Inventory & Assessment of Marine Oil Spill Response Resources in Massachusetts & New England States

For the COMMONWEALTH of MASSACHUSETTS











Prepared for: Massachusetts Department of Environmental Protection

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Contents

Executive Summary

This report presents an inventory oil spill response equipment located in the coastal communities of Massachusetts and in surrounding regions of the Northeastern United States as of mid-2009. This inventory was conducted as part of a broader oil spill threat evaluation under the direction of the Massachusetts Department of Environmental Protection (MassDEP). The purpose of both this project and the broader threat evaluation is to help the Commonwealth to make regional and local comparisons regarding relative oil spill threats and response equipment availability.

A variety of information collection methods were used to track the quantity, type, ownership, and storage location of boom, skimmers, skimming systems, and temporary storage devices within Massachusetts. Major spill response equipment owned by either state agencies or major marine oil spill removal organizations (OSROs) was inventoried for the neighboring states of New Hampshire, Maine, Connecticut and Rhode Island. An inventory of chemical dispersants was also conducted for the continental United States.

Within Massachusetts, relative oil spill response equipment stockpile levels are compared by region to provide a relative measure of spill preparedness. The highest levels of equipment stockpiles exist in the Boston Harbor and Cape and Islands regions. Nearly all of the Boston Harbor equipment is owned by oil spill response contractors, while in the Cape and Islands, most of the response equipment is state-owned. The majority of skimmers, skimming systems, and temporary storage capacity is concentrated in the Boston Harbor region. The inland region has a small stockpile of skimming systems, but other regions of the state have virtually no recovery or storage capacity. The distribution of boom statewide is more even, due to the presence of spill response trailers in over 70 coastal communities in all coastal regions of the state.

In comparing the oil spill response equipment stockpiles in Massachusetts with those in other New England states, this study found that Massachusetts has a comparatively high level of spill response resources, due to two major factors: (1) the boom inventory in state spill response trailers, and (2) the concentration of response contractor equipment in the Port of Boston. Massachusetts has the highest total amount of calm water boom, all boom types combined, skimming system units (but not necessarily capacity), and temporary storage. The state with the next highest level of equipment stockpiles in most categories is Maine, followed by New Hampshire, Rhode Island, and Connecticut. Maine has the highest relative stockpiles of response equipment suitable for open water or offshore operations, while New Hampshire has the most equipment for fast-water response. Rhode Island has a concentration of equipment in the Port of Providence.

Most of the New England on-water recovery capacity is in Maine, where all of the oil spill response vessels (OSRVs) and oil spill response barges (OSRBs) in New England are located. Massachusetts has a relatively high number of skimming system units, but with lower recovery rates overall. There is a

great deal of temporary storage available in Massachusetts (concentrated in Boston Harbor) and in Maine, with relatively little available in other New England states. Connecticut has the lowest equipment stockpiles overall.

Looking at the New England regional response capacity in aggregate, there are considerable stockpiles of all types of conventional hard boom, with considerably less specialty boom (such as fast-water/high current boom and tidal seal/shore seal boom) available. Compared to other regions of the continental U.S., New England has the absolute lowest level of dispersant stockpiles, although proximity to significant stockpiles in New Jersey may negate the need for additional dispersant storage in New England. Still, it is important for local spill response plans to recognize that additional transport time would be required to bring dispersants to Massachusetts or other New England states from out-of-region. The quantity of dispersants currently stored in New England (all of which is in Portland, Maine) would only treat 11,000 gallons of oil at typical application rates.

The results of this equipment study may be compiled with the initial threat evaluation to give additional context to evaluating equipment stockpiles relative to oil spill threats. Additional analysis would certainly enhance this understanding. Geographic areas that have a high oil spill threat level and a relatively low equipment stockpile level could be the target of more intensive prevention measures and/or future preparedness activities.

This study makes the following recommendations to the MassDEP as they continue to develop oil spill preparedness and response planning and programs:

- Use spill modeling and scenario analysis to measure spill response capacity
- Consider acquiring different types of spill response equipment in future purchases, to meet other response needs or conditions.
- Consider adding on-water recovery (skimming and storage) capacity to those regions of the state that currently lack it.
- Evaluate the availability of vessels and personnel to support large-scale implementation of GRPs.
- Develop a plan to continually maintain and update the response equipment spreadsheet developed through this project.
- Assess response management capabilities and limitations and use drills and exercises to practice and improve response preparedness.
- Evaluate the mobilization/deployment time for MassDEP trailers to be called in *en masse* to another region of the state to support a large-scale response.
- Evaluate the dispersant application capability and determine whether additional stockpiles and application platforms are required in the Northeast region.

Inventory and Assessment of Marine Oil Spill Response Resources in Massachusetts and New England States

Report to Massachusetts Department of Environmental Protection

August 2009

1 Introduction

This report presents information on oil spill response equipment located in the coastal communities of Massachusetts and in the Northeast region of the United States. Nuka Research and Planning Group, LLC (Nuka Research) has compiled this information under contract to the Massachusetts Department of Environmental Protection (MassDEP) in support of the "Project to Identify Priority Coastal Communities for Distribution of Future Oil Spill Response Equipment, Training and Geographic Response Plans for the Commonwealth of Massachusetts."

This report contains an inventory and assessment of marine oil spill response equipment available in the state and region, and make recommendations regarding response equipment stockpiles and spill response planning. Nuka Research has also developed a companion report that evaluates the relative threat of coastal oil spills within Massachusetts communities and regions. The threat evaluation report, entitled *Evaluation of Marine Oil Spill Threat to Massachusetts Coastal Communities* (hereafter, Threat Evaluation Report) references the response equipment inventory in this report and makes recommendations regarding coastal oil spill planning priorities based on a comparison of relative oil spill threat levels and response equipment availability by geographic location.

1.1 Background

In 2007, the Massachusetts Department of Environmental Protection developed an interim implementation plan to enact the mandates reflected in the 2004 Massachusetts Oil Spill Prevention and Response Act, which was passed in response to the *Bouchard B-120* oil spill in Buzzards Bay. Lessons learned from the incident and from the subsequent response were incorporated into the interim implementation plan.

Efforts undertaken by MassDEP to date to complete the plan include:

- Purchasing response trailers for South Coast, Cape and Island and North Shore Communities.
- Creating Geographic Response Plans for South Coast and Cape and Island Communities
- Conducting spill response drills
- Establishment of a stakeholder group to determine future projects.

A major task identified in the plan is to conduct a coastal oil spill threat evaluation. This evaluation is seen as a first step in a more comprehensive risk analysis and management program for the threat of marine oil spills in coastal waters. Once completed, the evaluation will serve as the basis for risk management decisions such as prioritizing future equipment purchases, scheduling and conducting training exercises, and developing Geographic Response Plans.

1.2 Objectives of Inventory Project

The primary objective of the oil spill response equipment inventory project was to conduct an informal evaluation of the marine oil spill response equipment stockpiles in the Commonwealth of Massachusetts and neighboring states. Since the Massachusetts Oil Spill Act Fund[1] is being used to purchase and maintain oil spill response equipment trailers for coastal communities, MassDEP is interested in identifying current stockpile levels in order to inform future equipment purchases. Specifically, the objectives of the project are to compile information on government and contractor-owned spill response resources in the state and region in order to better understand the following:

- What are the stockpile levels in Massachusetts for the major spill response equipment types – boom, skimmers and skimmer systems, and temporary storage devices?
- How does Massachusetts oil spill response equipment stockpile compare to those of other New England coastal states?
- Are there specific types of equipment or response capabilities missing in the Massachusetts spill response equipment stockpiles?
- What are the regional equipment stockpile levels and capabilities?
- How does oil spill response equipment availability compare statewide by town and by region?
- What is the regional dispersant capacity within New England?

By addressing these questions, the state will be better prepared to make future equipment purchases and place assets in locations that increase the chance of mitigating the damage from an oil spill.

1 The Massachusetts Oil Spill Prevention and Response Act identifies that funds collected from a 2 cent per barrel fee for petroleum products delivered to a marine terminal can be used for "oil spill prevention and response equipment or training, commonwealth response to a discharge or threat of a discharge of oil and assessment of natural resource damages."

2 Methods and Assumptions

The inventory project was initiated during 2008 and initial data-gathering efforts used mailed questionnaires and follow up phone calls to the agencies and oil spill response contractors that were identified as potential sources of equipment. Response equipment inventories were also collected from websites and through data files provided by various agencies and response organizations throughout 2008 and the first half of 2009.

2.1 Information Sources and Assumptions

Marine oil spill response equipment (described in greater detail in Section 3 of this report) is specialized equipment that is not readily available to purchase on an as-needed basis. Spill response equipment is costly, requires trained operators to deploy, and must be maintained regularly to ensure that it remains in proper working order. In the United States, a large percentage of the available inventory of spill response equipment is owned and maintained by oil spill cleanup contractors, including U.S. Coast Guard certified Oil Spill Removal Organizations (OSROs) as well as smaller environmental cleanup firms. State and federal agencies with purview over marine oil spill cleanup may also stockpile spill response equipment.

Potential Responsible Parties (operators of storage facilities, pipelines, refineries, tank vessels, and exploration/production facilities) who are required to file oil spill contingency plans with federal and state governments also maintain a required minimum level of oil spill response equipment, as do other private entities whose operations have the potential to spill oil into the marine environment. In some regions, co-operative organizations have been formed wherein a group of private companies (typically, oil facility or vessel operators within a specific geographic area) may pool their resources to purchase equipment which is then available to all co-operative members. Such arrangements can cut down on the costs involved with purchasing and maintaining equipment. Local first responders (harbor or fire departments) may also stockpile oil spill response equipment for their area of jurisdiction.

This survey includes marine oil spill response equipment that is owned by state or federal government agencies, oil spill cleanup contractors, and large spill response co-operatives. Locally-owned spill response resources were also considered, although in many cases there was limited information available about the make and model of equipment maintained by local fire and harbor departments. Privately-owned resources (i.e. those maintained at regulated facilities or vessel operators) were not included in this survey because there is no mechanism to ensure that those resources would be available during a response.[2] The inventories presented in this report represent the best effort by Nuka Research to compile information; however, the inventories are not exhaustive and it is likely that additional equipment

[2] If an operator has an equipment stockpile that is linked to federal Vessel Response Plan (VRP) or Facility Response Plan (FRP) requirements, then the operator cannot typically release that equipment without risking non-compliance with the response plan. Therefore, the equipment may not be available to a spill response that occurs anywhere but at the facility or from the vessel.

may be available that was not included in this report due to lack of accessible data.

Information was gathered from the following sources:

- U.S. Coast Guard National Strike Force[3]
- U.S. Navy SUPSALV
- Massachusetts Department of Environmental Protection
- Rhode Island Department of Environmental Management
- New Hampshire Department of Environmental Management
- Maine Department of Environmental Protection
- Various Massachusetts Coastal Cities and Towns[4]
- Marine Spill Response Corporation (MSRC) Eastern Region
- Clean Harbors Environmental Services Northeast Region
- U.S. Coast Guard Oil Spill Removal Organization (OSRO) Certification Database
- National Response Corporation (NRC)
- Moran Environmental
- Boston Harbor Response Co-Operative (Massachusetts)
- Providence River Co-Operative (Rhode Island)
- Piscataqua River Co-Operative (New Hampshire)

2.2 Geographic Scope

Geographic designations are important to the final analysis and presentation of the data collected in this study, since response planning efforts and projects under the Massachusetts Oil Spill Act are to be allocated by community (town or city) and region. In the interest of consistency with other statewide ocean and coastal planning and management initiatives, this study uses the same regional designations used by the Massachusetts Coastal Zone Management (CZM) program.[5]

As shown in Figure 1.1, the state is divided into five regions for the purpose of coastal oil spill response planning: North Shore, Boston Harbor, South Shore, Cape and Islands, and South Coastal. Municipalities that are included in each region are shown on the map in Figure 1.1. These municipal and regional designations are used later in this report to analyze and compare equipment stockpiles within the state.

[3] One information source that was not queried for this project was the U.S. Coast Guard National Strike Force's Response Resource Inventory (RRI), which was still undergoing software development and data population at the time this report was compiled. Follow-up research should include a data export from the RRI to verify equipment amounts.

[4] Towns were queried using survey forms and follow-up phone calls. Information about their equipment stockpiles was limited by their response rate to these inquiries.

[5] For a more detailed discussion of how coastal towns were identified, see the report to MassDEP entitled "Rationale for Identifying Massachusetts Communities for Inclusion in Coastal Oil Spill Threat Evaluation," June 2008. http://www.mass.gov/dep/cleanup/ctrec.pdf.

Figure 1.1 Map of five coastal oil spill planning and response regions and the communities included in each region

3 Oil Spill Response Equipment Types

For the purpose of the Massachusetts marine oil spill inventory, four types[6] of marine oil spill response equipment were considered:

- Boom
- Skimmers
- Skimming Systems
- Temporary Storage Devices

3.1 Boom

Boom is a containment barrier used to intercept, control, contain, and concentrate spreading oil on water. The portion of the boom above the water surface is referred to as the sail and usually includes a flotation mechanism; the portion below the surface is referred to as the skirt. The boom may be held in place by anchors, vessels, or specialized boom positioning devices such as trolleys. A combination of methods may be used to position boom.

Figure 3.1 shows the typical components of boom. A tension member (such as a piece of cable) of greater strength than the fabric prevents the fabric from tearing under stress. Some sort of ballast such as chain or weights is attached to the bottom of the fabric to keep the boom vertical in the water. Flotation material keeps the boom afloat. There are several different designs and methods of flotation. Floats may be rigid or flexible. Inflatable air chambers may be used to provide flotation. Freeboard is the vertical height of a boom above the water line. The freeboard prevents oil from washing over the top of the boom. If there is too much freeboard, however the boom may be pushed over in high winds. The part of the fabric below the floats is called the skirt. The skirt prevents oil from being swept underneath the boom. End connectors are used to connect sections of boom together. Since there are many different types of boom there are many types of end connectors.

Boom comes in a variety of forms and may be deployed in a number of possible configurations. Different types and sizes of boom may be referred to by a variety of names, some of which may vary regionally. Boom can be classified in a number of different ways. For the purpose of this study, two types of boom classification are considered: construction and operating environment.

There are two major types of boom construction: fence and curtain. Fence booms have a rigid or semi-solid material as a vertical screen against oil floating on the water. Fence booms are usually easy to deploy, resistant to damage, and bulky for storage. Curtain booms have flexible skirts which are free to move independently of the floats. They have centerline flotation provided by air, inert gas, solid foam bars, flexible foam roll, or granulated foam contained in a plastic cylinder. The most important difference between

[6] Note that Chapter 5 of this report, which discusses oil spill equipment stockpiles in neighboring states, also describes dispersant equipment. Since there is no dispersant equipment stored in Massachusetts and very little in New England, it is not discussed here.

fence and curtain booms is how they respond to wind, waves, and currents. Fence boom has the skirt and freeboard mechanically coupled together causing them to move as a single unit. If current and wind roll a fence boom away from the vertical, they also lose freeboard and draft. If fence boom is too rigid to conform to the surface of a passing wave, there is also a loss of freeboard and draft. Flexible curtain boom has a skirt that is free to move independently of the flotation and freeboard.

There are two major classification systems for selecting boom according to operating environment. This study uses the classification system developed by the American Society for Testing and Materials (ASTM), which divides boom into four categories, based on the operating environment in which it may be used:

- Calm water boom (sometimes referred to as "harbor boom")
- Fast water boom (calm water/fast current boom)
- Protected water boom
- Open water boom (sometimes referred to as "ocean boom")

Table 3.1 describes the ASTM operating environment classifications. Table 3.2 describes the properties of these four boom types.

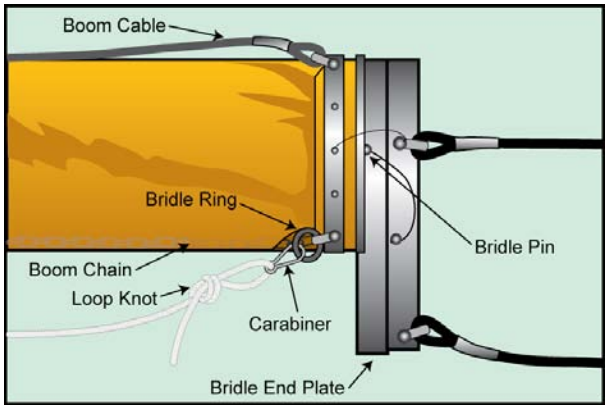
Table 3.1 Operating Environments

Environment	Significant Wave Height	Examples of General Conditions
Open Water	≤ 6 ft.	Moderate waves, frequent white caps
Protected Water	≤ 3 ft.	Small waves, some white caps
Calm Water	≤ 1 ft.	Small, short non-breaking waves
Fast Water	≤ 1 ft.	Small, short non-breaking waves with currents exceeding 0.8 knots, including rivers

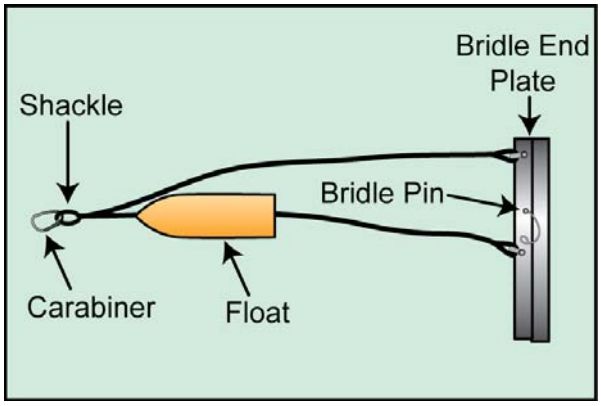
Table 3.2 Boom Types

Boom Property	Calm Water	Fast Water	Protected Water	Open Water
Height (in)	6 to 24	8 to 24	18 to 42	36 to 90+
Minimum reserve buoyancy to weight ratio	2:1	3:1	3:1	7:1
Minimum total tensile strength (lbs)	1,500	5,000	5,000	10,000
Minimum skirt fabric tensile strength (lbs/in) 2TM=2 tension members; 1TM=1 tension member	2TM - 300 1TM - 300	2TM - 300 1TM - 300	2TM - 300 1TM - 400	2TM - 400 1TM - 400
Minimum skirt tear strength (lbs)	100	100	100	100

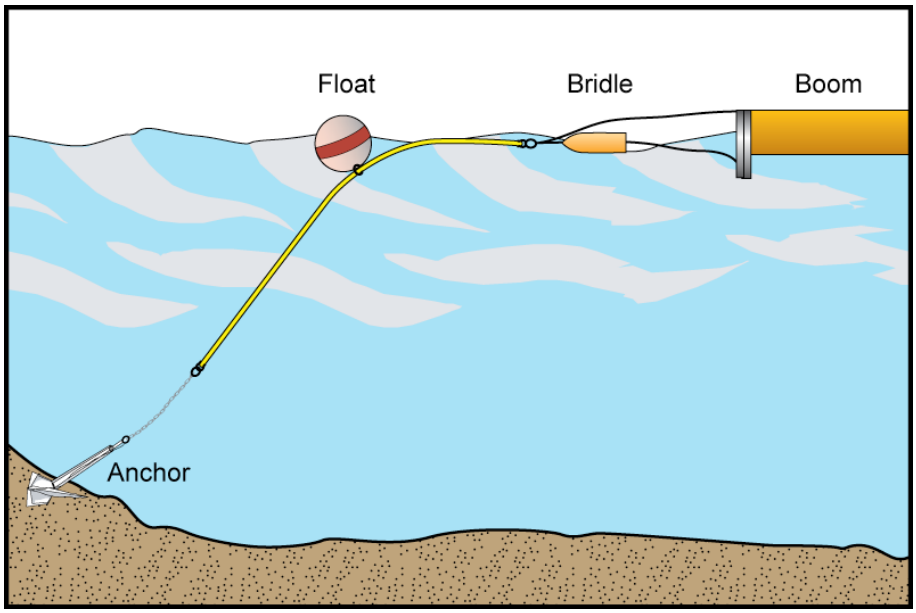
Figure 3.1 Typical Boom Components



Boom Components



Bridle Components



Typical Anchor/Boom/Bridle configuration

3.2 Skimmers and Skimming Systems

Recovery of oil contained or concentrated with boom or natural barriers is accomplished using a skimming or recovery system that removes oil and water from the surface and transfers the recovered liquids to secondary containment, where the oil and water can eventually be separated for disposal. Like booms, there are many models of skimmers, but all fall into one of three categories.

- **Weir skimmers** draw liquid from the surface by creating a sump in the water into which oil and water pour. The captured liquid is pumped from the sump to storage. Figure 2.2 shows a variety of weir skimmers.

- **Oleophilic skimmers** pick up oil adhered to a collection surface, leaving most of the water behind. The oil is then scraped from the collection surface and pumped to a storage device. The collection surfaces in oleophilic skimming systems include rotating disks, brushes and drums, or continuous belts or ropes. Figure 2.3 shows examples of oleophilic skimmers.

- **Suction skimmers** use a vacuum to lift oil from the surface of the water. These skimmers require a vacuum pump or air conveyor system. Like weir skimmers, suction skimmers may also collect large amounts of water if not properly operated. Most suction skimmers are truck mounted and work best on land. However, suction skimmers for the marine environment have been made by converting fish pumps to oil recovery purposes, or loading a vacuum truck on a vessel. Figure 2.4 shows examples of suction skimmers.

For the purpose of this study, skimmers are divided into two broad categories – skimmers, which provide a recovery mechanism but no recovered oil storage, and skimming systems, which include a skimmer as well as some type of storage device for recovered liquids.

The expected performance of skimmers and skimming systems may be described with one or more standard measures of effectiveness:

- Recovery efficiency (RE): the percent of oil in the recovered mixture
- Throughput efficiency (TE): the ratio of oil recovered to oil encountered, expressed as a percentage
- Oil recovery rate (ORR): the rate at which pure oil is being recovered in gallons per minute (gpm) or barrels per hour (bbl/h).

Skimmer performance is usually measured during test trials, and effectiveness measures should be considered as a guideline only. On-scene conditions, oil type and thickness, degree of weathering, and many other factors can combine to impact recovery efficiency. Unlike boom, skimmers are not usually classified according to operating environment, although skimmer manufacturers typically produce skimmers with a range of sizes and mechanical components to address different operating conditions and environments.

Figure 3.3 Weir Skimmers

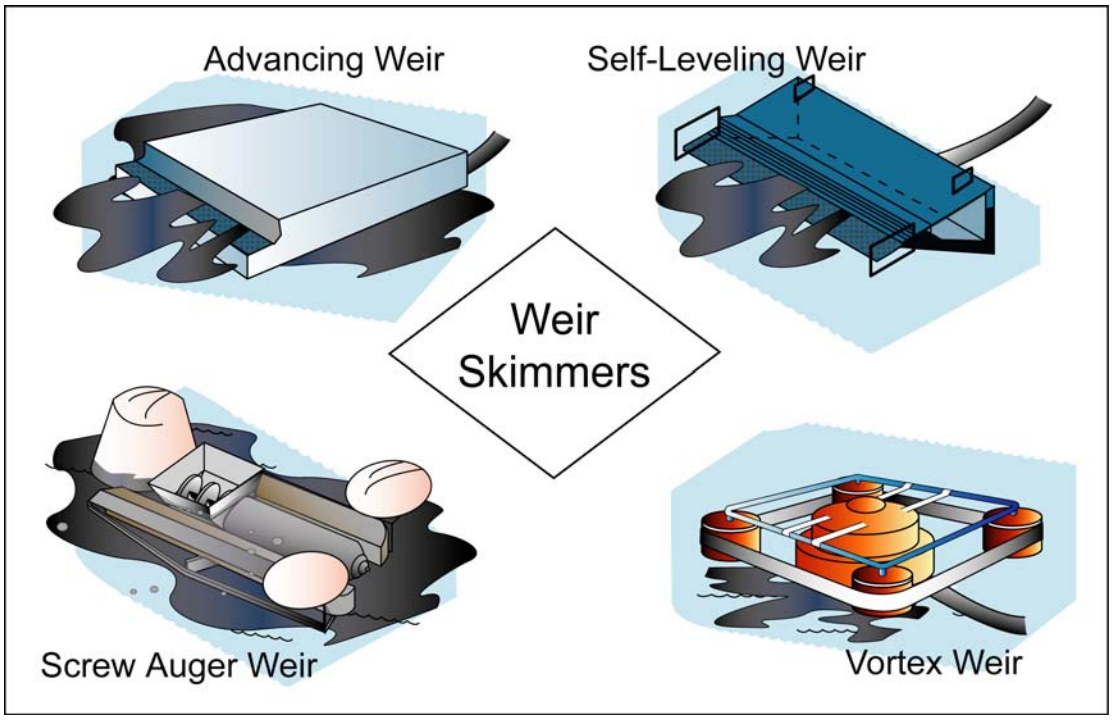


Figure 3.4 Oleophilic Skimmers

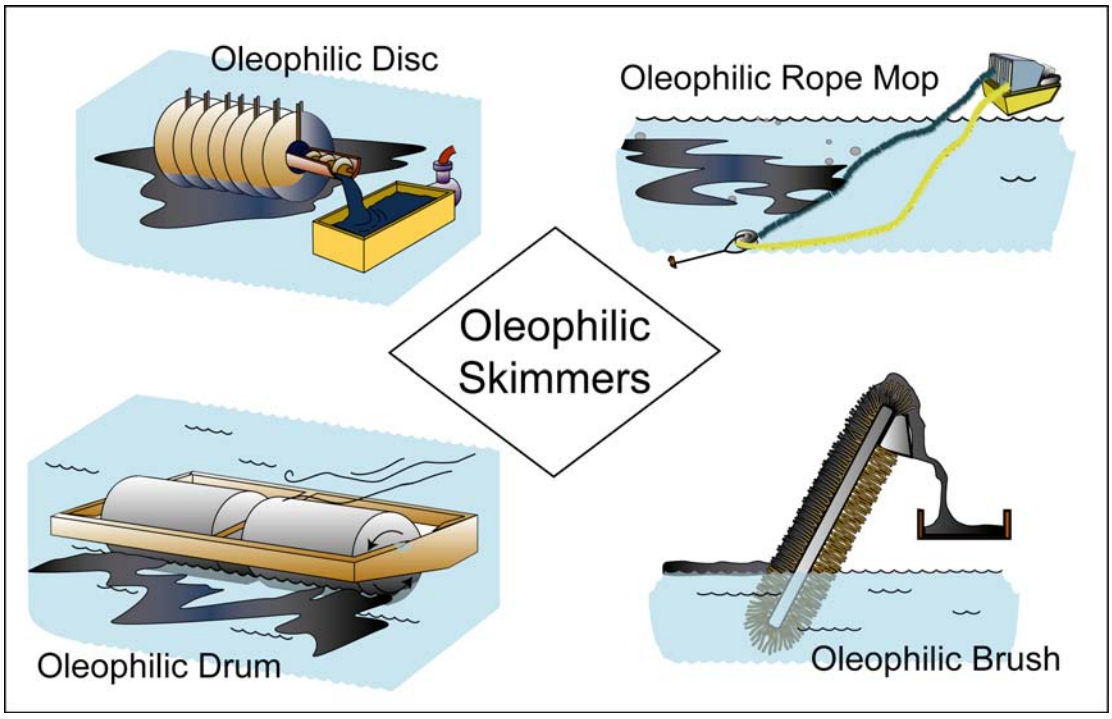
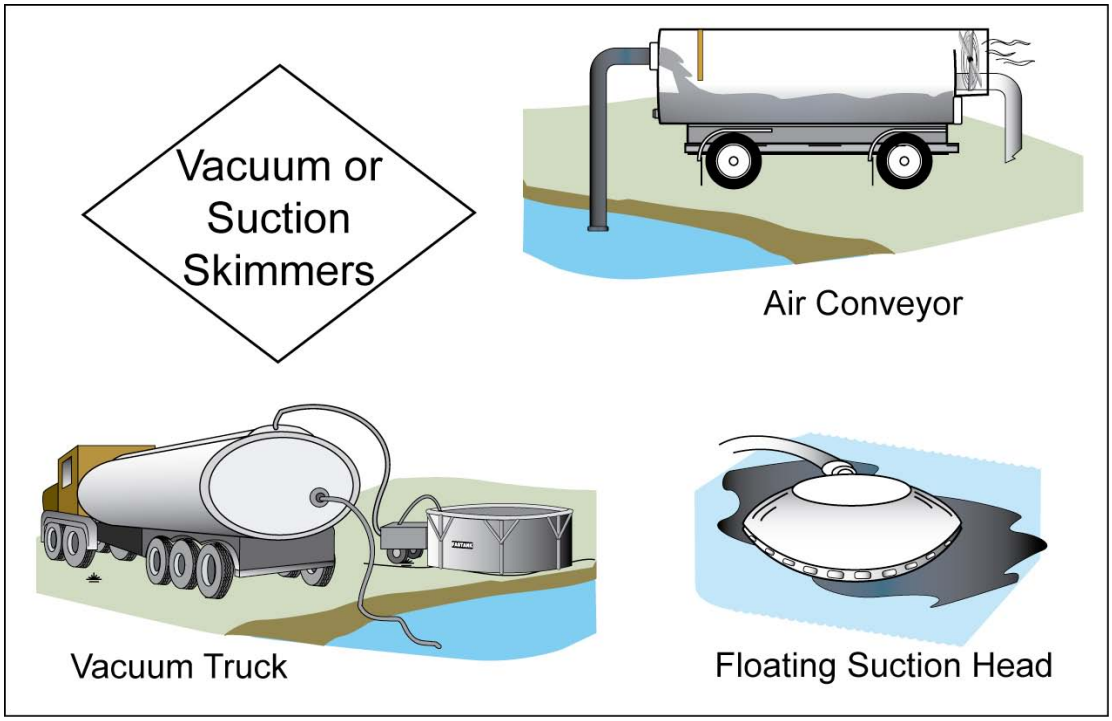


Figure 3.5 Vacuum or Suction Skimmers

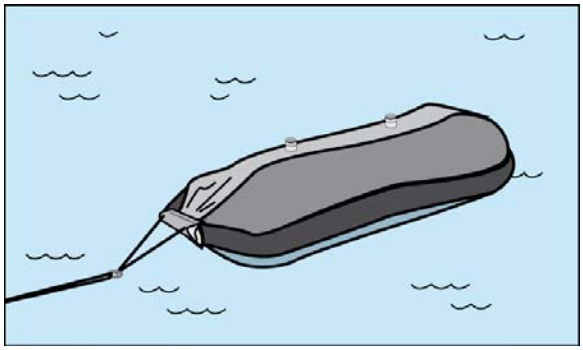


3.3 Storage Devices

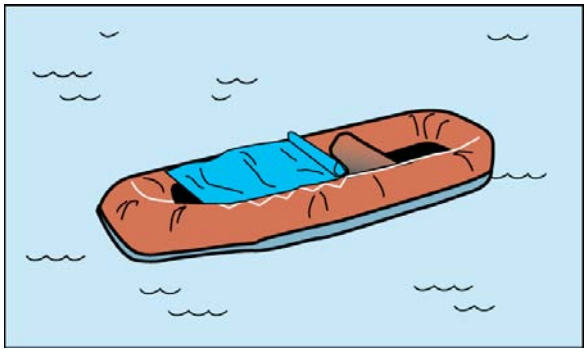
Storage devices are an important component of mechanical recovery, and can impede the recovery rate if insufficient capacity is available to store recovered liquids. Recovered liquids generated during mechanical recovery include emulsified oil/water and free water. Oil storage devices for the marine environment include: tanks, bladders, drogues, and barges. Portable oil storage devices may be stored onboard or can be towed by a vessel. Permanent or temporary tanks on land may also be used to store recovered liquids. Figure 2.6 shows some examples of storage devices that may be used as part of an on-water recovery system.

In order to effectively implement on-water recovery using skimmers, sufficient storage volume must be available to handle recovered liquids. Typically, during open water response operations, 10 to 20% of the recovered liquids will be free water. Oil/water emulsions can contain as much as 60% water, so as little as 30% of the recovered liquids may be oil.

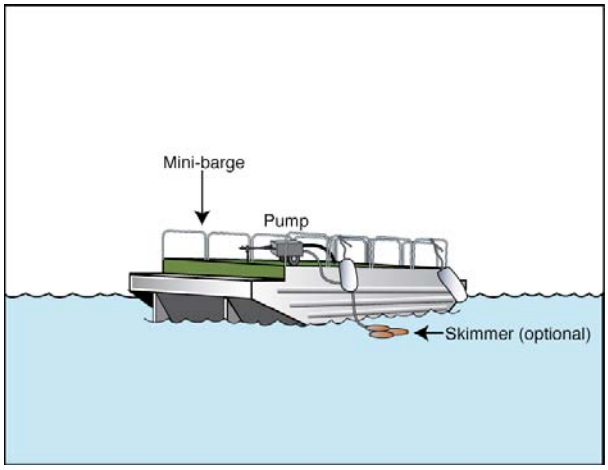
Figure 3.6 Examples of On-Water Storage Devices



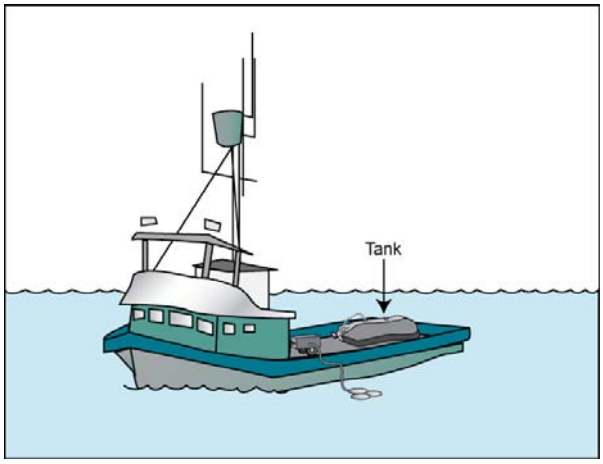
Towable Flexible Storage



Towable Open Storage



Storage Barge



Portable Storage Tank on Vessel Deck

3.4 Oil Spill Response Tactics

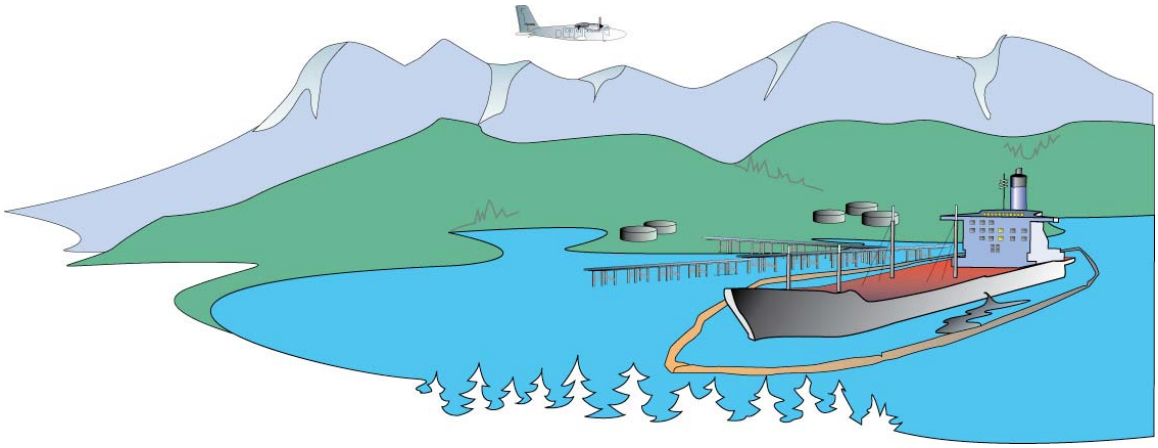
On-water oil spill response operations require that the major spill response technologies described in this section (boom, skimmers storage) be combined to accomplish a specific oil spill response tactic. The major tactics used to respond to a marine oil spill fall into three general categories: *containment, recovery* or *protection*. The *Massachusetts Geographic Response Plan* Tactics Guide contains standard descriptions for how these tactics work and the resources and personnel required to implement them.

3.4.1 Containment

Oil spill containment tactics focus on containing floating oil. Containment is often the first action taken during a spill response, to contain oil that is leaking from a discrete source such as a leaking vessel, pipeline rupture, or tank rupture. On-water containment is typically performed using hard boom.

Containment may be initiated as a discrete activity, but more commonly it is performed in conjunction with recovery. Figures 3.7 shows an examples of containment.

Figure 3.7 Containment around a leaking vessel.



3.4.2 Recovery

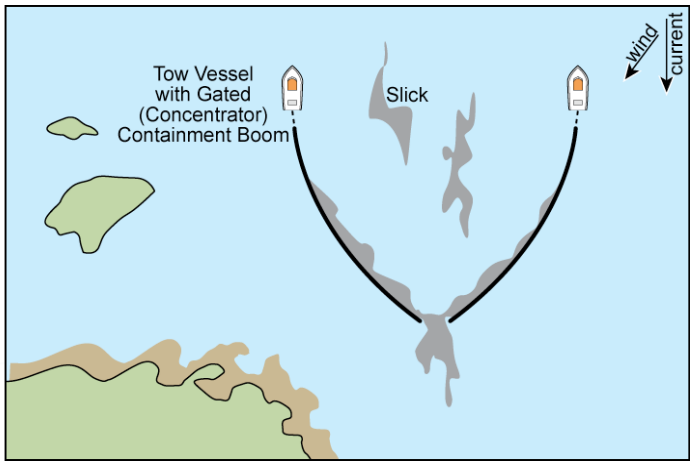
Oil spill recovery tactics involve recovering floating oil from the surface of the water using skimmers or skimming systems. Since skimmers operate best when they encounter oil slicks of some minimum thickness, containment is typically used to concentrate the oil into pockets where it can then be recovered using skimmers.

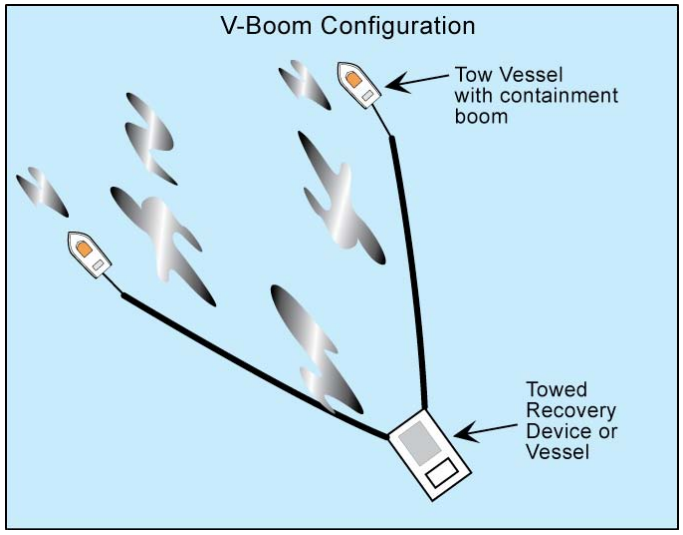
Recovery operations can be conducted on-water or shoreside. On-water recovery generally requires the use of vessels towing boom to concentrate oil in various configurations (See Figure 3.8). Shoreside recovery is used to remove spilled oil that has been diverted to a designated recovery site accessible from the shore. Shoreside recovery is often conducted in conjunction with protective booming (i.e. diversion booming). There are many possible ways to configure a shoreside recovery system, using skimmers or vacuum trucks, as shown in Figure 3.9.

Recovery operations also require that storage devices be available to hold recovered oil and oily water. Sufficient storage is a key component to on-water recovery as well as shoreside recovery. If storage is lacking, skimmers may not be able to function to their full capacity. On-water recovery typically requires floating temporary storage such as barges or bladders. Shoreside recovery may use land-based storage tanks or tanker trucks.

Passive recovery may also be implemented as a primary or supplemental response tactic. Passive recovery uses sorbent materials such as pads, snare or sausage boom to soak up oil (See Figure 3.10). Once sorbent materials have been contaminated with oil, they must either be cleaned or properly disposed of as oily waste.

Figure 3.8 Typical On-water Recovery Configurations





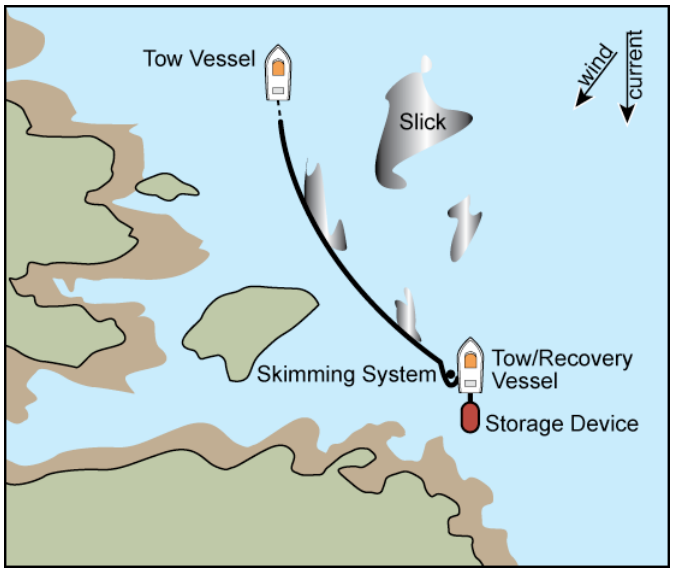


Figure 3.9 Shoreside Recovery Configurations

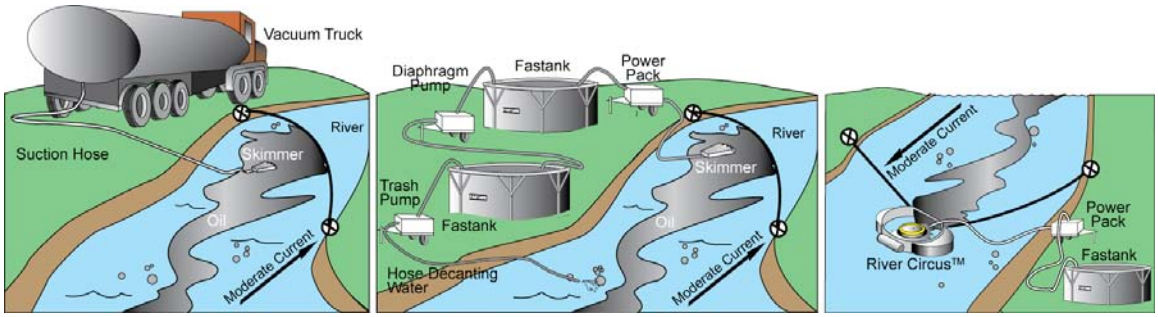
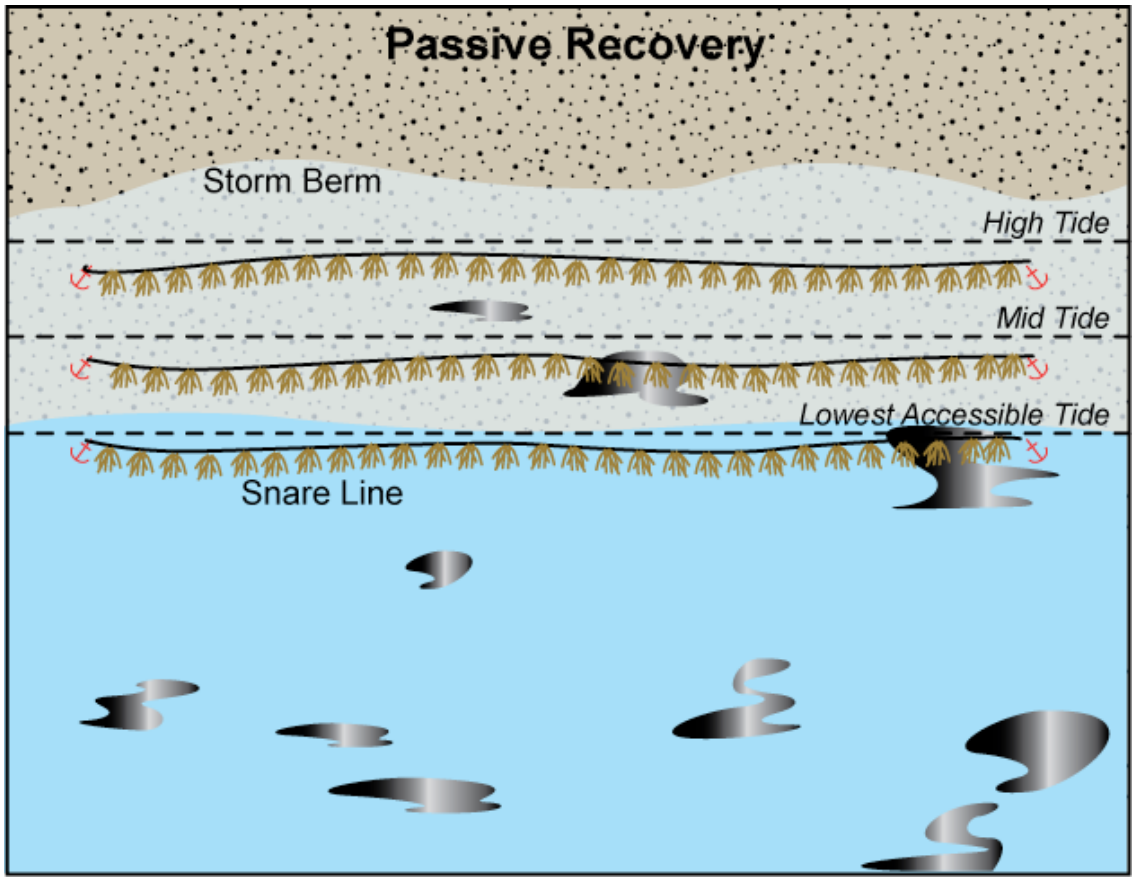


Figure 3.10 Passive Recovery



3.4.3 Protection

Protection tactics are typically used along the shoreline to prevent oil from impacting sensitive areas, such as marshes, bird nesting areas, marine mammal haulouts, or other critical habitat. In Massachusetts, the geographic response plans (GRP) identify specific tactics and strategies that have been developed to protect key sensitive areas. Protection tactics typically involve the use of hard boom in one of several configurations:

- **Exclusion booming** uses boom as a protective barrier to exclude oil from a sensitive area, as shown in Figure 3.11 Exclusion booming is typically a fixed boom tactic, which means that boom is set and held in place by anchors.

- **Diversion booming**[7] uses boom to redirect the spilled oil from one location or direction of travel to a specific site for recovery, as shown in Figure 3.12. Diversion booming is typically a fixed boom tactic, where the boom is positioned and held in place by anchors. However, live booming can also be used for diversion. Live booming means that one end of the boom is dynamically positioned using a vessel or an apparatus such as a boom vane. Live booming requires trained responders. The Massachusetts GRPs tend to use fixed booming.

- **Deflection booming**[8] uses boom to direct spilled oil away from a location to be protected or simply to change the course of the slick. Deflection booming may be either a fixed or live tactic, as shown in Figure 3.13. The Massachusetts GRPs tend to use fixed booming.

[7] For the purposes of maintaining consistent and clear terms, “deflection” is used to describe the tactic where oil is redirected away from an area but not recovered, in contrast with the term “diversion”, which is always associated with oil recovery.

[8] For the purposes of maintaining consistent and clear terms, “deflection” is used to describe the tactic where oil is redirected away from an area but not recovered, in contrast with the term “diversion”, which is always associated with oil recovery.

Figure 3.11 Exclusion Booming

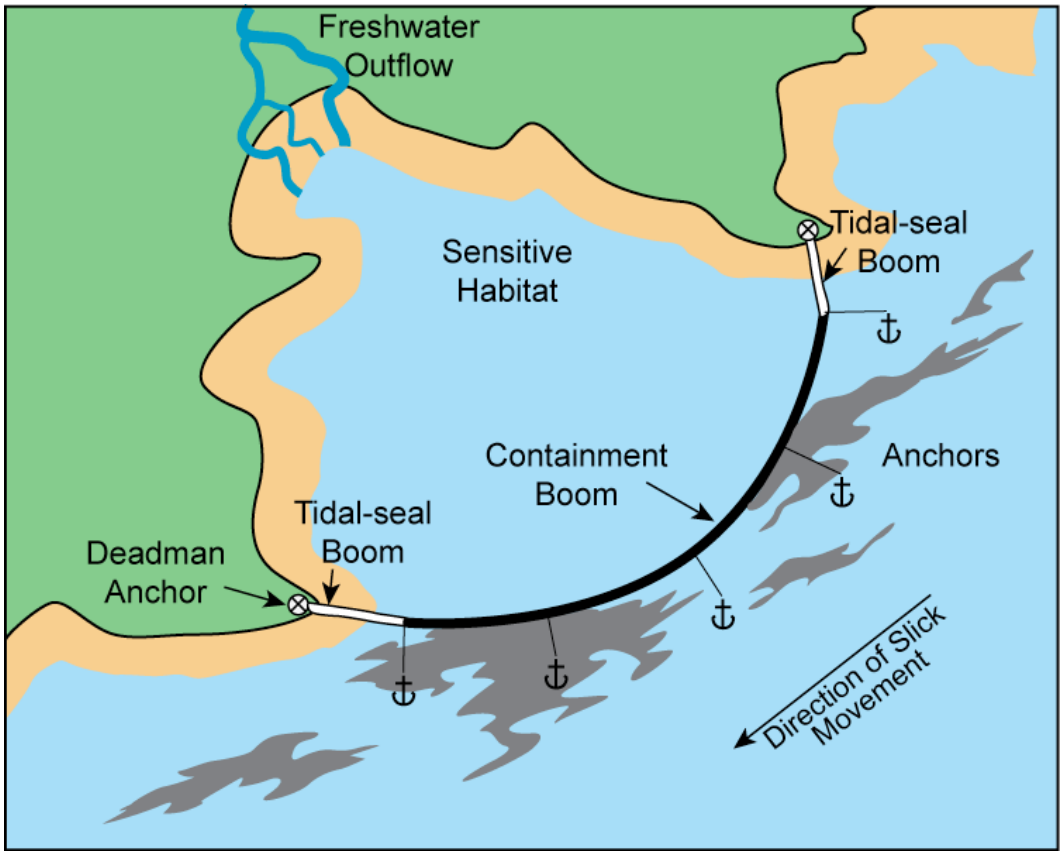


Figure 3.12 Diversion Booming

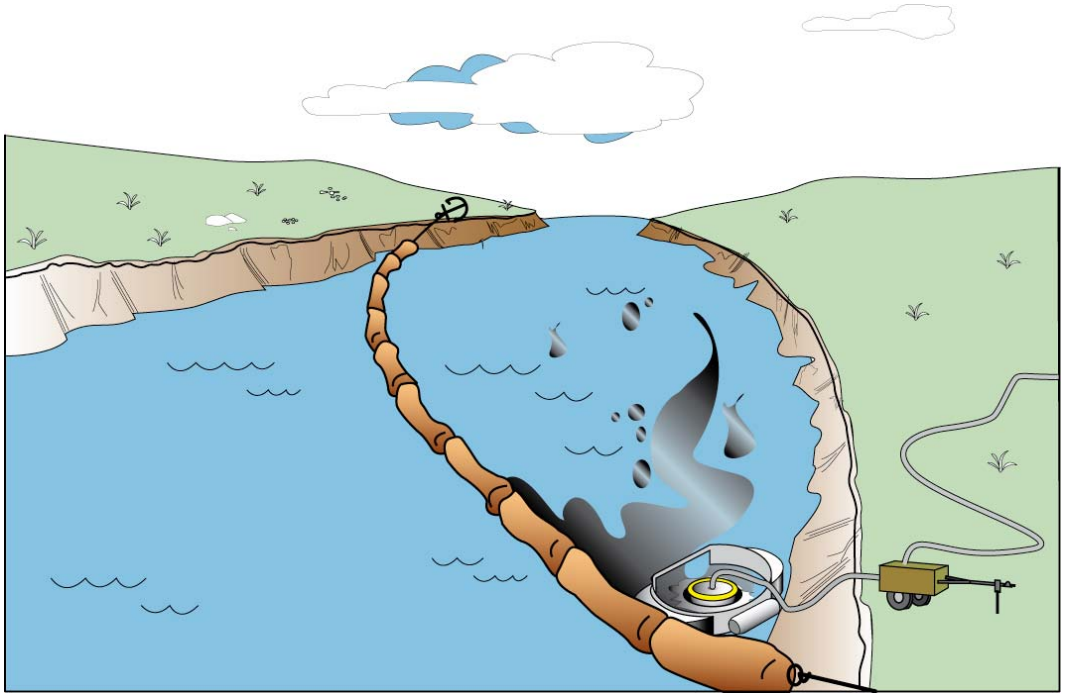
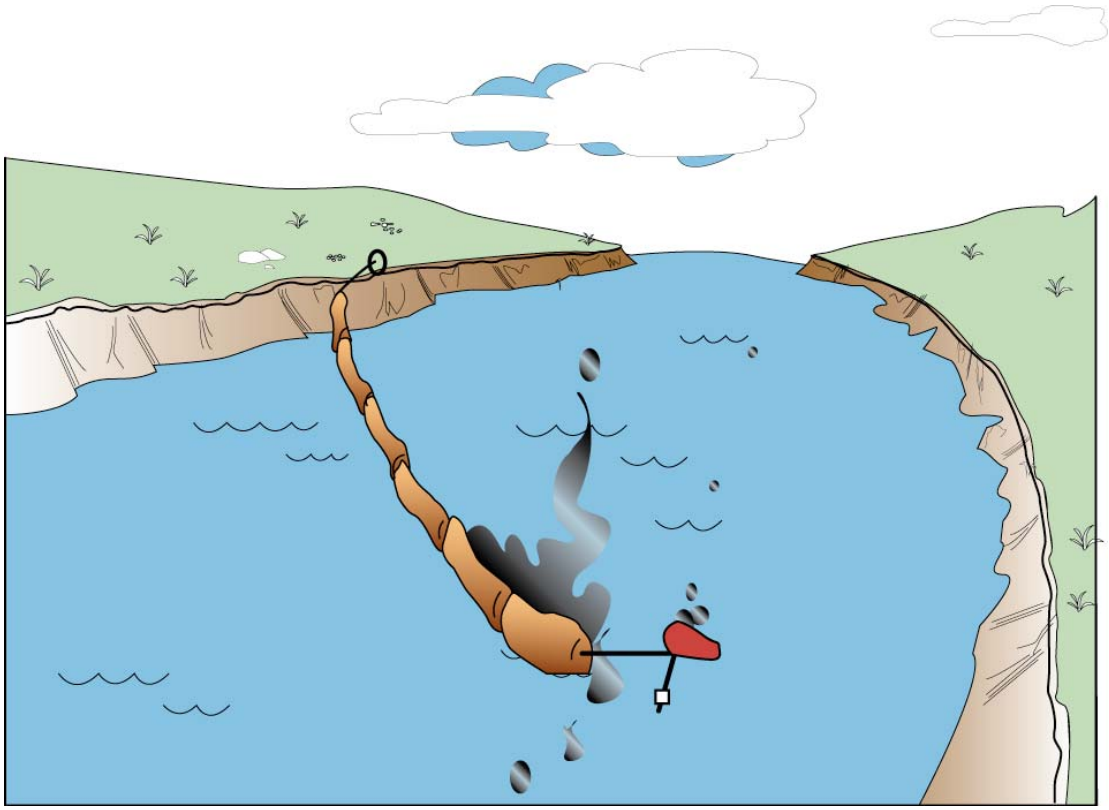


Figure 3.13 Deflection Booming



4 Massachusetts Spill Response Equipment Inventory

This section presents an inventory and summary of resources stockpiled within Massachusetts, based on the information-gathering efforts described in Section 1. This information reflects the status of equipment inventories as of mid-2009 based on accessible information.[9]

This study does not consider sorbent materials (sorbent boom, pads, snare) nor does it consider other consumable materials (personal protective equipment, waste bags, etc.).

4.1 Boom

Table 4.1 summarizes information gathered regarding the type and quantity of oil boom stockpiled in Massachusetts through government entities and oil spill response contractors (OSROs and response co-operatives). Table 4.1 summarizes the total amount of boom stockpiled in each region, classified by operating environment, and Figure 4.1 shows total boom amounts by type (calm water, protected water, and open water) and region. This information shows that the overwhelming majority of containment boom available in Massachusetts is calm water boom (predominantly 18" and 12" boom). The majority of the larger boom in Massachusetts is located in Boston Harbor and the Cape and Islands. Appendix A lists the full oil boom equipment inventory.

In all of the coastal regions except Boston Harbor, most of the boom is located in state-owned oil spill response trailers. Figure 4.2 shows photographs of a 20-foot trailer, which includes 800 feet of 18" boom and 200 feet of 12" boom, as well as anchors, line, floats, sorbent materials, protective equipment, and other miscellaneous contents. Smaller 12-foot trailers have been positioned in some communities with limited road access, and these contain a pared-down inventory with a total of 500 feet of boom (400 feet of 18" boom and 100 feet of 12" boom) and proportionately less of all other equipment. Figure 4.3 shows the location of the Mass DEP response trailers (as of September 2009)[10] and Appendix A includes a list of the typical contents of 20-foot MassDEP response trailers.

This study does not attempt to inventory equipment such as anchors, tow bridles, floats, or line, all of which are essential components needed to deploy boom on-water. The state response trailers are stocked with enough equipment to anchor a boom array every 100 feet. Most of the OSROs also have supporting equipment on-hand. This equipment was not counted in this study because inventories of such supplies fluctuate greatly.

[9] This equipment inventory was compiled from other equipment lists. The location and operability of response equipment listed in this report was not verified through firsthand inspections.

[10] Note that a few of the trailer locations represent towns and cities where state response trailer purchases have been initiated but not completed. All trailers are scheduled to be delivered by September 2009.

Table 4.1 Boom Inventory for Massachusetts (January 2009)

Region	Type of Owner-ship	Calm Water Boom (up to 18")	Protected Water Boom (19-36")	Open Water Boom (>36")	Shore Seal Boom
		TOTAL LENGTH OF BOOM IN FEET			
North Shore	State	17,500	0	0	0
	Federal	0	0	0	0
	Contractor	0	0	0	0
	TOTAL	17,500	0	0	0
Boston Harbor	State	8,000	0	0	0
	Federal	0	0	0	0
	Contractor	0	4,980	4,200	0
	Co-operative	11,850	6,000	0	0
	TOTAL	19,850	10,980	4,200	0
South Shore	State	6,000	0	0	0
	Federal	0	0	0	0
	Contractor	3,300	1,500	0	0
	TOTAL	9,300	1,500	0	0
South Coastal	State	14,000	0	0	0
	Federal	0	0	0	0
	Contractor	1,000	0	0	0
	TOTAL	15,000	0	0	0
Cape & Islands	State	24,700	0	0	0
	Federal	0	0	7,624	0
	Contractor	2,000	0	0	0
	TOTAL	26,700	0	7,624	0
Inland	State	1,000	0	0	0
	Federal	0	0	0	0
	Contractor	6,800	1,500	0	0
	TOTAL	7,800	1,500	0	0
TOTAL FOR ALL REGIONS		**96,150**	**13,980**	**11,824**	**0**

Figure 4.1 Graph Showing Type and Quantity of Boom Stored in Massachusetts, by Region

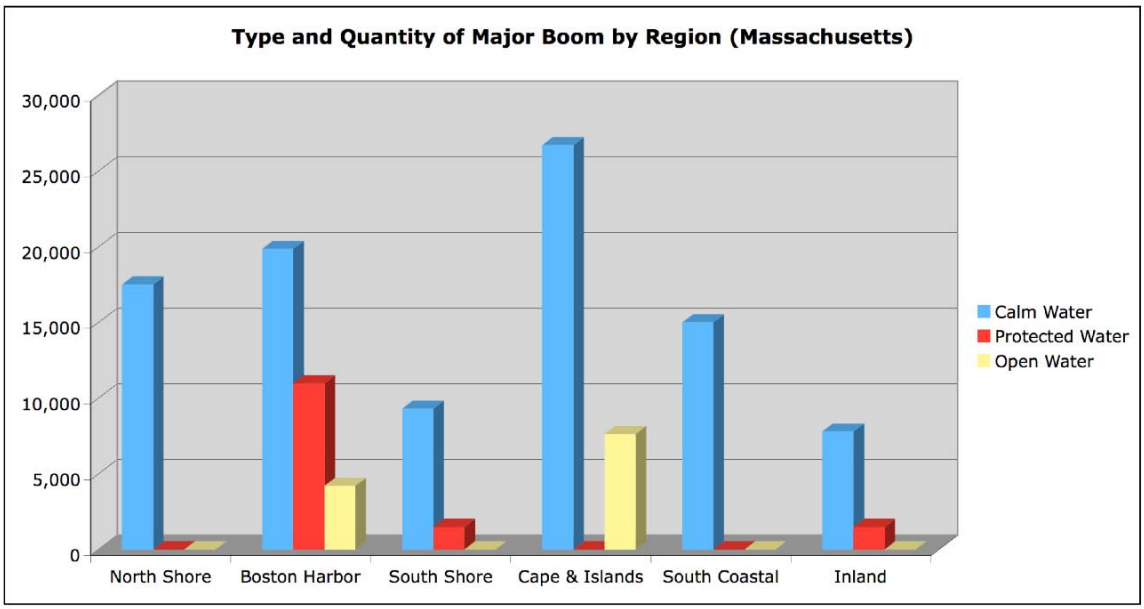
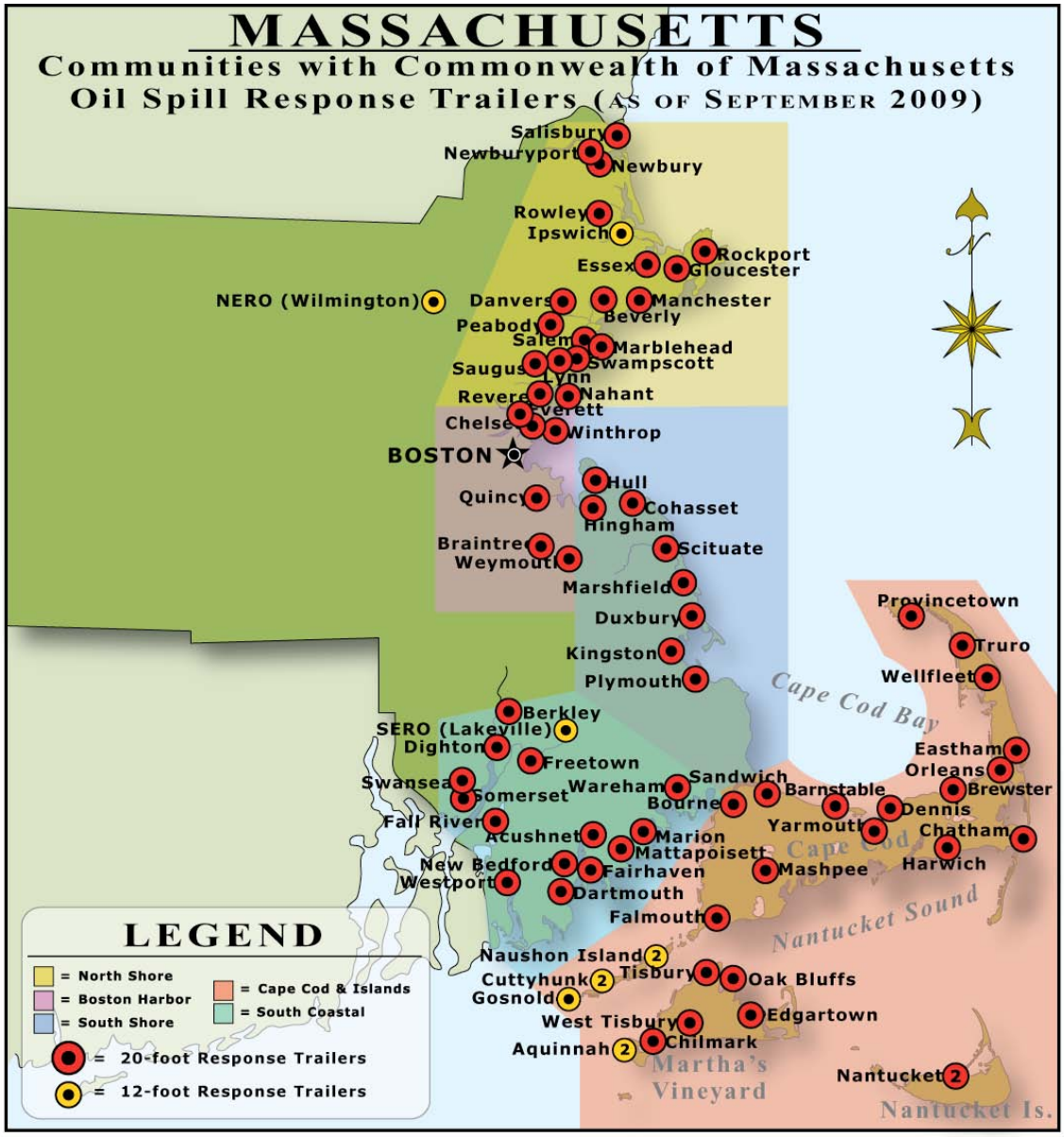


Figure 4.2 Photographs of Mass DEP oil spill response trailer

Figure 4.3 Location of Mass DEP oil spill response trailers (January 2009)



*Note that the Peabody Trailer is actually being stored by MassDEP in Holbrook.

4.2 Skimmers, Skimming Systems and Temporary Storage Devices

Based on the results gathered in this study, the skimmer inventory in Massachusetts is relatively limited. Skimmer ownership is limited to OSROs, and all but one are stored in the Boston Harbor area (Weymouth or East Boston). Table 4.2 lists this skimmer inventory, which includes both weir and oleophilic skimmers. They are inventoried by unit rather than by recovery capacity, because of disparities in available data on estimated daily recovery capacities for some of the skimmers. However, it is important to recognize (as discussed in Section 3.2) that skimmer recovery rates vary considerably, therefore some units may significantly increase response capability while other do so on a much smaller scale. A total of fourteen skimmers were identified in Massachusetts.

Table 4.2 also lists the inventory of skimming systems in Massachusetts by region. Skimming systems are distinguished from skimmers by the fact that the systems include a storage device. There are significantly more skimming systems than skimmers in the Commonwealth, with approximately 40 such systems identified. These include vacuum trucks, barge-based systems, and vessel-based systems. Recovery capacities vary from less than 30 bbl/hr to over 500 bbl/hr. Storage capacities range from the hundreds to the tens of thousands of gallons. The majority of skimming systems are also located in Boston Harbor, with a few in South Shore and Cape and Islands communities, and a few stored inland (Randolph). It is difficult to accurately estimate the aggregate recovery capacity of these systems due to missing values, but is at least 2,000 bbl/hr. Aggregate storage capacity for skimming systems is likewise difficult to calculate due to missing values, but appears to be several hundred thousand gallons.

Table 4.2 also includes information on temporary storage devices (TSD). Based on the results gathered in this study, most of the temporary storage devices in Massachusetts are located in Boston Harbor, with a few in other locations (Falmouth and Randolph). Ownership is mixed between private companies and OSROs, although most of the privately-owned storage devices seem to be available to one of the major OSROs under contractual arrangements. Total storage capacity for individual storage devices ranges from a few thousand gallons to over a million gallons. Aggregate storage capacity is close to 9 million gallons.

Appendix A lists the full Massachusetts skimmer, skimming system, and TSD inventory considered in this study.

Table 4.2 Skimmers, skimming systems, and Temporary Storage Devices in Massachusetts by Region

Region	Type of Owner-ship	Skimmers	Skimming systems – skim & store	Temporary Storage Devices
		(# of units)	(# of units)	(est. total storage capacity in gal)
North Shore	State/Federal	0	0	0
	Contractor	0	0	0
	TOTAL	0	0	0
Boston Harbor	State/Federal	0	0	0
	Contractor	9	31	8,900,000
	TOTAL	9	31	8,900,000
South Shore	State/Federal	0	0	0
	Contractor	5	2	48,500
	TOTAL	5	2	48,500
South Coastal	State/Federal	0	0	0
	Contractor	0	0	0
	TOTAL	0	0	0
Cape & Islands	State/Federal	0	0	0
	Contractor	0	1	3,000
	TOTAL	0	1	3,000
Inland	State/Federal	0	0	0
	Contractor	0	6	4,400
	TOTAL	0	6	4,400
TOTAL FOR ALL REGIONS		**14**	**40**	**8,955,900**

4.4 Relative Stockpiles of Spill Response Resources by Region

Table 4.3 summarizes the total amounts of equipment identified in each of the Massachusetts coastal regions, and also shows the percentage of total statewide resources in each region. The table shows total amounts for feet of boom and storage capacity, and numbers of units for skimmers and skimming systems. This information was compiled using the best available information, however it is possible that additional equipment exists in any or all of these communities. Figure 4.4 expresses this information in a graph.

The overwhelming majority of skimmers, skimming systems, and temporary storage capacity in Massachusetts is concentrated in the Boston Harbor region. The inland region has a small stockpile of skimming systems, but otherwise all other regions of the state have virtually no recovery or storage capacity.

The distribution of boom statewide is more even, with the highest percentage of all types of boom combined in the Boston Harbor region, followed closely by the Cape and Islands. Boston Harbor also has the highest concentration

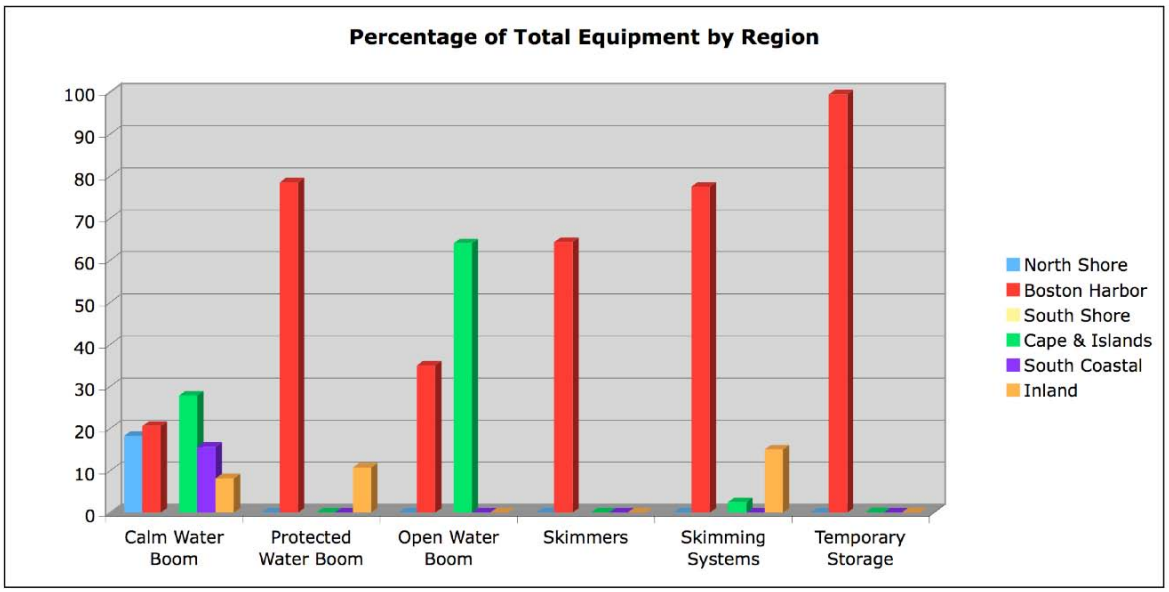
of protected water boom, and is one of the two regions with stockpiles of open water boom in the Commonwealth, the other being the Cape and Islands. While the Cape and Islands region has the largest quantity of this larger boom, it is all part of the Vessel of Opportunity Skimming System (VOSS) and may not necessarily be available for deployment separate from the VOSS. The VOSS-associated boom also requires that additional anchors be transported from the Atlantic Strike Team in New Jersey. There are small quantities of protected water boom in the South Shore and Inland regions. Calm water boom is more evenly distributed, with the highest concentration in the Cape and Islands region, followed by Boston Harbor, the North Shore, South Coastal, South Shore, and Inland regions.

The concentration of equipment of most types in Boston Harbor can be attributed to the fact that most of the major OSRO and industry-owned (co-operative) equipment is located there. With the exception of a few smaller OSRO equipment caches in the South Shore and Inland regions and some Coast Guard equipment on the Cape, nearly all boom in regions outside Boston Harbor is housed in the state spill response trailers.

Table 4.3 Summary of Massachusetts Oil Spill Response Resources by Region

Equipment Type	South Coastal (SC)	Cape & Islands (CI)	Boston Habor (BH)	North Shore (NS)	South Shore (SS)	Inland (I)	Totals for all regions
Calm Water Boom (up to 18") – length in ft	15,000	26,700	19,850	17,500	9,300	7,800	**96,150 feet**
% of total	15.6%	27.8%	20.6%	18.2%	9.6%	8.1%	
Protected Water Boom (19-36") length in ft	0	0	10,980	0	1,500	1,500	**13,980 feet**
% of total	0%	0%	78.5%	0%	10.7%	10.7%	
Open Water Boom (37+") – length in ft	0	7,624	4,200 ft	0	0	0	**11,824 feet**
% of total	0%	64%	35%	0%	0%	0%	
Total all boom types	15,000	34,324	35,030	17,500	10,800	9,300	**121,954 feet**
% of total	12.3%	28.1%	28.7%	14.3%	8.9%	7.6%	
Skimmers (# of units)	0	0	9	0	5	0	**14 units**
% of total	0%	0%	64.3%	0%	35.7%	0%	
Skimming Systems (# of units)	0	1	31	0	2	6	**40 units**
% of total	0%	2.5%	77.5%	0%	5%	15%	
Temp Storage Devices (capacity in gallons)	0	3,000	8,900,000	0	48,500	4,400	**8,955,900 gallons**
% of total	0%	<0.1%	99.4%	0%	0.5%	<0.1%	

Figure 4.4 Comparative Levels of Oil Spill Response Equipment Stockpiles in Massachusetts Coastal Regions (based on percentage of total amounts statewide)



5 Out-of-State Spill Response Equipment

This study considered major equipment stockpiles in Maine, New Hampshire, and Rhode Island in order to identify general stockpile levels in neighboring states. The out-of-state equipment inventories focused on equipment owned by the state, by national OSROs or by local co-ops. Other equipment stockpiles (smaller local OSROs, privately or locally owned equipment) were not considered because this equipment is less likely to be utilized in the event of a large spill where regional equipment is cascaded into Massachusetts.[11] Since these sources are not included, the out-of-state equipment inventory likely underestimates total equipment amounts in other states. However, for the purpose of this study the inventory represents a good estimation of general capacity in neighboring states and regions. Appendix B contains the complete out-of-state equipment inventory lists compiled by equipment type.

Out-of-state equipment sources were divided into two broad categories: government-owned and contractor-owned. Inventories for each category reflect the following equipment owners:

Government-owned Response Equipment:

- Rhode Island Department of Environmental Management (RIDEM)
- New Hampshire Department of Environmental Services (NHDES)
- Maine Department of Environmental Protection (MEDEP)
- U.S. Navy
- U.S. Coast Guard

Contractor or co-operative-owned Response Equipiment:

- Providence River Co-Operative (Rhode Island)
- Marine Spill Response Corporation (MSRC)
- National Response Corporation (NRC)
- Piscataqua River Co-Operative (New Hampshire)
- Clean Harbors Environmental Services
- Moran Environmental (formerly Fleet/Moran)
- PROPAC (Maine OSRO)

5.1 Boom Inventories

Table 5.1 summarizes the boom equipment totals by New England state. It also compares these figures to the total federal, state, and OSRO-owned equipment amounts in Massachusetts, to show comparative stockpiles. Figure 5.1 graphs this information.

Massachusetts has the largest total quantity of boom of all types, compared to other New England states. This is due primarily to the high levels of calm water boom, which is stockpiled in state-owned oil spill response trailers throughout Massachusetts. If this study were to have been completed three years ago, before the Department of Environmental Protection (MassDEP)

[11] Where available, information on privately-owned equipment was included in the equipment spreadsheets generated as part of this report, but were not considered in the analysis.

began the process of procuring oil spill response trailers, Massachusetts would have had 96,000 feet less of boom, and would have compared much differently to other states.

Of the other New England states, Maine has the second highest total boom stockpile, with the largest stockpile of protected water and open water boom, which is suitable for rougher sea conditions than the calm water boom that dominates the Massachusetts inventory. By comparison, nearly all of the boom in New Hampshire, which has the third highest total boom stockpile, is calm water.

In Rhode Island, the state with the second to lowest total boom concentration, nearly all of the equipment is stockpiled in the Port of Providence. Rhode Island's boom inventory includes a mix of boom sizes, and also includes a limited quantity of shore seal boom, which can be used in intertidal areas. Connecticut has extremely low levels of boom stockpiled in the state.

5.2 Skimming and Storage

Table 5.2 compiles the inventories for skimmers, skimming systems, and storage devices in other New England states, and includes information for Massachusetts. The skimming and storage capacity by state follows the same progression as booms, with Massachusetts having the highest totals, followed by Maine, New Hampshire, Rhode Island and Connecticut.

The information on skimmers and skimming systems was compiled by total number of units, rather than by capacity, so the numbers may be slightly misleading. For example, the skimming systems in Maine include several large oil spill response vessels (OSRV) and oil spill response barges (OSRB). (See Table 5.4) OSRVs have the capability of recovering and storing oil, and typically have much higher recovery capacities than smaller skimmers operating as part of an on-water recovery system. OSRBs provide storage only, but the largest OSRB can store in excess of 61,000 gallons of recovered fluids. So while Maine may have only 41 total recovery units (skimmers and skimming systems) compared to the 54 in Massachusetts, the total *capacity* (amount of oil that can be recovered during a given time period) of the recovery units in Maine may exceed the capacity of the units in Massachusetts. Recovery capacity was not measured in this study because of inconsistent data regarding recovery capacities among the various equipment inventories used as sources for this report.

The total numbers of recovery units and temporary storage, like other equipment, may be undercounted for neighboring New England state, as the data compilation process used for this report was less exhaustive for other states.

5.3 Comparison of Equipment Stockpiles within New England

Table 5.3 and Firgure 5.2 summarize and compare the relative equipment stockpiles for boom, skimmers, skimming systems, and temporary storage by considering the percentage of the total amount for all of New England

within each New England state. Understanding that the total amounts for states outside Massachusetts may be under-expressed, this table is still useful and provides a means for comparing relative stockpiles.

As discussed in Section 5.1, Massachusetts' dominance of the calm water boom inventory is a recent phenomenon and fully attributable to the MassDEP spill response equipment trailer procurement process. Massachusetts now has the highest regional inventory of calm water (up to 18") boom, which is suitable for use in nearshore areas with minimal sea state, and is relatively easy to tow and deploy, compared to larger boom sizes. However, Massachusetts has a much lower comparative stockpile of protected water (19-36") and open water (>37") boom. These larger boom types can be used in higher sea states and in offshore conditions, but require larger vessels, more robust anchoring systems, and experienced responders to deploy appropriately. Maine has the highest total stockpile of both of these boom amounts. There are smaller concentrations in the Port of Boston and also on Cape Cod as part of the Coast Guard's VOSS stockpile, but the VOSS boom on the Cape may not necessarily be available for deployment separate from the vessel of opportunity skimming system.

Maine has the largest concentration of skimmers, and the third highest number of skimming systems (after Massachusetts and New Hampshire). As discussed earlier, the measurement of recovery equipment by number of units rather than recovery capacity may not accurately reflect the comparative capabilities. Maine and New Hampshire are the only states with government-owned recovery units. All other states have 100% contractor-owned inventories. This is not unusual, since skimmers typically require more experienced responders to operate and also require more frequent maintenance than boom.

After Massachusetss, New Hampshire has the largest stockpile of calm water boom, with very little protected water or open water boom. New Hampshire also has some tidal seal boom, and some fast-water boom and associated equipment. The prevalence of smaller boom in New Hampshire is likely attributable to the fact that most of the oil industry is located on the Piscataqua River where smaller boom would be more appropriate under most conditions. New Hampshire's inventory of skimming systems is slightly higher than Maine, but it has the lowest concentration of skimmers.

Rhode Island has some limited skimmers and boom, and they are also one of only two New England states to have tidal-seal boom, although it has only been deployed once in the 10 years they have owned it.[12] Rhode Island's spill response equipment inventory is almost entirely contractor-owned, and is concentrated within the Port of Providence, with some Coast Guard equipment stored at Quonset Point with a VOSS system.

[12] In October 2008, 50 feet of the shore seal boom was deployed during the RIGRP deployment exercises, which were facilitated by Nuka Research. According to RIDEM and Clean Harbors participants, this was the first time this equipment had been used since its purchase. Only 50 of the 300 feet was deployed.

Connecticut has the lowest concentration of all types of spill response equipment, due at least in part to the fact that there are no major OSRO storage depots in Connecticut.

Compared to the other New England states, Massachusetts has significantly higher stockpile levels of calm water boom than any other state; in fact, Massachusetts has more calm water boom than all other New England states combined. However, Massachusetts has no state-owned boom that is larger than 18" and has no state-owned skimmers or temporary storage devices. All of the skimming and storage capacity in Massachusetts is owned by private entities or OSROs.

In estimating temporary storage amounts, the storage inherent in skimming and storage units such as OSRVs and OSRs were not factored in. Doing so would have increased the proportionate storage available in Maine compared to other states, since all six OSRV/OSRB in New England are located in Maine. (Appendix B contains an inventory of all the OSRV/OSRBs in the continental United States.)

Table 5.1 Summary of Estimated Boom Stockpiles in New England States (Contractor and Government-owned)[13]

State	Type of Owner-ship	Calm Water Boom (up to 18")	Protected Water Boom (19-36")	Open Water Boom (>36")	Shore Seal Boom
		TOTAL LENGTH OF BOOM IN FEET			
Rhode Island	State	1,500	0	0	300
	Federal	0	0	7,624	0
	Contractor	12,000	7,760	4,620	0
	TOTAL	**13,500**	**7,760**	**12,244**	**300**
Connecticut	State	0	0	0	0
	Federal	0	0	0	0
	Contractor	2,800	1,000	0	0
	TOTAL	**2,800**	**1,000**	**0**	**0**
Maine	State	6,850	28,350	0	0
	Federal	3,500	500	0	0
	Contractor	15,470	25,010	20,170	0
	TOTAL	**25,820**	**53,860**	**20,170**	**0**
New Hampshire	State	5,250	0	0	0
	Federal	5,550	410	0	60
	Contractor	44,840	0	0	600
	TOTAL	**55,640**	**410**	**0**	**660**
Massachusetts	State	71,200	0	0	0
	Federal	0	0	7,624	0
	Contractor	24,950	13,980	4,200	0
	TOTAL	**96,150**	**13,980**	**11,824**	**0**
TOTAL FOR ALL STATES		**193,910**	**70,010**	**44,238**	**960**

[13] Note that boom which was listed in inventories with no size noted was counted as calm water boom. Privately owned boom was not considered. This inventory is not exhaustive and likely omits some smaller stockpiles, but is believed to represent the major boom inventories in New England States.

Figure 5.1 Type and Quantity of Boom by New England State

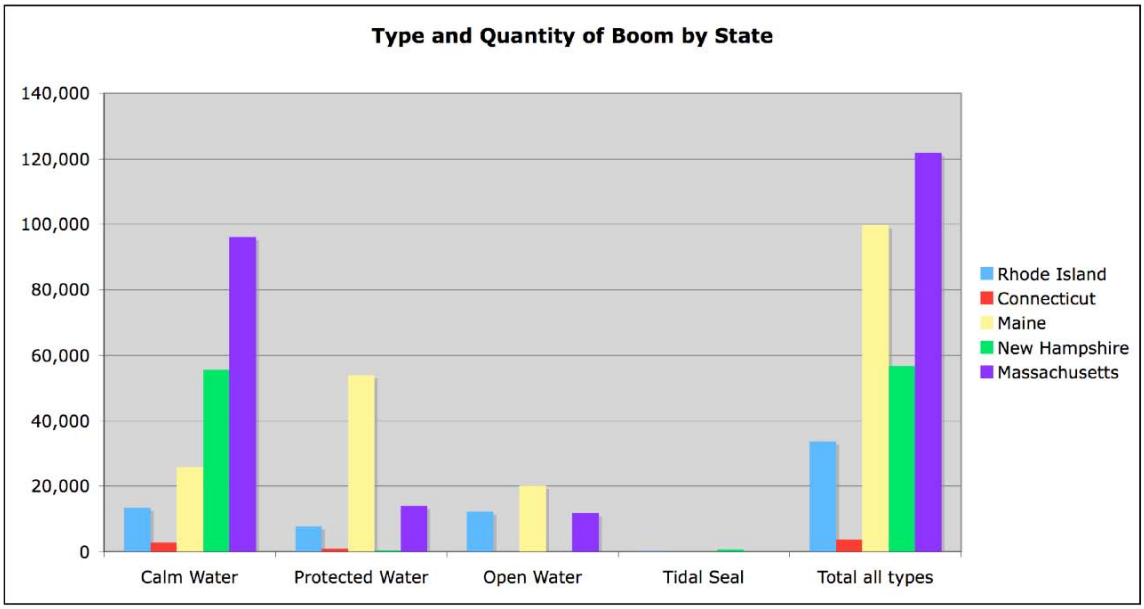


Table 5.2 Summary of Estimated Skimmer, Skimming System, and Storage Inventory in New England States (Contractor and Government-owned)[14]

State	Type of Ownership	Skimmers	Skimming Systems	Storage Devices
		# of units	# of units	Total capacity in gallons
Rhode Island	State/Federal	0	3	0
	Contractor	8	0	13,500
	TOTAL	8	3	13,500
Connecticut	State/Federal	0	0	0
	Contractor	3	0	5,016
	TOTAL	3	0	5,016
Maine	State/Federal	9	5	11,250
	Contractor	25	1	1,011,904
	TOTAL	35	6	1,023,154
New Hampshire	State/Federal	3	2	6,900
	Contractor	0	7	58,200
	TOTAL	3	9	65,100
Massachusetts	State	0	0	0
	Contractor	14	40	8,955,900
	TOTAL	14	40	8,955,900
TOTAL FOR ALL STATES		**63**	**58**	**10,062,670**

[14] Note that for other New England state these numbers are derived from major equipment lists only. The total amount for other New England states are likely underestimated because smaller response contractors were not necessarily included.

Table 5.3 Summary of New England Oil Spill Response Resources by State

Equipment Type	RI	CT	ME	NH	MA	Total for all states
Calm Water Boom (length in ft)	13,500	2,800	25,820	55,640	96,150	**193,910**
% of total	6.9%	1.4%	13.3%	28.7%	49.6%	
Protected Water Boom (length in ft)	7,760	1,000	53,860	410	13,980	**77,010**
% of total	10%	1.3%	69.9%	0.5%	18.2%	
Open Water Boom (length in ft)	12,244	0	20,170	0	11,824	**44,238**
% of total	27.7%	0%	45.6%	0%	26.7%	
Total all boom types	33,504	3,800	99,850	56,050	121,954	**315,158**
% of total	10.6%	1.2%	31.7%	17.8%	38.7%	
Skimmers (# of units)	8	3	35	3	14	**63**
% of total	12.7%	4.8%	55.5%	4.8%	22.2%	
Skimming Systems (# of units)	3	0	6	9	40	**58**
% of total	5.2%	0%	10.3%	15.5%	69%	
Temp Storage Devices (capacity in gallons)	13,500	5,016	1,023,154	65,100	8,955,900	**10,063,670**
% of total	0.1%	0.05%	10.2%	0.6%	89%	

Figure 5.2 Comparative Levels of Oil Spill Response Equipment Stockpiles in New England Coastal States (based on percentage of total amounts region-wide)

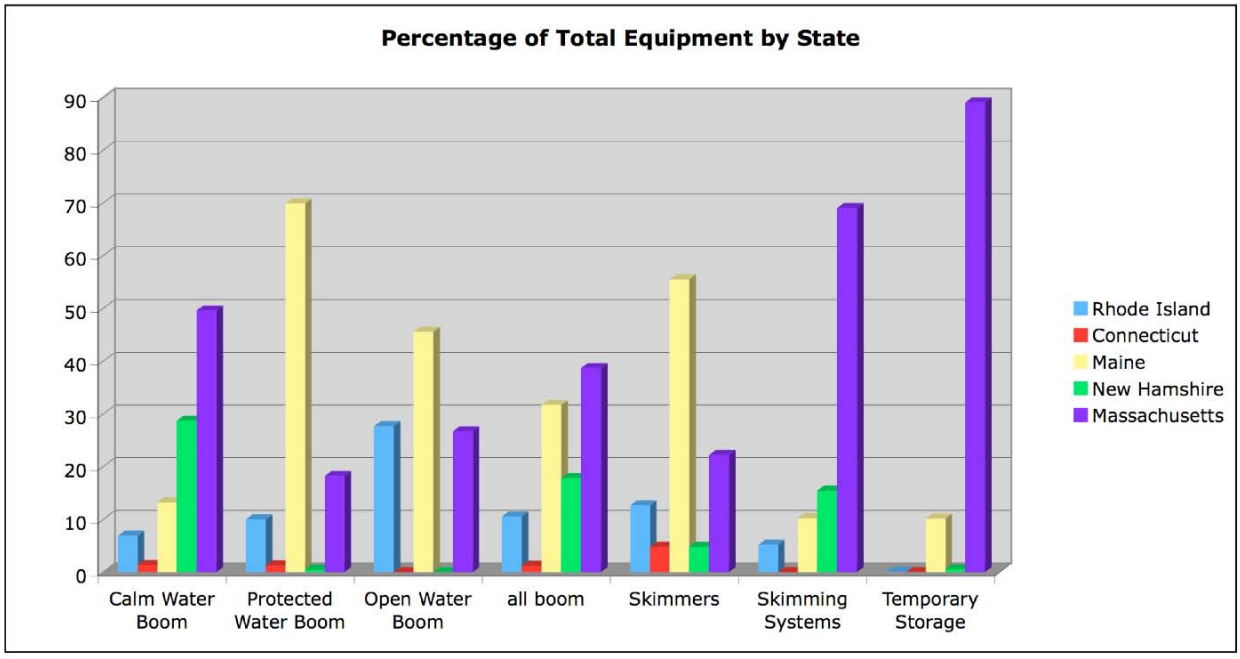


Table 5.4 Oil Spill Response Vessels (OSRV) and Oil Spill Response Barges (OSRB) Homeported in New England

Vessel Name	Vessel Type	Homeport	Owner	Temporary Storage Capacity in gallons	Estimated Daily Recovery Capacity (EDRC) in gallons
Maine Responder	OSRV	Portland, ME	MSRC	4,000	10,567
NRC Guardian - OSRV	OSRV	S. Portland ME	NRC	300	26,283
MSRC 620	OSRB	Portland, ME	MSRC	61,989	N/A
OSB NETEPENA WESIT (tug required)	OSRB	Bucksport, ME	ME DEP	N/A	N/A
OSB AUCOCISCO (tug required)	OSRB	S. Portland ME	ME DEP	N/A	N/A
NRC Reliant - OSRB	OSRB	S. Portland ME	NRC	19,500	N/A

5.4 Comparison of Regional Dispersants Stockpiles

While the focus of this report is on mechanical oil spill response equipment, a quick review of oil spill dispersant inventories was also conducted. Chemical dispersants are sometimes used as an alternative or a supplement to mechanical oil spill recovery operations, primarily for oil spills that occur offshore. Dispersants are surfactant chemicals that break oil into smaller and smaller droplets so that it can disperse into the water column. Unlike mechanical recovery, dispersants do not remove oil from the environment. However, treating a slick with dispersants and breaking it up can reduce shoreline oiling considerably. Dispersants typically work best during the first 24-48 hours after oil hits the water, and they are usually sprayed from an aircraft or vessel. Application of dispersants in the United States requires special approval from regulatory agencies.

The two types of chemical dispersants stockpiled in the United States are Corexit 9527 and Corexit 9500.[15] Table 5.5 summarizes the current inventories of chemical dispersants in the continental United States, by region. The table also calculates the approximate size of an oil slick that could be treated with these dispersants at an application ration of 1 unit of dispersants to 20 units of oil (1:20). This figure reflects the manufacturer-recommended dosage for most chemical dispersants on the market, although application ratios are frequently adjusted for actual application based on on-scene conditions, oil properties, and the quantity of dispersants available.

[15] Note that other chemical treating agents, such as shoreline cleaners, are not included in this analysis.

Most of the dispersants stockpiled in the U.S. are owned either by the U.S. Coast Guard regional strike teams or major national OSROs. In comparing dispersant stockpiles, it is important to remember that additional logistical support is required to apply dispersants – i.e. aircraft, trained personnel, spotter plans, and dispersant spraying equipment.

Figure 5.3 graphs the comparative amounts of dispersant stockpiles by dispersant type and by total. The Gulf Coast and West Coast regions have the highest comparative dispersant levels. The South and Mid-Atlantic region has less than half the amount of either the Gulf or West Coast, and the New England region has almost no appreciable stockpile. The two areas where dispersants are concentrated in the Gulf Coast region are Galveston, Texas and Kiln, Mississippi. In the West Coast region, there are large storage depots in Long Beach and Richmond, California, and in Everett and Ferndale, Washington. The South and Mid-Atlantic region stockpiles are concentrated in New Jersey and could probably be mobilized to New England fairly quickly. The small New England stockpile is located in Portland, Maine.

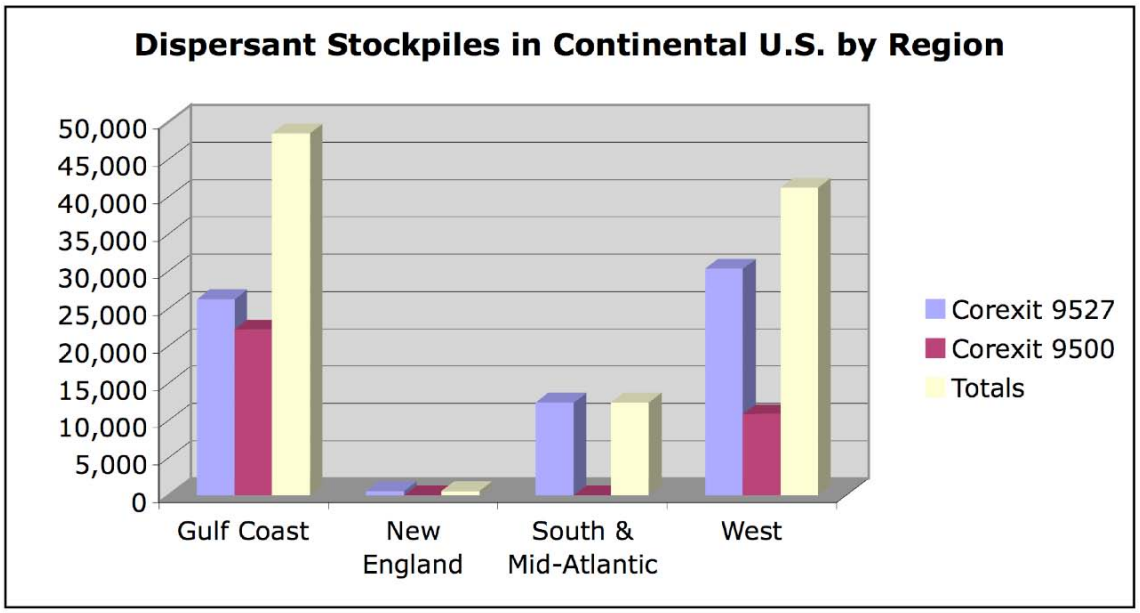
If all of the dispersants available in the continental U.S. were mobilized to a single spill site and applied at a 1:20 ratio, they could treat a slick of roughly 2 million gallons.

Table 5.5 Summary of Dispersant Stockpiles in Continental U.S.[16]

Dispersant Type	Amount Stored by Region (in gallons)				
	Gulf Coast	New England	South and Mid-Atlantic	West Coast	Total in Continental U.S.
Corexit 9527	26,250	550	12,410	30,360	**69,570**
Corexit 9500	22,200	0	0	10,800	**33,000**
Total Stockpile Amounts by Region	**48,450**	**550**	**12,410**	**41,160**	**102,570**
Total slick volume that could be treated at 1:20 application ratio (in gallons)	96,900	11,000	248,200	823,200	2,051,400

[16] Note that Alaska and Hawaii are not included due to distance from New England.

Table 5.3 Comparison of Dispersant Stockpiles in Continental U.S.



6 Discussion

This report discusses inventory levels for oil spill response equipment in Massachusetts and in neighboring states. This information has been compiled in several spreadsheets that can be maintained and updated by the Massachusetts Department of Environmental Protection as part of ongoing oil spill planning efforts. This information may also be combined with or compared against other response databases, such as the U.S. Coast Guard Response Resource Inventory (RRI).

6.1 Capacity of Oil Spill Response Systems within Massachusetts

This project considered the three major components of a marine oil spill response system – boom, skimmers, and temporary storage – by inventorying equipment stockpile levels. However, this project did not take the next step, which would be to consider how response equipment would be used to carry out oil spill response tactics. A systematic analysis that considers how this equipment would come together could be used to estimate the response capacity to perform major oil spill response and cleanup operations using this equipment.

6.1.1 On-water Response Capacity

When a marine oil spill occurs, the initial objective is always to recover or treat as much of the spilled oil as possible *before* it reaches the shoreline. This can be accomplished using mechanical on-water recovery systems – vessels, booms, skimmers, and storage units – configured to contain, recover and store oil. In order to understand the capacity to conduct on-water recovery, and therefore to estimate the maximum spill size that might be managed using available equipment, it is necessary to look at equipment systematically.

A systematic analysis could calculate the recovery rates and efficiencies for available skimmers, and looking at the capacity to hold recovered oil in the temporary storage devices available. Factors such as availability of vessels and trained personnel to conduct on-water recovery must also be considered. Often, oil spill scenarios are used to get a better understanding of response capacity. Scenario analyses require on modeled data and assumptions regarding how an oil spill response might proceed, but the resulting information can be useful to the understanding of the capacity and limits of existing response infrastructure.

A systematic analysis of Massachusetts' spill response capacity could also be useful to identifying which components of the system are missing or in limited supply. For example, if an oil spill scenario analysis was conducted to look at the amount of equipment available to support a given number of on-water response task forces, which are typically made up of vessels, skimmers, boom, and storage devices. In trying to piece all available equipment together into task forces, it can quickly become apparent whether one or more of the response components are in limited supply and therefore

impacting total capacity. This information could be used to guide future equipment acquisitions.

This project shows that Massachusetts' on-water skimming resources are fairly limited compared to relative amounts of boom. Similarly, Massachusetts has less skimming equipment and less open water boom available than other states. A systematic analysis would help to understand whether these limitations in fact amount to a lower response capacity.

6.1.2 Sensitive Area Protection Capacity

Protection of environmentally sensitive coastal areas is another important component of oil spill response. In Massachusetts, geographic response plans (GRP) have been developed, and continue to be developed, to provide tactical response plans for pre-identified high-priority shoreline areas. GRPs tell responders how and where to position boom to prevent oil from impacting certain inlets, marshes, or shoreline resources.

To assess whether sufficient resources exist to implement GRPs, a modeled spill scenario could be used to estimate the potential shoreline impacts from a spill at a given release site, and to therefore estimate which and how many GRPs might need to be implemented in response to one or more modeled oil spills. The amount of boom, vessels, anchor systems, and personnel required to implement a set of GRPs could then be calculated and measured against resources available locally, regionally, and statewide. Such an analysis could also factor in transport time for spill trailers or other equipment from one area of the state to another, to develop a realistic estimate for how long it might take to implement GRPs for a large-scale oil spill if equipment is brought in from other regions.

Drills and exercises could also be used to assess sensitive area protection capacity. Responders could be directed to implement multiple GRPs simultaneously, to estimate whether sufficient resources are available and to identify any missing links (i.e. not enough vessels or responders).

While this project did not attempt to estimate the number of vessels and trained personnel available to support spill response operations, such information could be collected and verified through scenario analyses, drills, or both.

6.2 New England Regional Capacity

In comparing the oil spill response equipment stockpiles in Massachusetts with those in other New England states, this study found that Massachusetts has a comparatively high level of spill response resources, due to two major factors: (1) the presence of state spill response trailers in over 70 communities, and (2) the concentration of response contractor equipment in the Port of Boston. Massachusetts has the highest total amount of calm water boom, all boom types combined, skimming system units (but not necessarily capacity), and temporary storage. The state with the next highest level of equipment stockpiles in most categories is Maine, followed by New Hampshire, Rhode Island, and Connecticut. Maine has the highest relative

stockpiles of response equipment suitable for open water or offshore operations, while New Hampshire has the most equipment for fast-water response. Rhode Island has a concentration of equipment in the Port of Providence.

Most of the New England on-water recovery capacity is in Maine, where all of the OSRVs and OSRBs in New England are located. Massachusetts has a relatively high number of skimming system units, but with lower recovery rates. There is a great deal of temporary storage available in Massachusetts (concentrated in Boston Harbor) and in Maine, with relatively little available in other New England states. Connecticut has the lowest equipment stockpiles overall.

Looking at the New England regional response capacity in aggregate, there are considerable stockpiles of all types of conventional hard boom, with considerably less specialty boom (such as fast-water/high current boom and tidal seal/shore seal boom) available. Compared to other regions of the continental U.S., New England has the absolute lowest level of dispersant stockpiles, although proximity to significant stockpiles in New Jersey may negate the need for additional dispersant storage in New England. Still, it is important for local spill response plans to recognize that additional transport time would be required to bring dispersants to Massachusetts or other New England states from out-of-region. The quantity of dispersants currently stored in New England (all of which is in Portland, Maine) would only treat 11,000 gallons of oil at typical application rates.

6.3 Other Considerations

Understanding resources availability is a critical component to assessing and understanding overall oil spill response capability. However, there are other important factors that should also be considered in order to estimate the overall level of preparedness for a state, town, or region to respond to a marine oil spill.

6.3.1 Spill Response Organization and Management

The existence of large stockpiles of oil spill response equipment does not necessarily ensure that a correspondingly high response *capability* exists. As discussed in Section 6.1, the manner in which resources are combined to form task forces and carry out response tactics will determine how much oil can be contained and recovered or excluded sensitive areas.

The manner in which resources come together and are used during an oil spill will be determined, to a large extent, by the response management system in place. A number of factors contribute to effective response management: timely and accurate spill assessment and situation updates, quick and effective decision-making, effective communications, competent responders, and continual re-evaluation of tactics and strategies to maximize oil recovery and minimize environmental impacts. Competency in response management is achieved through various planning and preparedness activities, such as developing and updating contingency plans, participating

in incident management training, and conducting drills and exercises to ensure that all agencies and organizations that might come together during a spill understand their role and their relationship to other functions.

In order for the spill response resources in Massachusetts to be effectively utilized, they must be part of a broader oil spill response management system that allows for continual practice and improvement. Any assessment as to whether Massachusetts has sufficient resources and capacity to manage a major oil spill also requires a strong understanding of the capabilities and limitations of this spill management system.

6.3.2 Maintenance and Operability

This study does not attempt to assess the operability of the spill response equipment that has been inventoried. However, it is important to ensure that response equipment is regularly maintained and in working order. Boom can tear or become brittle with age, use, or improper storage. Skimmers and pumps require periodic startup and operation to ensure that all parts are in working order.

The MassDEP equipment trailers are regularly maintained by the state, and the equipment owned and maintained by OSROs is required to undergo periodic maintenance and inspection. It is important to ensure that ongoing maintenance is a part of the overall spill preparedness system, since oil spills are infrequent events.

6.3.3 Quantity vs. Quality

The total amount of spill response equipment is a meaningless measurement without understanding the broader context of the response management system and the systematic capacity for various spill response functions. Therefore, even though this project shows that Massachusetts has higher stockpiles of boom than neighboring New England states, a modeled scenario analysis of GRP deployment during a major spill might show that this amount is still insufficient to meet projected response needs, or that the preponderance of calm water boom might limit response options to sheltered coves and inlets, and preclude operations in more exposed, open water environments. Similarly, an analysis of on-water recovery capacity may show that additional skimmers are needed or, conversely, that skimming capacity outpaces available storage and therefore additional storage would be needed to support on-water recovery.

7 Conclusion and Recommendations

7.1 Equipment Stockpile Levels

This report presents an initial inventory of oil spill response equipment resources in Massachusetts as of mid-2009. This inventory was conducted as part of a broader oil spill threat evaluation under the direction of MassDEP. The purpose of both this project and the broader threat evaluation is to help the Commonwealth to make regional and local comparisons regarding relative oil spill threats and relative preparedness, as measured in terms of response equipment availability.

As this report discusses in Section 6, spill preparedness cannot be measured based solely on equipment inventory levels. However, ensuring that sufficient resources are available to support a response is a critical component to spill preparedness. This study gives a comparative measure of spill preparedness by region and shows that the highest levels of equipment stockpiles exist in Boston and in Cape Cod. In Boston, nearly all of the equipment is owned by oil spill response contractors. In the Cape and Islands, most of the response equipment is housed in MassDEP spill response trailers.

The overwhelming majority of skimmers, skimming systems, and temporary storage capacity in Massachusetts is concentrated in the Boston Harbor region. The inland region has a small stockpile of skimming systems, but otherwise all other regions of the state have virtually no recovery or storage capacity. The distribution of boom statewide is more even, with the highest percentage of all boom types combined in the Boston Harbor region, followed closely by the Cape and Islands. Boston Harbor also has the highest concentration of protected water boom, and is one of the two regions with stockpiles of open water boom in the Commonwealth. There are small quantities of protected water boom in the South Shore and Inland regions. Calm water boom is more evenly distributed, with the highest concentration in the Cape and Islands region, followed by Boston Harbor, the North Shore, South Coastal, South Shore, and Inland regions.

Overall, the distribution of boom statewide is fairly even, due to the presence of spill response trailers in all regions of the state. The distribution of skimmers is concentrated in Boston Harbor and a few smaller OSRO hubs, but could be transported to most coastal regions within a few hours.

7.2 Assessing and Mitigating Spill Threat

The coastal oil spill threat evaluation project is a first step in beginning to put together the information required to make assessments of the location, type, and severity of oil spill threats statewide. The results of this equipment study may be compiled with the initial threat evaluation to give additional context to evaluating equipment stockpiles relative to oil spill threats. However, as discussed in Section 6, there are numerous other response preparedness factors that should also be considered when making any determination about overall spill preparedness.

The information compiled through this equipment study and the companion threat evaluation, while not definitive, does inform the broader oil spill risk management process. Additional analysis would certainly enhance this understanding. Either way, the Commonwealth can use the information gathered here describing where equipment is stored and can compare that information against where oil spill threats are most concentrated in order to make decisions about where to focus oil spill prevention or mitigation measures. Geographic areas that have a high oil spill threat level and a relatively low equipment stockpile level could be the target of more intensive prevention measures and/or future preparedness activities.

7.3 Recommendations

This report provides a snapshot of response equipment inventory levels and makes some general comparisons within the state and among neighboring states. This report also discusses response preparedness more broadly and describes how equipment levels fit into the bigger picture of oil spill response capability. There are a number of ways in which the Massachusetts Department of Environmental Protection can build on the analysis in this report in order to further improve and understand their capacity to respond to a major marine oil spill. These include:

- Use a combination of spill modeling and scenario analysis to evaluate spill response capacity based on the ability to assign available resources to on-water recovery and GRP implementation. Look for any deficiencies and tailor future equipment purchases to fill any gaps.
- Consider the need to acquire additional boom that is larger than 18" and could therefore operate in more of a protected or open water environment.
- Consider adding on-water recovery (skimming and storage) capacity to those regions that currently lack it.
- Evaluate the availability of vessels and personnel to support large-scale implementation of GRPs.
- Develop a plan to continually maintain and update the response equipment spreadsheet developed through this project. Consider adding additional information about other types of equipment.
- Assess response management capabilities and limitations. Practice response management through drills, exercises, and training that bring together local responders, state and federal agencies, and OSROs.
- Evaluate the mobilization/deployment time for MassDEP trailers to be called in *en masse* to another region of the state to support a large-scale response.

8 Appendices

Appendix A. Massachusetts Oil Spill Equipiment Inventory

A.1 Massachusetts Boom Inventory (sorted alphabetically by town)

Type of Boom	Size (in)	Total length (feet)	Type of Ownership	Owner	Storage Location – Region	Storage Location - Town
Calm water	12	200	State	MA DEP	South Coastal	Acushnet
Calm water	18	800	State	MA DEP	South Coastal	Acushnet
Calm water	12	200	State	MA DEP	Cape & Islands	Aquinnah
Calm water	18	800	State	MA DEP	Cape & Islands	Aquinnah
Calm water	12	200	State	MA DEP	Cape & Islands	Barnstable
Calm water	18	800	State	MA DEP	Cape & Islands	Barnstable
Calm water	12	200	State	MA DEP	South Coastal	Berkley
Calm water	18	800	State	MA DEP	South Coastal	Berkley
Calm water	12	200	State	MA DEP	North Shore	Beverly
Calm water	18	800	State	MA DEP	North Shore	Beverly
Calm water	18	700	co-op	BHOSC	Boston Harbor	Boston
Protected water	36	3000	co-op	BHOSC	Boston Harbor	Boston
Protected water	19	60	OSRO	MSRC	Boston Harbor	Boston
Protected water	21	100	OSRO	NRC	Boston Harbor	Boston
Protected water	21	500	OSRO	NRC	Boston Harbor	Boston
Protected water	23	1320	OSRO	MSRC	Boston Harbor	Boston
Protected water	24	2000	OSRO	MSRC	Boston Harbor	Boston
Protected water	26	1000	OSRO	MSRC	Boston Harbor	Boston
Open water	42	4000	OSRO	NRC	Boston Harbor	Boston
Open water	42	200	OSRO	NRC	Boston Harbor	Boston
Calm water	12	200	State	MA DEP	Cape & Islands	Bourne
Calm water	18	800	State	MA DEP	Cape & Islands	Bourne
Calm water	12	200	State	MA DEP	Boston Harbor	Braintree
Calm water	18	800	State	MA DEP	Boston Harbor	Braintree
Calm water	12	200	State	MA DEP	Cape & Islands	Brewster
Calm water	18	800	State	MA DEP	Cape & Islands	Brewster
unknown		600	Local govt	Chatham	Cape & Islands	Chatham
Calm water	12	200	State	MA DEP	Cape & Islands	Chatham

Type of Boom	Size (in)	Total length (feet)	Type of Ownership	Owner	Storage Location – Region	Storage Location - Town
Calm water	18	800	State	MA DEP	Cape & Islands	Chatham
Calm water	18	1000	co-op	BHOSC	Boston Harbor	Chelsea
Calm water	18	700	co-op	BHOSC	Boston Harbor	Chelsea
Calm water	18	1000	co-op	BHOSC	Boston Harbor	Chelsea
Calm water	18	700	co-op	BHOSC	Boston Harbor	Chelsea
Calm water	18	250	co-op	BHOSC	Boston Harbor	Chelsea
Calm water	18	1500	co-op	BHOSC	Boston Harbor	Chelsea
Calm water	12	200	State	MA DEP	Boston Harbor	Chelsea
Calm water	18	800	State	MA DEP	Boston Harbor	Chelsea
Calm water	12	200	State	MA DEP	Cape & Islands	Chilmark
Calm water	18	800	State	MA DEP	Cape & Islands	Chilmark
Calm water	12	200	State	MA DEP	Boston Harbor	Cohasset
Calm water	18	800	State	MA DEP	Boston Harbor	Cohasset
Calm water	12	200	State	MA DEP	South Coastal	Dartmouth
Calm water	18	800	State	MA DEP	South Coastal	Dartmouth
Calm water	12	200	State	MA DEP	Cape & Islands	Dennis
Calm water	18	800	State	MA DEP	Cape & Islands	Dennis
Calm water	12	200	State	MA DEP	South Coastal	Dighton
Calm water	18	800	State	MA DEP	South Coastal	Dighton
Calm water	12	200	State	MA DEP	South Shore	Duxbury
Calm water	18	800	State	MA DEP	South Shore	Duxbury
Calm water	12	200	State	MA DEP	Cape & Islands	Eastham
Calm water	18	800	State	MA DEP	Cape & Islands	Eastham
Calm water	12	200	State	MA DEP	Cape & Islands	Edgartown
Calm water	18	800	State	MA DEP	Cape & Islands	Edgartown
Calm water	12	200	State	MA DEP	North Shore	Essex
Calm water	18	800	State	MA DEP	North Shore	Essex
Calm water	18	1500	co-op	BHOSC	Boston Harbor	Everett
Calm water	12	200	State	MA DEP	Boston Harbor	Everett
Calm water	18	800	State	MA DEP	Boston Harbor	Everett
Calm water	18	1000	OSRO	Moran	South Coastal	Fairhaven
Calm water	12	200	State	MA DEP	South Coastal	Fairhaven
Calm water	18	800	State	MA DEP	South Coastal	Fairhaven

Type of Boom	Size (in)	Total length (feet)	Type of Ownership	Owner	Storage Location – Region	Storage Location - Town
Calm water	12	200	State	MA DEP	South Coastal	Fall River
Calm water	18	800	State	MA DEP	South Coastal	Fall River
Calm water	18	1,000	OSRO	Moran	Cape & Islands	Falmouth
Calm water	12	200	State	MA DEP	Cape & Islands	Falmouth
Calm water	18	800	State	MA DEP	Cape & Islands	Falmouth
Calm water	12	200	State	MA DEP	South Coastal	Freetown
Calm water	18	800	State	MA DEP	South Coastal	Freetown
Calm water	12	200	State	MA DEP	North Shore	Gloucester
Calm water	18	800	State	MA DEP	North Shore	Gloucester
Calm water	12	200	State	MA DEP	Cape & Islands	Gosnold
Calm water	18	800	State	MA DEP	Cape & Islands	Gosnold
Calm water	12	200	State	MA DEP	Cape & Islands	Harwich
Calm water	18	800	State	MA DEP	Cape & Islands	Harwich
Calm water	12	200	State	MA DEP	South Shore	Hingham
Calm water	18	800	State	MA DEP	South Shore	Hingham
Calm water	12	200	State	MA DEP	South Shore	Hull
Calm water	18	800	State	MA DEP	South Shore	Hull
Calm water	12	100	State	MA DEP	North Shore	Ipswich
Calm water	18	400	State	MA DEP	North Shore	Ipswich
Calm water	12	200	State	MA DEP	South Shore	Kingston
Calm water	18	800	State	MA DEP	South Shore	Kingston
Calm water	12	200	State	MA DEP	North Shore	Lynn
Calm water	18	800	State	MA DEP	North Shore	Lynn
Calm water	12	200	State	MA DEP	North Shore	Manchester
Calm water	18	800	State	MA DEP	North Shore	Manchester
Calm water	12	200	State	MA DEP	North Shore	Marblehead
Calm water	18	800	State	MA DEP	North Shore	Marblehead
Unknown		400	Local govt	Marion		Marion
Calm water	12	200	State	MA DEP	South Coastal	Marion
Calm water	18	800	State	MA DEP	South Coastal	Marion
Calm water	12	200	State	MA DEP	South Shore	Marshfield
Calm water	18	800	State	MA DEP	South Shore	Marshfield
Unknown			Local govt	Mashpee		Mashpee

Type of Boom	Size (in)	Total length (feet)	Type of Ownership	Owner	Storage Location – Region	Storage Location - Town
Calm water	12	200	State	MA DEP	Cape & Islands	Mashpee
Calm water	18	800	State	MA DEP	Cape & Islands	Mashpee
Calm water	12	200	State	MA DEP	South Coastal	Mattapoisett
Calm water	18	800	State	MA DEP	South Coastal	Mattapoisett
Calm water	12	200	State	MA DEP	North Shore	Nahant
Calm water	18	800	State	MA DEP	North Shore	Nahant
Calm water	12	400	State	MA DEP	Cape & Islands	Nantucket
Calm water	18	1600	State	MA DEP	Cape & Islands	Nantucket
Calm water	12	200	State	MA DEP	South Coastal	New Bedford
Calm water	18	800	State	MA DEP	South Coastal	New Bedford
Calm water	12	200	State	MA DEP	North Shore	Newbury
Calm water	18	800	State	MA DEP	North Shore	Newbury
Calm water	12	200	State	MA DEP	North Shore	Newburyport
Calm water	18	800	State	MA DEP	North Shore	Newburyport
Calm water	12	200	State	MA DEP	Cape & Islands	Oak Bluffs
Calm water	18	800	State	MA DEP	Cape & Islands	Oak Bluffs
Calm water	12	200	State	MA DEP	Cape & Islands	Orleans
Calm water	18	800	State	MA DEP	Cape & Islands	Orleans
Calm water	12	200	State	MA DEP	North Shore	Peabody*
Calm water	18	800	State	MA DEP	North Shore	Peabody*
Calm water	12	200	State	MA DEP	South Shore	Plymouth
Calm water	18	800	State	MA DEP	South Shore	Plymouth
Calm water	12	200	State	MA DEP	Cape & Islands	Provincetown
Calm water	18	800	State	MA DEP	Cape & Islands	Provincetown
Calm water	12	200	State	MA DEP	Boston Harbor	Quincy
Calm water	18	800	State	MA DEP	Boston Harbor	Quincy
Calm water	18	1200	co-op	BHOSC	Boston Harbor	revere
Calm water	18	1500	co-op	BHOSC	Boston Harbor	revere
Calm water	18	1000	co-op	BHOSC	Boston Harbor	Revere
Calm water	12	200	State	MA DEP	North Shore	revere
Calm water	18	800	State	MA DEP	North Shore	revere
Calm water	12	200	State	MA DEP	North Shore	Rockport
Calm water	18	800	State	MA DEP	North Shore	Rockport

Type of Boom	Size (in)	Total length (feet)	Type of Ownership	Owner	Storage Location – Region	Storage Location - Town
Calm water	12	200	State	MA DEP	North Shore	Rowley
Calm water	18	800	State	MA DEP	North Shore	Rowley
Unknown	?	?	Local govt	Salem	North Shore	Salem
Calm water	12	200	State	MA DEP	North Shore	Salem
Calm water	18	800	State	MA DEP	North Shore	Salem
Calm water	12	200	State	MA DEP	North Shore	Salisbury
Calm water	18	800	State	MA DEP	North Shore	Salisbury
Calm water	12	200	State	MA DEP	Cape & Islands	Sandwich
Calm water	18	800	State	MA DEP	Cape & Islands	Sandwich
Calm water	12	200	State	MA DEP	North Shore	Saugus
Calm water	18	800	State	MA DEP	North Shore	Saugus
Calm water	12	200	State	MA DEP	Boston Harbor	Scituate
Calm water	18	800	State	MA DEP	Boston Harbor	Scituate
Calm water	12	200	State	MA DEP	South Coastal	Somerset
Calm water	18	800	State	MA DEP	South Coastal	Somerset
Calm water	12	200	State	MA DEP	North Shore	Swampscott
Calm water	18	800	State	MA DEP	North Shore	Swampscott
Calm water	12	200	State	MA DEP	South Coastal	Swansea
Calm water	18	800	State	MA DEP	South Coastal	Swansea
Calm water	12	200	State	MA DEP	Cape & Islands	Truro
Calm water	18	800	State	MA DEP	Cape & Islands	Truro
Calm water	12	200	State	MA DEP	South Coastal	Wareham
Calm water	18	800	State	MA DEP	South Coastal	Wareham
Unknown		100	Local govt	Wellfleet	Cape & Islands	Wellfleet
Calm water	12	200	State	MA DEP	Cape & Islands	Wellfleet
Calm water	18	800	State	MA DEP	Cape & Islands	Wellfleet
Calm water	12	200	State	MA DEP	Cape & Islands	West Tisbury
Calm water	18	800	State	MA DEP	Cape & Islands	West Tisbury
Calm water	12	200	State	MA DEP	South Coastal	Westport
Calm water	18	800	State	MA DEP	South Coastal	Westport
Calm water	18	1100	OSRO	Clean Harbors	South Shore	Weymouth
Calm water	18	2200	OSRO	Clean Harbors	South Shore	Weymouth

Type of Boom	Size (in)	Total length (feet)	Type of Ownership	Owner	Storage Location – Region	Storage Location - Town
Protected water	36	1500	OSRO	Clean Harbors	South Shore	Weymouth
Calm water	12	200	State	MA DEP	Boston Harbor	Weymouth
Calm water	18	800	State	MA DEP	Boston Harbor	Weymouth
Calm water	18	800	co-op	BHOSC	Boston Harbor	Winthrop
Protected water	24	3000	co-op	BHOSC	Boston Harbor	Winthrop
Calm water	12	200	State	MA DEP	Boston Harbor	Winthrop
Calm water	18	800	State	MA DEP	Boston Harbor	Winthrop
Calm water	18	1,000	OSRO	Moran	Cape & Islands	Yarmouth
Calm water	12	200	State	MA DEP	Cape & Islands	Yarmouth
Calm water	18	800	State	MA DEP	Cape & Islands	Yarmouth
Calm water	18	300	OSRO	Clean Harbors	Inland	Springfield
Calm water	18	600	OSRO	Clean Harbors	Inland	North Grafton
Calm water	18	600	OSRO	Clean Harbors	Inland	North Grafton
Calm water	18	3100	OSRO	Moran	Inland	Randolph
Protected water	24	1500	OSRO	Moran	Inland	Randolph
Calm water	12	200	State	MA DEP	Cape & Islands	Naushon
Calm water	18	800	State	MA DEP	Cape & Islands	Naushon
Calm water	12	100	State	MA DEP	Inland	Lakeville
Calm water	12	100	State	MA DEP	Inland	Wilmington
Calm water	18	400	State	MA DEP	Inland	Lakeville
Calm water	18	400	State	MA DEP	Inland	Wilmington
Open water	42	5000	Federal	USCG	Cape & Islands	Bourne
Open water	46	2624	Federal	USCG	Cape & Islands	Bourne

*Note that the equipment trailer intended for Peabody is actually being stored at a MassDEP site in Holbrook.

A.2 Typical Inventory for 20-foot Mass DEP oil spill response trailer

Item Description	Use/Comments	Quantity
Booming and Oil Sorbing Equipment and Supplies		
Anchors #22 (Danforth "Quick Set" 25 lbs)		10
Chains for Anchor 3/8"	6' per Anchor	10
Clips for Towing Bridals, 2 per Bridal	3/8"	16
Floats/Buoys	Float Harbor Booms	10
Harbor Boom (Hard Boom, Same Universal Slide Connectors as 12") Bottom sleeve chain/cable, non-plastic slides, with upper tension member	100'x18" with Universal Slide Connectors Type I or II	8
Harbor Boom (Hard Boom, Same Universal Slide Connectors as 18") Bottom sleeve chain/cable, non-plastic slides, with upper tension member	50'x12" with Universal Slide Connectors Type I or II	4
Harbor Boom Pins	Universal Connector Pins	20
Oil Sorbent Pads (Bails)	17"x19" approximately	5
Rope with Thimbles and Eyes, 1/2" minimum (floating)	600' Rolls - Harbor Boom to anchor chains	5
Shackles for Chain and Anchor 2 per anchor and 2 per bridal	3/8" Long Shackles	36
Snare Boom (100' Sections) Bails		2
Sorbent Boom (10' sections, 40' per bail) 8 inch boom diameter	10'x8"	5
Steel Rods (to anchor boom to shore) with flat top 3/4" or 1" Diameter	6' Steel Rods	10
Towing Bridals with Thimbles		8
Inflatable bladders for storm culverts (12" Diameter)	12"	2
Inflatable bladders for storm culverts (18" Diameter)	18"	2
Inflatable bladders for storm culverts (24" Diameter)	24"	2
12’ telescoping boat hook		1
Speedy Dry (Granular)	Granular	5
Tools and Personal Protection Equipment (PPE)		
Cable Ties		20
Caution Tape		2
Chicken Boots (Size xl, 12")		50
Citrus Hand Cleaner	Case of 12	1
Duct Tape		5
HDPE Long Handle Spade Shovels		2
Leather Palm Work Gloves	Men's Large	25
Long Handled Broom		1
Nitrile gloves (Size xl)	20 per pack	5
Plastic Sheeting 4mil	100'x20'	5

Item Description	Use/Comments	Quantity
Portable Lights		2
Safety Glasses		20
Sledge Hammer, 20lbs		2
Tool Box	Mobile for Storing Tools	2
Tyvek QC size XXL (Clear Stack Packs)	Case of 25	2
Wrenches	For Tightening Thimbles	3
Portable 2000 watt Generator w/inverter	3-4 hp	1
Electric Powered Air Compressor 115 Volt		1

A.3 Massachusetts Skimmer Inventory

Skimmer Model	Capacity (units noted)	Number in inventory	Type of Ownership	Owner	Storage Location - Region	Storage Location - Town
SkimPac 4200	1,700 gph	1	OSRO	Clean Harbors	South Shore	Weymouth
Elastec Air TDS118	2,100 gph	1	OSRO	Clean Harbors	South Shore	Weymouth
2" Crucial Skimmer	1,500 gph	1	OSRO	Clean Harbors	South Shore	Kingston
N/A	Unknown	2	OSRO	Clean Harbors	South Shore	Weymouth
AP Model 18 Multi-Skimmer (Disk, Drum, Brush)	900 gph	1	OSRO	NRC	Boston Harbor	Boston
Desmi DOP 250	4,000 gph	1	OSRO	NRC	Boston Harbor	Boston
Marco Class XI AB Skimmer weir, belt	weir 2,400 gph belt 3,900 gph	1	OSRO	NRC	Boston Harbor	Boston
Acme weir head skimmer	2,000 gph	1	OSRO	NRC	Boston Harbor	Boston
Vikoma Fasflo Skimmer	Unknown	1	OSRO	NRC	Boston Harbor	Boston
Acme weir head skimmer	2,000 gph	1	OSRO	NRC	Boston Harbor	Boston
Desmi weir Head	3001-4000 bpd	1	OSRO	N.R.C.	Boston Harbor	Boston
Unknown	905 bpd	1	OSRO	MSRC	Boston Harbor	Boston
Unknown	3000 bpd	1	OSRO	MSRC	Boston Harbor	Boston

A.4 Massachusetts Skimming System Inventory

Type of system	Capacity (units as stated)	Total storage (gallons)	Other components	Number in Inventory	Type of Ownership	Storage Location - Region	Storage Location - Town
Vacuum truck	Unknown	4,000, 5,000 & 6,000	Could have suction & discharge hoses, could have a skim-pac, or a manta ray head skimmer	10	OSRO	Boston Harbor	Weymouth
Vacuum truck	Unknown	Unknown	High Power Vac-Truck/Cusco, could have a skim-pac, or a manta ray head skimmer	4	OSRO	Boston Harbor	Weymouth
Vacuum truck	Unknown	Unknown	Cyclone Vac/Guzzler (93Mack), could have a skim-pac, or a manta ray head skimmer	5	OSRO	Boston Harbor	Weymouth
Vacuum truck	Unknown	54,000	Vactor Jet Rodder (91 Mack), could have a skim-pac, or a manta ray head skimmer	1	OSRO	Boston Harbor	Weymouth
Vacuum truck	Unknown	3K to 3.5K	Could have suction & discharge hoses, could have a skim-pac, or a manta ray head skimmer	7	OSRO	Boston Harbor	Weymouth
Other skimming system	EDRC >5001 bpd	Unknown	Unknown	1	OSRO or co-op	Boston Harbor	Boston
Barge-based skimming system	Unknown	18480 per barge 36960 Total	1,320' Sea Sentry II Boom 67" 1000' Texas Boom 26" 2000' Slickbar Boom 24" 60' Mark II Boom6' Buson Push boat, 3k crane, discharge/hydraulic/air Hoses, Rigging kits	1	OSRO	Boston Harbor	Everett

Type of system	Capacity (units as stated)	Total storage (gallons)	Other components	Number in Inventory	Type of Ownership	Storage Location - Region	Storage Location - Town
Barge-based skimming system	Unknown	Unknown	Unknown	1	OSRO or co-op	Boston Harbor	Boston
Barge-based skimming system	Unknown	Unknown	Unknown	1	OSRO or co-op	Boston Harbor	Boston
Other skimming system	144,000 GPH	0	Elastec, Skim Pack, TDS-118	1	OSRO	Cape & Islands	Falmouth
Vessel-based skimming system	1320 GPH	Unknown	27' boot , 2x115hp., JBJ DIP420	1	OSRO	South Shore	Kingston
Vessel-based skimming system	1320 GPH	Unknown	27' boot , 2x115hp.,JBJ DIP420	1	OSRO	South Shore	Kingston
Other skimming system	Unknown	500	Skidmount vacuum unit	1	OSRO	Inland	Springfield
Vacuum truck	17,460 GPH	3,500	Unknown	1	OSRO	Inland	Randolph
Vacuum truck	15,420 GPH	4,000	Unknown	1	OSRO	Inland	Randolph
Vessel-based skimming system	8,022 GPH	195	JBF, DIP 400, Belt/Adhesion	1	OSRO	Inland	Randolph
Unknown	7,200 GPH	500	This system is on a Skid	1	OSRO	Inland	Randolph
Other skimming system	4,140 GPH	10	Weir/Suction, Skim Pack	1	OSRO	Inland	Randolph
Vessel-based skimming system	Unknown	Unknown	Unknown	Unknown	OSRO or co-op	Inland	Unknown
Barge-based skimming system	Unknown	Unknown	Unknown	Unknown	OSRO or co-op	Inland	Unknown

A.5 Massachusetts Temporary Storage Inventory

Type of Storage Device	Total capacity (in gallons)	Number of storage devices in inventory	Type of Ownership	Owner Name	Storage Location - Region	Storage Location - Town
Barge or vessel	1,260,000	2	Private/OSRO contracted	MSRC	Boston Harbor	Boston
Barge or vessel	1,260,000	1	Private/OSRO contracted	MSRC	Boston Harbor	Boston
Barge or vessel	4,200,000	1	Private/OSRO contracted	MSRC	Boston Harbor	Boston
Barge or vessel	1,000,000	4	Private/OSRO contracted	Clean Harbors	Boston Harbor	Boston
Barge or vessel	630,000	1	Private/OSRO contracted	Clean Harbors	Boston Harbor	Boston
Barge or vessel	511,056	1	Private/OSRO contracted	Clean Harbors	Boston Harbor	Boston
Barge or vessel	9,996	1	OSRO	NRC	Boston Harbor	Boston
Other	1000	1	OSRO	Clean Harbors	Boston Harbor	Weymouth
Other	22,500	25	OSRO	Clean Harbors	Boston Harbor	Weymouth
Towable (on water)	4,300	1	OSRO	Clean Harbors	Boston Harbor	Weymouth
Barge	16,800	1	OSRO	MSRC	Boston Harbor	Boston
Stationary (land-based)	3,000	2	OSRO	Moran	Cape & Islands	Falmouth
Other	2,500	2	OSRO	Clean Harbors	South Shore	Weymouth
Other	1000	1	OSRO	Clean Harbors	South Shore	Weymouth
Other	40000	4	OSRO	Clean Harbors	South Shore	Kingston
Other	5000	2	OSRO	Clean Harbors	South Shore	Weymouth
Towable (on water)	4,400	1	OSRO	Moran	Inland	Randolph

Appendix B. Regional (New England) Equipment Inventory

B.1 Regional Boom Inventory

Type of boom	Size (in)	Total length (ft)	Type of Ownership	State	Storage Location
Calm water	4	200	OSRO	Maine	Rockport, ME
Calm water	6	2,000	Federal	New Hampshire	Portsmouth, NH
Calm water	8	400	OSRO	Maine	Rockport, ME
Calm water	10	2,500	Federal	New Hampshire	Portsmouth, NH
Calm water	12	300	State	Maine	Bangor, ME
Calm water	12	2,000	State	Maine	Portland, ME
Calm water	12	2,100	Co-op	New Hampshire	Newington NH
Calm water	12	1,800	Co-op	New Hampshire	Newington NH
Calm water	12	3,000	Co-op	New Hampshire	Portsmouth, NH
Calm water	12	3,000	Co-op	New Hampshire	Portsmouth, NH
Calm water	12	1,000	Co-op	New Hampshire	Portsmouth, NH
Calm water	12	100	Co-op	New Hampshire	Newington NH
Calm water	12	800	OSRO	New Hampshire	Dover, NH
Calm water	12	400	OSRO	New Hampshire	Dover, NH
Calm water	12	200	State	New Hampshire	Hampton, NH
Calm water	14	5,400	OSRO	Maine	S. Portland, ME
Calm water	14	2,000	OSRO	Maine	Searsport, ME
Calm water	14	1,000	State	Maine	Augusta, ME
Calm water	16	220	OSRO	Maine	Portland, ME
Calm water	16	1,500	State	Rhode Island	Charlestown, RI
Tidal seal	17	220	Private	Maine	N. Waterford, ME
Tidal seal	17	280	Private	Maine	Raymond, ME
Calm water	18	200	OSRO	New Hampshire	Bow, NH
Calm water	18	50	State	New Hampshire	Newington NH
Calm water	18	50	Federal	New Hampshire	Kittery, ME
Calm water	18	400	State	Maine	Rockland, ME
Calm water	18	100	Co-op	New Hampshire	Newington NH
Calm water	18	2,000	OSRO	Maine	Searsport, ME
Calm water	18	800	OSRO	Connecticut	Bristol, CT
Calm water	18	800	OSRO	Connecticut	Milford, CT
Calm water	18	1,200	OSRO	Connecticut	North Haven, CT

Type of boom	Size (in)	Total length (ft)	Type of Ownership	State	Storage Location
Calm water	18	500	Federal	Maine	Boothbay, ME
Calm water	18	500	Federal	Maine	Bucksport, ME
Calm water	18	500	Federal	Maine	Eastport, ME
Calm water	18	500	Federal	Maine	Jonesport, ME
Calm water	18	1,500	Federal	Maine	Portland, ME
Calm water	18	1,500	OSRO	Maine	Bangor, ME
Calm water	18	1,500	OSRO	Maine	S. Portland, ME
Calm water	18	750	OSRO	Maine	Bangor, ME
Calm water	18	500	OSRO	Maine	Bucksport, ME
Calm water	18	1,000	OSRO	Maine	Bucksport, ME
Calm water	18	500	Private	Maine	S. Portland, ME
Calm water	18	400	State	Maine	Augusta, ME
Calm water	18	800	State	Maine	Bangor, ME
Calm water	18	1,650	State	Maine	Portland, ME
Calm water	18	300	State	Maine	Presque Isle, ME
Calm water	18	1,500	Co-op	New Hampshire	Portsmouth, NH
Calm water	18	50	Co-op	New Hampshire	Newington NH
Calm water	18	50	Co-op	New Hampshire	Newington NH
Calm water	18	50	Co-op	New Hampshire	Newington NH
Calm water	18	50	Co-op	New Hampshire	Newington NH
Calm water	18	1,000	Federal	New Hampshire	Portsmouth, NH
Calm water	18	1,000	OSRO	New Hampshire	Dover, NH
Calm water	18	1,700	Private	New Hampshire	Portsmouth, NH
Calm water	18	1,300	Private	New Hampshire	Portsmouth, NH
Calm water	18	550	Private	New Hampshire	Newington, NH
Calm water	18	50	Private	New Hampshire	Portsmouth, NH
Calm water	18	100	Private	New Hampshire	Newington NH
Calm water	18	50	Private	New Hampshire	Newington NH
Calm water	18	700	Private	New Hampshire	Portsmouth, NH
Calm water	18	1,000	State	New Hampshire	Durham, NH
Calm water	18	1,000	State	New Hampshire	Portsmouth, NH
Calm water	18	3,000	State	New Hampshire	Portsmouth NH
Calm water	18	10,000	Co-op	Rhode Island	Port of Providence

Type of boom	Size (in)	Total length (ft)	Type of Ownership	State	Storage Location
Calm water	18	1,000	OSRO	Rhode Island	East Providence, RI
Calm water	18	1,000	OSRO	Rhode Island	East Providence, RI
Protected water	19	3,200	OSRO	Maine	Portland, ME
Protected water	19	60	OSRO	Maine	Portland, ME
Protected water	19	60	OSRO	Rhode Island	Providence, RI
Protected water	21	1,000	OSRO	Connecticut	Berlin, CT
Protected water	21	500	OSRO	Maine	Bangor, ME
Protected water	21	4,100	OSRO	Maine	S. Portland, ME
Protected water	21	3,300	OSRO	Rhode Island	East Providence, RI
Protected water	24	500	Federal	Maine	Southwest Harbor, ME
Protected water	24	2,500	OSRO	Maine	S. Portland, ME
Protected water	24	1,100	OSRO	Maine	S. Portland, ME
Protected water	24	1,700	OSRO	Maine	Portland, ME
Protected water	24	1,000	OSRO	Maine	Bangor, ME
Protected water	24	1,000	OSRO	Maine	Bangor, ME
Protected water	24	1,000	OSRO	Maine	Bucksport, ME
Protected water	24	1,000	OSRO	Maine	Bangor, ME
Protected water	24	1,800	Private	Maine	Yarmouth, ME
Protected water	24	4,400	Private	Maine	S. Portland, ME
Protected water	24	2,850	Private	Maine	S. Portland, ME
Protected water	24	1,600	Private	Maine	S. Portland, ME
Protected water	24	2,600	State	Maine	Bangor, ME
Protected water	24	1,000	State	Maine	Bucksport, ME
Protected water	24	5,000	State	Maine	Eastport, ME
Protected water	24	1,000	State	Maine	Searsport, ME
Protected water	24	4,000	State	Maine	Bangor, ME
Protected water	24	5,750	State	Maine	Portland, ME
Protected water	24	2,000	State	Maine	S. Portland, ME
Protected water	24	2,600	State	Maine	Bangor, ME

Type of boom	Size (in)	Total length (ft)	Type of Ownership	State	Storage Location
Tidal seal	24	600	Co-op	New Hampshire	Newington NH
Protected water	24	150	Federal	New Hampshire	Shipyard Kittery
Protected water	24	100	OSRO	New Hampshire	Dover, NH
Protected water	24	1,900	OSRO	Rhode Island	Providence, RI
Tidal seal	24	300	State	Rhode Island	Charlestown, RI
Protected water	26	1,000	OSRO	Maine	Portland, ME
Protected water	26	1,000	OSRO	Rhode Island	Providence, RI
Protected water	27	2,600	OSRO	Maine	Portland, ME
Protected water	27	3,050	OSRO	Maine	Portland, ME
Protected water	30	1,000	OSRO	Maine	Searsport, ME
Protected water	36	200	OSRO	Maine	Bangor, ME
Protected water	36	4,400	State	Maine	S. Portland, ME
Protected water	36	200	Federal	New Hampshire	Portsmouth, NH
Protected water	36	60	Federal	New Hampshire	Portsmouth, NH
Tidal seal	36	60	Federal	New Hampshire	Kittery, ME
Protected water	36	50	Private	New Hampshire	Portsmouth, NH
Protected water	36	1,500	OSRO	Rhode Island	East Providence, RI
Open water	38	1,200	OSRO	Maine	Portland, ME
Open water	38	1,750	OSRO	Maine	Portland, ME
Open water	42	4,800	OSRO	Maine	S. Portland, ME
Open water	42	5,000	Federal	Rhode Island	N. Kingstown, RI
Open water	44	6,820	OSRO	Maine	Portland, ME
Open water	44	4,400	OSRO	Maine	S. Portland, ME
Open water	44	4,620	OSRO	Rhode Island	Providence, RI
Open water	46	2,624	Federal	Rhode Island	N. Kingstown, RI
N/A	N/A	29,500	OSRO	New Hampshire	Portsmouth, NH
Fire-Resistent	N/A	900	OSRO	Maine	Portland, ME
N/A	N/A	40	Co-op	New Hampshire	Newington NH
N/A	N/A	100	Co-op	New Hampshire	Newington NH

B.2 Regional Skimmer Inventory

Kind	Manufacturer	Capacity (units vary as noted)	Number in Inventory	Type of Ownership	State	Storage Location
Drum	Elastec 3"	35 gpm	1	OSRO	Connecticut	Milford, CT
Drum	Crucial	35 gpm	1	OSRO	Connecticut	Milford, CT
N/A	Aquaguard	363 bpd	1	OSRO	Connecticut	Berlin, CT
Disc	N/A		1	OSRO	Maine	Bangor, ME
Other	N/A		1	OSRO	Maine	South Portland, ME
N/A	Vikoma Sea Devil	2290 bpd	1	OSRO	Maine	Portland, ME
N/A	Desmi 250	2112 bpd	1	OSRO	Maine	Portland, ME
Drum	Elastec Tds 136	288 bpd	1	OSRO	Maine	Portland, ME
Drum	Lori LSC brush	1350 bpd	2	OSRO	Maine	Portland, ME
N/A	Stress Skimmer	15,840 bpd	1	OSRO	Maine	Portland, ME
N/A	Roclean OM 260	362 bpd	1	OSRO	Maine	Portland, ME
Weir	Skim-Pack	2054 bpd	1	OSRO	Maine	Portland, ME
N/A	Vikoma Komara	362 bpd	1	OSRO	Maine	Portland, ME
N/A	Vikoma Komara	905 bpd	1	OSRO	Maine	Portland, ME
N/A	Transrec 350	10,600 bpd	1	OSRO	Maine	Portland, ME
N/A	GT 185	1300 bpd	1	OSRO	Maine	Portland, ME
N/A	Skim-Pack		2	OSRO	Maine	Cutler, ME
N/A	AP Model 18 Multi-skimmer	446 bpd	1	OSRO	Maine	Bangor, ME
N/A	Marco Class XI	24,000 bpd	2	OSRO	Maine	South Portland, ME
Disc	N/A	1371 bpd	1	OSRO	Maine	Hampden, ME
N/A	Vikoma Cascade	5520 bpd	1	OSRO	Maine	South Portland, ME
N/A	AP Model 24 Multi-skimmer	823 bpd	1	OSRO	Maine	South Portland, ME
N/A	4 Band Rope Mop	N/A	1	OSRO	Maine	South Portland, ME
Weir	Acme	N/A	1	OSRO	Maine	South Portland, ME
Drum	N/A	N/A	1	OSRO	Maine	Searsport, ME
Drum	N/A	N/A	1	State	Maine	Augusta, ME
Weir	Slurp Skimmer	1,800?	2	State	Maine	Bangor, ME

Kind	Manufacturer	Capacity (units vary as noted)	Number in Inventory	Type of Ownership	State	Storage Location
Disc	N/A	N/A	2	State	Maine	Bangor, ME
Drum	N/A	N/A	1	State	Maine	Portland, ME
Disc	N/A	N/A	2	State	Maine	Portland, ME
Other	OMI	N/A	1	State	Maine	Portland, ME
Drum	Action Petroleum	N/A	1	State	Maine	Bangor, ME
Weir	Skim-Pack	300 (?)	1	Federal	New Hampshire	Kittery, ME
N/A	Kvichak-Macro 28	N/A	2	Federal	New Hampshire	Portsmouth, NH
Other	N/A	N/A	N/A	State	New Hampshire	Portsmouth, NH
Other	Crowley/Alden	210 GPH	2	OSRO	Rhode island	East Providence, RI
Drum	Elastec 3"	35 GPM	1	OSRO	Rhode island	East Providence, RI
Drum	Crucial	35 GPM	1	OSRO	Rhode island	East Providence, RI
N/A	GT 185	1300 bbl/day	1	OSRO	Rhode island	Providence, RI
Weir	N/A	1371 bbl/day	1	OSRO	Rhode island	East Providence, RI
N/A	AP Model 24 Multi-skimmer	823 bbl/day	1	OSRO	Rhode island	East Providence, RI
Weir	Acme		1	OSRO	Rhode island	East Providence, RI

B.3 Regional Skimming System Inventory

Skimming System Type	Capacity (gallons per hour)	Total amount of storage (gallons)	Other components	Number in Inventory	Type of Owner-ship	State	Storage Location
Barge-based skimming system	2,640	210,000	Barge with out-riggers boom and pumps, JBF DIP 500	1	State	Maine	Bucksport, ME
Barge-based skimming system	2,640	210,000	Barge with out-riggers boom and pumps, JBF DIP 500	1	State	Maine	South Portland, ME
Vessel-based skimming system	Unknown	Unknown	Skimmer with twin 50hp, JBF DIP 400/420	1	State	Maine	Augusta, ME
Vessel-based skimming system	Unknown	Unknown	Skimmer with twin 50hp, JBF DIP 420	1	State	Maine	Bangor, ME

Skimming System Type	Capacity (gallons per hour)	Total amount of storage (gallons)	Other components	Number in Inventory	Type of Owner-ship	State	Storage Location
Vessel-based skimming system	Unknown	Unknown	Skimmer with twin 50hp, JBJ DIP 420	1	State	Maine	Augusta, ME
Vessel-based skimming system	Unknown	Unknown	JBF DIP 400/420	1	OSRO	Maine	Searsport, ME
Vessel-based skimming system	2,250	1,320	23' boat, pumps Dispersant pump with monitor, JBF DIP420, skimmer is on a trailer	1	Co-op	New Hampshire	Portsmouth, NH
Vessel-based skimming system	2,250	1,320	23' boat, pumps Dispersant pump with monitor, JBF DIP420, skimmer is on a trailer	1	Co-op	New Hampshire	Portsmouth, NH
Vessel-based skimming system	8,400	1,000	Kvichak-Marco Skimmers	2	Federal	New Hampshire	Kittery, ME
Unknown	Unknown	1100	26" boom barge with 3000' boom on each	3	Co-op	New Hampshire	Portsmouth, NH
Vessel-based skimming system	Unknown	Unknown	Bay Defender high current skimming systems	2	Co-op	New Hampshire	Newington, NH
Vessel-based skimming system	9,450	1,200	20' boat, could be used with boom boats, JBF DIP420, skimmer is on a trailer	2	State	Rhode Island	Providence, RI
Vessel-based skimming system	9,450	1,200	20' boat, could be used with boom boats, JBF DIP420, skimmer is on a trailer	1	State	Rhode Island	Exeter, RI

B.4 Regional Temporary Storage Inventory

Type of Storage	Total capacity (in gallons)	Number of storage devices in inventory	Type of Ownership	Storage Location - State	Storage Location - Town
N/A	3000	1	OSRO	Connecticut	Milford, CT
Other	2016	1	OSRO	Connecticut	Berlin, CT
Other	900	1	OSRO	Maine	Bangor, ME
Other	1000	1	OSRO	Maine	Bangor, ME
Other	800	1	OSRO	Maine	South Portland, ME
Other	80000	1	OSRO	Maine	South Portland, ME
Towable (on water)	8600	1	OSRO	Maine	South Portland, ME
N/A	400	1	State	Maine	Bangor, ME
Other	600	1	State	Maine	Augusta, ME
Other	500	1	State	Maine	Bangor, ME
Towable (on water)	1250	1	State	Maine	Bangor, ME
Towable (on water)	1250	1	State	Maine	Bucksport, ME
Towable (on water)	1250	1	State	Maine	Searsport, ME
Towable (on water)	8400	1	OSRO	Maine	Portland, ME
Towable (on water)	21000	1	OSRO	Maine	Portland, ME
Towable (on water)	8400	1	OSRO	Maine	Portland, ME
Other	2400	1	OSRO	Maine	Portland, ME
Other	6000	1	Federal	Maine	Cutler, ME
Towable (on water)	1008	1	OSRO	Maine	Bangor, ME
Towable (on water)	4200	1	OSRO	Maine	South Portland, ME
Barge	9996	1	OSRO	Maine	South Portland, ME
Barge	840000	1	OSRO	Maine	South Portland, ME
Vessel	12600	1	OSRO	Maine	South Portland, ME
Vessel	12600	1	OSRO	Maine	South Portland, ME
Other	1000	1	OSRO	New Hampshire	Dover, NH
Other	3200	1	OSRO	New Hampshire	Dover, NH
Other	2000	1	OSRO	New Hampshire	Bow, NH
Other	250	1	State	New Hampshire	Portsmouth, NH
N/A	3,000	2	Federal	New Hampshire	Kittery, ME
N/A	1,200	1	Federal	New Hampshire	Kittery, ME

Type of Storage	Total capacity (in gallons)	Number of storage devices in inventory	Type of Ownership	Storage Location - State	Storage Location - Town
Towable (on water)	2700	1	Federal	New Hampshire	Portsmouth, NH
Towable (on water)	5000	1	Co-op	New Hampshire	Portsmouth, NH
Towable (on water)	11,000	1	Co-op	New Hampshire	Portsmouth, NH
Towable (on water)	11,000	1	Co-op	New Hampshire	Portsmouth, NH
Towable (on water)	25,000	1	Co-op	New Hampshire	Portsmouth, NH
Towable (on water)	4300	1	OSRO	Rhode Island	East Providence, RI
N/A	800	1	OSRO	Rhode Island	East Providence, RI
Towable (on water)	8400	1	OSRO	Rhode Island	East Providence, RI

B.5 Oil Spill Response Vessels (OSRV) and Oil Spill Response Barges (OSRB) Nationwide by Homeport

Vessel Name	Vessel Type	Homeport	Owner	Total Temporary Storage Capacity in gallons	Total Estimated Daily Recovery Capacity (EDRC) in gallons
Delaware Responder	OSRV	Chesapeake City, MD	MSRC	4,000	10,567
Virginia Responder	OSRV	Baltimore, MD	MSRC	4,000	10,567
Southern Responder	OSRV	Ingleside, TX	MSRC	4,000	10,567
Texas Responder	OSRV	Galveston, TX	MSRC	4,000	10,567
Gulf Coast Responder	OSRV	Lake Charles, LA	MSRC	4,000	10,567
Louisiana Responder	OSRV	Fort Jackston, LA	MSRC	4,000	10,567
Mississippi Responder	OSRV	Pascagoula, MS	MSRC	4,000	10,567
Florida Responder	OSRV	Miami, FL	MSRC	4,000	10,567
Pacific Responder	OSRV	Richmond, CA	MSRC	4,000	10,567
California Responder	OSRV	Terminal Island, CA	MSRC	4,000	10,567
WC Park Responder	OSRV	Port Angeles, WA	MSRC	4,000	10,567
Oregon Responder	OSRV	Astoria, OR	MSRC	4,000	10,567
Hawaii Responder	OSRV	Honolulu, HI	MSRC	4,000	10,567
Maine Responder	OSRV	Portland, ME	MSRC	4,000	10,567
New Jersey	OSRV	Edison, NJ	MSRC	4,000	10,567

Vessel Name	Vessel Type	Homeport	Owner	Total Temporary Storage Capacity in gallons	Total Estimated Daily Recovery Capacity (EDRC) in gallons
Responder					
OSRV Lynne Frink	OSRV	N. Cape May, NJ	NRC	300	26,283
NRC Admiral - OSRV	OSRV	Galveston, TX	NRC	300	26,283
NRC Cape Flattery - OSRV	OSRV	Neah Bay, WA	NRC	900	2,427
NRC Columbia - OSRV	OSRV	Astoria, OR	NRC	416	4,114
NRC Energy - OSRV	OSRV	Morgan City, LA	NRC	300	1,509
NRC Freedom - OSRV	OSRV	Los Angeles/Long Beach, CA	NRC	300	NA
NRC Guardian - OSRV	OSRV	S. Portland ME	NRC	300	26,283
NRC Liberty - OSRV	OSRV	Miami, FL	NRC	300	362
NRC Patriot II - OSRV	OSRV	Los Angeles/Long Beach, CA	NRC	300	342
NRC Perseverance - OSRV	OSRV	St. Croix, USVI	NRC	300	25,509
NRC Recovery - OSV	OSRV		NRC	49	13,000
NRC Sentinel - OSRV	OSRV	Miami, FL	NRC	300	29,520
NRC Sentry - OSRV	OSRV	St. Croix, USVI	NRC	300	25,509
MSRC 320	OSRB	Port Hueneme, CA	MSRC	32,000	
MSRC 350	OSRB	Savannah, GA	MSRC	35,000	
MSRC 360	OSRB	Tampa, FL	MSRC	36,000	
MSRC 380	OSRB	Port Angeles, WA	MSRC	38,000	
MSRC 381	OSRB	St. Croix, USVI	MSRC	38,343	
MSRC 400	OSRB	Honolulu, HI	MSRC	40,000	
MSRC 401	OSRB	Chesapeake City, MD	MSRC	40,000	
MSRC 402	OSRB	Pascagoula, MS	MSRC	40,260	
MSRC 403	OSRB	Ingleside, TX	MSRC	40,261	
MSRC 404	OSRB	Astoria, OR	MSRC	40,000	
MSRC 451	OSRB	Richmond, CA	MSRC	44,750	
MSRC 452	OSRB	New Orleans, LA Area	MSRC	45,000	
MSRC 520	OSRB	Perth Amboy, NJ	MSRC	52,000	
MSRC 570	OSRB	Galveston, TX	MSRC	56,920	
MSRC 620	OSRB	Portland, ME	MSRC	61,989	
MSRC 680	OSRB	Virginia Beach, VA	MSRC	67,891	
Pelican	OSRB	Bellingham, WA	MSRC	11,900	
Ibis	OSRB	Tacoma, WA	MSRC	21,400	
Kittiwake	OSRB	Port Angeles, WA	MSRC	23,400	
OSB NETEPENA	OSRB	Bucksport, ME	ME DEP		

Vessel Name	Vessel Type	Homeport	Owner	Total Temporary Storage Capacity in gallons	Total Estimated Daily Recovery Capacity (EDRC) in gallons
WESIT (tug required)					
OSB AUCOCISCO (tug required)	OSRB	S. Portland ME	ME DEP		
NRC Defender - OSRB	OSRB	Bayou Labatre, AL	NRC	16,500	29,520
NRC Endurance - OSRB	OSRB	St. Croix, USVI	NRC	24,500	NA
NRC Independence - OSRB	OSRB	North Charleston, SC	NRC	35,040	22,457
NRC Pebble Beach - OSRB	OSRB	Alameda, CA	NRC	24,600	NA
NRC Reliant - OSRB	OSRB	S. Portland ME	NRC	19,500	N/A
NRC Valiant - OSRB	OSRB	Aransas Pass, TX	NRC	20,892	24,000

B.6 Dispersant Stockpile Inventory in Continental U.S.

Type of Dispersant	Amount (gallons)	Storage	Type of Ownership	Location
Corexit 9500	22,200	330 gallon totes (74)	OSRO	Galveston, TX
Corexit 9527	22,400	330 gallon totes (58) ISO 5,000 gall (1)	OSRO	Stennis International Airport, MS
Corexit 9527	880	OSRV - 330 & 550 gal tote (1 ea)	OSRO	Pascagoula, MS
Corexit 9527	880	OSRV - 330 & 550 gal tote (1 ea)	OSRO	Fort Jackson, LA
Corexit 9527	880	OSRV - 330 & 550 gal tote (1 ea)	OSRO	Lake Charles, LA
Corexit 9527	880	OSRV - 330 & 550 gal tote (1 ea)	OSRO	Galveston, TX
Corexit 9527	330	OSRV - 350 gall tote	OSRO	Corpus Christi, TX
Corexit 9527	330	OSRV - 350 gall tote	OSRO	Portland, ME
Corexit 9527	220	4 x 55 gal drums	State	Portland, ME
Sea Spray II dispersant spray system	N/A	N/A	State	Portland, ME
Corexit 9527	330	OSRV - 350 gall tote	OSRO	Chesapeake City, MD
Corexit 9527	9,610	16 x 330 gall totes & 91x 55 gall drums	OSRO	Edison, NJ

Type of Dispersant	Amount (gallons)	Storage	Type of Ownership	Location
Corexit 9527	300	OSRV	OSRO	Edison, NJ
Corexit 9527	300	OSRV	OSRO	Savannah, GA
Corexit 9527	330	OSRV - 350 gall tote	OSRO	Virginia Beach, VA
Corexit 9527	330	330 gallon tote	OSRO	Slaughter Beach, DE
Corexit 9527	330	OSRV - 350 gall tote	OSRO	Perth Amboy, NJ
Corexit 9527	880	OSRV - 330 & 550 gal tote (1 ea)	OSRO	Miami, FL
Corexit 9500	10,800	330 gallon totes (36)	OSRO	Tesoro Marine Terminal Long Beach, CA
Corexit 9527	3,300	5,000 gallon ISO (1)	OSRO	Coolidge Airport Coolidge, AZ
Corexit 9527	605	OSRV - 330 gallon totes (2)	OSRO	Terminal Island, CA
Corexit 9527	11,715	55 gall drums (213)	OSRO	Chevron Richmond Refinery
Corexit 9527	605	OSRV - 330 gallon totes (2)	OSRO	Richmond OSRV
Corexit 9527	6,430	345 gallon SS totes (19)	OSRO	ConocoPhillips Refinery Ferndale, WA
Corexit 9527	6,495	330 gallon totes (20)	OSRO	Warehouse - Everett WA
Corexit 9527	605	OSRV - 330 gallon totes (2)	OSRO	Port Angeles, WA
Corexit 9527	605	OSRV - 330 gallon totes (2)	OSRO	Astoria, OR