

Sector San Francisco– Area Contingency Plan (ACP)

Volume II: Section 9800

ACP 3- Central Coast

2014-2019 Annual/Interim Updates to Geographic Response Strategies for Environmental Sensitive Sites

Geographic Response Area (GRA)	Site Number	Site Name	Change Description
GRA 1 - San Mateo, Santa Cruz County Line to Natural Bridges State Park			No Change
GRA 2 - Point Santa Cruz to Pajaro River			No Change
GRA 3 - Zmudowski State Beach to Point Pinos	3-310	Elkhorn Slough	Add 6 response strategies. Updated site description, resources at risk, key contacts, sit summary and comments, advice to responders, hazards and logistics.
GRA 4 - Asilomar State Beach to Point Lobos			No Change
GRA 5 - Garrapata Creek to Gorda Beaches			No Change

3-310-A Site Summary - Elkhorn Slough**3-310-A****County:** Monterey **ACP Division/Segment:** MR - B - S01**NOAA Chart :** 18680**Map Book :** 1055**Decimal Degrees :** 36.81 -121.7843**Site Description:**

Elkhorn Slough is a highly sensitive ecological site and local resource experts should be consulted in the event of a spill. The primary concerns addressed in this plan are inland spills from the Union Pacific Railroad, California State Route 1, or spills within the harbor. Spills originating in the ocean are addressed previously in site 3-305 for Moss Landing Inlet. The slough is over seven miles long, roughly shaped like the letter "S" extending east from State Route 1 which crosses the slough near its entrance, effectively dividing the slough from Moss Landing Harbor. The Union Pacific railway lies near the eastern shoreline and has two trestles crossing smaller sloughs. Petroleum products and other hazardous materials are transported on this rail line on a regular basis in varying quantities. The Elkhorn Slough State Marine Conservation Area and the Elkhorn Slough State Marine Reserve are within this sensitive site. The slough contains critical habitat for western snowy plovers (FT) which nest March-September, and tidewater gobies (FE) with peak nesting season April-July in estuary sediment. Listed amphibians are primarily found within the Elkhorn Slough Ecological Reserve on the east side of the slough. Southern sea otters (FT), sea lions, and harbor seals are commonly present. This site is an important stop for migratory birds during the fall and spring months and is also home to peregrine falcons and brown pelicans, which are California fully protected species. Controlling agencies include Elkhorn Slough National Estuarine Research Reserve (managed by CDFW), Moss Landing Wildlife Area (owned/managed by CDFW), Monterey Bay National Marine Sanctuary, and the Moss Landing Harbor District. A substantial portion of the northern and western shore (Elkhorn Ranch) is owned by the Packard Foundation. Elkhorn Slough is a saltwater estuary with seasonal freshwater input from winter storms, but twice-daily tides cause almost all of the water exchange in the slough. Extensive marshes and tidal flats (2,500 acres) are scattered throughout the site. It joins Monterey Bay through the entrance to Moss Landing Harbor, a rip-rapped channel. Currents are particularly swift as they pass through restrictions at State Route 1 and the entrance channel at Parson's Slough, and have deeply scoured channels.

Resources at Risk:

ESI and Habitat: 10A Salt - and brackish-water marshes
6B Riprap

List of Resources at Risk:

	Resource Name	Status	Presence
Amphibians	California red-legged frog	FT	Year-round
Amphibians	California tiger salamander	FT, ST	Year-round
Amphibians	Santa Cruz long-toed salamander	FT, ST	Year-round
Birds	Western snowy plover	FT	Year-round
Birds	bird rookeries		Year-round
Fish	tidewater goby	FE	Year-round
Fish	steelhead - Central/Northern California	FT	Year-round
Mammals	pinnipeds		Year-round
Mammals	Southern sea otter	FT, SP	Year-round
Plants	salt marsh		

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	Office/24hr	Northwest Information Center, Historical Resource	(707) 332-1117
E	Jeff Cann/Manager	California Department of Fish and Wildlife	(831) 649-7194
E	Office/24hr	Moss Landing Harbor District	(831) 633-2461
E	Tom Razzeca/Harbor Master	Moss Landing Harbor District	(831) 229-9763
O	Robert Stevens/Owner	Elkhorn Ranch - Packard Foundation	(831) 234-2818
O	Dash Dunkell/Stewardship Director	Elkhorn Slough Foundation	(831) 320-9212
O	Chris Grech/Operations	Monterey Bay Aquarium Research Institute	(831) 775-1909
O	Dispatch/24hr	Monterey County OES	(831) 796-1920
O	Duty Officer/24hr	Monterey Fire Department	(831) 901-5002
O	Dispatch/24hr	Santa Cruz City Police	(831) 471-1131
T	Becky Ota/Marine Conservation Manager	California Department of Fish & Wildlife, MPAs	(650) 631-6789
T	Dave Feliz/Reserve Manager	California Department of Fish and Wildlife	(831) 595-6605
T	Steve Wertz/Senior Environmental Scientist	California Department of Fish and Wildlife, Marine	(562) 343-3808
T	Regulatory Coordinator/24hr	Monterey Bay National Marine Sanctuary	(831) 647-4251

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Elkhorn slough has a high volume of on-water recreational users year-round including kayakers, boaters, and wildlife tour operators. The CDFW maintains a visitor center at the estuarine reserve and five miles of trails, all of which are open to the public.

Concerns and Advice to Responders:

The primary concerns addressed in this strategy are inland spills from the Union Pacific Railroad, California State Route 1, or spills within the harbor. Spills originating in the ocean are addressed previously in site 3-305 for Moss Landing Inlet. The immediate goal during a spill shall be to contain the spill as close to the source of release as possible. The strategies listed below may need to be altered based upon a high number of variables within Elkhorn Slough including tidal currents, wind, location of spill, access, and available resources at the time of the spill. There are numerous permanent anchor points near the harbor mouth to facilitate boom placement. Moss Landing Harbor District and Monterey Bay Aquarium Research Institute (MBARI) have booming experience and access to a boom trailer located in the harbor with 2500 feet of containment boom. The City of Monterey Fire Department has a CDFW response trailer located at the Coast Guard station in Monterey with 1000 feet of containment boom and associated equipment. Additionally, the Santa Cruz Harbor District has a CDFW response trailer. Contact information for each resource can be found above in the listed contacts.

The main channel is deepest near the mouth and shallowest in the upper slough and has an average depth of approximately 9 feet. Shallow-draft boats are recommended for on-water operations. Hand-launchable boats are also recommended for accessing many parts of the slough including North Marsh and Parson’s Slough. Access to the slough from the Moss Landing Harbor boat launch is limited by clearance under the State Route 1 bridge, which is approximately 8 feet at mean high tide.

Elkhorn Slough is a highly sensitive site. Marsh, mudflat, and limited subtidal eelgrass habitats are sensitive and should be avoided to the extent possible. Plywood walkways may be needed to access these areas to minimize damage to the vegetation root zone. These habitats support many migratory birds, fish, invertebrates, and marine mammals. Southern sea otters (FT) occur in substantial numbers year-round, including females with dependent pups (a sensitive life stage) which may be present particularly in the Yampah Creek area. Local sea otter biologists should be consulted regarding minimization of impacts to sea otters. Harbor seals are present year-round and may have pups during spring and summer months. Regular seal haul-out sites at Seal Bend, Parson’s Slough, and other locations should be avoided to the extent possible. California sea lions occur primarily near the mouth of the slough.

Critical habitat for western snowy plovers (FT) is found at the Moss Landing Wildlife Area, which is a nesting site March-September. Herons, egrets, and cormorants nest seasonally in rookeries near the slough. Special-status amphibians occur in fresh-water habitats primarily east of the Union Pacific Railroad tracks. Tidewater goby (FE) and steelhead (FT) are uncommon in the area but have been found in Bennett Slough and may occur year-round. Biological montitors should be present to observe and prevent any disturbance to listed species caused by operations.

Hazard and Restrictions:

Railway on eastern shoreline with approximately one train per hour carrying freight as well as Amtrak passenger trains. Rail crossing at Kirby Park has no flashing lights or crossarms. Be aware that waterfowl hunting is permitted in some areas of the slough during the waterfowl hunting season, which takes place during the late fall and winter.

Site Strategies:

Strategy: 3-310.1 Objective:

Strategy: This strategy applies to any location within the slough. Contain the spill as close to the source as feasible based upon the location and nature of the spill. Consult tide tables and wind forecasts to determine the potential trajectory of the spill. The equipment listed below would be required in the event of a large spill.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor Boom			5700	feet	
Anchors	Danforth	43 lbs		10		
Boom	Sorbent Boom			5700	feet	

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Anchors	Shore Anchors	5
Boat	Skiff	3
Boat	Hand-Launchable	2
Staff		12
Vac truck		1
Vac truck	High-Rail (if recovering near rail line)	1

Strategy: 3-310.2 Objective:

Strategy: See Figures 1 and 2. Pre-set three 43 lb. Danforth anchors east of the HWY 1 bridge along the planned deployment. The bottom is sandy and this ensures proper anchoring. Set a shore anchor on the north side of the slough in the area shown on Figure 1. There is a permanent anchor by the power plant outfall on the south side of the slough. Using the permanent anchor and the temporary shore anchor, deploy one strand of containment boom across the slough. Attach the Danforth anchors to prevent entrainment. If shore anchors are not available there are numerous other places to anchor boom including cypress trees and other permanent structures. Deploy one strand of sorbent boom behind the containment boom. Boats should be launched at the Moss Landing North Harbor launch ramp adjacent to HWY 1. Low profile boats (under 8 feet height) will be required in order to pass under the bridge. Equipment such as vacuum trucks can be staged in the parking lot adjacent to HWY 1 or in the Moss Landing Wildlife Area. Higher profile boats can launch at Kirby Park although not recommended due to narrow channel and small boat ramp.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Anchor	Shore Anchors			2		<i>Strategy Updated:</i> <i>Last Test: 1/19/2018</i>
Boom	Harbor			1400	feet	
Boom	Sorbent			1400	feet	
Boat	Skiff			2		
Staff				6		
Vac truck				1		
Anchors	Danforth	43 lbs		4		

Strategy: 3-310.3 Objective:

Strategy: See Figures 1 and 2. 3-310.2 is the preferred primary protection strategy. As an alternative or as a secondary containment, this strategy may be utilized. Deploy 1400 feet of boom from the harbor entrance north jetty to the south-west side of Highway 1 bridge. Both locations have permanent anchor points available. On the west side of Highway 1, the second anchor point away from the mouth of the slough should be used. Attach Danforth anchors or an additional 400 feet of boom angled back towards the Hwy 1 bridge to prevent entrainment.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor			1800	feet	
Boom	Sorbent			1800	feet	
Boat	Skiff			2		
Staff				6		
Anchors	Danforth	43 lbs		4		

Strategy: 3-310.4 Objective:

Strategy: See Figures 1 and 2. If oil cannot be contained within the main channel, deploy 900 feet of boom from the tip of the north inner harbor jetty across the north harbor entrance to the base of the boat ramp. Deploy sorbent boom behind hard boom.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor			900	feet	
Boom	Sorbent			900	feet	
Boat	Skiff			1		
Staff				4		

Strategy: 3-310.5 Objective:

Strategy: See Figures 1 and 2. Note: If a spill originates in the harbor this strategy would be implemented prior to 3-310.2. Deploy 1200 feet of boom from a location 200 feet south of permanent anchor point on Highway 1 (at the small sand beach) across south harbor to the southern extent of the sandy beach inside of the break wall (just north of Gravelles Boat Yard). Anchor boom if needed to prevent entrainment. Deploy sorbent boom behind hard boom.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor			1200	feet	
Boom	Sorbent			1200	feet	
Boat	Skiff			2		
Anchors	Danforth	43 lbs		2		
Staff				4		

Strategy: 3-310.6 Objective:

Strategy: See Figure 4. Contact the Elkhorn Slough Reserve staff at (831) 728-5939 or the reserve manager, Dave Feliz, at (831) 595-6605 and request staff to close all water control structures. Contact Jeff Cann at (831) 649-7194 to close gates at the Moss Landing Wildlife Area. Also, contact county communications (911) to inform of spill and direct staff to close water control structures.

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Strategy: 3-310.7 Objective:

Strategy: See Figures 1 and 3. At the Parson’s Slough trestle crossing, deploy approximately 400 feet of boom to the west of the trestle in a shallow chevron formation. Due to potential current under trestle and risk of entrainment a secondary deeper chevron formation may be deployed to ensure full containment of product released. Use a collection pocket in apex of boom. This strategy may require using a skiff that can be hand-carried over the levy if booming is necessary on the east side of the trestle. Oil collection will be conducted on-water or from the rail line using a high-rail skimmer. If access restricts equipment operations boom can be moved south into a modified chevron allowing more efficient skimming operations from shore based strategies

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor			800	feet	<i>Strategy Updated: Last Test: 1/19/2018</i>
Boom	Sorbent			800	feet	
Boat	Skiff			1		
Boat	Hand-carried			1		
Staff				4		
Anchors	Danforth	43 lbs		4		

Strategy: 3-310.8 Objective:

Strategy: See Figures 1 and 3. The specific shoreline protection strategies will depend on tide stage and oil movement but may include using deflection booms and lining the shoreline with absorbent pom-poms. Two primary areas of concern are Moss Landing State Wildlife Area and Yampah Marsh.

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Logistics:

Directions: The Moss Landing North Harbor boat launch is located immediately west of the Elkhorn Slough State Route 1 bridge in Moss Landing. The Kirby Park boat launch is accessible via Elkhorn Road, approximately 5 miles north of Dolan Road.

Land Access: The primary staging area would be the Moss Landing North Harbor parking lot mentioned above. Kirby Park is a secondary access point for smaller vehicles and watercraft. Otherwise, shoreline access by vehicle is very limited. Shore access on foot is attained via state property at Hummingbird Island, Minhoto parcel, Seal Bend and Moss Landing Wildlife Area. The north marsh can be accessed from the Elkhorn Slough Reserve on the south, from Elkhorn Road on the east and from Kirby Park on the north. South of Strawberry Road a dirt access road splits from the west side of Elkhorn Road and travels north along the railroad tracks, which provides limited access to the north end of the slough under a railroad trestle.

On-Water Limitations: Boats should launch at Moss Landing Harbor. However, access to the north slough from Moss Landing Harbor is limited by clearance under the State Route 1 bridge, which is approximately 8 feet at mean high tide. Alternatively, skiffs can launch at Kirby Park but can be limited by tide stage because of exposed mudflats.

Facilities, Staging Areas, Command Posts, Available Equipment: The Moss Landing North Harbor parking lot is large and can be used for staging equipment and personnel. Kirby Park also has a large parking lot with access to the main channel but is more remote. Theft can be an issue at both launch ramp parking lots. Moss Landing Harbor District and Elkhorn Slough Reserve have conference rooms for potential command posts.

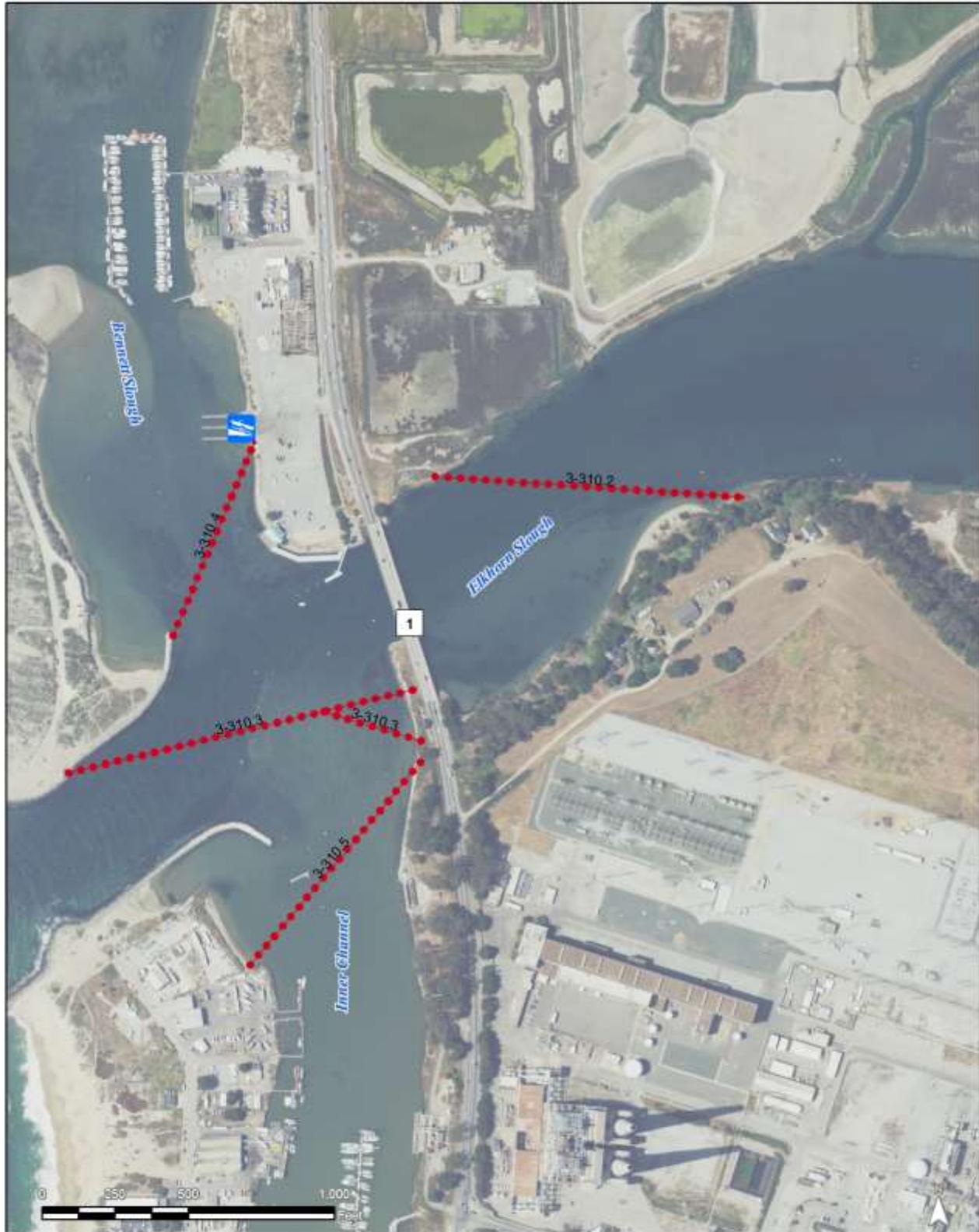
Communications Problems: None

Additional Operational Comments: None



Figure 1

Imagery: NAIP 2012 (Summer) 4-Band



CDFW - OSPR & USCG Site: 3-310 Name: Elkhorn Slough

G. Ewing (OSPR) & D. Schrimsher (OSPR) Date: 5/16/2018



Boat Launch

Figure 2

Harbor Boom



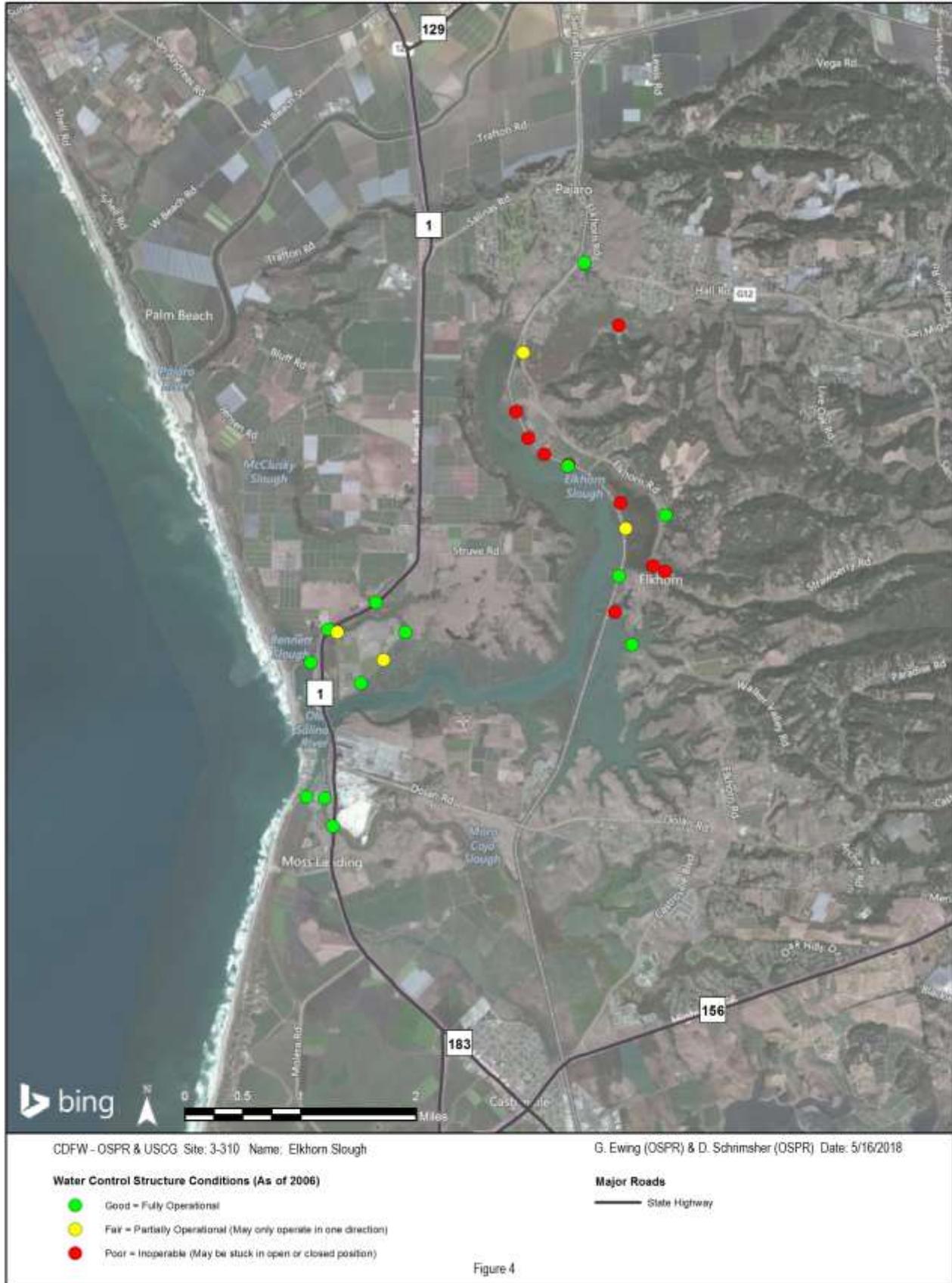
CDFW - OSPR & USCG Site Name:

G. Ewing (OSPR) & D. Schrimsher (OSPR) Date: 5/16/2018

-  Boat Launch
-  Boat Route

-  Harbor Boom
-  Train Trestle

Figure 3



Imagery: NAIP 2016, 60 cm resolution