining agriculture. Locally organized groups that further protect Delta farmland from development include the Yolo Land Trust and the California Farmland Trust. Many Delta farms are family operations, often employing several generations of a family. Educational efforts to pass on the agricultural skills and traditions include ten 4-H Clubs and ten Future Farmers of America chapters in Delta communities.

6.2 Lasting Legacy - Orchards

The Delta's agricultural land is a key component of its cultural landscape. Defining features of this cultural landscape in the project area include the orchards, vineyards, and farms where these crops are grown:

- Orchards. On mineral soils along the Sacramento River, pear orchards, which were adapted to the rising water tables associated with the higher water elevations caused by mining debris, were planted by the 1860s. During the 1860s and 70s when Delta pear orchards were first planted, farming was a part-time occupation. During the summer months, families grew pears, shipping them to San Francisco on a steamboat that pulled up to the dock below the farm and loaded pears. When pear harvest concluded for the season, farmers fled potential floods to higher ground where they joined miners in the gold fields,

returning each spring to see what was left of their pear trees after the flood waters receded.

Already in 1885 pears occupied 6,000 acres there. An 1894 promotion for the region bragged of a 40-mile orchard stretching upriver from Isleton toward Freeport. Riverside piers and packing sheds allowed growers to ship fruit directly from their orchard on steamboats travelling to markets in Sacramento or San Francisco, saving shipping costs and jostling of the fruit in wagons on poor roads. Colorful labels, such as River Boy, Netherlands, and Delta Rose, on crates and cans of Bartlett pears carried the Delta brand across the nation and overseas.

As more dependable levees were completed, and World War I increased demand for canned fruit, many families were able to settle into full-time pear growing in the Delta. Many current Delta pear growers and packers operate businesses begun by family forebears two, three, or even five generations ago. Unlike most fruit trees that lose their vigor in a matter of decades, pear trees get better with time and will produce a good crop for 50, 75, or even 100 years or more. Many orchards' locations are unchanged over the past century. In 2016, pear orchards occupied 5,429 acres in the Delta, primarily in Sacramento and Yolo counties. The crop was valued at \$44.1 million, almost five percent of all Delta farms' gross revenue. The beauty of historic pear orchards contributes significantly to the appeal of communities such as Courtland and Clarksburg located along the Sacramento River. The orchards, often enclosed in distinctive windbreaks of Lombardy poplar, offer a scenic vista for motorists traveling north of Walnut Grove on State Route 160 or the River Road, especially in spring when they flower.

6.3 Delta Powerhouse - Vineyards

- Vineyards. James Sims, the founder of Courtland, was one of the first grape growers in the Delta. At first, grape growing and winemaking in the Delta was a non-commercial household activity, including some bootlegging during Prohibition. In the 1960s, commercial vineyards began to be planted. Clarksburg's American Viticultural Area (AVA), which extends into Solano and Sacramento counties, was established in 1984. Its cool evenings and warm days with limited summer fog allow Clarksburg to produce a diverse portfolio of premium grapes and wine. Vineyards east of the Mokelumne are in Lodi's Mokelumne River AVA. It has long been a center for Portuguese and Italian wine grape varieties that reflect the Delta's southern European immigrants, as well as Old Vine Zinfandels, some first planted in the 19th century.

In 2016, wine grapes grew on 41,600 acres in the Delta, and produced a crop worth \$212.2 million, about 22 percent of Delta farms' total gross revenue. The Clarksburg Winegrowers and Vintners Association includes 46 grower members, and 12 wineries, several of whom have tasting rooms in Clarksburg's repurposed Old Sugar Mill.

6.4 The Foundations - Farms

- Small grains. Wheat and later barley were the first widely planted crops in the Delta. By the early 1880s, about 75,000 acres of wheat and barley were farmed in the Delta, producing more than a million bushels of wheat and barley each year. During this era of peak wheat production in the Delta, which coincided with the wheat boom in California, grain farming prospered, but over time Delta farmers learned their wheat needed to be rotated with other crops to avoid plant diseases and maintain soil fertility.

Small grains remain an important feature of the Delta landscape. In 2016, 42,181 acres of barley, oats, and wheat were planted in the Delta. In the project area, small grains were planted in San Joaquin, Sacramento, and Contra Costa counties. Wheat, the Delta's first crop, comprised two thirds of small grain acreage, with a value of \$11.6 million, about 1.2 percent of the gross value produced by all Delta farms.

- Truck Crops. Truck farmers in the Delta grew a variety of crops throughout the year to maintain an ongoing cash flow. Asian and Italian immigrants made significant contributions to truck farming. Italians introduced new varieties of Mediterranean crops resulting in the rich diversity of produce that the region is known for today. Asian growers mastered the complexities of large-scale agriculture that rivaled today's largest agribusinesses.

Truck crops, including potatoes, tomatoes, and asparagus, were planted on 49,419 acres in 2016. In the project area, they are most common in San Joaquin County, especially east of the Mokelumne River, near the San Joaquin River, and on Victoria Island.

- A. *Potatoes*. Potatoes were the first produce grown in the Delta for export. By rotating potatoes with small grains, growers could produce a profitable and easily shipped crop that could also reduce plant diseases when rotated with wheat and other small grains. Delta potato yields were significantly higher than elsewhere in California or the US, reached the market earlier than competitors', and had a pale skin preferred by consumers.

Potatoes were a particular specialty of several Chinese growers, despite laws that prohibited "aliens ineligible for citizenship" (defined as Japanese, Chinese, Koreans, Filipinos, and other East Asians) from owning land or possessing leases longer than three years. On Brack Tract between 1895 and 1900, 33 companies controlled by Chinese proprietors and three Chinese individuals leased plots of 90 to 115 acres to grow potatoes, paying Jacob Brack \$8 per acre plus a share of the crop. To ship their produce, three river landings were constructed: Quong Lee and Quong Goon on the Mokelumne and Gee Fung on Sycamore Slough.

Especially influential Asian immigrants associated with the success of potato cultivation in the Delta include the Chinese immigrant Chin Lung and Japanese immigrant George Shima. Chin Lung arrived in California in the early 1880s—close to the time of the

passage of the Chinese Exclusion Act of 1882—and would become known as the Chinese “Potato King.” He leased extensive acreage in the Delta, including on Roberts Island and Byron Tract. In 1912, one year before the California legislature passed the Alien Land Law, Chin Lung purchased an 1,100-acre tract northwest of King Island that he named the Shin Kee Tract. He hired Chinese laborers to grow potatoes as well as beans, asparagus, onions, hay, and grain, employing approximately 500 Chinese laborers each year to cultivate and harvest his crops, and mastered the tasks associated with large-scale tenant farming. Despite the heavy Chinese presence in the Delta that dates back almost to the Gold Rush, this tract remains the only one of Chinese provenance. By 1923, the Alien Land Acts forced Chin to give up his land and other businesses. A decade later, he returned to China.

George Shima, born Ushijima Kinji, immigrated from the Japanese island of Kyushu and by the end of 1889 settled in the Delta, where he quickly advanced from farm worker to labor contractor to independent farmer. By 1899 Shima had begun to experiment with potato cultivation and was reclaiming acreage in the central and lower Delta northwest of Stockton. California Delta Farms, a reclamation company controlled by Lee Phillips, a Los Angeles financier, leased Shima’s recently reclaimed land to be cleared and planted to potatoes. Its acreage included King Island and parts of Jones Tract. In 1910 Shima purchased an 800-acre parcel southeast of King Island on what is now known as the Shima Tract, the first of several purchases. In addition, he leased land on Brack Tract, Terminous Tract, and Roberts Islands, including as many as 14,000 acres from California Delta Farms.

The agricultural expansion that Shima was able to achieve was built on the labor of six hundred multinational workers. Approximately fifty percent were Japanese, thirty percent East Indian/Sikh, and twenty percent Mexican and other groups. These laborers lived in Shima’s camps, of which a dozen are still intact and constitute the Bacon Island Rural Historic District. To improve yields and quality, Shima consulted with agricultural experts at Stanford University and UC Berkeley regarding seeds and planting and harvesting techniques. By 1906, Shima became the largest potato grower in the world, growing 85 percent of California’s potato crop with a market value of \$18 million annually (more than \$200 million in today’s dollars). His production and marketing innovations contributed to his success. He is reportedly the first grower to wash potatoes before sacking them for shipment; to grade potatoes for sale by quality; and to sell potatoes under a trademark, using red bags. But the Alien Land Law’s limitations on Asian immigrants’ purchase or leasing of land ultimately led to the dismantling of his empire.

In 2016, potatoes continued to be planted on 4,054 acres. They had a gross value of \$49.9 million, about five percent of the total for all Delta farms.

- B. *Asparagus*. Asparagus became a popular crop in the 1890s, accelerated by the development of canneries at Walnut Grove and other communities in and around the

Delta. Pierson District was among the Delta's early asparagus districts. Growers even developed a unique local asparagus variety, Delta Queen, with thicker stems and sweeter taste. To serve the district's growers, the California Fruit Cannery Association opened an asparagus canning plant at Vorden, about three miles north of Walnut Grove. In the early 20th century, Chinese workers predominated in both asparagus fields and canneries in the Delta. Production became concentrated in the San Joaquin Delta during the 1930s, and by the mid-1940s the peat lands had become the Delta's major asparagus producing area, with significant acreage on Union, Victoria, and Lower Roberts islands and the Byron tract. Filipinos made up ninety percent of the asparagus harvesters in the Delta then. Ninety percent of all the asparagus grown in the United States was produced in the Delta during this era. Each spring hundreds of railroad cars of fresh asparagus were shipped daily to points east. Place-based brands, such as Silver Bend, Sunmist, and Delta King featured Delta imagery to create iconic labels for crates and cans of asparagus.

Difficult labor conditions in Delta asparagus fields led to strikes by the largely Filipino work force in 1939, 1948, and 1949. In 1948, asparagus fields near Stockton, Holt, and Byron were targets of the strike, which was organized by the Cannery Workers Union, and offshoot of the International Longshoreman and Warehouse Workers Union

Asparagus has declined markedly in the Delta recently. In 2016, only 2,000 acres were grown.

- C. *Tomatoes*. Chinese and Italian gardeners leasing land along Old River were among the first to grow tomatoes as well as a wide variety of other crops to market in San Francisco. The Delta climate was ideal for their growth. Tomatoes for canning were introduced in the Delta in the 1910s. By 1940, the south Delta's San Joaquin County became number one in the country in tomato production. Over the succeeding forty years, production per acre increased 250 percent.

A key development was the invention of the mechanical tomato harvester by the Blackwelder Manufacturing Company of Rio Vista, accompanied by development of the VF-145 tomato at nearby UC Davis. In 1960, the prototype harvester and production tomato were field tested in front of 2,000 farmers and other spectators on the Heringer Farm near Courtland. Blackwelder's tomato harvester was designated as a Historic Landmark of Agricultural Engineering by the American Society of Agricultural and Biological Engineers and is displayed at the San Joaquin County Historical Society.

Tomatoes remain among the Delta's major crops, being grown on 29,200 acres and accounting for 12 percent of Delta farms' gross revenue. Together, the five Delta counties' 16.5 percent share of worldwide processing tomato production exceeds the global market share of vehicles produced by General Motors and Ford combined.

- Livestock and Livestock Feed. Livestock, including cattle and sheep, were introduced into the Delta on Mexican Ranchos such as John Marsh's land grant at Los Medanos, east of the

Delta on the Cosumnes River. Cattle driven along the California Trail added to these herds. The broad grasslands, rising from the tules toward the foothills and often overflowed by the Cosumnes and other Delta tributaries, provided readily available forage. During summer droughts, livestock could move downslope to graze in the margins of tules and other wetlands.

Cattle comprised \$22.4 million of Delta farm products in 2016. Cattle remain common around the project area at Twin Cities Road, where dense soils have discouraged orchards and vegetable farming.

The rural properties at 4900 Dierssen Road and 54116 Dierssen Road hold utilitarian ranch homes with east-facing porches to escape afternoon heat that typify livestock ranches on the Delta-foothill boundary. Barns, storage buildings, culling shuts, and fences complete the properties' built resources. Landscaping with palms, Italian cypress, and other shade trees is representative of early 20th century agricultural properties. The properties are untilled, presenting rare examples within the Delta of once prevalent cattle grazing that characterized early agriculture there.

Feed Crops:

- A. *Corn*. Raising field corn as fodder for nearby dairies began after 1908, increasing to over 50,000 acres by 1930. It continues to be grown on 82,300 acres in 2016, producing almost nine percent of Delta farms' gross revenue.
- B. *Alfalfa and hay*. Marsh hay cut from un-reclaimed islands was an early Delta product. Pastures of alfalfa began to be developed in the early 1870s, cut for city livery trade and for large ranches raising beef cattle. Alfalfa remains a common crop, growing on 77,576 acres in 2016, where it produced almost seven percent of Delta farms' gross revenue. Forage hay is grown on another 5,900 acres. Because alfalfa and hay are perennial crops that can be grown without frequent tillage, they are encouraged to reduce subsidence caused by peat soils' oxidation.

7.0 Delta People –Heritage, History, and Settlements

The Sacramento-San Joaquin Delta's ethnographic landscape tells many stories of settlement, immigrants' experience, and community building. It reflects both pre-Gold Rush settlements of native California Indians and populations from the United States, Asia, southern Europe, and Mexico who settled in the Delta from the Gold Rush through the contemporary era. Over time, the succession of immigrants and economic transitions transformed the landscape and created a different but unique sense of place, with lessons to impart about labor, agriculture, race relations, economic development, and alterations of the natural environment.

Before the Gold Rush, the Delta was (and still is) home to a large and diverse native California Indian community but quickly became one of the early settlement locales associated with the Gold Rush migration. Later, its physical and geographical attributes brought together a complex mix of social classes and ethnic groups from many nations who transformed the Delta into one of the world's most productive agricultural regions. The Delta is also a place of transient labor.

Villages along Delta waterways emerged as centers for processing and transporting crops to markets, for business serving growers and farm workers, and for residents. Rural homes, from Victorian farmsteads to barracks and labor camps for farmworkers, sheltered those who lived outside of town. On weekends, rural workers sought out Delta villages and cities to socialize, recreate and spend their pay in shops, restaurants, gambling dens, and brothels.

People. At the heart of the Delta's environmental and economic transformation was the cross-cultural migration and settlement of newcomers. The Delta was a meeting ground where peoples of the Asian Pacific Rim interacted with white Anglo settlers. Land reclamation and the diversification of the Delta's agricultural economy depended on a permanent and sometimes mobile workforce that involved both skilled and unskilled laborers. Immigrant laborers repeatedly endured immense hardships, discrimination, and meager pay. These newcomers worked the land, became entrepreneurs, and built lasting communities. Their rural experiences of economic success, social exclusion and celebrations of ethnic solidarity are recorded in the ethnic businesses, schools, and cultural heritage festivals of the Delta. Each cultural and ethnic community shaped the region and continues to leave its imprint on the landscape.

- *Native California Indians.* Native California Indians were the Delta's first residents. The tribal governments representing them are best entitled to identify significant properties in the project area and the values they preserve. Out of respect for the tribes and because much information about their cultural resources is confidential, the summary below is brief. Its brevity is not a reflection on resources important to these tribes or to an understanding of their contributions to the Delta's history.

In the Delta, native California Indians settled on the natural levees and other high ground along rivers and major sloughs in villages of 200 to 1,200 residents – not much different in size than today's legacy communities. A typical community included several dozen semispherical homes, granaries to store acorns, ramadas shading work areas, sweathouses, and a ceremonial assembly house. Surrounding marshes provided tules for building and basketry materials, and waterfowl, roots, and pollen for food, while the rivers offered dependable runs of salmon, sturgeon, and steelhead. With elevations seldom higher than ten to fifteen feet above sea level, more permanent villages were typically placed on the highest ground available along or near a natural streambed or slough, usually "mound like" in appearance leading to cartographic representation of abandoned Native sites as "Indian mounds" on historic Delta maps. Delta Meadows, on Snodgrass Slough near Locke, was a site of one native community. Others were near Clarksburg on Elk Slough (*Ylame*), south of Hood (*Gualacomne* and *Chupmne*), near Courtland (*Suisumne*), and near the Cosumnes River (*Ohonapatme*). These first settlements should remain undisturbed by DCP development. Archaeologists from UC Berkeley excavated a village site between Hood and Courtland between 1949 and 1954. In Contra Costa County, a Yokuts village (*Tamcan*) was near Byron.

Some groups occasionally buried their dead, so special care should be taken to avoid disturbing burials. Burial zones and other village sites are known to occur along the proposed tunnel routes in Sacramento and San Joaquin counties.

Archaeologists have concluded that California's first human settlers arrived in the Delta at least 8,000 years ago. Distinctive spear points associated with these settlers have been found throughout the Delta region. Between 4,000 and 5,000 years ago, something changed, making the Delta area hospitable for a second wave of native immigrants. Plains Miwok were especially prominent on both sides of the Sacramento River from Rio Vista to Freeport. The San Joaquin River, with its maze of channels, formed the core of the Northern Yokuts homeland. Before Spanish colonization, their population densities were the highest in North America, exceeded only in central Mexico. Most of native California Indians were displaced from the Delta by the 1850s, decimated by Spanish and Mexican raiders, disease, and settlers' occupation of their lands. The Delta's historic vernacular landscape overlays this ethnographic landscape created by native California Indians.

Descendants of the Delta's native California Indian residents are members of many contemporary tribes that retain an interest in the region's cultural resources. These include the Buena Vista Rancheria of Me-Wuk Indians, the California Valley Miwok Tribe, the Cortina Indian Rancheria of Wintun Indians, the Lone Band of Miwok Indians, the Jackson Rancheria of Me-Wuk Indians, the Shingle Springs Band of Miwok Indians, the United Auburn Indian Community of the Auburn Rancheria, the Wilton Rancheria, and the Yocha Dehe Wintun Nation.

- *Anglo-Americans.* Unlucky gold miners replaced the Delta's native California Indians, settling in simple camps on the rivers' natural levees to garden and cut wood to fuel passing steamboats. A few established camps near Clarksburg and Hood, attempting to claim land by preemption. In 1849, one small riverside farm was said to have returned its owner \$25,000 at a time when many miners were lucky to clear \$3-\$4 daily. In subsequent decades, other American immigrants led efforts to purchase and reclaim the region's swamp and overflow lands, often capitalized with fortunes won in the mines. During levee construction and drainage, they worked as carpenters, teamsters, and managers. Others manufactured construction equipment used in reclamation or ran businesses in Delta communities. Most farmland was owned by Anglo-Americans, and they oversaw most farming operations.
- *Chinese.* In the post-Gold Rush era, Chinese laborers were among the first newcomers to arrive in the Delta, where they contributed to levee construction, orchard work, and potato, onion, and asparagus farming. Most Chinese workers had immigrated during and after the Gold Rush from the Pearl River Delta, where conditions resembled the Delta. They were brought to the Delta not to farm but to carry out the difficult work of reclamation for white landowners. As reclamation proceeded, some Chinese laborers remained to lease and farmland that they had drained. Later, the diversification of crops in the Delta meant that Chinese men could work in farming a variety of crops throughout the year. Weeding,

pruning, harvesting, as well as repair work on the farm and on the levees gave them ample work and allowed Chinese residents to stay in the region. In 1870s and '80s, Chinese growers dominated production of potatoes, vegetables, and beans in the Delta. Chinese tenants farmed leased plots on Pierson Tract, Brack Tract, Terminous Tract, Empire Tract, Roberts Island, Jones Tract, Victoria Island, and Byron Tract between 1880 and 1910. In 1910, Chinese farmers leased 5,381 acres in San Joaquin County, growing to 13,500 acres by 1920. In San Joaquin and Contra Costa counties work in canneries also contributed to the significant growth of Chinese populations after 1900, when they began finding long-term employment doing "floor work" previously reserved for white women including cutting, pitting, and sorting fruit.

Exclusionary laws led to the spatial isolation of Chinese residents of the Delta and the development of Chinatowns in Delta communities, including Courtland, Locke, Walnut Grove, Isleton, and Stockton. Emboldened by anti-Japanese agitation, a 1921 state law allowed for the establishment of separate schools for Chinese, Japanese, and south Asian and Indian children.

- *Japanese.* Japanese settlers arrived in the region to meet the demand for agricultural workers. Entering America through Pacific Rim ports like San Francisco, many first-generation *Issei* men found employment opportunities in agriculture in the Delta. Many started out as field hands, eventually becoming *keiyaku-nin* or a field foreman who supervised crews and helped to ensure the quality of the harvest. These immigrants moved into farming in great numbers and quickly progressed to secure long-term leases to grow high-value crops. By the turn of the 19th century, they began to overtake Chinese immigrants as the Delta's predominant tenant farmers. They made important contributions to large-scale agricultural operations including potato farming and cannery work.

Japanese immigrants' success often made them the target of discriminatory policies including discriminatory land laws and the establishment of segregated schools in the Delta. To fight against these laws, George Shima became president of the Stockton-based Japanese Association of America from 1908 to 1925. Ultimately, racial hostility resulted in the forced relocation and incarceration of Japanese Delta residents during World War II. In spring 1942, Japanese families living throughout the Delta were evacuated to assembly centers and in some cases sent directly to the camps. For example, *Issei* and *Nisei* who were living in the Clarksburg area were forced to board trucks in Freeport and were then sent directly to the Tule Lake facility in northeastern California (now Tule Lake National Monument). Others were assembled in Courtland and sent by train to the assembly center in Turlock, eventually ending up at the Gila River camp in Arizona. Many Japanese Americans lost their homes, their land, and their family possessions. Some eventually returned to the Delta; most did not. Walnut Grove's Japanese community fared better than some because the local bank honored loans and local people took care of their property during internment.

- *Southern Europeans.* Southern Europeans began to arrive in the Delta region in the late 1880s. Italians made significant contributions to truck farming by introducing new varieties of Mediterranean crops. They were also important innovators of mechanized farming equipment and they developed important labeling and packaging advances that allowed for the export of quality produce to the world market. Portuguese immigrants from the Azores were involved in reclamation activities in the northern Delta. Their efforts led to the creation of the Lisbon District near Clarksburg and the manufacturing of the first clamshell dredger.
- *Filipinos.* Filipinos played a major role in Delta farming and the urban life of Stockton. As residents of a U.S. territory, they could immigrate to California free from the discriminatory quotas that constrained migration from other Asian countries. In the 1920s, their migration to California gained strength and Stockton was a primary destination. They made up ninety percent of the asparagus harvesters in the Delta during the 1920s and 1930s and worked under some of the most difficult farm labor conditions in the country. Filipinos used Stockton as a base, as they moved from one labor camp to another throughout the year.

During the height of asparagus season, it is estimated that ninety percent (6,000 workers) of the harvesters were Filipinos. It was common to have teams of 300 asparagus cutters descend on the fields before dawn, attaching flashlights to their heads to see and be able to gather the tender shoots. Laborers would move from camp to camp, starting in January with asparagus picking, and then move on to row crops throughout the Central Valley and Central Coast. They used ferries and small boats to travel from one island to another to labor on farms and then return to temporary living quarters in Delta work camps.

Filipino farm workers responded to difficult living and working conditions with resistance, became instrumental in the farm labor movement, and created highly influential ethnic organizations. A 1939 strike by the Stockton-based Filipino Agricultural Workers Union against asparagus growers on San Joaquin River delta lands was among the few farm labor actions of that era to secure better wages and working conditions. Filipino farm workers also struck in the 1940s and 1950s, securing grower concessions. In 1959, Larry Itliong, a Stockton-based Filipino labor activist, helped organize these strikes and later led the Agricultural Workers Organizing Committee, a precursor of the United Farm Workers Union.

- *Punjabi Sikhs.* Punjabi Sikh immigrants also arrived in the Delta in the early 1900s. The region resembled their homeland in northern India, and they found work in the Delta's orchard and field crops and eventually expanded into leasing farmland. Prevented from land ownership under the 1913 California Alien Land Act, Sikh workers struggled to establish a livelihood and retain their social and religious life amidst the same type of discrimination endured by other Asian immigrants. Sikh newcomers gained a foothold in the celery, bean, and potato fields near Holt, just east of Stockton. They built a temple (*gurdwara*) there at a farm labor camp called Quito. They were also hired to work on farms in Isleton, often replacing Japanese workers. Locke's grain mill was operated by Sikh immigrants. Sikhs also settled in Stockton where they built the first permanent *gurdwara* in the United States in

1912. Much like the Japanese, Sikh field hands eventually advanced from performing wage labor for others to leasing farmland for themselves, and they ultimately thrived in the Central Valley.

- *Mexicans.* As the Filipino immigrant work force grew older, younger Filipinos moved from farm labor to the broader work force. To replace them, Delta farmers increasingly hired Mexican labor crews, primarily migrants from Michoacán and Jalisco. The 1940 census enumerated a well-established Mexican immigrant presence in the orchards and fields of the Delta. Immigration of Mexican laborers increased with the bracero farm labor recruiting system in 1942, which was initially driven by the demand for agricultural laborers to harvest the Delta's sugar beets. Today, Mexicans and immigrants from Central American comprise most of the Delta's farm laborers.

Stockton resident Delores Huerta founded the Agricultural Workers Association in 1961 to lobby politicians on behalf of migrant workers and other issues and was an early organizer for the Agricultural Workers Organizing Committee, a precursor to the United Farmworkers Union. She later joined with Cesar Chavez and Stockton-based Larry Itliong to found the United Farm Workers Union.

Infrastructure. The Delta's railroads and roads were built in the early 20th century to transport its crops to market, competing with riverboats that had served waterfront communities and rural landings. Many roads follow riverbanks or levee tops, capturing trade previously carried by the riverboats that served waterfront villages and farms. Several branch railroads also pushed into the Delta as harvests of more valuable farm products increased. Key infrastructure in the project area includes:

- *Sacramento Southern Railroad.* The Sacramento Southern (SSRR), whose abandoned right of way is still evident, extended south from Sacramento to river landings in Freeport, Hood, Locke, Walnut Grove, Isleton, and Bouldin Island. Its main purpose was to haul fruit and vegetables to the Southern Pacific's yards in Sacramento and Roseville for shipment across the nation. Construction began in 1906 from Sacramento to Freeport. It reached Walnut Grove in 1912 with further extensions to Isleton in 1929 and a three-mile branch to the Golden State Cannery on the Mokelumne River in 1931. The SSRR continued operations until October 10, 1978, facing stiff competition from refrigerated trucks beginning in the 1950s. Rails and ties have all been pulled south of Hood, leaving occasional stretches of flattened right-of-way but little other evidence of the energy and scale of this historic operation. California State Parks owns some of the SSRR right of way.
- *Western Pacific Railroad.* The Western Pacific extended a spur west from its Sacramento-Stockton mainline to Terminous.
- *Roads and bridges.* In the 1910s-20s, paved roads, often atop riverside levees, began to be improved to serve newly popular automobiles and trucks. Engineers welcomed the traffic as the heavy cars and trucks helped consolidate the levees' sediments. The California Delta Highway, now State Route 4, was an early improved route connecting Stockton with Antioch

and the Bay area. In 1921, the River Road from Sacramento to Antioch, now State Route 160, was incorporated into the Victory Highway, an early transcontinental route named to memorialize American forces who died in World War I. Part of its route through Sacramento County was planted with trees forming an arbor that shaded the highway. Improvements to these and other Delta roads were spurred by passage of California's State Highway Act of 1915, the Federal Road Aid Act in 1916, and subsequent state and local bond acts.

Many Delta roads are served by its collection of more than two dozen bridges or ferries. By 1931, eleven were built in a remarkable burst of public works construction. These include draw and lift bridges at the Middle River and Old River on State Route 4 and the Paintersville Bridge, which are all on the National Register of Historic Places. Other historic bridges in the project area in Sacramento County include the Freeport Bridge, the Miller Ferry Bridge, the Snodgrass Slough Bridge, the Steamboat Slough Bridge, and the Walnut Grove Bridge. In San Joaquin County, other historic bridges in the project area include State Route 4's San Joaquin River Bridge and the Miller Ferry Bridge.

Communities. Delta towns encapsulate the region's history of boom-and-bust cycles, reliance on global markets, close ties to transportation conglomerates, and experiments in residential development. Significant sites in the Delta's cultural landscape in the project area include:

- *Hood.* The community of Hood began as "Richland" in 1860 for the purpose of shipping grain. It was the site of an early terminal from which local fruit growers shipped produce downriver. By the 1870s, these farmers formed the California Transportation Company whose steamboats carried their produce on the river. At its peak Richland boasted a warehouse, hotel, grocery, church, school, and post office. The community declined as crops shifted from grain to fruit but was revived and renamed in 1909 by William Hood, Southern Pacific's Chief Construction Engineer, who saw a future as the newly built SSRR reached the town. Edward Harriman, who owned the SSRR and the Southern Pacific, envisioned it as a picturesque "Netherlands Route" that would eventually connect Sacramento to San Francisco by rail and steamboat. A depot was built in Hood with a spur from the Sacramento Southern mainline down to the wharf where a large packing shed was constructed to service fruit producers, especially the California Fruit Exchange and Stillwater Orchards. The railroad partnered with Sacramento businessman Madison Barnes, who founded the Hood Improvement Company to develop a residential community adjacent to the new shipping facilities. A hotel, hardware store, grocery, church, and post office (1912) operated in the town. Beginning in World War II, a cadre of Mexican American agricultural workers, many of whom were participants in the Bracero program, settled in Hood with their families.

Today, Hood has nearly 300 residents, 70 percent of whom are Hispanic. Many families have lived there for generations. The post office remains, and there is a market and a community park. Several historic properties are near the intersection of Hood-Franklin Road and State Route 160:

- A. Hood Supply Company: The Hood Supply Co., a restaurant and bar, occupies a building that was originally a combination gas station, soda fountain, and mercantile and supply store serving travelers on the Victory Highway.
 - B. River Road Exchange: The River Road Exchange was originally home to a bustling waterfront fruit shipping and processing facility. Currently, the 100,000 square foot space is being renovated, with some renovation completed, for retail use, including the Willow Ballroom and potential future wineries, distilleries, or breweries. The owners envision a second phase that will restore the original waterfront, boathouse/steamer shed and pear lockers (with river views).
 - C. Hood Post Office (10749 River Road). The current building is the second to house Hood's post office. Its furnishings were relocated from its predecessor.
 - D. Delta Bait and Tackle (10749 River Road). This commercial building is a local example of early 20th century commercial architecture.
 - E. Casitas (10775 Third and 10781 Third Street). These tiny homes were built to provide affordable housing for railroad and farm workers. One is a studio. The other has a single bedroom. Other similar homes scattered through Hood have simple expansions, often a lean-to or enclosed porch, added as families expanded and their finance allowed. They are prototypes for today's "tiny homes".
 - F. Barnes House (10780 3rd Street). This large home, with elaborate garden landscaping, was the home of a son of Hood's developer.
 - G. 10727 2nd Street. This residence, like its neighbor, is typical of early wood frame Hood homes built for railroad workers.
- Clarksburg. In 1861, Frederick Babel acquired 160 riverside acres where Clarksburg stands and moved his family into a newly constructed house. Nearby Babel Slough is named for him. The community began as a simple river landing. A post office was established in 1876. The 1883 Clarksburg School House is among early structures remaining in the community. In 1920, the Holland Land Company, which had taken over the reclamation district extending west into the Yolo Bypass, began to improve Clarksburg as a model town to serve purchasers of farms in the surrounding Holland district, with a ferry and later a bridge linking it to Freeport. Many of the families who initially settled there are still present, reinforcing the community's small-town charm. Development of the American Crystal Sugar Company refinery, now the Old Sugar Mill, contributed to Clarksburg's growth and prosperity. Many properties in the community were built prior to 1970 and exemplify architectural styles of the eras of their construction. The Medieval Revival-style Clarksburg Community Church was designed by well-known architect William Raymond Yelland, who spent his summers in Clarksburg. Clarksburg's population in 2018 was 442.

Clarksburg was a southern anchor to the riverside Lisbon District, which attracted many immigrants from the Azores. By 1880, the census recorded Portuguese immigrants comprised forty percent of the population of the area, giving rise to the reputation of the riverside north of Clarksburg as "Portuguese Bend."

For Portuguese in the Delta, community identity and cultural renewal center on participation in the annual *Festa do Espirito Santo* (Festival of the Holy Spirit), held since 1893 at the historic Portuguese IDES (*Irmandade di Espirito Divino*) Hall, on South River Road in Clarksburg, and commonly referred to as simply the festa. Traditionally held on Trinity Sunday, eight weeks after Easter, the festa attracts Portuguese from throughout northern California. Prior to construction of the Freeport bridge, celebrants would converge in Freeport and then ride the Soto Ferry to the IDES Hall. The festa celebration lasts several days and includes a procession of bands and queens dressed in handmade capes and gowns, walking along South River Road from St. Joseph Catholic Church to the IDES Hall, where a community meal of *sopas e carne* (Azorean beef stew ladled over mint bread) is served.

Holland Union Gakuen, one of the few remaining Japanese language school buildings in the Delta, is also located in Clarksburg. Plans to preserve and redevelop this historic site are currently underway.

- *Courtland*. James Sims, a forty-niner, established the town in 1871, downstream from a Chinese community that had answered the call for farm laborers and levee construction. It developed as a Delta-oriented trading and shipping center. A post office was established here in 1872, followed by wharves, a hotel, and stores. Early photographs show a bustling community complete with social halls, grocery stores, a Greek revival bank with Doric columns, a service station, and the iconic Courtland Market, which remains one of the most recognized buildings in town today.

Though small, Courtland's Chinatown served a large Chinese population, many living on surrounding farms. Its Chinatown suffered fire in 1879 and again in 1906. The town was the site of the Courtland Bates Oriental School, a separate school for Chinese and Japanese children. It was later converted into a public elementary school which still operates today.

Courtland thrived with the prosperity of fruit growers and asparagus farmers on Pierson Tract and other nearby islands. It also attracted Italian immigrants who maintained orchards and dairy herds. "Vista del Rio Brand" pears were grown and packed by J. A. DeBack at Courtland in the 1920s. The imagery on its crate label features a large Delta farmhouse, fenced yard, and a steamboat and canoe on the Sacramento River. Today, Courtland's small commercial center includes Chinese architecture and an outdoor museum featuring farming equipment from Chan's Diversified Farms. The town's population in 2018 was 537. The town's Pear Fair is held in the summer and is a celebration of the annual Bartlett pear harvest and the town's unique character and rural lifestyle.

- *Locke*. According to the Locke Foundation, Locke is the nation's last vestige of a rural Chinese community. It originated as a Delta-oriented trading and shipping center for John Locke, a Delta pear grower and merchant. In 1914, Chinese merchants leased lots from Locke, where they built a store, saloon, boarding house, and gambling parlor. In 1915, Locke's primarily Chinese workers and their families, many from Walnut Grove, following

fires that displaced them from their homes, chose to relocate to Locke's property and began expanding the town. "Pride of the River" brand was George Locke's personal label for the pears and asparagus shipped from his riverside packing house. On its label, three pears in the foreground lead the viewer to see a steamboat on the Sacramento River with a colorful sky.

Locke's four blocks of one- and two-story commercial and residential buildings, designed in the false-fronted, woodcutter Gothic style, are typical of turn of the 19th-20th century river towns. Locke is also home to the Chinese School, established in 1915. The building was funded by the Kuomintang (Chinese Nationalist Party) and was originally used as a meeting place for Kuomintang members. A bust commemorating the Chinese revolutionary leader, Dr. Sun Yat-sen, is in front of the school. A permanent population of around 400 made this an important ethnic as well as social and economic center for the Chinese, with up to 1,000 workers entering the town and the nearby orchards during harvest and packing season. Locke was a lively hub of activity in the 1920s, supporting a permanent population of around six-hundred residents. On the weekends, the population would swell closer to a thousand with field workers coming into town from the surrounding agricultural camps. The Libby Fruit Company began processing tomatoes at Locke in the early 1920s.

As its residents dispersed and its Chinese population declined, Locke's setting and low rents have sometimes attracted artists and writers. These including the late Laura Ulewicz, a Beat generation poet whose poems include "Notes toward the River Itself" and the late photographer James Motlow whose pictures illustrate the book *Bitter Melon: Stories from the Last Rural Chinese Town in America*.

Today, Locke maintains its charm and authenticity. Many of the Chinese-built buildings are still in use; they may no longer be a saloon, goods store, or bordello, but they retain their unique character and are being preserved for future generations. John Locke's riverside packing shed is a boathouse, and the Dai Loy Museum is housed in the former gambling hall. The town's current population is 40 to 50. The community hosts an annual Asian-Pacific festival each spring. Locke symbolizes the tenacity of immigrant Chinese who overcame prejudice and segregation to form a cohesive community with the full range of businesses, social and religious institutions, and housing.

The Locke Historical District is a national historic landmark. The Dai Loy Museum, the Chinese School Museum, the private Jan Ying Association Museum, and the Locke Boarding House, a California State Park property, help preserve and interpret the community's history.

- *Walnut Grove*. A post office was established in Walnut Grove in 1850. Its location at Tyler and Georgiana sloughs' confluence with the Sacramento River helped it develop as a Delta-oriented trading and shipping center. It was named by its founder, John Wesley Sharp, for the native trees he found there. Sharp acquired 160 acres under the 1850 Swamp Land Act and built a wharf, making the eventual town an important transportation stop along the Sacramento. He donated land for the first school and the site for the California

Transportation Company's landing. Walnut Grove benefited from river traffic, stage service, and ferries linking it to Grand, Andrus, and Staten Islands.

Walnut Grove's Chinese settlement was established in the mid-1870s, initially including residents from both the Sze Yup and Zhongshan districts of China's Guangdong Province. By the early 1900s, Walnut Grove supported the largest Chinatown in the Delta. Japanese residents created their own district just north of the Chinese settlement. By the 1920s, the right bank (Clampett Tract) was the preferred location for the town's prosperous residents. Such clusters of homes were given the name "Asparagus Row." Over time, Walnut Grove boasted a diverse mix of commercial and cultural establishments including canneries, a theatre, and several European-style hotels.

Currently, Walnut Grove is divided into three sections. First, located on the high ridge of the east bank levee is the main business section. Behind the levee is old town, which includes some of the commercial activities Walnut Grove has to offer along with Chinatown and Japantown. Lastly, across the main bridge are stores, churches, and the "bedroom community." The town's population in 2018 was 1,542.

Walnut Grove includes three districts on the National Register of Historic Places: the Walnut Grove Chinese American Historic District, the Walnut Grove Commercial-Residential Historic District, and the Walnut Grove Japanese American Historic District, as well as three other properties on the national register: the Imperial Theater, the John Stanford Brown house, and the Walnut Grove Gakuen Hall. Several buildings blend Chinese influence with the 1930s' Streamline Moderne style. The Chinese Freemason Hall is another prominent landmark. Other important landmarks include several businesses owned by Alex Brown and other family members, the Walnut Grove Buddhist Church, Kawamura's Barber Shop, and Hayashi's Market.

- *Terminous*. Terminous owes its founding to a water-rail connection point, located at the confluence of Potato Slough and the Mokelumne River. The town earned its name, as it was the "end of the road" for the Western Pacific Railroad's spur into the Delta. It was an especially important trans-shipment point for asparagus from Bouldin Island where the first test fields of the crop were planted. The town became the focus of vegetables brought in on barges from a wide area for washing, trimming, and crating. At the height of the season, it is estimated that 350 laborers were on hand to process the region's agricultural bounty with most workers living in Terminous' "box car city," made up of de-wheeled wooden box cars set up on old railroad ties. By the late 1930s, the town's freight business was made obsolete by the introduction of refrigerated trucks and smaller packing sheds distributed throughout the area. A three-story culling chute adjoining Little Potato Slough remains as a reminder of the landing's heyday. In 1983, it was nominated to the National Register of Historic Places.

Terminous has made the successful transition from an agricultural-based economy to recreation and tourism. Many of the town's original waterfront warehouses have been repurposed as boat storage facilities and the former box car city has been replaced by camp sites and a mobile home park near a large marina. Its population in 2010 was 381.

- *Holt*. Holt, eight miles west of Stockton, is named for the Holt family around whose farmsteads the community grew. It was located on spur railroad tracks linking Delta landings and farmers on nearby Roberts Island, Union Island, and Upper and Lower Jones tracts to the main rail network. Its advantageous location along the Borden Highway (now State Route 4), the first paved road in the Delta, reinforced the town's importance. The hamlet was even featured in a *Sunset* Home Seekers Bureau publication extolling Holt as the largest town in the San Joaquin Delta.

In its day, Holt was a bustling place with a hotel, speakeasies, and bordellos. Many agricultural laborers were employed in the Holt area and not surprisingly, the town became an entertainment mecca on weekends. There were gambling houses, illegal stills, and prostitutes and "taxi dancers" (paid female dance partners) arriving by train from Stockton in the late afternoon. Holt also displayed an early multiethnic character that included Chinese and Japanese sections of town. By 1917, the local school included students with Japanese, Mexican, Portuguese, and Italian heritage. Its current population is 110.

Holt also was a center for early innovation in the region. In 1904, the first successful test of the Caterpillar track-powered vehicle occurred in Holt. "Scientific" farmers experimented with Red Milo Maize and found hemp to be a viable crop in the area. Early dairyman John DeCarli introduced Ladino clover to milk production and developed new technologies for piping milk from dairies into tankers.

- *Byron*. In 1878, the town of Byron was established. By 1880, the Southern Pacific Railroad added a passenger stop there to serve the nearby Byron Hot Springs resort. Promoters continued to advertise the Byron area well into the 1920s as the heart of California's "Edenic Delta". Its population in 2010 was 1277.
- *Historic rural farmsteads*. In addition to these settled communities, individual rural farmsteads were located along the Sacramento River and other channels. Many featured their own landings where crops could be loaded onto passing riverboats or supplies received from carriers like the Southern Pacific Railroad and the California Transportation Company, which ran riverboats from Sacramento to San Francisco, and the California Navigation and Improvement Company on the San Joaquin River, serving hundreds of landings.

Especially noteworthy in the project area are the farmsteads along the Sacramento River from Freeport south to Walnut Grove. Here the acreage limitations of the early Swamplands Acts encouraged division of the land into long-lots that are unique in California history but similar to the French system along the St. Lawrence, around Detroit, and in Louisiana. Each family on the Sacramento had river frontage, with a long strip of land running perpendicularly away from the river. Typical house construction was two-stories with kitchen and pantry on the ground floor and bedrooms and living quarters above, an architectural pattern still visible today. Riverside farmsteads also often included a multi-story tankhouse, a smokehouse, sheds, garages, and occasionally a barn. Many homes and some outbuildings were elevated on mounds to avoid floods.

The Greek Revival Runyon House on River Road near Courtland, a National Register property built by one of the Delta's early orchardists, is representative of many early farm residences. The Rosebud Ranch, an Italianate house on the National Register of Historic Places, fronts the Sacramento River near Hood and typifies more elaborate later 19th century farm homes. Beginning in 1967 it was the home of celebrated artist Wayne Thiebaud. Here Thiebaud painted a series of Delta landscapes, such as "Brown River" and "Y River".

Along the riverside are many other fine old riverside homes built by the "pearistocracy" of prosperous fruit growers during the 19th or early 20th centuries but not yet listed on the National Register. Older residences may be 2-story Victorians, while more modern bungalows date from 1910-1930. Examples include the Lisbon District's Brown House, the Cornish House south of Clarksburg, the Greene home south of Hood, Merritt Island's Nelson Bump house, the Thomas Webster Dean House and "Ivy Banks," George Buckham Greene's house north of Courtland, the George Augustus Smith house south of Courtland, the Solomon Runyon, and William Neely Runyon homes on Sutter Island downstream from Paintersville, and the Albert Thomas James Reynolds house north of Walnut Grove. The river, its levees, and the surrounding reclaimed farmland contribute to the setting of each of these properties, buttressing their authenticity and integrity.

Farm workers on Delta farms rarely enjoyed such comfortable homes. Rather, while tending crops they often lived on weekdays in barracks at the back of the property, close to the orchards and fields they tended. Old barracks remain on some properties, often in disrepair. Prior to the 1950s, weekends and the off-season found Asian farmworkers rooming at boarding houses in Courtland, Locke, Walnut Grove, Holt, or Byron, where they found companionship and relaxation in gambling halls, bordellos, and speakeasies, or in Chinatowns in Stockton, Sacramento, or even San Francisco.

8.0 Water Management

Managing water has been a key to Delta life since construction of its first levees, ditches, and tide gates. The region's easy access to irrigation water protected reclaimed lands from droughts that desiccated farms in the Sacramento and San Joaquin Valleys. More recently, the Delta's location at the hub of the Central Valley Project and State Water Project has focused attention on protecting the region's resources and unique landscape from the depredations of outside agencies that covet its water. Debates about these projects from the 1940s to the contemporary era define too many Californians understanding of the Delta.

Key water management resources of the Delta's cultural landscape in the project area include:

- Local irrigation works. Irrigated agriculture became common in the Delta during the 1870s, although it had been practiced earlier. Flood irrigation, with water delivered at high tide through tidal gates in levees and spread by gravity through ditches across the level islands, then removed at low tide through drainage ditches, was initially the most common method.

But this system worked poorly on low-lying islands, and by the end of the 1880s began to be replaced by sub-irrigation. This method involves raising the water table by filling a system of unlined head ditches and small lateral ditches (“spud ditches”). First utilized for potatoes by George Shima, and for beans or volunteer hay crops, sub-irrigation gradually became the standard method for all crops grown. After 1900, siphons were often used to divert water to more subsided islands. In 1910, over 60 percent of Delta farmland was irrigated. In spring, as crops are emerging, and during summer heat, head ditches often run full with water to sustain the season’s produce. At other times, pumps and siphons are employed to drain and discharge excess water from low-lying islands to adjacent sloughs.

- Mokelumne Aqueduct. The East Bay Municipal Utility District’s Mokelumne Aqueduct crosses Roberts Island and Jones Tract, carrying water from the Pardee Reservoir and the Folsom South Canal to parts of Alameda and Contra Costa counties. Its initial above-ground cross-Delta pipeline was built between 1926 and 1929. A second pipeline was added in 1949 and a third in 1963. Water delivered through the aqueduct has been a key to development of urban communities in the East Bay.
- Central Valley Project. With the introduction of commercial production of rice in the Sacramento Valley in 1912, demand for irrigation water from the Sacramento River and its tributaries increased radically. In only four years, from 1915 to 1919, irrigation diversions of Sacramento River water doubled from 1.15 million acre-feet to 2.30 million acre-feet, drastically reducing Sacramento River flows to the Delta and increasing penetration of ocean salinity, harming Delta and Suisun Bay water users. In 1920, this situation coincided with a serious drought, which exacerbated the salinity problem, prompting the state to search for a solution. The resulting plan, which passed into State law in 1933 as the Central Valley Project Act, called for development of Shasta Lake on the Sacramento River to release water to the Delta to repel salinity. The act was welcomed by Delta residents, who believed that the project would secure the future of agriculture not only in the Delta, but throughout the Central Valley.

When the Great Depression impaired California’s capacity to finance the project, the State appealed to the federal government, which responded in 1935 by authorizing initial construction by the Corps and again in 1937 when Congress authorized the Bureau of Reclamation’s Central Valley Project (CVP). It called for Shasta Dam on the upper Sacramento River to regulate the river’s flows to control salinity problems in the Delta, Friant Dam on the San Joaquin River from which water would be diverted south to farms on the San Joaquin Valley’s east side, and the Delta-Mendota Canal to deliver “substitute” water from the Delta to lower San Joaquin River water users. The Delta-Mendota Canal established a precedent for water transfers across the Delta from the Sacramento Valley to the San Joaquin Valley.

CVP features in the project area include the C.W. Bill Jones Pumping Plant, completed in 1951 near Tracy to pump Delta water south to the Delta-Mendota Canal. Further north, the Delta Cross Channel, located between Locke and Walnut Grove, was constructed to send

fresh water from the Sacramento River toward these pumps through the Mokelumne, San Joaquin, Middle, and Old Rivers. Western Area Power Administration transmission lines cross Roberts Island and Byron Tract to serve the CVP's Jones pumping plant.

- State Water Project. The magnitude of water diversions through the Delta from the Sacramento River, and the problems for the Delta associated with them, would increase dramatically after the 1960s when the State Water Project (SWP) was constructed. The project dammed the Feather River at Oroville to transport part of its flow, mingled with that of the Sacramento River, across the Delta and into the new California Aqueduct, which provides water to the west side of the San Joaquin Valley and beyond to the cities of Santa Clara County and southern California. Historic SWP properties in the project area include the Clifton Court Forebay and Bethany Reservoir.

Throughout the period of the SWP's development and during the more recent era of Delta water planning, Delta residents have generally opposed a series of Delta conveyance projects and large habitat restoration programs to compensate for the CVP's and SWP's impacts, including the proposed Peripheral Canal in the 1970-80s, the CALFED Bay-Delta Program in the 1990-2000s, and the Bay-Delta Conservation Plan and California WaterFix in the 2010s. Delta residents viewed these projects as threats to the Delta's agricultural, historic, and natural landscape, objecting to the multiple adverse effects these projects would have on the region's identity. None of these projects were constructed, but a series of borrow pits excavated as part of constructing Interstate 5, including the White Slough Wildlife Area in San Joaquin County, mark the canal's proposed route. Meetings where opposition to these projects was voiced were held at Walnut Grove's Jean Harvie Community Center, a California Point of Historical Interest.

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