CALIFORNIA COASTAL COMMISSION
SOUTH COAST DISTRICT OFFICE
301 E Ocean Blvd, Suite 300
Long Beach, CA 90802
PHONE: 562-590-5071

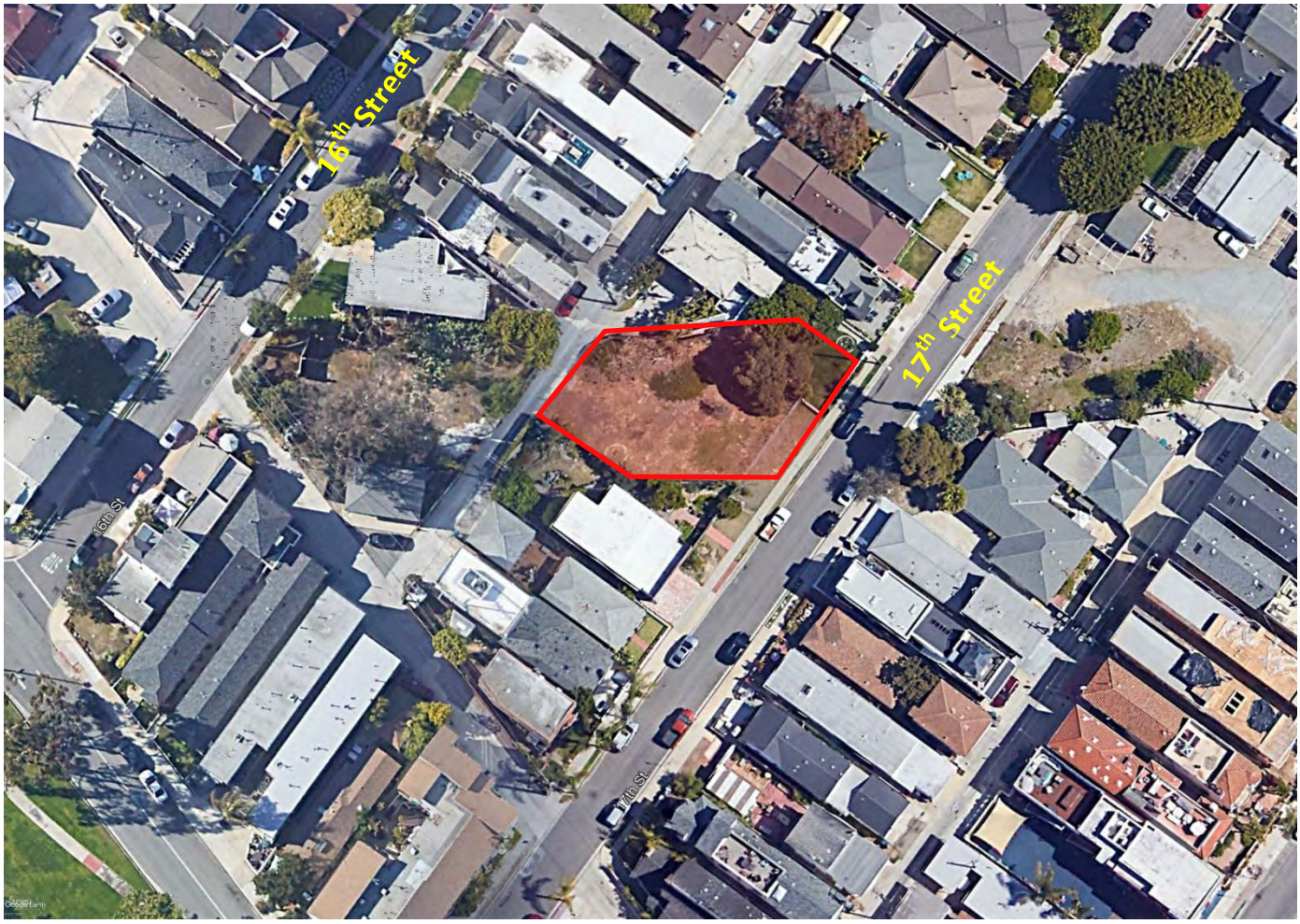
W27a&b

5-18-0907 & 5-18-0908 (NERJA INVESTMENTS, LLC)

JULY 10, 2019

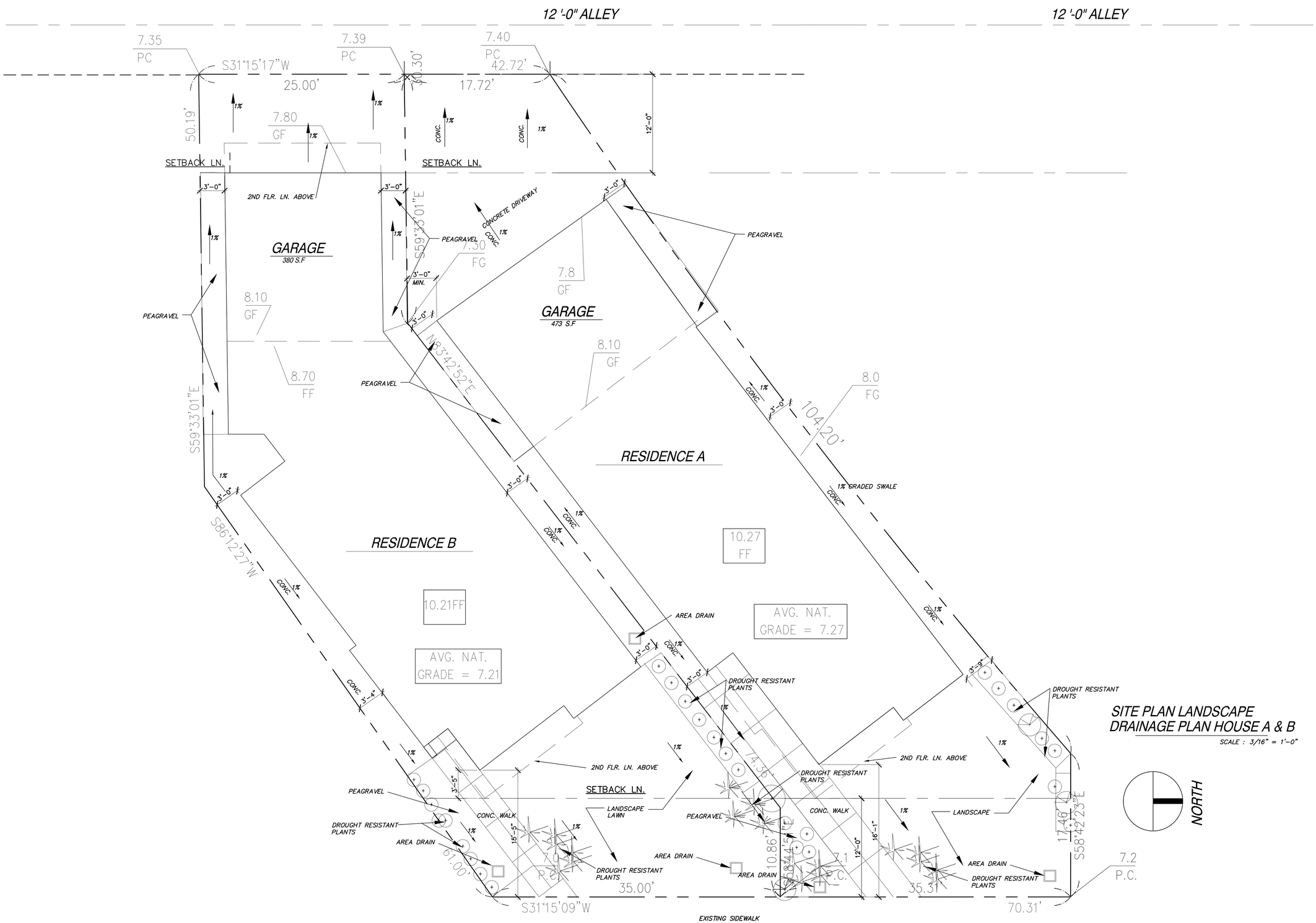
EXHIBITS

Table of Contents



Project site: 219 and 221 17th St, Seal Beach

Project Vicinity: Old Town, Seal Beach, Orange County



SITE PLAN LANDSCAPE
DRAINAGE PLAN HOUSE A & B

SCALE : 3/16" = 1'-0"

NORTH

m o c c
7844 PHLOX ST. DOWNEY, CA. 90241
562 - 832- 7793

PROPOSED RESIDENCE A&B PARCEL C

17TH ST. SEAL BEACH, CA.
OWNER; NERJA

REVISIONS

NO.	DATE	DESCRIPTION	APR
1		1	

DRAWN	C.C.
CHK.	
APP.	
SCALE	AS SHOWN
JOB NO.	
DATE	8/1/18
SHEET NO.	D-1

California Coastal Commission
Exhibit 2
5-18-0907 & 5-18-0908
Page 1 of 7

SCALE : 1/4" = 1'-0"

1ST.FLOOR PLAN
RESIDENCE A
SCALE : 1/4" = 1'-0"

1,215 SF

PROPOSED RESIDENCE A & B PARCEL C

17TH ST. SEAL BEACH, CA.

OWNER; NERJA

m o c c

7844 PHLOX ST. DOWNEY, CA. 90241

562 - 832- 7793

REVISIONS

NO.	DATE	DESCRIPTION	APR
1		1	

DRAWN C.C.

CHK.

APP.

SCALE AS SHOWN

JOB NO.

DATE 8/1/18

SHEET NO.

A-2

California Coastal Commission
Exhibit 2
5-18-0907 & 5-18-0908
Page 2 of 7

ROOF DECK
RESIDENCE A SCALE : 1/4" = 1'-0"
548 S.F.

2ND FLOOR PLAN
RESIDENCE A SCALE : 1/4" = 1'-0"
1,755 SF

PROPOSED RESIDENCE A & B PARCEL C

17TH ST. SEAL BEACH, CA.

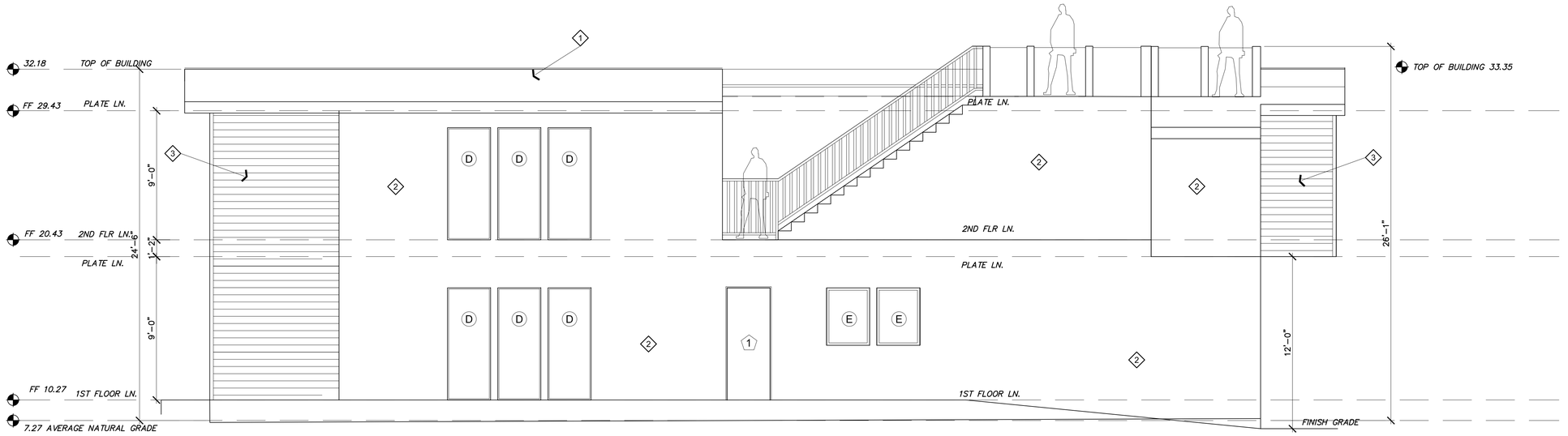
OWNER; NERJA

m o c c
7844 PHLOX ST. DOWNEY, CA. 90241
562 - 832- 7793

REVISIONS

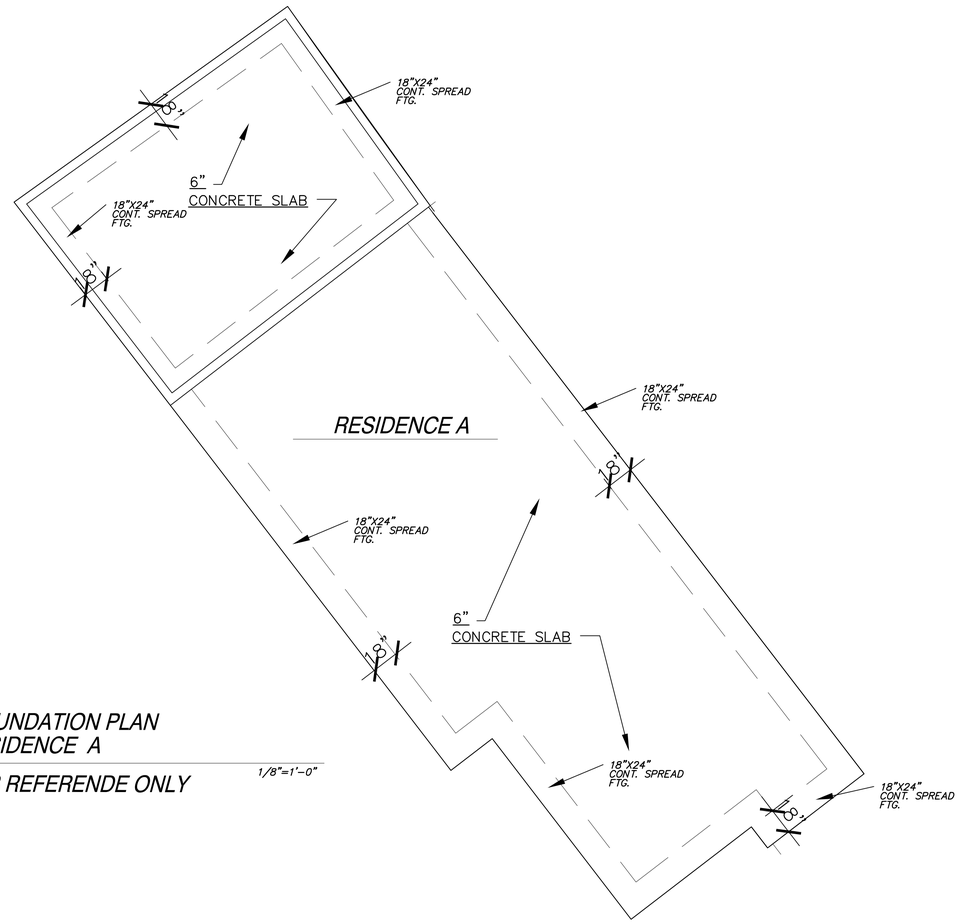
NO.	DATE	DESCRIPTION	APR
1	1		

DRAWN C.C.
CHK.
APP.
SCALE AS SHOWN
JOB NO.
DATE 8/1/18
SHEET NO. A-3



NORTH ELEVATION
RESIDENCE A

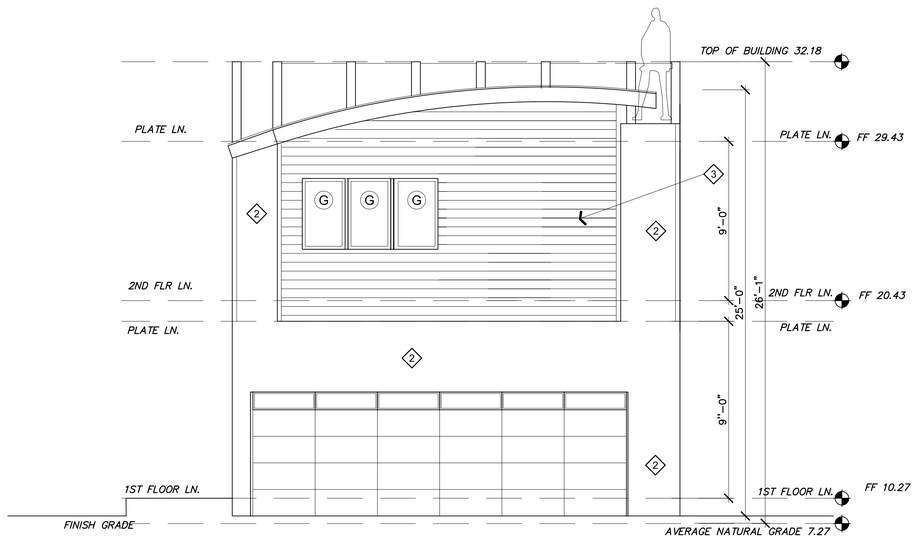
1/4"=1'-0"



FOUNDATION PLAN
RESIDENCE A

1/8"=1'-0"

FOR REFERENDE ONLY



WEST ELEVATION
RESIDENCE A

1/4"=1'-0"

PROPOSED RESIDENCE A PARCEL C

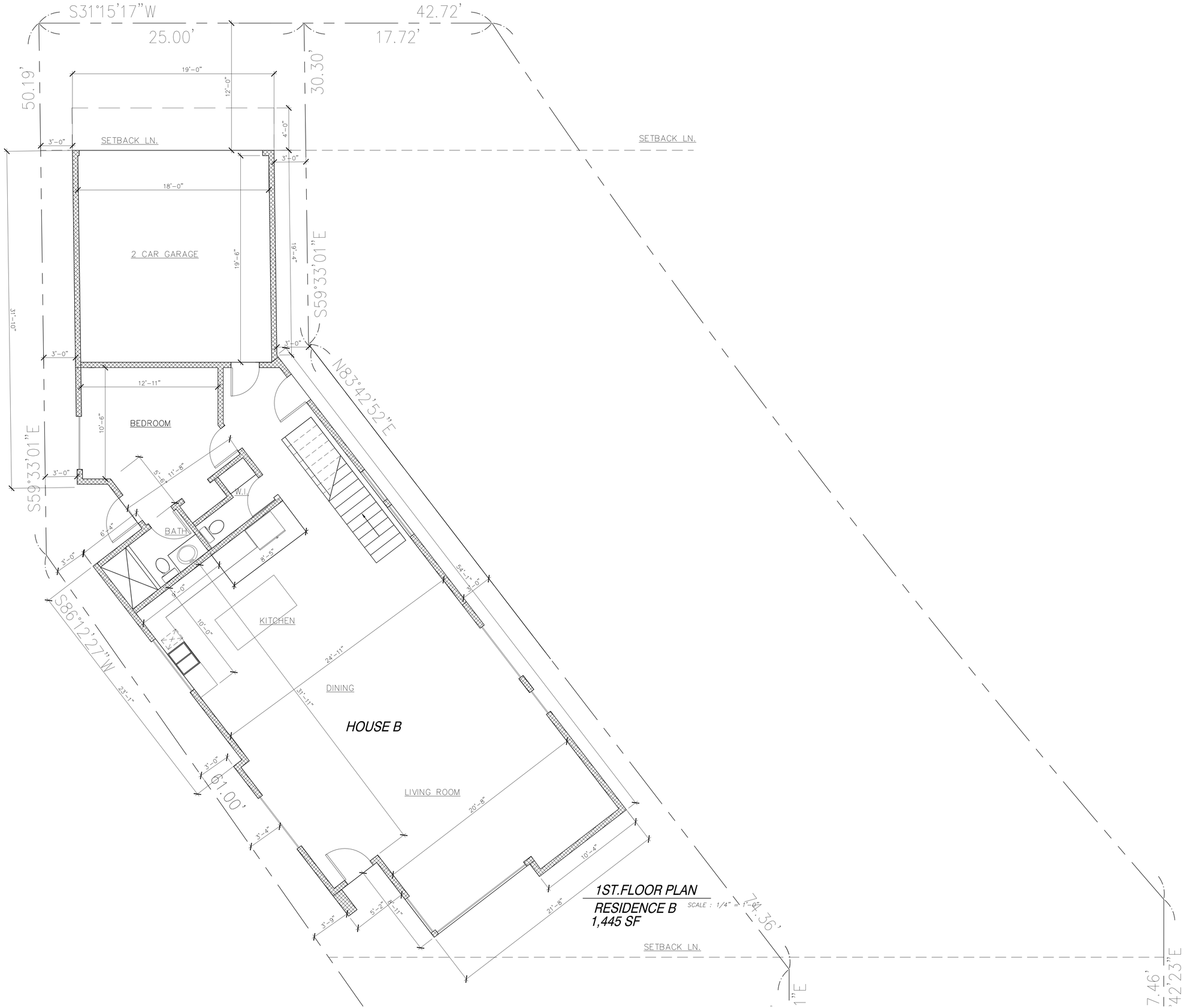
OWNER; NERJA

m o c c
7844 PHLOX ST. DOWNEY, CA. 90241
562 - 832- 7793

REVISIONS

NO.	DATE	DESCRIPTION	APR
1			

DRAWN C.C.
CHK.
APP.
SCALE AS SHOWN
JOB NO.
DATE 8/1/18
SHEET NO. A-5



PROPOSED RESIDENCE A & B PARCEL C

17TH ST. SEAL BEACH, CA.

OWNER; NERJA

m o c c
7844 PHLOX ST. DOWNEY, CA. 90241
562 - 832- 7793

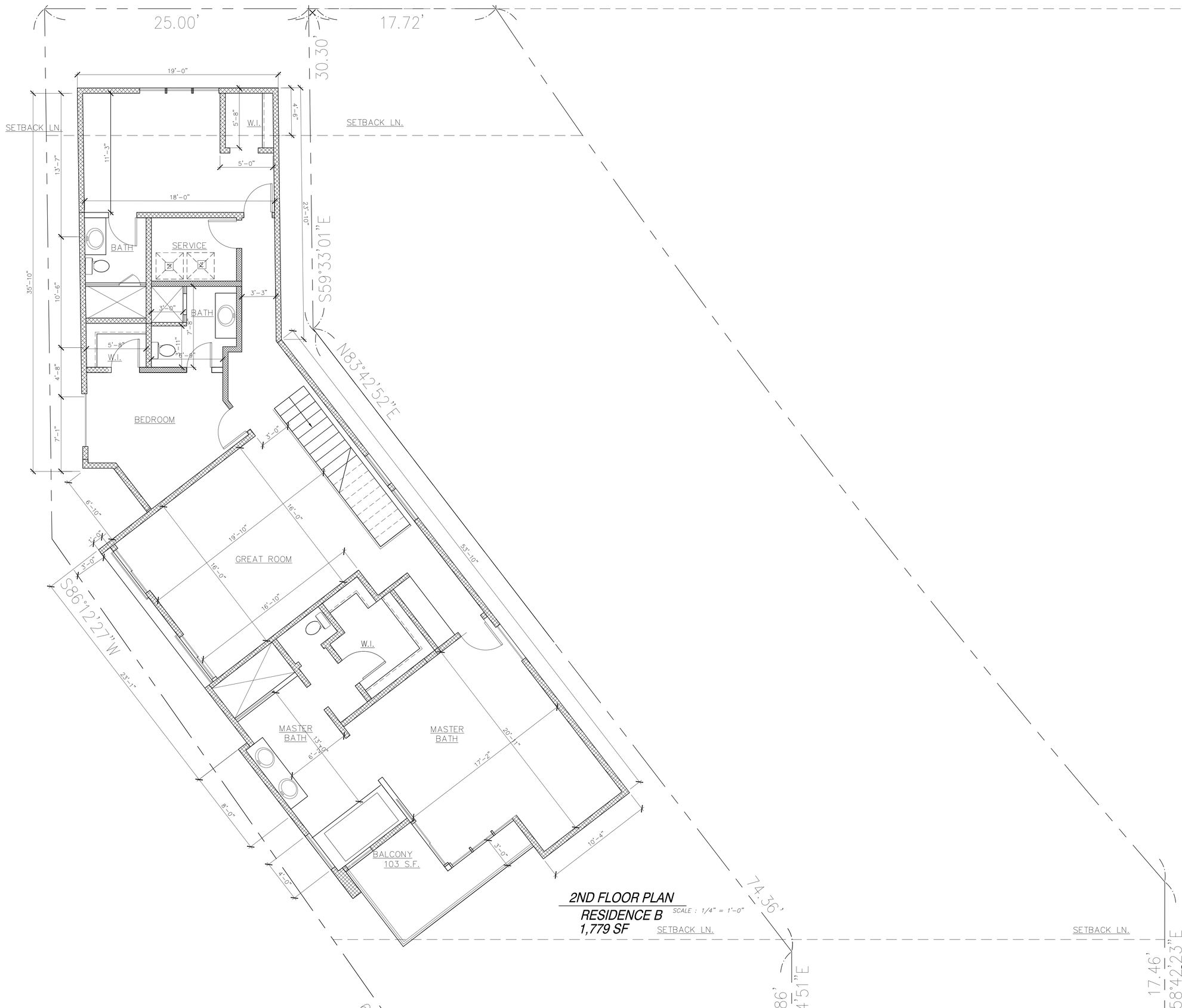
REVISIONS

NO.	DATE	DESCRIPTION	APR
1		1	

DRAWN C.C.
CHK.
APP.
SCALE AS SHOWN
JOB NO.
DATE 8/1/18
SHEET NO.

A-2

California Coastal Commission
Exhibit 2
5-18-0907 & 5-18-0908
Page 5 of 7



2ND FLOOR PLAN
RESIDENCE B
1,779 SF

SCALE : 1/4" = 1'-0"

PROPOSED RESIDENCE A & B PARCEL C

17TH ST. SEAL BEACH, CA.

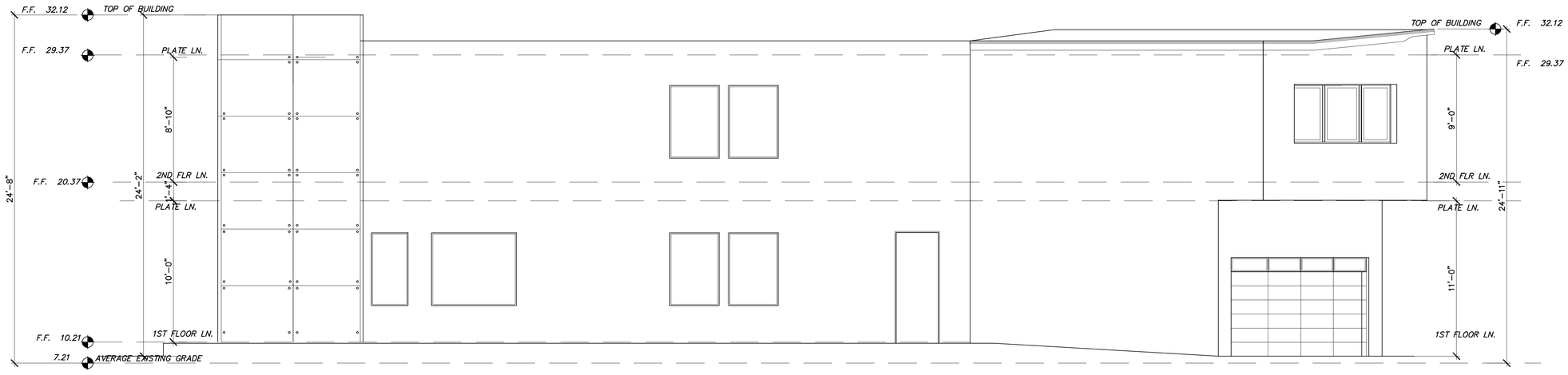
OWNER; NERJA

m o c c
7844 PHLOX ST. DOWNEY, CA. 90241
562 - 832- 7793

REVISIONS

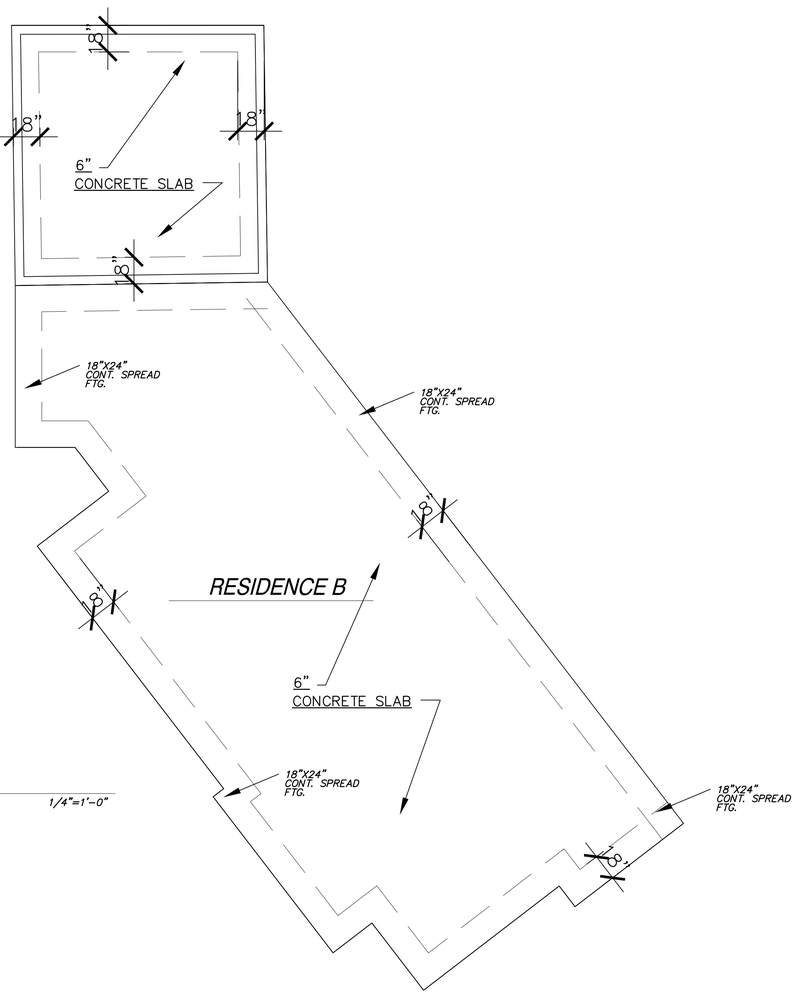
NO.	DATE	DESCRIPTION	APR
1			

DRAWN C.C.
CHK.
APP.
SCALE AS SHOWN
JOB NO.
DATE 8/1/18
SHEET NO. A-3



NORTH ELEVATION
RESIDENCE B

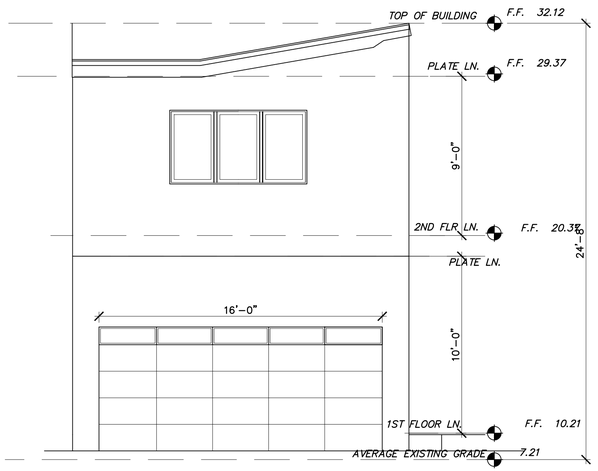
1/4"=1'-0"



FOUNDATION PLAN
RESIDENCE B

1/4"=1'-0"

FOR REFERENDE ONLY



WEST ELEVATION
RESIDENCE B

1/4"=1'-0"

m o c c
7844 PHLOX ST. DOWNEY, CA. 90241
562 - 832- 7793

PROPOSED RESIDENCE B PARCEL C

OWNER; NERJA

REVISIONS

NO.	DATE	DESCRIPTION	APR
1			

DRAWN C.C.
CHK.
APP.
SCALE AS SHOWN
JOB NO.
DATE 8/1/18
SHEET NO. A-5

California Coastal Commission
Exhibit 2
5-18-0907 & 5-18-0908
Page 7 of 7

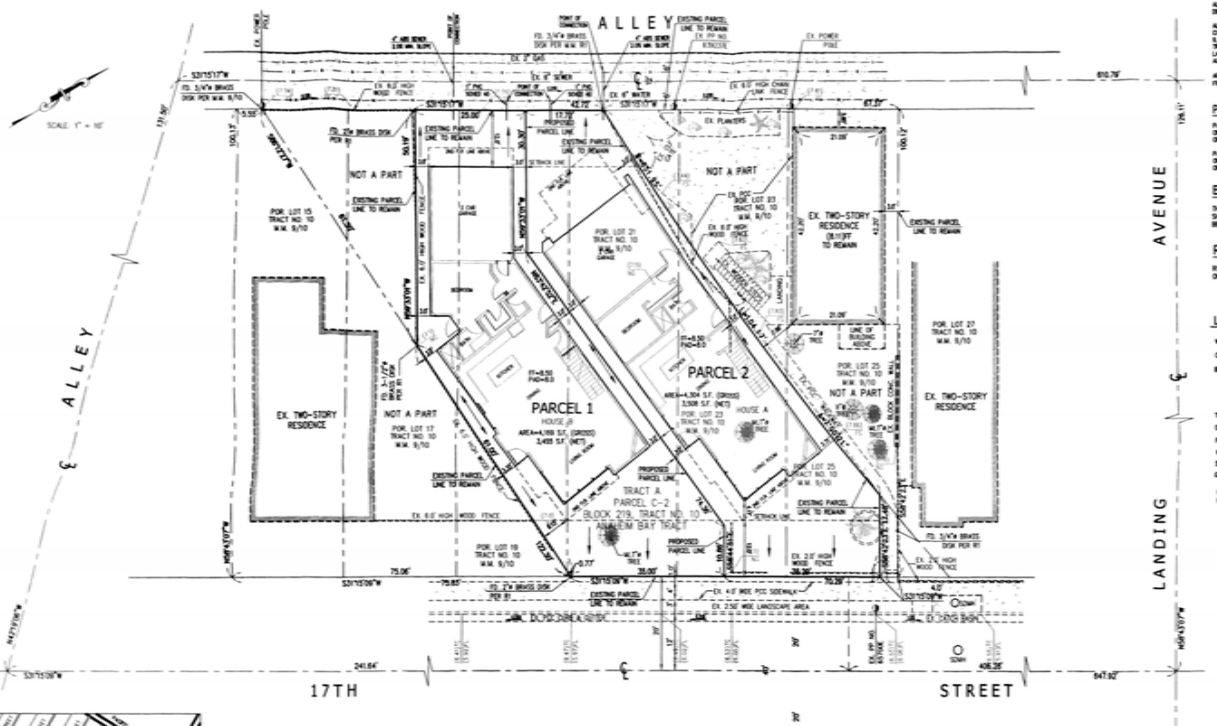
5-18-0907 RECEIVED

TENTATIVE PARCEL MAP NO. 2016-128

IN THE CITY OF SEAL BEACH, COUNTY OF ORANGE, STATE OF CALIFORNIA
FOR SUBDIVISION CONVERSION PURPOSES

DEC 21 2018

CALIFORNIA COASTAL COMMISSION



EXISTING LEGAL DESCRIPTION:

(PER PRELIMINARY TITLE REPORT NO. 3 DATED MAY 27, 2016, FILE NO. 21025247 FROM LAWYERS TITLE COMPANY, 18700 VON KARMAN AVENUE, SUITE 100, IRVINE, CA 92614 TEL. NO. 949 223-3975)

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE COUNTY OF ORANGE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

ALL THOSE PORTIONS OF LOTS 15, 17, 19, 21, 23 AND 25 IN BLOCK 219 OF TRACT NO. 10, IN THE CITY OF SEAL BEACH, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS SHOWN ON A MAP FILED IN BOOK 9, PAGE 10 OF MISCELLANEOUS MAPS, SHOWN AS TRACT A, LOT 19 IN PARCEL C-2 IN BLOCK 219, TRACT 10, ANAHEIM BAY TRACT, AS SHOWN ON THE SURVEY PLAT ACCEPTED FOR THE BUREAU OF LAND MANAGEMENT ON MAY 9, 2014, A COPY OF WHICH IS ATTACHED TO QUIT CLAIM DEED RECORDED AUGUST 7, 2014 AS INSTRUMENT NO. 2014-0000351 OF OFFICIAL RECORDS OF SAID COUNTY.

APN 199-084-55 (PER PRELIMINARY TITLE REPORT NO. 3 DATED MAY 27, 2016, FILE NO. 21025247 FROM LAWYERS TITLE COMPANY)

PROPOSED LEGAL DESCRIPTION:

PARCEL 1 OF PARCEL MAP NO. 2016-128, IN THE CITY OF SEAL BEACH, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK _____, PAGES _____ AND _____, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 2 OF PARCEL MAP NO. 2016-128, IN THE CITY OF SEAL BEACH, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK _____, PAGES _____ AND _____, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

BASIS OF BEARING :

THE BEARING OF S 31° 51' 08" W OF THE CENTERLINE OF 17th STREET AS SHOWN ON SHEET 4 OF SURVEY PLAT NO. T 5 S., R. 12 W., S.B.M. WAS USED AS THE BASIS OF BEARING FOR THIS SURVEY.

RECORD MAPS :

R1 DENOTES SURVEY PLAT ACCEPTED FOR THE BUREAU OF LAND MANAGEMENT ON MAY 9, 2014.

LEGEND

WOOD FENCE
CHAIN LINK FENCE (CLF) — X — X —
BLOCK CONCRETE WALL
TREE P.C.C. SLAB
TRACT BOUNDARY
EXISTING PARCEL LINE
PROPOSED PARCEL LINE
WATER LINE — W — W —
SEWER LINE — S — S —
GAS LINE — G — G —
DRAINAGE FLOWS (EXISTING & PROPOSED)

PREPARED UNDER THE SUPERVISION OF
NADER J. GOBORIS, PLS 7402, EXP. 12/31/19

GRAPHIC SCALE
0 5 10 20
(IN FEET)
1 inch = 10 ft.

VICINITY MAP
NOT TO SCALE

OWNER (PARCEL 1 & 2) /DEVELOPER/SUBDIVIDER:
KEIKA INVESTMENTS, LLC
CONTACT PERSON:
STEVE JOHPANG
52 GOLDEN EAGLE
IRVINE, CA 92603
TEL. NO. (949) 500-3427

SITE ADDRESS :
SW SIDE OF 17th STREET, BETWEEN LANDING AVENUE & ELECTRIC AVENUE, SEAL BEACH, CA 90740

LICENSED SURVEYOR :
FORESIGHT ENGINEERING, INC.
17821 IRVINE BLVD. SUITE 200
TUSTIN, CA 92780
CONTACT PERSON : NADER J. GOBORIS
TEL. NO. (714) 542-1234
FAX NO. (714) 542-0107

BENCHMARK:
DESCRIBED BY OCS 2002 – FOUND 3 1/4" OCS ALUMINUM BENCHMARK DISK STAMPED "CC-204-RC", SET IN THE NORTHWESTERLY CORNER OF A 4FT. BY 8 FT. CONCRETE CATCH BASIN, MONUMENT IS LOCATED IN THE EASTERLY CORNER OF THE INTERSECTION OF PACIFIC COAST HIGHWAY AND SEAL BEACH BOULEVARD, 40 FT. SOUTHEASTERLY OF THE CENTERLINE OF SEAL BEACH BOULEVARD AND 42 FT. NORTHEASTERLY OF THE NORTHEAST CURB ALONG THE PROLONGATED FROM THE SOUTH MONUMENT TO SET LOCAL WITH THE SIDEWALK.

ELEV. NO. 10'-104-85 ELEV=8.364 NAVD88 2005

APN NO :
PORTION OF APN NOS. 199-084-55

NOTES

EXISTING ZONE	:	RHD-20
NO. OF EXISTING LOTS	:	1
PROPOSED NO. OF LOTS	:	2
EXISTING LAND USE	:	VACANT LOT
PROPOSED LAND USE	:	SINGLE FAMILY RESIDENTIAL
LOT AREA		
PARCEL 1	:	4,308 SQ. FT. (GROSS)
	:	3,408 SQ. FT. (NET)
PARCEL 2	:	4,304 SQ. FT. (GROSS)
	:	3,308 SQ. FT. (NET)
FLOOD ZONE X	:	AREA OF MINIMUM FLOODING PER FIRM MAP NUMBER 06059C0152J DATED 12/03/2009

ADDITIONAL NOTES

PROPOSED METHOD OF SEWAGE : PUBLIC SEWER
PROPOSED WATER SERVICE : PUBLIC WATER SYSTEM

- NO STREET DEDICATION IS REQUIRED
- NO DRAINAGE AREA TRIBUTARY TO THE SITE
- THE OWNER OF RECORDS CONSENT TO FILING OF TENTATIVE MAP

UTILITY & SERVICE PROVIDERS

ELECTRIC	WATER, SEWER AND STORM DRAIN
SOUTHERN CALIFORNIA EDISON	CITY OF SEAL BEACH UTILITY
(800) 655-4555	(562) 431-2527, EXTENSION 1326
GAS	SOLID WASTE DISPOSAL
SOUTHERN CALIFORNIA GAS COMPANY	CONSOLIDATED DISPOSAL
(800) 427-2200	(800) 266-4868
TELEPHONE	ESTIMATED MAX DAILY
VERIZON	WATER CONSUMPTION: 1500 GALLONS
(800) 483-4000	ESTIMATED SEWAGE TO BE GENERATED: 1500 GALLONS

STATEMENT :
THE SUBDIVIDER IS THE PROPERTY OWNER OF RECORDS FOR PARCEL 1 & 2 (APN NO. 199-084-50)

KEIKA INVESTMENTS, LLC

REVISIONS

NO.	DATE	BY	APP'D

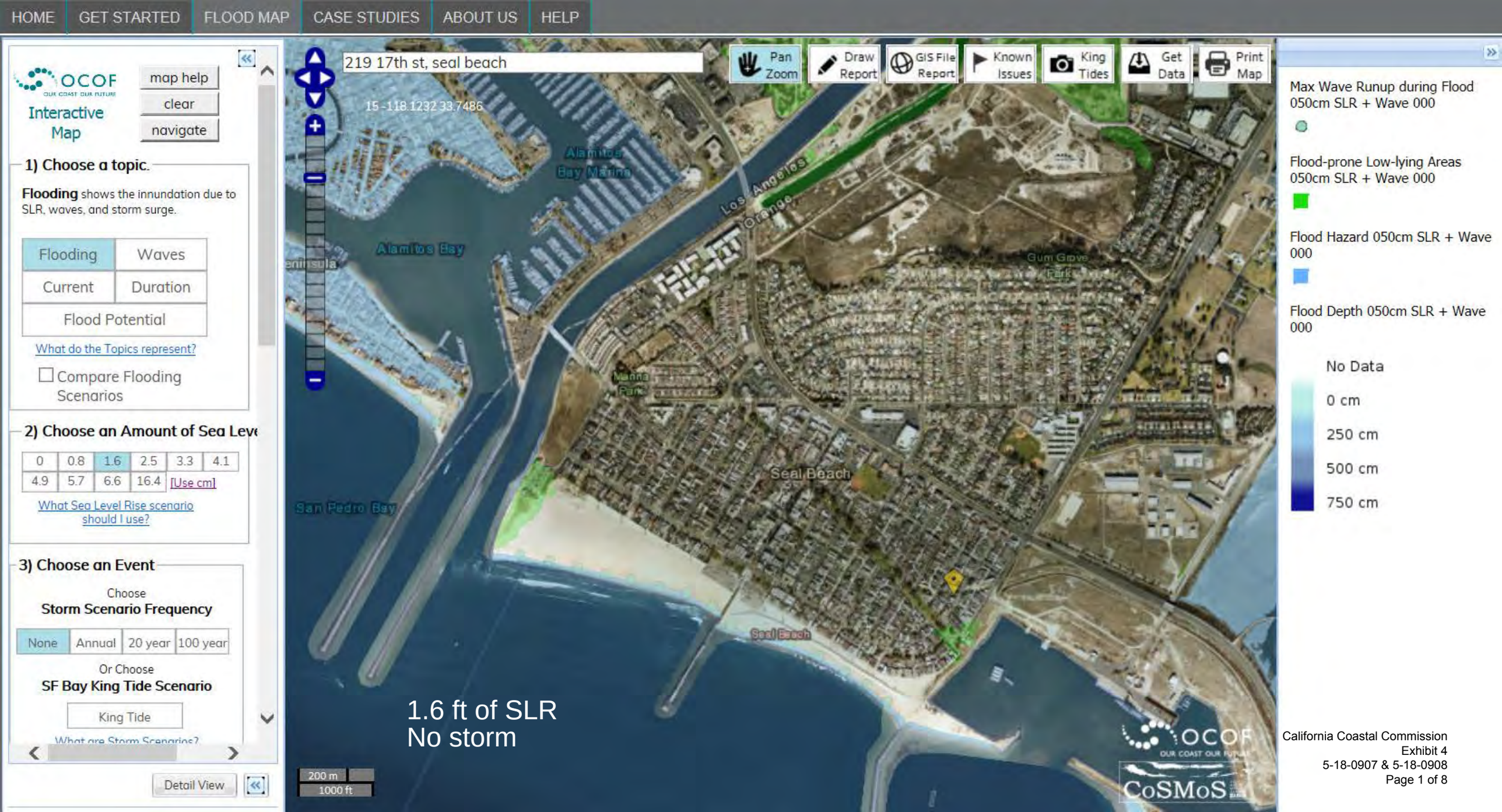
FORESIGHT ENGINEERING INC.
CIVIL ENGINEERING & LAND SURVEYING
17821 IRVINE BLVD., SUITE 200
TUSTIN, CA 92780
TEL (714)542-1234 • FAX (714)542-0107

TENTATIVE PARCEL MAP NO. 2016-128
Between LOT 223-227, 17th STREET,
SEAL BEACH, CA 90740
APN NOS. 199-084-50 & 199-084-24

DRAWING PREPARED FOR:

DRAWN BY: JLB	SCALE: 1" = 10'		12/12/2017
CHECKED BY: NJG	PROJ. NO. 3314-107		SHEET 1 OF 1

California Coastal Commission
Exhibit 3
5-18-0907 & 5-18-0908
Page 1 of 1


HOME
GET STARTED
FLOOD MAP
CASE STUDIES
ABOUT US
HELP
OCOF
OUR COAST OUR FUTURE
Interactive Map
map help
clear
navigate
1) Choose a topic.
Flooding shows the innundation due to SLR, waves, and storm surge.
Flooding
Waves
Current
Duration
Flood Potential
What do the Topics represent?
Compare Flooding Scenarios
2) Choose an Amount of Sea Leve
0
0.8
1.6
2.5
3.3
4.1
4.9
5.7
6.6
16.4
[Use cm]
What Sea Level Rise scenario should I use?
3) Choose an Event
Choose
Storm Scenario Frequency
None
Annual
20 year
100 year
Or Choose
SF Bay King Tide Scenario
King Tide
What are Storm Scenarios?
Detail View
219 17th st, seal beach
15 -118.1232 33.7486
Pan Zoom
Draw Report
GIS File Report
Known Issues
King Tides
Get Data
Print Map
Alamitos Bay Marina
Alamitos Bay
Los Angeles
Orange
Gum Grove Park
Marina Park
Seal Beach
San Pedro Bay
1.6 ft of SLR
No storm
200 m
1000 ft
OCOF
OUR COAST OUR FUTURE
CoSMoS
Max Wave Runup during Flood 050cm SLR + Wave 000
Flood-prone Low-lying Areas 050cm SLR + Wave 000
Flood Hazard 050cm SLR + Wave 000
Flood Depth 050cm SLR + Wave 000
No Data
0 cm
250 cm
500 cm
750 cm

OCOF
OUR COAST OUR FUTURE

Interactive Map

map help
clear
navigate

1) Choose a topic.

Flooding shows the innundation due to SLR, waves, and storm surge.

Flooding	Waves
Current	Duration
Flood Potential	

What do the Topics represent?

☐ Compare Flooding Scenarios

2) Choose an Amount of Sea Leve

0	0.8	1.6	2.5	3.3	4.1
4.9	5.7	6.6	16.4	[Use cm]	

What Sea Level Rise scenario should I use?

3) Choose an Event

Choose
Storm Scenario Frequency

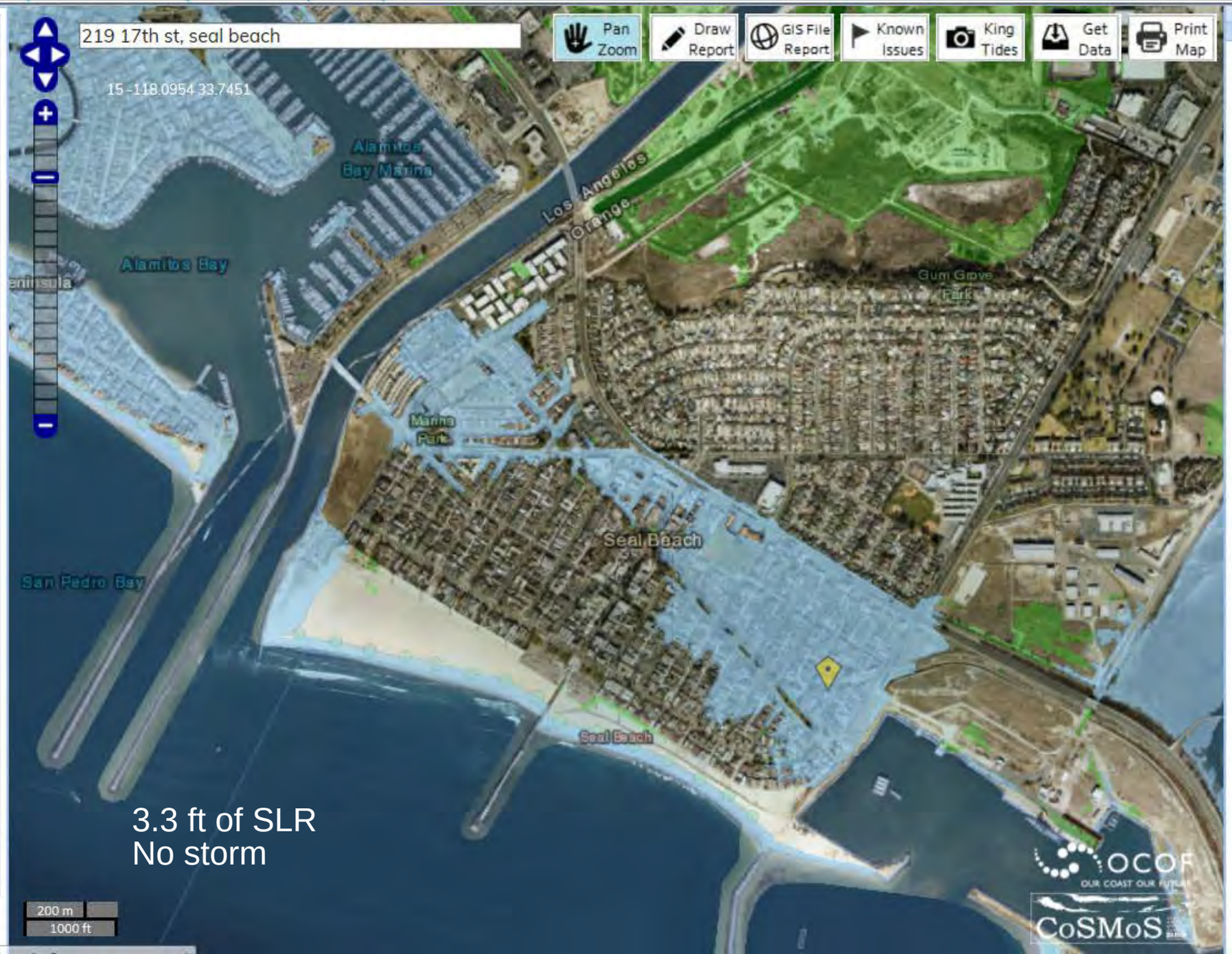
None	Annual	20 year	100 year

Or Choose
SF Bay King Tide Scenario

King Tide

What are Storm Scenarios?

Detail View



Max Wave Runup during Flood 100cm SLR + Wave 000

Flood-prone Low-lying Areas 100cm SLR + Wave 000

Flood Hazard 100cm SLR + Wave 000

Flood Depth 100cm SLR + Wave 000

No Data
0 cm
250 cm
500 cm
750 cm

OCOF
OUR COAST OUR FUTURE

Interactive Map

map help
clear
navigate

1) Choose a topic.

Wave Height shows how high the waves are coming to shore.

Flooding	Waves
Current	Duration
Flood Potential	

What do the Topics represent?

2) Choose an Amount of Sea Leve

0	0.8	1.6	2.5	3.3	4.1
4.9	5.7	6.6	16.4	[Use cm]	

What Sea Level Rise scenario should I use?

3) Choose an Event

Choose
Storm Scenario Frequency

None	Annual	20 year	100 year

Or Choose
SF Bay King Tide Scenario

King Tide

What are Storm Scenarios?
What is a King Tide scenario?

Detail View

219 17th st, seal beach

Pan Zoom | Draw Report | GIS File Report | Known Issues | King Tides | Get Data | Print Map

15 -118.1235 33.7548

Alamitos Bay Marina
Los Angeles
Orange
Alamitos Bay
Gum Grove Park
Marina Park
Seal Beach
San Pedro Bay
Seal Beach

3.3 ft of SLR
+100 yr storm

200 m
1000 ft

OCOF OUR COAST OUR FUTURE
CoSMoS

Max Wave Height 100cm SLR + Wave 100

- Less than 1m
- 1-2m
- 2-3m
- 3-4m
- 4-5m
- 5-6m
- 6-7m
- 7-8m
- 8-9m
- Greater than 9m

Wave Height 100cm SLR + Wave 100

- 0-0.5m
- 0.5-1m
- 1-1.5m
- 1.5-2m
- 2-2.5m
- 2.5-3m
- 3-3.5m
- 3.5-4m
- 4-4.5m
- 4.5-5m
- 5.5-5m
- 5.5-6m

OCOF
OUR COAST OUR FUTURE

Interactive Map

map help
clear
navigate

1) Choose a topic.

Flooding shows the innundation due to SLR, waves, and storm surge.

Flooding	Waves
Current	Duration
Flood Potential	

What do the Topics represent?

☐ Compare Flooding Scenarios

2) Choose an Amount of Sea Leve

0	0.8	1.6	2.5	3.3	4.1
4.9	5.7	6.6	16.4	[Use cm]	

What Sea Level Rise scenario should I use?

3) Choose an Event

Choose
Storm Scenario Frequency

None	Annual	20 year	100 year

Or Choose
SF Bay King Tide Scenario

King Tide

What are Storm Scenarios?

Detail View

219 17th st, seal beach

Pan Zoom | Draw Report | GIS File Report | Known Issues | King Tides | Get Data | Print Map

15 -118.1208 33.7472

Alamitos Bay Marina
Los Angeles
Orange
Alamitos Bay
Gum Grove Park
Marina Park
Seal Beach
San Pedro Bay

5.7 ft of SLR
No storm

200 m
1000 ft

OCOF OUR COAST OUR FUTURE
CoSMoS

Max Wave Runup during Flood 175cm SLR + Wave 000

Flood-prone Low-lying Areas 175cm SLR + Wave 000

Flood Hazard 175cm SLR + Wave 000

Flood Depth 175cm SLR + Wave 000

No Data
0 cm
250 cm
500 cm
750 cm

OCOF
OUR COAST OUR FUTURE

Interactive Map

map help
clear
navigate

1) Choose a topic.

Wave Height shows how high the waves are coming to shore.

Flooding	Waves
Current	Duration
Flood Potential	

What do the Topics represent?

2) Choose an Amount of Sea Leve

0	0.8	1.6	2.5	3.3	4.1
4.9	5.7	6.6	16.4	[Use cm]	

What Sea Level Rise scenario should I use?

3) Choose an Event

Choose
Storm Scenario Frequency

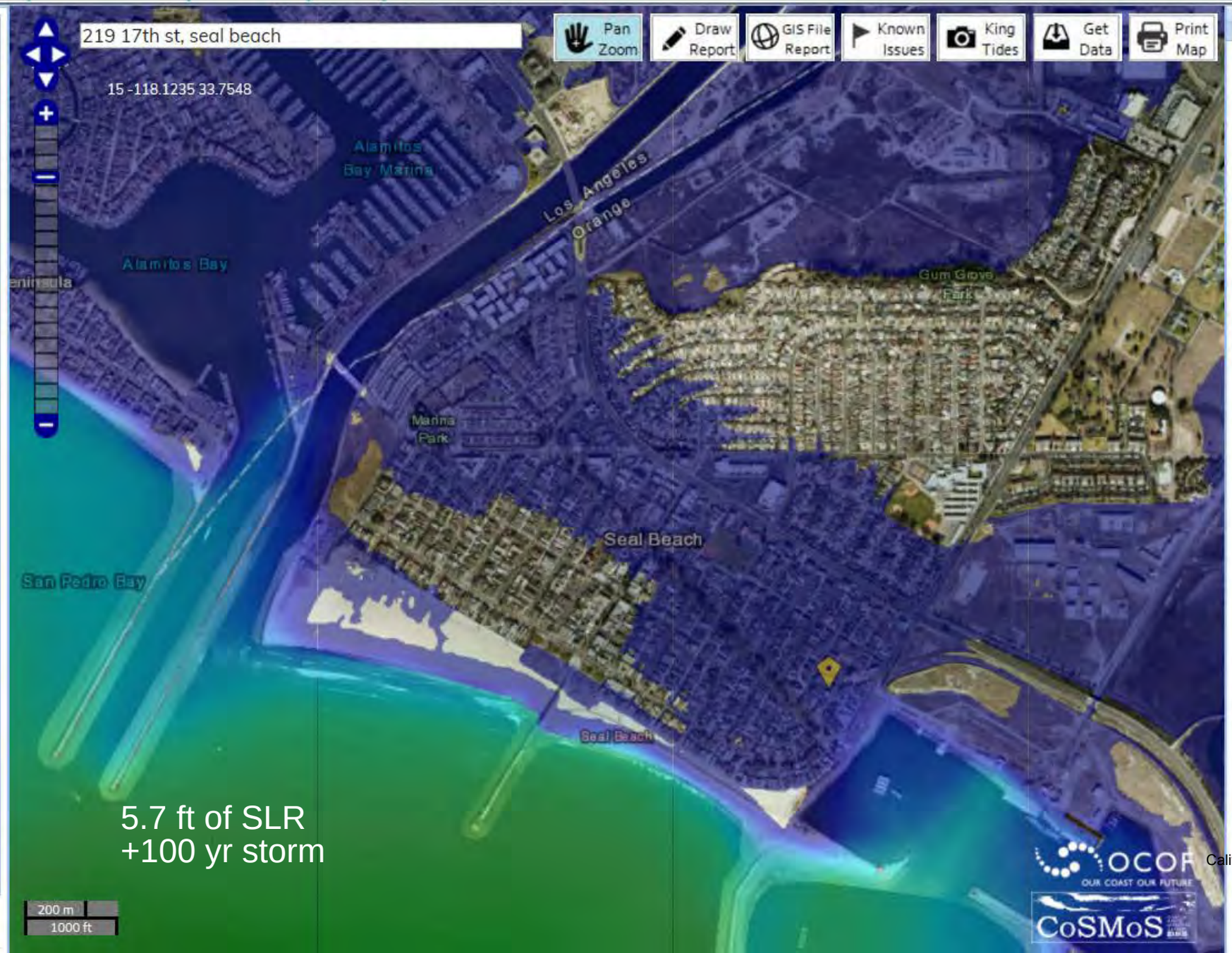
None	Annual	20 year	100 year

Or Choose
SF Bay King Tide Scenario

King Tide

What are Storm Scenarios?
What is a King Tide scenario?

Detail View

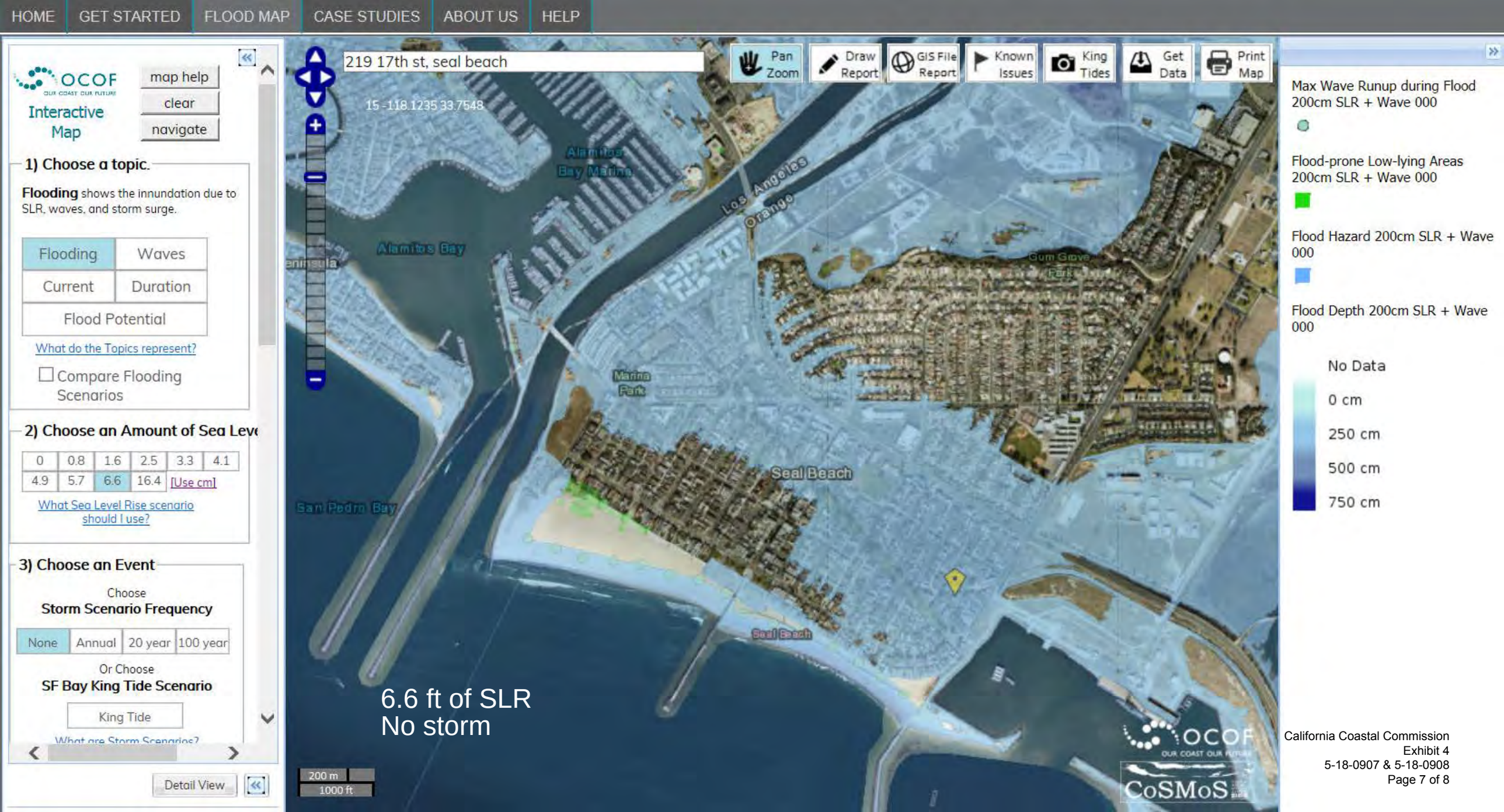


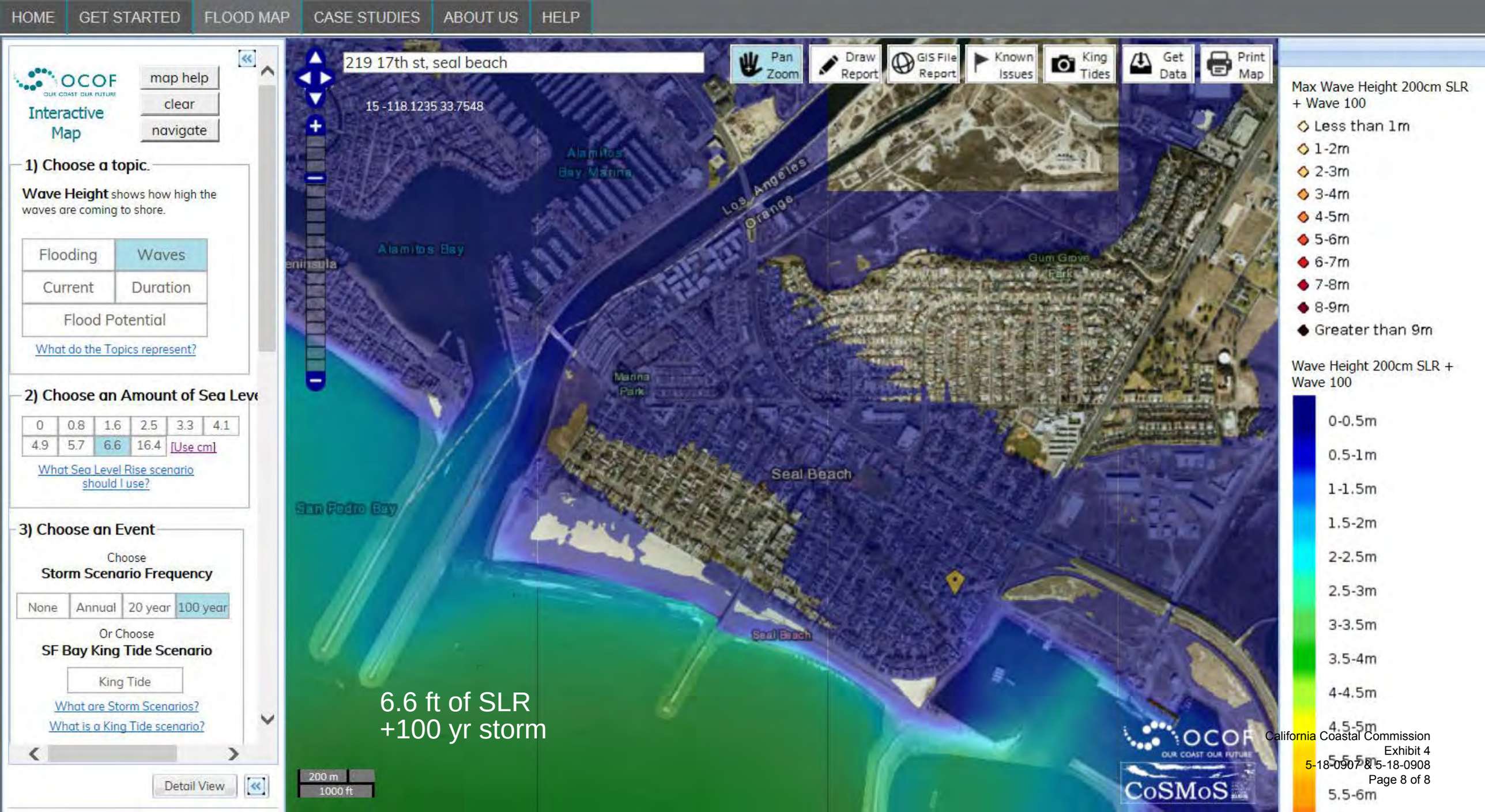
Max Wave Height 175cm SLR + Wave 100

- Less than 1m
- 1-2m
- 2-3m
- 3-4m
- 4-5m
- 5-6m
- 6-7m
- 7-8m
- 8-9m
- Greater than 9m

Wave Height 175cm SLR + Wave 100

- 0-0.5m
- 0.5-1m
- 1-1.5m
- 1.5-2m
- 2-2.5m
- 2.5-3m
- 3-3.5m
- 3.5-4m
- 4-4.5m
- 4.5-5m
- 5.5-6m


HOME
GET STARTED
FLOOD MAP
CASE STUDIES
ABOUT US
HELP
OCOF
Interactive Map
map help
clear
navigate
1) Choose a topic.
Flooding shows the innundation due to SLR, waves, and storm surge.
Flooding
Waves
Current
Duration
Flood Potential
What do the Topics represent?
Compare Flooding Scenarios
2) Choose an Amount of Sea Leve
0
0.8
1.6
2.5
3.3
4.1
4.9
5.7
6.6
16.4
[Use cm]
What Sea Level Rise scenario should I use?
3) Choose an Event
Choose
Storm Scenario Frequency
None
Annual
20 year
100 year
Or Choose
SF Bay King Tide Scenario
King Tide
What are Storm Scenarios?
Detail View
219 17th st, seal beach
15 -118.1235 33.7548
Pan Zoom
Draw Report
GIS File Report
Known Issues
King Tides
Get Data
Print Map
Alamitos Bay Marina
Los Angeles
Orange
Alamitos Bay
Gum Grove Park
Marina Park
Seal Beach
San Pedro Bay
6.6 ft of SLR
No storm
200 m
1000 ft
OCOF
CoSMoS
Max Wave Runup during Flood 200cm SLR + Wave 000
Flood-prone Low-lying Areas 200cm SLR + Wave 000
Flood Hazard 200cm SLR + Wave 000
Flood Depth 200cm SLR + Wave 000
No Data
0 cm
250 cm
500 cm
750 cm


HOME
GET STARTED
FLOOD MAP
CASE STUDIES
ABOUT US
HELP
OCOF
OUR COAST OUR FUTURE
Interactive Map
map help
clear
navigate
1) Choose a topic.
Wave Height shows how high the waves are coming to shore.
Flooding
Waves
Current
Duration
Flood Potential
What do the Topics represent?
2) Choose an Amount of Sea Leve
0
0.8
1.6
2.5
3.3
4.1
4.9
5.7
6.6
16.4
[Use cm]
What Sea Level Rise scenario should I use?
3) Choose an Event
Choose
Storm Scenario Frequency
None
Annual
20 year
100 year
Or Choose
SF Bay King Tide Scenario
King Tide
What are Storm Scenarios?
What is a King Tide scenario?
Detail View
219 17th st, seal beach
15 -118.1235 33.7548
Pan Zoom
Draw Report
GIS File Report
Known Issues
King Tides
Get Data
Print Map
Alamitos Bay Marina
Los Angeles
Orange
Alamitos Bay
Gum Grove Park
Marina Park
Seal Beach
San Pedro Bay
6.6 ft of SLR
+100 yr storm
200 m
1000 ft
OCOF
OUR COAST OUR FUTURE
CoSMoS
Max Wave Height 200cm SLR + Wave 100
Less than 1m
1-2m
2-3m
3-4m
4-5m
5-6m
6-7m
7-8m
8-9m
Greater than 9m
Wave Height 200cm SLR + Wave 100
0-0.5m
0.5-1m
1-1.5m
1.5-2m
2-2.5m
2.5-3m
3-3.5m
3.5-4m
4-4.5m
4.5-5m
5-5.5m
5.5-6m

REPORT OF CULTURAL RESOURCES ASSESSMENT FOR PROPOSED DEVELOPMENT AT 219-221 17TH STREET, SEAL BEACH, ORANGE COUNTY, CALIFORNIA

5-18-0907

By:

Carol R. Demcak, RPA

Of:

Archaeological Resource Management Corporation
3756 Hightide Drive
Rancho Palos Verdes, CA 90275
310/265-7244

Prepared for:

Nerja Investments LLC
82 Golden Eagle
Irvine, CA 92603

December 18, 2018

REPORT OF CULTURAL RESOURCES ASSESSMENT FOR PROPOSED DEVELOPMENT AT 219-221 17TH STREET, SEAL BEACH, ORANGE COUNTY, CALIFORNIA

INTRODUCTION

At the request of Joanne Kootsikas of Nerja Investments LLC, personnel from Archaeological Resource Management Corporation (ARMC) carried out a cultural resources assessment for a proposed development at 219-221 17th Street in Seal Beach, Orange County, California.

The author first conducted a records and literature search at the office of the South Central Coastal Archaeological Center (SCCIC), housed in the Department of Anthropology at California State University, Fullerton, on December 10, 2018. Following the archival research, the author conducted a field walkover survey on December 17 to search for any previously unrecorded cultural resources. She has been certified as a Supervisory Archaeologist by Orange County and is a certified member of the Register of Professional Archaeologists (RPA) and has over 40 years of experience in southern California archaeology.

The records search results were that the property had not been previously surveyed for cultural resources. Fifteen studies (records searches or reports.) had been carried out within a half-mile radius of the property. No prehistoric archaeological sites had been recorded within that radius. Twelve historic sites within the Seal Beach Naval Weapons Station and three additional historic resources had been recorded within that radius. Among these historic resources is Old Seal Beach City Hall which is listed on the National Register of Historic Places, Anaheim Landing which is listed as State Historical Landmark, and the Red Car Museum which is listed as a California State Point of Historic Interest. In addition the Pacific Electric Railway formerly traversed the property.

The field walkover survey revealed no evidence of prehistoric or early historic resources. Because of the former presence of the Pacific Electric Railway, there is potential for finding historic resources on the property. Monitoring during rough grading is recommended for the project. Should any cultural resources (prehistoric or historic) be uncovered during rough grading, a qualified archaeologist should undertake a testing program to evaluate the finds for significance. If the finds are found to be significant, a program of mitigation should be designed and carried out before project construction can be allowed to continue.

NATURAL SETTING

The study area (Figure 1) is located on the southern California coastal strip in Seal Beach. The elevation is 10' above mean sea level. On the USGS 7.5' Seal Beach topographic map (1965; PR 1981), the parcel can be found in Township 5S and Range 12W in the NE1/4 of the SE1/4 of Section 14. The US Naval Reservation and Seal Beach National Wildlife Refuge lie to the northeast. San Pedro Bay lies to the south and the San Gabriel River to the west. The City of Seal Beach surrounds the parcel on all sides. Electric Avenue is the nearest cross street.

The local climate is Mediterranean, consisting of cool, moist winters and hot, dry summers. Rain falls primarily in the months of October through March. The average annual rainfall in Seal Beach is 14

inches, and the average temperature is 70° in summer and 55° in winter (City of Seal Beach n.d.) Coastal fogs rising from the adjacent Pacific Ocean increase the relative humidity of the local area when compared to other parts of the Los Angeles basin.

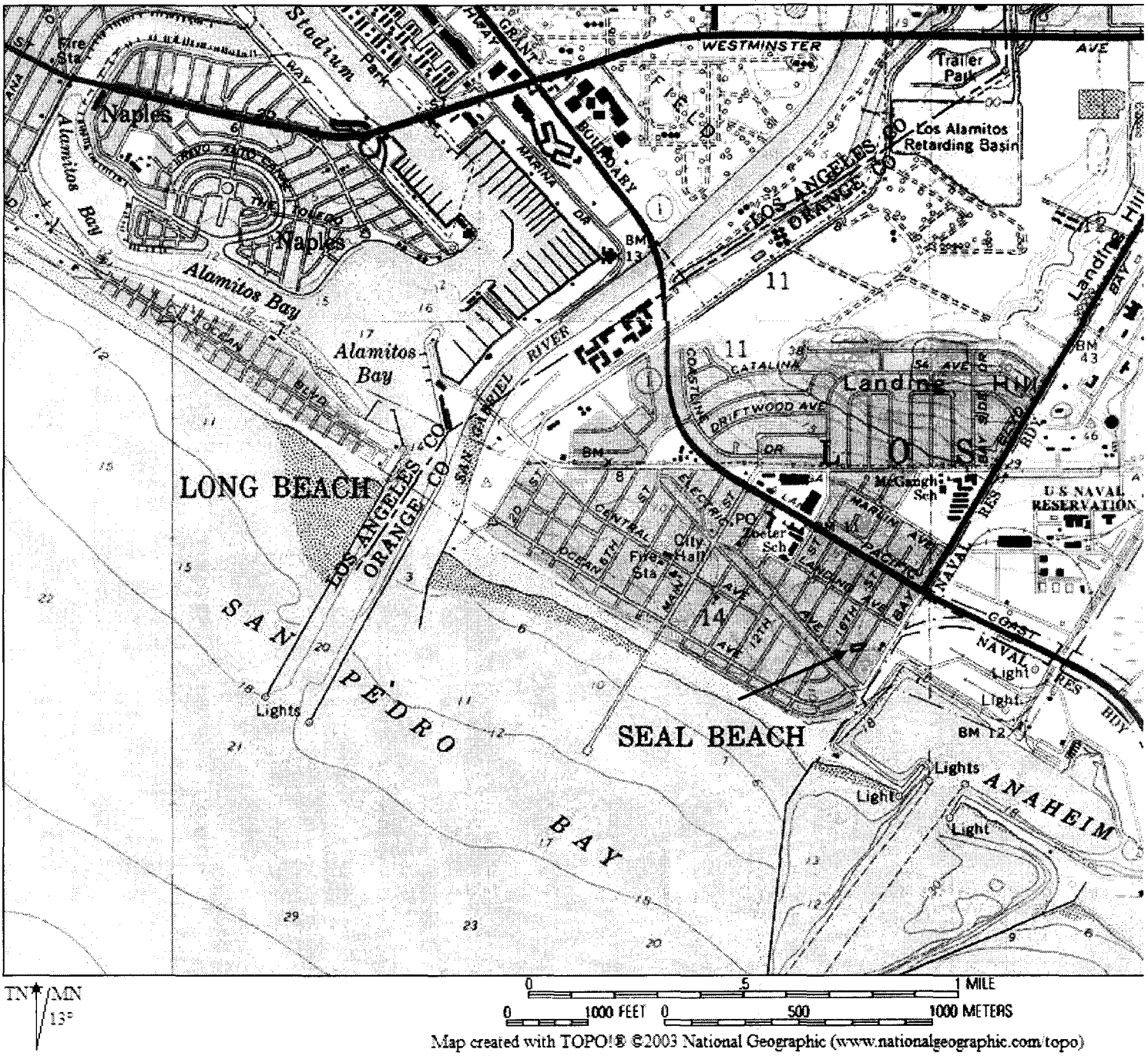
Two biotic communities are present in proximity to the project area: 1) Coastal Strand; and 2) Coastal Salt Marsh (Jaeger and Smith 1966: 41-42). The Coastal Strand community is defined as sandy beaches and coastal dunes whose typical plants include low woody perennials such as the Shore Sandbur (*Franseria chamissonis bipinnatisecta*), White-leafed Saltbush (*Atriplex leucophylla*), a lupine(*Lupinus chamissonis*), and various iceplants (eg. *Mesembryanthemum nodiflorum*). Bird species frequently include the Western Gull (*Larus occidentalis*), Sanderling (*Crocethia alba*), Snowy Plover (*Charadrius alexandrinus*), and the California Gull (*Larus californicus*). Invertebrates include the sand crab (*Emerita analoga*), tiger beetles (*Cicindella* , and beach amphipods ("fleas") such as *Orchestia traskiana*.

The Coastal Salt Marsh is defined as tidal lagoons and salt marshes which have low-lying herbs or shrubs, many succulent, plus some perennial grasses. Sea Blite (*Sueda californica*), pickleweeds (*Salicornia* spp.), Salt Grass (*Distichlis spicata*), and Sea Heath (*Frankenia grandiflora*) are typical plants of this community. Typical animals include the California vole (*Microtus californicus*), House Mouse (Mus musculus), and the common or Norway rat (*Rattus Norvegicus*). Typical birds include the Common Egret (Casmerodius albus), Snowy Egret (*Leuphoyx thula*), the Western Sandpiper (*Ereunetes mauri*), and numerous other shorebirds. Typical invertebrates include saltmarsh mosquitoes (*Aedes* sp.), and several butterfly species, eg. Sandhill Skipper (*Polites sabuleti*).

As coastal tideland collectors (Heizer and Elsasser 1980:60-62), the local Native populations would have taken advantage of the bountiful resources within these biotic communities. Although a sandy beach does not provide many hiding places for marine life to escape from wave action, the sand and neighboring mudflats provide a burrowing environment for some species, including the Pismo clam, the bean clam, the wedge clam, and hermit crabs (Hinton 1987).

Clams could be recovered at low tide, mussels from rocks near shore at low water, and surf fish captured by dip nets as the waves broke toward the fishermen. Prehistoric populations also collected kelp and other edibles. Shore and near shore water birds abounded in the area along with grass seeds, waterfowl, and various game animals, such as rabbits, deer, elk, and antelope .(Heizer and Elsasser 1980: 60-62).

Geologically the project area is underlain by Quaternary Terrace deposits (Qtm) of Pleistocene age and Quaternary beach sediments (Qb) of Holocene (Recent) age, according to Morton and Miller (1981). Saucedo et al. (2016) identify these sediments as Qom, Quaternary old shallow marine deposits of Pleistocene age which occur on a wave-cut surface; Qpe, Quaternary Paralic (interfingered marine and continental) estuarine deposits; and Qb, Quaternary beach deposits. Elsewhere in the Los Angeles Basin, similar Quaternary surface deposits have produced vertebrate mammals like those found at Rancho La Brea ("La Brea Tar Pits"). Accordingly McLeod (1999) assigns a high sensitivity (likelihood of producing significant fossil specimens) to these Quaternary deposits.



Taken from the USGS Seal Beach 7.5' Quadrangle (1963; PR 1981)

Figure 1. Project Location.

CULTURAL SETTING

Prehistory

Native populations in southern California were culturally conservative and remained hunter-gatherers throughout the prehistoric period. The earliest occupation that can be documented for the area north of San Diego is the Early Millingstone Horizon (EMS), or Encinitas. Small populations subsisted on plant foods, including seeds, tubers, and berries. They also collected shellfish along the coast and embayments, and they hunted small game. They made extensive use of the mano and metate. Projectile points were few in number. Wide, thick, and heavy, they were presumably used as spearpoints based on their weights (Fenenga 1953). In the ensuing cultural period, the Intermediate Horizon (Campbell), local populations expanded their resource base. Hunting and fishing assumed greater importance in the economy, and the mortar and pestle, tools associated with the processing of acorns and other fleshy plant foods, were added to the existing plant processing equipment. Projectile points remained relatively large and heavy.

In the final prehistoric period, the Late Horizon Cultures (Gabrielino, Chumash, Luiseño, and others) there is evidence of a marked expansion of local economies. One can observe an increase in cultural elaboration as well as a proliferation of non-utilitarian items in the cultural inventory of local population groups. The sea-going canoe (*tomol*) was introduced in the Santa Barbara-Ventura area in Chumash territory. These boats ushered in a marine adaptive pattern in vivid contrast to the littoral, or land-locked, pattern of earlier periods. Fishing and hunting of sea mammals assumed greater significance in the subsistence strategies of the northern populations, while populations in the central and southern zones (including the project area) continued to rely primarily upon plants, shellfish, and terrestrial game, which they hunted with small, lightweight arrowpoints and the bow.

Ethnography

Ethnographically, the study area was occupied by the Tongva, or Gabrielino people, whose territory was said to extend from Topanga Creek in the north to Aliso Creek in the south, and included all of the Los Angeles Basin and most of Orange County (Bean and Smith 1978). Relatively little is known about the culture of the Tongva, although they were thought to be one of the wealthiest and most powerful groups south of the Tehachapi (Kroeber 1925). As of 1900, however, due to disease and assimilation, there were relatively few remaining members of their group.

The Tongva were called Gabrielino because of their association with the Mission San Gabriel. This nominal assignment, imposed by the European missionaries, encompassed a number of loosely affiliated, politically autonomous bands. Linguistically, they were Takic speakers, of the greater Uto-Aztecan stock, connecting them with peoples occupying eastern California and the Great Basin.

The Gabrielino subsistence base was very broad. The Gabrielino exploited a number of biotic communities ranging from open coast to interior foothills within their territory. Prehistorically, they were thought to occupy villages situated either in flat fertile valleys adjacent to permanent water courses, or in sheltered coastal areas (Bean and Smith 1978:540). According to Bean and Smith (1978), these villages were occupied permanently, and were surrounded by special satellite camps for the seasonal procurement of resources and by special activity areas. Although little is known

about the social and political organization of the Gabrielino, the villages were reported to be "...politically autonomous, composed of non-localized lineages which periodically fragmented into smaller units for the purpose of resource procurement forays (Bean and Smith 1978:543-4).

The Gabrielino economy was centered on a very effective system of food utilization. Plant and animal resources were varied in their locations and in their availability. This variability helped shape the Gabrielino settlement system. Certain resources, such as rabbits and shellfish, were available nearly year-round. Others, such as acorns, ripened seasonally. Collecting groups left the villages and migrated to the acorn groves, where they gathered the wild resources before they rotted or were carried off by animals. Food sharing within and among villages was common. In general coastal populations had access to a wider range of food resources than did inland populations who experienced food stress, especially in the winter months. Gabrielino people were not entirely dependent on natural conditions. Through management of resources, trade, and ritual exchanges, they were able to make the most of the natural environment (McCawley 1996:111-142).

The material culture of the Gabrielino was marked by a highly developed craftsmanship. Even the most utilitarian objects were endowed with aesthetic appeal. They are probably best known for their widespread use of steatite for a variety of items ranging from carved effigies, pipes and ornaments to cooking utensils. Other items of their material culture included ornaments made of shell and bone, basketry, cordage, shell fishhooks, flaked stone arrow points and knives, and plant processing tools such as manos and metates, mortars and pestles (Bean and Smith 1978).

The largest Gabrielino/Tongva settlement in proximity to the project area was Puvungva on the campus of California State University, Long Beach, where a natural spring provided a good supply of potable water. Numerous other village names persist as local place names, including Cahuenga, Tujunga, Topanga, Azusa, and Cucamonga (Strawther 2014:13).

Although their numbers have been reduced, the Gabrielino maintain an active group identity. The Gabrielino/Tongva Tribal Council meets monthly with its members to inform the community of events important to their cultural heritage. Other active Gabrielino organizations include the Ti At Society, the Gabrielino/Tongva Indians of California Tribal Council, and the Coastal Diegueño-Gabrielino Band of Mission Indians.

Historical Overview: Orange County

The arrival of the Portolá Expedition in 1769 marked the first efforts at extending Spanish control into Alta California through the establishment of Catholic missions. This move by the Spanish King Carlos III was intended to protect Pacific Coast shipping against Russian or English occupation of the area. Beginning in San Diego, the padres surveyed the lands as far north as Monterey Bay and secured them for the Spanish Crown. Mission sites were selected on the way north by Fathers Crespi and Gomez (Hallan-Gibson 1986).

The Portolá party arrived in Orange County on July 22, 1769, at a site in Cristianitos Canyon where two sick children were baptized by the fathers. The following day the travelers camped near the Mission Vieja site (CA-ORA-29) at the mouth of Gobernadora Canyon. The next day the expedition

continued northwestward and out of the survey area to the western edge of the Plano Trabuco and camped at the San Francisco Solano campsite at the present location of the Trabuco Adobe. Altogether they stopped at seven campsites (Smith 1965) in what became Orange County.

Missions, presidios, and pueblos were established by the Franciscan fathers, and in 1775, the Mission San Juan Capistrano was begun. Within days, however, a Native American uprising at the mission in San Diego forced the fathers to abandon the local mission, hastily bury its bells, and with the soldiers hurry southward to assist their fellow priests. The fathers returned the following year to re-establish the mission at a different site. There on November 1, 1776, the mission was officially founded. On October 4, 1778, the mission was removed to its present location closer to the Arroyo Trabuco, a dependable water source (Hallan-Gibson 1986). Substantially expanded in 1784, the mission continues in use and is believed to be the oldest building extant in California, according to Friis (1965).

The Native inhabitants were brought under the control of the mission. They were converted to Catholicism and provided the mission with a large labor pool. The padres taught them the necessary skills to grow crops, tend cattle, grow grapes and produce wine, pottery and other crafts. The missions intended to prepare them to look after their own lands, which were held in trust for them. Spanish legislators called for the dissolution of the missions and the transfer of land ownership to the native populations as early as 1813. However, it was not until the Mexican Period that secularization was begun.

At the end of the Mexican Revolution, mission lands were seized and turned over to Mexican citizens of the Catholic faith and of good character. The Mission San Juan Capistrano was the first mission to be secularized in 1834. A pueblo for Native Americans was set up at Mission San Juan Capistrano, but, after years of mismanagement, failed (Dixon 1988; Hallan-Gibson 1986). A town was instead chartered and land became available to petitioners, including the Native Americans. Eventually, the town itself failed, and the mission was sold by Governor Pio Pico to his brother-in-law John Forster and James McKinley, a trader (Hallan-Gibson 1986). Forster maintained his residence at the mission until he moved his family to the Mission Viejo Adobe (Van Wormer 2002).

The Spanish Crown issued a series of land grants, or grazing rights. The land between the Santa Ana and San Gabriel rivers was given to Manuel Nieto in 1784; this was the first land grant in Orange County. The second, called Rancho Santiago de Santa Ana, went to Juan Grijalva and Jose Yorba, his son-in-law. The grant was confirmed in 1810 to Yorba and Grijalva's grandson (Hallan-Gibson 1986). There followed a period of growth and development as rancheros built adobe homes, ran large herds of cattle and sheep, engaged in foreign trade, and dabbled in politics.

California was drawn into the Mexican-American War in 1846, and Governor Pico fled the oncoming American Army. His son-in-law John Forster, an American sympathizer, tipped off the Union soldiers marching through Orange County that a large contingent of enemy soldiers was on its way. This may have saved their force from defeat by 600 Mexicans (Hallan-Gibson 1986). After the Treaty of Guadalupe Hidalgo ended the war in 1848 and California entered the Union, the land claims of the rancheros were scheduled to be upheld, but subsequent laws required the land owners to prove their claims, requiring considerable time and expense. The courts eventually confirmed most of the land claims in Orange County.

In the American Period, life on the ranchos continued much as before although squatters, rustlers, and mounting debts grew troublesome. Large landholdings were increasingly broken up; towns and settlements grew in number. During the 1860s, severe drought, smallpox, and torrential rains alternately took their toll on the large landholders and other settlers in southern California. The cattle market collapsed, land was devalued, and a diversified economy developed. The end of the Civil War brought an impetus to settlement. Land was cheap, and thousands flocked to the Golden West. A real estate boom ensued in the 1880s. The arrival of the Union Pacific, Southern Pacific, and Santa Fe Railroad provided transportation for people and products into and out of California. Sheep ranching became highly profitable due to the scarcity of cotton in the South. Large land grants were partitioned. Development proceeded at a rapid pace through the late nineteenth and early twentieth century. Improvements in transportation and communication contributed to the boom. The citrus industry with its associated bee keeping was one of the most successful enterprises in the region.

In the post-World War II period, southern California has been characterized by expanding urbanization, business, and industry. The aerospace industry, movie and television industries, automobile manufacturing, and tourism have spurred local growth and continue to attract visitors and potential residents. The last ranchos have been developed or are in the process of being developed.

City of Seal Beach

The following history of Seal Beach is taken from Rountree (1988) except where noted.

Seal Beach, first called Bay City, lies between Long Beach and Huntington Beach. It received its present name because a large colony of seals lived on the sandspits near the beach.

This land was included in a concession made to Manuel Nieto in 1784 by Pedro Fages, the Spanish governor of California. Later when the rancho was divided among his children, the area became part of the Ranch Los Alamitos and eventually part of the holdings of Abel Stearns.

After the town of Anaheim was founded by a group of German colonists in 1857, they developed successful vineyards and needed to export their products by sea. Because they had to haul their wine and other products all the way to the docks at Wilmington they looked for a more convenient port. They chose Alamitos Bay. A wharf was built near the south side of the bay entrance because the water within the bay was too shallow for ocean-going vessels. The Anaheim Lighter Company, formed in 1864, had scows built to serve as lighters for carrying cargo back and forth from the coastal steamers. A warehouse for storage was built. This area, Orange County's first port, became known as Anaheim Landing.

After the big flood of 1867 part of the bay was filled with silt, and the landing's location was moved farther south. The new Anaheim Landing had a flourishing business, serving many inland communities as far away as Pomona and San Bernardino. When the Southern Pacific Railroad was completed to Anaheim in 1875, Anaheim Landing lost much of its shipping business.

However, the area became a popular vacation spot. Many small beach cottages were built, remaining until 1944 when the U.S. Naval Weapons Station was developed. At the turn of the century, there was much interest in beach property. The Bayside Land Company, formed by Philip A. Stanton in 1903, purchased coastal land from the Bixbys and Hellmans, who had bought the Los Alamitos Ranch from the Stearns Ranchos Company in 1882.

The Bayside Land Company founded Bay City and encouraged the Pacific Electric Railway Company to place their route through the new city. Thus Bay City became the first city in Orange County to be served by this commuter system. Many vacationers came, motivating the building of a pier in 1906 which was the longest south of San Francisco.

After the San Francisco Panama-International Exposition of 1915, the giant roller coaster and famous scintillator lamps were brought to Seal Beach. The lamps were based at the end of the pier, and a multicolor light display was featured each summer evening. On either side of the pier entrance were two elaborate wooden buildings which were major attractions. On one side was the Pavilion, a large bathhouse which had many changing rooms on the first floor and boasted a magnificent ballroom on the second floor. On the other side of the pier entrance was a large, beautiful restaurant, the popular Jewel Café. The renowned bathing beauties of Mack Sennett were filmed here. Seal Beach soon became famous as the "Coney Island of the Pacific"

During the prohibition period, the town acquired a "sporty" reputation for allowing gambling, drinking, and questionable houses.

The annexation of neighboring communities has caused Seal Beach to expand its population of 3,553 in 1950 to over 24,236 as of the latest estimate (July 1, 2017, US census data). It is a charter city governed by a five-member city council and a mayor selected by the council from its membership. It is a city manager form of government. The manager selects department heads for various city services.

There is much diversity within Seal Beach. In addition to the mile-long recreational beach open to the public, there are three large shopping areas to serve the population. Leisure World, built in 1961 by the developer Ross Cortese, is an adult-only community with 10,000 residents.

"The buildings on the edge of the Seal Beach Weapons Station in Orange County originally belonged to the Rockwell Corporation, until Boeing purchased most of Rockwell in 1996, rechristening the facility as the Boeing Space and Communications Group. At the time of the purchase, Rockwell was a highly diversified, high technology company, with 82,000 employees and over $11 billion in annual sales, and 168 plants and R&D facilities worldwide. Rockwell was the builder of the B1-B bomber, and its subsidiary Rocketdyne was a leader in rocket propulsion design. The Seal Beach location was the site of several major Rockwell space and defense programs, including the airborne laser weapon system and space shuttle components. Huge high bay engineering buildings, still visible across the street from the headquarters, were used for the Space Shuttle's development." (Center for Land Use Interpretation n.d.).

The Naval Weapons Station still occupies over 5,000 acres. Both the San Diego Freeway and Pacific Coast Highway pass through the city.

The city's water system is fed by local wells with a ten-percent supplement from the Metropolitan Water District. Seal Beach also has both onshore and offshore oil wells.

Many tourists are drawn to Seal Beach because of its newly rebuilt pier and restaurants. A renovated Pacific Electric "Red Car" stands on a short set of rails in a small park developed from the former right-of-way; it serves as a local history museum and also as a reminder of the famous regional commuter system." (Rountree 1988:191).

According to the museum's website, Red Car no. 1734 "... was once a roving machine shop sent out to troubleshoot problems along the 40-mile Pacific Electric LA-Newport Line. A center tower was used for repairs and maintenance on the overhead lines. It operated for almost 50 years until 1950." The Red Car Museum is listed as a State Point of Historic Interest (Historic Resources Inventory).

The attractive tree-lined downtown Main Street retains the "Old Town" atmosphere with interesting restaurants and specialty shops that cater to visitors and residents alike. The beach city has also become world-famous for its annual sand-castle sculpture contests.

Near the entrance to the Seal Beach pier stands a small bronze monument to the friendly sea mammals that gave the city its name.

RECORDS SEARCH AND RESULTS

The author conducted an in-person records and literature search at the South Central Coastal Information Center (SCCIC), Department of Anthropology, California State University, Fullerton, on December 10, 2018. She reviewed the modern and historic maps, site survey records, reports, historic property listings, and other archives both at SCCIC and ARMC.

The results were that the property had not been previously surveyed for cultural resources. Fifteen studies (records searches or reports.) had been carried out within a half-mile radius of the property. No prehistoric archaeological sites had been recorded within that radius. Twelve historical properties within the Seal Beach Naval Weapons Station had been recorded (JRP Historical Consulting 1999) as part of a NRHP eligible district. Additional recorded historic resources included the Old Seal Beach City Hall (Primary No. 30-156069) which is listed on the National Register of Historic Places (NRHP); Anaheim Landing (30-162271) which is listed as State Historical Landmark No. 219. In addition the Red Car Museum (30-162293) is listed as a California State Point of Historic Interest No. ORA-20.

Historic topographic maps revealed early development in the project vicinity. The 1896 Las Bolsas 15" quadrangle showed a small development at Anaheim Landing consisting of a series of buildings and two roads associated with the port. By 1941 the Las Bolsas 15" sheet revealed a well-developed street grid in the City of Seal Beach, Highway 101A and the Pacific Electric Railway passing through the city and heading southward to Newport Beach.

FIELD WALKOVER SURVEY: METHODS AND RESULTS

The author and an ARMC crew person walked the project boundaries with reference to a tract map provided by Joanne Kootsikas. The tract map revealed that the Pacific Electric Railway had passed through the property.

The ARMC surveyors walked transects spaced two meters apart from south to north and the reverse. They examined the exposed soil and searched for evidence of archaeological deposits, either prehistoric or historic, that might be present.

The soil was a light tan sandy/silty alluvium with occasional cobbles and modern gravel. Bioturbation from rodents was also present; none of the rodent spoil piles revealed any cultural evidence.

Ground visibility was poor to moderate, impaired by introduced grasses, sedges, and tuberous plants. Limbs from neighbor's trees intruded into the parcel. Ground visibility was poor, ranging from 20-50%.

Disturbance was present throughout the property. An abandoned irrigation system was left in place. Mounding from a rectangular raised garden or flower bed was present. A combination of chain link and wooden stake fencing surrounded the property. Modern debris included occasional pieces of modern glass, wood, tile, and concrete.

SUMMARY AND CONCLUSIONS

The records and literature search results were that the property had not been previously surveyed for cultural resources. Fifteen studies (records searches or reports.) had been carried out within a half-mile radius of the property. No prehistoric archaeological sites had been recorded within that radius. Twelve historic sites within the Seal Beach Naval Weapons Station and three additional historic resources had been recorded within that radius. Among these historic resources is Old Seal Beach City Hall which is listed on the National Register of Historic Places, Anaheim Landing which is listed as a State Historical Landmark, and the Red Car Museum which is listed as a California State Point of Historic Interest. In addition the Pacific Electric Railway formerly traversed the property. The 1896 and 1941 topographic maps revealed early development in Seal Beach, the earliest at Anaheim Landing.

The field walkover survey revealed no evidence of prehistoric or early historic resources. Because of the former presence of the Pacific Electric Railway, there is potential for finding historic resources on the property. Monitoring during rough grading is recommended for the project. Should any cultural resources (prehistoric or historic) be uncovered during rough grading, a qualified archaeologist should undertake a testing program to evaluate the finds for significance. If the finds are found to be significant, a program of mitigation should be designed and carried out before project construction can be allowed to continue.

REFERENCES CITED

Bean, L.J., and C.R. Smith
1978 Gabrielino. In *Handbook of North American Indians, Volume 8, California*, edited by R.F. Heizer, pp. 538-549. Smithsonian Institution, Washington.

Center for land Use Interpretation (CLUI)
n.d. Former Rockwell Corporation Seal Beach Site (Now Boeing Space and Communications Group) California. CLUI website.

City of Seal Beach
n.d. About the City of Seal Beach. City's website http://sealbeachca.gov/About

Fenenga, F.
1953 The Weights of Chipped Stone Points: A Clue to their Functions. *Southwestern Journal of Anthropology* 9(3):309-323. Albuquerque.

Hinton, S.
1987 *Seashore Life of Southern California*. University of California Press, Berkeley.

Historic Resources Inventory (HRI)
2012 Copy on file, South Central Coastal Information Center (SCCIC), Dept. of Anthropology, California State University, Fullerton, CA.

Heizer, R.F., and A.B. Elsasser
1980 *The Natural World of the California Indians*. University of California Press, Berkeley.

Kroeber, A.L.
1925 Handbook of the Indians of California. *Bureau of Ethnology Bulletin* 78. Washington, D.C.

Jaeger, E.C., and A.C. Smith
1966 *Introduction to the Natural History of Southern California*. University of California Press, Berkeley.

JRP Historical Consulting
1999 Site forms for Seal Beach Naval Weapons Station Nos. 17628-32; 176803, 176847, 176852, 176855, 179841-2, 179859. Historic Resources Inventory; copy on file, SCCIC.

McCawley, W.
1996 *The First Angelinos: The Gabrielino Indians of Los Angeles.* Malki Museum Press/Ballena Press Cooperative Publication, Morongo Indian Reservation, Banning, CA.

McLeod, S.A.
1999 Paleontological Resources for the Eastern Orange County Project Area, letter report dated 11-16-1999, Natural History Museum of Los Angeles County, Vertebrate Paleontology Section. On file, ARMC.

Morton, P.K., and R.V. Miller
1981 Geologic Map of Orange County California Showing Mines and Mineral Deposits. *California Division of Mines and Geology Bulletin 204, Plate 1.*

Rountree, B.
1988 Seal Beach in *A Hundred Years of Yesterdays., pp. 189-191* The Orange County Centennial, Inc., Santa Ana.

Saucedo, G.J., H.G. Greene, M.P Kennedy, and S.P. Bezore
2016 *Geologic Map of the Long Beach 30'by 60' Quadrangle, California. Version 2.0.*

Strawther, L.
2014 *Seal Beach A Brief History.* The History Press, Charleston, South Carolina.

219 17th Street Project
Coastal Hazards Analysis

Prepared by
Nerja Investments
82 Golden Eagle
Irvine, CA

February 2019

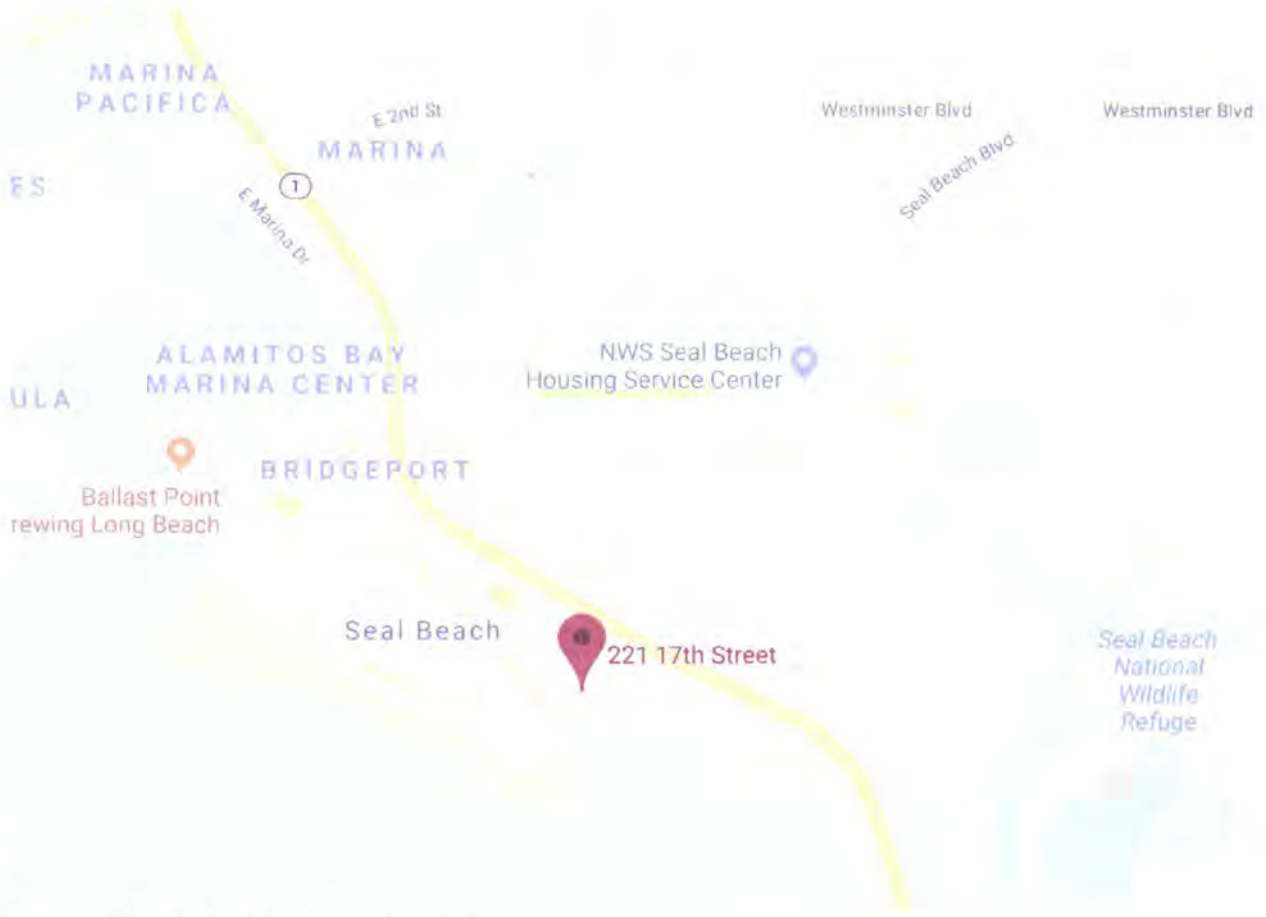


Figure 1 Map of Project Site Location

1. The proposed project is approximately 3,000 sq. ft. single family home development located at 219 17th Street Seal Beach (see figure 1 above). Historically, this area has been prone to flooding during 100 year storms at high tide. According to our soils report from Norcal Engineering, our site lies outside of any Alquist Priolo Special Studies Zone; therefore, making the potential damage due to direct fault rupture very remote (see figure 1.1 below).

The rough elevation of the projected site is 4.61 feet above the mean sea level. The soil of the site primarily consists of clayey silt. The existing site is made up of an empty lot with a few trees, surrounded by residential high density zoning. We will be using a continuous spread footing, which will be embedded 30 inches into native soil. We anticipate the life of the structure to be 75 years based on the State of California Sea Level Rise Guidance. Currently, there are two existing armoring structures in the near vicinity of the lot including a breakwall and levee as you can see from the figure below. There are no secondary impacts related to the proposed single family home noted.

Figure 3-9: Fault Rupture Potential (Newport-Inglewood Fault)

Projected Sea Level Rise (in feet): *San Francisco*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.8	1.0
2040	0.8	1.3	1.8
2050	1.1	1.9	2.7
2060	1.5	2.6	3.9
2070	1.9	3.5	5.2
2080	2.4	4.5	6.6
2090	2.9	5.6	8.3
2100	3.4	6.9	10.2

Table 2 Projected Sea Level Rise for California Coast

2. We anticipate the life of the structure to be 75 years based on the State of California Sea Level Rise Guidance. According to the California Coastal Commission, we decided to utilize the CCC's Sea Level Rise Policy Guidance updated on November 7, 2018 to base our sea level rise projections. From the figure above, we can see three proposed scenarios in each column. The first scenario predicts a 17% probability of sea level rise (SLR) at year 2090 will be 2.9 feet. The second scenario states a 0.5% probability that SLR will exceed 5.6 feet. Finally, the most extreme case boasts an SLR of 8.3 feet.

Based on the State of California Sea Level Rise Guidance, we will be using the medium-high risk aversion probabilistic projection. Since the Coastal Storm Modeling System gives similar results after 3.3 feet, we will be looking specifically at the following scenarios: 1.6 ft of SLR, 2.5 ft of SLR, and 3.3 ft of SLR. In all of these scenarios, our project may face risks from storms, floods, or waves, but we plan to mitigate this risk with a finished floor raised 3 feet above the natural grade. With our finished floor above,

Sea Level Rise Scenario	
Current Mean Sea Level	0 ft
1 6 of SLR	1.6 ft
2 5 of SLR	2.5 ft
3 3 of SLR	3.3 ft
Land Elevation	
Project Elevation	4.61 ft
Finished Floor	7.61 ft

3. Since we are not located on a shoreline, dune or bluff edge, we do not have any bluff or cliff erosion. We chose to look at the tidal range for the month of February to base our understanding of the largest tidal fluctuations, according to the figure below.

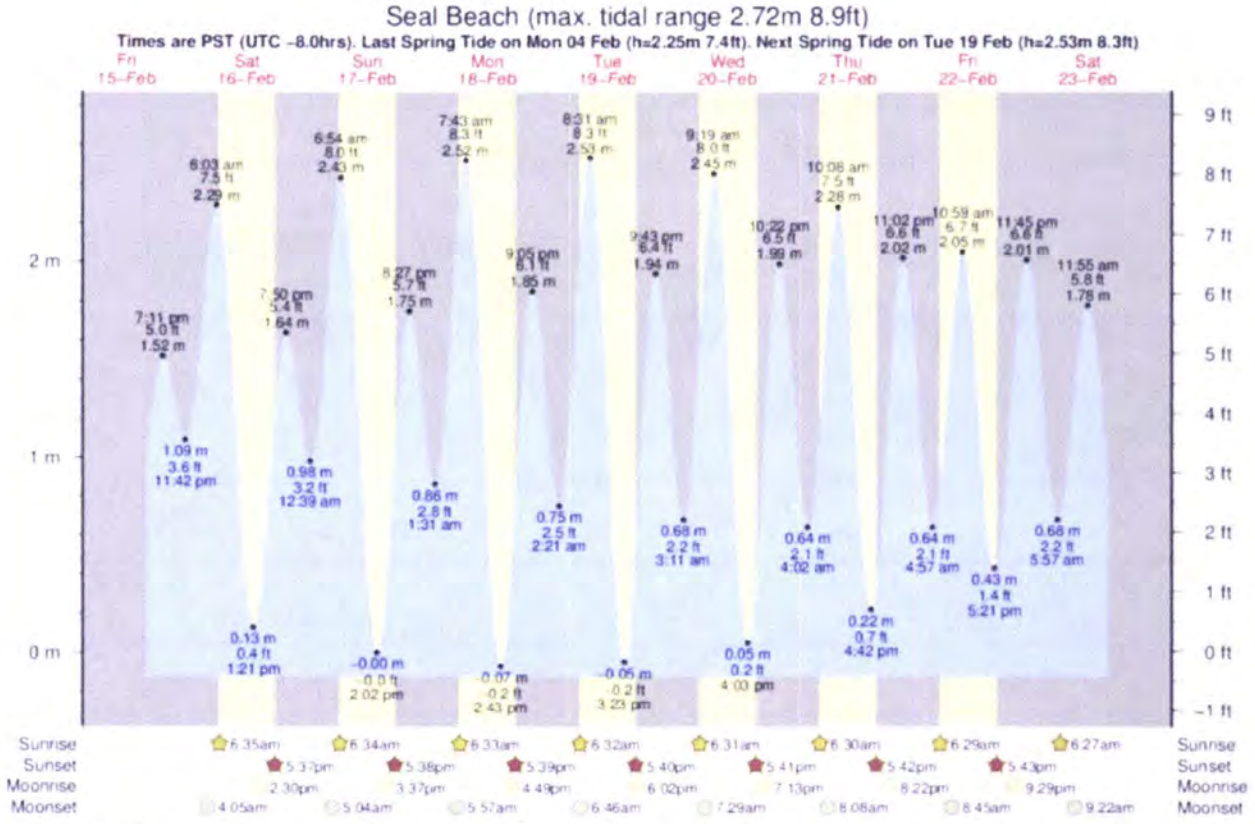


Figure 3 Tidal Ranges

Based on the diagram above, we can see that the largest fluctuation is typically about 8.9 feet.

Coastal Storm Modeling Scenarios:

The next three figures below will provide a flood map visual analysis of the rising sea level by comparing current sea levels to 1.6 feet of SLR, 2.5 feet of SLR, and 3.3 ft of SLR. All of these figures were generated using the Coastal Storm Modeling System, CoSMoS 3.0 provided by USGS. Using the medium risk aversion column, we will surpass 1.6 feet of SLR at year 2050 and will not have 2.5 feet of SLR until 2060.

Figure 4 Current Flood Map with 0 feet of SLR

The figure above shows the current flood interactive map. The yellow shape represents the location of the project. In the right portion of the tract, there is a light green color that shows the potential flood prone area. The figure below also shows the flood map but with 1.6 feet of SLR. Based on the medium-high risk aversion, the earliest scenario of this SLR occurs about 2045.

Figure 5 Flood Map with 1.6 feet of SLR, no storm

Figure 6 Flood Map 1.6 feet of SLR with 100 year storm

The above figure shows the year 2045 scenario along with a 100 year storm, which typically adds about 0.6 feet of water.

FIgure 7 Flood Map with 2.5 feet of SLR

This figure above demonstrates 2.5 feet of SLR. This amount of SLR will have 0.5% chance of occurring by the year 2060 according to the Coastal Commissions analysis.

Figure 8 Flood map with 2.5 ft with 100 year storm

Figure 9 Flood Map 3.3 ft of SLR, no storm

Figure 10 Flood Map 3.3 ft of SLR with 100 yr storm

The next two figures demonstrate when waves will become a more serious threat to the project. Here, we compare the current sea level waves to 3.3 feet of SLR.

Figure 11 Current Map of Waves

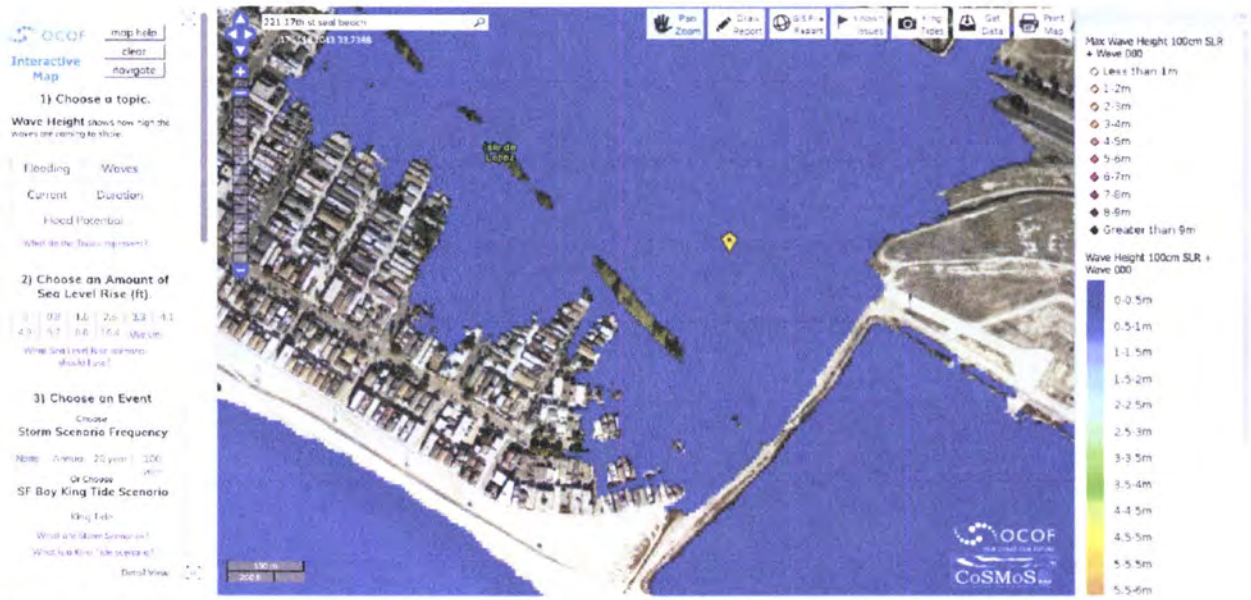


Figure 12 Wave Map with 3.3 feet of SLR, no storm

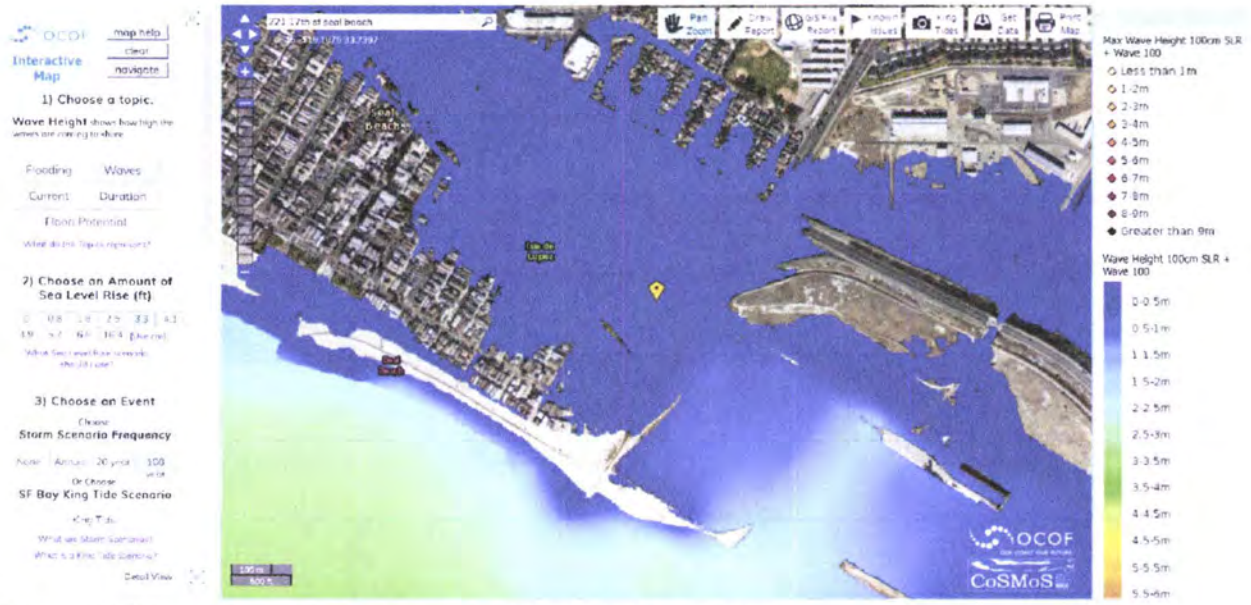


Figure 13 Wave Map with 3.3 feet of SLR with 100 year storm

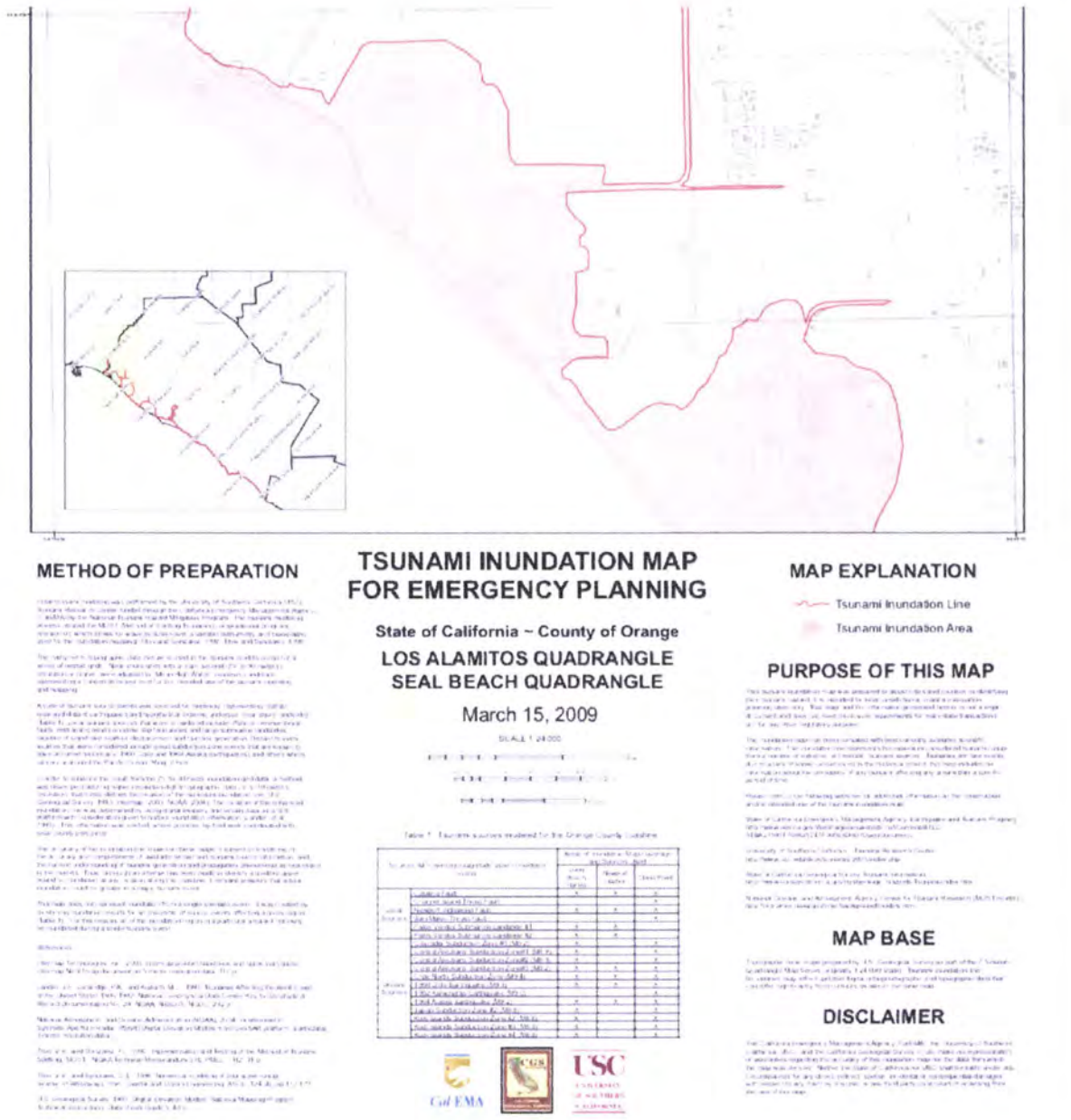


Figure 14 Tsunami

Tsunami

According to the tsunami inundation map, our project will face significant flooding in the event of a tsunami. This inundation represents tsunami hazards according to current sea levels and does not account for future sea level rise, which will include a larger magnitude of flooding than what is already depicted in the figure above.

Figure 14 One of the only homes left after 1960's New Jersey storm

Conclusion:

All in all, our project faces a 1 in 200 chance of a significant risk of flooding by the year 2070 at 3.3 feet of SLR. However, we have an 83% chance of having our project remain dry by the year 2100. We plan to mitigate this risk by proposing our building structure's finished floors at 3 feet above the natural grade. This will provide our future homeowners an extra buffer for flooding. In addition, we will construct a 3' high CMU block wall at the leading edge of the lot, the southwestern side, which will act as a further wave break if any waves do penetrate the existing break walls at the nearby naval base's marina. Furthermore, our structure and the existing structures in the surrounding area are oriented favorably to allow water flow around the structures. Essentially, these homes are built parallel to the water flow rather than perpendicular, allowing the flooded area water to dissipate back into the ocean.

Finally, all of our building and foundation will meet or exceed the California building code for safety requirements according to seismicity, uplifting winds, and uplifting buoyancy forces. There are no proposed future sea level adaptation measures noted.

Figure for Reference:

http://www2.pacinst.org/reports/sea_level_rise/hazmaps/Seal_Beach.pdf