



U. S. COAST AND GEODETIC SURVEY.

J. M. Horn, Superintendent.

State: *California.*

DESCRIPTIVE REPORT.

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LOCALITY:

San Diego Bay
Vicinity.

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CHIEF OF PARTY:

A. F. Rodgers.

Assist. in charge of Descriptive Report

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Archives

Give here full address to which reply should be sent.

San Francisco Cal.

U. S. Coast and Geodetic Survey,

North San Diego

Edinburgh, 1st 1887.

Mr. L. M. Thorn
Chief U. S. Hydrographer
Washington D. C.

Sir: Having closed my examination of
San Diego Bay & vicinity in accordance
with your instructions & the measure of
my allotment in Physical Hydrography
I have the honor to submit the following

If a comparison of San Diego Bay
as we see it to day & as it was originally
formed were entirely possible it would be
both interesting & instructive.

From my observation it seems
plain to me that in the dim past what we
know as San Diego & Saline Bays were un-
divided, an indentation in the coast line
extending to the present Southern limit of San
Diego Bay & North to the Northern edge of
what we call Saline Bay. At some period when

When the land rose from the water or the Ocean receded - Successor & deeply marked sea benches all along the Coast clearly point to such rocks in Nature's laboratory - This original Coast indentation was bordered seaward by four islands the present "Pt Loma" the largest & most prominent, the other three would perhaps be more appropriately termed "Islets" Two of these islets were east of the present Entrance to the Bay & are covered upon the Coast Survey Chart 36 by the words "THE ISLAND" There are there in fact, two distinctly outlined islands originally separated by what is now called "Spanish Bright" These two are joined by a connecting Sand Spit over which the Ocean will roll its higher waves at each high water. The fourth island is quite small as compared in area with the others, being about one mile long and a fourth mile in width. It is joined to the Main land at the extreme south

End of the bay by an extension of the
 Canal Port which including a bar
 enclosing the other two islands mentioned
 forms a somewhat mustard barrier against
 the beating of the sea & extends in all
 9 miles South from the present entrance
 to San Diego Bay. That these islets
 were above the surface of the ocean before
 the formation of the Canal which now
 connects them, appears too plain to need
 Argument. They are as much & no more
 the Creation of Ocean Implants than the
 adjacent lands to which their Structure &
 Materials show them to be closely allied.

The earth & sand spit building
 was probably the dam North & South of
 the Loma & the waters of the Northern
 part of San Diego Inlet were probably
 impounded at the dam time, leaving
 the Inlet then with two entrances the
 North & the other South of the Loma,
 the latter standing as an island, unconnected
 with the mainland. No later connection

South the main is due to the sediment bearing waters of the so called San Diego River. The normal debouchure of this river, flowing through the strongly marked high bordered Cañon known now as "Mission Gully" was the north end of San Diego Milet, which it first reached & then separated from its Southern Connection - Thus making the divisions now known as San Diego & Balise Bay's. The effects caused by the freshets of the river being turned into San Diego Bay are marked by the delta or marshes & shoals which extend out toward the edge of the main Channel South of "Old Town" as shown upon Chart 606

Former Areas of San Diego & Balise Bay
& the present Channels

Taking the original formation which I have outlined as a basis of measurement I find that the former mile South of Point Loma measured from bank to bank contained an area of 26 square miles

This measure is practically identical with the present high water area of San Diego Bay - That much of this area was originally covered by water of considerable & not in, beoaly great depth is suggested by my observations elsewhere - The marshes of San Francisco Bay, first formed as shoals, whereon they have been sown or piled fragments of shov mud or sediment deposits from 50 to 100 feet in depth. Looking at the shaded portions of Grant 606 and measuring the thread of Channel which now reaches from the Entrance at Ballast Point to the South end of the bay. Starting at the Entrance with a depth of 60 feet & diminishing to "bare at low water" I find a Channel area of less than four square miles. The Northern end of the original inlet now False Bay, contains within its banks an area of four square miles, of this area nearly three fourths is now laid bare at such low water and

6 1911.

The bar in front of its entrance instead of being pushed seaward & graded down by the heave & pulsations of its original tidal reservoir, nearly joins the beach line & has a depth of little over two feet upon its crest at low water.

Entrance San Diego Bay

Point Loma which I have described as a former island, is 6 miles long & averages a mile in width with a height above sea level of 400 feet.

East of the southern point of Point Loma is formed the bar of San Diego Bay, which is so protected from the prevailing N.W. wind by the high lands of the Loma & by the fringe of kelp which extends south from the point, that on ordinary weather no change of wave motion would be noticed in passing over it.

From the crest of the bar to the entrance between Ballast Point & the opposite sand spit is one & a half miles. The sides of the outer channel between the bar & the entrance are flanked

on the West by Point Loma & on the East
by the Zeevinga Shoal the highest point.
This Shoal is bare wash at low water.

The effective width of this outer
Channel is approximately $\frac{3}{8}$ of a mile.

Approaching the entrance from
Outside the Harbor, Ballast point appears
to project half way across the normal
Entrance, leaving a little over $\frac{1}{4}$ miles
width between it & the opposite Sand
Point. From the character of the Materials
forming Ballast point & from the evidence
I am convinced that Ballast point is
an old formation and the opposite Sand
Point comparatively new. Ballast point
now appears to project into the Channel
because the more yielding materials on
either side North & South have been eroded
away thus leaving the sharp curves
which appear on its Bay & Ocean faces.

Main Channel San Diego Bay

The main Channel of San Diego Bay
bends closely round Ballast point & under

- & under the high land of the Loma. In
 entering the bay, passing Ballast Point
 it turns sharply to the West, then
 North & gradually bends to the East
 & South in crescent form until at
 its Southern extremity its axis is on
 the Meridian. Narrow & deep at the
 Entrance its width averages a width of
 $\frac{3}{8}$ of a mile in the first 5 miles inside
 the Entrance - from $\frac{1}{4}$ to $\frac{1}{8}$ mile in the 5th
 to the 13th mile from the Entrance where it
 terminates & is lost in the Shoals formed
 at the South end of the bay. In the first
 five miles inside the Entrance the Channel
 will average 35 feet at low water & from
 the 5th to the 13th mile the depth gradually
 diminishes from 30 feet to 5 at low water.

Shoals

Just a prominent feature of the
 San Diego Bay formation is the Zumaia
 Shoal outside the Entrance. This Shoal
 projects South from the sand spit opposite
 Ballast Point one mile westward

and very close to the surface at low water, it still extends one mile further gradually increasing in depth until it fades into the Bar formation with the depth of which & its position & width it probably has much to do. It has been feared at times that the embryotic channel marked upon Chart 606 at the other end of Zuniinga Shoal would develop to the great detriment of the main channel.

The present most serious obstacle to the easy entrance of San Diego Bay by vessels of the largest class is the Middle Ground or Shoal which makes southwardly from the island side of the channel down toward Ballast Point. I look upon this Shoal as the most vulnerable point in the San Diego Bay formation, should it continue to increase in extent its effects must be disastrous. The formation of this Shoal is I think largely due to the erosion between Ballast point; into this Curvature the Ebb tide moves rapidly & before

been it changes direction & makes exit
to the ocean round Ballast Point & eddies
are thrown out & across the normal channel,
the ~~water~~ current in the latter is checked and
sediment precipitated to form the middle
shoal.

The original channel of San
Diego Bay, its normal opening I think extended
from the present extremity of Ballast Point
across to the western edge of what chart
606 calls "the Island". Examination of
the entrance suggests to me that the present Marsh
formation & the sand banks at the extreme West
end of the Island are comparatively new and
and are due to the same general cause as
the formation of the middle ground shoals,
namely, the eroded curve in the Loma
shoal line behind Ballast Point.

San Diego City & Coronado

My reports from time to time while I
was stationed at San Diego gave information
of the remarkable progress of population &
building both in that place & in Coronado
on the ~~the~~ north side of the bay. In tracing

which I have forwarded will illustrate the building area & its comparison with former years. The City of San Diego is spending large sums in street paving & sewerage. Streets here were no sewers, surface drainage & cess pools being the alternative. The so called Warring System has been adopted, a special feature of which is the small size of the sewer pipes combined with a method of daily automatic flushing. Coronado located in San Diego, fostered by a syndicate of capitalists & the large expenditure of money to develop its possibilities will in all probability in a few years have as large a population as San Diego now has, its water forage is just as available for shipping & its land connection with the main land made for Railways round the northern end of the bay. These two settlements, San Diego & Coronado equipped as they are with all the latest modern mechanical appliances for rapid filling in & building out are reaching toward each other & contracting

The Channel of the bay at a vital point.

That the deepest part of a tidal Channel will become deeper, when the bottom is of yielding material, and obstructions are placed upon its sides, seems convincing proof to enterprise that such obstructions are as beneficent in their physical effects as they are profitable to their immediate projectors. The effect of the naturally narrow Channel way between San Diego & the Coronado side is readily seen in the 7 fathoms deep shown upon Chart 606 and the rapid shoaling off northward to $4\frac{1}{4}$ fathoms. These effects will be repeated as the so called improvements narrow the waterway in front of San Diego & Coronado.

The deepening they will be commented on & the shoaling not noticed until it threatens to stop navigation.

Towns & Ports of San Diego

The number of towns laid out contiguous to San Diego are many - I mention "South San Diego" at the southern end of the bay which is as yet more a project than a fact.

Imagined North from South San Diego along the
Eastern ocean bay or just National
City a well established suburb of San
Diego & the present terminus of the California
Southern Rail Road. It is destined at no
distant day, I think to be joined to San Diego
by continuous lines of buildings & under
a common Municipal Government.

Going North from San Diego, "Middle
Town" is laid out, but its limits are not well
defined & its population, though very limited, &
adjoining "Middle Town" on the North is "Old
Town" popularly so known, though officially
called "North San Diego". The first buildings
of this from San Diego, adobe's with tiled
roofs date back into the last century, the
town looks its age, both old & decrepit. Its
population is under 500 with quite a propor-
tion of its number the descendants of former
Mexican occupants. Following

The shore of the bay from Old Town toward
the entrance, crossing the low, partly tide
covered at high water lands between the

San Diego Main & the local outlines of
the Torma or Com to the borders of "Rose-
ville" which exists as a town plat carefully
laid out upon the ground & represented on
paper. The only house within the limits of
Roseville is known as "Roseville Hotel"
Its location is determined trigonometrically.

This Hotel is not occupied & the town
has no present population except its native
Rabbits, Squirrels & Coyotes. Adjoining
Roseville on the West is "La Playa"
literally "The beach" which in name seems to
extend indefinitely toward Pt Torma.

The site of this Village seems to stretch
from the Collection of Dishermen's huts, shown
upon the Entrance tracing which I saw the
honorable to forward August 20th & to include
the site of the former village of La Playa
as shown upon Chart 606. The former
Village has no existence now - There is but
one house left, that was never a dwelling
& is not now occupied for any purpose.

A prominent object on the old

One of the Village of La Playa is a "Pepper tree" marked upon the tracery of the entrance.

This Pepper tree is specially entitled to notice as being the only tree of any kind upon the Loma.

The next buildings in sight west of "La Playa" are the white washed government buildings, two of them upon ^{Ballast St.} & three other upon the Loma, these are prominent objects from their glistening whiteness in the sunlight.

Four hundred & thirty feet above the Ocean & half a mile from the southern extremity of Pt Loma is the Pt Loma Light House. This is illuminated with a 3^d Order, fixed, white light, visible 24 miles. Light House Authority places the lantern of Pt Loma 120 feet above tide.

Going North from Pt Loma Light House, neither towns nor houses are met with until the southern extremity of Salas Bay is reached & then upon the comparatively level land at the foot of the Loma & South of the Salas Bay entrance we find a City in Embryo "Ocean Beach".

"Ocean Side" is laid out upon lands forming a part of the "Pueblo of San Diego". The street lines are marked by stakes & the streets themselves, Carrioles, Paved & of the native sage brush & undergrowth, may be plainly seen in plan, looked down upon from the higher levels of Sanborn.

The present buildings within the City of Ocean Side are an Hotel nearly completed, intended to contain 60 rooms & two a three more informal buildings.

Beside the laborers employed in Public works, the present population does not I think exceed four or five persons.

With an encouraged excitement was caused in selling \$100,000 worth of Town lots in Ocean Side by the discovery of "Fresh water" in the sands close to the surface & within two hundred feet of the ocean.

This fresh water is evidently found in a former bed of the San Diego river through which the water still percolates in its journey from the mountains to the

17

Sea, though its route is surface covered
& hidden from casual observation.

Beach of Cobble Stones

A notable feature of the formation of the
high lands round San Diego Bay is the
presence at all elevations of Cobble Beach.

The Manager or agent at Ocean
Beach informed me that in looking for Coal of which
there are indications in the Loma that forty
feet below the surface no encounter was
made of Cobble which proved 75 feet deep.

An former "Presidio of San Diego"
shown upon Chart No 6 North of "Old San Diego"
at the bend of the San Diego River (The buildings
& enclosure there shown upon the Chart have no
longer existence) was underlain by a Cobble
beach apparently 40 or 50 feet thick. The
erosion of the river party exposed this beach in
a bluff point & the U.S. Engineers availed
themselves of it to furnish a Cobble
facing & core for the dam built by them
to control the flood waters of the San
Diego River.

The San Diego River

This so called "River" is for at least 6 months in the year apparently a run of dry sand filled with glittering grains of mica. During some years of Exception drought it fails altogether to reach the Ocean as a surface running stream. At certain times of continuous heavy storms it becomes a torrent & fills Mission Valley through which it runs from bank to bank. That it always runs below the surface many facts evince.

In City of San Diego & Coronado respectively, draw their present supplies of water from this apparently dry river bed. The surface tanks are filled by gravitation & the water pumped thence into a hill reservoir, near "Old San Diego" & thence carried by pipe line to San Diego & across the bay to Coronado. I have endeavored in the above to cover the general requirements of the Circular entitled "Instructions & Memoranda for Descriptive Reports &c &c" to submit it.

Very Respectfully

Wm. A. Rodgers
Spokane