# ELKHORN SLOUGH
## TECHNICAL REPORT SERIES 2020: 3

*Sponsored by the Elkhorn Slough National Estuarine Research Reserve and the Elkhorn Slough Foundation*

# Moro Cojo: A Historical Perspective
## A compilation of primary historical data

**Andrea Woolfolk**

**June 2020**

Elkhorn Slough National Estuarine Research Reserve

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

ELKHORN SLOUGH FOUNDATION Since 1982

## HOW TO CITE THIS DOCUMENT

The appropriate citation for this document is:

Woolfolk, A. M. 2020. Moro Cojo: A Historical Perspective. Elkhorn Slough Technical Report Series 2020: 3. Available at http://www.elkhornslough.org/research-program/technical-report-series/

## AUTHOR AFFLIATION

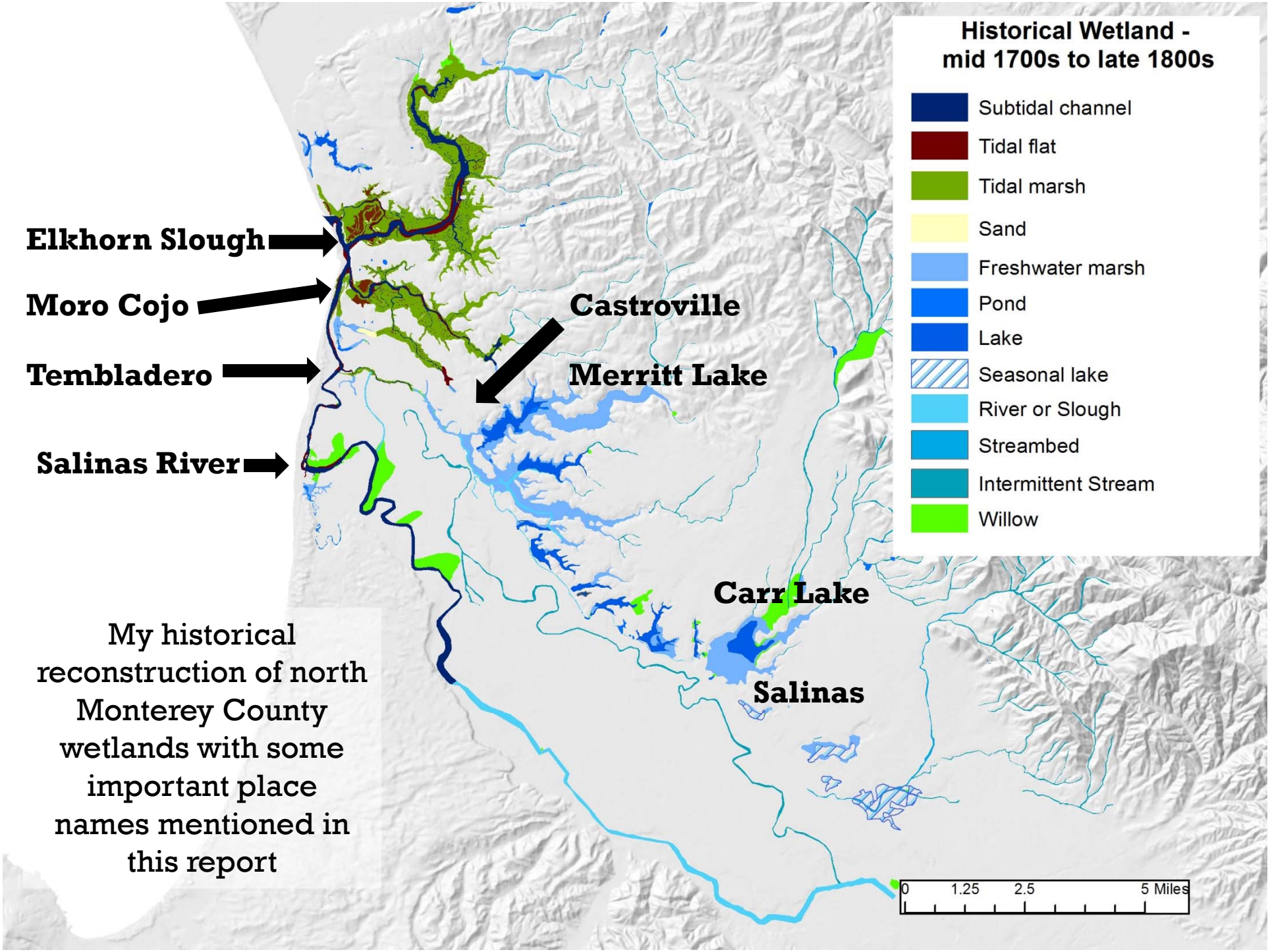
Andrea Woolfolk is the Stewardship Coordinator at the Elkhorn Slough National Estuarine Research Reserve.

## DISCLAIMER



## ABOUT THE ELKHORN SLOUGH TECHNICAL REPORT SERIES

The mission of the Elkhorn Slough Foundation and the Elkhorn Slough National Estuarine Research Reserve is conservation of estuarine ecosystems and watersheds, with particular emphasis on Elkhorn Slough, a small estuary in central California. Both organizations practice science-based management, and strongly support applied conservation research as a tool for improving coastal decision-making and management. The Elkhorn Slough Technical Report Series is a means for archiving and disseminating data sets, curricula, research findings or other information that would be useful to coastal managers, educators, and researchers, yet are unlikely to be published in the primary literature.



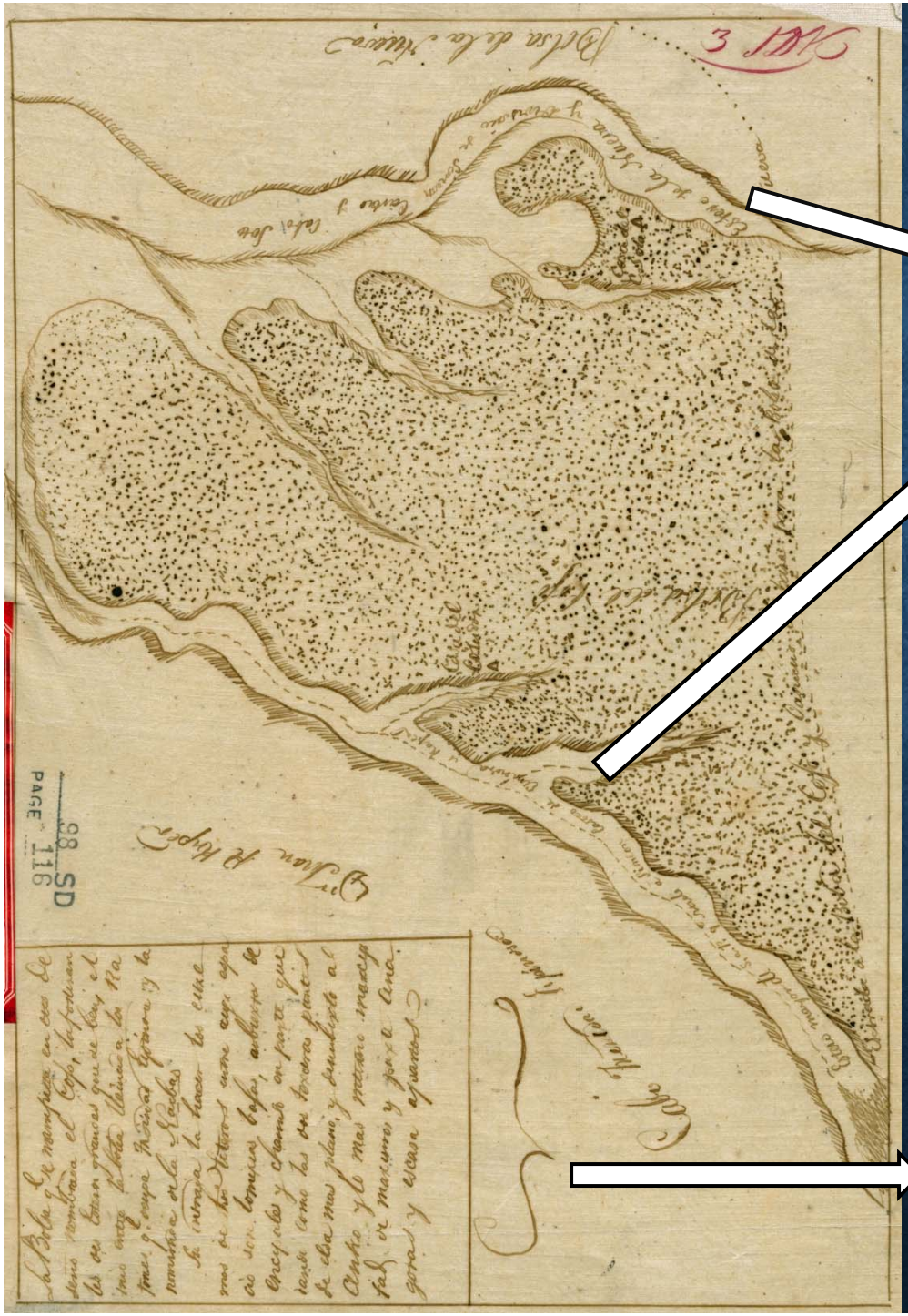

My historical reconstruction of north Monterey County wetlands with some important place names mentioned in this report

# Mexican Land Grants

- Maps and written descriptions by the landowners, dating to the early 1800s
- Describe Elkhorn Slough, Moro Cojo, and Tembladero as estuaries. Tembladero was connected to Merritt Lake, and Tembladero was described as being half salt water and half freshwater. Descriptions also talk about other wetlands in the vicinity

# 1830s – Rancho Map for El Moro Cojo

An early rancho map showing Moro Cojo, top of this rotated image. Includes description of land, on the next page.



# 1830s – Rancho Map for El Moro Cojo

Moro Cojo Slough. *"Estero de la Nueva y divisorio de Simeon Castro y Cabo Soto"*

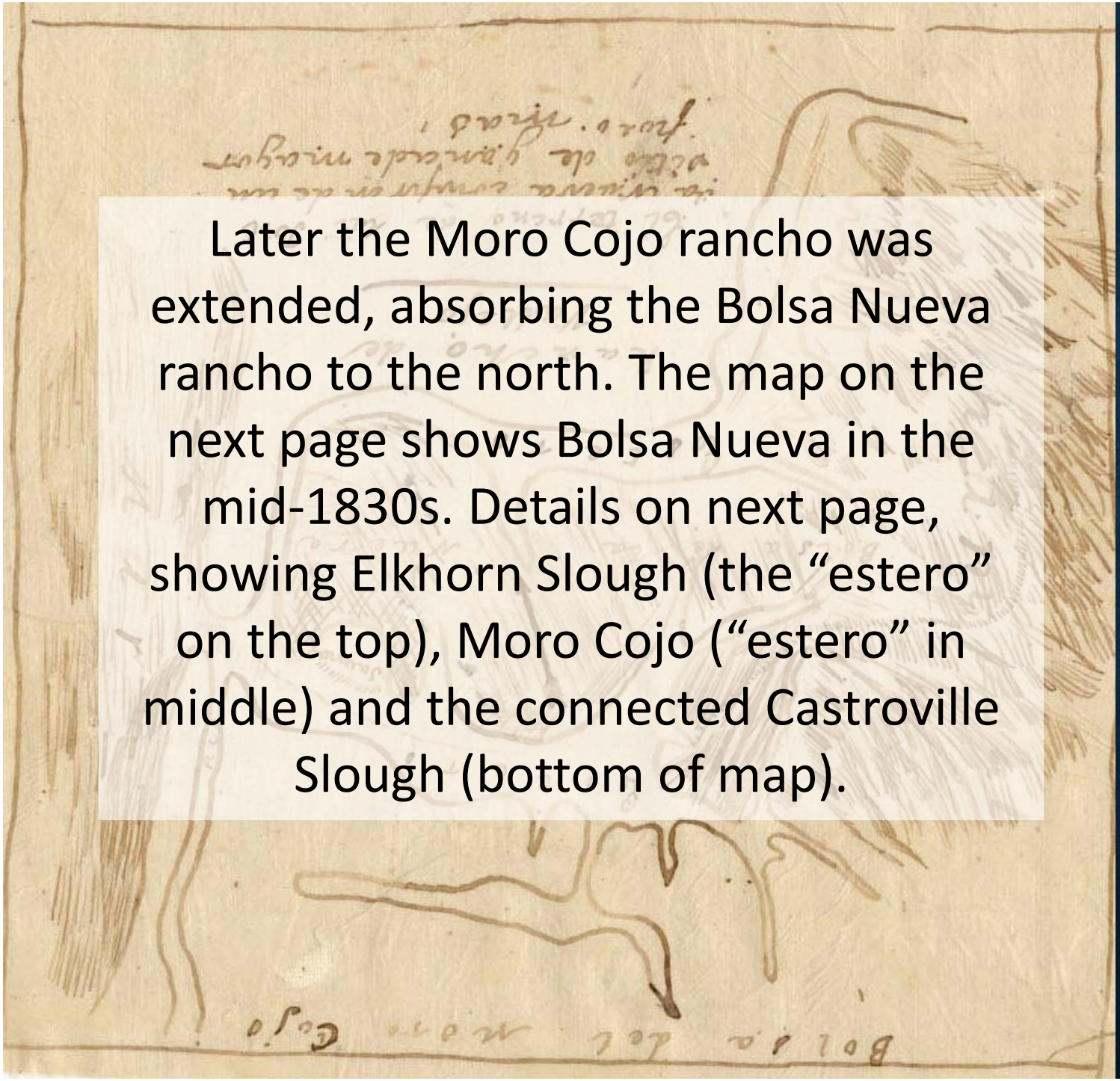
Tembladero Slough. "*Estero mayor de S. a. P. que venda a Simeon Castro de Espinosa y Kuper"*

"The pocket of land called El Cojo shown in this plan, bordered by large visible estuaries, is a triangle between the pocket called Los Ratones occupied by (Mr.) Trinidad Espinosa and the pocket called La Nueva.
The entrance is formed by the ends of the estuaries of which two thirds is uncovered flat land and the rest small hills partly covered with oak groves and dry scrub; the center is uncovered and wetlands and swamps as well as a few houses mark the deepest interior."

# Translation of Spanish document "Rancho of Simeon Castro La Bolsa El Moro Cojo"

*This description of the same rancho appears to pre-date the previous map by a few years. It is dated 1826. The lake is presumably Merritt Lake. My notes in brackets.*

". . . the boundaries on the part of the south are an Estuary one half of which is salt water and the other half fresh water [today's Tembladero] . . . Another Estuary [today's Moro Cojo] which is bounded by the Rancho of Corporal Francisco Soto and at no time has a ford therefore the Bolsa is surrounded by the two estuaries and has an entrance only on the part of the East and a pass on the north. It has a 'cienega' [swamp] covered with willows and tules and to the east some low hills covered with oak and thickets. In the center there is a small willow grove which with difficulty is entered. . .to the part of the west there is a hill covered with a thicket where cattle can conceal themselves. There are about three suerties of arable land depending on the seasons. It has a lake which lasts all year with other springs that dry up. The stock consists of 145 head of cattle, oxen, a pack of [illegible], and a donkey."



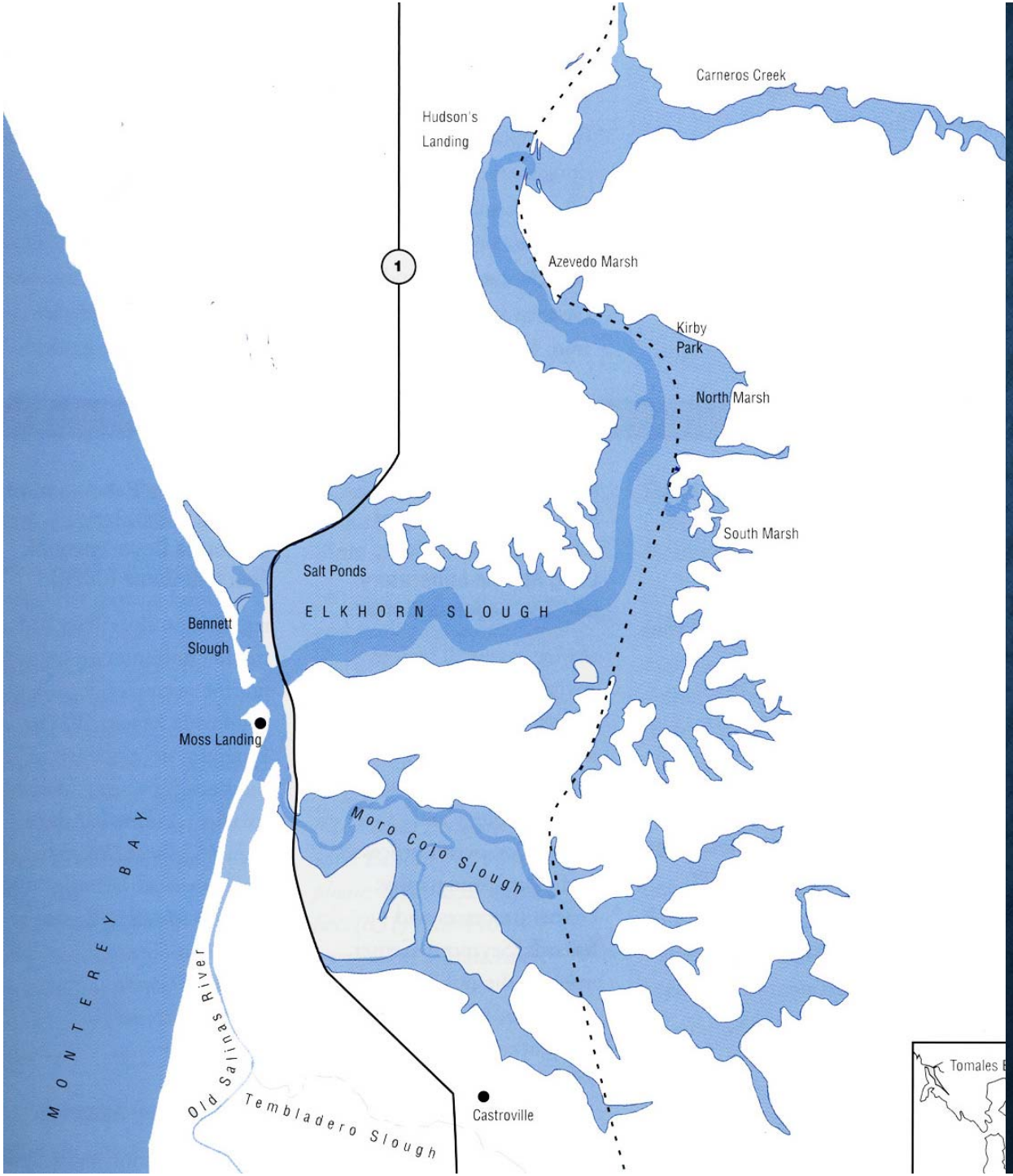
Later the Moro Cojo rancho was extended, absorbing the Bolsa Nueva rancho to the north. The map on the next page shows Bolsa Nueva in the mid-1830s. Details on next page, showing Elkhorn Slough (the “estero” on the top), Moro Cojo (“estero” in middle) and the connected Castroville Slough (bottom of map).

**1830s Rancho map for Bolsa Nueva rancho**

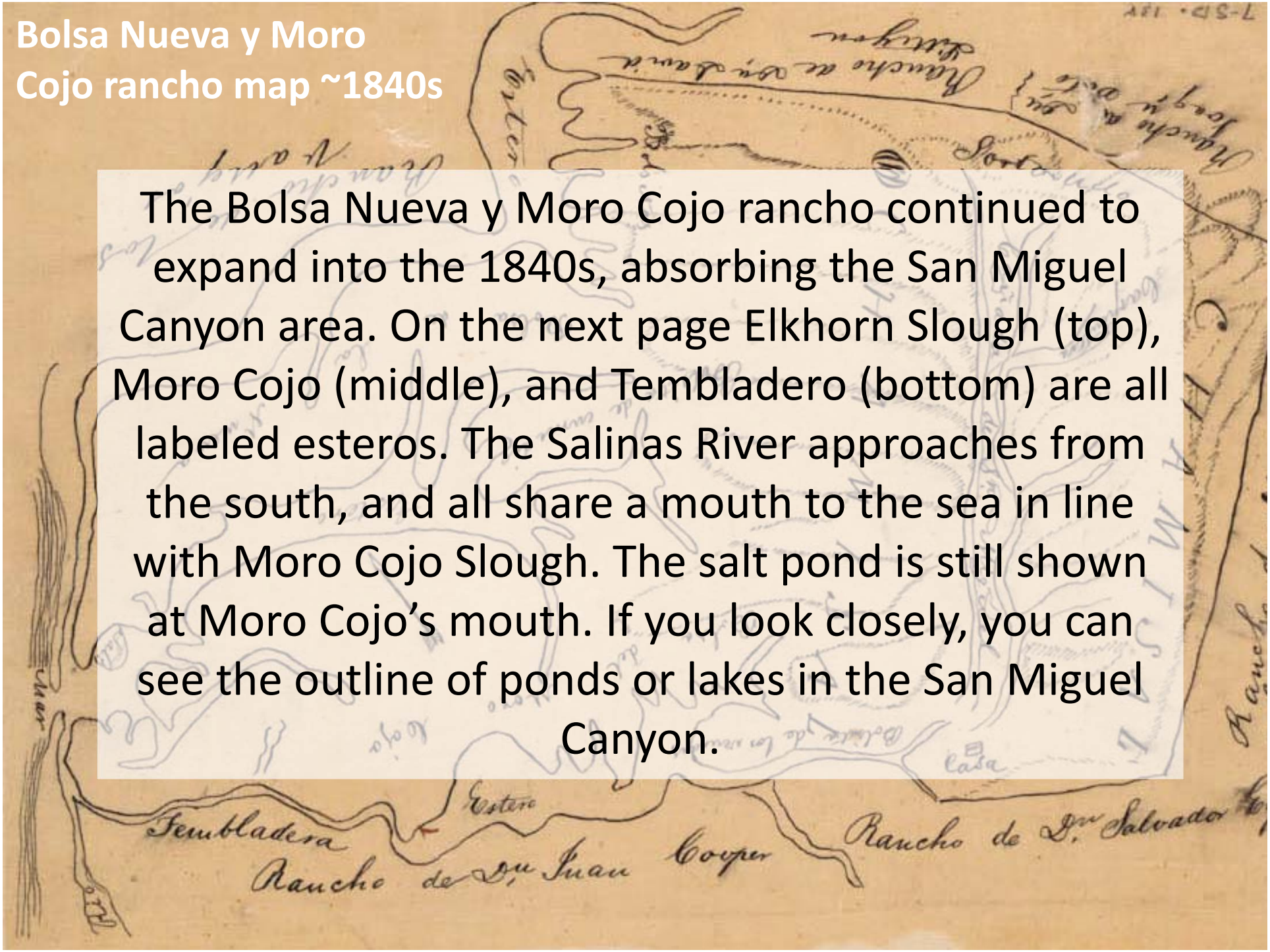
# 1830s Rancho map for Bolsa Nueva rancho

"Esteros": top Elkhorn Slough, bottom Moro Cojo.
"Salinas" or salt pond at mouth of Moro Cojo
"Rio" joins from south and all share a mouth in line with Moro Cojo

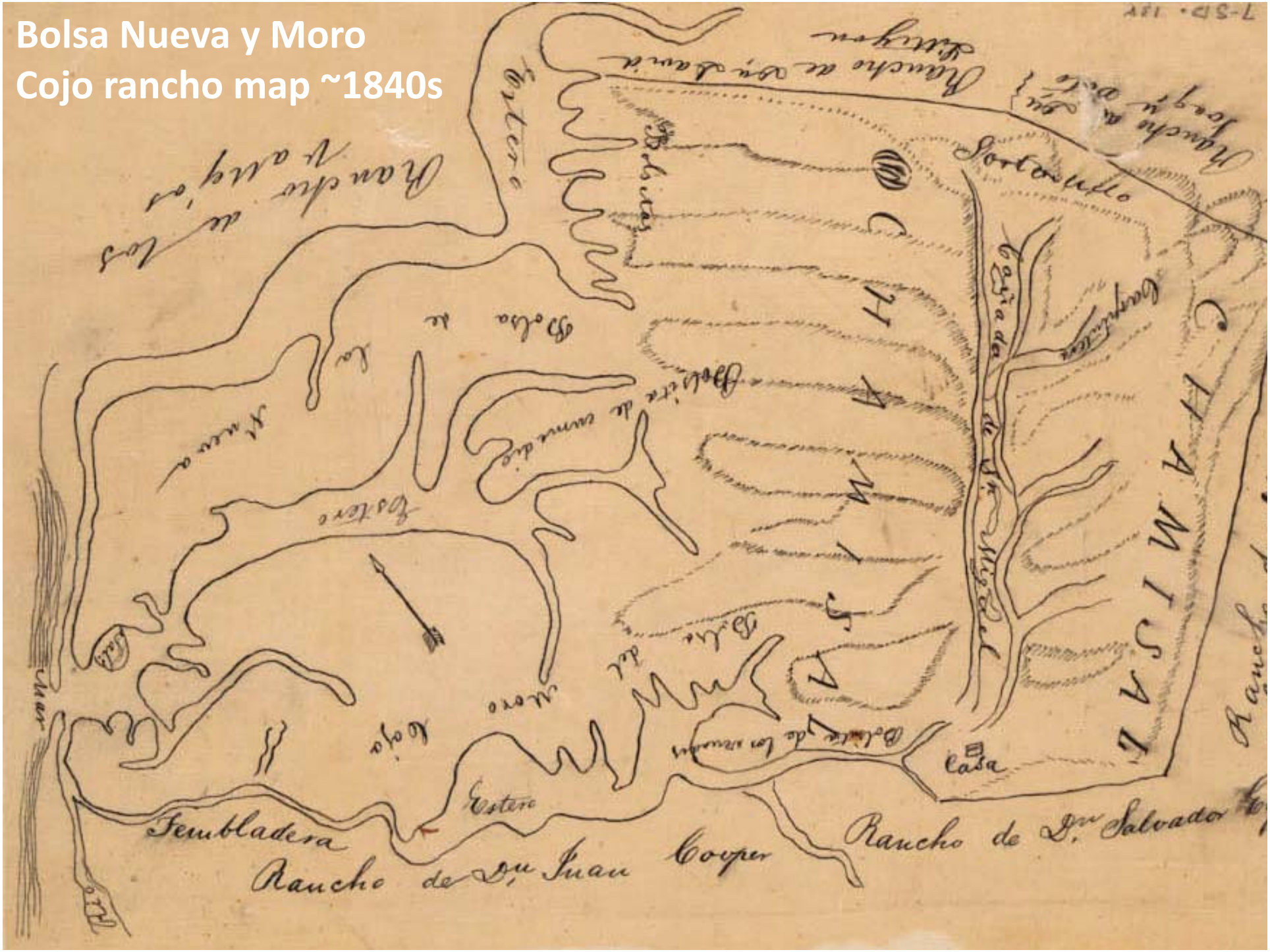
Esteros match up well with today's maps. . .




For comparison to previous slide – wetland outlines as drawn today based on elevations

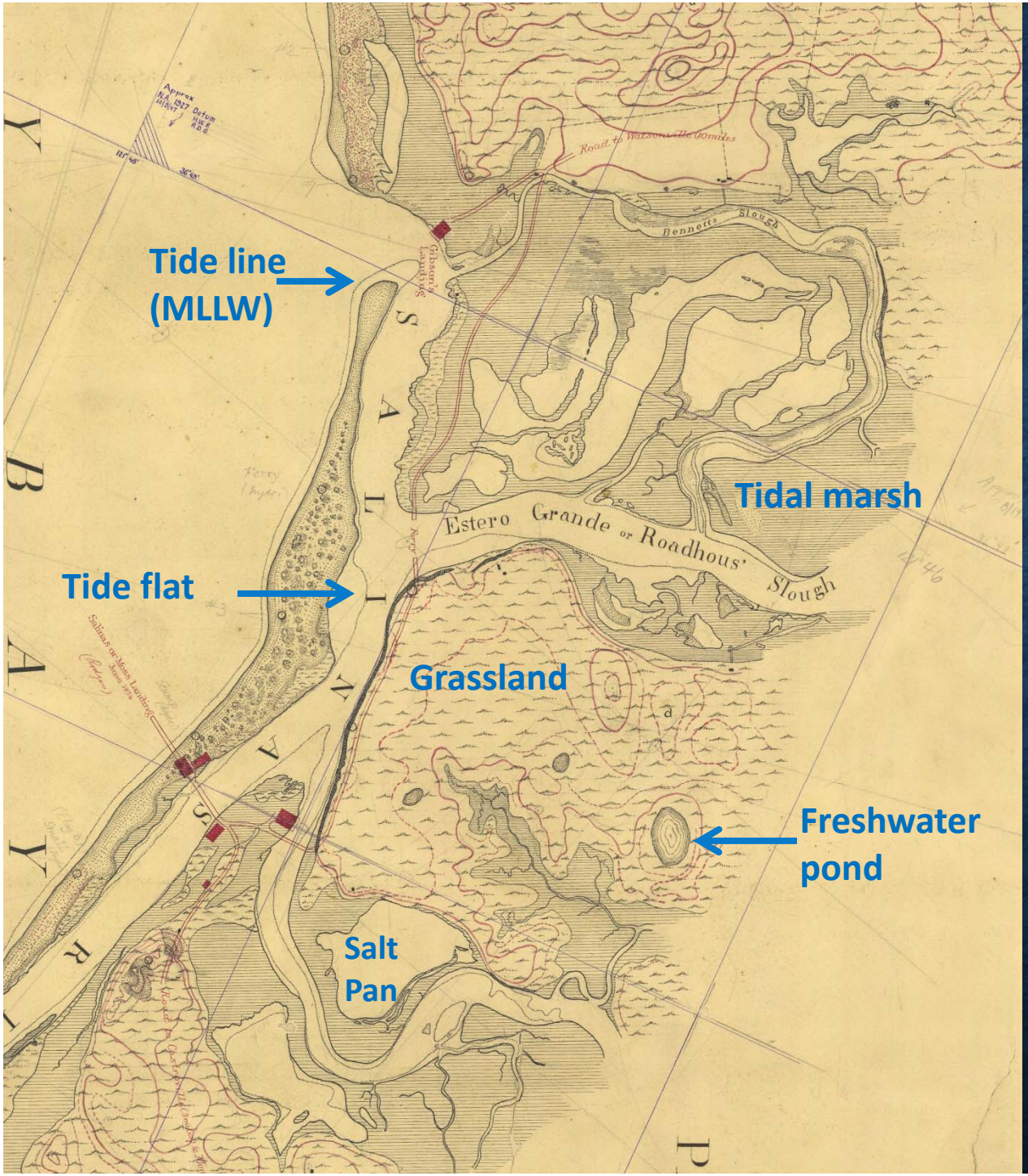

Bolsa Nueva y Moro
Cojo rancho map ~1840s
The Bolsa Nueva y Moro Cojo rancho continued to expand into the 1840s, absorbing the San Miguel Canyon area. On the next page Elkhorn Slough (top), Moro Cojo (middle), and Tembladero (bottom) are all labeled esteros. The Salinas River approaches from the south, and all share a mouth to the sea in line with Moro Cojo Slough. The salt pond is still shown at Moro Cojo's mouth. If you look closely, you can see the outline of ponds or lakes in the San Miguel Canyon.
Tembladera
Estero
Rancho de Dn Juan Cooper
Rancho de Dn Salvador

# Bolsa Nueva y Moro
# Cojo rancho map ~1840s



# Early American Period

Maps and articles still painted a picture of Moro Cojo as a tidal estuary. Tembladero Slough continued to be described as being connected to Merritt Lake and more.




# 1854 U.S. Coast Survey (t-sheet)

Mouth north of Elkhorn with sand bar and a deeper subtidal channel (under "Gibson Landing"), far left

Elkhorn Slough called "Estero Grande or Roadhouse Slough" on left.

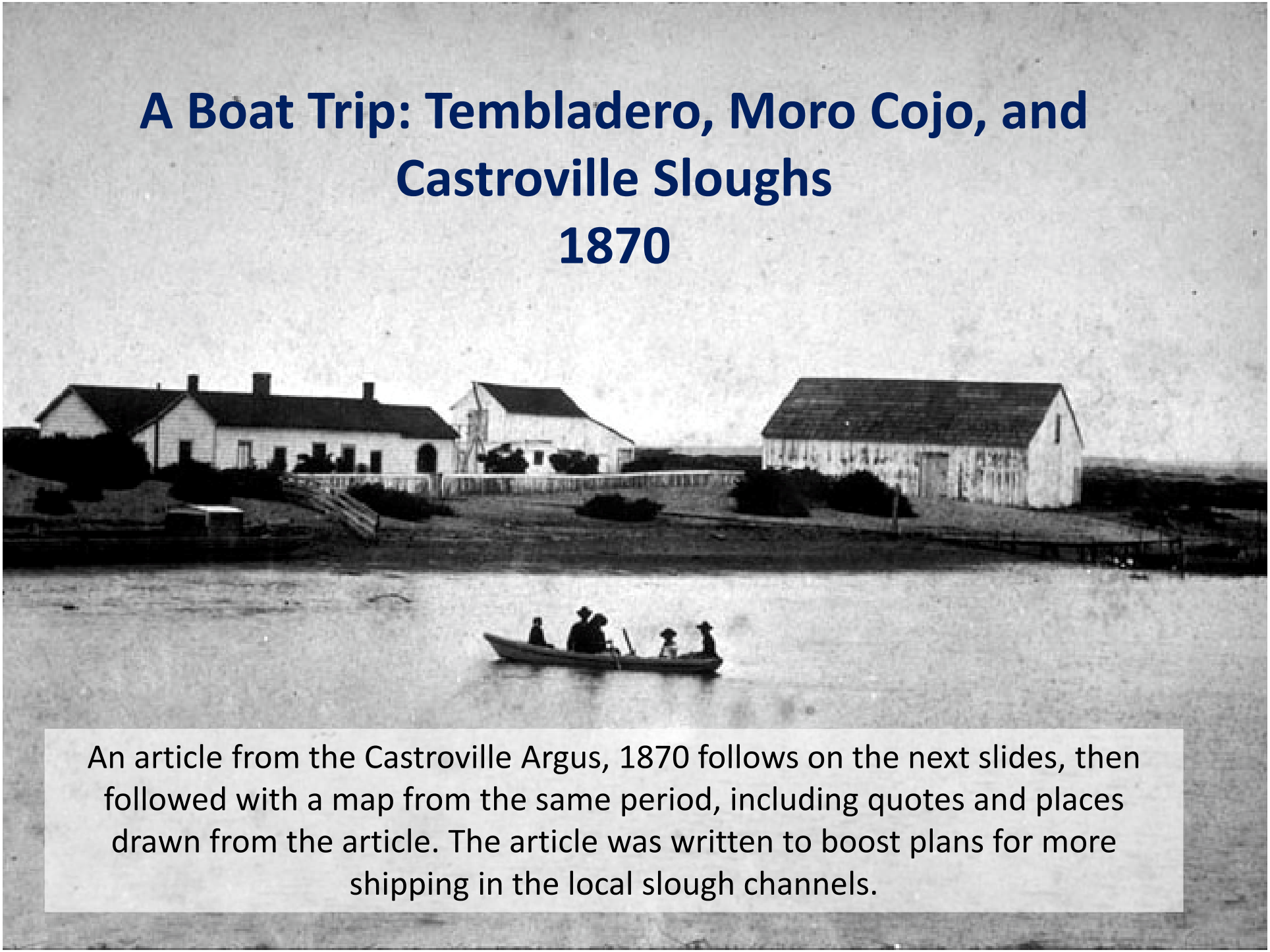
Moro Cojo unnamed below, with salt pans near its mouth.

Tide lines drawn in both estuaries

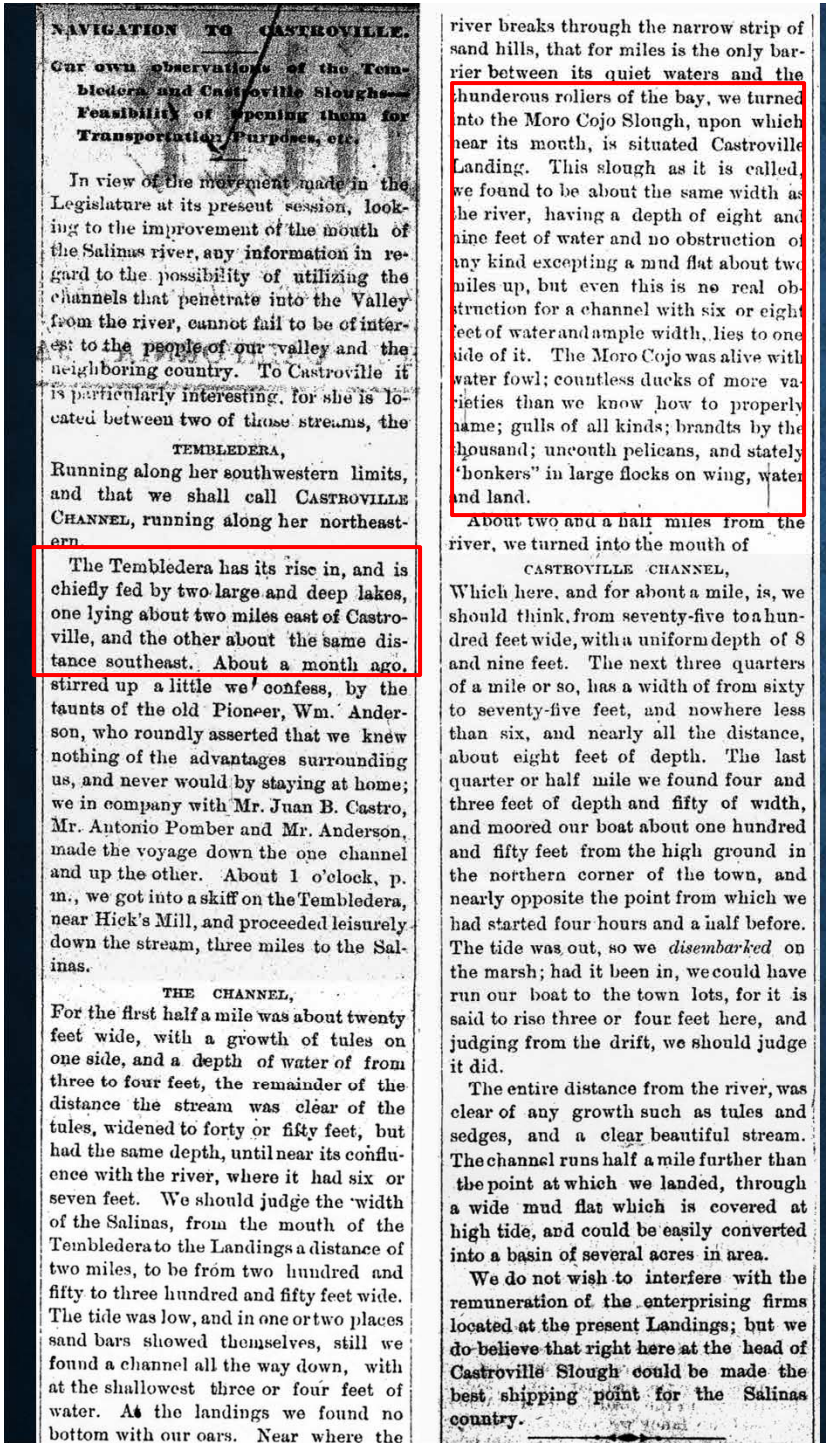
**B&W text – 1854**
**Red lines and text – added later, 1860s?**
**Blue text – my notes**

Next page: painting of region, ~1870s, before the bridges and water control structures. In the mid-1800s, local estuaries and the Salinas River were important for shipping locally grown produce to larger markets. On the next page, Elkhorn Slough is in the foreground, with a ferry crossing at its mouth. The Salinas River can be seen on the right, stretching far to the south. In the middle of the image is Moro Cojo, with a ship landing and warehouses on its shore. Moss' Landing on the coast is on the far right. The railroad increasingly handled that transportation beginning in the 1870s, and later slough channels were no longer as important to local landowners/farmers.

# A Boat Trip: Tembladero, Moro Cojo, and Castroville Sloughs 1870



An article from the Castroville Argus, 1870 follows on the next slides, then followed with a map from the same period, including quotes and places drawn from the article. The article was written to boost plans for more shipping in the local slough channels.



NAVIGATION TO CASTROVILLE.

Our own observations of the Tembladera and Castroville Sloughs—Feasibility of Opening them for Transportation Purposes, etc.

In view of the movement made in the Legislature at its present session, looking to the improvement of the mouth of the Salinas river, any information in regard to the possibility of utilizing the channels that penetrate into the Valley from the river, cannot fail to be of interest to the people of our valley and the neighboring country. To Castroville it is particularly interesting, for she is located between two of those streams, the

TEMBLEDERA,

Running along her southwestern limits, and that we shall call CASTROVILLE CHANNEL, running along her northeastern.

The Tembledera has its rise in, and is chiefly fed by two large and deep lakes, one lying about two miles east of Castroville, and the other about the same distance southeast. About a month ago, stirred up a little we confess, by the taunts of the old Pioneer, Wm. Anderson, who roundly asserted that we knew nothing of the advantages surrounding us, and never would by staying at home; we in company with Mr. Juan B. Castro, Mr. Antonio Pomber and Mr. Anderson, made the voyage down the one channel and up the other. About 1 o'clock, p. m., we got into a skiff on the Tembledera, near Hick's Mill, and proceeded leisurely down the stream, three miles to the Salinas.

THE CHANNEL,

For the first half a mile was about twenty feet wide, with a growth of tules on one side, and a depth of water of from three to four feet, the remainder of the distance the stream was clear of the tules, widened to forty or fifty feet, but had the same depth, until near its confluence with the river, where it had six or seven feet. We should judge the width of the Salinas, from the mouth of the Tembledera to the Landings a distance of two miles, to be from two hundred and fifty to three hundred and fifty feet wide. The tide was low, and in one or two places sand bars showed themselves, still we found a channel all the way down, with at the shallowest three or four feet of water. At the landings we found no bottom with our oars. Near where the river breaks through the narrow strip of sand hills, that for miles is the only barrier between its quiet waters and the thunderous rollers of the bay, we turned into the Moro Cojo Slough, upon which near its mouth, is situated Castroville Landing. This slough as it is called, we found to be about the same width as the river, having a depth of eight and nine feet of water and no obstruction of any kind excepting a mud flat about two miles up, but even this is no real obstruction for a channel with six or eight feet of water and ample width, lies to one side of it. The Moro Cojo was alive with water fowl; countless ducks of more varieties than we know how to properly name; gulls of all kinds; brandts by the thousand; uncouth pelicans, and stately "honkers" in large flocks on wing, water and land.

About two and a half miles from the river, we turned into the mouth of

CASTROVILLE CHANNEL,

Which here, and for about a mile, is, we should think, from seventy-five to a hundred feet wide, with a uniform depth of 8 and nine feet. The next three quarters of a mile or so, has a width of from sixty to seventy-five feet, and nowhere less than six, and nearly all the distance, about eight feet of depth. The last quarter or half mile we found four and three feet of depth and fifty of width, and moored our boat about one hundred and fifty feet from the high ground in the northern corner of the town, and nearly opposite the point from which we had started four hours and a half before. The tide was out, so we *disembarked* on the marsh; had it been in, we could have run our boat to the town lots, for it is said to rise three or four feet here, and judging from the drift, we should judge it did.

The entire distance from the river, was clear of any growth such as tules and sedges, and a clear beautiful stream. The channel runs half a mile further than the point at which we landed, through a wide mud flat which is covered at high tide, and could be easily converted into a basin of several acres in area.

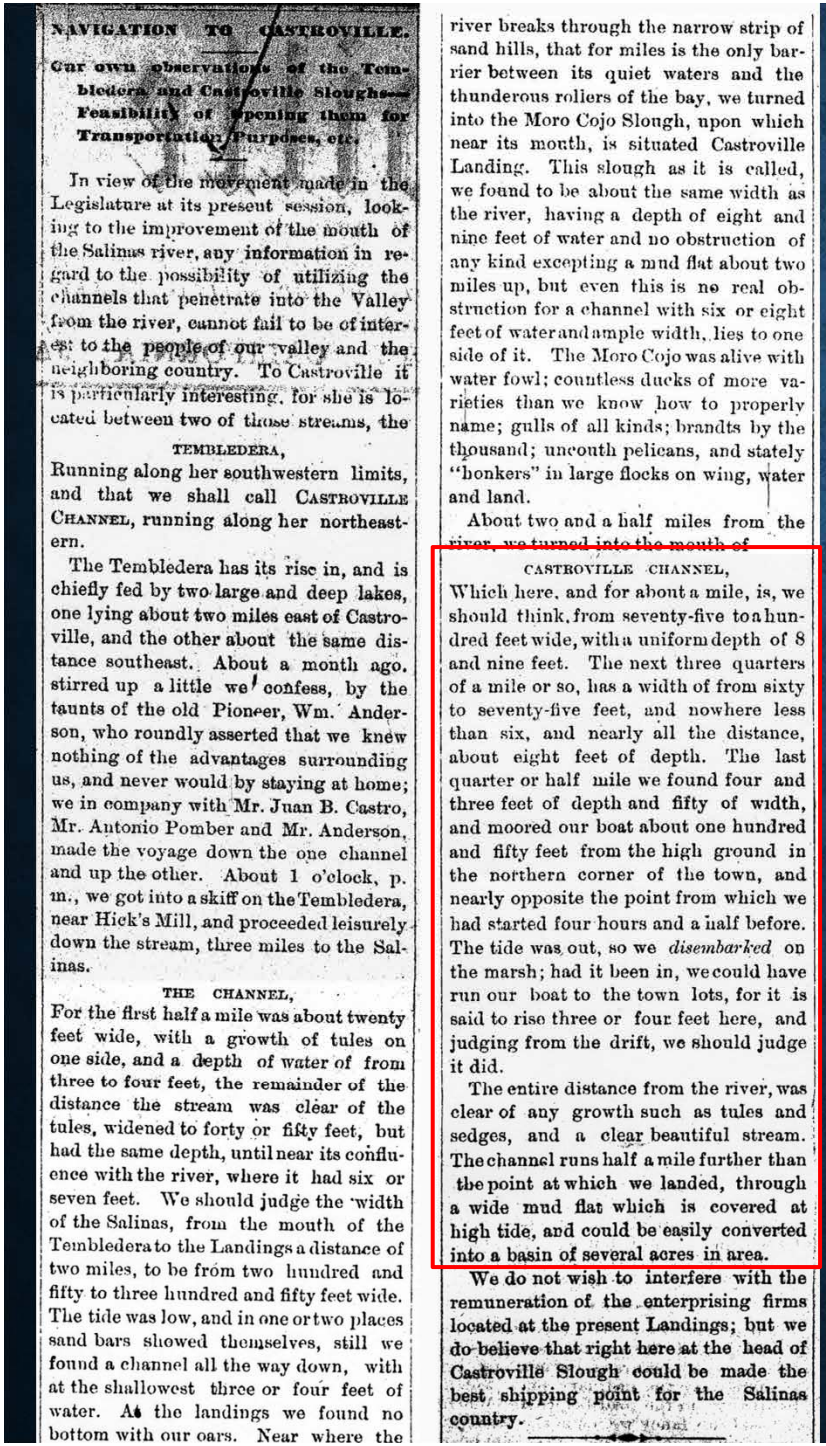
We do not wish to interfere with the remuneration of the enterprising firms located at the present Landings; but we do believe that right here at the head of Castroville Slough could be made the best shipping point for the Salinas country.

# January 1870, Castroville Argus. Navigation to Castroville.

*Describes a boat trip from the Tembladero Slough, to the Salinas River, up Moro Cojo, down Castroville Slough, landing in Castroville.*

"The Tembladero has its rise in, and is chiefly fed by two large and deep lakes, lying about two miles east of Castroville. . .

"Moro Cojo Slough. . . having a depth of eight and nine feet of water and no obstruction of any kind excepting a mud flat about two miles up. . .The Moro Cojo was alive with water fowl; countless ducks of more varieties than we know how to properly name; gulls of all kinds; brandts by the thousands; uncouth pelicans, and stately 'honkers' in large flocks. . ."



NAVIGATION TO CASTROVILLE.

Our own observations of the Tembledera and Castroville Sloughs—Feasibility of Opening them for Transportation Purposes, etc.

In view of the movement made in the Legislature at its present session, looking to the improvement of the mouth of the Salinas river, any information in regard to the possibility of utilizing the channels that penetrate into the Valley from the river, cannot fail to be of interest to the people of our valley and the neighboring country. To Castroville it is particularly interesting, for she is located between two of those streams, the

TEMBLEDERA,

Running along her southwestern limits, and that we shall call CASTROVILLE CHANNEL, running along her northeastern.

The Tembledera has its rise in, and is chiefly fed by two large and deep lakes, one lying about two miles east of Castroville, and the other about the same distance southeast. About a month ago, stirred up a little we confess, by the taunts of the old Pioneer, Wm. Anderson, who roundly asserted that we knew nothing of the advantages surrounding us, and never would by staying at home; we in company with Mr. Juan B. Castro, Mr. Antonio Pomber and Mr. Anderson, made the voyage down the one channel and up the other. About 1 o'clock, p. m., we got into a skiff on the Tembledera, near Hick's Mill, and proceeded leisurely down the stream, three miles to the Salinas.

THE CHANNEL,

For the first half a mile was about twenty feet wide, with a growth of tules on one side, and a depth of water of from three to four feet, the remainder of the distance the stream was clear of the tules, widened to forty or fifty feet, but had the same depth, until near its confluence with the river, where it had six or seven feet. We should judge the width of the Salinas, from the mouth of the Tembledera to the Landings a distance of two miles, to be from two hundred and fifty to three hundred and fifty feet wide. The tide was low, and in one or two places sand bars showed themselves, still we found a channel all the way down, with at the shallowest three or four feet of water. At the landings we found no bottom with our oars. Near where the river breaks through the narrow strip of sand hills, that for miles is the only barrier between its quiet waters and the thunderous rollers of the bay, we turned into the Moro Cojo Slough, upon which near its mouth, is situated Castroville Landing. This slough as it is called, we found to be about the same width as the river, having a depth of eight and nine feet of water and no obstruction of any kind excepting a mud flat about two miles up, but even this is no real obstruction for a channel with six or eight feet of water and ample width, lies to one side of it. The Moro Cojo was alive with water fowl; countless ducks of more varieties than we know how to properly name; gulls of all kinds; brandts by the thousand; uncouth pelicans, and stately "bonkers" in large flocks on wing, water and land.

About two and a half miles from the river, we turned into the mouth of

CASTROVILLE CHANNEL,

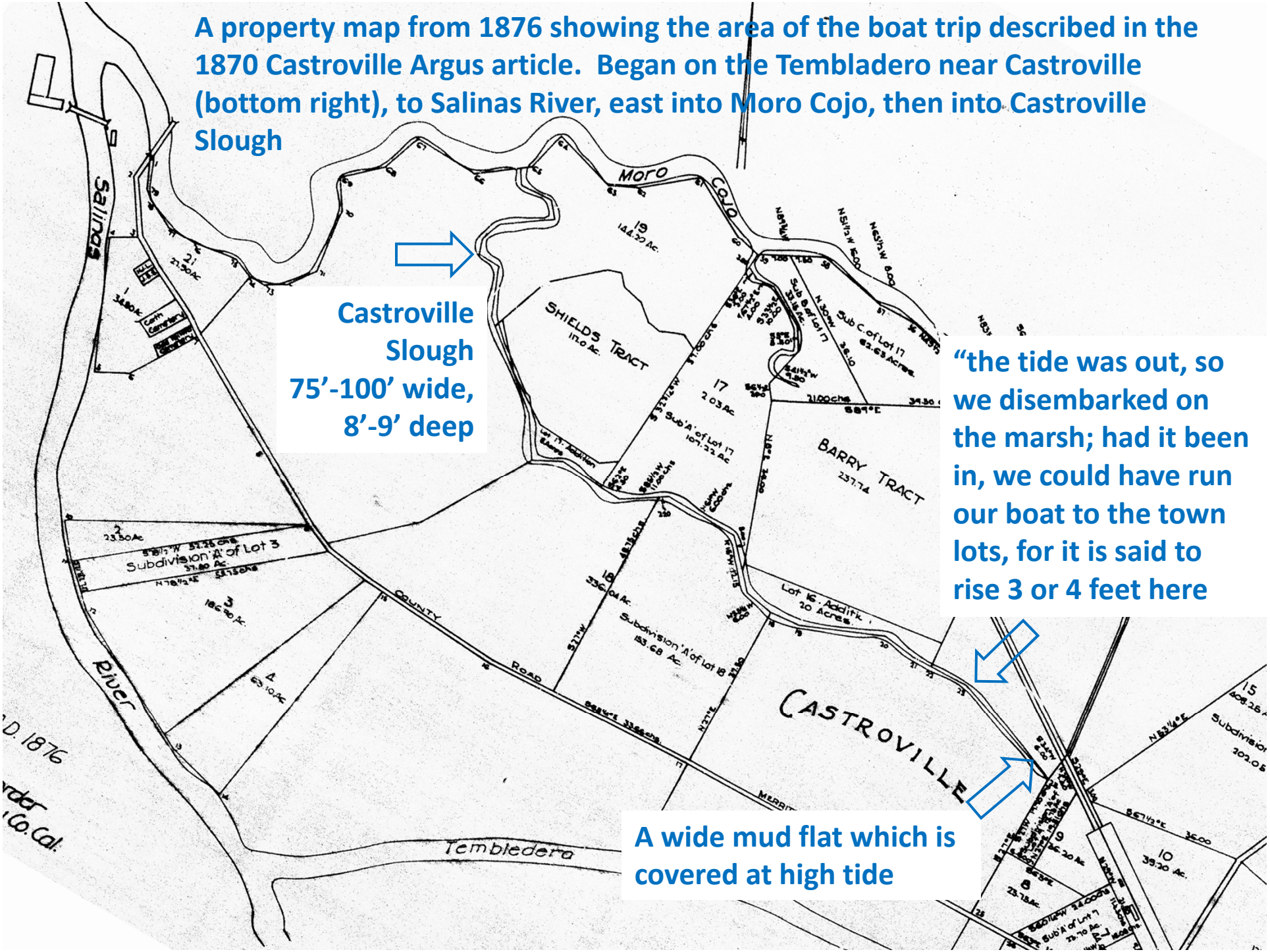
Which here, and for about a mile, is, we should think, from seventy-five to a hundred feet wide, with a uniform depth of 8 and nine feet. The next three quarters of a mile or so, has a width of from sixty to seventy-five feet, and nowhere less than six, and nearly all the distance, about eight feet of depth. The last quarter or half mile we found four and three feet of depth and fifty of width, and moored our boat about one hundred and fifty feet from the high ground in the northern corner of the town, and nearly opposite the point from which we had started four hours and a half before. The tide was out, so we *disembarked* on the marsh; had it been in, we could have run our boat to the town lots, for it is said to rise three or four feet here, and judging from the drift, we should judge it did.

The entire distance from the river, was clear of any growth such as tules and sedges, and a clear beautiful stream. The channel runs half a mile further than the point at which we landed, through a wide mud flat which is covered at high tide, and could be easily converted into a basin of several acres in area.

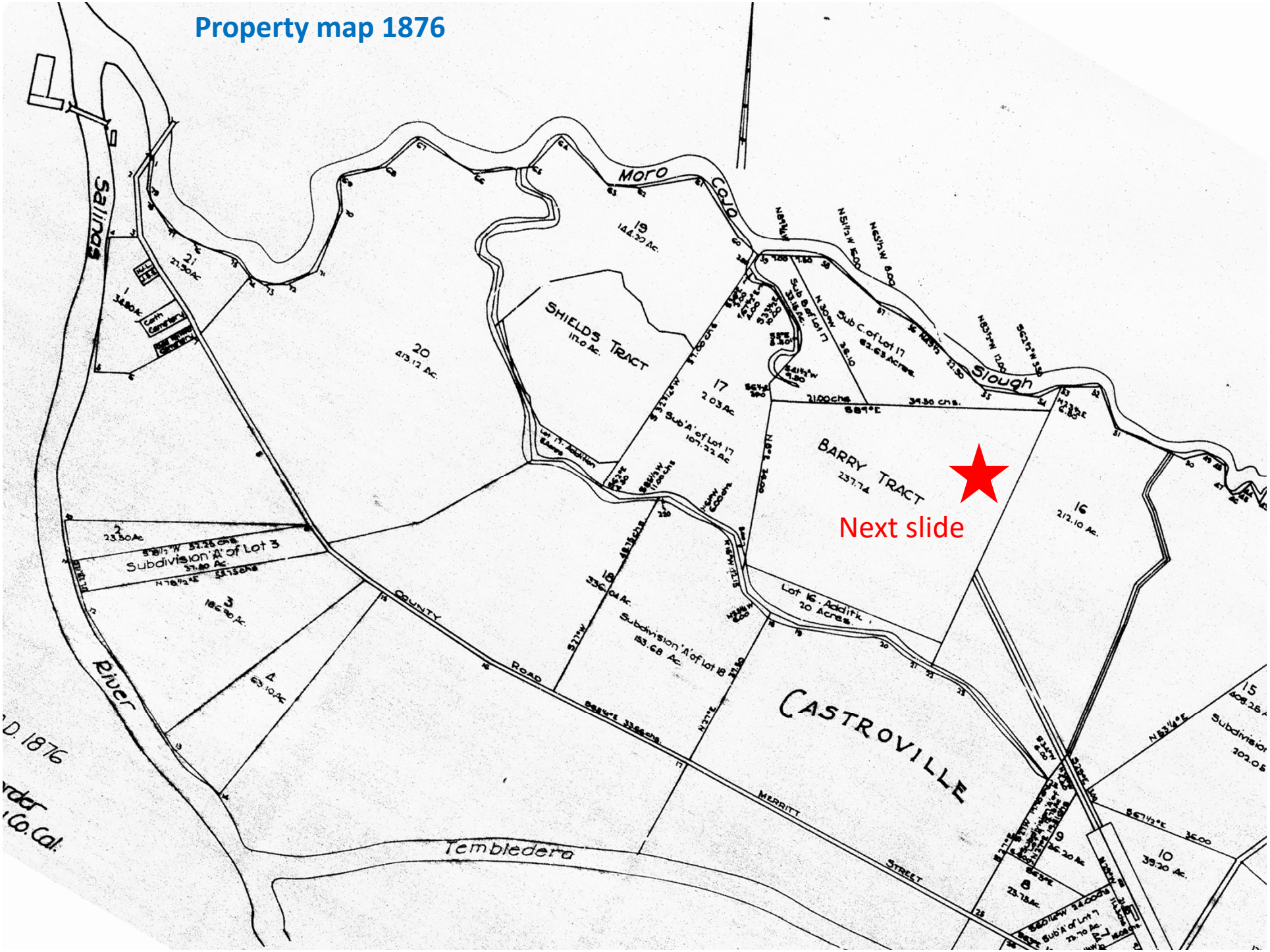
We do not wish to interfere with the remuneration of the enterprising firms located at the present Landings; but we do believe that right here at the head of Castroville Slough could be made the best shipping point for the Salinas country.

**January 1870, Castroville Argus.**
**Navigation to Castroville.**
*Continued. My notes in brackets.*

"Castroville Channel which here and for about a mile is, we should think from 75 to 100 feet wide, with a uniform depth of 8 and 9 feet. . .[we] moored our boat about 150 feet from the high ground in the northern corner of the town [Castroville], and nearly opposite the point from which we had started . . . The tide was out, so we disembarked on the marsh; had it been in, we could have run our boat to the town lots, for it is said to rise 3 or 4 feet here, and judging from the drift, we should judge it did. . . The channel runs half a mile farther than the point at which we landed, through a wide mud flat which is covered at high tide."


A property map from 1876 showing the area of the boat trip described in the 1870 Castroville Argus article. Began on the Tembladero near Castroville (bottom right), to Salinas River, east into Moro Cojo, then into Castroville Slough
Castroville Slough 75'-100' wide, 8'-9' deep
"the tide was out, so we disembarked on the marsh; had it been in, we could have run our boat to the town lots, for it is said to rise 3 or 4 feet here
A wide mud flat which is covered at high tide
Salinas River
Moro Cojo
Shields Tract
Barry Tract
Subdivision 'A' of Lot 3
Subdivision 'A' of Lot 18
Sub 'A' of Lot 17
Sub B of Lot 17
Sub C of Lot 17
Lot 16 - Addition
County Road
Tembladero
Castroville
D. 1876

# Property map 1876



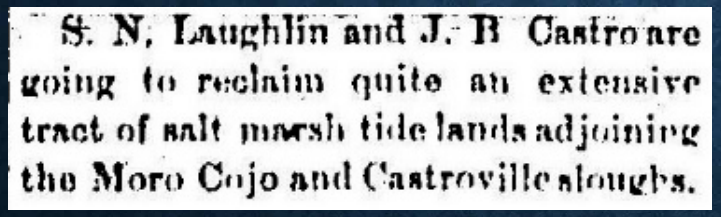
# 1870s – Land Use Changes

"Across the slough lying immediately north of Mr. Barry's farm [*see red star on map, previous page*] and embracing some thirty acres of his land and perhaps several hundred acres of Mr. Castro's, a levee has been thrown up to a height of five feet. . .extending from the higher land lying west of the slough to the railroad bridge, a distance of half a mile. . . We think [it will] effectually protect from the tide about 120 acres of land that otherwise would be profitless for any purpose. . . Mr. Castro intends doing further work of this kind where practicable. . ."

Castroville Argus, October 1875

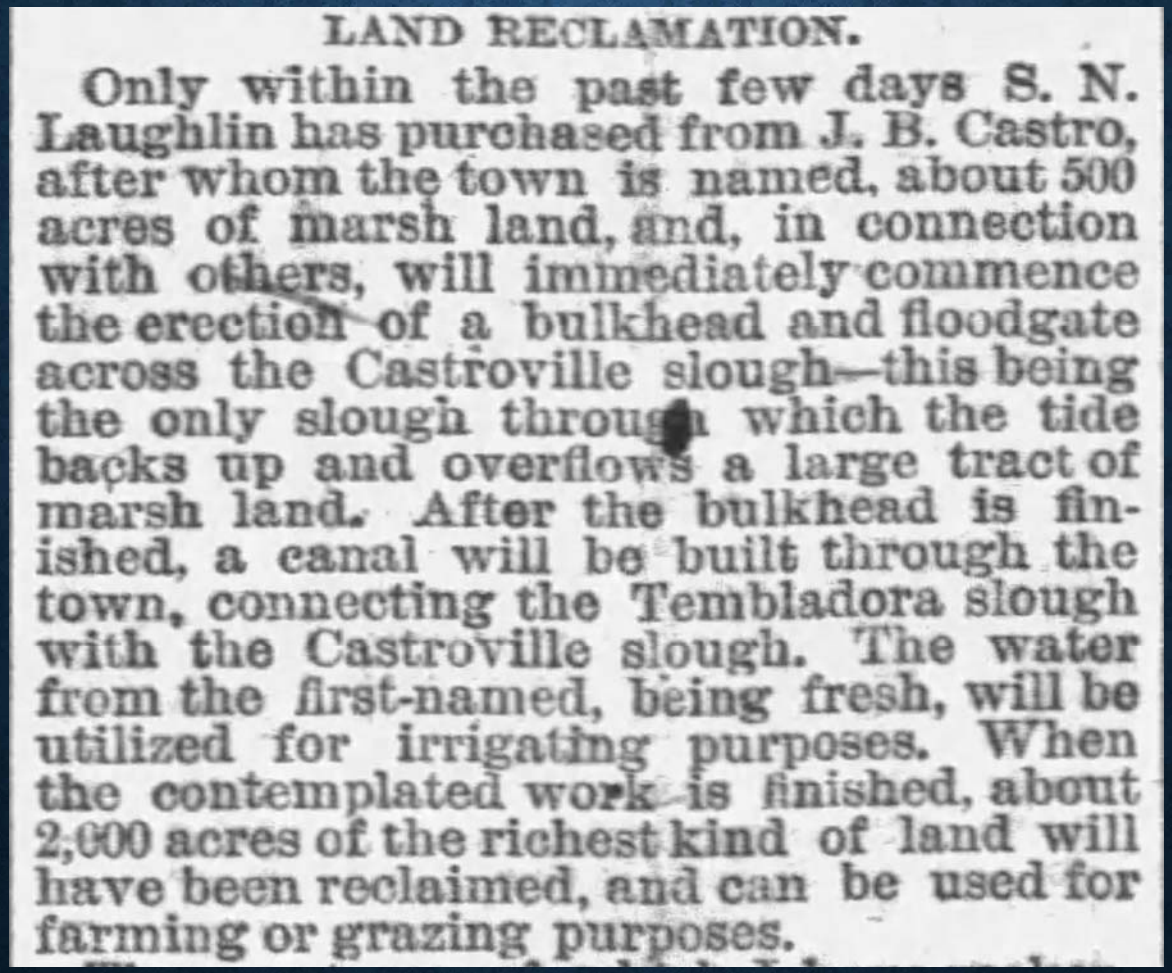
# Plans to reclaim salt marsh

"S. N. Laughlin and J. B. Castro are going to reclaim quite an extensive tract of salt marsh tide lands adjoining the Moro Cojo and Castroville Sloughs."


S. N. Laughlin and J. B Castro are going to reclaim quite an extensive tract of salt marsh tide lands adjoining the Moro Cojo and Castroville sloughs.

Watsonville Pajaronian
March 1884

# Moro Cojo reclamation plans include Tembladero Slough, called fresh



LAND RECLAMATION.

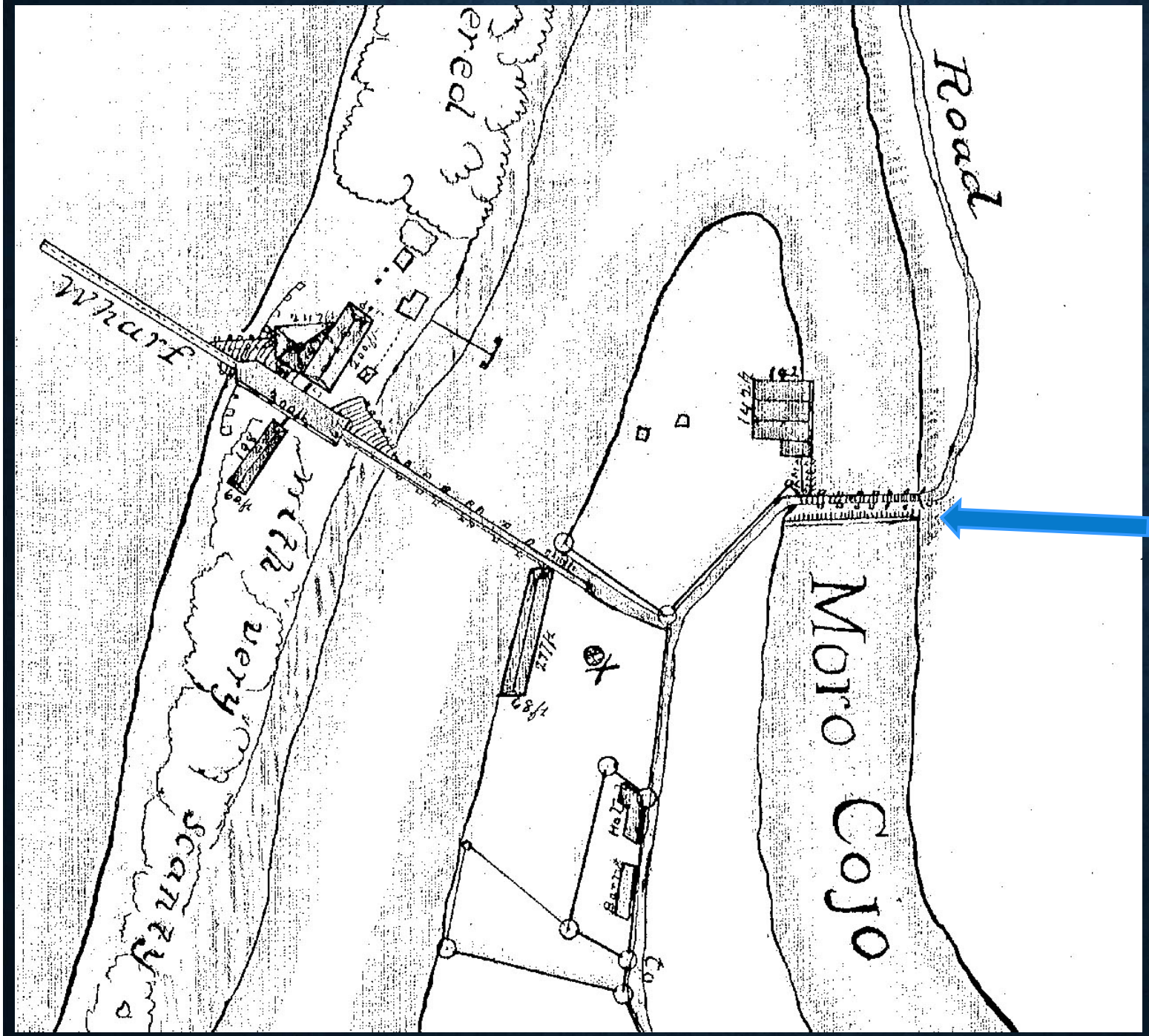
Only within the past few days S. N. Laughlin has purchased from J. B. Castro, after whom the town is named, about 500 acres of marsh land, and, in connection with others, will immediately commence the erection of a bulkhead and floodgate across the Castroville slough—this being the only slough through which the tide backs up and overflows a large tract of marsh land. After the bulkhead is finished, a canal will be built through the town, connecting the Tembladora slough with the Castroville slough. The water from the first-named, being fresh, will be utilized for irrigating purposes. When the contemplated work is finished, about 2,000 acres of the richest kind of land will have been reclaimed, and can be used for farming or grazing purposes.

San Francisco Examiner, May 1884

# Moro Cojo tide gate completed

"Land Reclamation. – Salinas Index: S.N. Laughlin's land reclamation project is pronounced a complete success. By constructing a substantial bulkhead across the Moro Cajo [sic] slough, a stream about 300 feet wide, he has prevented the tides from submerging a large tract of salt marsh, tide lands lying between Moss Landing and Castroville. These lands embrace about 2,000 acres, and are remarkably rich. This enterprise has considerably increased the agricultural area of our county, and materially enhanced the value of its taxable property. Thus have these lands, which were comparatively worthless, through the energy and enterprise of Mr. Laughlin, have been converted into a valuable property. . ."

Pacific Rural Press, November 1884




Detail of Pacific Coast Steamship Company map, showing a bridge and what appears to be a bulkhead across the Moro Cojo channel in the 1880s


# 1885 survey of mid-Moro Cojo and Castroville Slough, centered on the S.P.R.R. tracks

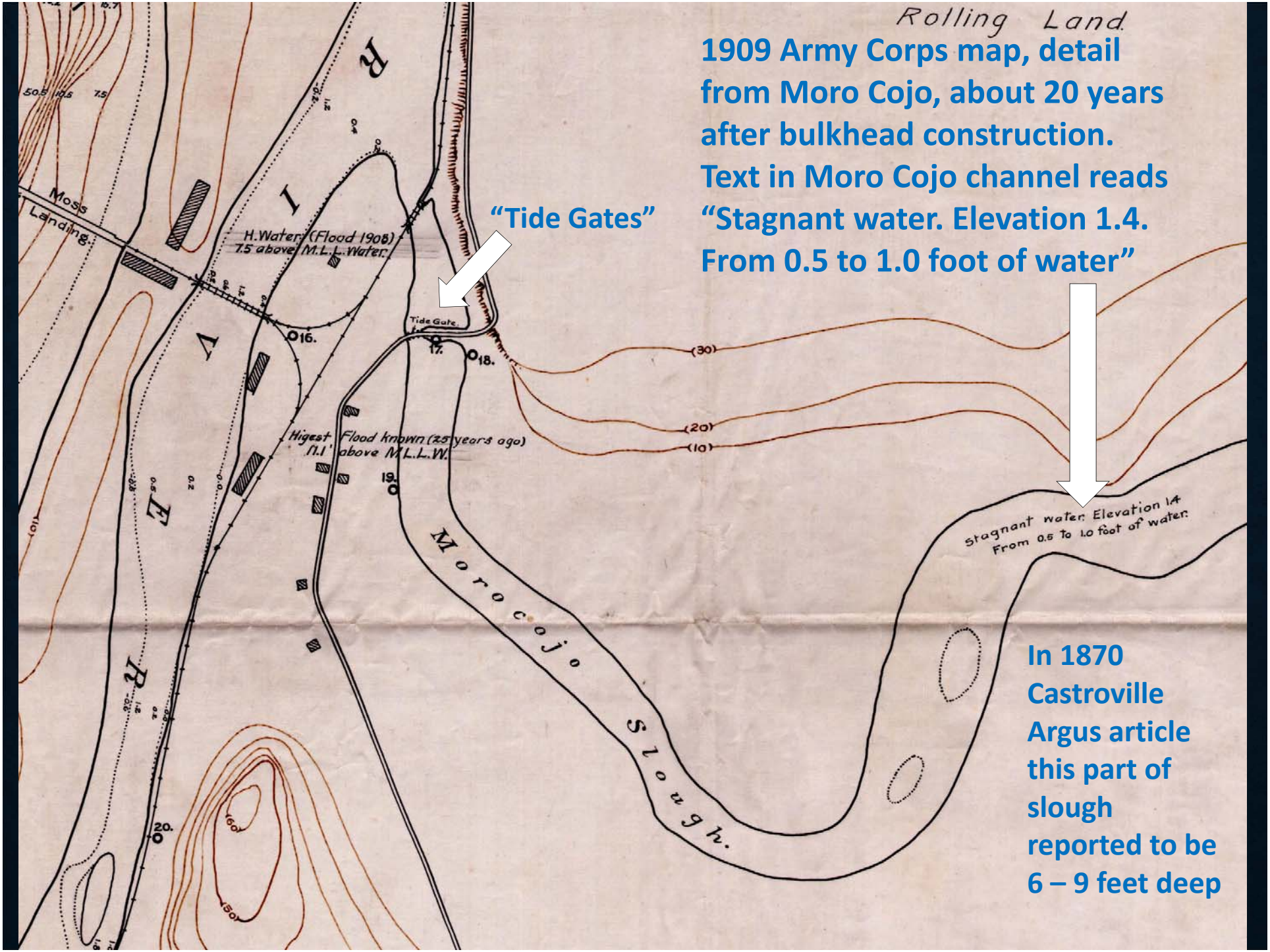
Includes ESF and Tottino parcels, showing extensive marshes and creeks. Surveyed for M. Barry; S.N. Laughlin is neighbor to west

# The 1900s

As technology improved, reclamation continued.

Photograph from 1901 Soil Survey illustrating reclamation of "tidal flats of the lower Salinas Valley". Based on buildings in background, *may* be Moro Cojo.

FIG. 2.—RECLAMATION OF TIDAL FLATS BY RIDGE CULTIVATION AND SHALLOW-SURFACE DRAINAGE.

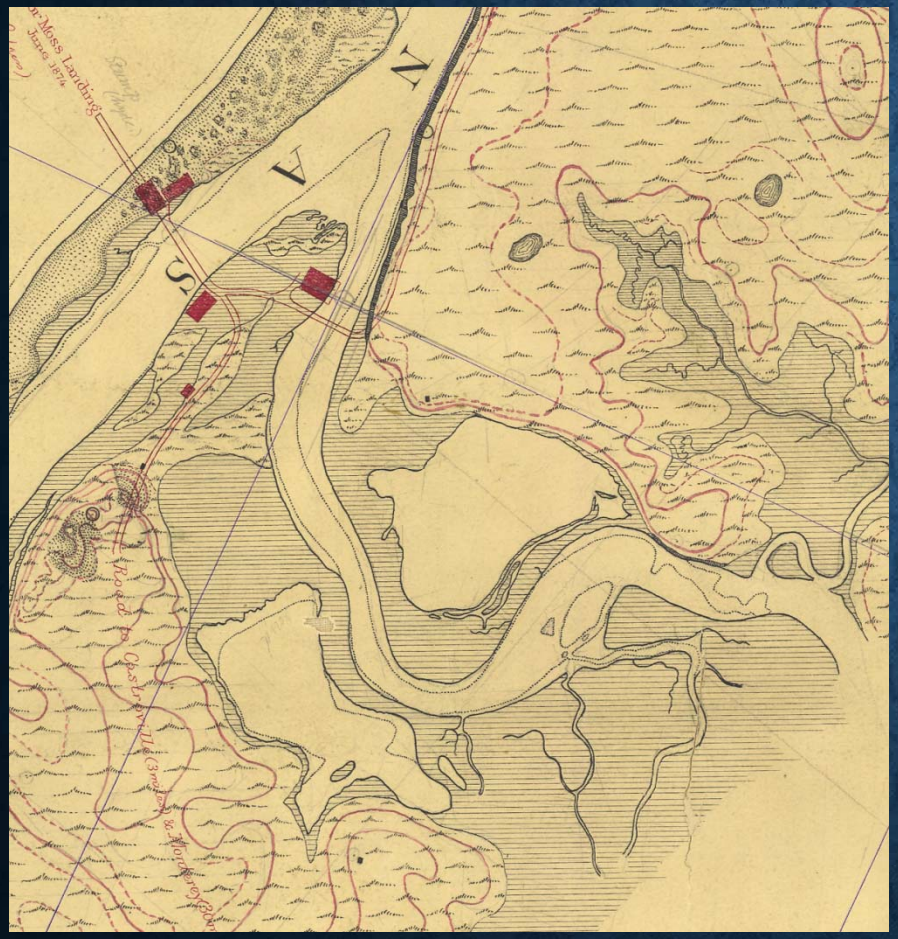

Rolling Land
Moss Landing
H.Water (Flood 1908) 7.5 above M.L.L.Water.
Tide Gate
16.
17.
18.
19.
20.
Higest Flood known (25 years ago) 11' above M.L.L.W.
(30)
(20)
(10)
(60)
(50)
Stagnant water. Elevation 1.4 From 0.5 To 1.0 foot of water.
Moro Cojo Slough.
"Tide Gates"
1909 Army Corps map, detail from Moro Cojo, about 20 years after bulkhead construction. Text in Moro Cojo channel reads "Stagnant water. Elevation 1.4. From 0.5 to 1.0 foot of water"
In 1870 Castroville Argus article this part of slough reported to be 6 – 9 feet deep

# 1910 U.S. Coast and Geodetic Survey Report

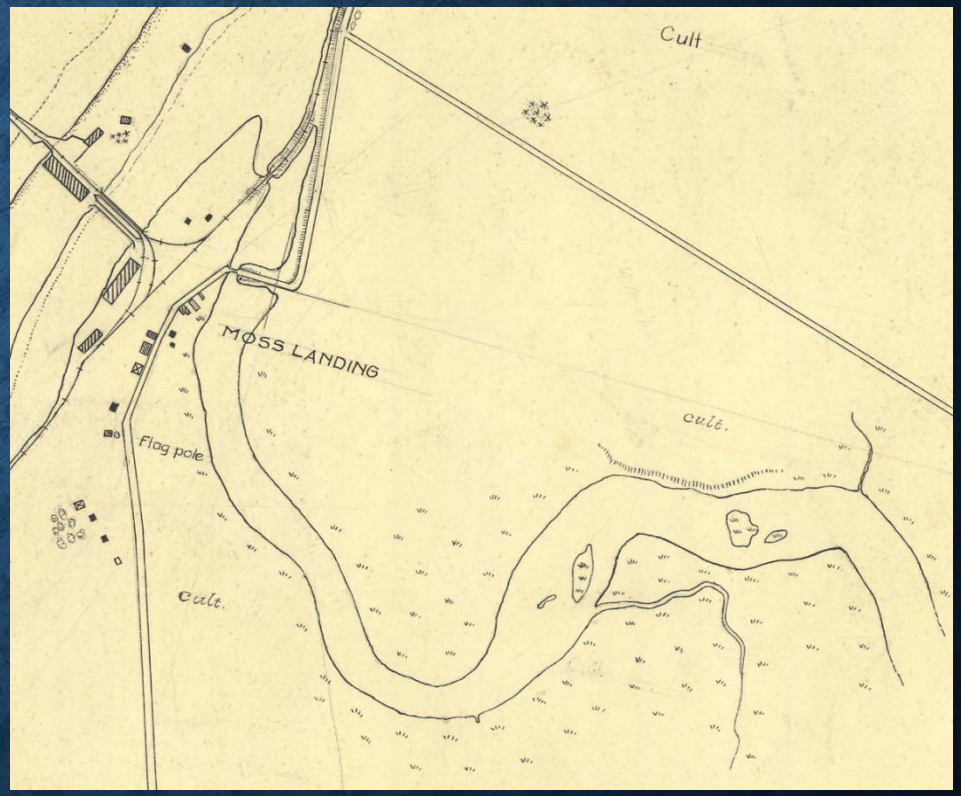
Surveyors return to the work (t-sheet) done in 1854, and comment on the changes:

"Moss Landing Slough: [Moro Cojo] The flow in and out of this slough is now partially controlled by a gate at the crossing of the county road near Moss Landing. The marshy areas shown on the old sheet do not now exist. There is good pasture ground close up to the banks of the slough, and a short distance away on either side the land is under cultivation."

# U.S. Coast Survey t-sheets, 1854 vs 1910

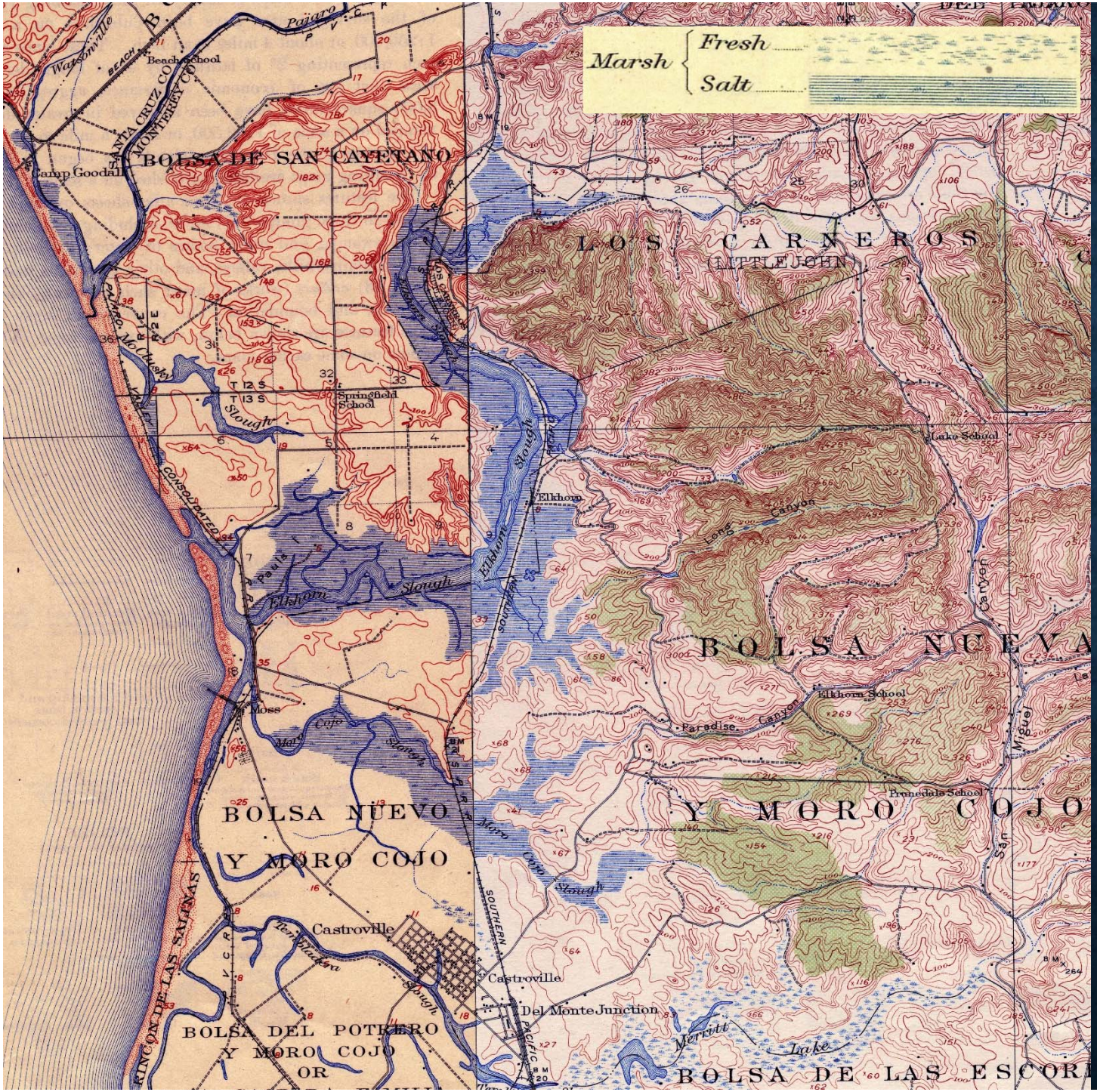


a.




b.

Maps showing loss of tidal marsh (horizontal lines) and conversion to grassland (shown with small tufts) between a) 1854 and b) 1910 in Moro Cojo. Notice salt pans and freshwater ponds in grassland are gone by 1910.

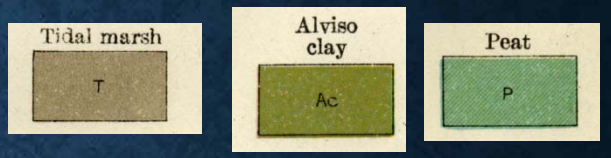



# Composite USGS map of region, 1914-1917.

Elkhorn Slough top, Moro Cojo middle, Tembladero joining Merritt Lake bottom.

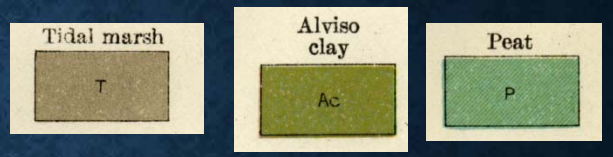
Legend from 1914 USGS map of CA coastline from Mendocino to Big Sur


# 1925 Soil Survey




The 1925 Soil Map was drawn over the top of USGS topo maps, and the USGS designation for salt marsh (blue horizontal lines with small tufts) and fresh marsh (blue tufts) can be seen through the Soil Survey's gray tidal marsh shading and greenish peat shading. In this map, tidal marsh covers Elkhorn Slough, and large areas of Moro Cojo Slough.


# 1925 Soil Survey




From the survey report: "Tidal marsh. . .this soil occupies areas of saline tide flats and tidal marsh which are traversed by meandering tidal sloughs and estuaries of streams. . .small included areas of peaty soil [are] affected by fresh water from springs or minor streams . . .this soil occupies large saline marshland areas adjacent to Elkhorn and Moro Cojo Sloughs. . .the native vegetation consists almost entirely of pickleweed…"


"Peat…occurs in stream valleys in which drainage has been blocked. . .and in…areas formerly occupied by shallow ponds and lakes…Supports a growth of reeds, rushes, tussock grass, and various other fresh-water grasses and water-loving plants.

Alviso Clay. . .is most extensive along Elkhorn and Moro Cojo Sloughs...During extremely high tide the soil is occasionally overflowed. Saline deposits, generally in high concentrations are present throughout this soil. ..It supports a growth of salt grasses, pickleweed and other water-loving salt-resistant grasses or sedges"

**Army Corps of Engineers, December 1943, in report preparing for Moss Landing Harbor construction**: "Moro Cojo slough has been equipped with some form of tidegate structure for the last 40 or 50 years. For various reasons, however**,** these gates were more or less ineffective in preventing salt-water action and some tidal fluctuations in the slough until about 1932, when gates were installed at State Highway No. 1 crossing near Moss Landing. Restricted tidal fluctuations prevent these gates from operating efficiently at the present time. However, the flow line is set too high, regardless of the effectiveness of tidal action in the lagoon, to provide good drainage for the floodwaters that collect on the marshlands adjacent to the slough channel. These waters run off very slowly, even at flood stage, and a considerable volume must evaporate or percolate into the ground. As a result there is practically no leaching of salt, and concentrations in the lands are still too high for good productivity."

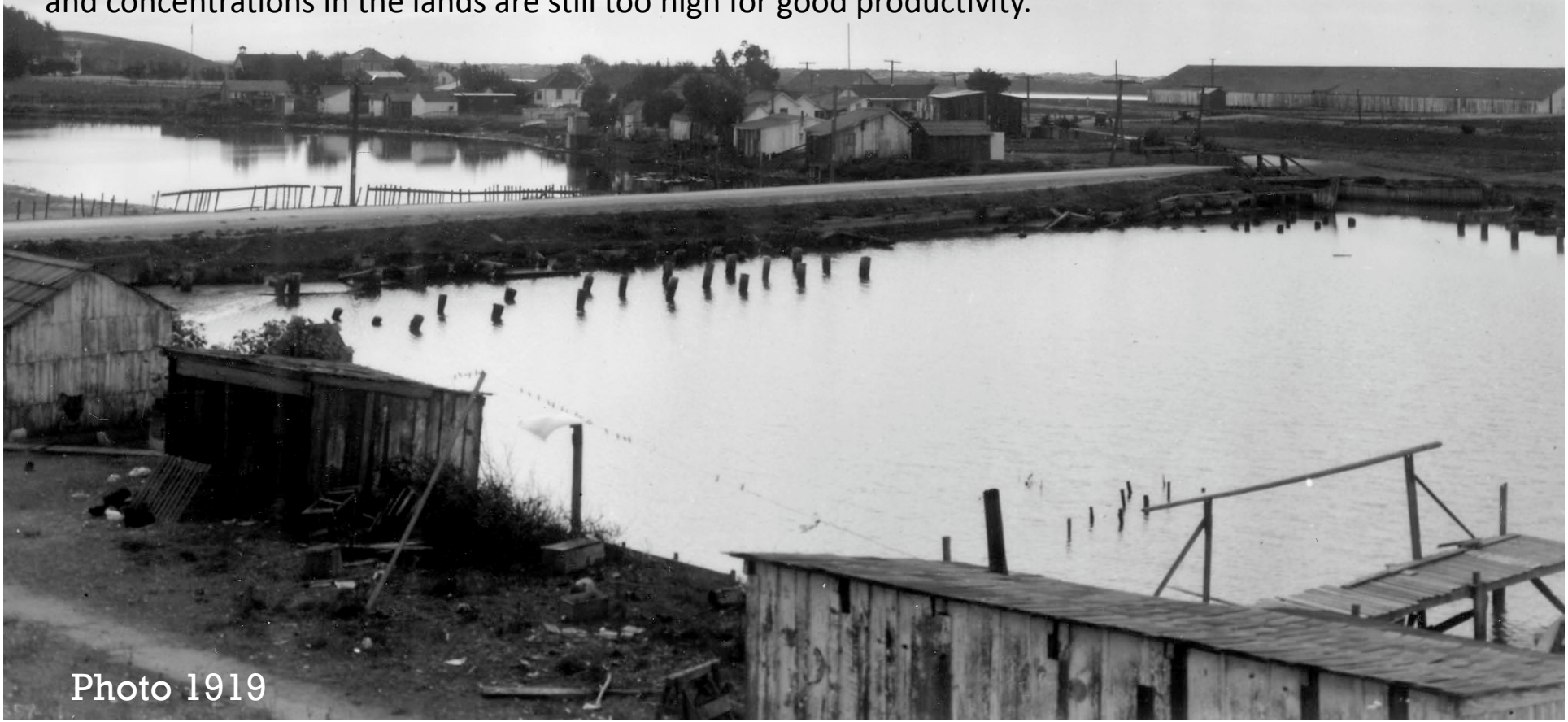


Photo 1919

# Moro Cojo Slough Reclamation Work Begun

Work has started on the Moro Cojo slough drainage project, designed to reclaim 1,150 acres of land for agricultural use.

A plan of operation has been approved, working agreement signed and equipment moved in.

The project calls for digging a channel from the county road leading to Moss Landing out to the Moss Landing harbor channel. The channel will be dug to a grade of one foot below mean low tide level. When finished, the project will lower the water level in Moro Cojo slough about four feet. This will make it possible to leach out the salt.

Plans for the project were approved this week by directors of the Elkhorn Soil Conservation district. Robert Blohm, district president, and G. W. Lyon, representing the local farmer group, have signed a working agreement.

Contract for the excavation has been let to the Granite Construction Co., which has moved equipment in and started work. The project is being financed by contributions from 12 land owners, the Northern Monterey County Mosquito Abatement district and the Kaiser Permanente Metals Co.

Assisting in the project are the Monterey county highway department which will install improved culverts and tidegates under the county road; the Moss Landing Harbor district which will furnish the tide gates; and the state highway which will improve the culverts under the highway. Army engineers made their survey data on tide flows available and the coast guard has helped in removing navigation light cables to permit construction.

The plan for the project was prepared by the local soil conservation service technicians under Jack Hering, conservationist assigned to the Elkhorn district. This project was one of the original projects planned by the Elkhorn Soil district. About half of the 1,150 acres to be benefitted will be developed for irrigated crops, while the remainder will be improved pasture. Most of the area is now salt marsh.

## Two Building Permits

Only two building permits were issued in the city during the past week. One was taken out by L. R. Farris for a $100 car port at 400 Rodriguez avenue and the other by Sam Tejada for a $1,000 cellar at 359 Hushbeck, according to records of the building inspector.

# Soil Conservation magazine article, 1953.

"Changing a mosquito haven to lush forage and cash cropland, is a pretty big order. That's the story of an old Moro Cojo Slough at the hands of an aroused community. . . Draining the wet acres was not easy. It took a lot of planning, teamwork and experience. . . It wasn't that the farmers hadn't tried to put their land in shape for peak production. They laid out a lot of ditches over the years. But, lacking a good outlet for waste water, the slough stayed wet...

Studying the Moro Cajo problem: Randy O. Barsotti, C. W. Lyons, Robert Blohm, president of the Elkhorn Soil Conservation District, and Merrill A. Wood, of SCS.

The technicians mapped out a drainage plan which drew support from both farmers and district directors.. .Such a plan was needed to stop the inflow of tidal waters at high tide and provide good drainage of flood waters from the lands above tide gates. . . .The task of scientifically mopping up the spongy old bog was accomplished early this year without fanfare. Farmers and interested groups liked what they saw. Slough water flowed steadily into Monterey Bay. Ponds began drying and waterlogged acres became tillable for the first time. Moro Cojo Slough is still a bit wet in places, and you'll need hip boots to cross some of the swales. But the day isn't far off when farmers figure they can say goodbye to their wet lands."

**Source Material (listed in the order that appears in this report)**

Mexican Land Grants


1. Rancho map for El Moro Cojo. Digital images available as:
    a. Diseño del Rancho Bolsa Nueva y Moro Cojo : Calif. at Online Archive of California/UC Berkeley, Bancroft Library: https://oac.cdlib.org/ark:/13030/hb2199n6tz/?brand=oac4
    b. Diseño map of Rancho Bolsa Neuvo & Moro Cojo, GLO No. 245, Monterey County, California": Hornbeck Collection, Digital Commons @ CSUMB: http://digitalcommons.csumb.edu/disenosmaps/8
2. Translation of Spanish document "Rancho of Simeon Castro La Bolsa El Moro Cojo". Excerpted from U.S. District Court. California, Southern District. 185- (date not given). Land Case No 98 Southern District: Bolsa Nueva Grant: Maria Antonia Pico de Castro, et al. claimant. Manuscript. The Bancroft Library, UC Berkeley.
3. Rancho map for Bolsa Nueva. Digital image available as El Terreno de la Bolsa Nueva comprende un sitio de ganado mayor poco mas : [Calif.]) at Online Archive of California/UC Berkeley, Bancroft Library: https://oac.cdlib.org/ark:/13030/hb867nb4tx/?brand=oac4
4. Bolsa Nueva y Moro Cojo rancho map ~1840s. Digital image available as Diseño del Rancho Bolsa Nueva y Moro Cojo : Calif. at Online Archive of California/UC Berkeley, Bancroft Library: https://oac.cdlib.org/ark:/13030/hb0d5n995w/?brand=oac4


Early American Period


5. 1854 U.S. Coast Survey (t-sheet). Johnson, W. 1854. Map of part of the coast of Cal. from the Pajaro River southward, Register No. 473. U.S. Coast Survey. Black and white version available from NOAA's Shoreline Data Explorer, https://www.ngs.noaa.gov/CUSP/
6. Painting of region, ~1870s. Painting by Léon Trousset, Moss Landing at Castroville, 1876. Original housed at Our Lady of Refuge Church, Castroville, CA
7. A boat trip, photo. "Old Salinas River between Mulligan Hill and Moss Landing, 1892." Printed in Clovis, Margaret. 2006. Monterey County's North Coast and Coastal Valleys. Arcadia Publishing, San Francisco, CA
8. January 1870, Castroville Argus. The Castroville Argus. January 15, 1870. Navigation to Castroville.
9. A property map from 1876. Detail from Moro Cojo Rancho, surveyed for Juan B. Castro et al by J. Westcoatt August 1874, filed April 25, 1876. Full map posted online at https://www.elkhornslough.org/1878-views-in-monterey-county/
10. 1870s – Land Use Changes. The Castroville Argus. October 16, 1875. Land Reclamation – A Good Work Begun.
11. Plans to reclaim salt marsh. Watsonville Pajaronian. March 27, 1884. Items from Neighboring Towns. Available from Digital Reel, Watsonville Public Library: https://dr651d.bmiimaging.com/index?datasetName=Watsonville%20Public%20Library
12. Moro Cojo reclamation plans include Tembladero Slough. San Francisco Examiner. May 18, 1884. Castroville: recent rapid growth of a town in Monterey County.
13. Moro Cojo tide gate completed. Pacific Rural Press. November 8, 1884. Monterey. Land Reclamation. Digital version available from the California Digital Newspaper Collection, UC Riverside https://cdnc.ucr.edu/

14. Detail of Pacific Coast Steamship Company map. Garber, John H. 1885? Map of Moss, Salinas and Watsonville Landings [Monterey Bay Region, Calif.] : belonging to the Pacific Coast Steamship Company. Science and Engineering Library, UC Santa Cruz, CA.
15. 1885 survey. Herman Bros. 1885. Map of a survey made for Michael Barry as part of the Rancho Bolsa Nueva y Moro Cojo.

The 1900s

16. Photograph from 1901 Soil Survey. Lapham, Macy H. and W. H. Heileman. 1901. Soil Survey of the Lower Salinas Valley, California. U.S. Dept. of Agriculture, Bureau of Soils. Available from Natural Resources Conservation Service: www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/california/lowersalinasvalleyCA1901/lowersalinasvalleyCA1901.pdf
17. 1909 Army Corps map. Demeritt, H.L. and C. M. Crain. September 1909. Map of Moss Landing, Cal., Showing Proposed Inland Harbor and Jetties. U.S. Army. National Archives and Records Administration.
18. 1910 U.S. Coast and Geodetic Survey Report. Rhodes, H.W. 1910 Descriptive Report from Pajaro River Southward; Supplemental Survey. U.S. Coast and Geodetic Survey, Department of Commerce and Labor.
19. U.S. Coast Survey t-sheets. Rhodes, H.W., Cade, A. M., and Lukens, R.R. 1910. Monterey Bay Pajaro River Southward, California. Department of Commerce and Labor, Coast and Geodetic Survey.
20. Composite USGS map. Maps available online at the USGS Historical Topographic Map Explorer: https://livingatlas.arcgis.com/topoexplorer/index.html
21. 1925 Soil Survey. Carpenter, E. J., and Stanley W. Cosby. 1925. Soil Survey of the Salinas Area, California. U.S. Department of Agriculture, Bureau of Chemistry and Soils. The report and map are available online at:
    a. Natural Resources Conservation Service, Soil Surveys: https://www.blogs.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/california/salinasareaCA1925/salinasareaCA1925.pdf
    b. Hornbeck Collection, Digital Commons @ CSUMB: https://digitalcommons.csumb.edu/cgi/viewcontent.cgi?article=1004&context=hornbeck_cgb_1
22. Army Corps of Engineers, 1943.
    a. Report: United States Congressional Serial Set. 79th Congress, 1945 Document No 50. Monterey Bay (Moss Landing), Calif. Available at Haithi Trust: https://hdl.handle.net/2027/mdp.39015087643279
    b. Photo: original from UC Berkeley, Bancroft Library.
23. Soil Conservation magazine, 1953. Boddy, Herb. 1953. Pest Control. Soil Conservation. Soil Conservation Service. Available online at http://www.elkhornsloughctp.org/uploads/files/14181731111953%20scs%20moro%20cojo.pdf