

September 22, 2006

**TO:** San Francisco Bay Area Water Trail Steering Committee  
**FROM:** Sara Polgar, Water Trail Project Manager (415/352-3645 [sarap@bcdc.ca.gov](mailto:sarap@bcdc.ca.gov))  
**SUBJECT:** **Safety and Education** (For Committee consideration on October 3, 2006)

### Introduction and Staff Recommendation

The Water Trail Steering Committee will address safety and education in Meeting 5 (October 3, 2006). The purposes of the meeting are to learn and find areas of agreement about issues and opportunities related to these topics, and to provide guidance on the formulation of safety and education strategies. In past meetings, the Committee identified some trail-related safety issues and education needs, but this will be the first opportunity for focused discussion on these two topics. To inform the discussion at the October 3 meeting, issue experts will offer input on the core safety and education needs related to non-motorized small boating (NMSB) activities on San Francisco Bay, and ways that the water trail should fill certain gaps.

The following staff report provides background on safety and education. For both topics, the report begins by identifying safety or education needs that are associated with the water trail. This is followed by summaries of existing safety or education efforts in the Bay Area that relate to NMSB activities, and a discussion of gaps in existing efforts and how these might be addressed in the future. To a large extent these two topics overlap; trail-related safety needs as well as the existing safety efforts are education based. Safety education programs are covered in the safety section, but these efforts are equally important to the education discussion.

To help define the water trail approaches to safety and education, staff concludes the report by proposing two overarching principles for these issues. These should serve as a basis for the Committee's discussion and lead to ideas and recommendations for specific strategies. Staff recommends that the Steering Committee adopt these overarching principles to guide the water trail approach to safety and education.



## Safety

Two primary objectives of the water trail are to improve access for non-motorized small boats (NMSBs) on San Francisco Bay (Bay), and to create opportunities for point-to-point trips in kayaks and other craft. Tied to these objectives is a need to educate trail users about safe boating practices and navigational safety and security regulations. Additionally, expansion of NMSB activities on the Bay due to the water trail creates a need for good communication and coordination among different NMSB user groups and between these groups and others in the maritime community. Although communication alone cannot eliminate safety problems, better coordination among these groups will facilitate finding ways to resolve vessel-to-vessel safety issues.

This section briefly describes the safety issues related to the water trail and discusses ways in which the two needs identified above are currently addressed in the Bay Area. The discussion breaks safety into two categories. Personal safety issues encompass factors such as natural boating conditions on the Bay (e.g. wind and currents) and individuals' boating skills. The second category includes navigational safety – interactions among vessels – and national security.

**Personal Safety.** Cold waters, rapidly changing weather conditions and strong tidal currents create a challenging boating environment on the Bay. For avid paddlers and boardsailors, these conditions may be an attraction of the Bay Area. However, visitors to the area and less experienced local boaters may not be prepared for factors such as strong afternoon gusts, thick fog, currents up to 6 knots and water temperatures between 45° - 60° F. Even a skilled boater who is familiar with Bay conditions can get into trouble. If a paddling trip is poorly planned, kayakers can get caught fighting strong currents or stuck during low tide in mudflats far from a launch site. Windsurfers are vulnerable to changes in winds that can strand them far from shore, and conditions at some sites such as Crissy Field – where windsurfers can get washed out under the Golden Gate Bridge – do not offer much margin for error. When emergencies on the Bay occur, the U.S. Coast Guard rescue personnel responds to distress calls (on marine radio channel 16) and reports of incidents from citizens, and often, other mariners aid those in distress.

Inevitably there will be incidents in which trail users run into problems, but they can reduce the likelihood of emergencies by:

- Learning boating skills such as self-rescue techniques and being in good physical condition;
- Using the proper equipment such as a personal flotation device (PFD) and a wetsuit;
- Planning trips based on favorable tide, current and weather predictions, and local knowledge about unique conditions in an area, including navigational concerns such as shipping or ferry lanes and security exclusion zones;
- Planning trips that are suited to one's capabilities;
- Boating with others and informing someone onshore about their plans; and
- Knowing how to recognize emergencies and what to do in these situations, and having the right, functioning emergency equipment (e.g. VHF radio and flares).

In addition to on-water conditions, personal safety is an issue onshore. Accidents can occur at launch sites as boaters carry their equipment to the water over rough terrain (e.g. rip rap) and while launching (e.g. from an algae-covered ramp or steps). Compared with the potential for loss of life on the water, these land-side accidents seem insignificant, but NMSB users point out that many debilitating injuries to boaters occur onshore due to

falling.<sup>1</sup> In the case of boardsailing sports, the equipment itself can be a hazard to people around a launch area if boaters are not careful to follow site-specific norms for staging (i.e. preparing their boards, sails and lines) and launching and landing.

Personal security is another concern that boaters have raised about the water trail. This is particularly important to consider in planning for sites that provide overnight or extended stay accommodations. Boaters will not want to store their equipment (e.g. at a guest dock) where it is likely to be stolen, nor will they feel secure camping at many locations around the Bay.

NMSB activities involve extensive contact with the water and these boaters are vulnerable to sicknesses caused by poor water quality. Urban runoff that enters the Bay through stormdrains – particularly after rainstorms – and occasional overflows at wastewater treatment plants are major causes of water quality issues affecting these user groups. They need to be aware of water quality problems and avoid boating at specific sites or during certain time periods.

**Navigational Safety and Security.** With the high volume and diversity of vessel traffic – motorized and non-motorized recreational boats, fast ferries, commercial shipping vessels, tugs, tankers and others – vessel-to-vessel interactions for water trail users are inevitable. Navigating among these different interactions is complex and mistakes can lead to tragic results. Although accidents involving NMSBs and other vessels are rare, incidents such as a near miss between kayakers and a fast ferry raise concerns about future safety on the Bay if numbers of paddleboaters and boardsailors expand as a result of the water trail. National security is another concern with increased NMSB activities. For water trail users, these types of security issues may be the last thing to come to mind, but if they stray into a security exclusion zone, as one kayaker did near Crockett last winter, the consequences can be severe (e.g. arrest and, in the extreme, being shot at).

The U.S. Coast Guard regulates navigation in San Francisco Bay by issuing and enforcing rules that govern navigation practices, marine events, and safety and security zones within the Bay.<sup>2</sup> The Inland Navigation Rules (commonly called the “Rules of the Road”) apply to “every description of watercraft” and address vessel sailing and steering as well as use of lights and sound.<sup>3</sup> To enforce these rules, the Coast Guard investigates incidents reported by mariners, and imposes fines and license suspensions for violations. Within the context of the Bay, Rules 5, 8 and 9 are especially relevant to non-motorized small boating.<sup>4</sup>

- Rule 5 requires boaters to maintain a “look-out” while operating a vessel. For NMSB users this translates into being alert of their surroundings and risks of collision at all times.
- Rule 8 describes actions that a vessel operator must take to avoid collisions.
- Rule 9 requires vessels (including NMSBs) to keep clear of, and not hinder or interfere with, transit of larger vessels that can “safely navigate only within a narrow

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<sup>1</sup> Personal communication with Paul Kamen (Berkeley Waterfront Commission) and Penny Wells (Bay Access).

<sup>2</sup> Federal authority over navigation in the Bay derives from the Commerce Clause of the U.S. Constitution (Article I, Section 8, Clause 3) as interpreted by the U.S. Supreme Court in *Gibbons v Ogden* 22 U.S. 1 (1824). Under this clause, U.S. Congress has the power “to regulate Commerce with foreign Nations, and among several States, and with the Indian Tribes.” In *Gibbons v Ogden*, the Court ruled that federal power “to regulate navigation is as expressly granted as if that term had been added to the word 'commerce'”. The Court further concluded that the federal authority over commerce extends to commerce within state waters, and that in cases of conflict between state and federal laws, the “sovereignty of Congress” over commerce is “plenary” to that of the states.

Navigation and Navigable Waters Law, 33 U.S.C. § 2007 et seq

<sup>3</sup> 33 U.S.C. § 2003(a) <http://www.navcen.uscg.gov/mwv/navrules/rules/Rule03.htm>

<sup>4</sup> 33 U.S.C. § 2007, 2008, 2009.

channel or fairway.” This rule is important in the Bay where most areas are too shallow for large ships that have deep drafts. These vessels are confined to narrow, dredged channels within the Bay.

Although the Rules of the Road apply to NMSBs, they are not specific to these types of recreational boats.<sup>5</sup> In some instances of vessel-to-vessel interactions on the Bay in which a risk of collision or other accident exists, the rules sufficiently clarify the required safety actions for each vessel operator. For example, Rule 12 concerning the right of way between two sailing vessels applies to interactions among boardsailors and other sailing vessels. However, the Rules lack codes of conduct for interactions between certain vessel types that are common on the Bay, including sailboats or small motorboats and kayaks. Regardless of the type of interaction, the Rules oblige a boater to try to avoid a collision, even if s/he has the right of way.<sup>6</sup> In practical application this usually means that a smaller, more maneuverable boat will have to get out of the way of a larger vessel.<sup>7</sup> Another example of how this last rule applies to NMSBs can occur near Crissy Field on a windy afternoon when dozens of windsurfers are on the water. If a recreational motorboat cruises into the area, it is supposed to give the right of way to the windsurfers under Rule 18, but if it adjusts its course away from one boardsailor, the motorboat might head into the paths of other windsurfers. In this case, the windsurfer may need to get out of the way of the motorboat to avoid an accident. These types of situations call for a comprehensive understanding of the Rules of the Road as well as a pragmatic approach to applying them to ‘real-life’ situations on the Bay.

To facilitate compliance with these rules, the Coast Guard operates the Vessel Traffic Service (VTS) system of San Francisco Bay. VTS acts as a clearinghouse of real-time information on vessel movements in the Bay. VTS staff informs “mariners of other vessels and potential hazards,” and provides recommendations and direction to mariners on courses of action to prevent accidents.<sup>8</sup> These information and advisory services are available to all mariners on the Bay by monitoring VHF (very high frequency) radio channels 12 and 14. Although the number of NMSBs on the Bay carrying VHF radios is increasing, many do not have these radios, and this subset of on-water recreationists is often taking advantage of the VTS information system.

The Coast Guard administers a permitting system to regulate any “organized water event of limited duration which is conducted according to a prearranged schedule” that will “introduce extra or unusual hazards to the safety of life on the navigable waters of the United States.”<sup>9</sup> To maintain safety at a permitted event, the Coast Guard has the authority to establish a safety zone in which marine traffic is excluded from that portion of the Bay. Permits can also stipulate that the event be patrolled by one or more vessels of the Coast Guard or delegated authorities to enforce special event requirements as well as general

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<sup>5</sup> In one case, the Rules do specifically identify vessels that might use the Water Trail; Rule 25 addresses lighting requirements for sailing vessels less than 7 meters long and vessels under oar. 33 U.S.C. §2025

<sup>6</sup> 33 U.S.C. § 2017.

<sup>7</sup> This also reflects a widely cited “rule,” the Rule of Tonnage that essentially calls for smaller vessels to give way to larger ones. This is not a regulation (i.e. it is not one of the Rules of the Road), but it has emerged due to the reality of interactions between differently-sized vessels: in the event of a collision, the smaller vessel will probably not fair as well as the other boat. Therefore the smaller vessel that, it is assumed, has the better maneuverability and an operator with greater incentive to avoid the collision, will steer clear.

<sup>8</sup> Information retrieved on February 26, 2006 from the Sector San Francisco Vessel Traffic Service website: <http://www.uscg.mil/d11/vtssf/>

<sup>9</sup> 33 U.S.C. §100.05, 100.15

navigation and safety rules. The Coast Guard posts a “Local Notice to Mariners” at its Navigation Center website to inform the public about marine events and any special restrictions associated with the events.<sup>10</sup>

The Coast Guard has authority to establish different types of limited or controlled access zones and regulated navigation areas.<sup>11</sup> Safety and security exclusion zones around the Bay restrict vessel traffic access (including NMSB access) into these areas.<sup>12</sup> Most safety exclusion zones are temporarily established in response to a specific marine event (e.g. fireworks displays). Existing security exclusion zones are in effect around cruise ships, tankers and naval vessels to 100 yards, 25 yards from any pier, abutment, fender or piling of the Golden Gate and Bay Bridges, and 200 yards from the San Francisco and Oakland International Airports.<sup>13</sup> Navigation is also affected by “regulated navigation areas” throughout the Bay. In these areas the Coast Guard has established specific rules (e.g. designating vessel traffic lanes and separation zones for large vessel traffic) to ensure safety of life.<sup>14</sup> The National Oceanic and Atmospheric Administration (NOAA) maintains navigational charts that show long-term exclusion zones and regulated navigation areas.

State and local governments regulate navigation by establishing restrictions to promote or protect the overall use of navigable waters, and to strike an appropriate balance among competing public trust uses of a waterway (e.g. commerce, recreation, environmental needs).<sup>15</sup> The Harbors and Navigation Code authorizes the Department of Boating and Waterways to establish and enforce recreational boating operation and equipment regulations (in conformity with federal navigation rules promulgated by the Coast Guard). Most of these rules address boating practices, equipment requirements and liability issues.<sup>16</sup> Under the Code, local governments can also regulate recreational boating in waters within their jurisdiction through time-of-day restrictions, speed zones, special-use areas and sanitation and pollution controls.<sup>17</sup>

The Harbor Safety Committee of the San Francisco Bay Region also addresses navigational safety issues. The Committee, comprised of representatives of the maritime community and state and federal agencies, makes navigational safety findings based on guidelines established in the California Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990. The Committee is relevant to the water trail in a few ways. First, its findings can lead to new navigational safety regulations that may affect NMSB activities on the Bay. Second, public meetings of the full Harbor Safety Committee and its subcommittee work groups enable local and regional interests to provide input on state and federally-regulated aspects of Bay navigation and national security. Third, the Prevention Through People (PTP) work group – which primarily develops educational and outreach materials to

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<sup>10</sup> Local Notices to Mariners are posted at the following website: <http://www.navcen.uscg.gov/LNM/default.htm>

<sup>11</sup> 33 U.S.C. §165

<sup>12</sup> The Coast Guard establishes safety zones – water and/or shore areas to which access is limited – for safety or environmental purposes. A safety zone may be stationary and described by fixed limits or be described as a zone around a vessel in motion. (33 U.S.C. §165.20) Security zones serve to prevent damage or injury to any vessel or waterfront facility, to safeguard ports, harbors, territories, or waters of the United States or to secure the observance of the rights and obligations of the United States. (33 U.S.C. §165.30)

<sup>13</sup> 33 U.S.C. §165.1183-1192

<sup>14</sup> 33 U.S.C. §165.1181

<sup>15</sup> *City of Berkeley v. Superior Court*, *supra*, at 523-526; *People v. California Fish Co.*, *supra*, at 598-599; *Carstens v. California Coastal Com.* 1986. 182 Cal.App.3d 277, 289.

<sup>16</sup> Harbors and Navigation Code §660 (b). In terms of managing access on navigable waters, the department makes rules within cities, counties or other political subdivisions where “no special rules or regulations exist,” or when “the department determines that the local laws regulating the use of boats or vessels on that body of water are not uniform and that uniformity is practicable and necessary.”

<sup>17</sup> Harbors and Navigation Code §660 (a).

promote maritime safety – has recently focused these efforts on paddleboat safety.<sup>18</sup> Additionally, the Harbor Safety Committee remains engaged in the water trail planning work, consulting and advising on navigational safety and security issues that particular launch sites or water trail activities may raise.

**NMSB Safety Efforts.** The Prevention Through People group is one of handful of organizations that works on safety issues for NMSB activities in San Francisco Bay. Bay Area Sea Kayakers (BASK) and Western Sea Kayakers (WSK) are two regional clubs dedicated to safe enjoyment of the sport. Both clubs focus on helping members improve kayaking skills, learn safety techniques, and stay informed about local marine conditions and hazards. The clubs frequently offer classes and workshops for members that cover different paddling skills, the Rules of the Road and other safety topics. Members also learn about kayaking safety through presentations at monthly meetings and informally through interactions with other club members (e.g. during club-organized trips). The clubs do outreach to paddlers beyond their membership base through posting and linking to safety-related information at their websites. The San Francisco Boardsailing Association (SFBA) is a regional organization that works to promote windsurfing and kitesurfing access and safety. The SFBA website is a clearinghouse of regional and site-specific safety information for boardsailors. Over the past few years, the organization has expanded its safety outreach and education efforts by offering safety clinics for members, sponsoring presentations on boating safety by the Coast Guard and, most recently, holding a boardsailing “Safety Day” event open to the public.<sup>19</sup> Additionally, Peter Thorner, SFBA President, is preparing a guide to VHF radio communications for windsurfers.

Other boating clubs around the Bay are affiliated with specific locations and/or competitive teams. One example is Cal Sailing Club at the Berkeley Marina that offers its members windsurfing lessons and equipment to use at a relatively low cost.<sup>20</sup> The club implements a rigorous training and skills rating system for members that determines when, where and how members are permitted to use club equipment. Another example is the South End Rowing Club at Aquatic Park in San Francisco. The club has a wide variety of paddlecraft that members can use once they complete a rowing clinic and demonstrate to the club’s rowing staff their competency on the water.<sup>21</sup> Similarly, many competitive outrigger canoe, dragonboating, whale boating and sculling clubs around the Bay train members in boating skills in preparation for using club equipment and participating in races.

Throughout the Bay region, numerous shops rent and sell kayaks, canoes, windsurfers and kiteboards and offer classes for building paddling or boardsailing skills, including training in rescue techniques, understanding tide and current predictions and navigation. For many beginners and tourists, these outfitters are the sole source of information about safe, responsible kayaking on the Bay.

Numerous, general boating safety courses are available through a variety of agencies and organizations. These are less relevant to the water trail because they tend to focus on motorized boating safety. Two key sources for this safety education are California Department of Boating and Waterways (DBW) and the U.S. Coast Guard Auxiliary. DBW

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<sup>18</sup> PTP developed and distributed a safety reminder sticker designed to attach to a kayak just in front of the cockpit or seat. The subcommittee is also working on a paddlesport safety tips card targeted to inexperienced paddlers that will ideally be distributed with the sale of a kayak, canoe or other paddleboat.

<sup>19</sup> Information from the SFBA website retrieved on August 25, 2006: [www.sfba.org](http://www.sfba.org); and from personal communication with Peter Thorner, President, SFBA (July 17, 2006).

<sup>20</sup> Information from the Cal Sailing Club website retrieved on September 14, 2006: <http://www.cal-sailing.org>

<sup>21</sup> Information from the South End Rowing Club website retrieved on September 14, 2006: <http://www.south-end.org/row/boatRules.shtml>

offers boating safety courses online and its website has links to all safety courses approved by DBW. One of mission of the Coast Guard Auxiliary is public education about boating safety. In addition to safety information at its website, the Auxiliary offers a variety of courses at Bay Area locations on topics such as navigation, reading nautical charts and general safe boating practices.<sup>22</sup>

**Gaps in Safety Efforts.** The range of safety efforts described above shows that there is no need to start from scratch in addressing NMSB-related safety issues. However, based on the needs identified previously – consistent safety education and coordination among maritime user groups – gaps remain. Coordination between NMSB groups and maritime agencies and organizations is one of these gaps. In some instances, differences between organizational cultures seem to inhibit good communication and coordination (e.g. the grassroots approach of some kayakers, versus the ‘chain of command’ model in the Coast Guard and Harbor Safety Committee). Historical issues also contribute to current communication problems. One example for overcoming these issues is an ambassador approach. Peter Thorner, SFBA President, meets annually with Coast Guard personnel involved in marine safety and rescue operations to familiarize them with boardsailing equipment and safety issues. He uses this opportunity to learn about how the boardsailing community can make the Coast Guard’s work easier.<sup>23</sup>

Poor communication about navigational restrictions associated with marine events has also caused problems recently. These issues might be better addressed if one organization takes responsibility for collecting information on marine events and disseminating this information in a form that is understandable and relevant to water trail users. Postings made via a master email list or website could enable boaters to stay up to date.

Improved coordination between paddle sport user groups and sailing vessels and motorized boaters might also be the first step in addressing another gap in navigational safety; a lack of rules or norms for on-the-water interactions between paddlecraft and these other types of boats. Increases in fast ferry traffic and large sailing vessels on the Bay as well as water trail usage could lead to more accidents, particularly if broadly accepted navigational protocols, or norms, are not adopted for these vessel-to-vessel interactions. In some cases, such as with fast ferries, maritime user groups are working to develop standard practices (e.g. consistent travel routes) to minimize chances of accidents in general. However, these efforts could be improved with better coordination with NMSB users to ensure that adopted standards are consistent with protecting and improving safety for these non-motorized boaters as well. Occasionally, measures that improve navigational safety for larger, faster vessels can, in contrast, have negative safety impacts to NMSB users. For example, a safety exclusion zone around a ferry terminal could force kayakers – who travel at a maximum speed of about 3 knots – to travel much longer distances in more exposed and dangerous waters, or closer to shipping traffic.

Many personal and navigational safety concerns are site-specific. To safely launch and boat in some areas, local knowledge about site-specific conditions is essential. This information is not widely available for kayakers and canoeists. For windsurfers and kitesurfers who can launch in only a limited number of locations, SFBA provides launch site information at its website. Similarly, this information needs to be made available to

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<sup>22</sup> Information from the U.S. Coast Guard Auxiliary District 11 Northern Region website retrieved on August 25, 2006: <http://www.uscgaux-d11nr.org/>

<sup>23</sup> For example, based on comments from the Coast Guard, SFBA recommends that boardsailors write their names and contact information on their boards. In the event that someone gets separated from his/her board and it is later retrieved, the Coast Guard can try to contact him or her before launching a rescue mission.

paddleboaters through water trail resources such as a website, trail guidebook and onsite signage. These resources should also address safety preparedness for people planning multi-day trips on the Bay.

The last gap is adequate safety education for all types of water trail users. For example, existing safety efforts may not be reaching many new boat owners. Their safety training is often ad hoc or limited to basic skills training. Safety outreach and education may also be inadequate for tourist-users of the water trail (i.e. visitors to the Bay Area) who are less likely to be affiliated with a Bay Area boating clubs. If the water trail is successful in attracting tourists, the main point of contact for these users will be through rental outfitters and tour operators. For tours, the presence of experienced guides can help minimize safety problems. For visitors who want to independently rent a boat, a safety training course and/or method of testing their competency on the water and safety knowledge may be an appropriate prerequisite for renting.

## Education

This last safety gap introduces another central component of the water trail: education. Education and outreach efforts are essential to protecting the safety of water trail users and others on the Bay. Development of the water trail creates other education needs as well. In meetings three and four, the Water Trail Steering Committee identified a need for education about how to boat in a manner that is consistent with protecting wildlife and habitat. There is also a need for education and interpretation that fosters stewardship – the motivation to participate in responsible management and protection of resources. A successful water trail will also require education and interpretation to enhance the experience of paddling on the Bay to attract people to get out onto the trail.

The following section discusses existing education efforts in the Bay Area that relate to NMSB activities and gaps in these efforts that are critical to addressing the water trail needs identified above.

**Education Efforts.** Dozens of Bay Area education programs focus on natural, historic and cultural resources, but few are staged on the Bay. Of these, only a handful of programs integrate this educational focus with NMSB activities. Two Save the Bay programs combine these components. The Canoes in Sloughs program is an on-the-water learning experience for students that “helps them gain knowledge about and respect for nature and the Bay.”<sup>24</sup> Save the Bay’s Restoration Program makes use of kayaks for access to remote project sites. This combined educational and experiential approach is aimed at fostering stewardship of Bay resources. East Bay Regional Park District (EBRPD) provides naturalist-led kayak tours to Brooks Island Park to interpret natural, historic and cultural resources on the island. Access on the island is restricted to protect these sensitive resources. These tours offer EBRPD a way to let visitors enjoy and develop an appreciation for the park while maintaining the integrity of the island resources.

Some Bay Area kayak outfitters such as Sea Trek, Environmental Traveling Companions, California Canoe and Kayak and Blue Waters Kayaking offer tours focused on wildlife observation and learning about natural, historic or cultural features of the Bay Area. Commercial operators might employ naturalists to lead these trips or partner with another organization that provides the educational portion of the tour. For example, California Canoe and Kayak shop provides equipment and guides (for safety) for some of the Brooks Island tours, and naturalists from EBRPD staff lead the trips. Boating clubs such as BASK and WSK also organize tours on the Bay that have similar educational emphases.

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<sup>24</sup> Save the Bay. (2005) “Education Programs.” Retrieve September 1, 2006 from the Save the Bay website: <http://www.savesfbay.org/site/pp.asp?c=dgKLLSOWEnH&b=479747>

Depending on the design of a tour and how it is led, these trips can address all or some of the educational needs for the water trail – promoting safety, protecting wildlife and habitat, encouraging stewardship and enhancing the boaters’ experiences on the water.

The skills-building and safety classes offered by outfitters, boating clubs and other organizations (identified in the previous section) obviously address some safety education needs, but they may tangentially cover paddling etiquette or practices to prevent or minimize negative impacts to wildlife or habitat. This component depends heavily on the knowledge of the instructor and the circumstances of the class. For example, a class that takes place in an area near wildlife might give a motivated and knowledgeable instructor the opportunity to teach participants about proper viewing distances and behaviors.

Other NMSB-related education about safety, wildlife and habitat, stewardship and Bay attractions occurs off-the-water. For example, both BASK and WSK frequently have speakers at their monthly meetings that present on natural, historic and cultural features around the Bay Area that are accessible via kayak. The annual Paddlefest event at Coyote Point Park in San Mateo includes talks on how to bird watch from kayaks and appropriate boating practices for kayaking in nature.

A wide range of education programs focus on Bay resources but do not have an affiliation or component that obviously relates to NMSB activities. Providing an exhaustive list of these here is not possible, but a few examples include the education and interpretive programs offered by San Francisco Bay National Wildlife Refuge, Audubon Society chapters, Marine Science Institute, EBRPD Naturalist Programs, Crissy Field Center and Marine Mammal Center. Some programs talk generally about Bay resources, while others highlight natural, historic and cultural features at a particular site. They are targeted to a variety of audiences and designed around different activities such as walks, hands-on environmental education workshops and restoration or other stewardship events. A common thread among these programs is an emphasis on helping participants understand and develop an appreciation for natural, historic and cultural resources of the Bay Area.

Another element of education is media – signage, maps, guidebooks, brochures, web sites, newspaper and magazine articles and television. At some launch sites for NMSBs, signs describe local safety and security issues and rules for launching or operating boats. For example, signage at Crissy Field and 3<sup>rd</sup> Ave (in San Mateo) warns boaters about dangerous local conditions (e.g. winds and currents). A few of the existing NMSB launch sites are in parks and areas of natural, historic or cultural significance that have interpretive signage and displays about these features. A good example of this is the Rosie the Riveter interpretive displays in Barbara and Jay Vincent Park (in Richmond) which has excellent NMSB launch facilities. Additionally, signage in these areas may alert visitors to sensitive wildlife or habitat and describe site-specific boating rules for protecting these (e.g. Martin Luther King Jr. Shoreline (in Oakland) and Palo Alto Baylands Park).

Brochures and similar handouts are another source of education for water trail users. BASK produces a tri-fold brochure that outlines key safety preparedness steps and basic boating practices to prevent disturbances of wildlife. All BASK members also receive copies of a “P.A.D.D.L.E.” card that describes widely accepted wildlife viewing practices that

minimize disturbances. The card was developed by the Farallones Marine Sanctuary Association, California Department of Fish and Game, Marin County Open Space District and BASK. The acronym stands for:<sup>25</sup>

**Pass afar:** Maintain a distance so that animals do not feel threatened. Some wildlife can be disturbed at distances over 650 feet. Responsible visitors watch for changes in animal behavior to avoid disturbing them. Stay at least 300 feet away (approximately the length of a football field) from seals, birds and other wildlife, or from places where they could be resting out of view.

**Approach parallel:** Maintain a parallel course to the animal distribution. This is believed to be less threatening than a direct approach towards the animal. Pass at a constant speed. Do not slow down speed up or swing closer to seals or birds.

**Discrete viewing:** Restrain your impulse to get closer: if you get too close, wildlife will leave. As you pass, do not engage in any "stalking" activity, or attempt to approach animals undetected. If you wish to observe wildlife behavior, use binoculars or a camera with a 500mm or longer lens. If the animal reacts in any way to your presence, you are too close!

**Defer immediately:** If seals begin lifting their heads, or birds begin moving away or flapping their wings, retreat from the area. If seals stretch out their necks or chests higher in the air, back off immediately. If seals start to move towards the water or enter the water, immediately leave the area to avoid prolonged stress on the animals. Backpaddle away from wildlife instead of turning your boat around.

**Leave alone:** Do not handle or attempt to "rescue" seal pups that you believe are abandoned or injured. Mother and pup will usually reunite on their own. If you are concerned about a marine mammal, call the Marine Mammal Center at (415) 289-7325. They will notify the appropriate agency or respond directly.

**Explain effects:** Tell other paddlers and small boaters how they can help protect wildlife. Marine mammals and migratory birds are protected from harm and harassment by the Endangered Species Act, the National Marine Sanctuary Act, the Marine Mammal Protection Act and the Migratory Bird Treaty Act. It is against the law to harass wildlife. This includes intentionally causing seals or birds to flush. Continuing disturbances can result in areas being closed to boating. Protect your paddling and boating privileges by helping educate less aware paddlers.

Educational information in most brochures for parks and refuges along the shoreline does not usually address NMSB-related activities, but the information often identifies or interprets features at the site that are of special interest or require special protection. These types of media can enhance experiences on the trail, and inform NMSB users about how to minimize negative impacts to resources at the site.

**Gaps in Education Efforts.** To fulfill the education needs that the water trail creates, significant gaps in the existing education efforts have to be addressed. The Bay Area lacks sufficient integrative programs that use NMSB activities with education and interpretation as a means of building appreciation of Bay resources and motivating participants to protect these resources. One approach to expanding the number of these integrative programs might be to establish additional partnerships between NMSB outfitters and organizations and agencies that already do environmental education. Additionally, information about preventing and minimizing disturbances to wildlife and their habitat needs to be consistently and accurately presented in all NMSB education settings. Current education efforts often do not address this issue directly, leaving too much to chance; NMSB users may or may not take away a clear understanding of proper boating behaviors from the educational experience. Consistently promoting an outreach and education message based on the P.A.D.D.L.E. acronym for all educational settings may help address this gap.

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<sup>25</sup> Taken from the P.A.D.D.L.E. cards provided by Bay Area Sea Kayakers (BASK). Text of the card is available at the BASK website: [www.bask.org](http://www.bask.org).

Visitors to the Cascadia Water Trail north of Seattle, WA will notice that on and off the trail they get consistent messages about safety and environmental protection and conservation. The information is the same whether a visitor reads it on a water trail campsite sign, hears it from a tour guide or reads it on brochure available on the ferry ride over. Presumably, this consistent messaging did not happen overnight – the Cascadia trail is over 20 years in the making – and it involves ongoing, persistent efforts by the Washington Water Trail Association staff to ensure that trail users are receiving the same, accurate information wherever they go. The Bay Area needs a similar coordinated, multi-media effort to provide consistent and accurate information to NMSB users.

Another NMSB education need that is not currently addressed is sufficient signage at launch sites and decisions points that describes site-specific conditions (e.g. safety hazards and sensitive habitat areas) and recommended or required boating practices for these conditions. Studies on visitor education in natural areas suggest that information intended to change visitor behavior is most effective when presented at decision points.<sup>26</sup> Most key decision points for NMSB users occur on the water. While it is infeasible to install on-the-water signs in most areas of the Bay, indicator buoys may be a viable alternative for the water trail in some locations. Additional signage is also needed at launch sites to interpret natural, historic and cultural features from an on-the-water perspective. This is an important component in building appreciation for and motivation to protect resources, as well as enhancing the experience of being out on the water and attracting people to the trail.

These last two gaps – outreach signage to promote proper boating practices and interpretive signage – reflect broader gaps in NMSB-related educational media. In particular, NMSB users do not have site-specific information available in maps, a guidebook, websites or on-site signage. These are critical components of other water trails that enable users to plan and enjoy interesting trips, boat safely and protect the natural, historic and cultural resources on the trail.

## Principles

Filling the gaps described in this report will require significant trail-related safety and education efforts. Staff proposes two overarching principles to act as starting points for defining these efforts. Once stakeholders have discussed safety and education in Meeting 5, staff will compile recommendations from the Steering Committee, issue experts and other stakeholders into safety and education strategies. These strategies will be integrated into the existing suite of trail design and management strategies that the Committee previously reviewed.

Staff derived the following overarching principles from the water trail safety and education needs and gaps identified in this report.

- Promote safety through a water trail education program, and through active coordination among NMSB groups and other mariners and regulatory agencies.
- Offer a comprehensive water trail education program that increases opportunities for environmental education and interpretation and promotes consistent and accurate educational messages in all outreach efforts.

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<sup>26</sup> Settina, Nita. (2005) Efficacy of Leave No Trace Education at Reducing Camping Impacts in Green Ridge State Forest. Draft version of report provided to BCDC by the author. Nita Settina is Nature Tourism Program Chief for the Maryland Department of Natural Resource's Forest & Park Service.