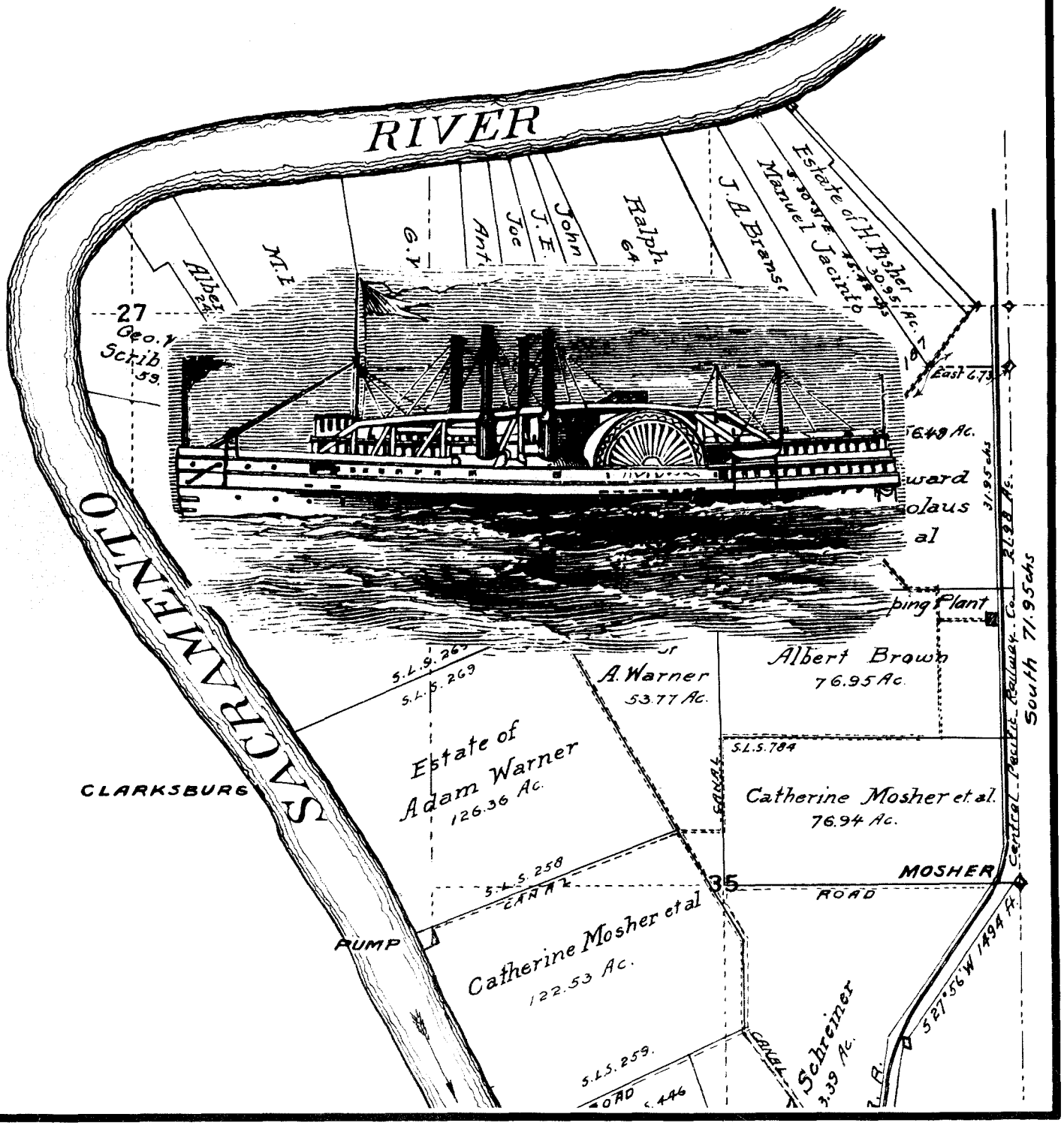
A Map and Record Investigation of

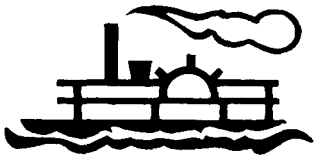
HISTORICAL SITES AND SHIPWRECKS ALONG THE SACRAMENTO RIVER

Between Sacramento City and Sherman Island



A Map and Record Investigation of HISTORICAL SITES AND SHIPWRECKS ALONG THE SACRAMENTO RIVER Between Sacramento City and Sherman Island

Prepared by
Land Location and Boundary Section
on the staff of the
California State Lands Commission



Until this material is reviewed and approved by the Executive Officer of the California State Lands Commission, it is to be considered as tentative and subject to revision.
February 29, 1988

LEGISLATIVE CHARGE

As part of the 1985/86 budget, the State Lands Commission was requested to locate, document, and investigate the significant ships and artifacts from California's rich historical heritage along the Sacramento River. In general, we were charged with:

- Inventorying, mapping, and cataloging all known points of historical significance along the River, including ports, wharves, piers villages, and ship sinkings.

- Preparing costs estimates for an electronic survey using magnetometers, side-scan sonars, and sub-bottom profilers for the purpose of locating historic ships and artifacts.

- Preparing cost estimates of a program of field verification of selected locations.

- Considering contracting all or part of the study with "outside entities" and shall consider contracting for consulting services with the State Historic Preservation Office.

An exact copy of the authorizing budget item is included in this report. See the table of contents for the page.

ROSTER OF STAFF WHO CONTRIBUTED TO THIS REPORT

This report has no single author. An entire Boundary Unit in the Land Location and Boundary Section shared the work and collaborated on what we hope is an interesting and informative report.

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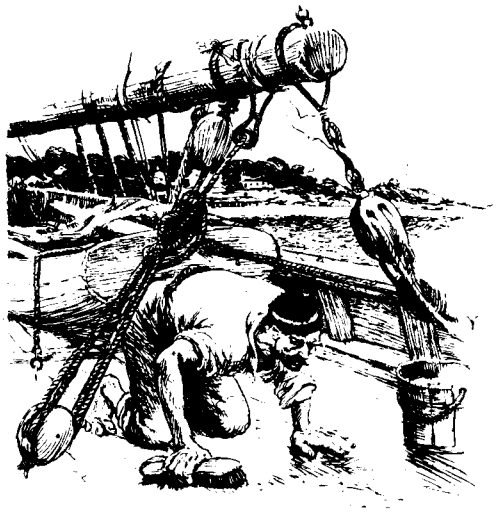


INTRODUCTION

Purpose - Scope - Benefits

Introduction

The report was prepared in response to a legislative request contained in the 1985/86 budget act. The exact nature of the request is reprinted on page XX. The report has been divided into two parts. This, the first part, presents the results of our research that is relevant to the charge by the legislature. The second part, bound separately, is titled *Analysis, Conclusion, and Recommendations to Accompany A Map and Record Investigation of Historical Sites Along the Sacramento River.*

The reports were bound separately since many people may want only one part or the other.

All of the staff who researched this project found much material of interest, but not related to identifying historic sites. We decided to share this material by including it in the report. Several methods were used. First, a collection of the most relevant and interesting anecdotes were selected and these are found throughout this volume of the report. They are set apart from the text by a border and a lightly patterned background, and are identified in the table of contents as *Vignettes.*

The second literary device that was used is the Appendix, entitled *A Historic Reprise*. This contains an interesting short history of the Sacramento area. Perhaps it will be interesting to many Sacramentans; it will certainly help the many people who have expressed interest or helped in the research, but live throughout California, and in many parts of the United States.

Our research produced many photographs, some never before published, and we found many lithograph prints that were charming. These were included, usually on portions of pages that would have been otherwise blank; we hope the reader finds these helpful in creating a historical mood appropriate to the subject matter.

The drawings on the pages that begin each chapter are excerpted from the first sailing and navigation chart of the Sacramento River, surveyed by Cadwalader Ringgold, USN, in 1841 and 1849. The drawings were navigational aids in a time before photography could be used to perpetuate landmarks and landfalls. A facsimile of this map is available from the Land Location and Boundary Section Library, in the State Lands Commission.

The engraving printed on the back of this volume is a portion of "View on the Fruit Ranch of Henry W. Myers, Steamboat Slough, Grand Island, Sacramento, California. It appeared originally in the 1880 History of Sacramento County by Thompson and West. The front cover of this volume was composed by staff, using a map of the Sacramento River from the J.C. Boyd collection in the State Lands Commission Boundary Library.

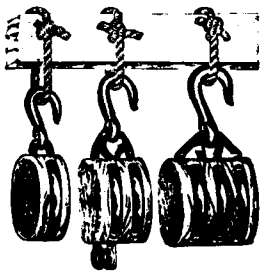
SCOPE

This report begins at the mouth of the Sacramento River, and runs up the river to the I Street Bridge. However, virtually no emphasis was placed on the river adjacent to Old Sacramento; this area has been studied by experts in a wide variety of fields, and we would have been able to provide little additional information. It would have been a waste of money and time. We did, however, use river areas adjacent to Old Sacramento for our tests and demonstrations of various underwater survey equipment.

As we became involved in the investigation, we discovered that, prior to 1880, very little historical work has been done on inland river boats, boating, and historical sites in our study area. After that, information proliferates but is still seldom compiled in the manner of the professional historian Much of the historical community's interest seems to have been focused on railroads, gold rush, Sutter's Fort and the Donner Party. We also found that, unlike the usual historical investigations that we undertake, people were not willing to share any significant information that they may have. Perhaps this results from the mystique surrounding shipwrecks; people are titillated by the prospect of hidden treasure or artifacts — with renown the reward for the historian and archaeologist, and financial gain for the divers and salvors.

BENEFITS

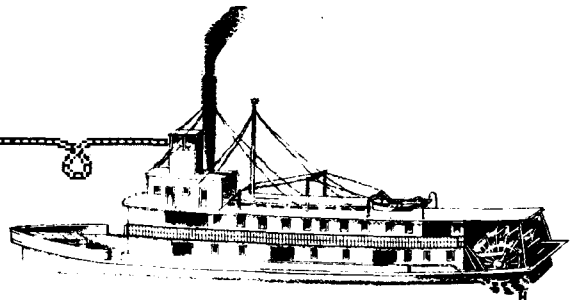
The major benefit from this investigation is that a body of knowledge, collected by skilled historical investigators with special cartographic and surveying skills, provides, at less than the budgeted cost, one more tool for decision makers to do their jobs.



Chapter 1

A HISTORICAL OVERVIEW OF THE SACRAMENTO RIVER AND DELTA

Exploration, Settlement, Goldrush, Statehood, Economy, Levees, Hydraulic Mining



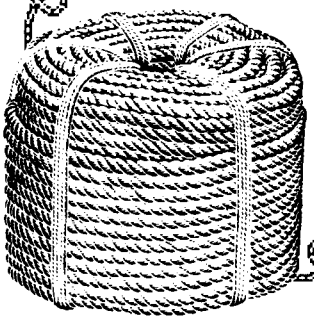
TRADING BOATS ON THE SACRAMENTO

As Joseph McGowan relates in *The History of the Sacramento Valley,* there was a great need after the Civil War for a smaller class of steamboat which could navigate the sloughs and backwaters of the Sacramento and San Joaquin Rivers.

Thus the trading boat was conceived.

From 1867 to the turn of the Century, until the advent of paved roads, these workhorse steamers were the only connection for Californians cut off by tule swamps or distance to the railroad. And, as McGowan recounts, the future of the Golden State lay not in the Sierra Nevada, but in the fertile interior valley. The trading boat was instrumental in opening up this agricultural market:

> "Farmers traded the produce of their fields for all sorts of merchandise which the boats carried. On the return trip, the boats were loaded down with poultry, pigs, calves, wild game, garden truck, fruits, hides, dairy products, and anything that could be raised on the low lands. Deck hands offered another friendly service by tying newspapers or magazines to a stick and throwing it to farmers waiting for the trading boats to pass by. On occasion, some complained that the trading boats sold liquor to the farm hands who immediately proceeded to get drunk. In any case, all waited for the trading boat, recognized its characteristic whistle and rushed to the bank to see it pass, or to the landing to trade with it."



THE ETHNOHISTORY, HISTORY AND HISTORICAL ARCHAEOLOGY OF THE LOWER SACRAMENTO RIVER

by

HOWARD P. GOLDFRIED
Professor of Anthropology
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Editor's note: Dr. Goldfried's report was included in its entirety, without editing, and contains its own bibliography. The recommendations and advantages of further work are Dr. Goldfried's views, and are not necessarily those of the staff who prepared this report.

The path of the goldseeking Forty-niners, the supply line for the Mother Lode and the Central Valley, the route traveled by the food and materials needed by the Nevada silver mines - the lower Sacramento River was northern California's main artery of trade and transportation until long after the building of the Central Pacific Railroad.

The lower Sacramento River of 1986 is not the same river used by the Native American tribes prior to white contact, nor is it the same river seen by the first Spanish explorers, nor is it the same river traveled by the "Forty-niners," nor is it the same river as that which brought goods and supplies to the Central Valley until its role in transportation was filled by the railroads. Man and nature, but chiefly man, have markedly changed the river and its surroundings.

A great watery Delta has been drained and surrounded by levees, the river bed and channel have been altered by the billions of tons of debris washed out of the Sierras and foothills by hydraulic mining, agriculture and settlement have altered the nature of the riverbanks, the introduction of non-native vegetation and animals have produced a totally new flora with the net result that little of its earlier state remains today. Much of this change is directly related to trade, commerce and industry on the Sacramento river in the 19th century.

Real understanding of the lower Sacramento in the 19th century can only be achieved via a multidisciplinary approach combining anthropology, archaeology and history. Any separation would be artificial and leave great gaps in understanding the course of events during the 19th century. The anthropology (ethnohistory), history and historical archaeology of navigation, settlement and trade on the lower Sacramento river is divided into four phases:

I. the historic Native American tribes lasting until the destruction of their villages along the Sacramento River;

2. the period of early exploration ending with the arrival of John Sutter in 1839;

3. the period of the Gold Rush and ending in 1863 with the building of the Central Pacific Railroad;

4. the post 1863 period.

These phases are somewhat arbitrary and overlap to some degree.

THE NATIVE AMERICANS

The Native American groups who lived in the area of concern of this project include the Plains Miwok, Bay Miwok, Patwin, and Nisenan or Southern Maidu. *(See Map 1.)*

The Patwin occupied the southern portion of the Sacramento Valley from the town of Princeton on the upper Sacramento to San Pablo Bay. While most of their riverine villages were located on the Upper Sacramento, their villages along Putah and Ulitas Creeks used the river. The west bank of the Lower Sacramento and the area of Montezuma Hills are described as "unclaimed and utilized by more than one group." *(P. Johnson 1978:351.)*

Missionization affected the Patwin as early as 1800 with the arrival of priests from Mission San Francisco. Assimilation and/or destruction of the Patwin villages on or near the lower Sacramento River was complete by the early 1850's.

The Nisenan (often called the Southern Maidu) were primarily the occupants of the American and Yuba river drainages but did occupy a small portion of the Sacramento River both north and south of its junction with the American River. One important subdivision of the Nisenan had its center at this point with two important villages, Momol and Sama, being within the area of this project. It was these Nisenan and those from other villages who John Sutter encountered when he founded New Helvetia in 1839. The Valley Nisenan had already been decimated by the great malaria epidemic of 1833 and many villages had been wiped out - as much as 75% of the total population died. The Nisenan were not missionized but did take in escaping missionized Indians and displaced Miwok villages from the south.

The Plains Miwok occupied both banks of the Sacramento River from Freeport to Rio Vista. Ten tribelets, each consisting of several permanent settlements, were resident in this area. The Bay Miwok (Saclan) occupied the eastern portions of Contra Costa County from Walnut Creek eastward to the Sacramento-San Joaquin Delta. Sherman Island and the west bank of the Sacramento River below Rio Vista was part of Bay Miwok territory. Sherman Island was occupied by the Julpun tribelet of the Bay Miwok and the Quenemsia tribelet of the Plains Miwok while the west bank of the Sacramento River below Rio Vista was occupied by the Ompin tribelet of the Bay Miwok. *(Levy 1978:398.)*

The Bay Miwok first underwent missionization in 1794 at Mission San Francisco while the Plains Miwok and most of Bay Miwok were taken to Mission San Jose after 1811. A cycle of escapes by Miwok, Spanish expeditions to bring them back, Miwok raids on missions and ranchos, and Spanish reprisals was quickly established. Many Miwok villages and tribelets were wiped out by the combined effects of removal to the missions and the epidemics of the 1830's. Many Plains Miwok became involved in agricultural work on the land-grant ranchos. Members of the Miwok Ochehamne tribelet were employed at Sutter's Fort.

The Effects of the Spanish Missions

Indian life along the lower Sacramento had undergone stress and dislocation as the result of European contact since the establishment of the missions at San Francisco (1776) and San Jose (1796). The process was accelerated when missions were founded at San Rafael (1817) and Sonoma (1823). The impact of missionization was enormous. It was not simply a question of baptism and acceptance of Catholicism, it was a total uprooting of individuals and entire villages and their movement, under the institution of *reduccion*, to the missions. Its aim was the total destruction of Native American culture and the creation of a Indo-Spanish society.

The missionized Indian was not free to leave, was subject to strict harsh discipline, hard work, and worst of all, the whims of a totally alien culture. Accusations of slavery and mistreatment were frequent, with even mission Franciscans filing reports depicting the excesses of their fellows. Padre Horra charged:

> The treatment shown to the Indians is the most cruel I have ever read in history. For the slightest things they receive heavy floggings, are shackled, and put in the stocks, and treated with so much cruelty that they are kept whole days without a drink of water. *(Bancroft 1886 I:593.*

Exposure to disease, bad sanitation, malnutrition, cruelty, and cultural shock all served to reduce the numbers of Mission Indians and the population in general. Bowman gives us an idea of the human cost of missionization - only 15,000 neophytes survived conversion out of 53,600 baptized in the Mission period,1769-1836. *(Bowman 1958).* Abortion and infanticide were frequent among the Mission Indians.

Runaways were pursued by soldiers, villages destroyed for harboring fugitives, entire villages fled to escape the danger of forced resettlement and disease. Plains Miwok and Bay Miwok were caught up in these disruptive movements. Venereal disease became widespread and other European diseases; measles, diphtheria, and other respiratory diseases attacked tribe after tribe.

After the secularization of the missions (1834) during the Mexican period, a new form of exploitation and cultural breakdown came into being. Mexican land grant holders converted numbers of Patwin, Maidu and Plains

Miwok into peons, held frequently in debt servitude. Hostilities between the tribes and the Mexican ranchos and settlements were frequent with raiding and reprisals as constants. One must conclude secularization was nothing more than further stress on the Native American population.

European disease continued to ravage the lower Sacramento tribes. Indians fleeing from the missions and those returning after secularization brought European disease with them. A great smallpox epidemic in the 1830's reduced the lower valley population. This was followed by the *Pandemic* of 1833, malaria spreading south from the Columbia River area, struck tribe after tribe. Cook estimates, on the basis of horrifying contemporary accounts, that as much as fifty percent of the population died. *(See Cook 1955 for these documents).*

This was followed by later epidemics of smallpox (1837 among the Patwin, 1844 among the Miwok), scarlet fever and cholera. The death toll was enormous between 1830 - 1845. Cook estimates the death toll to have been over 100,000, leaving an Indian population in all of California of 150,000 just prior to the Gold Rush and the American period. A disaster of enormous magnitude but yet the tribes did survive in spite of all of the disorientation produced by these diseases. The Hispanic population was only a few thousand, mainly along the coast, who viewed the Indian as a valuable source of labor and who, also, accepted the idea of miscegenation. A real attempt was made, disastrous as it was, to incorporate the Indian into the colonial economic and social order.

This changed with the discovery of gold and the influx of the Americans. Their numbers were huge, they covered the valley and the foothill and the sierras, there were no refuge areas away from these whites. There was no role for the Indian in American society - he really was not wanted as a labor source. Miscegenation, accepted by Hispanics for the lower class, was totally rejected by Anglo-American. "Half-breed" was a totally negative term, an insult, "fighting words."

Schuyler offers another but somewhat similar explanation:

> . . .When the gold rush and farming potential of the state drew in literally tens of thousands of immigrants in a year's time, a total society was transformed into California overnight. In this situation, with few exceptions, the Indian had no economic function. In 1850 the relationship between the Anglo and Indian was closer to that between a man and a natural feature that happened to exist, and happened to be in the way, than between one culture and another.
>
> . . .There was a place for the Indian in Spanish California; in fact, he was an integral part of its economic underpinning. There was a continuing place, albeit much less important, in Mexican California; but the nature of Anglo culture

> excluded him and forced him close to extermination. *(Schuyler 1978:79.)*

Archaeological excavations in Old Sacramento and the various mining camps of the Mother Lode shows no signs of Indian involvement in these communities. This is a far cry from the archaeological and historical evidence from Sutter's Fort where evidence of close contact and Indian involved is clearly demonstrated in the archaeological record. (Olson 1961, Payen 1961.)

The lower Sacramento tribes were directly in the path of the Gold Rush and the rapid alteration of their environment, the destruction of either many of their major food resources or the denial of access to these resources and the constant Anglo hostility caused the villages along the lower Sacramento to be among the first to vanish.

A summary of the effect of American contact on the surviving Indian population during the period 1845 - 1855 is provided by Cook:

> The decline in the worst decade, 1845 to 1855 was incredible-from approximately 150,000 to 50,000. This desolation was accomplished by a ruthless flood of miners and farmers who annihilated the natives without mercy or compensation. The direct causes of death were disease, the bullet, exposure, and acute starvation. The more removed causes were insane passion for gold, abiding hatred of the Red man, and complete lack of any legal control. *(Cook 1978:93.)*

Native American Use of the Lower Sacramento River.

The tule balsa boat was the principal vessel used by the Native American groups along the lower Sacramento. (See Fig. 1.) For simple river crossings, a bundle or group of bundles of tule reeds was adequate but for any other kind of water travel, a vessel with raised sides and a point and elevated prow was constructed. This was propelled by a pole. *(Kroeber 1922.)*

Kroeber's description of the Patwin tule balsa is informative:

> Large boats for travel downstream might be twenty feet long and six or more in beam. Those for crossing the river were smaller. All were quickly made. There was no bladed paddle, but plain wooden poles were paddled with. In the tules, progress was by poling. It was impossible to travel upstream in these balsas. *(Kroeber 1932:283.)*

The use by the Nisenam of a dugout canoe is mentioned by Wilson and Towne 1978:380. Nisenan tule balsa boats used one or two logs in the bottom of the craft to provide greater stability. *(Wilson and Towne 1978:392.)*

The Miwok balsa boat was made of about 20 bundles of reeds. Better rigidity was gained by the use of willow poles for gunwales and eight external ribs of willow. *(Levy 1978:406.)* Boats do not appear to have been used for long distance travel but for fishing and the hunting of waterfowl. It is noteworthy that all discussions of Native American trade emphasize land routes and there is no explicit mention of any major role played by the Sacramento River in the process of trade and exchange.

Native American exploitation of the Sacramento River was chiefly fishing. Salmon, sturgeon, whitefish, chub, pike, and trout were taken using dip nets, seine nets, weirs, fish traps, spears and harpoons.

THE PERIOD OF EXPLORATION

Exploration of the Sacramento River began in 1772 when Father Juan Crespi and Don Pedro Fages stood on Mt. Diablo and looked down on the delta and the lower Sacramento and San Joaquin rivers. The founding of the mission at San Francisco, four years later, was to give impetus to further exploration of the area. The mouth of the Sacramento was seen by explorers of San Francisco Bay and named the San Roque.

In 1808, Lieutenant Gabriel Moraga, while seeking mission runaways, reached the lower Feather River in the vicinity of Nicholas and named it the Sacramento. On October 10, 1808, moving west from Sutter Buttes, he encountered the Sacramento River near Stony Creek, naming it the *Jesus Maria.*

European vessels first entered the Sacramento River on October 23, 1811. An expedition headed by Fathers Abella and Fortini, and commanded by Jose Antonio Sanchez, entered "the northern river of San Francisco." After a short voyage on the Sacramento, they turned into the San Joaquin before returning to the Presidio of San Francisco.

May 13, 1817 marks the first major exploration of the Sacramento River from its mouth northward. Luis Arguello led twenty men, and Padres Duran and Abella in two launches into the river. After camping at Montezuma Sough and Rio Vista, the expedition proceeded north until May 20, 1817 when they turned back after marking their furthest point by carving a cross into an oak.

While Dana states this was near Freeport *(1939.39)*, it must have been further north since the diary of Padre Duran describes the Sutter Buttes as being visible to the north and the current swept them fourteen leagues in the first day of their return voyage. The most probable northernmost point reached by this expedition was near the junction of the Sacramento and the Feather River. Thus it is the 1817 Arguello expedition which was the first to explore the Sacramento River to and above the location of Sacramento.

Arguello led a second expedition into the Sacramento Valley in 1821. This, a land expedition, followed the Sacramento River north to the general area of Redding. All of the Spanish expeditions mentioned many Native American villages and clearly indicate a large population along the river.

Exploration of the Sacramento River did not long remain a Spanish monopoly. In 1824, Captain Otto von Kotzebue of the Imperial Russian Navy sailed upstream with two boats and twenty Aleut hunters from Fort Ross. Bancroft believed that Kotzebue may have reached the mouth of the American River *(1886 II:523)* while Dana places the furthest extent of his voyage at Freeport *(1939:45.)* It was the botanist attached to the Kotzebue expedition who first described and named the California poppy *(Eschscholtzia California.)*

Great Britain sent Captain Sir Edward Belcher and H.M.S. Sulphur to investigate and chart the Sacramento River in 1837. He sent two ship's boats "150 miles upstream to the head of navigation" and produced the first chart of the lower Sacramento River. *(Bancroft 1886 IV:143)*

Jedediah Smith was the first American to reach the Sacramento River, following it north to the vicinity of Red Bluff in April of 1828. Smith believed the Sacramento was the Buenaventura, the legendary river thought to flow west from the Rocky Mountains to the Pacific. The search for this legendary stream did not end until the explorations of John Fremont finally laid the notion to rest.

After a journey which took him from Switzerland to St. Louis, to Fort Laramie, on down the Columbia to Fort Vancouver, where the lack of any vessel forced him to the Sandwich Islands (Hawaii). He then chartered a ship, loaded it with supplies and sailed to Sitka, to Monterey then to Yerba Buena (San Francisco) finally setting sail in two schooners, the *Nicholas* and the *Isabella,* for the Sacramento Valley on August 1, 1839.

Sacramento (New Helvetia) was founded by John Sutter on August 15, 1839. The establishment of New Helvetia, together with the settlements and ranches established by Peter Lassen, John Sinclair, John Bidwell, Theodore Cordua, William Knight, William Chard and many others marks the beginning of constant and regular traffic on the Sacramento River. In 1841, Sutter purchased Fort Ross for $30,000. Part of his purchase was a launch, quickly renamed the *Sacramento*. The honor of being the first vessel to make regular voyages between Sacramento and San Francisco (Yerba Buena) belongs to this launch. It took approximately two weeks to make the round trip voyage to San Francisco.

In 1847, the *Sitka* was the first steamboat to sail the Sacramento. Purchased from the Russia America Company by William Leidesdorff, it was reassembled on Yerba Buena Island. A tiny side-wheeler, only thirty-seven feet long, it was so underpowered that it barely was propelled by its steam engine. Finally sailing on November 29, 1847 for Sutter's Fort, it took six days to make the voyage (slower than a man walking) and then, on the return voyage, an ox team which left Sacramento at the same time beat the *Sitka* to Benicia. Its engines removed, the *Sitka* was converted to a sailing vessels and renamed the *Rainbow*. This ill-fated vessel sank in San Francisco Bay before the end of 1848.

THE GOLD RUSH ERA

The discovery of a few shining flakes of gold in the millrace of Sutter's Mill at Coloma by John Marshall on January 24, 1848, set in motion an enormous migration, invasion is a better term, of gold seekers. Sutter's Fort could not hope to meet the needs of this influx of gold seekers who were short of everything but dreams and enthusiasm. It was this sudden and incredible demand for goods and services which led to the founding of both Suttersville and Sacramento.

Soon after the founding of New Helvetia, John Sutter had his Indians build a roadway between his fort and the Sacramento River, just below its junction with the American River. This, he named the Embarcadero, intending it to be simply a port. Sutter was aware that most of the area between his fort and the Embarcadero was subject to frequent flooding and so could not, in his opinion, serve as the location for a new city. It was his intention to found a town on higher ground, less subject to flooding, and possessing a good anchorage for ships. Choosing a site to the south of the Embarcadero, he named it Suttersville.

Ironically, it was Sutter's son, John Sutter, Jr. and Sam Brannan who were responsible for the success of Sacramento and the failure of Sutter's plans. The constant arrival of ships at Sutter's Embarcadero, their discharge of passengers and goods, and their subsequent abandonment by their crews, and the more direct access via the American River to the gold fields, helped make Sacramento a success.

Brief competition between the two would-be cities for control of the trade in the Sacramento Valley included the selling of lots at low prices, offering merchants free lots if they would move to the other city, getting storeships to anchor in the river, constructing needed roads and so on. The merchants of Suttersville, in desperation, made a fatal offer to undersell anyone in the area. The merchants at Sutter's Fort then proceeded to buy all of their stock, leaving them nothing to sell to the Argonauts of 1849. The final blow came when Bidwell, McKinstry and Hastings (the promoters of Suttersville) quarreled and Suttersville withered away.

One hundred thousand gold seekers descended on California, Sacramento, and the gold fields in 1849. How were they to be supplied, housed and fed? Prices were unheard of. "A person accustomed to paying six cents a pound for beef, six cents for cheese and five cents for bread, found the Sacramento prices were fifty cents, a dollar and thirty or forty cents respectively. *(McGowan 1961: I:56.)* Milk was a dollar a quart, butter three dollars a pound, and whiskey was one dollar a shot.

This enormous market could not help but attract merchants and shippers to meet the need and make what appeared to be and were at first, enormous profits. Two ocean-going ships, the *Joven Guipuscoana* owned by Sam Brannan and the *Eliodora* owned by Hensley and Reading, reached the Sacramento area in March/April 1849 demonstrating the Sacramento River was open to navigation by large vessels. The *Whiton,* a bark, was the first ship bearing cargo from the East Coast whose stated destination was Sacramento, reached Sacramento on May 2, 1849.

Almost as quickly as sailing vessels ships anchored, their crews jumped ship and headed for the gold fields. These abandoned vessels were turned into stores, warehouses, and hotels and there was a line of 24 ships tied, two deep, to the riverbank at the Embarcadero by July 1, 1849. (The wrecks discovered by the Sacramento Redevelopment Agency may part of this group of vessels.) One abandoned bark, the *La Grange,* served as Sacramento's jail from 1850 until it sank in 1859.

Today, it is almost impossible to appreciate the role played by the Sacramento River in the economic life of the Sacramento Valley and the Mother Lode prior to the building of the railroads. All goods, after long voyages (four months was usual) via Cape Horn, were unloaded in San Francisco and then moved upriver to Sacramento and other river towns. While goods and passengers did travel by land, it was both expensive and uncomfortable. It was the river communities that served as the centers of both settlement and trade.

Since sailing vessels took a week or more to make the voyage to Sacramento, steamboats were the only solution to the problem of supplying the towns and the mining camps. Steamboats of greater size and power than the ill-fated *Sitka.*

The first successful steam navigation of the river was by the steamboat, the *Senator,* reached Sacramento on November 5, 1849. It made three round trips a week and carried three hundred passengers and three hundred tons of freight per trip. Charging thirty dollars for a one way trip and thirty dollars a ton for freight, the Senator made a monthly profit of sixty thousand dollars. Such profits meant more steamboats, these were built, and the competition and rate wars forced fares and rates down to a third of their previous high. By 1853, six first-class steamboats were providing Sacramento with service.

Competition meant racing for "the fastest boat on the river." Racing meant excitement, gambling and accidents. Running aground, collisions, and boiler explosions *(the R. K. Page)* were common.

The demand for goods was great, the number of ships sailing the Sacramento River in 1850 was substantial with two hundred-three vessels arriving at Sacramento in the summer of 1850. Traffic at the Embarcadero reached 426 vessels in 1851. Tonnage was great, in 1852, 165,000 tons, 1853 a decrease to 103,000 tons and a further drop to 98,000 tons in 1854. The drop was due to the departure of many miners from the gold fields as the easily accessible placer deposits were worked out. There would be a great revival of business and navigation with the discovery of the Comstock Lode in 1859.

Domination of the steamboating on the Sacramento was achieved by the California Steam Navigation Company soon after its incorporation in 1854.

Made up of the owners of the *Confidence, Colusa, Governor Dana, New World, Antelope, Helen Hensley* and *Sam Soule,* it achieved a virtual monopoly by price cutting, gaining control of wharfs and piers and general harassment. Opposition boats and companies either went bankrupt due to these tactics or agreed to a common set of rates.

California Steam Navigation built the *Chrysopolis,* the "Queen of the

Sacramento," in 1860. Built by John North, everything that went into her construction was the best and the finest. North personally selected the timbers, purchased the finest engine from New York rated at over 1300 horsepower. Painted white on the outside, with an interior color scheme of white and gold, hung with paintings by Bierstadt, Hill and other California artists, with cabins and public rooms filled with costly "appointments" (furnishings), the *Chrysopolis* was as fine a steamboat as ever sailed an American river.

Powered by superb engines, 245 feet in length, the *Chrysopolis* set a record of five hours and ten minutes for the Sacramento-San Francisco run - it was never beaten. After the silting up of the Sacramento River, the *Chrysopolis* was moved to San Francisco Bay, remodeled and became, in 1875, the ferry, Oakland. The *Chrysopolis* served as an Oakland-San Francisco ferry until the completion of the Oakland-San Francisco Bay Bridge. It burned while being salvaged in 1940.

Sacramento was the head of navigation for ocean going vessels and large steamboats. The shallow water of the upper Sacramento and the Feather River required all freight to be trans-shipped in shallow draft steamers and barges drawing less than 4 inches of water. The problems of navigation on the upper Sacramento and Feather River were magnified after 1853 by the deposition of debris from hydraulic mining. (The upper Sacramento River and the Feather River are outside the scope of this project.)

Settlement Along the Lower Sacramento

The history of settlement along the lower Sacramento is marked by: bogus or speculative towns; the sudden shift of a town site due to severe flooding; the rise and death of communities as a result of the moving or establishment of a post-office, the building of a wharf, the building of the railroad and the silting up of the river. There are numerous examples of these processes.

Stephen Massey, a salesman for a land speculator, describes the creation of a pseudo-town:

> Thus towns were conceived in the minds of speculators, some were stillborn while others had a brief and rapidly terminated life. Onisbo, laid out at the mouth of Steamboat Slough in 1849 with an unsuccessful expectation of being the head of deep water navigation rather than Sacramento, lost its post office to Courtland and vanished by 1867. Emmaton, below Rio Vista, vanished in the flood of 1876.

McGowan sums up the role of the Sacramento River in land speculation:

> Effective shallow draft steamboats began to run up and down the river about December 1849, and their number was greatly increased during 1850.

> Their arrival introduced an important question: Where was the head of navigation? At that point an important commercial town would arise, for it would allow ships to bring freight as close to the miner as possible, as cheaply as possible. The problem was that no one knew the vagaries of the river, how deep the water was in September, when the important fall trade began, or where the sand bars were located. Nevertheless, many speculators, intent on making their fortune by laying out towns and selling lots, claimed this or that location was the head of navigation. The result was a series of "paper towns," cities of illusion that existed primarily on paper and sometimes with a few building put up to impress the unwary investor. As the navigability of the river changed with the season and the year, most of these towns disappeared. The promoters could not lose: if their town proved to be the head of navigation, they could make a fortune; if this happy event did not develop, they took the profits from lots sold and went on their way.

Permanent communities had a checkered history. *Brazos del Rio,* surveyed in 1857, underwent a quick name change to *Brazoria.* The building of a wharf and the establishment of a post office gave the young community prestige and encouraged further growth as it supplied the local farming and salmon fishing industry and provided a means for shipping their products. The *Brazoria* was rechristened *Rio Vista* in 1860. The city moved to is present location after the great flood of 1862.

The Sacramento Valley Railroad and Freeport

No community's history along the lower Sacramento shows as direct a relationship with trade and transportation in the Central Valley than Freeport. Freeport's founding in 1863 was nothing more than an attempt to avoid or evade taxes by the Sacramento Valley Railroad.

The Sacramento Valley Railroad, officially opened February 22, 1856, ran from Sacramento to Folsom. Its initial low profits and financial difficulties were ended by the discovery of the Comstock Lode in Virginia City in 1859. As the sole carrier of freight to Folsom (the point of departure for all goods by wagon to the Comstock Lode) it became immensely profitable.

In 1862, the city of Sacramento demanded payment for back taxes and the maintenance of the streets over which the railroad passed. In addition, the railroad was seen as responsible for much of the damage caused by the flood of December 9, 1861 when water flowing south was blocked by the railroad trestle and the debris trapped by it, causing the city to be covered to a depth of two to four feet. The city ordered the tracks from 6th Street to the levee torn up, forcing the railroad to haul freight to 6th Street by wagon,

and then placed taxes and charges for the transportation of goods from the Embarcadero to the railroad depot.

Finally in 1863, the railroad built a ten-mile line from Brighton south to the Sacramento River thus freeing the railroad from city taxes and charges. The route functioned until it was taken over by the Central Pacific Railroad in 1865 at a cost of $800,000. With the tearing up of the Freeport-Brighton line, Freeport was soon reduced to nothing more than a ferrypoint on the Sacramento River.

The Comstock Lode, mentioned above, immediately influenced the lower Sacramento River. Veins of ore with a gold and silver content of three to four thousand dollars a ton were commonplace. The great mines of the Comstock Lode and the miners of Virginia City, Gold City and the Carson Valley could only be supplied via Sacramento and the Sacramento River. Traffic on the Sacramento increased, the railroad brought the supplies to Folsom, while freight wagons carried it to Placerville, and an endless stream of teamsters hauled them over the mountains to the Carson Valley and the Washoe.

The magnitude of this traffic is astonishing. A single week in October 1862, saw 739 wagons leave Folsom for the Comstock. A eyewitness calculated 320 tons of freight moved via Placerville to Nevada every day. It is worth considering that all of these supplies took three - five months by sailing ship to reach California via Cape Horn. Most of the food for the Washoe and Virginia City came from the Sacramento Valley.

"Slickens" and the Lower Sacramento River

During the period 1853 - 1878, navigation, trade, agriculture and life in general along the lower Sacramento were being rapidly altered by a new man-made problem - the debris from hydraulic mining. The technique of using powerful streams of water to wash away the rock, earth and clay that covered the gold bearing gravels were first developed in 1853. The dry or moderately wet years that followed prevented any major deposition of this sand, gravel and "slickens" in the lower Sacramento but it had begun to interfere with navigation on the Feather and Yuba Rivers and the upper Sacramento.

The floods of 1861/62 and the great floods 1875 and 1878 brought down the entire mass of accumulated debris - destroying fishing, permanently ruining agricultural lands, wrecking water supplies, and raising the bed of the river. Raising the bed of the river meant the river would flood more easily and this period saw the almost constant breaching of levees and the flooding of the Delta Islands. One consequence of this deposition of billions of cubic yards of debris was the closing of many rivers to navigation - the Feather River, the American River and the Bear River were virtually closed to navigation and navigation between Sacramento and Marysville became more and more difficult.

A sandbar grew to alarming size in front of Sacramento's Embarcadero making it impossible for deep draft steamers to tie up. This sandbar was disposed of in what became one of the finest pieces of Sacramento

steamboat lore. The substitute master of the *Goodman Castle*, angered by the interference of the bar, tied a number of plows together, dropped them overboard, and dragged them up and down. This chewed up the bar and the "slickens" washed downstream.

The navigation on the lower Sacramento was markedly affected by the deposition of hydraulic debris. The largest steamboats on the river in the 1860's were the *Yosemite* (1,032 tons), the *Capital* (1,625 tons) and the *Chrysopolis* (1,086 tons) - the most beautiful steamboat to sail the Sacramento and the holder of the Sacramento-San Francisco speed record of five hours and ten minutes. The build up of debris effectively closed the lower river to them and they were altered to serve as ferries on San Francisco Bay. In 1873, the largest steamboats on the lower Sacramento were much smaller; the *Amador* (864 tons), the *Sacramento* (700 tons) and the Julia (520 tons). The shallowness of the channel is indicated by the size of the fourth largest boat on the river, the *S. M. Whipple,* a mere 350 tons, less than a third the size of the great boats of the 1860's.

Changes in channel depths included: Steamboat Slough from a depth of twelve feet in 1853 to a mere five feet in 1879 thus closing it to steamboats; the bed of the river at Sacramento had risen fifteen feet; and Suisun Bay had virtually been filled in by hydraulic debris.

Hydraulic mining was declared illegal in 1884 and gradually decreased over the years. The damage had been done, debris was still washing out of the mining areas and it was not until the twentieth century that the rivers began to scour themselves of accumulated debris.

THE RAILROAD AND THE RIVER

Conventional wisdom leads one to expect that the building of the Central Pacific Railroad meant the rapid demise of steamboating on the Sacramento. This was not the case. The steamboats and the dominant company, the California Steam Navigation Company, were seen by the railroads as genuine competition. This is demonstrated by the purchase of the California Steam Navigation Company by the California Pacific Railroad Company (Sacramento to Marysville). The purchase was an attempt to control or reduce competition for both passengers and freight. Both companies were taken over by the Central Pacific in 1871.

This purchase by the Central Pacific, soon to become the Southern Pacific Railroad, was not an attempt to destroy steamboating. It was an attempt to control all transportation to Sacramento. The steamboats were part of one of the most successful and profitable transportation operations in United States history. When steamboats could carry freight cheaper than by rail, it went by river. If not, it traveled by rail.

Passenger traffic was encouraged and was immensely profitable, causing the Southern Pacific to spend millions on the construction of new steamships of which the last, built in 1926, were the *Delta Queen* (now sailing the Mississippi) and the *Delta King* (now under reconstruction in Old Sacramento).

LANDINGS, AGRICULTURE, AND THE RIVER

The profits made by those farmers who supplied the "Forty-niners" were as spectacular as those made by the owners of the *Senator*. One farmer made more than thirty thousand dollars while another farm showed a profit of thirty eight thousand dollars in 1850.

The expansion of agriculture along the Sacramento began in 1855 with the sale of government lands and final decisions by the Lands Commission on the validity of Mexican land grants. Orchards, herds of cattle, flocks of sheep, grain fields, vegetables flourished. The crops were brought to Sacramento by steamer but more often by sloops and schooners that sailed the river, stopping at landing after landing to bring the produce to urban markets. These produce boats are represented in many of the engravings and prints of the time (See Wright 1880 for examples).

Small steamboat companies came into being to meet the needs of farmers. The California Transportation Company, formed in 1875, was the most important of these companies. Its fleet of small steamers stopped at all farmers' landings to pick up freight - a far cry from the big river steamboats which only stopped at Sacramento, Rio Vista and Benicia. The company also operated two large steamboats, the *S. M. Whipple* and the calliope bearing *Chin-Du-Wan.*

These steamboats stopped at all landings between Rio Vista and Clarksburg. This could mean as many as sixty-five different landings on a single trip. The lower Sacramento had as many as two hundred landings but no extant map lists all of them. This is due to the nature of the landings. Some were substantial constructions with pilings and heavy timbers (these are usually indicated on maps of the time and the remnants of a few of these may still be seen along the levees today) while many were nothing more than piles of brush made by a single farmer.

It is extremely difficult to date any remains of landings along the Sacramento River. Many, if not most, postdate the period of concern to this project and farms and orchards have changed hands many times since the 1870s. Limited information is provided by the illustrations in Thompson and West's *History of Sacramento County*. This volume published in 1880 shows many of the important farms, orchards and ranches of the lower Sacramento.

Examination of the illustrations shows the following. There are fourteen river front scenes of farms and ranches. Only three show any kind of wharf, pier or permanent landing. Small steamboats are shown being loaded with goods by use of a gangplank. Sheds to protect produce and goods from the elements are represented but permanent landings seem to be quite rare and were limited to the major towns along the river and certain large farms and ranches.

RECOMMENDATIONS FOR FURTHER WORK

The most important portion of the archaeological aspect of this study are the sunken ships and shipwrecks. Underwater archaeology is very different from dry land archaeology and it is necessary to understand these limitations since they all have one major consequence for any project - a marked increase in cost.

The location of the sunken ships of the lower Sacramento River involves a three stage process. First, the archival research to determine the approximate location of shipwrecks; second, electronic remote-sensing device searches to determine probable sites; and third, identification and assessment of such finds by underwater archaeologists. None of these steps are inexpensive but the cost will skyrocket once excavation begins. The cost is a reflection of the nature of underwater archaeology.

Underwater archaeology is affected by problems of visibility at all times. In the silt of the Sacramento River, where any disturbance of the bottom produces a blinding cloud of particles, this is a major obstacle to work. The river current is another factor that wears out underwater archaeologists who are trying to maintain their position over a single spot.

Water temperature is a problem at all times - it limits the amount of time any diver can spend underwater. The Sacramento is not a warm stream. There is the problem of communication - almost impossible without equipment costing large sums of money. Divers cannot communicate anything complex to each other nor can they communicate with the surface.

A number of psychological studies have shown: dexterity decreases, the recollection of instructions drops, the ability to make observations underwater and remember them when returning to the surface is impaired (Baddeley 1966, Godden and Baddeley 1975, and Godden 1977). Cold and exhaustion are additional factors further reducing the efficiency of divers. In short, everything takes longer to do underwater.

All archaeological excavation is affected by being done underwater. The removal of backdirt (the silts, clays, etc. excavated from the shipwreck) requires the use of a small dredge and/or an airlift. Surveying, mapping and photographing an underwater excavation demand special equipment and techniques. Every aspect of underwater archaeology is more expensive than the comparable segment of land archaeology. Liability insurance is one such cost.

An underwater excavation cannot be carried out by an archaeologist and a group of volunteer "sport" divers. This type of excavation would result in underwater chaos and the destruction of the sunken vessel with little information being gained. The goal is not to simply rip out artifacts as quickly as possible and bring them to the surface but to learn something about the ship and the society of which it was part. Archaeology is not the search for artifacts but an attempt to reconstruct the past. In order to carry out a scientific investigation, one must have an experienced professional underwater archaeologist, a number of experienced (both in terms of diving and archaeology) field assistants, and a number of carefully selected divers.

It is difficult to establish costs but it is safe to say that any underwater

excavation is extremely expensive and that any underwater archaeology project is approximately six times more expensive than any land excavation of the same duration and with the same size excavation crew.

This is not to be taken as an argument against the proposed project but simply a summary statement explaining why the costs of excavation are high.

ADVANTAGES OF EXCAVATION OF THESE SUNKEN SHIPS

Preservation of organic material. Plaint remains, leather, wood, rope, basketry, even paper are preserved in an underwater site. This occurs because the water provides an oxygen-free environment which markedly slows the chemical and biological process of decay. Underwater archaeology can provide remains of certain categories of material culture which no land excavation can ever yield. One point must be made: the stabilization and conservation of these materials so they can be studied and exhibited is extremely expensive.

Knowledge of ship construction. A shipwreck site can yield important information about the construction of 19th century vessels. Many were built without formal plans and of those built with formal plans, such as the *Chrysopolis,* few if any of these plans have survived. It would be a significant contribution to the history of marine construction.

"The time capsule." The shipwrecks of the lower Sacramento River are the result of a sudden disaster. We can be reasonably certain everything found in a wreck-site is truly contemporary - in use on the same day in the same spot.

There are some qualifications to this "time capsule" concept. The most important is the salvaging of cargo, engines, and even the raising of vessels. In a river as shallow as the Sacramento, engines could be easily removed, a very large portion of the cargo saved, and even ships raised and repaired. Archival research will already eliminate any search for a raised vessel. A partial time capsule is still a very valuable and signficant find.

The Shipwrecks of the Lower Sacramento River. The location of shipwrecks was determined by an examination of the newspapers of the period. The *Alta California, The Sacramento Union,* and the *Sacramento Bee* were checked for information relating to sinkings, cargos and salvage operations. Eighty- three sinkings were located in the lower Sacramento River, of these, fifty-five occurred between 1849 and 1885. A sample of these are discussed below.

The schooner *Commodore*. A three-masted schooner which sank 3/17/64 after being rammed by the steamer *Yosemite* - 3 miles south of Freeport. Hit amidship, it sank in 2 minutes, in 10 feet of water. Not entirely submerged. *Sacramento Union* articles mentions "a request for one

or two schooners to aid in getting the *Commodore* afloat again." Had a small engine and propeller and was powered by this at the time of the accident. The *Commodore* was the largest schooner on the river. Cargo was hides, a small quantity of iron, including an iron safe.

It may have been salvaged. The Sacramento Bee says that it was a valuable craft and suggested that it could be salvaged at little expense.

NOTE: The *Yosemite* met with disaster on October 12, 1865, when its boiler exploded at Rio Vista killing or injuring close to 100 passengers.

The sloop *Salinas*. Sank on January 5, 1876 as the result of a collision with the steamer *New World.* Sank near the *Brothers* and was loaded with bran which prevented it from sinking out of sight.

The sloop *Wasp*. While sailing from Freeport to San Francisco, it hit a snag and sank in Steamboat Slough on January 12, 1865. Value was $2400. Cargo was cobbles and brick. No mention of any recovery attempt and given the weight of its cargo such a task would have been difficult.

The schooner *Bianca*. A schooner carrying 80-100 tons of assorted cargo, sank at the mouth of Cache Creek. According to the *Sacramento Union* 10/30/54) "There are two different rumors relative to the cause of the accident - the one that she struck a snag, and the other that she had been hauled up near the bank at night and careened on the ebb of the tide." Loss was 50% of the cargo and it was taken out and forwarded on sailing vessels. No mention of any salvage attempt.

The *James Blair,* steamer. Sank March 10, 18611 after striking a snag in the Feather River. There was no loss of life, damage to the cargo but a steamer on the following day removed what "freight could be obtained." "The *Blair*, though sunken, is not entirely submerged." No mention of it being raised.

The *R.K. Page*, steamer. While racing with the *Governor Dana,* its boiler blew near Nicholas, causing the death of the captain, one of the owners, the pilot and the ship's clerk. The force of the explosion blew the dome of the boiler 800 yards. Large number of injured. It sank in six feet of water, the deck was partially covered but it was possible to remove the engines. The wreck "was thought to be too much injured for removal." The *R. K. Page* had just been refitted at a cost of $12,000 and was on her first trip.

The *Kate Blakiston,* schooner. While attempting to jibe in a strong wind, the *Kate Blakiston* capsized and sank, almost immediately, within sight of the Sacramento Levee opposite Y Street. It sank approximately 100 feet from the east bank. Only the captain was saved, the other two members of the crew, unable to swim, drowned. The cargo was general merchandise.

A later article describes the *Kate Blakiston* as a lumber schooner and mentions the salvaging of a steam hoisting engine. The attempt to raise the *Kate Blakiston* ended because the majority owner would not go to any great expense to raise her.

The next step in this project should be an electronic search of the locations of all the shipwrecks discovered via archival research; and an

evaluation of the results of such an electronic search by an experienced professional underwater archaeologist. Then, and only then, can any reasonable decision be made as to the value of any further work on what could be an extremely important resource for the study of California history.

There is one real danger in all of this work. Publicity can be fatal for the preservation of these shipwrecks. Publication of suspected locations will serve to attract "sport divers" seeking artifacts and will result in the destruction of these sunken ships as historical and archaeological artifacts.

BIBLIOGRAPHY

Baddeley, A.D., "The influence of depth on the manual dexterity of free divers." *Journal of Applied Psychology* 50: pp. 81-85. (1966)

Bancroft, Hubert H., *The History of California.* 7 vols. San Francisco: The History Company (1886)

Bass, George F., *Archaeology Under Water.* Penguin Books. (1966)

Bennyhoff, James A., *The Ethnogeography of the Plains Miwok.,* Unpublished Ph. D. Dissertation in Anthropology, University of California, Berkeley. (1961)

Bowman, J. N. "The resident neophytes of the California Missions, 1769-1834." *Quarterly of the Historical Society of Southern California* 40: pp. 138-148. (1958)

Castillo, Edward D. "The impact of Euro-American Exploration and Settlement." *In:* Heizer 1978: pp. 99-127. (1978)

Cook, S. F. "The Conflict between the California Indian and White Civilization, III: The American Invasion 1848-1870." *Ibero-Americana* 23: Berkeley (1943)

Cook, S. F. "The epidemic of 1830-1833 in California and Oregon." *University of California Publications in American Archaeology and Ethnology* 43: pp.303-326 (1955)

Cook, S. F. "Historical Demography." *In:* Heizer 91-98. (1978)

Dana, Julian. *The Sacramento: River of Gold.* New York: Farrar & Rinehart. (1939)

Godden, D. R. "Cold, wet and hostile." *New Behavior* 1: pp. 422-425

Godden, D. R. & Baddeley, A. D. "Context-dependent memory in two natural environments; on land and underwater." *British Journal of Psychology* 66: pp. 325-331.

Heizer, Robert F. *Languages, Territories, and Names of California Indian Tribes.* University of California Press. (1966)

Heizer, Robert F. , Editor *Handbook of North American Indians. Volume 8. California.* Washington: Smithsonian Institution. (1978)

Heizer, Robert F. and Thomas Hester. "The names and locations of some ethnographic Patwin and Maidu Indian Villages." *Papers on California*

Ethnography . Contributions of the University of California. Archaeological Research Facility No. 9: pp. 79-117.

Johnson, Patti J. "Patwin." *In:* Heizer, ed. 1978: pp. 350-360. (1978)

Kroeber, Alfred L. "Elements of culture in native California." *University of California Publications in American Archaeology and Ethnology* 13: pp.260-328. (1922)

Kroeber, Alfred L. "Handbook of Indians of California." *U.S. Bureau of American Ethnology*, Bulletin 78. (1925)

Kroeber, Alfred L. "The Patwin and their neighbors." *Univ. of California Publications in American Archaeology and Ethnology,* 29: pp. 253-423. (1932)

Levy, Richard. "Eastern Miwok." *In:* Heizer: pp. 398-413. (1978)

McGowan, Joseph A. *San Francisco-Sacramento Shipping*. M. A. Dissertation.University of California, Berkeley. (1949)

McGowan, Joseph A. *Freighting to the Mines in California,* 1849-1859. Ph. D. University of California, Berkeley. (1949)

McGowan, Joseph A. *History of the Sacramento Valley*. 3 volumes. New York: Lewis Historical Publishing Company. (1961)

Muckelroy, Keith *Maritime Archaeology*. Cambridge Univ. Press. (1978)

Murdock, George Peter and Timothy J. O'Leary. *Ethnographic Bibliography of North America*. 4th edition. Volume 3: Far West and Pacific Coast. New Haven: Human Relations Area Files Press. (1975)

Olsen, William H. *Archaeological Investigations at Sutter's Fort State Historical Monument, 1959*. (Manuscript No. 62 at the California Department of Parks and Recreation, Sacramento). (1961)

Payen, Louis A. *Excavations at Sutter's Fort*. (Manuscript No. 87. at the California Department of Parks and Recreation). (1961)

Schuyler, Robert L. "Indian-Euro-American Interaction: Archeological Evidence from Non-Indian Sites." *In:* Heizer: pp. 69-79. (1978)

Severson, Thor. *Sacramento: An Illustrated History - 1839-1874*. California Historical Society. (1973)

Wilson, Norman L. and Arlean H. Towne "Nisenan." *In:* Heizer editor 1978: pp. 387-397.

Chapter 2

SHIPPING ON THE SACRAMENTO RIVER

Types of Vessels,
Emergence of Steamboats
Shipwrecks - Sinkings and Recovery

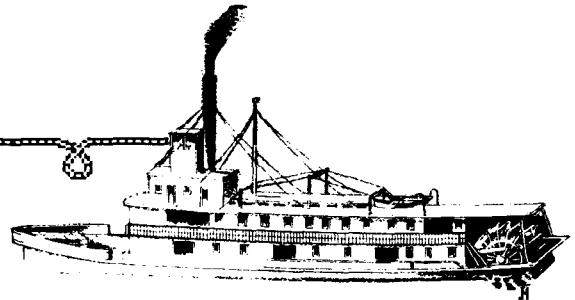
Figure 1. Steamer for Marysville passing the bridge in Sacramento.

STEAMBOATS

The first steamboat to navigate the Sacramento River was *Little Sitka*, a forty-ton paddle wheel steamer thirty-seven feet in length which drew only 18 inches of water. The *Little Sitka,* purchased from the Russians sank in San Francisco Bay in 1848. The engine was sold to miners and the hull refitted into a schooner and renamed the *Rainbow.*

The next steamer was the *Sacramento* . It was brought to California aboard a sailing brig and assembled in Sacramento. The *Sacramento* was to handle trade between San Francisco and Sacramento, but was not large enough for the open waters of San Francisco Bay. Instead it traded between New York of the Pacific and Sacramento.

Figure 2.This photograph shows two old hulks used as storehouses and landings along Sacramento waterfront.



THE ADVENTURES OF THE *NEW WORLD*

One of the first large steamers on the Sacramento, the *New World*, had a colorful and illustrious career. Built in New York in 1850 she was 225 feet long; her cabin housed 35 staterooms and 111 berths. Serving only the best cuisine, furnished with extravagant fixtures she was truly a floating palace.

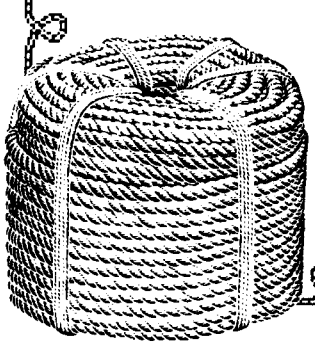
Captain Edgar Wakeman was her master. Deciding to try his hand in the steamboat trade in California, he readied his craft for a journey around Cape Horn. A local sheriff, learning of his plans, boarded the ship and presented Wakeman with a lien against the *New World* for bad debts. Wakeman sailed anyway, knowing that the sheriff had no jurisdiction on the high seas. The sheriff was put ashore down the coast and the *New World* continued on her way.

Several histories make note of Captain Wakeman's cat-and-mouse game with authorities. At one point, says Harry Sinclair in *The Steamboaters*, a British frigate cornered the *New World* in Rio de Janeiro's harbor. While Wakeman was being transported ashore in a small rowboat, he fell overboard; once he was safe and dry before the American Consul he claimed to have lost his clearance papers during his floundering in the harbor. The Consul believed him, and now armed with a bona fide set of papers, the captain continued his journey.

The *New World*'s adventures were far from over. At Valparaiso she was ordered quarantined for twenty days; when Wakeman raised a cry, the writ was lifted and the steamer allowed to proceed. And when he made port at Callao, the Captain learned that news of his hasty departure from New York had been relayed to the Pacific; he would be arrested upon reaching Panama.

Captain Wakeman, having eluded his pursuers thus far, was determined as ever to see California. Though the *New World* had enough fuel to make San Diego, Wakeman anchored her off Panama, and dressed in disguise, snuck ashore. There he learned that Federal marshals were armed with papers and waiting to extradite him back to the States.

Captain Wakeman then enlisted the support of the many gold-seekers in Panama: He promised to transport them to San Francisco at a greatly reduced fare if they could somehow deter the marshals from arresting him. The mob brought its influence to bear: greatly out-numbered, out maneuvered, the agents ripped up their papers. The *New World*, now well-provisioned and carrying 200 new passengers, set sail for San Francisco Bay where she arrived on July 11, 1850. Together with the *Senator*, the *New World* offered the first continuous service between San Francisco and Sacramento.



The Steamboat, *Senator* , was the most profitable of the early paddle wheel steamers. It appeared in November in 1849 after steaming around Cape Horn. The *New World* was the most luxurious steamer in California at the time, was commonly referred to as the stolen steamer because of the way the captain eluded a sheriff's sale.

September 28, 1850, Sacramento became a port of entry. It was thought that Sacramento would become a major port for large sea going ships. However, shippers found it more convenient to break up their cargoes in San Francisco so portions could be sent to other river ports. In the fall it became difficult for large steamboats, because of the number of small craft and low water conditions, to reach Sacramento let alone turn around in the narrow river channel. Subsequently, Sacramento, due to lack of ocean vessels, lost its status as a port of entry by 1852.

Although the steamboats were faster and more dependable than sailing ships, sailing vessels shipped more cargo in 1851 to Sacramento than steamboats. Sacramento's Harbor Master's Report for that year shows sailing craft outnumbering the steamboats and handling more cargo tonnage.

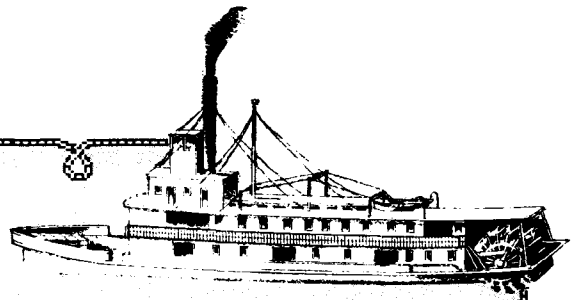
The gold rush made Sacramento a major supply point for the gold mines and if not the most, one of the most important inland shipping ports on the West Coast. Due to shortages of labor and building materials, caused by the gold rush, old ship hulks were used for storehouses and landings. These old hulks would be tied to the shore along the waterfront. The Harbor Masters report lists eight hulks as store ships; each store ship was charged from $75.00 to $125.00 monthly. The shortage of buildings also resulted in keeping inmates in old hulks. The *Strafford*, *Stirling*, and *La Grange* were used as prison brigs.

The first steamboat completely built on the West Coast was reportedly the *Shasta*. This stern-wheel vessel was designed specifically for river trade . It was rated at 120 tons and drafted a mere 18 inches of water.

Generally a steamship referred to a large ocean going vessel and a steamboat was generally a shallow draft vessel used in protected waterways and rivers.

Early steamship hulls resembled sailing craft with paddle wheels added to the sides. As technology improved, hulls of steamboats also improved and specialized. The hulls of eastern steamboats were lengthened to a 1: 8 width to length ratio. A kayak has the same dimensions. Thus, steamboats captured the hearts of the American public. Two common types of paddle wheel steamboats are the paddle-wheelers (side-wheelers) and stern-wheelers. Several early Sacramento River craft were paddle wheel steamboats; these would be replaced by the Sacramento River fleet of stern-wheelers.

Figure 3. Photograph shows an old hulk with the upper deck constructed similar to the old prison brigs.



SACRAMENTO *vs* MARYSVILLE

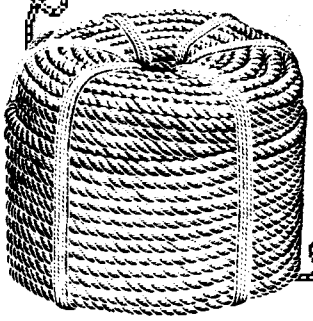
In the early Gold Rush, the Sacramento River was crowded with vessels of every conceivable size--from the lowliest row boats to ocean-going barks and schooners. When the mines peaked their gold production in the early 1850's and the mad urge to get to the Sierras lessened, the steamboats grabbed a lion's share of the market transporting goods and passengers on the Sacramento. Competition between steamers soon became fierce with some owners charging a dollar for travel between Sacramento and San Francisco.

In an effort to stabilize rates and keep themselves profitable, the steamboat owners and pilots organized the California Steam Navigation Company on March 1, 1854. Essentially a monopoly (there were no laws against trusts at this time) it set rates for freight and passengers sailing the Sacramento and San Joaquin Rivers. But, as historians have noted, the CSNC, while enjoying a virtual hammer-lock on shipping, did not abuse this power, for the alliance of the independent pilots and owners was a fragile one at best.

Still, there were some who felt the CSNC rates were unfair. Because Marysville was in competition with Sacramento for trade in the northern mines, her merchants resented the higher rates charged them. Not to be outdone, they organized their own shipping company the "Citizens' Steam Navigation Company" — also known as "The Opposition."

The competition between CSNC and the Citizens' Steam Navigation Company was intense if brief, and followed a pattern which was to repeat itself again and again in opposition companies - the appearance of a new steamship line would bring a reduction in rates followed by more rate cutting until the opposition either went bankrupt or sold out to the CSNC.

After the transcontinental RR was completed in 1869 the CSNC found itself competing for its life. In 1871 the monopoly was sold to the Central Pacific, and the era of steamship supremacy passed away.



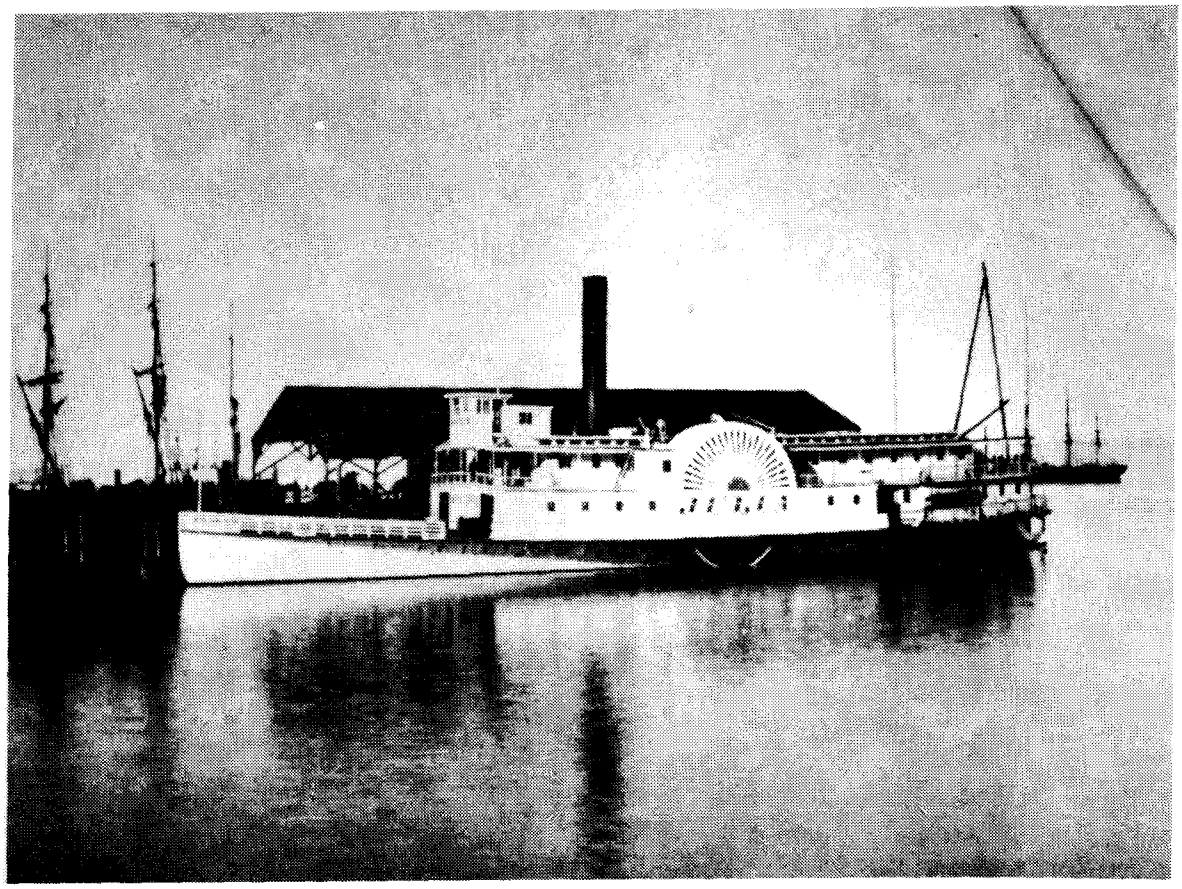


Figure 4. This photograph shows the paddle wheel steamboat Julia. Note the narrow hull at waterline.

Early shipwrights designed paddle wheels on the side-wheelers to be situated at a point between the crest of the wake from the bow and the low point. Thus the paddle wheels were placed at a location most efficient for propulsion even in rough swelling ocean waters. The paddle-wheeler when in shallow water would purportedly skip or loose power. The large ocean going vessels were mostly paddle wheel steamships with deep hulls. River going paddle wheel steamboats were shallow draft, making them very susceptible to the wind forces.

The stern-wheel steamboat, as the name applies, had its paddle at the stern and was well adapted for river travel in shallow water. Stern-wheel steamboats had the distinctive problem of keeping the paddle wheel in the proper location in rough swells of the open ocean waters. When the ship would reach the crest of the swell the paddle wheel would leave the water and at the bottom the paddle wheel would loose power by lifting water. Typically, craft designed for upper river travel in California were narrow, shallow draft stern-wheelers.

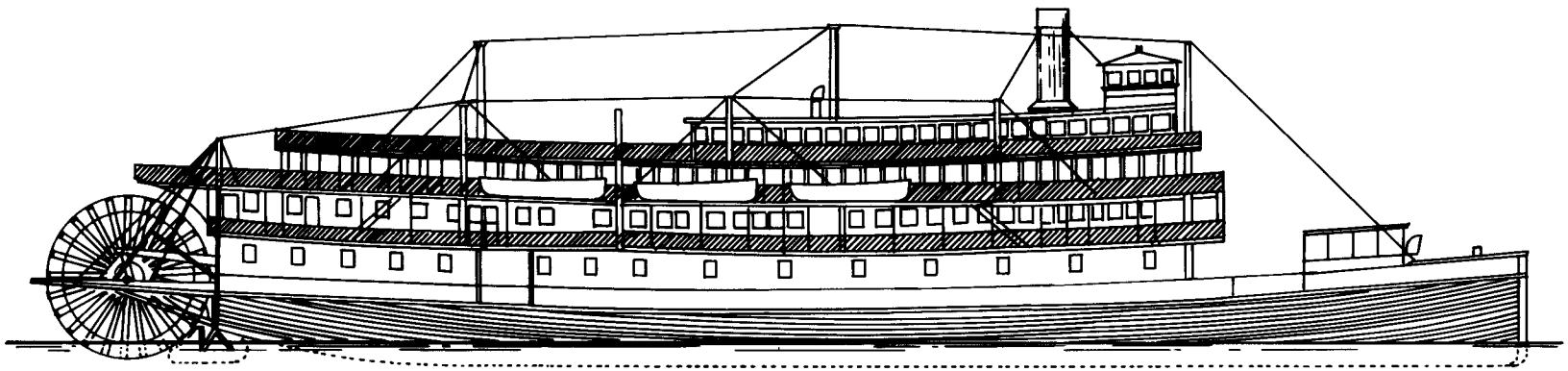


Figure 5. A drawing showing the profile of a typical stern-wheel steamboat built on the west coast for river trade.

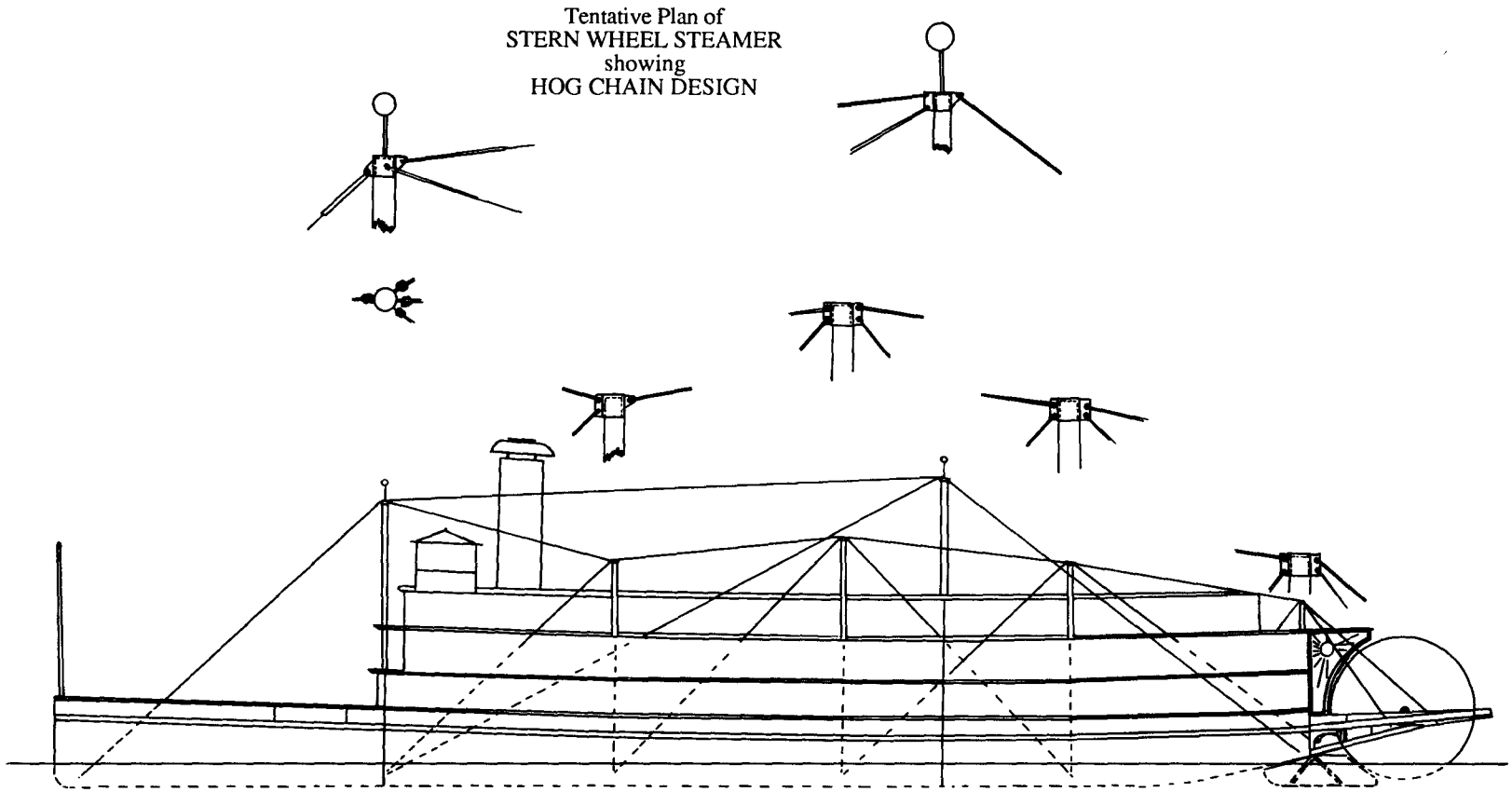


Figure 6. Hogging chain and mast plan, showing their placement on a stern-wheel steamboat.

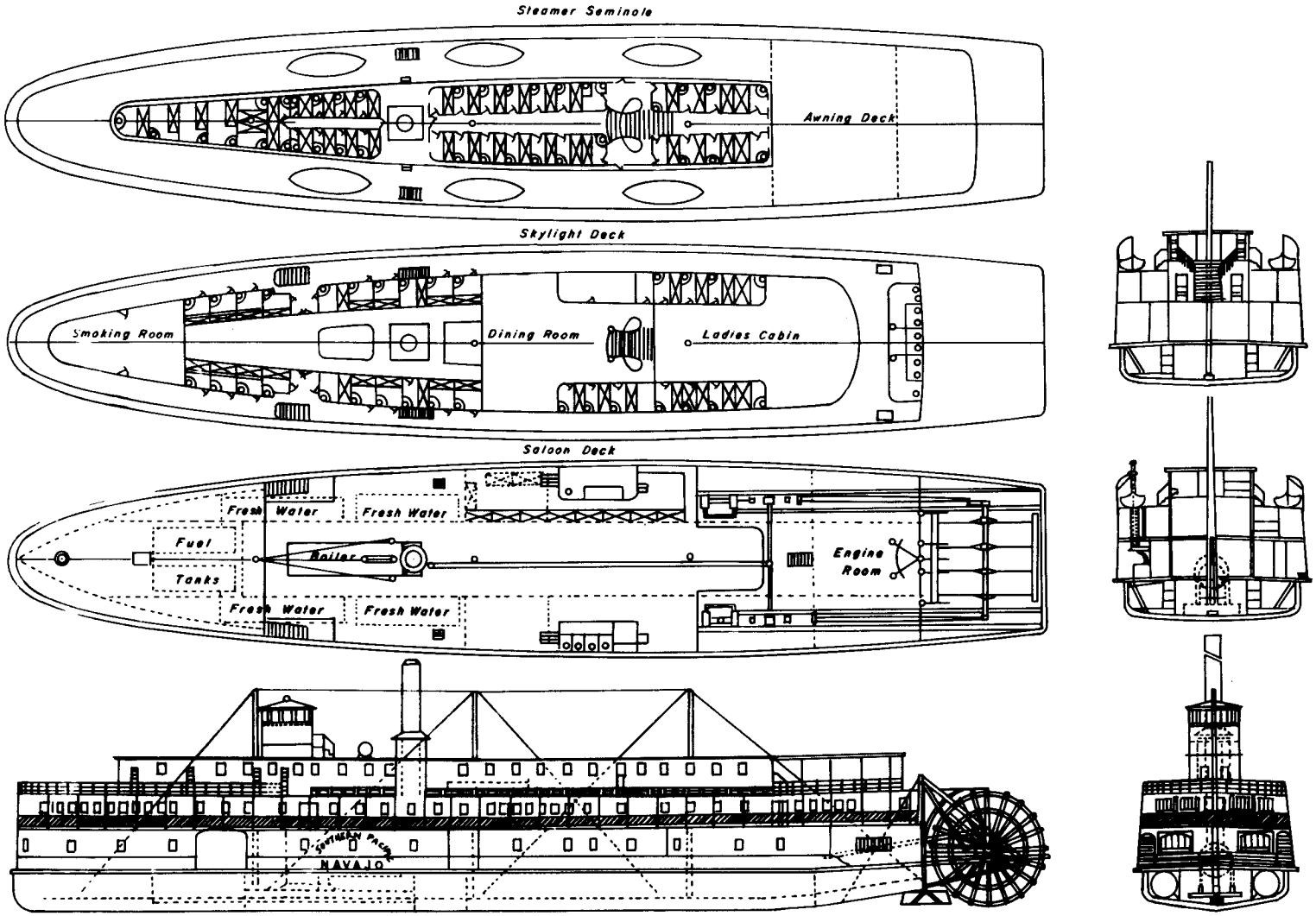


Figure 7. Plans of a later sternwheel steamboat to be used on the Sacramento River.

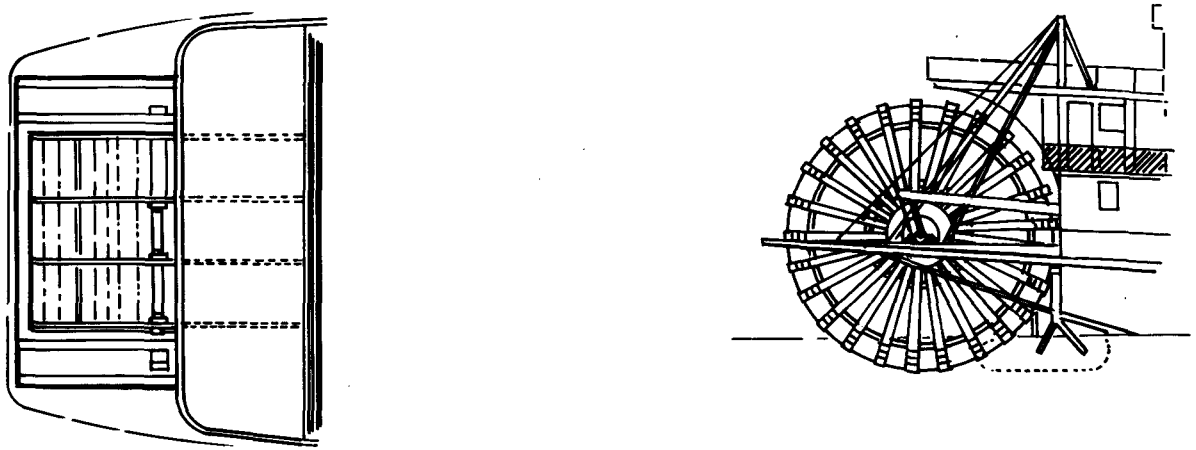
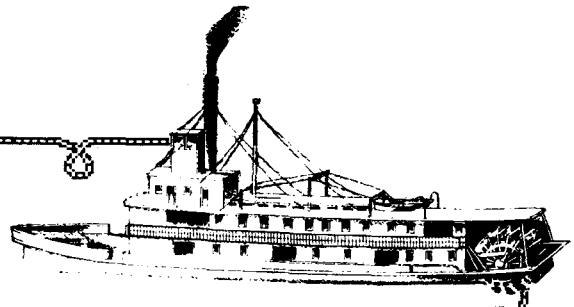


Figure 8. Typical stern wheel paddle.



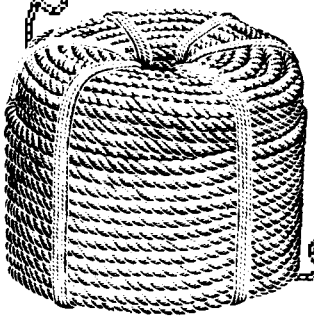
A SMALL VICTORY

The first vessels to ply the Sacramento River were sailing ships, mostly brigs, barks, and schooners. Their place in California history was short lived because of the duration of the trip from San Francisco to Sacramento, ten days to five weeks, depending on wind and tidal conditions.

Travelers had to be a long suffering breed. A sizzling sun baked them during the day; at night they had two intolerable choices: they could either stay below deck in the suffocating heat or sleep on deck, inviting attacks from clouds of mosquitoes. By the end of a long trip many passengers appeared to be victims of small pox, so lumpy and swollen their faces were from the ravages of these bloodthirsty insects.

Steamships on the other hand were a welcome alternative. If wind driven ships represented the romance of sailing with their towering masts and billowing sails, wood and coal fired steamships, huffing against the current, were infinitely more practical. A moderately sized steamer could make a trip in hours, compared to days and weeks for her tall-masted rivals. Neither were steamships prey to the caprices of wind and tide. Economically too they were much more enviable, as they could transport in a month 400 times more cargo than could a sailing ship. And the "floating palaces" as large steamers were known, afforded their passengers almost regal luxury compared to the spartan conditions aboard sailing ships. Most important, the steamers were fast and dependable.

Against such competition the sailing ships were doomed. The first hint of their demise came when steam tugs were pressed into service to tow them through Steamboat Slough, where the winds often died. Yet there exists one golden moment which the sailing ships can call their own. As Joseph McGowan relates in *San Francisco - Sacramento Shipping, 1839-1854,* one schooner captain went so far as to contract with a steamship owner to tow his ship from Sacramento to San Francisco. Unknown to the steamer's owner, the heady captain packed his ship with passengers by undercutting the rates of the very steamer that towed him. Keeping his clandestine cargo below deck and out of sight, the captain beat the steamship owner at his own game. It was a small victory for all the die hard sailing captains who had transported around the Horn the first disassembled steamships in their holds, but a victory nonetheless. Sailing ships soon disappeared from the inland waterways, and the era of steamboat domination began.



Two common types of paddle wheels were the radial and feathering style. The radial is the type generally used by stern-wheelers and many paddle-wheelers. The floats are connected directly to arms radiating from the paddle shaft. Floats are the boards attached to the paddle wheel which push the craft through the water. Feathering paddle wheels are designed to keep the submerged floats perpendicular to the water surface, thus eliminating drag on the paddle as it enters and exits the water.

The hulls of later craft were built by the same methods used on railroad truss bridges. In fact, the trussing of steamboat hulls was reportedly derived from those very methods used by the railroads. Trussed hulls, referred to as hog framing, enabled the shipwrights to build large flat river vessels drafting 18 or less inches of water. The *Latona*, *Eureka*, *James Blair*, *Maria* and *Pet* were light draft river steamers. The *Pet* , 78 feet long and rated at 75 tons, drew only 10 inches of water.

Hogging and sagging are two types of strains which adversely affected the flat trussed hulls of later steamboats. Hogging is where the ends of a ship drop down. Sagging is where the middle drops down. The trussed hull of a river steamer was very susceptible to these types of strain. To compensate, a system of poles or hog masts were placed in areas where the most strain would occur. From the hog mast, cables or chains would run down to the hull of the ship. These cables, referred to as hog chains, could be tightened or loosened thus compensating for the effects of hogging and sagging. The tow line would then be attached to a hogging post which was situated well above the paddle wheel.

The boiler's function was to convert water into the steam used to drive the engine. Early boilers were merely water chambers heated from the bottom. Due to the small heating surface they were found to be inefficient. Tubes were then used to increase the heating surface. The water tube boiler is where water tubes are exposed and run directly through the fire box. The fire tube boiler is where tubes from the fire box run through the water chamber and then out the stack. The fire tube boiler was most commonly used on steamboats. Early boilers were made from domestic wrought iron and riveted together. Although domestic wrought iron was inferior to imported wrought iron, it was less expensive, therefore, extensively used by early steamboat builders. Copper was occasionally used to build boilers. Due to their large size, boilers had to be heated slowly; once fired, they would not be shut down until the end of the trip.

Boiler explosions were the most tragic of the steamboat accidents. When the boiler exploded, those passengers not killed by the flying debris would be burned by the steam. The following list of steamboats had their boilers explode: *Washoe, Pearl, Belle, Yosemite, Fawn, Dana, McClelland,* and the *Page*. When the *Washoe* exploded, 103 lives were lost, 11 unaccounted for were presumed drowned, 80 others injured, 3 of which would die later. Due to bad publicity, a steamboat which blew up usually changed its name after repairs. Others like the *Belle* were totally destroyed.

Figure 9. The Neponset II was the last of the trading vessels which stopped at ranches and farms along the Sacramento River trading directly with farmers. Note the chickens and pigs along the side of the steamer.

The early paddle wheel vessels operating in sheltered waterways did not require port holes. Instead, steamboaters preferred large windows. Due to the immense size of the boilers and engines, the steamboats' superstructure had to be tall enabling the builder to place many large windows throughout the entire ship. The steamer usually painted white, along with the many large windows, created a large airy looking vessel.

When passenger travel was reduced, many steamboats were converted into steam barges. These vessels transported goods from ranches and farms along the river. There were many old steamers whose engines and boilers were removed and converted into cargo barges. California steamboat operators, unlike their counterparts on the Mississippi River, towed the barges. The Sacramento Bridge was the cause of many accidents, especially barges loaded with grain and/or wood. Apparently the current would drive the barge against the bridge, sinking the vessel or knocking off portions of deck cargo.

During the Gold Rush period the steamship *Senator* had made a profit of $60,000.00 in one month. Rates from San Francisco to Sacramento were $30.00 and higher depending if a passenger wanted a berth or meal. During this time period the number of steamboats increased proportionally as fast as the population. In 1852 the amount of placer gold reached a peak. From this time on the amount of gold began to decline and so did the amount of supplies needed in the gold fields. The Sacramento Directory of 1853-54 lists the following four companies and individual steamboats under the title:

Inland Steam Navigation

Independent Line--- Steamer *Antelope*, Capt. W. E. Bushnell, landing Storeship *Antelope*, foot of K Street.

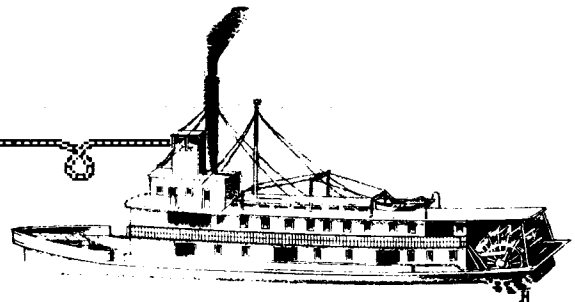
Merchants' Line--- Steamers *J. Braggon*, Capt. T. W. Lyes: *Camanche*, Capt. George R. Barclay ; *Urilda*, Capt. Thos R. Hope ; landing Storeships *Coosa* and *Jovin Guipuzcoana*, foot of J Street.

People's Line--- Steamers *Senator*, Capt. Saml. Seymour; *New World*, Capt. Wood Hutchins ; landing Storeship *Eliza*, foot of K Street.

Union Line--- *Confidence*, Capt. Wm. Clark ; *Wilson G. Hunt*, Capt. E. C. Poole; landing Storeship *Globe*, foot of L Street. Run regularly between Sacramento and San Francisco.

Merchants' Line--- Excepting when the stage of water in the Feather River is too low---run regularly between San Francisco and Marysville, stopping at Sacramento and Marysville.

The *Orient*, *Shasta*, *Fashion*, *Capt. Sutter*, *San Jose*, *Ranger*, etc., run regularly between Sacramento and Colusa, and the upper towns on the Sacramento River.



STRANDED UPSTREAM

Not every mishap involving steamboats had to do with snagging or burst boilers. In some cases the machinery simply malfunctioned, which, in the following instance, abbreviated an afternoon outing for some of Sacramento's leisure class.

"The little steamer *Stella* went up the Sacramento yesterday afternoon with a few ladies and gentlemen, on a semi-pleasure and trial trip, arriving at Haggett's Ranch, about one and a half miles above the city, and after all had gone ashore except the engineer, the end of her cylinder was blown out by considerable violence. No serious damage was done, however, to either passengers, machinery or boat. It was rather inconvenient, though, for the party to foot back to town. The boat remains up the river.

—*Sacramento Union, June 7, 1860*

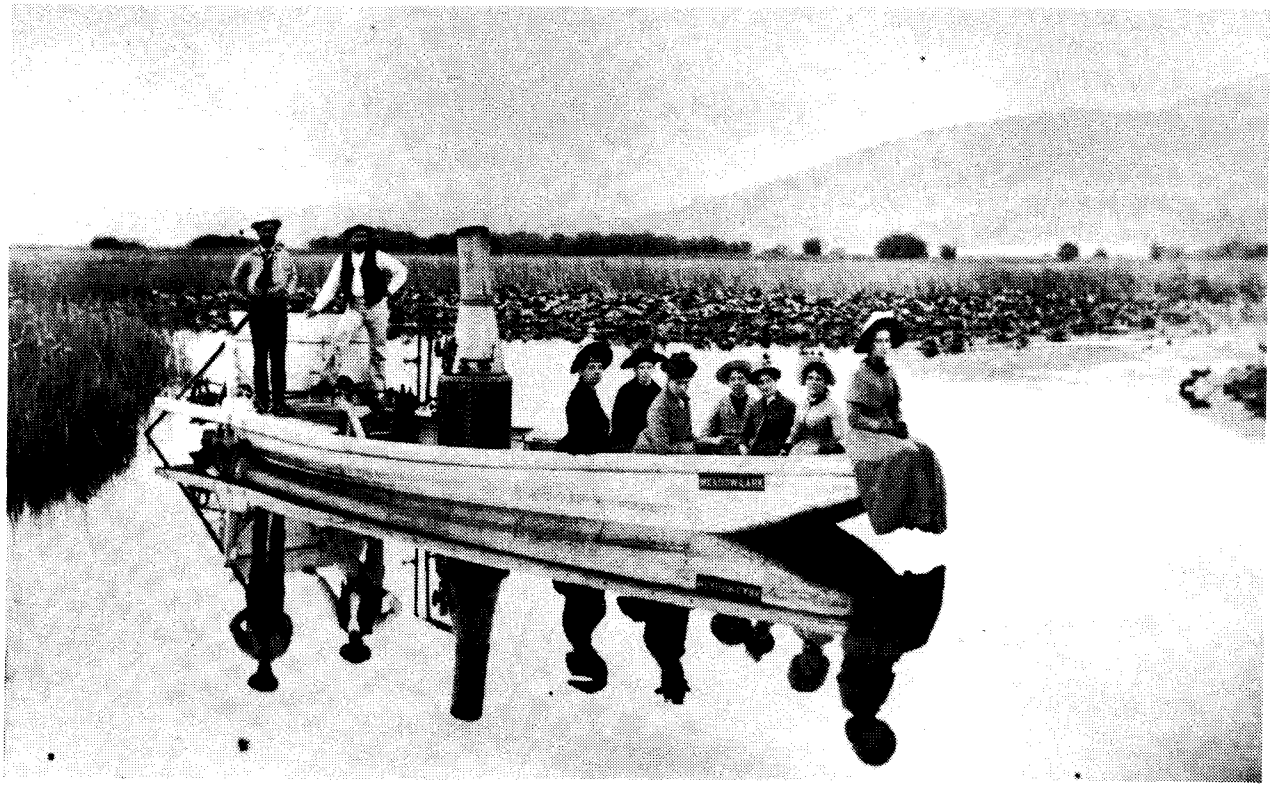


Figure 10. Photograph of the Meadowlark was taken in 1889 and shows a group of adventurer's out for a day cruise.

Due to increases in competition, steamboat operators saw their profits falling. To counter this trend, inland steamboat operators met in San Francisco and formed the California Steam Navigation Company. This company was founded with $2,500,000 dollars capital. Each steamship owner received one share of stock for each $1000.00 dollars based upon the value of their boat. Thus, inland navigation was temporarily monopolized.

Merchants of Marysville found they could not be competitive with Sacramento due to the high cost of freight. They formed the Citizens Steam Navigation Company, referred to as the Opposition Line and purchased the steamboat *Enterprise* and later the *Queen City* . The price wars started all over. The Opposition Line soon found itself having financial problems and was forced into a trade agreement with the California Steam Navigation Company, which leased control of the Opposition's ships. In 1869 the California Steam Navigation Company was purchased by the Central Pacific Railroad, placing valley transportation under the control of one company and eliminating competition. In 1908 there were eleven companies operating on the Sacramento River. By March of 1932 they had merged into River Lines Incorporated.

Not all the steamboats were large commercial vessels. Some were small pleasure craft. The *Bessie* and the *Meadowlark* were two such boats. The *Meadowlark* was built by Augustus Bidwell of Oroville.

Figure 11. This Photograph shows the Sacramento Fleet burning on the August night which forever changed the Sacramento waterfront and steamboating on the river.

On August 28, 1932 a large portion of the Sacramento fleet, while docked on the Yolo side of the river, caught fire. Flames jumped from ship to ship destroying the *Flora, Dover, Red Bluff, Colusa, San Joaquin 1, San Joaquin 2, San Jose, Valletta, Sacramento, and Jacinto*, forever changing steamboating on the Sacramento River. The last steamboats used on the river were the *Delta King* and *Delta Queen*. In 1941 the military leased both ships for transporting troops in San Francisco Bay. After the war they were returned to civilian duty. The *Delta Queen* is still in use on the Mississippi River, the *Delta King* located at the Old Sacramento Waterfront, where it is being rebuilt.

Figure 12. Aerial Photograph taken in 1922, showing the busy Sacramento waterfront.

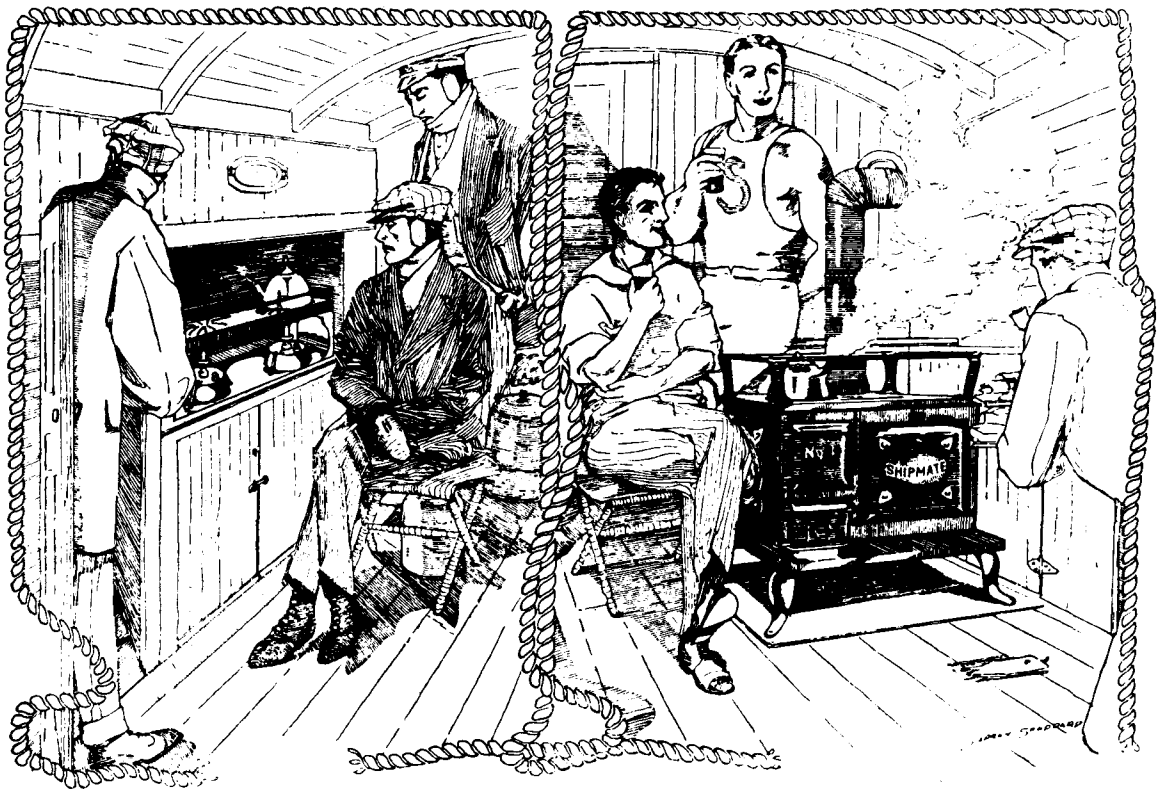


Figure 13. Life on the Riverboat.

SUNKEN VESSEL LIST

The vessels listed on the following pages sank in the project area, but we don't know whether they were salvaged, or whether their remains rest in the riverbed. The list was compiled from newspaper articles, books, maps, and other record information by State Lands Commission Boundary staff. One particularly rich source of information was the *Sacramento Daily Union* microfilm collection in the California State Library, Sacramento and the time period is from 1851 until 1880.

There is a brief description of the vessel and the wreck and sometimes a newspaper account is transcribed. Each vessel is accompanied by a map that suggests the wreck site.

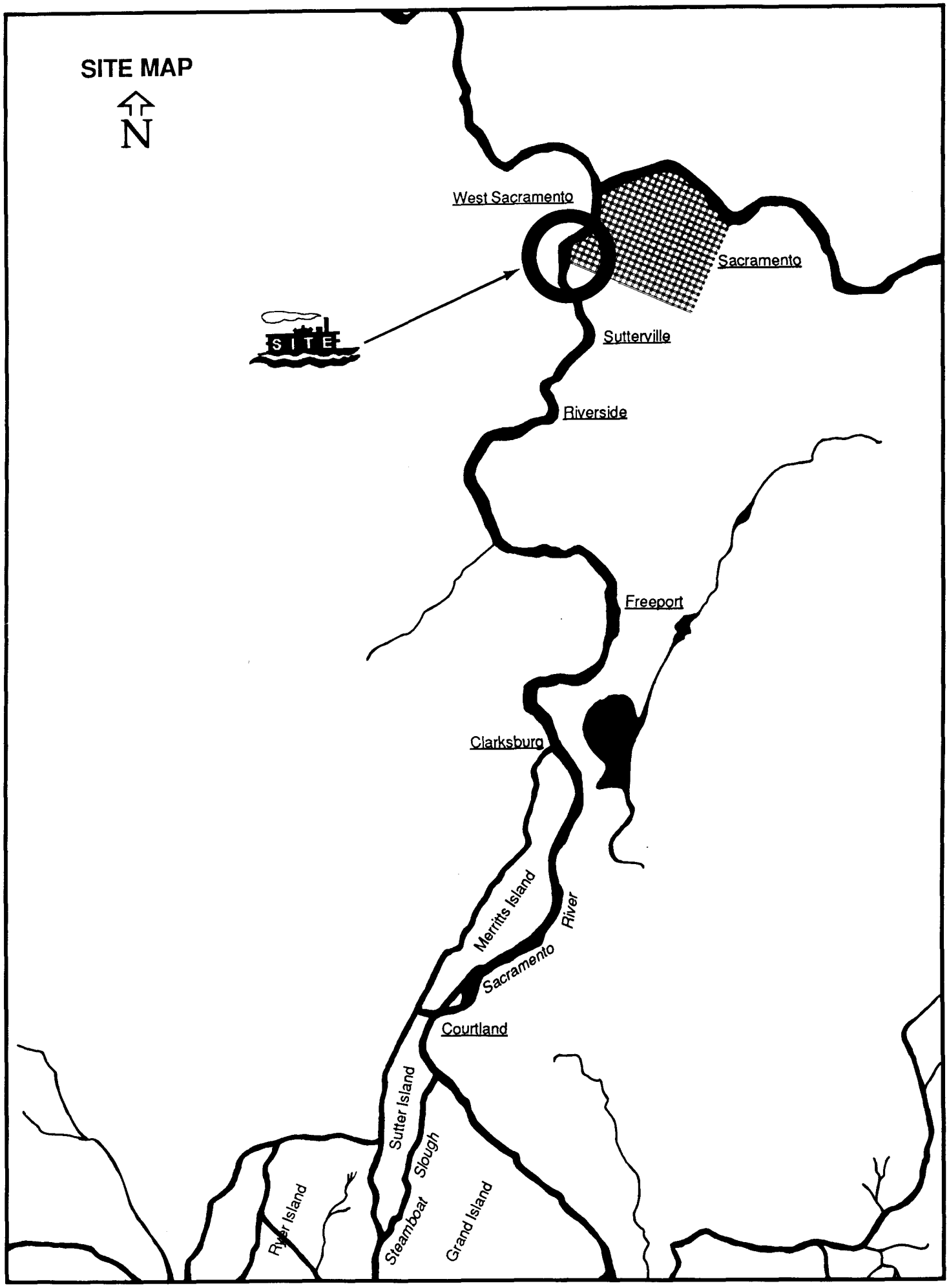
Early maps show the Sacramento River as having three forks: Easterly fork, being the present Sacramento River; Middle fork, the current Steamboat Slough; and Westerly fork, now Miner and Prospector Sloughs. Each of the three channels was researched for both submerged and upland features.

There were many boating accidents and explosions, however most ships were recovered and the cargo salvaged. Normally when a ship was sinking the captain would try to beach the craft in shallow water where the cargo and passengers could be off-loaded and the ship repaired. If successful they would continue their journey; if not barges were used to raise the vessel. If a vessel was not worth repairing, as often was the case with older boats, they were merely abandoned.

A typical scenario went as follows; a ship hits a snag starts sinking, the captain heads for shallow water, the cargo is placed on another craft or barge and the ship is repaired and afloat within days.

The steamboat had an advantage over its counterpart the sailing vessel. The steamer when in trouble, could, under its own power, head straight to shallow water. The sailing vessel on the other hand needed wind to get to shore. Thus, vessels sinking in deeper waters of the Sacramento River tend to be sailing craft.

Exhibits for illustrative purposes only.


SITE MAP
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West Sacramento
Sacramento
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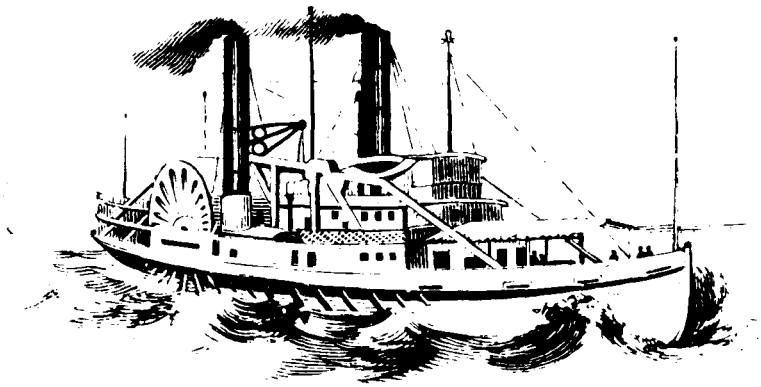
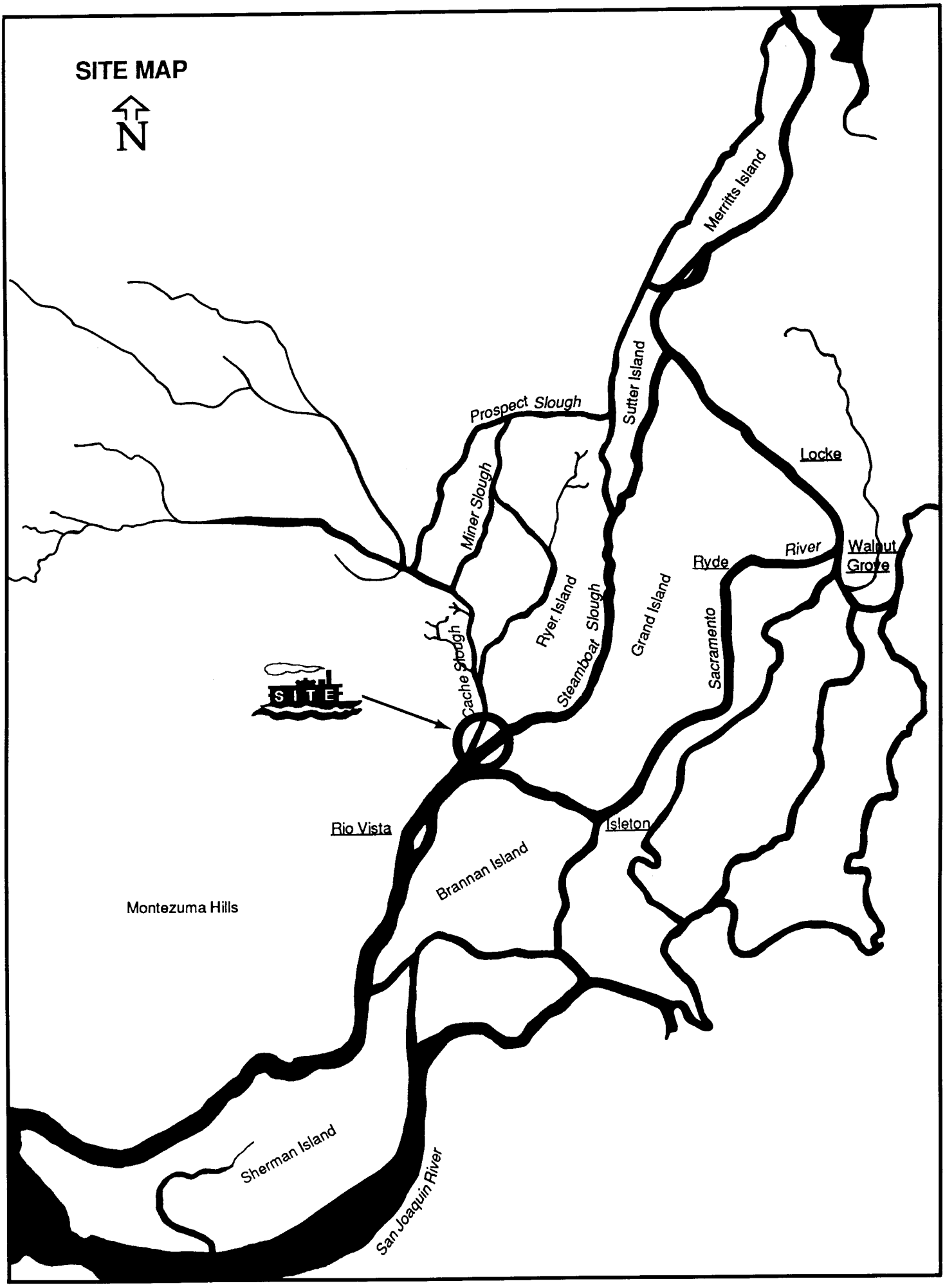
Clarksburg
Merritts Island
Sacramento River
Courtland
Sutter Island
Slough
Steamboat
Grand Island
River Island



BESSIE

"Sunk.--The little pleasure steamer *Bessie*, a craft thirty or forty feet long, which has been laid up on the Yolo side of the river for several months, lies almost entirely submerged a few yards above the bridge, and if some effort is not made to raise her soon she will be destroyed by the action of the current. The difficulty arises from the fact that she was originally tied up in shallow water, which gradually receded as the season advanced, and eventually left her sticking in the mud, from which she refused to rise when the water in the river increased in volume."

12/27/1869, Sacto. Union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Prospect Slough
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Miner Slough
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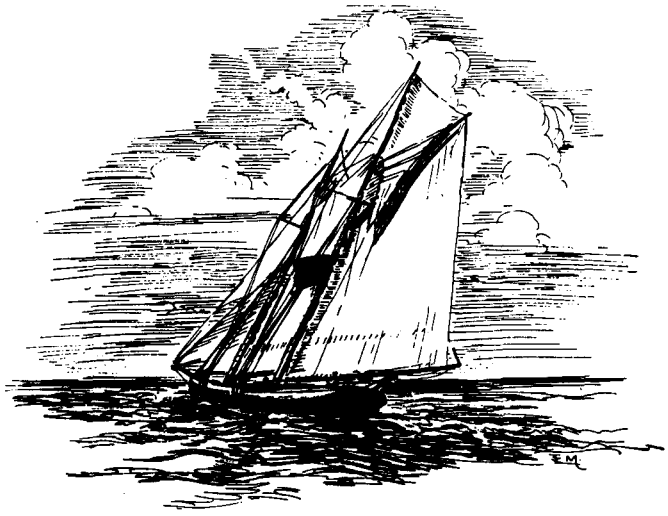
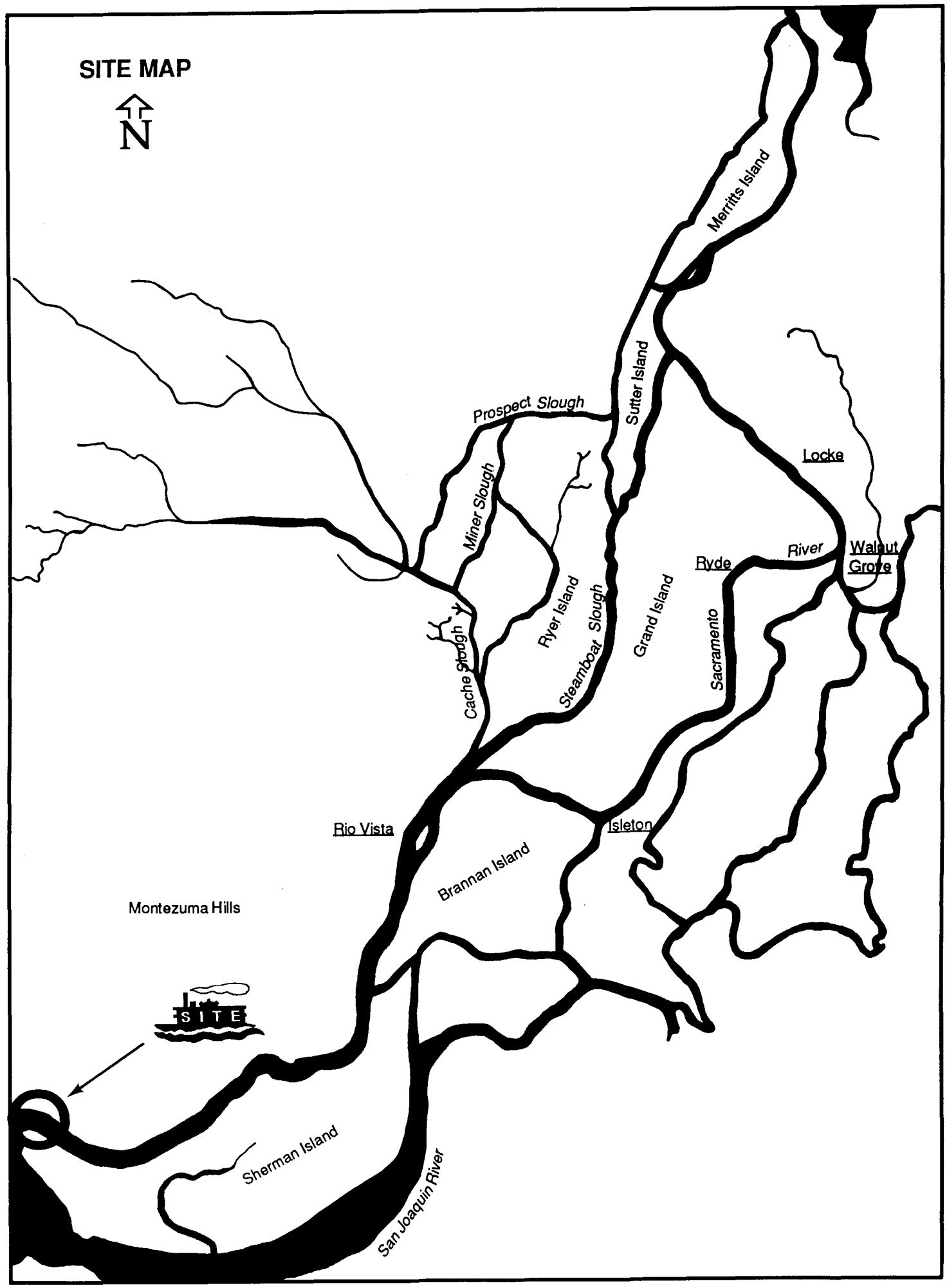
Walnut Grove
Ryer Island
Steamboat Slough
Grand Island
Sacramento
Cache Slough
SITE
Rio Vista
Isleton
Brannan Island
Montezuma Hills
Sherman Island
San Joaquin River



BIANCA

"Schooner Sunk- The schooner *Bianca*, bound for this city with an assorted cargo of from eighty to one hundred tons, sunk at the mouth of Cache Creek, on Thursday night last. There are two different rumors relative to the cause of the accident- the one that she struck a snag, and the other that she had been hauled up near the bank at night and careened on the ebb of the tide. The loss will amount to about fifty percent of the cargo, and doubtless fall heavy on some of the shippers. We understand that the cargo has been taken out and forwarded on sailing vessels."

10/30/1854, Sacto. Union.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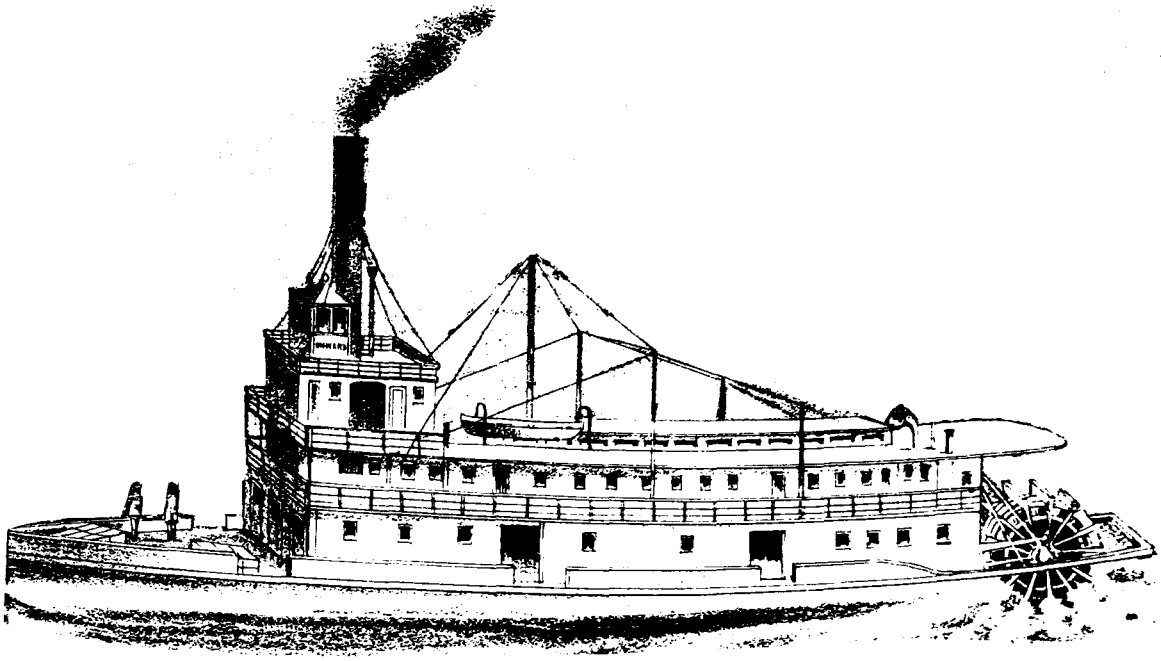
Ryde
Ryer Island
Grand Island
Steamboat Slough
Sacramento
Cache Slough
Rio Vista
Isleton
Brannan Island
Montezuma Hills
SITE
Sherman Island
San Joaquin River

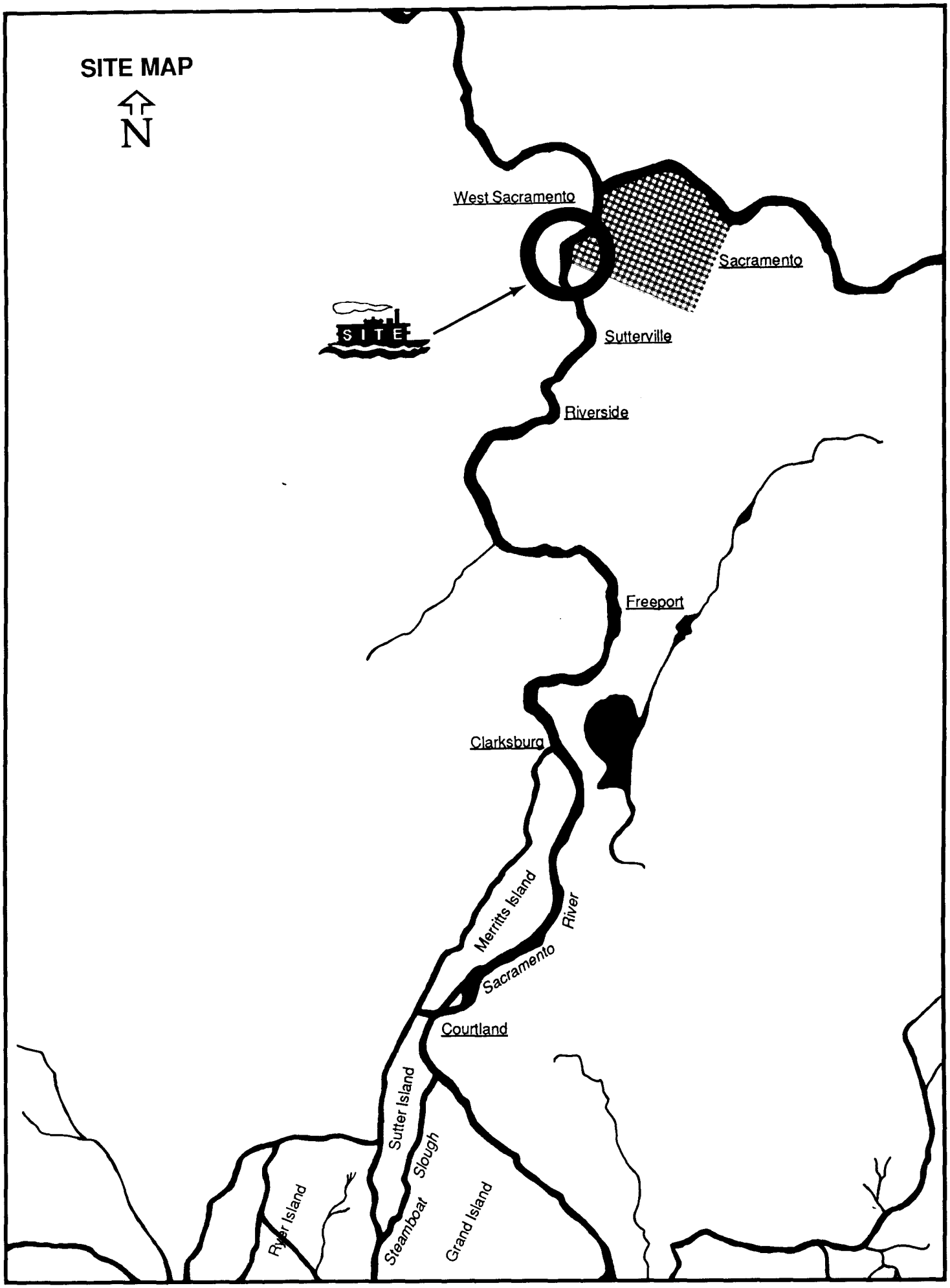


COLUSA

Formerly The *Star of the West.*

"Steam Barge Sunk- Loss of life.- While on her upward trip Monday evening, about 8 o'clock, the steamer *Capital* ran into and sunk the steam barge *Colusa*. The facts, as near as we can learn them, are as follows: When near Collinsville the pilot of the *Capital* saw the *Colusa*, bound down, and gave the usual signal with the whistle. The *Colusa* not responding, the *Capital* backed her engine and turned out of her course to avoid a collision. Just then the *Colusa* sheared off to the side taken by the *Capital* and attempted to cross her bow, but in doing so was struck near midships on the starboard side, from the effect of which she sank almost instantaneously. Of those on board, all were saved except two of the hands, who are said to have been asleep at the time of the collision. Every effort was made by those on board the *Capital* to save the entire crew, but in the case of these men unsuccessfully. The *Colusa* (formerly the wood barge *Star of the West*) was owned by McNair & Sherman, and at the time of the accident had on board a freight of grain and broom-corn. It is doubtful whether either boat or cargo were insured. At the time of the accident Sherman and another man were at the wheel, there being no regular pilot on board. The owners of the *Colusa* are very unfortunate, it being two weeks since their barge, while bound down, loaded with grain, was snagged."

10/22/1868, Sacto. Union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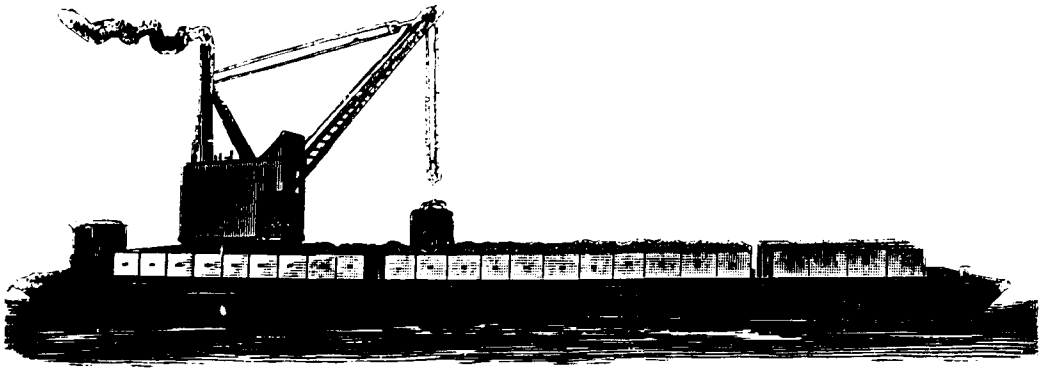
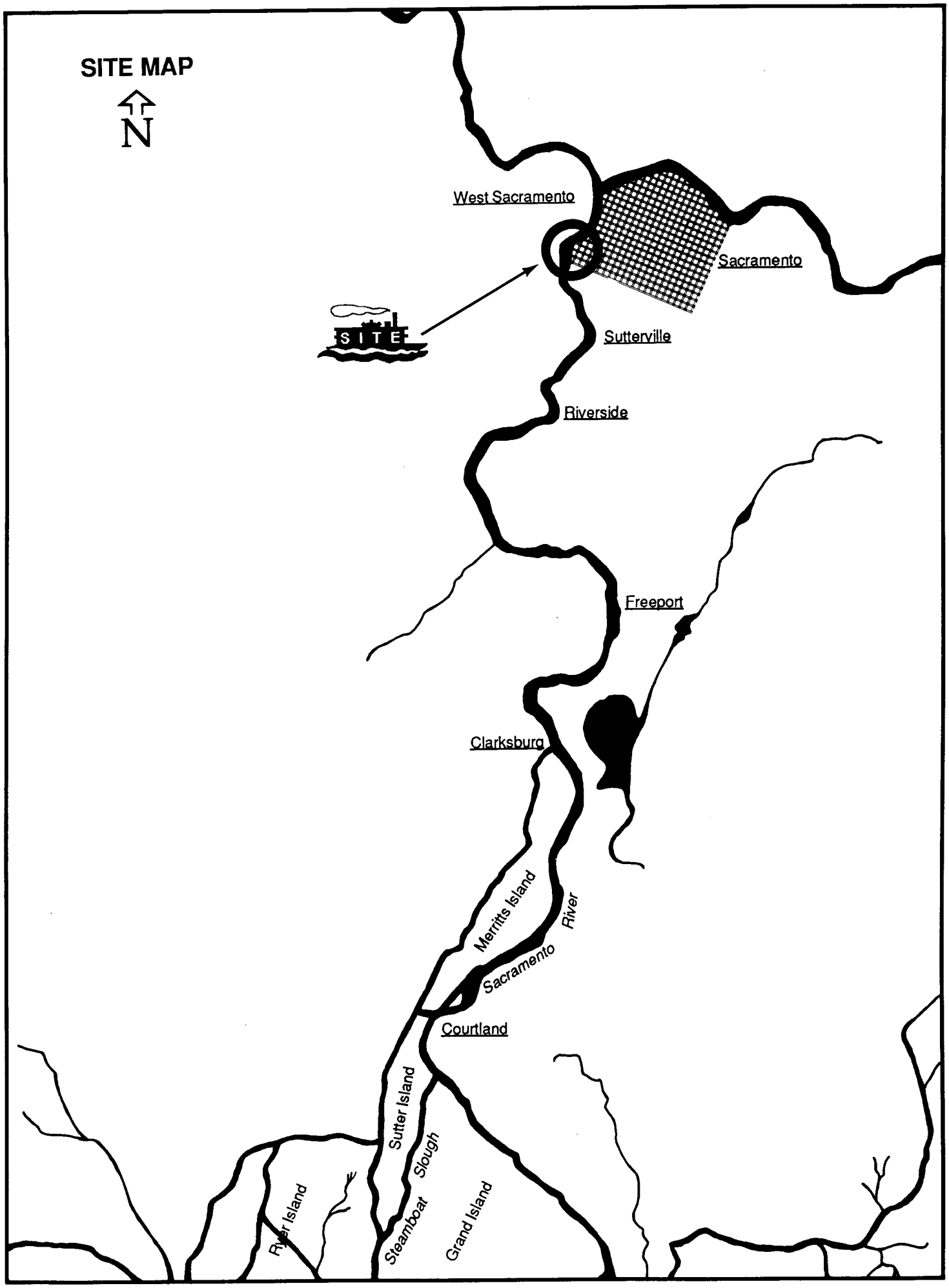


COOPER'S HULK

"Still there - The wood barge, *Pike.* which struck a snag on Tuesday evening and sunk just below the bridge, remains in the position in which she first went down. Her cargo of wood was taken off, but being filled with water, she, of course, will not float without assistance. Last evening a survey of the river at that point presented the wreck of the old prision brig, the wreck of the Cooper's Hulk, both sunken but partially visible; the barge *Pike,* in five feet of water but partially visible and another barge loaded with wood, aground on a bar a few rods below the Pike. All of these craft were so located as to aid materially inforcing the channel to the Yolo side of the river, and in forming sand bars on the Sacramento side. The question of removing the old prison brig, especially, should claim the attention of the City Trustees".

7/1/1984, Sacto Union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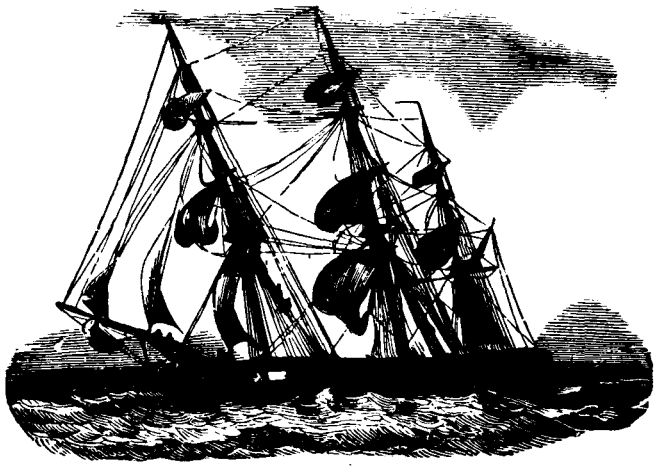
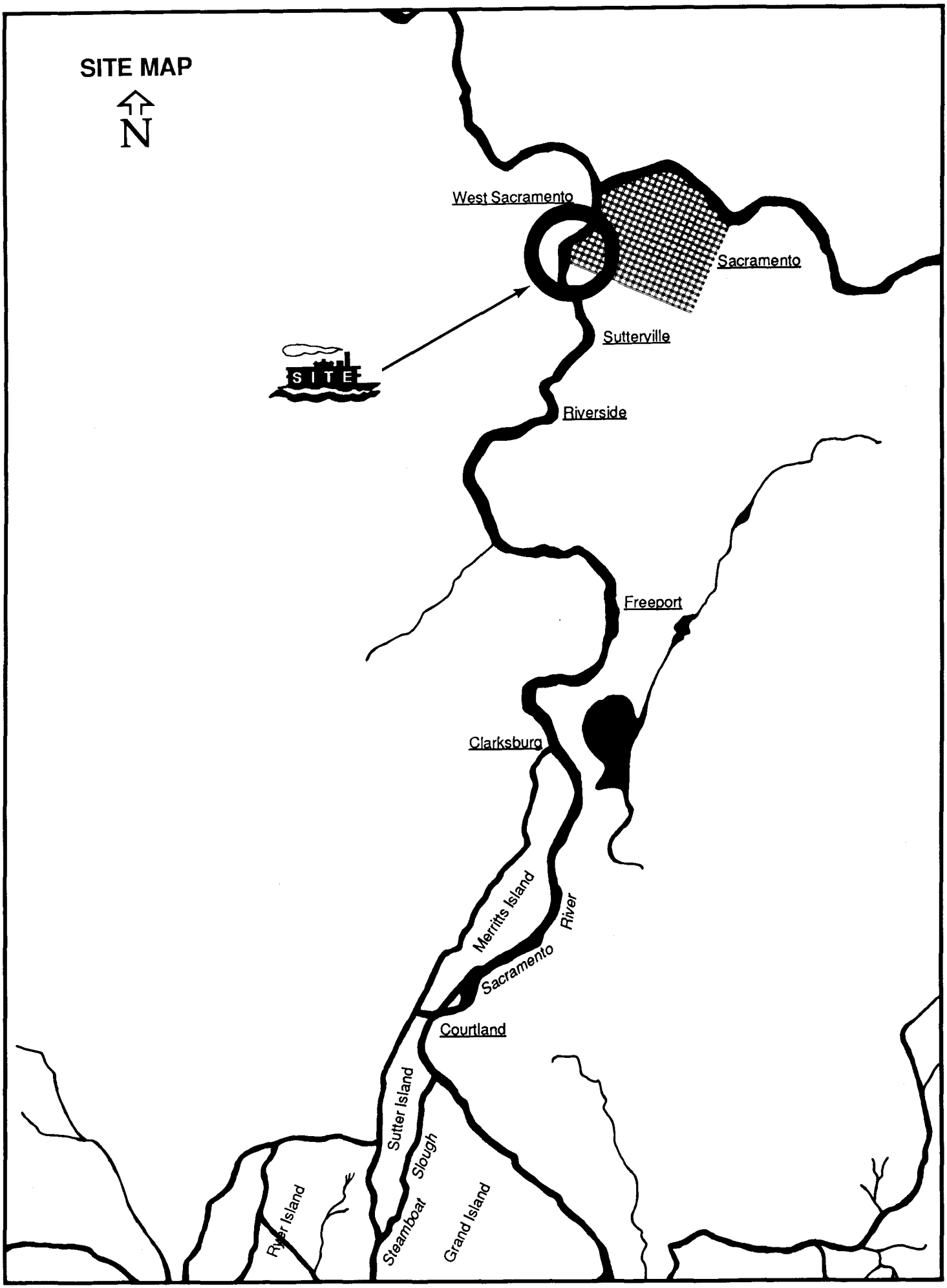
Grand Island
River Island



CRESCENT
Ship; stripped of salvageable material and abandoned at the foot of Y Street 21Mar.1873.

"To be stranded.- The owners of the hulk of the old ship *Crescent*, having taken from her as much of her timber as possible while she floats, have removed what remains of her to the foot of Y Street, there to remain to be left high and dry as the river falls during the summer months."

3/21/1873, Sacto. Union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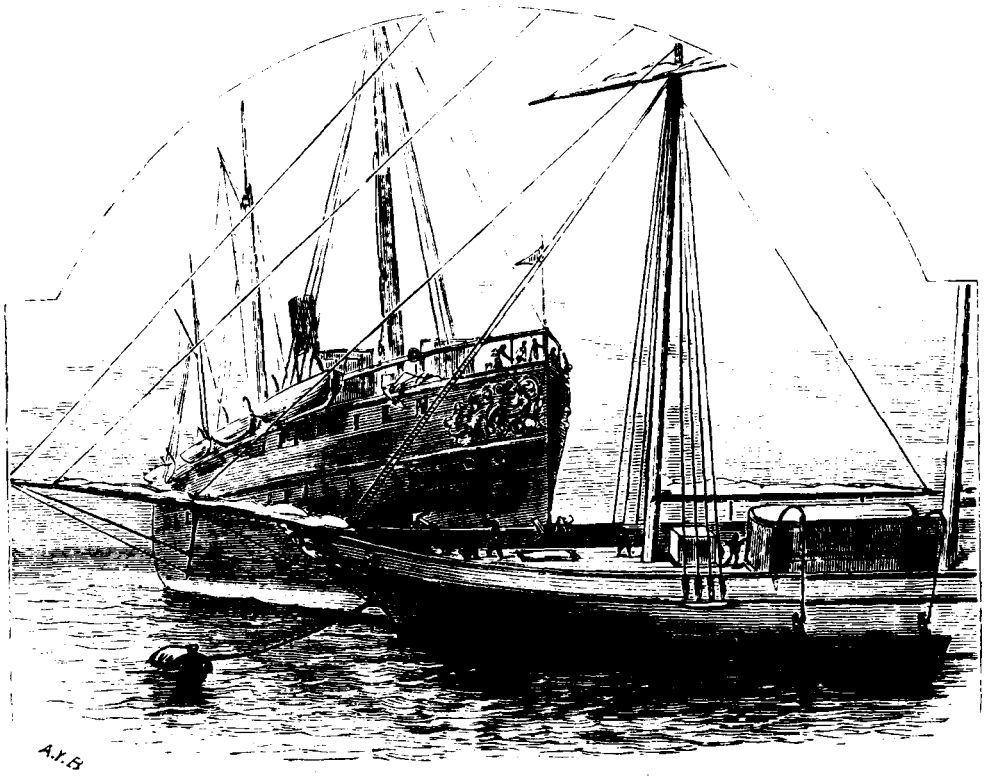
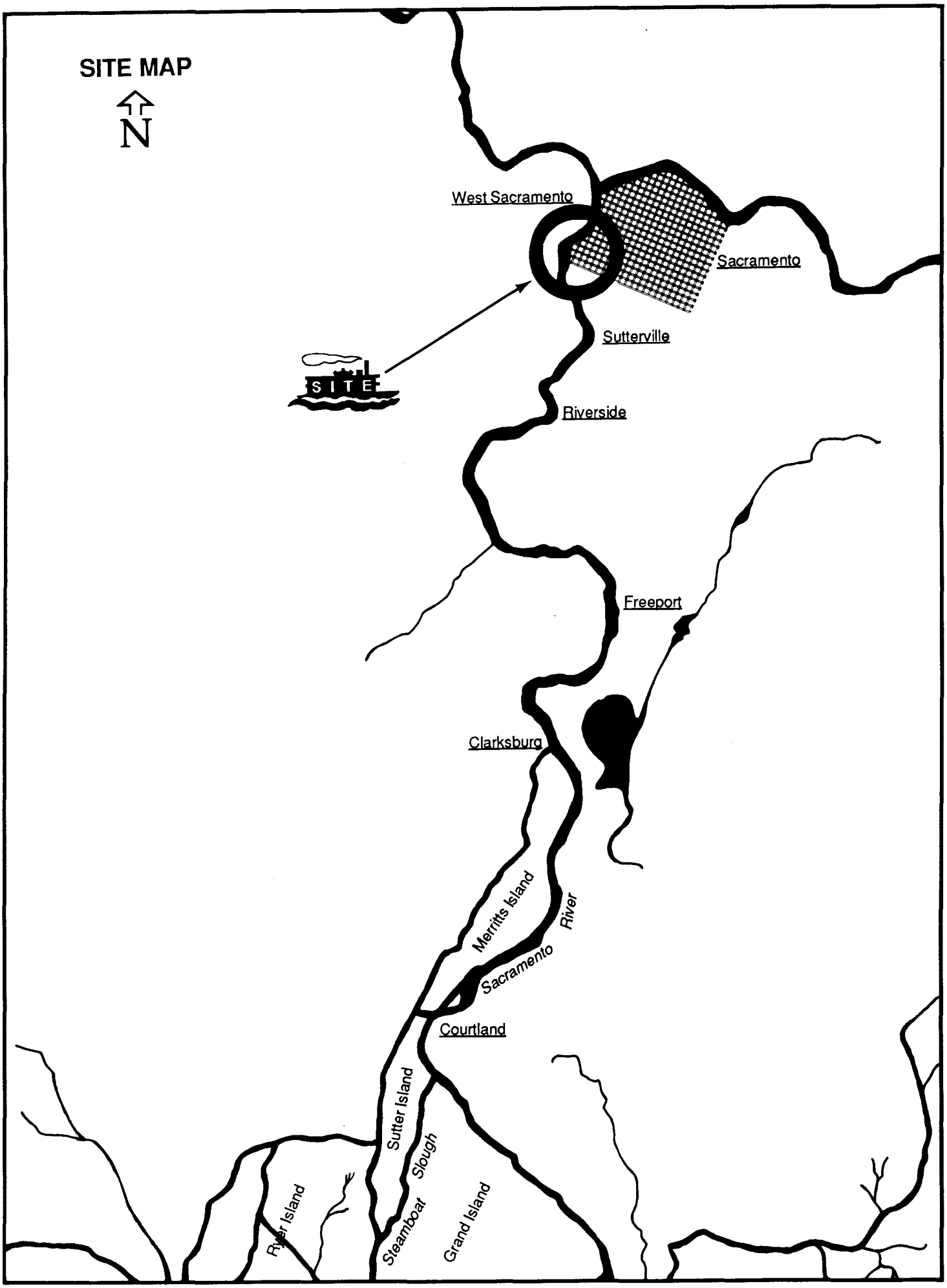


DIMON

"Sunk - The old hulk *Dimon*, which for a long time has been lying at the foot of R street, began to sink gradually a few days ago, and Tuesday night went to the bottom. She now lies submerged to the main deck. The *Dimon* was sold to a junk dealer, not long since, who intended to tear her to pieces for the purpose of saving the wood, iron and copper composing her hull. As it is now, we doubt whether she will have anything done to her until the water shall have reached much lower figures than at present. She should not be allowed to remain any longer than is really necessary in her present position, as a sandbar of large dimensions would speedily form around her. Boys of all ages and sizes were yesterday using her deck as a place from which to dive while in swimming, and declared it a great convenience."

7/30/1868, Sacto. Union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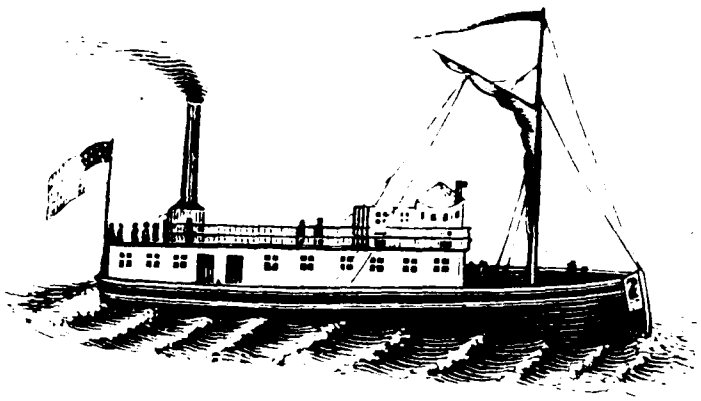
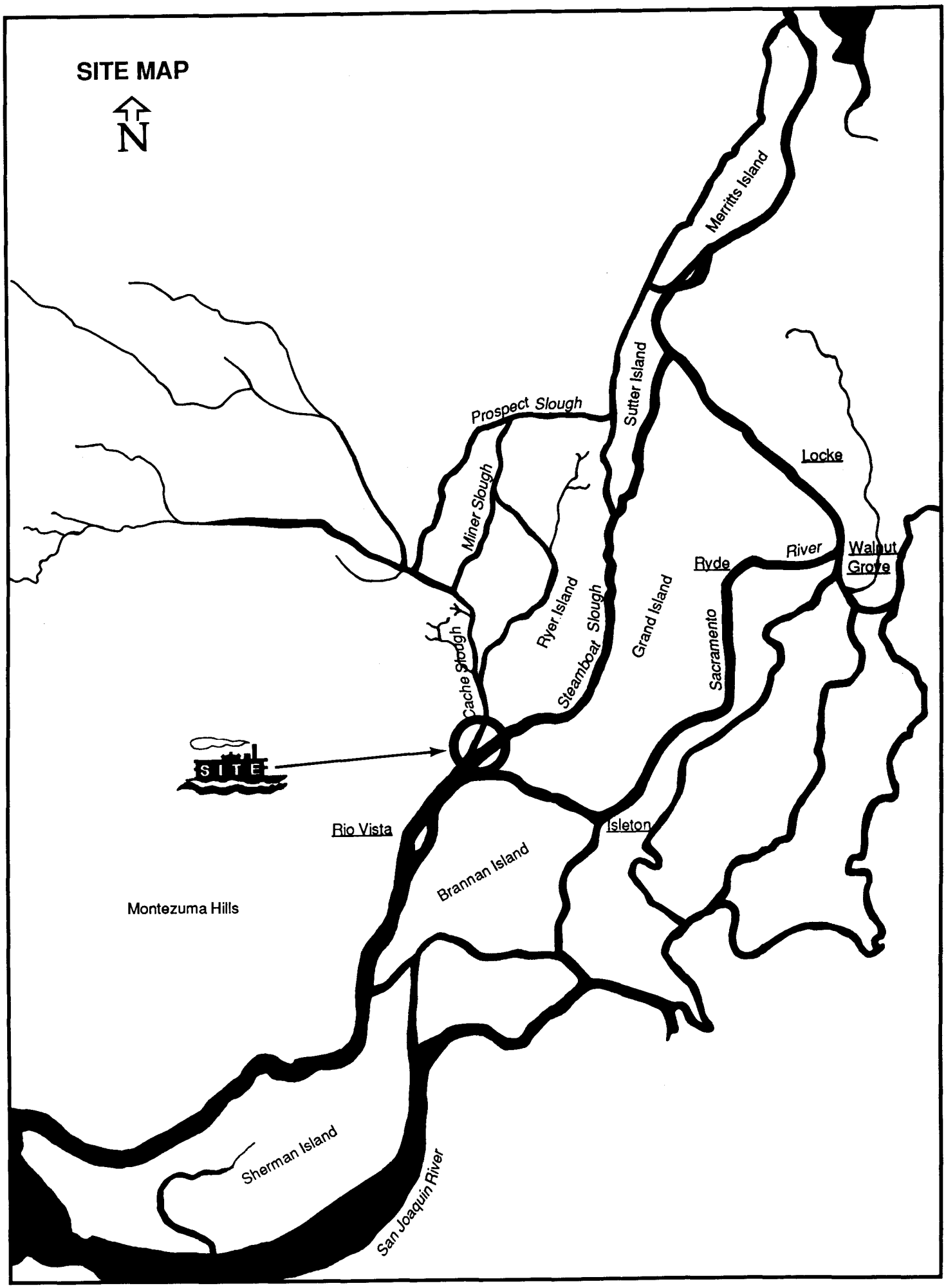


ELIZA

"Wood Barge Sunk. - The wood barge *Eliza*, freighted with one hundred and fifty cords of wood, sunk on Thursday, on the Yolo side of the river, in front of Washington. In coming through the bridge the *Eliza* fell into the western channel of the river, and becoming unmanageable by the few men who were on her, floated in among the steamers moored at the bank. Striking the *Governor Dana*, she injured the steamer slightly and herself to such an extent as to stave in her side. She soon filled with water and sunk, disappearing partially but not entirely from view. A portion of her cargo floated off. The *Eliza* was owned by Mexican wood dealers. Workmen were engaged yesterday in raising her, with a fair prospect of success."

12/3/1864, Sacto. Union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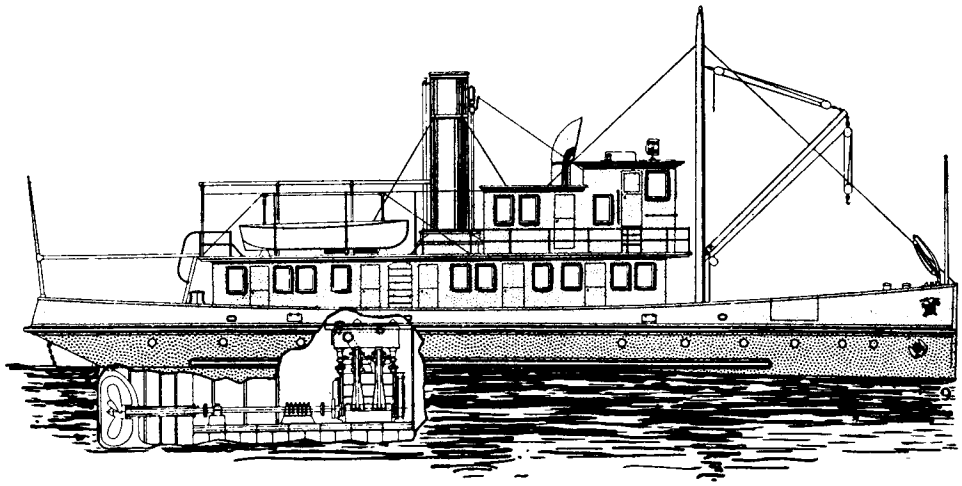
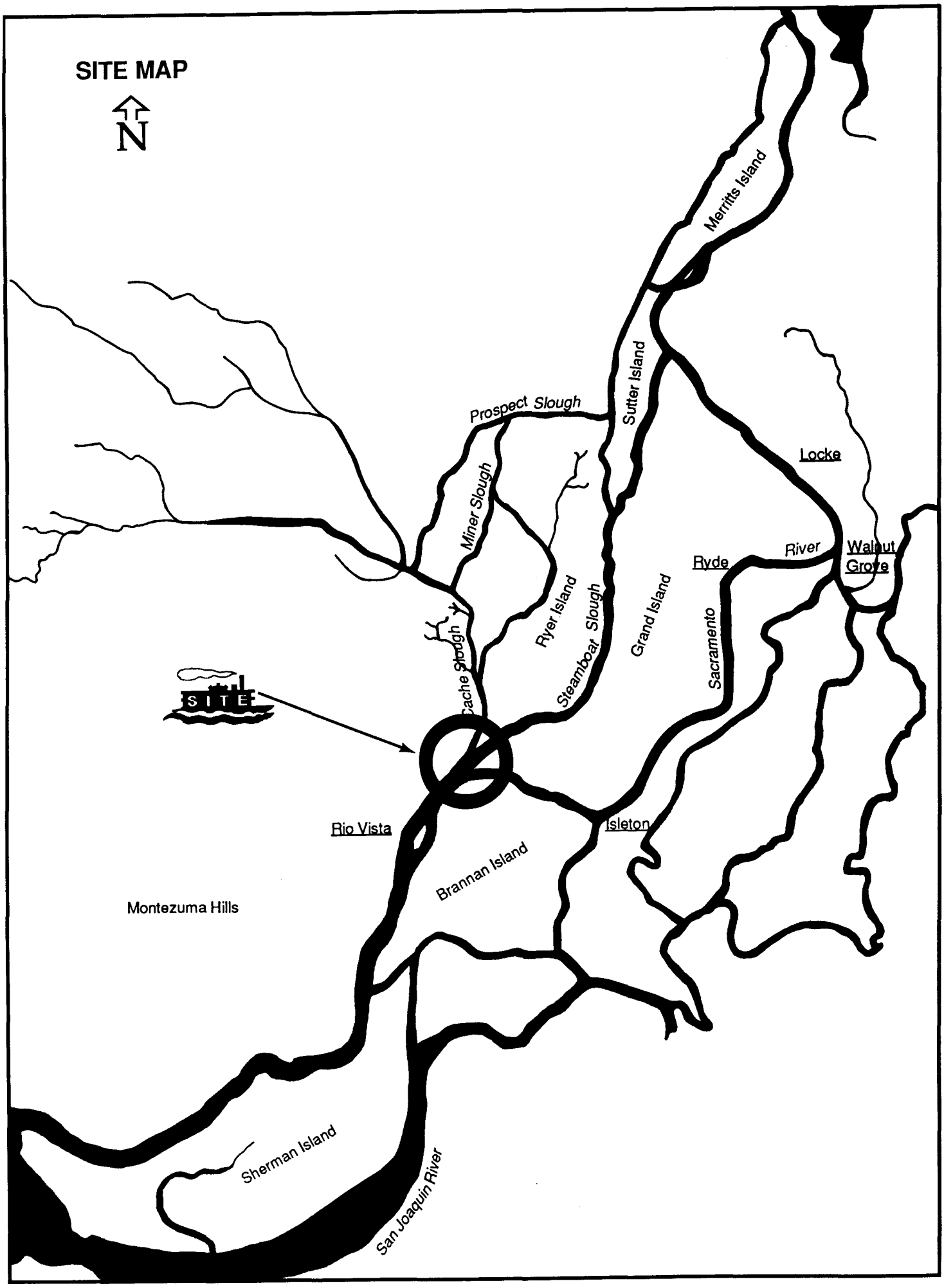


FANNY ANN

"The *Fanny Ann.*- The large barge *Tule Hawk* will leave the city today in tow of the steamer *Pioneer*, destined for Cache Creek, there to be used in raising the sunken propeller *Fanny Ann.*. The owners of the latter vessel have been energetic in the matter of removing her cargo of grain, which is now probably soon to be afloat again."

11/9/1868, Sacto. Union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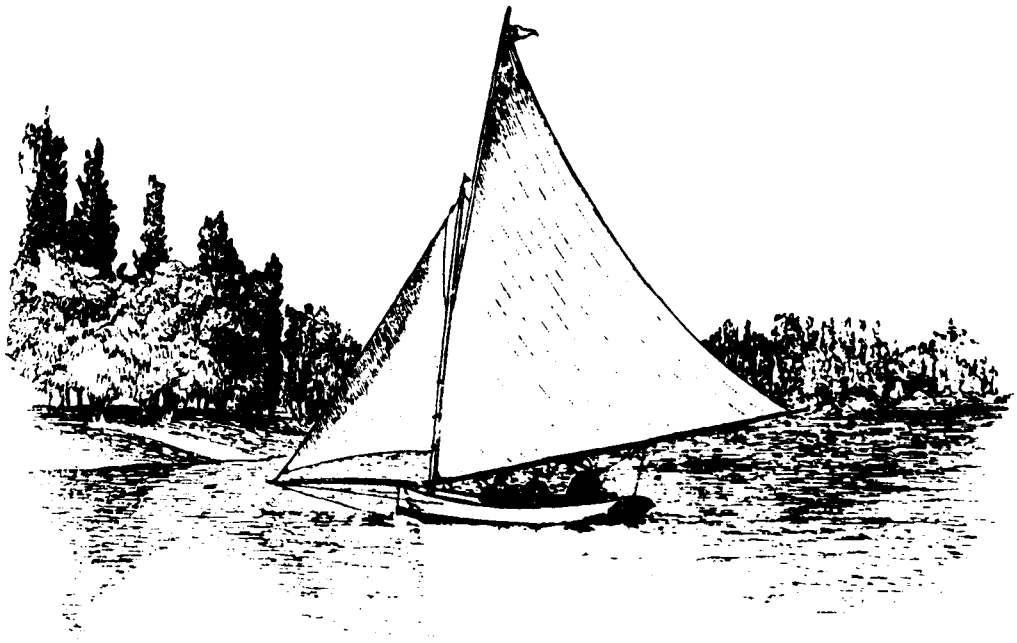
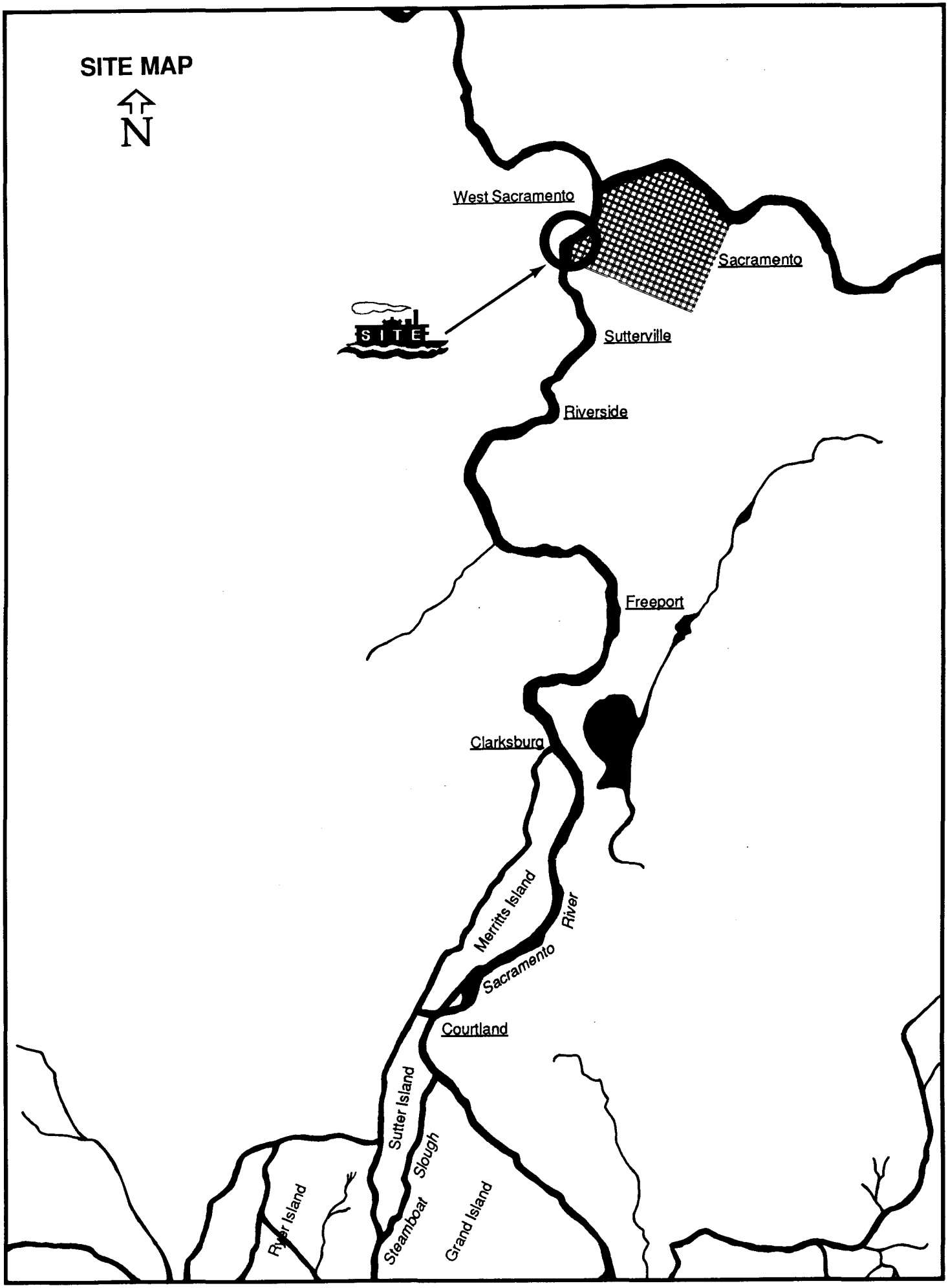


F.W. CRAWFORD

"Marine Disaster - The sloop *F. W. Crawford,* hence this port for San Francisco, with thirty-six thousand brick, was snagged on Saturday last below the head reach of Steamboat slough."

7/30/1868, Sacto. Union

"This vessel, which was snagged on Saturday last, was owned by Captain Peye, who was in command at the time of the accident. His loss is estimated at about three thousand dollars, and the loss of brick and other cargo is placed at between three and four hundred dollars. The schooner lies in deep water, and in the center of the channel - about sixteen feet of water standing over her decks. The shippers lose the brick."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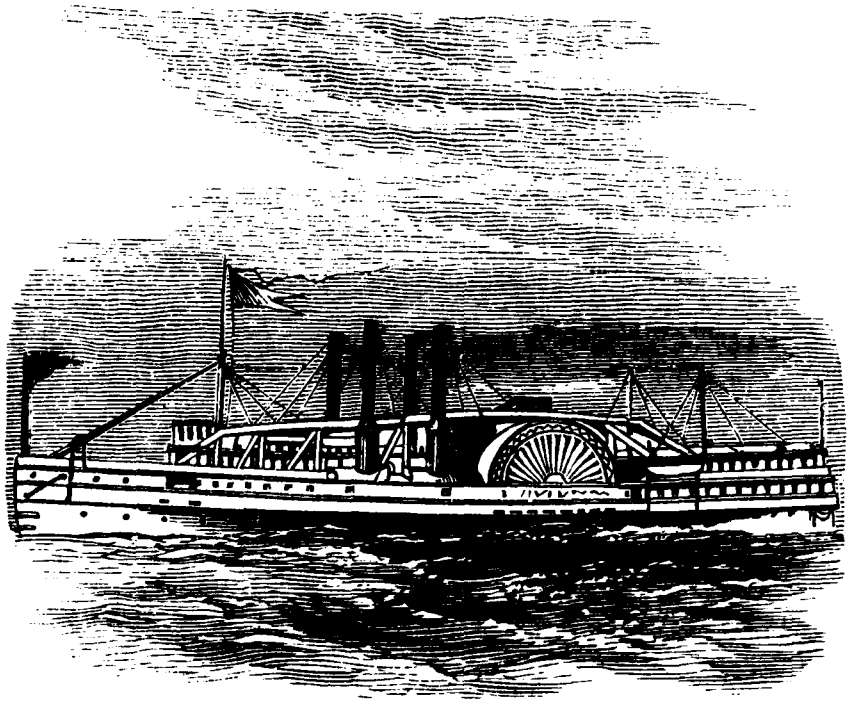


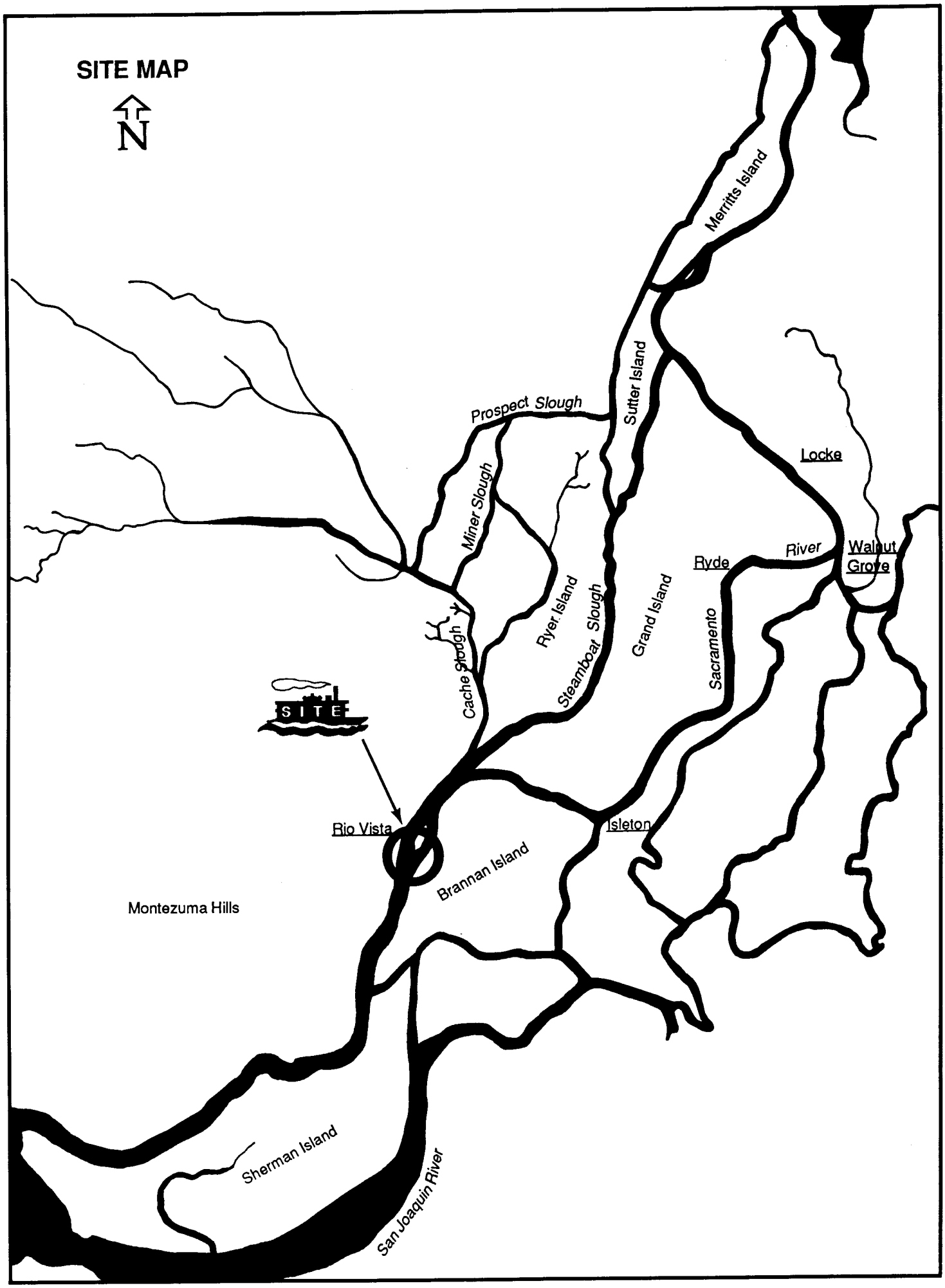
GENERAL REDDINGTON

"Last night, about five minutes before ten o'clock, the steamer *Gen'l Reddington*, belonging to Jos. Arcego, and which is engaged in towing barges and lighters up and down the river, while passing the draw of the Sacramento bridge, having a barge laden with wood in tow, was swung around by the force of the current, and struck the center pier of the bridge, injuring her to such an extent that she began filling, and sunk a short distance below the bridge. There were several persons on board the steamer at the time of the accident, none of whom were injured."

11/8/1859, Sacto. Union

"Sunken Steamer.- Active operations were commenced yesterday towards raising the steamer *General Reddington*, which sunk on Monday night, opposite Carpenter's Building, having been injured by collision with a pier of the Sacramento bridge. The steamer has been encircled with chains, and spars have been erected and rigged for the purpose of raising her, under the direction of J. A. Crocker, who has undertaken the job. Probably the steamer will be afloat, right side up, to-day."

11/9/1859, Sacto. Union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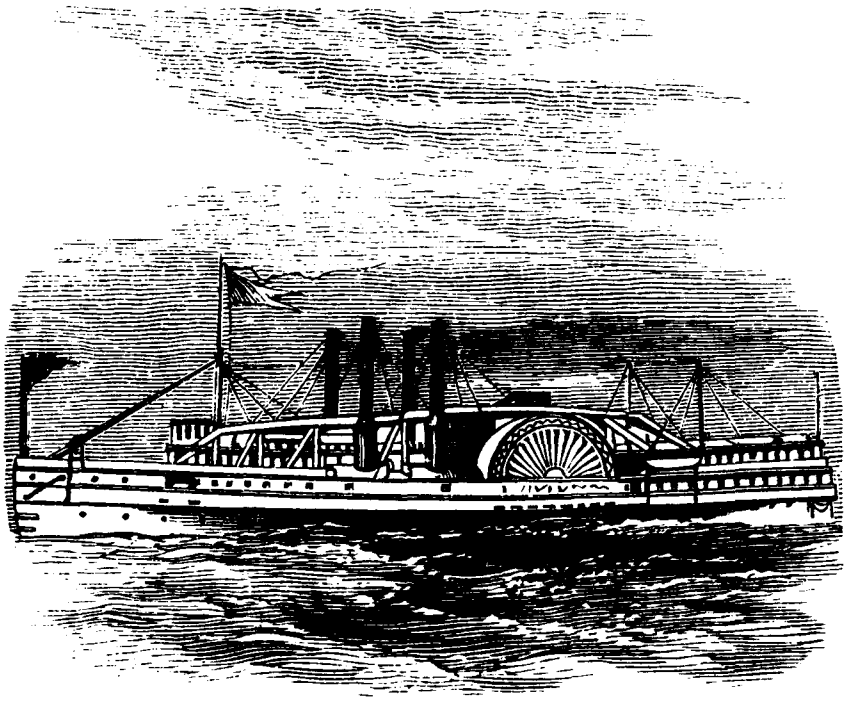


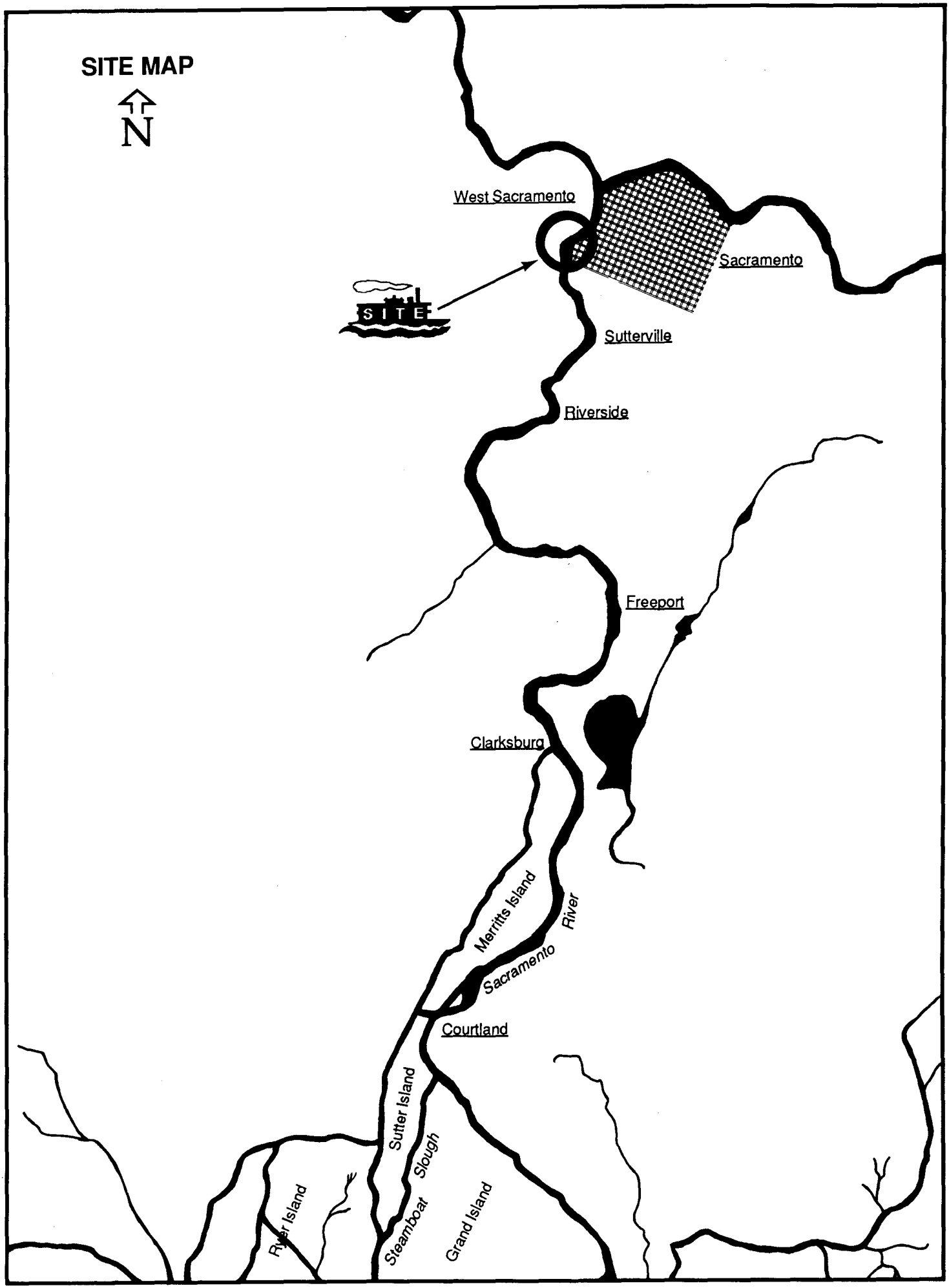
HELEN HENSLEY
Steamship; towed to the back of Wood Island and abandoned. Boilers, engines, and everything else of value was removed. 12 Mar.1873.

"The *Helen Hensley*.- The steamer *Gem* with a barge and force of men, will leave for the lower Sacramento to remove from the old steamer *Helen Hensley*, now lying back of Wood Island, her broilers, engines, doors, windows and everything valuable. The old craft sprung a leak several months ago, and, as she was not deemed worth repairing, was hauled to a flat and allowed to remain there full of water." *3/12/1873, Sacto. Union*

"The *Hensley*.- The steamer *Gem*, towing a barge, left yesterday for the lower Sacramento to remove from the old steamer *Helen Hensley*, lying back of Wood Island, the boilers and engines." *3/13/1873, Sacto. Union*

"The *Hensley's* Machinery.- The steamer *Gem* arrived night before last from the wreck of the steamer *Helen Hensley*, lying at Wood Island, bringing up the boilers, engines and everything else belonging to that venerable craft."
3/17/1873, Sacto. Union

"The *Hensley's* Machinery.- The four boilers recently taken from the steamer *Helen Hensley*, which has been wrecked, will be stored on the Yolo side of the river in the steamer yard. They were built in 1860, and were the second set the steamer had. Her machinery is to be sent to the railroad shops and broken up for old iron. It was built in St. Louis twenty years ago and sent out "around the Horn".
3/19/1873, Sacto. Union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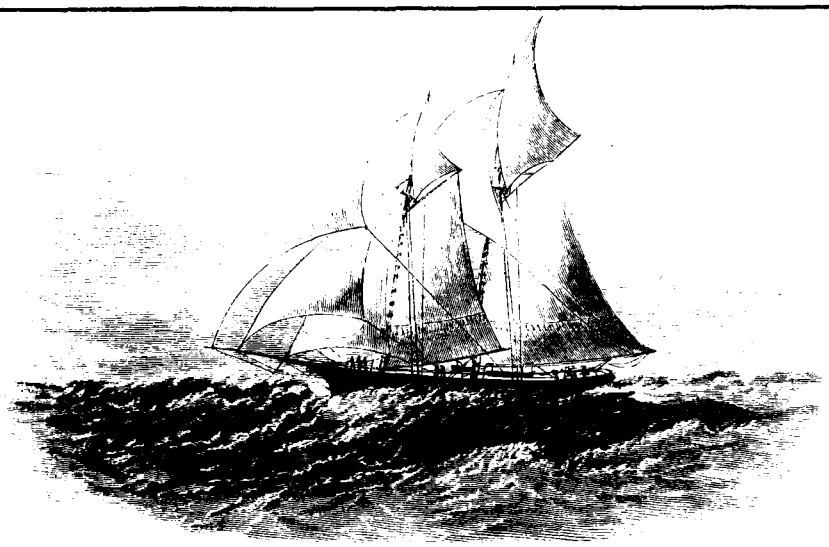


KATE BLACKSTONE (BLAKISTON)
Schooner; capsized at the foot of Y Street, Sacramento, within 100 feet of the east bank. 15 June 1865.

"Schooner Sunk.- Two Men Drowned.- At about four o'clock yesterday afternoon the schooner *Kate Blackstone*, from San Francisco when in sight of the levee with a cargo of general merchandise, capsized and sunk. Of the three men on board at the time of the accident, two were drowned and one was saved. The schooner was coming up to the city under a strong wind and a full sail. When opposite Y Street she was observed to keel over until the masts touched the water. She then righted, but the reaction carried her over on the other side, when she sunk with her masts down stream. A number of boats at once put out from the levee to her relief, but on account of the wind and rough water some time elapsed before they reached her. Three men were seen afloat, but before assistance reached them two of the number sunk and were drowned. Captain Ernst Gerken, master of the schooner clung to some portion of the cargo and drifted a half mile down stream, when he was overtaken and rescued. When he arrived at the house of Mr. Smith, on Front Street, he was so far chilled and exhausted as to be unable to speak. The two men who were drowned were known by the name of Harry, a native of Denmark, aged 22, and Fred, a native of Hamburg, aged 16 years. The Captain states as the vessel was sinking the two men could not swim and clung to him until all three were near drowning. The schooner lies within a hundred feet of the east bank of the river. She can probably be raised."

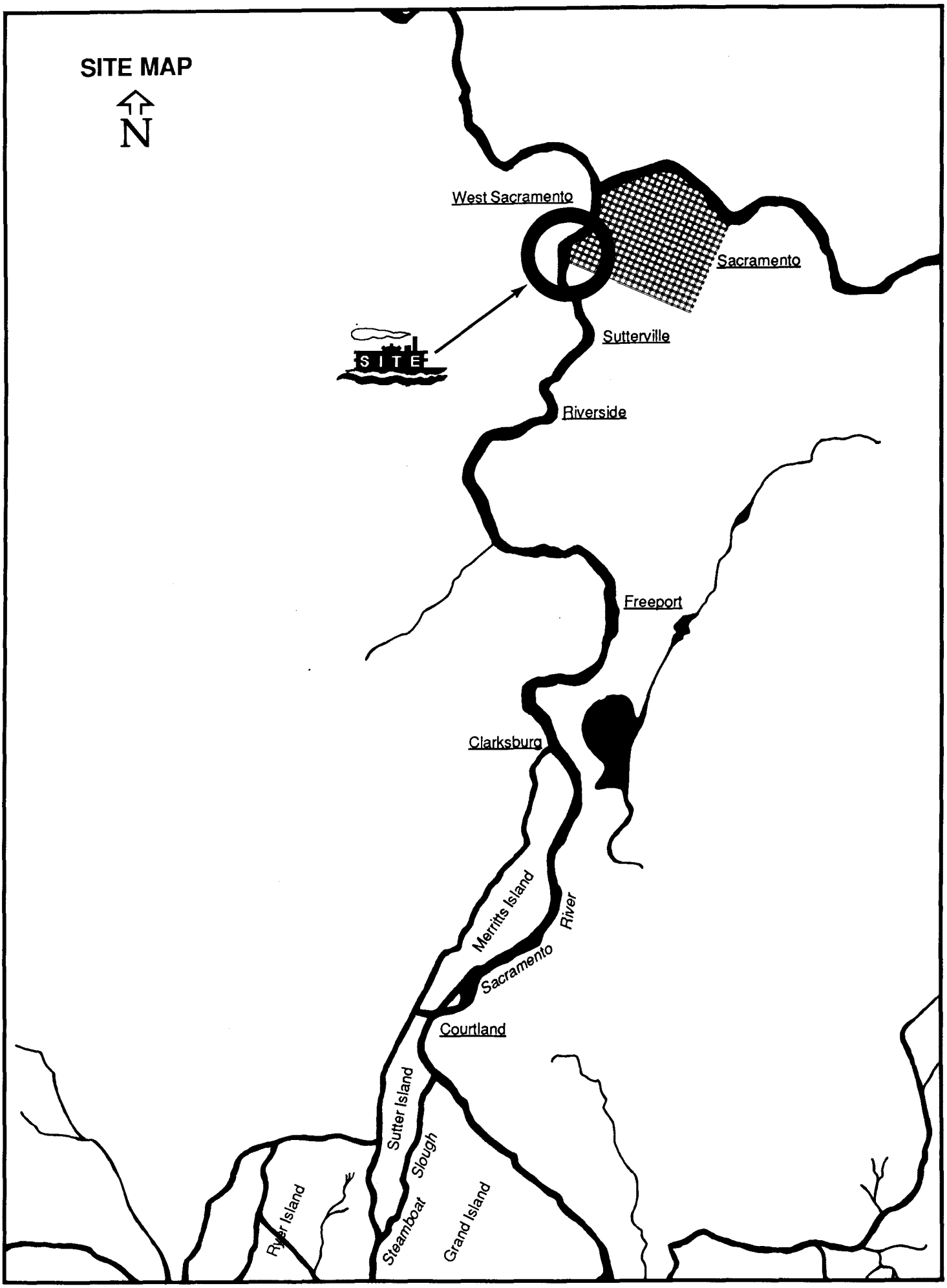
6/16/1865, Sacto. Union

"Cessation.- The schooner *Harriet K.* and sloop *America* ceased, yesterday, from their labors in trying to raise the schooner *Kate Blakiston*, not because they thought the job impracticable but for the reason that under the circumstances, it would not pay. The *Harriet K.* and the *America* are now loaded with freight for San Francisco. Captain Gerken, yesterday afternoon, took the steamer for the Bay in order to make arrangements to float his craft as soon as possible. Two-thirds interest in the *Kate Blakiston* are in the hands of the San Francisco Public Administrator, and we understand that he is not disposed to go to any great expense in order to set her afloat."

6/20/1865, Sacto. Union

"Saved.- A steam engine designed for hoisting purposes, owned by Becker & Hamilton, was raised yesterday from the lumber schooner *Kate Blakiston.*"

6/22/1865, Sacto. Union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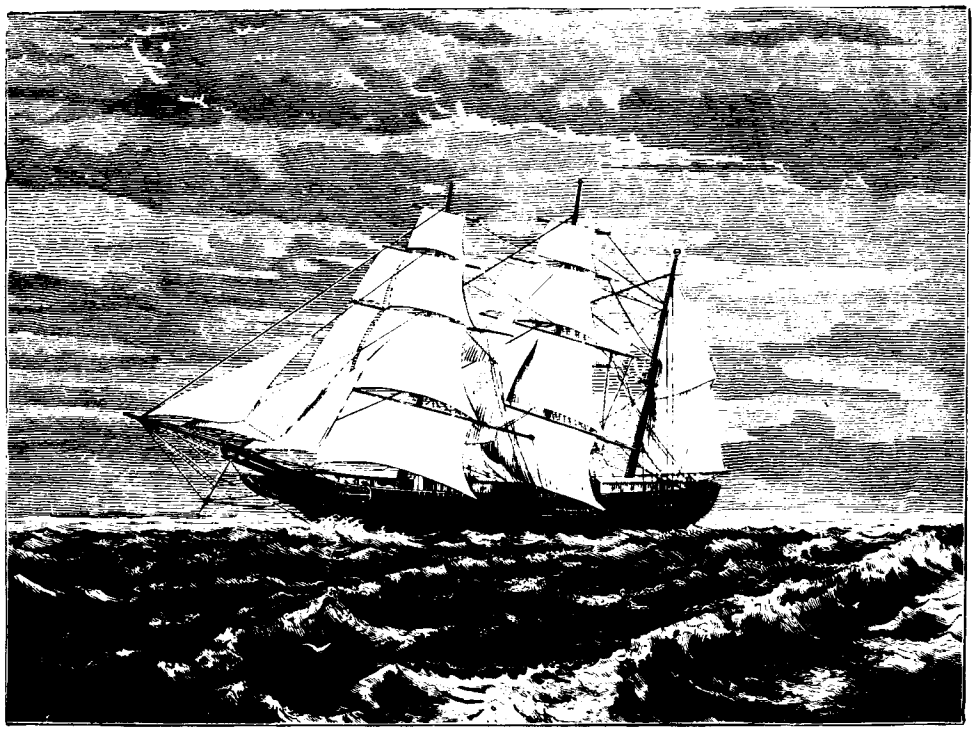
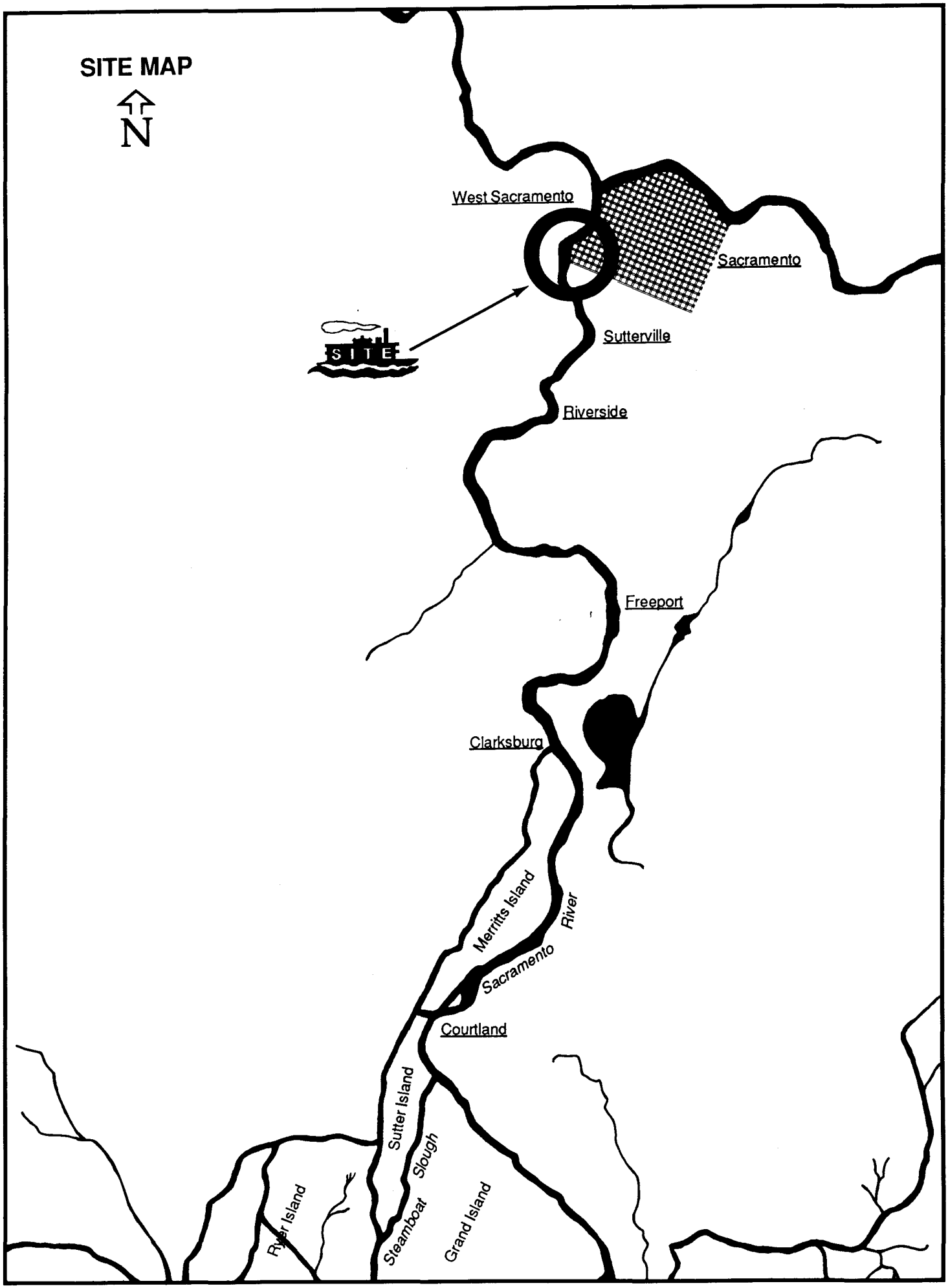


LA GRANGE

"Prison Brig--Sold Again--The bark *La Grange*--the old "Prison Brig"--recently purchased from the county by Talbot and Harris for $205, was sold by them yesterday to Yong Chee & Co. for $325, proving that they made a very profitable investment. Possession was given about noon yesterday, Constable Harris in person placing the fortunate possessors on board. In a few minutes thereafter, the news being abroad, the Chinese swarmed in the vicinity like bees. It is the intention of Yong Chee & Co. to strip off her copper and break her up. They intend to have a team constantly at the levee to transport the timber to Chinadom as fast as taken out. An attack will be made on the hulk without unnecessary delay."

12/24/1859, Sacto Union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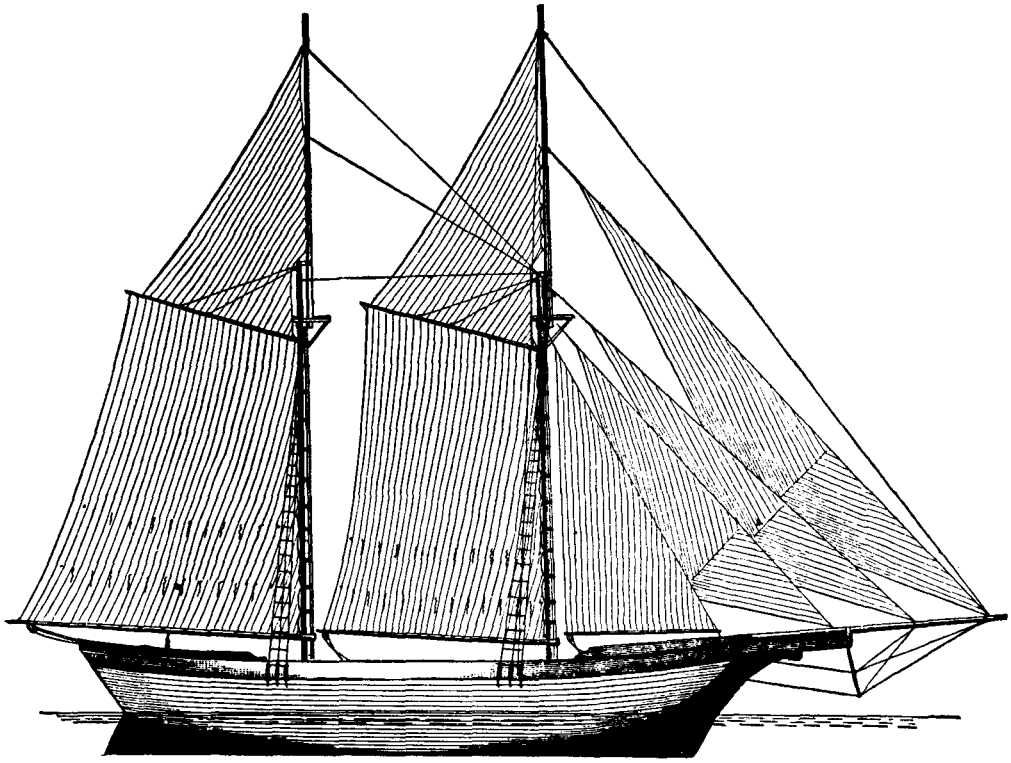
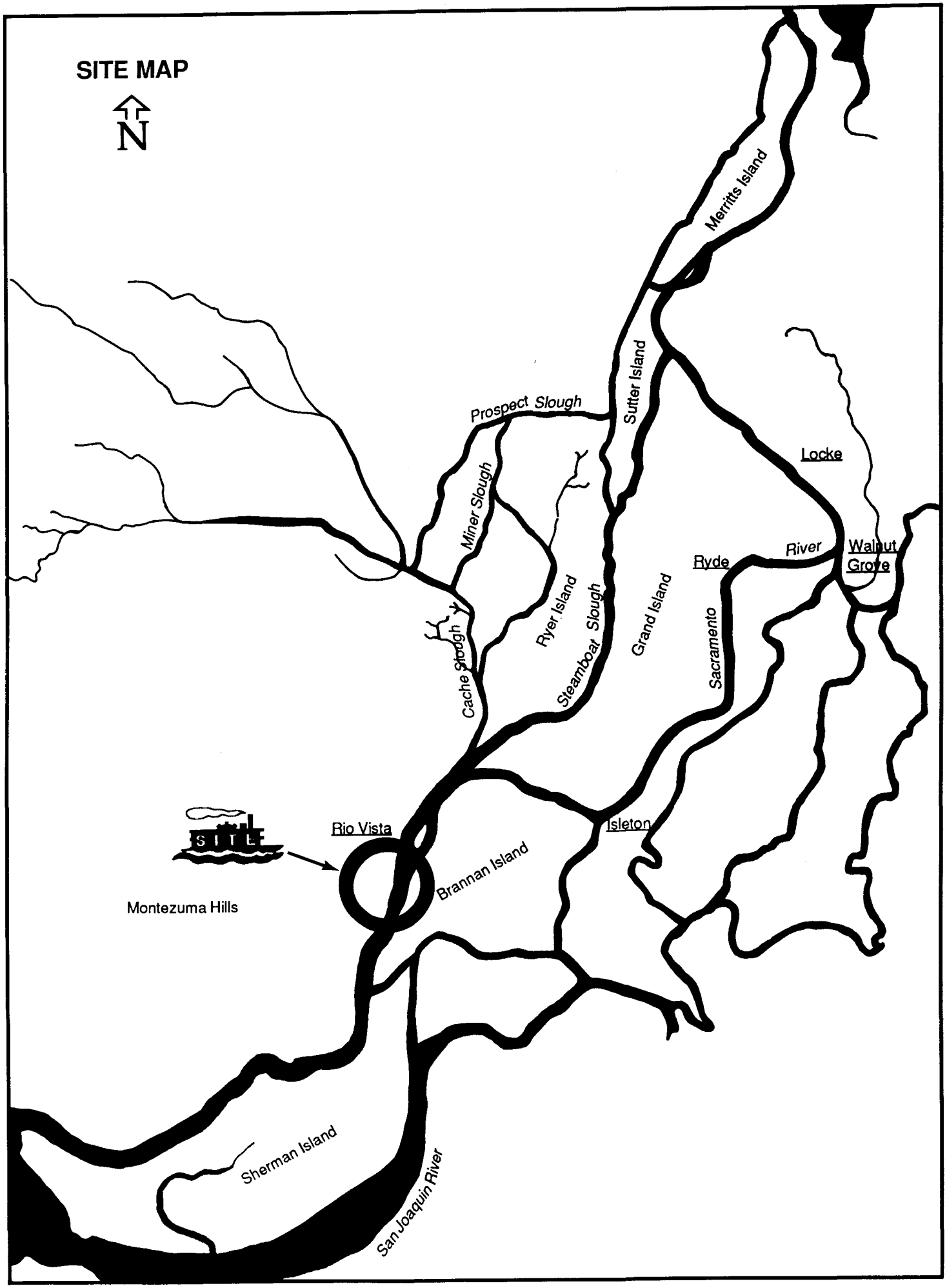


LONG ISLAND

"Marine Accident. - The schooner *Long Island*, Williston, in getting off yesterday, with a load of cobbles, under the pressure of a strong northerly wind, came in collision with the old submerged power hulk, *Ninus*. It is currently reported that the Long Island sustained the greater injury. The accident may be very properly attributed to a stress of wind and weather.

2/23/1860, Sacto. Union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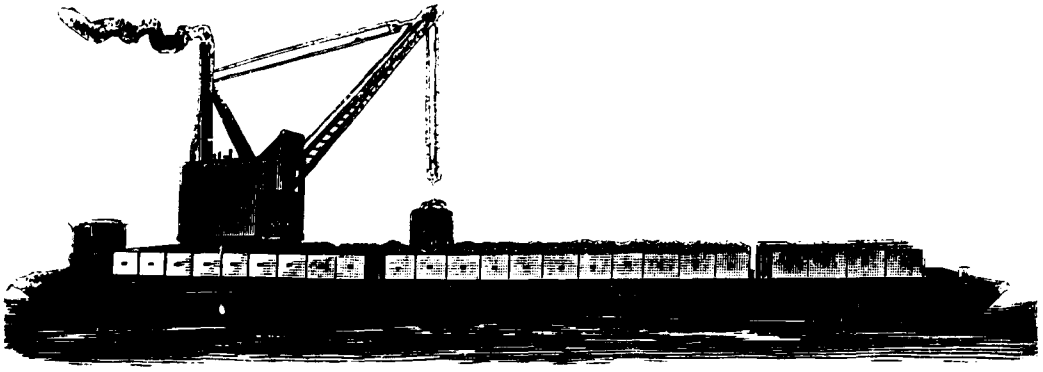
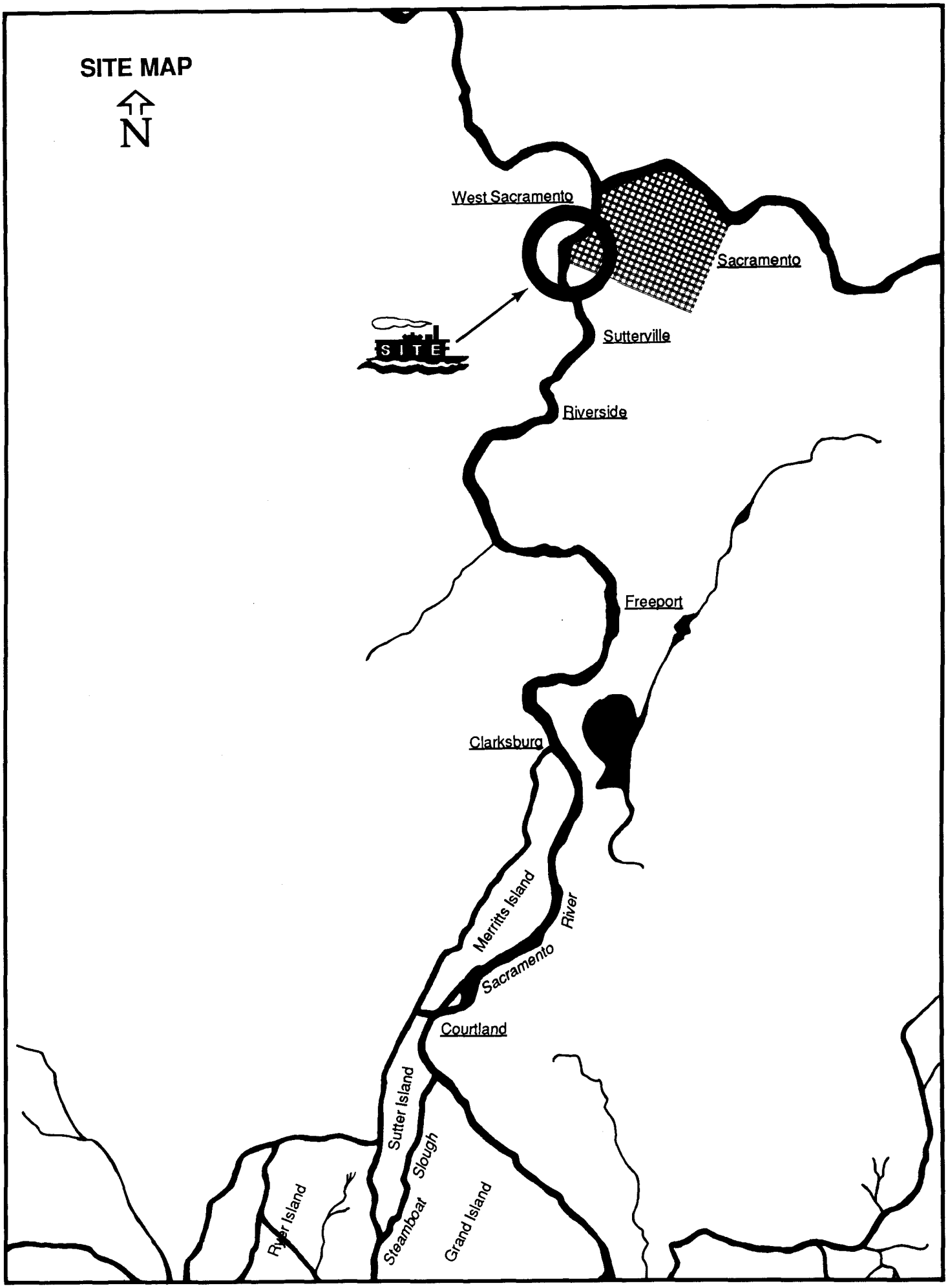


MONITOR

"Barge Burnt - On Friday afternoon last, the barge *Monitor*, bound for Sacramento, was burnt and sunk two miles below Rio Vista. This barge was built of the hull of the steamer *Monitor*, the machinery having been removed and the hulk rassed down to answer the purposes of carrying freight. At the time of the accident, she was freighted with thirty tons of hay, also a large wagon worth $300, and was being towed up to the city by the steamer, *Christina*. There were two men on the barge at the time. They discovered the hay to be on fire and commenced at once to throw off the bales. The wind was blowing so violently that by the time they had thrown fifteen bales into the river the flames had spread over nearly the entire cargo. The men were compelled to jump overboard and cling to the rudder until the barge floated in near the shore, when one of them swam to shore and aided in saving the other, who could not swim. The *Christina* was compelled, on account of her own safety, to keep at a distance. The barge burnt to the water's edge and sunk."

7/25/1864, Sacto Union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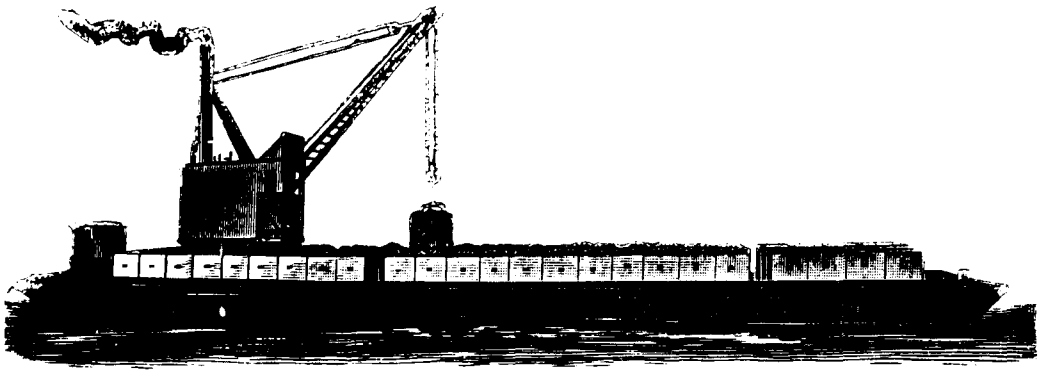
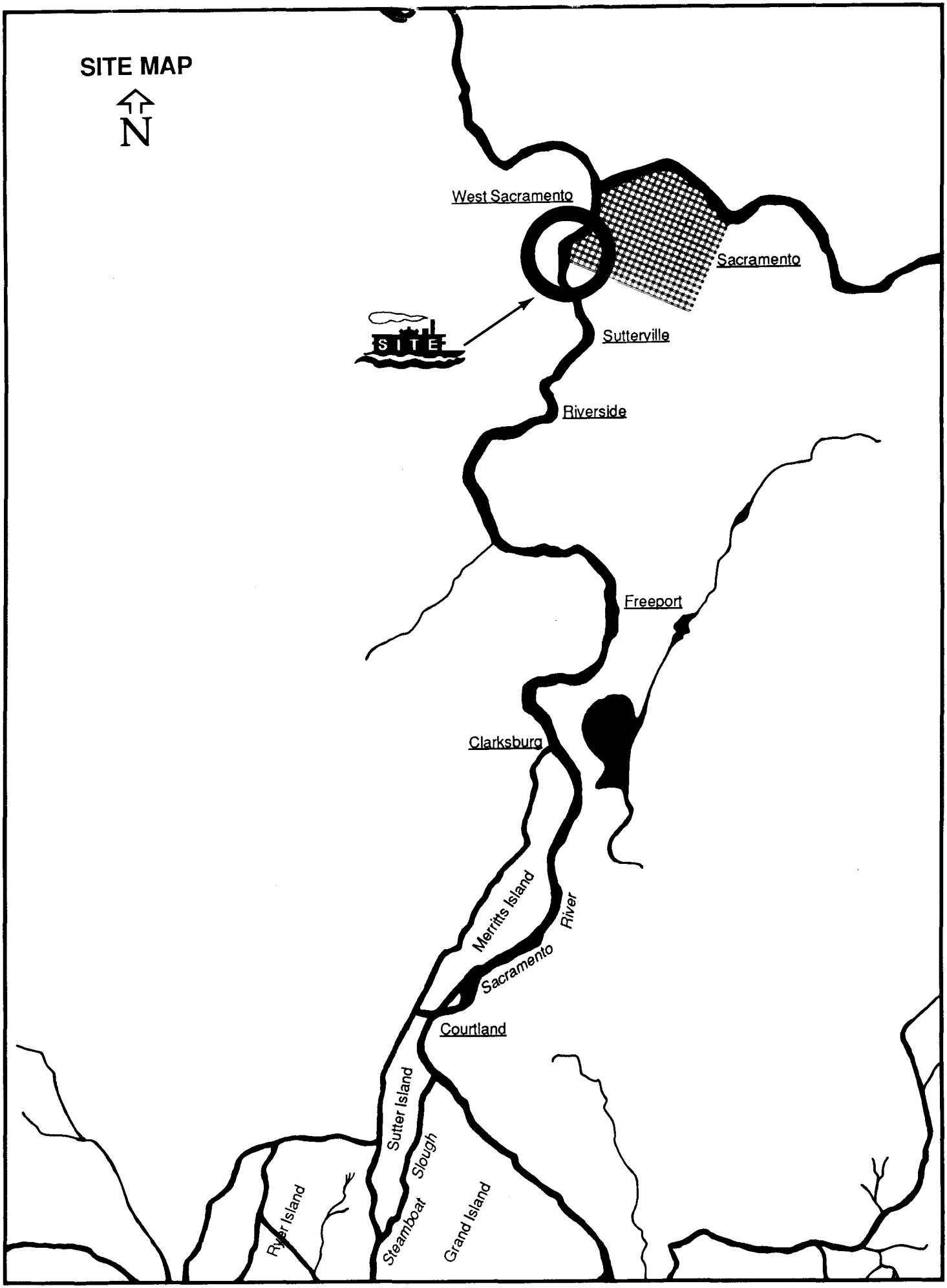


MOSQUITO

"Snagged. - Yesterday afternoon, the barge, *Mosquito*, loaded with one hundred cords of wood, from Colusa, struck a snag in the bend just above the Sacramento and Yolo bridge and soon filled. She drifted down, passed under the bridge, and leaned against the sand bar which is to be met with opposite the city. The barge *Star of the West* has since been engaged in taking off the *Mosquito's* wood and transferring to the schooner *Fourth of July*.

6/29/1864, Sacto. Bee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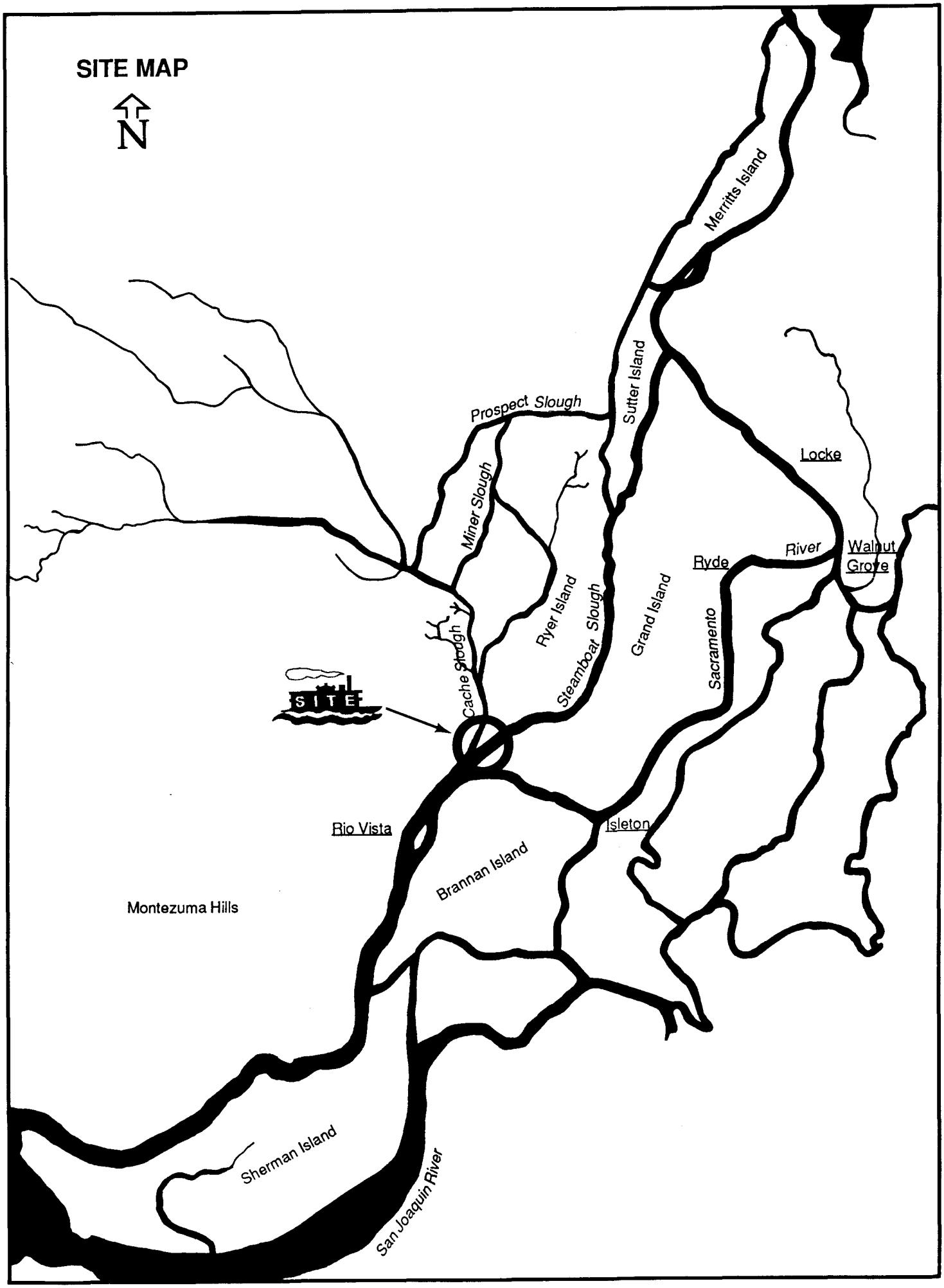
NATALIE

"Passing Away. - The old hulk *Natalie*, that has for so long past been solemnly moored to the levee, at the foot of N street, is to be removed to a point below R street to be broken up. The process of demolition was commenced yesterday on the light structure on deck."

3/6/l856, Sacto Union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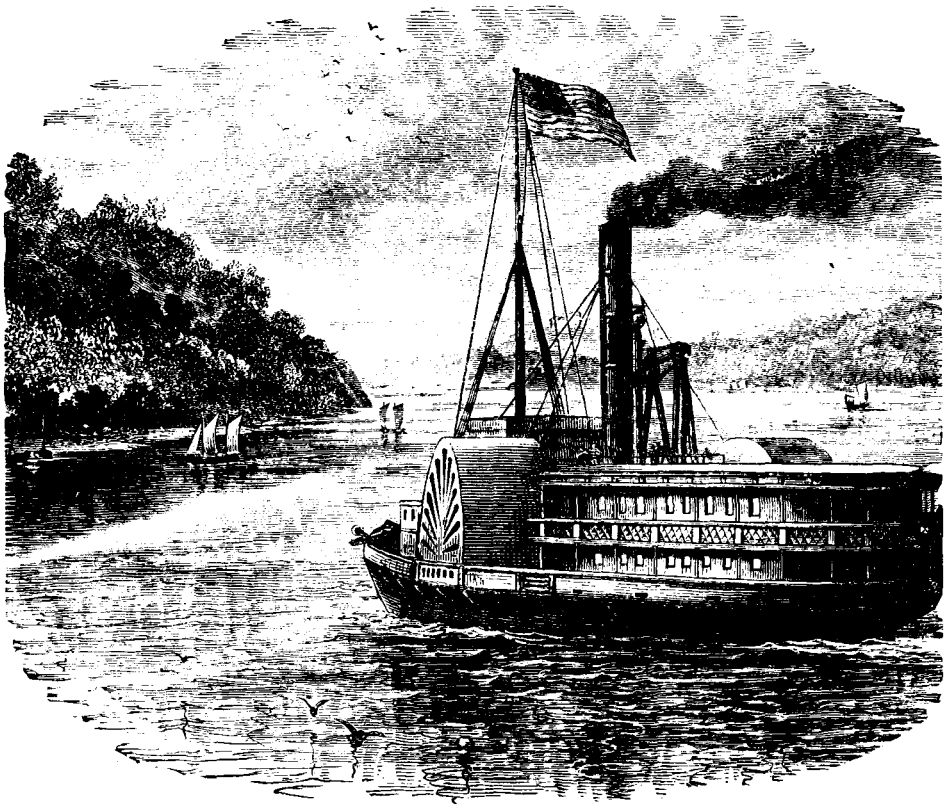
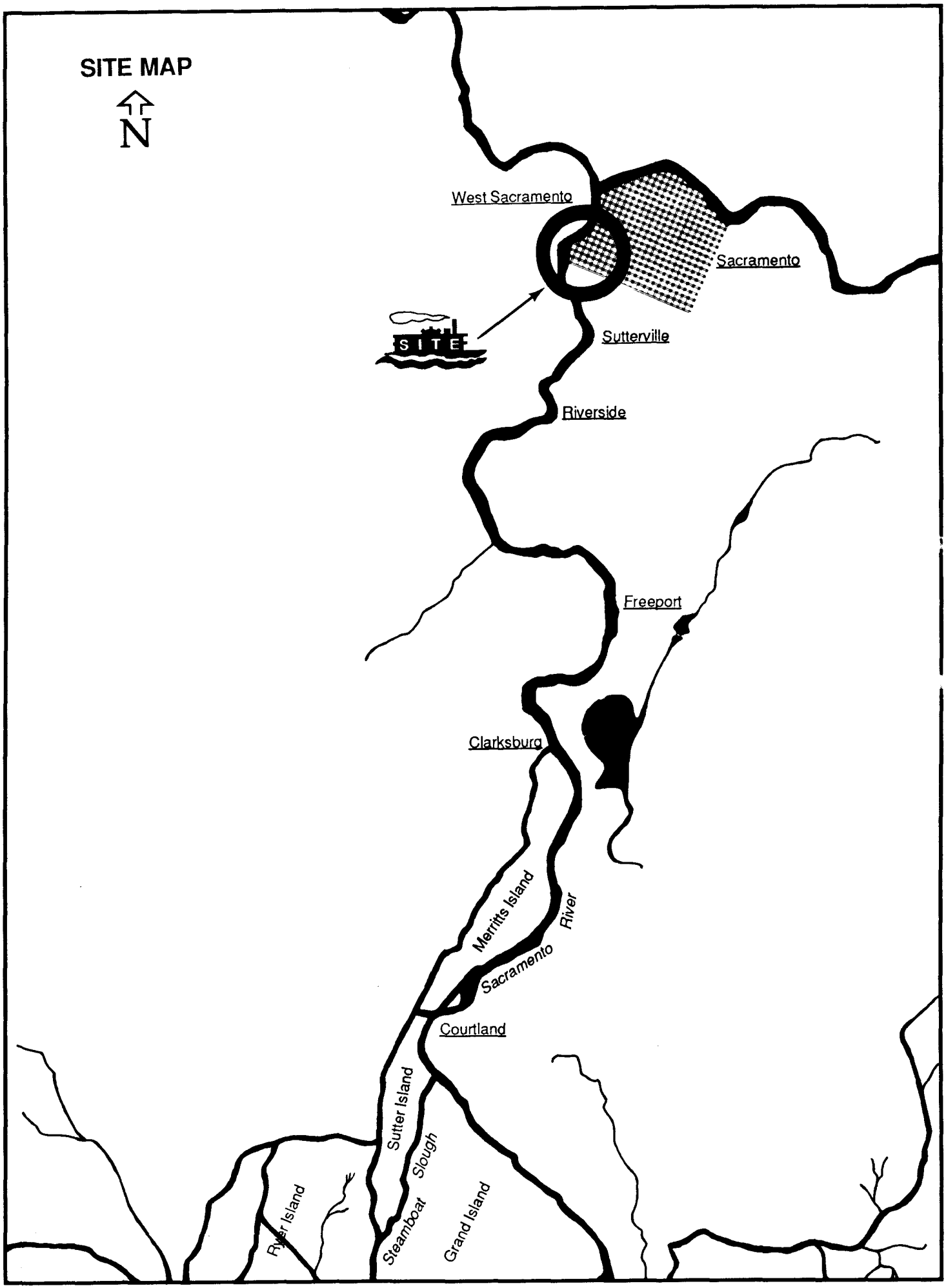


NEVADA

"In a race, the *New World* having chased the *Nevada* into Steamboat Slough at full speed, the leading craft's pilot, apparently with too much on his mind at one time, failed to note a slight swirl which marked a snag. There was a roar of splintering timber and the *Nevada* began to fill. They got her on a bank near Cache Slough before she went down, and so no one was drowned; but the bank proved to be quicksand, and the big steamer became a total loss.... for years, there were a few traces of her bones near the point were Cache Slough and Steamboat Slough empty into the Sacramento, not far from the town of Rio Vista."

2/7/1862, Paddle-Wheel Days in California.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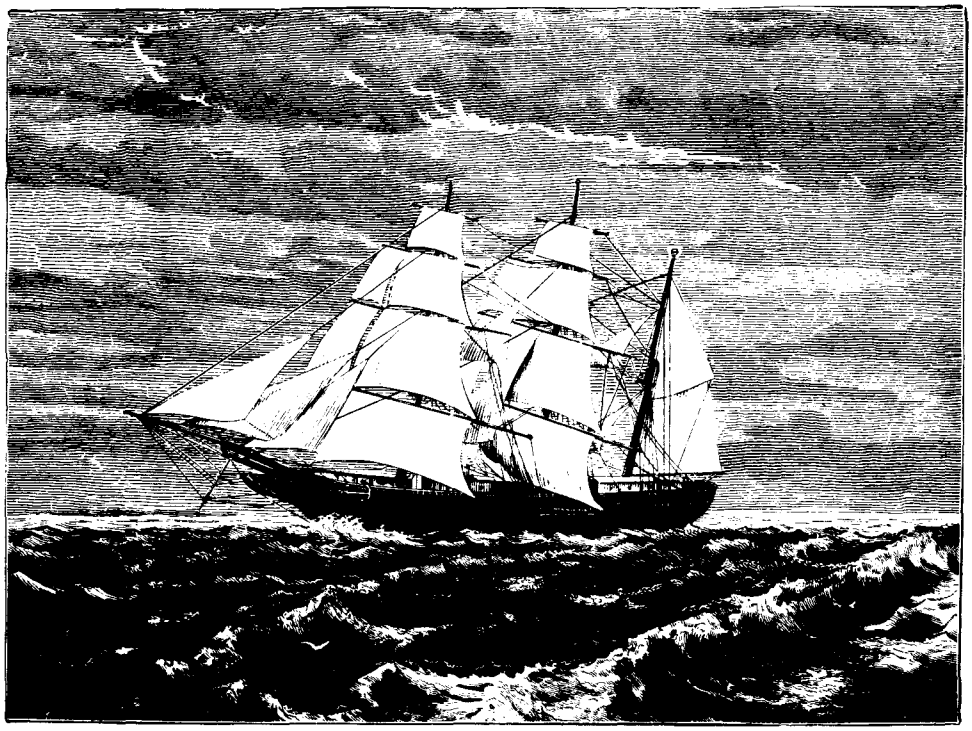
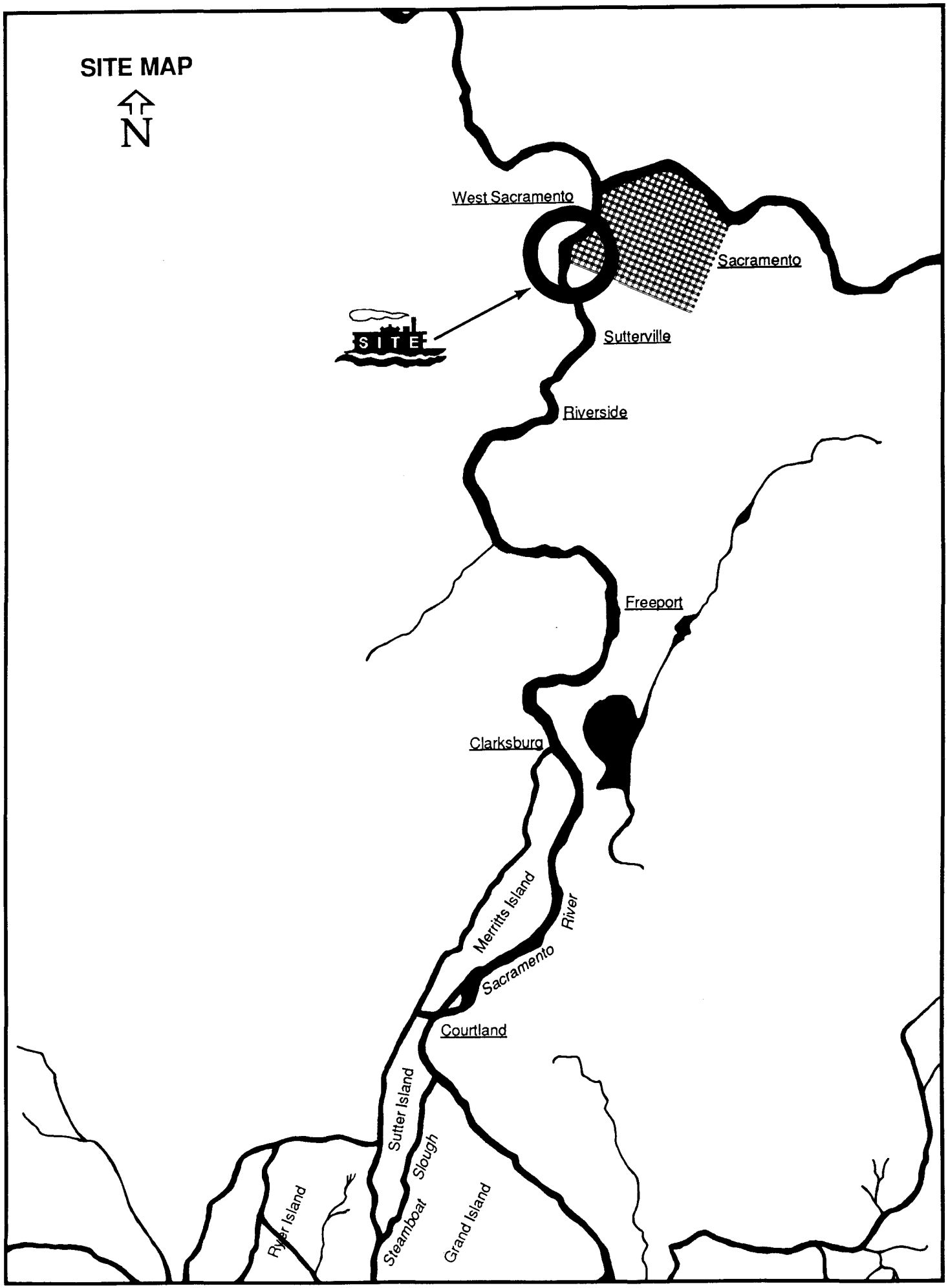


NINUS *11/16/1861, Sacto. Union*
"The bark, *Ninus* - Under the supervision of the Levee Committee, the upper portion of the bark *Ninus*, in the river below R street, has been cut off at the water's edge and removed. It is presumed that the effect upon the eddy at that point will be advantageous."

7/30/1868, Sacto. Union

"Levee Improvements - The Levee Committee reported yesterday to the Board of Supervisors in favor of strengthening the levee at Rabel's tannery by another bulkhead. An engineer will be employed to report an estimate of the cost of the work before any decisive action is had. The same Committee report in favor of removing the bulk of the bark *Ninus* from its present location below the feet of R street."

7/30/1868, Sacto. Union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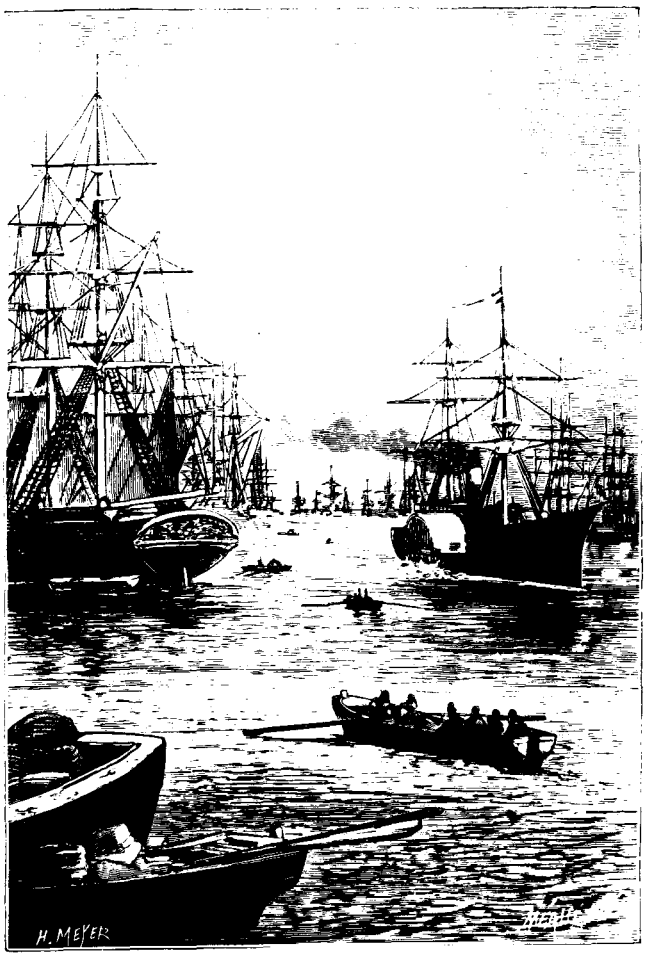
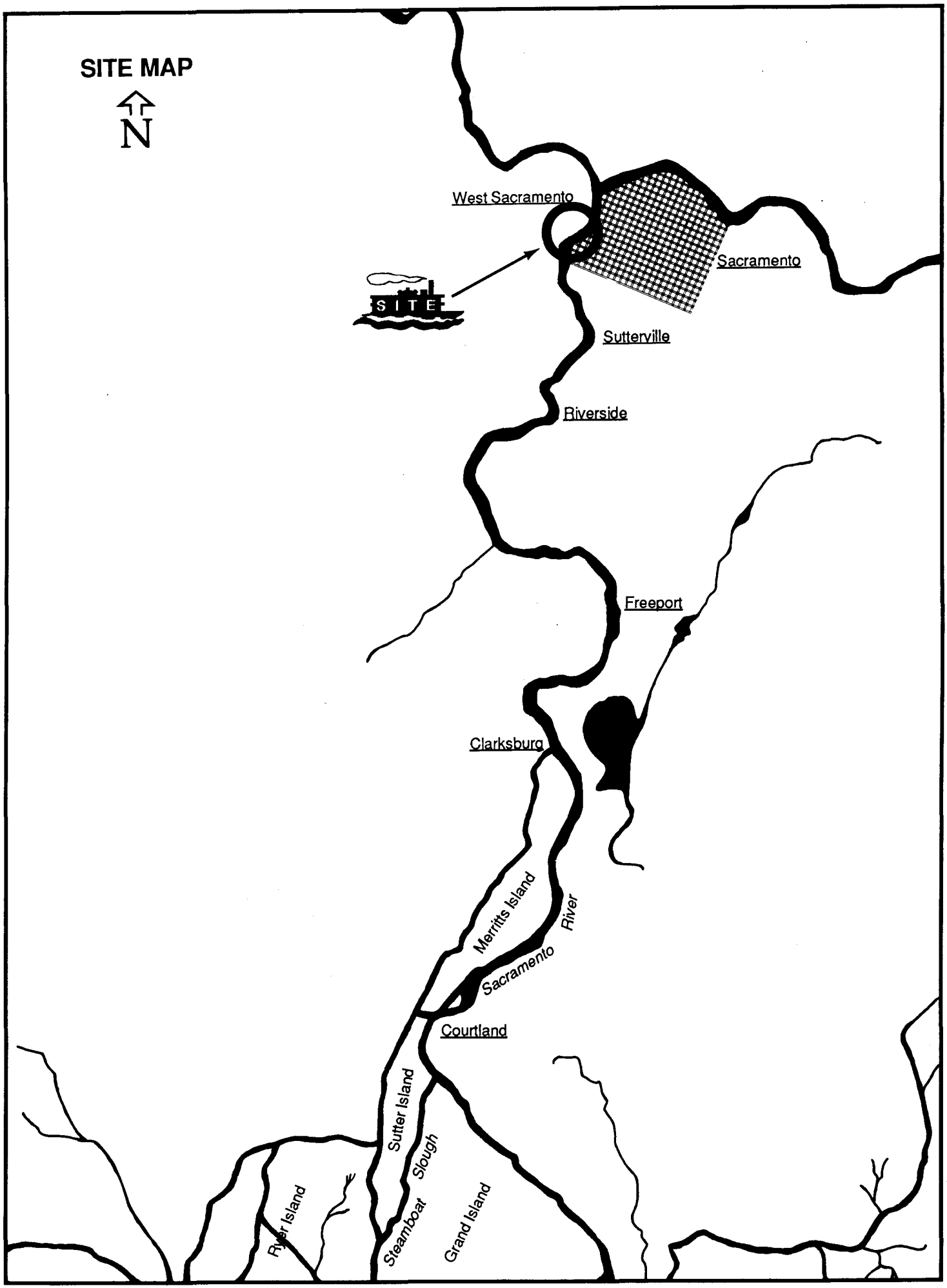


OLD HULK

"The Old Hulk - The members of the chain gang have removed from the old hulk, at the Nevada's landing, the planking with which the deck was covered. The old lumber will be taken to the vicinity of the Water Works. The hulk will probably be sold, although the proposition to sink on the Yolo side of the river, above the bridge, has been agitated, with a view of throwing the channel to the Sacramento side."

3/12/1863, Sacto. Union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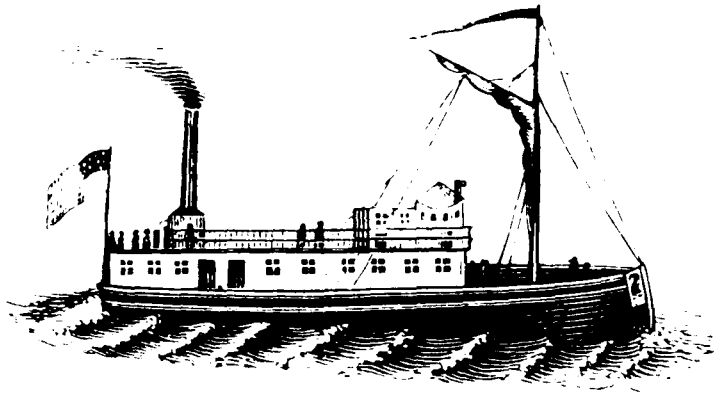
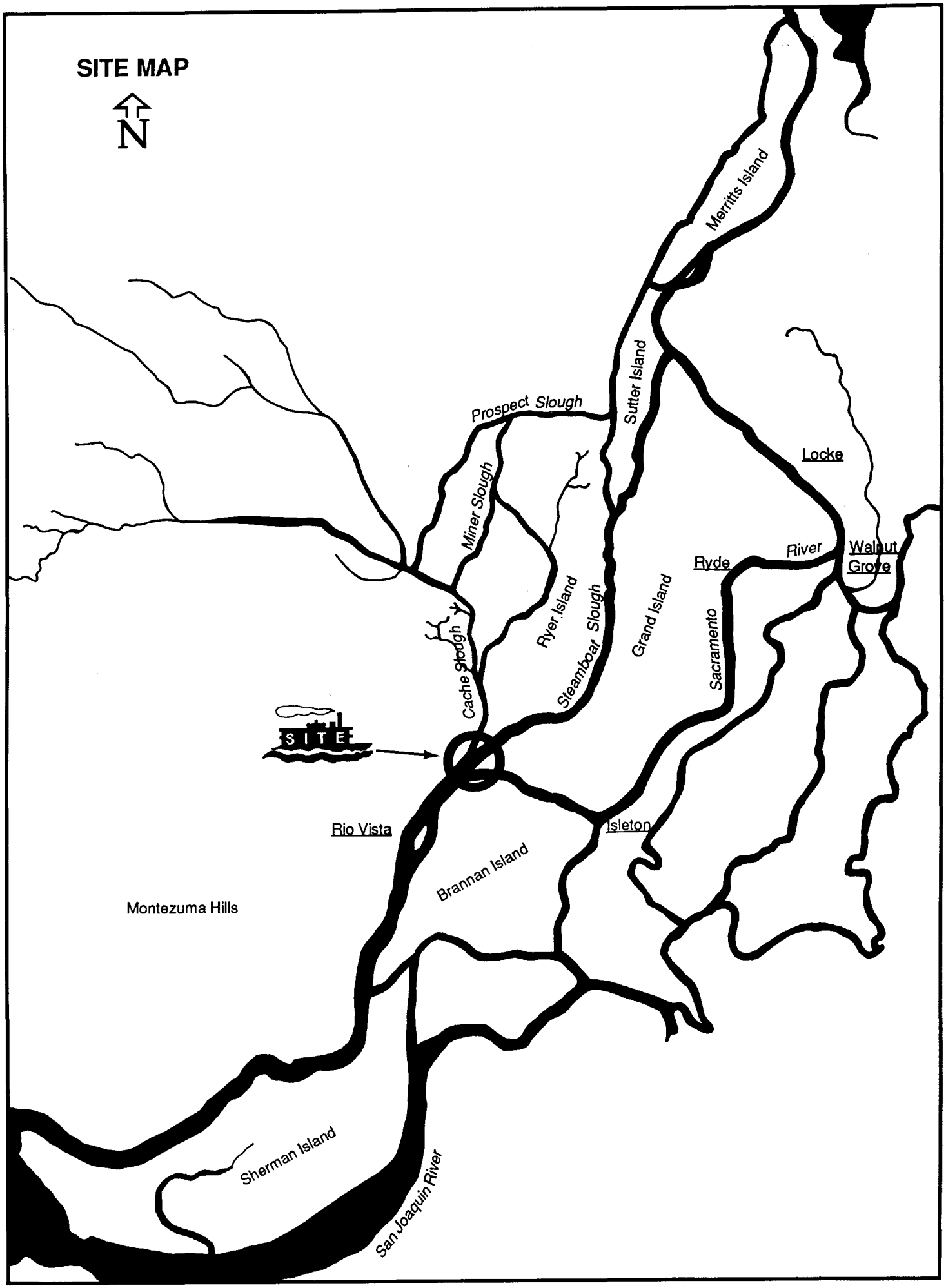


O. K.
Small steamer burned on the Yolo side opposite M Street. 3 July 1865.

"Steamer Burnt.- Between two and three o'clock yesterday morning the small steamer *O.K.* on the Yolo side of the river, opposite M street was destroyed by fire. The *O.K.* belonged to Captain Allen. She has been used on the river for two or three years past for towing schooners, carrying wood, grain, etc. When she had burnt she had on a cargo of wood which she had brought from the upper Sacramento, designed for San Francisco. The orgin of the fire is not known. A portion of the hull of the steamer still remains above the water near the Yolo bank. No general alarm occurred in the city, although the city front was fully illuminated by the burning boat."

7/3/1865, Sacto. Union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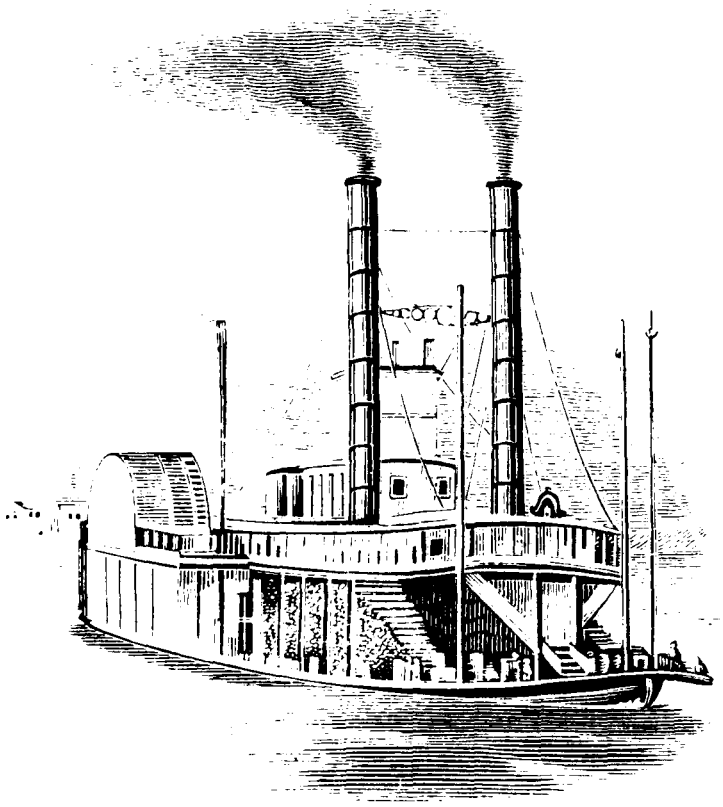
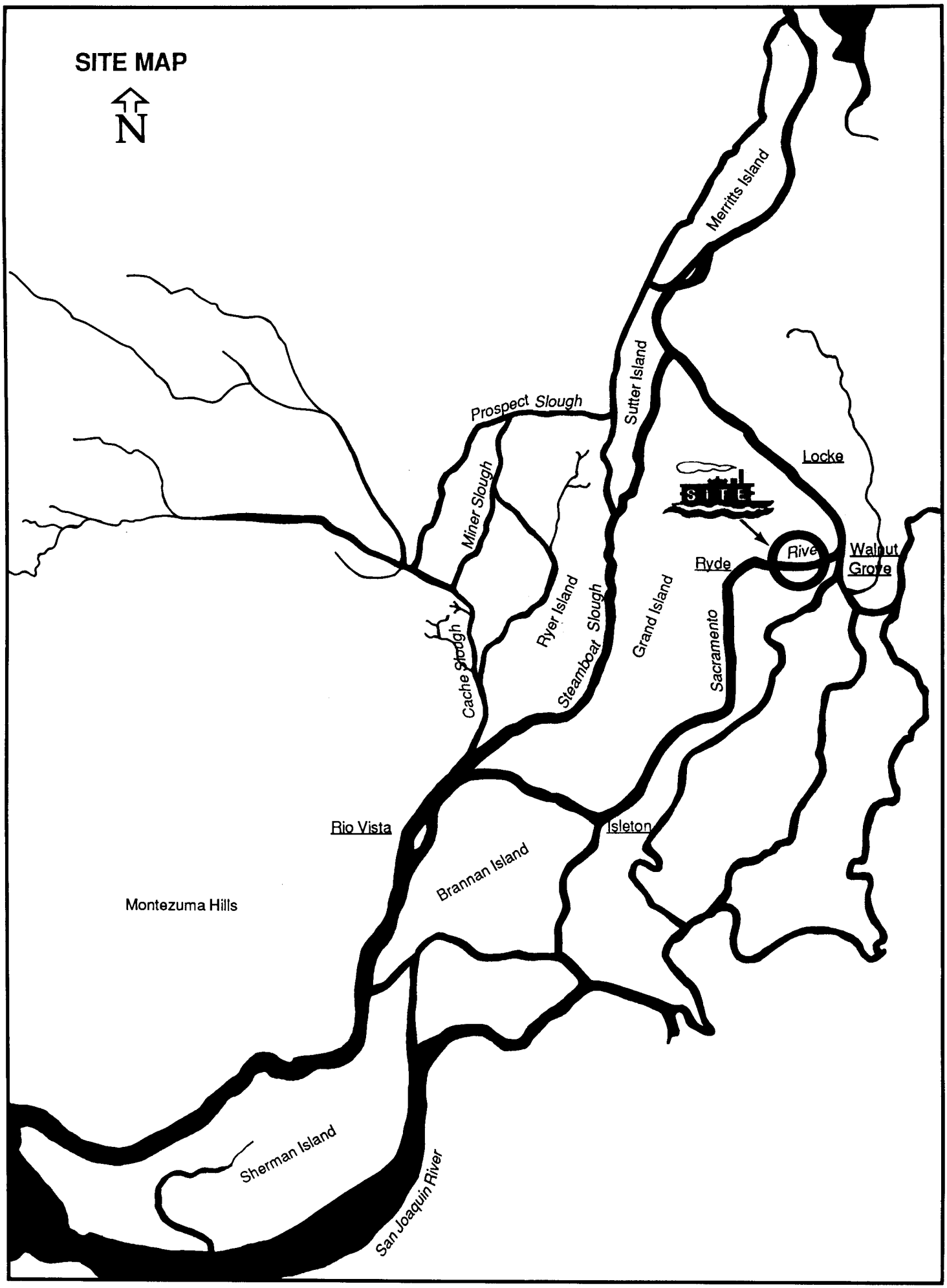


PET

"Steamer Sunk.- The steamer *Pet*, Captain McNair, owned by McNair & Brewer, of this city, was snagged and sunk about nine o'clock Monday night at a point near the mouth of Steamboat Slough. It is not known exactly when she struck the snag, the shock not having been perceptible. The first intimation Captain McNair received of the accident was the report of the engineer, the boat was making water rapidly. An examination quickly followed, which satisfied the Captain that the only course left for him to pursue was to run the vessel ashore, which was accordingly done. Soon afterward she sunk, and is now lying with her bow on shore, but the balance submerged. At this time of the accident the *Pet* was in route from Rio Vista to Sacramento towing a barge loaded with hay. Captain McNair came to the city yesterday to procure a barge with which to raise the sunken craft, but being unable to procure one, left for San Francisco, were he will get a barge and steamer, returning to the wreck he will proceed energetically with the raising."

3/10/1870, Sacto Union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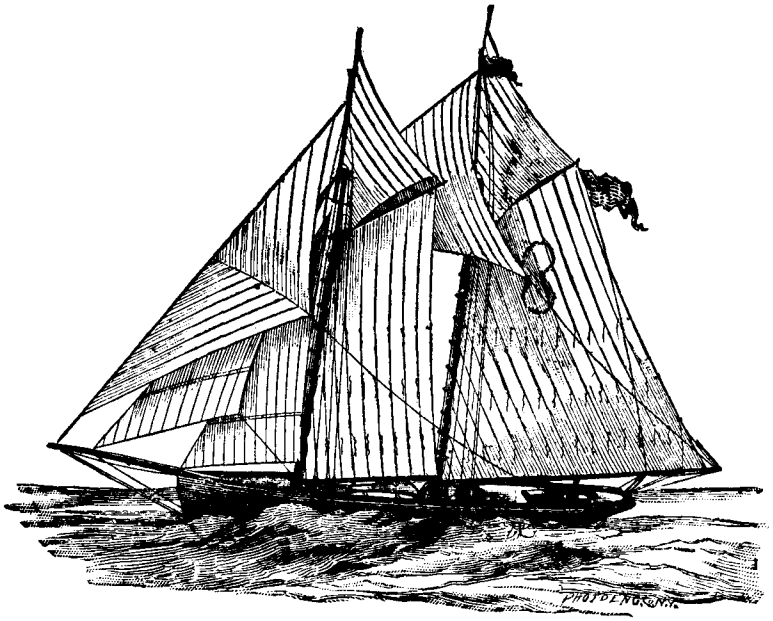
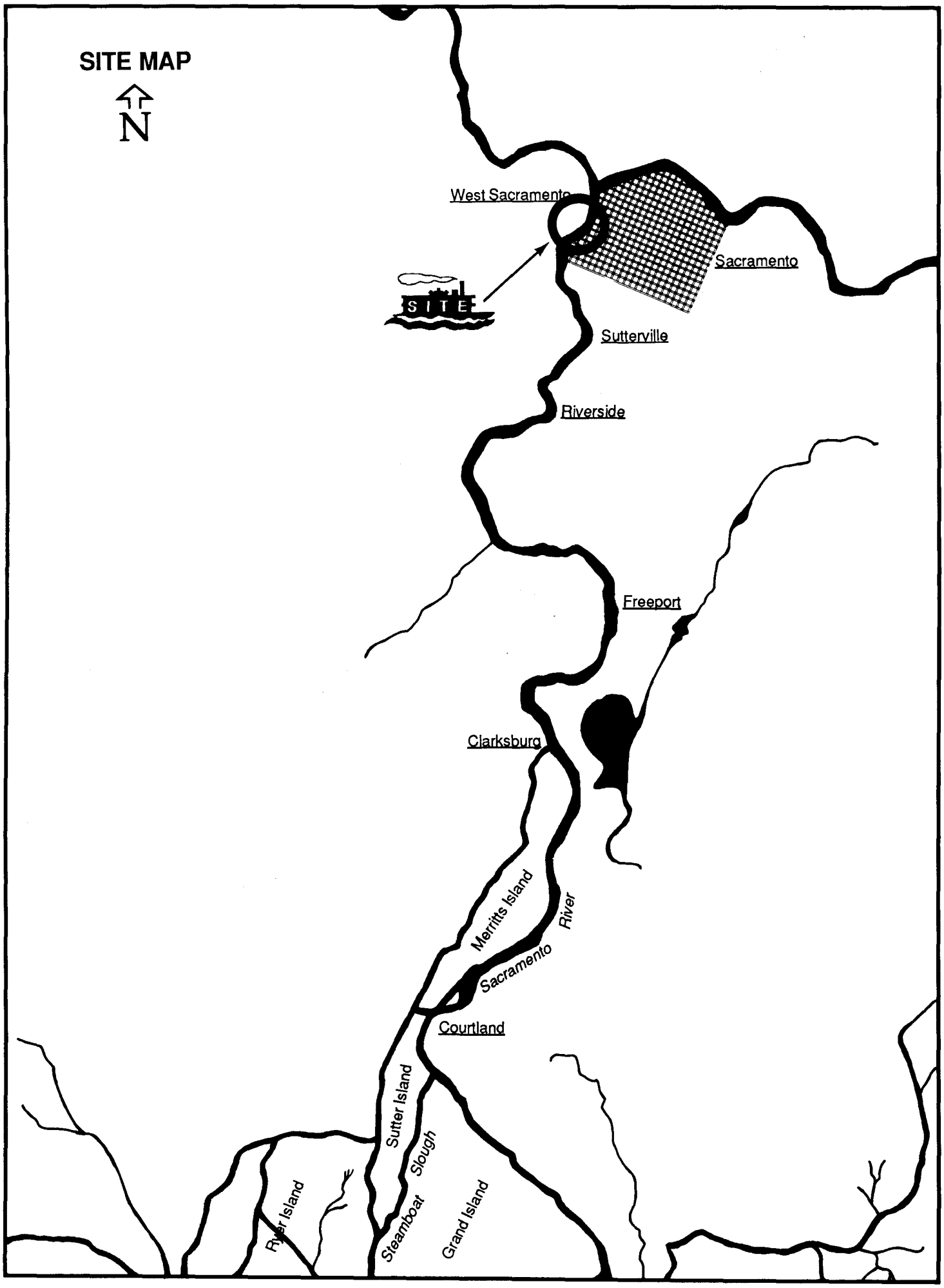


ROBBIE HUNTER
Schooner, stuck snag and sunk a few miles below Walnut Grove. 1 Oct.1879.

"Schooner Sunk.- The schooner *Robbie Hunter*, which left this city for San Quentin a few days since, loaded with door panels and scrap iron, is reported to have struck a snag and sunk a few miles below Walnut Grove last Sunday. Captain Johnson left for San Francisco to secure the use of vessels to lighten and assist in raising her. Though the water is shallow were she is lying, it is probable that the door panels, forming the greater portion of her load, will be greatly damaged. Vessel and freight are believed to be uninsured."

3/10/1870, Sacto Union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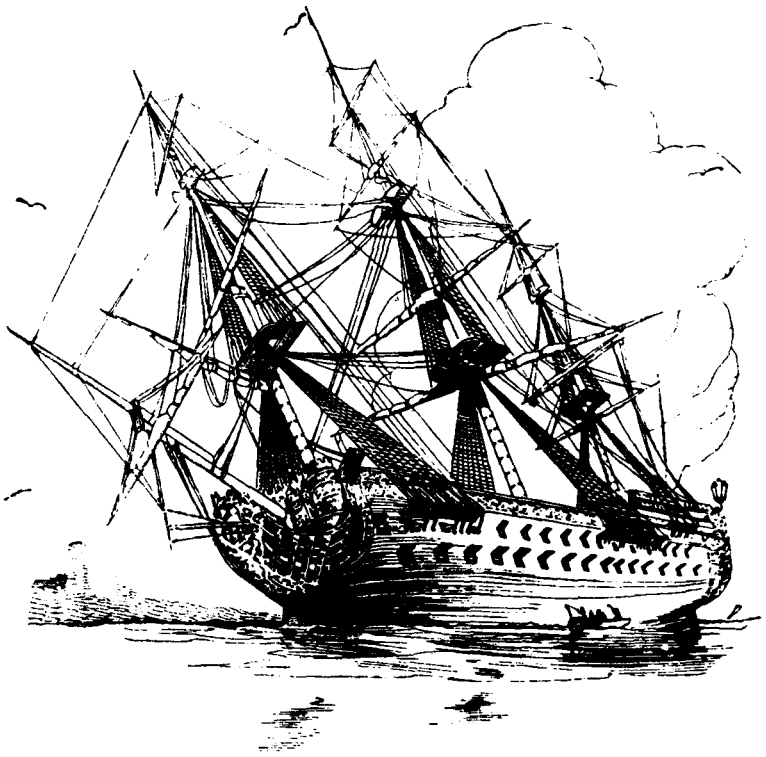
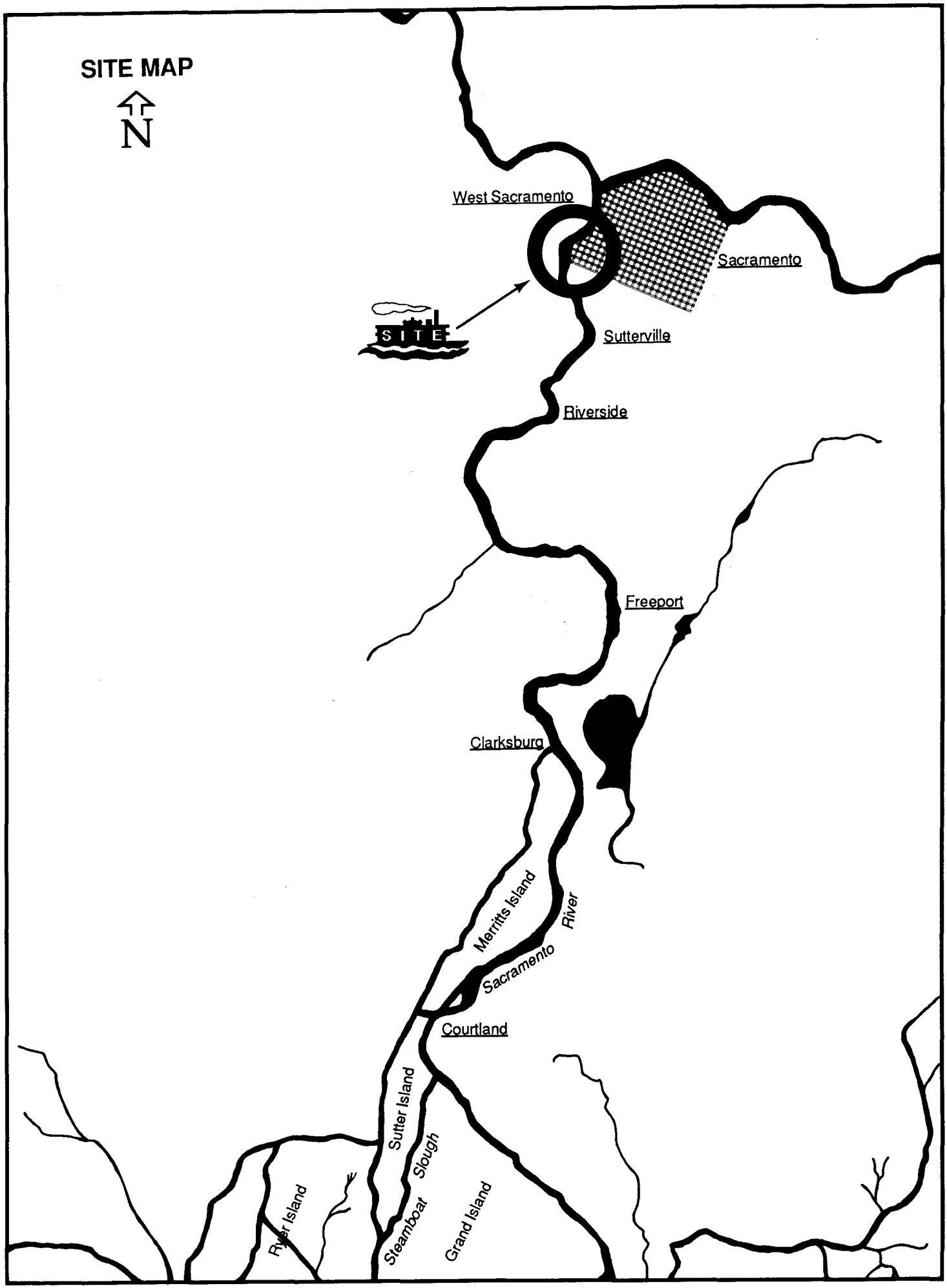


STERLING
Brig sunken hull to be removed from the foot of K Street. 21 Oct.1854.

"NOTICE TO CONTRACTORS- Sealed proposals will be received by the Committee on Contracts and Expenditures of the Common Council of Sacramento, until Monday, the 23d inst., at 5 o'clock P.M., for removing the sunken hull of brig *"Sterling,"* now lying moored to the levee, at the foot of K street, to some point below the city, to be designated by the Council, and not exceeding one mile in distance.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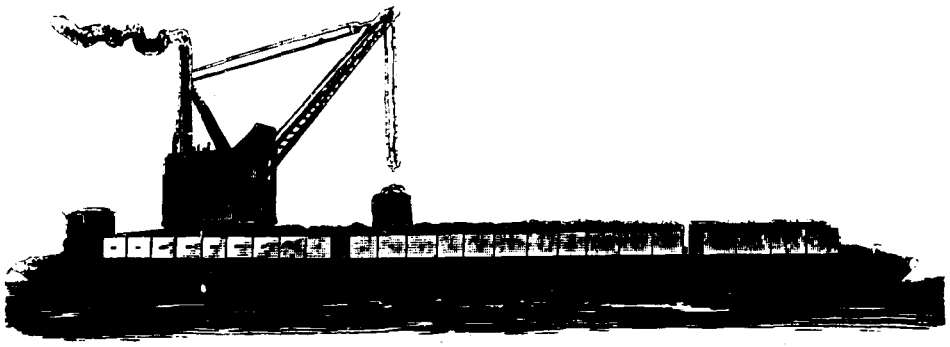
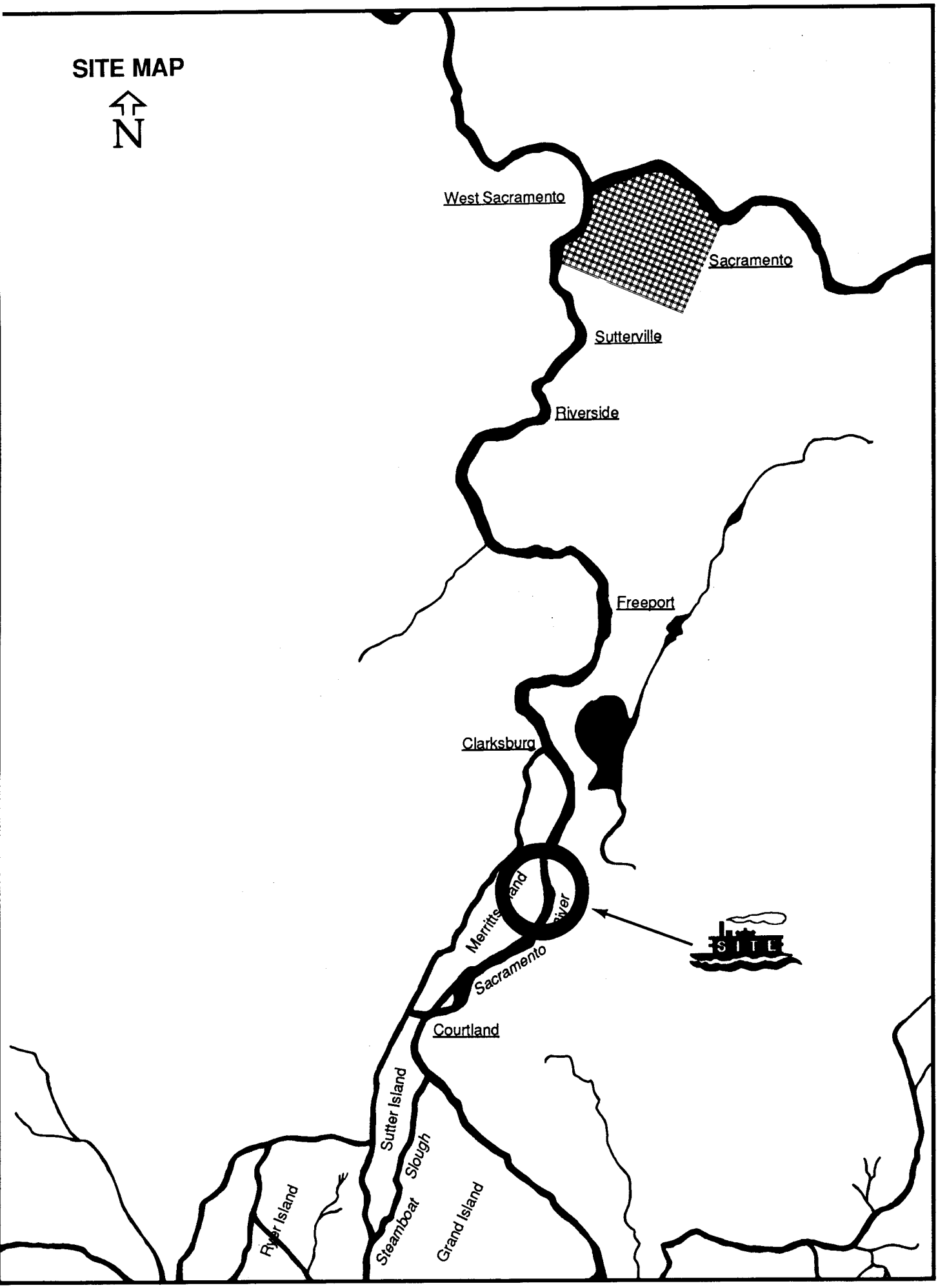


SUNKEN BARGE
Shown on USCE Sacramento River, 1894 Survey Map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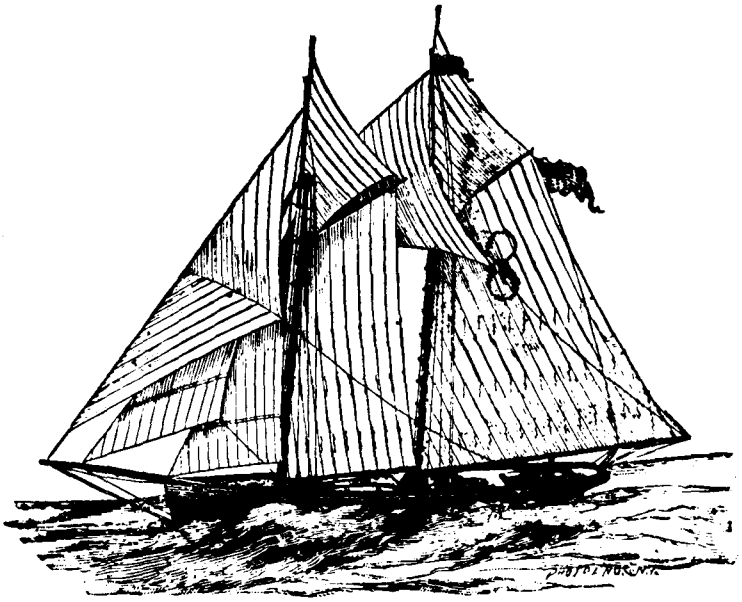
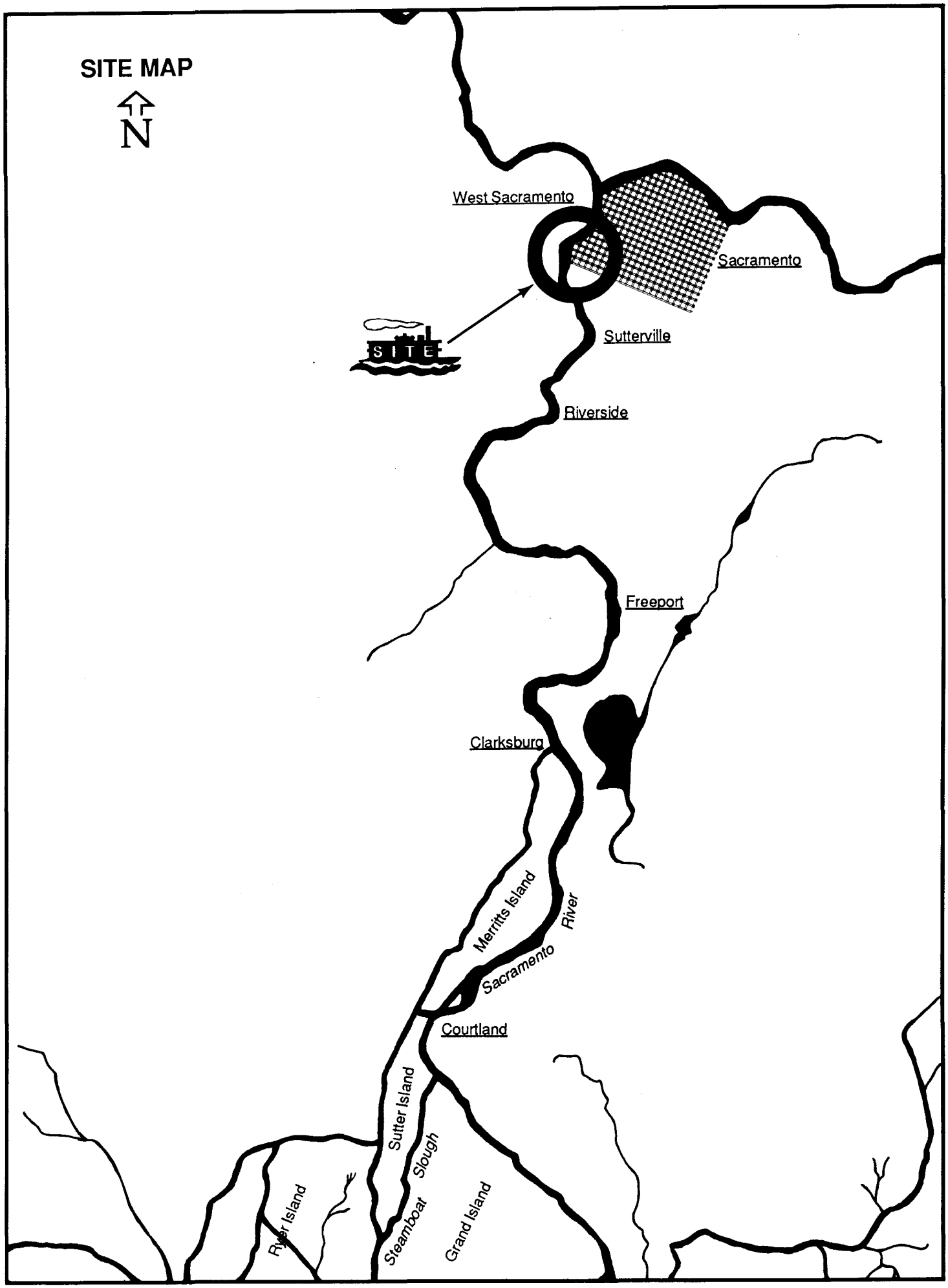


SUNKEN SCHOONER
Shown on USCE Sacramento River, 1894 Survey Map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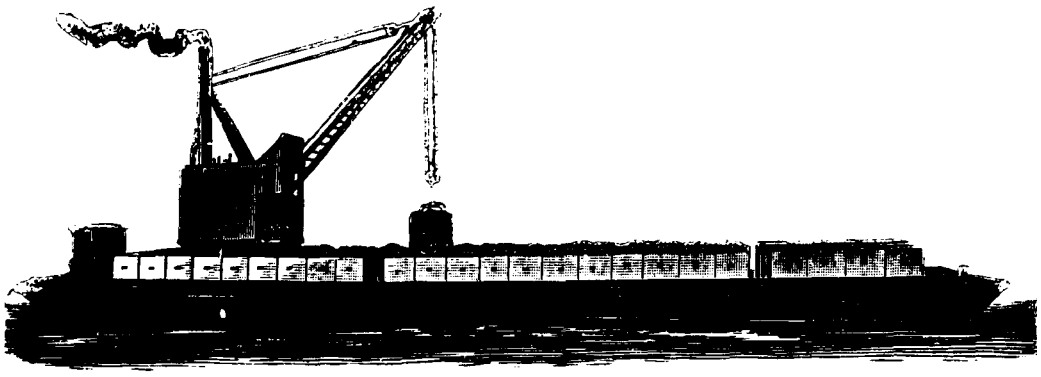
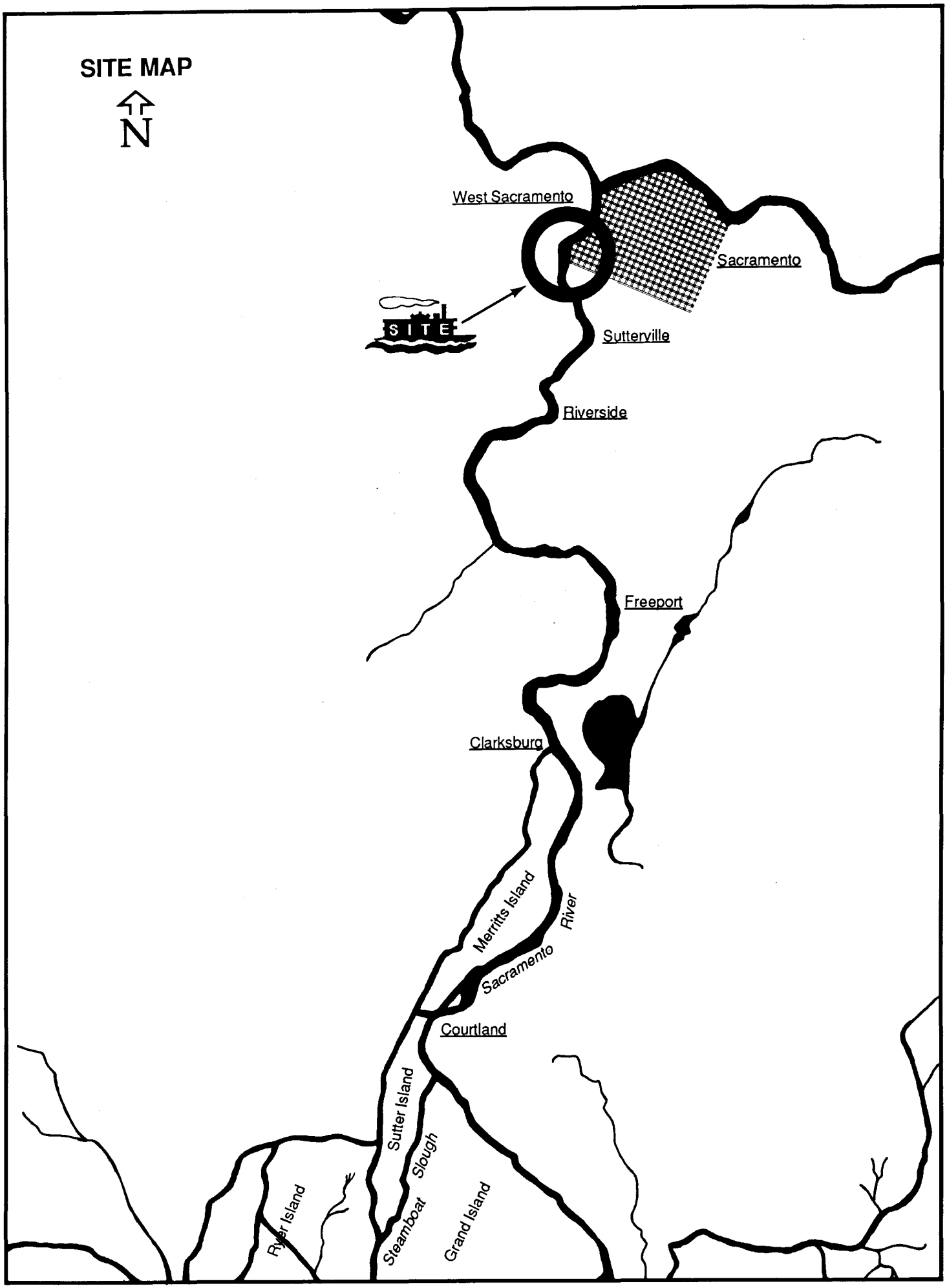


TOM POSSE *Sacto. Union*

"Wood Barges Sunk - The wood barges *Maid of Orleans* and *Tom Posse* were sunk yesterday morning, at the levee--the former just below the Harbor Master's Office, and the latter at Arcego's landing. There was lost from the Maid of Orleans between thirty-five and sixty cords of woods, giving employment to many small sized wreckers, who were kept busily engaged raking in stray sticks below. We observed one little girl who had secured quite a pile, waiting anxiously for some one to come and remove them to safer quarters. The wood on the *Tom Posse* (belonging to Arcego) was transferred to another barge and saved. The barges were started leaking by the violence of the gale from the south, driving them against the pier and vessel to which they were respectively moored."

10/1/1879, Sacto. Union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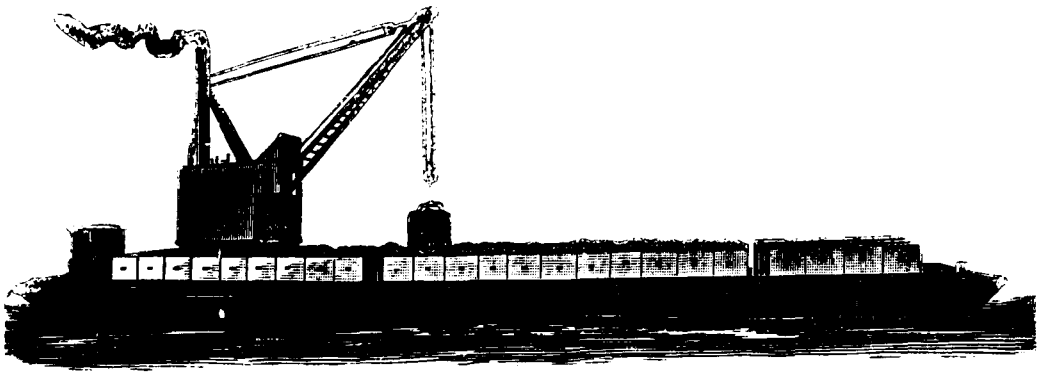
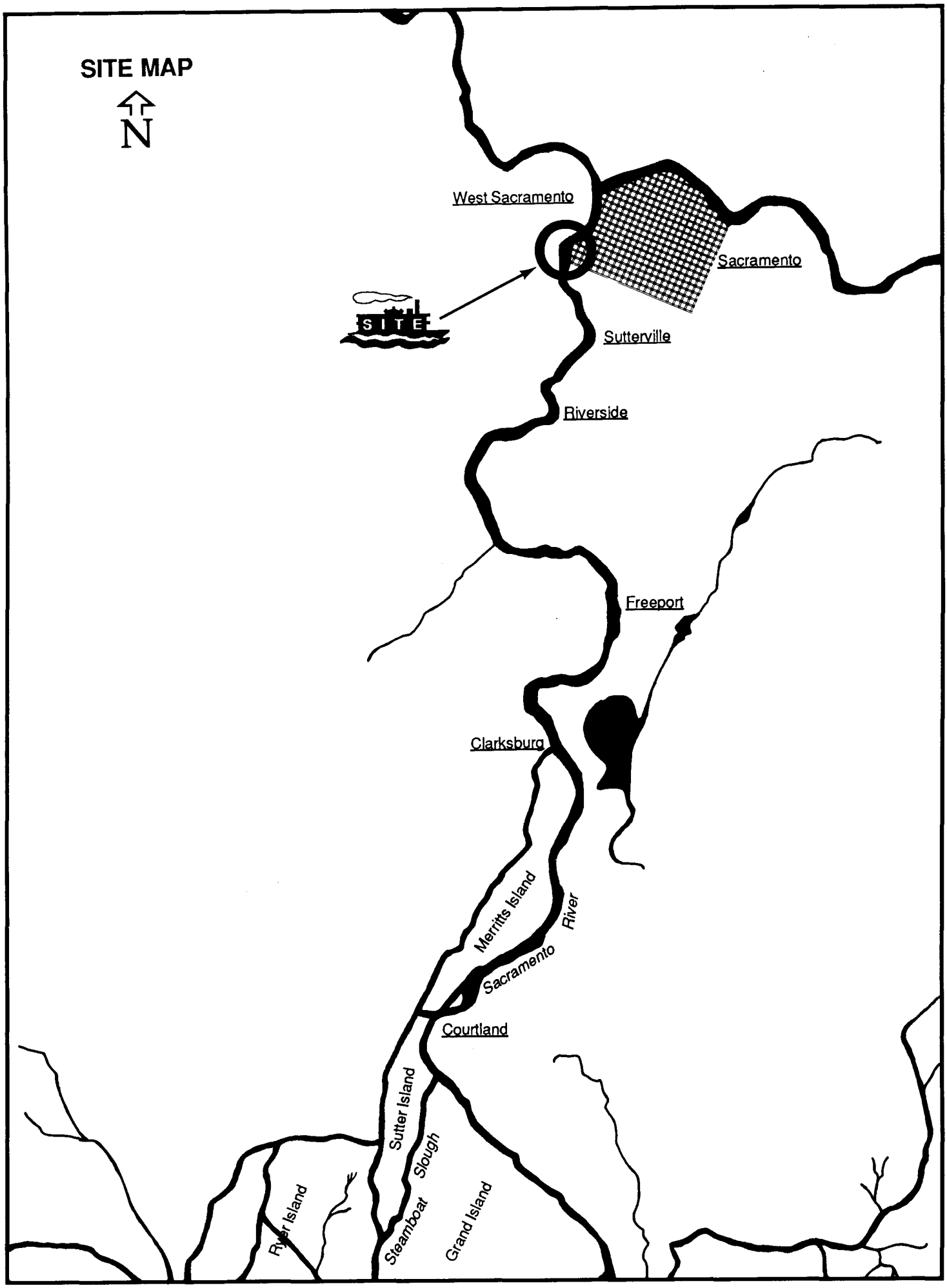


UNKNOWN BARGE

"Barge Sunk - Yesterday morning the steamer *Chin-de-Wah* started for San Francisco with two barges in town, but had not got them fairly straightened out on their way from the levee when one, the *Moulton* , loaded with old railroad iron took a sheer and ran too close to the shore near the foot of R street, getting into such a place that her rudder was torn loose and also one or two planks, in consequence of which she quickly sank, with her deck near the surface. The steamer got another barge alongside as soon as possible, and a large force of men was engaged during the remainder of the day transferring the deck load from the sunken craft, and otherwise lightening her."

9/19/1878 Sact. Union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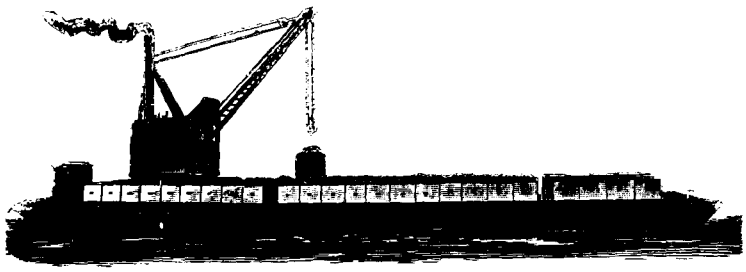
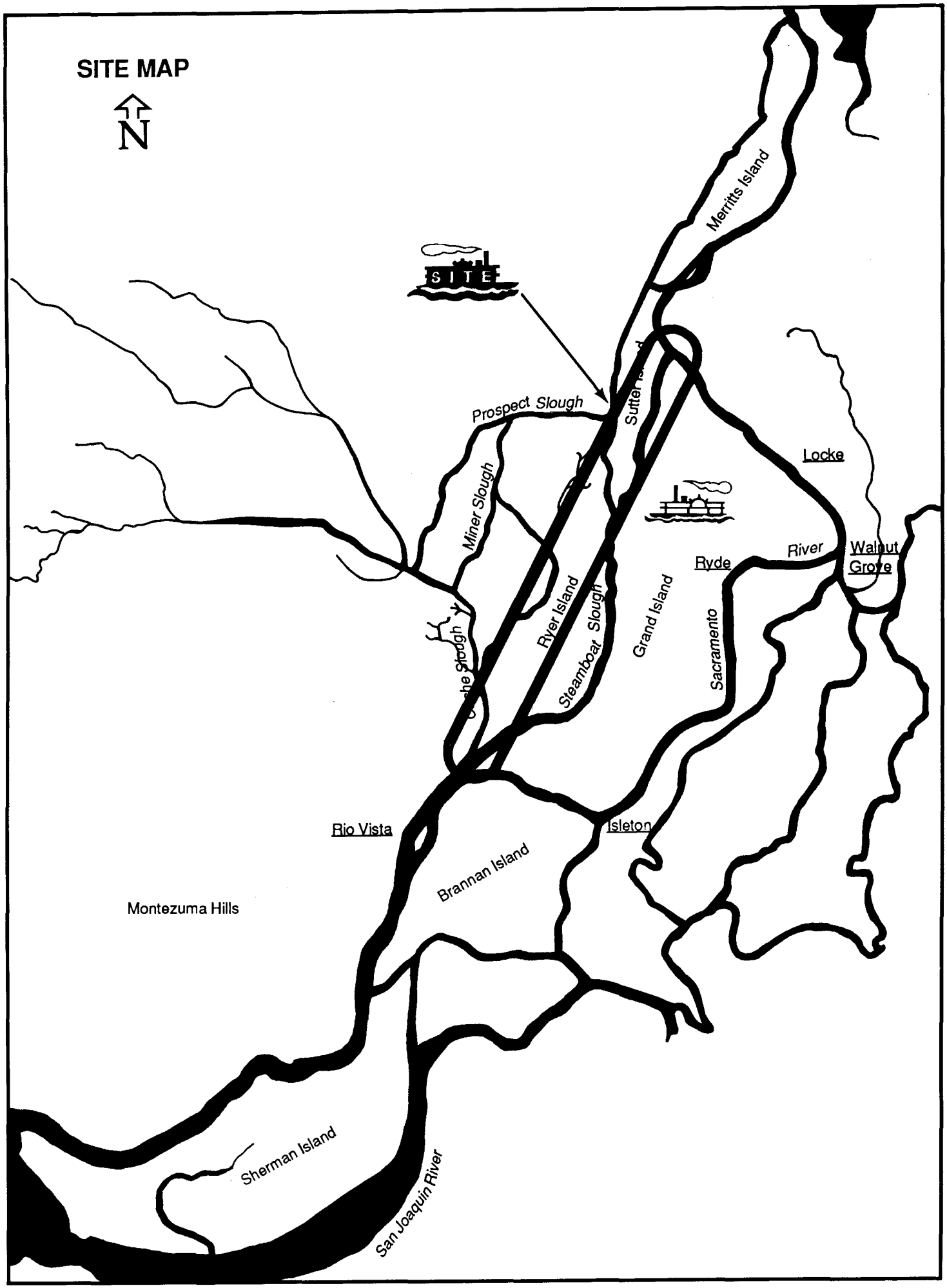


UNKNOWN BARGE

"Sunk - The old barge that served as a landing for the San Joaquin Company's steamers, at the foot of N street, has sunk almost to the bottom. Preparations were being made to raise her, but, owing to the rise of the river, they have been postponed for the present. If the sunken craft gets full of sand there will be considerable trouble in removing her."

11/18/1875, Sacto. Union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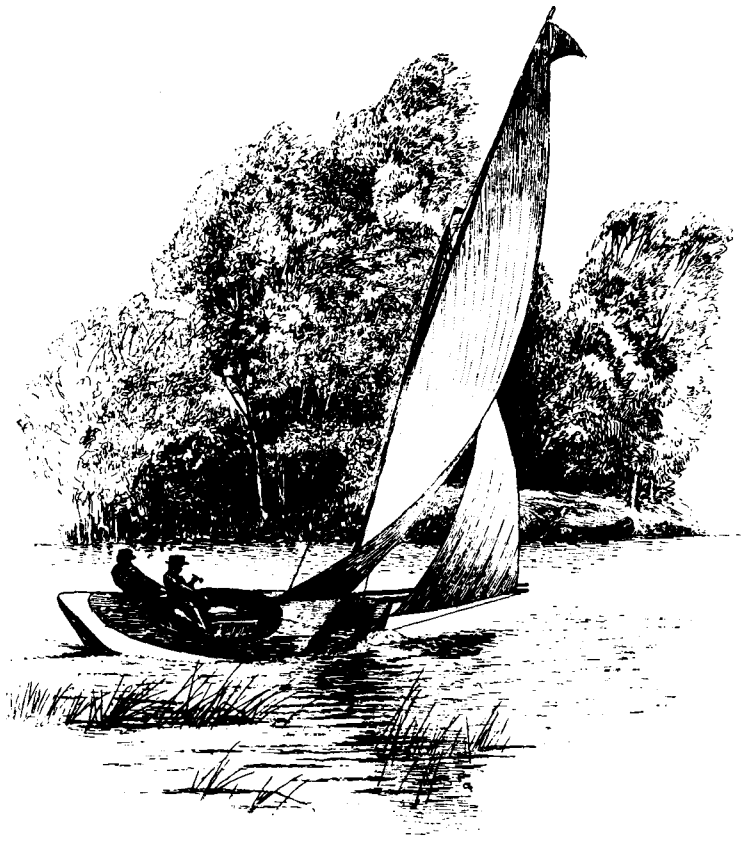
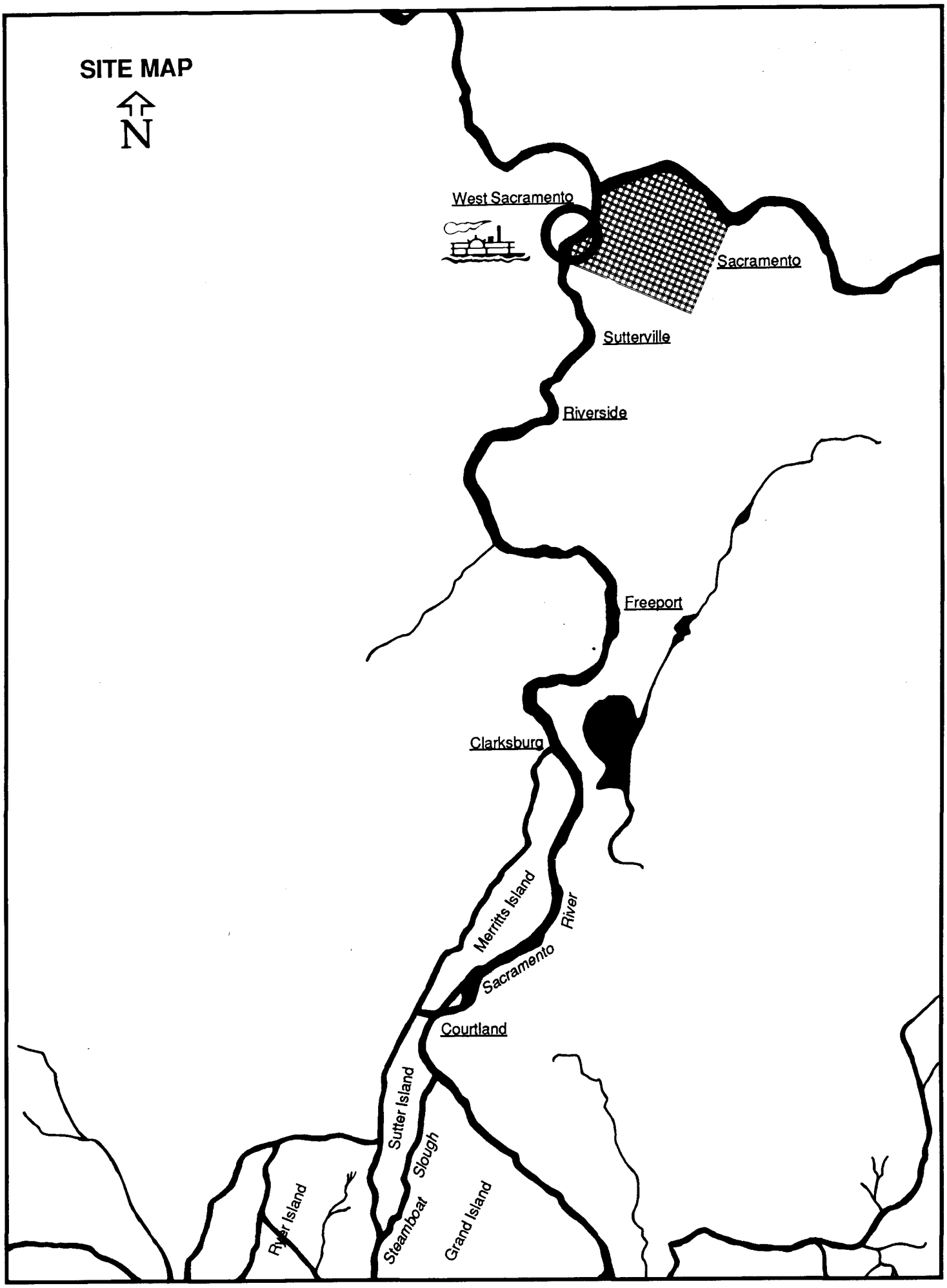


WASP

"Sloop Sunk.- We are informed by Captain Streckmire, of the schooner *San Pablo,* that the sloop *Wasp* struck a snag on Thursday night last, in Steamboat Slough, and in a few minutes filled and sunk. She was commanded by Captain Gerke, who, with the crew, succeeded in escaping to shore, although they were unable to free the small boat from the sloop. The *Wasp* was owned by the Captain and C. Clauson, and was valued at $2400. She was loaded with cobbles and bricks, from Freeport to San Francisco, when the accident occurred."

1/16/1865, Sacto Union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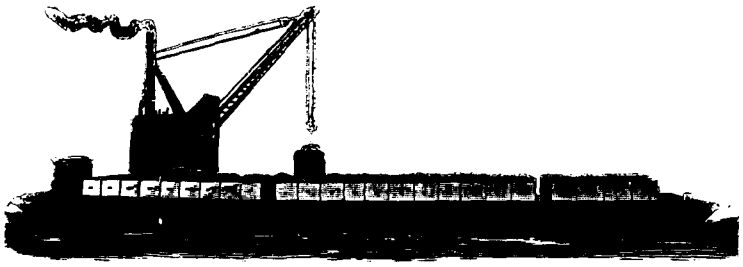
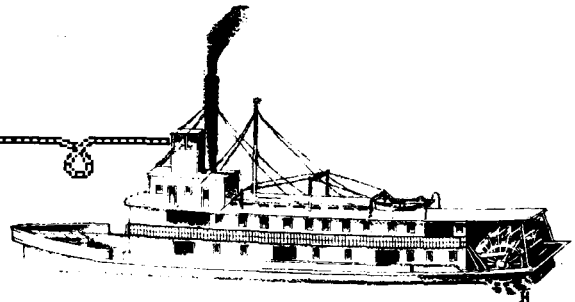


W. H. TAYLOR
Wood barge, wrecked on middle pier of Sacramento bridge. Broken in two pieces. 29 Jan.1866.

"Wreck of the Wood Barge.- The wood barge *W.H. Taylor* arrived at the bridge at eleven o'clock A.M. yesterday from the upper Sacramento River with about eighty-five cords of wood. For the purpose of passing the bridge with safety the owner made fast to the buoy placed in the river for that purpose. Unfortunately, the line parted, and the force of the current carried her rapidly down stream until she struck broadside against the middle pier of the bridge. After remaining in this position a minute or two, the barge broke in two, about forty feet from the stern. The larger portion, about sixty feet in length, floated down stream, and was recovered and made fast to the foot of R Street. The smaller portion was not recovered, but was carried down river. The wood was nearly all carried off, and was of course a dead loss to the owner. At the time the accident occurred there were six men on board, all of whom saved themselves by climbing up the pier to the bridge. Both barge and cargo belonged to Joseph Anton, a Portuguese. The wood was worth about $600 and the barge $800."

1/29/1866, Sacto Union

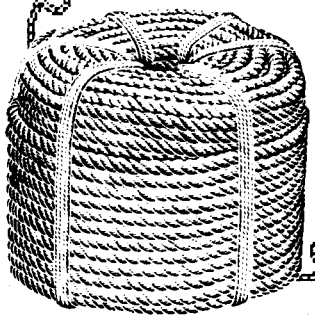


PRECIOUS CARGO

After minor collisions adjacent to the Embarcadero in Sacramento, all efforts were made to recover the merchandise before it sank.

The following item appeared in the Sacramento Union, showing the exuberant recovery efforts of one especially valuable cargo.

> "The Steamer *Cleopatra* came in collision with the steamer *Antelope* about half-past 8 o'clock yesterday morning, in consequences of which the former discharged into the river five one-eighth casks of brandy--the same seemingly rolling of their own motion off the guards of the steamer. Several of the levee boys, having a "taste" for the business, swam out, secured the casks, and returned them after being liberally rewarded for their disinterested exertions."
>
> —*Sacramento Union, May 24, 1860.*



ALPHABETICAL LISTING OF

SHIPWRECKS IN THE SACRAMENTO RIVER BETWEEN SACRAMENTO AND SHERMAN ISLAND

Alert
Steamship, 65 tons, built 1885, foundered at Rio Vista. 26 Sept. 1919.

Alviso
Steam, side wheel, 197 tons, built 1896, burned at Brytes Bend, Sacramento River. 15 Dec.1920.

Annie (Hannah) B. Bourne
Schooner snagged at Sutterville. 5 Aug.1862.

Antelope
Noted for speed, many racing mishaps upon Sacramento River. Steamship 220.6 feet long, brought the first mail from Sacramento to San Francisco from the westbound Pony Express. After collision with *Confidence*, Bushnell the captain put his body into the hole to stem the flow of water until the ship was beached. 1888.

Barge
Barge struck by steamer *Enterprise* about five miles below Nicholas. Sixty tons of freight was lost or destroyed. 9 Nov.1854.

Barge
Barge began sinking on Sacramento River by the waterworks; it was pulled to shore and salvaged. Deck crew jumped overboard and went downstream. 25 May 1854.

Barge
Sank eight miles above the city. 30 Mar.1858.

Barge *
Old barge, sunk, it served as a landing for the San Joaquin Company's steamers at the foot of N Street. 11 Nov. 1875.

Belle
Steamship, sidewheel. Exploded and sank at Russian Ford, 11 miles above Sacramento. Captain and thirty people killed. 7 Feb.1856.

* More information available on the shipwreck in Sunken Vessel List Section

Belle
Sternwheeler, snagged and sunk in fifteen feet of water. Cargo: coal; never raised. 18 Oct.1870.

Bessie *
Steamer sunk on the Yolo side of the river.December 27, 1869.

Bianca *
Struck a snag; about half the cargo was lost. Sank at the mouth of Cache Creek. 26 Oct. 1854.

Colusa
Sternwheel steamship; built 1911; wrecked near Broderick on September 15, 1932.

Colusa *
Capitol ran into and sank the *Colusa* to eliminate a business competitor. Cargo: Corn and grain. Sank near Collinsville. 19 Oct.1868.

Commodore
Schooner; rammed by *Yosemite*, 4 miles below Freeport. 17 Mar. 1864.

Continental
Steamship wrecked on the Sacramento. 29 Aug. 1870.

Cooper's Hulk *
Old Prison Brig; Wrecked on Sacramento side of river. 10/1/1879.

Cora
Steamship, hit snag and sank 20 miles below Sacramento on 20 May 1879.

Covina
Gas, screw, 87 tons, built in 1902. Burned at Collinsville. 30 July 1926.

Crescent *
Ship; stripped of salvageable material and abandoned at the foot of Y Street. 21March 1873.

Daisy
Steamship, sternwheel, sank in the Sacramento River, site unknown. July 17, 1888.

Diamond
Barge, sank in the Sacramento River near Gray's Landing. 10 Sept.1884.

Dimon *
"Sunk - R street. July 30, 1868.

* More information available on the shipwreck in Sunken Vessel List Section

Eclipse
Barge; wrecked near the bank of Steamboat Slough; efforts to raise were successful--towed to a point near Hog's Back. Probably placed in a position as a wingdam near the mouth of Cache Creek. 1 March 1873.

Edward Everett Jr.
Steamship, wheel, flat bottom. Wrecked in the Sacramento River after third trip. Engine sold to miners and the hull sold for ferry. 1849.

Eliza *
Barge; Sunk. 3 December 1864.

Fanny Ann *
Propeller, sunked while destined for Cache Creek with cargo of grain. 9 November 1868.

Fawn
Steamship, exploded near Sacramento; two dead. 18 August 1851.

Flora
Steamship, sternwheel, 185 tons, built 1885; burned at Broderick with other ships. 30 September 1932.

F.W. Crawford *
Sloop - snagged, lies in 16 feet of water below headreach of Steamboat Slough; cargo: Brick. July 30, 1868.

General Reddington *
Steamer; collision with pier opposite carpenter's bridge in Sacramento. 7 November 1859.

George Washington
Sank at Sacramento. 5 November 1849.

Goliath
Schooner; lost when foundered at Cache Slough during a Benicia/Courtland run. 22 July 1879.

Grace Barton
Sternwheel, burned at Rio Vista during the filming of "Jim Bluso," a movie. Camera man took advantage of good shots and filmed it. 1916.

Gypsy
Steamer; snagged 20 miles below Sacramento near Lufkin's Ranch. 2 September 1862.

* More information available on the shipwreck in Sunken Vessel List Section

Hector
Barge; struck a snag above Bogg's Ranch on upper Sacramento.
12 February 1873.

Hoosier
Sacramento River. 1853.

Helen Hensley *
Steamship; towed to the back of Wood Island and abandoned. Boilers, engines, everything else of value was removed. 12 March 1873.

Isleton
Burned to water's edge in Sacramento River. Cargo saved.
2 July 1909.

J.A. McClennan
Steamboat; blew up near Knight's Landing. Killed twenty five people. Pilot blown 200 feet into the air. 25 August 1861.

Jacinto
Steamship, sternwheel, 235 tons, built 1889. Wrecked at Broderick.
30 September 1932.

Jack Haynes
Steamboat; snagged while sailing the Sacramento River (Re-named the *R. K. Page*). February 1851.

James Rolph
Sailship, 228 feet, built 1884 at Liverpool. Burned at Shermans's Island. Burned at the same location as the *ANNIE ROLF*, but four days later. Same owner. 27 December 1938.

Kate Blackstone (Blakiston)
Schooner; capsized at the foot of Y Street, Sacramento, within 100 feet of the east bank. 15 June 1865.

La Grange *
Bark; old Prison Brig. 24 December 1859.

Launch
Sank on the Sacramento River. Loaded with merchandise. Two people drowned, three other safely reached shore. 9 May 1849.

Linnea
Gas, screw, 51 tons, built 1908. Burned at Sacramento. 27 Sept.1927.

* More information available on the shipwreck in Sunken Vessel List Section

Lizzie Patterson
Barge, sank in Sacramento River. Cargo: grain. 4 August 1879.

Lizzie Theresa
Gas, screw, built in 1876. Burned in Suisun Bay. 10 July 1920.

Long Island *
Schooner; collision with submerged *Ninus*.. 23 February 1860.

Major Tompkins
Swedish ship. Exploded in the Sacramento River; killed two people. 23 January 1851.

Mariposa
Rammed and sunk by *WEST POINT*, at New York of the Pacific (Pittsburg); later raised. 28 October 1850.

Melvina
Wrecked somewhere. Gas, screw, 63 tons. 10 October 1920.

Miner
Sternwheeler, 75 tons. Built 1850. Burned to water's edge at New York of the Pacific. 9 October 1851.

Missouri
Snagged and a total loss, in the Sacramento River. February 1851.

Monitor *
Barge; burnt and sunk two miles below Rio Vista. 25 July 1864.

Mosquito
Barge; Snagged; rested below the Sacramento and Yolo bridge. Cargo was wood. 29 July 1864.

Natalie
Wrecked at the foot of N Street, demolition of savagable materials. March 1856.

Neponset #2
Sternwheeler, 224 tons, built 1884; foundered in Georgiana Slough, Sacramento River.

Nevada *
Cache Slough; mired in quicksand. Remains there today. Racing with the *New World*. 1863.

* More information available on the shipwreck in Sunken Vessel List Section

New World
Steamship. Exploded near Sacramento; 15 injured, 2 dead. 3 May 1851.

New World
Steamship, snagged and sunk 9 miles below Sacramento on the Yolo side of the Sacramento River. 10 October 1854.

Ninus *
Bark, in the river below R Street. 16 November 1861.

O. K. *
Small steamer burned on the Yolo side opposite M Street. 3 July 1865.

Old Hulk *
Snagged at Nevada's Landing

Pearl
Steamship, side-wheeler. Boiler exploded at mouth of American River; 54 killed. Ship was raised. 27 Jan.1855.

Pet *
Steamer, snagged and sunk at a point near Steamboat Slough.10 Mar.1870.

Pike *
Wood barge; snagged "below" bridge in Sacramento. 29 June 1864.
Cargo: Wood.

Pioneer #1
Sacramento River. 1849.

Pioneer
Steamship, sunk Sacramento River, cargo saved. 1872.

Plumas
Sacramento River. 1854.

Port Saunders
Steamship, 112 tons; built 1920. Burned in the Sacramento River. September 2, 1941.

R.K. Page
Formally *Jack Hayes*. Enroute, Sacramento/Marysville. Racing with the *Governor Dana*. Used pitch, tar and oil for extra speed. blew up. Common practice at the time to obtain more speed; 24 killed. 22 February 1853.

* More information available on the shipwreck in Sunken Vessel List Section

***Robbie Hunter* ***
Schooner, stuck snag and sunk a few miles below Walnut Grove. Destination was San Quentin. 1 October 1879.

Sacramento
Sternwheeler, built 1914, burned at Broderick. 16 September 1932.

Salinas
Sloop; collided with steamer *New World*. 5 January 1876.

San Joaquin #2
Built in 1875, 242 tons, burned at Broderick. 30 September 1932.

San Joaquin #3
Built in 1877, side-wheeler. Burned at Sacramento. 25 September 1910.

San Joaquin #4
Steamship, sternwheeler, 365 tons, built 1885. Most powerful river steamer at the time. Burned at Broderick. 30 September 1932.

San Jose
Sternwheeler, 192 tons, built 1889. Burned at Broderick. 30 September 1932.

San Pablo
Schooner; struck a snag near Sutterville. 11 August 1862.

Shasta
Cargo: bales of hay. Owned by Mrs. Carl Juhl, only woman shipowner on the Pacific Coast. 30 September 1926.

S.M. Whipple
Sunk in Suisun Bay. 11 November 1875.

S.N. Bentley
Steamer; struck a snag 40 miles below Sacramento.

Sophie McClean
Sternwheeler, built 1858. Exploded at Suisun Bay wharf, 13 dead and missing. Boiler made from the same batch of steel as the *Washoe,* which also blew up. 26 November 1864.

Star Of The West
Wood barge; struck the western pier of the Sacramento and Yolo bridge and capsized. 8 Aug.1862.

* More information available on the shipwreck in Sunken Vessel List Section

Sterling *
Brig sunken hull to be removed from the foot of K Street.
21 October 1854.

Sunken Barge
Shown on USCE Sacramento River, 1894 Survey Map

Sunken Schooner
Shown on USCE Sacramento River, 1894 Survey Map

Tom Posse *
Barge; Sunk at Arcego's landing. Cargo was wood.October 1879.

Underwriter
Sunk in the Sacramento somewhere. 1857.

Unidentified barge *
Barge at the foot of N street. 18 November 1875.

Unidentified barge
"Barge Sunk. 19 September 1878.

Unidentified Launch *
Launch sunk about forty miles above Suisun, in the Sacramento river.
9 May 1849.

Valletta
Sternwheeler, river steamer, built in 1901; burned at Broderick.
3 September 1932.

Visalia
Steamer; sank at Hayes Bend, three miles above Nicholas; snagged.
25 May 1864.

Victor
Snagged and sank at Pike's Cut-off, near Coloma. March 1868.

Villa
Capsized in Suisun Bay; cargo : railroad steel. 24 January 1869.

Warrens Cutter
Cutter sailed for Fort Sacramento with payroll for garrison. Last sighted passing through Suisun Bay. Never reached Fort Sacramento. Ship was commanded by the sons of the Commodore of the Pacific Squadron, Montgomery. Loss, three officers, nine seamen December 1846.

* More information available on the shipwreck in Sunken Vessel List Section

Washoe
Blew up thirty five miles down from Sacramento. Killed 85 people.
5 September 1864.

Wasp *
Sloop; Snagged and sunk at Steamboat Slough; cargo: cobbles and bricks.
12 January 1865.

Weithpec
Sidewheeler, built 1904, burned at Brytes Bend, Sacramento River.
15 December 1920.

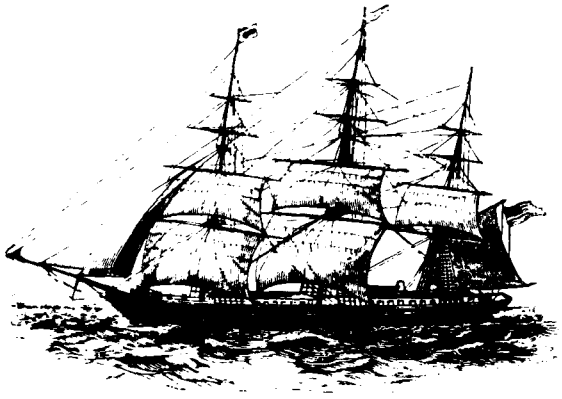
W. H. Taylor *
Wood barge, wrecked on middle pier of Sacramento bridge. Broken in two pieces. 29 January 1866.

Wilhelmina
Gas, screw, 112 tons built 1918. Burned at Fourteen Mile Slough, Sacramento River. Carried lumber and a general cargo. 16 December 1935.

Yosemite
Steamship, 1319 tons, blew up at the wharf at Rio Vista. Killed 29 Chinese in the China Hold. Killed twenty-two others and injured 50. Ship was raised. Finally sunk in Puget Sound. 12 October 1865.

Yuba
Snagged in the Sacramento River; total loss. February 1851.

Zinfandel
Steamship, 329 tons. Built 1889. Foundered at Miner Slough, Sacramento River. 5 September 1922.



* More information available on the shipwreck in Sunken Vessel List Section

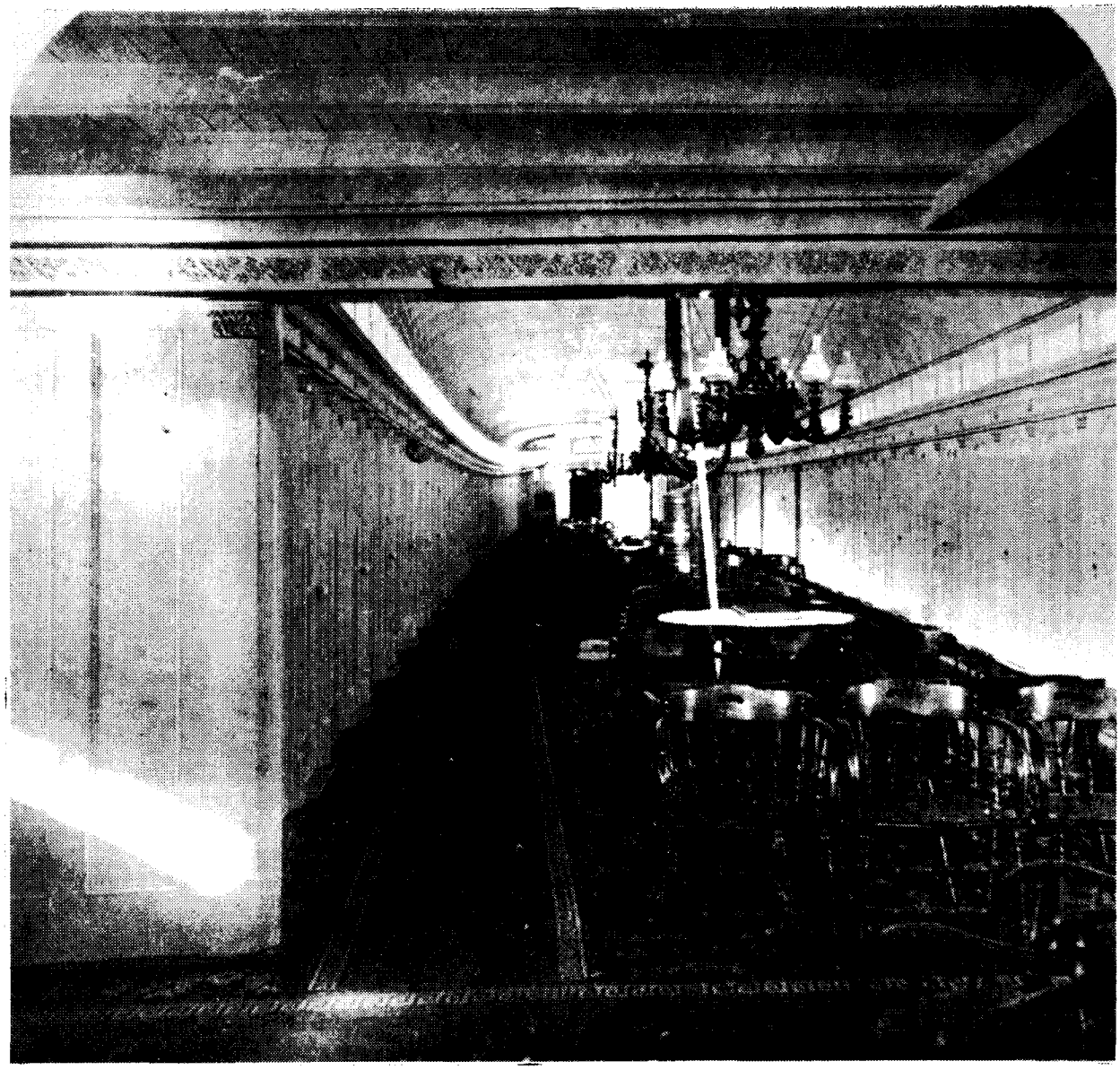


Figure 14. Cabin of the Sacramento River Steamer Capital. *This picture helps provide meaning to the term applied to some of the riverboats—Floating Palaces.*

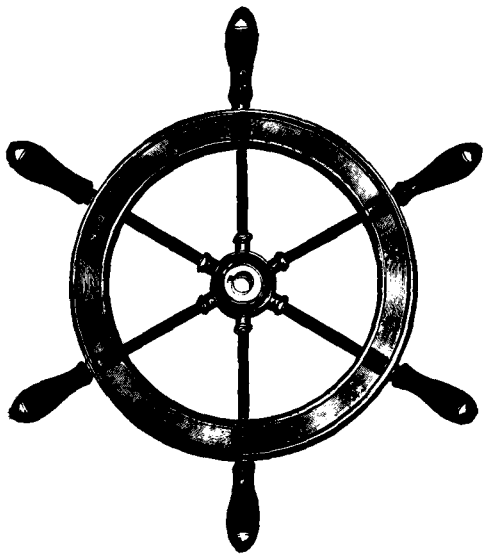
The doors to the individual cabins are along the left side of the picture. These doors opened out onto the common lounge area. Although the cabins were furnished nicely, they were quite small, by modern standards, and without much cross-ventilation. As a result, passengers spent much of their waking hours in the lounges.

CULTURAL DEVELOPMENT LIST

The following list was abstracted from early charts and maps. Each map was researched from the project limits near Rio Vista northerly to Sacramento. This list contains map title, source of map, date, scale, county, general location, formal name, and cultural features shown on the map. These maps are listed chronologically and are indicative of cultural growth along the Sacramento River.

The early 1841 sailing chart shows Sutterville as the only cultural feature on the chart. The 1894-5 Corps of Engineers Map are at a scale of 1"=300' which shows in detail the many farms, landings and docks along the Sacramento River system, including two sunken vessels.

Staff studied each map carefully to catalog information that would suggest archaeologically significant sites.



Map Title	Source	Date	Scale	County	General Location	Name	Features Shown on Map	
Hist. Sailing Chart		1841	None	Sacramento		Sutters New Helvetia	town	
Hist. Sailing Chart	USC&GS	1850	None	Solano		Montezuma House	house	
Hist. Sailing Chart	USC&GS	1850	None	Solano		Suisun City/ Rio Vista (Town)	town	
Hist. Sailing Chart	USC&GS	1850	None	Sacramento	Taylor/Grand Is.	Barber Sr.	house	
Hist. Sailing Chart	USC&GS	1850	None	Sacramento		A. Runyon & Sons	house	
Hist. Sailing Chart	USC&GS	1850	None	Sacramento		Indian Village	village	
Hist. Sailing Chart	USC&GS	1850	None	Sacramento		Indian Village	village	
Hist. Sailing Chart	USC&GS	1850	None	Sacramento		Barber Jr.	house	
Hist. Sailing Chart	USC&GS	1850	None	Sacramento		Webster or Russian Embarcadero	houses	
Hist. Sailing Chart	USC&GS	1850	None	Sacramento		Suttersville (Town)	town	
Hist. Sailing Chart	USC&GS	1850	None	Sacramento		Sacramento (Town)	city	
Hist. Sailing Chart	USC&GS	1850	None	Yolo		Washington (Town)	town	
Hist. Sailing Chart	USC&GS	1850	None	Sacramento		Boston (Town)	town	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Walnut Grove (Town)	wharves	
USCE Sacto. River	USCE	1894	1"=300'		Tyler Island	Green's Landing	landing	
							wharves	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Sals Wharf	wharf	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Trash's Landing	landing	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento	Grand Island	Parvin Ranch	warehouse	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento	Grand Island	H.D. Kercheval	landing	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Von Loben Sels, Upper Landing	landing	
							wharf	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Levi Painter's Cannery	cannery	
							wharves	
							blacksmith	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Courtland (Town)	wharves	
							bulkhead	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Chinatown (Town)	wharf	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento			20 or so houses	
						Osborn	wharf	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Green's	dry house	
							wharf	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Skiff Landing	landing	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Launch House	house	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Hollister Landing	landing	
							sunken schooner, Sheet 8	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Richland (Town) Gammon's Warehouse	warehouse	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Osborn Landing	landing	
							shed	
							warehouse	
USCE Sacto. River	USCE	1894	1"=300'	Yolo		Clarksburg (Town)	wharf	
							blacksmith	
							store	
							house	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Strothman Landing	landing	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Eagle Point Landing	landing	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Sacramento Brick Kiln	brick kiln	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Freeport (Town)		
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Brickyards of the Sacramento Transportation Co.	wharf	
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Sutterville (Town)		
USCE Sacto. River	USCE	1894	1"=300'	Sacramento		Sacramento (City)	sunken barge	
USCE Sacto. River	USCE	1895	1"=300'	Solano	Lone Tree Island	C. Larsen House	house	
							bridge	
							barn	
USCE Sacto. River	USCE	1895	1"=300'	Solano		R. D. Robbins	house	
							dock	
USCE Sacto. River	USCE	1895	1"=300'	Solano		Tolands (Town)	wharf	
							warehouses	
USCE Sacto. River	USCE	1895	1"=300'	Sacramento	Sherman Island	W. A. Huston	house	
							barn	
USCE Sacto. River	USCE	1895	1"=300'	Sacramento	Sherman Island	Emmaton (Town)	warehouse	
							wharves	
USCE Sacto. River	USCE	1895	1"=300'	Solano		Glassell	landing	
USCE Sacto. River	USCE	1895	1"=300'		Brannan Island	Wilcox	landing	
USCE Sacto. River	USCE	1895	1"=300'	Solano		Rio Vista (Town)	wharves	
							warehouses	
USCE Sacto. River	USCE	1895	1"=300'	Solano		New Town (Town)	wharves	
							warehouses	
USCE Sacto. River	USCE	1895	1"=300'	Sacramento	Brannan Island	Thomas McCourt	landing	
USCE Sacto. River	USCE	1895	1"=300'	Sacramento	Brannan Island	Huhnes	landing	

USCE Sacto. River	USCE	1895	1"=300'	Sacramento	Brannan Island	Ferry Landing, (Steamboat Slough)	landing	
USCE Sacto. River	USCE	1895	1"=300'	Sacramento	Brannan Island	E. Dann, Landing	landing	
							wharf	
USCE Sacto. River	USCE	1895	1"=300'	Sacramento	Brannan Island	Terchuran's	landing	
							shed	
							piling	
USCE Sacto. River	USCE	1895	1"=300'	Sacramento	Andrus Island	Isleton (Town)	China Town	
							wharves	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano		Montezuma Landing	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano		Brown	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Sherman Island	Landing	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano		Perley	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano		Tolands (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Sherman Island	Bakers	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Sherman Island	Emmaton (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano		R. Hansen's	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano		Peterson	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Sherman Island	Upham	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano		Neal	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano		Crum's	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Brannan Island	Zeile	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Brannan Island	Kulpers	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Brannan Island	J. F. Wilcox	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano		Rio Vista (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Brannan Island	Roper	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		NewTown (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	McIntyre	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Brannan Island	J. Rose	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Brannan Island	McCords	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Turner	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Brannan Island	Hodopp	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Brannan Island	C. F. Terchurer	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Bixler	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Brannan Island	H. F. Smith	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Brannan Island	Isleton (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Sterns	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Mrs. Buckly	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	McCarty	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	Wilcox	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	Turners	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Johnson & Lind	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	A. Nelson	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	C. K. Davis	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	John Smith	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	Poole	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	T. W. Sheehan	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	J. Aldrich	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	C. C. Perkins	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	Mrs. Hensley	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	J. Kennedy	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	G. A. Knott	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	C. Wickstorm	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	D. Leary	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	Mrs. Smith	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	Ben Chambers	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	C. Berlin	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	D. Leary	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	Mrs. Thisby	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	Foster	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Cordoza	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	H. Thisty	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Ryde (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	F. Peters	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	J. Albert	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	P. Crow	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Andrus Island	E. Dann's	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	C. Hansen	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	W. Madge	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	M. Madge	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Walnut Grove (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Cannery Landing	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	J. L. Kercheval	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		I. Wise	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	A. J. Reynolds	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Lock & L.	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		A. J. Dailey	landing	

Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Eastman	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Cowing	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Green	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Von Lobensels lower	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	H. Kercheval	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		S. Tamadge	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		J. Crofton lower	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Figgs lower	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		J. Crofton upper	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Grand Island Wharf	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Crofton	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	I. G. Hall	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	E. P. Figg	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Vorden's	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		J. R. Olsea	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	E. R. Parvin	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		C. V. Talmadge	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Mrs. Coggshell	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		S. Runyon	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Kanady	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	H. P. Kercheval	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		W. H. Berry	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Draw Bridge	bridge	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Lobensels Upper	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Mrs. K. Kercheval	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Onisbo	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Sutter Island	C. H. Bates	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		O. R. Runyon	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Verice	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Sutter Island	A. J. Peck	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Sutter Island	Olive	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Wedley	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Sutter Island	Morse	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Paintersville	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		G. A. Smith	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Condon's	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		B. Bates	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Courtland (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	N. Bump	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Sims	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	Ferran	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Randall Island	D. Osborne	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	W. F. Gammon	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Randall Island	J. W. Den	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Randall Island	G. B. Green	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	J. L. McFedden	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		D. Hollister	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	H. Ryman	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		S. W. Ralston	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Mrs. Payne	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	Green Brothers	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Richland (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	C. Nelson	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	A. J. Bogle	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		D. D. Gammon	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Dr. Williams	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	B. T. King	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		W. Johnson	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		M. S. Green	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	S. Smith	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Bryans	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	Geo. Cornish	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Osborn	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo	Merritts Island	L. Winter	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Warners	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Clarksburg (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Webber	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Strothman	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Hammand	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Peters	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Cromp	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Pump	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Cave	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Brown	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Eagle Point	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Gourley	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Mis Moore	landing	

Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Silva's	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Miller	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Beech Grove	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Brickyard	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Hop House	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		While House	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Freeport (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		T. Sotp	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Hop House	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Ruthers	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Williams Ferry	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Sheep Ranch	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Haycocks	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Glides	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		McGee Pumphouse	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Pleasant Ranch	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Lisbon Ranch	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		61 Ranch	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Whiteley	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		DuBoise	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Frank Martin	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Big Barn	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Brickyard	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Perran	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Riverside (Town)	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Lufkin	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Edwards Break	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Chicory	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Suttersville	town	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		McGowen	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Washington	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Lovedale	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Merkley	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Conrad	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento		Sacramento (City)	city	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Yolo		Washington (Town)	town	
						STEAMBOAT SLOUGH SECTION OF MAP		
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Neiri	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Ross	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Smith	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Mathews	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	China Ranch	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Geddes	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Walkers	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Hollenbeck	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	C. A. Wisley Ferry	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Thornton	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	D. Bixler	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Nirod	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Fairford	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Slough	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Jones & Seymeur	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	Goldman	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	L. W. Myers	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	F. Myers	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	H. W. Myers	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	J. Collins	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Sutter Island	Hustler	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Sutter Island	Sullivan	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	F. Davis	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Sacramento	Grand Island	A. W. Stuart	landing	
						MINER SLOUGH SECTION OF MAP		
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Tuttman	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Tuttman	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Powell	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Warner	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Thomas	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Carey	landing	
Chart Sacto. River	Punnett Bros.	1912	1"=mile	Solano	Ryer Island	Thomas	landing	
Air Comp. T-5000	USC&GS	1931	1:10000	Solano		Tolands Landing (Town)	landing	
Air Comp. T-5000	USC&GS	1931	1:10000	Sacramento	Sherman Island	Small boat ldg.	landing	
Air Comp. T-5000	USC&GS	1931	1:10000	Sacramento	Sherman Island	Emmaton (Town)	landing	
Air Comp. T-5000	USC&GS	1931	1:10000	Sacramento	Sherman Island	Fish Wharf	wharf	
Air Comp. T-5000	USC&GS	1931	1:10000	Sacramento	Sherman Island	Small boat landing	landing	
Air Comp. T-5000	USC&GS	1931	1:10000	Solano	Decker Island	Decker Landing	landing	

Air Comp. T-5000	USC&GS	1931	1:10000	Sacramento	Sherman Island	Fish Wharf	wharf	
Air Comp. T-5000	USC&GS	1931	1:10000	Sacramento	Sherman Island	Boat House	boat house	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Brannan Island	Pile Bulkhead	bulkhead	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Brannan Island	Hulk	hulk	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Brannan Island	Hulk	hulk	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Brannan Island	Hulk	hulk	
Air Comp. T-5001	USC&GS	1931	1:10000	Solano		Rio Vista(Town)	town	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Brannan Island	Pile Bulkhead	bulkhead	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento		Draw Bridge	bridge	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento		Newtown (Town)	town	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Brannan Island	Pile Bulkhead	bulkhead	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Ida Island	Wooden Bridge	bridge	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Grand Island	Pile Bulkhead	bulkhead	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Grand Island	Griffin Bros.	building	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Brannan Island	Wharf	wharf	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Brannan Island	Libby, McNiel, & Libby	wharf	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Brannan Island	Isleton (Town)	town	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Andrus Island	California Coop. Cannery	wharf	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Andrus Island	Bayside Cannery	wharf	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Andrus Island	Southern Pacific Wharf	wharf	
Air Comp. T-5001	USC&GS	1931	1:10000	Sacramento	Andrus Island	Isleton Drawbridge	drawbridge	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 33	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Landing No. 40	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 35	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Landing No. 42.5	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 37	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Landing No. 44	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Landing No. 46	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 39	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Landing No. 46.5	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Mathens	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Landing No. 48	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 41	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Pratt Low Preserving	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 41.5	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 43	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Landing No. 50	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	California Conserving Co.	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 47.5	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Landing No. 52	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Libby, McNeil & Libby	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 49.5	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Landing No. 54	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 53	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Ryde (Town)	town	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 55	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Landing No. 56.5	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Andrus Island	Landing No. 58	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 59	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 59.5	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 61	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Tyler Island	Walnut Grove (Town)	town	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 61.5	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 63	landing	
						STEAMBOAT SLOUGH PORTION OF MAP		
Air Comp. T-5002	USC&GS	1931	1:10000	Solano	Ryer Island	Landing	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Solano	Ryer Island	Landing	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Solano	Ryer Island	Landing	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Solano	Ryer Island	West Steel Pole Howard Landing	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Sacramento	Grand Island	East Steel Pole Howard Landing	landing	
Air Comp. T-5002	USC&GS	1931	1:10000	Solano	Ryer Island	Howard Landing Ferry	landing	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento	Grand Island	Union Oil Wharf	wharf	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento	Grand Island	Standard Oil Wharf	wharf	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento		Southern Pacific Wharf	wharf	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento		Libby, McNeil & Libby No. 3	landing	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 65.5	landing	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento		Landing No. 70	landing	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento		MacCathys B 72	landing	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento		Simonis B74	landing	

Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 71	landing	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento		Landinmg No. 72	landing	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento	Grand Island	Grand Island 75	landing	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento	Grand Island	Crofter 77	landing	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento		Vorden Landing	landing	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento		Vorden (Town)	town	
Air Comp. T-5019	USC&GS	1931	1:10000	Sacramento		McCollough 80	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing No. 79	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento		Talmadge 82	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento		Runyon 84	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento	Grand Island	Coggeshall 81	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento		Kanady 86	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento		Landing No. 83	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento		Landing No. 85	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento		Landing No. 92	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento		Landing No. 87	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento		Landing No. 94	landing	
						STEAMBOAT SLOUGH PORTION OF MAP		
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento	Ryer Island	Landing	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento	Sutter Island	Landing	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento	Grand Island	Goldman Ldg D-217	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento	Sutter Island	Landing	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento	Grand Island	Landing	landing	
Air Comp. T-5003	USC&GS	1931	1:10000	Sacramento	Sutter Island	Landing	landing	
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						MINER SLOUGH PORTION OF MAP		
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Air Comp. T-5006	USC&GS	1931	1 :10000	Sacramento		Union Oil Co. Wharf	wharf	
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Air Comp. T-5006	USC&GS	1931	1 :10000	Sacramento		Eagle Point Landing 138	landing	
Air Comp. T-5006	USC&GS	1931	1 :10000	Sacramento		Moores Landing 140	landing	
Air Comp. T-5007	USC&GS	1931	1 :10000	Yolo		Freeport Landing 137	landing	
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Air Comp. T-5009	USC&GS	1931	1 :10000	Sacramento		Assoicated OIL Co. Wharf	wharf	
Air Comp. T-5009	USC&GS	1931	1 :10000	Yolo		Capital Rice Mill Landing	Landing	
Air Comp. T-5009	USC&GS	1931	1 :10000	Sacramento		PG&E Dock	dock	
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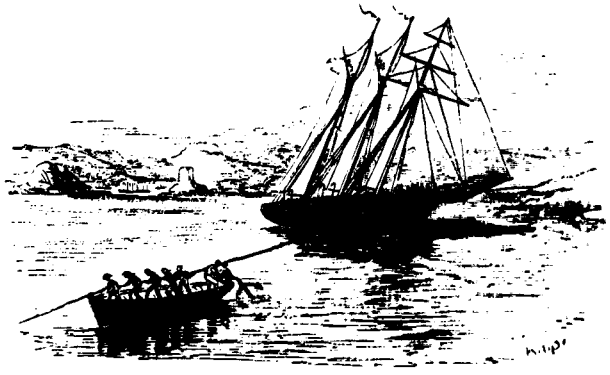
						CACHE SLOUGH		
Air Comp. T-5016	USC&GS	1931	1 :10000	Solano	Ryer Island	Sunken Dredge	dredge	
Air Comp. T-5016	USC&GS	1931	1 :10000	Solano	Ryer Island	Old Beet Loader	beet loader	
Air Comp. T-5016	USC&GS	1931	1 :10000	Solano		Hamilton Landing	landing	
Air Comp. T-5016	USC&GS	1931	1 :10000	Solano	Ryer Island	Booth Landing 5	landing	
Air Comp. T-5016	USC&GS	1931	1 :10000	Solano		Old Beet Loader	beet loader	
						MINER SLOUGH		
Air Comp. T-5016	USC&GS	1931	1 :10000	Solano	Ryer Island	Landing	landing	
Air Comp. T-5016	USC&GS	1931	1 :10000	Solano	Ryer Island	Landing	landing	



Chapter 3

SURVEY ESTIMATES

Electronic Survey, Field Verification

ELECTRONIC SURVEY

INTRODUCTION

Paragraph (c) of Item 3560-001-001 of the Supplemental Report of the 1986 Budget Act requires that the State Lands Commission prepare a cost estimate for an electronic survey of the Sacramento River. The purpose of the survey is to locate the position of submerged vessels and artifacts and to determine the geological composition of the riverbed at specific locations. The electronic instruments to be used include magnetometers, side-scan sonar, and sub-bottom profilers. The results of this phase of the project will greatly assist in determining the priority of selected locations.

Evidence of sinkings discovered during the document research does not necessarily pinpoint the location of the occurrence. It is anticipated that the electronic survey will fix the location of the sunken vessel, making the task of field verification easier. The final product will be a report of the analysis of the survey supported by site maps depicting the location of suspected archaelogical finds, and charts showing the probable geological composition of the river bed. These will be supported by captains' logs, equipment operators' logs and field survey notes.

Objectives of Electronic Survey

Two objectives will be accomplished with this survey:

1. Suspected archaeologically significant objects will be electronically located and their positions noted.

2. The river bed will be mapped at selected locations to the extent that water depths and siltation depths will be known.

Objective of Mapping

Mapping at selected locations will consist of the following:

1. Vicinity map. This will show the selected site in relation to Sacramento County (Exhibit A).

2. Site map will show approximately 6000 feet of river per sheet at a scale of 1 inch = 200 feet (Exhibit B).

3. Detail map will show the site at a scale of 1 inch = 1 foot, or at a scale that will render the most accurate detail (Exhibit C).

4. Map sheets will be 24 inches x 34 inches.

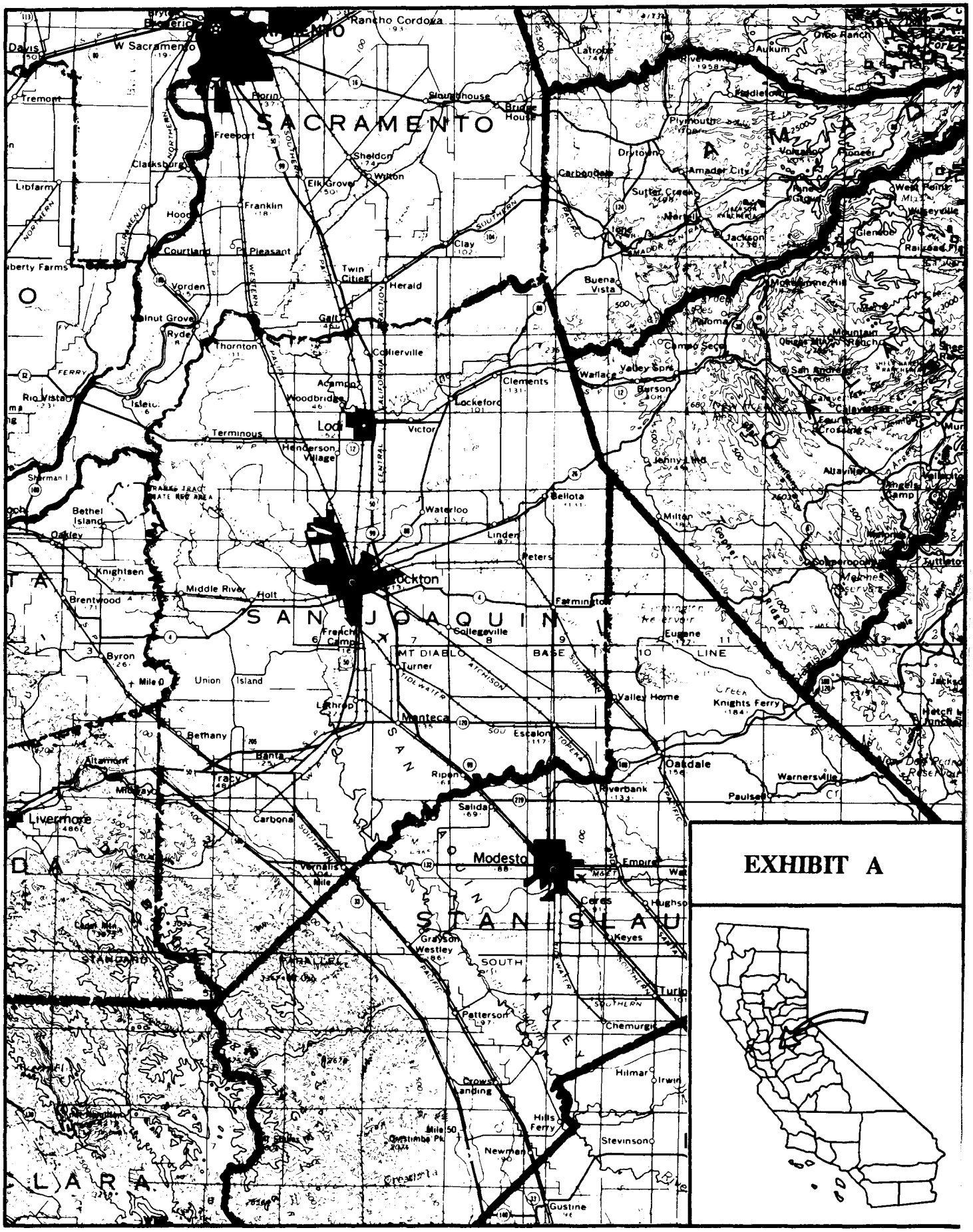
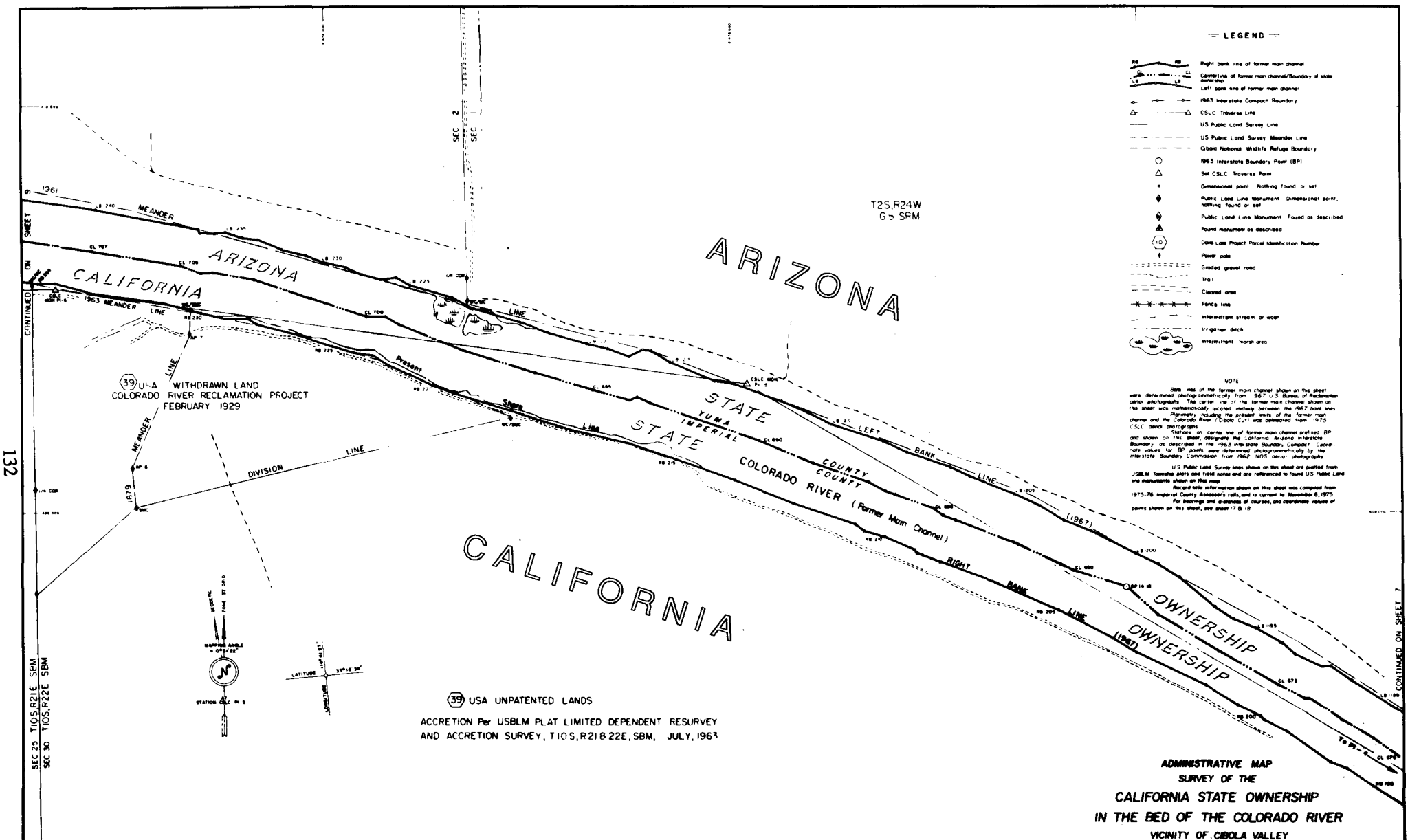

SACRAMENTO
SAN JOAQUIN
STANISLAUS
Sacramento
Rancho Cordova
W Sacramento
Davis
Tremont
Florin
Sloughhouse
Bridge House
Latrobe
Aukum
Oro Ranch
Fiddletown
Plymouth
Freeport
Clarksburg
Sheldon
Elk Grove
Wilton
Drytown
Amador City
Carbondale
Sutter Creek
Jackson
Clay
Franklin
Hood
Courtland
Pleasant
Twin Cities
Herald
Buena Vista
Vorden
Walnut Grove
Galt
Ryde
Thornton
Collierville
Acampo
Woodbridge
Lockeford
Clements
Wallace
Valley Spring
Burson
Campo Seco
San Andreas
Rio Vista
Isleton
Lodi
Victor
Terminous
Henderson Village
Jenny Lind
Altaville
Angels Camp
Sherman I
Bethel Island
Oakley
Waterloo
Bellota
Milton
Linden
Peters
Knightsen
Stockton
Middle River
Holt
Brentwood
Farmington
Collegeville
French Camp
Eugene
Byron
Mile 0
Union Island
Turner
Valley Home
Knights Ferry
Lathrop
Manteca
Escalon
Bethany
Banta
Altamont
Tracy
Ripon
Oakdale
Warnersville
Paulsell
Riverbank
Livermore
Carbona
Salida
Modesto
Empire
Vernalis
Ceres
Hughson
Keyes
Grayson
Westley
Patterson
Turlock
Chemurgic
Hilmar
Irwin
Crows Landing
Hills Ferry
Newman
Stevinson
Gustine
Mile 50
Mt Diablo Base Line
EXHIBIT A

Figure 15. - Vicinity Map. This map shows the general vicinity of the project in relation to the state.

Project Area

The project area for the electronic survey is defined by the legislature as the Sacramento River, from the I Street Bridge, in Sacramento to the westerly tip of Sherman Island. A distance of approximately 60 miles. Also included in this proposal is Steamboat Slough (approximately 12 miles), and Sutter Slough (approximately 6 miles). The total length of waterways is 78 miles.



REVISIONS	BY	DATE	SCALE 1 = 200 Feet	CONTOUR INT.

STATE OF CALIFORNIA
STATE LANDS COMMISSION
STATE LANDS DIVISION

APPROVED _____ DATE _____

PREPARED UNDER W 20693.1
FILE NO.
SECTION G L A P
SHEET 8 OF 21

Figure 16.- (Opposite page) Site Map 1" = 200'. This is representative of the maps produced by the State Lands Commission. Although the maps produced for this project may not include many of the ownership lines, all topographic features will be shown.

Channel Changes In Project Area

The Sacramento River, within the project area, is almost entirely situated in its natural channel. That is, it has not been rechannelized by man. This study has located only one significant artificial cut or rechannelization of the riverbed. Decker Island, which lies northerly of Sherman Island, was created by an apparent cut. The cut was made to straighten the Sacramento River, and at the same time, separated Decker Island from the upland known as Montezuma Hills. With this exception, the Sacramento River will be considered to have been confined in this historically natural position by its extensive levee system. Steamboat Slough and Sutter Slough were included in this portion of the study because historical maps and charts have depicted these two sloughs as the Sacramento River. Consequently, these two water courses were navigated as the Sacramento River.

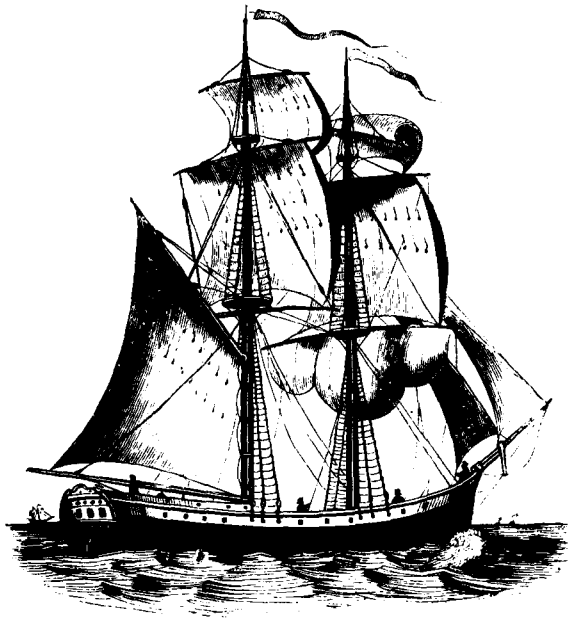
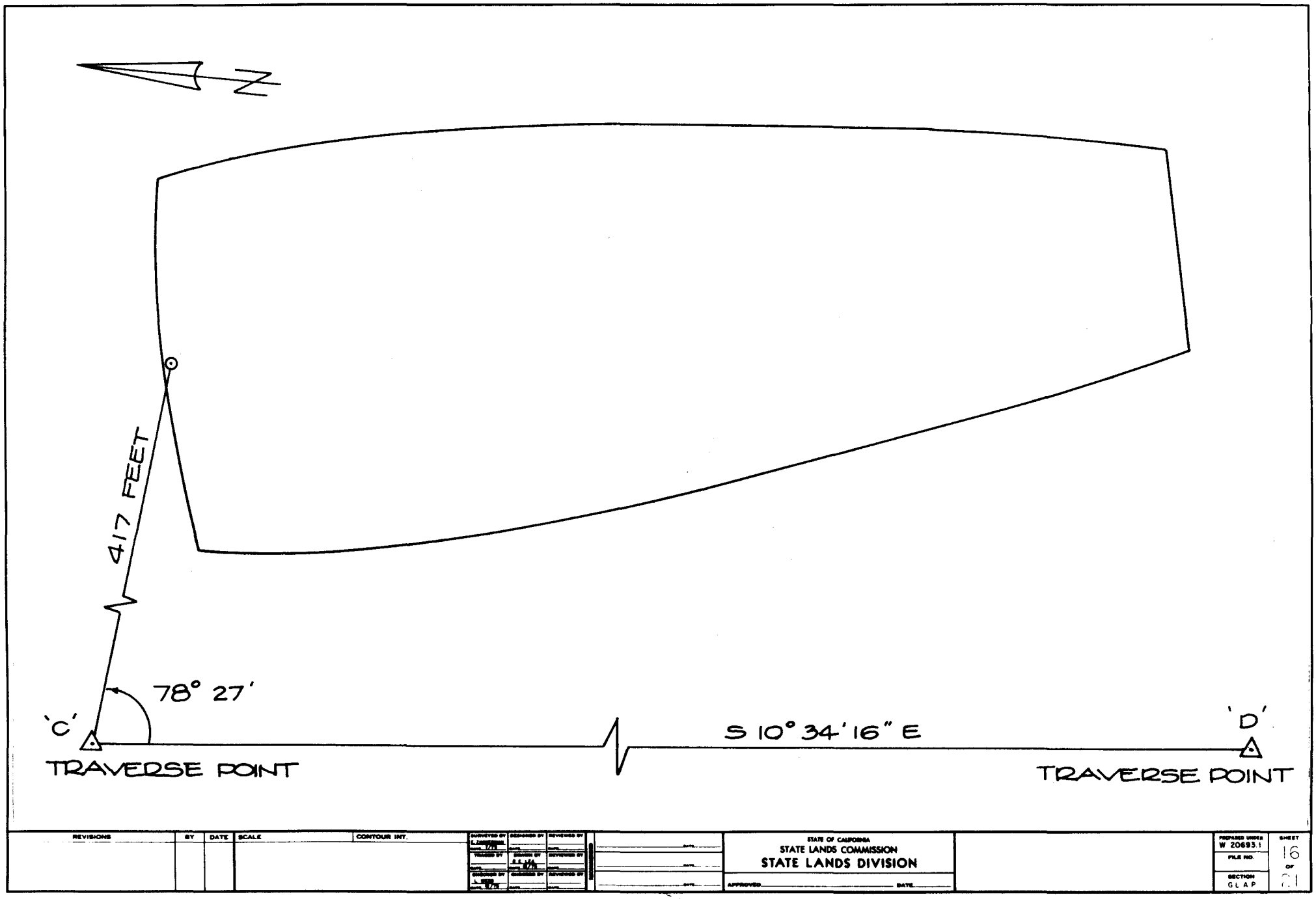


Figure 17.- Detail Map 1" = 20'. The scale of this map will be such that all important details will be adequately shown.



PROPOSED ELECTRONIC SURVEY AND MAPPING OPERATIONS

Preliminary Activities

The total length of the river to be investigated exceeds 60 miles. The cost to search each square mile would be very costly. It is however both appropriate and more economical to identify potential sites of underwater archaeological artifacts by review and evaluation of documents which locate areas of ships anchorages, berthing locations and accidents. Once the sites are identified there still remains the problem of locating artifacts in murky water and sand.

The most appropriate way to pinpoint the exact location of potential submerged artifacts is by the use of electronic devices that rely on sound transmission and that measure magnetism.

Electronic Survey Operation

The electronic equipment used to conduct the underwater survey of previously selected sites includes side-scan sonar, sub-bottom profiler and magnetometer.

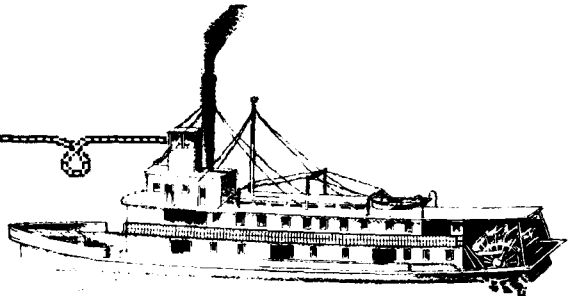
Side-Scan Sonar: An echo sounding device towed beneath the boat that provides a graphic picture of items resting on or above the bottom surface.

Sub-bottom Profiler: An echo sounding device that is a high power, low frequency sonar which penetrates the bottom surface and provides a graphic picture of buried solid objects. This instrument is very reliable in a mud and silt bottom, however, it is not very useful in heavy sand or gravel.

Magnetometer: A device that measures and records the steady force of the earth's magnetic field. It is limited to a bottom that is reasonably smooth and magnetically constant.

The electronic search will provide a chart of the selected areas with real targets for future exploration by divers. The search consists of passing through the survey area with side-scan sonar to identify items on the bottom surface. The sub-bottom profiler is then used to penetrate the sediment charting the shape of buried items. Next the magnetometer is used to identify the presence of iron materials.

The survey will be performed by professional scientists and marine technicians with extensive experience and training in submarine data acquisition and interpretation. A boat, such as a Navy Landing Craft, 36 feet long, provides an ideal platform for instruments and operators. It is also an excellent diving platform. However, any boat that would provide a minimum of 10 feet of deck space will accommodate the equipment and operators.

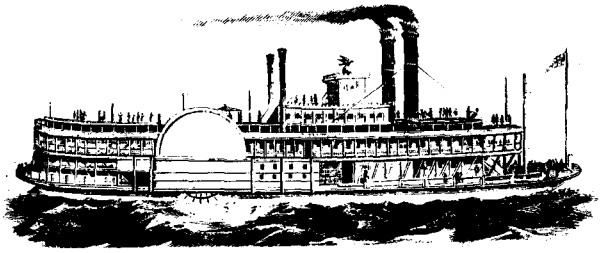


RACING ON THE SACRAMENTO

The California Steam Navigation Company never held an iron-fisted control over the River, and though it tried to discourage racing, it could not stop it altogether. One opposition company which ran against CSNC was the California Navigation and Improvement Company, organized by Captain G.W. Kidd, the "pestiferous" owner of the *Nevada* and *Washoe*.

Newspaper accounts show the *Nevada* liked to chase the *Antelope*, a smaller but faster steamer, with the intention of ramming her. And, at Benicia once, the *Nevada* went after the *New World*, but the latter boat pushed the *Nevada* up on a mudbank.

The rivalry between the two steamers continued. During one especially close race, the *Nevada* tried to cut in front of the *New World*, but the latter chased the *Nevada* into Steamboat Slough where the *Nevada*, more concerned with staying ahead than watching the channel, was snagged. Mired in quicksand near Cache Slough, the *Nevada* became a total loss.



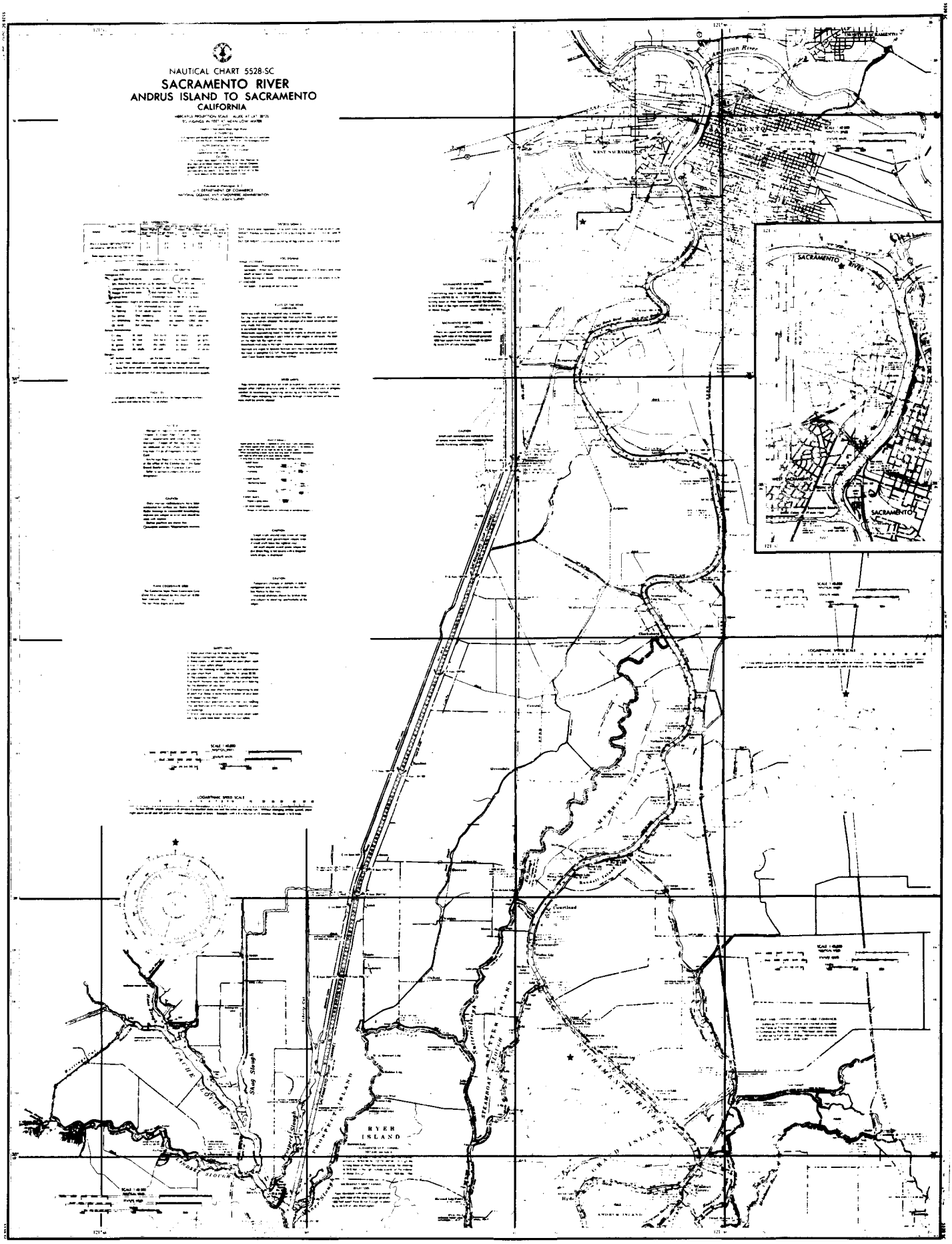
Mapping Operations

Mapping in support of the electronic survey will begin with the inventory of all possible sites. Existing maps, historical and current, will be included in the document search portion of the report. These maps will also serve as the basis for more specific mapping on sites selected for the electronic survey. This phase of the project is vitally important to any recovery efforts. Suspected sunken ships or artifacts discovered electronically will be accurately plotted at the time of the finding. This will decrease the diving time. At the rate of $1500.00 a day, diving time would be better used for the recovery of artifacts, not in the search.

As outlined in Section II of this estimate, mapping at each site will consist of three types of maps: vicinity map, site map, and detail map. Existing maps, Exhibit A, will be used for the vicinity map to show the relation of the site to Sacramento County. The site maps, Exhibit B, at a scale of 1 inch = 200 feet, will be drawn in as many sheets as required to cover a site. It is anticipated that a scan for a sunken ship could will be at least a mile. Scans could be as long as six miles depending on the accuracy of the reports in the document search.

Horizontal control is defined as points on the face of the earth that have a known position with reference to a particular datum. For instance, (see Figure.18) nautical charts have lines of latitude and longitude as the reference datum. Geographic coordinates, latitude and longitude, are used to locate the horizontal position of points on the curved surface of the earth. Another example of reference datum in common use is the California Coordinate System (CCS). The CCS is based on geographic coordinates. Two of the more significant differences is that it uses the foot as the unit of measurement and maps based on the CCS assume that the earth is flat. A reference datum is a basic requirement for accurate mapping.

Research for horizontal control shows that there is none available in the immediate area. This does not pose a threat to the accuracy of the mapping. It only implies that the mapping will not be referenced to an established datum. Instead of using the California Coordinate System, or latitude and longitude, an assumed datum will be used. An assumed datum is very similar to the CCS in that it uses the foot as the unit of measure and the mapping assumes a flat surface.



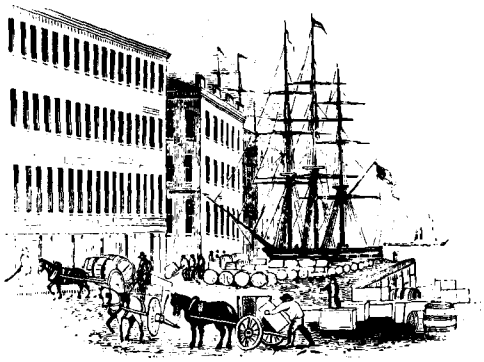
NAUTICAL CHART 5528-SC

SACRAMENTO RIVER
ANDRUS ISLAND TO SACRAMENTO
CALIFORNIA

MERCATOR PROJECTION SCALE 1:40,000 AT LAT 38°25'
SOUNDINGS IN FEET AT MEAN LOW WATER

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

Figure 18. (Opposite page) Nautical Chart 5528SC. Grid lines (enhanced for reproduction) on this chart represent lines of latitude and longitude. The grid spacing is at five minute intervals. The horizontal position of any point on this chart can be calculated from the nearest grid lines.



A field survey required for mapping will consist of the following for each site:

1. Reconnaissance of the site to determine the position of the horizontal control points to be established. The physical point will be reinforcing iron, 3/4 of an inch in diameter, 30 inches long, with an aluminum survey cap, set in the ground. The cap will identify the monument as a State Lands Commission survey marker. Permanence and stability are factors that are considered in positioning control points.

2. Control points will be spaced 1000 feet apart along the length of the site. The positions of each control point will be referenced to existing topography. The topographic survey will plot the location of the river's edge, roadways, natural and manmade features such as telephone poles, utility lines, and houses. This will aid in the recovery of the points at a later date. If possible, the points will be set on top of the levee, on the same side of the river as where the sunken ship is expected to be.

3. Field survey for control will be the measurement of the horizontal angle and the distance between succeeding points. This series of points, an open traverse,will be the basis for mapping.

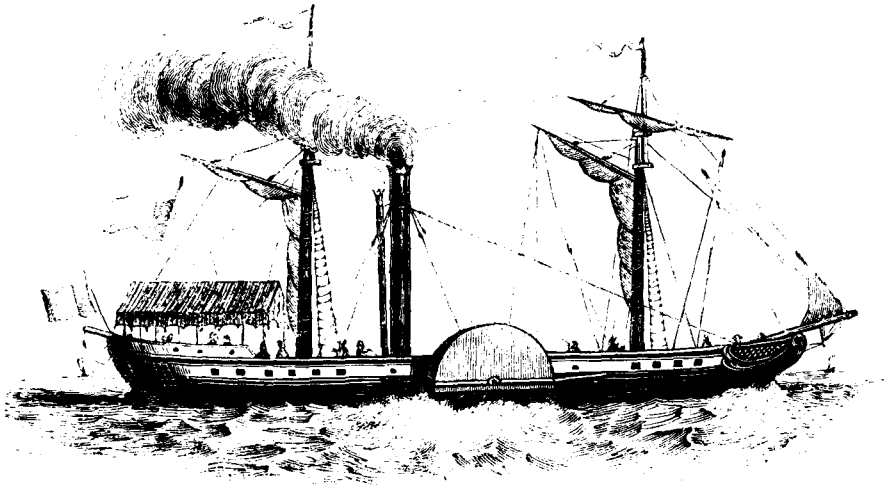
4. As the electronic survey is proceeding, the position of the boat will be tracked by theodolite and electronic distance measurer (EDM) and its position noted. Communication between the boat and the survey crew will enable an accurate plot of the boat as it passes over suspected archaeological finds.

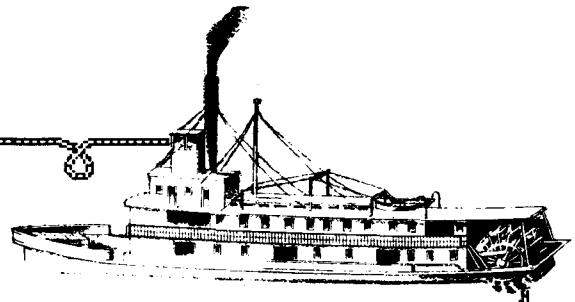
The field survey in support of an electronic survey for the entire project will be somewhat different. Control points will be set further apart and the topopgraphic surveying will be at a minimum. The field work will be only sufficient to locate the position of the boat doing the electronic survey. No maps will be produced from this operation unless potentially significant targets are discovered.

The survey operations at this point will have been sufficient to complete the vicinity map and site map. The survey for the detail map, Exhibit C, will occur at the time of an exploratory dive. Supplemental horizontal control will be set, having the points 100 feet apart and closer to the waters edge. Vertical control for the survey will be by river gage observation.

The survey and mapping of an archaeologically significant site on dry land is also anticipated. The survey and mapping operations will be similar to the underwater mapping operations. The horizontal control and topographic survey will be as previously described, however, more attention will be given to detail. Another aspect of an archaeological site is

the ownership of the land. The riverbed is under the jurisdiction of the State Lands Commission. The ownership of an upland location may fall into private ownership and the location of an archaeological site may have to be legally described. This will not pose a problem, but it is a variation of the river survey.

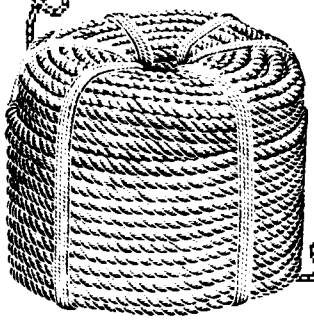




RAISING THE NEVADA

For the most part, steamship companies and their insurers were vague about reporting exact locations of vessel sinkings. Due to silting from hydraulic mining, the river bed had been raised several feet; if in shallow water a ship could be easily stripped by opportunists. In this rare newspaper article, the recovery of the steamer *Nevada* is revealed.

> Many of the city papers have published a statement to the effect that, owing to seeming insuperable difficulties, Mr Fell had abandoned the attempt to raise the hull of this steamer from a place where she now lies, off Washington point, opposite Rio Vista, on the Sacramento River. This, we are informed, is an error. The contractor, like Gen McClellan, has only changed his "base of operations." The first plan was to pump her out by hydraulic process; but it was found that she was so deeply imbedded in the mud--a bar being formed around her, and some ten feet of deposit on the stern--it would result in breaking the boat up, and was accordingly abandoned. This probably gave rise to the report that no further effort would be made. It is proposed, by the aid of a sort of coffer dam (which is nearly completed) around the hulk as it lies, to secure a clear space for the removal of the superincumbent mass of river mud, and the effective application of the hydraulic power, whereby Fell hopes to bring the boat to the surface in about twenty days' time, more or less.
>
> —*Sacramento Union, March 3, 1861*



COST ESTIMATES

The Electronic Survey - Contracted Work
The estimated cost per day for equipment and operators, not including positioning devices, or survey teams are:

Boat and operator	$300.00
Side-scan and operator	$550.00
Sub-bottomprofiler	$750.00
Magnetometer and operator	$550.00
Mobilization (one time cost)	$1000.00

Each instrument has a different range of coverage, therefore, each scan will be performed independently of the others. Just as the range of each instrument varies, so does the area that can be surveyed in one day. The following are cost estimates for the equipment and operators for an electronic scan on seventy miles of river, the entire project area:

Side-scan sonar and operator: 24 days @ $550 =	$13,200.00
Boat and operator: 24 days @ $300 =	$7,200.00
Sub-bottom profiler and operator: 70 days @ $750 =	$52,500.00
Boat and operator: 70 days @ $300 =	$21,000.00
Magnetometer and operator: 24 days @ $550 =	$13,200.00
Boat and operator: 24 days @ $300 =	$7,200.00
Sub Total:	*$114,300.00*
Per-diem for two boat operators: 118 days @ $82 x2 =	$19,352.00
Mobilization:	$1,000.00
Total:	**$134,652.00**

Note: The side scan estimate is based on an average of four passes per section of river and an average coverage of three miles per day. The same coverage data was used for the magnetometer estimate. The sub-bottom profiler estimate was calculated on the basis of 15 to 20 passes per section of river and coverage of one mile per day.

The following is the cost estimate for a individual site or a single mile of river *(mobilization for less than 1 day not considered):*

Side-scan sonar and operator:	$550.00
Boat and operator:	$300.00
Side-scan cost: (yields 3 miles per day)	*$850.00/day*
Sub-bottom profiler and operator:	$750.00

Boat and operator:	$300.00
Sub-bottom profiler cost: (yields 1 mile per day)	*$1,050.00/day*
Magnetometer and operator:	$550.00
Boat and operator:	$300.00
Magnetometer cost: (yields 3 miles per day)	*$850.00/day*
Per diem: 2 x $82 for 1 day =	*$164.00*
Mobilization cost:	*$1,000.00*
Cost for all three operations:	**$3,914.00/day**

Note: The side-scan sonar estimate was based on four passes over a mile of river or an isolated site. Additional time was calculated for start-up. The same time and coverage was estimated for the magnetometer. The sub-bottom profiler estimate was based on 15 passes over a mile of river or an isolated site. A mobilization or start-up charge of $1000 will be required for each survey site.

The Electronic Survey - SLC Equipment

In preparation of these cost estimates, an alternate operation plan was developed. Consideration was given to the purchase of the electronic equipment necessary to perform the survey and the training of personnel in its use. This project is the first of its type and is limited in area to only a small fraction of the wetlands under the jurisdiction of the Commission. Historical research projects can be developed to study other potentially significant sites. This project, and future projects, could be surveyed at reduced cost if the Commission had the electronic equipment for the underwater survey and trained operators.

The first step taken to explore the possible purchase of equipment was to arrange for demonstrations of the various instruments. The side-scan sonar, sub-bottom profiler, and magnetometer were selected as the instruments to be evaluated. Nearly one hundred letters were sent out to electronic equipment manufacturers, vendors, and dealers inviting them to demonstrate their equipment on the Sacramento River. Two representatives agreed to demonstrate the requested instruments.

Rick Whitney of Whitney & Associates, Inc. arranged for the demonstration of the E G & G side-scan sonar and magnetometer, and the Datasonics, Inc. sub-bottom profiler. Carl Moller of C & C Moller, Inc. demonstrated the Kline side-scan sonar and sub-bottom profiler.
The instruments being demonstrated were considered to be of the latest technology.

The purpose of the demonstrations was to determine if it would be to the States advantage to purchase the equipment. An alternative would be to subcontract the work out. The equipment was evaluated for the following factors:

1. Ease of use
2. Training required to acquire and interpret data

3. Accuracy
4. Resolution
5. Cost

The Sacramento River, from the Miller Park boat ramp to the Tower Bridge, was used as the testing site. The demonstration area included that portion of the river searched last year by Bob Taylor and Associated Divers. The test area was to be the same for all demonstrations. This would allow for a comparison of results.

On May 11, 1987, Rick Whitney arranged for Ron Royal, Terry S. Snyder, Dave Porta, and John Ingenito to be in Sacramento for the on-site demonstrations. The State Lands Commission boat, Wet Dog, was used as the support vessel.

Ron Royal demonstrated the E G & G Recording Proton Magnetometer Model G-866, Figure 19. This instrument was extremely compact, and apparently easy to operate; the output was both in digital and graphical form, Figure 20.

Terry Snider demonstrated the E G & G Model 260 Image Correcting Side-Scan Sonar and Model 272TD Tow Fish, Figure 21. Although this instrument is larger than the magnetometer, it is still compact. The recorder is cubical in shape, measuring approximately 20 inches to the side. The output is in paper form and was easy to read, Figure 22.

Dave Porta and John Ingenito demonstrated the Datasonics SBP-5000 Sub-Bottom Profiler, Figure 23. The equipment was in three separate units: the control unit, the plotter, and a "catamaran transducer vehicle." The printout from this instrument, Figure 24, was not as easily read as the other records and required some interpretation.

On May 13, 1987, Carl Moller demonstrated the Klein Side-Scan Sonar and Dual Channel Recorder Model 421. This piece of equipment has the capability to record both side-scan sonar and sub-bottom profile. Figure 25 shows a sample of the output. Although it was not available for a demonstration, the Klein Digital Sonar, System 590 (Figures 26 & 27) is the newer model with improved recording abilities.

Approximate prices are:

Side-scan sonar	$70,000.00
Sub-bottom profiler	$45,000.00
Magnetometer	$17,000.00

The exact prices are dependent on the model, and additional support equipment required or ordered.

Cost Estimates For The Project:

Electronic Equipment Purchase	$132,000.00
Time Required: 118 Days	
Boat & Operator: 118 x $300.00	$35,400.00
Assoc. BDO operator: 118 x $383.00	$45,200.00
TOTAL	**$212,600.00**

EG&G GEOMETRICS

Recording Proton Magnetometer Model G-866

Figure 19.- EG & G Recording Proton Magnetometer Model G-866. Photo courtesy of EG & G Geometrics.

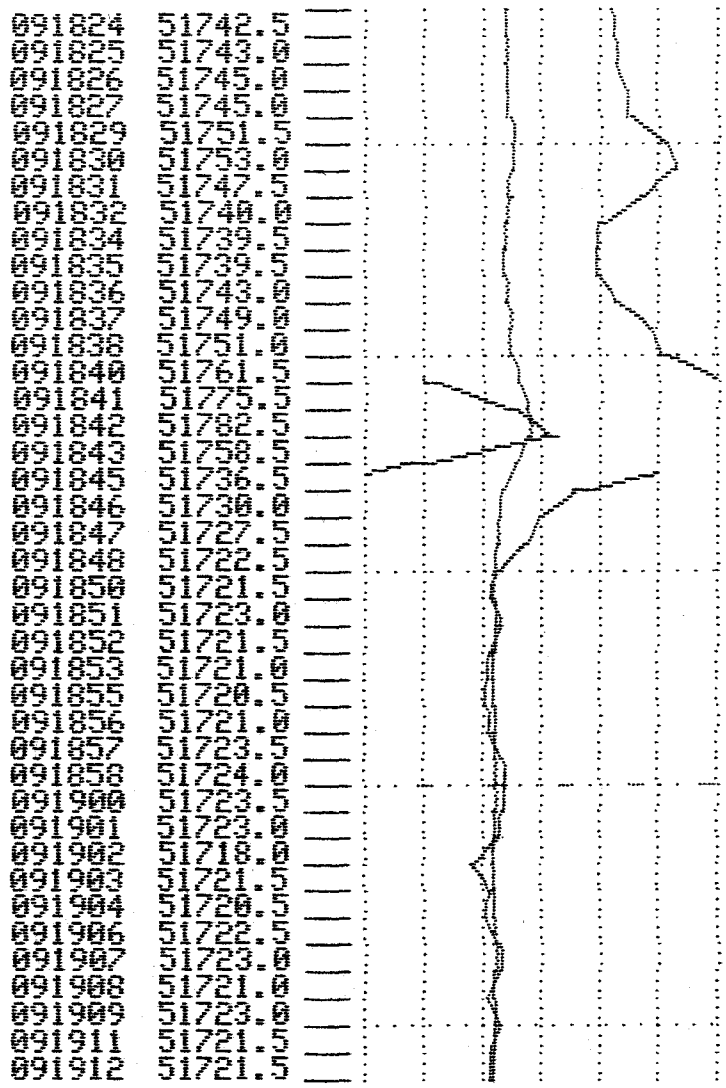


Figure 20. - Output from the EG & G Magnetometer Model G-866. This portion of the magnetometer record shows the time and gamma reading on the columns on the left side of the tape. The plotted line on the right is of the gamma reading. Spikes in this plot indicate the presence of magnetic materials. A spike is shown at 9:18:42. The plotted line on the left is of the gamma readings at a flatter scale.

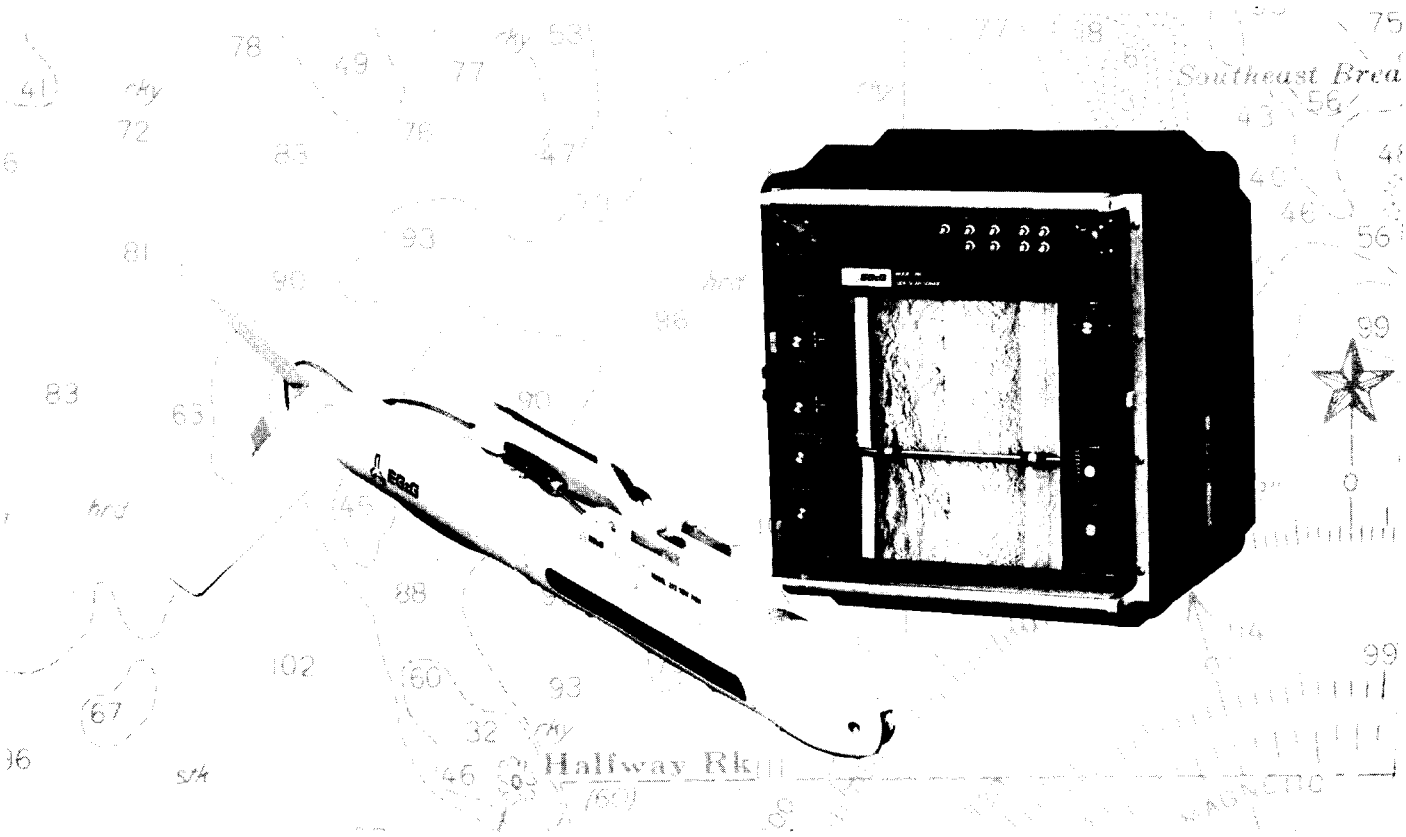


Figure 21.- EG & G Model 260 Side-Scan Sonar and Towfish. Photo courtesy EG & G Environmental Equipment

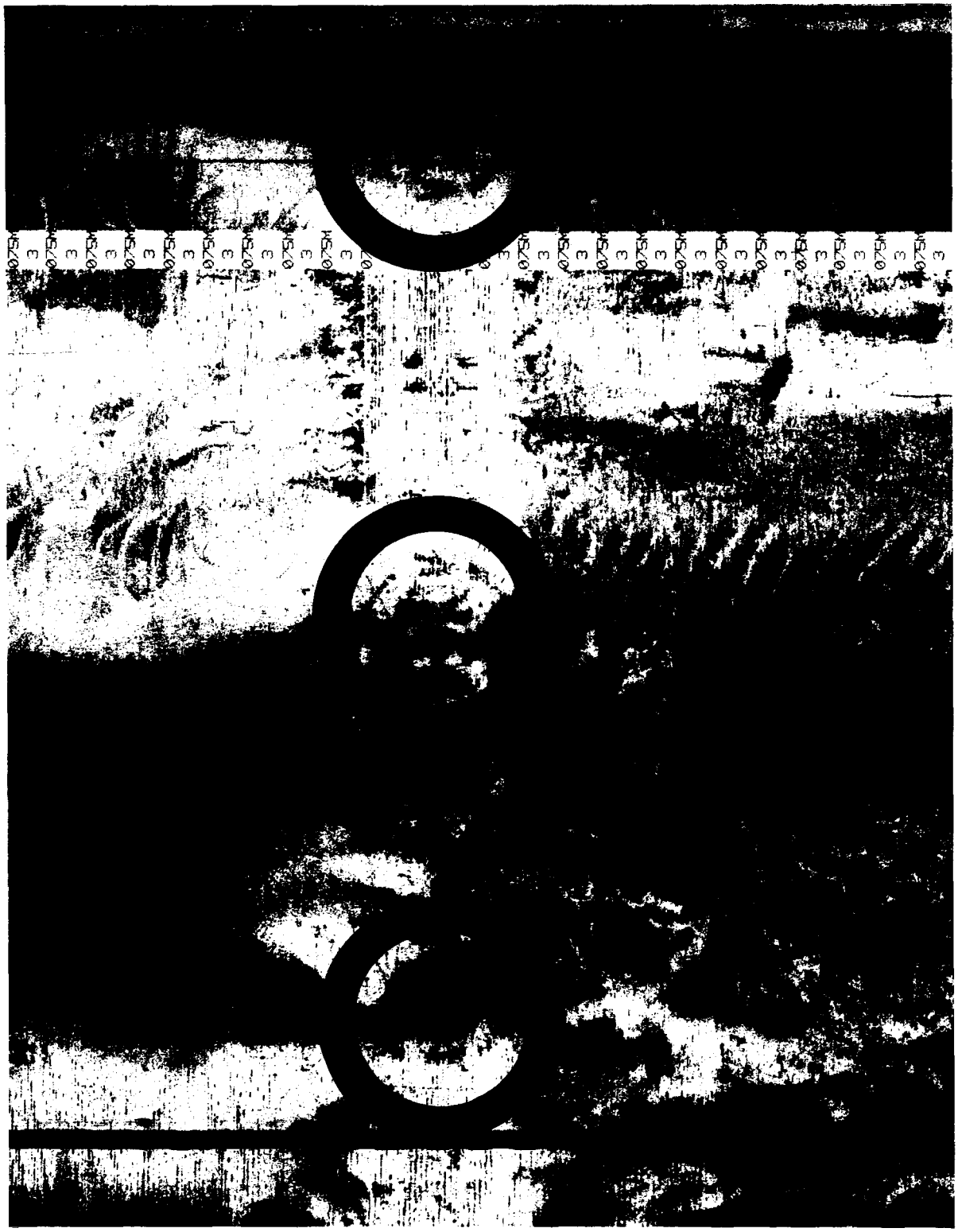


Figure 22.- Output from the EG & G Side-Scan Sonar. This is a copy of the record of the Sacramento River at the Tower Bridge. The center line is the path of the boat. On the original plot, bridge columns (circled) are clearly shown.

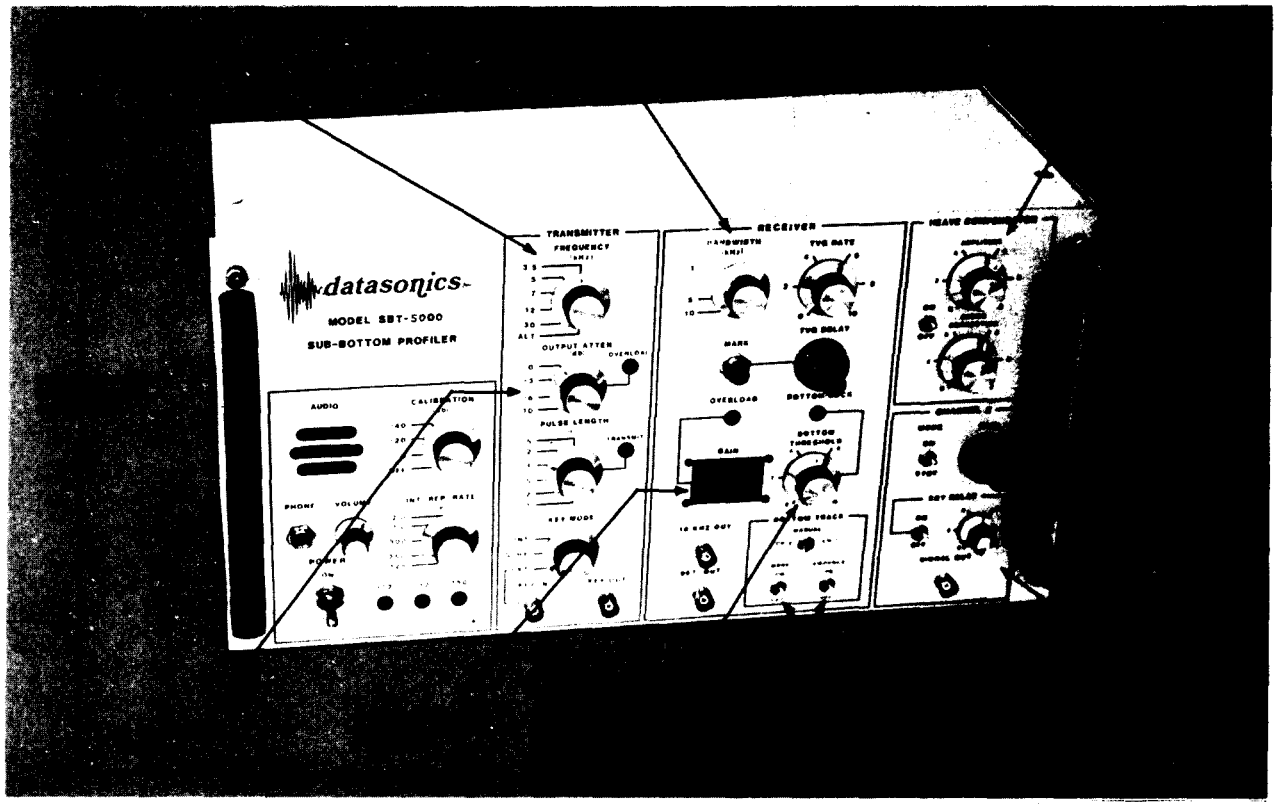


Figure 23.- Datasonics SBP-5000 Sub-Bottom Profiler. Photo courtesy of Datasonics, Inc.

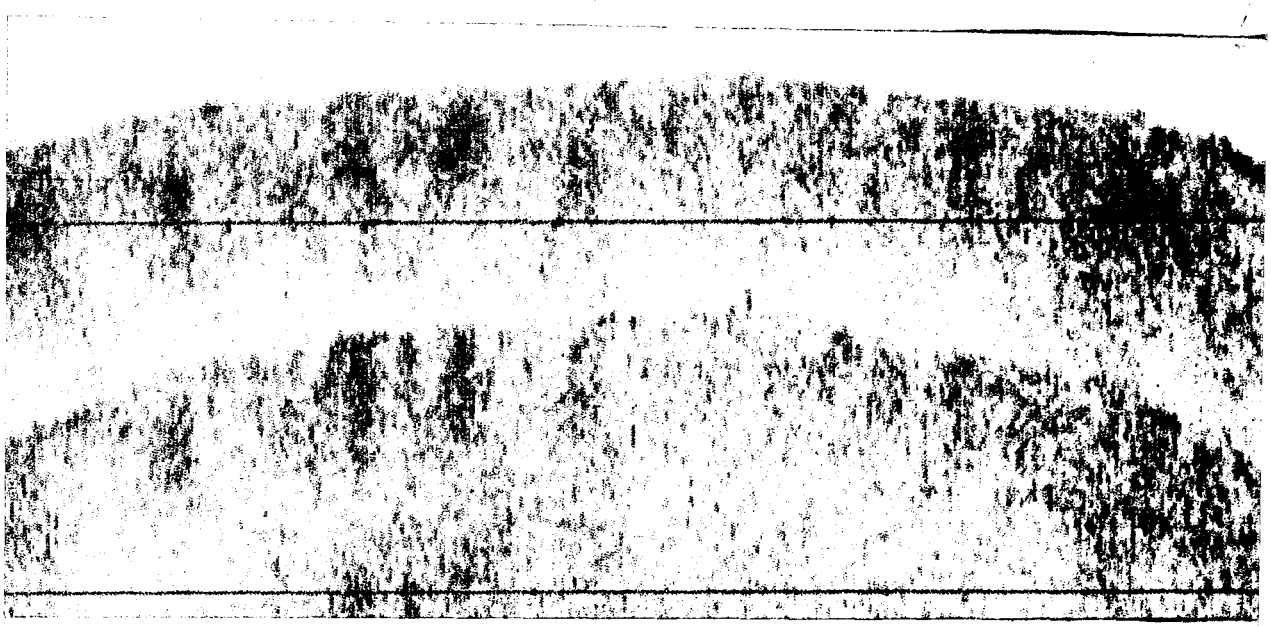


Figure 24.- Output from the Datasonics SBP-500 Sub-Bottom Profiler. This is a copy of the record of the sub-bottom profiler taken of the Sacramento River. An echo of the signal is also shown as an equidistant shadow to the river bottom.

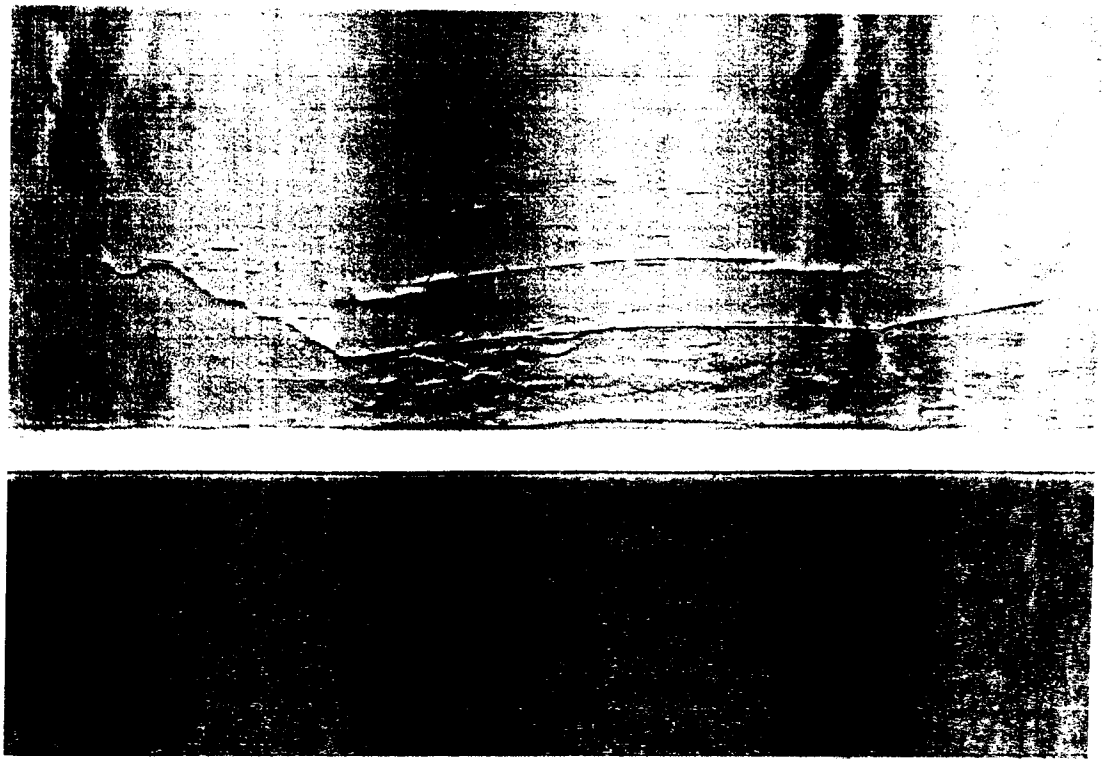


Figure 25. - Output from the Klein Model 421 Dual Channel Recorder. Sample ouput of the 421 Recorder. This record was taken at the Sacramento River in the vicinity of the Tower Bridge. The upper half of the record is the left channel of the side-scan sonar. The lower half is the record of the sub-bottom profiler.

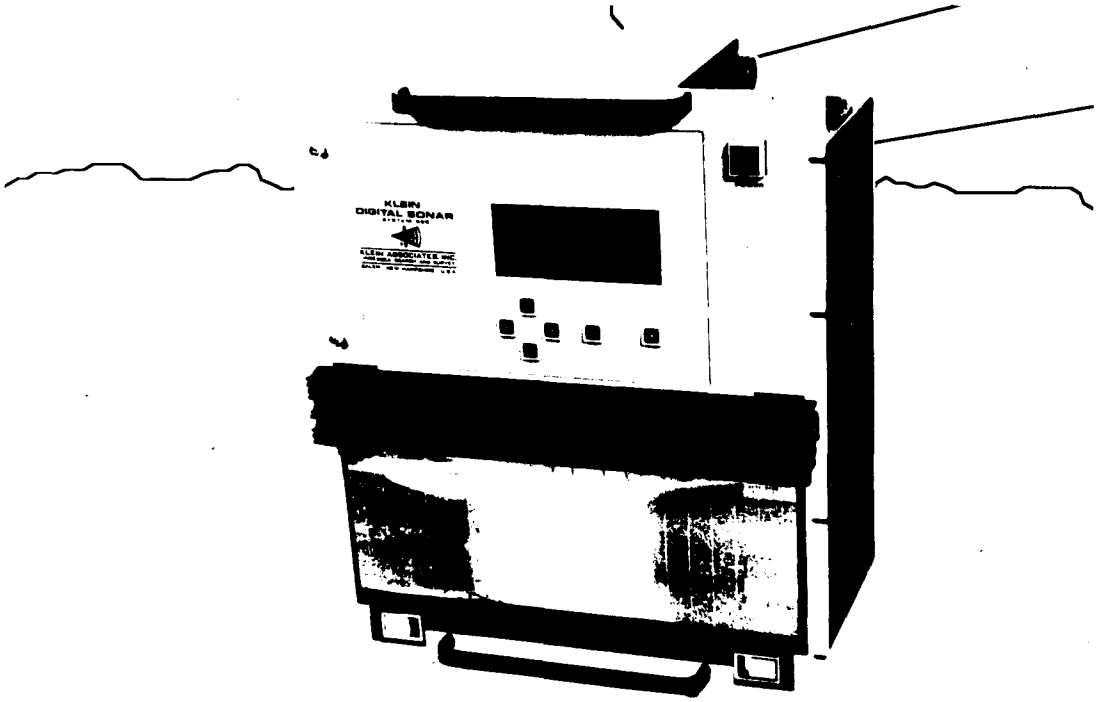


Figure 26.- The Klein Model 590. This is the current "top of the line" system from Klein. This recorder has the capability to record side-scan sonar and sub-bottom profile simultaneously. Photo courtesy of Klein Associates, Inc.

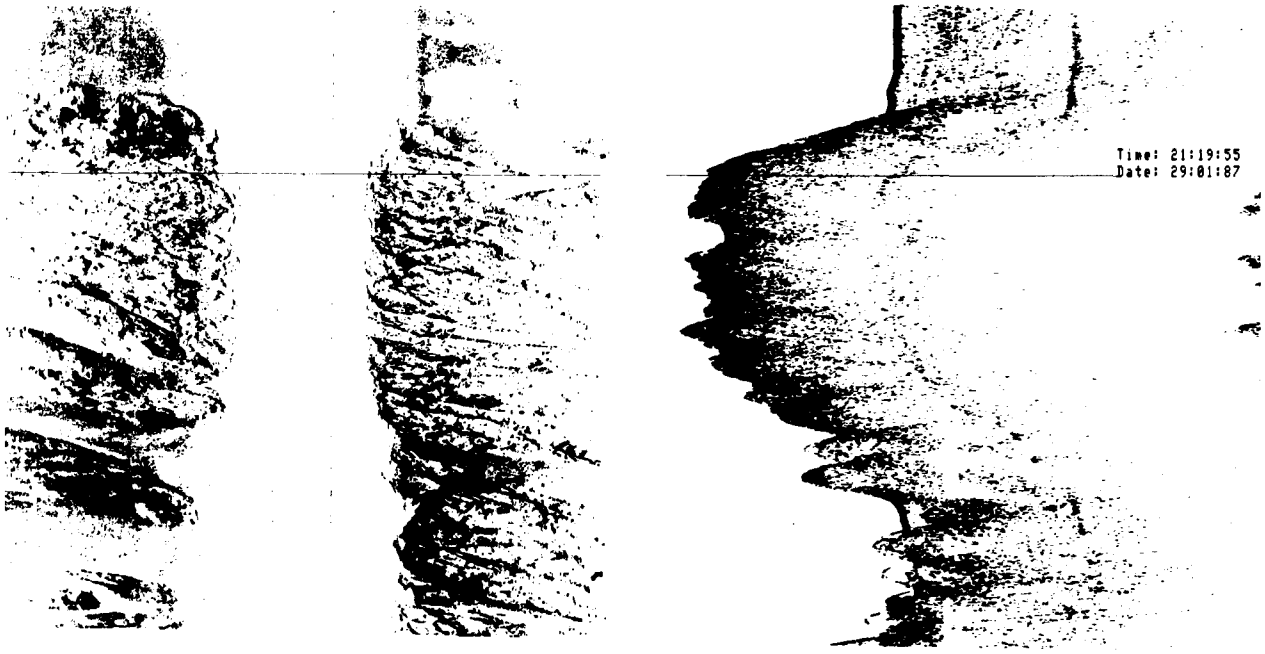
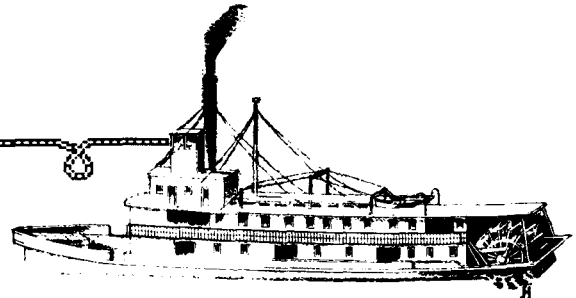


Figure 27. - Output from the Klein Model 590. This record has noticeably more resolution than the Model 421. The upper portion of the record is the left and right channels of the side-scan sonar. The lower portion is the record from the sub-bottom profiler. The "event mark" notes the date and time. The location of where this record was taken is unknown.



THE WASHOE

Another of Captain Kidd's steamers, the *Washoe*, led a short, violent life. Competition between steamers, even when docking, was often cut-throat. When the *New World* tried to tie up at Benicia, the *Washoe*, close on her heels, opened up her engines to try to cut ahead, dock first, and thereby monopolize the wharf. The pilot of the *New World,* not to be bested, countered by ramming the *Washoe*, which sank in a few minutes. The *Washoe* did not stay down long. She was raised and repaired, only to be involved in another devastating accident.

On September 5, 1864, the *Washoe*, *Yosemite* and *Antelope* were racing on the Sacramento--the swift *Antelope* as usual had pulled ahead, and the *Yosemite* and *Washoe* were neck and neck. Five miles above Rio Vista the starboard boiler of the *Washoe* burst and she immediately began filling with water. The *Antelope* turned back, and making her way slowly in the fog, found the *Washoe* burning out of control. She then ferried the injured to Sacramento. When a final tally was made, nearly twenty passengers had died and scores were wounded. It was the worst accident on the Sacramento.

Captain Kidd, unyielding in his desire to keep his steamships running, again raised the unlucky *Washoe* and put her back in service. But unlucky she remained--after a few more acccidents she caught fire in 1878 and sank for good.

The Field Survey and Mapping
The field survey in support of the electronic survey will be performed by staff of the State Lands Commission. Typically the crew will be composed of:

One Associate Boundary Determination Officer (Assoc. B.D.O.)
Two Assistant Boundary Determination Officers (Assist. B.D.O.)
One Boundary Determination Technician

Salaries for crew personnel are as follows:

Assoc. BDO	$47.88
2 Assist. BDO's	$81.20
BD Tech.	$31.44
Total per hour	$160.52
Total per day	*$1,284.16*

This estimate is based on fiscal year 1987/88 salaries.

The estimate for the field work to support the electronic survey over the entire project is:

Reconnaissance	15 crew days	
Set survey monuments	20 crew days	
Traverse	50 crew days	
Total	85 crew days	
Field Survey Cost, Project Total		*$109,154.00*

The estimate for the field work on a site, one mile long, is:

Reconnaissance	1/2 crew day	
Set survey monuments	1/2 crew day	
Topographic survey	1 crew day	
Traverse	2 crew days	
Boat positioning	3 crew days	
Total	7 crew days	
Field Survey Cost, Site Total		*$8,989.00*

The cost for a survey of an archaeologically significant site on dry land is estimated as follows:

Reconnaissance	1 crew day	
Set survey monuments	1 crew day	
Topographic survey	2 crew days	
Traverse	2 crew days	
Total	6 crew days	
Survey Cost, Archaeological Site Total		*$7,705.00*

The maps produced as the result of the field surveys will be drawn by Commission staff. The office team will consist of one Associate Boundary Determination Officer and one Assistant Boundary Determination Officer. Time requirements for mapping is one week for either a site or a mile of river survey. The cost is summarized as follows:

Associate BDO	$47.88 x 40 =	$1,915.00
Assistant BDO	$40.62 x 40 =	$1,625.00
Map Cost	*Total*	*$3,540.00*

Cost Summaries

- Cost for an electronic survey (contracted) and field survey (SLC) over the entire project area:

- Field Survey *(Details, pg. 154)*		$109,150.00
- Electronic Survey *(Details, pg. 143)*		$134,652.00
	TOTAL	$243,802.00

- Cost per mile or individual site for an electronic survey (contracted), field survey (SLC), and mapping:

- Field Survey *(Details, pg. 154)*		$8,990.00
- Electronic Survey *(Details, pg. 143&4)*		$3,914.00
- Mapping *(Details, pg. 155)*		$3,540.00
	TOTAL	$16,444.00

- Cost for a survey and mapping of an archaeological site on the upland:

- Field Survey *(Details, pg. 154)*		$7,705.00
- Mapping *(Details, pg. 155)*		$3,540.00
	TOTAL	$11,245.00

- Cost for the purchase of electronic equipment and survey (by SLC) over the entire project area:

- Purchase side-scan sonar unit		$70,000.00
- Purchase sub-bottom profiler unit		$45,000.00
- Purchase magnetometer unit		$17,000.00
- Field Survey *(Details, pg. 154)*		$109,150.00
- Electronic survey *(by SLC staff)*		$80,600.00
	TOTAL	$321,750.00

EXPLORATORY DIVE

On June 16 and 17, 1986, an exploratory dive was made in the Sacramento River. The purpose of this dive was to:

1. Determine how much area can be covered in a day of diving.
2. Determine the geologic make-up of the river bottom.
3. Search for artifacts dating to the 1800's.
4. Determine the amount of field surveying required to adequately position a diver over a given location.

Tom Nugent contacted Bob Taylor of Associated Divers to do the diving. Taylor was highly recommended by Mr. Nugent and was considered as the only person in the Sacramento area capable of the task.

Preliminary field survey work consisted of recovery of horizontal control and setting an additional control point. Time required was one crew day.

The site selected was an area downstream from the Tower Bridge, on the easterly half of the channel, and about 100 feet west of the Delta King. California Coordinates were assigned to the center of the search area for control purposes. California Coordinate System, Zone 2 coordinates of x=2, 140,864 and y=332,832 were used as the target. The search radiated out from this point. This site was selected because research indicates there were many shipping accidents in this general area and artifacts are likely to be found.

JUNE 16, 1986

The personnel working on this assignment were:

Tom Nugent, Consultant
Bob Taylor, Diver
Eric Taylor, Diver's Attendant
Frank Carey, SLC
Ed Zimmerman, SLC
Carlos Najera, SLC

Position for the boat was determined by theodolite and electronic distance measurer. Walkie-talkies were used for communication between boat and shore. A buoy was dropped at the predetermined coordinates without difficulty. The only minor difficulty occurred in anchoring the boat at that location. Total time to locate and anchor the boat was nearly an hour.

Bob Taylor dove alone and spent approximately five hours under water. He found the following:

I. Riverbottom cross-section randomly layered
   1. Sand
   2. Mud and Silt
   3. Baseball sized rocks

II. Diving Conditions
   1. Current was considered mild
   2. Visibility was limited to 6 to 8 inches
   3. Water temperature was not a factor.

The diving day ended at 3:30pm. Ed and Carlos met the boat party at the marina at the end of the day to discuss the day's activities. Taylor recovered three bottles, a drinking glass, and a crock. Only one of the bottles, a hand blown wine bottle, appeared older than twenty years.

The area covered this day was 1400 square feet.

JUNE 17, 1986

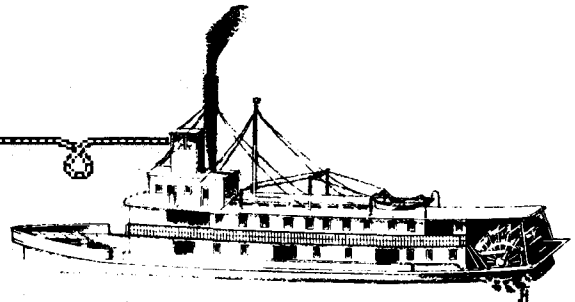
The area covered the day before had been plotted on a map. From the coordinated point, most of the coverage had been to the west. This day's coverage would be concentrated to the north and east of the reference point. The activities for the day were very similar to the day before.

Diving ended at about 4:30 p.m. Taylor recovered a ceramic bowl. He also located rubber tires and hub-caps. An area of 1400 square feet was covered this day.

Summary

An area of approximately 2800 square feet was searched. A cursory examination of the artifacts found indicated that this search area would not yield archaeologically significant artifacts. However, the initial intent of the dive was satisfied. Valuable experience was gained. The area covered in one day is limited. Diving conditions were not very good, but June through September are the best months to dive in the Sacramento River. Visibility is always expected to be minimal, however, the current and water temperature were near optimum. All these factors will be considered in underwater search planning.

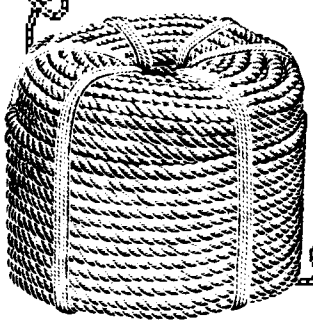
Considering limited visibility, a reasonable conclusion is that a "search diving" approach is an inappropriate method of seeking artifacts. Any diving should be limited to investigation of those sites previously identified through reputation or any of the scientific means addressed in this report.



ARRIVAL OF THE *YOSEMITE*

By the 1860's the appearance of a new steamship on the River was hardly cause for celebration, but as this long newspaper account reveals, Sacramento's citizens still had an abiding fascination for the large glamorous steamers.

The new and magnificent steamer *Yosemite* made her first trip to the city on Saturday night, leaving San Francisco at four o'clock p.m., and arriving at the levee at quarter-past one the next morning. The working of her machinery was entirely satisfactory. Although the tides were unfavorable, the trip was made in eight hours and a quarter. Had the tides been in her favor, she would have arrived by half-past eleven o'clock, or in about seven hours and a half. The *Yosemite* yesterday was visited by hundreds of our citizens, from whom many and profuse expressions of admiration were elicited by the complete appointments and elaborate finish of the boat . . . The main saloon is located on the upper deck, and connected with it are fifty-four state rooms. The main portion of the paneling is painted in white, with appropriate gilt finish. On the panel of each stateroom door is a sketch representing landscape etc in great variety and of elaboarate and artistic execution. In addition to these sketches, which were formerly used on the Eclipse, there are thirty-six different original sketches in the saloon, of California scenery, painted by Frederick Butman of San Francisco. They of course embrace mountain, river, valley, oceans, etc, and are at once recognized by those who are familiar with the scenery of the state. The ladies' cabin surpasses by far that of any boat on the river for exquisite finish. There are connected with this cabin eight staterooms. The panel work is made entirely of rosewood and satinwood dining-room is capable of accommodating 150 persons at a time, and in connection with it is a fully furnished and faultless culinary department. The male portion of the traveling community will be delighted to find on the boat the best equipped barbershop--movable or stationary--in the state, and the Union men will find that the barber, Charley, is so sound on the Union question as to keep the Union colors, the red, white, and blue permanently displayed before their eyes. The *Yosemite* is, of course, furnished throughout in a style to correspond with her internal finish. She is, in all her apartments, lighted and ventilated far more successfully than vessels of her size and capacity generally are. She will run permanently on the line between this city and San Francisco, alternating with the *Chrysopolis*.



Chapter 4

RESEARCH PROCEDURES

Charge, Activities, Sources and Contacts

ACTIVITIES

Legislative Charge

As part of the 1985/86 budget, the State Lands Commission was requested to locate, document, and investigate the significant ships and artifacts from California's rich historical heritage along the Sacramento River. In general, we were charged with:

- Inventorying, mapping, and cataloging all known points of historical significance along the River, including ports, wharves, piers villages, and ship sinkings.

- Preparing cost estimates for an electronic survey using magnetometers, side-scan sonars, and sub-bottom profilers for the purpose of locating historic ships and artifacts.

- Preparing cost estimates of a program of field verification of selected locations.

- Considering contracting all or part of the study with "outside entities" and shall consider contracting for consulting services with the State Historic Preservation Office.

An exact copy of the authorizing budget item is included in the front of this report. See the table of contents for the page.

Activities

At the onset, staff sent out more than 60 letters. The list included Sacramento City and County elected officials, and Yolo County Officials. Staff hoped to ferret out any caches of information, or to determine if anyone was interested in materially contributing to the report.

All of the major historical societies were contacted, as well as all smaller societies listed in the roster of historical societies. Others notified were John Foster of State Parks, Jim Delgado of National Park Service, Gary Strong, State Library, John Burns, State Archives, James Henley of Sacramento Museum and Historical Commission. The letter explained our project, and asked that if the recipients were "interested in assisting in this project please call.....". Telephone numbers of two Commission staff were listed.

Staff received several written responses to this letter, and those were generally limited to asking to be kept abreast of the work and to obtain a copy of the report. Jim Delgado offered assistance and staff held several discussions with him.

The publicity brought in some inquiries from those who wanted to help as paid consultants. Included among this last list was Roger Kelly, of the National Park Service and Stephen James, from Texas.

Everyone who expressed interest will be sent copies of this report.

As part of our specific budget charge, our Executive Officer sent a special letter of invitation to the State Preservation Office on July 24, 1985, at the very beginning of our work, noting that *We....feel that you and your staff could make a valuable contribution....* The letter requested that ...representative be designated to work with us. No response was received.

After virtually no indication of interest from the historical - interest groups, we set about meeting the requirements of the budget item.

Staff of the Land Location and Boundary Section were assigned the task of document and map research. They are Boundary Determination Officers who are trained, applied historians, intimately familiar with historical research, and with well developed abilities to tie together various and seemingly unrelated facts using maps, photographs, and documents. Their efforts produced a mass of information which, although not used in this report, remain on file in the offices of the State Lands Commission. All of this material is available to serious researchers and will be kept as a single unit of information in the Land Location and Boundary Section of the State Lands Commission.

They contacted all likely repositories and collected data for evaluation and then perhaps inclusion in the report. Susan Searcy, of the Sacramento History Center turned out to be helpful. While the information the Center has is significant, we either had it already, or it was not useful to us to help meet our specific charges. Susan Searcy gave us some additional sources to contact, but we had already mined those sources.

Outside expertise was retained to prepare two major components of the report. The first required an archaeologist to propose criteria and give an opinion on which sites were not only significant but which would have some potential for recovery or development as Historical Sites. The archaeologist was also asked to provide information on upland historical sites that may have existed such as town, piers, or landings. His views on the value of underwater recovery from ship sinkings were solicited.

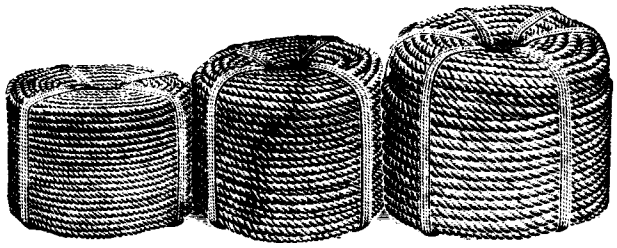
Dr. Harold Goldfried, professor at CSUS, was selected to prepare the material. His report, with his own recommendations, is included, in its entirety, in this report as Chapter 1.

The second major component of the charge requiring private expertise was to develop the cost estimates for electronic survey and field verification programs. We needed to know how to verify, as much as possible, the location of potential sites, both above and below water. Recovery operations that will preserve artifacts are very expensive and we needed to be as certain as possible about the costs and problems that might result from our final suggestions.

Staff contacted every firm on the west coast of the United States who advertised the desired equipment for sale. From those few who responded demonstrations of the equipment were arranged. For each demonstration, the equipment was mounted in the State Lands Commission boat and a section of the River near the I Street Bridge was used. To provide a basis for comparison, our boundary officers laid out a surveyed course for all of the demonstrators to use. Representative portions of the printouts are included in the report in Chapter 3. Regrettably the printout is on thermal paper and does not reproduce in the report very well. The entire demonstration results are filed, however, with the project material and are available for inspection.

While we have expertise on upland location procedures, we needed someone to give us information about underwater recovery. To do this, we contracted with Mr. Thomas Nugent, a diver with national recognition, a Captain in the Naval Reserve, and a Senior Project Officer for the US Navy Supervisor of Salvage. He also had experience in historical artifact recovery in different parts of the United States, including work with various public programs in the Old Sacramento Waterfront area. Staff felt that Mr. Nugent would provide a more objective evaluation than may have been possible if someone was used who may possibly have had a vested interest in the outcome. As part of his work for us, several dives into the River adjacent to Old Sacramento were conducted to obtain information that would enable us to make recommendations with more confidence.

Both these contracts, and well as some contracts for clerical and routine research help were carried out under a master agreement with the Hornet Foundation at California State University Sacramento, through the facilities of the Office of University Services, a part of the Chancellor's Office located in Sacramento.



RESEARCH
SOURCES AND CONTACTS

In addition to the records of the State Lands Commission the following people and institutions were either consulted, or contributed to the preparation of this report. For each contact, there are detailed research reports on file in the California State Lands Commission. If there is a need, these may be reviewed by contacting Roy Minnick, 916-445-4086, at the Commission's staff office. All of the sources are in California unless otherwise noted.

Arron, Mary M. Memorial Museum
Marysville

Brown, Tony
Rio Vista

California Historical Society
San Francisco

California State Archives
Sacramento

California State Library - California Room
Sacramento

California State University - Chico
Meriam Library

California State University - Sacramento

California Wreck Divers Association
Larry Stein and Bill Wilson
Oxnard

Chapman, Howard
National Park Service

Chico Museum
Chico

Colusa County Library
Colusa

National Park Service

Dooley, Jacquelin
Jensen - Alvarado Ranch Assoc.
Riverside.

Dutra Dredging Co.
Rio Vista

Eckert, Jack
CIGNA Archive Center
Philadelphia, PA. 19103

Federal Archives and Record Center
San Bruno

State Parks and Recreation
Sacramento

Haggin Museum
Stockton

Harrison, Warner
Marysville

Holt-Atherton Center for Western Historical Studies
University of Pacific
Stockton

Hunter, Jack
Marine Archaeologist
San Pedro

James, Steve
Nautical Archaeologist
Espey, Huston & Assoc.
Austin, Tx.

Kortum, Karl
National Maritime Museum

Lauritzen, Roland
Stockton

Randall De Mattei
The Mobius Society
Los Angeles

Marysville Public Library
Marysville

McCotter, Gary
Independent diver

Moore's Riverboat
Isleton

Morris, Don
Santa Barbara

National Archives
San Bruno

National Maritime Library
San Francisco

Oakland Museum
History Research Center
Oakland

Older, Mary Shafer
Lucerne

Olmstead, Nancy
Consultant

Pierson, Larry J.
P. S. Associates
Cardiff

Rio Vista Museum
Rio Vista

Sacramento Bee

Sacramento Corral of the Westerners

Sacramento County Historical Society
Sacramento Museum and Historical Commission
Sacramento

Sacramento History Center
Sacramento

Sacramento Valley Museum Association
Williams

Sacramento Union

San Joaquin County Historical Society and Museum
Lodi

Sands, Anne
Riparian Systems
Mill Valley

Sausalito Historical Society
Sausalito

State Historical Preservation Office

Stockton Central Library
Stockton

United States Army - Corps of Engineers
Sacramento

University of California - Berkeley
Bancroft Library

University of California - Berkeley
Franklin Doe Library

University of California - Berkeley
Law Library - Boalt Hall

University of the Pacific
Holt-Atherton Center for Western Historical Studies
Stockton

Water Resources, California Department of
Sacramento

White, Les
Wood dating expert

Yolo County Historical Society
Woodland

Yolo County Library
Woodland

Yuba County Library
Marysville

Chapter 5

REFERENCES

Books, Documents, Maps

MAP REFERENCE LIST

The following maps were consulted during the preparation of this report.

(no date) *Map of a part of the Sacramento River.* Source: Unknown. Listed as number 47 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives. Scale: Undetermined.

(no date) *Sacramento and San Joaquin Drainage District, Solano and Sacramento Counties.* Rancho de los Ulpinos and subdivision thereof and record ownership thereof. Source: Sacramento and San Joaquin Drainage District. SLC Map No. CXA 56. Scale: 1 inch = 400 feet.

(1849) *The Sacramento Valley from the American River to Butte Creek, by order of Gen. Riley, comdg 10 Mil. Dept.* Author: Lieut. Geo. H. Derby. Source: Unknown. Listed as W 10 Roll on page 1 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives. Scale: Undetermined.

(1870) *Map of the Sacramento River between Rio Vista and the foot of Steamboat Slough containing the obstruction to navigation known as the Hog's Back; made by Lieut. W. H. Heuer, assisted by Chas. F. Brown.* Author: Maj. R. S. Williamson. Source: Unknown. Listed as W 141 Roll on page 7 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives. Scale: 400 ft. to 1 inch.

(1870) *Map of the Sacramento River between Sacramento and Heacock's Shoal; made by Lieut. W. H. Heuer, assisted by Chas. F. Brown.* Author: Maj. R. S. Williamson. Source: Unknown. Listed as W 140 Roll on page 8 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives. Scale: 400 ft. = 1 inch.

(1874) *Map of country N. of Suisun Bay and W. of Sacramento River, Cal.* Author: Unknown. Source: Maj. R. S. Williamson. Listed as U. S. 324 Portfolio No. 126 on page 25 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives. Scale: Undetermined.

(1874) *Map of the country east of the Sacramento (Eldorado, Placer & Sacramento counties) Cal., showing tributaries of the Sacramento & Feather rivers.* Author: Unknown. Source: Maj. R. S. Williamson. Listed as U.S. 324 Portfolio No. 64 on page 27 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief Engineers, U. S. Archives. Scale: Undetermined.

(1877) *Georgiana Slough, Cal; sketch showing its relation to main channel of the Delta of the Sacramento and San Joaquin rivers, accompanying report of examination by H. H. Payson submitted with letter of June 19, 1877.* Author: Maj.G. H. Wendell. Source: Unknown. Listed as U. S. 430 Portfolio, No. 219 on page 11 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives. Scale: 1 inch to one half mile.

(1880) *Map of the lower portion of the Sacramento River, Cal. showing the tributary streams draining Hydraulic Mining Districts.* Author: Lieut. Col. G. H. Wendell. Source: Unknown. Listed as W 318 Roll on page 15 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives. Scale: 1 inch = 12 miles.

(1880) *Upper Sacramento River, Cal; drawings accompanying letter of April 23, 1880, viz.: Sketches of the principle obstructions - Sam Soule's Bar, Munroeville Bar and Dead Man's Bar - showing proposed improvements, and Sketch of Tehama Rapids, from surveys by L. H. Le Conte, Asst. Engr., Nov. 1879; General plan of proposed wing dams at Munroeville to Deadman's Bars, and at Sam Soule's Bar.* Source: Unknown. Author: Lt. Col. G. H. Wendell. Listed as W 327 on page 16 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives. Scale: 1 : 7,200.

(1881) *Protection of the navigable waters of California from injury from the debris of mines; maps accompanying report of Jan. 10, 1881, viz.: Lower portions of the Sacramento and San Joaquin rivers, showing*

tributary streams draining hydraulic mining districts. Author: Lt. Col. G. H. Wendell. Source: Published in Annual Report, Chief of Engrs. 1881. Listed as W 347 Roll on page 16 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives. Scale: 1 : 760,320.

(1886) *Sacramento River from the mouth of the American River to below Sacramento City; comparative cross sections of; from surveys of 1854, 1878 and 1885, annual report June 30, 1886.* Author: Capt. A. H. Payson. Source: Unknown. Listed as W 443 Flat on page 35 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives. Scale: Undetermined.

(1888) *Map showing the present condition of river & harbor work and the newly dredged channels in California, in charge of Maj. W. H. Heuer. Submitted for the files of the O. C. of E., in compliance with the order dated Nov. 23, 1887, with maps of the following localities, viz.: Walsh's Cut-off, Sacramento R.; Farratts Chute, do., & Calls Bend, do., Cala, respectively. Scale: 500 feet : 1 " (1: 6000). Mouth of Feather R. Cal., three dams built at,; 1885. Scale: 200 feet : 1"; Sacramento R., three dams built in 1879 - 81 - 85. Scale: 300' : 1" (Fremont Bar). Sacramento R., two dams built in 1885. Scale 200' : 1" (at Sacramento).* Author: Unknown. Source: Unknown. Listed as W 469 Flat on page 18 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives.

(1889) *Sacramento River, Cal., near Payne's Crevasse; Map of survey of, relating to the project & estimate for repair of damage by floods.* Author: Major W. H. Heuer. Source: Col. G. H. Wendell. Listed as W 522 Flat on page 18 in "Catalogue of Maps sent to the Engineer's Office at Washington". The catalogue is part of Records Group 77, Records of the Office of the Chief of Engineers, U. S. Archives. Scale: Undetermined.

(1908) *San Joaquin River from Stockton to Suisun Bay at Collinsville. Sacramento River. Sacramento and Contra Costa Counties.* Source: Corps of Engineers, Sacto. SLC Map No. CXA 423. Date of Survey: 1908. Scale: Graphical.

(1924) *From the mouth of Cache Slough to Collinsville. U.S.E.D. Coordinated, ticks shown property on both sides of river. Sacramento and Solano Counties* Source: U.S.E.D. SLC Map No. CXA 1185 Date of Survey: August 25, 1924. Scale: 1 inch = 1200 feet.

(1933) *Sacramento River Basin from Sacramento to Collinsville.* Sacramento River, Solano, Sacramento, and Yolo Counties. Source: Corps of Engineers, Sacto. SLC Map No. CXA 374. Date of Survey: Jan., 1933. Scale: 1 inch = 400 feet.

(1934) *U. S. Coast and Geodetic Survey, Hydrographic Survey No. 6006, on T 5001; Georgiana Slough, Sacramento River, California.* Date of Photographs December 15, 1931. Date of Survey: February, March, April 1934. Scale: 1 : 10,000.

(1934) *U. S. Coast and Geodetic Survey, Hydrographic Survey No. 6009, on T 5002; North Fork of Mokelume River and Georgiana Slough, Sacramento River, California.* Date of Survey: March 1934. Scale: 1 : 10,000.

(1934) *U. S. Coast and Geodetic Survey, Hydrographic Survey No. 6013, on T 5000; Decker Island, Lower Sacramento River, California.* Date of Survey: July 1934. Scale: 1 : 10,000.

(1935) *Cache and Lindsey Slough Junction, Sacramento River, Solano Counties.* Sacramento River, California, Cache and Lindsey Sloughs. Source: Corps of Engineers. SLC Map No. CXA 59. Date of Survey: June 1935. Scale: 1 inch = 400 feet and graphical.

(1937) *From Colusa to Chico Landing. Mile 142 to Mile 194, Sacramento River, Glenn, Butte and Colusa Counties.* Source: U.S. Corps of Engineers. SLC Map No. CXA 1263 through 1281. Date of Survey: March 1937. Scale: 1 inch = 400 feet.

(1938) *Knights Landing Sacramento River.* (Yolo Co.) through Colusa (Colusa Co.) Sutter, Yolo & Colusa Counties. Source: U.S. Engineers. SLC Map No. CXA 1190 through 1205. Date of Survey: August 1938. Scale: 1 inch = 400 feet.

(1940) *Cache Slough (Mouth), Sacramento River, Solano and Sacramento Counties.* Sacramento River, California 1940 River Survey, mouth of Cache Slough to Collinsville. SLC Map No. CXA 58. Date of Survey: 1940. Scale: Graphical.

(1942) *Boundaries and Transportation Map. Tehama County.* Shows highways, railroads, canals, air lanes, and dredged channels. Source: Fed. Works Agency. SLC Map No. CXA 596. Date of Survey: 1942. Scale: 1 : 250,000.

(1942) *Sacramento River, Sacramento County.* Proposed 12 3/4 inch O. D. gas main crossing , under Sacramento River. Source: Undetermined. SLC Map No. CXA 985. Date of Survey: April 1942. Scale: Horizontal: 1 inch = 40 feet, Vertical: 1 inch = 4 feet.

(1949) *Rio Vista, City of, Sacramento River, Solano County. Survey of City Property on the Sacramento River between Logan Street and State Highway.* Author: Walter B. Berger. Source: Solano Engineers Associated. Date of Survey: March 3, 1949. Scale: 1 inch = 50 feet.

(1949) *Sacramento River from Walnut Grove to Isleton, Property ownerships Georgiana Slough. Sacramento River, Sacramento County.* Source: California Reclamation Board. SLC Map No. CXA 1186. Date of Survey: March 1949. Scale: 1 inch = 1,000 feet.

(1952) *Sacramento River, Sacramento and Contra Costa Counties,* Source: State Lands Commission, SLC Map No. CB 550. Date of Survey:
1952. Scale: 1 inch = 50 feet.

(1953) *Sacramento River, Yolo and Sacramento Counties.* Source: State Lands Commission. SLC Map No. CB 531. Date of Survey: Nov. 1953. Scale: 1 inch = 50 feet.

(1953) *T11 & 12N, R3E,* Gas lease from Sacramento and San Joaquin Drainage Dist. to Humble Oil and Gas Co., vicinity of Fremont Wier. Source: The Reclamation Board. SLC Map No. CXA 1189. Date of Survey: Feb. 1953. Scale: 1 inch = 400 feet.

(1953) *Ordinary High Water Mark, Sacramento River. Yolo and Sacramento Counties,* Source: State Lands Commission SLC Map No. CB. 584-595. Date of Survey: Sept. 1953. Scale: 1 inch = 100 feet.

(1954) *Ordinary High Water Mark, Sacramento River. Broderick and Sacramento.* Source: State Lands Commission. SLC Map No. CA 81 thru 84. Date of Survey: Feb. 1954. Scale: 1 inch = 100 feet.

(1957) *Mean High Tide Line & Profiles, Sacramento River. Sacramento County.* Source: State Lands Commission. SLC Map No. CB 806. Date of Survey: November 1957. Scale: 1 inch = 200 feet.

(1959) *State's Claim to Bed of Sacramento River, Vicinity of Hartley's Island , Butte and Glenn Counties.* Source: State Lands Commission. SLC Map No. CA 92, Date of Survey: April 1959. Scale: 1 inch = 400 feet.

(1959) *Rancho Llano Seco, Sacramento River. Glenn and Butte Counties.* Source: State Lands Commission. SLC Map No. CB 886-87. Date of Survey: May 1959. Scale: 1 inch = 2,000 feet.

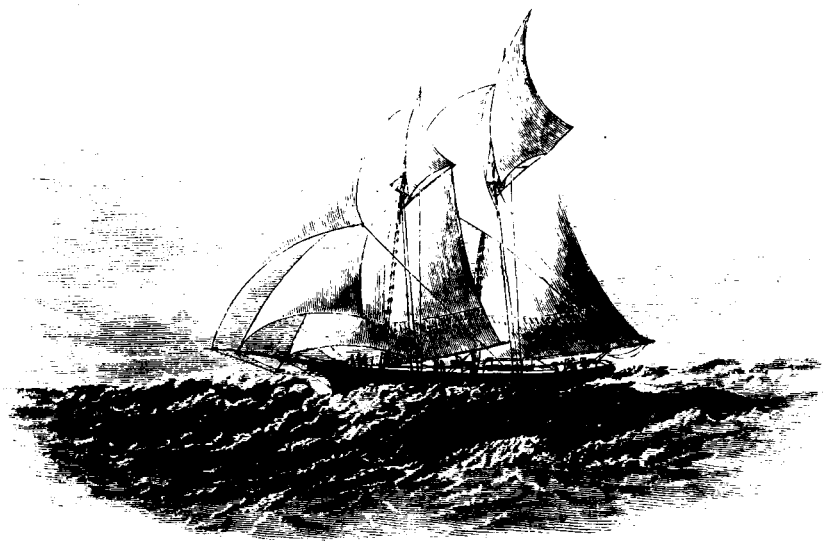
(1959) *Rancho Llano Seco, Parrott Claim. Glenn County.* Source: State Lands Commission. SLC Map No. CB 1488. Date of Survey: May 1959. Scale: 1 inch = 2,000 feet.

(1959) *Rancho Llano Seco, Sacramento River, Glenn County.* Source: State Lands Commission. SLC Map No. CB 1489. Date of Survey: August 1959. Scale: 1 inch = 24,000.

(1961) *Quiet Title No. 10953, Sacramento River, Glenn and Butte Counties, California Properties of George F. Peterson, Harry E. Nichols & Charles M. Collier, et al.* Source: State Lands Commission. SLC Map No. CB 1158. Date of Survey: June 1961. Scale: 1 inch : 2,000 feet.

(1961) *North Properties of P.G.E., Sacramento River, Contra Costa County.* Source: State Lands Commission. SLC Map. No. CB 1161. Date of Survey: April. Scale: 1 inch = 200 feet.

(1968) *Bloody Island, Macco Realty, Sacramento River, Tehama County.* Plotting of Government Field Notes, Overlay for Bend and Balls Ferry Quadrangle. Source: State Lands Commission. SLC Map No. CB 1496 and 1497. Date of Survey: August 1968. Scale: 1 : 24000.



BIBLIOGRAPHY

The Following books were consulted during the preparation of this report.

Alta California. (San Francisco). 1849-1880.

American Congress on Surveying and Mapping. *An Overview of Hydrographic Surveying.* American Congress on Surveying and Mapping, Committee on Marine Surveying and Mapping.

Ballard, Robert D. *A Long Last Look at TITANIC. National Geographic.* Vol. 170 - No. 6 Dec. 1986.

Bancroft, H.H. *Chronicle of the Builders of the Commonwealth.* San Francisco: The History Company. 1892.

Bancroft, H.H. *History of California.* Vol. I, IV, VI, VII, XXI, XXIV. San Francisco: A.L. Bancroft, Pub. 1886.

Berman, Bruce D. *Encyclopedia of American Shipwrecks.* Boston. Mariners Press, Inc. 1972.

Briggs, Asa. *The Power of Steam an Illustrated History of the World's Steam Age.* Chicago. University of Chicago Press. 1982.

California Steam Navigation Company. Misc. Papers 1858-1869, History, Bay and River Navigation. Berkeley, Ca. University of Califoria, Berkeley, Bancroft Library (Source).

California Transportation Co. Bills of Lading. Lodi, Ca. San Joaquin County Historical Society and Museum (Micke Grove) (Source).

Camp, Charles L. "An Irishman in the Gold Rush--The Journal of Thomas Kerr." *California Historical Society Quarterly.* 8.1 (1929): 17-25.

Coleman, William Tell. Business ventures in Sacramento - - shipping interests (including associations with Edward Mott Robinson and People's California Steamship Co.) Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

Cook, Fred S. *Steamboats in the Valley.* Stockton, Ca. Stockton City Library.

Daily Morning Call. (San Francisco). 1856-1880.

Dana, Julian. *The Sacramento River of Gold.* New York: Farrar and Thinehart. 1939.

Desmond, Charles. *Wooden Ship-Building*. Reprint. Originally published: New York: Rudder Pub. Co., c.1919. Vestal, New York: Vestal Press Ltd. 1984.

Dickenson, A.B. *Van Pelt's "Sacramento"*.

---. *1849 River Boats*.

Dillon, Richard. *Fool's Gold: The Decline and Fall of Captain John Sutter of California*. New York: Coward-McCann. 1967.

Drago, Harry Sinclair. *The Steamboaters: From the Early Side-wheelers to the Big Packets*. New York: Dodd, Mead. 1967.

Dyke, Dorothy Jeanette. "Transportation in the Sacramento Valley, 1849-60." Diss. University of California, 1922.

Espey, Huston & Associates, Inc. *Spatial Limits of Two Historic Shipwrecks: J Street Area, Sacramento California*. Austin. Tx. Espey, Huston & Associates, Inc.

Fay Brothers. Correspondence 1852 - 1854. Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

Foster John W. *An Assessment and Treatment of Impacts to Historic Shipwrecks in the Sacramento River*. John W. Foster, Foothill Archaeological Services, Fair Oaks, Ca. 1985.

Gibbs, James A. *Shipwrecks of the Pacific Coast*. Portland: Binford and Mort Pub. 1962.

---. *Disaster Log of Ships*. Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

Giles, Rosena A. *Shasta County, California, A History by Rosena A. Giles*. Oakland, Ca. Biobooks. 1949.

Green, Will S. *The History of Colusa County, California and General History of the State*. Sacramento, Ca. Sacramento Lithograph Co. 1950.

Hancocks, Robert Jr. No Title. *Golden Notes*. 9.3 (1963): 2-20.

Helper, Anton. *Land of Gold* . Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

Heaser, Eileen. *Sacramento River and Delta Area*. Chico, Ca. California State University, Chico, Meriam Library (Source).

Historical Evaluation of Delta Waterways. Report No. 3. Prepared for the State Lands Commission.

Historical Record Co. *History of Colusa and Glenn Counties*. Los Angeles. Historical Record Co. 1918.

Hitchcock, Ruth Hughes. *Leaves of the Past 1828 - 1880, A Pioneer Register, Including an Overview of the History and Events of Early Tehama County*. Chico, Ca. Association for Northern California Records and Research.

Hoffman, H. Wilbur. *History of Navigation on California's Feather River*. Diss. Sacramento State College, 1963.

Howland, S. *Steamboat Disasters and Railroad Accidents in the United States*. 1846. San Francisco. National Maritime Library (Source).

Hunter Underwater Archaeology. *Old Sacramento Waterfront Underwater Archaeological Survey*. Submitted to the Sacramento Housing and Redevelopment Agency. October, 1984.

Hurd, Edith Thatcher. *Sailers, Whalers and Steamers, Ships that Opened the West*. Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

Hutchings. *Steamboats That Have from Time to Time Been Running from San Francisco to Sacramento*. 4: 1-15, July, 1859. Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

Hutchinson, W.H. *California: Two Centuries of Man, Land, and Growth in the Golden State*. Palo Alto: American West Publishing Co. 1969.

Ing, John C. "The Sacramento Valley." *The Raven* (Sacramento Valley Edition.) 6:3 1905: 135-42.

Kemble, John Haskell. "The First Steam Vessel to Navigate San Francisco Bay." *California Historical Society Quarterly*. 14.2 (June): 135-42.

Kemp, Peter. *The Oxford Companion to Ships & the Sea*.

Koch, Gerald (Doner). *Book of Collections - Papers of 1848, 1850 - 55, 1858, 1866*. San Francisco, Ca. National Maritime Library (Source).

Lee, Daniel. *The Steamboat - Catalytic Element in the Development of Red Bluff, California 1850 - 1862*. Chico, Ca. University of California, Chico, Meriam Library (Source).

Lindsay Publishing. *Catalogue 1884, Porter Mfg. Co., Limited, Engines and Boilers*. Lost Technology Series. Printed 1884 by Truair, Smith & Bruce, Syracuse, New York. Bradley, Il. Lindsay Pub. 1985.

---. *Mechanic's Notebook 13*. Bradley, Il. Lindsay Pub. 1985.

---. *Steam Boilers*. Reprinted from : *Steam Boilers*, W.M. Barr, 1880. Bradley, Il. Lindsay Pub. 1982.

---. *Steam Engine Design*. Lost Technology Series. First published in 1896 byInternational Correspondence Schools. Bradley, Il. Lindsay Pub. 1983.

Lyman, John. *The Sailing Vessels of the Pacific Coast and Their Builders, 1850 - 1905*. Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

MacMullen, Jerry. *Paddle-Wheel Days in California*. Stockton, Ca. Stockton City Library (Source).

Major Shipwrecks on the Coastal, Offshore and Inlands Waters of the Pacific Coast, Washington, Oregon and California (circa 1550 - 1962). California Historical Society, San Francisco, Ca. (Source).

Marine Engineer's Beneficial Association. No. 35. List of Steamers Wrecked on the Pacific Coast 1850 - 1894. Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

Marshall, Don B. *California Shipwrecks: Footsteps in the Sea*. Seattle: Superior Publishing Co. 1978.

Matteson and Williamson Mfg. Co. Bills of Lading. Lodi, Ca. San Joaquin County Historical Society and Museum (Micke Grove) (Source).

Matthews, F.C. "Gold Rush Vessels." *Pacific Marine Review*. August, 1922.

McCormick, Charles D. *History of Colusa and Glenn Counties*. Los Angeles. Historic Record Co. 1918.

McGowan, Joseph. "A River Palace on the Sacramento." *Golden Notes*. 22.2 (1976): 1-14.

---, *History of the Sacramento Valley*. Three volumes. New York: Lewis Historical Publishing Co., 1961.

---, and Terry Willis. *Sacramento -- Heart of the Golden State*. Woodland Hills, CA.: Windsor Publishing. 1983.

---, *San Francisco -- Sacramento Shipping, 1839-1854*. Diss. University of California, 1939.

---, *The Sacramento Valley: A Student's Guide to Localized History*. New York: Columbia Press. 1967.

McKinstry, George. "Documents for the History of California, 1846-49. ms. University of California.

McMullen, Jerry. Paddlewheel Days in California. Palo Alto: Stanford University Press, 1944.

Mills, Frank R. and Ev Mills. "Rail and Water." *History West*. North Highlands, Ca. Frank R. Mills and Ev Mills. 1981.

Mims, Julie Elizabeth and Kevin Michael Mims. Sacramento: *A Pictorial History of California's Capital*. Virginia Beach, Virginia: The Donning Co. Pub. 1981.

National Register of Historic Places. 1976. Sacramento, Ca. California State Library, Government Publications Section (Source).

Neasham, V. Aubrey, and James E. Henley. *City of the Plain: Sacramento in the Nineteenth Century*. Sacramento Pioneer Foundation in Cooperation with Sacramento Historic Landmarks Co. 1969.

Ostrander, Daniel Lee. "The Steamboat: Catalytic Element in the Development of Red Bluff, California, 1850-62." Diss. Chico State College, 1968.

Perkins, George Clement. Early life as seaman including shipping business, etc. Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

Sacramento Bee. 1857-1880.

Sacramento Steamer Union. May 1, 1852 - Sept. 15, 1854.

Sacramento Transcript. April 1, 1850 - June 16, 1851.

Sacramento Union. March 19, 1851 - 1880.

Scott, Hon. Charles L. of California. On the Steamboat Passenger Bill. Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

Severson, Thor. *Sacramento: An Illustrated History - 1839-74*. San Francisco. California Historical Society. 1973.

Shaw, George. *A History of Steamboating on the Upper Sacramento, 1850 -1862*. Chico, Ca. University of California, Chico, Meriam Library (Source).

South, Arethusia Aurelia. *"California Inland Navigation, 1839-1890."* diss. University of California. 1939.

Southern Pacific Co. Bills of Lading. Lodi, Ca. San Joaquin County Historical Society and Museum (Micke Grove) (Source).

Spangler, H.W., Arthur M. Greene, Jr., S.M. Marshall. *Elements of Steam Engineering*. Lost Technology Series. Original copyright 1903 by Spangler, Greene & Marshall, and published by John Wiley & Sons, New York. Bradley, Il. Lindsay Pub. 1984.

Stockton, City of. *Charter and Ordinances of the City of Stockton.* Stockton, Ca. Independent Book and Job Printing Establishment. 1870.

---. *Charter (As Amended) and General Ordinances of the City of Stockton.* Stockton, Ca. The Daily Evening Mail Steam Presses. 1882.

---. *Revised Ordinances of The City of Stockton.* Stockton, Ca. Silliam Biven, City Printer. 1855.

Stockton, City of, Mayor of. *Annual Report of the Mayor of the City of Stockton, California.* Stockton, Ca. Daily Evening Herald Book and Job Printing Offfice. 1881.

Surveyor's and Engineer's Reports for 1861 - 1869. Lodi, Ca. San Joaquin County Historical Society and Museum (Micke Grove) (Source).

Thompson. *Settlement Geography of the Sacramento - San Joaquin Delta, California*. 1957.

Thompson, John. "The Ferry System of the Lower Sacramento River." *The Pacific Historian*. Vol. 25, No. 1. Spring, 1981. Stockton, Ca. University of the Pacific.

Thompson and West. *History of Sacramento County, California.* Berkeley, Ca. Howell - North. 1960.

Early Navigation. Union Oil Bulletin. May, 1938. Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

United States. Congress. Senate. *Senate Executive Documents*. Report on the Steamboat Act. 34th Congress. 1st session, Washington: GPO. 1856.

Wagon Wheels. Vol. XII, No. 1. August, 1963. Colusa, Ca. Colusa County Library (Source).

Waterland, John, "John Waterland's Historical Articles." Photocopied from the Chico Record.

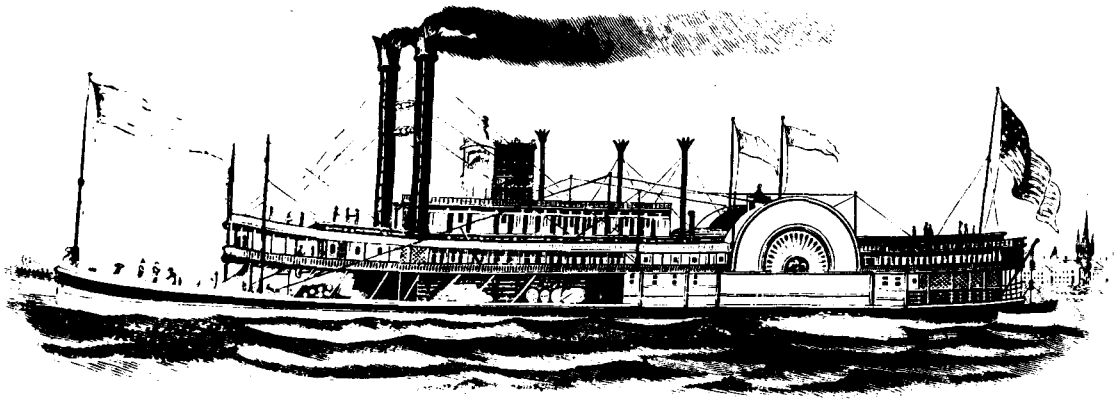
Wiltsee, Earnest. *Gold Rush Steamers of the Pacific*.

Wheelwright, William. *Early Plans and Projects for Pacific Steam Navigation*. Berkeley, Ca. University of California, Berkeley, Bancroft Library (Source).

Whittier, Bob. Paddle Wheel Steamers and Their Giant Engines. Duxbury, Mass. Seamaster Boats, Inc. 1983.

Wooldridge, Major J.W. *History of the Sacramento Valley California*. Three volumes, Chicago: The Pioneer Historical Publishing Co. 1931.

Zelinsky, Edward Galland, and Nancy Olmstead. "Upriver Boats - When Red Bluff Was the Head of Navigation." *California History*. 64.2 (1985): 86-117.



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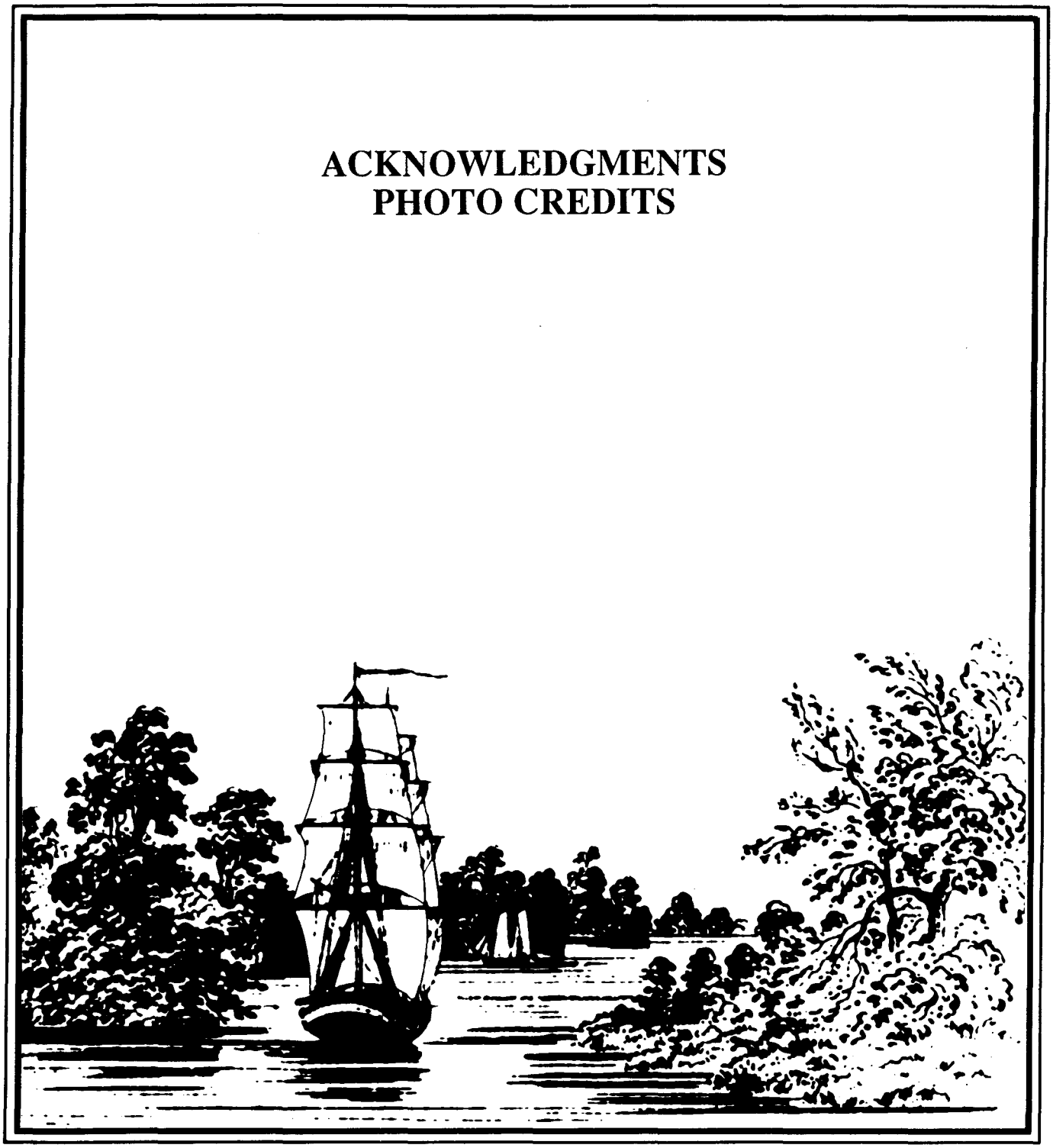

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PHOTO CREDITS

Note: *State Library refers to California State Library; HT refers to Houseworth Collection in the library. SLC refers to California State Lands Commission. CSUC refers to Calif. State Univ. at Chico.*

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APPENDIX

A Historical Reprise

A HISTORICAL REPRISE

The following information was collected as part of the investigation. While it has no particular bearing on the charge given to the State Lands Commission, it is an interesting sidelight, and we pass it on without comment.

Exploration

Spanish Captain Moraga named the Sacramento River "Jesus Maria," and gave one of its tributaries the name *Sacramento*. The names were eventually switched.

Other explorers included a Russian named Kotzebue who in 1816 or 1818 went as far as Sacramento.

Settlement

Ceremonial Captain John Sutter went to Monterey to talk to the Mexican Governor about colonizing parts of the upper Sacramento. The Mexican Government's land policies were very liberal. He was given the right to explore and occupy this country on the condition that he become a Mexican citizen. He organized his expedition at Yerba Buena, now San Francisco.

And on August 9, 1839, he sailed up the Sacramento River in two ships, a schooner, *Isabel* and a yacht, *Nicholas*. He landed at the foot of what is now 28th Street.

Sutter's Fort was begun in 1839 and finished in 1841. He called it New Helvetia. The Fort has been reconstructed and remains a tourist attraction in Sacramento.

The fort was the stopping place for miners going to the gold fields. By July 1848, 10-12 stores operated in the fort itself where the merchants paid $100 a month rent for a single room.

In March 1849, in the midst of gold fever, Sutter's launch was charging $100 - $200 per person for passage to Sutters Fort from San Francisco and was carrying a full load each trip. After 1845 a ship either arrived or left the embarcadero at Sacramento at least every two weeks.

Sutter raised wheat, corn, horses and cattle -- he also received an income from the salmon fisheries.

> In his manner, Captain Sutter is frank and prepossessing; he has much intelligence, is conversant with several languages, and withal not a little enthusiastic; he generally wears a kind of undress uniform with his sidearm buckled around him. *Wooldridge, p. 22.*

John Augustus Sutter, Jr., eldest son of Sutter arrived at the fort in September 1848 to help his father out of debt. By August 1848 John Sutter's debt was estimated $100,000. —McGowan, *Hist. of Sac. Valley*, Chap. 4.

Gold Rush and Statehood

Sacramento grew by leaps and bounds after May 1849 when the first of the forty-niners began to arrive by ship (which was a three-month trip from the East Coast around Cape Horn to the West Coast). Not a single building was on the site of Sacramento in November 1848; by mid-1849, Sacramento was a booming frontier town, with a booming economy as well. Prices in Sacramento were in some cases 20% higher than in San Francisco.

Sacramento City was surveyed two miles west of the fort. In 1844, Sutterville was established as the intended city. However, the activity centered around Sacramento and Sutters Fort. Finally the level of business activity exceeded the capacity of the Fort, and Sacramento received its city charter on February 27, 1850.

> A great city in the making, hastily thrown together, its parts unrelated, its fortunes trembling on the precarious ground of overstimulation of land values, its population on the verge of departing to the mines, always in quest of the riches of its dreams. —*Wooldridge p. 39.*

Growing Sacramento

The squatters' riots bared a Sacramento where the old and the new ways clashed head on. Those who had bought land from Sutter now were being confronted by newcomers, some of them avowed anarchists who questioned the validity of Sutter's claim, saying that the Mexican Cession invalidated those claims, and argued that every man was entitled to a city lot. Things came to a head with an eruption in August, 1850. The leader of the squatters was shot dead, and Mayor Hardin Bigelow was seriously wounded.

The issue was never raised again.

As Sacramento grew in importance and population, so did the need to protect itself from flooding. Mayor Bigelow pushed for higher and higher levees.

> Sacramento was named by Congress as a port of entry in September 1850. This helped speed up the delivery of goods and lessened the

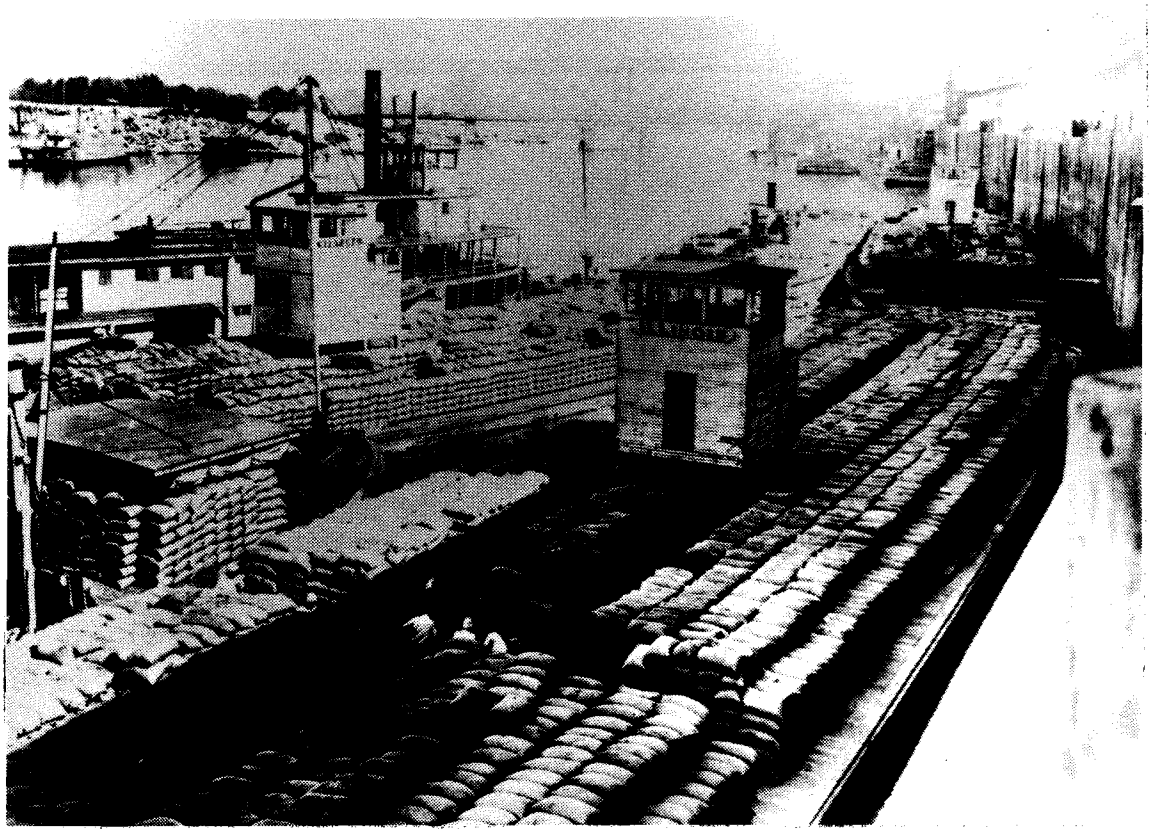


Figure 28. The Sacramento riverboat in the late 19th Century.

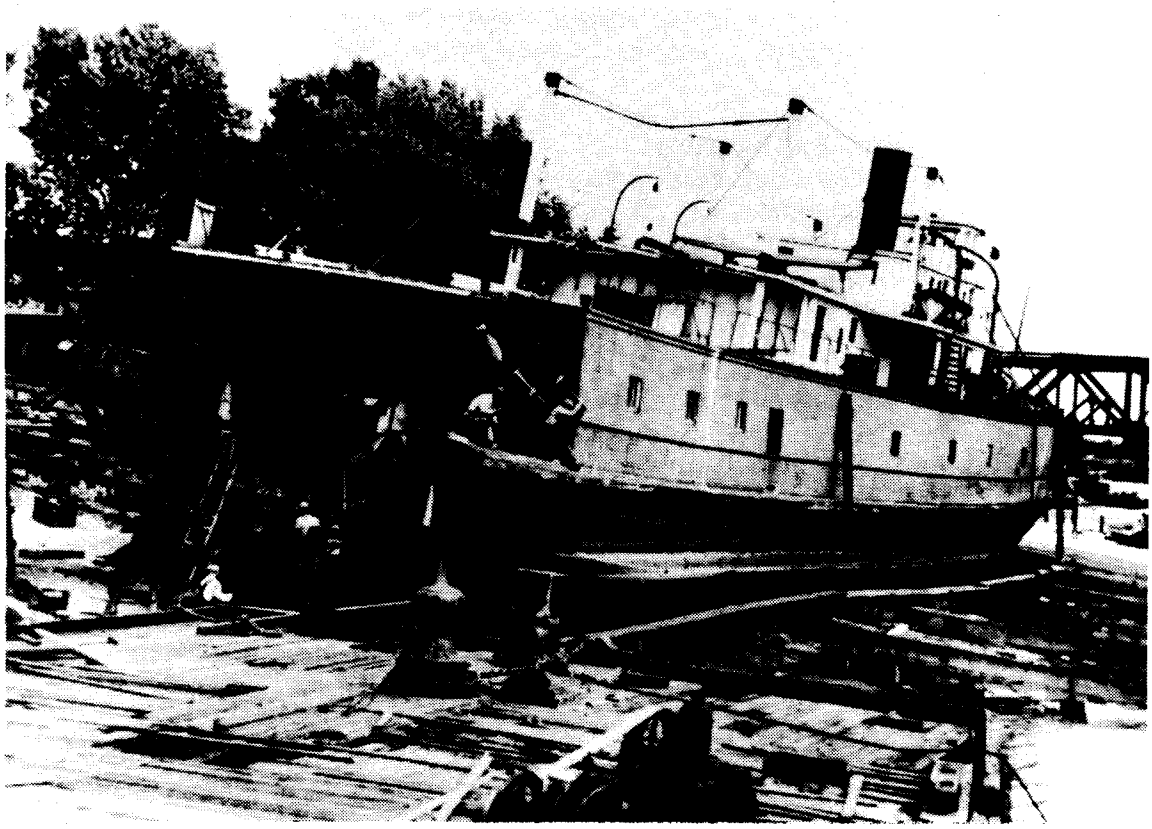


Figure 29. Riverboat repair on the Sacramento "I" Street bridge in background.

> cost of freight, since in 1850 over half of California's population was dependent on Sacramento for supplies. But wooden ships were being replaced by iron ships which could not turn around at Sacramento. Sacramento lost this status in 1852.
>
> —McGowan, *History of Sacramento Valley* Ch. 6.

After 1852 the tonnage of supplies dropped, population dropped and the amount of placer gold diminished as well.

Sacramento built bridges to handle its extra traffic. It had two two bridges crossing the American in the early years, plus another built in 1857 at the foot of I Street.

Some apprehension was felt in Sacramento when a sandbar in front of the Embarcadero began growing at an alarming rate:

> Captain Bill Corlett, substitute master of the *Goodman Castle,* made short work of the bar by tying half a dozen iron plows together, dropping them overboard, and dragging them up and down the waterfront on a hawser, chewing up the bar and leaving it to the current to carry the debris down river to lodge somewhere else.
>
> —*The Steamboaters* , p. 224.

Gold was discovered by James Marshall, foreman at Sutter's lumber mill at Coloma on January 24, 1848. For the first few years the gold was simply placer mined. After that, hydraulic mining was invented, in 1853, to blast the gold out of the hills with water pressure. It was accomplished by the force of water against the hillsides, loosening dirt and gravel which are washed down over the sluices. Hydraulic mining caused serious silting of the river channels and partial blockage of tributary streams--in addition, damage was done in flood times to farms adjacent to the river.

Finally, Judge Sawyer of the U.S. Circuit Court restrained a company from discharging debris into the river in 1884 (Hydraulic mining was not illegal but the discharge of debris was illegal.) Many mines closed after this injunction.

There was another Bonanza that affected California and especially Sacramento a few years after the initial Gold Rush in 1849. A scant ten years later, on July 1 1859, the Comstock Lode discovery was made public. Sacramento became the supply depot with the Nevada Territory as the recipient:

> There are no records to indicate even approximately the amount of travel between the

Sacramento and Carson Valleys, but there are occasional glimpses into the magnitude of this trade afforded by interested observers. A railroad agent, sent to investigate this very question stationed himself along the road during the busy fall trade between August 16 and October 10, 1862. He counted 4,000 teams of 22,000 animals hauling 10,000 tons over Johnson Pass, or an average of 74 teams a day. This meant, in effect, that a team of six to ten horses or mules left Placerville every ten minutes during daylight hours. — McGowan, *History of Sacramento Valley*, p.180.

Mercantile and Agricultural Economy

In 1849 very little was produced in California and nearly everything imported. In the dry periods the miners worked, spending the winters in Sacramento or San Francisco. Hence late rains caused temporary depressions in these cities and limited the freight carried by steamers. Fires and floods influenced the market as well.

Rate cutting by the different companies influenced the amount of freight carried by the steamers--merchants were often reluctant to buy or ship goods, fearing that lower freight rates would enable competitors to undersell them.

Sacramento herself greatly profited from the commerce coming upriver. Steamers paid the city $150.00 a month, plus tonnage dues of 8 cents a ton, to unload their cargo at storeships along the levee.

Changing Physical Character of River and Environs.

During the winter of 1849-50, U.S. Navy Commander Cadwalader Ringgold made a survey of the Sacramento River to produce the first reliable navigation charts and sailing directions.

Floods were commonplace in Sacramento. There were four separate floods from December 1861 to spring 1862. There were few levees; those that existed were only a few feet high, and Sacramentans were not prepared for the deluges that occurred.

The floods of 1861-62 was that much of downtown Sacramento was raised from four to fourteen feet. The final raising was determined by a measurement known as "above overflow" (the highest known level of flood waters). As a result, excavations in downtown Sacramento show an "extra" basement, and those unfamiliar with Sacramento History are willing to believe in the myths that have been circulated about the uses of these "cellars".

The floods of 1861-62 intensified the need for more, higher, and better levees. But the problem with flooding was worsened by the

fact that debris from hydraulic mining was now raising the bed of streams, which required higher levees. Steamboat captains had noticed as early as 1855 that parts of the river channels were more shallow than in previous years, but generally people were not aware until the floods of the early sixties. Another 14 years passed before hydraulic mining was restricted.

Steamboat Slough, 12 feet deep in 1853, was five feet deep in 1879, and was abandoned as a customary waterway from steamboats. The river had to be dredged.

In 1864 dredging was done by attaching plows to the stern of a steamer. Thus was the sediment loosened, to float away, downriver to the next snag. On March 20, 1866, the city levied a tax of 15 cents on each $100 in cargo. The funds collected were used to deepen the channel, which was filled with so much silt that ships could not tie up at the shore.

Types of Vessels on the River

By April 1848 in response to the horde of gold seekers, a launch was being run between Marysville and San Francisco. Unlike Sutter's launches, which were run primarily for his business, this service met the needs of farmers and ranchers bordering the Sacramento and its tributary.

In 1849 large sailing vessels were still able to ascend to Sacramento where a sand bar obstructed the river. It also offered excellent anchorage. Because their crew almost immediately left for the mines, these ships were used as warehouses, stores and boarding houses.

> As the Sacramento River was very crooked it was necessary to warp the vessels with a rope attached to a tree. The passengers, as was expected during this period, assisted in the work. Sometimes the rigging became entangled in tree branches. Their progress of boats was also impeded by sunken and floating snags in the river.
> — Dyke,*Transportation in the Sacramento Valley,* p. 4.

The bark, *Whiton*, under Captain Gelston was the first ship to sail to Sacramento directly from the Atlantic states. As early as July 1849 these and other large boats were charging an ounce of gold for passage to Sacramento.

A journey to Sacramento in the early gold rush took anywhere from ten days to five weeks, with burning sun, fierce mosquitos and a lack of wind. Navigation for wind driven vessels was tricky. At night these boats anchored due to obstacles of islands. Often passengers were forced to sleep on deck.

Figure 30. A saloon and game room on the Capital. Note the ornate grillwork on the stairs and wood carving throughout.

Figure 31. Interior view of the Riverboat Capital. Note the wicker furniture; the piano and the curtain between the lounge in the background and the lobby area in the foreground, with the individual cabin doors on the left.

Even with these inconveniences and obstacles, die-hard owners of sailing vessels tried to resist the impinging steamers through the early 1850's, but without success.

Steamboats Emerge

The Golden Age of steamboating lasted from 1849-1871. The steamers were either freighted by parts on a sailing vessel to San Francisco Bay and assembled there, or came around the Horn. The first small steamers and scows arrived by this latter means. Some of them had run on eastern rivers.

The larger steamers, river palaces they were called, began to make an appearance. The *McKim* was the first to appear (October 3, 1849) a propeller driven steamer. She made her first trip from San Francisco to Sacramento in 17 hours, 24 hours less than any previous craft.

The *McKim* was an immediate success. One one trip alone she made $16,000 profit. Rates on the *McKim*::

Cabin passage to Sacramento	$30.00
Deck passage to Sacramento	20.00
Berth passage to Sacramento	5.00
Meals (cabin passengers only)	1.50
SF to Benicia	15.00
Heavy freight per 100 #	2.50
Measurement of goods per foot	1.00

—McGowan, *Sac to SF Shipping*, p. 47

Although the *McKim* was large it cannot be classed with the floating palaces. The first of these was the *Senator* which arrived in San Francisco on October 27, 1849. On a trip to Sacramento it completed the trip in 11 hours.

Though the *McKim* was profitable, The *Senator* held the distinction for making more money than any other boat built in the United States.

On July 11, 1850 the first large steamer built expressly for the California trade steamed into San Francisco Bay. The New World was built in New York.

On January 22, 1851 the New World sped down the river in an unbelievable 7 hours, cutting the old time in half. This was to start a rivalry in racing which was to hold the public's interest.

Together with the *Senator*, the *New World* ran what was known as the People's Line--they set the first daily communication with the mining depot of Northern California with large

comfortable speedy boats. They made the trip either way in about eight hours.

July 1850--another large steamer, *Major Tompkins*--used during the Mexican War as a transport. It competed with the *New World* and *Senator* by lowering rates--also the *Tompkins* advertised that it would pick up freight at any point on the beach or harbor.

> Although on the Mississippi it was the card sharp who was most actively resented, on the Sacramento it was the petty thief who most frequently met with frontier justice. On the *Senator* one day a fellow was caught stealing a pair of shoes from a Chinaman but was released upon returning them. Later, when he was caught stealing five dollars which had just been placed on the bar, he was taken forward to the windlass and given 36 lashes before being put ashore.
> —McGowan, *Sacramento SF Shipping*, p. 63.

Steamboat Slough was an especially bad place for steamers coming upriver. Sometimes the steamers, negotiating a broad turn poked her nose into the thickets on the bank.

Light Draught Steamers:

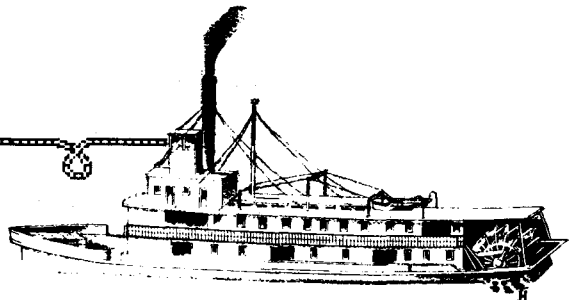
The summer of 1850 saw the need for light-draught steamers to carry freight and passengers from Sacramento to Marysville or further upstream where streams were 2-3 feet deep. By 1852 and 1853, the number and rivalry of the of the larger steamers minimized the effectiveness of these smaller boats except in dry seasons.

Although the larger floating palaces were the major factor in the development of the river navigation, the smaller steamers and scows provided service in communicating with the mines. First, the scows lessened dependence of wind and tide in supplying the mines. They also acted as ferries across the river, mining dredges or farm produce carriers.

These small inland steamers eagerly competed for the bits of business that the larger steamers couldn't or wouldn't supply. They shipped produce to market while the bigger steamers had the monumental task of supplying the mines.

Of the light-draught steamers the most effective was the *Gov. Dana* (First run April 14,1850.)) She was assembled at New York on the Pacific; *Jack Hayes* (formerly *Commodore Jones*); Fawn.

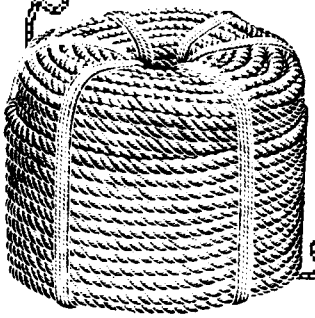
Because of the increased freight, the barge came to the Sacramento River in 1856. They were large flat-bottomed scows



A SINGULAR CAPTAIN

The men who piloted the Sacramento River were selfless and responsible-necessary qualities for those in whom scores of passengers placed their fate - but there were a few bad apples. Passengers aboard the Continental complained to the newspapers of one captain's abandoning ship in the midst of a fire:

> "We consider it our duty to inform the public of what we were witness to, viz: That when the fire went out the Captain lost entirely his presence of mind and cried "Every man for himself" or words to that effect. There was a rushing for the boats, when one of the passengers called the Captain's attention to the fact that the sea was going too high for the safety of any boat. He then ordered us to wait until morning, when he personally left in the third boat, leaving the other passengers to care for themselves. The steamship remained twenty-three hours or more afloat before she sank, and there would consequently have been plenty of time for lightening her or for building a raft to save the remaining passengers, the specie and the correspondence."
>
> —*Sacramento Union, October 22, 1870*



with quadruple rudders. The pilot house which was raised on stilts allowed the helmsman to see ahead to maneuver tight turns.

On February 22, 1854, the owners of all steamers on San Francisco Bay, the Sacramento, San Joaquin, Feather and Yuba River formed a joint stock company known as California Steam Navigation Co.

A dozen owner captains and their bankers sat down and brought forth the CSNC. It was thought that it would be a monstrous monopoly that would crush the opposition and bleed the public with high tariffs. It did nothing of the sort--it brought order out of chaos and stabilized rates.

> The appearance in 1855 of the Defender, and opposition boat, caused considerable excitement, and competition was strong. One one occasion the *Defender*, finding no place to land at Sacramento, moored to the hulk *Damon*.. When the time for departure came, the band played to entice passengers on boat. A few minutes afterwards a small steamer began to sound a whistle, drowing out the music of the band, stopping when it stopped and starting when the band did. Soon a man and two boys with Chinese gongs essayed to rival the band and the steamer, making so much noise that court being held by Judge Morrison in Sacramento hadto be adjourned. —Dyke, *Transport...*, p. 11-12.

Marysville organized their own company--Citizens Steam Navigation Co. Their interests centered around the large steamer *Queen City* soon joined by the large stern-wheeler *Young America*. Both companies lost much money; a compromise was reached where the *Queen City* was subsidized by the CSNC.

The California Steam Navigation Co. dominated the river until it was transferred to Central Pacific RR in 1871. There was almost continual opposition to the monopoly. It ran mostly below Sacramento.

Because of speed, a steamer could carry as much freight to Sacramento in a month as 400 sailing crafts.

The development of agriculture after 1860 stimulated the steamboat companies to stop at every farmer's landing to pick up cargo.

Steamboating on the Feather River was more important than on the Sacramento until 1869. Steamboats stopped using it after 1869 when the RR arrived. The Marysville Steam and Navigation organized in 1874 went into competition against the high freight rate charged by the RR's. The steamboat line charged $3 a ton where the railroad charged $5.25.

Fruit farmers used 2 sailing vessels in 1864 to take their produce to San Francisco, making two round trips per month. But this was too slow as the fruit ripened quickly. They hired in turn the little steamer, *Reform*, to move freight. From this sprang the California Transportation Co., formed in 1875, which provided a 48-hour round trip service to San Francisco for landings between Rio Vista and Clarksburg. It sometimes touched as many as 65 different landings. There were several hundred landings below Sacramento--some made of timbers, others of brush. The steamboats stopped at smaller landings only on signal.

Though the RR carried most of the freight after 1861 the growth of the valley made it possible for the steamboats to increase their business.

Small independent owners found a place for themselves as well. One of the first was the Sacramento Wood Co., organized by steamboat captain, Captain Thomas Dwyer. He bought land adjacent to the river and cut wood, then ran his steamship *San Joaquin #1* from this. In 1869 Dwyer formally organized Sacramento Wood Co. Its name was changed in 1879 to Sacramento Transportation Co.

A public service type steamboat on the upper Sacramento after the Civil War was the trading boat. Many people were cut off from towns by tule swamps or distance to the railroad. These people relied on trading boats. The first such trading boat was the *Alta*; also the *Neponset* 1 and 2.

> Farmers traded the produce of their fields for all sorts of merchandise which the boats carried. On the return trip the boats were loaded down with poultry, pigs, calves, wild game, garden truck, fruits, hides, dairy products, and anything that could be raised on the low lands.
>
> Deck hands offered another friendly service newspapers or magazines to a stick and throwing it to farmers waiting for the trading boats to pass by. On occasion, some complained that the trading boats sold liquor to farm hands who immediately proceeded to get drunk. In any case, all waited for the trading boat, recognized its characteristic whistle and rushed to the bank to see it pass, or the landing to trade with it.
>
> —McGowan, *History of Sacramento Valley*, p. 306.

Each steamboat had its own distinctive whistle, and the sound of "your" boat signaled the imminent contact with the outside world.

The electric railroad, automobiles, and paved highways added to

the demise of the steamboat. Steamboats above Sacramento were mainly concerned with moving wheat to market until 1901.

The end of the steamboat era on the Sacramento came in October 1941 when the *Delta King* and *Queen* were leased to the U.S.Navy.

Steamboat Fates

The Steamboats met with various fates. Several were lost in a fire in August 1932, two or three were used to repair levee breaks and *Captain Weber* burned at the docks in 1943. Many of the smaller and lesser known boats were converted into barges and later towed by diesel-driven boats.

The first "floating palace" to steam to Sacramento was the *Senator*.

Vessels found it hard to navigate the Feather River but it was every more difficult after 1855 because of the large number of mining ditches that diverted water from the Yuba and Feather Rivers.

Sinkings

The upper Sacramento had always been handicapped by snags and shallow water. The Federal Government tried to help by sending in the *Seizer*, a snagboat, to clear the river in 1881.

In those races a steamboat would leave its moorings--the one that pulled out first would zig-zag to stop the opposing boat from passing. Sometimes the captain would skip Benicia to make time, forcing the passengers to take the next ship back.

Once, in May 1859 passengers of both steamboats, excited by the contest and unfair tactics, drew pistols and began shooting at each other.

> Racing was dangerous but soon became the accepted practice. There was no insurance on goods shipped on the upper Sacramento because the rates were prohibitive. —Ostrander, *The Steamboat: Catalytic Element....*

Boiler Explosions

Of all steamboat disasters, boiler explosions did the most damage. *Belle* exploded on February 7, 1856, 11 miles above Sacramento--13 killed and fifteen injured.

The *Pearl* exploded January 27, 1855, at the mouth of the American River, killing about 56 of the 100 passengers. The *Washoe* exploded on September 5, 1864 near Steamboat Slough killing 70 passengers. The *Yosemite* exploded at the wharf

in Rio Vista on October 12, 1865, killing scores of people. These explosions were generally caused by defective iron in the boilers. But by 1870 steam engineering had progressed to the point that few explosions took place.

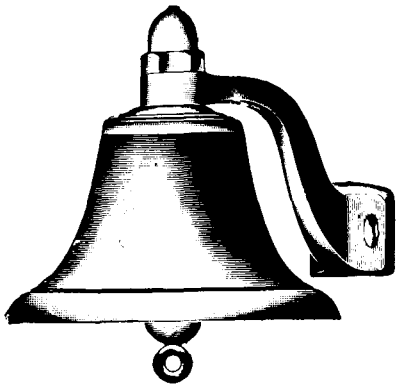
From the Steamboat Act.....*When a Boiler Bursts:*

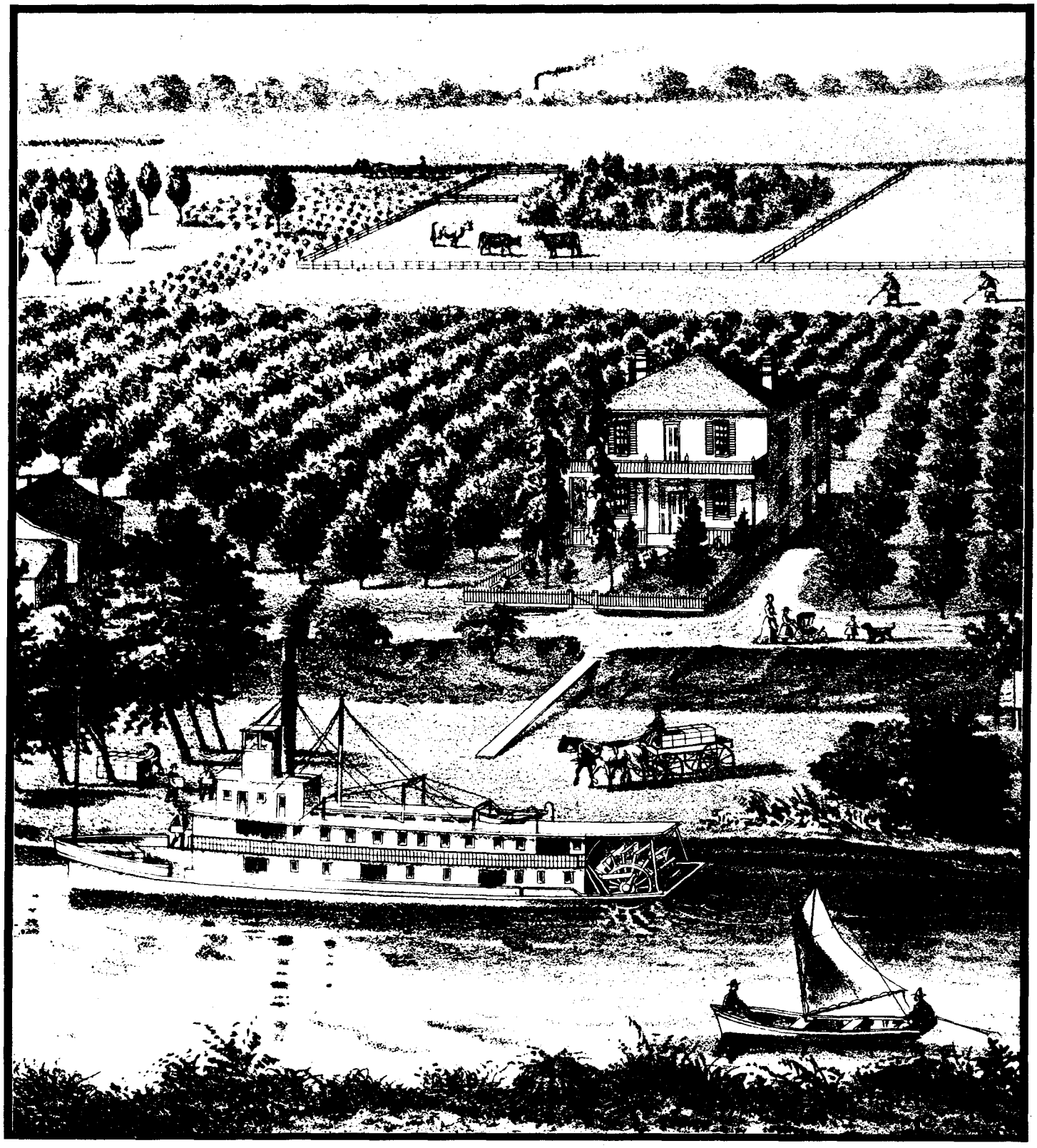
> To punish criminally in such cases is impossible; for, when such catastrophes occur, it cannot be frequently be told who is most to blame, the captain, the mate, the pilot, or the engineer.
>
> The supervising of the local inspectors can suspend a pilot or an engineer for days or months in succession and thus deprive him of an opportunity of earning a dollar by his business; or revoke his license entirely, and thus compel him, when perhaps on the downfall of life, some other employer.

A Report, pursuant to the provisions of the Steamboat Act, on explosion of the *Pearl*, January 27, 1855:

> This accident was investigated most fully, and the decision was, that it was caused by the carelessness or recklessness of the engineer; the boat had been inspected in compliance with the law, but the engineer then in charge was not licensed, a change having been made in the engineer without the knowledge of the inspectors; the previous engineer had been licensed by them. Their engineer in charge would have been prosecuted by the inspectors, but that he absconded after the accident.

Steamboating on the Lower Sacramento still provided, even with all its inconveniences, and with its myriad of hazards, the most expeditious route to the heartland.

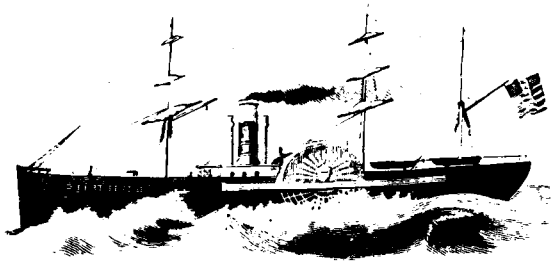




Analysis, Conclusion, and Recommendations

to accompany

A Map and Record Investigation of HISTORICAL SITES AND SHIPWRECKS ALONG THE SACRAMENTO RIVER Between Sacramento City and Sherman Island



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A Map and Record Investigation of HISTORICAL SITES AND SHIPWRECKS ALONG THE SACRAMENTO RIVER Between Sacramento City and Sherman Island

prepared by

Roy Minnick
Supervising Boundary Officer on
staff of

California State Lands Commission

This report was approved for distribution by the Commission on August 10, 1988.

SUMMARY

The project area extends up the Sacramento River from its mouth to the I Street Bridge in Sacramento. We included several notable arms of the Sacramento, such as Steamboat Slough, because they were traveled by the inland rivercraft; we did not emphasize the section of river adjacent to Old Sacramento because it has been the subject of intensive study by historians and underwater recovery specialists.

While we are aware that the Sacramento River may have moved somewhat over the years, so that a wreck site may be buried in a dry field, the map and document study was hampered by lack of accurate maps showing the location of the river prior to establishing the present levees. No evidence of such dramatic change was disclosed by the study, but further work may be needed if any such evidence is uncovered or offered by a source. The best technique would be remote sensing.

Historic Sites

Although our consultant historian, as well as SLC staff, were able to find areas of possible interest, we were unable to provide any specific locations of potentially significant archaeological sites in any of the three topics of special interest: obliterated Indian villages, historic riverboat landings, or shipwreck sites that may yield artifacts. While we knew, for example, that Indians lived 20 miles below Sutter's Fort, we were unable to narrow the search area sufficiently by examining maps and documents, or by site inspections. One historical record may say "20 miles,.." but measured using what standard, and measured by river miles, or as the bird flies. Another may refer to the same site, and give a different distance, again with no indications of measurement standards. Without such information, locating the site is speculative. While we know something existed or happened in some general area, the scope of our search, limited to maps and documents, didn't yield data sufficient for us to indicate, on a map, a site with a degree of precision that would enable us to go out, point at the ground, and say "dig here."

Obliterated Indian Villages
Sensible for the time, Indians lived along the river, and would, or could come into the study area during the summer when the waters had receded.

Also, other studies of the river locations after 1840, but prior to the construction of artificial levees, indicates that even though the river was free to meander, natural levees actually restricted this process, except during floods or highwaters which probably occurred frequently enough to destroy easily recognizable traces of Indian Villages. Certainly, some middens may be found, as well as other traces, but we need to obtain or develop more precise locations. Apparently, maps and documents won't provide an easy or a conclusive answer.

Historic Riverboat Landings
Most farms, villages, and would -be villages had a landing of some sort. After all, the river provided the primary and certainly easiest mode of transportation between San Francisco and Sacramento, and all points between. Large and small riverboat companies made regular deliveries and pick-ups of personal and commercial goods. However, fluctuating river stages and custom, dictated the type of landings provided the boat. Apparently most landings, and particularly the earlier ones,were little more than gang planks that swung either from the boat to shore, or were slid from shore to boat after the boat was tied to a tree, or "deadman" sunk in the bank for the purpose.

Several pictures in the report show examples of typical "landings". They were changed or modified to meet whatever timely need there may have been, and hence, other than a map of some of the sites, little evidence remains of their existence.

It seems that we are, at present, unable to do very much more toward locating significant historical landing sites without combining information obtained from underwater survey devices, physical dives, and parole accounts.

Shipwreck Sites That May Yield Artifacts, or Even Remains of a Boat

There have been a number of shipwrecks in the project area. Some of them were common knowledge and so we began the investigation with optimism. However, we discovered that the shipwrecks, by the nature of their occurrence, reduced our chances to successfully pinpoint locations using solely map and document evidence. Our studies show that wrecks resulted from several situations— the boat either blew up, or snagged itself and tore a hole in the bottom and sunk; seldom was the *exact* site reported or obtained after the fact.

If it blew up, some of the vessel would be damaged, but the remainder sunk. Records disclose that at least some cargoes of value were salvaged.

In the case of a less convulsive sinking, the boat, or at least most of its cargo, could often be salvaged, and was. Typically, if the boat snagged and tore a hole in its bottom, the Captain would steer to the nearest bank or sandbar and run aground, saving passengers and cargo. The historical deposits that remain may or may not be substantial.

Our research discovered accounts where the cargo was salvaged, the passengers rescued, and the boat refloated. Sometimes it would even be renamed.

Our investigation of available insurance records, although admittedly not complete because the sources are nearly untraceable or in Eastern United States, do not indicate that many large settlements were paid, even though there were a number of wrecks.

Dr. Goldfried makes a good point in his chapter. He provided some information about the impact on the river by hydraulic mining. It is conceivable that many items are covered up if they weren't carried down river. Our explorations in the River seemed to confirm Dr. Goldfried's opinion about the amount of silt or debris from the mining that could be expected in the river, and that it hinders location and recovery of smaller items.

Staff feels that hydraulic mining may have caused movement, along with other causes; to allow for this, staff has not refined sitings beyond the circles shown in the report on the site maps beginning on page 46 in the report.

While artifacts are in the study area, the amount of money and effort required to find and retrieve anything is substantial, and there is no guarantee of return on the investment. There may be, however, a moral obligation to future generations that requires that the effort be made.

Estimated costs are detailed in the chapter entitled *Survey Estimates*, specifically pages 154, and 155, and need not be repeated in detail here except to note the following:

- The cost per site for survey and mapping is $16,444.00.

- A reasonable cost for scanning and essential corollary actions, this whole section of river is $243, 802.00. Other alternatives are in the report, providing for different levels of input of existing staff.

At the onset of the study, staff hoped to identify at least several significant sites that could be set aside for study, use, or development by the historical community. Staff also felt that one ideal situation would be to locate a significant ship wreck, adjacent to a landing and near the remains of an Indian Village, about 20 miles downriver from Sacramento, with transportation to the site provided by the railroad museum in a vintage train. This could be developed into a museum site where riverboating could be highlighted. One prototype of this is at Vicksburg, Mississippi, where a Civil war gunboat is being restored as part of the museum complex.

The history of the lower Sacramento is exciting, dynamic, and peopled with a collection of characters, some courageous, some outrageous. However, it unfortunately may remain a story to be found largely in maps, diaries, photographs and other records unless some additional steps are taken. Suggestions are outlined in the recommendations section.

Records, documents, and maps are not always the only answer. An underwater survey may uncover a site that failed to be reported, or may even have resulted from an incident that happened before John Sutter's time, or even the Spanish colonialization of San Francisco. Staff feels that a means for review by all the disciplines

must be provided so that decisionmakers are aware of the impact of their actions when use of one of the sites is contemplated.

In summary, perhaps the best benefit derived from this investigation and report and is that an inventory of potentially significant sites is available, and land-use decisionmakers have a point from which to start their evaluations of future uses of any land within these sites.

RECOMMENDATIONS

1. The State Lands Commission should identify the sites noted in this report as being potentially significant historic locations.

The State Lands Commission staff should, as part of their review of permits and leases, consider the impact on the site and any artifacts that may be contained within the perimeter, and report their findings with their recommendation.

Even though the document and map investigation failed to disclose any specific significant locations, it does suggest that an occurrence happened in that vicinity that may have historical significance. There is no way to be certain, without further research, that the area does not possess significant historical artifacts. Identification as a potential site provides an opportunity to have an intensive historical evaluation prior to any actions that would irretrievably damage the site.

2. The legislature should provide State Lands Commission with funds to purchase the equipment essential for underwater research, such as a side-scan sonar, magnetometer, or other device that may be available when the funds are approved.

The cost, for the equipment as described in the report beginning on page 129, in Chapter 3, would be about $150,000. The State Lands Commission already has the boat and the technical expertise to utilize the equipment.

3. A task force should be established that includes, in addition to State Lands Commission staff, professional diving and salvage personnel, historians and archaeologists, as well as others who may have a special expertise that may be needed. The expertise should be available on an as-needed contract basis.

Only an interdisciplinary task force can effectively evaluate a site. While the map and document investigation was able to locate the general area of a site, it cannot be the sole tool to make a final evaluation of an underwater historical site.

Divers, without some idea of location, have a difficult time diving in the Sacramento River. It should be remembered that most finds in the River, to date, have been in areas where either sinkings were known to have happened, or there was likelihood that something happened, namely, the area adjacent to the City of Sacramento.

The purchases proposed in recommendation 2, above, would make available, on a permanent standby basis, the equipment to help pinpoint, within a general location, any search locations for the divers on other recovery tools.

Existing State Lands Commission boundary staff would be able to conduct the essential on-shore ground surveys to reference the underwater surveys, and provides maps of the underwater exploration.

The task force should evaluate sites that are being considered for permit, or use, prior to any new physical modification to the area.

4. State Lands Commission staff should be funded and directed to investigate and prepare a similar map and document report on the upper Sacramento and the San Joaquin Rivers.

The report would provide the same type of inventory of potential sites that is the primary result of this report. Any sites that may be identified could be treated in the same manner by the already established interdisciplinary task force.

Even though our investigation of the lower Sacramento did not conclusively discover any precisely locatable sites of historical interest, we have amassed a great deal of information, and have a substantial amount of "river knowledge" on staff. Much of the research already completed would be valuable for any similar investigation on the Upper Sacramento and the San Joaquin Rivers.

Review of material already known to us indicates a strong possibility that the upper Sacramento River may have several potential wreck sites and significant historical sites along the River. There are also references, in historical reports, of islands that formed around sunken and abandoned vessels. These would probably provide excellent time capsules, and be of great interest to the community of professional historians.

River boats on the San Joaquin went into the foothills, at least as far as Fort Millerton, upriver from Friant Dam. Boat traffic to Stockton was quite heavy and there seems to be potential sites of interest in and along much of the river. Also, the San Joaquin was less affected by hydraulic mining so the underwater recovery problems would be less than might be expected on the Sacramento River.

Considering what is already known about river boating, and now in our data bank, the additional work on both rivers could be accomplished in a shorter period of time, and at an estimated cost of $65,000, less than half what was appropriated for just this study on the Sacramento River.

Based upon some of SLC staff's previous river boundary studies, islands in the Sacramento River, with potential historical sites, may already belong to the State of California as sovereign lands under jurisdiction of the State Lands Commission. If this proves to be the case, exploration or preservation by the historical community would be facilitated.

Similar boundary studies now underway along the San Joaquin may provide the same type of benefit.

With the recent public interest in the San Joaquin River, and the increasing development pressures it is important that historical sites in and along the river be promptly identified. If we wait until development of land intensifies and disturbs what are now relatively natural sites, we will have missed the opportunity to identify, locate, and recover significant sites at a reasonable cost.