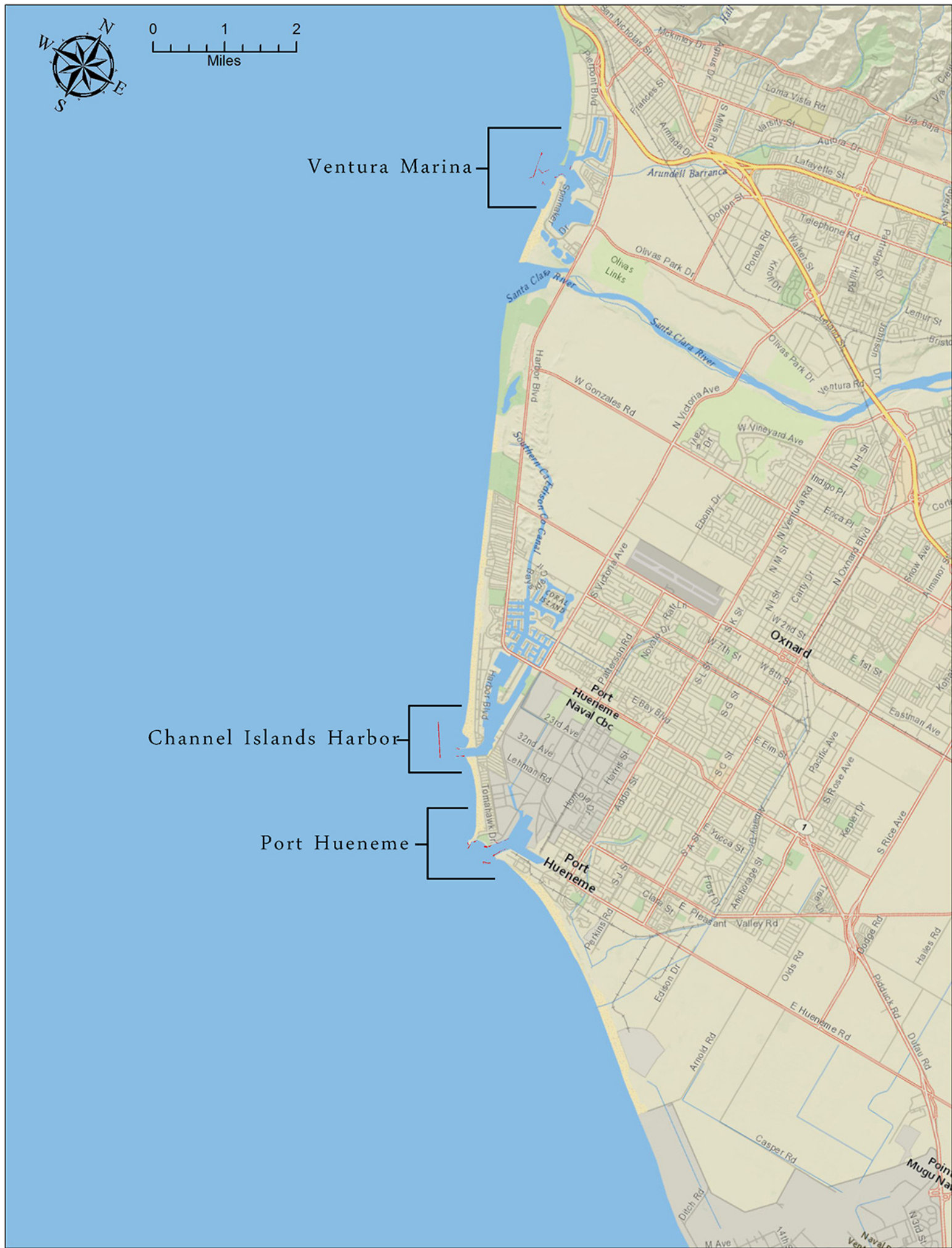
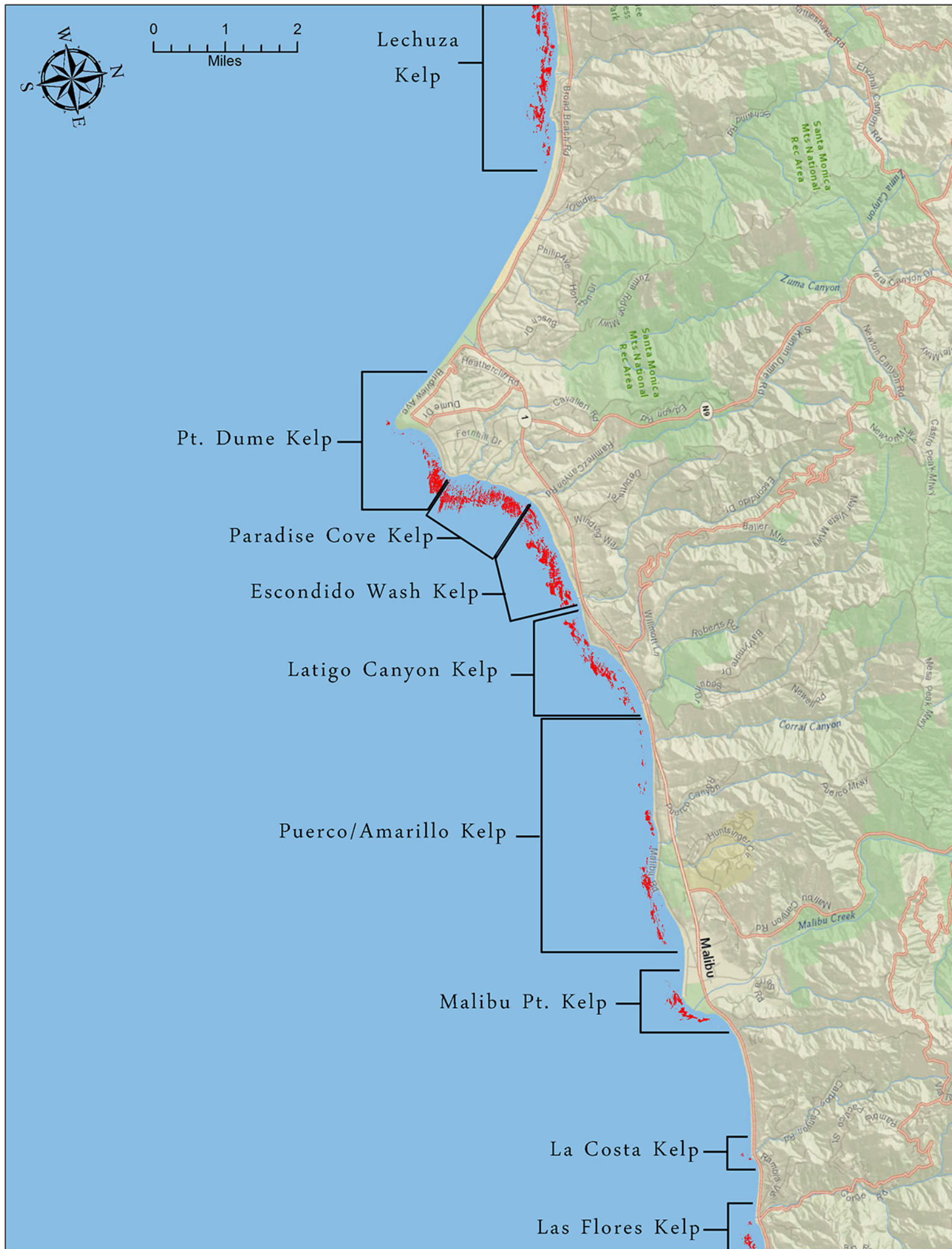
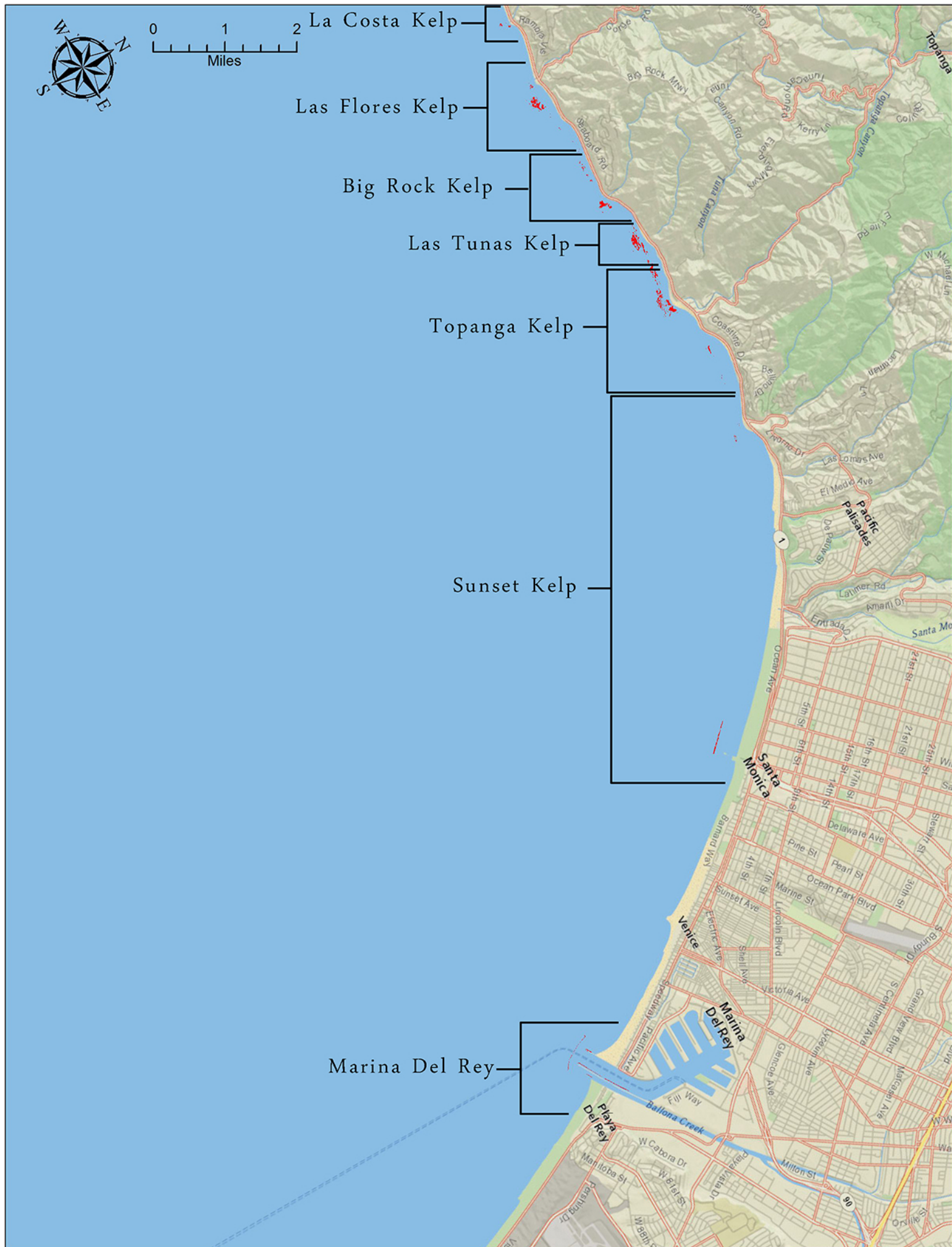


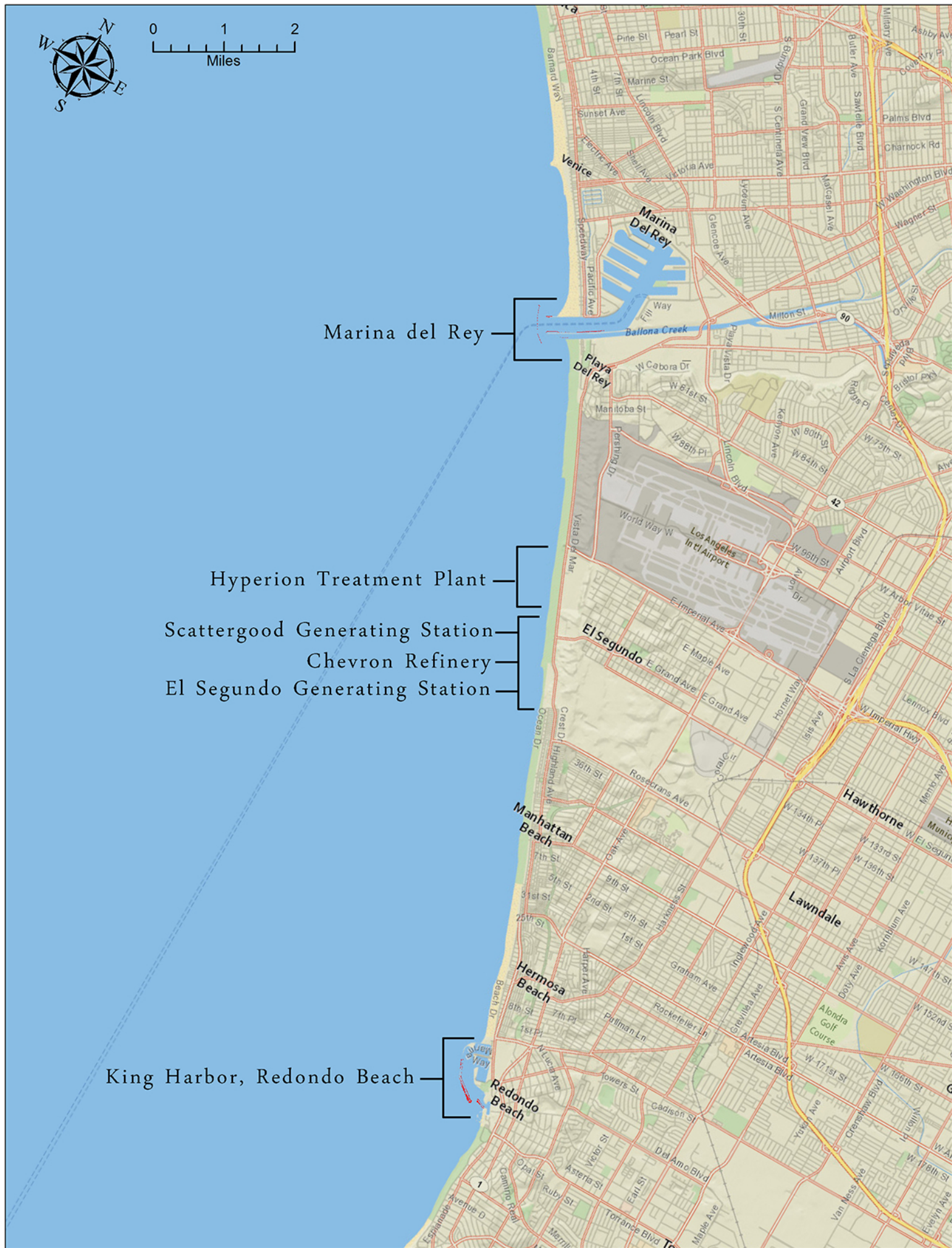
APPENDIX D

Flight Path
Flight Data Reports
Field Data Sheets









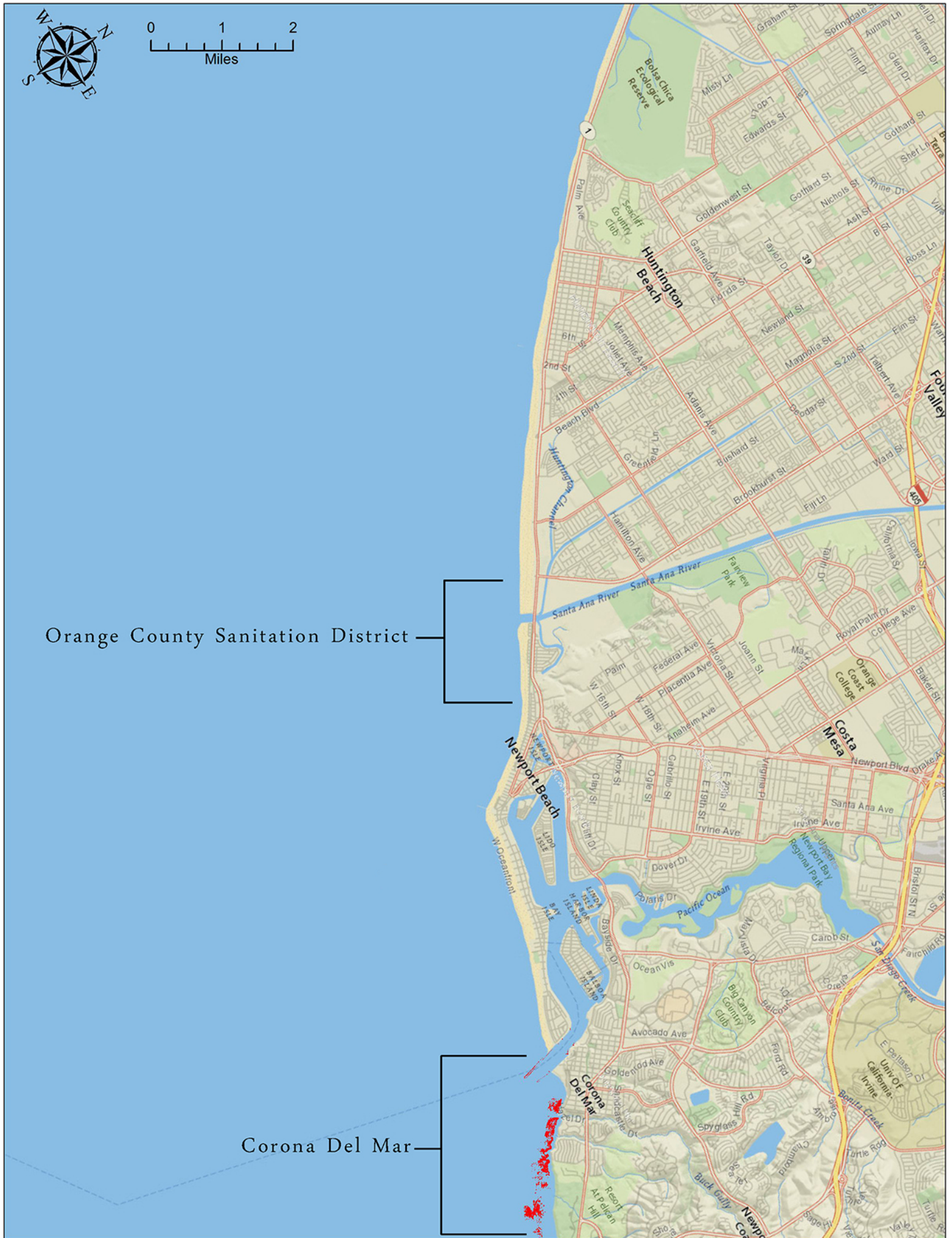


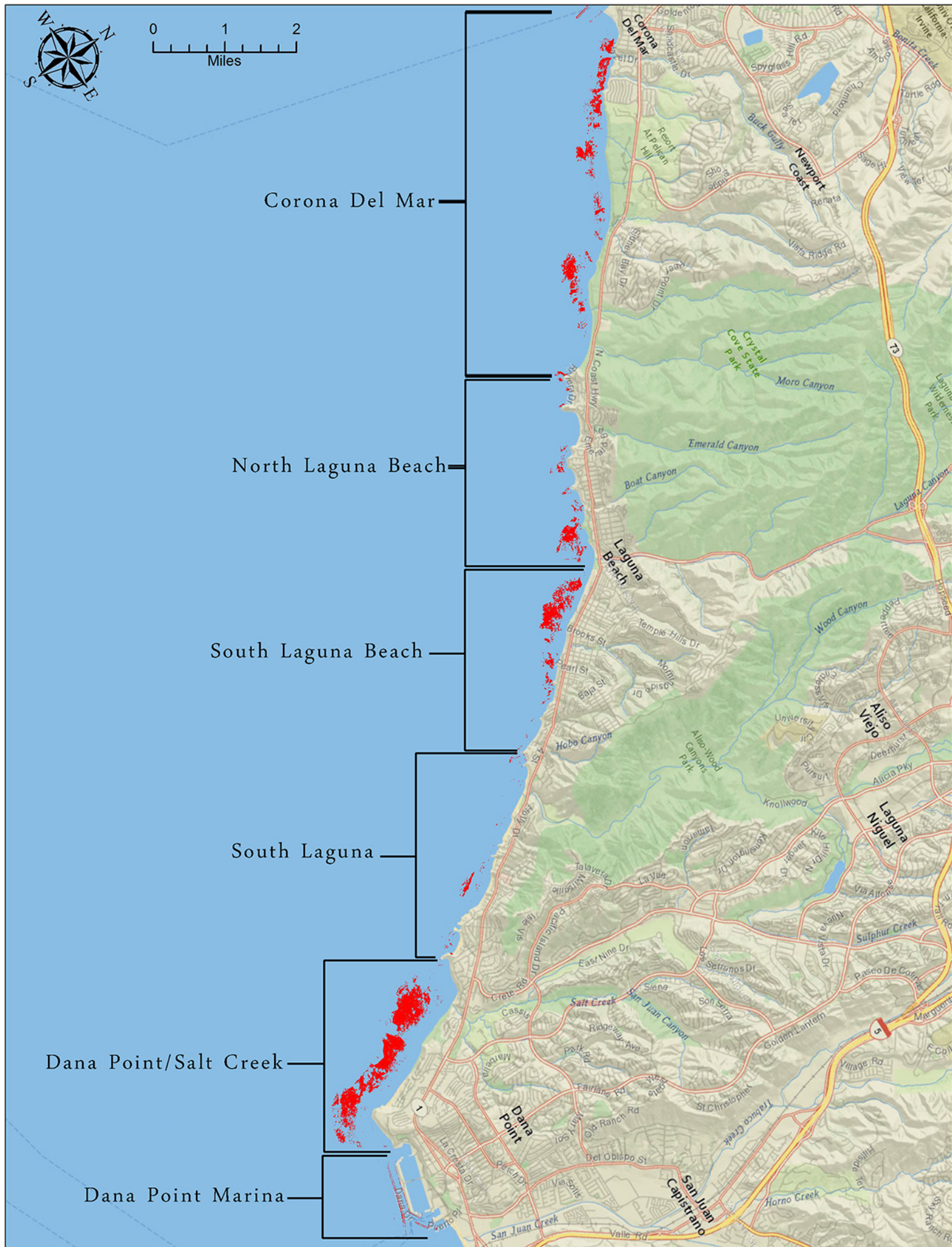


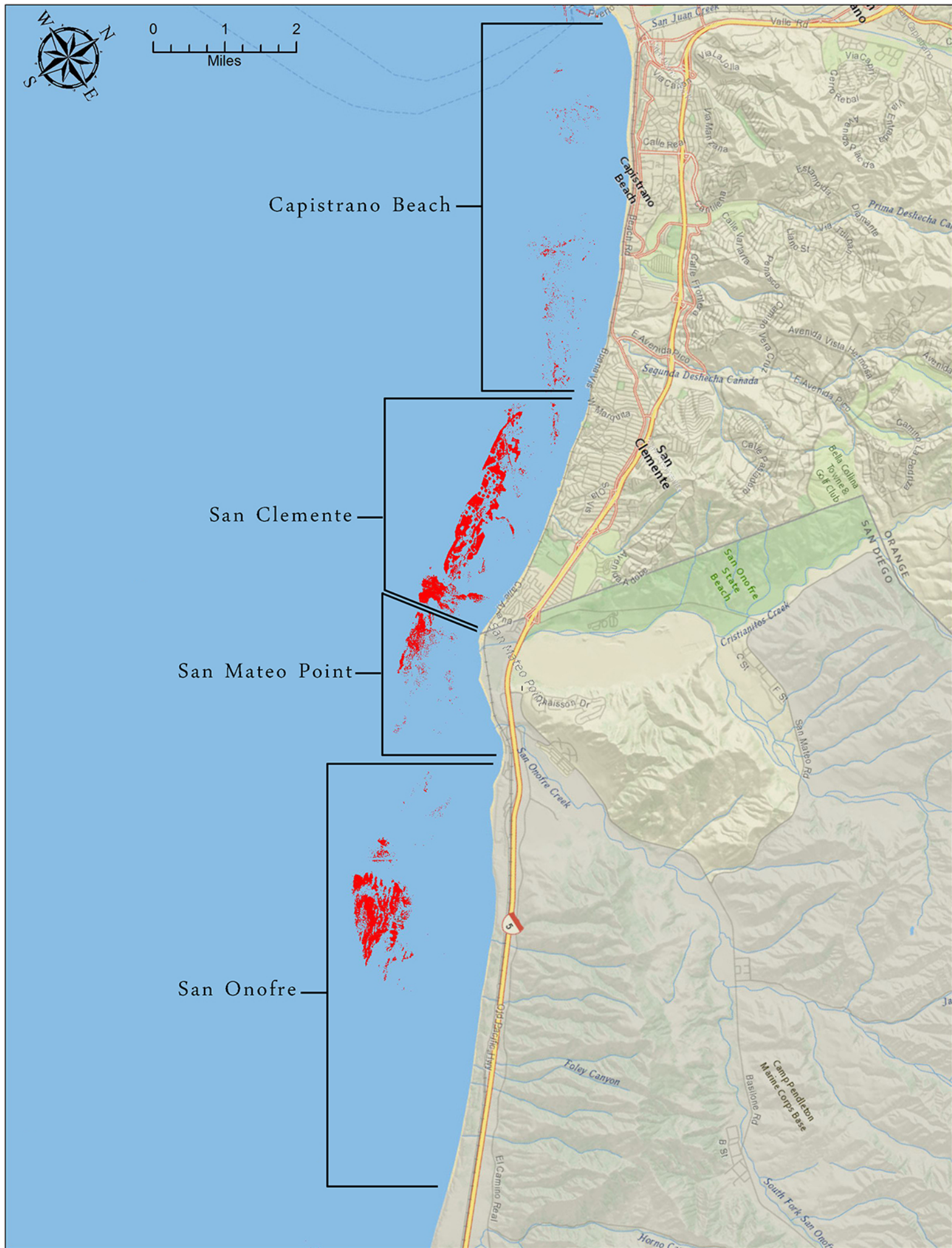
0 1 2
Miles

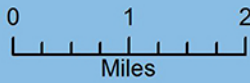
Orange County Sanitation District

Corona Del Mar







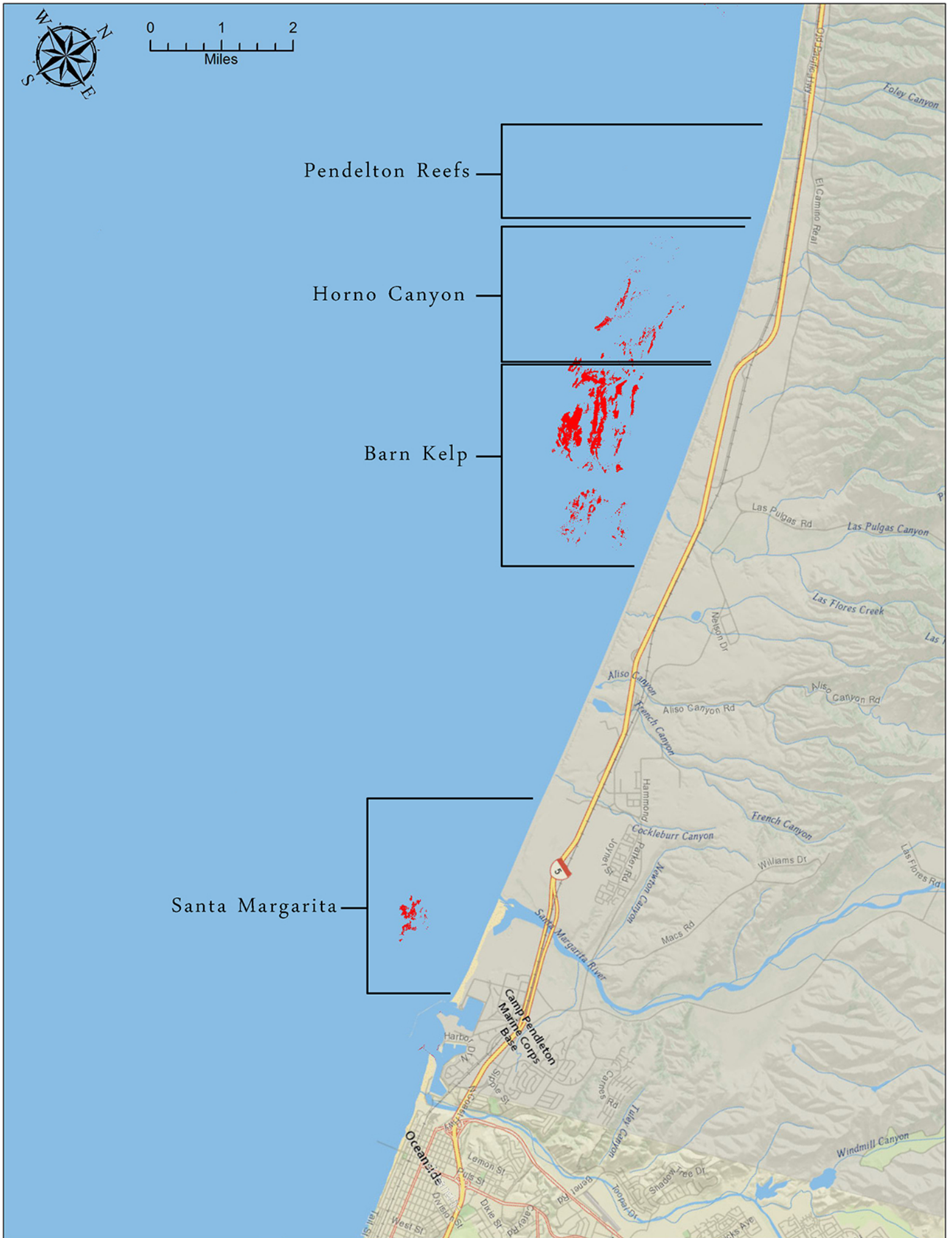


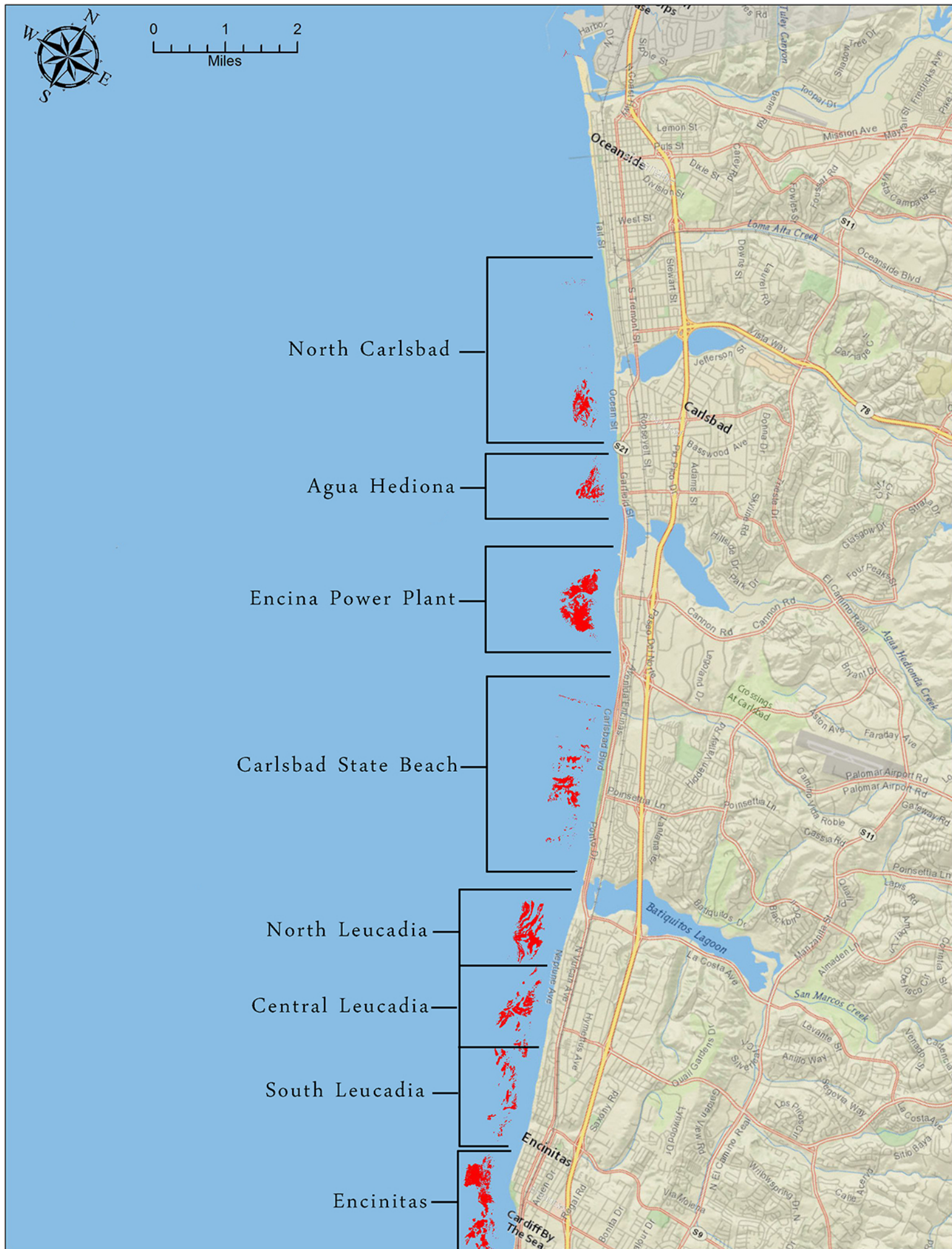
Pendelton Reefs

Horno Canyon

Barn Kelp

Santa Margarita

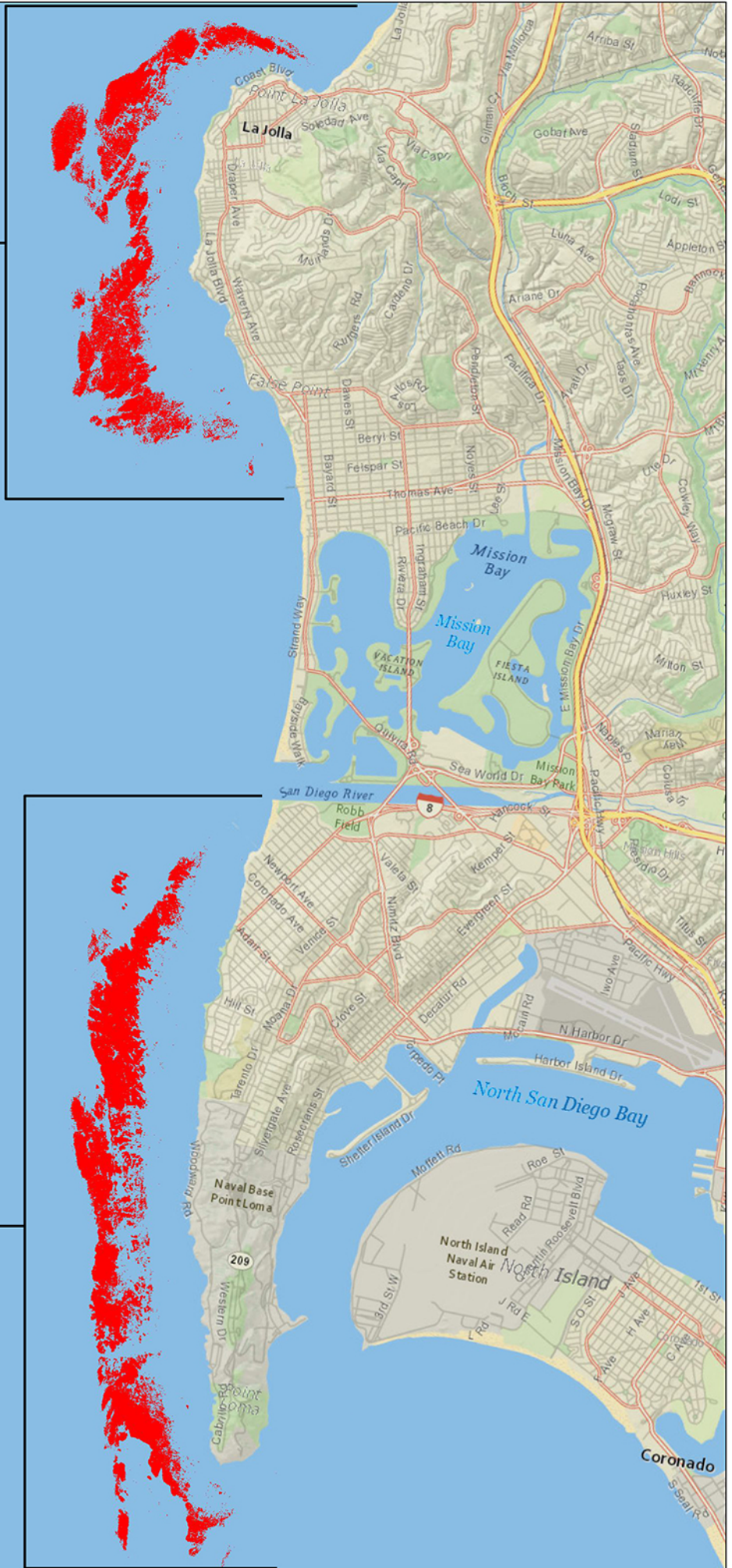


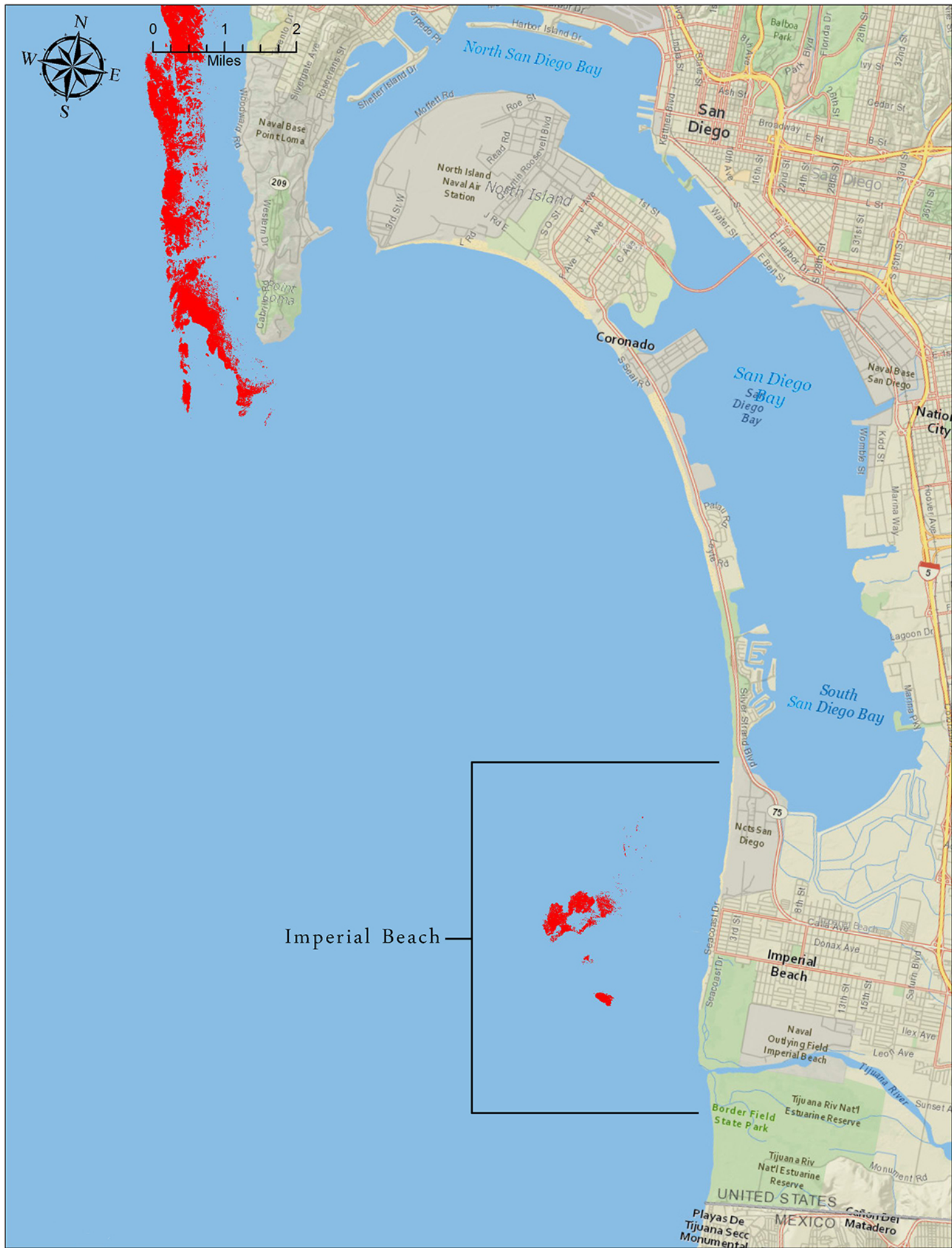




La Jolla

Point Loma





Ecoscan Resource Data
Data Acquisition
Flight Data Report

Appendix D.16A Flight record for
April 18, 2016.

Contracting Agency/Contact		Contract/Order #/Agency File #
Contracting Agency: MBC Applied Environmental Sciences		Contract/Order #:
Division:		Agency File #:
Contact/Title: Michael Curtis, Shane Beck		Calendar
Address: 3000 Redhill Ave.		Services Ordered: 3/16
City/State/Zip: Costa Mesa, CA 92626		Data Acquisition Completed: 4/18/16
Phone 1/Phone 2: (714) 850-4830		Draft Report Materials Due:
Fax/E-Mail: (714) 850-4840		Final Report Materials Due: 4/16
Project Title/Target Resource (s)- Survey Range (s)/Survey Data Flow		
Project Title	California Coastal Kelp Resources - Ventura to Imperial Beach - 4/18/16	
Target Resource (s)/ Survey Range (s)	Coastal Kelp Canopies Ventura Harbor to Newport Beach	
Survey Data Flow	Acquisition: Vertical color IR digital imagery of all coastal kelp canopies within the survey range Processing: Survey imagery indexed and delivered to MBC for further processing and analysis Analysis: All survey imagery presented with 8"x10" contact sheets (12 images/per page) Presentation:	

Aerial Resource Survey Flight Data for:		April 18, 2016	
Survey Type		Aircraft/Imagery Data	Associated Conditions
<input type="checkbox"/>	Aerial Transportation/Observation	Aircraft: Cessna 182	Sky Conditions: Clear
<input type="checkbox"/>	Photographic Film Imagery - 35 mm	Altitude: 13,500' MSL	Sun Angle: > 20 degrees from vertical
<input type="checkbox"/>	Photographic Film Imagery - 70 mm	Speed: 100 kts.	Visibility: 50+ miles
<input checked="" type="checkbox"/>	Digital Color/Color Infrared Imagery	Camera: Nikon D200	Wind: 5-10 knots
<input type="checkbox"/>	Videography	Lenses: 30mm (see note)	Sea/Swell: 3-5 feet
<input type="checkbox"/>	Radio Telemetry	Film: Digital Color IR	Time: 1401-1545
<input type="checkbox"/>	Radiometry/Geophysical Measurements	Angle: Vertical	Tide: 0.2' (+) to 0.7' (+) MLLW
<input type="checkbox"/>	Other 1:	Photo Scale: As Displayed	Shadow: None
<input type="checkbox"/>	Other 2:	Pilot: Unsicker	Other:
<input type="checkbox"/>	Other 3:	Photographer: Van Wagenen	Comments: Excellent Conditions
Range (s) Surveyed	Ventura Harbor to Imperial Beach.		
Target Resource Observations	Kelp Canopies	The kelp canopies south of San Pedro were observed to have a reduced surface extent.	
Imagery Quality/ Comments	Excellent	All surface kelp canopies were photographed within the above range. The image processing was conducted normally. All of the imagery was judged of excellent quality and was useable for the subsequent mapping of the kelp resource.	
	Lens Note	30mm (digital SLR camera) is similar focal length to 50mm (35mm film SLR camera)	

Ecoscan Resource Data

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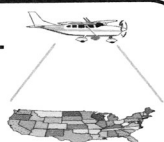
Appendix D.16B Flight record for
June 20, 2016.

Contracting Agency/Contact		Contract/Order #/Agency File #
Contracting Agency: MBC Applied Environmental Sciences		Contract/Order #:
Division:		Agency File #:
Contact/Title:	Michael Curtis, Shane Beck	Calendar
Address:	3000 Redhill Ave.	Services Ordered: 6/16
City/State/Zip:	Costa Mesa, CA 92626	Data Acquisition Completed: 6/20/16
Phone 1/Phone 2:	(714) 850-4830	Draft Report Materials Due:
Fax/E-Mail:	(714) 850-4840	Final Report Materials Due: 6/16
Project Title/Target Resource (s)- Survey Range (s)/Survey Data Flow		
Project Title	California Coastal Kelp Resources - Ventura to Imperial Beach - 6/20/16	
Target Resource (s)/ Survey Range (s)	Coastal Kelp Canopies Ventura Harbor to Newport Beach	
Survey Data Flow	Acquisition Processing Analysis Presentation	Vertical color IR digital imagery of all coastal kelp canopies within the survey range Survey imagery indexed and delivered to MBC for further processing and analysis All survey imagery presented with 8"x10" contact sheets (12 images/per page)

Aerial Resource Survey Flight Data for:		June 20, 2016	
Survey Type		Aircraft/Imagery Data	Associated Conditions
<input type="checkbox"/>	Aerial Transportation/Observation	Aircraft: Cessna 182	Sky Conditions: Clear
<input type="checkbox"/>	Photographic Film Imagery - 35 mm	Altitude: 13,500' MSL	Sun Angle: > 20 degrees from vertical
<input type="checkbox"/>	Photographic Film Imagery - 70 mm	Speed: 100 kts.	Visibility: 50+ miles
<input checked="" type="checkbox"/>	Digital Color/Color Infrared Imagery	Camera: Nikon D200	Wind: 5-10 knots
<input type="checkbox"/>	Videography	Lenses: 30mm (see note)	Sea/Swell: 3-5 feet
<input type="checkbox"/>	Radio Telemetry	Film: Digital Color IR	Time: 1440-1642
<input type="checkbox"/>	Radiometry/Geophysical Measurements	Angle: Vertical	Tide: 2.1' (+) to 1.9' (+) MLLW
<input type="checkbox"/>	Other 1:	Photo Scale: As Displayed	Shadow: None
<input type="checkbox"/>	Other 2:	Pilot: Unsicker	Other:
<input type="checkbox"/>	Other 3:	Photographer: Van Wagenen	Comments: Excellent Conditions
Range (s) Surveyed	Ventura Harbor to Imperial Beach.		
Target Resource Observations	Kelp Canopies	The kelp canopies south of San Pedro were again observed to have a significantly reduced surface extent.	
Imagery Quality/ Comments	Excellent Lens Note	All surface kelp canopies were photographed within the above range. The image processing was conducted normally. All of the imagery was judged of excellent quality and was useable for the subsequent mapping of the kelp resource. 30mm (digital SLR camera) is similar focal length to 50mm (35mm film SLR camera)	

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Appendix D.16C Flight record for
September 24, 2016.

Contracting Agency/Contact		Contract/Order #/Agency File #
Contracting Agency: MBC Applied Environmental Sciences		Contract/Order #:
Division:		Agency File #:
Contact/Title: Michael Curtis, Shane Beck		Calendar
Address: 3000 Redhill Ave.		Services Ordered: 9/16
City/State/Zip: Costa Mesa, CA 92626		Data Acquisition Completed: 9/24/16
Phone 1/Phone 2: (714) 850-4830		Draft Report Materials Due:
Fax/E-Mail: (714) 850-4840		Final Report Materials Due: 10/16
Project Title/Target Resource (s)- Survey Range (s)/Survey Data Flow		
Project Title	California Coastal Kelp Resources - Ventura to Imperial Beach - 9/24/16	
Target Resource (s)/ Survey Range (s)	Coastal Kelp Canopies Ventura Harbor to Imperial Beach	
Survey Data Flow	Acquisition Processing Analysis Presentation	Vertical color IR digital imagery of all coastal kelp canopies within the survey range Survey imagery indexed and delivered to MBC for further processing and analysis All survey imagery presented with 8"x10" contact sheets (12 images/per page)

Aerial Resource Survey Flight Data for:		September 24, 2016	
Survey Type	Aircraft/Imagery Data	Associated Conditions	
Aerial Transportation/Observation	Aircraft: Cessna 182	Sky Conditions: Clear	
Photographic Film Imagery - 35 mm	Altitude: 13,500' MSL	Sun Angle: > 20 degrees from vertical	
Photographic Film Imagery - 70 mm	Speed: 100 kts.	Visibility: 50+ miles	
✓ Digital Color/Color Infrared Imagery	Camera: Nikon D200	Wind: 5-10 knots	
Videography	Lenses: 30mm (see note)	Sea/Swell: 3-5 feet	
Radio Telemetry	Film: Digital Color IR	Time: 1035-1213	
Radiometry/Geophysical Measurements	Angle: Vertical	Tide: 2.6' (+) to 2.8' (+) MLLW	
Other 1:	Photo Scale: As Displayed	Shadow: None	
Other 2:	Pilot: Unsicker	Other:	
Other 3:	Photographer: Van Wagenen	Comments: Excellent Conditions	

Range (s) Surveyed	Ventura Harbor to Imperial Beach.		
Target Resource Observations	Kelp Canopies	The kelp canopies south of Los Angeles were again observed to have a significantly reduced surface extent.	
Imagery Quality/ Comments	Excellent Lens Note	All surface kelp canopies were photographed within the above range. The image processing was conducted normally. All of the imagery was judged of excellent quality and was useable for the subsequent mapping of the kelp resource. 30mm (digital SLR camera) is similar focal length to 50mm (35mm film SLR camera)	

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Signed: _____ Bob Van Wagenen, Director

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Flight Data Report**

Appendix D. 16D Flight record for
December 28, 2016.

Contracting Agency/Contact		Contract/Order #/Agency File #
Contracting Agency: MBC Applied Environmental Sciences		Contract/Order #:
Division:		Agency File #:
Contact/Title: Michael Curtis, Shane Beck		Calendar
Address: 3000 Redhill Ave.		Services Ordered: 12/16
City/State/Zip: Costa Mesa, CA 92626		Data Acquisition Completed: 12/28/16
Phone 1/Phone 2: (714) 850-4830		Draft Report Materials Due:
Fax/E-Mail: (714) 850-4840		Final Report Materials Due: 1/17
Project Title/Target Resource (s)- Survey Range (s)/Survey Data Flow		
Project Title	California Coastal Kelp Resources - Ventura to Imperial Beach - 12/28/16	
Target Resource (s)/ Survey Range (s)	Coastal Kelp Canopies Ventura Harbor to Imperial Beach	
Survey Data Flow	Acquisition	Vertical color IR digital imagery of all coastal kelp canopies within the survey range
	Processing	Survey imagery indexed and delivered to MBC for further processing and analysis
	Analysis Presentation	All survey imagery presented with 8"x10" contact sheets (12 images/per page)

Aerial Resource Survey Flight Data for:		December 28, 2016	
Survey Type		Aircraft/Imagery Data	Associated Conditions
<input type="checkbox"/>	Aerial Transportation/Observation	Aircraft: Cessna 182	Sky Conditions: Clear
<input type="checkbox"/>	Photographic Film Imagery - 35 mm	Altitude: 13,500' MSL	Sun Angle: > 20 degrees from vertical
<input type="checkbox"/>	Photographic Film Imagery - 70 mm	Speed: 100 kts.	Visibility: 50+ miles
<input checked="" type="checkbox"/>	Digital Color/Color Infrared Imagery	Camera: Nikon D200	Wind: 5-10 knots
<input type="checkbox"/>	Videography	Lenses: 30mm (see note)	Sea/Swell: 3-5 feet
<input type="checkbox"/>	Radio Telemetry	Film: Digital Color IR	Time: 1345-1529
<input type="checkbox"/>	Radiometry/Geophysical Measurements	Angle: Vertical	Tide: 0.1' (+) to 0.6' (-) MLLW
<input type="checkbox"/>	Other 1:	Photo Scale: As Displayed	Shadow: None
<input type="checkbox"/>	Other 2:	Pilot: Unsicker	Other:
<input type="checkbox"/>	Other 3:	Photographer: Van Wagenen	Comments: Excellent Conditions

Range (s) Surveyed	Ventura Harbor to Imperial Beach.	
Target Resource Observations	Kelp Canopies	The kelp canopies within the survey range were observed to have a significantly increased surface extent when compared with the September 2016 survey.
Imagery Quality/Comments	Excellent	All surface kelp canopies were photographed within the above range. The image processing was conducted normally. All of the imagery was judged of excellent quality and was useable for the subsequent mapping of the kelp resource.
	Lens Note	30mm (digital SLR camera) is similiar focal length to 50mm (35mm film SLR camera)

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Signed: _____ Bob Van Wagenen, Director

Copy To:

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG:

Extent ND VISIBLE CANOPY

Density

Tissue color

% Frond comp. Senile Mature Young Other

Disease

Encrustaceans

Apical blades

Sediment on blades

Remarks

Date 3-13-2017
 Location IMPERIAL BEACH
 Time 0945
 Wind/Direction 0 - WESTSWELL
 Current N.O.D.E.
 Weather FOGGY 100MV, 5
 UW Visibility 10 FT
 Swell Ht/Period 1-2 FT

(3.5)

NOTHING A

Subsurface

WENT TO TWO DENSEST SPOTS FROM 2015 SURVEY

NOTHING AT 32° 34.463 / 119° 09.748 OR
 32° 34.169 / 119° 09.141 NOTHING

ON METER OR 00 SURFACE

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Sporophylls

Juvenile fronds

Holdfasts

Old holdfasts

Recruitment

Remarks

Community

Litter

Turf algae

Turf invert.

Shrub algae

Large invert.

Fishes

Disease

Sed. on rocks

Urchin status

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG:

Extent 1/2 MI / 1/2 MILE
 Density SCATTERED - MED DENSITY
 Tissue color DARK YELLOW
 % Frond comp. 40% Senile 50% Mature 10% Young _____ Other _____
 Disease NO
 Encrustaceans NONE TO 10%
 Apical blades 10% WITH 30-40% DATTERED TIPS
 Sediment on blades NONE
 Remarks FROND LENGTH 4-5 M

Subsurface

LOTS of SUBSURFACE KELP
32° 39.879 > 49 FT
117° 15.870 > 49 FT
63 FT AT CANOPY EDGE

Date

3/13/2017

Location

POINT LOMA SOUTH

Time

1045

Wind/Direction

SE - W

Current

Weather

FOGGY 100% VIS

UW Visibility

10

Swell Ht/Period

1-2 FT W

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____
 Sporophylls _____
 Juvenile fronds _____
 Holdfasts _____
 Old holdfasts _____
 Recruitment _____

Remarks

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. _____
 Fishes _____
 Disease _____
 Sed. on rocks _____
 Urchin status _____

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent 450M x 400M LE
 Density SCATTERED
 Tissue color DARK YELLOW
 % Frond comp. 70% Senile 10% Mature 5%
 Disease NOT OBSERVED
 Encrustaceans NO
 Apical blades 5% GOOD
 Sediment on blades NO
 Remarks FROND LENGTHS 3-5 M

Subsurface

KELP ON FATHOMETER 19 CONTINUOUS

Date 3/13/2017
 Location POI OF LOMANDATH
 Time 1115
 Wind/Direction 2/3 E W
 Current -
 Weather FOGGY 1/2 MI V/S
 UW Visibility 10FT
 Swell Ht/Period 1-2FT W

5% Young Other
KELP ON GORFACE
32° 43.476
117° 16.265 (56 FT)

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____
 Sporophylls _____
 Juvenile fronds _____
 Holdfasts _____
 Old holdfasts _____
 Recruitment _____

Remarks _____

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. _____
 Fishes _____
 Disease _____
 Sed. on rocks _____
 Urchin status _____

Remarks _____

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 32 49.430 / 117 17.367

Extent 1/2 MI / 1/4 MI

Density SCATTERED

Tissue color DARK YELLOW

% Frond comp. 20 Senile 20% Mature 50% Young Other

Disease NONE

Encrustaceans NONE

Apical blades 30% IN SACT

Sediment on blades NONE

Remarks 3-4 M ON SURFACE

Subsurface

CONTINUOUS STRIP

Date 3-13-17

Location LA JOLLA SOUTH

Time 1155

Wind/Direction 5 KNOT WESTERLY

Current

Weather FOGGY 1 MI VIS

UW Visibility 10 FT

Swell Ht/Period 1-2 FT SWELL WEST

@ 60 FT OUTER EDGE

MARKING KEEPS

200 M WIDE BY

6000 MILES LONG

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Sporophylls

Juvenile fronds

Holdfasts

Old holdfasts

Recruitment

Remarks

Community

Litter

Turf algae

Turf invert.

Shrub algae

Large invert.

Fishes

Disease

Sed. on rocks

Urchin status

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 32°51.043/117°17.223 (55 FT)

Extent 1/4 MI / 1 MILE

Density ~~DARK~~ LOWTissue color ~~DARK~~ GREEN

% Frond comp. 10% Senile 60% Mature 30% Young Other

Disease NO

Encrustaceans 40%

Apical blades 1% GOOD REST MISSING

Sediment on blades NO

Remarks SCATTERED KELP @ 50+ FT

Subsurface 3-4 MT ON SURFACE SANDS

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Sporophylls

Juvenile fronds

Holdfasts

Old holdfasts

Recruitment

Remarks

Community

Litter

Turf algae

Turf invert.

Shrub algae

Large invert.

Fishes

Disease

Sed. on rocks

Urchin status

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp CanopyLAT/LONG 32°53'15.67"/117°15'60.7"

Extent _____

Density _____

Tissue color _____

% Frond comp. _____ Senile _____ Mature _____

Disease _____

Encrustaceans _____

Apical blades _____

Sediment on blades _____

Remarks _____

Subsurface _____

NO KELP

Date

3/13/17

Location

TORREY PINES

Time

1240

Wind/Direction

5 KN

Current

-

Weather

POGGY 1/2 MI VIS

UW Visibility

10 FT

Swell Ht/Period

1-2 FTFATHOMETER SEARCH DID NOT
PING/SEE ANY KELP

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Bottom

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Sporophylls _____

Juvenile fronds _____

Holdfasts _____

Old holdfasts _____

Recruitment _____

Remarks _____

Community

Litter _____

Turf algae _____

Turf invert. _____

Shrub algae _____

Large invert. _____

Fishes _____

Disease _____

Sed. on rocks _____

Urchin status _____

Remarks _____

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent _____
 Density _____
 Tissue color _____
 % Frond comp. _____ Senile _____ Mature _____
 Disease _____
 Encrustaceans _____
 Apical blades _____
 Sediment on blades _____
 Remarks _____

Date 3/13/17
 Location DEL MAR
 Time 1300
 Wind/Direction 3K
 Current _____
 Weather Hazy 1/2 mi VLS
 UW Visibility 10 FT
 Swell Ht/Period 1 FT W

Subsurface

NO VISIBLE CANOPY
 AND TRACE OF FATHOMETER
 CIRCLED LAT LONGS - SAW
 NOTHING - SOME AT 0.5 FATHOMETER

APPEARS TO BE A FEW KELP SUBSURFACE

#1 32.67554 / 117° 16.489 APPROX
 SPOT ON - 578 528

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____
 Sporophylls _____
 Juvenile fronds _____
 Holdfasts _____
 Old holdfasts _____
 Recruitment _____

Remarks _____

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. _____
 Fishes _____
 Disease _____
 Sed. on rocks _____
 Urchin status _____

Remarks _____

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent 150M/50M
 Density MED DENSE 10-20/100m²
 Tissue color MED BROWN
 % Frond comp. 50% Senile 40% Mature 10% Young Other
 Disease NO
 Encrustaceans NO
 Apical blades A FEW 5% LOPPED
 Sediment on blades NO
 Remarks 2-3 M LONG FRONDS OF SURFACE

Subsurface

UNDERWATER OBSERVATIONS

Midwater

Tissue color END OF BED
 Encrustaceans 3259.800
 Disease 117 17.059
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____
 Sporophylls _____
 Juvenile fronds _____
 Holdfasts _____
 Old holdfasts _____
 Recruitment _____

Remarks

Date 3/9/17
 Location 30 CANADIAN
 Time 1315
 Wind/Direction 5 K W
 Current _____
 Weather HAZY & WINDY
 UW Visibility 10FT
 Swell Ht/Period 1FT

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. _____
 Fishes _____
 Disease _____
 Sed. on rocks _____
 Urchin status _____

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Lat/Long: 33° 00.824 / 119° 17.483

Extent SCATTERED 1/2 MILE X 1/4 MILE

Density LOW 10-15 X 100 M²

Tissue color MED YELLOW

% Frond comp. 25% Senile 75% Mature _____ Young _____ Other _____

Disease NO

Encrustaceans 5%

Apical blades LOW 5% RESTYATTERED

Sediment on blades NO

Remarks _____

Subsurface 3-4 M FRONDS

Date

Location

Time

Wind/Direction

Current

Weather

UW Visibility

Swell Ht/Period

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Bottom

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Sporophylls _____

Juvenile fronds _____

Holdfasts _____

Old holdfasts _____

Recruitment _____

Remarks _____

Community

Litter _____

Turf algae _____

Turf invert. _____

Shrub algae _____

Large invert. _____

Fishes _____

Disease _____

Sed. on rocks _____

Urchin status _____

Remarks _____

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 33°02'08" / 117°18'11"

Extent

(1/4 MI X 1/4 MI)

Density

DENSE 20-30 PER 100 M²

Tissue color

DARK YELLOW

% Frond comp.

20%

Senile

10%

Mature

Disease

NO

Encrustaceans

10%

Apical blades

VERY FEW INTACT. MOST ATTACHED

Sediment on blades

NO

Remarks

Date

3/13/17

Location

ENCINITAS

Time

11:15

Wind/Direction

SE

Current

Weather

Hazy

UW Visibility

10 FT

Swell Ht/Period

1 FT

20%

Young

Other

33°01'679 117°17'859

10 PLANTS SURFACE 52456X

IN 10 2 EDGE 48 FT

Subsurface

4.5 M L FRONDS

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Sporophylls

Juvenile fronds

Holdfasts

Old holdfasts

Recruitment

Remarks

Community

Litter

Turf algae

Turf invert.

Shrub algae

Large invert.

Fishes

Disease

Sed. on rocks

Urchin status

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 33°03'17D 117°18'52W

Extent 250M X 250M

Density DENSE - 20-30/100M²

Tissue color DARK YELLOW

% Frond comp. 20% Senile 50% Mature 30%

Disease NO

Encrustaceans 100%

Apical blades 5% REST-TATTERED

Sediment on blades NO

Remarks 3-5 M PROTRUSION SURFACE

Date 3/13/17

Location SOUTH LEUCADIA

Time 1530

Wind/Direction 5K W

Current

Weather HAZY KM12C

UW Visibility 10 FT

Swell Ht/Period 1 FT W

1 STAND ON SURFACE

NORTH/WEST LAT/LONGS

CENTRAL ANOTHER LARGE PATCH OF KELP AT

Subsurface LEUCADIA 33°03'17D 117°18'52W 200M X 150M

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Sporophylls

Juvenile fronds

Holdfasts

Old holdfasts

Recruitment

Remarks

Community

Litter

Turf algae

Turf invert.

Shrub algae

Large invert.

Fishes

Disease

Sed. on rocks

Urchin status

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 33°04.489/117°19.076

Extent 250M / 150M

Density DENSE 70-80/100M

Tissue color DARK YELLOW

% Frond comp. 20 Senile 50 Mature 30 Young Other

Disease NO

Encrustaceans 100%

Apical blades FEW 5% GOOD REST TATTERED

Sediment on blades NO

Remarks

Subsurface 3-4M FROND LENGTH

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Sporophylls

Juvenile fronds

Holdfasts

Old holdfasts

Recruitment

Remarks

Community

Litter

Turf algae

Turf invert.

Shrub algae

Large invert.

Fishes

Disease

Sed. on rocks

Urchin status

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent _____

Density _____

Tissue color _____

% Frond comp. _____ Senile _____ Mature _____ Young _____ Other _____

Disease _____

Encrustaceans _____

Apical blades _____

Sediment on blades _____

Remarks _____

Date 3/13/17
 Location CARLS BAD STATE MAR
 Time 1500
 Wind/Direction SE W
 Current _____
 Weather HAZY
 UW Visibility 10%
 Swell Ht/Period 1 FT

Subsurface _____

NOTHING ON SURFACE
 FEW OF FATHOMETER

NOTHING AT SP2

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Bottom

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Sporophylls _____

Juvenile fronds _____

Holdfasts _____

Old holdfasts _____

Recruitment _____

Remarks _____

Community

Litter _____

Turf algae _____

Turf invert. _____

Shrub algae _____

Large invert. _____

Fishes _____

Disease _____

Sed. on rocks _____

Urchin status _____

Remarks _____

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 33° 07.485 / 117° 20.365

Extent 500 M X 300 M WIDE

Density HI - 40+ / 100 M²

Tissue color DARK YELLOW

% Frond comp. 80% Senile 60% Mature 20% Young Other

Disease 80-90% NONE

Encrustaceans 80-90%

Apical blades A FEW - MOSTLY TATTERED

Sediment on blades NO

Remarks

Subsurface

EXTENSIVE BED - METERING KELP
ON BOTTOM

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Sporophylls

Juvenile fronds

Holdfasts

Old holdfasts

Recruitment

Remarks

Community

Litter

Turf algae

Turf invert.

Shrub algae

Large invert.

Fishes

Disease

Sed. on rocks

Urchin status

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 33° 08' 69.3" N / 117° 24' 03.1" W

Extent _____

Density _____

Tissue color _____

% Frond comp. _____ Senile _____ Mature _____

Disease _____

Encrustaceans _____

Apical blades _____

Sediment on blades _____

Remarks _____

Subsurface _____

Date 3/13/17
 Location ABOIA HEDIONDA
 Time 3:15
 Wind/Direction SE WEST
 Current _____
 Weather HAZY 1/2 MI VIS
 UW Visibility 10
 Swell Ht/Period 1 FT W

NOTHING ON SURFACE
 " ON METER

NOTHING ON FATHOMETER

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Bottom

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Sporophylls _____

Juvenile fronds _____

Holdfasts _____

Old holdfasts _____

Recruitment _____

Remarks _____

Community

Litter _____

Turf algae _____

Turf invert. _____

Shrub algae _____

Large invert. _____

Fishes _____

Disease _____

Sed. on rocks _____

Urchin status _____

Remarks _____

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 33°09'37.74"/117°21'7.54"

Extent 100M/100M

Density THIN 10/100 M²

Tissue color DARK YELLOW

% Frond comp. 20% Senile 60% Mature 20% Young Other

Disease NO

Encrustaceans 70%

Apical blades

Sediment on blades NO

Remarks FRONDS 2-3M

Subsurface

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Sporophylls

Juvenile fronds

Holdfasts

Old holdfasts

Recruitment

Remarks

Community

Litter

Turf algae

Turf invert.

Shrub algae

Large invert.

Fishes

Disease

Sed. on rocks

Urchin status

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 33°14'23"/117°26'46"

Extent _____

Density _____

Tissue color _____

% Frond comp. _____ Senile _____ Mature _____ Young _____ Other _____

Disease _____

Encrustaceans _____

Apical blades _____

Sediment on blades _____

Remarks _____

Subsurface

SM-1 34 FT
33 15.688 117 27.262NOTHING AT
THIS LOCATION

Date

3/13/7

Location

SANTA MARIA BARRI TA

Time

351

Wind/Direction

3 K W

Current

Weather

Hazy 12/15

UW Visibility

10 FT

Swell Ht/Period

1 FT

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Bottom

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Sporophylls _____

Juvenile fronds _____

Holdfasts _____

Old holdfasts _____

Recruitment _____

Remarks _____

Community

Litter _____

Turf algae _____

Turf invert. _____

Shrub algae _____

Large invert. _____

Fishes _____

Disease _____

Sed. on rocks _____

Urchin status _____

Remarks _____

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent 200 - 200 M 42 FT
 Density HIGH 20-30/100 m²
 Tissue color DARK YELLOW
 % Frond comp. 20 Senile 20 Mature 40 Young _____ Other _____
 Disease NO
 Encrustaceans 40%
 Apical blades 5%
 Sediment on blades NO
 Remarks FRONDS 2-3 M ON SURFACE
SEVERAL LARGE AREAS
1500 X 100 X
KELP COMING BACK LOTS
OF YOUNG KELP

Subsurface

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____
 Sporophylls _____
 Juvenile fronds _____
 Holdfasts _____
 Old holdfasts _____
 Recruitment _____

Remarks

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. _____
 Fishes _____
 Disease _____
 Sed. on rocks _____
 Urchin status _____

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent _____
Density _____
Tissue color _____
% Frond comp. _____ Senile _____ Mature _____
Disease _____
Encrustaceans _____
Apical blades _____
Sediment on blades _____
Remarks _____

Date 3/13/17
Location HORDON CANYON
Time 1625
Wind/Direction 0-3 E W
Current _____
Weather Hazy 0.5 miles
UW Visibility 10 FT
Swell Ht/Period 1 FT

Subsurface

NOTHING ON BOTTOM
OR ON SURFACE AT
LAT LONGS OR IN
VICINITY

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____
Encrustaceans _____
Disease _____
Sediment on blades _____
Sinking fronds _____
Grazed tissues _____

Bottom

Tissue color _____
Encrustaceans _____
Disease _____
Sediment on blades _____
Sinking fronds _____
Grazed tissues _____
Sporophylls _____
Juvenile fronds _____
Holdfasts _____
Old holdfasts _____
Recruitment _____

Remarks _____

Community

Litter _____
Turf algae _____
Turf invert. _____
Shrub algae _____
Large invert. _____
Fishes _____
Disease _____
Sed. on rocks _____
Urchin status _____

Remarks _____

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG:

SONB9

Extent

Density

Tissue color

% Frond comp.

Senile

Mature

Young

Other

Disease

Encrustaceans

Apical blades

Sediment on blades

Remarks

Subsurface

PENDLETON

1 PLANT ON

FATHOMETER

NOTHING ON

SURFACE

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Sporophylls

Juvenile fronds

Holdfasts

Old holdfasts

Recruitment

Remarks

Community

Litter

Turf algae

Turf invert.

Shrub algae

Large invert.

Fishes

Disease

Sed. on rocks

Urchin status

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent 250 X 250
 Density 416 ft 20-30/1000
 Tissue color DARK YELLOW
 % Frond comp. Senile 40% Mature 60%
 Disease NONE
 Encrustaceans 50%
 Apical blades 5% MOST
 Sediment on blades NO
 Remarks 2-4 m FRONDS

Subsurface

DARK YELLOW
DEPTH 50 FT SIDE EDGE
OFF CRUSTAL 2012 59 FT 100 BOUNDING TIPS

Date 3/29/2017
 Location SAVANA POINTE
 Time 0815
 Wind/Direction 3-4 K NE
 Current _____
 Weather CLC AIR
 UW Visibility 10 FT
 Swell Ht/Period 2-3 FT

100% Young _____ Other _____

50 FT DEPTH 53° 22.940 / 112° 36.740
300 MX 300
AREA 2 55 Y

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____
 Sporophylls _____
 Juvenile fronds _____
 Holdfasts _____
 Old holdfasts _____
 Recruitment _____

Remarks _____

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. _____
 Fishes _____
 Disease _____
 Sed. on rocks _____
 Urchin status _____

Remarks _____

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 33°23'40" 117°36'93"

Extent: 100 X 100

Density: MED

Tissue color: DARK YELLOW

% Frond comp. Senile NO 20% Mature 80% Young Other

Disease: NO

Encrustaceans: 50% / 10%

Apical blades: 5% 6 rows / 10 rows / 50% TIPS

Sediment on blades: NO / NO

Remarks: FRONDS - 2-4 M ON SURFACE

Date: 3/29/2017
 Location: WTPD Rocks
 Time: 8:50
 Wind/Direction: 4-5K NE
 Current: SE
 Weather: SUNNY CLEAR
 UW Visibility: 10 FT
 Swell Ht/Period: 3-4 FT W 8

Subsurface

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Sporophylls

Juvenile fronds

Holdfasts

Old holdfasts

Recruitment

Remarks

Community

Litter

Turf algae

Turf invert

Shrub algae

Large invert.

Fishes

Disease

Sed. on rocks

Urchin status

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent 150 x 100 M
 Density 10 W
 Tissue color DARK YELLOW
 % Frond comp. 10% Senile 50% Mature 40%
 Disease NO
 Encrustaceans 40% 80%
 Apical blades 50% 10% rest 70% tall
 Sediment on blades NO
 Remarks 2-4 m

Date 3/24/2017
 Location San Clemente
 Time 8:50
 Wind/Direction 3-4 K
 Current -
 Weather Sunny clear
 UW Visibility 10 FT
 Swell Ht/Period 2-3 FT

Subsurface

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____
 Sporophylls _____
 Juvenile fronds _____
 Holdfasts _____
 Old holdfasts _____
 Recruitment _____
 Remarks _____

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. _____
 Fishes _____
 Disease _____
 Sed. on rocks _____
 Urchin status _____

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 33°25.715'N / 117°38.951'W

Extent NO KELP ON SURFACE

Density NONE OFFATHOMETER

Tissue color

% Frond comp. Senile Mature

Disease

Encrustaceans

Apical blades

Sediment on blades

Remarks

HARD BOTTOM

Date 3/29/17
 Location CAPISTRANO BCH
 Time 9:05
 Wind/Direction 2-3K
 Current
 Weather CLEAR/SUNNY
 UW Visibility 10 FT
 Swell Ht/Period 2-3 FT

CIRCLE SEARCH

45 FT

CURRENT HOLDING KELP DOWN

LAT/LONGS

33.251679 / 117.39.010

APPEARS TO BE SOME OF

BOTTOM 5-6 PLANTS OF

SURFACE 9/10 TS OK FATHOMETER

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Sporophylls

Juvenile fronds

Holdfasts

Old holdfasts

Recruitment

Remarks

Community

Litter

Turf algae

Turf invert.

Shrub algae

Large invert.

Fishes

Disease

Sed. on rocks

Urchin status

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: _____

Extent: _____

Density: _____

Tissue color: _____

% Frond comp. _____ Senile _____ Mature _____

Disease: _____

Encrustaceans: _____

Apical blades: _____

Sediment on blades: _____

Remarks: _____

Subsurface: _____

UNDERWATER OBSERVATIONS

Midwater

Tissue color: _____

Encrustaceans: _____

Disease: _____

Sediment on blades: _____

Sinking fronds: _____

Grazed tissues: _____

Bottom

Tissue color: _____

Encrustaceans: _____

Disease: _____

Sediment on blades: _____

Sinking fronds: _____

Grazed tissues: _____

Sporophylls: _____

Juvenile fronds: _____

Holdfasts: _____

Old holdfasts: _____

Recruitment: _____

Remarks: _____

Date

Location

Time

Wind/Direction

Current

Weather

UW Visibility

Swell Ht/Period

Young

Other

Community

Litter: _____

Turf algae: _____

Turf invert: _____

Shrub algae: _____

Large invert: _____

Fish: _____

Disease: _____

Sed. on rocks: _____

Urchin status: _____

Remarks: _____

Bottom characteristics

NO KELP ON DEEP WATER

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent _____
 Density LOW
 Tissue color DARK YELLOW
 % Frond comp. _____ Senile _____ Mature _____
 Disease ND
 Encrustaceans HEAVY 25-100%
 Apical blades RAW
 Sediment on blades NO
 Remarks 3-4 M FRONDS

Subsurface

Date 3/24/17
 Location SOUTH CLARK POINT
 Time 9:30
 Wind/Direction 2-3K
 Current _____
 Weather CLEAR SUNNY
 UW Visibility 0-10 FT
 Swell Ht/Period 2-3 FT

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____
 Sporophylls _____
 Juvenile fronds _____
 Holdfasts _____
 Old holdfasts _____
 Recruitment _____

Remarks

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. _____
 Fishes _____
 Disease _____
 Sed. on rocks _____
 Urchin status _____

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent 150m L x 50m WIDE
 Density LOW - SCATTERED
 Tissue color DARK YELLOW
 % Frond comp. Senile 25% Mature 25%
 Disease NO
 Encrustaceans LOD &
 Apical blades NONE
 Sediment on blades NO
 Remarks _____

Subsurface

FRONTS 3-9 M

BED COVERS A LONG AREA BUT VERY THIN ABOUT 500 M L / 50m WIDE + DARRAW

Date

Location

Time

Wind/Direction

Current

Weather

UW Visibility

Swell Ht/Period

Young

Other

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____
 Sporophylls _____
 Juvenile fronds _____
 Holdfasts _____
 Old holdfasts _____
 Recruitment _____

Remarks

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. _____
 Fishes _____
 Disease _____
 Sed. on rocks _____
 Urchin status _____

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent 300M X 100 M W
 Density DENSE > 30/100M²
 Tissue color DARK YELLOW
 % Frond comp. Senile 75% Mature 25%
 Disease NO
 Encrustaceans 20%
 Apical blades FEW MOTTLED
 Sediment on blades NO
 Remarks DIVE 1205-1227

Date 3/29/17
 Location SOUTH LAGOON BEACH
 Time 1030
 Wind/Direction _____
 Current _____
 Weather _____
 UW Visibility 1000
 Swell H/Period _____

Subsurface

3-4M AT RESTORATION SITE - KELP
IN TWO DISTINCT BEDS BUT SCATTERED
THROUGHOUT REGION

UNDERWATER OBSERVATIONS

Midwater

Tissue color DARK YELLOW
 Encrustaceans LIGHT
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color DARK YELLOW
 Encrustaceans NO
 Disease NO
 Sediment on blades NO
 Sinking fronds NO
 Grazed tissues NO
 Sporophylls GOOD
 Juvenile fronds _____
 Holdfasts GOOD
 Old holdfasts NO
 Recruitment NONE

Remarks

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. NO
 Fishes GAR BAIT KILLER LARVAE
 Disease HALF MOON EATING HEAD
 Sed. on rocks NO
 Urchin status NONE

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent: 150m L BY 100m W, 1 DE
 Density: _____
 Tissue color: DARK YELLOW
 % Frond comp. NO Senile 30% Mature 30% Young _____ Other _____
 Disease: NO
 Encrustaceans: MOD - LIGHT
 Apical blades: 10% RESTORED
 Sediment on blades: NO
 Remarks: 2-3 M. L. FRONDS

Subsurface

UNDERWATER OBSERVATIONS

Midwater

Tissue color: _____
 Encrustaceans: _____
 Disease: _____
 Sediment on blades: _____
 Sinking fronds: _____
 Grazed tissues: _____

Bottom

Tissue color: _____
 Encrustaceans: _____
 Disease: _____
 Sediment on blades: _____
 Sinking fronds: _____
 Grazed tissues: _____
 Sporophylls: _____
 Juvenile fronds: _____
 Holdfasts: _____
 Old holdfasts: _____
 Recruitment: _____

Remarks

Community

Litter: _____
 Turf algae: _____
 Turf invert: _____
 Shrub algae: _____
 Large invert: _____
 Fishes: _____
 Disease: _____
 Sed. on rocks: _____
 Urchin status: _____

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent 200 m x 200 m
 Density 60 FT
 Tissue color DARK YELLOW
 % Frond comp. Senile 60% Mature 40%
 Disease NO
 Encrustaceans HEAVY 30% to 50% R. LESS
 Apical blades NO
 Sediment on blades NO
 Remarks 2-3 M FRONDS

Date 3/29/17
 Location HEISTER MAR AREA SOLAR
 Time 12:45
 Wind/Direction 2-3 K
 Current -
 Weather CLEAR BUNNY
 UW Visibility 10
 Swell Ht/Period 1-2 FT

Subsurface

OUTER EDGE OF BED

COUPLE DOZES
KELP 35 FT

33° 32' 00" 117.48 008

UNDERWATER OBSERVATIONS

Midwater

Tissue color DARK YELLOW
 Encrustaceans _____
 Disease _____
 Sediment on blades NO
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____
 Sporophylls _____
 Juvenile fronds _____
 Holdfasts _____
 Old holdfasts _____
 Recruitment _____

Remarks

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. _____
 Fishes _____
 Disease _____
 Sed. on rocks _____
 Urchin status _____

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: 33° 33.867 N 117° 50.228 W

Extent 600m x 200m WIDE

Density HEAVY

Tissue color

% Frond comp. Senile Mature

Disease NO

Encrustaceans 25%

Apical blades 5% GOOD NOT DAMAGED

Sediment on blades NO

Remarks 2-4 M ROUND LUNGS

Subsurface

UNDERWATER OBSERVATIONS

Midwater

Tissue color

Encrustaceans

Disease

Sediment on blades

Sinking fronds

Grazed tissues

Bottom

Tissue color DARK YELLOW

Encrustaceans 20%

Disease NO

Sediment on blades NO

Sinking fronds A FEW

Grazed tissues NO

Sporophylls GOOD

Juvenile fronds 6/19, 6/32, 5/12, 7/22

Holdfasts GOOD

Old holdfasts 1

Recruitment NONE

Remarks

Date 3/29/17

Location SICOTE H.M. AND M. H. 50

Time 12:00

Wind/Direction 2-3 K

Current

Weather SUNNY CLEAR

UW Visibility 10

Swell Ht/Period 1-2 FT

LARGE BED OFF
SICOTE H.M. AND IS BACK
1212-1222 42 FT

Community

Litter

Turf algae

Turf invert.

Shrub algae

Large invert. 2 PINK 6 IN BALANCE

Fishes

Disease

Sed. on rocks

Urchin status

47 FT

Remarks Bob - Kelp 43 ADULT

1 JUV

2 RECRUITS

CHARLENE 55 ADULTS

10 JUV

2 RECRUITS

Bottom characteristics

LARGE REEFS

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

Extent 150
 Density 20/100m²
 Tissue color DARK YELLOW
 % Frond comp. NO Senile NO Mature NO Young NO Other NO
 Disease NO
 Encrustaceans HEAVY 50%
 Apical blades 5-10% HAVE TIPS
 Sediment on blades NO
 Remarks 3-4M LONG FRONDS

Subsurface

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____

Bottom

Tissue color _____
 Encrustaceans _____
 Disease _____
 Sediment on blades _____
 Sinking fronds _____
 Grazed tissues _____
 Sporophylls _____
 Juvenile fronds _____
 Holdfasts _____
 Old holdfasts _____
 Recruitment _____

Remarks

Community

Litter _____
 Turf algae _____
 Turf invert. _____
 Shrub algae _____
 Large invert. _____
 Fishes _____
 Disease _____
 Sed. on rocks _____
 Urchin status _____

Remarks

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG: _____

Extent 150 x 100 MDensity MEDTissue color DARK YELLOW

% Frond comp. _____ Senile _____ Mature _____

Disease NOEncrustaceans 10-20%Apical blades A FewSediment on blades DO

Remarks _____

Date 3/22/17Location COLOWADEL MARTime 1700

Wind/Direction _____

Current _____

Weather _____

UW Visibility _____

Swell Ht/Period _____

_____ Young _____ Other

Subsurface FRONDS 3-4M LONG

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Bottom

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Sporophylls _____

Juvenile fronds _____

Holdfasts _____

Old holdfasts _____

Recruitment _____

Remarks _____

Community

Litter _____

Turf algae _____

Turf invert. _____

Shrub algae _____

Large invert. _____

Fishes _____

Disease _____

Sed. on rocks _____

Urchin status _____

Remarks _____

Bottom characteristics

CONDITION OF MACROCYSTIS BED

SIDE OBSERVATIONS

Kelp Canopy

LAT/LONG:

Extent NOTHING @ DEEP WATER

Density _____

Tissue color _____

% Frond comp. _____ Senile _____ Mature _____

Disease _____

Encrustaceans _____

Apical blades _____

Sediment on blades _____

Remarks _____

Subsurface _____

UNDERWATER OBSERVATIONS

Midwater

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Bottom

Tissue color _____

Encrustaceans _____

Disease _____

Sediment on blades _____

Sinking fronds _____

Grazed tissues _____

Sporophylls _____

Juvenile fronds _____

Holdfasts _____

Old holdfasts _____

Recruitment _____

Remarks _____

Date

Location

Time

Wind/Direction

Current

Weather

UW Visibility

Swell Ht/Period

Young

Other

Community

Litter _____

Turf algae _____

Turf invert. _____

Shrub algae _____

Large invert. _____

Fishes _____

Disease _____

Sed. on rocks _____

Urchin status _____

Remarks _____

Bottom characteristics