

Swift Water Spill Response Guide

Good Practice Guidelines for Initial Spill Response Management and Operational Tactics

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Introduction

This field operations guide is not an educational or decision-making tool. This guide contains a set of operational tools and references to assist in the response to spilled oils on inland swift waters, which are waters traveling at speeds greater than 2.5 mph.

Priorities for oil spill response:

- people—safety of response personnel and the public;
- environment—prevention of environmental, human health, and welfare effects;
- assets—minimizing damage to structures and equipment.

People

Responder safety and health should never be compromised for tactical considerations. Likewise, swift water spill response (SWSR) should be conducted to maximize safety around water and health impacts to responders, the public, and the surrounding areas of a spill.

Intended Audience

This guide is intended for experienced response operations personnel having basic knowledge in spill response. For general guidance on spill response, it is encouraged that you review basic spill response materials prior to utilizing this guide. The functionality of this guide is designed to be a personal walkthrough geared towards an understanding of the necessary response tactics and consequences of swift water spill response.

How to Use This Field Guide

A decision to use SWSR with appropriate local, state, and/or federal approvals should already have been made before field operations commence.

Operations managers should use this guide to develop timely plans, brief personnel, and manage operations. Environmental staff should ensure that operational plans conform to any permission requirements or permit conditions.

The scale of the spill response and its tactics will determine the potential hazards, permissions required, operational staffing, management structure, and intensity of any air quality monitoring. This guide is intended to be incident scale-neutral.

When encountering unfamiliar terms or acronyms, please refer to Section 7, Terms and Definitions.

Swift Water Spill Response Guide

1 Safety

1.1 Safety Equipment and Personal Protective Equipment

The first priority during an emergency response is the protection of human health and safety. This applies to the responders attempting to contain the release. In the following section, we will discuss the appropriate personal protective equipment for initial responders. Most responses create a heightened sense of urgency necessary to combat and minimize the potential impact to the environment. However, it is very important that this does not create an unsafe workplace. All releases will have differing hazards associated with them, so it is vitally important to review the safety data sheets (SDS) of spilled materials to ensure responder safety. It is also important to make sure that regulatory and company standards are followed. Safety is the first priority; serious injuries and loss of life cannot be remediated.

For the purposes of this guide, we will not dissect government regulations or all hazards associated with spill response. We will cover the main and key pieces of safety equipment that all responders should be familiar with. This begins with personal protective equipment (PPE). Each operational scope will require a different combination of PPE to protect personnel. When we talk about swift water spill response (SWSR), three initial work scopes have the largest significance:

- 1) On-water crews: will be working from the confines of a response vessel;
- 2) Shoreline crews: will be spending a majority of their response time within close proximity of the watercourse;
- 3) Standard crew: the response team workers who will be more than 10 feet from the water.

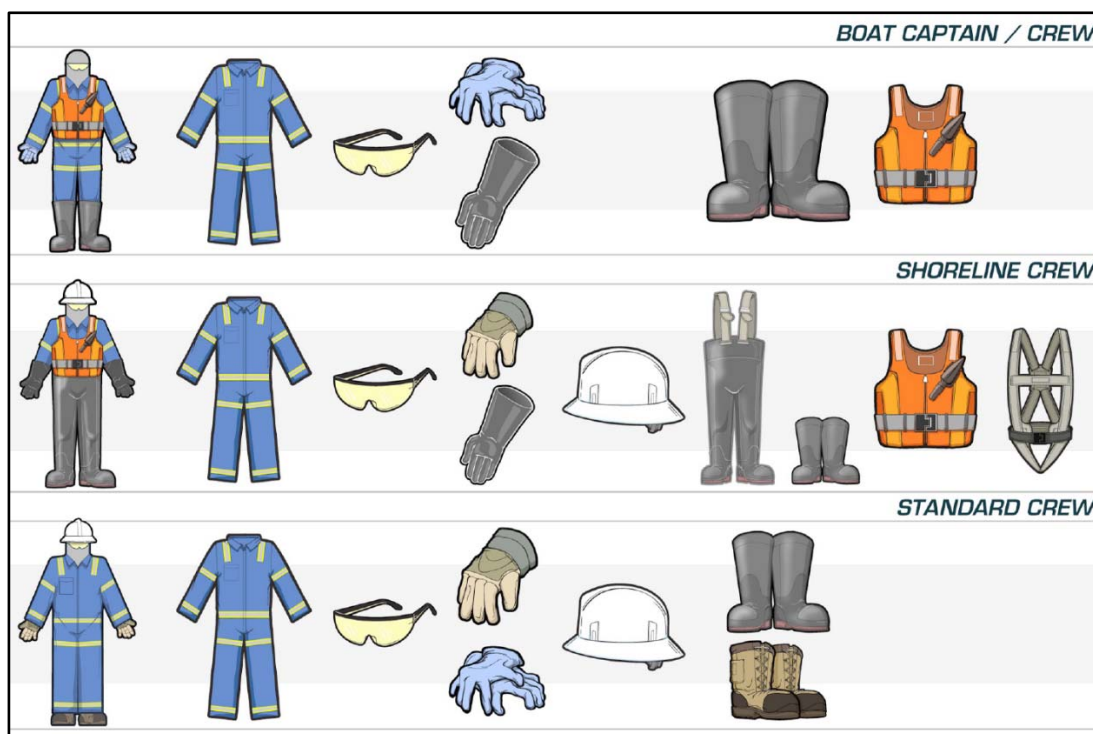


Figure 1—Personal Protective Equipment

The base layers for the responders will vary based on site temperatures; however, the exterior shells should always be fire-retardant coveralls with high-visibility banding. Eye protection should always be worn, and varying types may be required based on work scope. Gloves are also required, especially for the responders who will be frequently performing manual handling tasks. Foot protection should be steel/composite toe that is easy to decontaminate. High-ankle support is also strongly recommended for those who may be working on uneven shoreline terrain. Personal flotation devices (PFD) are a must for anyone working on the water or within 10 feet of the water's edge. Note that this location can change over the course of the response giving rising/falling water lines. There are several different types of PFDs, so ensure you choose the correct one based on your work scope. Hard hats are recommended for shoreline and standard crews where no overhead hazards exist. However, hard hat use is not recommended for those on a vessel, unless chinstraps are worn to guarantee hardhats cannot come off and become a hazard. Helmets should be considered when working in swift water. Also, harnesses may be considered for shoreline crew.

Air monitoring equipment should be used by safety personnel to ensure that flammable vapors do not become a point of concern. The makeup of the spilled material will determine the level of concern posed by toxic or flammable vapors, and the SDS should be consulted. Additionally, local and regional governments should be consulted during air monitoring to ensure an efficient use of resources, as well as enable communication of this information to the public.

Fire and explosion hazards are most prevalent during the initial response, so it is strongly recommended that no work operations occur until proper monitoring equipment is available. This is extremely important because watercourses are found in lowland areas due to their topographical makeup. This can create toxic or flammable areas that may not be as obvious as the spill footprint. Respirators may also be necessary depending on the released product and volume. If you ensure that time is spent creating a response-specific health and safety plan (HASP), you will be able to address the unique hazards present. Hazard assessment should always be treated as an ongoing process with continuous reevaluation to ensure the safety of personnel and the public.

1.2 Site Safety

Taking the time to conduct daily field-level safety meetings will lead to a healthy and open dialogue on-site. This is also a great time to discuss hazards that other crews may have previously encountered, or to discuss safe work practices. This “tailgate” is meant to be a concise forum for all responders to voice their concerns or good work practices. It provides supervisors the opportunity to ensure that workers are familiar with site hazards for the day's operations. It also affords the opportunity to draw up the containment strategies on a whiteboard or trailer if they have not been already. The delegation of tasks can then be conveyed and goals reaffirmed to promote success.

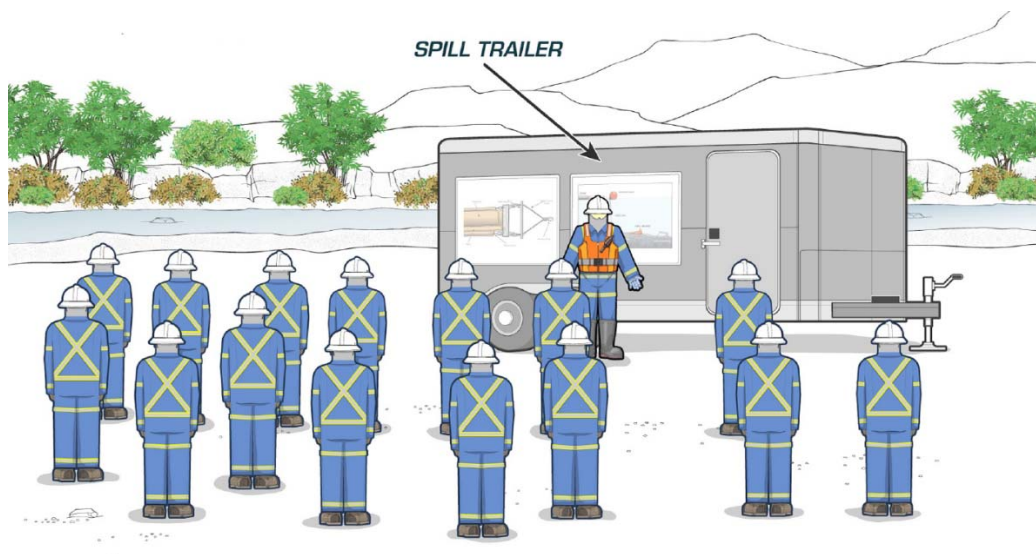


Figure 2—Pre-deployment Meeting

2 Site Evaluation

This section examines site variables responders should consider when choosing containment and recovery sites.

2.1 Access

Having instantaneous access to the anticipated control point is certainly beneficial, and is sometimes identified in a contingency plan. However, this is not always possible. Some responses are going to dictate that access has to be creative and positioned based on the specific considerations during a spill. If this is required, it is extremely important to evaluate the consequences of forging a road to the shoreline. Over the next few pages, we will discuss low-impact techniques and why they should always be considered when developing control point access. The driving factor for determining whether special access should be built should be a net environmental benefit analysis (NEBA). By building this analysis, you will decide whether the further impact to the environment is justified by the access it will afford. This analysis will need input from all stakeholders and the responsible party. Extreme rutting (see Figure 3) will limit access of vital response equipment and make the control point ineffective. As the first responder, you should challenge yourself to maintain as small of a footprint as reasonably possible for an effective response.

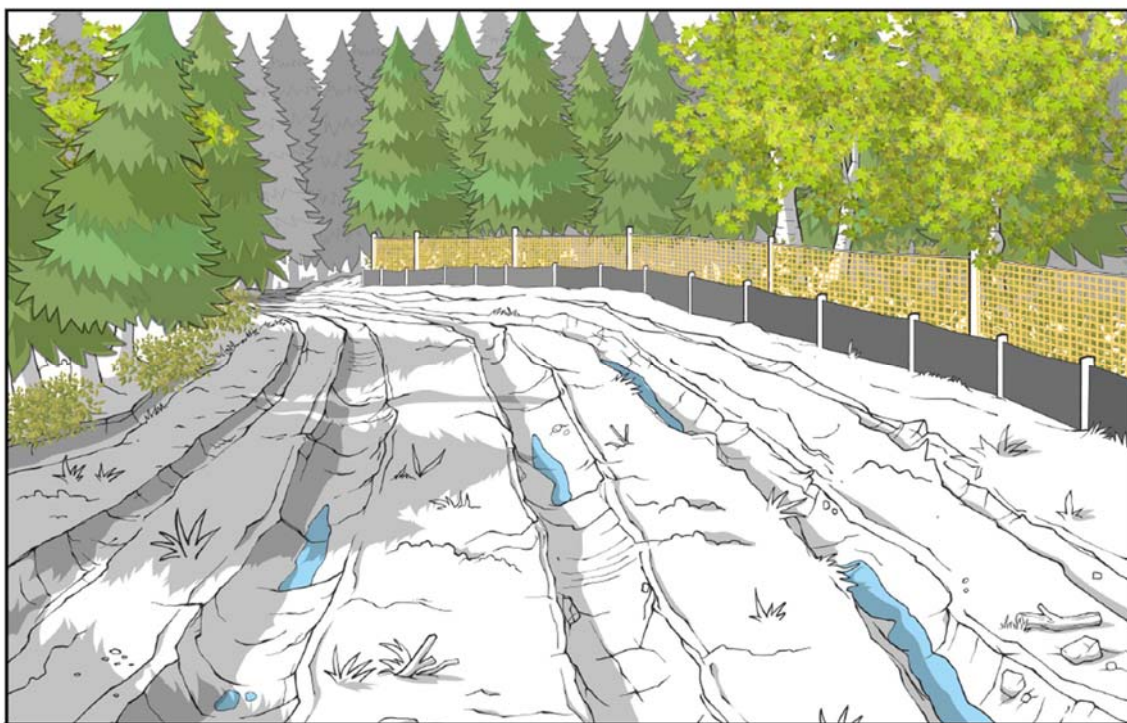


Figure 3—Extreme Rutting Limiting Access

Oftentimes, the best access methods for a particular event will not always be readily available. This should not be a deterrent to finding a location that provides exemplary containment conditions. Easy access should be viewed as a luxury and not a necessity. Optimal containment conditions should be your priority for SWSR. Minimal impact equipment can be brought in to negate/minimize an expanding footprint. Matting and pallets (see Figure 4) are inexpensive supplements that can be reused at different locations. They allow frequent traversing with less damage. This is important if the response occurs as seasons are changing, which will make it hard to maintain adequate access. Not every control point will require as much attention to the detail of the access, as roads may be erected with minimal damage or already be present. However, for locations that will become crucial for the entire response, the benefit of a detailed and thorough access plan is more than just environmentally cohesive; it can become the cornerstone for maintaining continuous progress.

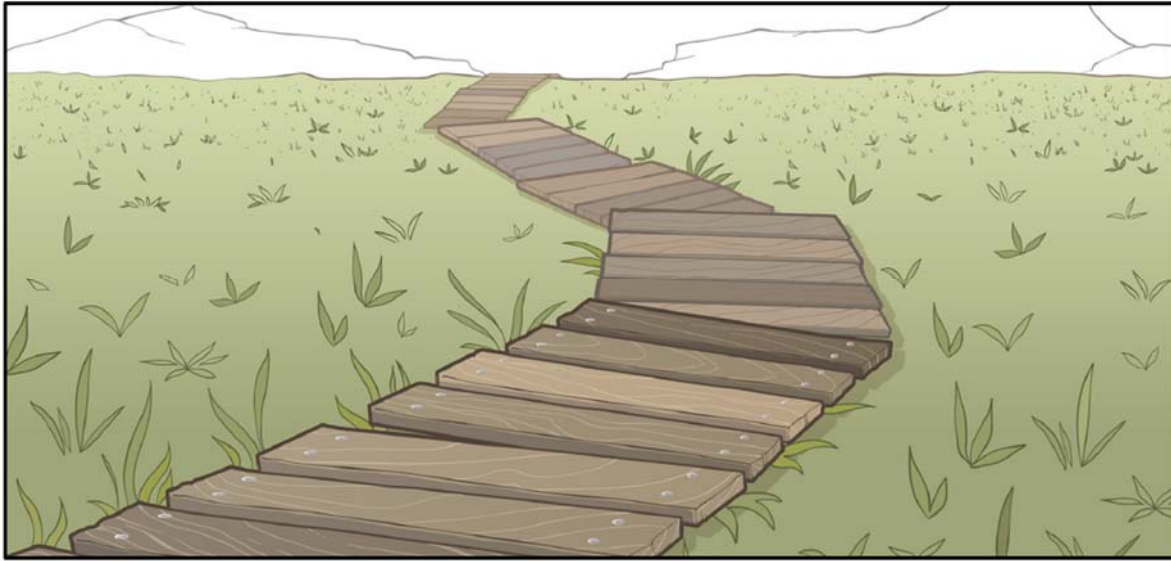


Figure 4—Boarding and Pallets

2.2 Staging Area

The logistical backbone of a successful control point location is the staging area. This encompasses not only having the necessary equipment but keeping it organized and quickly accessible. The next few pages will break down the design and strategy for staging-area configurations, as well as the necessary management mentality to promote response success. During an initial response, recovery locations are important, but staging areas become important after the initial response. The resources will need to be housed at a convenient location to allow for effective and efficient deployment of resources. Depending on the magnitude of the response, this can be as simple as one local field office or as complex as several adjacent fields spread out along the river system. Some responses may require moving the staging area several times during the response.

The size of a staging area is almost always underestimated because it is hard to know the full work scope immediately following the release, and only over the duration of a response can the correct size and type of staging area be designed. However, there are several consistencies that can be templated to ensure that the response will be able to function if the staging area needs to be increased. The first consistency is duration of necessity. It is important to build the staging areas to outlast the operational scope; the infrastructure necessary to protect the equipment and surrounding wildlife is crucial to establish early. The next step is ensuring the topsoil can handle the amount of anticipated site traffic. This may mean moving the topsoil temporarily and/or bringing in matting. Both are options that should be considered for practicality and effectiveness. The next consideration is to establish a traffic plan or flow for equipment arriving and leaving the site. The one entrance and one exit system ensures that everything arriving is not only checked in immediately, but also is in the right place. One exit helps eliminate theft or accidental misappropriation.

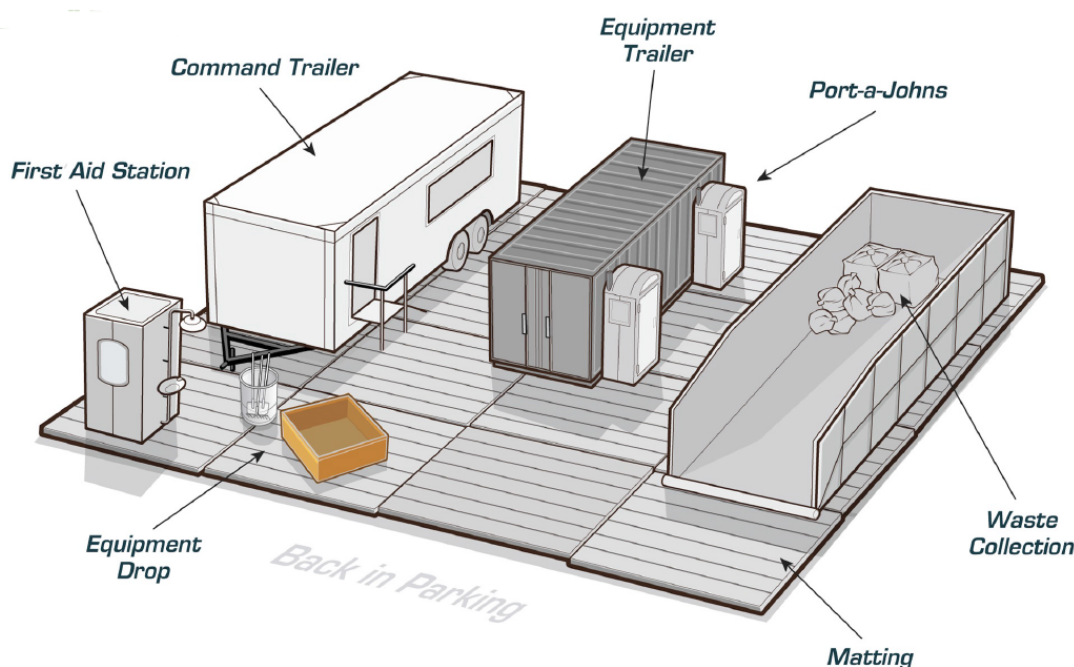


Figure 5—Staging Area Example

Initially, the most common resources will be focused on containment and recovery. However, it is very important that as the ancillary resources come in, they do not get in the way or bury important pieces of containment. Depending on the size and scope of the response, it can be beneficial to use the staging area for waste management. This will streamline logistics and shrink the response footprint. The staging area design and functionality will simplify response equipment tracking while also helping to ensure response effectiveness, so it is important to utilize good midpoints between control points and less important to ensure the staging area is located directly adjacent to response operations on the watercourse.

For the staging area and recovery site, the best way to promote success is by establishing a functional work area. Over the next few pages, we will highlight the appropriate design for swift water spill response. Figure 6 illustrates work areas that will lead to successful product recovery. These feature open access points for mechanical equipment, bare or minimally vegetated banks, and very little slope. The trick is to utilize equipment that will enhance the response efforts or be able to spot variables that will be too much of an obstacle and warrant moving the work area upstream or downstream. During the initial response, playing defense and securing containment ahead of the leading edge is as vital as isolating the source. Using Figure 6 as a template on how to design a work area, discuss whether it will be more beneficial to cut down overgrown vegetation or install pallets along the shoreline to minimize impact, as was considered when looking at site access. This stable work area will allow for efficient equipment usage on site. Another good practice is that if matting is installed, it should allow for a vacuum truck to drive all the way to the shoreline for recovery rather than having to utilize additional hosing or a fast tank. These subtle improvements will allow for the response to handle changing weather patterns that have traditionally caused further impact or a worsening loss of containment. This development of adequate infrastructure also ensures that other traditionally menacing variables can be maintained at the control point.

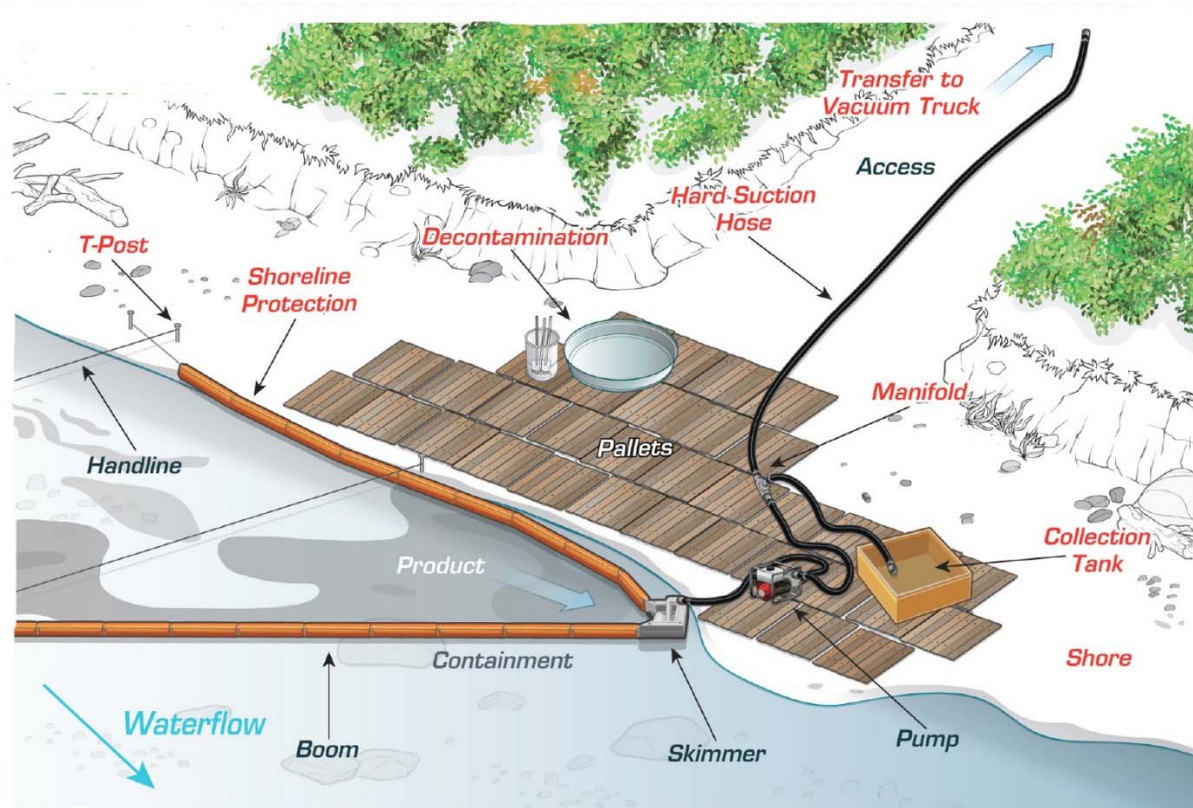


Figure 6—Work Area Example

Another best practice is to provide sufficient room for decontamination or, at a minimum, ensure that the impacted equipment doesn't leave the site between use. This is important as it pertains to hand tools and PPE. If every responder is taking equipment back to the staging area for decontamination at the end of every work cycle, the spill footprint will slowly grow every day and will require additional remediation along access paths. All resources should be utilized to their maximum extent prior to being brought back to the staging area or prior to decontamination. The best example of this is shoreline protection boom. This is the segment of containment boom that runs upstream from the recovery equipment along the work area. This is important because the goal of a containment configuration is to force the released impacts to a recovery point. Accumulating more product at this location than what would typically be deposited based on the hydrology is preferred. This cause and effect leads to a greater potential to impact the shoreline adjacent to the work area. The shoreline protection boom ensures that this does not happen and that the product stays within the containment configuration until it is extracted mechanically.

2.3 Boat Launch

When choosing a control point location, having an onsite boat launch will drastically expedite the response efforts. Be aware that a boat launch is only a few stabilized mats away from being created at any site. For swift water spill response, vessels are pivotal in all phases of the response effort. The initial response phase is no different; without boats, the response efforts are limited to very few tactical strategies. Locating all of the permanent boat launches should be done prior to a response during contingency planning. If not, you will be forced to rely on local knowledge and online information. For swift water spill response, utilize boat launches located as close to their work area as possible. This helps cut down on unnecessary travel time. It is also highly recommended that public launches be photographed and their conditions be well documented. This will help track the wear caused by the influx of response vessels. It is also important during the initial response phase to have someone visually inspect and collect records of decontamination for all of the vessels heading into the water. Introducing an invasive species to a sensitive area should be avoided. This will also assure you are not introducing more contamination into the site.