
# 2014 LA-LB AREA

(Revised January 2016)

# CONTINGENCY

# PLAN

## SECTION 3000
## OPERATIONS

ABSTRACT

*This section is designed to frame and inform decisions on response actions.*

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# 3000 OPERATIONS

## *3100* Operations Section Organization

The Operations Section Chief is responsible for the management of all operations directly applicable to the primary mission. The Operations Chief activates and supervises elements in accordance with the Incident Action Plan and directs its execution; activates and executes the Site Safety Plan; directs the preparation of unit operational plans; requests or releases resources; makes expedient changes to the Incident Action Plans as necessary; and reports such to the Incident Commander.

There is only one Operations Section Chief for each operational period and is normally, but not always, from the jurisdictional or agency which has the greatest involvement either in terms of resources assigned or area of concern.

Refer to Section 3002 of the Regional Contingency Plan.

### 3110 Organization Options

Reserved

Refer to Section 3002.01 of the RCP

## *3200* Recovery and Protection

### 3210 Protection

**Containment and Protection Options**

This subsection is to assist first responders to an oil spill in protecting the most sensitive and valuable biological communities. It is assumed that those first responders are unfamiliar with the relative sensitivities of the biological communities at risk from the spilled oil. This document is intended to serve as a guide only until the Unified Command System is staffed with appropriate biological expertise to make the response recommendations to the Federal On-Scene Coordinator and the State's On-Scene Coordinator. This appendix is meant to be used as a reference by the staff of the Incident Commander and not as a controlling document.

**References**

Nautical charts prepared by the National Oceanic and Atmospheric Administration provide a large scale geographic picture that is helpful in planning for a response to a catastrophic spill involving large areas of the coastline or San Francisco Bay and as navigational aids for responders.

A study of California's coastal inlets, "Coastal Inlet Protection Strategies for Oil Spill Response," was prepared for the Marine Spill Response Corporation (MSRC) and the California Department of Fish and Wildlife (CDFW) Office of Oil Spill Prevention and Response (OSPR) and contains detailed maps of the 172 coastal inlets and possible response strategies. These are discussed in Section 4600 of this Area Contingency Plan by reference. Copies are available from Research Planning, Inc. of Columbia, South Carolina, or copies may be made from the OSPR originals.

Maps of the sensitivity of the shoreline to oiling, the Environmental Sensitivity Index (ESI), are useful in response activities and are incorporated into the Area Contingency Plan by reference. Section 9800 shows a listing of the shoreline types and gives a brief description of each. ESI maps are currently available for the entire California Coast and the Channel Islands. These maps are available through Research Planning, Inc. or photocopies of the maps may be made from the OSPR originals. These maps will be in a geographic information system (GIS) and also have natural resource and some socioeconomic data available. These are also available for a fee from Research Planning, Inc. or available for copying at OSPR.

**Environmental Sensitivity**

While the basic philosophy is to protect the largest number of organisms most sensitive and vulnerable too oiling, it must be noted that **all** biological communities and organisms are sensitive to the effects of oiling. The different categories simply identify the relative degree of sensitivity. Even shorelines on which specific environmentally sensitive sites have not been identified have resources sensitive to oiling.

The environmental sensitivity of a site is determined by considering the following criteria:

1. Does the site provide habitat for species either listed or candidates for listing as rare, threatened, or endangered under State and/or Federal law?
2. Does the site provide habitat that is of extraordinary biological productivity?
3. Does the site provide habitat that is of extraordinary biological diversity?
4. Does the site provide habitat for organisms that are extremely vulnerable and sensitive to oiling and that would be difficult to restore if contaminated by oil?

**Prioritization**

Using these criteria, the following relative priorities for environmentally sensitive areas are established:

**Category A** – Highest concern for Protection

- Wetlands, estuaries, and lagoons with emergent vegetation (includes all Environmental Sensitivity Index (ESI) 10 shorelines (see Section 9800) Sheltered tidal flats (includes all ESI 9 shorelines)
- Habitats of species that are listed or candidates for listing as rare, threatened, or endangered under State and Federal laws.
- Sites of significant concentrations of vulnerable and sensitive species, e.g. pinniped pupping and nursery areas during the pupping season.

**Category B** – Very high concern for Protection.

- Major pinniped haul out areas during non-pupping seasons.
- Moderate concentrations of vulnerable and sensitive species.
- Other low energy shorelines not otherwise included by one of the criteria above, including rip-rap in sheltered areas (ESI 6b), exposed tidal flats (ESI 7), sheltered rocky shores (ESI 8A) and sheltered man-made structures (ESI 8B).

**Category C** – Great concern for Protection. Higher energy habitats (ESI 6A through 1) for example: Habitats important to large numbers of species of sport, commercial value, and scientific interest or species experiencing significant population declines though not yet threatened.

**Mapping**

Mapping is complicated by the mobile nature of many of the species considered during an oil spill response. This circumstance highlights the need to immediately involve experts with current knowledge of resources and their distribution, and the need to regard this annex only as a guide for first responders without this information.

Resources and sites for priority in protection are mapped on the series of maps included. Circles are placed on the maps to identify the sites of concern, their relative priority for protection and the seasonality of that concern, if any. A letter on the circle indicates the area's priority for protection, with "A" indicating the first priority for protection and "B" the second priority as discussed above. If the sites priority for protection varies seasonally, the circle will be subdivided, and each subdivision will contain a letter indicating the appropriate protection priority for that season. The months of the year are represented on the face of the circle, with the month of January occurring between the 12 o'clock and 1 o'clock positions, February occurring between the 1 o'clock and the 2 o'clock positions, and so on.

A four-digit number near the circle cross references to an adjoining site summary sheet where information regarding the resources at the location highlighted can be found. The site summary sheets provide specific information about the natural resource that caused the site to be of concern.

**Relative Risk at the Time of a Spill**

For the purpose of this task, "risk" is defined as "the likelihood of spilled oil reaching the vicinity of the resources." During an actual oil spill event, the relative likelihood of a resource coming into contact with the oil is a result of the proximity of the spill to the natural resource and the wind, weather, current, and tides at the time of the spill. Consequently, responders to an oil spill should not assume that resources equidistant from the source of a spill are at equal risk from the oil. At a minimum, first responders to a spill in the marine environment must be able to forecast the speed and direction of the spilled oil. This requires responders to have immediate access to real time information about the local weather, tides, and currents to make the best prediction possible about the movement of the oil away from the scene of a spill.

Access to computer software programs that predict the movement of the oil in response to the conditions existing at the time of the spill are the preferred method of determining which resources are most likely to be reached by the oil and therefore at most "risk." Responders should begin use of computer predictions for periodic intervals over the short-term future as soon as possible in the response. For example, predictions would be useful for every four to eight hour increment for the first 36 to 48 hour, with the exact time and interval keyed to the maximum and minimum tides and any significant changes predicted in the wind direction and/or speed and weather. Normally, computer projections are most available to responders at the time of a spill through the National Oceanic and Atmospheric Administration's Scientific Support Coordinator.

**Deployment of Response Resources**

The deployment of response resources must be consistent with the facility's or vessel's oil spill contingency plan, or in the even a spill without a responsible party, the State's oil spill contingency plan and the appropriate Area Contingency Plan unless unique local circumstances for the spill at hand dictates a variance that would be in the interest of providing more effective protection for natural resources at risk. First responders must use the information and procedures contained in the appropriate plans and implement the plans as fully as possible as is consistent with good judgment and with the conditions existing at the time of the response.
These plans all utilize the Unified Command System. The Unified Command may utilize the proposed response strategies for the environmentally sensitive sites. However, the Unified Command and the responders should remain flexible and be receptive to additional information when instituting the booming plan or other countermeasures. The proposed strategies are proposals. The proposals should only be considered as "predetermined strategies" when they have been deployed during an exercise (or actual response) and their effectiveness is evaluated as satisfactory. It is envisioned that it will take several years to fully test all of the response strategies.

Remember that the predetermined protection strategy field tests are narrow in focus and do not cover all given scenarios and conditions. Even after field tests are complete, all predetermined strategies should continue to be a guideline and starting point. The Unified Command has ultimate responsibility to ensure that protection strategies used during a response are the best possible for the given situation and conditions.

The decision makers in the Unified Command are the Federal On-Scene Coordinator, the State On-Scene Commander, the Responsible Party and a local government representative or their designee.

**Prioritization of Environmental and Economic Resources**

Consistent with State and Federal law, the highest priority in oil spill response is the protection of human health and safety. Consistent with State law, protection of environmental resources is the second highest priority. Protection of economic resources is the third highest priority.
There may be significant situations where both the economic and environmental significance of a site or area would be considered in deciding appropriate response strategies. This consideration would only be necessary if response resources were limited. These considerations must be made at the time of the spill by the Unified Command based on the information available and conditions at the time of the spill.

### Containment Strategies

Before spilled oil can be effectively recovered, the spreading of the oil must be controlled and the oil contained in an area accessible to oil recovery devices. In this section various oil containment strategies are discussed. Generally, spilled oil is contained using oil containment boom. Typical boom has a flotation section that provides a barrier on and above the water surface and a skirt section that provides a barrier below the water surface. The physical dimensions of the boom to be used for a particular spill will be dependent on local conditions. In the open ocean it may be necessary to use a boom that is several feet tall. In a protected marsh, a boom that is only a few inches tall may be appropriate.

There are limitations on the effectiveness of any boom. Oil will be lost if the conditions are such that there is splash over from breaking waves. Oil will also be carried under the boom if it is deployed in such a way that currents cause the oil to impact the boom with a velocity perpendicular to the boom of greater than 0.7 knots. Once a boom has been deployed, it may be necessary to reposition it due to changing tides and currents. It is desirable to have personnel available to readjust the boom as required. In all cases of boom deployment, consideration must be given to protecting the safety of those involved in the activity.

### Open Water Containment

Oil spilled on open water is normally contained using boom. The boom will be deployed using vessels that will tow the boom around the perimeter of the oil spill. The type of boom to be deployed will depend on local conditions, including sea state, tides, currents and wind. To be most effective, booming on open water must be done as soon as possible after a spill.

### Protective Booming

The goal of most oil containment and recovery strategies is to collect the spilled oil from the water and prevent it from reaching sensitive resources. Frequently, however, this is not possible and sensitive resources are oiled in spite of response efforts, especially during large oil spills. Often the goal will be to minimize environmental injury using a variety of booming, containment and recovery techniques. The following are techniques that can be implemented by the Booming Branch of the UCS' Operations section for containing spilled oil on water or as a means to direct it away from sensitive natural resources or cultural amenities. Shoreline cleanup and treatment methods are discussed in more detail later in this Appendix.

### Exclusionary Booming

This type of booming is performed prior to the advance of the oil and is used to prevent or exclude oil from entering a harbor inlet, slough, marsh or estuary. Either skirted or sorbent boom can be used for this type of booming. Factors that need to be considered are: type and size of boom, natural outflow of the body of water, wind, tide and currents or a combination of both.

These factors can be predetermined by establishment of a priority system, training and local knowledge of underwater topography, weather conditions and boom anchoring capabilities. It is important to remember that the boom needs to be tended and monitored as weather and tidal conditions can change.

**Diversionary Booming**

Oil movement for this type of booming strategy should be reduced to under 0.7 knots. This can be accomplished by angling the boom in relation to the current's direction, reducing the velocity of the floating oil in relation to the boom. Diversionary or deflection booms can be set up in series along a waterway to increase their effectiveness. As stated before, the boom(s) needs to be tended and monitored as weather and tidal conditions can change.

**Containment Booming**

Containment booming is used primarily to prevent spreading and to concentrate the oil so it can be skimmed or vacuumed. Factors that need to be considered are: type and size of boom required for weather, winds, tides and currents in the vicinity of potential spill areas; the type of deployment vessel needed; the amount of boom needed for effective containment and available skimming capabilities. Fixed or natural anchor points should be selected. These factors can be predetermined by emphasizing worst-case spill scenarios and using local knowledge of weather and sea conditions.

**Sorbent Booming**

This type of booming is useful when the amount of oil is minimal, when tides and currents are light, or when shorelines require protection. Heavier oil can be recovered using adsorbents (oil "sticks" to material) and lighter fuels generally are recovered using absorbents (sausage, sweep, or diapers). Sorbent booming can also be used as a backup for other types of booming to recover product that may have entrained past the primary barrier.

Factors that need to be considered are: wind and wave action; type of sorbent required, i.e., rocky or sandy shoreline, marsh area, etc.; and type and viscosity of product to be recovered.

**Berms and Dams**

Coastal shores are barriers to spreading oil. Temporary berms, dikes and dams can also serve as effective barriers against oil contamination of sensitive natural resources and economic amenities. Berms, dikes and dams are simply another form of booming and are subject to the same environmental stresses. The appropriate protection technique for a particular shore depends on several factors:
Water body type (open water, bay, tidal channel, inlet)
Water current velocity
Water depth
Wave height
Shore type (sand, gravel, boulder).

Generally, sediment berms, dikes and dams will most often be used to protect small coastal inlets or perhaps tidal channels serving wetlands and marshes when these channels are accessible. The object of berms, dikes and dams is to keep oil outside an inlet because there are often abundant natural resources and economically significant areas that use the sheltered waters of bays and estuaries within. Occasionally, dikes and dams have been used across a channel to contain the oil within a portion of marsh in order to prevent widespread contamination of other resources.

Dikes and dams are not practical when currents are great, waters are deep and waves are large. Also, beaches with abundant sand are generally the most suitable for building dikes and dams. Berms can be built above the active beach face to prevent oil contamination of high beach during spring tides. Alternative strategies should be prepared and the necessary supplies and equipment in place should a berm, dike or dam fail.

Constructing a berm or dam in the coastal zone may require an emergency costal development permit from the California Coastal Commission. For information on emergency permits call the CCC Oil Spill Program, Deputy Director 415-904-5205 or 24 hour cell phone 415-693-8375.

### 3220 Biosecurity Requirements for Channel Islands National Park and Marine Sanctuary

The Channel Islands National Park was established to conserve the rich biological ecosystems of five islands and nearby rocks and islets. The naturally small populations found on islands can be easily driven to extinction by new introductions and, therefore, islands are unusually vulnerable to the impacts of new invaders.

It is much more cost effective to prevent the arrival of introduced species than to attempt to eradicate after arrival. In many cases, it may be impossible to eliminate a pest once it has arrived.

#### Personal Gear

- Maximum use of hard sided boxes. Any cargo packaged and stored overnight must be stored in a hard-sided box. Food may only be stored in containers that are totally sealed (i.e. hard-sided box with a tight fitting top and no holes). The park has purchased a number of plastic boxes with lids that can be used by anybody traveling on park boats or flights.

- Minimize use of megabags. Megabags need to be shaken out prior to each loading. They need to be clean. Megabags should never be loaded except immediately prior to being slung onto a boat. No supplies left in a megabag overnight will be loaded onto a boat without first unloading and inspecting all of the gear.

- No corrugated cardboard boxes may be used to transport food. No corrugated cardboard boxes that are second-hand use (i.e. banana boxes) may be used for any reason.

- All other corrugated cardboard is discouraged. However, items (not food) in original cardboard packing (preferably sealed) may be used. The park will assess the level of risk that is posed by new boxes.
- Personal gear should be stored in clean, pest-free conditions at home. Gear should be cleaned and packed. Boots, sleeping bags, tents, nets should be cleaned prior to packing.
- All footwear, clothing, and gear (especially Velcro, shoelaces, cuffs, and boot lugs) should be clean and inspected for seeds and soil before departing for the islands, when boarding boats, and when moving between islands.

**Equipment and Supplies**

- Equipment (large and small) should be stored and transported in a manner which prevents the attraction or transport of seeds, invertebrates, vertebrates and pathogens. Wherever possible, gear should be loaded into, stored and transported in containers with tight fitting lids that can prevent access by mobile species such as invertebrates and vertebrates (such as rodents). Corrugated cardboard boxes should be avoided to transport equipment and gear as the corrugations provide hiding places for invertebrates such as earwigs, beetles, and ants.

- Gear and equipment should NOT be left or stored where it is at risk for attracting and harboring potential non-native species prior to departing. For example, leaving large equipment in the open is a dangerous practice; it provides cover and food for rodents and insects. Gear that is left out in the open may also be exposed to potential weed seeds blown around or carried by other species. Types of safe storage units include plastic or metal containers with tight fitting lids, large truck trailer shipping containers, inside park buildings, or cold (freezer) storage.
- During the loading and unloading process all containers used in transport (e.g. dumpsters) should be cleaned of any item that may have spilled especially foodstuffs, plant materials and soil. This practice will reduce the risk of attracting insects, rodents or other pest species

**Lumber and Wood Products**

- Lumber should only be used if it is clean, new, processed lumber from California. CAUTION: California Pine could contain blister rust or pitch canker and California Oaks could have the pathogen that causes Sudden Oak Death. All lumber must be certified pest and pathogen-free by either the distributor or the Park before use on the islands.

- Bundled lumber should be taken apart, inspected thoroughly, and restacked before leaving the mainland as it could harbor animals and/or seeds. The only exception is if a wholesale supplier has certified lumber pest and pathogen-free and it is tightly bundled and closely packed. Ideally, lumber should be inspected and cleaned before bundling.

- Under no circumstances should firewood or any unprocessed lumber with bark be allowed on the Channel Islands. Bark can provide habitat to many invertebrates and could carry pathogens such as pine blister rust, pitch pine canker, and Sudden Oak Death.
- All wood products should be processed and ideally treated, with no traces of bark or soil.

**Waste**

- The build up and disposal of waste is a significant issue on the Channel Islands. A waste management and disposal plan should be designed with CINP input and buyoff as early as possible in the response.

**Dumpsters**

- Dumpsters are a large risk for transport of non-native animals. Whenever possible, dumpsters should not be used for personal food wastes. These should be taken off by the individual generating the waste.
- Dumpsters may only be used for construction and/or spill clean-up projects and will be located in a manner that they will not be used for food materials.
- Under no circumstances should dumpsters go to the islands with any garbage. The inside and outside, including the wheels, of the dumpsters should be pressure washed and treated with a disinfectant solution before leaving the mainland.
- Dumpsters must be inspected, emptied, and cleaned before departing the mainland for the islands.
- Under no circumstances should dumpsters move between islands.

**Ground Vehicles**

- All vehicles should be washed and inspected prior to departure, especially earth moving and heavy equipment such as vehicles, tractors, shovels, and associated construction equipment. In particular, equipment should be cleaned of soil and vegetative matter before being leaving their departure point, be this mainland or island.
- Heavy equipment (especially construction and earth moving equipment) should not be allowed to move between islands without: 1) being transported first to the mainland and cleaned; or 2) being cleaned on island prior to moving. In some situations it may be necessary to clean equipment while at sea but this should not be routine. Not only is this difficult and dangerous, the boat itself could become a vector for removed contaminants.
- All vehicles should be washed and inspected to ensure no transport of soil or vegetative matter. Using a hoist for washing is ideal; special attention should be paid to the undersides and insides of vehicles.

**Vessels**

- Every boat shall have armed bait boxes that are checked monthly. Also, sticky traps should be deployed on every boat and changed monthly.
- Boat decks should be washed clean between cargo runs. No soil or other debris should remain on a boat.
- Any sign of rodents on a boat should be reported to the Superintendent.
- Any landing craft should be trapped intensively using a combination of bait boxes, snap traps, and sticky traps when a load is placed on the boat.
- No scrubbing of boat bottoms at the islands. Vessels should be cleaned in the harbor or offshore.

**Planes**

- Planes should follow the same rules for containers and food storage as do boats.
- Planes should be maintained in a clean manner and routinely be swept out.
- The presence of yellow star-thistle at the landing strip at Santa Cruz Island poses a risk to the other islands. If a flight is to visit multiple islands, Santa Cruz should be the last island visited. An aircraft should never go from Santa Cruz Island to another park island.
- Planes and helicopter shall have their landing gear and passenger compartments of their aircraft cleaned and inspected prior to leaving the mainland.

**Soil & Gravel**

- The transportation of soil and gravel from the mainland to islands is discouraged. If material is to be transferred, it must be freshly dug and transported to an island as soon as possible. Material that is held on the mainland must be tarped to protect from non-native seeds. The site where soil or gravel is deposited on an island will be mapped and provided to the Chief of Natural Resource for monitoring.

**Education**

- Education is the best defense against the introduction of non-native plants and animals to the islands. Prior to responders departing for the islands, CINP personnel shall give an overview of the dangers and precautions necessary to mitigate those dangers to response personnel.

### 3230 On-Water Recovery

**Offshore/Open Water Operations**

Oil removal/recovery in open water is accomplished through the use of skimming devices once the oil has been contained. Skimmers can be freestanding in which the skimmer is a separate piece of equipment which pumps the oil-water mixture from the

contained surface into tanks on a vessel. These skimmers are usually driven by hydraulic units on board a vessel. Self-propelled skimmers have a skimmer as an integral part of the vessel. The skimming vessel positions itself at the head of a concentrated or contained pool of oil and recovers the oil into tanks on board the vessel. There is also a type of skimmer in which the weir or collection zone of the skimmer is an integral part of the boom, which is in contact with the oil. The pumping and oil collection is done on the vessel, which is close to the weir skimmer.

"Vessels of opportunity", such as fishing vessels, may be used to deploy or tow boom and, depending on their size, be equipped with skimming equipment. They need to have adequate deck space and lifting cranes to carry the necessary equipment. The Coast Guard's Vessel of Opportunity Skimming System (VOSS) could be deployed on a variety of vessels.

To be most effective, oil spill recovery equipment must be directed to the location of the thickest oil accumulation. Observers on vessels at water level are unable to see a vast area and are unable to recognize the most optimum skimming locations. Skimming activities are best directed by trained observers aloft in helicopters. One observer may be able to direct several skimming units to optimum skimming locations. During hours of darkness or poor visibility, tracking devices that emit radiolocation signals can be placed in the spilled oil to trace the oil movement. Remote sensing systems have been developed which can track oil movement even in darkness and poor visibility. The sensor is mounted in an aircraft that overflies the spill area. The sensor systems include Side Looking Airborne Radar (SLAR), infrared and radiometric.

**Near-shore/Shallow Water**

Oil recovery techniques and equipment are different in near-shore/shallow water locations than open water. Shallow draft vessels and smaller boom and skimmers are used in these situations. These vessels can maneuver into tight places behind and under wharfs or in sloughs and can actually skim next to shore in many near-shore locations.

Strategies for near-shore cleanup can differ depending on the depth of the water and the location. Near-shore operations, within a bay or inlet, will also require shallow draft vessels, workboats and skimmers. However, the vessels may only be operable at high tide. At or near low tide, the operation may evolve into a shoreline cleanup operation. Any boom towing boats or skimmers must be able to withstand going aground without sustaining major damage.

Coastal shallow water or near-shore strategies will differ in certain respects. In addition to the need for small, shallow draft vessels, specialized vessels such as kelp cutters and harvesters may also be needed. California's rocky coast can make near-shore operations difficult and even dangerous during high surf and winter conditions. Once again, the safety of personnel involved in these operations is the Unified Command's paramount concern.

**Coastal Inlets**

The coastal inlets of California are the focal points for designing strategies to protect the vital resources of the State’s estuaries and bays. It is through these inlets that oil spilled on open ocean waters could reach inland resources. A publication titled Coastal Inlet Protection Strategies for Oil-Spill Response was prepared jointly by Miles O. Hayes and Todd M. Montello. This document provides a synopsis of the relevant characteristics of

the coastal inlets in the State, as well as a discussion of potential protection strategies for each inlet. The discussion of each inlet alludes to the range of conditions that might occur at the inlet; however, the proposed protection strategies are based on the best professional judgment of what would work under average wave and tide conditions.

**Recovery Options**

**Skimmers**

Weir Skimmers: These skimmers recover oil by aligning a barrier just below the surface of the water and having oil floating on the water surface pass over the weir into a recovery box or into a pump. Weir skimmers are not the most efficient recovery systems because a large amount of water is usually collected along with the recovered oil. Also, they do not function well in uneven seas or whenever currents exceed 0.7 knots.

Vortex Skimmers: In a vortex skimmer, a turbine-like fan, mounted below the surface, is used to create a current, which draws in oil floating on the water. It is then pumped to a collection tank. The device is mounted on a vessel or floats at the water surface.

Sorbtion/Oleophilic Skimmers: This type of skimmer uses materials that will retain a high percentage of oil minimizing the amount of water collected with the oil. The skimming devices can be belts, ropes, brushes or discs that come in contact with the oil. The device then will either wring or scrape the oil from the material into a collection point for removal to a storage tank. Some belt or brush skimmers are very effective in currents exceeding 2 knots and more aggressive sea conditions (see USCG publication - Oil Spill Response in Swift Currents - high velocity skimmers.)

Suction Skimmers: These devices operate in conjunction with a pump that draws liquid into the skimming device. The skimmer head generally floats on the water with an oil/water mixture being drawn into the skimmer. A typical application would include a skim head used with a truck mounted vacuum system.

**Dredges**

Suction dredges are rarely used to recover oil or oiled sediments from the bottom of a water body because oil usually does not sink or, if it does, the amount is small and not recoverable. There are exceptions, however. Whether oil sinks or floats depends primarily on the specific gravity of the oil and the temperature and salinity of the water. Oil may also sink once it is adsorbed to exposed sediment like sand or gravel, which is subsequently mobilized and re-deposited in deeper water.

If dredging is considered as a recovery technique, there must be provision for containment and storage of large quantities of water recovered along with the oil or oiled sediment. A large quantity of oil-contaminated water can present significant storage, transport, and disposal problems, which must be resolved before the activity is begun. These problems can be diminished if oil/water separation is provided, and decanting of water back to the containment area is allowed by state and federal agencies.

Dredging can be coupled with low-volume, low pressure washing of the bottom to direct the sunken oil down gradient to some collection point where the accumulated oil can be recovered by a dredge. Currents and flow patterns may cause the sunken oil to naturally collect in low spots that can serve this same purpose. The use of a hopper barge's inverted draghead as a weir skimmer was fairly successful in Prince William Sound and could be employed in calm seas.

**Vacuum Trucks**

Vacuum trucks are frequently essential equipment for cleanup of oil spills. A hose is extended from the truck to the oil collection or containment site to pick up the oil. If the oil is floating on water, the suction hose can be connected to a "duck bill" nozzle that has a long horizontal slot to allow the oil to be picked up while minimizing the amount of water collected. A weir-type skimmer can also be connected to the suction hose to suck the thin layer of oil from the surface and minimize the amount of water collected at the same time. Both methods require a full-time attendant to adjust the equipment and clear debris.

Vacuum trucks work best when the oil layer is thick. If there is only a thin layer of oil on the water, much more water will be collected than oil. Recovery of a large quantity of water can make a vacuum truck operation very inefficient because the tank will quickly fill with water and little oil. Transport and disposal costs increase as a result. The operation can be made more efficient if the oil/water mix recovered is allowed to separate in the tank and the water decanted back to the containment area. Decanting must be approved by state and federal agencies.

**S t o r a g e**

To expedite removal of spilled oil, refined products, and contaminated materials from marine waters during an emergency-response, containment activities (to include temporary waste storage) may be conducted at appropriate on-shore locations [22 CCR 66270.1(c)3]. The transportation of oil and contaminated material to temporary waste storage sites during an emergency response is exempt from transportation and manifesting requirements, per the draft MOU between OSPR and DTSC (these requirements are also exempted per 22 CCR 66263.30 and/or 66263.43 for transportation-related emergency responses.

During an immediate response, all oil and/or oily materials may be recovered, transported, or transferred to temporary waste storage sites and are exempt from any hazardous waste generator and facility permit requirements for a period of 30 days, per the draft MOU between OSPR and DTSC. Additional 30-day extensions may be granted by DTSC, under appropriate circumstances.

Temporary storage sites can be an area or facility approved by the IC or Unified Command for characterizing and/or temporarily storing recovered oil and/or oily materials used, collected, or recovered during an oil spill response. Such an area may include, but is not limited to, permitted or interim status hazardous waste storage facilities, other non-permitted facilities, vessels, barges, tanks, vacuum trucks, barrels, containers, storage piles, or other appropriate containment methods and locations that may be used to hold recovered oil and/or oily materials. Temporary storage sites need not be owned, operated, or leased by the RP. Temporary storage sites that are on-

shore should be established at locations that are convenient to the recovery operations for the temporary storage of recovered petroleum products, and contaminated materials and debris. The location of the temporary storage site, however, must be done with the concurrence of the following:

DTSC [The DTSC duty officer can be contacted at one of the following phone numbers: Region 1 (Sacramento) @ 916-255-3564; Region 2 (Oakland) @ 510-540-3739; Region 3 (Glendale) @ 818-551-2830; and Region 4 (Long Beach) @ 310-590-4968.]

California Coastal Commission Oil Spill Program: for information on emergency permits for temporary storage sites within the coastal zone call the CCC Oil Spill Program, Deputy Director 415-904-5205 or 24 hour cell phone 415-693-8375.
Regional Water Quality Control Board (RWQCB), and
Local health, fire and emergency services departments.
If a Unified Command is established, OSPR will facilitate the contact of the state and local government agencies through the Liaison Officer.

**3240 Shoreside Recovery**

The most obvious differences between shorelines along the California coast are due to their geomorphology. These geomorphologic differences are caused by their exposure to different quantities of water and wind driven forces of shoreline energy (specifically waves and currents) and the shoreline type (substrate, grain size, tidal elevation, origin). The geomorphology and the degree of exposure to waves and currents combine to influence the plants and animals that inhabit the intertidal and shallow sub tidal areas of the shoreline and the natural persistence of stranded oil. It is these same factors that provide the criteria to determine the appropriate shoreline cleanup techniques.

These concepts were the basis for development of the Environmental Sensitivity Index (ESI) by the Research Planning Institute (RPI), which ranks shorelines according to their sensitivity to oiling and shoreline cleanup activity. The ESI provides a useful first step in the design of contingency plans because it enables the ready identification of priority areas for protection from oiling and determination of appropriate shoreline cleanup methods during response activities.

Summarized, the ESI ranges from 1 (least sensitive to oil) to 10 (most sensitive to oil). Detailed descriptions of the ESI shoreline types and likely oil impacts can be found in the National Oceanic & Atmospheric Administration (NOAA) Shoreline Assessment Manual at: http://response.restoration.noaa.gov/shor_aid/shor_aid.html

Shoreline types are ranked as follows:

| RANK | SHORE | (NOAA ESI Map Shore Type) |
|---|---|---|
| 1 | Exposed Rocky Shores | (1a) |
| 2 | Exposed Solid Man-made Structures | (1b) |
| 3 | Exposed Wave-cut Platforms | (2a) |
| 4 | Sand Beaches | (3 & 4) |

| | | |
|---|---|---|
| 5 | Mixed Sand and Gravel Beaches | (5) |
| 6 | Gravel Beaches | (6a) |
| 7 | Riprap | (6b) |
| 8 | Exposed Tidal Flats | (7) |
| 9 | Sheltered Rocky Shores | (8a) |
| 10 | Sheltered Solid Man-made Structures | (8b) |
| 11 | Sheltered Tidal Flats | (9a) |
| 12 | Salt to Brackish Marshes | (10a) |

Under certain conditions it will be appropriate to take actions to remediate the effects of stranded oil on shorelines. Other conditions may dictate that no actions should be taken. The primary goal of the implementation of any shoreline countermeasure is the removal of oil from the environment with no further injury or destruction to that environment. A list of the 21 different countermeasures is provided. These 21 countermeasures, including natural recovery, have been evaluated for the appropriateness of their use on five different major categories of petroleum products (very light, light, medium, heavy, non-floating) stranded on ten shoreline types. The results of these evaluations are presented on five matrices attached at the end of this section. These matrices are intended to be used as a planning guide by the Shoreside Recovery Group of the Operations Section.

The countermeasures listed may not be the best for use under all possible circumstances, and multiple countermeasures may need to be used on the same shoreline. Selection of specific countermeasures for use during a spill response will be based on the properties off the stranded oil, the degree of contamination, the shoreline type, and the presence of sensitive natural resources. The Federal On-Scene Coordinator or the State On-Scene Commander has the authority to select or approve specific countermeasures for use during an oil spill response.

**Shoreline Cleanup Options**

The following section lists and describes those techniques, which may be required for use during a shoreline cleanup. Methods and equipment currently in use for these shoreline treatment methods are described in more detail in the Shoreline Assessment Manual. These methods, when used according to the guidelines in this document, may be used on most sites as part of the UC-directed response. It should be noted that methods noted with an (*) will require special consideration and authorization by the natural resource trustee prior to commencement of work. The trustee agency(s) for fish and wildlife resources will make the final recommendations to the Unified Command on which specific method(s) to employ on a case-by-case basis. Regardless of this decision, contingency plans should provide for an array of identified methods to be used. Currently approved methods are:

- Natural Recovery
- Barriers/Berms
- Manual Oil Removal/Cleaning

- Mechanical Oil Removal
- Sorbents
- Vacuum
- Debris Removal
- Sediment Reworking/Tilling *
- Vegetation Cutting/Removal
- Flooding (deluge)
- Low Pressure, Ambient Water Flush (<50 psi)
- High Pressure, Ambient Water Flush (50-100 psi)
- Low Pressure, Hot Water (<50 psi)
- High Pressure, Hot Water (50-100 psi)
- Steam Cleaning
- Sand Blasting
- Solidifiers *
- Shoreline Cleaning Agents *
- Nutrient Enrichments *
- Natural Microbe Seeding *
- In-situ Burning *

A description of each shoreline cleanup method is discussed below:

**Natural Recovery**

**Objective:** No attempt is made to remove any stranded oil, when there is no effective method for cleanup or to minimize impact to the environment. Oil is left to degrade naturally.

**Description:** No action is taken, although monitoring of contaminated areas is required.
Applicable Habitat Types: All habitat types.

**When to Use:** When natural removal rates are fast (e.g., gasoline evaporation or high energy coastlines), when the degree of oiling is light, access is severely restricted or dangerous to cleanup crews, or when cleanup actions will do more harm than natural removal.

**Biological Constraints:** This method may be inappropriate for areas used by high numbers of mobile animals (birds, marine mammals) or endangered species.

**Environmental Effects:** Same as from the oil alone.
Waste Generation: None.

**Barriers/Berms**

**Objective:** To prevent entry of oil into a sensitive area or to divert oil to a collection area.

**Description:** A physical barrier other than a boom is placed across an area to prevent oil from passing through into sensitive habitats. Barriers can consist of earthen berms or filter fences. When it is necessary for water to pass because of water volume, underflow or overflow dams are used.

**When to Use:** When the oil threatens sensitive habitats, and other barriers are not feasible. Berms also serve to protect sensitive areas when cleaning adjacent shorelines.

**Applicable Habitat Types:** At the mouths of creeks or streams to prevent oil from entering from offshore, or to prevent oil from being released from the creek into offshore waters. Also, on beaches where a high berm can be built above the high-tide line to prevent oil from over-washing the beach and entering a sensitive back-beach habitat (e.g. lagoon).

**Environmental Effects:** May disrupt or contaminate sediments and adjacent vegetation. The natural beach or shore profile should be restored (may take weeks to months on gravel beaches).

**Biological Constraints:** Responders must minimize disturbance to sensitive areas, such as shorebird nesting sites on beaches. Placement of dams and filter fences could cause excessive physical disruptions to the site, particularly in wetlands.

**Waste Generation:** Sediment barriers will become contaminated on the oil side and filter fence materials will have to be disposed of as oily wastes.

**Manual Oil Removal/Cleaning**

**Objective:** To remove oil with hand tools and manual labor.

**Description:** Removal of surface oil with hands, rakes, shovels, buckets, scrappers, sorbents, pitchforks, etc., and placing in containers. No mechanized equipment is used. Manual recovery includes underwater recovery of submerged oil by divers with hand tools, for example.

**Applicable Habitat Types:** Can be used on all habitat types.

**When to Use:** Light to moderate oiling conditions for stranded oil or heavy oils that have formed semi-solid to solid masses that can be picked up manually.

**Biological Constraints:** Foot traffic over sensitive areas (wetlands, tidal pools, etc.) should be restricted or prevented. There may be periods when shoreline access should be avoided, such as during bird nesting.

**Environmental Effects:** Minimal, if surface disturbance by crew movement and waste generation is controlled.

**Waste Generation:** May generate significant quantities of oil mixed with sediment, which must be properly disposed of or treated. Decontamination of hand tools may produce oily wastewater that must be treated properly. Worker personal protective gear is usually disposed of daily or decontaminated and the resulting oily wastewater treated properly.

**Mechanical Oil Removal**

**Objective:** To remove oil from shorelines and bottom sediments with mechanical equipment.

**Description:** Oil and oiled sediments are collected and removed using mechanical equipment such as backhoes, graders, bulldozers, dredges, draglines, etc. This method requires systems for temporary storage, transportation, and final treatment and disposal.

**Applicable Habitat Types:** On land, wherever surface sediments are both amenable to and accessible to heavy equipment. Mechanical recovery is appropriate for submerged oil, used in sheltered areas where oil accumulates. Additionally it can be used on viscous to solid oil on the water's surface.

**When to Use:** When large amounts of oiled materials must be removed care should be taken to remove sediments only to the depth of oil penetration, which can be difficult when using heavy equipment. Mechanical methods should be used carefully where excessive sediment removal may cause erosion.

**Biological Constraints:** Heavy equipment may be restricted in sensitive habitats (e.g., wetlands, soft substrate) or areas containing endangered species. Operators will need special permission to use in areas with known cultural resources. Dredging in sea grass beds or coral reef habitats may be prohibited. The noise generated by the mechanical equipment may also be a constraint.

**Environmental Effects:** The equipment is heavy, with many support personnel required. Mechanical methods may be detrimental if excessive sediments are removed without replacement. All organisms in the sediments will be affected, although the need to remove the oil may make this response method the best overall alternative. Re-suspension of exposed oil and fine-grained oily sediments can affect adjacent bodies of water.

**Waste Generation:** Can generate significant quantities of contaminated sediment that must be cleaned or land filled. The amount of waste generated by this cleanup option should be given careful consideration by response planners when reviewing potential environmental impacts of the oily wastes, debris, and residues.

**Sorbents**

**Objective:** To remove surface oil by absorption onto oleophilic (oil-attracting) material placed in water or at the waterline.

**Description:** Sorbent material is placed *on the floating oil or water surface* to allow it to absorb oil, or alternatively, the material can be used to wipe or dab stranded oil. Forms include sausage boom, pads, rolls, sweeps, snares, and loose granules or particles. These products can be either synthetic or natural substances. Efficacy

depends on the capacity of the particular sorbent, energy available for lifting oil off the substrate, and stickiness of the oil. Recovery of all sorbent material is mandatory.
Loose particulate Sorbents must be contained in a mesh or other material.

**Applicable Habitat Types:** Can be used on any habitat or environment type.

**When to Use:** When oil is free-floating close to shore or stranded on shore. The oil must be able to be released from the substrate and absorbed by the sorbent. Often used as a secondary treatment method after gross oil removal and in sensitive areas where access is restricted. Selection of sorbent varies by oil type; heavy oils only coat surfaces, requiring a high surface area to be effective, whereas lighter oils can penetrate sorbent material.

**Biological Constraints:** Access for deploying and retrieving sorbents should not be through soft or sensitive habitats or affect wildlife. Sorbent use should be monitored to prevent overuse and generation of large volumes of waste. Sorbents should not be used in a fashion that would endanger or trap wildlife. Sorbents left in place too long can break apart and present an ingestion hazard to wildlife.

**Environmental Effects:** Physical disturbance of habitat during deployment and retrieval. Improperly deployed or tended sorbent material can crush or smother sensitive substrates.
**Waste Generation:** Sorbents must eventually be collected for proper disposal so care should be taken to select and use sorbents properly, and prevent generation of large amounts of lightly oiled sorbents. Recycling should be emphasized rather than disposal.

**Vacuum**

**Objective:** To remove oil pooled on a shoreline substrate or sub tidal sediments.

**Description:** A vacuum unit is attached via a flexible hose to a suction head that recovers free oil. The equipment can range from small, portable units that fill individual 55-gallon drums to large super suckers that are truck or vessel mounted and can generate enough suction to lift large rocks. Removal rates from substrates can be extremely slow.

**Applicable Habitat Types:** Any accessible habitat type. Vacuum machinery may be mounted on barges for water-based operations, on trucks driven to the recovery area, or hand-carried to remote sites.

**When to Use:** When oil is stranded on the substrate, concentrated in trenches or trapped in vegetation. Usually requires shoreline access points.

**Biological Constraints:** Special restrictions should be established for areas where foot traffic and equipment operation may be damaging, such as soft substrates. Operations in wetlands need to be very closely monitored, with a site-specific list of restrictions developed to prevent damage to vegetation.

**Environmental Effects:** Minimal, if foot and vehicular traffic is controlled and minimal substrate is damaged or removed.

**Waste Generation:** Collected oil and or oil/water mix will need to be stored temporarily prior to recycling or disposal. Oil may be recyclable; if not, it will require proper disposal. Large amounts of water are often recovered, requiring separation and treatment.

**Debris Removal**

**Objective:** To remove contaminated debris from the shoreline or water surface.

**Description:** Manual or mechanical removal of debris from the shore or water surface. Debris removal can include cutting and removal of oiled logs.

**Applicable Habitat Types:** This method can be used on any habitat or environment type where access is safe.

**When to Use:** Driftwood and debris are heavily contaminated and provide a potential source of chronic oil release. Debris removal may create aesthetic problems, be a source of contamination for other resources in the area or cause clogging problems in the skimmer and create safety problems for responders. Debris removal is used in areas of debris accumulation on beaches prior to oiling to minimize the amount of oiled debris to be handled.

**Biological Constraints:** Foot traffic over sensitive areas (wetlands, spawning grounds) needs to be restricted. There may be periods when access should be restricted (spawning periods, influx of large numbers of migratory water birds).

**Environmental Effects:** Physical disruption of substrate, especially when mechanized equipment must be deployed to recover a large quantity of debris.

**Waste Generation:** Debris removal will generate contaminated debris (volume depends on what, and how much, is collected, e.g., logs, brush). Unless there is an approved hazardous waste incinerator that will take oily debris, burning will seldom be allowed especially on-site burning. However, this option should still be explored, especially for remote locations, with the appropriate state or federal agencies that must give approvals for burning.

**Sediment Reworking/Tilling**

**Objective:** To enhance the rate of degradation, by breaking up oily sediments and surface oil deposits, increasing the surface area, and mixing deep subsurface oil layers to the surface.

**Description:** The oiled sediments are roto-tilled, disked, or otherwise mixed using mechanical equipment or manual tools. Along beaches, oiled sediments may also be pushed to the water's edge (surf washing) to enhance natural cleanup by wave activity. The process may be aided with high-volume flushing of gravel.

**Applicable Habitat Types:** On any sedimentary substrate that can support mechanical equipment or foot traffic.

**When to Use:** On sand to gravel beaches with subsurface oil, where sediment removal is not feasible (due to erosion or disposal problems). On sand beaches, where the sediment is stained or lightly oiled, appropriate where oil is stranded above normal high waterline.

**Biological Constraints:** Avoid use on shores near sensitive wildlife habitat, such as fish-spawning areas or bird-nesting or concentration areas because of the potential for release of oil and oiled sediments into adjacent bodies of water. Tilling should not be used in shellfish beds.

**Environmental Effects:** Due to the mixing of oil into sediments, this method could further expose organisms that live below the original layer of oil. Repeated mixing over time could delay reestablishing organisms. Refloated oil from treated sites could contaminate adjacent areas.

**Waste Generation:** None.

**Vegetation Cutting/Removal**

**Objective:** To remove portions of oiled vegetation or oil trapped in vegetation to prevent oiling of wildlife or secondary oil releases.

**Description:** Oiled vegetation is cut with weed-whackers, blades, etc., and picked or raked up and bagged for disposal.

**Applicable Habitat Types:** Habitats composed of vegetation such as wetlands, sea grass beds, and kelp beds.

**When to Use:** When the risk of oiled vegetation contaminating wildlife is greater than the value of the vegetation that is to be cut, and there is no less-destructive method that removes or reduces the risk to acceptable levels.

**Biological Constraints:** Operations must be strictly monitored to minimize the degree of root destruction and mixing of oil deeper into the sediments. Access in bird-nesting areas should be restricted during nesting seasons. Cutting only the oiled portions of the plants and leaving roots and as much of the stem as possible minimizes impact to plants.

**Environmental Effects:** Vegetation removal will destroy habitat for many animals. Cut areas will have reduced plant growth, and in some instances, plants may be killed. Cutting at the base of the plant stem may allow oil to penetrate into the substrate, causing subsurface contamination. Along exposed sections of shoreline, the vegetation may not recover, resulting in erosion and habitat loss. Trampled areas will recover much more slowly.

**Waste Generation:** Cut portions of oiled plants must be collected and disposed.

**Flooding**

**Objective:** To wash oil stranded on the land surface to the water's edge for collection. Description: A perforated header pipe or hose is placed above the oiled shore or bank. Ambient-temperature water is pumped through the header pipe at low pressures and flows down slope to the water. On porous sediments, water flows through the substrate, pushing loose oil ahead of it, or floating oil to the water's surface and transporting the oil down the slope for pickup. On saturated, fine-grained sediments, the technique becomes more of a flushing of the surface.

**Applicable Habitat Types:** All shoreline types where the equipment can be effectively deployed. This is non-effective in steep intertidal areas.

**When to Use:** In heavily oiled areas when the oil is still fluid and adheres loosely to the substrate, and where oil has penetrated into gravel sediments. This method is frequently used with other washing techniques (low- or high-pressure, cold-to-hot-water flushing).

**Biological Constraints:** Special care should be taken to recover oil where nearshore habitats contain rich biological communities. Not appropriate for muddy substrates.
**Environmental Effects:** Habitat may be physically disturbed by foot traffic during operations and smothered by sediments washed down the slope. Oiled sediment may be transported to shallow, nearshore areas, contaminating them and burying benthic organisms.

**Waste Generation:** Depends on the effectiveness of the collection method.

**Low-Pressure, Ambient-Water Flushing**

**Objective:** To remove fluid oil that has adhered to the substrate or man-made structures, pooled on the surface, or become trapped in vegetation.

**Description:** Ambient-temperature water is sprayed at low pressures (<10 psi), usually from hand-held hoses, to lift oil from the substrate and direct it to the water's edge for recovery by skimmers, vacuum, or sorbents. Can be used with a flooding system to prevent released oil from re-adhering to the substrate down-stream of the treatment area.

**Applicable Habitat Types:** On substrates, riprap, and solid man-made structures, where the oil is still fluid. In wetlands and along vegetated banks where oil is trapped in vegetation.

**When to Use:** Where fluid oil is stranded onshore or floating on shallow intertidal areas.

**Biological Constraints:** May need to restrict use so that the oil/water effluent does not drain across sensitive, intertidal habitats and mobilized sediments do not affect rich sub tidal communities. Use from boats will reduce the need for foot traffic in soft substrates and vegetation. Flushed oil must be recovered to prevent further oiling of adjacent areas.

**Environmental Effects:** If containment methods are not sufficient, oil and oiled sediments may be flushed into offshore areas. Some trampling of substrate and attached biota will occur.

**Waste Generation:** Depends on the effectiveness of the collection method.

**High-Pressure, Ambient-Water Flushing**

**Objective:** To remove oil that has adhered to hard substrates of man-made structures.

**Description:** Similar to low-pressure flushing except that water pressure is 100-1,000 psi. High-pressure spray will more effectively remove sticky or viscous oils. If low-water volumes are used, sorbents are placed directly below the treatment area to recover oil.

**Applicable Habitat Types:** On bedrock, man-made structures, and gravel substrates.

**When to Use:** Use when low-pressure flushing is not effective at removing adhered oil that must be removed to prevent continued oil release or for aesthetic reasons. Use when a directed water jet can remove oil from hard-to-reach sites.

**Biological Constraints:** May have to restrict flushing so that the oil does not drain across sensitive habitats. Flushed oil must be recovered to prevent further oiling of adjacent areas. Attached animals and plants in the direct spray zone will be removed.

**Environmental Effects:** May drive oil deeper into the substrate or erode shorelines of fine sediments if water jet is improperly applied. If containment methods are not sufficient, oil and oiled sediments may be flushed into offshore areas. Some trampling of substrate and attached biota will occur.

**Waste Generation:** Depends on the effectiveness of the collection method.

**Low-Pressure, Hot-Water Flushing**

**Objective:** To remove non-fluid oil that has adhered to the substrate or man-made structures, or pooled on the surface.

**Description:** Hot water (90.F up to 170.F) is sprayed with hoses at low pressures (<10 psi) to liquefy and lift oil from the substrate and direct it to the water's edge for recovery by skimmers, vacuums, or sorbents. Used with flooding to prevent released oil from re-adhering to the substrate.

**Applicable Habitat Types:** On bedrock, sand to gravel substrates, and man-made structures.

**When to Use:** Where heavy, but relatively fresh oil is stranded onshore. The oil must be heated above its pour point, so it will flow. This is less effective on sticky oils.

**Biological Constraints:** Avoid wetlands or rich intertidal communities so that hot oil/water effluent does not contact sensitive habitats. Operations from boats will help

reduce foot traffic in soft substrates and vegetation. Flushed oil must be recovered to prevent further oiling of adjacent areas.

**Environmental Effects:** Hot-water contact can kill all attached animals and plants. If containment methods are not sufficient, oil may be flushed into downstream areas. Some trampling of substrate and biota will occur.

**Waste Generation:** Depends on the effectiveness of the collection method.

**High-Pressure, Hot-Water Flushing**

**Objective:** To mobilize weathered and viscous oil strongly adhered to surfaces.

**Description:** Hot water (90 degrees F [30 degrees C] up to 170 degrees F [70 degrees C]) is sprayed with hand-held wands at pressures greater than 100 psi (720 kpa). If used without water flooding, this procedure requires immediate use of vacuum or sorbents to recover the oil/water runoff. When used with a flooding system, the oil is flushed to the water surface for collection by skimmers, vacuum, or sorbents.

**Applicable Habitat Types:** Gravel substrates, bedrock, and man-made structures.
**When to Use:** When oil has weathered to the point that warm water at low pressure no longer effectively removes oil. Use to remove viscous oil from man-made structures for aesthetic reasons.

**Biological Constraints:** Use should be restricted so that the oil/water effluent does not drain across sensitive habitats (damage can result from exposure to oil, oiled sediments, and hot water). Should not be used directly on attached algae nor rich, inter-tidal areas. Released oil must be recovered to prevent further oiling of adjacent areas.

**Environmental Effects:** All attached animals and plants in the direct spray zone will be removed or killed, even when used properly. Oiled sediment may be transported to shallow near-shore areas, contaminating them and burying benthic organisms.

**Waste Generation:** Depends on the effectiveness of the collection method.

**Steam Cleaning**

**Objective:** To remove heavy residual oil from solid substrates or man-made structures.

**Description:** Steam or very hot water (171 degrees F [77 degrees C] to 212 degrees F [100 degrees C]) is sprayed with hand-held wands at high pressure (2000+ psi [14,400 kpa]). Water volumes are very low compared to flushing methods.

**Applicable Habitat Types:** Man-made structures such as seawalls and riprap.

**When to Use:** When heavy oil residue must be removed for aesthetic reasons, and when hot-water flushing is not effective and no living resources are present.

**Biological Constraints:** Not to be used in areas of soft substrates, vegetation, or high biological abundance directly on, or below, the structure.

**Environmental Effects:** Complete destruction of all organisms in the spray zone. Difficult to recover all released oil.

**Waste Generation:** Depends on the effectiveness of the collection method. Usually sorbents are used, generating significant waste volumes.

**Sand Blasting**

**Objective:** To remove heavy residual oil from solid substrates or man-made structures.

**Description:** Use of sandblasting equipment to remove oil from the substrate. Sand blasting may include recovery of used (oiled) sand in some cases.

**Applicable Habitat Types:** On heavily oiled bedrock, artificial structures such as seawalls and riprap.

**When to Use:** When heavy oil residue must be cleaned for aesthetic reasons and even steam cleaning is not effective.
**Biological Constraints:** Not to be used in areas of soft substrate, vegetation, or high biological abundance directly below, or adjacent to, the structures.

**Environmental Effects:** Complete destruction of all organisms in the blast zone. Possible smothering of downstream organisms, unrecovered, and used sand will introduce oiled sediments into the adjacent habitat.

**Waste Generation:** Will need to recover and dispose of oiled sand used in blasting.

**Solidifiers**

**Objective:** To change the physical state of spilled oil from a liquid to a solid.

**Description:** Chemical agents (polymers) are applied to oil at rates of 10-45 percent or more, solidifying the oil in minutes to hours. Various broadcast systems, such as leaf blowers, water cannons, or fire suppression systems, can be modified to apply the product over large areas. Solidifiers can be applied to both floating and stranded oil. Solidifiers can be placed in booms, pillows, sausages, etc. and used like sorbents, although this type of solidifier application has not been used operationally.

**Applicable Habitat Types:** All water environments, bedrock, sediments, and artificial structures.

**When to Use:** When immobilization of the oil is desired, to prevent refloating from a shoreline, penetration into the substrate, or further spreading. However, the oil may not fully solidify unless the product is well mixed with the oil, and may result in a mix of solid and untreated oil. Generally not used on heavy oil spills, which are already viscous.

**Biological Constraints:** Must be able to recover all treated material.

**Environmental Effects:** Available products are insoluble and have very low aquatic toxicity. Unrecovered solidified oil may have longer impact because of slow weathering rates. Physical disturbance of habitat is likely during application and recovery.

**Waste Generation:** If skimming efficiency is increased, solidifiers may reduce the volume of water collected during oil recovery. Effects on recycling oil treated with solidifiers are unknown. Most solidifier producers state that treated oil can pass leachate tests, allowing disposal in landfills.

**Shoreline Cleaning Agents (Surface Washing Agents)**

**Objective:** To increase the efficiency of oil removal from contaminated substrates.

**Description:** Special formulations are applied to the substrate, as a presoak and/or flushing solution, to soften or lift weathered or heavy oils from the substrate to enhance flushing methods. The intent is to lower the water temperature and pressure required to mobilize the oil from the substrate during flushing. Some agents will disperse the oil as it's washed off the beach, others will not.

**Applicable Habitat Types:** On any habitat where water flooding and flushing procedures are applicable.

**When to Use:** When the oil has weathered to the point where it cannot be removed using ambient water temperatures and low pressures. This approach may be most applicable where flushing effectiveness decreases as the oil weathers.

**Biological Constraints:** When the product does not disperse the oil into the water column, the released oil must be recovered from the water surface. Use may be restricted where suspended sediment concentrations are high, near wetlands, and near sensitive near shore resources.

**Environmental Effects:** The toxicity and effects on dispersability of treated oil vary widely among products. Selection of a product should consider the toxicity of the product.

**Waste Generation:** Because treated oil must be recovered, waste generation is a function of recovery method, which often includes sorbents.

**Nutrient Enrichment (Biostimulation)**

**Objective:** To accelerate the rate of oil hydrocarbon degradation due to natural microbial processes using a form of bioremediation that adds nutrients (generally nitrogen and phosphorus) that stimulate microbial growth. If nutrients are a limiting factor (as measured using the interstitial pore water) in an area where shoreline oiling has occurred, water-soluble nutrients can be applied by a spray irrigation system.

**Description:** Nutrients should be applied daily if the impacted area gets completely submerged by tides and waves and if maximum biostimulation is desired. If the impacted area gets submerged only during spring tides, the frequency of nutrient

addition will be determined by the intertidal zone water coverage. Using slow-release granular or encapsulated nutrients or oleophilic fertilizer (which adheres to the oil residue on the surface) should require less frequent addition, but time-series monitoring of interstitial pore water nutrient levels is needed to ensure target levels are being maintained, especially throughout the depth of the impacted intertidal zone.

**When to Use:** Any shoreline habitat type where access is allowed and nutrients are deficient.

**Applicable Habitat Types:** On moderate to heavily oiled substrates, after other techniques have been used to remove free product on lightly-oiled shorelines, where other techniques are destructive or ineffective; and where nutrients limit natural attenuation. Most effective on light to medium crude oils and fuel oils (asphaltenes tend to inhibit rapid biodegradation). This method is less effective where oil residues are thick. Not considered for gasoline spills, which evaporate rapidly.

**Biological Constraints:** Avoid using ammonia-based fertilizers at highly elevated concentrations because un-ionized ammonia is toxic to aquatic life. Nitrate is an equally good nitrogen source, minus the toxicity. Sodium tripolyphosphate is a better phosphorus source than orthophosphates because it is more soluble in seawater. If nutrients are applied properly with adequate monitoring, eutrophication should not be a problem. Only nutrient additives proven to be nontoxic and effective in either the laboratory or the field should be used in the environment. Contact toxicity of oleophilic nutrients may restrict their use as other chemicals in the product could be more toxic to aquatic organisms in the presence of oil.

**Environmental Effects:** Detrimental effects to shoreline from foot or vehicle traffic caused by workers applying nutrients (unless nutrients are sprayed from a vessel or aircraft).

**Waste Generation:** None.

**Natural Microbe Seeding (Bioaugmentation)**

**Objective:** To accelerate natural microbial degradation of oil by using a form of bioremediation that adds high numbers of oil-degrading microorganisms.

**Description:** Formulations containing specific hydrocarbon-degrading microbes are added to the oiled area because indigenous hydrocarbon degraders are low in number, or, those that are present cannot degrade the oil effectively. Since microbes require nitrogen and phosphorus to convert hydrocarbons to biomass, formulations containing these oil degraders must also contain adequate nutrients. Research studies conducted with bioengineered organisms or organisms enriched from different environments, grown in the laboratory to high numbers, and applied to an oiled beach to stimulate rapid biodegradation, have failed to prove conclusively that seeding is effective.

Bioaugmentation appears less effective than biostimulation because: 1) hydrocarbon degraders are ubiquitous in nature and, when an oil spill occurs at a given site, the influx of oil will cause an immediate increased response in the hydrocarbon degrading populations; but, 2) if nutrients are in limited supply, the rate of oil biodegradation will

be less than optimal; thus, 3) supplying nutrients will enhance the process initiated by the spill, but adding microorganisms will not, because they still lack the necessary nitrogen and phosphorus to support growth.

**Applicable Habitat Types:** There is insufficient information on impact or effectiveness of this method to make a judgment on applicable habitat.

**When to Use:** There is insufficient information on impact or effectiveness of this method to make a judgment on when to use it.

**Biological Constraints:** Avoid using products containing ammonia-based fertilizers at elevated concentrations because un-ionized ammonia is toxic to aquatic life. Nitrate is an equally good a nitrogen source, minus the toxicity. If the product containing nutrients is applied properly with adequate monitoring, eutrophication should not be a problem; but, toxicity tests should be evaluated carefully, as other chemicals in the product could be toxic to aquatic organisms.

**Environmental Effects:** Detrimental physical effects to shoreline from foot or vehicle traffic caused by workers applying bioaugmentation products (unless nutrients are sprayed from a vessel or aircraft).
Waste Generation: None.

**IN-SITU BURNING**

**Objective:** To remove oil from the water surface or habitat by burning it in place.

**Description:** Oil floating on the water surface is collected into slicks at least 2-3 mm thick and ignited. The oil can be contained in fire-resistant booms, or by natural barriers such as ice or the shore. On land, oil can be burned when it is on a combustible substrate such as vegetation, logs, and other debris. Oil can be burned from non-flammable substrates using a burn promoter. On sedimentary substrates, it may be necessary to dig trenches for oil to accumulate in pools to a thickness that will sustain burning. Heavy oils are hard to ignite but can sustain a burn. Emulsified oils may not ignite nor sustain a burn when the water content is greater than 30 to 50 percent.

**When to Use:** On most habitats except dry muddy substrates where heat may impact the biological productivity of the habitat. Burning may increase oil penetration into permeable substrates. Use in marshes should be undertaken using special precautions. Not suitable for woody vegetation such as mangroves and hardwood swamps.

**Applicable Habitat Types:** On land, where there is heavy oil in sites neither amenable nor accessible to physical removal and it is important to remove the stranded oil quickly. In wetlands and mud habitats, a water layer will minimize impacts to sediments and roots. Burning has many potential applications for spills in ice. There are many operational and public health limitations.

**Biological Constraints:** The possible effect of smoke on wildlife and populated areas should be evaluated.

**Environmental Effects:** Temperature and air quality effects are likely to be localized and short-lived. Toxicological impact from burn residues has not been evaluated. On-water, burn residues are likely to sink. On land, removal of residues is often necessary for crude and heavy oils. Limited data on burning oiled wetlands indicate recovery of wetland vegetation will depend on season of burn, type of vegetation, and water level in the marsh at time of burn.

**Waste Generation:** Any residues remaining after burning will need to be collected and land-filled, but with an efficient burn will be a small fraction of the original oil volume.

## Response

## Matrices Gasoline

## Products

**Table 44.** GASOLINE PRODUCTS (Category I): Relative environmental impact from response methods for SHORELINE INTERTIDAL habitats.

This table should not be used without the accompanying text in the document.

| ***Response Method*** | *Exposed Rocky Shores (1a)* | *Exposed Solid-Man-made Structures (1b)* | *Exposed Wave-cut Platforms (2a)* | *Sand Beaches (3) & (4)* | *Mixed Sand and Gravel Beaches (5)* | *Gravel Beaches (6a)* | *Riprap (6b)* | *Exposed Tidal Flats (7)* | *Sheltered Rocky Shores (8a)* | *Sheltered Solid Man-made Structures (8b)* | *Sheltered Tidal Flats (9a)* | *Salt to Brackish Marshes (10a)* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Natural Recovery** | A | A | A | A | A | A | A | A | A | A | A | A |
| Barriers/Berms | – | – | – | B | C | – | – | B | – | – | B | B |
| **Manual Oil Removal/Cleaning** | – | – | – | D | D | D | – | – | – | – | – | D |
| Mechanical Oil Removal | – | – | – | D | D | D | – | – | – | – | – | D |
| **Sorbents** | – | – | – | – | – | – | – | – | A | – | – | – |
| Vacuum | – | – | – | – | – | – | – | – | – | – | – | – |
| **Debris Removal** | – | – | – | – | – | – | – | – | – | – | – | – |
| Sediment Reworking/Tilling | – | – | – | D | D | D | – | – | – | – | – | D |
| **Vegetation Cutting/Removal** | – | – | – | – | – | – | – | – | – | – | – | D |
| Flooding (deluge) | – | – | – | A | A | A | A | – | – | – | – | B |
| **Low-pressure, Ambient Water Flushing** | – | – | – | B | B | A | A | – | – | – | – | B |
| High-pressure, Ambient Water Flushing | – | – | – | – | – | – | A | – | – | – | – | – |
| **Low-pressure, Hot Water Flushing** | – | – | – | – | – | – | – | – | – | – | – | – |
| High-pressure, Hot Water Flushing | – | – | – | – | – | – | – | – | – | – | – | – |
| **Steam Cleaning** | – | – | – | – | – | – | – | – | – | – | – | – |
| Sand Blasting | – | – | – | – | – | – | – | – | – | – | – | – |
| **Solidifiers** | – | – | – | – | – | – | – | – | – | – | – | – |
| Shoreline Cleaning Agents | – | – | – | – | – | – | – | – | – | – | – | – |
| **Nutrient Enrichment** | – | – | – | – | – | – | – | – | – | – | – | – |
| Natural Microbe Seeding | – | – | – | – | – | – | – | – | – | – | – | – |
| ***In-situ* Burning** | – | – | – | – | – | – | – | – | – | – | – | – |

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type:

A = May cause the least adverse habitat impact.
B = May cause some adverse habitat impact.
C = May cause significant adverse habitat impact.
D = May cause the most adverse habitat impact.
I = Insufficient Information - impact or effectiveness of the method could not be evaluated.
— = Not applicable.

## Diesel-Like Products and Light End Crude Oils

**Table 45.** DIESEL-LIKE PRODUCTS AND LIGHT CRUDE OILS (Category II): Relative environmental impact from response methods for SHORELINE INTERTIDAL habitats.
This table should not be used without the accompanying text in the document.

| ***Response Method*** | *Exposed Rocky Shores (1a)* | *Exposed Solid Man-made Structures (1b)* | *Exposed Wave-cut Platforms (2a)* | *Sand Beaches (3) & (4)* | *Mixed Sand and Gravel Beaches (5)* | *Gravel Beaches (6a)* | *Riprap (6b)* | *Exposed Tidal Flats (7)* | *Sheltered Rocky Shores (8a)* | *Sheltered Solid Man-made Structures (8b)* | *Sheltered Tidal Flats (9a)* | *Salt to Brackish Marshes (10a)* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Natural Recovery** | A | A | A | B | B | A | A | A | A | A | A | A |
| Barriers/Berms | – | – | – | B | C | B | – | B | – | – | B | B |
| **Manual Oil Removal/Cleaning** | – | – | B | B | C | C | A | C | C | B | D | D |
| Mechanical Oil Removal | – | – | – | B | C | D | – | D | – | – | – | D |
| **Sorbents** | B | B | B | B | A | A | A | A | A | A | A | A |
| Vacuum | A | – | A | – | – | – | – | C | B | – | C | B |
| **Debris Removal** | A | – | A | A | A | A | A | B | A | A | B | B |
| Sediment Reworking/Tilling | – | – | – | B | B | B | – | – | – | – | – | D |
| **Vegetation Cutting/Removal** | – | – | – | C | C | – | – | D | – | – | – | D |
| Flooding (deluge) | – | – | A | A | A | A | A | A | A | – | B | B |
| **Low-pressure, Ambient Water Flushing** | – | – | A | B | A | A | A | B | A | A | C | B |
| High-pressure, Ambient Water Flushing | – | – | B | – | – | – | A | – | C | B | – | – |
| **Low-pressure, Hot Water Flushing** | – | – | D | – | – | – | C | – | – | – | – | – |
| High-pressure, Hot Water Flushing | – | – | D | – | – | – | C | – | – | – | – | – |
| **Steam Cleaning** | – | – | – | – | – | – | – | – | – | – | – | – |
| Sand Blasting | – | – | – | – | – | – | – | – | – | – | – | – |
| **Solidifiers** | – | – | C | – | – | – | B | C | C | – | C | C |
| Shoreline Cleaning Agents | – | – | – | – | – | – | – | – | – | – | – | – |
| **Nutrient Enrichment** | – | – | – | A | A | A | A | I | A | I | I | A |
| Natural Microbe Seeding | – | – | I | I | I | I | I | I | I | I | I | I |
| ***In-situ* Burning** | – | – | D | – | – | – | – | – | D | – | – | B |

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type:

A = May cause the least adverse habitat impact.
B = May cause some adverse habitat impact.
C = May cause significant adverse habitat impact.
D = May cause the most adverse habitat impact.
I = Insufficient Information - impact or effectiveness of the method could not be evaluated.
— = Not applicable.

## Medium-Grade Crude Oils and Intermediate Products

Table **46.** MEDIUM GRADE CRUDE OILS AND INTERMEDIATE PRODUCTS (Category III): Relative environmental impact from response methods for SHORELINE INTERTIDAL habitats.
This table should not be used without the accompanying text in the document.

| ***Response Method*** | *Exposed Rocky Shores (1a)* | *Exposed Solid Man-made Structures (1b)* | *Exposed Wave-cut Platforms (2a)* | *Sand Beaches (3) & (4)* | *Mixed Sand and Gravel Beaches (5)* | *Gravel Beaches (6a)* | *Riprap (6b)* | *Exposed Tidal Flats (7)* | *Sheltered Rocky Shores (8a)* | *Sheltered Solid Man-made Structures (8b)* | *Sheltered Tidal Flats (9a)* | *Salt to Brackish Marshes (10a)* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Natural Recovery** | A | A | A | B | B | B | B | A | B | B | B | B |
| Barriers/Berms | – | – | – | B | C | B | – | B | – | – | B | B |
| **Manual Oil Removal/Cleaning** | B | B | B | A | B | B | A | B | B | B | C | C |
| Mechanical Oil Removal | – | – | – | B | B | C | B | D | – | – | – | D |
| **Sorbents** | A | A | A | A | A | A | A | A | B | A | A | A |
| Vacuum | A | – | A | B | B | B | A | B | B | – | B | B |
| **Debris Removal** | A | – | A | A | A | A | A | B | A | A | B | B |
| Sediment Reworking/Tilling | – | – | – | B | B | B | – | C | – | – | – | D |
| **Vegetation Cutting/Removal** | – | – | – | C | C | – | – | D | D | – | D | C |
| Flooding (deluge) | – | – | A | A | B | B | B | A | A | – | B | B |
| **Low-pressure, ambient Water Flushing** | – | – | A | B | A | A | B | B | A | B | C | B |
| High-pressure, Ambient Water Flushing | – | – | B | – | C | B | B | – | B | B | – | – |
| **Low-pressure, Hot Water Flushing** | – | – | C | C | C | C | C | – | D | C | – | – |
| High-pressure, Hot Water Flushing | – | – | C | – | D | C | C | – | D | C | – | – |
| **Steam Cleaning** | D | D | D | – | D | D | D | – | D | D | – | – |
| Sand Blasting | D | D | D | – | – | – | D | – | D | D | – | – |
| **Solidifiers** | – | – | C | B | B | B | B | C | C | – | C | C |
| Shoreline Cleaning Agents | C | B | C | C | C | B | B | – | B | B | – | B |
| **Nutrient Enrichment** | – | – | – | A | A | A | A | I | B | I | I | B |
| Natural Microbe Seeding | – | – | I | I | I | I | I | I | I | I | I | I |
| ***In-situ* Burning** | – | – | D | C | C | C | D | – | C | – | – | B |

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type:

A = May cause the least adverse habitat impact.
B = May cause some adverse habitat impact.
C = May cause significant adverse habitat impact.
D = May cause the most adverse habitat impact.
I = Insufficient Information - impact or effectiveness of the method could not be evaluated.
— = Not applicable.

## Heavy Crude Oils and Residual Products

Table **47.** HEAVY CRUDE OILS AND RESIDUAL PRODUCTS (Category IV): Relative environmental impact from response methods for SHORELINE INTERTIDAL habitats.
This table should not be used without the accompanying text in the document.

| ***Response Method*** | *Exposed Rocky Shores (1a)* | *Exposed Solid Man-made Structures (1b)* | *Exposed Wave-cut Platforms (2a)* | *Sand Beaches (3) & (4)* | *Mixed Sand and Gravel Beaches (5)* | *Gravel Beaches (6a)* | *Riprap (6b)* | *Exposed Tidal Flats (7)* | *Sheltered Rocky Shores (8a)* | *Sheltered Solid Man-made Structures (8b)* | *Sheltered Tidal Flats (9a)* | *Salt to Brackish Marshes (10a)* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Natural Recovery** | A | A | A | C | C | B | B | A | B | B | B | B |
| Barriers/Berms | – | – | – | B | B | B | – | B | – | – | B | B |
| **Manual Oil Removal/Cleaning** | – | – | B | A | A | B | A | B | C | B | C | C |
| Mechanical Oil Removal | – | – | – | B | B | C | C | D | – | – | – | D |
| **Sorbents** | A | A | A | A | B | B | B | B | C | B | B | A |
| Vacuum | A | – | A | A | B | B | A | B | B | – | B | B |
| **Debris Removal** | A | – | A | A | A | A | A | B | A | A | B | B |
| Sediment Reworking/Tilling | – | – | – | B | B | B | – | C | – | – | – | D |
| **Vegetation Cutting/Removal** | – | – | – | C | C | – | – | D | D | – | D | C |
| Flooding (deluge) | – | – | B | B | C | C | C | A | B | – | B | B |
| **Low-pressure, Ambient Water Flushing** | – | – | B | B | B | B | C | C | B | C | D | B |
| High-pressure, Ambient Water Flushing | – | – | B | – | D | B | B | – | B | C | – | – |
| **Low-pressure, Hot Water Flushing** | – | – | C | C | C | B | C | – | D | C | – | – |
| High-pressure, Hot Water Flushing | – | – | C | – | D | C | C | – | D | C | – | – |
| **Steam Cleaning** | D | D | D | – | D | D | D | – | D | D | – | – |
| Sand Blasting | D | D | D | – | – | – | D | – | D | D | – | – |
| **Solidifiers** | – | – | – | – | – | – | – | – | – | – | – | – |
| Shoreline Cleaning Agents | – | – | C | C | C | B | B | – | B | B | – | B |
| **Nutrient Enrichment** | – | – | – | B | B | B | B | I | C | I | I | B |
| Natural Microbe Seeding | – | – | I | I | I | I | I | I | I | I | I | I |
| ***In-situ* Burning** | – | – | D | C | C | C | D | – | C | – | – | B |

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type:

A = May cause the least adverse habitat impact.
B = May cause some adverse habitat impact.
C = May cause significant adverse habitat impact.
D = May cause the most adverse habitat impact.
I = Insufficient Information - impact or effectiveness of the method could not be evaluated.
— = Not applicable.

## Non-Floating Oil Products

**Table 48.** NON-FLOATING OIL PRODUCTS (Category V): Relative environmental impact from response methods for SHORELINE INTERTIDAL habitats.
This table should not be used without the accompanying text in the document.

| ***Response Method*** | *Exposed Rocky Shores (1a)* | *Exposed Solid Man-made Structures (1b)* | *Exposed Wave-cut Platforms (2a)* | *Sand Beaches (3) & (4)* | *Mixed Sand and Gravel Beaches (5)* | *Gravel Beaches (6a)* | *Riprap (6b)* | *Exposed Tidal Flats (7)* | *Sheltered Rocky Shores (8a)* | *Sheltered Solid Man-made Structures (8b)* | *Sheltered Tidal Flats (9a)* | *Salt to Brackish Marshes (10a)* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Natural Recovery** | A | A | A | D | C | B | B | A | B | B | B | B |
| Barriers/Berms | – | – | – | B | B | B | – | B | – | – | B | B |
| **Manual Oil Removal/Cleaning** | B | B | B | A | A | A | A | B | C | B | C | C |
| Mechanical Oil Removal | – | – | – | B | B | C | C | D | – | – | – | D |
| **Sorbents** | A | A | A | B | B | B | B | B | C | B | B | B |
| Vacuum | A | – | A | A | B | B | A | B | C | – | B | B |
| **Debris Removal** | A | – | A | A | A | A | A | B | A | A | B | B |
| Sediment Reworking/Tilling | – | – | – | B | B | B | – | C | – | – | – | D |
| **Vegetation Cutting/Removal** | – | – | – | C | C | – | – | D | D | – | D | C |
| Flooding (deluge) | – | – | B | C | C | C | C | B | C | – | C | B |
| **Low-pressure, Ambient Water Flushing** | – | – | B | C | C | C | C | C | C | D | B | |
| High-pressure, Ambient Water Flushing | – | – | B | – | D | B | C | – | C | C | – | – |
| **Low-pressure, Hot Water Flushing** | – | – | C | C | C | B | C | – | D | C | – | – |
| High-pressure, Hot Water Flushing | – | – | C | – | D | C | C | – | D | C | – | – |
| **Steam Cleaning** | D | D | D | – | D | D | D | – | D | D | – | – |
| Sand Blasting | D | D | D | – | – | – | D | – | D | D | – | – |
| **Solidifiers** | – | – | – | – | – | – | – | – | – | – | – | – |
| Shoreline Cleaning Agents | C | B | C | C | C | B | B | – | B | B | – | I |
| **Nutrient Enrichment** | – | – | – | C | C | B | B | I | C | I | I | B |
| Natural Microbe Seeding | – | – | I | I | I | I | I | I | I | I | I | I |
| ***In-situ* Burning** | – | – | – | C | C | C | – | – | C | – | – | C |

The following categories are used to compare the relative environmental impact of each response method for the specific environment or habitat for each oil type:

A = May cause the least adverse habitat impact.
B = May cause some adverse habitat impact.
C = May cause significant adverse habitat impact.
D = May cause the most adverse habitat impact.
I = Insufficient Information - impact or effectiveness of the method could not be evaluated.
— = Not applicable.

3240.23

**Pre-Beach Cleanup**

Refer to Section 9800 of this Plan

**Storage**

To expedite removal of spilled oil, refined products, and contaminated materials from marine waters during an emergency-response, containment activities (to include temporary waste storage) may be conducted at appropriate on-shore locations [22 CCR 66270.1(c)3]. The transportation of oil and contaminated material to temporary waste storage sites during an emergency response is exempt from transportation and manifesting requirements, per the draft MOU between OSPR and DTSC (these requirements are also exempted per 22 CCR 66263.30 and/or 66263.43 for transportation-related emergency responses.

During an immediate response, all oil and/or oily materials may be recovered, transported, or transferred to temporary waste storage sites and are exempt from any hazardous waste generator and facility permit requirements for a period of 30 days, per the draft MOU between OSPR and DTSC. Additional 30-day extensions may be granted by DTSC, under appropriate circumstances.

Temporary storage sites can be an area or facility approved by the IC or Unified Command for characterizing and/or temporarily storing recovered oil and/or oily materials used, collected, or recovered during an oil spill response. Such an area may include, but is not limited to, permitted or interim status hazardous waste storage facilities, other non-permitted facilities, vessels, barges, tanks, vacuum trucks, barrels, containers, storage piles, or other appropriate containment methods and locations that may be used to hold recovered oil and/or oily materials. Temporary storage sites need not be owned, operated, or leased by the RP. Temporary storage sites that are on-shore should be established at locations that are convenient to the recovery operations for the temporary storage of recovered petroleum products, and contaminated materials and debris. Sitting of the temporary storage site, however, must be done with the concurrence of the following:

FOSC

DTSC [The DTSC duty officer can be contacted at one of the following phone numbers: Region 1 (Sacramento) @ 916-255-3564; Region 2 (Oakland) @ 510-540-3739; Region 3 (Glendale) @ 818-551-2830; and Region 4 (Long Beach) @ 310-590-4968.]

California Coastal Commission Oil Spill Program: for information on emergency permits for temporary storage sites within the coastal zone call the CCC Oil Spill Program, Deputy Director 415-904-5205 or 24 hour cell phone 415-693-8375.

Regional Water Quality Control Board (RWQCB), and

Local health, fire and emergency services departments.

If a Unified Command is established, OSPR will facilitate the contact of the state and local government agencies through the Liaison Officer.

## 3250 Disposal and Decontamination

**Crude oil and Refined Petroleum Products**

Under California law, material released or discharged to marine waters of the state are defined as waste. Once the final disposition of a specific waste is determined, the waste

may be redefined as a product or material and may no longer will be subject to waste management requirements.

Crude oil spilled to marine waters, recovered, and transported to a refinery may be considered a product and may not be subject to hazardous waste management regulations [California Health and Safety Code (CHSC), 25943.2]. The collected crude oil may be shipped to the refinery of original destination or a refinery that can accept the spilled crude oil. Refined petroleum products that are recovered from marine waters may also be handled as a product if they can be used for their originally intended purpose (i.e. fuel, fuel oil, etc.)(CHSC 25250.3).

There are other avenues by which recovered petroleum may be managed as a material (CHSC 25143.2). These approaches include recycling the petroleum through incineration, as a fuel, a substitute for raw material feedstock, or as an ingredient used in the production of a product (i.e. asphalt). The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) should be consulted for more information on these and other management options.

State law requires the consideration of recycling; therefore, recycling should be a top priority and will be undertaken if at all possible. The latest published list of companies that recycle oil is presented in Section 4552.6 and the latest published list of licensed used oil haulers is presented in Section 4556.1. A discussion of waste minimization and recycling options is also included in this section.

Recovered petroleum "products" that are not accepted by a refinery or that cannot be recycled must be managed as a waste. In order that the appropriate management mechanism is determined for the recovered petroleum, the waste must be characterized by a state certified laboratory to determine if the waste is hazardous or non-hazardous. It is the responsibility of the Responsible Party (RP) to have the waste accurately characterized for proper disposition [Title 22, Sec. 66260.200(c) of the California Code of Regulations (22 CCR)].

**Waste Management and Temporary Storage Options**

One of the major issues associated with an oil spill response is the proper management of the recovered petroleum product, as well as the contaminated cleanup materials, soil, and debris. How these are managed is dependent on how they are characterized - as either a solid waste, hazardous waste or a hazardous material (used or reused). This subsection presents a general approach to the management of the various types of wastes collected during an oil spill.

**Waste Management Options**

Under California law, a hazardous substance released or discharged to marine waters of the state is defined as a waste and must be characterized as either hazardous or nonhazardous and managed accordingly. Once the waste is characterized and its final disposition is determined, the waste may be redefined and managed as a material, rather than a waste.
In accordance with CHSC 25143.2, recovered hazardous wastes may be managed as a hazardous material rather than a hazardous waste by utilizing any one of the following methods:
The material is used or reused as an ingredient in an industrial process to make a product, and is NOT reclaimed;

The material is used or reused as a substitute for commercial products, and is NOT reclaimed;
Without first being reclaimed, the material is returned to the original process from which it was generated as a substitute for raw material feedstock, as long as the material is returned as a substitute for raw material feedstock, and the process uses raw materials as principal feedstock;
The material is shipped to the site from where it was generated or managed, or to another site owned by the same generator, and is either burned as a fuel or is recombined with normal process streams to produce a fuel. However, it should be noted that the DTSC has agreed with DFG/OSPR that recovered oil originally headed for a refinery will NOT be considered a hazardous waste and may still be sent to the refinery.
Remember, hazardous "material" management activities need to comply with a different set of regulations, which include, in part, the local fire code for storage and handling requirements, and 49 CFR for shipping requirements. Do NOT use a hazardous waste manifest when shipping hazardous materials - use a Bill of Lading.
In managing hazardous wastes, one must also be responsible for adhering to the waste minimization philosophy behind good waste management practices. Waste generation and disposal can be minimized through proper waste characterization, handling, segregation, treatment, and recycling; while only solid, non-recyclable wastes are actually "disposed" of. The following waste management hierarchy should always be used in the management of both hazardous and nonhazardous wastes:

1. Eliminate or minimize the amount of waste generated
2. Source reduction
3. Use and reuse as a material
4. Reclaim or recycle
5. Treatment
6. Disposal

Dispose of waste only if the above priorities are not feasible !!
The need to minimize the volume and toxicity of all hazardous wastes has been made clear and explicit in state and federal regulations; however, other reasons to minimize waste would include protection of public health and the environment, as well as economic incentives, liability incentives, and public relations incentives.

**Crude oil and Refined Petroleum Product.**

Crude oil spilled into marine waters that is recovered and transported to the refinery of original destination or a refinery that can accept the crude oil for use or reuse may be considered a "material" rather than a "waste" and, therefore, not subject to the more stringent hazardous waste management laws and regulations [California Health and Safety Code (CHSC), Section 25143.2]. Refined petroleum products that are recovered from marine waters may also be handled as a product if they can be used for their originally intended purpose (i.e. fuel, fuel oil, etc.), per CHSC 25250.3.

There are other avenues by which recovered petroleum may be managed as a material (CHSC 251143.2). These approaches include recycling the petroleum through incineration, as a fuel, a substitute for raw material feedstock, or as an ingredient used in the production of a product (i.e. asphalt). The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) should be consulted for more information on these and other management options. The latest published list of companies that recycle oil and the latest published list of licensed used oil haulers can be obtained from DTSC.

Recovered petroleum "products" or "materials" that are not accepted by a refinery as a material, should then be recycled. Since state law requires the generator of a waste to consider recycling before other waste management methods, recycling should be the next waste management priority. To ensure that the appropriate waste management method is utilized for the recovered petroleum, the waste must be characterized by the generator either through knowledge of the waste or through analysis by a State certified laboratory to determine if the waste is hazardous or non-hazardous. It is the responsibility of the Responsible Party (RP) to have the waste accurately characterized for proper disposition [Title 22, Section 66260.200(c) of the California Code of Regulations (22 CCR)].

**Discharge to Sea of Water Separated From Recovered Oil.**

Oil recovered at sea typically contains significant amounts of seawater. In order to maintain the efficiency of the skimming process this water must be separated/decanted from the oil and discharged back to the ocean during recovery operations. Separated sea water typically contains elevated levels of hydrocarbons and thus the discharge of this material may constitute a discharge of a pollutant; therefore, in 1995, a Memorandum of Understanding (MOU) had been entered by the SWRCB and OSPR which addresses all permits and requirements pertaining to the incidental discharge of wastewater during oil spill response activities. The MOU finds that these discharges are exempt from the regulation under a National Pollution Discharge Elimination System (NPDES) permit. Additionally, the MOU also provides that the SWRCB will recommend that the coastal RWQCB waive the issuance of waste discharge requirements for these types of discharges.

The "discharge" of separated/decanted water is recognized by the Federal On-Scene Commander (FOSC) as an integral part of off-shore skimming operations and as an excellent waste minimization tool. The FOSC or designee, therefore, may authorize the discharge of separated/decanted water back into the sea within the catenary area of a boom/skimming system outside of State waters (3 miles), in accordance with the MOU between SWRCB and OSPR. The exception to this will be in NOAA Marine Sanctuary waters. With the addition of the Monterey Bay National Marine Sanctuary a significant portion of the coastline is now part of the National Marine Sanctuary program. Other sanctuaries include Point Reyes/Farallon Island, Channel Islands San Miguel, Santa Cruz, Santa Rosa, Anacapa, Santa Barbara Island, Richardson and Castle Rock), and Cordel Banks. Federal law prohibits the discharge of material, such as separated water, to marine sanctuaries unless permitted by the Administrator of the sanctuary program. Negotiations are presently under way seeking pre-approval to discharge separated waters during an emergency response to oil spills within the sanctuaries. Until pre-approval is obtained, permit for the discharge of separated water must be obtained from the Sanctuary Program, via the appropriate field office, before any discharge can take place. The phone numbers for the Sanctuary field offices are as follows: Monterey Bay @ (408) 647-4258; Channel Islands @ (805) 966-7107; and Farallones and Cordell Book @ (415) 556-3509.

**Contaminated Debris**

Contaminated debris including organic material, contaminated cleanup equipment (i.e., PPE, sorbents, booms, etc.) and other contaminated materials that cannot be recycled must be managed as a waste. The materials must also be characterized before the appropriate waste management option is determined.
If the debris is contaminated only with petroleum or any of its fractions, then it is exempt from regulation under Section 25143.12 of the Health and Safety Code if ALL of the following conditions are met:

The debris consists exclusively of wood, paper, textile materials, concrete rubble, metallic objects, or other solid manufactured objects;

The debris is not subject to regulation as a hazardous waste under the federal act;

The debris does not contain any free liquids, as determined by the paint filter test specified in the regulations adopted by the department;

The debris is disposed of in a composite lined portion of a waste management unit which is classified as either a Class I or Class II landfill in accordance with 23 CCR 2530, *et seq*., the disposal is made in accordance with the applicable requirements of the California Regional Water Quality Control Board and the California Integrated Waste Management Board, and, if the waste management unit is a Class II landfill, it is sited, designed, constructed and operated in accordance with the minimum standards applicable on or after 10/9/93 to new or expanded municipal solid waste landfills, which are contained in 40 CFR 258.1, *et seq*.

**Oiled Animal Carcasses**

Handling of oiled wildlife and carcasses is not permitted by law unless under the direction of California Department of Fish and Game, Office of Spill Prevention and Response (OSPR) representatives who are responsible for wildlife rehabilitation and collection of carcasses for natural resource damage assessment (NRDA) investigations. The identification and location of OSPR representatives can be provided by the Unified Command Center. Collection, handling, and disposal should only proceed at the direction of OSPR which is the designated responsible trustee. RCP Appendices XXII (a) and (b), the California Wildlife Response Plan, provides details about handling and preservation of oiled wildlife and carcasses.

**Waste Evaluation Federal**

**Criteria**

Is the Material a Waste? (40 CFR 261.2)
A solid waste is an abandoned, recycled, or inherently waste-like discarded material that is not specifically excluded in 40 CFR 261.4.
Is the Waste Excluded from Regulation? (40 CFR 261.4):
Domestic sewage sludge
Ash wastes from the combustion of fossil fuels
Industrial wastewater subject to regulation under the Clean Water Act
Spent sulfuric acid
Certain chromium wastes
Mining overburden
Mining wastes
Household waste
Exempt small quantity generator
Is the Waste a Listed Hazardous Waste? (40 CFR 261.30-33):
Wastes from non-specific sources ("F" List)
Wastes from specific sources ("K" List)
Discarded commercial chemical products, oil specification, container residues & spill residues thereof ("P" & "U" Lists)
Is the Waste a Characteristic Hazardous Waste? (CFR 261.20-24)
Ignitability
Liquid (other than aqueous with <24% Alcohol) with a flashpoint <140 F
Non-liquid which can cause fire and, when ignited, burns persistently and vigorously
Flammable compressed gas [49 CFR 173.300(b)]
Oxidizer (49 CFR 173.151)
Corrosivity
Aqueous liquid with pH <2 or >12.5
Liquid that corrodes steel >6.35mm/yr at 55 F
Reactivity
Normally unstable
Generates Toxic Gases
Reacts Violently
Contains Cyanides or Sulfides
Explosive Mixtures
Detonates or Explodes
Toxicity

40 Compounds have assigned regulatory levels
Samples are compared to the regulatory threshold after Being Prepared Per the Toxicity Characteristic Leaching Procedure.
Is the Hazardous Waste Mixed With a Non-hazardous Waste? (40 CFR 261.3)
A Mixture of a Listed Hazardous Waste and a Non-hazardous Waste is a Hazardous Waste Unless:

The Listed Waste Was Listed Merely Because it Exhibited a Characteristic and the Resultant Mixture No Longer Exhibits that Characteristic
OR
The Mixture is a Wastewater that is Discharged Pursuant to Specific Provisions of the Clean Water Act.

The Mixture of a Characteristic Hazardous Waste and a Nonhazardous Waste only if the Resultant Mixture Exhibits a Characteristic.
Is the Waste a "Derived From" Waste? [40 CFR 261.3 (c)]
Any Solid Waste Generated From the Treatment, Storage, or Disposal of a Hazardous Waste unless is a Hazardous Waste Unless the Waste is Specifically Excluded or Does Not Exhibit a Character a flashpoint >t Derived From a Listed Waste.

**State Criteria**

Is the Material a Waste? (HSC 2412.4)
A waste is discarded material that is not specifically excluded.
A discarded material is relinquished, recycled, or inherently Waste-Like.
Is the Waste Listed in Appendix 10? (22 CCR, Division 4.5, Appendix X)
Wastes listed in Appendix 10 are presumed hazardous unless proven otherwise by applying knowledge of or testing the characteristics of the waste stream
Is the Waste a Characteristic Hazardous Waste? (22 CCR 66261.21-24)
Ignitability (22 CCR 66261.21)
Identical criteria to federal characteristics
Corrosivity (22 CCR 66261.22)
Identical criteria to federal characteristics except that California regulates non-aqueous wastes in addition to aqueous wastes
Reactivity (22 CCR 66261.23)
Identical criteria to federal characteristics
Toxicity (22 CCR 6626.24)
Persistent and bioaccumulative substances
A waste is hazardous if the soluble concentration of a substance is > its regulatory threshold known as the Soluble Threshold Limit Concentration (STLC). The soluble concentration is determined after preparing the samples with the Waste Extraction Test (WET)
A waste is hazardous if the total concentration of a substance is > to its regulatory threshold known as the Total Threshold Limit Concentration
Acute toxicity
Oral $LD_{60}$ <5,000 mg/kg (single administration). Test species is the rat.
Dermal $LD_{60}$ <4,300 mg/kg (24 hour time period). Test species is the rabbit.
Inhalation $LC_{50}$ <10,000 ppm as a gas or vapor (8 hour time period). Test species is the rat.
Aquatic Toxicity
$LC_{50}$ <500 mg/l

96 Hour Bioassay
Test species are either fathead minnows, golden shiners, or rainbow trout.
Chronic Toxicity
16 Listed Carcinogens >0.001% (by weight)
A waste which has been shown through experience or testing to pose a hazard to human health or the environment because of its Carcinogenicity, Acute Toxicity, Bioaccumulative Properties or Persistence in the Environment
Is the Waste Used Oil? (HSC 25250-25250.25)
Any refined crude oil which has become contaminated with physical or chemical impurities as a result of use
Any refined crude oil which is no longer useful to the original purchaser as a consequence of extended storage, spillage, or contamination
Spent lubricating fluids
Spent industrial oils
Contaminated fuel with a flashpoint > 100 F
Is the Waste an Extremely Hazardous Waste? (22 CCR 66261.110)
Acute toxicity
Acute oral LD60<50 mg/kg
Acute dermal LD50 <43 mg/kg
Acute inhalation LC50<100ppm
Listed carcinogen>0.1% (by weight)
Contains a persistent or bioaccumulative substance at > Listed TTLC
Water Reactive.
Is the Waste a Special Waste? (22 CCR 66261.122)
A special waste is hazardous ONLY because inorganic constituents exhibit:

Soluble concentration > STLC
OR
Total concentration > TTLC
EXCEPT THAT
Soluble concentration in mg/kg must be < TTLC
The generator must apply for and receive the special waste classification from the Department.

Is the Hazardous Waste Mixed with A Non-Hazardous Waste? [22 CCR 66261.3(b)(3)
A mixture of hazardous waste and a non-hazardous waste is hazardous waste only if the resultant mixture exhibits an Article 3 characteristic

**Transportation**

Recovered petroleum product not accepted at a refinery for reuse must be transported to an approved waste management facility. The type of waste management facility will be based on the results of the waste analysis performed.

**Hazardous Waste**

Waste classified as hazardous under either federal or State regulations must be transported to a permitted or interim status hazardous waste management facility. Any shipments of hazardous waste must be done by a transporter who is registered with DTSC as a hazardous waste hauler (a list is available from the DTSC) and has a valid EPA Identification Number. Prior to removal of the hazardous material from temporary storage, a California Uniform Hazardous Waste Manifest (EPA Form # 8700-22A) must be prepared by the generator (RP or designee) for recovered petroleum and other contaminated materials (22 CCR 66263.20-66263.23). While preparing the manifest, the RP may request assistance from the on-scene DTSC representative or the DTSC regional duty officer.

All hazardous materials and wastes shipped off-site must be transported in compliance with applicable regulations. These include the RCRA regulations in 40 CFR 262-263, DOT Hazardous Materials Regulations (49 CFR 171-178), and any applicable state regulations (22 CCR 6626.20-6626.23).

**Nonhazardous Waste**

Waste that is determined to be nonhazardous but is a "designated waste" (per 23 CCR 2522) will be transported to a Class II waste management facility. Manifesting of the waste is not required but a Bill of Lading is required for transportation. The appropriate Regional Water Quality Control Board (RWQCB, list in Table E.VI.3) and local health department should be contacted to determine what waste management facility will accept the waste and any additional test requirements the facility might require (see tables E.VI.4). Removal of nonhazardous waste from temporary storage will require authorization by the Unified Command, FOSC, or SOSC.

**Off-Site Waste Management Facilities**

Depending on the type of waste and how it is to be managed, you need to identify an appropriate off-site waste management facility, as follows:

Non-hazardous waste/designated waste (per 23 CCR 2522): Transport to a Class II waste management facility*.

Non-hazardous waste/non-designated waste (per 23 CCR 2522): Transport to a Class III waste management facility*.

Hazardous waste: Transport to a facility as a "material" for use/reuse; or to an authorized Class I hazardous waste management facility for recycling, treatment, storage, or disposal.

The Regional Water Quality Control Boards should be consulted for information on the location and disposal requirements of facilities in their region.

To avoid confusion and panic at the time of a spill incident, it usually helps to plan ahead and identify the waste management facilities (primary and alternates) to use for the different types of waste streams that are expected to be generated during a spill response and clean up. There are three approved hazardous waste management facilities in California, as follows:

1. Chemical Waste Management Co. (Kettleman Hills Facility)

   35251 Old Skyline Blvd.
   Kettleman City, CA 93239
   (209) 386-9711

This is the only class I facility that accepts liquid waste in any sizable quantity. Liquid petroleum accepted at Kettleman Hills will be transported to their subsidiary in Azusa, California and further transported out-of-state for incineration:

2. Laidlaw Environmental Services (Imperial County)
   5295 South Garvey Road
   Westmoreland, CA 92281
   (619) 344-9400

This facility will accept only solid waste:

3. Laidlaw Environmental Services (Kern County)
   2500 Lokern Road
   Buttonwillow, CA 93206
   (805) 762-7372

This facility accepts only solid waste, although it is developing the ability to process small volumes of liquid waste.

For a list of Recyclers within California, as well as in other states, call DTSC/Resource Recovery Unit at (916) 323-6042 for a copy of the California Waste Exchange Directory of Industrial Recyclers and Listing of Hazardous Wastes Available for Recycling.

**List of Licensed Used Oil Haulers in California**

| COMPANY NAME | LOCATION | PHONE NUMBER |
|---|---|---|
| Action Cleaning Corp. | San Diego | (619) 233-1881 |
| All American Oil | Pleasanton | (415) 484-2470 |
| Allied Oil and Pumping | San Jose | (408) 263-2222 |
| Alviso Independent Oil | Alviso | (408) 262-2715 |
| Amberwick Corp. | Long Beach | (562) 426-6504 |
| American Oil Co. | Los Angeles | (213) 469-2277 |
| Artesian Oil Recovery | Oakland | (415) 839-4234 |
| Ashbury Oil Co. | Compton | (213) 321-1392 |
| Asbury Environmental | San Diego | (619) 298-1610 |
| Asbury Environmental | Fontana | (714) 350-1840 |
| B.O.R. Industries | West Sacramento | (916) 372-2342 |
| Balakian Drain Oil | Parlier | (209) 888-2682 |
| Bay Area Oil Recycling | Pacifica | (415) 359-0469 |
| Bayshore Oil Co. | Redwood City | (415) 366-6146 |
| Bay Side Oil II, Inc. | Santa Cruz | (408) 427-3773 |
| Blach Gold Industries | Ventura | (805) 981-4616 |
| Chico Drain Oil Service | Chico | (916) 345-9043 |
| Cole's Services | Bakersfield | (805) 322-8250 |
| Crane's Waste Oil | Lake Isabella | (619) 379-4377 |
| Diamond Oil Service | San Luis Obispo | (805) 543-4977 |
| Erickson Inc | Richmond | (510) 235-1393 |
| Express Oil Co. | Los Angeles | (213) 586-9399 |
| Frank W. Anderson | Calexico | (760) 357-3487 |
| G.I. Pumping Inc | Whittier | (562) 947-8088 |
| Gottlieb Waste Oil Co. | Concord | (415) 671-2566 |
| GTR Transportation | South El Monte | (818) 443-6744 |
| Hydro-Chem Services Inc. | San Francisco | (415) 822-1181 |

| | | |
|---|---|---|
| Industrial Services Co. | Los Angeles | (213) 262-9747 |
| Interstate Oil | Chino | (909) 393-4696 |
| IT Corporation | Torrance | (213) 378-9933 |
| J. Bennett Oil Co., Inc. | Riverside | (714) 687-4307 |
| J.C.'s Grease Buyers | Norco | (714) 736-1198 |
| J.W. Butler Oil, Inc. | Lancaster | (805) 946-1124 |
| Jack Stone Drainage Oil Co. | Long Beach | (562) 427-7216 |
| Jim Knight Drain Oil Service | Long Beach | (562) 434-2419 |
| K.S. Waste Oil Co. | Long Beach | (213) 731-7718 |
| Laidlaw Environmental | Los Angeles | (213) 585-5063 |
| Leach Oil Co., Inc. | Compton | (310) 323-0226 |
| M.C. Nottington Co of So Cal. | El Monte | (818) 286-3104 |
| Oasis Pumping | Whittier | (562) 944-5225 |
| Oil Conservation Serv., Inc. | Fresno | (209) 485-5495 |
| Otto Sprenger | Norwalk | (213) 864-1197 |
| Pacific Coast Oil Co. | Garden Grove | (714) 539-7002 |
| Pacific Fuel Service | Rancho Cucamonga | (714) 980-1537 |
| R. B. Enterprises | Ridgecrest | (619) 375-7727 |
| R.C.A. Oil Recovery | Fremont | (510) 794-5632 |
| Ramos Oil Recyclers | West Sacramento | (916) 371-2570 |
| Refineries Services, Inc. | Patterson | (209) 837-4205 |
| Reserve Fuel Services | Upland | (714) 981-2666 |
| Roaring Camp, Inc. | Felton | (408) 335-4484 |
| Rosemead Oil Production, | Santa Fe Springs | (213) 941-3261 |
| Rutherford/Pacific, Inc | Compton | (213) 637-1240 |
| Santa Clara Valley Oil | San Jose | (408) 259-5567 |
| Sheldon Oil Co. | Suisun | (707) 425-2951 |
| Shields Oil Co., Inc. | Covina | (714) 629-8985 |
| Southwast Trails | Long Beach | (562) 538-5730 |
| Speed's Oil Tool Serv., Inc. | Santa Maria | (805) 925-1369 |
| T & T Crane & Service | Ventura | (805) 648-3348 |
| Talley Brother, Inc. | Huntington Park | (213) 587-1217 |
| Triad Marine & Oil Cleaning | San Diego | (619) 239-2024 |
| U.S. Waste Oil Corp. | San Ramon | (415) 829-5288 |
| W-H Tank Lines, Inc. | Long Beach | (800) 439-1166 |
| Waste Oil Recovery System | Oakland | (415) 533-0750 |
| Western Asphalt Services | Bakersfield | (805) 322-5904 |
| Williams Tank Lines | Stockton | (209) 944-5613 |

**Waste Minimization and Recycling Opportunities**

{To be developed}

**Debris Avoidance**

It is generally not possible to avoid the generation of oily debris resulting from the contact of floating oil with waterborne solids, however, it is possible to minimize the generation of oily debris in the coastal intertidal zone if the anticipated area of oil impact can be cleaned prior to stranding of the spilled oil. This has been successfully accomplished in a small number of past spills.

Personnel can be deployed to remove debris from beach intertidal areas to above the high tide line in order to minimize oiling of stranded debris/trash. It is important to note that such crews are not likely to be certified as required under OSHA 1910.120 and can only perform this task prior to the stranding of spilled oil. An Industrial Hygienist and/or Health & Safety specialist should be consulted regarding the limitations of these crews and the effective establishment of exclusion zones in the area of beach impact.

**Selection of Personal Protective Equipment**

Depending upon climatic conditions and material compatibilities of personal protective equipment (PPE), waste can be minimized through the selection of reusable equipment, when possible. For instance, the use of reusable PPE (such as gloves and boots) instead of disposable PPE can minimize the generation of the oil-contaminated disposable PPE, as long as such equipment use is approved by the site safety officer. Such decisions should be made early in the response process in order to minimize the generation of contaminated PPE which is generally considered a hazardous waste and managed at a Class I hazardous waste management facility.

**Recovered Oil and Oily-water**

In order to maximize skimmer efficiency and effectiveness, water should be decanted to the spill impact area with the approval of the FOSC and relevant state agency representatives. Operational standards (e.g., decanting only in the impact area where water depth is sufficient; no free oil) should be established as soon as skimming is initiated. In federal waters, decanting can be approved through a request to the FOSC. As discussed earlier, in state waters approval must be secured from the Regional Water Quality Control Board (see the MOU between the SWRCB and OSPR).

Both oil and oily-water recovered from skimming operations should be off-loaded to facilities (i.e.; terminals, refineries) where it can be effectively managed as a material, or recycled as a waste stream at an off-site recycling facility (i.e.; commercial refiners, reclaimers, recyclers). These facilities may be able to provide temporary waste storage in their tank or container storage areas. Prior to commencing any storage activities, however, the facility may have to obtain an emergency permit from the DTSC (approval is usually over the phone, followed by the appropriate paperwork in the mail). Additionally, any oiled debris that is recovered along with the skimmed oil must also be maintained in a secure, temporary waste storage area until it is sufficiently characterized for final disposition.

**Sorbent Use/Reuse**

Synthetic sorbents (i.e., pads, sweeps, booms) have become standard response materials in the "mechanical recovery" of spilled oil. Their oleophilic, hydrophobic character makes them efficient at separating oil and water and they are routinely used to recover oil from solid surfaces as well (e.g., rubble, cobble and boulder shorelines; equipment/gear; vessels; etc.). Since oiled sorbent material often constitutes a substantial percentage of the oily solid waste generated during spill response and cleanup, opportunities for minimizing this waste volume should be considered.

Some sorbents are designed to be reusable (i.e., mechanized rope-mop skimmers) or can be recycled on-site with inexpensive gear (e.g., appropriate barrel-mounted wringers). Sorbent manufacturer's instructions should be followed regarding the limits of effective reuse for their individual products. It is also possible to replace sorbent sweeps and booms with recyclable boom and other appropriate gear in circumstances where floating oil can be efficiently recovered without generating oiled sorbents. For example, in good-access, low energy shoreline areas (harbors, bays, inlets), it may be possible to use containment-boom and recover the trapped oil with vacuum trucks instead of contaminating large volumes of sorbent.

**Petroleum-contaminated Soil Recycling and Reuse**

While the volume of petroleum-contaminated soil associated with coastal spills is generally lower than such volumes resulting from large inland spills, opportunities for recycling/reuse should be considered. For soils satisfying the waste profiling requirements of the state and commercial facilities, beneficial reuse as daily landfill cover after appropriate treatment is an available option in California (see Response Resources list). Recycling of oil-contaminated soil as aggregate in cold-mix and hot batch asphalt is available at four facilities in the State of Washington. Furthermore, a recently completed study of the incorporation of oily/solid residuals into construction materials concluded that a large market exists in California and that these recycling/reuse opportunities should be pursued and encouraged. It is important to note that both the costs and benefits of such recycling (less than $100/ton and low future liability) versus disposal in a California Class I or II disposal facility (greater than $100/ton and moderate to high future liability) are substantial. Removal of contaminated soil from temporary storage will require the authorization Unified Command, FOSC, or SIC.

**Temporary Storage**

To expedite removal of spilled oil, refined products, and contaminated materials from marine waters during an emergency-response, containment activities (to include temporary waste storage) may be conducted at appropriate on-shore locations [22 CCR 66270.1(c)3]. The transportation of oil and contaminated material to temporary waste storage sites during an emergency response is exempt from transportation and manifesting requirements, per the draft MOU between OSPR and DTSC (these requirements are also exempted per 22 CCR 66263.30 and/or 66263.43 for transportation-related emergency responses.

During an immediate response, all oil and/or oily materials may be recovered, transported, or transferred to temporary waste storage sites and are exempt from any hazardous waste generator and facility permit requirements for a period of 30 days, per the draft MOU between OSPR and DTSC. Additional 30-day extensions may be granted by DTSC, under appropriate circumstances.

Temporary storage sites can be an area or facility approved by the IC or Unified Command for characterizing and/or temporarily storing recovered oil and/or oily materials used, collected, or recovered during an oil spill response. Such an area may include, but is not limited to, permitted or interim status hazardous waste storage facilities, other non-permitted facilities, vessels, barges, tanks, vacuum trucks, barrels, containers, storage piles, or other appropriate containment methods and locations that may be used to hold recovered oil and/or oily materials. Temporary storage sites need not be owned, operated, or leased by the RP. Temporary storage sites that are on-shore should be established at locations that are convenient to the recovery operations for the temporary storage of recovered petroleum products, and contaminated materials and debris. Sitting of the temporary storage site, however, must be done with the concurrence of the following:
DTSC [The DTSC duty officer can be contacted at one of the following phone numbers: Region 1 (Sacramento) @ 916-255-3564; Region 2 (Oakland) @ 510-540-3739; Region 3 (Glendale) @ 818-551-2830; and Region 4 (Long Beach) @ 562-590-4968.]

California Coastal Commission Oil Spill Program: for information on emergency permits for temporary storage sites within the coastal zone call the CCC Oil Spill Program, Deputy Director 415-904-5205 or 24 hour cell phone 415-693-8375.
Regional Water Quality Control Board (RWQCB), and
Local health, fire and emergency services departments.
If a Unified Command is established, OSPR will facilitate the contact of the state and local government agencies through the Liaison Officer.

**Initial Treatment**

Petroleum and petroleum contaminated cleanup materials can potentially be treated at the temporary storage site. One of the treatment process that may be used is Transportable Treatment Units (TTU). The most likely treatment process undertaken with a TTU will be separation of water from collected petroleum. Another treatment method employed for separating water on-site is decanting water from temporary storage tanks.

Any water generated through the separation of petroleum and seawater may be potentially discharged to a sanitary sewer system or back to marine waters. A discharge to the sanitary sewer will require a permit from the local sanitation district, which will establish effluent requirements for the discharged water. Should a sanitation district not allow the discharge of water to its system, the recovered seawater would either be discharged back to the adjacent marine waters or transported off-site for disposal. The discharge of recovered seawater to state waters will require a NPDES permit from the local RWQCB, if it isn't under the scope of the OSPR/SWRCB MOU. A portable incinerator may be another type of TTU available during a spill response for use with contaminated material. The use of an incinerator will require a permit from DTSC and the local air pollution control district or air quality management district. The potential use of any TTU and regulatory standards must be discussed with DTSC.

**Characterization of Recovered Material**

Recovered petroleum and contaminated debris not recycled must be characterized to determine their waste classification before the waste can be shipped to a proper waste management facility for final disposition. The actual testing may be conducted on representative samples of each type of waste by a State of California certified hazardous waste laboratory.

It is the responsibility of the generator , or the responsible party (RP), to have the recovered petroleum and other contaminated materials accurately characterized as either hazardous or nonhazardous for proper disposition [22 CCR 66260.200(c)]. A generator who incorrectly determines and manages a hazardous waste as non-hazardous is in violation of the hazardous waste requirements and may be subject to DTSC enforcement action.

According to 22 CCR 66264.13 and 66265.13, before an owner or operator of a treatment, storage, or disposal facility transfers, treats or disposes of any hazardous waste, the owner or operator shall obtain a detailed chemical and physical analysis of a representative sample of the waste. An analysis of the waste, therefore, must be provided to the hazardous waste management facility (HWMF) via a profile sheet, which can be obtained from the HWMF. The HWMF then determines whether or not the waste can be accepted prior to its shipment. State criteria for characterizing a waste hazardous or nonhazardous are found in 22 CCR 66261.10 and 66261.20.

Federal criteria are presented in 40 CFR 261.30-261.33 (see Figure E.VI.2). These criteria can apply to any oily-water; sorbents, booms, and debris generated as a result of an oil spill cleanu p. Based on waste characterization, the wastes can be further defined as either a Federal Resource Conservation and Recovery Act (RCRA) waste (hazardous waste regulated under federal regulations), a non-RCRA waste (hazardous waste regulated under California regulations only), or a non-hazardous waste. Be aware, however, that some non-hazardous wastes may be defined as a "designated waste" per 23 CCR 25522,and should be managed accordingly. Once the waste is characterized, disposition options can then be selected. Removal of recovered material from temporary storage will require authorization by the Unified Command, FOSC, or SOSC.

**List of Licensed Oil Recyclers in California**

| COMPANY NAME | LOCATION | PHONE NUMBER |
|---|---|---|
| Advanced Environmental, Inc. | Fontana | (909) 356-9025 |
| Chem-Tech Systems, Inc. | Los Angeles | (213) 268-5056 |
| DeMenno/Erdoon | Compton | (213) 537-7100 |
| Evergreen Oil, Inc. | Newark | (415) 795-4400 |
| Industrial Service Oil Co. | Downey | (562) 869-9667 |
| Laidlaw | San Jose | (408) 451-5024 |
| Ramos Environmental | West Sacramento | (916) 371-5747 |

Advanced Environmental, Inc. (909) 356-9025
13579 Whittram Avenue
Fontana, CA 92335-2950

Demenno/Kerdoon 2000 (310) 537-7100
North Alameda Street
Compton, CA 90222

Evergreen Oil (800) 972-5284
2355 Main Street, Suite 230
Irvine, CA, 92614

Industrial Service Oil Company, Inc. (562) 598-5577
P.O. Box 1158
Downey, CA 90240

For more information on these companies, see California Environmental Protection Agency, Dept of Toxic Substances Control Alternative Technology Division's DIRECTORY OF INDUSTRIAL RECYCLERS, 1991.

**Decanting Policy**

Oil recovered at sea typically contains significant amounts of seawater. In order to maintain the efficiency of the skimming process this water must be separated/decanted from the oil and discharged back to the ocean during recovery operations. Separated seawater typically contains elevated levels of hydrocarbons and thus the discharge of this material may constitute a discharge of a pollutant. This issue is presently being discussed with regulatory agencies to determine if a National Pollution Discharge Elimination System (NPDES) permit, or a waiver from the permit, is required before separated/decanted water may be discharged back into state waters. The "discharge" of separated/decanted water is recognized by the USCG On-Scene Commander as an integral part of offshore skimming operations and as an excellent waste minimization tool. Therefore, the USCG OSC or his/her representative may authorize the discharge of separated/decanted water back into the catenary area of a boom/skimming system outside of State waters (3 miles). The exception to this will be in NOAA Marine Sanctuary waters.

With the addition of the Monterey Bay National Marine Sanctuary a significant portion of the coastline is now part of the National Marine Sanctuary program. Other sanctuaries include Point Reyes/Farallones Island, Channel Islands San Miguel, Santa Cruz, Santa Rosa, Anacapa, Santa Barbara Island, Richardson and Castle Rock, and Cordel Banks. Federal law prohibits the discharge of material, such as separated water, to marine sanctuaries unless permitted by the Administrator of the sanctuary program. Negotiations are presently under way seeking pre-approval to discharge separated waters during an emergency response to oil spills within the sanctuaries. Until pre-approval is obtained, a permit for the discharge of separated water must be obtained from the Assistant Administrator of the Sanctuary Program (202-606-4122) before any discharge can take place.

**Sample Waste Management Plan**

Example:

WASTE MANAGEMENT PLAN
for the Careless Corporation Oil Spill
September 10 - 28, 1997

OBJECTIVES

To handle recovered oil, oily debris, and contaminated sand/dirt resulting from the subject oil spill so that the wastes do not cross-contaminate other areas that are clean. To ensure that all recovered oil and oiled debris are managed in accordance with state and federal regulations, while keeping operating costs down.

GENERATOR:

**Name:** Careless Corporation
Generator's EPA ID: 000 000 000

COLLECTION SITES

Collection Site Locations:

1. Yahoo Bay Yacht Club
1212 Wave Ave.,
Long Beach

2. Dolphin Beach Naval Storage Station
9875 Riptide Blvd.
Long Beach

Approximately 8 **Vacuum trucks** (with attached skimmers) will recover oil directly from collection points and off-load at the Careless Corp. Terminal (CCT), Tank #11-XTC (130,000 bbl capacity).
The Coastal On-Water (COW) **recovery barge** (45,000 bbl capacity) will be emptied tomorrow morning at the CCT. Four additional tanks are also available with a capacity of 175,000 bbl on an as needed basis. Currently, Tank #12-XTC (130,000 bbl capacity) is available to accept oil from the barge. The recovered oil off-loaded by both the barge and vacuum trucks will later be processed into gasoline at the Careless Corp. Refinery.

WASTE TYPE & MANAGEMENT METHOD

**Decanted Water**: Water that is decanted from offshore skimming operations will be released back to the ocean within the operational area, per the MOU between the State Oil Response Agency and the State Water Board.

**Recovered Oil:** Managed as a recovered product, and not a waste, as it will be used/reused as raw material as part of the process at the Careless Corp. Refinery.
Solid Oily Debris:

If non-hazardous (oiled dirt/sand, PPE, trash, wood, seaweed, etc.) = No-Waste, Inc. and Action Clean-Up Company will transport waste to the Union Pacific Railroad loading facility (245 Pacific Rim Drive, Wilmington) and shipped to WasteCo (class II landfill) located in-state.

If hazardous = transport to the Union Pacific Railroad loading facility in Wilmington and on to Burn-It Industries (class I Waste Management Facility) in Utah.

No-Waste is currently doing beach pre-cleanup, while Action Clean-Up and Wacco Waste Co. are available to be contracted out by Careless Corp. to do waste sampling, transport to lab, clean-up, and HW transportation, as needed. All three contractors are available for oily debris beach clean up in the event oil does impact the shoreline.

**Oily Sand/Dirt:** Sand and/or dirt that are oiled will be placed in bins stored at the temporary waste storage area (if no bins area available, the sand/dirt can be stockpiled at the staging areas - lined and covered with visqueen), until results of the samples reveal whether or not the oiled sand/dirt is hazardous or non-hazardous. If hazardous, will transport to Burn-It Industries; if non-hazardous, it will be transported to Ace Asphalt for use in their asphalt processes.

**Waste from Decon Operations:** Liquid Waste: Two Baker Tanks (each with a capacity of 500 bbls) will be located at each field staging areas/command posts. Oily water waste will be held in the Baker Tanks and off-loaded by vacuum trucks and transported to Cryer & Underwood in Wilmington for recycling. Solid Waste: Solid wastes resulting from decontamination operations will be placed in the bins labeled "Contaminated Waste "(which are already located at the temporary storage sites, next to the field staging areas/command posts) and will be managed the same way as the solid oily debris.

**Waste from Wildlife Rehab Operations:** Liquid Waste - All oily water recovered from rehab operations will be stored in a portable tank for further analysis/waste characterization. If the oily water is acceptable for re-use, it will be brought back to the Careless Corp. Refinery and used as a "material" in the refinery process. If not acceptable for re-use, the oily water waste will be discharged to the sewer with an approved NPDES permit (local sanitation district has already given approval). Solid Waste - All solid oily wastes from rehab operations will be placed in visqueen-lined roll-on/roll-off bins and will be managed the same as solid oily debris.

**Oiled Animal Carcasses:** Any oiled animal carcasses will be handled and managed by state Oil Response Agency wildlife personnel.

**WASTE MINIMIZATION:**
Handling of oiled wildlife and carcasses is not permitted by law unless under the direction of California Department of Fish and Game, Office of Spill Prevention and Response (OSPR) representatives who are responsible for wildlife rehabilitation and collection of carcasses for natural resource damage assessment (NRDA) investigations. The identification and location of OSPR representatives can be provided by the Unified Command Center. Collection, handling, and disposal should only proceed at the direction of OSPR which is the designated responsible trustee. RCP Appendices XXII (a) and (b), the California Wildlife Response Plan, provides details about handling and preservation of oiled wildlife and carcasses.

**Pre-beach cleanup:** Pre-beach cleanup of wood, seaweed and other debris prior to oil impacting the shoreline is being conducted by No-Waste, with Action Clean-Up and Wacco Waste are on stand-by. Conducting pre-beach cleanup in the coastal zone may require an emergency costal development permit from the California Coastal Commission.

California Coastal Commission Oil Spill Program: for information on emergency permits within the coastal zone call the CCC Oil Spill Program, Deputy Director 415-904-5205 or 24 hour cell phone 415-693-8375.

**Segregation of contaminated and non-contaminated wastes:** Roll-off bins will be labeled as either "Contaminated Debris" or "Non-Contaminated Debris", so as to avoid any cross-contamination.

**TEMPORARY STORAGE SITES**

**Temporary Storage Site Locations:** Yahoo Surf State Beach, Parking lot #8; and Dolphin Beach State Park, parking lot # 19. Both temporary storage sites are adjacent to the staging areas, and near the field command posts.

Ten roll-off bins lined with plastic sheet will be located at each temporary storage site. Each bin will be labeled "Contaminated Debris" and "Non-Contaminated Debris", so as to avoid any cross-contamination. Each bin will be numbered in a chronological manner as they are received on-site (i.e.: #1 - 10), and letters to identify the site (i.e.: "YS" for Yahoo Surf, "DB" for Dolphin Beach). The identification numbers should, therefore, look as follows: *YS-1, YS-2; DB-1, etc*.

Each bin will be further identified by origin of waste (e.g.: "Yahoo Yacht Club", etc.). Use duct tape and marker pen w/ indelible ink. Contents of bins will be assessed by Oil Response Agency and Careless Corp. representatives before transporting to an off-site facility. Bins will be marked as "hold" or "OK to transport" by the Oil Response Agency and Careless Corp. representatives. Assessment of bins may take up to 2 weeks, therefore, bins marked hold will be temporarily stored at the Careless Terminal, until the bins are assessed. A State Oil Response Agency representative will also witness gauges of Baker Tanks containing liquid wastes.

**Siting & Construction:** Appropriate state agencies (Oil Response, Water Board, Coastal Commission, and Toxic Substances) have approved the siting and construction of temporary storage sites prior to storage. All agencies have approved siting of temporary storage areas.

**Temporary Storage Site Permits Required:** State Toxic Substances Department and the Coastal Commission have granted emergency permits to operate the temporary storage sites as described above.

**DECONTAMINATION SITES**

Decontamination of response equipment (boat, boom, etc.) and personnel, as well as recreation and fishing boats, will be conducted at the following designated locations:

Yahoo Yacht Club
Ito Industries Dock
Mira Marina

**GAUGING OF RECOVERED OIL**

Skimmed oil from marine waters:

1. From COW vessels to Barge #119. A state Oil Response Agency representative will be on-scene to witness gauging. Barge #119 to Careless Terminal to off-load into Tank #12-XTC. A state Oil Response Agency representative will witness gauges, watercut, and will sample oil prior to any transfers. Additionally, Marine Terminal Safety Inspectors from the State Lands Commission-Marine Facilities Inspection Division will assist the state Oil Response Agency with gauging and oil transfer operations issues, as needed.
2. During Lightering of the damaged Barge, oil will be skimmed from damaged tanks. This oil will be handled SEPARATE from the recovered skimmed oil, as this is oil that has not been spilled.
3. Oil skimmed from the water at collection points will be transported to Careless Terminal Tank #11-XTC by vacuum truck. A Careless Corp. representative (or designee) will record each load amount and the collection point from which the vacuum truck came from. A state Oil Response Agency Representative will conduct daily spot checks.
4. State Oil Response Agency will witness all final closing gauges when transfers are finished.

**Recovered oil from the beaches:** . State Oil Response Agency will be assessing the amount of oil accumulated in the bins at the temporary storage sites along with the Careless representative (or designee). Bins will not leave the temporary storage sites until this has been completed.

**SAMPLING PROTOCOL**

**Protocol:** Sampling of the recovered oil and oily debris will be followed in accordance with the attached Sampling Protocol. Sampling will be conducted by the state Oil Response Agency and/or the Careless representative (or designee). All analytical results will be shared amongst Careless Corp., state Oil Response Agency, U.S. Coast Guard, and NOAA (NRDA Team)

**State Certified Hazardous Waste Laboratory:** Careless Corp. already has a contract in place with **Del Lago Analytical**. Representative waste samples will be analyzed for flashpoint, state metals, and TCLP EPA Method 8240 to determine whether or not the waste is hazardous.

**TRANSPORTATION**

**Highway:** Action Clean-Up and/or No-waste. Both are registered hazardous waste haulers and are certified by the state Toxic Substances Department.

**Rail:** Union Pacific

Recovered oil that is considered a hazardous waste does not need a manifest to transport from the spill site to theTerminal, as it is a transportation-related spill incident and is exempt from that requirement. Recovered oil that is not considered a waste, but a material to be used/reused at the terminal, does not require manifests for transportation from the spill site to the Careless Terminal. Manifests will be used when transporting hazardous wastes (and a Bill of Lading for non-hazardous wastes) from the spill site and/or the Careless Terminal to the Wilmington Railroad transfer facility and then by rail to Burn-It Industries.

**OFF-SITE WASTE MANAGEMENT FACILITY**
**Burn-It Industries**, located in Utah.
**Ace Asphalt**, located in Azusa, California
REQUIRED PERMITS/GOVERNMENT AGENCY CONTACTS
**State Toxic Substances Department** @ (800) 555-4998. To obtain emergency permits for the temporary storage sites. The Toxic Substances Dept. has granted an emergency permit over the phone for the temporary storage sites.

If you can't find the answer to your question on our Web site, or want to walk through regulatory requirements with a live person, our Regulatory Assistance Officers will be able to help. Call (800) 72TOXIC - that's (800) 728-6942. From outside California, call (916) 255-3618.

**California Coastal Commission, Oil Spill Program**, has granted an emergency permit for work at temporary storage sites within the coastal zone, and will issue the permit by phone or in person by 5pm Monday through Friday. Call the CCC Oil Spill Program, Deputy Director 415-904-5205 or 24 hour cell phone 415-693-8375.

## Decontamination

This section identifies general guidance procedures to be followed for vessels and equipment involved with oil spill response operations. Because these operations may involve operating within oiled waters or recovery operations, we may assume that vessels, equipment, machinery, and other gear will be impacted with oil. This plan will be used for all vessels and equipment either contaminated or suspected of being contaminated with oil to return to a non-oiled state. Note: Plan should identify decontamination location or site.

### Concept Overview

In view of the extensive equipment inventory involved in a response effort, the On Scene Coordinator will establish decontamination zones.

All contaminated items will be cleaned to a condition of cleanliness mutually agreed upon by the Unified Command and the equipment owner.

The primary focus of this operation will be to expedite cleanup of oiled vessels and response equipment in a safe, organized and efficient manner while minimizing further damage to the environment and waste generation.

### Equipment Decontamination

Equipment decontamination will occur in three phases:

1. Decontamination of equipment for immediate re-utilization or relocation.

2. Recovered oil is to be off-loaded from OSRV's, barges, tow-able storage bladders and cargo tanks to portable storage tanks pending disposal in accordance with Section 3240 - Disposal.

3. Full decontamination prior to demobilization.

4. An "Equipment Decontamination Form" has been provided to track equipment undergoing decontamination, it is Enclosure (A) of this section.

**Decontamination Methods**

Equipment decontamination will be done as follows:

¨ The Unified Command will approve the on water decontamination of vessels.

¨ On water decontamination of large oil spill response vessels (OSRVs) to be conducted at berth and/or other satellite locations, as needed.

¨ Decontamination of portable equipment and small vessels less than 32', to be conducted in bermed areas as identified on the site layout diagram.

**Oil Spill Response Vessel (OSRV)**

Decontamination of large OSRVs is to occur on site. Each vessel will be placed inside standard contractor containment boom (8x12) during decontamination process. These decontamination zone areas will utilize a boom anchoring system to prevent the collapse of the perimeter protection during tidal changes and surges.

Decontamination plan will be created for each OSRV. These plans will be added as appendices to this document. Preplanning for protection of adjacent areas shall be accomplished in order to minimize cross contamination. Floating oil from sheen-emanating vessels will be minimized with sorbents as necessary to reduce potential loss outside the containment boom. Floating sorbent materials shall be utilized in natural collection points as needed to retain free-floating oil. These sorbents will be tended daily.

Mobile decontamination teams will be assigned on an as needed basis. A mobile deacon team will be comprised of one supervisor, six laborers, and a designated representative. A vessel specific plan will be developed for each OSRV to ensure that skimming equipment, storage tanks, piping systems, deck gear and the vessel hull are cleaned to agreed upon standards. A marine chemist may be utilized to determine tank entry safety.

**Portable Equipment and Containment Boom**

A paved area and warehouse with appropriate space shall be identified as the final decontamination area. A support zone will be established nearby to be used for consumable supplies.

Using the Equipment Decontamination Form, Enclosure (A) of this section, either complete each section or indicate where the required information is located. Use additional sheets if more space is needed for any item.

As equipment enters the decon area through an established security checkpoint it will be recorded and tracked using the Equipment Decontamination Form.

At the beachside retrieval point, Geo-cloth or PVC (like) will be used to protect the shoreline material to prevent secondary contamination. In addition, abrasion pads will be used across the beach to prevent boom drag and secondary contamination. Large ocean boom (>30") will be retrieved by a portable crane to avoid shoreline abrasion.

A priority assessment will be attached to each piece of equipment to ensure a timely flow of equipment through the cleaning process. Logistics section will assign prioritization of equipment to be cleaned. Depending upon priority, equipment will be directed to either a bermed holding area or to immediate cleaning into one of the two decontamination pools. A Hypalon liner or like (secondary containment) will be placed under each pool with the perimeter sufficiently bermed to allow for wastewater and rainwater evacuation. All wastewater will be pumped to a poly portable storage tank for disposal. All pumps, hoses and piping will be left in place to facilitate speedy evacuation of retain. The final disposal of wash water, oiled sorbents and materials will be pursuant to the responsible party's disposal plan.

**Cleaning Solutions**

A citrus based cleaning solution (Simple Green, CitrusSolve, PES51 or like) will be utilized as a degreaser and will be applied by either an airless sprayer or hudson sprayer as applicable.

Like Decanting, before cleaning on-water equipment, permission must be obtained from the Federal or State On-Scene Coordinator.

Actual cleaning will utilize a Landa (or like) hot/cold pressure washer with a temperature range to 220F and a pressure rating up to 3000 psi. Every attempt will be exercised to mitigate noise generating equipment by placing it in insulated areas.

Oily waste/wash water will be transferred to poly storage tanks by means of a Wilden M15 pneumatic diaphragm pump.

By utilizing the PES51 product, which will not emulsify the oily water, it is possible to re-circulate cleaning agents back into the cleaning cycle. As each piece of equipment is cleaned, its progress is updated in the equipment resource database.

Once the piece has been determined clean by the responsible party equipment owner, the equipment is transferred to the designated "clean" holding area.

As the cleaned equipment exits the decon site it is logged out on the database. A status report will be printed daily as needed.

**Equipment and Supplies**

The following list of equipment and supplies will be needed for the Decontamination Group operations:

**Machinery and Equipment:**

| | |
|---|---|
| 4 | Landra Pressure Washers w/200' hose |
| 10 | Hose, Suction 3" x 25' |
| 25 | Hose, Discharge 3" x 25' |

| | |
|---|---|
| 4 | Wilden M15 Air Diaphragm Pumps |
| 4 | Portable Air Compressors, Diesel |
| 20 | Fire Hose, 1 1/2" x 50' |
| 1500 | Containment Boom, (8"x12"), feet |
| 2 | Generator, Diesel, 7.5kw |
| 4 | 6500 Gallon Poly Storage Tanks |
| 2 | Airless Sprayer, Paint Type |
| 5 | Hudson Sprayer, Metal Can |
| 2 | Shop Vac, Industrial |
| 2 | Coppus Blower |
| 2 | 25 Ton Mobile Cranes with Straps & Spreader Bars |
| 2 | 10K LB Forklifts |
| | Refueling Vehicle |
| | Transportation Equipment (Flatbeds, Trucks, etc) |
| | Personnel Transportation |
| | Vessel Platforms for Hull Cleaning |
| 3 | Vacuum Trucks |

Tools

Small Tool Kits

Shovels, Plastic, Non Sparking

Scrapers

Ladders

Squeegees

Plastic Hand Scoops

Push Brooms

Hand Carts

Ice Coolers, 20-30 Gallon

Water Coolers

Extension Cords

Utility Knives

Assorted Fire Hose Fitting and Wash Nozzles

Barrel Grapple

Fuel Cans, 5 Gallon

Caution Tape

Barrel Pumps

Sorbents

Sorbent Pads, Bales

Sorbent Sweep, Bales

Sorbent Role, Spc Sxt 638

Oil Snare, on Rope

Consumables

Ice

Water

Rope, 3/8 Poly

Hand Cleaner

PES 51, Citrus Based Cleaner

Duct Tape

Motor Oil

Diesel Fuel

Gatorade (or similar)

Office Supplies

Calculator

Cellular Phones

Radios, VHF

Portable Computer w/Printer & Modem

Fax Machine]

Tables

Folding Chairs, Metal

**Site Demobilization**

Upon final breakdown and closure of the decontamination operation, a joint operation survey of the facility will be conducted by the responsible party, USCG and other participating agencies. Any signs of oil escapement past the secondary containment will be thoroughly cleaned, by hot water pressure washing or other appropriate methods, to a mutually agreed condition of cleanliness.

**Sample Decon Form**

| Equipment Decontamination Form | | | | | | |
|---|---|---|---|---|---|---|
| Company | | | | | | |
| Contact Person | | | By | | | |
| Phone | | | Contract | | | |
| Item | Quantity | Unit | Location | Date Started | Date Released | FOSC |
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## 3260 Dispersants

*The California Dispersant Plan, Appendix XII of the RRT IX Regional Contingency Plan, details in full the agencies, authorities, and process involved in making a dispersant use decision in US and State waters. (http://www.dfg.ca.gov/ospr/fed_region_9.aspx).*

The most common technique for removing spilled oil from marine surface waters involves mechanical skimming devices, which typically remove less than 20% of the spilled petroleum (National Research Council [NRC], 1989). The second most commonly considered method is the use of chemical agents (*e.g.*, dispersants) to disperse oil into the water column. The effectiveness of this approach can range from zero to 100 percent, depending on the type of petroleum spilled, the dispersant used, oceanographic conditions, and the approach employed to estimate effectiveness (NRC, 1989).

While dispersant use can be controversial, some operational advantages are that dispersants can be applied in offshore or remote areas where the use of skimming vessels may be limited or response times protracted, in high sea states where skimming vessels may not be able to operate, and via aerial application to more quickly address larger areas. While moving dispersed oil into the water column does not alleviate the risk of impacts to that environment, it does have the potential to accelerate cleanup of spilled oil on the water surface and at the same time reduce the environmental risk of oil- related impacts on more environmentally sensitive areas and species, including the intertidal, tidal inlets, marshes and wetlands, coastline areas, and surface waters where endangered marine mammals and large concentrations of sea birds might exist.

Studies indicate that the present generation of dispersants do not themselves present a significant threat to marine life, but their action to move more oil as small droplets into the water column can present an acute toxicity to sensitive species in the upper water column (and to about 30' below the water surface). When used in deeper offshore waters, these effects will be relatively short term, as the dispersed oil is typically diluted within hours to levels below those expected to product impacts on the water column community. Before a decision is made to use dispersants, the trustee agencies will determine if, in exchange for this impact to the upper water column, there is an expected "net environmental benefit" to the more sensitive habitats and oil-sensitive species, which would otherwise be oiled if unrecovered oil was left on the surface to drift inshore and strand on beaches. Net Environmental Benefit Analyses (NEBA) have already been conducted for all marine areas of the California coastline (0-200 miles from shore) and for San Francisco Bay. Results of the NEBAs are included in the California Dispersant Plan, and are revisited during a spill response to fine-tune the information on sensitive species and habitats in the spill impact area to make sure the NEBA findings in the planning phase are still current and applicable to a given response.

Dispersant effectiveness is difficult to predict in advance due to the many controlling variables (*e.g.*, type and weathered state of the spilled oil, the dispersant used, sea state, application efficiency). The use of SMART (Specialized Monitoring of Applied Response Technologies) is part of the California Dispersant Plan, and will be used as appropriate during real spills to estimate the effectiveness of a dispersant application, and to make informed decisions about whether continued application is warranted.

Dispersants can also in some cases be considered for use in conjunction with mechanical skimming (and *in-situ* burning, Section 3270) to increase the rate of surface oil removal.

**RRT Dispersant Use Policy**

The RRT has approved two types of dispersant use zones in California:

1) Dispersant Pre-Approval Zones.
   All waters 3-200 nm from any shoreline except those within a National Marine Sanctuary, or within 3 nm of the California/Mexico border. This pre-approval is only extended by the RRT to the Federal On-Scene Coordinator (OSC).

2) RRT Incident-Specific Approval.
   Required for all other waters (*e.g.*, within state waters, including bays and estuaries, and within 3 nm of the California/Mexico border).

*It is expected that the RRT will also require that any subsurface use of dispersants, or a surface use extending beyond 96 hours, will also need to come to the RRT for their incident-specific approval.*

Only dispersants that are on the federal NCP Product Schedule and licensed by the State of California may be used.

Conditions of dispersant use apply, even within the pre-approval zone. These and other recommended practices and processes are detailed in full in the California Dispersant Plan.

During a spill, dispersant use decisions (as well as other ART decisions) are run from under the Environmental Unit in Planning (see Section 4600), facilitated by the OSPR ART Technical Specialist and, as available, the NOAA SSC. Both are members of the Region IX RRT, and will be the primary persons tasked with working through the dispersant use flowcharts and checklists, and briefing the FOSC/UC and RRT with their recommendations. If a decision is made to use dispersants, a Liaison position between Planning and Operations will be established to facilitate some operational aspects of that decision, with a focus on ensuring that all conditions of dispersant use are being met, and all Best Management Practices, effectiveness monitoring, water/toxicity sampling, wildlife monitoring, etc., are incorporated and used, as appropriate to each incident.
Other aspects of dispersant use (*e.g.*, public outreach and risk communication, seafood safety) can continue to call on the technical and process expertise available through the specialists within the Environmental Unit.

## 3270 In-Situ Burn

*The In-Situ Burn Plan, Appendix XIII of the RRT IX Regional Contingency Plan, details in full the agencies, authorities, and process involved in making an in-situ burn use decision in US and State waters. (http://www.dfg.ca.gov/ospr/fed_region_9.aspx)*

At the time of an oil spill, the FOSC is authorized to evaluate the use of *in-situ* ("controlled") burning. The use of *in-situ* burning should be considered when it will lessen the overall environmental impact of the spill, and when permitted under specified circumstances. A distinct advantage of *in-situ* burning of oil is that it permanently removes oil from the surface, with little or no impacts to environmentally sensitive resources outside the burn area (*e.g.*, outside the air space, off the water surface, and deeper than the surface microlayer of the water column). Disadvantages are that successful burns create a very visible and dark soot plume, which will need to be monitored to ensure particulate matter within the plume does not exceed allowed standards, and that it is not drifting toward human populated areas or occurring within the minimal distances from shore established by local air districts. *In-situ* burning of oil also poses some operational constraints: the oil must first be contained (which can be difficult in higher sea states) within specialized fire boom (not currently generally available in California), winds must be favorable, the oil must be thick enough and not too emulsified to burn, and trained burn teams and monitors (wildlife, SMART, air) should be available before and during most burn events.

*In-situ* burning can also in some cases be considered for use in conjunction with mechanical skimming (and chemical dispersants, Section 3260) to increase the rate of surface oil removal.

*In-situ* burning can also in some cases be considered for use in conjunction with mechanical skimming (and chemical dispersants, Section 3260) to increase the rate of surface oil removal.

### 3270.1 **R R T In-Situ Burn Policies**

The RRT has approved two types of *in-situ* burn use zones in California:

1) RRT *In-situ* Burn Pre-Approval Zone.
All waters 35-200 nm from any California shoreline. **This pre-approval is only extended by the RRT to the On-Scene Coordinator (OSC).** This Pre-Approval is conveyed in a Letter of Agreement among the Coast Guard, EPA, NOAA and DOI, and may be found in its entirety in Appendix XIII of the RCP.

2) RRT Incident-Specific Approval.
Required for all other California waters (*e.g.*, 3-35 nm from shore, and within state waters, including bays and estuaries), and on land. A case-by-case checklist for RRT *in-situ* burn approval, as well as other decision support material, is in Appendix XIII of the RCP.

During a spill, *in-situ* burn use decisions (as well as other ART decisions) are run from under the Environmental Unit in Planning (see Section 4600), facilitated by the OSPR ART Technical Specialist and, as available, the NOAA SSC. Both are members of the Region IX RRT, and will be the primary persons tasked with working through the *in-situ* burn use flowcharts and checklists, and briefing the UC and RRT with their recommendations. If a decision is made to conduct an *in-situ* burn, a Liaison position between Planning and Operations will be established to facilitate some operational aspects of that decision, with a focus on ensuring that all conditions of *in-situ* burn use are being met, and all Best Management Practices, effectiveness monitoring, air and water sampling, wildlife monitoring, etc., are incorporated and used, as appropriate to each incident.

## 3280 Bioremediation

*Appendix XIV of the RRT IX Regional Contingency Plan describes the agencies, authorities, and process involved in making a decision to use bioremediation for oil spill incidents in US and State waters, and on land. (http://www.dfg.ca.gov/ospr/fed_region_9.aspx)*

The primary objective of oil spill abatement and cleanup is to reduce the effect of spilled oil on the environment. Physical removal of oil is the preferred method. However, mechanical recovery may be limited by equipment capability, weather and sea conditions, spill magnitude, safety considerations, site accessibility, and surface load restrictions. In addition, efforts and equipment used for mechanical recovery of oil, especially in sensitive habitats such as marshes and wetlands, may prove to be more destructive to these environments than the original contamination with oil, leaving bioremediation as the more preferred option for consideration.

Bioremediation is a treatment technology that enhances existing biological processes to accelerate the decomposition of petroleum hydrocarbons and some hazardous wastes. Bioremediation has been used extensively in waste water treatment of spilled oil. Research in Alaska following the Valdez incident suggested that shoreline treatment by nutrient enhancement significantly increased degradation rates of oil, compared to untreated shoreline areas. The benefits of bioremediation, however, have not been adequately demonstrated through field applications during spills post-Exxon Valdez (in most cases, native oil-eating microbes effectively degrade the residual oil without additional input).

The prospect of bioremediation providing increased rates of oil degradation with minimal input of human effort is attractive. However, the technology is time consuming, unproved in open water environments, and probably best suited to the treatment of stranded oil on specific types of shorelines and in marsh habitats. At present, bioremediation should be viewed as a polishing agent for the final stages of cleanup rather than as a primary response tool, especially considering the slow rates of reaction to degrade the oil.

### 3280.1 RRT Bioremediation Policy

It is RRT policy that bioremediation should be used strictly as a shoreline remediation tool with a preference for nutrient enhancement and without the introduction of indigenous and/or non-indigenous microbes.

Only bioremediants that are on the federal NCP Product Schedule and licensed by the State of California may be used.

During a spill, decisions involving the use of bioremediation (as well as other ART decisions) are run from under the Environmental Unit in Planning (see Section 4720.7), facilitated by the OSPR ART Technical Specialist and, as available, the NOAA SSC. Both are members of the Region IX RRT, and will be the primary persons tasked with working through the bioremediation flowcharts and checklists in Appendix XIV of the RCP, and briefing the UC and RRT with their recommendations.

However, based on current knowledge and research, the use of bioremediation will generally not be advised as a response tool to remove bulk oil, but reserved and further researched as a way to removed stranded oil from sensitive habitats after all threats of re-oiling have been mitigated.

## 3290 Use of Oil Spill Cleanup Agents (OSCA)

*Appendix XI of the RRT IX Regional Contingency Plan describes the agencies, authorities, and process involved in making a decision to use OSCAs for oil spill incidents in US and State waters, and on land. (http://www.dfg.ca.gov/ospr/fed_region_9.aspx)*

Chemical dispersants and bioremediants are two types of oil spill cleanup agents (OSCAs) already addressed in sections 3260 and 3280, respectively. Generally, OSCAs are defined by the State of California as:

*" …a chemical, or any other substance, used for removing, dispersing, or otherwise cleaning up oil or any residual products of petroleum in, or on, any waters of the state. This category of substances would include surface washing agents, dispersants, gelling agents, herding agents, emulsifiers and de-emulsifiers, chemical booms, sorbents and bioremediants."*

To be considered for use in California, OSCAs must be both:

1) Listed on the federal EPA NCP Product Schedule (http://www.epa.gov/emergencies/content/ncp/index.htm), *and*

2) Licensed by the California Department of Fish and Wildlife, Office of Spill Prevention and Response (OSPR) (http://www.dfg.ca.gov/ospr).

The EPA exempts all sorbent and sorbent-type products from listing procedures. Sorbents are not automatically exempted from the State licensing process – they must first prove they are "inert" according to definitions in State Government Code Section 8670.13.1(b) before a state license exemption will be granted.

Once an OSCA is appropriately listed and licensed, it must still be approved for use by the RRT. If the use is in state waters, approval must also be granted by the OSPR Administrator.

Some cases of OSCA use, such as dispersants, have already been reviewed by the RRT, and pre-approval granted by the RRT to the OSC for specified areas and conditions of use. All other OSCA use (for example, use of surface washing agents to clean oiled rip-rap or ship hulls) must be approved for use on a case-by-case basis.

During a spill, decisions involving the use of OSCAs (as well as other ART decisions) are run from under the Environmental Unit in Planning (see Section 4600), facilitated by the OSPR ART Technical Specialist and, as available, the NOAA SSC. Both are members of the Region IX RRT, and will be the primary persons tasked with working through the OSCA use flowcharts and checklists in Appendix XI of the RCP, and briefing the UC and RRT with their recommendations. The Incident Commander/Unified Command will then determine the appropriateness of any particular OSCA use during a given spill incident, and will forward their request to use an OSCA to the RRT for RRT decision. If the OSCA use is in state waters, the OSPR Administrator will also issue a letter approving (or refusing approval) of an OSCA in a response. OSCA approvals (from either/or the RRT and the OSPR Administrator) may also stipulate conditions of use.

## *3300* Emergency Response

The priority response objective is protection of public health and safety including response personnel. Protection of the environment and public welfare (infrastructure) are also important response objectives, but are subordinate to public and responder safety.

Refer to Section 3003.01 of the Regional Contingency Plan.

### 3310 Search and Rescue (SAR)

Search and Rescue (SAR) efforts primarily focus on finding and assisting persons in actual or apparent distress.

Refer to Section 3003.01.1 of the Regional Contingency Plan.

**SAR Area Resources**

Search and Rescue resources may be provided by local U.S. Coast Guard units and/ or county and local fire/lifeguards, law enforcement agencies, or other agency with jurisdiction and capabilities.

Refer to IMH Chapter 13 and Section 3003.01.1 of the Regional Contingency Plan.

### 3320 Salvage/Source Control

The primary objective in any salvage scenario, whether a single event casualty or combination of casualties, is to minimize the risk to human health, the environment, and

property. The following six types of casualties are listed in order of frequency: Hull or Machinery Damage, Stranding or Grounding, Collision, Fire and Explosion, Allision, Stress Fractures. Common to all casualties is a need for the quick and substantial allotment of response resources. The Unified Command will set the objectives of a vessel casualty response. Early dissemination of an accurate assessment of the vessel's condition and deployment of appropriate response resources is essential.
Refer to Section 3003.01.2 of the Regional Contingency Plan.

**Assessment and Survey**

The evaluation and interpretation of information gathered from a variety of sources (including weather information and forecasts, computerized models, GIS data mapping, remote sensing sources, ground surveys, etc.) that, when communicated to emergency managers and decision makers, can provide a basis for incident management decision making.

Refer to IMH Chapter 25 and Section 3003.01.2 of the Regional Contingency Plan.

**Stabilization**

Refer to Section 3003.01.2 of the Regional Contingency Plan.

**Specialized Salvage Operations**

See 3320 above.
Refer to Section 3003.01.2 of the Regional Contingency Plan.

**Types of Equipment Required**

The equipment required in an incident ranges from personal protective, fire fighting, medical, decontamination, communications, pollution control, to any specific special equipment to mitigate further escalation of the incident.
Refer to Section 3003.01.2 of the Regional Contingency Plan.

**Salvage Guidelines**

Once enough information has been gathered to proceed with a decisive action plan, the USCG Operational Commander, IC or UC will set forth the operational period objectives.

(a) These objectives *may* include but are not limited to:

a. Evacuate crew
b. Control vessel movement
c. Get response personnel and equipment on-scene
d. Extinguish shipboard fire
e. Stop/slow flooding
f. Stop/slow vessel movement toward potential hazards
g. Contain pollution
h. Identify suitable port of refuge
i. Create a salvage plan
j. Mitigate potential impacts of the casualty on other vessel traffic and port activities

(b) Evaluate risk to public- i.e., hazardous material release, air quality, etc.

(a) Prepare and approve press release
(b) Establish a safety zone
(c) Contact all appropriate Federal, State and local agencies, as well as foreign governments
(d) Evaluate/mitigate the environmental impacts of incident
(e) Identify an appropriate lightering vessel

Refer to Section 3003.01.2 of the Regional Contingency Plan.

### 3330 Marine Fire Fighting

Coast Guard guidance on Marine Firefighting can be found in the Coast Guard Marine Safety Manual Volume 6 (COMDTINST M16000.1)Among the provisions of the Ports and Waterways Safety Act of 1972 (PWSA) (33 U.S.C. 1221 et seq.) is an acknowledgment that increased supervision of port operations is necessary to prevent damage to structures in, on, or adjacent to the navigable waters of the U.S., and to reduce the possibility of vessel or cargo loss, or damage to life, property, and the marine environment.

The Coast Guard has traditionally provided fire fighting equipment and training to protect its vessels and property. Commanding Officers of Coast Guard units (COTP's, Groups, Cutters, Stations) are routinely called upon to provide assistance at fires on board vessels and at waterfront facilities. Although the Coast Guard clearly has an interest in fires involving vessels or waterfront facilities, local authorities are principally responsible for maintaining the necessary fire fighting capabilities within U.S. ports and harbors. Additionally, a vessel/facility's owner and/or operator is ultimately responsible for the overall safety of vessels/facilities under their control, including ensuring adequate fire fighting protection.

Refer to Section 3003.01.3 of the Regional Contingency Plan.

### 3340 Hazmat

Under the direction of the Emergency Response Branch Director, the HAZMAT Group Supervisor is responsible for coordinating and directing all hazardous materials activities related to the incident.

1. Prioritize HAZMAT responses related to the incident.
2. Determine resource requirements.
3. Direct and coordinate HAZMAT responses.
4. Manage dedicated HAZMAT resources.
5. Brief Emergency Response Branch Director on activities.
6. Maintain Unit/Activity Log (ICS 214).

Refer to Section 3003.01.4 of the Regional Contingency Plan.

### Initial Emergency Response Procedures

See above 3340
Refer to Section 3003.01.4 of the Regional Contingency Plan.

### Evacuation Procedures

See above 3320.5

Refer to Section 3003.01.4 of the Regional Contingency Plan.

**Hazmat POC's**

Under the direction of the Emergency Response Branch Director, the HAZMAT Group Supervisor is responsible for coordinating and directing all hazardous materials activities related to the incident.
Refer to Section 3003.01.4 of the Regional Contingency Plan.

**Types of Equipment Required**

The equipment required in an incident ranges from personal protective, fire fighting, medical, decontamination, communications, pollution control, to any specific special equipment to mitigate further escalation of the incident.

Refer to Section 3003.01.4 of the Regional Contingency Plan.

## 3350 Emergency Medical Services

Under the direction of the Emergency Response Branch Director, the EMS Group Supervisor is responsible for coordinating and directing all emergency medical services related to the incident.

1. Prioritize EMS responses related to the incident.
2. Determine resource requirements.
3. Direct and coordinate EMS responses.
4. Manage dedicated EMS resources.
5. Brief Emergency Response Branch Director on activities.
6. Maintain Unit/Activity Log (ICS 214).

Refer to Section 3003.01.5 of the Regional Contingency Plan.

## 3360 Law Enforcement

Under the direction of the Emergency Response Branch Director, the Law Enforcement Group Supervisor is responsible for coordinating and directing all law enforcement activities, related to the incident, which may include, but not limited to, isolating the incident, crowd control, traffic control, evacuations, beach closures, and/or perimeter security.

1. Determine resource needs.
2. Direct and coordinate law enforcement response.
3. Manage dedicated law enforcement resources.
4. Manage public protection action; e.g., evacuations, beach closures,
5. Brief Emergency Response Branch Director on activities.
6. Maintain Unit/Activity Log (ICS 214).

Refer to Section 3003.01.6 of the Regional Contingency Plan.

**Perimeter/Crowd/Traffic/Beach Control**

See above 3360

Refer to Section 3003.01.6 of the Regional Contingency Plan.

**Safety/Security Zones**

Security/Safety Zones will be coordinated in accordance with 33 CFR 165 Subparts C and D.

Refer to Section 3003.01.6 of the Regional Contingency Plan.

## *3400* Air Ops

Refer to the Incident Management Handbook or contact Coast Guard Air Station Los Angeles at 310-215-2112

### 3410 Air Tactical

Refer to Incident Management Handbook or contact Coast Guard Air Station Los Angeles at 310-215-2112

**Aerial Surveillance**

Refer to Incident Management Handbook or contact Coast Guard Air Station Los Angeles at 310-215-2112

**Aerial Dispersant Application**

Refer to the Incident Management Handbook or contact Coast Guard Air Station Los Angeles at 310-215-2112

**Procedures for Temporary Flight Restrictions**

Refer to the Incident Management Handbook or contact Coast Guard Air Station Los Angeles at 310-215-2112

**Permanent Area Restrictions**

Refer to the Incident Management Handbook or contact Coast Guard Air Station Los Angeles at 310-215-2112

### 3420 Air Support

Refer to the **Incident Management Handbook** or contact Coast Guard Air Station Los Angeles at 310-215-2112

**Airports/Helibases/Heli-spots**

Refer to Section 9800 of this Plan

**Unmanned Aerial Systems**

Refer to Section 3420 of the Regional Contingency Plan for UAS guidance.

**List of Certified Helo's/Aircraft Providers**

Refer to the California Dispersant Plan Appendix XII of the Regional Contingency Plan.

**Fuel/Maintenance Sources**

Refer to Section 9800 of this Plan

**Air Traffic Control Procedures**

Refer to the Incident Management Handbook or contact Coast Guard Air Station Los Angeles at 310-215-2112

## *3500* Staging Areas

### 3510 Pre-Identified Staging Areas

Refer to Section 9800 of this Plan

(1) Staging areas for equipment: To a degree, the appropriate staging area is spill specific. However, there are considerations, which need to be applied each time an equipment staging site is selected. A preliminary list of these considerations follows and is not all inclusive:

(a) Accessibility (e.g. vehicles, trailers, boats, etc.);

(b) Proximity to spill;

(c) Proximity to a sensitive environmental site (California Department of Fish and Wildlife - OSPR and trustees MUST be consulted);

(d) Potential temporary command post site and/or availability of existing facilities;

(e) Accessibility to power, phone lines, and water;

(f) Availability of site (i.e. is site privately owned, regulatory prohibitions, etc.);

### 3520 Security

Refer to Section 5220.6 of this Plan

## *3600* Wildlife

Following is an excerpt from the Wildlife Response Plan for California (Wildlife Plan). Refer to Section 3007 of the RCP for the complete version. The Wildlife Plan appendices can be found in their entirety on the California Department of Fish and Game, Office of Spill Prevention and Response (OSPR) web site at https://www.dfg.ca.gov

Wildlife and habitats are put at risk or injured when oil is spilled into the marine environment. Both Federal and State statutes mandate protection, rescue and rehabilitation of oiled wildlife.

The Oil Pollution Act of 1990 requires that Fish and Wildlife and Sensitive Environments protection plans be developed and include immediate and effective protection, rescue and rehabilitation of wildlife resources and habitat that are harmed by a spill.
The State of California's Lempert-Keene-Seastrand Oil Spill Prevention and Response Act requires:

Development of contingency plans for the protection of fish and wildlife,

Establishment of rescue and rehabilitation facilities,

Establishment and funding of a network of rescue and rehabilitation facilities, known as the Oiled Wildlife Care Network,

Assessment of injuries to natural resources from a spill,

Development of restoration plans to compensate for adversely affected wildlife resources and habitats.

To address these statutory mandates, the Wildlife Plan has been developed by a group of federal and state agencies and other interested parties. The Wildlife Plan is part of the RCP/ACP for California, a joint document of U.S. Coast Guard (USCG) and OSPR.

The Wildlife Plan details the Wildlife Operations Branch purposes, goals, objectives, responsibilities, and structure. The Wildlife Operations Branch is in the Operations Section of the Incident Command System (ICS) for oil spill response. The Wildlife Operations Branch structure needed in California and detailed in this plan is expanded beyond that described in the Incident Management Handbook at the Group level. As is always true with ICS, the structure may be expanded or contracted to fit the need, but the mission remains unchanged.

In California, the principal objectives of Wildlife Operations during a spill response are to:

Protect wildlife and habitats from contamination,
Minimize injuries to wildlife and habitats from the contamination,
Minimize injuries to wildlife from the cleanup, Provide
best achievable care for injured wildlife, and,
Document adverse effects that result from the spill and cleanup.

To ensure these objectives are achieved with maximum efficiency, the Wildlife Branch Director coordinates and manages the activities of all personnel in the Wildlife Branch who fall under the authority of the Unified Command during spill response. These include federal, state, and local agencies along with commercial and non-profit organizations performing wildlife protection and management.

Within the Wildlife Operations Branch, there are four Groups who report to the Wildlife Branch Director:

Wildlife Reconnaissance Group (aerial, ground, and on-water reconnaissance of wildlife in the spill area),
Wildlife Hazing Group,
Wildlife Recovery and Transportation Group (search and collection), and
Wildlife Care and Processing Group (rehabilitation and logging in).

Even though Wildlife Operations is integrated into the ICS, it is self-directed in many ways and self-contained with regard to wildlife response resources (both staff and equipment). Wildlife Operations gathers much of its own spill information through wildlife reconnaissance, staffs its own Branch with pre-trained experts (e.g. veterinarians, rehabilitation staff, processing staff, capture experts, volunteers), and prepares its own sections of the Incident Action Plan for the Planning Section.

In this 2005 revision, the Wildlife Plan has been modified and expanded to ensure the statutory requirements of best achievable treatment, protection, and restoration of wildlife are met. This revision clarifies the organizational structure and details the required duties of the different positions within the Wildlife Operations Branch.

The Wildlife Plan has been written with the view that OSPR staff will usually assume the role of Wildlife Branch Director during a spill response. This is a natural consequence of the pivotal position of the Department of Fish and Wildlife, because the Department:

- Is the lead state trustee agency for California's Fish and Wildlife,
- Has permits and agreements with other agencies, to care for special status species and other protected wildlife
- Has legal mandates to protect wildlife, beyond OPA 90 and OSPR and,
- Has the needed expertise, training and experience

While the Wildlife Plan has been designed principally to cover oil spills in marine waters as required by Federal and State law, it is applicable to inland oil and non-oil spills as well. The organizational structure, roles and responsibilities remain the same, although some functions may be altered, as appropriate

### 3610 Fish and Wildlife Protection Options

When oil spills occur in California, the ICS is used as the organizational structure to coordinate response actions. The actual response organization grows to fit the level of response necessary for a specific incident. For that reason, when a specific ICS position is discussed in the Plan, readers should realize positions and duties may not be needed or may be combined. Readers new to the ICS should keep in mind that various people may fill any given ICS position, and normal day-to-day job titles do not relate to ICS position titles. If a suggested ICS position is not filled, the responsibility for the unfilled position's duties falls to the next higher ICS position. Those tasks still get done unless they don't apply to the particular response.

Refer to Appendix XXII of the Regional Contingency Plan.

### 3620 Recovery

Recovery &Transportation of oiled wildlife involves collecting dead and capturing live animals and transporting them to processing centers. Wildlife collection by any agency or organization must be conducted under the direction of the WBD and the UC. Their activities must comply with agreements and permits from the appropriate management agencies (e.g., DFG, NOAA-NMFS, and USFWS; see 14 CCR 679(d)).

Refer to Appendix XXII of the Regional Contingency Plan.

### Wildlife Recovery Operations/Procedures

Once animals have become oiled, habitat-specific and species-specific strategies to recover and remove oiled/debilitated live animals and all dead wildlife are required. Under the direction of the Recovery & Transportation Group Supervisor, systematic surveys for collecting affected wildlife should be carried out several times per day, including at least one survey as early as is safely possible after dawn. Successful captures not only depend on the condition of the animal, but also on the training and experience of the handler, along with techniques and equipment used.

Refer to Appendix XXII of the Regional Contingency Plan.

### Recovery Processing

The Wildlife Processing Unit ensures oiled animals are fully evaluated and data are captured, so the UC can obtain oiled wildlife statistics used for a variety of purposes, such as response strategy development and media updates.
Depending on the size of the spill, Live Animal and Dead Animal Strike Teams can be formed to improve triage and stabilization capabilities for the live animals.

Refer to Appendix XXII of the Regional Contingency Plan.

### Carcass Retrieval and Processing

Following processing and documentation, information on wildlife collected including number, type, species, locations, and disposition of oiled wildlife, all dead animals that have had appropriate evidence collected (photos, feather samples and fur/carapace swabs) should be systematically packaged and stored in locked freezers on site until the conclusion of the event.

Refer to Appendix XXII of the Regional Contingency Plan.

## 3630 Wildlife Rehab

Native wildlife in California is protected under a variety of other regulations (e.g., DFG code 3500). The OWCN and key Oiled Wildlife Care Network (OWCN) Member Organizations hold Wildlife Rehabilitation Permits issued by the State which allow them to temporarily collect and hold injured (as by oil) wildlife. Non-native restricted species cannot be released or transferred without written permission from DFG (14 CCR s 671).

Refer to Appendix XXII of the Regional Contingency Plan.

### Wildlife Rehab Operations

In response to the Federal Oil Pollution Act of 1990 (OPA 90), the National Oil and Hazardous Substances Pollution Contingency Plan (“National Contingency Plan” or NCP) update of 1994 stipulates that Area Contingency Plans (ACPs) contain a Fish and Wildlife and Sensitive Environments Plan “in order to provide for coordinated, immediate and effective protection, rescue, and rehabilitation of, and minimization of risk of injury to, fish and wildlife resources and habitat.”

Refer to Appendix XXII of Regional Contingency Plan.

**Rehab Facilities**

Facilities within the OWCN "shall be established and maintained in a state of preparedness to provide the best achievable treatment for marine mammals and birds affected by an oil spill in marine waters." In the case of cleaned animals that require prolonged time to recover, transport to long-term care facilities may be considered (particularly for marine mammals).

Refer to Appendix XXII of Regional Contingency Plan.

**Rehab Procedures**

Refer to the Wildlife Response Plan for Oil Spills in California, Appendix XXII Of the Region 9 Contingency Plan (RCP).

## *3700* Potential Place of Safe Refuge

### 3710 Places of Safe Refuge Decision-Making Process

See Section 4900 and 8000

## *3800* Reserved

## *3900* Reserved for Area/District