		Thomas Guide Location	Latitude N	Longitude W
County:	**Marin**	Marin County	3 8 14	122 58
USGS Quad:	**7.5" Quad: Tomales, CA**	NOAA Chart:	**Bodega and Tomales Bays 18643**	

Last Page Update : 7/1/2005

SITE DESCRIPTION:

This site includes all of Tomales Bay from the entrance at the north end to the head of the bay at Lagunitas Creek at the southerly head. Several environmentally sensitive sites identified in this ACP (164-184) are also located within this site. Site lies within the Gulf of the Farallones National Marine Sanctuary. This site includes all of Tomales Bay from the entrance at the north end to the head of the bay at Lagunitas Creek at the southerly head. Tomales bay is a large elongate bay, approximately 13 miles long, with a narrow mouth (1,200 ft wide). There are strong tidal currents through the mouth. Most of the tidal volume scours a deep channel along the west shore all the way south to Pelican Point. Lesser channels braid away from the mouth to the east forming a complex of bars and channels which shift throughout the year and require local expertise to negotiate. Elsewhere waters are shallow and salt marshes, sand and mud flats, extensive eelgrass beds, clam beds, and oyster aqua culture facilities are typical throughout the bay. Significant numbers of migratory shorebirds, seabirds, and waterfowl (dabbling, diving, and sea ducks) use the area particularly during fall and winter months. Pacific herring spawn in eelgrass beds. Anadromous fishes are present in the bay and its tributaries from November through May. Ownership of the bay margin is predominantly public agencies and conservation groups: Point Reyes National Seashore, Golden Gate National Recreation Area, Tomales Bay State Park, Audubon Society. Many private landowners bordering the bay are concerned about the conservation and well being of the bay. All response actions should be temporized by the fact that the entire margin of the bay, especially drainage mouths, have archeologic sites from heavy native American use.

SEASONAL and SPECIAL RESOURCE CONCERN

The year-round "A" priority is due to extensive marsh habitat and several threatened and endangered species inhabit the bay all year. There are seasonal issues: herring spawn on eelgrass November through March, endangered coho and other salmonid spawning and migration, and migratory influxes of shorebirds.

RESOURCES OF PRIMARY CONCERN

The entire bay contains a variety of environmental sensitivities including: salt marshes, eelgrass beds, clam beds, anadromous fish streams, and expansive mudflats which provide foraging habitat to 10's of 1000's of shorebirds and waterfowl that migrate through the bay every spring and fall, as well as reside in the bay.

Threatened and/or endangered species utilizing the bay include the western snowy plover, marbled murrelet, bald eagle, osprey, northern harrier, saltmarsh common yellowthroat, and black rail. Significant numbers (>25,000 birds) of migratory shorebirds, wading birds, waterfowl (dabbling, diving and sea ducks) use bay during fall and winter months.

Approximately 500 harbor seals haul out and pup at specific locales.

Anadromous fishes (Coho salmon and steelhead) use Walker and Lagunitas Creeks. Clam beds and fish resources are present throughout bay at all times of the year. Pacific herring spawn in eelgrass beds throughout Tomales Bay (particularly in the northern portion) during the winter months (Nov-Feb) and viable eggs (Feb-Apr).

A variety of shrimp, worms, clams and other invertebrates are present on the mudflats. Near the bay mouth, two sand bars (islands) are present which support large populations of harvestable clams and a heavy, sustainable sport clam fishery. There are a number of commercial oyster culture operations in the bay.

Tomales Bay is rich in eelgrass beds throughout the upper 2/3 of the bay. Several saltmarshes containing threatened and/or endangered plant species occur near Lawson's Landing, Walker Creek, White Gulch, Miller Point, Inverness, and Lagunitas Creek.

CULTURAL, HISTORIC, and ARCHEOLOGICAL SENSITIVITIES

There are over 200 known cultural sites on the Bay margin. For specific sites, contact the Pt. Reyes Park headquarters archeological staff, the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison -(916) 653-9125), and the Northwest Information Center, (Bryan Much, Sonoma State College ((707) 332-1117)) for specific information on historic or cultural resources in this area.

KEY CONTACTS: Trustee (T); Entry/Owner/Access (E); Cultural (C); or Other Assistance (O)

Type	Name / Title	Organization	Phone
T	24hr Sanctuary Personnel	Gulf of the Farallones National Marine Sanctuary	(650) 479-5311
E/T		CA State Parks, Northern Comms Center (Dispatch)	(916) 358-0333
E	John Finger	Hog Island Oyster Co	(415) 663-9218
O	John Kelly	Audubon Canyon Ranch	(415) 868-9214

E	Michael Lawson Owner	Lawson's Landing Store & Campground	(707) 878-2443
E/T	Pt. Reyes NP Dispatch PRNS	US National Park Service, Pt. Reyes (NS), Ranger	(415) 464-5170

ADDITIONAL SITE SUMMARY COMMENTS:

County and Thomas Guide Location	NOAA CHART	Latitude N	Longitude W
Marin County Marin	Bodega and Tomales Bays 18643	3 8 14	122 58

Last Page Update : 7/1/2005

CONCERNS and ADVICE to RESPONDERS:

Oil may contaminant a wide variety of resources in the bay including saltmarshes, eelgrass beds, clam beds, harbor seals, birds and oyster aquaculture facilities. Shallow waters and large tidal mudflats will create access difficulties. The concerns are oil contamination and response activity impacts to wetlands, rare and endangered species, and other vulnerable plants and wildlife which are present throughout the year. The primary objective is to minimize the exposure of oil to plants, animals and habitats present at this site. Other concerns are the impacts resulting from response activities. Avoid trampling wetlands, sensitive plants and animals, and soft mudflats, causing penetration of oil into the sediments and further injury to the environment.

HAZARDS and RESTRICTIONS:

Extremely strong tidal currents near the mouth of the bay. Shallow tidal bars and flats exist throughout the bay especially in the northeastern portion at the mouth of the bay. Submerged oyster aquaculture facility structures common on the eastern side of the central bay.

SITE STRATEGIES

Extreme currents, narrow channels, and extreme shallows are deployment obstacles in many parts of Tomales bay which can best be overcome with the aid of local knowledge. Local contacts include: John Finger - Hog Island Oyster Company, Gene Maffuci - local fisherman, and alternates: Carlos Porrata - State Park Ranger, Steve Stinnett - National Park Ranger, Tom Moore - DFG biologist, and other local oystermen.

Strategy 2-164.1 Objective: Primary exclusion for heavy oil impact threats: Exclude/divert/contain oil near mouth of bay to collection near Pelican Pt and minimize free spreading of oil on high velocity currents.

The concept is to keep oil from spreading and allowing currents to move it to an area near Pelican Pt where currents cease to be a serious factor and collection is relatively easy. On the ebb current this strategy will also direct oil to shoreline collection at Tom's Pt area. This technique requires the direction of local fishermen (see contacts below), because dealing with channels and shallow bottoms along and south of Tom's Pt require detailed local knowledge and very shallow draft vessels, as does the approach to Tom's Pt shoreline.

Deploy 15,000 ft of Hboom from about a point about 1000 ft north of Toms Pt at a diagonal into the channel and then centered in the current all the way past Hog Island to collection at Pelican Pt. A second deflection from shore should preceed the main deflection. The oil will stay within the current and move to collection areas, and not spread across the bay. Currents thoughout upper bay are very strong and booms must be set with and not against current using large anchors (22# and 40# danforths with chain) else currents will entrain oil under booms. Set anchors every 500 feet and more often to angle boom into the current at Tom's Pt shoreline and Pelican Pt shoreline (and other places where channel turns). Cascade boom where necessary. If boom is set with or very diagonal to the current, then oil will not entrain under the boom. Target time for completion for six boomboats working at both ends of the strategy is about 3.5 hrs.

Collection should be set up just before or just after Pelican Pt by bringing boom end to shoreline. Even though Pelican Pt is a sensitive site (2-174), it is one of the few locations where oil may be managed and controlled and where land-based or water-based collection can be successful. The deepest water is just after Pelican Pt. Use Self Propelled Skimmers (SPS) with storage barges to collect, decant, and transport oil to storage at the east shoreline. A secondary collection area may be established at the mouth of White Gulch (see substrategy 2-177.3).

Strategy 2-164.2 Objective: Collect/Divert/Exclude - 2ndary backup strategyfor threats of heavy oiling to exclude oil from spreading to upper Bay and divert to east shoreline collection.

Deploy boom at a diagional from just south of Pelican Pt to the shoreline about midway between Cypress Grove and Nick's Cove (note that there is a dairy on the hill above and a culvert under Hwy 1 at this location.) Currents are minimal along the entire length of this boom deployment; 7000 ft of 4X4+ boom (or 9X9+ or better if winds are threatening). Place anchors at 800 ft intervals. Construct a collection Boom pocket at the shoreline and service Shore Side Skimming (SSS) at Hwy 1. Target time for deployment is 3.5 hrs using 3 Boomboats.

Strategy 2-164.3 Objective: Deflect to alternative collection locale at White Gulch.

As a back-up collection area, divert oil from the containment boom in substrategy .1 past marker ## near Hog Isle to White Gulch. Deploy 2000' 9X9+ Hboom across the channel into White Gulch, cascading as necessary, with anchors at least every 400' intervals. The back portion of White Gulch cove has little current and oil may be skimmed with Self Propelled Skimmers (SPS). If oil is to be collected here, the protection strategy fo White Gulch (2-174.1) will require alteration by adding more boom and anchors (300' 4X4+) to create a collection pocket. Deployment Target time is 3 hrs using 2 BoomBoat equivilents.

This location has possible physical conditions which may limit it's usefulness. 1) it may be difficult to divert surface currents across the channel past the shallow mid-channel eelgrass bed to the Cove, because of the current deflected off the upstream point toward the east; 2) there are stiff winds which typically blow down White Gulch which might prevent oil from staying in the collection pocket. These uncertainties cause this alternative to be viewed as an alternate until it can be demonstrated as effective.

Strategy 2-164.4 Objective: 3rd alternate: Divert oil from Sand Point area across to Tomales Headland

Deploy 6000' diversion boom from a locale near Sand Point (and in conjunction with Sand Pt Strategy 2-166.1) across the channel at a very gradual diagonal (to keep the flow agianst the boom to a minimum to avoid entrainment) to quiet waters near shore. Cascade boom as necessary and adjust cascades to avoid entrainment losses. Use mid-boom anchors to minimize catenary sags in boom. Use heavy anchoring with chain and extra scope on lines. For a target time of 2 hours, 5 BoomBoat Equivalents will need to be assigned. If oil collects effectively, call for Self Propelled Skimmer and seek opportunities to gound oil on pocket beaches along the shoreline.

This strategy is the third alternate to control oil entering Tomales Bay for these reasons: 1) currents here are extremely strong (can exceed 4 knots) and requires exceptional booming skills; 2) there are no clear collection options at the shoreline; 3) very high tides may carry oil into riparian vegetation along shore.

Strategy 2-164.5 Objective: Outside bay alternative: ART & Open Water Skimming.

Eliminating oil before it enters the Bay is the optimal strategy for dealing with oil spill threats.

Only the application of Advanced Technologies (dispersants & in situ burning) has a high effectiveness in large slicks. Conventional skimming can be effective if oil encounter rate is high.

Under rare calm conditions oil might be diverted to shore outside the bay, but these deployments are not likely to be effective and will fail when conditions become aggressive.

Grounding of oil at Sand Pt outside the bay entrance is similarly problematic: Deflect oil to Dillon Beach by cascading small sections (300 to 500 feet) of ocean boom across the flood tidal channel that runs parallel to the beach. Use 4,000 feet of boom having a minimum freeboard of 20 inches and a minimum draft of 18 inches. Two boom boats capable of operating in 3 ft seas will be needed to pull the boom off the shore into formation.

Table of Response Resources

strategy number	harbor boom	swamp boom	Other boom type	sorb boom	Anchoring no	Anchoring type and gear	Boom boat	Skiffs punts	Skimmers No	Skimmers Type	Special Equipment or comment No	Special Equipment or comment and kinds	staff deploy	Staff tend
2-164.1	15000	0		0	40	25/22# & 15/40#/danforth =20' chain	6	1	1	SPS		shallow draft vessels / stakes for shallows	20	2
2-164.2	7000			0	10	22#/danforths	3	0	1	SSS			9	2
2-164.3	3500	300		0	16	11/22# & 5/40#/Danforth + chain	2	0	1	SPS			6	
2-164.4	6000	0		0	0		5	0	0			local expertise	15	
2-164.5	0	0		0	0		0	0	0					

LOGISTICS

DIRECTIONS: to site (by land and/or by water, to nearest launch ramp and are access permits required.)

Highway 1 follows the eastern shoreline of Tomales Bay. To get to Hwy 1 from Hwy 101: in San Rafael, take the Sir Francis Drake exit and proceed west to Olema and Pt. Reyes Station; in Petaluma, take the Pt. Reyes Petaluma Road to Pt. Reyes Station at the head of the bay, or the Petaluma-Bodega Rd to Tomales-Petaluma Road to Hwy 1. This site includes all of Tomales Bay from the entrance at the north end to the head of the bay at Lagunitas Creek at the southerly head. Several environmentally sensitive sites identified in this ACP (164-184) are also located within this site. Site lies within the Gulf of the Farallones National Marine Sanctuary.

LAND ACCESS: varies from foot only to large truck

WATER LOGISTICS: YES, <40ft vessels preferred, shallow draft only over flats

Limitations: depth, obstruction

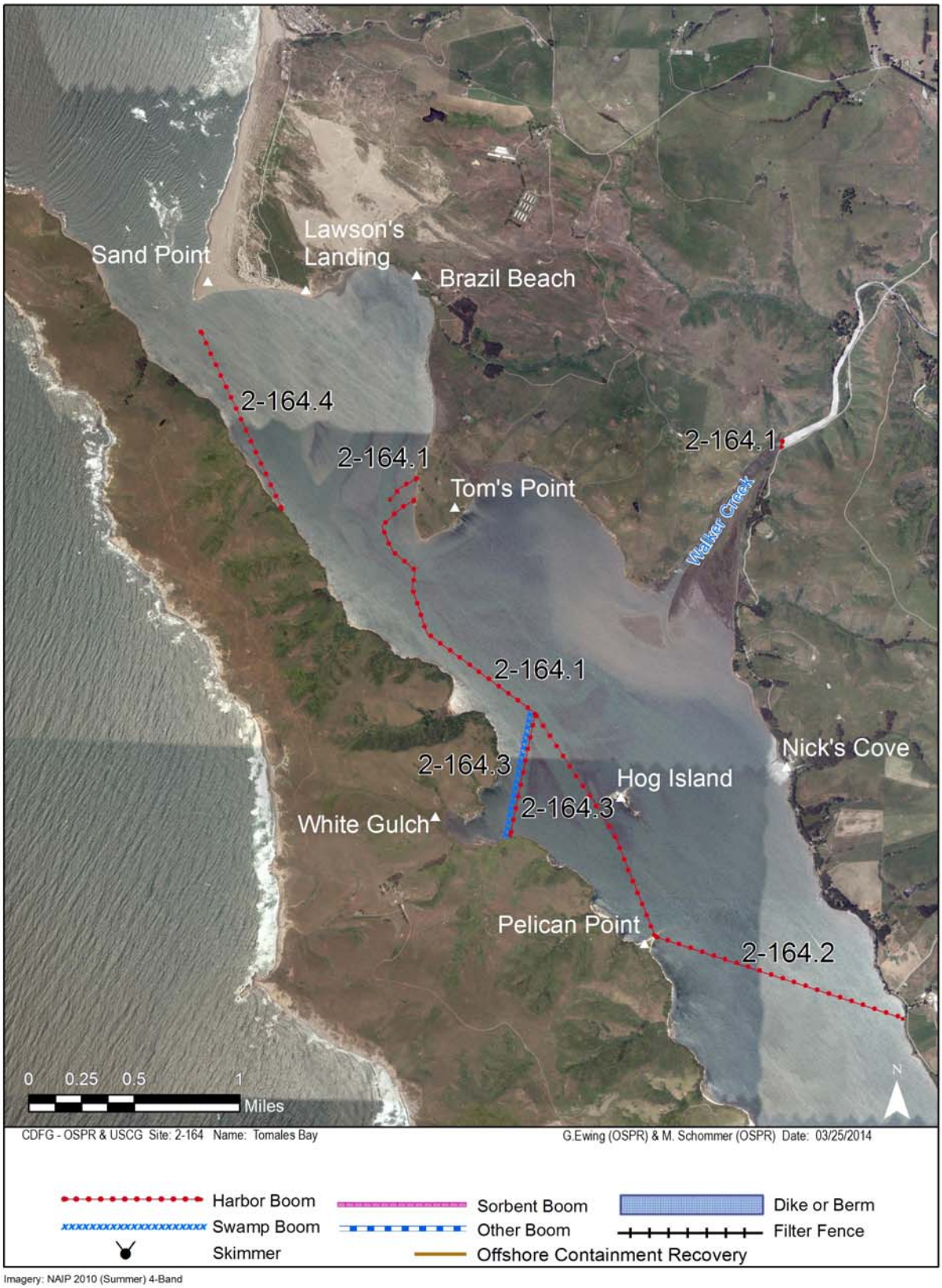
Launching, Loading, Docking and Services Available: Boats up to 35 feet LOA can be launched (hoist) at Marshall Boat Works (Owner: John Vilisitch (415-663-122x). There is a concrete boat launch ramp at Nick's Cove near Miller Park. There are also beach launching for small boats (<25ft.) at Lawson's Landing, Sacramento Landing, and Marconi. Also inverness.

FACLITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:

There is good access and large staging area at Lawson's Landing. There is also space for a staging area at Marshall Boat Works and Nick's Cove boat ramp.

COMMUNICATIONS PROBLEMS:

ADDITIONAL OPERATIONAL COMMENTS: Access to SE end of Brazil Beach is through private property owned by Mr. Jim Byers.


Sand Point
Lawson's Landing
Brazil Beach
2-164.4
2-164.1
2-164.1
Tom's Point
Walker Creek
2-164.1
Nick's Cove
2-164.3
Hog Island
2-164.3
White Gulch
Pelican Point
2-164.2
0 0.25 0.5 1
Miles
N
CDFG - OSPR & USCG Site: 2-164 Name: Tomales Bay
G.Ewing (OSPR) & M. Schommer (OSPR) Date: 03/25/2014
Harbor Boom
Swamp Boom
Skimmer
Sorbent Boom
Other Boom
Offshore Containment Recovery
Dike or Berm
Filter Fence
Imagery: NAIP 2010 (Summer) 4-Band