

ATTACHMENT 3

2002-2004 SOUTHERN CALIFORNIA COASTAL MARINE FISH CONTAMINANTS SURVEY

Field SOPs and Audit Reports

Prepared for:

U.S. Department of Commerce
National Oceanic and Atmospheric Administration

on behalf of the Natural Resource Trustees

U.S. Environmental Protection Agency-Region IX
San Francisco, California

- (1) Field Standard Operating Procedures
- (2) Overall Audit Report
- (3) Collection Audit Report
- (4) Health and Safety Plan

Field Standard Operating Procedures

This Standard Operating Procedure is intended to provide a step by step description of the procedures for collecting, measuring, packaging, and transporting fish obtained during the 2002 Montrose Settlements Restoration Program (MSRP) Fish Collection. The MSRP Fish Sampling Plan (SAP) contains additional information on the project.

1.1 LOCATION SELECTION

The goal of the 2002 MSRP Fish Collection and Analysis is to provide reliable data for the determination of contaminant levels in various species of fish offshore of Ventura, Los Angeles, and Orange Counties in California. This data will be used both to identify locations that could be suitable for constructing artificial reefs as part of the Restoration Program and to provide trustworthy information for the public about contaminant levels in fish caught for subsistence and recreational purposes. Segments for collection of different fish species have been identified between Dana Point and Ventura.

Nearshore segments are specified by linear boundaries. These are indicated both as latitude/longitude coordinates in decimal seconds of the boundary line endpoints, shown in Attachment 1 and as visual references on a map (Attachment 2). This SOP provides for accuracy of identifying locations on maps and for identification of locations during future sampling activities. Any location within 2 miles of shore and less than 120 ft deep within these boundaries is suitable for catching fish for a segment. The collector should aim for a location near the center of the segment.

Offshore segments are identified in Attachment 1 as a central point, a radius, and a depth range. Segments 23 and 24 have a radius of one km and a depth of less than 120 ft. Segments A-F have a radius of 0.5 km and a depth of less than 200 m. Any location within the circle that meets the depth requirements is suitable for catching fish for the segment.

At each location where sampling takes place, the location will be determined by GPS in latitude/longitude (NAD 83) in decimal minutes. Estimated accuracy is 2 meters. The collector will verify that this location is between the lines designated for that spot. The collection depth and latitude/longitude will be recorded on the field data sheet.

1.2 FISH COLLECTION PROCEDURES

Twenty-four different species or species groups of fish will be collected. These target fish and their acceptable size range are shown in Exhibit 1. These will be collected at 30 sites along the California coast between Ventura and Dana Point. Attachment 3 demonstrates the minimum species collection requirements at each site. Additional fish that are on the target species list and in the appropriate size range will also be kept. The maximum number of any species that will be kept at a particular site is 30 fish. Fifteen fish of a given species must be caught in a segment in order to meet the minimum collection requirements.

Four different groups of fish are targeted based on their primary habitats – these are hard bottom, soft bottom, hard/soft bottom, and pelagic. For this reason, a variety of fishing methods will be employed in each segment, and multiple fishing locations may be necessary within a segment. The primary collection methods are listed below. The method of collection will be recorded on the collection data sheet (Attachment 4) and on the field data sheet (Attachment 5). In all cases, fish will be carefully handled to minimize damage to individual fish. Fish that have had their skin ruptured will be returned to the sea.

The fish collectors will also be careful when handling fish in order to prevent injury to any personnel. California scorpionfish (*Scorpaena guttata*) and round rays (*Urolophus halleri*) have poisonous spines, which can inflict painful wounds. Sand bass (*Paralabrax nebulifer*), kelp bass (*Paralabrax clathratus*), and rockfish (*Sebastes* spp.) have strong dorsal spines, which can cause puncture wounds. California halibut (*Paralichthys californicus*) and barracuda (*Sphyraena argentea*) have sharp teeth. Care should be taken removing live fish from traps and nets. Fish will be euthanized as soon as possible to prevent injury to sample processors.

Gill net: The gill net will be anchored at each end and marked with surface buoys. The net will be left during the day, and overnight when necessary for collecting target species, and pulled daily to retrieve fish. The fish are picked out of the net by hand; suitable fish will be kept in an ice chest with blue ice for up to 24 hours until proper packaging and labeling. Other fish are returned to the sea.

Trawl net: The trawl net towed along the bottom for 5-30 minutes, with care taken to avoid snagging the net on the bottom. A trawl data sheet (Attachment 6) will be filled out for each trawl. All fish are alive when caught. Desired fish will be stored on blue ice in an ice chest for up to 24 hours until packaging, others will be returned to the sea.

Fish traps: Traps are baited and left on the bottom for up to 24 hours, then pulled and checked. Fish will be alive when caught. Desired fish will be stored on blue ice in an ice chest for up to 24 hours until packaging, others will be returned to the sea.

Hook and Line: This method may be used. Individual fish are caught; those of desired fish are kept and others are returned to the sea.

EXHIBIT 1

Acceptable Size Ranges for Collected Fish

Species	Species Code	Minimum Total Length (mm)	Maximum Total Length (mm)
HARD-BOTTOM SPECIES			
Opaleye	OP	165	400
Sargo	SA	170	350
Kelp bass	KB	305 ⁴	500
Surfperches – BF ¹	BF	150	360
Surfperches – WCF ¹	WCF	100 ²	200 ²
Rockfishes (sebastes spp.)	RO	200	350
California sheephead ²	CS	305 ⁴	540
HARD/SOFT-BOTTOM SPECIES			
Topsmelt	TO	130	240
Barred sandbass	BS	230 ⁴	500
Halfmoon	HA	210	330
California scorpionfish (Sculpin)	SC	255 ⁴	
White seabass	WS	200	500
Black croaker	BC	180	360
PELAGIC SPECIES			
Chub mackerel	CM	130	460
Pacific sardine	PS	150	220
Pacific barracuda ³	PB	720	900
Yellowtail ³	YE	550	940
SOFT-BOTTOM SPECIES			
White croaker	WC	160	300
Jacksmelt	JA	220	390
Yellowfin croaker	YC	200	380
California corbina	CC	260	520
California halibut	CH	560 ⁴	820
Shovelnose guitarfish	SG	500	1100
Queenfish	QU	120	260

Based on 1996-2000 RecFIN observed catch in Los Angeles, Ventura, and Orange Counties at shore-based sites. Minimum and maximum lengths are based on the middle 80% of observed catch from angler intercept surveys. RecFIN lengths are reported based on fork length, but RecFIN provides conversion factors for many species. Where they were not available, total length conversion factors were estimated from fish species with similar fin structures.

¹BF= benthic feeding; WCF= water column feeding. The “Surfperches - BF” complex includes the following benthic feeding species of surfperch (white seaperch, barred surfperch, calico surfperch, pile perch, black perch, rainbow seaperch, dwarf perch, striped seaperch and rubberlip seaperch). The “Surfperches - WCF” complex includes the following water column feeding species of surfperch (walleye surfperch, silver surfperch, spotfin surfperch, shiner perch and kelp perch).

²Values are based on available data for walleye and shiner perch. Other water-column feeding surfperch can be outside this range.

³Reported lengths are for nearshore catch from boats (0-3 miles), due to insufficient catch reported from shore-based modes.

⁴Minimum lengths are truncated at the State of California legal size limits.

1.3 FISH IDENTIFICATION AND MEASUREMENT

1.3.1 Species Identification

The Chief Field Scientist will oversee the fish identification process. For identification of rockfish species, Love (2002) and additional identification guides provided by the Trustees will be used. Miller and Lea (1972) will be used as the standard fish identification reference when identification is uncertain. In the event that a rockfish or surfperch is not positively identified to the species level, a notation will be made in the collection chart for that species group, a description of the colors and spines of the fish will be written in the comments section of the data sheet, and a digital photograph will be taken that includes the fish tag for future identification. (See below for additional information on fish tags.)

Following species determination, the staff person will verify that the fish is within the correct length category, as specified in Table 2 and using the procedure indicated in the following section.

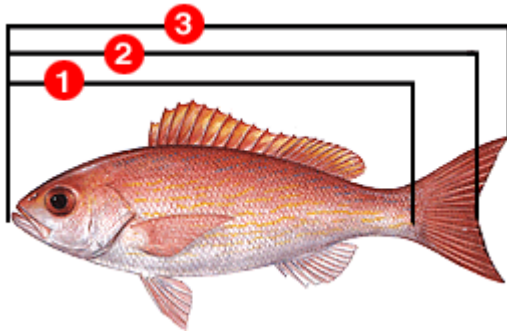
During the fish collection process, a “voucher collection” will be prepared that includes a fish representing each species collected. One fish of each species will be labeled, photographed, and frozen. For the surfperches, this will include walleye surfperch, shiner perch and black perch. Other surfperches and rockfishes are not expected to be collected in sufficient numbers to necessitate creation of a voucher collection. Each of these fish will be documented with a digital photograph that will be labeled with the species identification.

1.3.2 Measuring Length

The fish length will be determined on a measuring board with a linear scale (mm) with a rigid head piece. The board will be calibrated with a second measuring device prior to the fish collection. Before taking measurements of each fish, the measuring board will be visually inspected to ensure that the board is in good working order. The board will be rinsed with salt water between fish.

1. Place a fish on the measuring board on its right side, with its head facing the recorder's left.
2. Hold the head of the fish firmly against the head piece before measuring the fish.
3. Measure the total length to the nearest millimeter. Total length is defined as the length from the most anterior part of the fish to the tip of the longest caudal fin ray. (Exhibit 2 demonstrates the different fish measurements.)
4. Measure the standard length to the nearest millimeter. Standard length is defined as the length of a fish from the front of the upper lip to the posterior end of the vertebral column.
5. Note the fish length on the data sheet in the next fish number of that species.

Exhibit 2. Description of Different Length Measurements



(1) Standard Length

(2) Fork Length

(3) Total Length

1.3.3 Labeling

A three-part label has been developed for this collection effort. A sample label is shown in Exhibit 3. The right-most portion is stapled to the tail of the fish with a stainless steel staple. The middle portion is placed in the sample bag with the fish. The leftmost portion is retained as a stub.

1. After identification and measurement, staple the sequential species tag to the tail of the fish.
2. Verify that the tag and the row being filled out on the collection data sheet (Attachment 4) match.
3. If this is the first fish of a species from a site, write in the date, catch method, and GPS readings. Otherwise, continue a line down in each of these columns.

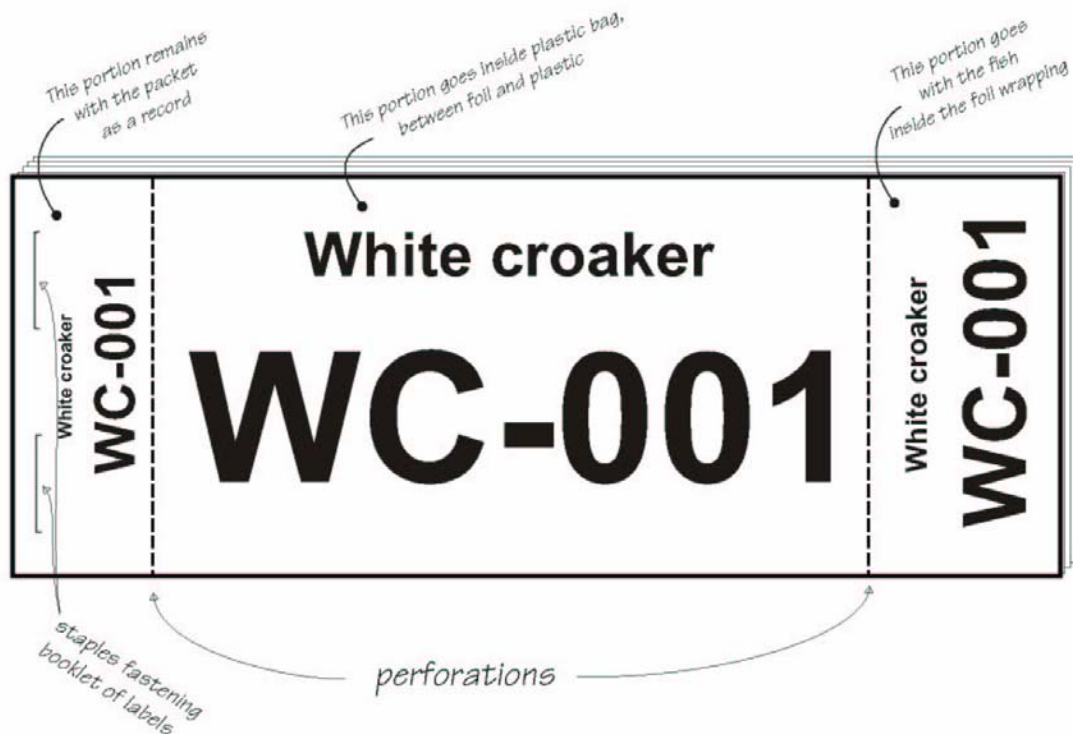
1.3.4 Gutting

All fish will be gilled and gutted prior to packaging, with the exception of topsmelt and Pacific sardine, which will be thoroughly rinsed and frozen whole. The gutting and gilling procedure will take place on a clean nylon surface, scrubbed with Alconox and rinsed with salt water between fish. The gilling and gutting will be done with stainless steel implements. Tools and hands/gloves will be rinsed in Alconox then salt water between each fish. Tools will also be thoroughly cleaned with Alconox then seawater after sharpening.

Fish will be gilled and gutted, with care taken to not damage fish or organs. For a right-handed operator, the fish will be placed on the gutting board with the head facing left. (Opposite for a left-handed operator.) The gut cavity is opened with a straight, shallow cut from the base of the gills to the anal opening. The gills and guts are removed with the fingers, and the cavity is washed thoroughly with salt water.

At selected sites¹, the fish entrails will also be preserved. These fish are thoroughly rinsed prior to removal of the viscera. During the gutting/gilling process, all entrails will be placed in a pre-cleaned 4- or 8-ounce jar. The jar will be labeled with the same number as the corresponding fish, with the additional notation of “V” for viscera. The jars from each site will be frozen and kept together in boxes. In the comments section on the data sheet for each of these fish, a notation will be made that the guts were preserved. (This does not need to be written individually for each fish; a line drawn down from the initial comment will be sufficient.)

Exhibit 3. Label Design



1.4 PACKAGING OF FISH

1.4.1 Packaging

All fish will be wrapped in aluminum foil and then sealed in plastic. The steps to be followed are listed below.

1. Place the fish on a clean section of aluminum foil.

¹ White croaker at sites 2, 5, 7, 10, 13/14, A (6 locations) and kelp bass at sites 2, 7, 13/14, (17 or 18) (4 locations).

2. Wrap the fish tightly in the foil.
3. Tape the middle section of the corresponding tag to the wrapped fish, and seal it in plastic.
4. Bagged fish are placed in the freezer in a larger open bag containing all fish of that species from that site.
5. The freezer temperature will be maintained at 0°F (-20°C) and checked with a thermometer kept in the freezer.
6. The processor will initial the sample data sheet when the data is transferred to the computer.

1.4.2 Packing storage boxes

The fish will be loaded into containers for transport to the onshore freezer storage area when the onboard freezer capacity is filled, if not earlier. The following process will be undertaken:

1. As each fish is loaded into a container, make a notation of the fish number (e.g. WC-002) on a packing list (Attachment 7) to be enclosed in the numbered container.
2. Additionally, mark the fish number on the chain of custody form (Attachment 8).

1.5 WIPE TESTS

Wipe tests will be performed during the collection process. These will be evaluated in the laboratory in the event of suspected contamination. At the beginning and end of each collection day, both gutting utensils and the gutting surface (the nylon board) will be wipe tested. One piece of chemically clean filter paper will be wiped over the utensils and another over the gutting surface. Each piece of filter paper will be tagged, wrapped, bagged, and frozen identically to the fish specimens. The tags will be labeled with the date, either “a.m.” or “p.m.,” and either “utensils” or “surface.”

1.6 SUBMISSION OF DATA SHEETS

All collection data sheets, field data sheets, and trawl sheets will kept in a secure location. Data will also be entered into the shipboard computer in Excel spreadsheets. These sheets will record the fish identification numbers collected at each segment on a given day, and provide a running tally of fish collected. The Excel files will be mailed electronically to the Contractor (Industrial Economics, attn: Ann Jones) each day.

In the event that shipboard communication is not available, every effort will be made to fax the data sheets to the Contractor on a daily basis from shore.

Attachment 1

Summary of Nearshore Segments for Fish Sampling and Selection Considerations

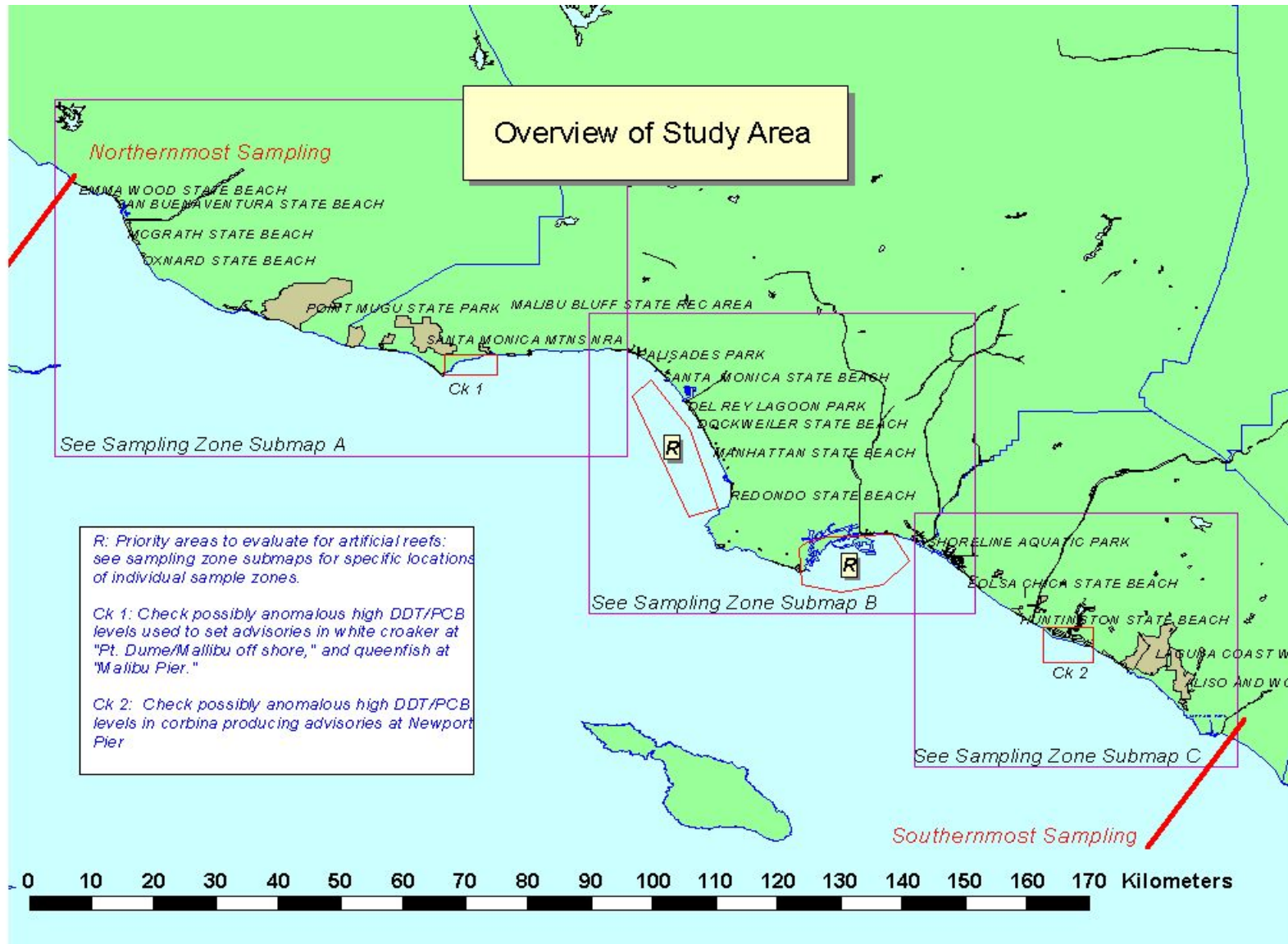
Segment	Segment Boundaries	Latitude and Longitude of Endpoints in Decimal Seconds				OEHHA Fishing Advisory
		Onshore Endpoint (N/S)		Offshore Endpoint (N/S)		
		Latitude	Longitude	Latitude	Longitude	
1	Ventura: Emma Wood Beach to San Buenaventura Beach	-119.31	34.28	-119.33	34.26	
		-119.27	34.25	-119.29	34.24	
2	Pt. Dume to West End of Malibu Lagoon Beach	-118.82	34.01	-118.84	33.99	
		-118.70	34.03	-118.70	34.01	
3	West End of Malibu Lagoon Beach to Las Flores	-118.64	34.04	-118.64	34.01	✓
4	Las Flores to West End of Santa Monica Beach	-118.52	34.03	-118.53	34.00	
5	Santa Monica Beach to El Segundo	-118.43	33.91	-118.45	33.91	
6	El Segundo to the South End of Manhattan Beach	-118.41	33.87	-118.43	33.86	
7	King Harbor Area: South End of Manhattan Beach to Redondo Beach	-118.39	33.82	-118.41	33.82	✓
8	Redondo Beach to Flat Rock Pt.	-118.41	33.80	-118.43	33.80	
9	Flat Rock Pt. to Palos Verdes Pt.	-118.43	33.77	-118.44	33.76	
10	Palos Verdes Pt. to Pt. Vicente	-118.41	33.75	-118.43	33.73	✓
11	Pt. Vicente to Long Pt.	-118.40	33.74	-118.40	33.72	✓
12	Long Pt. to Bunker Pt.	-118.35	33.72	-118.35	33.70	✓
13/ 14	Bunker Pt. to Pt. Fermin, including White Point	-118.29	33.70	-118.29	33.68	✓
15	Cabrillo/LA Breakwater: Ocean Side	-118.29	33.70	-118.25	33.70	✓
16	Cabrillo/LA Breakwater: Inland Side	-118.28	33.72	-118.25	33.72	✓
		-118.19	33.73	-118.17	33.71	
17	Pier J to Finger Piers/Shoreline Park	-118.18	33.76	-118.17	33.74	✓
18	Belmont Pier/ Seaport Village	-118.12	33.74	-118.13	33.73	✓
19	Seal Beach: Alamitos Bay Jetties to Anaheim Bay	-118.09	33.73	-118.09	33.71	
20	West End of Sunset Beach to Huntington Beach (Hwy. 39)	-117.97	33.64	-117.98	33.62	
21	Huntington Beach (Hwy. 39) to Pelican Pt.	-117.86	33.58	-117.88	33.57	✓
		-117.73	33.49	-117.75	33.47	
22	Dana Pt.: East End of Mussel Cove to East End of Doheny Beach	-117.67	33.45	-117.68	33.44	

Attachment 1 (continued)

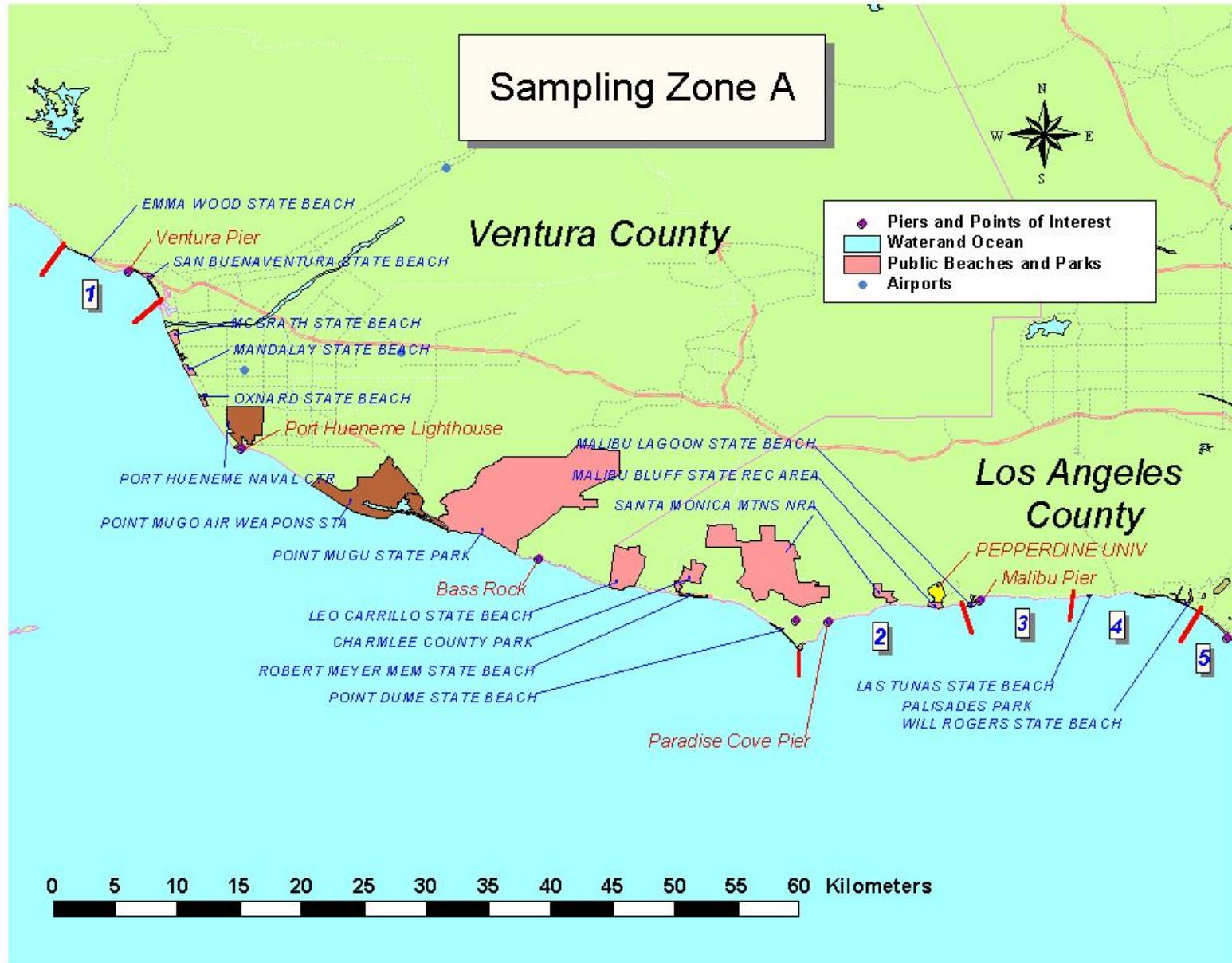
Summary of Offshore Segments for Fish Sampling and Selection Considerations

Segment	Name	Latitude	Longitude	Depth	Radius	OEHHA Fishing Advisory
23	Short Bank			120 ft	1 km	✓
24	Horseshoe Kelp	-118.2025	33.6678	120 ft	1 km	✓
A	Middle Breakwater (1991 OEHHA #17)	-118.21660	33.71285	100 m	0.5 km	✓
B	Approx. 2 miles offshore of Segment 15	-118.26784	33.67664	100 m	0.5 km	
C	Approx. 5 miles SE of Pt. Fermin	-118.24161	33.62650	100 m	0.5 km	
D	Approx. 7 miles S/SE of station A	-118.13093	33.61172	100 m	0.5 km	
E	West of Palos Verdes Pt. before Redondo Canyon	-118.48554	33.79108	100 m	0.5 km	
F	West of Station E on north side of Redondo Canyon	-118.51207	33.82051	200 m	0.5 km	

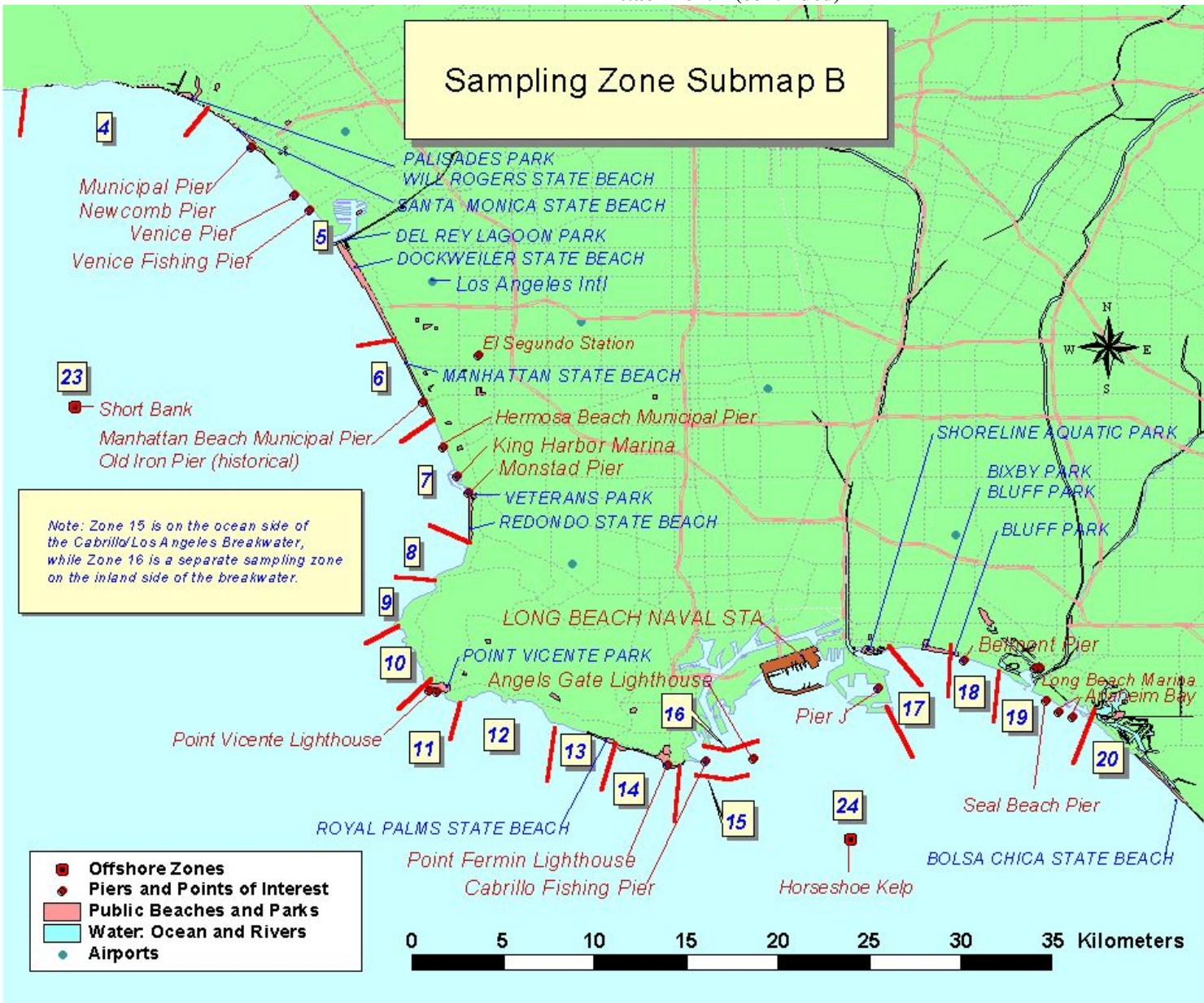
Attachment 2 Sampling Locations



Attachment 2 (continued)



Sampling Zone Submap B



4
Municipal Pier
Newcomb Pier
Venice Pier
Venice Fishing Pier

PALISADES PARK
WILL ROGERS STATE BEACH
SANTA MONICA STATE BEACH
DEL REY LAGOON PARK
DOCKWEILER STATE BEACH
Los Angeles Intl

23
Short Bank
Manhattan Beach Municipal Pier
Old Iron Pier (historical)

6
MANHATTAN STATE BEACH
El Segundo Station
Hermosa Beach Municipal Pier
King Harbor Marina
Monstad Pier
7
VETERANS PARK
REDONDO STATE BEACH

Note: Zone 15 is on the ocean side of the Cabrillo/Los Angeles Breakwater, while Zone 16 is a separate sampling zone on the inland side of the breakwater.

8
9
10
LONG BEACH NAVAL STA
POINT VICENTE PARK
Angels Gate Lighthouse
Point Vicente Lighthouse
11
12
13
14
15
ROYAL PALMS STATE BEACH
Point Fermin Lighthouse
Cabrillo Fishing Pier

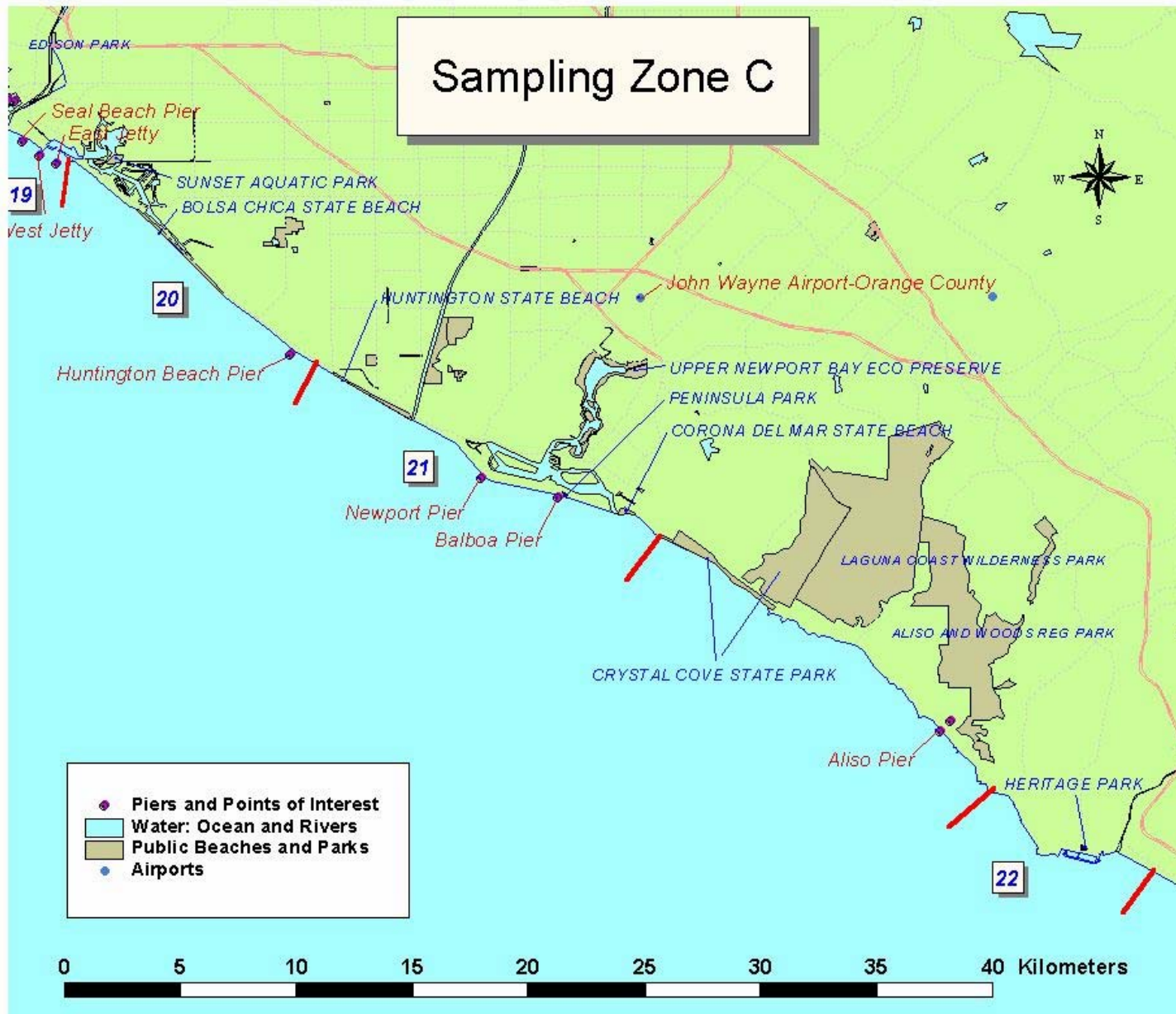
SHORELINE AQUATIC PARK
BIXBY PARK
BLUFF PARK
BLUFF PARK

17
18
19
20
Bentley Pier
Long Beach Marina
Anaheim Bay
Seal Beach Pier
24
Horseshoe Kelp
BOLSA CHICA STATE BEACH

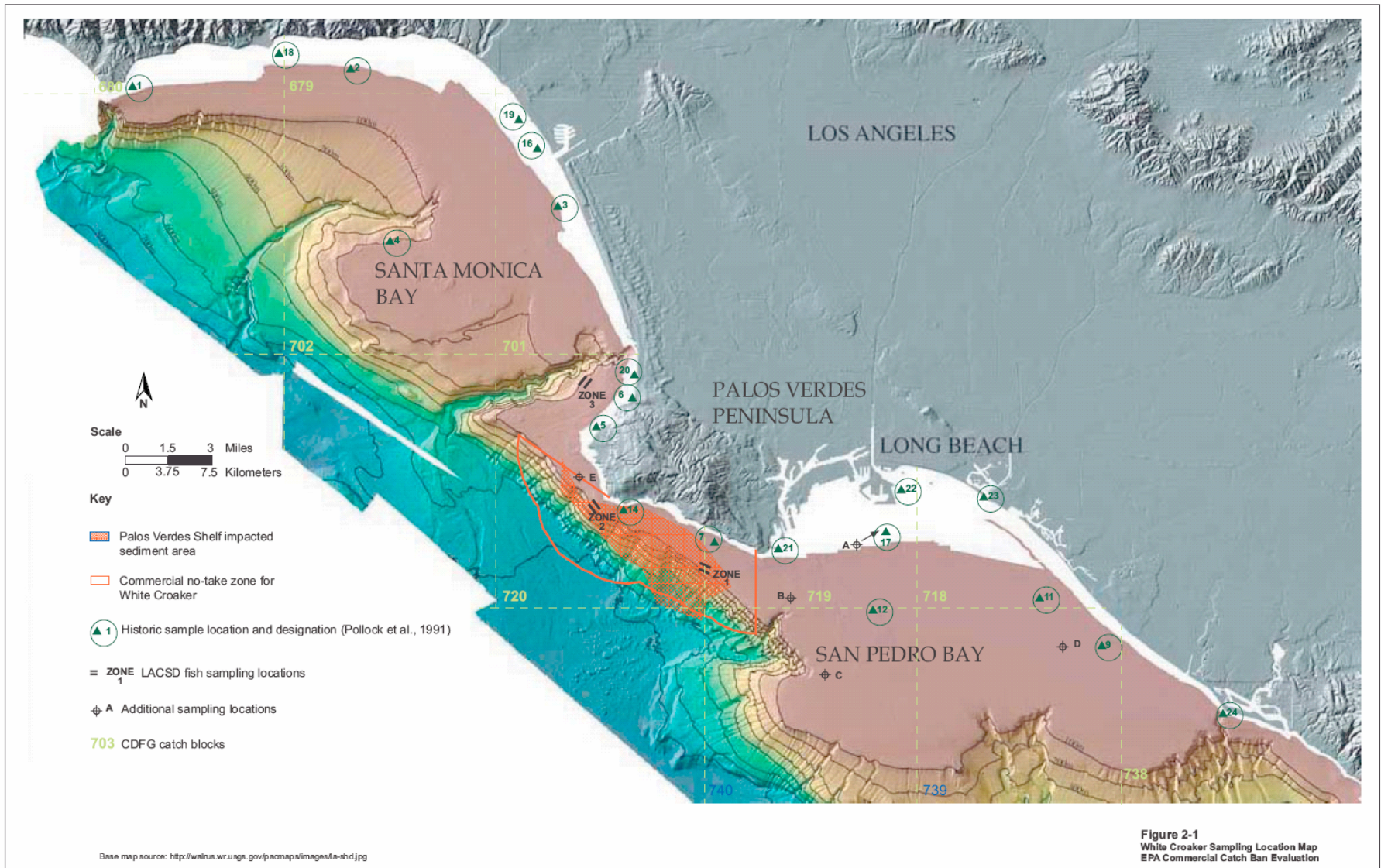
- Offshore Zones
- Piers and Points of Interest
- Public Beaches and Parks
- Water, Ocean and Rivers
- Airports

0 5 10 15 20 25 30 35 Kilometers

Attachment 2 (continued)



Attachment 2 (continued)



Attachment 3

Summary of Minimum Species/Sampling Segment Collection Requirements (All locations/species combinations marked with a character are required.)

Segment	Segment Name	Hard-Bottom Species						Hard/Soft-Bottom Species					Pelagic Species					Soft-Bottom Species								
		Opaleye	Sargo	Kelp Bass	Surperches - BF	Surperches-WCF	Rockfishes	California Sheephead	Barred Sandbass	Topsmelt	Halfmoon	California Scorpionfish	White Seabass	Black Croaker	Chub Mackerel	Pacific Sardine	Pacific Bonito	Pacific Barracuda	Yellowtail	White Croaker	Jacksnelt	Yellowfin Croaker	California Corbina	California Halibut	Shovelnose Guitarfish	Queenfish
1	Ventura																		P							
2	Pt. Dume to West End of Malibu Lagoon Beach	P		P	P			P											P							P
3	West End of Malibu Lagoon Beach to Las Flores													P	P	P	P		P							P
4	Las Flores to West End of Santa Monica Beach																		P							P
5	Santa Monica Beach to El Segundo	B	B	B	R			B	B	B			B						B	R	B	B	B	R	B	B
6	El Segundo to the South End of Manhattan Beach	R		R	R			R	R - 2 of 5 species					P	P	P	P		B	R	R	B	R	R	R	R
7	King Harbor Area	R	B	R	R			B		B			B						B	B	R	B	B	R	R	R
8	Redondo Beach to Flat Rock Pt.	R		R	R			R	R - 2 of 5 species										B	R	R	B	R	R	R	R
9	Flat Rock Pt. to Palos Verdes Pt.							P											C/R							
10	Palos Verdes Pt. to Pt. Vicente							P											B							
11	Pt. Vicente to Long Pt.													P	P	P	P		C/R							
12	Long Pt. to Bunker Pt.			P			P				P								B							
13/14	Bunker Pt. to Pt. Fermin, including White Point	P		P	P	P	P	P		P	P		P						B							
15	Cabrillo/LA Breakwater: Ocean Side ¹	R		B	B	B	B	B	B - 1 of 4 species			B		P	P	P	P		C/R	R	R	R	R	R	R	R
16	Cabrillo/LA Breakwater: Inland Side	B		B	B	B		B	B	B	B	B	B						C/R	B	R	R	B	B	B	B

Attachment 3

Summary of Minimum Species/Sampling Segment Collection Requirements (All locations/species combinations marked with a character are required.)

Segment	Segment Name	Hard-Bottom Species						Hard/Soft-Bottom Species						Pelagic Species					Soft-Bottom Species						
		Opaleye	Sargo	Kelp Bass	Surperches - BF	Surperches-WCF	Rockfishes	California Sheephead	Barred Sandbass	Topsmelt	Halfmoon	California Scorpionfish	White Seabass	Black Croaker	Chub Mackerel	Pacific Sardine	Pacific Bonito	Pacific Barracuda	Yellowtail	White Croaker	Jacksnelt	Yellowfin Croaker	California Corbina	California Halibut	Shovelnose Guitartfish
17	Pier J to Finger Piers at Shoreline Park	R		R	B	B		R	B		B	B	B						C/R	B	R	R	B	R	B
18	Belmont Pier /Seaport Village	R		R	B	B		B	B			B	B						C/R	B	B	B	R	B	B
19	Seal Beach	R		B	B	B		B	B - 2 of 5 species										B	R	R	R	B	R	R
20	West End of Sunset Beach to Huntington Beach (Hwy. 39)							P							P	P	P	P	C			P			
21	Huntington Beach (Hwy. 39) to Pelican Pt.																		C			P			
22	Dana Pt.							P											C			P			
23	Short Bank			P			P	P			P	P							P						
24	Horseshoe Kelp			P			P	P			P	P							C						
A	Middle Breakwater (1991 OEHHA #17)				P	P							P						C						P
B	Approx. 2 miles offshore of Segment 15																		C						
C	Approx. 5 miles SE of Pt. Fermin																		C						
D	Approx. 7 miles S/SE of station A																		C						
E	West of Palos Verdes Pt. before Redondo Canyon																		C						
F	West of Station E on north side of Redondo Canyon																		C						

Collection key: P: for Public Information Purposes; R: for Reef purposes; C: for Commercial Catch Ban purposes; B: for both Public Information and Reef Purposes.

1. Advisories at Segment 15 are based on the Los Angeles/Long Beach Harbor and Los Angeles/Long Beach Breakwater (ocean side) advisories from OEHHA. Segment 15 is located on the Palos Verdes shelf side of the Breakwater advisory and thus is expected to have similar or higher contamination levels.

Attachment 4. Collection Data Sheet (Ken is currently preparing latest version)

Montrose Settlements Restoration Program and EPA Fish Contamination Survey

Date: _____

Common Name: _____

Recorder: _____

Species Name: _____

Segment: _____

Tag Number	Total Length (mm)	Std Length (mm)	Catch Method	Latitude	Longitude	Comments	Entry Pers.

Comments:

Attachment 6. Trawl Data Sheet

Net Deployment

Depth in Meters

Segment	Date	Rep
Net Over	Time	Depth
Latitude		Longitude
Trawl Start	Time	Depth
Latitude		Longitude
Trawl End	Time	Depth
Latitude		Longitude
Net on Deck	Time	Depth
Latitude		Longitude

Net Deployment

Depth in Meters

Segment	Date	Rep
Net Over	Time	Depth
Latitude		Longitude
Trawl Start	Time	Depth
Latitude		Longitude
Trawl End	Time	Depth
Latitude		Longitude
Net on Deck	Time	Depth
Latitude		Longitude

Attachment 8. Chain of Custody.

**Chain of Custody Record
Montrose Settlement Restoration Program Fish Collection**

Container Number: _____.

Page: ___ of ___

Collector: SeaVentures for Industrial Economics, Inc.

Contact Information: Ken Nielsen; 949-637-2433

Shipping Date: _____

Sample Number	Date Collected	Preservation	Comments

Total Number of Fish: _____

Relinquished by: _____ Signature Print Name/Organization Date Time	Accepted by: _____ Signature Print Name/Organization Date
Relinquished by: _____ Signature Print Name/Organization Date Time	Accepted by: _____ Signature Print Name/Organization Date
Relinquished by: _____ Signature Print Name/Organization Date Time	Accepted by: _____ Signature Print Name/Organization Date

Sample Location and Receipt Information:

Attachment 9. Special Materials

Waterproof paper:

Dura/Copy™

-tear proof, heat stable, moisture repellent, soil and dust-resistant

-suitable for black and white or color plain paper copiers

J.L. Darling Corporation

2614 Pacific Highway East

Tacoma, WA 98424-1017

(253)922-5000

Stainless steel staples:

Monel staples, nickel-copper alloy

-suitable for use with regular handheld staplers

Talas Archival Supplies

<http://www.talas-nyc.com/>

Plastic sealer



TECHNICAL MEMORANDUM

DATE: September 19, 2002
TO: Mike Donlan, Industrial Economics, Inc.
FROM: Ann Bailey
PROJECT NO: C6328-4
SUBJECT: **Montrose Settlements Restoration Program**
Field Audit of Fish Collection

On August 21, 2002, I performed an audit of the field activities and procedures on board the M/V Early Bird owned and operated by Seaventures, Inc. of Dana Point, CA. The field investigators were implementing the *Montrose Settlements Restoration Program Fish Sampling Plan*, May 24, 2002. Additional documents specific to the field operations are: *Field Standard Operating Procedures* for the Montrose Settlements Restoration Program (MSRP) fish collection, and the *MSRP Fish Sampling Health and Safety Plan*, August 4, 2002.

The audit started with a meeting on board the M/V Early Bird at the California Yacht Marina (Cabrillo Marina) near San Pedro, CA. I met with Ann Jones, Industrial Economics, Inc. and the Seaventures personnel: Ken Nielsen (Boat Captain), Pete Hague (Chief Field Scientist), Bob Lohrman, and Jim Vetter. Dan Heilprin (Observer), fisheries biologist with SAIC, was also on board providing quality assurance oversight of the fish identification. Attached are an Audit Plan form and two field checklists that were used during my audit to document the items and procedures reviewed during my visit.

Prior to leaving the dock, the Health and Safety Plan was reviewed and signed off by all project personnel. The boat was clean and well organized with adequate storage and equipment. The boat crew was experienced, and had reviewed the written field procedures for the project.

Fish recovery by trawl net, gill net, fish traps, and hook and line was observed. Fish were sorted and measured, then gutted, wrapped and placed in on-board freezers. Fish were handled in a careful and efficient manner.

As this was the first day of sampling, the field SOPs were reviewed, and possible changes and refinements discussed with the field crew. The following changes to the field SOPs were implemented with my agreement:

- The “voucher collection” will not be preserved in formalin, but will be photographed then frozen.
- Not all fish will be gilled and gutted. The following species will be rinsed with salt water, wrapped whole, then frozen: Topsmelt and Pacific sardine.
- Aluminum foil will not be laid down on the nylon cutting board. Instead, the nylon cutting board will be scrubbed with the Alconox solution, then rinsed with salt water between fish.

Two large chest freezers were located on board the boat. It was requested that thermometers be purchased and the temperature be verified (-20 degrees C \pm 10).

Chain of Custody procedures were reviewed with Pete Hague and Ann Jones. It was agreed that a Packing List would not be necessary, but that the Chain of Custody would serve as an inventory each numbered container. The original signed Chain of Custody should be copied then place in the appropriate container at the storage facility.

Overall, the field operations were found to be well organized and the field crew experienced in fish collection. Except as noted above, the MSRP Field Sampling Plan and field SOPs were being followed, and fish collection was proceeding at a reasonable rate.

NOAA FISH COLLECTION QA/QC TECHNICAL MEMORANDUM

TO: Mike Donlan (IEC)
FROM: Danny Heilprin

DATE: December 2, 2002

This report summarizes Quality Assurance/Quality Control (QA/QC) methods and results from field audits of the NOAA fish sampling off the southern California coast between August and November 2002.

The following sections provide information on QA Methods, Results, and a Discussion on any corrective action necessary during the audits.

Methods

Fish collection QA audits were performed on August 21, 29, and November 20 on the M/V Early Bird. Data sheets (QA Checklists) from each QA audit are provided in Appendix A. The checklist verified that the approved Standard Operating Procedures (SOP) for fish collections were followed by the collection crew. Components of the checklist included checking that the SOP was located on the collection vessel, documenting that SOPs were followed correctly and whether any corrective action was necessary, and making sure that fish were identified and processed according to the approved SOP.

In addition, the freezer facility was visited on October 16 to verify that fish were being stored in a reliable and secure location and that the proper chain of custody (COC) forms were located in each storage container. The on-site warehouse supervisor provided information on daily temperature logs and response procedures for power losses. The freezer facility is:

P&O Cold Logistics
19840 Rancho Way
Dominguez Hills, CA 90221
(310) 632-6265 ext. 1128
Contact: Jose Romero (Warehouse Supervisor)

Results

August 21, 2002

An audit of fish collection procedures and sample processing was conducted onboard the M/V Early Bird, owned and operated by Seaventures, Inc. (Dana Point, CA). The audit started with a meeting on the vessel attended by Ann Jones (Industrial Economics, Inc.), Ken Nielsen (Seaventures - Boat Captain), Pete Hague (Seaventures - Chief Field Scientist), Bob Lohrman, and Jim Vetter (Seaventures - field crew), and Ann Bailey (Lead QA Officer - Ecochem). SOPs were reviewed and some minor revisions noted. The health and safety plan was also reviewed.



Fish collection gear used included trawls, traps, and hook-and-line. Fish were identified and sorted by species, measured, and then processed (gutted, wrapped, and placed in on-board freezers). A total of five fish species were collected and processed. All procedures for collection, identification, and processing were followed according to the SOP (Appendix A).

August 29, 2002

An audit of fish collection procedures and sample processing was conducted onboard the M/V Early Bird. Personnel present included Ken Nielsen (Seaventures - Boat Captain), Pete Hague (Seaventures - Chief Field Scientist), Bob Lohrman, and Jim Vetter (Seaventures – field crew).

Gear methods used during this survey included trawls, gill nets, and hook-and-line. A total of three fish species were collected and processed on this date. All collection, identification, and processing procedures were followed according to the approved SOP (Appendix A). No corrective actions were required.



October 16, 2002

An audit of the freezer storage facility was conducted at P&O Cold Logistics. Personnel present included Ken Nielsen and Bob Lohrman (Seaventures). All documentation such as chain-of-custody (COC) forms were complete and located with each fish sample container. Jose Romero, the on-site Warehouse Supervisor, assured me that only food products were located in the freezer facility (no chemicals) and that there is no potential for contamination of the fish samples.



Mr. Romero also discussed the emergency generators and procedures that the facility uses to maintain freezer temperatures in the event of a power loss. Daily freezer logs are maintained by P&O and available on request. The fish samples are located in a secure (locked) cage that is unique to this project. No other vendor has cages in the P&O facility, so there is no chance that the NOAA fish samples could be removed or confused with any other product (see attached notes in Appendix A). Procedures and protocols followed by the P&O Cold Logistics met expectations and are consistent with storage company standards.

November 20, 2002

An audit of fish collection procedures and sample processing was conducted onboard the M/V Early Bird. Personnel present included Ken Nielsen (Seaventures - Boat Captain), Pete Hague (Seaventures - Chief Field Scientist), and Otto Elliot (Seaventures – deckhand).

Gear methods used during this survey included trawls, gill nets, and traps. Only one fish species was collected and processed on this date. All collection, identification, and processing procedures were followed according to the approved SOP (Appendix A). No corrective actions were required.



Discussion

Overall, field operations were well organized, with an extremely experienced field crew during fish collection, identification, and processing. In addition, all procedures and protocols detailed in the Field Sampling Plan and field SOP were followed. Chain-of-Custody forms were filled out correctly and were co-located with sample containers at the freezer facility (P&O Cold Logistics).

The P&O facility had the appropriate security and emergency plan in place to deal with any potential power loss. P&O maintains daily temperature logs and has those available for review if requested. The samples were being maintained in a very organized and clean location, away from all other vendors. There is no possibility of chemical contamination at the P&O facility because they only store food products.

No corrective actions were necessary in any part of the sampling collection or processing.



**APPENDIX A
NOAA FISH QA/QC
COMPLETED DATA SHEETS**

**MONTROSE SETTLEMENTS RESTORATION PROGRAM
FISH SAMPLING HEALTH AND SAFETY PLAN**

TRUSTEE REVIEW DRAFT -- Confidential

4 Aug 2002

Prepared for:

NOAA Damage Assessment Center and the
Montrose Settlements Restoration Program

Prepared by:

Seaventures, Inc.
Dana Point, CA

Introduction

Seaventures, Inc. is pleased to provide the initial field fish collections for the Montrose Settlements Restoration Program. The primary goal of the sampling plan is to provide scientifically defensible measures of the current geographic extent and severity of DDT and PCB contamination in local sports and subsistence fish. Field sampling will commence on or about August 15, 2002 and continue into September. All sampling sites, methods, and protocols have been determined by a scientific review board and are delineated in the MONTROSE SETTLEMENTS RESTORATION PROGRAM: FISH SAMPLING PLAN, 20 May 2002 (Draft). Sampling locations are listed in Appendix 1. Additional background and sampling information can be found in the FISH SAMPLING PLAN.

Vessel Descriptions

The M/V Early Bird is a 36 foot fiberglass boat solely owned and operated by Seaventures, Inc. and used to conduct ocean monitoring and research program. The M/V Early Bird will be the primary sampling platform, daily sample processing and storage location, and quarters for Seaventures personnel. It is powered by twin diesel engines and has a generator to provide for electrical power. The vessel is equipped with hydraulic deck and boom winches and a hydraulic bow winch to recover anchor gear. The Early Bird has a large aft deck with several saltwater wash-down hoses for sample sorting and an open bridge to facilitate communications with deck crew. In addition, there is an enclosed cabin to store electronic equipment and personal effects. Checklist of safety equipment required

An additional 14 ft fiberglass skiff will be employed to assist in sampling operations within harbors and in calm conditions offshore, as necessary.

Seaventures Personnel

Ken Nielsen and Bob Lohrman will be the operators of the M/V Early Bird. Both are Coast Guard licensed operators with over twenty-five years of experience in similar operations. Each will participate in sample collections and processing as necessary. Jim Vetter and Pete Hague will serve as crew, skiff operators, and sample collectors and processors. In addition, Pete Hague will serve as lead field scientist.

Safety Equipment

The M/V Early Bird and skiff comply with all Coast Guard regulations. Safety gear includes personal flotation devices (PFDs), Type II PFD work vests, throwable PFD life rings and seat cushions, boat hooks, wearable strobe lights (for nighttime sampling), and a Coast Guard approved Emergency Position Indicator Beacon (EPIRB).

A standard, commercially available first aid kit, containing, but not limited to, bandages, antibiotic ointments, compresses, splints, and wraps is stored and regularly maintained aboard the M/V Early Bird.

Communications

The M/V Early Bird is equipped with a primary and back-up marine band two-way radio. The radio will be on and monitored at all times while the vessel is under way, or while sampling is being performed. Channels monitored will be 11 (for ship to ship, skiff, or shore communications) and 16 (ship or Coast Guard hailing). The skiff is provided with a hand-held marine radio tuned to working channel 11. All communications to the skiff will be routed through the Early Bird.

The Early Bird will have a dedicated cell phone for project telephone and wireless email communications. In addition, Seaventures personnel have individual cell phones, as listed below and in Appendix 2.

	Cell Phone	email address
M/V Early Bird	(949) 939-0205	earlybird@starlinksystem.net-g.net
Ken Nielsen	(949) 637-2433	fishermansalley@cox.net
Bob Lohrman	(949) 500-1615	lohrmanline@cox.net
Jim Vetter	(949) 547-1328	
Pete Hague	TBA	pjhague@yahoo.com

Sampling Operations and Float Plan

Sampling operations. Sampling operations and plans will be discussed each day prior to commencing work. Sampling activities may include placement and retrieval of fish traps and gill nets, hook and line fishing, and otter trawling. Many of these activities will be performed in the skiff. Only Seaventures personnel will operate and sample from the skiff. Otter trawling, in which a 25 ft wide net will be dragged along the ocean bottom, will be done aboard the Early Bird. Personnel from other companies or agencies may observe such activities safely from the bridge, forward of the deck winch, or other locations identified by Seaventures personnel. All personnel should remain clear of the stern of the Early Bird while the vessel is underway. The Early Bird is equipped with high power, halogen floodlights, which illuminate the stern of the vessel during nighttime sampling operations. Seaventures personnel operating the skiff during periods of darkness will wear PFD work vests equipped with waterproof lights, and will have portable waterproof flashlights in the skiff. All work done along the stern of the Early Bird or in the skiff at night will be performed in teams of at least two members. Seaventures personnel will inform all observers of the type and location of safety gear, as well as the anticipated activities for the day, during a pre-departure safety “tailgate” meeting.

Sampling Locations. Sampling locations will range geographically from Ventura in the north to Dana Point in the south. Ports and harbors that may be used to tie up at night, for refuge in case of inclement weather, or in case of an emergency include Ventura Harbor or Channel Islands Harbor, Marina del Rey or King Harbor, California Yacht Marina (Cabrillo Marina) in the Port

of Los Angeles, Long Beach Marina, and Dana Point Marina. Harbor office, Coast Guard, and emergency contacts for each location are listed in Appendix 3. Sampling operations in Segments 2, 3, and 4 (northern Santa Monica Bay) may be optimized by anchoring overnight outside of shore facilities in the lee of Point Dume if weather permits.

Weather. Benign weather conditions are expected throughout the sampling period, but temperatures may vary up to 30 degrees during a day due to wind, fog, and sun. Sampling may also occur at night. Seaventures personnel will have available appropriate sampling clothing, including rubber deck boots, rain pants and jackets, and layers of insulating clothes. Spare gear may be available to observers, but to ensure fit and availability, it would be prudent to bring personal gear and clothing. All personnel should also be aware of the potential for sunburn at all times, even during cloudy or cool temperature periods, and the potential heat exhaustion during warm periods. Inclement weather is discussed below.

Float Plans. The proper authorities (Harbor offices, ship traffic control stations, Coast Guard, etc.) will be notified of sampling activities within all ports and harbors. An agent identified by the Trustees will be given updates of sampling status and anticipated operations on a frequency determined by the Trustees or their agent (e.g.: daily). Departures or deviations from the Fish Sampling Plan will be made only after consultation and agreement with the Trustees and/or review board members.

Hazards. There are many hazards associated with working aboard small vessels. These include potential persons overboard; slips, trips, and falls; lines and sampling gear on deck; instability of persons and objects due to the motion of the vessel while underway or from waves and currents.

Person Overboard. If a person falls overboard at sea, personnel witnessing the accident should immediately throw the life ring over the side while simultaneously calling out "Man Overboard" to the captain. One witness is to maintain visual contact with the person in the water while tracking his/her position by continually pointing at him/her. The captain will then maneuver the vessel back to pick up the person in the water as quickly as possible. If the boat is not underway, a life ring with an attached 50 ft line is thrown to the person and used to assist him/her to the swim-ramp at the stern of the vessel. If the boat is at anchor when the person goes over the side, the witness is to notify the captain by calling out "Man Overboard", and throw the person a line to assist him/her to the swim-ramp. The skiff may also assist in retrieving any persons in the water if practical. In all man overboard situations the captain is to be notified and, in case the person overboard is hurt or unconscious, another person is to prepare for and enter the water to assist if necessary.

Incidents can be prevented by carefully moving about the vessel and securing objects in a manner that they will not become dislodged. Care must be taken to have a familiarity with the vessel: layout of handrails, ladders, and doors; and location of safety gear. Fish sample processing, which includes the use of sharp knives, will be limited to areas delineated by Seaventures personnel.

Certain species of fish may present hazards. California scorpionfish (*Scorpaena guttata*) and round rays (*Urolophus halleri*) have poisonous spines, which can inflict painful wounds. Sand bass (*Paralabrax nebulifer*), kelp bass (*Paralabrax clathratus*), and rockfish (*Sebastes* spp.) have strong dorsal spines, which can cause puncture wounds. California halibut (*Paralichthys californicus*) and barracuda (*Sphyraena argentea*) have sharp teeth. Care should be taken removing live fish from traps and nets. Fish will be euthanized as soon as possible to prevent injury to sample processors.

Emergency phone numbers

Sampling Locations. Telephone numbers of local emergency service providers in the vicinity of ports and harbors near sampling locations are listed in Appendix 3.

Seaventures Personnel. Names and emergency contacts for Seaventures crew:

Ken Nielsen:	Maureen Nielsen	home (949) 492-3143	
Bob Lohrman:	Bernice Lohrman	home (949) 249-1515	cell (949) 887-5224
Jim Vetter:	Kate Kotner	home (949) 661-6831	
Pete Hague:	Sarah Bryant	home (831) 645-9501	work (831) 393-7892

Inclement Weather

Inclement weather severe enough to disrupt sampling operations is not anticipated, given sampling locations and time of year. However, National Weather Service broadcasts will be monitored daily. Daily sampling activities may be modified based on weather reports or weather conditions experienced while on-site. For instance, offshore sampling may be curtailed due to forecasted or unanticipated high wind. Sampling, however, may then resume at a near-by location that may provide more shelter. In all cases, sampling will occur only under conditions deemed safe by all Seaventures personnel.

Appendix 1. Sampling locations and probable harbor to be used for overnight stays.

Segment	Segment Name	Harbor
1	Ventura	Ventura/Channel Islands
2	Pt. Dume to West End of Malibu Lagoon Beach	Marina del Rey/Point Dume
3	West End of Malibu Lagoon Beach to Las Flores	Marina del Rey/Point Dume
4	Las Flores to West End of Santa Monica Beach	Marina del Rey/Point Dume
5	Santa Monica Beach to El Segundo	Marina del Rey
6	El Segundo to the South End of Manhattan Beach	Marina del Rey
7	King Harbor Area	Marina del Rey/King Harbor
8	Redondo Beach to Flat Rock Pt.	Marina del Rey/King Harbor
9	Flat Rock Pt. to Palos Verdes Pt.	California Yacht Marina/King Harbor
10	Palos Verdes Pt. to Pt. Vicente	California Yacht Marina/King Harbor
11	Pt. Vicente to Long Pt.	California Yacht Marina
12	Long Pt. to Bunker Pt.	California Yacht Marina
13	Bunker Pt. to Royal Palms	California Yacht Marina
14	Royal Palms to Pt. Fermin	California Yacht Marina
15	Cabrillo/LA Breakwater: Ocean Side	California Yacht Marina
16	Cabrillo/LA Breakwater: Inland Side	California Yacht Marina
17	Pier J to Finger Piers at Shoreline Park	California Yacht Marina/Long Beach Marina
18	Belmont Pier /Seaport Village	California Yacht Marina/Long Beach Marina
19	Seal Beach	California Yacht Marina/Long Beach Marina
20	West End of Sunset Beach to Huntington Beach (Hwy. 39)	Dana Point/Long Beach Marina
21	Huntington Beach (Hwy. 39) to Pelican Pt.	Dana Point
22	Dana Pt.	Dana Point
23	Short Bank	Marina del Rey
24	Horseshoe Kelp	California Yacht Marina

Other locations may be added to the sampling period at the discretion of the Trustees

Appendix 2. List of cell phone numbers and email addresses of Seaventures Personnel.

	Cell Phone	email address
M/V Early Bird	(949) 939-0205	earlybird@starlinksystem.net-g.net
Ken Nielsen	(949) 637-2433	fishermansalley@cox.net
Bob Lohrman	(949) 500-1615	lohrmanline@cox.net
Jim Vetter	(949) 547-1328	
Pete Hague	TBD	pjhague@yahoo.com

Appendix 3. List of telephone numbers of emergency service providers in Ventura Harbor/Channel Islands Harbor, King Harbor and Marina del Rey.

DIAL 911 IN ALL LOCATIONS IN CASE OF EMERGENCIES

VENTURA HARBOR

Harbor Master/ Harbor Patrol	(805) 642-8618
Coast Guard	(562) 980-4444
Police Department	(805) 339-4400
Nearest Hospitals/Clinics:	
Ventura County Medical Center	(805) 652-6000
Community Memorial Hospital	(805) 652-5011

CHANNEL ISLANDS HARBOR

Harbor Master/ Harbor Patrol	(805) 382-3007
Coast Guard	(562) 980-4444
Ventura County Sheriff's Department	(805) 654-2311
Nearest Hospitals/Clinics:	
St. John's Hospital	(805) 988-2500

KING HARBOR

Harbor Master/ Harbor Patrol	(310) 318-0632
Coast Guard	(562) 980-4444
Redondo Beach Harbor Police and Fire	(310) 379-5416
Redondo Beach Police Department	(310) 379-5411
Nearest Hospitals/Clinics:	
South Bay Medical Center	(310) 376-9474

MARINA DEL REY

Dept. of Beaches and Harbors	(310) 305-9595
Coast Guard	(562) 980-4444
Sheriff's Harbor Patrol	(310) 823-7762
Nearest Hospitals/Clinics:	
Daniel Freeman Hospital	(310) 823-8911

**Appendix 3. List of telephone numbers of emergency service providers in California
Yacht Marina (Cabrillo Marina)/Port of Los Angeles, Long Beach
Harbor/Port of Long Beach, and Dana Point Harbor.**

DIAL 911 IN ALL LOCATIONS IN CASE OF EMERGENCIES

CALIFORNIA YACHT MARINA (CABRILLO MARINA)/PORT OF LOS ANGELES

California Yacht Marina Office	(310) 732-2252
California Yacht Marina Security	(310) 732-2249
Coast Guard	(562) 980-4444
Los Angeles Port Police	(310) 732-3500
San Pedro Police Department	(310) 548-7605
Nearest Hospitals/Clinics:	
San Pedro Peninsula Hospital	(310) 832-3311

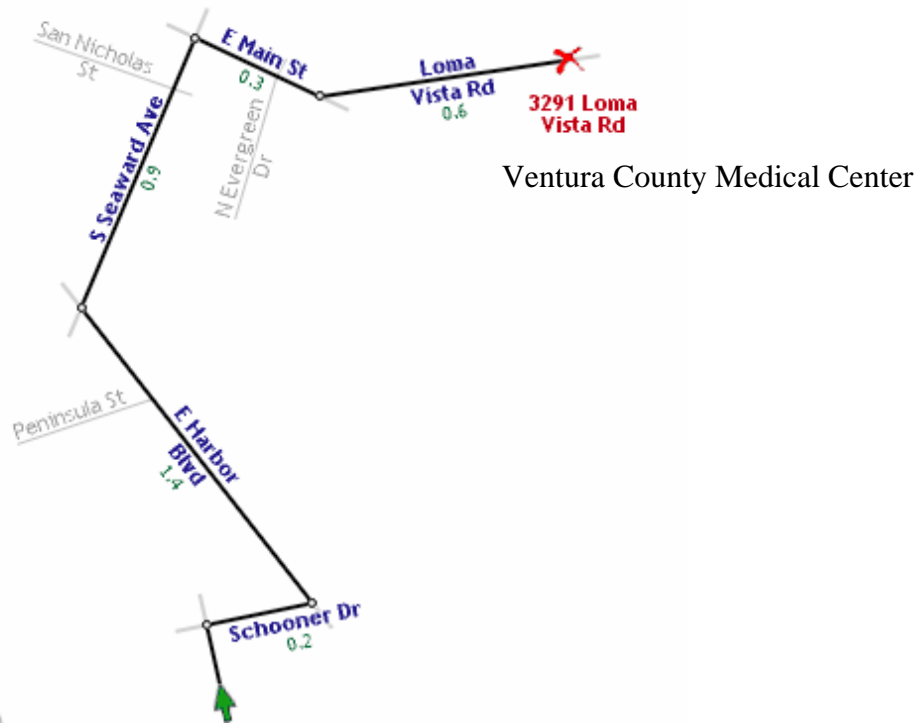
LONG BEACH HARBOR/PORT OF LONG BEACH

Long Beach Fire Department	(562) 591-7631
Coast Guard	(562) 980-4444
Marine Patrol	(562) 570-3217
Long Beach Police	(562) 435-6711
Nearest Hospitals/Clinics:	
Long Beach Memorial Hospital	(562) 933-2000
Community Hospital of Long Beach	(562)

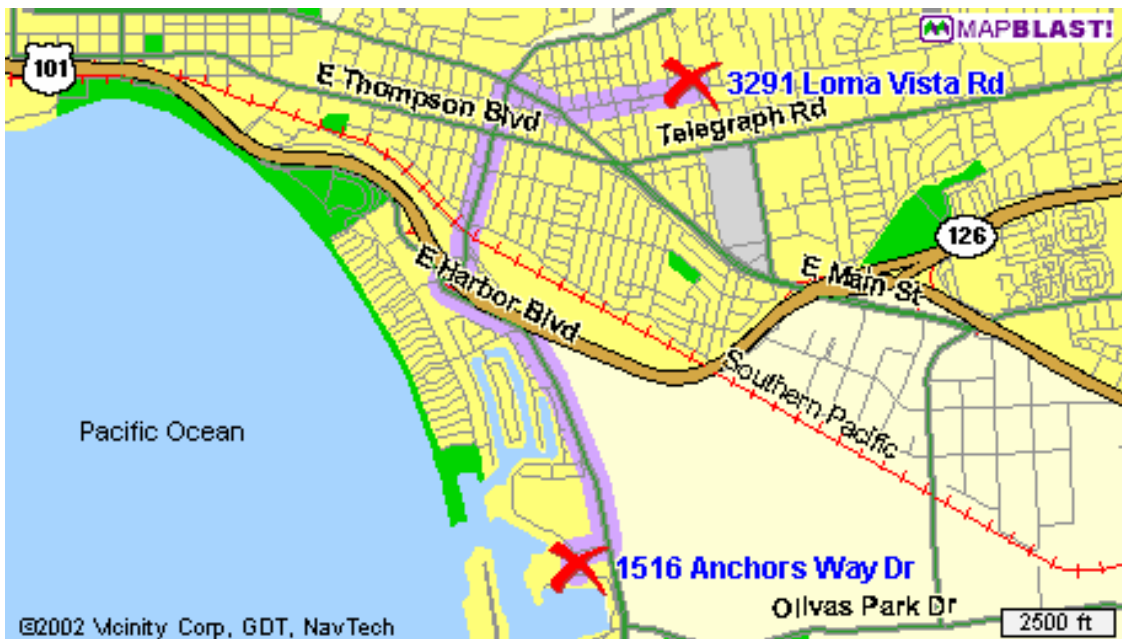
DANA POINT HARBOR

Harbor Patrol	(949) 723-1002
Harbor Master	(949) 723-1003
Coast Guard	(562) 980-4444
South Orange County Sheriff's Dept	(949) 770-6011
Nearest Hospitals/Clinics:	
South Coast Medical Center	(949) 770-6011

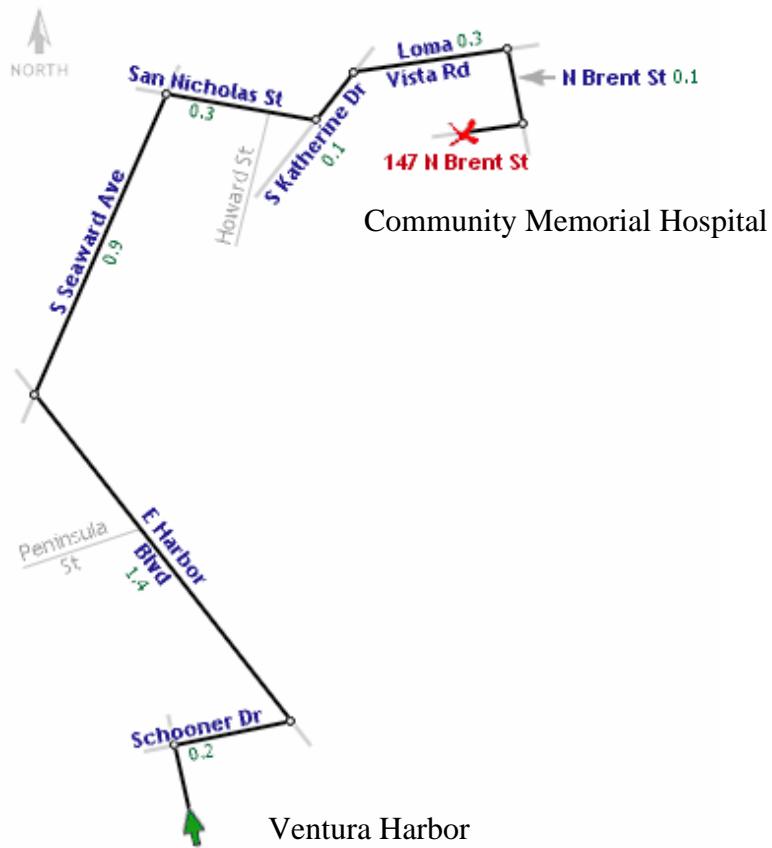
Ventura Harbor to Ventura County Medical Center



Ventura Harbor

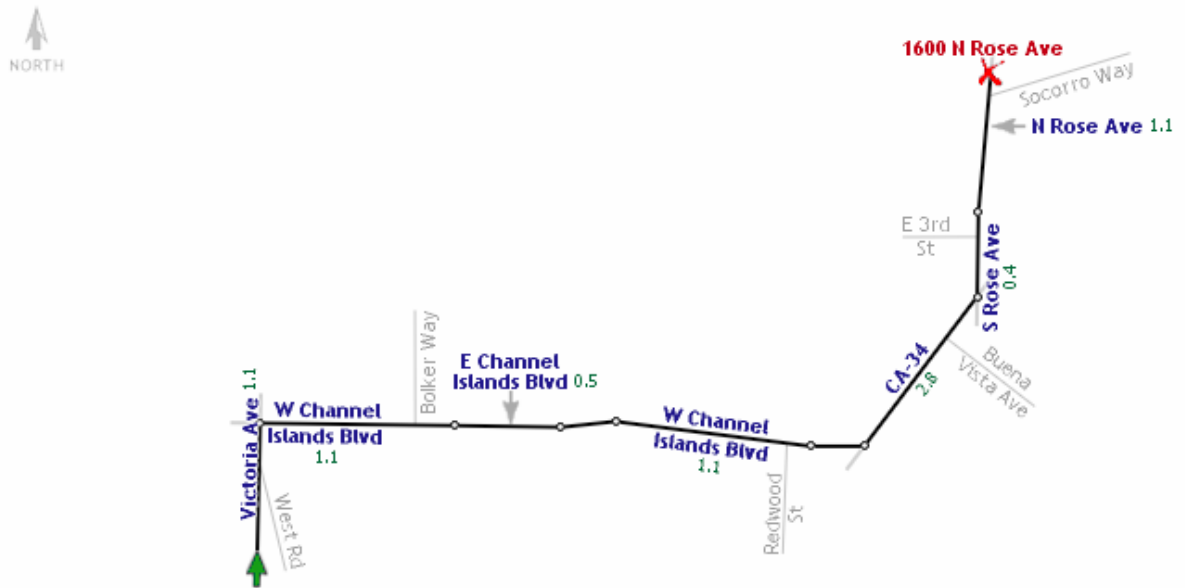


Ventura Harbor to Community Memorial Hospital

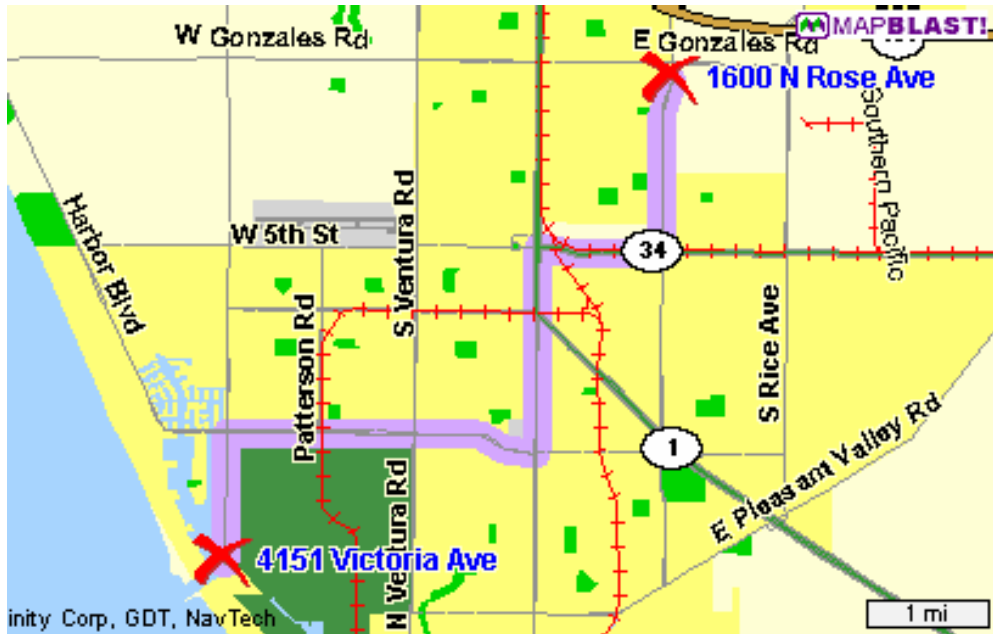


Channel Islands Harbor to St. John's Hospital

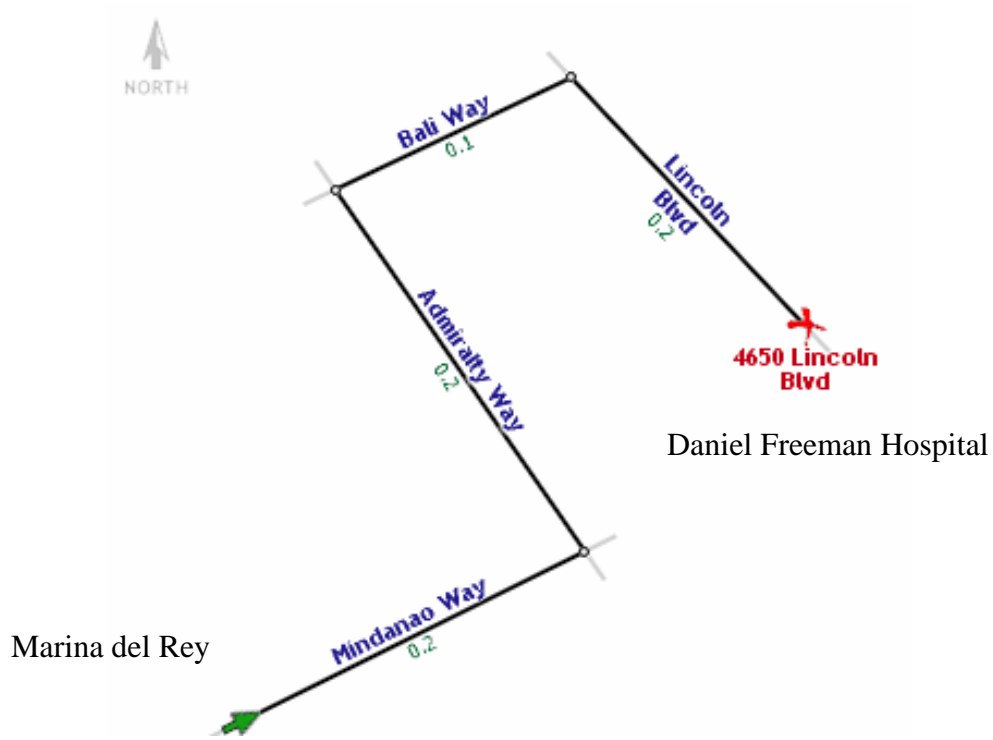
St. John's Hospital



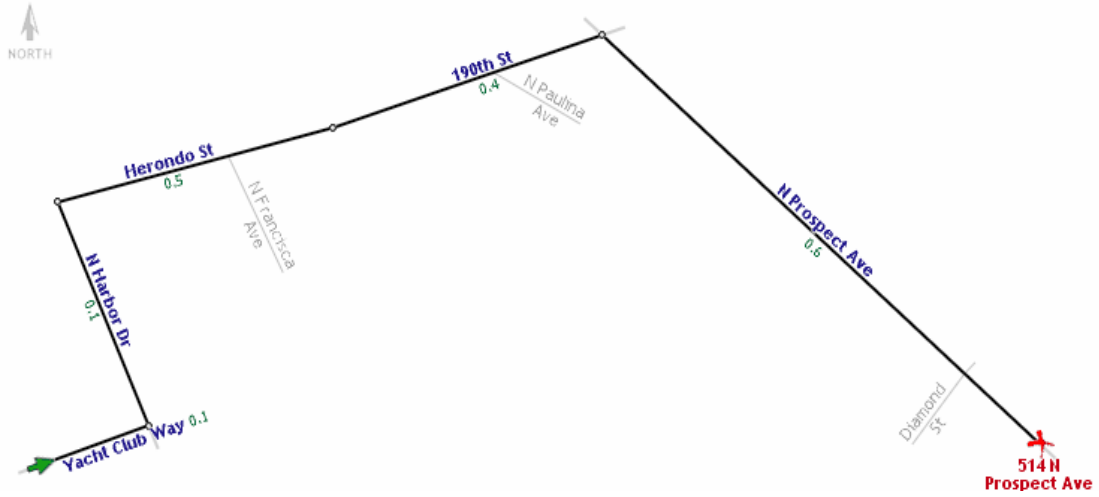
Channel Islands Harbor



Marina del Rey to Daniel Freeman Hospital

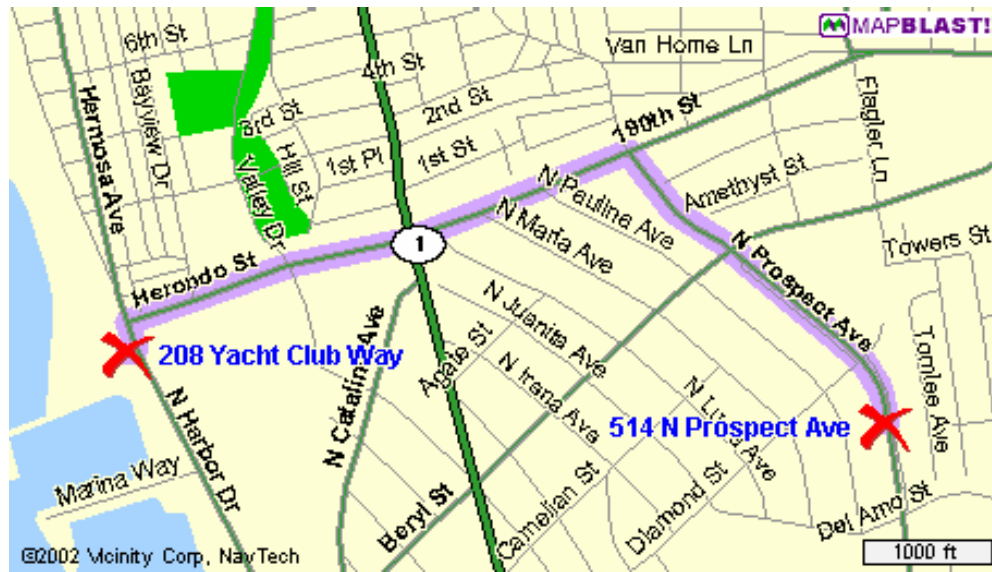


King Harbor to South Bay Medical Center

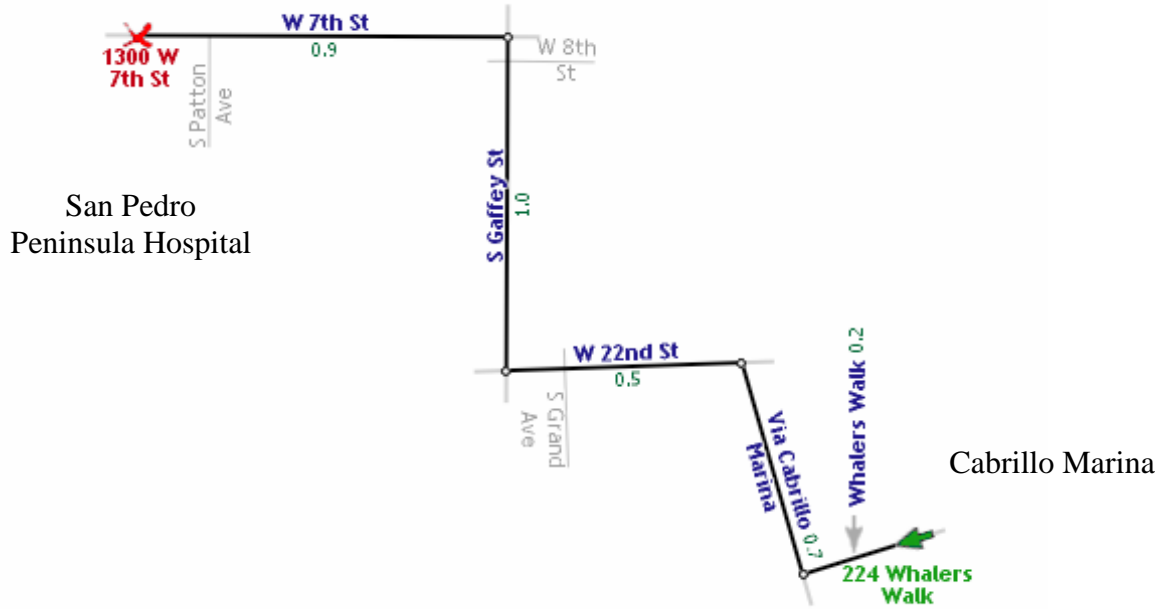


King Harbor

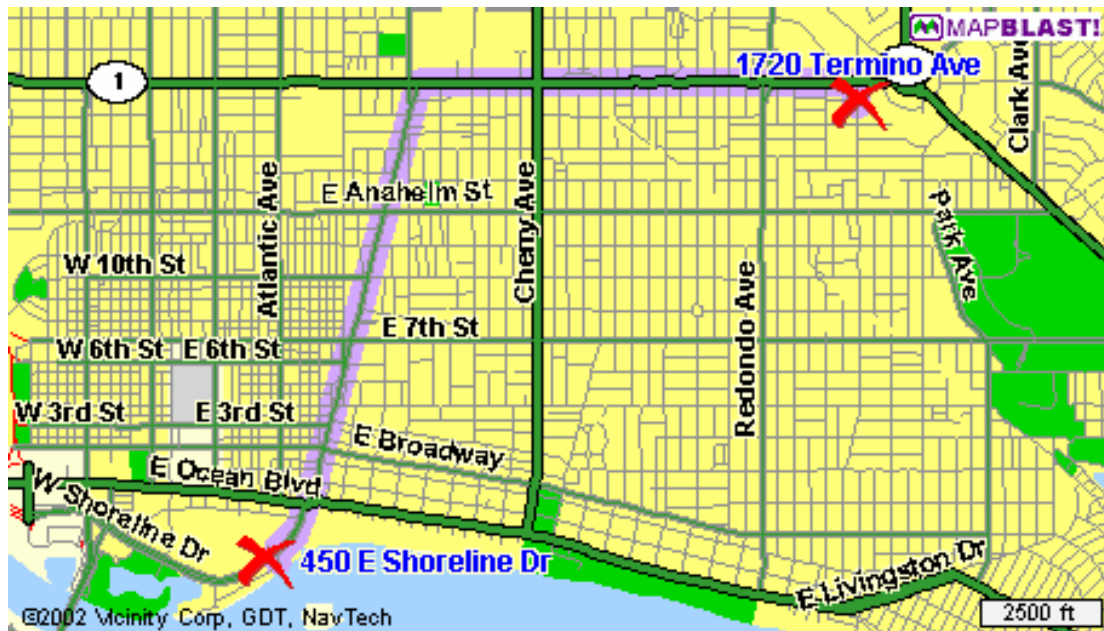
South Bay Medical Center



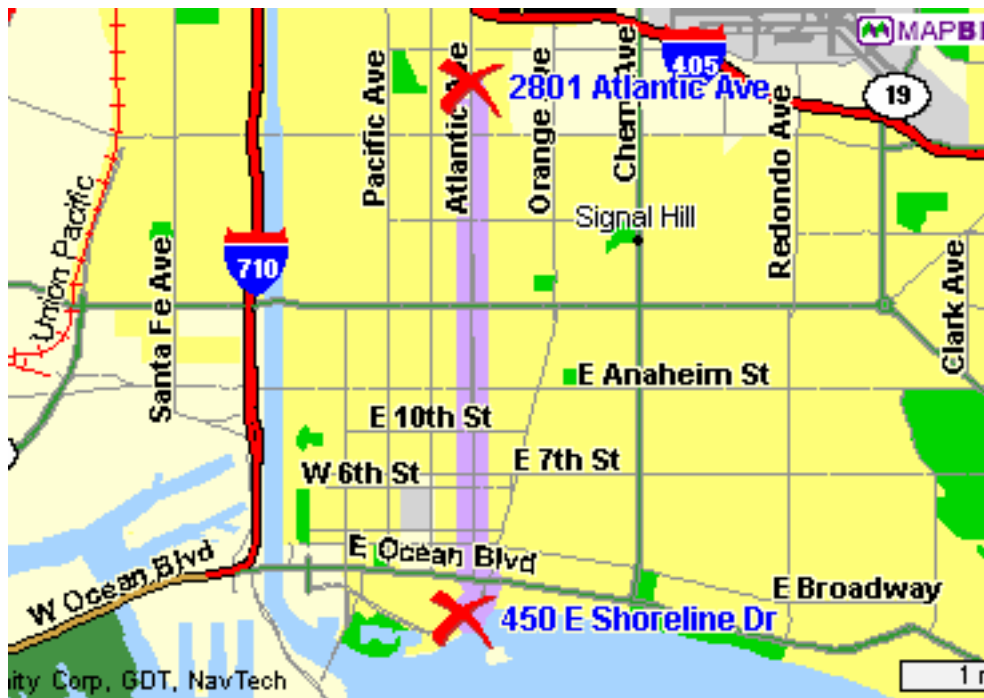
California Yacht Harbor/Cabrillo Marina to San Pedro Peninsula Hospital



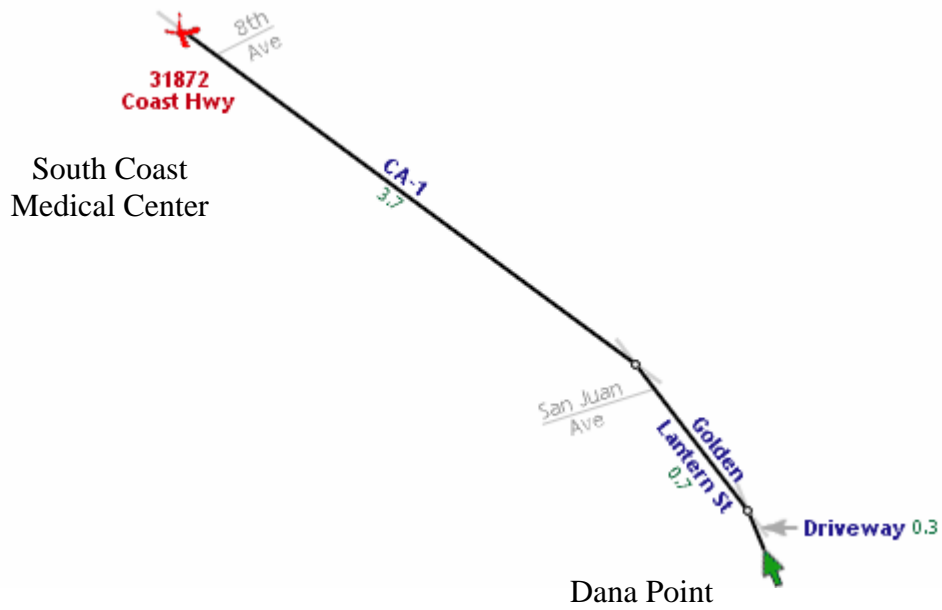
Long Beach Marina to the Community Hospital of Long Beach



Long Beach Marina to the Long Beach Memorial Medical Center



Dana Point Marina to South Coast Medical Center



HEALTH AND SAFETY PLAN CERTIFICATION

I have had the opportunity to read and ask questions about this health and safety plan. My signature indicates that I understand the procedures and restrictions of this plan and agree to abide by them. Please list an emergency contact name and number below your name

Name (Print)

Signature

Company

Date

Emergency Contact: _____

Emergency Contact: _____

Emergency Contact: _____

Emergency Contact: _____

Emergency Contact: _____

Emergency Contact: _____

Emergency Contact: _____

Emergency Contact: _____

Emergency Contact: _____

Emergency Contact: _____

