



**FACILITY RESPONSE PLANS FOR OPA 90**  
**Department of Transportation**  
**Pipeline & Hazardous Materials Safety Administration**

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*Bryant Lease*

*Prepared for*

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*Signal Hill Petroleum, Inc.*  
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**CERTIFICATION OF RESPONSE PREPAREDNESS**

Signal Hill Petroleum, Inc.

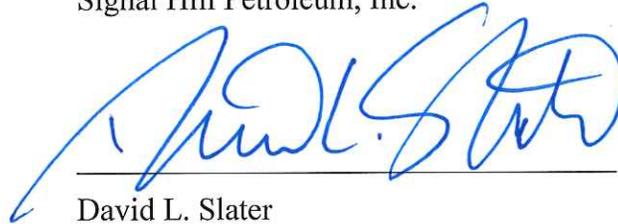
Sequence Number 1975 – BRYANT LEASE, LONG BEACH

Response Zone 2 (RZ2)

Divisions B-1 &amp; B-2

Signal Hill Petroleum, Inc. hereby certifies to the Pipeline and Hazardous Materials Safety Administration of the Department of Transportation that it has identified and ensured by contract or other means to be approved by the Pipeline and Hazardous Materials Safety Administration, the availability of private personnel and equipment to respond, to the maximum extent practicable, to a worst case discharge or a substantial threat of such a discharge.

Signal Hill Petroleum, Inc.



David L. Slater  
Executive Vice President

## **SIGNAL HILL PETROLEUM**

### **DOT-PHMSA OPA-90 FACILITY RESPONSE PLAN**

#### **INTRODUCTION**

##### **Purpose of the Facility Response Plan**

This Department of Transportation – Pipeline and Hazardous Materials Safety Administration (PHMSA) Facility Response Plan (FRP) is prepared for the Signal Hill Petroleum, Inc. (SHP) Bryant Lease facility. The purpose of this FRP is to address, prepare, and plan for responding, to the maximum extent practicable, to a worst-case discharge, and to a substantial threat of such a discharge from onshore crude oil pipelines operated by SHP at the Bryant Lease Facility.

[49CFR194.107(a)]

This FRP establishes the communication, containment, and clean-up procedures in the event of a worst-case crude oil discharge from SHPs Bryant Lease. This is done by defining the response zone; divisions within the response zone; notification procedures and contacts in order of priority; discharge detection and mitigation procedures; response activities including equipment and personnel resources; procedures to train and drill SHP personnel in implementing this FRP; supporting environmental data and spill response guidelines; and procedures to update, distribute and store this plan.

Exercising elements of this FRP through periodic facility review, training, drills, and FRP updates assists in mitigating or preventing a substantial threat of a worst-case discharge at SHPs facilities. Implementation of this FRP helps to reduce the likelihood of an unintentional crude oil discharge from this facility and, if a discharge does occur, will minimally impact navigable waters and/or environmentally sensitive areas.

##### **Implementation of the FRP**

This FRP will be implemented upon discovery that an unauthorized discharge of oil has occurred that:

- Violates applicable water quality standards or,
- Causes a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or causes a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines. [40 CFR 110.3]

If this occurs, then the discharge is reportable to certain state and federal agencies. Refer to Section 2 – Immediate Notification Procedures for notification requirements of agencies and company representatives.

##### **Facility Description**

SHP operates the Bryant Lease oil field facility in the City of Long Beach, within Los Angeles County, in the State of California. This facility is located at 6990 East 2<sup>nd</sup> Street, Long Beach, California, 90803. It is located on the Los Angeles county and Orange County border, in an area that is within the Los Cerritos wetlands. The facility is situated on a segment of land intersected diagonally (northeast to southwest) by the San Gabriel River flood control channel. The facility is bordered on the north by 2<sup>nd</sup> Street, on the west by a chain link fence running north to south that is directly in line with Studebaker Avenue and on the south and east by an electrical power

generating facility intake channel (Figure 1). All pipelines for this facility are contained in an area approximately 0.30 miles wide and 0.40 miles long and run in a north to south direction. On the east side of the fence line is an oil and gas facility and on the southwest side of the power generating facility intake channel is another oil and gas facility. Surrounding this facility is a region of commercial, industrial, and residential areas. Paved and hard-packed dirt/gravel roadways allow quick access to all of SHP pipelines and related equipment.

Section 9 – Response Zone Appendix provides the details of the Response Zone 2, Sequence No. 1975 – Bryant Lease, Long Beach (RZ2). RZ2 is separated into two divisions based on the facility configuration, topography, and, in the event of a release, the general drainage and direction of flow. Natural drainage on this facility generally flows to facility low-lying areas and the storm water retention basins. There are long, tall berms bordering the San Gabriel River flood control channel and the power generating facility intake channel that prevent liquids from flowing off the Bryant Lease directly into these waterways. There are only three pipes near to the Bryant Lease that can allow liquids to enter the San Gabriel River flood control channel from the land areas. In the event of a worst-case discharge, the response resources will be used to prevent discharges from disrupting the Los Cerritos Wetlands and from reaching these pipes with maximum available spill response capabilities and with the most practicable response time allowable. If left unmitigated, flows can eventually exit the Bryant Lease and discharge into the San Gabriel River flood control channel. The San Gabriel River flood control channel drains into the Alamitos Bay, 0.25 miles to the southwest of the facility.

## **PLAN CERTIFICATION**

As certified in the beginning of this FRP and detailed in Sections 3 – Spill Detection and On-Scene Mitigation Procedures and 4 – Response Activities and Response Resources, SHP has identified and ensured by contract or other means, the availability of private personnel and equipment to respond, to the maximum extent practicable, to a worst case discharge or a substantial threat of such a discharge. [49CFR194.115(a)]

## **CONSISTENCY WITH NATIONAL AND AREA CONTINGENCY PLANS**

This FRP is consistent with the National Contingency Plan (NCP), United States Environmental Protection Agency (EPA) Region IX Contingency Plan (EPA IX RCP) and the Los Angeles/Long Beach Area Contingency Plan (LA/LB ACP) [49CFR194.107(c)]. As part of the preparation of this FRP, the NCP, the EPA IX RCP and the LA/LB ACP were reviewed. Appropriate information and references are included in this FRP to achieve consistency with these plans. Relevant sections from the plans have been referenced in this FRP as part of the response planning and management. In addition, this FRP is consistent and complementary with SHPs Spill Prevention Control and Countermeasure (SPCC) plans for the Bryant Lease facility.



## PLAN FORMAT, RETENTION, & DISTRIBUTION [49CFR194.119(a)]

This FRP is written in the English language only. A second language version of this FRP is not required since all SHP personnel responsible for carrying out the FRP do not communicate in a language other than English as their sole and/or primary language [49CFR194.107(b)].

The following Table I-1 lists to which locations and individuals this FRP should be distributed. The entire FRP, including all sections and appendices, will be kept at these locations or by these individuals [49CFR194.111].

<b>Table I-1 – DISTRIBUTION LIST</b>		
<b>NAME/TITLE</b>	<b>VOLUME</b>	<b>LOCATION</b>
Central File	1 (original copy)	Signal Hill Petroleum Main Office – Central File 2633 Cherry Ave , Signal Hill Ca 90755
Signal Hill Bryant Lease	2	Field Office 6990 E. 2 <sup>nd</sup> Street, Long Beach, CA
David L. Slater/Vice President Qualified Individual	3	Signal Hill Petroleum Main Office 2633 Cherry Ave, ,Signal Hill Ca 90755
Sean McDaniel/Vice-President, Operations 1 <sup>st</sup> Alternate Qualified Individual	4	Signal Hill Petroleum Main Office 2633 Cherry Ave, Signal Hill CA 90755
Kevin Laney/Vice-President, Operations 2 <sup>nd</sup> Alternate Qualified Individual	5	Signal Hill Petroleum Main Office 2633 Cherry Ave, Signal Hill CA 90755
PHMSA	6, 7	U.S. D.O.T. PHMSA, Alexandria VA
EPA	8	U.S. EPA Region 9, San Francisco, CA

Corrections and revisions to the original FRP (Volume 1) are to be made to all other volumes. Corrections and revisions to the FRP are to be documented in the Records of Revisions Table in the previous section. Two copies of the updated FRP are to be sent to the US PHMSA office within 30 days of any corrections or revisions [49CFR194.119(a)].

## CORE PLAN

### Section 1 - Information Summary [49CFR194.107(d)(1)(i)]

#### Facility Name and Location:

Signal Hill Petroleum Bryant Lease  
6990 East 2<sup>nd</sup> Street  
Long Beach, CA 90803

#### Owner/Operator Name and Address: [49cfr194.113(a)(1)]

Signal Hill Petroleum, Inc.  
2633 Cherry Ave  
Signal Hill, CA 90755

#### Qualified Individuals: [49cfr194.113(b)(2)]

The Qualified Individual (QI) and alternates are available on a 24-hour basis. They are trained for the overall management of a crude oil discharge including a worst-case discharge according to provisions in this FRP. Refer to Section 2 and Section 5 – List of Contacts for complete contact number listings, including assigned SHP communication devices.

#### Qualified Individual:

David L. Slater (Executive Vice President/COO) 24-hr Phone Number: (562) 254-8407

#### Alternate Qualified Individuals:

Sean McDaniel (Vice President, Operations) 24-hr Phone Number: (562) 755-7289  
Kevin Laney (Vice President, Operations) 24-hr Phone Number: (562) 254-6185

#### Response Zone (RZ2) Data: [49cfr194.113(a)(2)]

The following is the description and listing of lines operated by SHP within RZ2 that can be expected to cause significant and substantial harm to the environment in the event of a discharge of oil into or on the navigable waters or adjoining shorelines. As is evident in Section 9 and Figures 1 and 2, RZ2 is separated into two divisions. These divisions allow a faster and more specific response to unexpected discharges from the Bryant Lease.

#### *Response Zone 2 Description:*

The Bryant Lease facility is contained entirely within PHMSA Sequence Number 1975, Response Zone 2 (Figure 1). This FRP discusses and considers only discharges from SHP operated pipelines at this facility in RZ2. All pipelines operated by SHP within RZ2 are contained within an area 0.30 miles wide by 0.40 miles long and run in a north-south direction. RZ2 is contained entirely in the City of Long Beach, within Los Angeles County, in the State of California. As described earlier, this response zone is situated on segment of land diagonally intersected (northeast to southwest) by the San Gabriel River flood control channel. It is bordered on the north by East 2<sup>nd</sup> Street, on the west by a chain link fence that is directly in line with Studebaker Avenue and on the south and east by an electrical power generating facility intake channel (Figure 1). Elevations in RZ2 range from low points at about five (5) to nine (9) feet above sea level, low berms and roadways about one foot higher than surrounding terrain, the berm bordering the electrical power generating facility at eight (8) to ten (10) feet above sea level and the berm bordering the San Gabriel River flood control channel at approximately

fourteen (14) to sixteen (16) feet above sea level. These waterway berms are about two (2) to eight (8) higher than the adjacent ground level in the Bryant Lease facility. In this response zone there are two (2) divisions divided by the San Gabriel River flood control channel, that are defined by specific pipelines, topography, direction of flow and areas most likely to be impacted in case of a discharge.

#### Division 1 (RZ2-B-1)

RZ2-B-1 is located north of the San Gabriel River flood control channel, in a generally flat area, surrounded by dirt berms and enclosed by a chain-linked fence. There is a long and taller berm bordering the San Gabriel River flood control channel on the southeast of this division. These berms act to prevent any discharge on the facility from discharging directly into the channel.

There are five (5) onshore pipelines located within RZ2-B-1. All are oil well gathering lines less than 6-5/8 inches in outside nominal diameter and less than 10 miles in length. These pipelines transport crude oil produced from seven active facility oil wells (Figure 2). (b) (3), (b) (7)(F)

[REDACTED]

#### Division 2 (RZ2-B-2)

RZ2-B-2 is located between the San Gabriel River flood control channel and the electrical power generating facility intake channel. The topography in this division slopes from the higher elevation in the northeast corner to the lower elevation in the southwestern corner of the facility that contains storm water retention basins. Long tall berms bordering both the San Gabriel River flood control channel and the power generating facility intake channel further direct any facility discharges away from the river and channel, to the storm water retention basins.

There are four (4) onshore pipelines are located within RZ2-B-2 and all are oil well gathering lines less than 6-5/8 inches in outside nominal diameter and less than 10 miles in length. These pipelines transport crude oil produced in RZ2-B1 to the tank farm located in this Division and from three active oil wells. One 3-inch diameter pipeline is encased in a 6-inch diameter pipeline conductor (BL #5) and is routed under the San Gabriel River flood control channel. This 3-inch pipeline delivers all crude oil produced in Division 1 to the tank farm in this Division. A (b) (3), (b) (7)(F)

[REDACTED]

#### *Significant and Substantial Harm Criteria*

All pipelines within RZ2 including:

BL #1 (RZ2-B-1)

BL #2 (RZ2-B-1)

BL #3 (RZ2-B-1)

BL #4 (RZ2-B-1)

BL #5 (RZ2-B-2)

BL #6 (RZ2-B-2)

BL #7 (RZ2-B-2)

BL #8 (RZ2-B-2)

BL #9 (RZ2-B-1)

may reasonably be expected to cause significant and substantial harm in the event of a worst-case discharge. During adverse weather conditions, a worst-case discharge is possible. A worst-case discharge from any of the pipelines has the potential to enter the San Gabriel River Channel and from there, enter the Los Alamitos Bay approximately 0.25 miles southwest of the facility. Significant and substantial harm could reasonably be expected to occur to navigable waters and environmentally sensitive areas in the event of a worst-case discharge releasing into the San Gabriel River flood control channel, Alamitos Bay or the greater San Pedro Bay.

The probability of a discharge from RZ2-B-1 or RZ2-B-2 to the power generating facility intake channel is very low. There are no pipes that discharge from the Bryant Lease facility area to the power generating facility intake channel. Just off the Bryant Lease facility there are three pipes that are directly connected to the San Gabriel River flood control channel and are lower in elevation than the top of the power generating facility intake channel berm. Unmitigated discharges from the Bryant Lease facility would have to exit the facility before reaching one of the three pipes. Once off the facility, discharges would enter one of the three pipes leading to the San Gabriel River flood control channel before breaching the berm bordering the power generating facility intake channel.

Public drinking water intakes are not threatened by crude oil discharges within RZ2. These intakes are at a much greater distance than the five (5) mile radius requirement set forth in the Federal Rules and Regulations. Additionally, as part of the SPCC plan, all SHP operated tanks containing crude oil located within RZ2 are protected with a secondary containment system designed to contain at least 110% of the tank capacity. Discharge control procedures and potential discharge volumes are documented in SHPs Bryant Lease SPCC.

#### *Worst Case Discharge*

The hypothetical worst-case discharge is computed as the basis for SHPs FRP. Section 9 lists the hypothetical worst-case discharges for the pipelines within each division of RZ2. In addition, the method to determine these worst-case discharges and calculations are summarized in Section 9. The following Table 1-1 summarizes this data. As is evident, the largest hypothetical worst-case discharge for SHP RZ2 is (b) (7)(F), (b) (3) ) of fluid from RZ2-B-1, BL #5.

#### *Substantial Threat of a Worst Case Discharge*

In addition to dealing with an actual worst-case discharge, SHP has procedures in place to eliminate or mitigate the substantial threat of a discharge. PHMSA considers “substantial threat” to be the equivalent of “abnormal operations” as defined under 49CFR195.402(d). The following describes abnormal operations and SHP procedures to eliminate or mitigate these conditions, or the threat of a discharge under these conditions.

#### Unintended Closure of Valves or Shutdowns

(b) (3), (b) (7)(F)

### Increase in Pressure or Flow Rate outside Normal Operating Limits

Gathering systems at SHP facilities have pressure gauges and switches that SHP operators monitor during daily facility inspections. The gathering system also has safety shutdown systems that shut off all wells on a gathering pipeline if the pipeline is above normal operating pressure. Shutting off the wells operating above noted operating pressures prevents over-pressuring and eventual failure of the pipeline.

<b>Table 1-1 - WORST-CASE DISCHARGE SUMMARY</b>		
<b>RESPONSE ZONE DIVISION</b>	<b>PIPELINE SECTION</b>	<b>WORST-CASE DISCHARGE (bbls.)</b>
RZ2-B-1	Bryant Lease Line #1 (BL #1)	(b) (7)(F), (b) (3)
RZ2-B-1	Bryant Lease Line #2 (BL #2)	
RZ2-B-1	Bryant Lease Line #3 (BL #3)	
RZ2-B-1	Bryant Lease Line #4 (BL #4)	
RZ2-B-2	Bryant Lease Line #5 (BL #5)	
RZ2-B-2	Bryant Lease Line #6 (BL #6)	
RZ2-B-2	Bryant Lease Line #7 (BL #7)	
RZ2-B-2	Bryant Lease Line #8 (BL #8)	
RZ2-B-1	Bryant Lease Line #9 (BL #9)	

### Loss of Communications

SHP requires the QI, Operations Supervisor, Operations Foreman, Operators as well as Incident Commanders (IC) and IC alternates to have a mobile phone. All supervisors and almost all SHP operations personnel have a mobile phone. There are a total of 50 mobile phones distributed to SHP personnel. In case of a catastrophic communications failure in which all phone systems fail, SHP has 6 (six) two-way emergency radios that are capable of covering all of SHPs facilities.

Maintenance to prevent loss of communications before and during an event is the responsibility of the Logistics Section (LC). Maintenance of communications involves developing response specific plans that include distributing, testing, and repair of all communications equipment. SHP has pre-assigned mobile phones to all applicable operations personnel as the primary form of communications. The Logistics Section Chief (LSC) is responsible to ensure that the published phone numbers are up-to-date and distributed to the staff and OSRO. If required, the LC will distribute this phone number list to agency representatives.

In case the mobile phone systems fail, it is the responsibility of the LC to distribute the six backup two-way radios. The LSC, after discussions with the IC, is responsible to ensure that the two-way radios are operational, properly assigned, logged, and distributed. The LSC will schedule a briefing with recipients of the radios to discuss communication procedures and ways to minimize unnecessary communications. Since these radios use channels accessible by the

public, recipients will be briefed on communications procedures with regards to confidential and sensitive issues. The LSC will be responsible to ensure that SHP radio frequencies will be compatible with outside agency frequencies. Response personnel will be briefed regularly at the beginning of a shift on these and other communications issues. The radios are checked annually to ensure availability for immediate use during emergencies and are stored at the main office (default ICS command post).

Finally, if the backup two-way radios are insufficient, SHPs OSROs have two-way radios that can be integrated into SHPs ICS/NIMS. SHPs LSC will coordinate the distribution and logging of these radios with the OSRO manager.

#### Pipeline Design, Maintenance and Replacement

Pipelines operating at SHPs facilities were designed to the standards in place at the time of installation. SHP has an ongoing program to test and replace older pipelines, if needed. Newly installed pipelines are x-rayed and hydro tested prior to commissioning. Finally, there is surveillance of SHPs pipelines at the Bryant Lease facility 365 days per year to ensure that external damage due to third party excavations is averted. SHP has a dedicated employee that oversees third party excavations near facility pipelines.

#### Pipeline Corrosion Prevention Program

In addition to the on-site daily observation of the pipeline pressure-monitoring system mentioned previously, SHP maintains a pipeline corrosion prevention program. Anticorrosion chemicals are added at oil wellheads and the group gathering systems for internal pipeline corrosion protection. Also, external corrosion is averted by external pipe coatings. New and replacement pipelines have the latest technology external coatings applied before installation.

#### Operation of Safety Devices

Operators are periodically trained to operate the aforementioned pipeline safety devices located at SHP facilities. Operators are at this facility on a 365day/year schedule. Safety devices are periodically checked as part of the operator's daily routine while on location.

#### Any Other Malfunction of a Component, Deviation from Normal Operation, or Personnel Error Which Could Cause a Hazard to Persons or Property

SHP personnel are trained on a periodic schedule by a properly certified Health and Safety instructor to respond to abnormal emergencies. These emergencies could include damage to the pipelines from outside sources or damage from floods, fires and earthquakes.

## Section 2 - Immediate Notification Procedures [49CFR194.107(d)(1)(ii)]

### Notification Requirements and Procedures

This section details the notification procedures to be taken when a discharge of crude oil from one of SHPs pipelines is first observed or reported. A discharge is defined as *including, but not limited to, any spilling, leaking, pumping, pouring, emitting, emptying or dumping of oil*. The first SHP employee who either discovers a discharge or is first notified of a discharge from an outside source is responsible for initiating immediate internal notification procedures.

If the incident involves fire, explosions, medical emergencies, or other potentially catastrophic incidents, the SHP employee should call **911** immediately before following the remaining procedures in this FRP.

Upon discovery by a Hazcom trained SHP employee or notification to a Hazcom trained SHP employee of a discharge, that employee must immediately identify the discharge, determine the source of the discharge and if deemed safe, shut-off or isolate the discharge quickly and safely. Immediately after the SHP employee has quickly and safely shut-off/isolated the discharge, or if the discharge cannot be quickly and safely shut-off, the employee must contact the QI or Alternate QIs.

If an outside party reports the leak, the responsible SHP employee must obtain as much of the following information as possible:

- Name of person reporting the leak/discharge and contact telephone number,
- Time and date the leak/discharge was reported,
- Time and date the leak/discharge was discovered,
- Estimated amount of the discharge,
- Precise location of leak and discharge in relation to streets, buildings, landmarks, addresses,
- Fire, explosion or location of a potential ignition source near the leak source or discharge,
- Agencies notified by the discovering party,
- Waterways near the leak source or entered by the discharge, including storm drains and sewers.

### Notification of the Qualified Individual

The employee must contact the Qualified Individual (QI) immediately after quickly and safely shutting off the discharge or if they cannot quickly and safely shut off the discharge. The employee must supply the QI with the location, severity, status of the discharge, and all actions taken since discovery or notification of the discharge. The employee is to use the quickest method of contact, which will likely be by SHPs mobile phones. The alternate method is to use a land-based phone system. The following is a complete telephone notification list for the Qualified Individual:

Qualified Individual:  
 24-hour phone number (office):  
 24-hour mobile phone number:  
 Alternate mobile phone number

David L. Slater (Executive Vice-President)  
 (562) 595-6440

(b) (6)

### Notification of the Alternate Qualified Individual

In case the primary QI cannot be reached, alternate QIs are to be notified in the order given below. Alternate QIs are available on a 24-hour basis for the coordination and supervision of a crude oil discharge including a worst-case discharge. The employee is to use the quickest method of contact, which will likely be by SHPs mobile phones. The alternate method is to use a land-based phone system. The following is a complete telephone notification list for SHPs Alternate Qualified Individuals:

First Alternate QI:	Sean McDaniel (Vice President Operations)
24-hour phone number (office):	(562) 595-6440
24-hour mobile phone number:	(b) (6)
Second Alternate QI:	Kevin Laney (Vice President Operations)
24-hour phone number (office):	(562) 595-6440
24-hr mobile phone number:	(b) (6)

After contact by the SHP employee, the QI or alternate QI will determine if the discharge is reportable and initiate agency, company, and personnel notifications as required in the next section. He will then notify members of SHPs Spill Response/Incident Command System (ICS/NIMS) team and initiate spill response, if required.

### Person Responsible for Notifications

The ICS Liaison & Information officer (LIO) is responsible for contacting all applicable Federal, State, County and local authorities as required depending on the extent of a discharge. The LIO is also responsible for documenting all immediate and follow-up notifications. Notification includes updates on the status of response actions taken; status and location (if changed) of discharge; and information on health risks, if applicable. Notification can be done using a mobile or land-based phone system. Appendix H – Spill Documentation Forms has SHP specific incident forms used to document notifications.

### Prioritized Notification List

In the event of a crude oil leak or discharge from SHPs pipelines, the QI, with information supplied to them by the SHP employee who first discovered or was notified of the discharge, must determine if the discharge is reportable per requirements stated in, *Implementation of this FRP* located in the Introduction Section of this FRP.

If the incident consists of a reportable discharge of crude oil including worst-case discharges, then Table 2-1 contains the notification procedure for the Bryant Lease to be implemented immediately to provide containment and clean up to the maximum extent practicable. Appendix H contains the SHP agency contact log (SHP-03) checklist as well as company/personnel contact log (SHP-03a) checklist to be used during prioritized notification procedures.

<b>Table 2-1 – PRIORITIZED NOTIFICATION LIST FOR REPORTABLE DISCHARGES</b>		
<b>Priority</b>	<b>Personnel and/or Organization</b>	<b>24-Hour Phone No.</b>
1	National Response Center	(800) 424-8802 (24 hr) (202) 267-2675 (Alt)
2	California Emergency Management Agency (CAL-EMA, formerly OES)	(800) 852-7550 (24 hr) (916) 845-8911(Alt) (916) 845-8741 (24 hr)
3	Patriot Environmental Services (Primary OSRO contractor) Or NRC (Secondary OSRO contractor)	(800) 624-9136  (562) 432-1304
4	Long Beach Fire Dept (City of Long Beach CUPA)	(562) 436-8211 911 (Alt)
5	Long Beach Police Department	(562) 435-6711 (24 hr) 911 (Alt)
6	United States Coast Guard	(562) 980-4450 (562) 980-4444 (after hours)
7	California Department of Fish and Game	(888) 334-2258 (916) 445-0045 (Alt)
8	Division of Oil and Gas – District #1	(714) 816-6847
9	Los Cerritos Wetlands Authority	(626) 815-1019
10	Los Angeles County Flood Control (if discharge enters storm drain system)	(562) 861-0316 (800) 675-4357 (after hours)
11	South Coast Air Quality Management District (Discharges from SCAQMD permitted equipment)	(800) 288-7664 (Call in Breakdown of Eqpt)
12	Commercial Global Insurance of California	(949) 600-7995 (business hrs only)

### Initial and Follow-up Notification and Reporting Information

The LIO is required to gather the following information for all initial and follow-up notification and reporting:

- Name of pipeline and operator,
- Time of discharge,
- Location of discharge,
- Type of oil involved,
- Reason for discharge,
- Estimated volume of discharge,
- Medium (soil, water, air) impacted by discharge,
- Weather conditions on scene,
- Actions taken by persons on scene,
- Actions planned by persons on scene.

The LIO should enter this information into SHPs Spill Documentation forms (Appendix H).

### Identification and Location of Contact Phone Numbers for Obtaining Equipment

The spill response may require additional equipment beyond that provided by SHP and the Oil Spill Removal Organization (OSRO). The ICS Logistics section is in charge of obtaining

additional equipment, if needed. The Logistics Chief (LC) has a list of contractors that may provide supplementary equipment for a spill response. The QI, his qualified reliefs, and all supervisors of SHP have a list of the equipment contractors and their phone numbers. Also, each field operator, the main office and all field offices have a list of equipment contractors and their phone numbers. A list of contact phone numbers for obtaining equipment is located in Section 5.

#### Identification and Location of Contact Phone Numbers for Obtaining Personnel

The LC has a list of the contact phone numbers for all SHP employees and contracted OSROs on call for spill response activities. QIs, alternate QIs, and all supervisors of the company have OSRO and Employee phone numbers. Employee phone numbers (mobile and residence) are located in the main office and all field offices as well. Finally, a list of phone numbers for contacting personnel is located in Section 5 and Appendix A1.

#### Primary and Secondary Communication Methods

The primary method of communication that is used by SHP employees is permanently assigned mobile phones. Most employees are assigned mobile phones. The secondary method of communication that can be deployed during an incident is emergency hand-held two-way radios. These radios are available in case the mobile phone system fails. These radios can also supplement the primary method of communication.

There are six radios, selected to ensure coverage of the entire SHP response zone RZ2. The LC will assign the radios to response personnel and agency representatives as detailed in Section 1 – Information Summary, Loss of Communications. The LC will document and track the two-way radio assignments using SHP spill form SHP-03b – Communication Log.

### Section 3 – Spill Detection and On-Scene Mitigation Procedures [49CFR194.107(d)(1)(iii)]

If a discharge from a pipeline occurs, SHP has several means to provide for quick spill detection and initial on-scene mitigation procedures. These methods and procedures allow for quick containment of discharges and protection of resources. Quick spill detection and mitigation also minimizes recovery resources and activities.

#### Methods of Initial Discharge Detection.

SHP uses a variety of initial discharge detection methods. These methods listed below, have been found to be an effective means for quick detection of discharges.

- Detection by SHP employees: Approximately 40 employees and 30 company vehicles perform maintenance duties within SHPs response zones on a normal 40-hour per week basis. These employees patrol the SHP facilities as part of normal facility operations. These employees are required to look for unusual events and discharges as part of these regular facility patrols. These SHP employees carry a mobile phone that can be used for routine and emergency communication in the case a discharge is detected.
- Daily Surveillance: SHPs operators provide surveillance of the response zone every day of the year including nights, weekends and holidays. There are at least three operators that survey the lease during the day and night shifts for an average of 6 hours each day. These operators have mobile phones for routine and emergency communication in the case a discharge is detected.
- Detection by Neighboring Oil and Gas Facilities: There are two active oil and gas facilities bordering the Bryant Lease that are not part of SHPs operations. Operators at these facilities have visual sight of the Bryant Lease and will contact SHP should a discharge be detected. These companies have SHP contact information.
- Detection by Contractors: Detection by contractors employed by SHP who perform maintenance duties within SHPs response zone and are familiar with SHP operations provide a secondary means of discharge detection. These contractors are equipped with mobile phones and can quickly contact SHP supervisors if a discharge is detected.
- Detection by the General Public: Discovery by the general public is a secondary means of detection that has proven to be effective in the past. There is a popular public bikeway on top of the Southern berm of the San Gabriel River flood control channel that affords a clear view of all parts of the Bryant lease. SHP posts the 24-hour emergency phone number on all oil wells and on certain fences, gates and equipment throughout the response zone.

#### Methods of Discharge Mitigation

SHP uses a variety of discharge mitigation methods as listed below. These methods have been found to be an effective in reducing and quickly containing discharges.

- Pipeline Hydro-testing: SHP regularly hydro-tests crude oil pipelines that are ten years or older. SHP hydro-tests lines beyond requirements defined by the State of California or

(b) (3), (b) (7) (F)

- Spill Training: SHPs operations personnel are trained as Hazwoper first responders. SHP also conducts periodic spill response training as defined in Section 6 – Training Procedures so that all operations personnel know how to quickly and correctly respond to a discharge of crude oil. In addition, SHP operations personnel attend daily meetings where actual and potential crude oil discharge events are discussed.
- 24-hour On-Call Personnel: SHP has a 24-hour/365 day per year on-call crew, equipped with mobile phones. The crew includes the QI, alternate QIs, ten (10) operators and three (3) vacuum truck operators as well as general operations personnel. This crew is ready for immediate first responder duties.
- Mobile Communication Devices: SHP supplies the QI and alternate QIs with mobile phones for routine and emergency communications.
- Vehicle Equipped Emergency Oil Spill Pack: Each SHP company vehicle, including those driven by the operators, is equipped with an emergency oil spill pack. This pack includes booms and oil pads (Appendix A2).
- Field Office Oil Spill Response Equipment: The field office at Bryant Lease has a ready supply of spill response equipment (Ref: Appendix A2).
- Physical Containment: Bryant Lease has secondary containment walls for all tanks that are used to store and process crude oil and/or produced water. Additionally most of the Bryant Lease is surrounded by berms.
- Oil Well Knockout Pots: “Knockout Pots” have been installed on all oil wells to help contain stuffing box leaks and to shutdown the wells if such a leak occurs at the wellhead.

#### Procedures SHP Personnel Follow in Response to a Pipeline Discharge

The first SHP employee who either discovers a discharge or is first notified of a discharge from an outside source is responsible for initiating the procedures in response to a pipeline discharge. If an outside party reports the leak, the responsible SHP employee must obtain as much of the following information as possible before proceeding.

- Name of person reporting the leak/discharge and contact telephone number,
- Time and date the leak/discharge was reported,
- Time and date the leak/discharge was discovered,
- Precise location of leak and discharge in relation to streets, buildings, landmarks, addresses,
- Medium (soil, water, air) impacted by discharge,
- Fire, explosion or location of a potential ignition source near the leak source or discharge,
- Agencies notified by the discovering party,
- Waterways near the leak source or entered by the discharge, including storm drains and sewers.

The following lists the procedures to be taken, in order of priority, by the SHP employee that initially discovers or is notified of the discharge. Note that if the incident involves fire, explosions, medical emergencies, or other potentially catastrophic incidents, the SHP employee should call **911** immediately before following the remaining procedures in this FRP.

1. Identify the discharge – The SHP employee must attempt to identify what is being discharged and at what approximate rate.

2. Determine the source of the discharge – The SHP employee must identify where the discharge is coming from.
3. Quickly and safely shut-off or isolate the discharge – The SHP employee should quickly and safely shut-off or isolate the discharge if it is coming from a SHP pipeline. If the discharge cannot be quickly and safely shut-off or isolated, they must immediately proceed to the next step.
4. Quickly and safely eliminate any ignition sources, if possible – The SHP employee should attempt to quickly and safely eliminate any ignition sources to prevent potentially catastrophic events from occurring.
5. Contact the QI or Alternate QIs – The SHP employee must immediately contact the QI or alternate QI after shutting or isolating the discharge. The SHP employee must immediately contact the QI if the discharge cannot be quickly and safely shut off or isolated. The employee must describe the location, severity and status of discharge.
6. Remain at the discharge site – The SHP employee should remain at the discharge site if safe to do so, until the QI or assigned on-site IC arrives.

#### Procedures SHP QI Follows in Response to a Pipeline Discharge

When the QI is first notified of a discharge in RZ2 the following activities are initiated:

1. The QI should assess the situation with information supplied by the SHP employee that first discovered or was notified of the discharge.
2. The QI should direct the SHP employee especially in the event of potentially catastrophic incidents.

The QI may act as the IC or assign an alternate IC based on the magnitude of the discharge. The QI has the ultimate responsibility for monitoring and directing response activities. Thus, the QI manages the IC during all response activities if they are not the acting IC. Refer to Section 4 – Response Activities and Response Resources for information on SHPs IC and ICS/NIMS.

#### Procedures IC Follows in Response to a Pipeline Discharge

Quick and effective mitigation of a crude oil discharge relies on the rapid deployment of the ICS/NIMS management system to carry out protection, containment and recovery techniques. When the IC for the crude oil discharge is established, the following activities are initiated:

1. The IC will coordinate all site response activities.
2. If warranted by discharge conditions, the IC will activate the OSRO to contain and remove the discharge and restore impacted area(s).
3. The IC should confirm with the QI that the discharge is a reportable spill.
4. The IC will activate the ICS/NIMS and may activate individual ICS command staff officers and section chiefs (Ref: Section 4).
5. The IC will assume the duties of the LIO or activate and direct an alternate LIO to contact federal, state, and local agencies as needed based on the magnitude of the discharge.
6. The IC will begin response activities using the ICS/NIMS management system.

#### OSRO Spill Personnel and Response Equipment List

SHPs policy is to rely on an OSRO for most crude oil discharge response activities. The OSRO is activated soon after discovery or notification of a discharge, when deemed necessary by the

IC. SHP has identified and ensured by contract, the availability of a primary OSRO to respond, to the maximum extent practicable, to a worst-case discharge or a substantial threat of such a discharge. Additionally, SHP has identified a secondary OSRO available to supplement the primary OSRO.

The OSROs have oil spill response personnel on call 24-hours per day that are trained to contain, remove and dispose of crude oil discharges. The OSRO personnel are trained to restore the impacted area to its pre-spill condition to the maximum extent practicable while minimizing any permanent environmental impact on the response site. As part of response to discharges, the OSROs have a variety of equipment and supplies readily available for most protection, containment, and recovery techniques.

SHP has identified the following OSROs to supply both personnel and equipment on a 24-hour basis [49CFR194.107(d)(1)(iv)]:

Primary OSRO (contracted)

Patriot Environmental Services  
 1900 West Anaheim Boulevard  
 Long Beach, CA 90813  
 Ph: (800) 624-9136  
 (562) 436-2614  
 Fax: (562) 436-2688

Secondary OSRO (as-needed)

NRC Environmental Services  
 3777 Long Beach Blvd 1<sup>st</sup> floor  
 Long Beach CA 90802  
 Ph: (562) 432-1304  
 Fax: (562) 432 1826

Detailed information regarding personnel and equipment supplied by the OSRO is in Section 4 and Appendix B – Contractors Spill Response Equipment.

SHP Spill Personnel and Response Equipment List

SHP will use company resources as part of the initial response and mitigation activities for a crude oil discharge from RZ2. SHP has oil spill response personnel that are trained to contain, shutoff, remove and dispose of crude oil discharges as part of initial response efforts. These personnel have ready access to a variety of equipment, and supplies located at various locations in and near to RZ2 to assist with responding to a discharge. These personnel and equipment are detailed in Section 4 and Appendix A.

Protection Priorities

If possible, SHP will protect all threatened resources equally. If time and response resources do not permit an equal reaction to all situations, the following guidelines should be used to prioritize the response efforts.

Human health and safety is of primary importance when responding to a discharge of crude oil from RZ2. Primary attention should be devoted to fire, explosions, medical emergencies, or other events that severely threaten human health and safety.

Protection of human health includes:

1. Evacuation of, or securing the area impacted by the discharge,
2. Setting up roadblocks to limit access into the area of discharge,
3. Informing the landowners in the area of discharge,
4. Protection of response workers and the general public,
5. Other measures that may be required by ICS and appropriate agencies.

Safety factors to consider for the protection of response personnel and the general public include:

1. Fire and explosion potential of vapors at or near the discharge,
2. Potential toxic effects of the discharge,
3. Proper use of safety equipment,
4. Vehicle, boat and aircraft safety.
5. Heat Stress
6. Noise Exposure
7. Oxygen Deficient Environments
8. Physical Hazards (Slips, Trips, Falls)
9. Appropriate PPE for responding personnel

After protection of human health and safety, SHP considers the protection of environmentally sensitive areas and wildlife to be of primary importance when responding to a discharge of crude oil from RZ2. Response guidelines to sensitive areas and wildlife are detailed in the following section. Discharges from RZ2 can reach these environmentally sensitive areas by discharges to terrestrial areas and/or via inland waters to coastal waters. Thus, SHP has placed an equal priority on protection, containment, and recovery of discharges that impact both terrestrial areas and inland waters within RZ2.

The Bryant Lease is within the Los Cerritos Wetlands. As part of normal operations at the Bryant Lease, SHP works with the Los Cerritos Wetlands Authority whose purpose is to manage all aspects of the wetlands. In case of an incident at this facility, the Los Cerritos Wetlands Authority will be contacted as part of prioritized Bryant Lease agency contact list. SHP will work with the Los Cerritos Wetlands Authority to identify and manage environmentally sensitive areas impacted by discharges during spill response and restoration of impacted areas.

### Spill Response Techniques

It is important to identify techniques that have a minimal environmental impact that also maximize protection, containment, and recovery of the discharge. SHP primarily uses the following techniques to reduce the overall impact of a discharge.

- Drain pipes and culvert blocking: Blocking of drain pipes is an effective way to restrict the flow of a discharge to inland waters. There are only three pipes that can empty fluid from the Bryant Lease into the San Gabriel flood control channel. One is located near RZ2-1 and two are located near RZ2-2. Typical methods include the use of earthen dams, sand bags, and plywood.
- Booms: Booms are essential to reducing the impact of a spill. SHP has booms located at this facility and carried in some SHP vehicles to help quickly contain a discharge.
- Sorbents: Sorbents can significantly reduce the impact of a spill by helping to remove the discharge before it impacts sensitive areas.
- Interception barriers: Interception barriers such as trenches and ditches are useful measures for controlling the flow of a discharge and are often used with dams and berms.

- Dams and berms: Dams can be used for blocking fluid flow and are useful in RZ2 due to changing topography and natural channels. Dams are typically constructed in ditches, culverts, or other dry channels using sandbags and/or earthen materials. Berms, many of which are already in place throughout the response zone for discharge mitigation, are typically used for the containment of a spill and/or to provide additional time for response. Berms can be built rapidly on terrestrial areas or reinforced with backhoes using earthen materials, when allowed.
- Vacuum trucks: Vacuum trucks are essential in the removal of discharge and are most effective when used in conjunction with the techniques listed above. SHP has three vacuum trucks and employs several trained operators.

Decision guides in Appendix I – Spill Decision Guides help to prioritize situations and to assist with choosing protection, containment, and recovery techniques. Decision Guide 3-1 assists with creating a priority list for multiple situations arising from a discharge event. Decision Guide 3-2 assists with selecting protection, containment and recovery techniques for coastal waters. Decision Guide 3-3 assists with selecting protection, containment and recovery techniques for inland waters. Decision Guide 3-4 assists with selecting protection, containment and recovery techniques for terrestrial discharges. Decision Guide 3-5 directs the user to Decision Guides 3-6, 3-7, 3-8, 3-9, or 3-10. Decision Guides 3-6 through 3-10 assists with cleanup decisions for various situations and techniques.

Also included in Appendix I is Table 3-1 that is used when selecting cleanup techniques and Table 3-2 that is used to decide whether to remove the discharge or let the area recover through natural mechanisms. Table 3-1 also contains containment and recovery techniques involving chemical agents that are mentioned in Appendix C – Spill Protection, Containment and Recovery Techniques. Burning of oil and the use of chemical agents are strongly discouraged unless the directed by the ICS and appropriate agencies. Under normal conditions, physical protection, containment, and recovery techniques should be sufficient in handling discharges from RZ2. Under no circumstances are chemical sinking agents to be used on discharges. Tables 3-1 and 3-2 should be used when protection, containment and recovery strategies are being considered for all impacted areas.

Appendix E – Summary of Response Methods and Environmentally Sensitive Habitats contains excerpts from the guidebook *Summary of Response Methods and Habitats from Options for Minimizing Environmental Impacts of Freshwater Spill Response – November 1994, Section 2.0*. Included is the overview of the physical, chemical, and biological response methods for two types of oils handled by SHP – medium and heavy oils. Also, this guidebook presents response techniques not listed in Table 3-1. This guidebook also lists the techniques and their relative effects on different habitats such as open waters, large rivers, small streams, manmade structures, sand, gravel, mud, and wetlands. The guidebook was developed by the American Petroleum Institute and the National Oceanic and Atmospheric Administration and is located at SHPs main office central file.

### Sensitive Areas

The environmentally sensitive areas that could be impacted by discharges from RZ2 are listed in the LA/LB ACP section 9800. These areas include:

Golden Shore Marine Reserve (5-250-A); Alamitos Bay/Los Cerritos Wetlands (5-260-A); and Anaheim Bay (Seal Beach National Wildlife Refuge (5-310-A).

These areas and the associated site protection strategies were defined and listed in the LA/LB ACP, Section 9800. These site summaries and strategies sheets contain a site description, seasonal and special resource concerns, resources of primary concern, cultural, historic and archeological sensitivities, key contacts, site strategies and logistics information.

These environmentally sensitive areas are located such that they could be affected by a discharge from RZ2. The closest environmentally sensitive area is the Alamitos Bay/Los Cerritos Wetlands. The Bryant Lease is on the Los Cerritos Wetlands and is intersected by an inland waterway. Therefore, the primary method of protection is by prevention of discharge and next by rapid deployment of response resources to minimize the effects of any discharge.

The decision to use one or more containment, protection, and recovery techniques will depend on the circumstances of the spill, its location and potential movement. SHP will follow the appropriate site strategies as outlined in Appendix D unless conditions dictate otherwise. The techniques described in Appendix D are defined in Appendix C. If circumstances dictate that the DOFG recommended site protection strategy could not be used, numerous options for marine, inland waterway and terrestrial spill protection, containment, and recovery are available pending approval from the ICS and appropriate responding agencies.

Intrusive activities and disturbances of the shorelines, streambeds, or wetlands will require approvals from the ICS and the appropriate agencies. Operations on private and public lands may require written permission and/or issuance of a permit from the land owner/manager. Refer to Table 3-1 and Appendix E to help assess effects of protection, containment and recovery strategies being considered for sensitive areas. Note that Section 9800 of the LA/LB ACP also contains response strategies for cultural and historic sensitive areas and economically sensitive areas that could possibly be affected by a discharge from the Bryant Lease. These guidelines have not been included in this FRP as they are general in nature. Also, specific economically sensitive areas can change frequently. Thus, these guidelines must be referenced directly from the LA/LB ACP.

#### Wildlife Rehabilitation

Sensitive areas often contain wildlife such as aquatic mammals and birds. The primary response strategy is to prevent a discharge from reaching areas containing wildlife. However, if wildlife is affected by discharge from RZ2, response activities concerning the identification, protection, rescue, processing and rehabilitation of oiled or threatened wildlife are performed by the California Oiled Wildlife Care Network (OCWN). If necessary, SHP will follow the Wildlife Response Plan for California (Appendix F) that was developed by the California Office of Spill Prevention and Response (OSPR). This plan contains an information summary, the participating centers that help care for oiled wildlife, and the response action instructions for when wildlife is impacted. This Wildlife Response Plan was developed as a joint effort by private organizations, state agencies, and federal agencies and is administered by OSPR.

#### Inland and Coastal Waters

SHP places a high priority on preventing a discharge from RZ2 from entering inland waters through storm drains. The selection of appropriate protection, containment, and recovery techniques for inland and coastal waters is dependent on the nature of the waters, ambient conditions, the amount and type of discharge. Generally, spills on waters are handled by containment, protection, and collection of discharges. More than one response technique can be used and special circumstances may dictate a particular technique. Large discharges may be

divided into smaller sections depending on response technique. Appendix C contains the methods SHP will use to prevent discharges from entering the local waterway system.

### Inland Waters

The foremost method for preventing discharges from impacting inland waterways is by preventing the discharge from reaching three pipes that enter the San Gabriel River flood control channel, an inland waterway that bisects RZ2. Although two inland waters run through RZ2, a discharge that exits the Bryant Lease facility in RZ2 will likely travel to one of three pipes that drain into the San Gabriel River flood control channel rather than breach the berms bordering the inland waters. This is due to the pipe entrances being lower in elevation than the top of the berms that border the San Gabriel River flood control channel and the power generating facility intake channel.

Discharges from RZ2 will most likely impact terrestrial areas first. These discharges will generally flow to facility low areas depending on discharge amount and land contour. On the north side of the San Gabriel River flood control basin (RZ2-B1), the facility is generally flat areas protected by low dirt berms. On the south side of the San Gabriel River flood control basin (RZ2-B2), discharges will flow to facility low areas that contain storm water retention basins. If a discharge is left unmitigated, it can eventually overflow these containment areas and reach one of the three pipes off of the Bryant Lease that can release into the San Gabriel River flood control channel (Figure 2).

After locating the discharge and probable route of migration, recovery strategies can be implemented ahead of the discharge front. Appendix C and Decision guides 3-5 through 3-9 assists with selecting protection, containment, cleanup decisions and recovery for discharges to terrestrial lands. If the discharge threatens to enter the local waterways, Figures 1, 2 should be referenced.

After entering the waterway, the selection of appropriate protection, containment and recovery techniques will depend upon the amount of oil, discharge migration distance, water body configuration, shoreline configuration, velocity of water currents, depth of water, and presence of tidal influence. Figures 1 and 2 of this FRP should be referenced to determine migration direction of a discharge in these inland waters. Decision guide 3-3 can assist with selecting protection, containment and recovery for discharges to inland waters. Decision guides 3-5 through 3-9 assists with those cleanup decisions for conditions that may be encountered with the two inland waterways adjacent to the facility.

### Coastal Waters

The foremost method for preventing discharges from impacting coastal waters is by preventing the discharge from entering the inland waterway as well as stopping any discharge within the inland waters noted in the previous section. These inland waters eventually empty into coastal waters. If a discharge from RZ2 has entered coastal waters, the first priority is to protect environmentally sensitive areas. Note that all environmentally sensitive areas that may be affected by a discharge from RZ2 are adjacent to coastal waters. Therefore, the discharges should be closely monitored and prevented from impacting these sites.

Decision guide 3-2 can assist with selecting protection, containment and recovery for discharges to coastal waters. Decision guides 3-5 through 3-9 assists with cleanup decisions for conditions that may be encountered with coastal waters. If environmentally sensitive sites are impacted, the previous section discussing Sensitive Areas should be referenced for response procedures.

### Terrestrial Areas

The selection of appropriate protection, containment, and recovery techniques for terrestrial areas is dependent on the nature of the substrate, the slope of the terrain, type of vegetation present, the amount and type of discharge. Generally, terrestrial spills are handled by protection (isolation), recovery, cleanup, and replacement of contaminated material or by the acceleration of the natural degradation process. Methods for natural recovery are described in Appendix C.

There are no set requirements for the selection of protection, containment, and recovery methods to handle discharges of oil to terrestrial areas. SHP will work closely with the Los Cerritos Wetlands authority in managing a discharge of oil in RZ2. SHP may also use consultants to assist handling discharges of oil to terrestrial areas. More than one response technique can be used and special circumstances may dictate a particular technique. Large discharges may be divided into smaller sections depending on response technique. Discharges to terrestrial areas have a lower priority than discharges to waters as they tend to migrate at a slower rate. The exception is discharges to terrestrial areas that have a high potential to enter the drain pipes.

## **Section 4 – Response Activities and Response Resources** [49CFR194.107(d)(1)(v)]

When a discharge from RZ2 occurs, SHP considers the primary goals are to protect the public, personnel, and wildlife, and to prevent damage to property, navigable waters and environmentally sensitive areas. Signal Hill Petroleum, Inc. has committed manpower and equipment for the detection and isolation of a crude oil discharge from RZ2, including a worst-case discharge. SHP ensures that it will use all available resources and practicable methods necessary to respond to such a discharge.

As certified in the beginning of this FRP and detailed in this section, SHP has identified and ensured by contract, the availability of private personnel and equipment to respond to a worst-case discharge or a substantial threat of such a discharge to ensure that it is contained and removed to the maximum extent practicable. These private personnel and equipment are provided by contracted OSRO. In addition, SHP employs personnel trained for initial spill response and owns spill response equipment located in RZ2, at nearby SHP facilities, and on company vehicles.

### Incident Command System

In order to efficiently respond to a discharge from RZ2, SHP activates an Incident Command System (ICS/NIMS). The ICS/NIMS is used by SHP to manage an emergency incident and can be used for a worst-case discharge as well as small discharges. Although only chiefs and officers are discussed in this FRP, assistants to chiefs and officers (deputies) may be assigned to each general and command staff. Basic ICS/NIMS protocol will be utilized during a SHP spill response.

The default ICS/NIMS command post for response activities is the SHP main office located at 2633 Cherry Ave, Signal Hill CA. The main office is 6.25 miles northwest of the Bryant Lease and is easily accessible from all points within RZ2 as well as inland waters that may be impacted by a discharge from RZ2. The main office is equipped with multiple communication devices including land-based phones, mobile phones, and two-way radios. All emergency spill plans including this FRP, as well as pipeline and area drawings and maps, operational guidelines, response guidelines, and SDS information are in the central file at the main office. Additionally, a field office can be set up at the Bryant Lease field office, which is quickly accessible from SHPs main office. For worst-case, large, or significant discharges, SHP may choose to set up a field command post located at the Bryant Lease field office or close to the response area. Depending on the discharge size and planned duration of response activities, the field command post may range in size from SHPs main office building to a pickup truck near the incident site.

### *Organization*

#### Qualified Individual (QI)

The QI is responsible for managing a discharge from RZ2 as well as the closure of discharge activities. The QI is authorized to activate the OSRO and obligate funds required for response activities. Together with the LIO, the QI is responsible for interfacing with the OSRO, federal, State and local responders, and the Federal On-Scene Coordinator (FOOSC). Such interfacing includes initial and follow-up notification, status and coordination of response activities, and plans for continued response activities.

The QI manages a discharge through SHPs ICS. The on-site IC manages the ICS/NIMS and reports directly to the QI. In the event of a worst-case discharge, a large discharge, or a

discharge that impacts sensitive areas, the QI will assume the duty of the IC. For less significant discharges, the QI may assign the IC position to one of the alternates listed in Table 4-1.

#### Incident Commander (IC)

The IC manages the ICS/NIMS and supervises overall on-site response activities until properly relieved of this duty. Initially, the IC will assume all roles listed in Table 4-1. The IC will quickly identify the character, exact source, estimated amount and extent of the release as well as other necessary information so the appropriate agencies can be notified.

Depending on the size and significance of the discharge, the IC may then choose to activate the command officers and general staff chiefs listed in Table 4-1 as needed. The IC manages and directs all Liaison & Information, Safety & Environmental, Operations, Logistics, Planning, and Finance/Administration section activities.

The IC will develop the overall strategy for discharge mitigation (with the planning section, if activated). The IC reviews and approves the Incident Action Plan (IAP) and prepares the Incident Closure Report. The IC schedules ICS meetings, including initial, status, and post-review meetings. Finally, the IC manages and coordinates SHP response activities with OSRO response activities.

#### Liaison & Information Officer

The Liaison & Information officer (LIO) is the official contact between SHP; federal, state and local agencies; and response organizations. The LIO reports directly to the IC as command staff and co-ordinates activities with the QI. Depending on discharge size and significance, the QI or the IC may assume the duties of the LIO. Refer to Table 4-1 for the assigned and alternate LIOs.

As outlined in Section 2, the LIO is responsible for the initial notification of government agencies and private organizations according to Table 2.1. The officer is also responsible for follow-up notifications as well as documenting all initial and follow-up notifications. The officer monitors, assesses and tracks organization and agency response units and resources in conjunction with the Operations, Logistics, Planning, and Finance/Administration Sections. Additionally, the officer notifies the QI and IC if a government agency assumes control of the discharge response.

The LIO is the point of contact for organizations seeking information about a discharge from RZ2. The officer prepares and releases information to the public or media as necessary. The officer monitors and responds to inquiries by the general public and creates a toll-free hotline, if necessary. They also coordinate and consult legal counsel and SHP management as necessary before transfer of information. The officer coordinates any requests for emergency assistance and provides point of contact for the responding organizations and agencies.

#### Safety & Environmental

The Safety & Environmental officer (SEO) monitors safety and environmental conditions for the response effort. The officer develops measures for assuring the safety of all assigned personnel and insures response activities follow environmental regulations. The officer manages recovered material and wastes resulting from response activities. The officer reports directly to the IC as command staff. Refer to Table 4-1 for the assigned and alternate SEOs.

The officer develops the specific Site Safety Plan for the response effort. The officer coordinates and advises the ICS sections, SHP and OSRO response personnel on potentially hazardous and unsafe conditions, emergency procedures, and safe working procedures. The officer works with

the OSRO safety supervisor to coordinate and instruct OSRO response personnel on hazards and safety procedures. The officer selects and maintains safety equipment, proper personal protective equipment for SHP response personnel. The officer is also in charge of coordinating all medical services, including medical emergencies as well as on-site medical areas and local clinics and hospitals.

The SEO evaluates the effectiveness of the response activities in mitigating real and potential environmental concerns. The officer authorizes, manages, and assesses any environmental monitoring, such as air monitoring and sampling. The officer coordinates monitoring and sampling with agencies. The officer ensures all spill forms are properly completed, collects all documentation involved with the discharge and properly stores them at SHPs central files when response activities are completed. Finally, the officer coordinates any post response environmental activities.

### Operations

The Operations section chief (OSC) is in charge of the Operations section. This section manages, tracks, and assesses tactical operations that are needed to carry out the IAP. The OSC reports directly to the IC as a section chief. Refer to Table 4-1 for the assigned and alternate OSCs.

This section develops the tactical objectives and organization for response activities based on the IAP. This section modifies tactical operations and resources as necessary based on field information and reports revisions to the Planning section.

### Logistics

The Logistics section chief (LSC) is in charge of the Logistics section. This section provides the support to meet needs, resources and all other services needed to sustain incident response and to carry out the IAP. The LSC reports directly to the IC as a section chief. Refer to Table 4-1 for the assigned and alternate LSCs.

The Logistics section (LS) provides support and obtains services to meet response needs. The LS establishes staffs and equips the command post, and monitors radio and telephone communications from the command post to field locations. The LS sets up areas and arranges for services to be used by responders, such as resting and eating areas. The LS maintains security of the command post and the response area. The LS insures that additional equipment, vehicles, ICS support personnel, and standby crews are available as necessary based on the Planning Section's forecasts. Finally, this section monitors operations to identify potential organizational coordination problems and reports issues to the IC.

### Planning Section

The Planning section chief (PSC) is in charge of the Planning section (PS). The PS supplies technical information. This section collects and evaluates information about the discharge. This section conducts preliminary damage assessment from initial information supplied by the IC and conducts long-range planning, forecasts probable course of events, and develops the IAP. The PSC reports directly to the IC as a section chief. Refer to Table 4-1 for the assigned and alternate PSCs.

<b>Table 4-1: Incident Command System Positions</b>			
ICS Position	Primary	First Alternate	Second Alternate
Qualified Individual QI	David L. Slater, Executive Vice President	Sean McDaniel, Vice-President Surface Operations	Kevin Laney, Vice-President Operations
Incident Commander IC	Sean McDaniel, Vice-President Surface Operations	Kevin Laney, Vice-President Operations	David L. Slater, Executive Vice President
Liaison & Information Officer LIO	Keith Kerr Supervisor	Sean McDaniel, Vice-President Surface Operations	Kevin Laney, Vice-President Operations
Safety & Environmental Officer SEO	Jim Lee Regulatory Specialist	Jim Haas Millwright/ Weekend Supervisor	Keith Kerr Supervisor
Operations Section Chief OSC	John Perry Supervisor	Eric Veinot Supervisor	Eric Veinot Supervisor
Logistics Section Chief LSC	Jim Haas Millwright/ Weekend Supervisor	John Perry Supervisor	John Perry Supervisor
Planning Section Chief PSC	Eric Veinot Supervisor	Keith Kerr Supervisor	Jim Haas Millwright/ Weekend Supervisor
Finance/Administrati on Section Chief FSC	Eric Veinot Supervisor	Jim Haas Millwright/ Weekend Supervisor	John Perry Supervisor

The PS collects and displays all key incident and resource information such as cleanup strategies and response progress for other ICS personnel. This section evaluates the effectiveness of response activities for modifications to the IAP and FRP. The PS supplies documents, drawings, P&IDs, and plot plans as needed for the response effort. This section develops demobilization plans as part of the Incident Closure Report to end response activities.

#### Finance/Administration Section

The Finance section chief (FSC) is in charge of the Finance/Administration section (FS). The FS monitors and manages financial status, projections of costs, and expenditures related to the response effort. The FSC reports directly to the IC as a section chief. Refer to Table 4-1 for the assigned and alternate FSC's.

The FS provides accounting, procurement, time recordkeeping, and cost analyses related to the response efforts. This section tracks personnel and equipment procurement costs as well as subcontractor costs and reimbursement costs. This section ensures adequate funds are available to support the response efforts. This section coordinates with legal counsel and insurance companies regarding financial matters and claims. This section responds to financial inquiries

and processes necessary claims for compensation. Finally, this section prepares the financial report for the response activities as part of the closure report.

#### Procedures that personnel are required to follow in responding to a pipeline emergency

##### *Responsibilities of Operating Personnel Prior to Arrival of Qualified Individual*

The responsibilities of the SHP personnel who first discover or receive notification of a discharge are detailed in Section 2 and Section 3. Briefly, the first SHP employee who discovers or is notified of the discharge:

- Should call **911** if the incident involves fire, explosions, medical emergencies, or other potentially catastrophic incidents,
- Should identify the discharge, determine the source of the discharge and shut-off or isolate the discharge quickly and safely, if possible,
- Contact the QI or Alternate QIs,
- Supply the QI with information listed in Section 2.

##### *Responsibilities of the Qualified Individual*

SHPs QI responsibilities during the initial response to a discharge from RZ2 are detailed in Section 3. The QI has the ultimate responsibility for ensuring response activities results in proper mitigation of the discharge and must coordinate activities with the IC throughout response efforts.

##### *Responsibilities of the Incident Commander*

In addition to the initial response activities listed in Section 3, the IC insures the following activities are achieved through the ICS/NIMS:

1. Creation and implementation of an IAP that insures the complete containment and removal of the discharge, including restoration of impacted area(s).
2. Coordination of the OSRO and SHP response teams, equipment and supplies.
3. Coordination with federal, state, and local agencies as necessary.
4. Obligation of funds necessary through the QI to properly carry out response activities.
5. Proper repair of the damaged equipment (SHP policy is to replace old pipeline section(s) where discharge occurred with new pipeline section(s)).
6. Report response updates to QI and LIO as necessary.
7. Properly complete and close the response activities.
8. Document the response activities.

#### OSRO/Contractor and Response Equipment [49CFR194.115]

SHPs policy is to use OSROs for most crude oil discharge response activities. When deemed necessary by the QI and IC, an OSRO is activated soon after discovery or notification of a discharge. The IC manages the OSRO and coordinates SHP ICS activities with the OSRO activities through the OSRO project manager. The OSRO project manager will be responsible for supervising OSRO response personnel.

The OSROs are based locally, close to RZ2. They have oil spill response personnel on call 24-hours per day that are trained to contain, remove and dispose of crude oil discharges. OSRO personnel are also trained to restore the impacted area to its pre-spill condition to the maximum extent practicable while minimizing any permanent environmental impact on the response site.

As part of response to discharges, the OSROs have a variety of equipment and supplies readily available for most protection, containment, and recovery techniques.

The available OSRO personnel and equipment together with SHP personnel and equipment described in this section can be committed for a seven-day response, if needed. All personnel and equipment that can be committed for a seven-day response are based locally, near RZ2.

#### *OSRO Contractors*

SHP has identified the following OSROs to supply both personnel and equipment on a 24-hour basis:

##### Primary OSRO (contracted)

Patriot Environmental Services  
 1900 West Anaheim Boulevard  
 Long Beach, CA 90813  
 Ph: (800) 624-9136  
 (562) 436-2614  
 Fax: (562) 436-2688  
 USCG Classification Number 0146

##### Secondary OSRO (as-needed)

NRC Environmental Services  
 3777 Long Beach Blvd.  
 Long Beach CA 90802  
 Ph: 562-432-1304  
 Fax: 562-432-1826  
 USCG Classification Number 0016

Both OSROs are both located within 10 miles of SHPs main office and RZ2. The OSROs' equipment and personnel are available for emergency response activities on a 24-hour basis.

#### *OSRO Spill Response Personnel*

Patriot Environmental Services (Patriot) has more than 80 Hazwoper trained personnel for immediate response and can provide an additional 100 Hazwoper trained personnel within four to eight hours. If more personnel are needed, Patriot can tap into their national pool of resources. NRC Environmental Services is an OSRO that can be contracted by SHP to provide additional trained personnel as well as equipment necessary to assist with spill cleanup activities, on a planned basis, either at onset of the incident or "as-needed," especially if a discharge should reach coastal marine waters.

#### *OSRO/Contractor Spill Response Equipment List*

Appendix B contains the SHP approved and contracted OSROs (Patriot and NRC) with their list of spill response equipment. The equipment available to the OSROs is more than sufficient to contain and clean-up SHPs worst-case discharges within the designated tier times. OSRO response equipment includes the following:

- Vacuum Trucks
- Backhoes, Trucks, Roll-offs, Storage Bins
- Portable Pumps
- Skimmers

- Spill Booms
- Spill Blankets
- Sorbents
- Barricade, signs, flashers, etc. for traffic control
- Mobile Phones/Radios
- Generator and lights
- Steam Cleaners, Pressure washers.

#### SHP Spill Personnel and Response Equipment List

SHP will use company resources as part of the initial response and mitigation activities for a crude oil discharge from RZ2. SHP has employed personnel that are trained to the Hazmat first responder level in accordance with 29 CFR 1910.120 (q) and for crude oil spill response. These personnel have ready access to a variety of equipment, and supplies located within RZ2, at nearby SHP facilities and on company vehicles that will assist with responding quickly to a discharge.

Although SHP response personnel and equipment are described in this FRP, the extent of SHPs response activities will be only detection, isolation, and equipment repairs (first response), except for small discharges. The OSRO is contracted to provide the necessary certified personnel, equipment and materials for the containment, recovery and clean-up of discharges, including a worst-case discharge from RZ2.

#### *SHP Response Personnel*

SHP has trained personnel on call 24-hours per day to assist with response to a worst-case discharge. SHP employees are trained to identify and isolate or shut-off crude oil discharges. SHP has approximately 45 trained personnel available on a 24-hour basis for response activities including detection, isolation, and pipeline repair. The quantity of SHP personnel in combination with OSRO personnel is more than sufficient for providing continuous response operations for the first seven (7) days. SHP has back-up capabilities (enabling continued operations) for the SHP Vice President/COO or Vice-President/Operations, who comprise part of the spill management team. Back-up capabilities are also available for pipeline repair crews.

Appendix A1 contains the list of SHP personnel available on a 24-hour basis for all response activities. Included on this list are the employee's mobile numbers and residence numbers.

#### *SHP Response Equipment*

SHP has spill equipment and vehicles available for immediate use in response to a worst-case discharge. The equipment list includes the following:

- Crane trucks
- Vacuum Trucks
- Backhoes
- Spill Booms
- Spill Pads
- Sorbents
- Barricade, signs, etc. for traffic control
- Generator and lights
- Transfer hoses and connection equipment,
- Portable pumps and ancillary equipment,

- Facilities available to transport and receive oil from a leaking pipeline,
- Two-way radios and mobile phones.

Also, SHP has a storage capacity of more than 3000 barrels onsite and 50,000 barrels at their nearby facilities that is more than sufficient for a worst-case discharge from RZ2.

The primary means of communication during response activities is by SHP-owned and OSRO-owned mobile phones and 2-way radios. This system is very reliable and is operational even if a local power outage has occurred. Both SHP and the OSROs have 2-way radios which are readily available as part of their response resources.

Appendix A2 contains the list and locations of SHP spill response equipment that may be used by SHP response personnel. This equipment is located at four local facilities and on SHP company vehicles. SHPs communication devices and assignment procedures are outlined in Section 2

### Maintenance Program

SHP periodically tests and inspects their available spill response and communications equipment as part of required drills. At that time, any damaged or nonfunctional equipment is replaced, refurbished, or repaired. In addition, spill response equipment that is used during a discharge event is inspected soon after completion of activities and replaced, if necessary.

Patriot and NRC are both USCG classified as OSROs (Appendix B) that serve as documentation of their response resources and equipment maintenance program. Both Patriot and NRC are qualified to respond to a worst-case discharge in RZ2.

### Response Activities within Appropriate Tier Times [49CFR194.155(b)]

The following lists the appropriate tier times for this FRP:

Tier 1 - Response activities must begin within 12 hours after discovery of a discharge including a worst-case discharge.

Tier 2 - Containment activities must begin within 36 hours after discovery of a discharge including a worst-case discharge.

Tier 3 - Clean-up activities must begin within 60 hours after discovery of a discharge including a worst-case discharge.

Note: RZ2 is not considered a “high volume area.”

SHP operators are on the Bryant Lease at least three times a day for a minimum of 5 hours per day, 365 days per year. Based on the low volume and discharge rate of this facility, a discharge in RZ2 would most likely be detected in a timely manner, as practicable based upon facility traffic. Additionally, this facility is bordered by two oil and gas facilities that will contact SHP should they discover a discharge at the Bryant Lease. Unless circumstances dictate otherwise, SHP will commence with initial response and containment activities as soon as the discharge is discovered.

The OSROs are prepared to respond to a discharge from RZ2 (Tier 1) within two hours of discovery with containment and clean-up activities (Tier 2 and 3) beginning shortly thereafter. Figure 3 is an OSRO response map that shows the 2-hour radius for the Long Beach/Signal Hill area. The OSROs’ 2-hour response time includes response activities for onshore, shallow water, and shoreline environments as well.

The OSROs have more than a sufficient amount of equipment and personnel located within 10 miles and/or 30 minutes of RZ2 (Appendix B). Because of the OSROs' close proximity to RZ2, the main response, containment, and cleanup activities often begin within an hour of discharge detection, as have been demonstrated by actual RZ2 spill response. Except for hazardous wastes, all wastes are handled at SHP facilities located within 10 miles of RZ2. Thus the majority of wastes resulting from clean-up activities are appropriately mitigated/ disposed of within 60 hours of discovery of a discharge. Because response personnel and equipment are based locally, both the OSRO and SHP can and will commit resources for a continuous 7-day response if required for any discharge from within RZ2.

#### Emergency Response Data (SDS)

SHP processes crude oil and produced water that are transported via facility pipelines. Most of the pipelines in RZ2 contain a dilute amount of crude oil mixed with a large amount of produced water. The SDS for these products are in Appendix J of this FRP, at SHPs main office and at field facility offices. The SEO is responsible for maintaining and distributing these documents as needed for response activities.

#### Recovered Material and Waste Management

The SEO manages recovered material and wastes resulting from response activities within RZ2 according to federal, State, and local requirements. The SEO is in charge of the recovered material and waste disposition including characterization, transportation, storage, and disposal. The U.S. EPA manages federal waste requirements, the State of California Department of Toxic Substance Control manages State waste requirements and the City of Long Beach Certified Unified Program Agency (CUPA) (Environmental Health Department) manages local waste requirements. The local CUPA should be contacted first regarding hazardous material and waste management. Guidelines for handling nonhazardous and hazardous waste are located at SHPs main office central file.

Unless the discharge of crude oil is small, the recovered materials resulting from response activities are stored in temporary bins and tanks at the response site in order to quantify amounts of crude oil discharge and to await final disposition. The PS is in charge of quantifying crude oil discharge amounts and will gauge the bins and tanks prior to release for disposition. The FOSC and other on-site agencies must be notified before gauging and releasing recovered material and waste for further disposition. If recovered discharge materials and wastes are in a vacuum truck tank and cannot be quantified before disposition or transfer back into SHPs process stream, they must be transferred to temporary storage for holding until such a time as they can be appropriately processed.

#### *Temporary Waste Storage*

The OSRO will supply temporary storage bins and tanks for collected crude oil discharge, cleanup water, and crude oil impacted soil at the response site. These storage units are to be clearly labeled and located in an appropriate site near the response area. Storage areas should be designated as oil impacted, hazardous or non-hazardous and will function as the temporary transfer site for final disposition. All recovered free oil and oil-impacted soil should be labeled and stored separately. All nonhazardous and non-oil impacted wastes such as food wrappers and waste papers should be labeled and kept in separate containers appropriate for nonhazardous waste disposal. Nonhazardous wastes should be segregated away from oil impacted material and hazardous waste storage areas to avoid contamination.

Care should be taken to prevent further impact of recovered material on native soil or waters. Temporary berming with sandbags or booms for storage areas may be necessary. Impermeable sheeting may be required on berms and floor of storage areas. Proper handling equipment such as forklifts and front loaders should be available to these areas to minimize contamination during material transfer. The SEO is responsible for required air and other environmental monitoring for these areas to fulfill safety and environmental requirements.

Storage units can be established on paved areas within SHPs secured facilities. SHP can increase containment volume in these areas with sandbags and booms, if needed. Recovered material that will be stored for more than 24 hours should be placed in covered bins and tanks.

SHP has permanent enclosed storage capacity of more than 3000 barrels onsite and 50,000 barrels at their nearby facilities that is more than sufficient for a worst-case discharge. All crude oil discharge, cleanup water and crude oil impacted soil will be stored in accordance to Federal and State regulations (labeling, storage time limitations, and secured storage areas). The local CUPA can assist with designating temporary storage areas.

If required, an oral permit can be issued for temporary storage of wastes (CCR Title 22, Section 66270.61). A written Emergency Storage/Treatment Permit, valid for 90 days, must be issued within 5 days of the oral permit. Information required for the permit includes a list of materials to be stored, the storage location, the type and size of storage containers, and the approximate time of storage prior to disposal and treatment.

#### *Disposition of Wastes*

After PS and on-site agency approvals, recovered free crude oil and cleanup water from a discharge is returned back to SHPs process stream without first being reclaimed. SHP processes crude oil and natural gas for delivery to petroleum refineries and natural gas processors. Thus, the recovered discharge material is considered a recyclable material and can be excluded from classification as a waste. These recovered materials are reintroduced into SHPs process stream at the inlet to the Bryant Lease tank, West Unit Oil/Water Separator or the Central Unit's Sludge Tank.

Crude oil impacted soil is sent to a permitted land based bioremediation cell, at a local SHP facility, less than ten miles from RZ2. Crude oil impacted materials such as incidental trash, rags, disposable gloves, and sorbents cannot be processed at SHPs facilities or be deposited in the land based bioremediation cells. These wastes as well as any hazardous wastes are disposed of in permitted waste disposal facilities with proper documentation (Bill of Lading, Uniform Hazardous Waste Manifests). Note that the OSROs are permitted to transport hazardous wastes.

#### *Recordkeeping*

The SEO is in charge of recordkeeping. They distribute SHP spill forms (Appendix H) to ICS staff for documentation of response events as needed. SHP spill forms were developed based on ICS forms and are tailored specifically for crude oil spills in RZ2. Federal ICS forms are available to the SEO, if needed. The SEO tracks the spill forms and collects them for reference and filing in SHPs main office central files. The SEO also gathers other documentation such as agency correspondences and Uniform Hazardous Waste Manifest for filing in the central files. The PS prepares the closure report based on information gathered from the various ICS sections and the discharge response post review.

A generic Site Safety plan was developed using elements of SHPs facility general safety plan. The SEO develops a unique site safety plan for each discharge event from this generic site safety

plan. Since every discharge event is unique, the SEO must fill in pertinent details to tailor the Site Safety Plan to each specific discharge. It is distributed as required and stored with other spill forms by the SEO.

**Section 5 – List of Contacts** [49CFR194.107(d)(1)(vi)]Immediate Response Contacts

SHP personnel, government agencies, and organizations that are required to be contacted immediately after the discovery or notification of a pipeline discharge from RZ2 are listed, by priority, in Section 2, Table 2-1.

Government Agencies

Table 5-1 lists additional government agencies not noted in Section 2 that may be contacted by SHP during response activities to discharges from RZ2.

<b>Table 5-1: Government Agency Contacts</b>			
<b>Agency</b>	<b>Phone Number</b>		
	<b>24 Hour</b>	<b>Office Hours</b>	<b>After Hours</b>
U.S. Environmental Protection Agency, Region IX 75 Hawthorne Street San Francisco, CA 94105 website: <a href="http://www.epa.gov/oilspills/index.htm">www.epa.gov/oilspills/index.htm</a>	(415) 947-4400 (800) 300-2193	(866) 372-9378 (415) 947-8000 (213) 244-1800	----
U.S. Department of Health and Human Services Agency for Toxic Substances and Disease Registry Emergency Response 75 Hawthorne Street, Room 100, Mail Code HHS-1 San Francisco, CA 94105 website: <a href="http://www.atsdr.cdc.gov">www.atsdr.cdc.gov</a>	(404) 498-0120	(415) 744-1771 (415) 947-4323	-----
U.S. Geological Survey (Western Region) 345 Middlefield Road Menlo Park, CA 94025 website: <a href="http://www.usgs.gov">www.usgs.gov</a>	----	(303)-273-8500	----
National Weather Service, National Oceanic and Atmospheric Administration 520 North Elevar Street Oxnard, CA 93030 website: <a href="http://www.nws.noaa.gov">www.nws.noaa.gov</a>	----	(805) 988-6610	----
U.S. Naval Weapons Station 800 Seal Beach Blvd. Seal Beach, CA. 90740 attn: Mr. Robert Schallmann website: <a href="http://www.sbeach.navy.mil">www.sbeach.navy.mil</a>	(562) 626-7290 (562) 477-6432	----	----
State of California Division of Oil, Gas and Geothermal Resources District 1 5816 Corporate Ave., Suite 200 Cypress, CA 90630 website: <a href="http://www.consrv.ca.gov/dog/">www.consrv.ca.gov/dog/</a>	----	(714) 816-6847	----
State of California State Fire Marshall DOT Pipelines 3950 Paramount Blvd. #210 Lakewood, CA 90712 website: <a href="http://osfm.fire.ca.gov/">http://osfm.fire.ca.gov/</a>	----	(562) 497-9100	----

<b>Table 5-1: Government Agency Contacts</b>			
<b>Agency</b>	<b>Phone Number</b>		
	<b>24 Hour</b>	<b>Office Hours</b>	<b>After Hours</b>
State of California Dept of Toxic Substance Control 5796 Corporate Avenue Cypress, CA 90630 website: www.dtsc.ca.gov	----	(714) 484-5300	----
State of California Regional Water Quality Control Board Los Angeles Region 320 W. 4 <sup>th</sup> Street, Suite 200 Los Angeles, CA 90013 website: www.swrcb.ca.gov/rwqcb4/	----	(213) 576-6600	----
City of Long Beach Marine Bureau Marine Patrol - Sergeants Desk (non-emergency only) website: www.ci.long-beach.ca.us/lbmarina	(562) 570-4950	----	----
Port of Long Beach 925 Harbor Plaza Long Beach, CA website: www.polb.com	(562) 590-4185	----	----
Port of Los Angeles Port Police Office 425 S. Palos Verdes Street San Pedro, CA 90731 website: www.portoflosangeles.org	(562) 366-5555	----	----
City of Huntington Beach Fire Department Police Department website: www.ci.huntington-beach.ca.us	911 911	M-F 8-5 (714) 536-5411 (714) 960-8811	---- ---- ----
City of Seal Beach Fire Department Police Department Spill Reporting – Public Works/Engineering website: ci.seal-beach.ca.us	911 911 ----	(562) 594-7232 (562) 431-2527 ext. 317	(714) 538-3501 (562) 594-7232 ----
Los Angeles County Department of Beaches and Harbor 13837 Fiji Way Marina del Rey, CA 90292	HARBOR MASTER (310) 482-6000	(310) 305-9503 M-TH (10 hrs.)	----

### SHP Contacts

Table 5-2 lists SHP personnel that can be contacted on a 24-hour basis to support response activities of a discharge from RZ2. This table consists of ICS personnel including those listed in Section 4, Table 4-1, and their mobile phone numbers. The names, phone numbers, and addresses of other SHP operations personnel that are qualified to participate in spill response are SHP company confidential and listed in Appendix A1.

<b>Table 5-2: SHP Contacts</b>		
<b>ICS Position</b>	<b>Name</b>	<b>Mobile Phone</b>
Qualified Individual	David L. Slater	(b) (6)
First Alternate	Sean McDaniel	
Second Alternate	Kevin Laney	
Incident Commander	Sean McDaniel	
First Alternate	Kevin Laney	
Second Alternate	David L. Slater	
Liaison & Information Officer	Keith Kerr	
First Alternate	Sean McDaniel	
Safety & Environmental Officer	Jim Lee	
First Alternate	Jim Haas	
Operations Section Chief	John Perry	
First Alternate	Eric Veinot	
Logistics Section Chief	Jim Haas	
First Alternate	John Perry	
Planning Section Chief	Eric Veinot	
First Alternate	Keith Kerr	
Finance/Administration Section Chief	Eric Veinot	
First Alternate	Jim Haas	

### Response Resources

Table 5-3 lists additional response resources that may be contacted by SHP during response activities to discharges from RZ2. Included are government and private wildlife organizations, medical organizations, and contractor equipment and services. Additional response resources are listed in the LA/LB ACP, Section 5000 – Logistics.

<b>Table 5-3: Response Resource Contacts</b>			
<b>Organization</b>	<b>Phone Number</b>		
	<b>24 Hour</b>	<b>Office Hours</b>	<b>After Hours</b>
Memorial Occupational Medical Services 2801 Atlantic Avenue Long Beach, CA 90806	----	(562) 933-0085	----
Long Beach Memorial Medical Center 2801 Atlantic Avenue Long Beach, CA 90807	----	(562) 930-2000	----
Willow Urgent Care 2704 East Willow Street Signal Hill, CA 90755	----	(562) 595-0203	----
Advanced Technology Laboratory 1510 East 33 <sup>rd</sup> Street Signal Hill, CA 90807	----	(562) 989-4045	----
Saybolt Laboratory, LP 21730 South Wilmington Avenue, Suite 201 Carson, CA 90810	----	(310) 513-2031	----
Strata-Analysts Group Laboratory 1842 East 29 <sup>th</sup> Street Long Beach, CA 90806	----	(562) 426-0199	----
Commercial Global Insurance of California 8105 Irvine Center Drive, Ste 400 Irvine, CA 92618	----	(949) 600-7995	----
U.S. Fish and Wildlife Service 2730 Locker Avenue West Carlsbad, CA 91698	----	(619) 431-9440	----
California Oiled Wildlife Care Network University of California at Davis 128 Old Davis Road Davis, CA 95616	----	(916) 445-0045 (530) 754-9035	----
California Marine Mammal Center (mammals) 1065 Fort Cronkhite Sausalito, CA 94965	(415) 289-7325	----	----
NRC Environmental Pier D Berth D47 Long Beach, CA 90802	(800) 337-7455	(562) 432-1304	----
Guzman Crane & Trucking 24824 Seagrove Avenue Wilmington, CA 90744	----	(562) 492-6888	----
AH & S 2439 Cerritos Avenue Signal Hill, CA 90755		(562)-426-7051	
Southern California Edison 2244 Walnut Grove Avenue Rosemead, CA 91770	(800) 611-1911	(800) 655-4555	----
Long Beach Energy (Gas and Electric Department) 2400 East Spring Street Long Beach, CA 90806	----	(562) 570-2000	----

**Section 6 – Training Procedures** [49CFR194.107(c)(1)(vii), 49CFR194.117]

SHP maintains a comprehensive training program for operations supervisor and personnel. This program includes training beyond emergency discharge response requirements discussed in this FRP. Training techniques can vary from classroom sessions, videotape self-studies, internet based courses, field demonstrations, drills, workshops and review sessions.

SHPs emergency response training program is set up to meet federal and state OSHA Hazwoper requirements. The program is designed so that SHPs operations personnel and supervisors receive the periodic training necessary to fulfill their assigned role in an emergency discharge response.

An OSHA qualified ICS and Health and Safety trainer together with SHPs operations supervisor are in charge of SHPs training program. Together, they will verify that each operations personnel that may participate in emergency discharge response receive training commensurate with their responsibilities. The trainer will have either satisfactorily completed a course for emergency response or they will have academic credentials and instructional experience necessary to demonstrate competent instructional skills and good command of the subject matter. The trainer will set up the training schedule as well as document training.

**HAZWOPER, Hazard Communications, and ICS/NIMS Training**

All SHP operations personnel are trained in hazardous waste operations and emergency response (HAZWOPER) in accordance with 29CFR1910. All new SHP operations personnel participate in the 24-hr Hazmat First-Responder course, as required by their job description. All current SHP operations personnel receive an annual 8-hr HAZWOPER refresher course.

All SHP personnel are trained in hazard communications annually. Included are training for the characteristics and hazards of crude oil as well as the location and availability of the written hazard communication program including SDS. Also included are the physical characteristics, health effects, and exposure protection methods for crude oil, especially during discharge response activities.

SHPs designated OSROs meet training requirements pursuant to 29CFR1910.120 (HAZWOPER). The OSROs supply the training as well as any protective equipment for their response personnel. At the time of a discharge, SHPs SEO will meet with the OSROs' on-site safety manager to review the site specific safety plan and any special circumstances involved with response activities that may require OSRO personnel to don special protective equipment or follow special procedures.

Contractors hired by SHP as part of response activities typically meet training requirements pursuant to 29CFR1910.120 (HAZWOPER). The contractors must supply the training as well as any protective equipment for their response personnel. At the time of a discharge, SHPs SEO will meet with the contractor's operations manager to review the site safety plan and any special circumstances involved with response activities that may require the contractor's personnel to don special protective equipment or follow special procedures.

Some non-SHP response personnel who are needed to temporarily perform immediate emergency work, in the support zone, such as truck drivers and crane operators may not be required to meet HAZWOPER training requirements. These personnel will be briefed of potential hazards at the site that they may encounter while performing their duties prior to actually participating in site activities. If required by the task, they will be instructed on the use

of any personal protective equipment. SHPs SEO will be in charge of providing Hazard Communication training and information to these personnel. Documentation of training of these personnel will be prepared and kept with each specific discharge response event at SHPs main office central file.

Volunteers that may be used during an emergency discharge response will be assessed as far as level of HAZWOPER training. Volunteers that are HAZWOPER trained will be assigned tasks based on the LA/LB ACP listing (Section 9720). Volunteers that aren't HAZWOPER trained and are deemed necessary for discharge response efforts will receive HAZWOPER training, funded by SHP.

#### Training for Use of Facility Response Plan [49CFR194.117]

SHP will conduct annual training to ensure that all operations personnel that may participate in oil discharge response activities know the contents of, as well as their responsibilities under this FRP. Training will cover the basic contents and any changes to this FRP. The hiring of new employees, transfer or promotion of current employees or the acquisition of new spill response equipment and techniques may initiate additional discharge response training sessions. Emergency discharge response post-review may also initiate additional training or retraining sessions.

Training information will include the names, addresses, and the procedure for contacting other operations personnel on a 24-hr basis as well as the name of, and procedures for contacting the QI and alternates on a 24-hr basis. Although it is the responsibility of the LIO for notification of agencies during response activities, all operations personnel will be trained to know agency notification process and phone numbers such as the 24-hr toll-free telephone number of the National Response Center and of the California Office of Emergency Services.

As part of SHPs training program, all operations personnel that may be part of response activities will know the conditions that are likely to worsen emergencies, including the consequences of malfunctions or failures. Training also includes knowing the appropriate corrective actions and steps necessary to control any accidental discharge of oil. Finally, training will include the steps to minimize the potential for fire, explosion, toxicity, or environmental damage.

All SHP operations personnel are trained as first responders in order to properly handle a discharge of crude oil including worst-case discharges from RZ2 when it is first discovered or reported. First responders are personnel who respond to a release or potential releases of crude oil for the purpose of protecting nearby persons, property or the environment. Their function is to act defensively to contain the release, to keep it from spreading, and to prevent exposures. SHP operations personnel have basic knowledge of how to identify, isolate, and perform control, containment and/or confinement techniques on discharges with pipeline shut off procedures and booming strategies. These personnel also are trained to understand standard operating procedures of SHPs facilities in order to stop or lessen discharges.

Note that although SHP response personnel are trained in control, containment and/or confinement techniques, the extent of SHPs planned response activities will be only detection, isolation, and equipment repairs, except for small discharges. OSROs are contracted to provide extensive containment, recovery and clean-up of discharges, including a worst-case discharge from RZ2. SHPs OSROs will have the responsibility for containing and cleanup beyond first response activities.

### Onsite Safety Training Meetings

In addition to regularly scheduled training, daily operations and safety meetings will be held at the site of response activities. These meetings are used to discuss the previous and upcoming day's events. During these meetings, the SEO apprise SHP personnel, OSRO personnel, and contractors of safety issues, review previous response activities, and answer safety questions pertaining to response activities. These daily meetings may also be used as training sessions to supplement regularly scheduled training. Records of these on-site safety meetings will be kept as part of the specific discharge response records.

### Training Documentation

SHP will maintain the training record for each operations personnel that have been trained in emergency discharge response for as long as that person has duties as described in this FRP or three years, whichever is longer. The records will be kept at SHPs main office central file. Documentation will include the type of training, date conducted and name of participants. SHP personnel are presented with written certification when they have completed certain training sessions. Documentation will be kept of those receiving certification and date that certification was presented. Training records may be generated for personnel engaged in response, other than SHP and OSRO personnel. These records will be maintained as part of the specific discharge response event at SHPs main office central file.

## **Section 7 – Drill Types, Schedules, and Procedures** [49CFR194.107(c)(1)(ix)]

SHP uses drill and exercises to assess whether the FRP will function as planned and to maintain readiness, awareness and communication of emergency discharge response activities. Drills also confirm the readiness and competence of SHP personnel while ensuring that equipment is in good working condition and prepared at all times for discharge response. SHP conducts drills according to the DOT/USCG/EPA/MMS National Preparedness for Response Exercise Program (PREP – Appendix G – Drill/Exercise Documentation Forms). This section describes methods to determine that the drills were completed, were conducted in accordance of PREP guidelines, and were evaluated regarding the effectiveness of the FRP.

Drills conducted by SHP may be site specific and/or scenario specific. The scope and scheduling of the drills will be coordinated between SHPs Health and Safety trainer, operations management and SHPs Operation Supervisor. There will be periodic announced and unannounced internal and external drills. Internal drills are self-evaluated and self-certified by SHP. External drills are those that extend beyond the FRPs' organization and may include government agencies. External drills include the external response community members and are designed to examine the FRPs' effectiveness in coordinating with the government and external response community.

### Triennial Drills

Drills at SHP operate on a three-year cycle. All elements of SHPs FRP will be tested during the three year drill cycle. Drills may include SHPs contracted OSROs. FRP components that will be exercised include:

- Notifications to appropriate parties Internal/ External
- SHP ICS/NIMS and Emergency Discharge Response Team Mobilization and Operation
- Discharge Control, Containment, and Assessment
- Discharge Recovery
- Protection of Sensitive Areas
- Waste Management
- Communications
- Transportation
- Personnel and Equipment Support
- Procurement
- Documentation, including post discharge assessment

### Qualified Individual Notification Drill

The purpose of this internal drill is to ensure that the QI or alternate QIs can be reached for emergency discharge response including a worst-case discharge. The drill will be conducted on a quarterly basis. Contact with the QI must be made, confirmed by the QI, and documented to satisfy the drill objective. At least once per year the QI notification drill will be conducted during non-business hours.

### Spill Management Team Tabletop Drill

The purpose of this internal drill is to assess SHPs spill management team's organization, communication, and coordination of the components of this FRP. The drill will be conducted unannounced on an annual basis. SHPs spill management team is the spill emergency response team (the officers and chiefs of SHPs ICS/NIMS).

The objectives of this exercise include the demonstration of the knowledge of this FRP, proper notification procedures, and review of communication systems, ability to organize SHP personnel and OSRO resources and the ability to interface with federal, state and local agencies. Credit will be taken for this drill if it is conducted in conjunction with other drills or occurs as a result of an actual spill incident, as long as the objectives are met and documented.

#### Equipment Deployment Drill [49CFR194.107(c)(1)(viii)]

The purpose of this drill is to demonstrate the ability to deploy emergency response equipment and ensure its proper working order. Also, this drill will demonstrate that the equipment is in good operating condition and is appropriate for the intended operating environment. This equipment drill will be conducted unannounced on an annual basis. Personnel that would normally operate or supervise the operation of the response equipment will participate in the drill. Credit will be taken for this drill if it is conducted in conjunction with other drills or occurs as a result of an actual spill incident, as long as the objectives of the drill are met.

#### Drill Review and Documentation

As part of drill exercises, a post-drill review will be conducted and elements of the FRP will be critiqued. SHPs QI will coordinate the post-drill review and meet with the ICS officers. If certain elements of the FRP need revision, the FRP will be revised and distributed as described in Section 8.

In addition, credit can be taken for internal drill reviews conducted in response to actual discharges providing the response was evaluated and documented. It also must be determined which drill or exercise described in this FRP was completed in the discharge response. Reviews and documenting actual events will be identical to that done for a planned drill or exercise.

Internal drills will be documented for self-certification. Spill drill documentation forms derived from PREP guidelines (Appendix H) will be used to document drills. Information and results of drill exercises will be documented and maintained at SHPs main office central file for at least five years.

**Section 8 – Response Plan Review and Update Procedures** [49CFR194.107(c)(1)(x)]  
[49CFR194.121]

Pursuant to OPA-90 requirements, SHPs FRP will be reviewed and submitted to PHMSA at least once every five (5) years for review and approval. Also, SHPs SEO will review this FRP periodically and update when necessary if there are new spill response requirements or significant changes in pipeline operations. New requirements and significant changes that require revisions to the FRP include:

- An extension of the existing pipeline or construction of a new pipeline in a response zone not covered by the previously approved plan,
- Relocation or replacement of the pipeline in a way that substantially affects the information included in the response plan, such as a change to the worst-case discharge volume,
- The type of oil transported, if the type affects the required response resources,
- The name of the OSRO, changes to OSRO, changing OSROs,
- Emergency response procedures,
- The Qualified or Alternate Qualified Individual,
- A change in the NCP or ACP that has significant impact on the equipment appropriate for response activities,
- Change in ownership,
- Any other information relating to circumstances that may affect full implementation of the plan.

If revisions are required, then this FRP will be amended and submitted to PHMSA within 30 days of the revisions. Prior to submittal, revisions will be reviewed by SHP personnel and approved by SHPs Operations Supervisor and QI. After submittal, SHPs SEO will distribute the revised FRP as listed in Table I-1.

In the unlikely event that there is a worst-case discharge, SHP will review all aspects of this FRP in relation to the worst-case discharge response within 30 days of the end of response activities. SHP will then decide if revisions are required and, if revisions are made, submit the FRP to PHMSA.

**Section 9 – Response Zone Appendix** [49CFR194.107(c)(2)]Signal Hill Petroleum Response Zone 2 (Sequence No. 1975)

OPERATOR: Signal Hill Petroleum, Inc.  
2633 Cherry Ave  
Signal Hill CA 90755

QUALIFIED INDIVIDUAL: David L. Slater  
Executive Vice President/COO  
24-HOUR PHONE NUMBER: (562) 254-8407

ALTERNATE QUALIFIED INDIVIDUALS: Sean McDaniel  
Vice President, Operations  
24-HOUR PHONE NUMBER: (562) 755-7289

Kevin Laney  
Vice President, Operations  
24-HOUR PHONE NUMBER: (562) 254-6185

CORE INFORMATION SUMMARY: See Core Plan, Section 1

## NOTIFICATION PROCEDURES:

If it is unclear to the initial detector that the incident involves a reportable oil spill, the detector should immediately call the Qualified Individual or Alternate Qualified Individuals. If the detector is certain that the incident involves a reportable oil spill, call, in order listed:

- 1) National Response Center: (800) 424-8802 (24 hr)  
(202) 267-2675 (Alt)
- 2) Office of Emergency Services (800) 852-7550 (24 hr)  
(916) 262-1621 (Alt)
- 3) OSRO (Patriot – on contract) (800) 624-9136  
OSRO (NRC – planned basis) (562) 432-1304

See *Introduction, Implementation of the FRP* for reportable oil spill criteria. See Section 2 for further details involving notification procedures. See Section 5 and Appendices for the additional contacts.

SPILL DETECTION AND MITIGATION PROCEDURES: See Section 3

SPILL RESPONSE ACTIVITIES AND RESOURCES: See Section 4

OIL SPILL REMOVAL ORGANIZATION: Patriot Environmental Services  
1900 West Anaheim Boulevard  
Long Beach, CA 90813  
Ph: (800) 624-9136  
(562) 436-2614  
Fax: (562) 436-2688

NRC Environmental Services  
 3777 Long Beach Blvd.  
 Long Beach, CA 90802  
 Ph: (562) 432-1304  
 Fax: (562) 432-1826

## EMERGENCY RESPONSE DATA:

See Appendix J – SHP MSDS

Description of Divisions within Response Zone 2

The following describes each division of RZ2 with applicable worst-case discharge calculations. Note that piping diagrams and plan-profile drawings of each line section is kept at the main office of Signal Hill Petroleum located at 2633 Cherry Ave, Signal Hill, California.

*Worst Case Discharge Determination Methodology:* [49CFR194.105]

The worst case discharge is first calculated by the summation of:

- the maximum discharge time in hours plus the maximum shutdown response time in hours multiplied by the maximum flow rate expressed in barrels per hour and
- the largest line drainage volume after shutdown of the line section in barrels.

This calculated worst case discharge is then compared with the largest historic discharge volume from the line section and the largest breakout tank volume. Since there are no breakout tanks associated with the pipelines and there are no historic pipeline discharges either known by SHP or since SHP had become the operator, the worst case discharge will be based upon the previously stated calculation methodology.

The following table summarizes the calculated worst case discharge for each pipeline segment (identifier) in RZ2. The pipeline volumes listed in this table is determined by either [the calculated pipeline volume in cubic feet multiplied by the gallons of fluid per cubic feet of pipeline (7.4802 gal/ft<sup>3</sup>) divided by 42 gallons per barrel of fluid] OR [the measured barrels per feet as supplied by the manufacturer (volume/length) multiplied by the length of pipeline], whichever is larger.

Bryant Lease										
Table 9-1: Worst Case Discharge										
Identifier	Pipeline					Discharge				Worst-case Discharge
	Length	Diameter	Total	Volume/ length	Total	Total Flowrate	Shut-in Time	Discharge Time	Volume	
	(ft)	(inches)	(bbls)	(bbls/ft)	(bbls)	(b) (7)(F), (b) (3)				
BL #1	331	1.94	1.21	0.0037	1.21	(b) (7)(F), (b) (3)				
BL #2	503	2.9	4.11	0.0082	4.11	(b) (7)(F), (b) (3)				
BL #3	393	2.9	3.21	0.0082	3.21	(b) (7)(F), (b) (3)				
BL #4	463	1.94	1.69	0.0037	1.69	(b) (7)(F), (b) (3)				
BL #5	652	2.864	5.20	na	na	(b) (7)(F), (b) (3)				
BL #6	585	2.9	4.78	0.0082	4.78	(b) (7)(F), (b) (3)				
BL #7	234	1.94	0.86	0.0037	0.85	(b) (7)(F), (b) (3)				
BL #8	555	3.83	7.91	0.0142	7.91	(b) (7)(F), (b) (3)				
BL #9	431	1.94	1.58	0.0037	1.57	(b) (7)(F), (b) (3)				

### Description of Response Zone 2, Division 1 – RZ2-B-1:

RZ2-B-1 is located along the northwest flank of the San Gabriel River flood control channel, in the City of Long Beach, within Los Angeles County, California (Figure 1). Five (5) onshore pipeline sections within RZ2-B-1 transport crude oil with an average API gravity of 26 and produced brine water from Bryant Lease crude oil wells to the pipeline that crosses under the San Gabriel River flood control channel (Figure 2). The nominal sizes of the sections are 2-inch and 3-inch inner diameter, schedule 80 pipeline.

RZ2-B-1 is generally flat at around five (5) to nine (9) feet elevation surrounded by low berms. Discharges will drain to the low points in this division, between the roadways and low berms. If a discharge is left unmitigated, it can reach a drainage pipe, located just off the southern-most point of this division. This pipe is just south of the Bryant Lease and leads to the San Gabriel River flood control channel. The entrance to the pipe is lower in elevation than the top of the berm bordering the San Gabriel River flood control channel.

#### *Significant and Substantial Harm Criteria:*

A worst case discharge from a pipeline section in RZ2-B-1 has the potential to discharge into the San Gabriel River flood control channel and, if unmitigated, could enter the Los Alamitos Bay, 0.25 miles to the southwest of RZ2-B-1. During adverse weather conditions a worst-case discharge is possible. Significant and substantial harm could reasonably be expected to occur to navigable waters and environmentally sensitive areas. Public drinking water intakes are not threatened by crude oil discharge from RZ2-B-1. These intakes are at a much greater distance than the five (5) mile radius requirement set forth in the Federal Rules and Regulations.

#### *List and Descriptions of Line Sections in RZ2-B-1:*

1. BL #1 Pipeline (Northwest Corner of RZ2-B-1) – BL #1 is a 2-inch diameter steel schedule 80 pipeline that transports crude oil and produced water from crude oil wells #26 and #30 to a pipeline valve and operates at 25 psi (Figure 2). (b) (7)(F), (b) (3) [REDACTED]. The maximum anticipated crude oil content for this pipeline at any given time is 7% (93% produced water). The calculated worst-case discharge for BL #1 is (b) (7)(F), [REDACTED] (Table 9-1).
2. BL #2 Pipeline (Central RZ2-B-1) – BL #2 is a 3-inch diameter steel schedule 80 pipeline that transports crude oil and produced water from the pipeline BL #1 valve to a pipeline valve and operates at 25 psi (Figure 2). (b) (7)(F), (b) (3) [REDACTED]. The maximum anticipated crude oil content for this pipeline at any given time is 30% (70% produced water). The calculated worst-case discharge for BL #2 is (b) (7)(F), [REDACTED] (Table 9-1).
3. BL #3 Pipeline (Southern Portion of RZ2-B-1) – BL #3 is a 3-inch diameter steel schedule 80 pipeline that transports crude oil and produced water from the pipeline BL #2 valve and crude oil wells #3 and #12 to a pipeline valve and operates at 25 psi (Figure 2). (b) (7)(F), (b) (3) [REDACTED]. The maximum anticipated crude oil content for this pipeline at any given time is 25% (75% produced water). The calculated worst-case discharge for BL #3 is (b) (7)(F), [REDACTED] (Table 9-1).

4. BL #4 Pipeline (North and East Portion of RZ2-B-1) – BL #4 is a 2-inch diameter steel schedule 80 pipeline that transports crude oil and produced water from crude oil well #28 to a valve at pipeline BL #3 and operates at 25 psi (Figure 2). (b) (7)(F), (b) (3)  
 [REDACTED]  
 [REDACTED] The maximum anticipated crude content for this pipeline at any given time is 6% (94% produced water). The calculated worst-case discharge for BL #4 is (b) (7)(F), (b) (3) (Table 9-1)
5. BL #9 Pipeline (Parallels North San Gabriel River flood control channel) – BL #9 is a 2-inch diameter steel schedule 80 pipeline that transports crude oil and produced water from crude oil wells #1 and #4 to a valve at pipeline BL #3 and operates at 25 psi (Figure 2). (b) (7)(F), (b) (3)  
 [REDACTED]. The maximum anticipated crude content for this pipeline at any given time is 25%. (75% produced water). The calculated worst case discharge for BL #9 is (b) (7)(F), (b) (3) (Table 9-1).

#### Description of Response Zone 1, Division 2 – RZ2-B-2:

RZ2-B-2 is located along the southeast flank of the San Gabriel River flood control channel, in the City of Long Beach, within Los Angeles County, California (Figure 1). Four (4) onshore pipeline sections within RZ2-B-2 transport crude oil with an average API gravity of 26 and produced brine water from Bryant Lease crude oil wells and RZ2-B-1 to the tank farm (Figure 2). The nominal sizes of the sections are 2-inch, 3-inch and 4-inch inner diameter, schedule 80 pipeline. Additionally, approximately 650-feet of 3-inch high-density polyethylene (HDPE) SDR11 pipeline runs through a 6-inch diameter HDPE pipeline casing that cross underneath the San Gabriel River flood control channel.

RZ2-B-2 is fairly flat at around five (5) to nine (9) feet elevation surrounded by low berms. This area gradually slopes from the high point at approximately nine (9) feet elevation at the northeast corner to the low point at approximately five (5) feet in the southwest corner. In the southwest corner of the facility, just south of the tank farm, are storm water retention basins that collect excess storm runoff. In the event of a release in this division, discharges will flow from northeast to the southwest and into the storm water retention basins. If the discharge is unmitigated, it can overflow the storm water retention basin and into a drain that discharges into the San Gabriel River flood control channel, just south of the Bryant Lease facility. There is another drain in the northeast corner of the facility that also discharges to the San Gabriel River flood control channel, but due to terrain, crude oil discharges are unlikely to flow to that site.

#### *Significant and Substantial Harm Criteria:*

A worst-case discharge from a pipeline section in RZ2-B-2 has the potential to discharge into the San Gabriel River flood control channel system, and if unmitigated, could enter the Los Alamitos Bay, 0.25 miles to the southwest of RZ2-B-2. During adverse weather conditions a worst-case discharge is possible. Significant and substantial harm could be reasonably expected to occur to navigable waters and to environmentally sensitive areas. Public drinking water intakes are not threatened by crude oil discharges from RZ2- B-2. These intakes are at a much greater distance than the five (5) mile radius requirement set forth in the Federal Rules and Regulations.

#### *List and Descriptions of Line Sections in RZ2, Division-2:*

1. BL #5 Pipeline (Crosses underneath the San Gabriel River flood control channel) – BL #5 is a 3-inch diameter HDPE SDR11 pipeline that transports crude oil and produced

water from RZ2-B-1 crude oil wells, underneath the San Gabriel River flood control channel through a 6-inch diameter HDPE SDR11 pipeline conductor, to a valve in the RZ2-B-2 pipeline and operates at 25 psi (Figure 2). (b) (7)(F), (b) (3)

The maximum anticipated crude content for this pipeline at any given time is 10% (90% produced water). The calculated worst-case discharge for BL #5 is (b) (7)(F), (Table 9-1).

2. BL #6 Pipeline (Parallels South Side of San Gabriel River Channel) – BL #6 is a 3-inch diameter steel schedule 80 pipeline that transports crude oil and produced water from a valve at pipeline BL #5 to a valve at the tank farm and operates at 25 psi (Figure 2). (b) (7)(F), (b) (3)

The maximum anticipated crude content for this pipeline at any given time is 20% (80% produced water). Thus, the calculated worst case discharge for BL #6 is (b) (7)(F), (Table 9-1).

3. BL #7 Pipeline (South portion of RZ2-B-2) – BL #7 is a 2-inch diameter steel schedule 80 pipeline that transports crude oil and produced water from crude oil well #32 to a valve at pipeline BL #6 and operates at 25 psi (Figure 2). (b) (7)(F), (b) (3)

The maximum anticipated crude content for this pipeline at any given time is 4% (96% produced water). The calculated worst case discharge for BL #7 is (b) (7)(F), (Table 9-1).

4. BL # 8 Pipeline (Southwest portion of RZ2-B-2) – BL #8 is a 4-inch diameter steel schedule 80 pipeline that transports crude oil and produced water from crude oil well #33 and #34 to a valve at the tank farm and operates at 25 psi (Figure 2). (b) (7)(F), (b) (3)

The maximum anticipated crude content for the pipeline at any given time is 7% (93% produced water). The calculated worst case discharge for BL #8 is (b) (7)(F), (Table 9-1).

## Section 10 – Definitions, Acronyms, References

### Definitions [49CFR194.5]

**BENTHIC** – Of, relating to, or occurring at the bottom of a body of water.

**BREAKOUT TANK** – A tank used to receive and store hazardous liquids transported by a pipeline for reinjection and continued transportation by pipeline.

**DISCHARGE** – Incidents including, but not limited to, any spilling, leaking, pumping, pouring, emitting, emptying or dumping of oil.

**DISCHARGE MITIGATION PROCEDURES** – Specific proactive procedures set forth by the operator to help reduce the likelihood of a worst-case discharge.

**ENVIRONMENTALLY SENSITIVE AREA** - An area of environmental importance that is in or adjacent to navigable waters.

**LINE SECTION** - A continuous run of pipe that is contained between pump stations, a pump station and a tank, a pump station and a valve, or adjacent valves.

**MAXIMUM EXTENT PRACTICABLE** – Within the limits of available technology and the practical and technical limits of a pipeline operator.

**NAVIGABLE WATERS** - The waters of the United States, including the territorial sea, lakes, rivers, streams; waters used for recreation; and waters from which fish or shellfish are taken and sold in interstate or foreign commerce.

**OIL SPILL REMOVAL ORGANIZATION** - An entity that provides response resources.

**ONSHORE PIPELINE FACILITIES** - New and existing pipe, rights-of-way, and any equipment, facility or building used in the transportation of crude oil in, on, or under any land within the United States other than submerged land.

**OPERATOR** – A person who owns or operates onshore crude oil pipeline facilities.

**PIPELINE** - All parts of an onshore pipeline facility through which oil moves including but not limited to, line pipe, valves and other appurtenances connected to line pipe, pumping units, metering and delivery stations, and tanks.

**PROXIMITY** - A pipeline is within a distance of navigable waters, public drinking water intakes or environmentally sensitive areas which are in or adjacent to navigable waters such that a discharge could cause substantial harm.

**QUALIFIED INDIVIDUAL** - An English speaking representative of an operator, located in the United States, available on a 24-hour basis with full authority to: activate and contract with oil spill removal organization(s), activate personnel and equipment maintained by operator, act as a liaison with required agencies, and obligate any funds required to carry out all required or directed oil response activities.

**RESPONSE ACTIVITIES** - The containment and removal of crude oil from the water and shorelines, the temporary storage and disposal of recovered oil, or other actions necessary to minimize or mitigate damage to the environment.

**RESPONSE PLAN** - The operator's core plan and response zone appendices for responding, to the maximum extent practicable, to a worst case discharge of crude oil, or the substantial threat of such a discharge.

**RESPONSE RESOURCES** - The personnel, equipment, supplies and other resources necessary to conduct response activities.

**RESPONSE ZONE** - A geographic area either along a length of pipeline or including multiple pipelines, containing one or more adjacent line sections, for which the operator must plan for the deployment of, and provide, spill response capabilities. The size of the zone is determined by the operator.

**WORST CASE DISCHARGE** - The largest foreseeable unmitigated discharge of crude oil, including a discharge from fire or explosion, in adverse weather conditions. This volume is determined by the operator for each response zone.

### Acronyms

ACP – Area Contingency Plan

BBL – Barrels

BPH – Barrels per Hour

CAL-EMA – California Emergency Management Agency (formerly OES)

CALTRANS – California Department of Transportation

CUPA – Certified Unified Program Agency, Long Beach Fire Department

CSFM-PSD – California State Fire Marshal Pipeline Safety Division

DTSC – California Department of Toxic Substance Control

DOFG – The State of California Department of Fish and Game

DOT – United States Department of Transportation

PHMSA – United States Department of Transportation, Pipeline and Hazardous Materials Safety Administration

EPA – United States Environmental Protection Agency

EPA IX RCP – EPA Region IX Mainland Regional Contingency Plan

FSC – Finance/Administration Section Chief

FS – Finance/Administration Section

FRP – Facility Response Plan

HAZWOPER – Hazardous Waste Operations and Emergency Response

HDPE – High Density Polyethylene

IAP – Incident Action Plan

IC – Incident Commander

ICS/NIMS – Incident Command System/National Incident Management System

LA/LB ACP – Los Angeles/Long Beach 2008 Area Contingency Plan (USCG)

LIO – Liaison & Information officer

LSC – Logistics section chief

LS – Logistics section of the ICS  
MMS – Department of the Interior Minerals Management Service  
NCP – National Contingency Plan  
NRC – National Response Center  
OES – State of California Governor’s Office of Emergency Services (now CAL-EMA)  
OSHA – Occupational Safety and Health Administration  
OS – Operations section of the ICS  
OSC – Operations section chief  
OSPR – California Department of Fish and Game Office of Spill Prevention and Response  
FOSC – Federal On-Scene Coordinator  
SOSC- State On-Scene Coordinator  
OSRO – Oil Spill Removal Organization  
PS – Planning section of the ICS  
PSC – Planning section chief  
SCAQMD – South Coast Air Quality Management District  
SDS – Safety Data Sheet  
SEO – Safety & Environmental officer  
SHP – Signal Hill Petroleum, Inc.  
SPCC – Spill Prevention, Control and Countermeasure  
USCG – United States Coast Guard

### References

API, NOAA; *Options for Minimizing Environmental Impacts of Freshwater Spill Response*; API Publication Number 4558; February 1995.

EPA; *Facility Response Planning*; EPA 540-K-02-003d; August 2002.

EPA Region IX; *Federal Region 9, Regional Contingency Plan*, October 2005.

*Area Contingency Plan (ACP) Los Angeles/Long Beach (Northern ACP4 & Southern Sector ACP5)*; October 2008.

US. DOT, USCG-PHMSA, EPA, MMS; *National Preparedness for Response Exercise Program (PREP) Guidelines*, August 1994.

40CFR300 – National Oil and Hazardous Substances Pollution Contingency Plan.

40CFR112 – Oil Pollution Prevention.

49CFR194 – Response Plans for Onshore Oil Pipelines.

# **APPENDIX A1**

**SIGNAL HILL PETROLEUM  
Personnel List and Contact Numbers**

<b>ICS Center</b>	<b>Voice</b>	<b>Fax</b>	<b>NAME</b>	<b>Cell Phone</b>	<b>Residence</b>
Main Office	(562) 595-6440	(562) 426-4587	Francisco Aceves	(b) (6)	
<b>NAME</b>	<b>Cell Phone</b>	<b>Residence</b>	Eugenio Aguilar		
Antonio Aguilar	(b) (6)		Hilario Aguilar		
Ron Bates			Hilario Aguilar Jr.		
Jim Dare			Everado Aldapa		
Tom Dunn			Pedro Ambriz		
Keith Kerr			Jamie Amundson		
Kevin Laney			Dave Berens		
Jim Lee			Ray Boykins		
Sean McDaniel			Eric Brannon		
John Perry			Steve Clavijo		
Vince Romo			Jose Elizarraraz		
Devon Shay			Jose Elizarraraz Jr.		
Dave Slater			Phil Esparza		
Bill Summerfield			Marco Gandara		
Eric Veinot			Dillon Griffis		
			Jim Haas		
			Derrick Hallion		
			Jae Han		
			Gregg Harrison		
			Jesse Hernandez		
			James Hughes		
			Patrick Hurley		
			Carlos Hurtado		
			Willie Jackson		
			Kevin Johnson		
			Jeremiah Johnson		
			Dan "Bud" Jones		
			Brent Kerr		
			Jimmie Legaspi		
			Franklin Linares		
			Pedro Lopez		
			Jose Martinez		
			Anthony McClellan		
			Frank Mendez		
			Frank A. Mendez		
			Luis Mendez		
			Mike Newman		
			Edgar Osuna Camacho		
			Bernardo Preciado		
			Victor Pulido		
			Alex Ramirez		
			Pedro Rivera		
			Al Rodriguez		
			Nicholas Sisko		
			Dave Stewart		
			Fernando Vazquez		
			David Vititow		
			Jeffery Weaver		
			Dale Weick		
			Sal Zavala		

# **APPENDIX A2**

<b>Signal Hill Petroleum</b>
<b>Spill Supplies</b>
<b>Vehicles</b>

Date: 6/10/2010

Amount	Description	Size
1	Square Shovels	---
1	Round Shovels	---
1	Caution Tape	300-ft Roll
1	Rope	1/2-in x 100-ft
1	Spill Kit	includes: 1 - 2" x 5' oil boom 1 - 2" x 5' soft boom 1 - trash bag 10 - 17" x 19" oil pads

<b>Signal Hill Bryant Lease</b>
<b>Spill Supplies</b>
<b>Spill Building</b>

Date: 6/10/2010

Amount	Description	Size
12	Sorbent Pads	100 count
12	Sorbent Booms	4 bail, 8-in x 10-ft
6	Sorbent Kitty Litter	25 lb bag
1	Fold-up Ladder	---
1	Extension Ladder	16-ft
2	Black Plastic Sheeting	20-ft by 100-ft
2	Clear Plastic Sheeting	20-ft by 100-ft
4	Trash Bags	Box, 3 mil 42 gal
8	Caution Tape	3-in x 300-ft Roll
4	Squeegee	---
4	Push Brooms	---
4	Round Shovels	---
4	Square Shovels	---
4	Rope	3/8-in x 50-ft
6	Duct Tape	2-in x 150-ft
2	Slow/Stop Sign	---

<b>Signal Hill West Unit</b>		
<b>Spill Supplies</b>		
<b>Spill Container adjacent to Garage</b>		
Date: 3/31/2010		
<b>Amount</b>	<b>Description</b>	<b>Size</b>
12	Sorbent Pads	100 count
12	Sorbent Booms	4 bail, 8-in x 10-ft
6	Sorbent Kitty Litter	25 lb bag
1	Fold-up Ladder	---
1	Extension Ladder	16-ft
2	Black Plastic Sheeting	20-ft by 100-ft
2	Clear Plastic Sheeting	20-ft by 100-ft
4	Trash Bags	Box, 3 mil 42 gal
8	Caution Tape	3-in x 300-ft Roll
4	Squeegee	---
4	Push Brooms	---
4	Round Shovels	---
4	Square Shovels	---
4	Rope	3/8-in x 50-ft
6	Duct Tape	2-in x 150-ft
2	Slow/Stop Sign	---

<b>Signal Hill Central Unit</b>
<b>Spill Supplies</b>
<b>Spill Container North of Control Room</b>

Date: 3/31/2010

Amount	Description	Size
12	Sorbent Pads	100 count
12	Sorbent Booms	4 bail, 8-in x 10-ft
6	Sorbent Kitty Litter	25 lb bag
1	Fold-up Ladder	---
1	Extension Ladder	16-ft
2	Black Plastic Sheeting	20-ft by 100-ft
2	Clear Plastic Sheeting	20-ft by 100-ft
4	Trash Bags	Box, 3 mil 42 gal
8	Caution Tape	3-in x 300-ft Roll
4	Squeegee	---
4	Push Brooms	---
4	Round Shovels	---
4	Square Shovels	---
4	Rope	3/8-in x 50-ft
6	Duct Tape	2-in x 150-ft
2	Slow/Stop Sign	---

<b>Signal Hill Old East Unit</b>		
<b>Spill Supplies</b>		
<b>Spill Container North of SCE Substation</b>		
Date: 3/31/2010		
<b>Amount</b>	<b>Description</b>	<b>Size</b>
12	Sorbent Pads	100 count
12	Sorbent Booms	4 bail, 8-in x 10-ft
6	Sorbent Kitty Litter	25 lb bag
1	Fold-up Ladder	---
1	Extension Ladder	16-ft
2	Black Plastic Sheeting	20-ft by 100-ft
2	Clear Plastic Sheeting	20-ft by 100-ft
4	Trash Bags	Box, 3 mil 42 gal
8	Caution Tape	3-in x 300-ft Roll
4	Squeegee	---
4	Push Brooms	---
4	Round Shovels	---
4	Square Shovels	---
4	Rope	3/8-in x 50-ft
6	Duct Tape	2-in x 150-ft
2	Slow/Stop Sign	---

**APPENDIX B1**



July 30, 2009

Mr. Walt Dorn  
Patriot Environmental Services  
P.O. Box 1091  
Long Beach, CA 90801

Re: Agreement for Emergency Oil Spill Response Services

Dear Mr. Dorn:

This agreement for emergency oil spill response services is made and entered into on the 30th day of July, 2009, by and between Signal Hill Petroleum, Inc. ("SHP") located at 2633 Cherry Avenue, Signal Hill, California, and Patriot Environmental Services ("PATRIOT") located at 1900 W. Anaheim, Long Beach, California.

*As Available, [Signature]*

PATRIOT agrees to make available to SHP, as and when requested by SHP and pursuant to the Facility Response Plan ("FRP") for SHP, emergency oil spill response services in accordance with this agreement and all applicable federal, state and local laws. SHP has furnished to PATRIOT a copy of the FRP and PATRIOT has reviewed such plan.

PATRIOT is a U.S. Coast Guard classified Oil Spill Response Organization (OSRO), Classification Number 063, and meets all applicable federal, state and local laws and regulations as an OSRO.

SHP reserves the right, at any time, to contact, employ, hire or enter into agreements with other contractors for emergency oil spill response services.

Either party may terminate this agreement with or without cause by giving written notice of such termination to the other party at least thirty (30) days in advance of such termination. Should a breach of this agreement occur by either party, the non-defaulting party may terminate this agreement immediately with written notice to the defaulting party.

In agreement hereof:

Signal Hill Petroleum, Inc.

Patriot Environmental Services

[Signature]  
David L. Slater      Exec Vice President

[Signature]  
Walt Dorn      Title

**PATRIOT ENVIRONMENTAL SERVICES**  
Southern California Region



**TRANSPORTATION EQUIPMENT**

*\*Tractors*

*\*Vacuum Trucks and Trailers*

*\*Gear, SUVs & Pickup Trucks*

*\*Equip, Command & Resp. Trailers*

Equipment Description	Make/Model	Year	Location	Storage	Qty.	Maintenance
Tractor, Roll-Off, 48,500 gww	Peterbilt	1991	Long Beach	Yard	1	Bit/Quarterly
Tractor, Roll-Off, 48,500 gww	Peterbilt	2000	Los Angeles	Yard	1	Bit/Quarterly
Tractor, Roll-Off, 48,500 gww	Volvo	2005	Long Beach	Yard	1	Bit/Quarterly
Tractor, Roll-Off, 48,500 gww	Peterbilt	2007	Los Angeles	Yard	1	Bit/Quarterly
Tractor, Roll-Off, 48,500 gww	Peterbilt	2007	Los Angeles	Yard	1	Bit/Quarterly
Tractor, Roll-Off, 48,500 gww	Peterbilt	2007	Los Angeles	Yard	1	Bit/Quarterly
Tractor, Roll-Off, 48,500 gww	Freightliner	2001	Long Beach	Yard	1	Bit/Quarterly
Tractor, Roll-Off, 48,500 gww	Peterbilt	2006	San Diego	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Peterbilt	1989	Long Beach	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	White/GMC	1994	San Diego	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Volvo	1999	San Diego	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Volvo	2000	Long Beach	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	International	1995	Long Beach	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	International	1995	Long Beach	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Volvo	1996	Los Angeles	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Volvo	1997	Long Beach	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Kenworth	1999	Los Angeles	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Kenworth	1999	San Diego	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Volvo	2000	Long Beach	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Volvo	2000	San Diego	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Peterbilt	2007	Los Angeles	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Peterbilt	2007	Los Angeles	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Peterbilt	2007	Los Angeles	Yard	1	Bit/Quarterly
Tractor, 46,000 gww	Freightliner	2003	Long Beach	Yard	1	Bit/Quarterly
Tractor, Vector Air Mover/Line Jetter	Mack	2001	Long Beach	Yard	1	Bit/Quarterly
Tractor, Vacuum, 50 BBL, 32,000 gww	Ford F800	1989	Long Beach	Yard	1	Bit/Quarterly
Tractor, Vacuum, 70 BBL, 48,500 gww	Freightliner	1995	Long Beach	Yard	1	Bit/Quarterly
Tractor, Vacuum, 70 BBL, 48,500 gww	Peterbilt	2008	Long Beach	Yard	1	Bit/Quarterly
Tractor, Vacuum, 70 BBL, 48,500 gww	Peterbilt	2008	Long Beach	Yard	1	Bit/Quarterly
Tractor, Vacuum, 70 BBL, 48,500 gww	Peterbilt	2008	Long Beach	Yard	1	Bit/Quarterly
Van, 24' Box, 30,000 gww	Peterbilt	2004	Long Beach	Yard	1	Bit/Quarterly
Van, 24' Box, Hazmat Response	Chev Step	2003	Los Angeles	Yard	1	Bit/Quarterly
Truck, 1-Ton, 4x4, Crewcab	Ford F-350	1999	Ventura	Yard	1	Quarterly
Truck, 3-Ton, 4x4, Crewcab	Ford F-550	2003	Mira Loma	Yard	1	Quarterly
Truck, 1-Ton, Crewcab, Utility Bed	Chev 3500	2004	San Diego	Yard	1	Quarterly
Truck, 1-Ton, Crewcab	Chev 3500	2004	Los Angeles	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Ventura	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Long Beach	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Long Beach	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Long Beach	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Long Beach	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Long Beach	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	San Diego	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	San Diego	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Mira Loma	Yard	1	Quarterly

**PATRIOT ENVIRONMENTAL SERVICES**  
Southern California Region



**TRANSPORTATION EQUIPMENT**

*\*Tractors*

*\*Vacuum Trucks and Trailers*

*\*Gear, SUVs & Pickup Trucks*

*\*Equip, Command & Resp. Trailers*

Equipment Description	Make/Model	Year	Location	Storage	Qty.	Maintenance
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Mira Loma	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Los Angeles	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Los Angeles	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Los Angeles	Yard	1	Quarterly
Stakebed Truck, Liftgate, 2 Ton	Ford F-450	2008	Los Angeles	Yard	1	Quarterly
Stakebed Truck, Liftgate, 3 Ton	Ford F-550	2008	San Diego	Yard	1	Quarterly
Stakebed Truck, Liftgate, 3 Ton	Ford F-550	2008	San Diego	Yard	1	Quarterly
SUV, 3/4 Ton, 4x4, Excursion	Ford Excursion	2002	Long Beach	Yard	1	Quarterly
SUV, 3/4 Ton, 4x4, Excursion	Ford Excursion	2005	Long Beach	Yard	1	Quarterly
SUV, 3/4 Ton, 4x4, Suburban	Chevy Suburban	2003	Long Beach	Yard	1	Quarterly
SUV, 3/4 Ton, 4x4, Expedition	Ford Expedition	2008	Long Beach	Yard	1	Quarterly
Truck, 3/4 Ton	Chevy 1500	2001	Los Angeles	Yard	1	Quarterly
Truck, 3/4 Ton	Ford F-350	2002	Mira Loma	Yard	1	Quarterly
Truck, 3/4 Ton	Ford F-250	2002	Ventura	Yard	1	Quarterly
Truck, 3/4 Ton	Ford F-350	2002	Los Angeles	Yard	1	Quarterly
Truck, 3/4 Ton	Ford F-150	2004	Los Angeles	Yard	1	Quarterly
Truck, 3/4 Ton	Ford F-150	2007	Long Beach	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-350	2008	Long Beach	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-350	2008	Ventura	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-450	2008	Long Beach	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-350	2008	Mira Loma	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-350	2008	Long Beach	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-350	2008	Long Beach	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-350	2008	Mira Loma	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-350	2008	Long Beach	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-350	2008	Los Angeles	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-350	2000	Long Beach	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-150	2008	Los Angeles	Yard	1	Quarterly
Truck, 3/4 Ton, 4X4	Ford F-350	2008	Ventura	Yard	1	Quarterly
Vacuum Trailer, 120 BBL	Thompson	1981	Long Beach	Yard	1	Bit/Quarterly
Vacuum Trailer, 120 BBL	Certified	1985	Long Beach	Yard	1	Bit/Quarterly
Vacuum Trailer, 120 BBL	Petro-Steel	1992	Los Angeles	Yard	1	Bit/Quarterly
Vacuum Trailer, 120 BBL	Thompson	1994	Los Angeles	Yard	1	Bit/Quarterly
Vacuum Trailer, 120 BBL	Heil	1988	Los Angeles	Yard	1	Bit/Quarterly
Vacuum Trailer, Stainless Steel, 120 BBL	Acro	1991	Los Angeles	Yard	1	Bit/Quarterly
Vacuum Trailer, Stainless Steel, 120 BBL	Acro	2003	San Diego	Yard	1	Bit/Quarterly
Vacuum Trailer, Stainless Steel, 120 BBL	Heil	1988	San Diego	Yard	1	Bit/Quarterly
Vacuum Trailer, Stainless Steel, 120 BBL	Heil	1986	San Diego	Yard	1	Bit/Quarterly
Vacuum Trailer, 130 BBL	Wright	2004	Long Beach	Yard	1	Bit/Quarterly
Vacuum Trailer, 130 BBL	Wright	2004	Long Beach	Yard	1	Bit/Quarterly
Vacuum Trailer, 130 BBL	Wright	2004	Long Beach	Yard	1	Bit/Quarterly
Vacuum Trailer, 130 BBL	Wright	2004	Long Beach	Yard	1	Bit/Quarterly
Vacuum Trailer, Mini Tank & Press Washer	Ditch Witch	2006	Mira Loma	Yard	1	Bit/Quarterly
Vacuum Trailer, Mini Tank & Press Washer	Vac-Tron	2008	Los Angeles	Yard	1	Bit/Quarterly
Vacuum Trailer, Mini Tank & Press Washer	Vac-Tron	2008	Long Beach	Yard	1	Bit/Quarterly

**PATRIOT ENVIRONMENTAL SERVICES**  
Southern California Region



**TRANSPORTATION EQUIPMENT**

*\*Tractors*

*\*Vacuum Trucks and Trailers*

*\*Gear, SUVs & Pickup Trucks*

*\*Equip, Command & Resp. Trailers*

Equipment Description	Make/Model	Year	Location	Storage	Qty.	Maintenance
Trailer, Spill Response, 45' *	Great Dane	1988	Los Angeles	Yard	1	Quarterly
Trailer, Drums, 48'	Thayco	1986	Los Angeles	Yard	1	Quarterly
Trailer, Spill Response, 45' *	Great Dane	1994	Long Beach	Yard	1	Quarterly
Trailer, Flat Bed, Drums, 43'	Trlmo	1973	Los Angeles	Yard	1	Quarterly
Trailer, Boom, 48', Boom (Ocean)	McKinney	1994	Long Beach	Yard	1	Quarterly
Trailer, Boom, 48', Boom (Ocean)	McKinney	1994	Long Beach	Yard	1	Quarterly
Trailer, Roll-Off Box, 30,000 gvw	Pike	1943	Long Beach	Yard	1	Quarterly
Trailer, Roll-Off Box, 30,000 gvw	Spartan	1997	Los Angeles	Yard	1	Quarterly
Trailer, Roll-Off Box, 30,000 gvw	Fontane	1966	Long Beach	Yard	1	Quarterly
Trailer, Roll-Off Box, 30,000 gvw	Edge	2007	Los Angeles	Yard	1	Quarterly
Trailer, Roll-Off Box, 30,000 gvw	Edge	2007	Los Angeles	Yard	1	Quarterly
Trailer, Roll-Off Box, 30,000 gvw	Edge	2007	Los Angeles	Yard	1	Quarterly
Trailer, Dbl Roll-Off Boxes, Rocket Launcher	PMF	1994	San Diego	Yard	1	Quarterly
Trailer, Dbl Roll-Off Boxes, Rocket Launcher	ESPM	2002	Long Beach	Yard	1	Quarterly
Trailer, Dbl Roll-Off Boxes, Rocket Launcher	Dragon ECT	2008	Los Angeles	Yard	1	Quarterly
Trailer, Spill Response	Carson	2002	Long Beach	Yard	1	Quarterly
Trailer, Skimmer	Carson	2002	Long Beach	Yard	1	Quarterly
Trailer, Boom	Carson	2002	Ventura	Yard	1	Quarterly
Trailer, Boom	Carson	2002	Long Beach	Yard	1	Quarterly
Trailer, Boom	Carson	2002	Long Beach	Yard	1	Quarterly
Trailer, Skiff (carries six skiffs)	Wallstrong	2002	Long Beach	Yard	1	Quarterly
Trailer, Spill Response	Carson	2003	Long Beach	Yard	1	Quarterly
Trailer, Spill Response	Carson	2003	Long Beach	Yard	1	Quarterly
Trailer, Command Center	Pro Trac	1986	Long Beach	Yard	1	Quarterly
Trailer, Boom	Aztec	2001	San Diego	Yard	1	Quarterly
Trailer, Confined Space Rescue	Carson	2004	Long Beach	Yard	1	Quarterly
Trailer, Spill Response	Wells Cargo	2008	San Diego	Yard	1	Quarterly
Trailer, Spill Response	Wells Cargo	2008	Long Beach	Yard	1	Quarterly
Trailer, Spill Response	Wells Cargo	2008	Los Angeles	Yard	1	Quarterly
Trailer, Spill Response	Wells Cargo	2008	Long Beach	Yard	1	Quarterly
Trailer, Spill Response	Wells Cargo	2008	Long Beach	Yard	1	Quarterly
Trailer, Spill Response	Wells Cargo	2008	Mira Loma	Yard	1	Quarterly
Trailer, Spill Response	Wells Cargo	2008	Los Angeles	Yard	1	Quarterly
Trailer, Spill Response	Wells Cargo	2008	Ventura	Yard	1	Quarterly
Trailer, Command Center	Big TX Elite	2008	Long Beach	Yard	1	Quarterly
Trailer, Boat	Shore	1986	Long Beach	Yard	1	Quarterly
Trailer, Boat	Classic	2002	Long Beach	Yard	1	Quarterly
Trailer, Boat	Ezloader	1987	Long Beach	Yard	1	Quarterly
Trailer, Boat	Pacific	1998	San Diego	Yard	1	Quarterly
Trailer, Boat	PC Trailer	1998	Long Beach	Yard	1	Quarterly

Equipped with equipment, materials and supplies to support a minimum of 100 personnel for shoreline cleanup.



**COMMUNICATION EQUIPMENT**

\*Phones/Radios

\*Marine Radios

Equipment Description	Make/Model	Year	Location	Storage	Qty.	Maintenance
Cellular Phone/Radio	Sprint	2004	Long Beach	Office	40	As Needed
Cellular Phone/Radio	Sprint	2004	Los Angeles	Office	25	As Needed
Cellular Phone/Radio	Sprint	2004	Mira Loma	Office	10	As Needed
Cellular Phone/Radio	Sprint	2004	San Diego	Office	15	As Needed
Cellular Phone/Radio	Sprint	2004	Ventura	Office	10	As Needed
Radio, VHF	Standard/ICOM	2002	Long Beach	Office	5	As Needed
Radio, VHF	Standard/ICOM	2002	San Diego	Vessel	5	As Needed
Radio w/Repeater	Motorola	2008	Los Angeles	Office	18	As Needed
Satellite Phone	Iridium	2009	Long Beach	Office	2	As Needed



**MARINE EQUIPMENT**

- \*Containment Boom
- \*Response Vessels
- \*Recovery Equipment

**CONTAINMENT BOOM**

Equipment Description	Make/Model	I.D. No.	Year	Location	Storage	Qty.
Contractor Boom, 6"x12" Inland	Am. Marine	Pat 700	2002	Long Beach	Trailer	2,000
Contractor Boom, 8"x12" Inland	Kepner	Pat 700	2002	Long Beach	Yard	2,000
Contractor Boom, 6"x12" Inland	Am. Marine	Pat 700	2002	San Diego	Trailer	2,000
Contractor Boom, 6"x12" Inland	Am. Marine	Pat 700	2004	Ventura	Trailer	2,000

Total Containment Boom

8,000

**RESPONSE VESSELS**

Equipment Description	Make/Model	Year	Location	Storage	H.P.	Maintenance
Response Vessel-30'x9'x12"	Grady-White	1995	Long Beach	Trailer	400	Use/Weekly
Response Vessel-22'x9'x12"	Mako	1987	Long Beach	Moorage	225	Use/Weekly
Response Vessel-22'x8.6'x12"	HBI-RHI	1991	Long Beach	Moorage	140	Use/Weekly
Response Vessel-21'x8'x12"	Mako	1995	Long Beach	Moorage	200	Use/Weekly
Response Vessel-32'x10'x12"	Monarch	1998	Long Beach	Moorage	270	Use/Weekly
Response Vessel-21'x8'x12"	Pursuit	1998	San Diego	Moorage	225	Use/Weekly
Response Vessel-14'x4'x4"	Waco	2003	San Diego	Trailer	8	Use/Monthly
Response Vessel-14'x4'x4"	Waco	2003	San Diego	Trailer	8	Use/Monthly
Response Vessel-14'x4'x4"	Waco	2003	Long Beach	Trailer	8	Use/Monthly
Response Vessel-14'x4'x4"	Waco	2003	Long Beach	Trailer	8	Use/Monthly
Response Vessel-14'x4'x4"	Waco	2003	Long Beach	Trailer	8	Use/Monthly
Response Vessel-14'x4'x4"	Waco	2003	Long Beach	Trailer	8	Use/Monthly

Total Response Vessels

13

**RECOVERY EQUIPMENT/OIL SKIMMERS**

Equipment Description	Make/Model	Location	Storage	BPD	Eff.	EDRC
Four Drum Skimmer	Elastec Magnum 100	Long Beach	Trailer	3428	95%	3,257
Four Drum Skimmer	Elastec Magnum 100	Long Beach	Trailer	3428	95%	3,257
HIB Skimmer	Webster Barnes	Long Beach	Container	100,000	70%	70,000
Disc Skimmer	Vikoma Komara 12k	San Diego	Container	2575	80%	2,060
Weir Skimmer	Desmi Terminator	San Diego	Container	18,857	20%	3,771
Weir Skimmer	Desmi Terminator	Long Beach	Container	18,857	20%	3,771
Weir Skimmer	Desmi Terminator	Long Beach	Container	18,857	20%	3,771
Skimmer	Desmi Terminator	Long Beach	Container	18,857	20%	3,771
Skimmer	Desmi Terminator	Long Beach	Container	18,857	20%	3,771

Total Effective Daily Recovery Capacity (EDRC)

97,429

**MISC SUPPORT EQUIPMENT**

\*Industrial Cleaning Equipment

\*Storage Tanks/Bins

\*Support Equipment

Equipment Description	Make/Model	Year	Location	Storage	Maintenance
Air Compressor, 185 CFM	Sullair	2001	Los Angeles	Yard	Weekly
Air Compressor, 185 CFM	Sullair	2008	Long Beach	Yard	Weekly
Air Compressor, 185 CFM	Sullair	2004	San Diego	Yard	Weekly
Light Towers	Multiquip	2006	Los Angeles	Yard	Weekly
Light Towers	Multiquip	2006	Long Beach	Yard	Weekly
Light Towers	Multiquip	2006	San Diego	Yard	Weekly
Dual Pressure Washer, 6,000 PSI	Steam X	2002	Los Angeles	Yard	Weekly
Dual Pressure Washer, 6,000 PSI	Steam X	2004	Long Beach	Yard	Weekly
Dual Pressure Washer, 6,000 PSI	Steam X	2004	San Diego	Yard	Weekly
Dual Pressure Washer, 6,000 PSI	Steam X	2004	Ventura	Yard	Weekly
Dual Pressure Washer, 6,000 PSI	Steam X	2007	Los Angeles	Yard	Weekly
Dual Pressure Washer, 6,000 PSI	Big Tex	2007	Long Beach	Yard	Weekly
Pressure Washer, 3,000 PSI	Steam X	2001	Long Beach	Yard	Weekly
Pressure Washer, 3,000 PSI	Sande	1991	Los Angeles	Yard	Weekly
Pressure Washer, 3,000 PSI	Steam X	2004	San Diego	Yard	Weekly
Pressure Washer, 3,000 PSI	Steam X	2007	Ventura	Yard	Weekly
Pressure Washer, 3,000 PSI	AZTV	2006	Mira Loma	Yard	Weekly
Generator, 3.7 kW	Honda	2008	Long Beach	Trailer	Weekly
Generator, 3.7 kW	Honda	2008	Long Beach	Yard	Weekly
Generator, 3.7 kW	Honda	2008	San Diego	Yard	Weekly
Generator, 3.7 kW	Honda	2008	San Diego	Trailer	Weekly
Generator, 3.7 kW	Honda	2008	Los Angeles	Trailer	Weekly
Generator, 3.7 kW	Honda	2008	Los Angeles	Trailer	Weekly
Generator, 3.7 kW	Honda	2008	Mira Loma	Yard	Weekly
Generator, 3.7 kW	Honda	2008	Ventura	Yard	Weekly
Generator, 3.7 kW	Honda	2008	San Diego	Trailer	Weekly
Generator, 3.7 kW	Honda	2008	Los Angeles	Trailer	Weekly
Various Hand Tools and Supplies	Various	N/A	All	Yard	Weekly
Sorbent Boom, Pads, Sweep	SPC	N/A	All	Trailers	Weekly
Roll-Off Storage Bins- (125 Total)	10-40 Yard	Var.	All	Yard	Weekly
Drums	Various	N/A	All	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Los Angeles	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Los Angeles	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Los Angeles	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Los Angeles	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Long Beach	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Long Beach	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Long Beach	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Long Beach	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Long Beach	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Long Beach	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Long Beach	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	Long Beach	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	San Diego	Yard	Weekly
Portable Tank, 20,000 gallon	ESP	1998	San Diego	Yard	Weekly

## **APPENDIX B2**

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**EMERGENCY RESPONSE AND SERVICE AGREEMENT**

**Between**

**NRC ENVIRONMENTAL SERVICES INC.**

**And**

**SIGNAL HILL PETROLEUM, INC.**

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EXHIBIT A – TYPE OF OPERATION AND COVERAGE AREA

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## EMERGENCY RESPONSE AND SERVICE AGREEMENT

THIS AGREEMENT, effective this 1st day of December, 2009 by and between NRC ENVIRONMENTAL SERVICES INC. duly organized and existing by virtue of the laws of the State of Washington (herein referred to as "NRCES"), and SIGNAL HILL PETROLEUM, INC., duly organized and existing by virtue of the laws of the State of California (herein referred to as "CUSTOMER").

WHEREAS, NRCES is engaged in the business of providing environmental and hazardous waste management services. This includes emergency response services to mitigate oil, hazardous and other substances released into the environment.

WHEREAS, CUSTOMER desires to engage NRCES to perform emergency response and other environmental services on an as-needed basis.

NOW, THEREFORE, for valuable consideration, the parties agree as follows:

### ARTICLE I. SCOPE OF SERVICES

1.1 NRCES will provide emergency response services ("Response Services") to respond to spills of oil of any kind or in any form (including petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil), hazardous waste, or other regulated and non-regulated substances or materials as defined by applicable state and federal law (referred to collectively as "Waste") by CUSTOMER on land or in the water on an as-called, as-able basis in the locations described on EXHIBIT "A" to this Agreement. The scope of Response Services to be performed by NRCES shall be determined by the parties at the time NRCES accepts CUSTOMER's request for Response Services (as further defined in Article 2), and as directed by CUSTOMER's on-scene representative and any governmental agency involved.

1.2 NRCES (either through its own organization or through subcontractors) may provide CUSTOMER with additional environmental services on a planned basis ("Planned Services", and collectively with Response Services, referred to as "Services"), including but not limited to soil and groundwater remediation, facility decontamination, demolition, industrial cleaning and vacuuming, transportation, preparedness training, and other environmental services pursuant to requests by Customer and proposals submitted by NRCES. Once accepted by CUSTOMER, NRCES' proposal for Planned Services shall govern the performance and compensation of the Planned Services, subject to the terms and conditions of this Agreement.

### ARTICLE 2. INITIATION OF RESPONSE SERVICES

2.1 CUSTOMER shall request Response Services by telephone during any 24-hour period at 1-800-33-SPILL (1-800-337-7455).

2.2 CUSTOMER shall provide NRCES with the location of the spill ("Site"), nature of the emergency, approximate time of the emergency, substance released, chemical name, trade name, amount released, name of CUSTOMER's on-scene representative, and other information requested by NRCES. NRCES shall be entitled to rely upon this information in determining if and to what extent NRCES will respond.

2.3 Unless otherwise stated by a Retainer Addendum executed by both parties, NRCES is not obligated to respond to requests for Response Services. If NRCES is able to respond, NRCES does not

thereby guarantee any response time. CUSTOMER acknowledges that NRCES may determine in its sole discretion which requests for emergency response to respond to in the event that NRCES at any time receives more requests than it can respond to with its available personnel and equipment. CUSTOMER further acknowledges that this Agreement does not obligate NRCES to remove personnel and equipment from response services initiated prior to CUSTOMER's initiation of the Response Services.

2.4 CUSTOMER may issue written confirmation of a request for Response Services. This shall not, however, be a condition precedent to payment for Response Services performed by NRCES under this Agreement. Any terms on such written confirmation that vary from the terms of this Agreement are hereby rejected unless specifically accepted by NRCES in writing.

2.5 During the term of this Agreement only, including all renewal periods, CUSTOMER may name NRCES in its state and federal contingency plans only as a supplemental resource, without any guarantee of response time or resource level capabilities. NRCES shall be entitled, without liability to CUSTOMER, to provide to any governmental agency at any time notice of the status of CUSTOMER's relationship with NRCES, including, without limitation, the right upon termination of this Agreement, to notify any governmental agency that this Agreement has been terminated and that CUSTOMER is not entitled to continue to name NRCES in its contingency plans.

### **ARTICLE 3. NRCES' RESPONSIBILITIES**

3.1 NRCES will provide supervision, labor, materials, tools, equipment and subcontracted items for the performance and completion of the Services, to the extent agreed between the parties. NRCES shall act as an independent contractor in the performance of the Services.

3.1.1 NRCES shall supervise, direct, control and directly pay for all personnel NRCES provides to perform the Services, whether they are permanent or temporary personnel of NRCES, or employees of third parties who provide personnel to NRCES on a contract basis. Similarly, all equipment utilized by NRCES, whether owned, rented or under subcontract, including but not limited to all vessels, boom, and skimmers, shall be installed, operated, monitored, maintained, demobilized and decontaminated by NRCES personnel or the personnel of NRCES' subcontractors. Such equipment and the labor hours associated with installing, operating, monitoring, maintaining, demobilizing and decontaminating the equipment, are part of the Services to be compensated in accordance with Article 5. NRCES shall not be required to supervise, direct or control any personnel provided by CUSTOMER or temporary personnel hired by CUSTOMER to perform other services.

3.2 CUSTOMER recognizes that Response Services provided by NRCES under this Agreement are provided on an emergency basis, that the purpose of each response is to minimize to the extent practicable the environmental damage and health and safety risks resulting from spills or releases of oil, hazardous or other substances; and that the substance involved may not be eliminated from the Site by the emergency response. NRCES DOES NOT WARRANT, BY THE TERMS OF THIS AGREEMENT OR BY UNDERTAKING RESPONSE SERVICES PURSUANT TO THIS AGREEMENT, THAT SUCH RESPONSE SERVICES WILL RENDER THE SITE SAFE FOR ANY FORM OF HUMAN ACTIVITY OR IN COMPLIANCE WITH ANY STATE, LOCAL OR FEDERAL LAW.

3.3 NRCES shall take necessary precautions for the safety of its personnel and shall comply with applicable provisions of federal, state and local safety laws and regulations. While on CUSTOMER's facilities or vessels, NRCES shall comply with all instructions received from CUSTOMER concerning safety policies and procedures. CUSTOMER shall give such instructions with as much advance notice as is practicable under the circumstances. NRCES shall maintain all required safety training, including HAZWOPER training, of its employees. NRCES shall not have responsibility for the elimination or abatement of safety hazards created or otherwise resulting from conditions at the Site existing prior to NRCES' presence, or arising from work at the Site carried on by CUSTOMER's other contractors, employees and

agents. CUSTOMER agrees to cause any such contractors, employees and/or agents to abide by and fully adhere to all applicable provisions of federal, state and local safety laws and regulations and to comply with all reasonable requests of NRCES for the elimination or abatement of any safety hazard at the Site.

3.3.1 With respect to Response Services, CUSTOMER understands and agrees that (i) actions carried out in an emergency response may be inherently dangerous and difficult, (ii) rules and requirements that may be appropriate and applicable under normal circumstances may not be appropriate or applicable in a particular emergency situation, as recognized by the considerable authority of governmental or regulatory agencies to direct private actions in a response, and (iii) there are unresolved jurisdictional and applicability issues associated with emergency response that may make it difficult to determine the applicability of a particular requirement. Therefore, the provisions of Article 3.3 will not be interpreted in a manner that would hold NRCES to a standard that would be unreasonable under the actual conditions of particular spill event. All NRCES actions carried out consistently with the directions of the federal or state on scene coordinator or with approval of applicable safety officials will be deemed to be in compliance with Article 3.3.

3.4 NRCES will require laboratories hired by NRCES to maintain samples for thirty (30) calendar days from the date the analysis is performed. After thirty (30) days, at CUSTOMER's direction, such samples will be returned to CUSTOMER or such samples will be disposed of with CUSTOMER paying for all charges and expenses associated with such disposal.

#### **ARTICLE 4. CUSTOMER'S RESPONSIBILITIES**

4.1 Prior to the commencement of the Services, CUSTOMER shall designate to NRCES a representative who shall be fully acquainted with the Services, and who has authority on behalf of CUSTOMER to approve changes in the Services, approve daily reports submitted by NRCES setting forth the daily charges, resolve disputes in invoices, render decisions promptly, execute waste manifests and furnish information expeditiously and in time to meet the time schedule for completion of the Services.

4.2 CUSTOMER shall provide full and complete information regarding its requirements for the Services and shall immediately transmit to NRCES any new information which becomes available or any change in plans subsequent to any such providing of information. CUSTOMER shall communicate to NRCES those special hazard risks involved in the excavation and/or removal of the Wastes of which it is or becomes aware. Such information shall include, but not be limited to, any relevant notification of substantial risk given by CUSTOMER pursuant to the Toxic Substances Control Act.

4.2.1 CUSTOMER shall furnish to NRCES available information on the Site describing: physical characteristics, soil reports and subsurface investigations, the location of any installations and underground utilities, legal limitations, legal description, and other reports or documents that may be reasonably requested by NRCES. In the event the Site is not owned by CUSTOMER, CUSTOMER shall be responsible for obtaining any information relative to the Site from the owner and providing that information to NRCES.

4.3 CUSTOMER shall secure and pay for all necessary approvals, easements, assessments, permits and charges required for the Services to be performed. CUSTOMER shall secure all necessary approvals, judicial and/or administrative orders necessary to insure NRCES' legal access to the Site. CUSTOMER warrants that any right-of-way provided by CUSTOMER to/from the Site and/or to/from the most convenient public way, is sufficient to bear the weight of all NRCES' equipment and vehicles reasonably required to perform the Services required. NRCES shall not be responsible for any changes required to be made to any private pavement or accompanying subsurface of any route for its performance of the Services. CUSTOMER shall be responsible for repairs to all roadways and rights-of-way arising out of the normal wear and tear resulting from NRCES' use thereof by its equipment during the performance of the Services.

4.4 Upon NRCES' written request, CUSTOMER shall furnish reasonable evidence satisfactory to NRCES that sufficient funds are available and committed for the entire cost of the Services. Unless such evidence is furnished, NRCES is not required to commence or continue any Services, or may, if such evidence is not presented within ten (10) days of the request, terminate this Agreement as set forth in Article 14. The failure of NRCES to request or insist upon the receipt of this evidence at any time shall not be a waiver of CUSTOMER's obligation to make payments pursuant to this Agreement, nor shall it be a waiver of NRCES' right to request or insist that such evidence be provided at a later date.

4.5 CUSTOMER warrants that it holds clear title to all Wastes to be handled by NRCES and is under no legal restraint or order which would prohibit the transfer of the Wastes to a disposal facility designated by CUSTOMER for treatment, storage and/or disposal. CUSTOMER shall execute all transportation, treatment and disposal manifests and other documentation as generator of the Wastes involved.

4.6 CUSTOMER warrants that the Services to be done under this Agreement does not violate any final court order or any final ruling of any governmental agency of which CUSTOMER has knowledge.

4.7 CUSTOMER shall pay all taxes, assessments, and fees associated with the Services, including taxes for which CUSTOMER claims it is exempt or for which CUSTOMER issues NRCES direct-pay permits, and generator, disposal and other fees. CUSTOMER shall reimburse NRCES for all sales taxes, use or similar taxes or assessments or fees paid by NRCES related to the Services hereunder.

4.8 CUSTOMER shall report any "confirmed release" to the appropriate local, state and federal agency in accordance with any applicable regulations. CUSTOMER shall indemnify, defend and hold harmless NRCES from any and all fines, penalties, assessments and costs resulting from any failure of CUSTOMER to report such release.

4.9 The services and information required by the above Sections 4.1 to 4.8 shall be furnished with reasonable promptness at CUSTOMER's expense and NRCES shall be entitled to rely upon the accuracy and the completeness thereof in the performance of the Services.

#### **ARTICLE 5. COMPENSATION**

5.1 Unless otherwise stated in a written proposal for Planned Services issued by NRCES, CUSTOMER shall pay NRCES for all Services performed on a time and materials basis in accordance with the terms and rates set forth in EXHIBIT "B", NRCES' Schedule of Rates, as amended from time to time. CUSTOMER shall pay for all personnel provided by NRCES in accordance with these rates, whether they are permanent or temporary employees of NRCES, or employees of third parties who provide personnel to NRCES on a contract basis. CUSTOMER expressly acknowledges and agrees that NRCES administrative personnel required to perform project specific record-keeping, reporting, accounting, logistics and resource allocation are required for the proper performance of the Services and shall be paid for at the rates set forth in EXHIBIT "B". Similarly, all equipment and materials provided by NRCES that are listed on EXHIBIT "B", whether rented or owned, shall be paid for at the rates contained therein. CUSTOMER shall also pay for all expenses incurred by NRCES in connection with the Services, including but not limited to expenses for travel (including local travel), meals, lodging, reproduction, deliveries, equipment rental, freight, transportation, disposal and subcontractor charges, all in accordance with EXHIBIT "B". CUSTOMER acknowledges that all equipment rental, subcontractor charges, disposal services, material costs and other third party charges for services, personnel, materials or equipment not listed on EXHIBIT "B" will be invoiced by NRCES and paid for by CUSTOMER at the cost of such services, personnel, equipment or materials to NRCES, plus a markup of 20%.

5.1.1 The rates set forth in EXHIBIT "B" shall be firm from the date of execution until NRCES provides written notice of a rate change. NRCES reserves the right to modify such rates at any time,

provided, however, that no such rate change will take effect until thirty (30) days after NRCES provides written notice of the rate change to CUSTOMER.

5.2 Unless specifically stated otherwise by NRCES in a written proposal for Planned Services, estimates of the cost of Services provided by NRCES are provided for budgetary purposes only, and shall not be deemed guaranteed maximum prices or otherwise limit the amount of compensation that NRCES shall receive for performance of the Services. This provision applies notwithstanding language to the contrary appearing on any purchase order or other written documentation provided to NRCES by CUSTOMER.

5.3 NRCES shall submit invoices setting forth the amounts due for all current charges and expenses on a monthly basis or upon completion of the Services, whichever occurs first. Unless a different address is provided by CUSTOMER, NRCES shall submit all invoices to the address shown on the signature page of this Agreement. All invoices will be due upon receipt, but no later than thirty (30) days from the date of the invoice. CUSTOMER shall send payment to NRCES at the following address:

NRC Environmental Services Inc.  
P.O. Box 8500-2886  
Philadelphia, PA 19178-2886

5.3.1 CUSTOMER shall, within fifteen (15) days of receipt of invoice, communicate in writing to NRCES any invoice errors, discrepancies or disputes. If such communication is not made within this 15-day period, the invoice will be deemed to be approved and shall be paid. If an error, discrepancy or dispute is identified, then the parties will endeavor to resolve the dispute within fifteen (15) days. If no resolution is made within this time frame, the disputed amount will be excluded from the total invoice amount, with the parties endeavoring to resolve the dispute within thirty (30) days. The balance of the invoice shall be deemed approved and shall be paid within thirty (30) days after the original invoice date.

5.3.2 Balances outstanding more than thirty (30) days after the invoice date shall be deemed delinquent and shall earn interest at the rate of 1.5 % per month, or the maximum rate permitted by law (whichever is lesser), from the due date until paid. In addition to interest, CUSTOMER shall be responsible for all costs incurred by NRCES to collect overdue amounts, including collection fees, filing fees, court costs and attorney's fees. NRCES reserves all legal rights and recourses against CUSTOMER and its property for failure of CUSTOMER to pay such invoices when due. Further, NRCES shall have the right to suspend performance of the Services in the event any invoice is delinquent, and to continue such suspension until all delinquent invoices are paid. CUSTOMER shall pay for all costs incurred by NRCES during, and arising as a result of the suspension period in accordance with EXHIBIT "B".

5.4 For one year from the completion of each request for Services, NRCES will maintain records of all labor, materials, equipment and expenses invoiced to CUSTOMER on a rate sheet or reimbursable basis and will make such records available to CUSTOMER during normal business hours at the NRCES office providing the Services, or by mail if so requested.

## **ARTICLE 6. CHANGES IN THE SERVICES**

6.1 Without invalidating this Agreement, CUSTOMER and NRCES may request changes in the Services within the general scope of the Services. In the event changes in the Services, emergencies, changed conditions, or delays and interferences result in increased work requirements, extended schedule or increased cost to perform the Services, CUSTOMER shall pay NRCES for such changed or increased Services or delays in accordance with EXHIBIT "B" unless otherwise mutually agreed by the parties in writing.

6.2 CUSTOMER acknowledges that Response Services may be governed and regulated by certain state, federal and local laws and the regulations and other requirements of various government agencies with

jurisdiction over emergency events and other environmental matters. To the extent any of these governmental requirements increase the scope of Response Services to be rendered and the expenses associated with such Response Services, CUSTOMER shall pay NRCES for all Response Services and expenses in accordance with Article 5.

#### **ARTICLE 7. INSURANCE**

7.1 NRCES shall carry at its expense, during the term of this Agreement, the insurance coverages set forth below:

COVERAGE	LIMITS
(a) Worker's Compensation	Statutory
(b) Employer's Liability	\$1,000,000 each occurrence
(c) Commercial General Liability (Bodily Injury & Property Damage)	\$1,000,000 combined single limit/aggregate
(d) Automobile Liability (Bodily Injury & Property Damage)	\$1,000,000 combined single limit/aggregate
(e) Contractor's Pollution Liability	\$1,000,000 per claim

NRCES agrees to furnish to CUSTOMER, upon CUSTOMER's request, insurance certificate(s) evidencing such coverages. If requested, CUSTOMER will be named an additional insured on the General Liability policy, but only to the extent of negligent operations performed by NRCES. The providing of insurance and the granting of additional insured status shall not be construed as an assumption of any liability by NRCES for the acts, omissions, negligence or other liability caused by CUSTOMER or any third party. CUSTOMER shall be responsible for purchasing and maintaining its own liability insurance.

7.2 CUSTOMER and NRCES waive all rights against each other for damages covered by property insurance during and after completion of the Services, except in the case of gross negligence or willful misconduct of the other party.

#### **ARTICLE 8. INDEMNIFICATION**

8.1 Subject to section 8.1.1 below, CUSTOMER's indemnification obligations and Articles 14 and 15, NRCES agrees to indemnify, defend and save harmless CUSTOMER from and against liabilities, claims, demands, damages, causes of action, costs and expenses, including reasonable attorney's fees and costs of defense (collectively referred to as "Claims") for bodily injury to or death of any person or destruction of or damage to any property of any third party, but only to the extent arising from (i) the negligent and gross negligent acts or omissions or willful misconduct of NRCES, its agents, employees or subcontractors in the performance of the Services, and/or (ii) the failure of NRCES or any of its agents, employees or subcontractors to observe or comply with any of NRCES' duties and obligations as a response contractor under the law or this Agreement. This indemnification does not extend to Claims arising from (a) CUSTOMER's failure to comply with and fulfill its obligations under the law or this Agreement, (b) negligent or gross negligent acts or omissions or willful misconduct of CUSTOMER, any one under contract with

CUSTOMER or otherwise under CUSTOMER's direction and control, or (c) acts or omissions of any third party. NRCES' liability under this Section shall not exceed the insurance limits specified in Article 7.

8.1.1 Notwithstanding any other provision contained in this Agreement, NRCES' obligation to indemnify CUSTOMER shall not extend to any Claims that NRCES would otherwise be protected against, exempt from or liability limited under any federal or state laws protecting response contractors from certain liability in connection with their response efforts, even if such Claims arise from negligent acts or omissions of NRCES. It is agreed that NRCES' liability under section 8.1 will not in any case exceed NRCES' liability under such laws.

8.2 CUSTOMER shall indemnify, defend and hold harmless NRCES, its parent and affiliated companies, their directors, officers, employees, agents, insurers and subcontractors against Claims to the extent arising out of or as a result of (i) the negligent acts or omissions or willful misconduct of CUSTOMER, its employees, representatives, agents and other contractors; and/or (ii) the failure of CUSTOMER or any of its employees, agents or other contractors to observe or comply with any of CUSTOMER's duties and obligations under the law or this Agreement.

8.3 CUSTOMER shall indemnify, defend and hold harmless NRCES, its parent and affiliated companies, their directors, officers, employees, agents and subcontractors against any and all Claims arising out of or as a result of (i) the presence of NRCES or its subcontractors on the Site if the Site is not owned by CUSTOMER; and/or; (ii) the discharge, escape or release of Waste from CUSTOMER's property or the property of others, except to the limited extent caused by the active negligence, gross negligence or willful misconduct of NRCES in the performance of the Services, provided that this exception shall not apply to the extent NRCES is immune or NRCES' liability is limited under federal or state laws.

#### **ARTICLE 9. CONFIDENTIALITY**

9.1 For purposes of this Article, "Information" means any verbal, handwritten, typewritten, printed, recorded or graphic matter (including computer-generated mediums) containing proprietary business information of either party which may come within the knowledge of the other party in the performance of this Agreement. "Confidential Information" is any Information that has been designated in writing by the party seeking to impose any obligation hereunder as "Confidential". In the case of verbal or visual Information, the party seeking to apply this Article to such Information shall, within three (3) days of the conveyance of the Information to the other party, notify the other party of that the Information is considered Confidential Information and to be treated as such under this Article.

9.2 NRCES and CUSTOMER (including both parties' employees, officers, agents, and directors) shall treat Confidential Information as confidential and proprietary and not disclose it to others during or for a period of three (3) years after the completion of any Services performed under to this Agreement (except as is necessary to perform Services under this Agreement), without securing the prior written consent of the other party.

9.3 Nothing contained within this Article shall prevent either NRCES or CUSTOMER from disclosing to others or using in any manner information which either party can show:

- a. has been published and has become part of the public domain other than by acts, omissions, or fault of NRCES or CUSTOMER;
- b. has been furnished or made known to NRCES or CUSTOMER by third parties (other than those acting directly or indirectly for or on behalf of NRCES or CUSTOMER) as a matter of legal right without restrictions on its disclosure; or,

- c. was in either party's possession prior to the disclosure thereof by CUSTOMER or NRCES to the other.

9.4 If either party shall be required by subpoena, court, or administrative order (hereinafter "the Order") to disclose any Confidential Information of the other party, the disclosing party shall give immediate notice to the other party. Upon receipt, the party whose information may be the subject of the Order may interpose all objections it may have to the disclosure of its Confidential Information at its cost. If the party owning the Confidential Information fails to make timely objections to the disclosure of such Confidential Information, the party who received the Order shall comply with the Order without liability to the other party.

#### **ARTICLE 10. EXCUSE OF PERFORMANCE**

10.1 The performance of this Agreement, except for the payment of money for services already rendered, may be suspended by either party in the event performance of this Agreement is prevented by a cause or causes beyond the reasonable control of either party. Such causes shall include, but not be limited to: acts of God; acts of war; acts of terrorism; riot; fire; explosion; accident; flood; abnormal weather; sabotage; lack of adequate fuel, power, raw materials, labor, transportation or disposal facilities; requirements of Governmental laws, regulations, permits, ordinances, rules, orders or actions; breakage or failure of machinery or apparatus; national defense requirements; injunctions or restraining orders; failure or refusal of disposal facilities to handle or receive Wastes; and labor trouble, strike, lockout or injunction (provided that neither party shall be required to settle a labor dispute against its own best judgment).

10.2 The party asserting a right to suspend performance under this Article must, within a reasonable time after it has knowledge of the effective cause, notify the other party of the cause for suspension, the performance suspended, and the anticipated duration of suspension.

10.3 Upon receipt of notice as set forth in 10.2, advising the other party of a suspension of performance, the parties shall mutually agree on one of the following:

- a. termination of all or any part of the Services affected;
- b. demobilization of affected personnel and equipment from the Site with remobilization to the Site occurring at a mutually agreeable time after the end of the suspending event; or,
- c. placement of affected personnel and equipment in a standby mode until the end of the suspending event.

If the parties agree to option a. above, CUSTOMER shall compensate NRCES, unless otherwise agreed to, as set forth in Section 12.3. If the parties agree to either option b. or c. above, the parties shall agree to schedule adjustments and adjustment to compensation in the manner as set forth in Articles 5 and 6.

#### **ARTICLE 11. DIFFERING SITE CONDITIONS**

11.1 NRCES shall be entitled to equitable adjustments in the compensation and schedule in the event it encounters physical, structural, subsurface, soil or other conditions at the Site differing from those indicated, provided to or represented to NRCES. Thereafter, the parties shall agree in writing upon an appropriate amendment to this Agreement to reflect the cost and schedule impact of such conditions. NRCES shall not be required to continue performance of the Services upon notification to CUSTOMER of such differing site conditions until the appropriate amendment is agreed upon.

11.2 Absent mutual agreement to the contrary, NRCES shall be entitled to compensation for Services rendered as a result of changed conditions in accordance with EXHIBIT "B".

**ARTICLE 12. TERMINATION**

12.1 This Agreement, or Services being performed under this Agreement, may be terminated with or without cause by either party upon thirty (30) days written notice to the other party.

12.2 This Agreement, or Services being performed under this Agreement, may be terminated by either party upon forty-eight (48) hours written notice should the other party fail substantially to perform its obligations under this Agreement through no fault of the party initiating the termination, provided the party initiating the termination has given the other party written notice of the deficiency, and allowed that party a reasonable period of time, not to exceed five (5) working days, to commence to cure the deficiency before notice of termination is issued.

12.3 In the event of termination not the fault of NRCES, CUSTOMER shall compensate NRCES for all Services performed prior to termination in accordance with the compensation for such Services as well as charges for demobilization, decontamination and other termination charges in accordance with EXHIBIT "B".

**ARTICLE 13. DELEGATION AND ASSIGNMENT**

13.1 NRCES may at any time, without the prior consent of CUSTOMER, delegate, orally or in writing, the performance of a portion of the Services. However, any delegation by NRCES shall not operate to relieve NRCES of its responsibilities hereunder.

13.2 Neither party may assign any rights or remedies hereunder without the prior written consent of the other party.

**ARTICLE 14. HANDLING OF SUBSTANCES**

14.1 In the performance of this Agreement, NRCES may handle Waste that pre-existed NRCES' presence at the Site. CUSTOMER acknowledges that CUSTOMER has exclusive title to all Waste the subject of this Agreement and is responsible for any real or personal property contaminated with or otherwise affected by such Waste. Nothing contained within this Agreement nor the performance of any Services by NRCES shall be construed or interpreted as requiring NRCES to assume the status or liability as an owner, operator, manager or person in charge of all or any portion of the Site, as arranger for the treatment, transportation or disposal of any Waste, or as owner or generator of any Waste under the Resource Conservation and Recovery Act, 42 USCA, Section 6901. *et seq.*, as amended, (hereinafter "RCRA"), Comprehensive Environmental Response Compensation and Liability Act, 42 USCA, Section 9601. *et seq.*, as amended (hereinafter "CERCLA"), or within any other federal or state statute governing the treatment, storage and disposal of Waste (herein collectively referred to as "Regulations"). NRCES has not taken and will not take title, control of or otherwise own any Waste under this Agreement.

14.2 CUSTOMER shall retain the primary responsibility for compliance with the provisions of such Regulations governing the treatment, storage and disposal of Waste. NRCES will transport or cause to be transported any Waste under this Agreement to a disposal or treatment facility selected by CUSTOMER. Any such transportation undertaken under this Agreement shall be undertaken or arranged solely as CUSTOMER's agent and under CUSTOMER's direction.

14.3 CUSTOMER shall provide NRCES with CUSTOMER's EPA identification number and any other identification or authorization required by law and assigned to CUSTOMER.

14.4 If CUSTOMER requests NRCES' assistance, then NRCES, as requested and directed by CUSTOMER, may perform the following Services:

- a. obtain analytical testing to assist CUSTOMER in the proper characterization of the Waste for manifest preparation;
- b. identify potential transporters and disposal facilities which may be used in the transportation and disposal of Wastes collected;
- c. enter into subcontract or purchase order arrangements with transporters and/or disposal facilities selected by CUSTOMER on behalf of CUSTOMER; and,
- d. prepare manifests for CUSTOMER's approval and execution.

14.5 NRCES shall not be liable to CUSTOMER (or any person claiming through CUSTOMER) in any amount for any personal injury, illness, death or property damage caused in whole or in part by Waste that is handled by NRCES in the performance of this Agreement, except to the extent caused by the active negligence or willful misconduct of NRCES.

14.6 NRCES shall have no liability to CUSTOMER (or any person claiming through CUSTOMER) for contamination or change in character or properties of any Waste that is off-loaded by NRCES by pump, vacuum or otherwise into equipment supplied by CUSTOMER or NRCES for transportation by CUSTOMER, NRCES or a third party to a destination designated by CUSTOMER. CUSTOMER hereby releases NRCES from and indemnifies NRCES against any such liability or damages. Any increase in cleanup, transportation, treatment or disposal costs as a result in any such contamination or change in character or properties of the Waste shall be paid for by CUSTOMER at its sole expense.

#### **ARTICLE 15. WARRANTIES AND LIMITS OF LIABILITY**

15.1 NRCES warrants that its provision of the Services under this Agreement will conform to the standards of care, skill and diligence normally observed by contractors performing similar services. THIS WARRANTY IS IN LIEU OF, AND EXCLUDES ALL OTHER WARRANTIES, STANDARDS AND GUARANTEES, WHETHER EXPRESSED OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OF ANY EQUIPMENT, MACHINERY, PROCESS OR SYSTEM EMPLOYED OR PROVIDED BY NRCES. CUSTOMER'S SOLE REMEDY AND NRCES' SOLE LIABILITY FOR BREACH OF WARRANTY SET FORTH IN THIS AGREEMENT OR OTHERWISE SHALL BE THE PERFORMANCE OF THE SERVICES IN QUESTION TO THE EXTENT NECESSARY TO CURE THE BREACH. Such remedy shall be available to CUSTOMER only if CUSTOMER reports the breach to NRCES within a reasonable period of time after discovery of the breach and in any event prior to completion and demobilization of Response Services, or not later than one (1) year after completion of Planned Service in question. In no event will NRCES' obligation to reperform Services exceed the compensation actually paid to NRCES for the performance of the Services in question, less those amounts paid by NRCES to third parties.

15.2 To the fullest extent allowed by law, NRCES, its parent and affiliated companies, their directors, officers, employees, agents and subcontractors, shall not be liable to CUSTOMER, and CUSTOMER hereby releases them from special, indirect, incidental, consequential or exemplary damages in any way related to or in connection with the Services, this Agreement or their presence at the Site, regardless of the cause, including negligence, gross negligence, willful misconduct or strict liability.

#### **ARTICLE 16. ADDITIONAL GENERAL PROVISIONS**

**16.1 Waiver** - Any waiver by either party of any provision or condition of this Agreement shall not be construed or deemed to be a waiver of any other provision or condition of this Agreement, nor a waiver of a subsequent breach of the same provision or condition, unless such waiver be so expressed in writing and signed by the party to be bound.

**16.2 Governing Law** - The validity and interpretation this Agreement shall be governed and construed in accordance with the laws of the State of Washington. Any suit, action or proceeding brought by either party in consequence of or to enforce any term or provision of this Agreement shall be commenced in the United States District Court for the Western District of Washington at Seattle, Washington, if such court has jurisdiction. In the event that the said United District Court lacks jurisdiction, then any suit, action or proceeding brought by either party shall be commenced in the King County Superior Court of the State of Washington. Customer submits to the jurisdiction of the courts of the State of Washington and the United States District Court for the Western District of Washington and consents to service of process by certified mail, return receipt requested, addressed in accordance with the address specified on the signature page hereof. The prevailing party in any such suit, action or proceeding shall be entitled to recover its costs of suit and reasonable attorney's fees.

**16.3 Severability** - If any article, subarticle, sentence or clause of this Agreement shall be adjudged illegal, invalid or unenforceable, this shall not affect the legality, validity or enforceability of this Agreement as a whole or of any other part of this Agreement not so adjudged.

**16.4 Successors and Assigns** - The covenants and agreements contained in this Agreement shall apply to, inure to the benefit of and be binding upon the parties hereto and upon their respective successors and permitted assigns.

**16.5 Notice** - Any notice to be given hereunder shall be in writing and deemed to have been sufficiently given when sent by confirmed facsimile transmission, courier service, delivered in person or by registered or certified mail, postage prepaid, return receipt requested, to the address of the respective party shown on the signature page. Either party may, by notice to the other, change the addresses and names identified below.

**16.6 Applicability:** All limitations of and releases from liability, and exclusive remedy provisions and entitlement to indemnity applicable to NRCES by law or under this Agreement shall apply to NRCES, National Response Corporation, Seacor Holdings Inc., affiliates and subsidiaries of either, their officers, directors, employees, insurers and agents, and to any vessel owned or chartered by any of the above, and the master and crew of any such vessel.

**16.7 Entire Agreement** - This Agreement documents consist of: (i) this Agreement and its Exhibits; (ii) CUSTOMER accepted NRCES Proposals; (iii) and amendments approved by the parties in writing after the execution of the Agreement. This Agreement represents the entire understanding and agreement between the parties hereto and supersedes any and all prior agreements, whether written or oral, that may exist between the parties. All Exhibits are by this reference incorporated into this Agreement.

**16.8 Amendments** - This Agreement may be amended or modified only by a written amendment to the Agreement signed by both parties. Additional or different terms on a Purchase Order, or other document provided by CUSTOMER shall be deemed material and shall be rejected, unless expressly accepted by NRCES in writing.

**16.9 Term of Agreement** - This Agreement, effective as of the date referenced on Page 1, is effective until either party notifies the other of its intention to terminate the Agreement with thirty (30) days prior written notice. This termination shall not apply to ongoing work until such work is completed.

**16.10 Authority** – Each party represents and warrants that the person signing this Agreement on its behalf is duly authorized and has the requisite corporate authority to bind such party to the terms and conditions of this Agreement. Each party is entitled to rely upon this representation as respects the authority of the person signing this Agreement on behalf of the other party. This Agreement can be signed in multiple counterparts. A facsimile of a signature or other electronically transmitted signature has the same force and effect as an original signature.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized representatives as of the day and year as referenced on Page 1.

**NRC ENVIRONMENTAL SERVICES INC.**

<p>Name: Stephanie Barton</p> <p>Signature: </p> <p>Title: Director, Emergency Response Programs</p>	<p>Address: 9520 10th Ave. S., Suite 150 Seattle, WA 98108</p> <p>Attn: Stephanie Barton</p> <p>Phone: 206-730-3993</p> <p>Fax: 206-607-3001</p> <p>E-mail: sbarton@nrees.com</p>
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**CUSTOMER**

**SIGNAL HILL PETROLEUM, INC.**

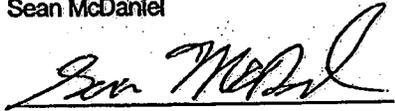
<p>Name: Sean McDaniel</p> <p>Signature: </p> <p>Title: Vice-President, Surface Operations</p>	<p>Address: 2633 Cherry Ave. Signal Hill, CA 90755</p> <p>Attn: Jim Lee</p> <p>Phone: 562-595-6440 ext. 5214</p> <p>Fax: 562-426-4587</p> <p>E-mail: jslee@shpl.net</p>
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EXHIBIT "A"

TYPE OF OPERATION AND COVERAGE AREA  
FOR RESPONSE SERVICES

1. Type of Operation: CUSTOMER's facilities and operations that may require Response Services under this Agreement are:

Facilities, including pipelines and storage tanks, utilized in exploration, development and production of natural gas, natural gas liquids and crude oil.

2. Coverage Area: The coverage areas requiring Response Services are:

Long Beach/Signal Hill Oilfield area of operations and potentially impacted LA/Long Beach waterways and marine environments

**EXHIBIT "B"**  
**NRCS SCHEDULE OF RATES**

**See attached.**



# PRICE LIST

## Effective February 18, 2009

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HOSES / PIPE / FITTINGS .....	5
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PUMPS.....	5
RECOVERY/SKIMMERS .....	3
SAFETY .....	6
SUPPORT .....	5
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TRAILERS.....	4
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VACUUM TRUCKS .....	4
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Price List Terms: Customer's request for NRC Environmental Services Inc. (NRCES) to perform services constitutes an agreement to pay for those services under the Personnel, Equipment and Material Terms of this Price List, regardless of any estimates provided by NRCES. Charges will be based on the most current published Price List. In addition, a minimum charge of \$3,500.00 applies to emergency response call outs from Customers without prearranged contracts with NRCES. Surcharges to current published rates may apply in non-local areas. Surcharges may also apply to cover unanticipated cost increases for items, including but not limited to fuel and insurance, resulting from circumstances beyond the control of NRCES. Rates are based upon net 10 payment terms unless otherwise agreed by written contract. All prices are in U.S. dollars.

# PERSONNEL

ITEM #	DESCRIPTION	HOURLY RATE
SP	Senior Project Manager	135.00
CH	Certified Industrial Hygienist (NRCES only)	125.00
PM	Project Manager	110.00
IH	Industrial Hygienist (non-CIH)	100.00
SU	Superintendent	90.00
AM	Assistant Project Manager (Operations, Planning, Logistics, Finance)	90.00
HS	Health & Safety / Training Manager	85.00
SA	Senior Accountant	85.00
SM	Support Manager (Purchasing, Communications, Transportation, Decon, Disposal)	80.00
PS	Project Scientist / Field Chemist	75.00
PR	Purchaser / Subcontracts Administrator	65.00
AS	Administrative Support / Accountant	50.00
FS	Field Supervisor	70.00
MC	Mechanic / Welder	70.00
EO	Equipment Operator	60.00
DR	Driver (Commercial)	55.00
SF	Site Foreman	55.00
RT	Confined Space / Rescue Technician	50.00
LO	Licensed Vessel Operator	75.00
VO	Vessel Operator	55.00
DH	Deckhand	45.00
TE	Technician – HAZWOPER	45.00
ST	Support Technician (Warehouseman, Personnel, Resource Coordinator)	45.00

## Personnel Terms:

1. Minimum call out is 4 hours per person, except for projects over 50 miles from office location require 8-hour daily minimum.
2. Rates for FS, MC, EO, DR, RT, SF, LO, VO, DH, TE, SA, AS and ST are subject to the following:
  - a. Weekdays: 0700 to 1500 hours charged at Straight Time (ST = Hourly Rate); 1500 to 1900 hours charged at Overtime (OT = 1½ times the Hourly Rate); 1900 to 0700 hours charged at Double Time (DT = 2 times the Hourly Rate). Changes to start times for Weekday ST, OT and DT may be requested by Client and may be approved by NRCES on a case-by-case basis for longer term projects.
  - b. Saturday: First 8 hours charged at Overtime (1½ times the Hourly Rate); hours over first 8 hours charged at Double Time (2 times the Hourly Rate).
  - c. Sundays and Holidays: All time charged at Double Time (2 times the Hourly Rate).
  - d. The following are included holidays: New Years Day, Presidents Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Day after Thanksgiving and Christmas Day. Other holidays may apply when employing certain union personnel, including but not limited to: Martin Luther King, Jr. Day, Cesar Chavez's Birthday, Veterans Day, day before Christmas and day after Christmas.
  - e. The above Rates are applied regardless of the number of hours worked for any Client on any particular day. Rates for hours subsequent to a break of less than 8 hours are calculated as continuous to hours prior to break.
3. All project specific personnel, including accounting, administrative, personnel support, logistics and management, whether on site, at NRC Environmental Services offices, or at support locations, are chargeable per the above rates. All personnel are charged according to the above rates, regardless of full-time, part-time or third party labor source status, unless provided as part of a specified subcontracted service. Labor rates for remote sites and prevailing-wage projects may require a surcharge.
4. Time charges begin with equipment and personnel mobilization activities. Time charges terminate at the conclusion of the services, which includes transportation of equipment and personnel back to operations centers and any necessary demobilization activities. Personnel time is charged in half-hour increments for all personnel. All hourly rates will be charged Portal-to-Portal from the location of personnel when dispatched, including but not limited to NRCES office, personnel home, hotel or other jobsite as applicable. Personnel on standby for Customer will be charged at 8 hours per 24-hour period.
5. Transportation and any incidental costs for all emergency response personnel, both on site, at support locations and traveling to and from the site or support locations, are charged at cost plus 20%. Per Diem charges for food in metropolitan areas are \$50.00 per person per day. Typical per diem rates for lodging, based on double occupancy, are \$100.00 per person per day. Rates for premium areas and remote sites to be determined.

# EQUIPMENT

<i>CATEGORY</i>	<i>ITEM #</i>	<i>DESCRIPTION</i>	<i>UNIT</i>	<i>RATE</i>
<b>BOOM</b>	1001	Anchor Gear / Boom Mooring Light	Day/Each	30.00/13.00
	1002	Contractor Boom, up to 21"	Ft/Day	1.75
	1003	Petro Barrier, up to 24"	Ft/Day	2.50
	1004	Ocean Boom, up to 42"	Ft/Day	6.75
<b>RECOVERY/ SKIMMERS</b>	2001	Air Conveyor, VS-50	Day	3,000.00
	2002	Belt Skimmer, Marco Class XI-C	Day	4,000.00
	2003	Belt Skimmer Vessel, JBF DIP 3001	Hour	350.00
	2004	Belt Skimmer Vessel, Marco I C	Hour	375.00
	2005	Brush Skimmer, Lamor	Day	3,600.00
	2006	Brush Skimmer, Aquaguard RBS-40	Day	2,500.00
	2007	Brush Skimmer, Aquaguard RBS-25 or 10 Twin	Day	2,000.00
	2008	Brush/Drum/Disc Skimmer, Aquaguard RBS-05	Day	850.00
	2009	Disc Skimmer, MI-30, Komara 12K	Day	1,800.00
	2010	Disc Skimmer, Vikoma Sea Skimmer	Day	2,000.00
	2011	Drum Skimmer, Roto 70	Day	3,500.00
	2012	Drum Skimmer, Action Petroleum Model 60	Day	1,400.00
	2013	Drum Skimmer, Action Petroleum Model 36	Day	1,200.00
	2014	Drum Skimmer, Action Petroleum Model 24	Day	800.00
	2015	Rope Mop Skimmer, II-9	Day	800.00
	2016	Rope Mop Skimmer, I-4, II-4, II-6	Day	600.00
	2017	Rope Mop Skimmer, extra rope, 100'	Day	110.00
	2018	Vacuum/Transfer Unit (VTU)	Day	1800.00
	2019	Weir Skimmer, Desmi 250	Day	3,500.00
	2020	Weir Skimmer, Follex, vacuum	Day	1,500.00
	2021	Weir Skimmer, Follex, hydraulic	Day	2,500.00
	2022	Weir, Cascade LP 3000 or Vikoma Fastflow	Day	1,600.00
	2023	Weir Skimmer, Skimpak or Oleo, 2" or 3"	Day	300.00
<b>TEMPORARY STORAGE</b>	3001	Bladder Tank, 24 barrel	Day	250.00
	3002	Bladder Tank, 25 - 100 barrel	Day	500.00
	3003	Bladder Tank, 101 - 240 barrel	Day	1000.00
	3004/3005	Container, Intermodal or Connex Storage, 20'/40'	Day	22.00/44.00
	3006/3007	Roll-off Bins, up to 20 cu. yd. / 30-40 cu. yd.	Day	22.00/44.00
	3008	Storage Tank, 500 to 2,500 gal	Day	20.00
	3009	Storage Tank, 2,500 to 4,500 gal	Day	25.00
	3010	Storage Tank, 4,500 to 6,000 gal	Day	35.00
	3011	Tank Barge, up to 210 bbls (NRCES only)	Day	1,500.00
	3012	Tote Tank, DOT approved, 275 to 300 gal	Day	80.00
	3013	Vacuum Box, up to 25 cu. yd.	Day	80.00
<b>VESSELS / SUPPORT BOATS</b>	4001	Deck Barge, up to 110'	Day	500.00
	4002	Response Vessel, 65'	Hour	375.00
	4003	Response Vessel, 35' - 55'	Hour	225.00
	4004	Response Vessel, 30' - 34'	Hour	160.00
	4005	Response Vessel, 25' - 29'	Hour	125.00
	4006	Response Vessel, 16' - 24'	Hour	100.00
	4007	Skiffs w/outboard, 15' or less	Hour	50.00
	4008	Skiffs w/o outboard	Hour	25.00
<b>EXCAVATION</b>	5001	Backhoe (710 or equivalent)	Day	375.00
	5002	Backhoe (580 or equivalent)	Day	325.00
	5003/5004	Backhoe Attachment, Breaker / Compactor	Each/Day	220.00/125.00
	5005	Dozer, 75-105 HP equivalent	Day	500.00
	5006	Dump Bed, Moorooka 5-10 cu. yd.	Day	350.00
	5007	Excavator, Mini	Day	325.00
	5008	Excavator, up to 37,000 lb	Day	850.00
	5009	Excavator, 38,000 to 53,000 lb	Day	1,050.00

<i>CATEGORY</i>	<i>ITEM #</i>	<i>DESCRIPTION</i>	<i>UNIT</i>	<i>RATE</i>
<b>EXCAVATION</b>	5010	Excavator, over 53,000 lb	Day	1,500.00
<b>(cont.)</b>	5011/5012	Excavator Attachment, Thumb or Wheel/Hammer	Each/Day	350.00/550.00
	5013	Loader (Bobcat, Skidsteer or equivalent)	Day	350.00
	5014	Loader Attachment, Breaker, Compactor, Grapple	Each/Day	175.00
	5015	Loader, up to 4 yds.	Day	650.00
	5016	Off Road 35 ton Dump Truck	Day	800.00
<b>TRAILERS</b>	6001	Trailer, Confined Space Entry/Rescue.	Day	2,000.00
	6002	Trailer, Decon, up to 24'	Day	350.00
	6003	Trailer, Dump, 7000 lb	Day	250.00
	6004	Trailer, Dump, Side/End, 18 yd.	Hour	35.00
	6005	Trailer, Emergency Response, up to 24'	Day	350.00
	6006	Trailer, Emergency Response, 40'- 48'	Day	500.00
	6007	Trailer, Equipment, Utility, 1-2 ton	Day	100.00
	6008	Trailer, Equipment, Utility, 3-10 ton	Day	250.00
	6009	Trailer, Flatbed, up to 48'	Day	250.00
	6010	Trailer, Incident Command Center, 24'	Day	650.00
	6011	Trailer, Incident Command Center, 48'	Day	1,500.00
	6012	Trailer, Low Boy	Day	300.00
	6013	Trailer, MTR (boom, boat, skimmer add'l if deployed)	Day	350.00
	6014	Trailer, Office	Day	200.00
	6015	Trailer, Rocket (Roll Off) Launcher	Hour	40.00
	6016	Trailer, Side Dump, 3 axle	Day	600.00
	6017	Trailer, Tilt Top, 26 ton	Day	250.00
	6018	Trailer, Van, up to 48'	Day	350.00
	6019	Trailer, Water Buffalo (up to 500 gallons, with pump)	Day	200.00
	6020	Trailer, Wildlife (Response and Rehab (supplies add'l))	Day	2,500.00
	6021	Trailer, Wildlife Search & Collection	Day	1000.00
	6022	Trailer, Wildlife Support, Water or Electrical	Day	850.00
<b>TRUCKS</b>	7001	Tractor, Diesel	Hour	40.00
	7002	Truck, Camera	Hour	125.00
	7003	Truck, Crane, 1 ton - 6 ton	Hour	65.00
	7004	Truck, Crane, 7 ton - 10 ton	Hour	75.00
	7005	Truck, Crane, 10 ton - 18 ton	Hour	95.00
	7006	Truck, Crane, 40 ton	Hour	140.00
	7007	Truck, Dump, up to 10 yard	Hour	60.00
	7008/7009	Truck, Dump, over 10 yard / with pup	Hour	65.00/70.00
	7010	Truck, Gear, less than 1 ton	Day	125.00
	7012	Truck, Gear, 1 ton	Day	150.00
	7014	Truck, Gear, 2 ton - 5 ton	Day	225.00
	7016	Truck, Gear, over 5 ton	Hour	45.00
	7017	Truck, Hazmat Response, pickup, or van, up to 24'	Hour	75.00
	7018	Truck, Marine Response	Hour	50.00
	7019/7020	Truck, Roll Off, bobtail / with trailer	Hour	70.00/80.00
	7021	Truck, Water, up to 3000 gallons	Hour	70.00
<b>VACUUM TRUCKS</b>	8001	Guzzler/Air Mover	Hour	150.00
	8002	Vactor/Jetter - Combo Unit	Hour	185.00
	8003/8004	Vacuum Trailer, 120 -130 bbl, black iron/ stainless	Hour	30.00/45.00
	8005/8006	Vacuum Truck, less than 35 bbl / 35 - 70 bbl	Hour	50.00/60.00
	8007	Vacuum Trailer, less than 50 bbls	Hour	25.00
<b>VEHICLES</b>	9001/9002	All Terrain Vehicle / cargo carrying	Day	240.00/375.00
	9003	Auto, Personnel or Support	Day	100.00
	9004	Van, MTR (boom, boat, skimmer add'l if deployed )	Day	400.00
	9005	Van, Maintenance, Personnel or Support	Day	150.00
	9006	Wildlife Transport-Care Vehicle	Day	600.00
<b>BLOWERS/ COMPRESSORS</b>	1101	Air Compressor, up to 100 CFM	Day	150.00
	1102	Air Compressor, 100 to 185 CFM	Day	225.00
	1103	Air Compressor, 210 to 375 CFM	Day	325.00

<i>CATEGORY</i>	<i>ITEM #</i>	<i>DESCRIPTION</i>	<i>UNIT</i>	<i>RATE</i>
<b>BLOWERS/ COMPRESSORS</b>	1104	Blower, Coppus, Electric/Pneumatic	Day	100.00
(cont.)	1105/1106	Blower, Negative Air Exhaust, 6" / 12" (filters add'l)	Day	75.00/110.00
	1107	Blower, Venturi, Horn	Day	30.00
	1108	Exhaust Duct, 25' x 6", 10" or 12"	Day	25.00
<b>PRESSURE WASHERS</b>	1201	Specialty Nozzles, Roto Jet or Butterworth	Day	45.00
	1202	Hydroblaster, 6,000 psi	Hour	50.00
	1203	Hydroblaster, 10,000 psi	Hour	70.00
	1204	Hydroblaster, 20,000 psi	Hour	180.00
	1205	Gamma Jet Cleaning Head	Day	275.00
	1206	Pipeline Lancing Nozzle, w/ Hose & Foot Pedal	Day	75.00
	1207	Pressure Washer, up to 3,000 psi	Day	250.00
	1208	Pressure Washer, 3,000 to 5000 psi	Day	350.00
<b>PUMPS</b>	1301/1302	Pump, up to 1", Petroleum / Chemical	Day	60.00/75.00
	1303/1304	Pump, 2", Petroleum / Chemical	Day	85.00/150.00
	1305	Pump, 2", Chemical Peristaltic	Day	350.00
	1306/1307	Pump, 3", Petroleum / Chemical	Day	100.00/200.00
	1308/1309	Pump, 4", Trash / Petro-Submersible	Day	175.00/325.00
	1310	Pump, 5"- 6", Petroleum	Day	\$400.00
	1311	Air Conveyor, Vac-U-Max	Day	150.00
<b>HOSES/PIPE/ FITTINGS</b>	1401/1402	Hose, Fire, 1.5" / 2.5"	50 Ft/Day	15.00/17.50
	1403/1404	Hose, Guzzler, Flex or Pipe, 4" / 6"	Ft/Day	3.50/4.00
	1405	Guzzler Vacuum Breaker	Day	30.00
	1406	Guzzler/Jetter Fittings (elbows, tees, etc.)	Day/Each	8.00
	1407	Hose, Pneumatic	50 Ft/Day	10.00
	1408/1409	Hose, Suction & Discharge, 2", Petro / Chemical	25 Ft/Day	15.00/30.00
	1410/1411	Hose, Suction & Discharge, 3", Petro / Chemical	25 Ft/Day	18.00/36.00
	1412/1413	Hose, Suction & Discharge, 4", Petro / Chemical	25 Ft/Day	20.00/40.00
	1414	Hose, Suction & Discharge, 6", Petro	25 Ft/Day	35.00
	1415/1416	Hose, Discharge (lay flat) 2" / 3"	50 ft/Day	10.00/12.00
	1417/1418	Hose, Discharge (lay flat) 4" / 6"	50 ft Day	15.00/25.00
	1419	Hose, Wash, up to 1"	50 ft/Day	\$10.00
<b>SUPPORT</b>	1501	Air Knife	Day	150.00
	1502	Bag Filter System "Dual Pod" (bag filters add'l)	Day	75.00
	1503	Carbon Filtration System, 55 gal drum	Each	75.00
	1504	Chipping Gun, Pneumatic	Day	40.00
	1505	Compactor, Hand Operated	Day	150.00
	1506	Decon Cleaning Pool, Portable 10' x 15'	Day	125.00
	1507	Decon Cleaning Pool, Portable 10' x 30'	Day	200.00
	1508	Decon Cleaning Pool, Portable 20' x 100'	Day	550.00
	1509	Decon Cleaning Pool, Portable 25' x 50'	Day	275.00
	1510	Decon Station, Small (supplies add'l)	Day	50.00
	1511	Electrical Accessories (cords, GFI, adaptors)	Day	14.00
	1512	Forklift, 6K to 10K lb	Day	275.00
	1513	Forklift Attachment	Day	100.00
	1514	Generator, less than 4 kW	Day	50.00
	1515	Generator, 4 to less than 7.5 kW	Day	115.00
	1516	Generator, 7.5 kW to 12.5 kW	Day	165.00
	1517	Handheld Pipeline Locator System	Day	150.00
	1518	Jackhammer	Day	150.00
	1519	Ladder, Extension & Folding	Day	40.00
	1520	Lights, Tower Trailer Mounted	Day	175.00
	1521	Light, Explosion-Proof	Day	44.00
	1522/1523	Light, Stand, Regular, 500W / 1000W	Day	16.00/60.00
	1524	Office Space (for command post at NRCES as available)	Day	1,500.00
	1525	Pipe Plug 4" to 18" (includes 20' air line hose)	Day	95.00
	1526	Pipe Plug 18" to 24" (includes 20' air line hose)	Day	155.00
	1527	Pipe Plug 24" to 36" (includes 20' air line hose)	Day	175.00

<i>CATEGORY</i>	<i>ITEM #</i>	<i>DESCRIPTION</i>	<i>UNIT</i>	<i>RATE</i>
SUPPORT (cont.)	1528	Pipe Plug 36" to 48" (includes 20' air line hose)	Day	215.00
	1529	Pipe Plug 48" to 60" (includes 20' air line hose)	Day	350.00
	1530	Power Pack, Hydraulic, 1 hp	Day	50.00
	1531	Power Pack, Hydraulic, 16 hp	Day	138.00
	1532	Power Pack, Hydraulic, 40 hp	Day	275.00
	1533	Power Pack, Hydraulic, 60 hp	Day	500.00
	1534	Road Closure Signs, reflective	Day/Each	50.00
	1535	Road Closure, Barricades, Cones, Delineators	Day/Each	5.00
	1537/1538	Saw, Chain / Cutoff	Day	60.00/125.00
	1539	Soil Sampler, Hollow Stem	Day	50.00
	1540	Tools, Hand (brooms, shovels, etc.)	Each/Day	5.00
	1541	Tools, Mechanical Set	Each/Day	50.00
	1542	Tools, Non-Sparking	Each/day	15.00
	1543	Tools, Power, small (drills, sawzall etc.)	Each/Day	35.00
	1544	Truck Ramps	Day	150.00
	1545/1546	Vacuum, HEPA/Shop (filters add'l)	Day	250.00/50.00
	1547	Walk-Behind Floor Nozzle, Guzzler Attachment	Day	75.00
	1548	Welding Unit / Torch Set, Portable	Day	85.00
	1549	Wildlife Rehabilitation Pool	Day	200.00
	1550	Wildlife Rehabilitation Shelter, 19' x 35'	Day	2000.00
	1551	Wildlife Support Shelter, 20' x 20'	Day	750.00
	1552	Yokohama Fenders, 8' diameter	Day	175.00
	COMMS.	1601	Base Station	Day
1602		Cellular Phone (airtime over \$10 per day add'l)	Day	35.00
1603		Computer w/Modem and Printer	Day	95.00
1604		GPS Unit	Day	50.00
1605		High Power Repeater System w/Generator	Day	300.00
1606		Radio, UHF or VHF, Portable	Day	25.00
1607		Satellite Phone (includes 20 minutes airtime per day)	Day	75.00
1608		Satellite Dish for HS Internet	Day	125.00
SAFETY	1701	Air Sampling Kit (tubes add'l)	Day	40.00
	1702	Chest or Hip Waders, Insulated Cooling Vests	Day	25.00
	1703	Chlorine A/B/C Response Kits (gaskets add'l)	Day	500.00
	1704	Eyewash Station	Day	35.00
	1705	Drager CMS Meter	Day	200.00
	1706	Floation Work Suit	Day	50.00
	1707	Floation Work Vest, PDF	Day	10.00
	1708	Full Face Respirator (cartridges add'l)	Day	25.00
	1709	Half Face Respirator (cartridges add'l)	Day	20.00
	1710	Harness/Lanyard/Safety Line	Day	25.00
	1711	Meter, 4EC Radiation	Day	350.00
	1712	Meter, LEL/O2/H2S/CO	Day	150.00
	1713	Meter, Jerome Mercury	Day	600.00
	1714	Meter, Personal / Gillian, H2S 4-gas	Each/Day	35.00
	1715	Meter, Personal / Particulate Monitoring	Day	150.00
	1716	Meter, PID/HNU/OVA	Day	200.00
	1717	Mercury Vacuum (bags add'l)	Day	750.00
	1718	Salvage Cylinder/Coffin	Day	1,500.00
1719	SCBA or Egress Bottles w/ lines	Day	125.00	
1720	Six Pack / Regulated Air Supply with 300' line	Day	300.00	
1721	Tripod and Winch	Day	250.00	
1722	Truck Rollover/Cylinder Drill Kit/Betts Valve	Day	400.00	

**Equipment Terms:**

1. All equipment sent to site by NRCES shall be in a basic operating condition. Additional components charged to customer include, but are not limited to, multiple hose lengths, blast shields, specialty tips or fittings, specialty connections, noise abatement, catalytic converters, etc. Equipment prices do not include fuel, operator or mobilization unless otherwise stated. Fuel consumed in non-mileage related operation of equipment, including vehicle and non-vehicle equipment and vessels, will be charged at cost plus 20%. Vacuum truck washouts will be charged at cost plus 20%.

2. Time charges are calculated portal to portal, beginning with equipment mobilization activities from the NRCES office or operations center unless otherwise specified, including all time at the site. Time charges terminate at the conclusion of the operation, which includes transportation of equipment back to NRCES office or operations center and completion of any necessary demobilization activities, including equipment cleaning, repair, replacement and/or delivery to NRCES of restored equipment.
3. Day rates are based on 8 hours of operation. Equipment will be charged in half-day increments for additional hours over 8, up to a total of 3 days charge during a 24-hour period.
4. Minimum call out for hourly equipment is four hours per day for local projects and eight hours per day for projects over 50 miles from mobilization site. Minimum charge for daily rate equipment is daily charge per day. Customers will be charged for unused requested equipment until released and returned to service per Note 3.
5. Base mileage charges are \$.50 per mile for cars, \$.65 per mile for trucks/vans and \$.85 per mile for commercial trucks. A fuel surcharge of an additional \$0.15 will be added to the base mileage charges for every \$0.50 increase above \$3.75 per gallon of diesel in the local NRCES office area at the time of service..
6. Equipment not specified on the Price List will be charged at cost (including rental, insurance, freight, fuel, etc.) plus 20%.
7. In addition to payment of rental charges, Customer agrees to pay NRCES, in accordance with rates contained in this Price List, for any cleaning or repairs necessary to return all equipment to the same condition as at the commencement of services (with the exception of normal wear and tear). Customer is also responsible for the payment of all transportation and disposal charges for any waste generated during cleaning. Only NRCES or its subcontractors shall perform any cleaning and decontamination operations on all equipment owned, rented or subcontracted by NRCES. If NRCES determines that equipment cannot be returned to the condition it was in at the commencement of the services, Customer shall pay for all costs at cost plus 20%, including freight and other expenses incurred by NRCES to replace this equipment. All boom, whether new or used, that is damaged beyond repair shall be replaced by NRCES with new boom at Customer's expense at cost plus 20%, including freight and other expenses.

## MATERIALS AND SUPPLIES

<i>CATEGORY</i>	<i>ITEM #</i>	<i>DESCRIPTION</i>	<i>UNIT</i>	<i>RATE</i>
<b>BAGS/SHEETING</b>	M100	Bulk Bag, 1 yard	Each	22.00
	M101	Plastic Bag, 36" x 60", 6 mil, 50/roll or box	Roll/Box	95.00
	M102	Plastic Bag, 36" x 60" (drum liner)	Each	3.00
	M103	Roll Off Box Liner	Each	35.00
	M104	Sheeting, 20' to 32' x 100', 10 mil	Roll	155.00
	M105	Sheeting, 20' to 32' x 100', 6 mil	Roll	115.00
<b>CLEANERS</b>	M200	Cleaner, Hand, 1 gallon size	Gallon	30.00
	M201	Cleaner, Marine (Simple Green, etc.)	Gallon	25.00
	M202	Disinfectant (bleach, A-33, etc.)	Gallon	3.00
	M203	Decon Solvent (Big Orange) 55 Gallon Drum	Each	2900.00
	M204	Decon Solvent (Big Orange)	Gallon	55.00
<b>CONTAINERS</b>	M301	5 Gallon, Bucket, Poly w/ Lid	Each	15.00
	M302	10 Gallon, Open Top	Each	95.00
	M303	20 Gallon, Open Top	Each	65.00
	M304	30 Gallon, Open Top	Each	65.00
	M305	55 Gallon, Close Top	Each	60.00
	M306	55 Gallon, Open Top, Refurbished	Each	55.00
	M307	55 Gallon, Poly Open/Closed Top	Each	90.00
	M308	85 Gallon, Overpack, Unlined, Black	Each	195.00
	M309	85 Gallon, Overpack, Lined, Yellow	Each	255.00
	M310	95 Gallon, Overpack, Poly	Each	220.00
	M311	275-300 Gallon, Liquid Tote, DOT Approved	Each	450.00
	M312	Triwall Box, Cubic Yard, DOT Approved	Each	125.00
<b>SAFETY</b>	M400	Acid Suit, 1 Piece	Each	90.00
	M401	Boot, Steel Toed, PVC/Nitrile	Pair	28.00
	M402	Glove, Brown Jersey	Pair	3.00
	M403	Glove, Inner, Cotton/Latex/Nitrile	Pair	1.00
	M404	Glove, Inner, Cotton/Latex/Nitrile, 50/box	Box	30.00
	M405	Glove, Heavy Duty, PVC, Green / PVC 14"	Pair	4.00
	M406	Glove, Heavy Duty, Black	Pair	8.00
	M407	Glove, Heavy Duty, Butyl Rubber	Pair	30.00
	M408	Glove, Silver Shield	Pair	4.50
	M409	Hard Hat w/ Face Shield and Bracket	Each	35.00
	M410	Overboot, Disposable	Pair	5.00

CATEGORY	ITEM #	DESCRIPTION	UNIT	RATE	
SAFETY (cont.)	M425	Protective Gear Level A	Each	1400.00	
	M426/M427	Protective Gear Level B	Each/Change	450.00/300.00	
	M428/M429	Protective Gear Level C	Each/Change	85.00/55.00	
	M430/M431	Protective Gear Level D	Each/Change	35.00/20.00	
	M432	Rain Gear, 2 Piece	Set	20.00	
	M433	Respirator, Cartridge, Multi-Gas	Pair	17.00	
	M434	Respirator, Cartridge, higher level specific	Pair	30.00	
	M435	Respirator, Half-Face	Each	25.00	
	M436	Safety Glasses	Each	6.75	
	M437	Safety Goggles	Each	7.25	
	M438	Safety Vest	Each	25.00	
	M439	Tyvek Suit, Coated, Saranex / Durafab	Each	30.00	
	M440	Tyvek Suit, Disposable	Each	12.00	
	M441	Tyvek Suit, Poly-Coated, Durafab	Each	13.00	
	SORBENTS	M500	Absorbent, Chemical Stabilizer, 35 lb	Bag	130.00
		M501	Absorbent, Absorb X	Bag	17.50
M502		Floor Dry 25 lb	Bag	10.50	
M503		Neutralizer (citric acid, soda ash or bicarbonate)	Bag	65.00	
M504		Oil Snare on Rope, 50 ft/Bag	Bag	135.00	
M505		Oil Snare, 30/Cartron	Carton	110.00	
M506		Sorbent Boom 5" x 10', 4/Bale	Bale	100.00	
M507		Sorbent Boom 8" x 10', 4/Bale	Bale	185.00	
M508		Sorbent Roll, SXT 638, 38" x 144' x 3/8"	Roll	175.00	
M509		Sorbent Sheet 17" x 19" x 3/8", 100/Bale	Bale	75.00	
M510		Sorbent Sweep 17" x 100' x 3/8"	Each	130.00	
M511		Vermiculite, 4 cu.ft. /Bag	Bag	28.00	
MISCELLANEOUS	M600	Banner Tape, 3" x 1000' Roll	Roll	20.00	
	M601	Cotton Rags, 25 lb Box/Bale	Each	50.00	
	M602	Decon Pool, Small Personnel	Each	30.00	
	M603	Sample Supplies (pogo pump, Clar-in-oil)	Each	25.00	
	M604	Duct Tape, 2"	Roll	5.00	
	M605	HazCat Kit (each fingerprint)	Per Test	25.00	
	M606	Mercury Meter Bags (cloth only)	Each	135.00	
	M607	Petro Flag Test Kit	Per Test	35.00	
	M612	Photo Documentation, Disposable or Digital	Each	35.00	
	M613	Poly Rope, 600', up to 1/2"	Roll	90.00	
	M614	Sand Bags, Filled	Each	8.50	
	M615	Spilfyter Strips	Each	10.00	
	M616	Sprayer, Hand Held (Hudson), 3 gal.	Each	55.00	
	M801	Water, Drinking, 24/case	Case	14.00	

**Materials Terms:**

- All materials utilized, whether listed in daily reports or not, are chargeable. All materials not listed on price list, including Wildlife Trailer supplies and expendables and third-party invoices for services, charged at cost plus 20%.
- Non-regulated waste disposal at NRCES facilities charged at \$0.35 per gallon for liquids and \$95.00 per ton for solids. Disposal quotes for waste based on meeting approved profiles. NRCES will assist Customer with disposal plan and provide price quotes, but Customer must designate disposal facility. NRCES will not take title to any wastes: dangerous, hazardous or non-hazardous.
- Protective gear category descriptions:  
Level D: Coveralls/Uniform, Steel Toe Boots, Safety Glasses, Work Gloves, Hard Hat and Safety Vest as applicable  
Level C: Level D plus, Disposable Tyvek, Full Face or Half Face Respirator (excluding cartridges)  
Level B: Level C plus supplied air and egress air bottle or SBCA (Supplied air equipment includes – mask, 100' air supply hose, supplied air, bottle manifold and egress bottle or SBCA)  
Level A: Quoted per Price List for specific project requests and requirements
- All materials prices subject to surcharge based on percentage increase of price for diesel over \$3.75 per gallon. Petroleum based products prices subject to change at any time based on increased manufacturing costs.
- NRCES reserves the right to substitute products of equal quality and construction without affecting the performance. NRCES applies the Brand Name of a product as a reference only, and reserves the right to substitute the product for similar and or equivalent products as it deems necessary.

## **APPENDIX C – SPILL PROTECTION, CONTAINMENT AND RECOVERY TECHNIQUES**

### **C-1 – Open Water (Coastal) Spill Containment, Protection and Recovery Techniques**

#### ***1.1 Open Water (Coastal) Containment Booms***

Use: Booms deployed in front of open water slicks or streamers are used to contain floating oil. Allow winds and currents to concentrate the oil at the boom's closed end for recovery.

Limitations: Excessive spill size, implementation time, heavy seas, adverse weather, and availability of recovery equipment.

General Instructions: Position the deployment boat along one side of the slick's leading edge. Deploy the boom using an assist boat or attach a drogue to one end. Tow the free end around the slick's leading edge and hold it in place with the assist boat or drogue, as shown in Figure C-1a. Wind and currents will concentrate the oil in the boom's apex where a boat can be positioned to begin skimming operations. Under strong wind and sea conditions, it may be advantageous to deploy upwind and chase the slick downwind in order to reduce the relative forces between the boom and the seas.

Equipment Required: Deployment boat(s), drogues, open-water boom, and portable or self-propelled skimmer.

Maintenance: Continually reposition the skimmer to the area of heaviest oil concentration. Check the boom periodically for leakage and broken, twisted, or submerged sections. The boom may require repositioning or redeployment if the current or wind direction changes appreciably.

Cleanup: after skimming, remove oil sheens using sorbents.

Variations: Boom may be deployed to completely or partially encircle the slick as shown in Figures C-1 b and C-2. Two boats or two sea anchors can be used to deploy the boom in a catenary configuration as shown in Figure C-1. Tow the boom ends up either side of a slick until all the oil is contained within the boom. Two additional boom configurations are depicted in Figures C-1c and C-3.

#### ***1.2 Diversion Booming***

Use: Booms are positioned along low-energy shorelines to divert oil away from sensitive shoreline areas to less sensitive onshore or offshore areas for subsequent recovery. Proven to be an effective booming technique in currents greater than 1 knot.

Limitations: Accessibility, implementation time, availability of deployment equipment, and heavy wave conditions.

General Instructions: Anchor one end of the boom to the shoreline and, using a vessel, position the boom's free end at an angle to the current. If oil is being diverted to the shore, angle the boom's free end towards the oncoming oil, as shown in Figure C-4. Oil diverted towards the shore can be recovered by skimming or pumping. If oil is being diverted away from the shore, angle the free end away from the approaching oil. If the spill is large or continuing, the free end of the boom should also be anchored in place.

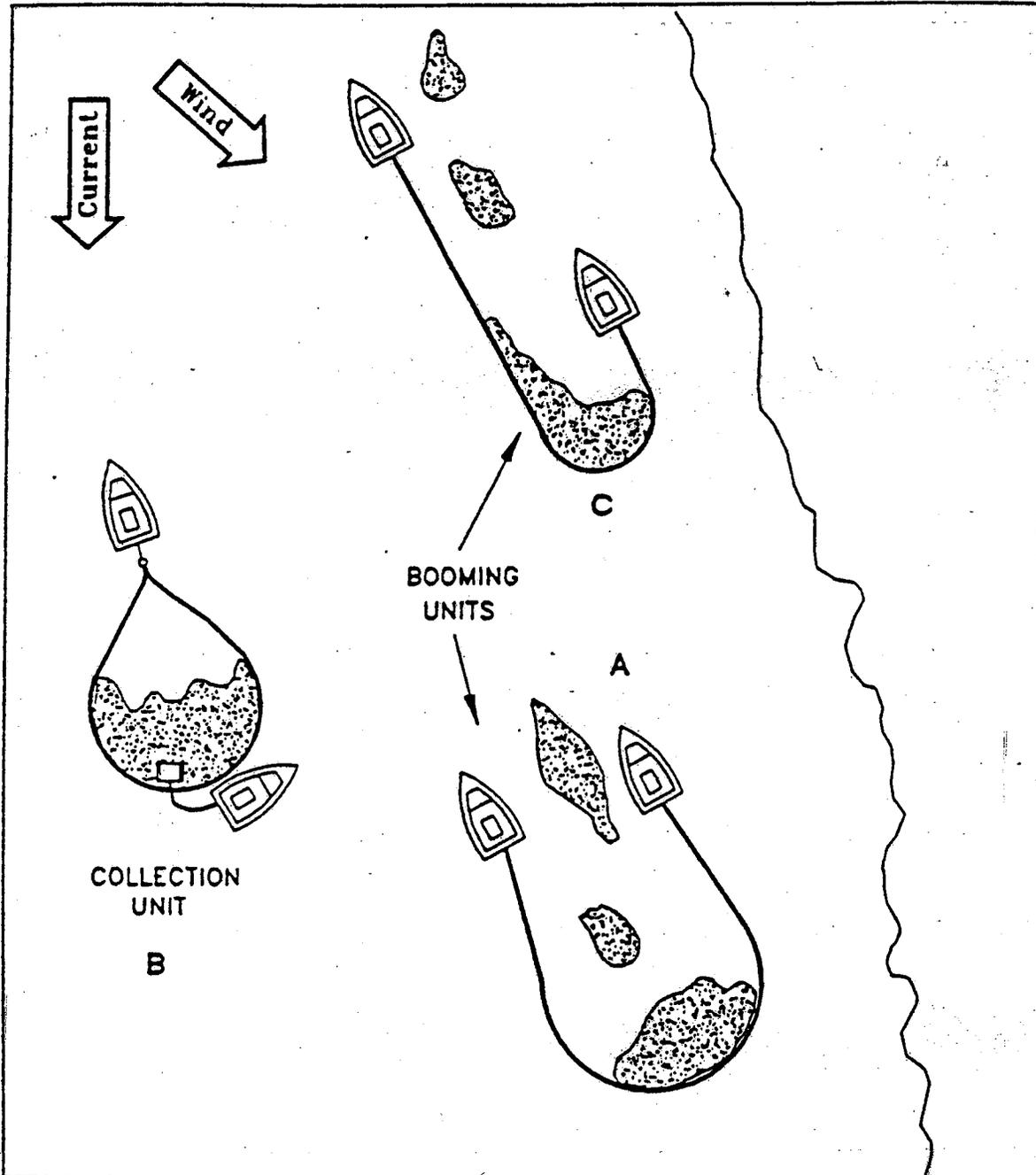


Figure C-1. Open Water Containment:  
a. Catenary Configuration;  
b. Encirclement Configuration;  
c. "J" Configuration

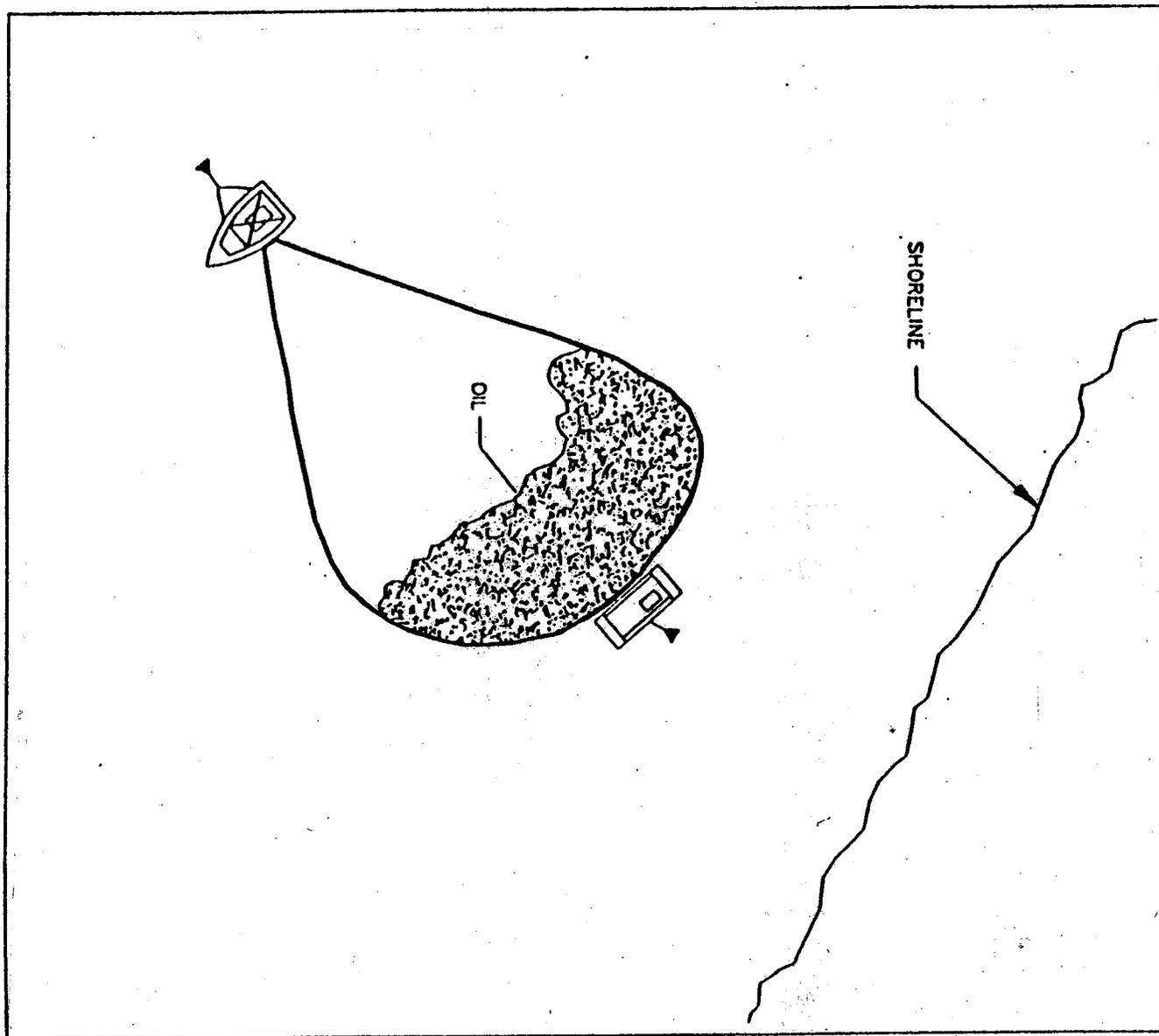


Figure C-2. Open Water Containment: Boom in Encirclement Configuration

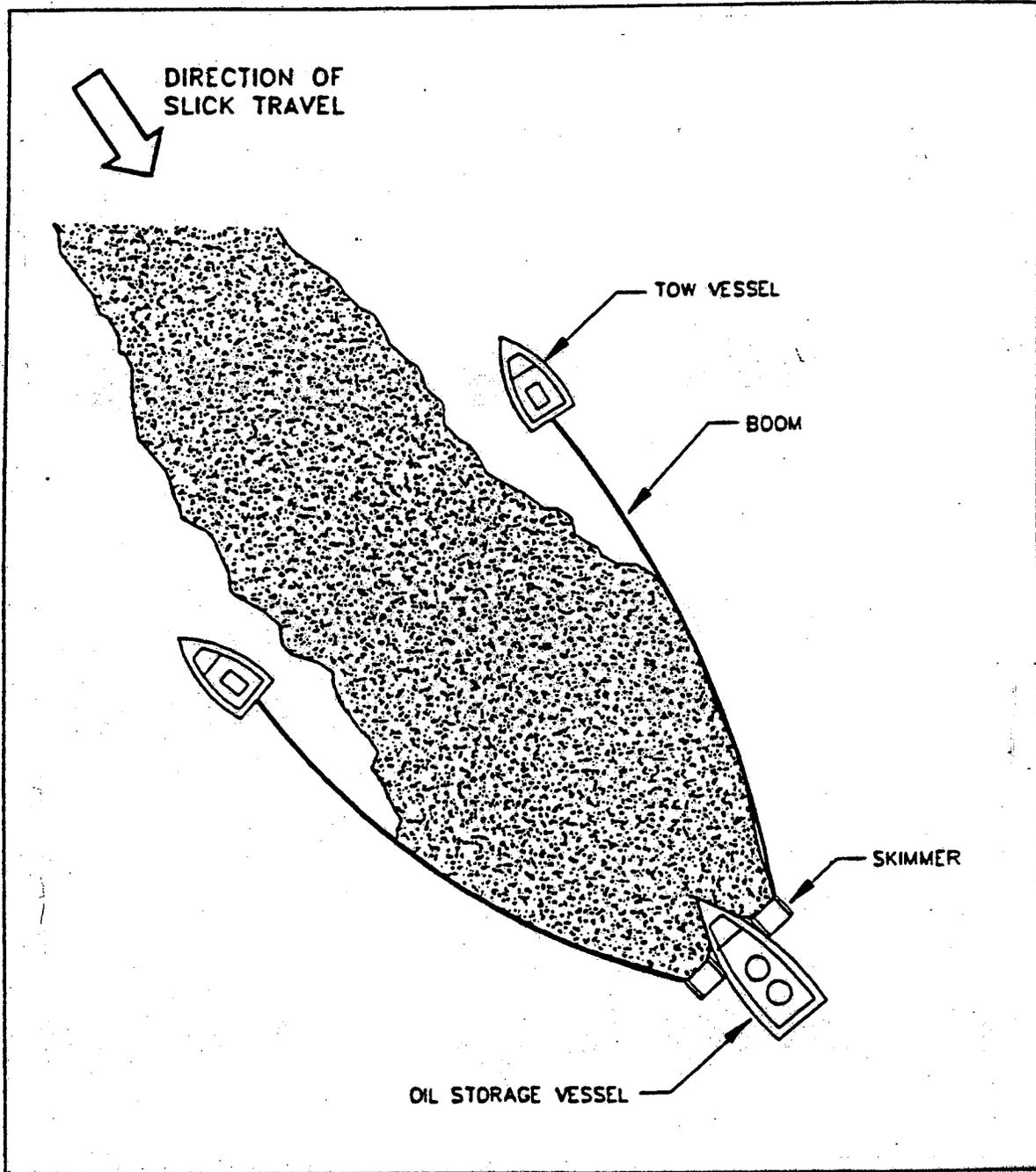


Figure C-3. Open Water Containment: Double Boom Configuration

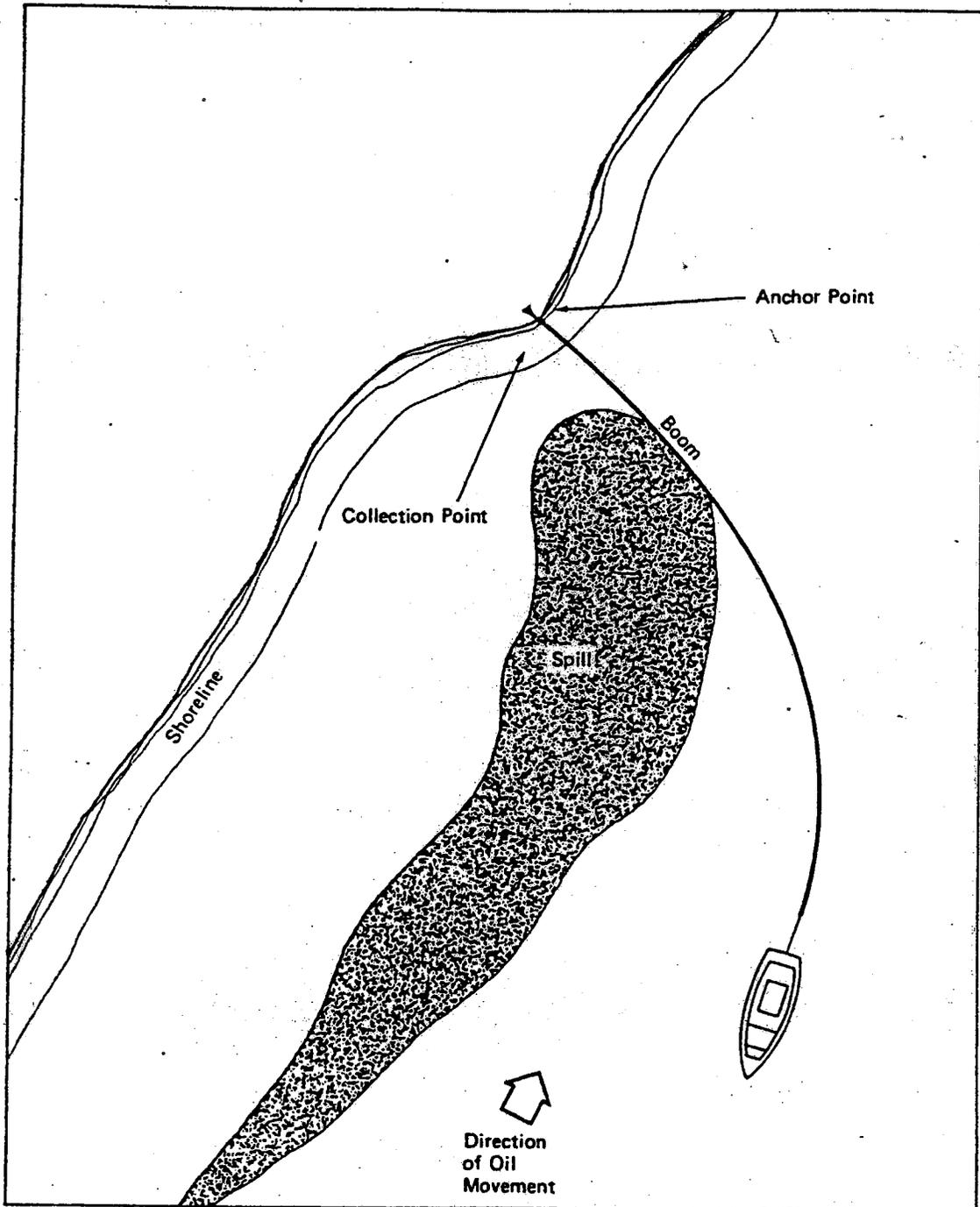


Figure C-4. Marine Diversion Booming Techniques for Protection of Sensitive Areas

As depicted in Figure C-5, two booms can be deployed to divert an approaching slick from a shoreline and into a floating skimmer. Secure one end of each boom to opposite sides of the skimmer and tow one free end along or parallel to the threatened shore. By towing the other free end toward open waters, the booms form a "vee" configuration to trap the encroaching oil while the skimmer recovers the contained oil before it reaches the shore.

The optimum angle of boom deployment is dependent upon the type and length of boom used, the current velocity, and the shape and position of the approaching slick. Generally, the free end of the boom must be angled toward the shoreline as current velocity increases. To avoid boom failure in strong currents, the deployment angle must be smaller than in weak currents. The same relation is true with regard to boom length. The optimum deployment angle decreases as boom length increases unless the boom is anchored at several places along its length. Refer to Figure C-6 for optimum boom deployment angles as a function of current velocity.

**Equipment Required:** Boom deployment boat(s), anchor(s), and hand tools.

**Maintenance:** Check the boom periodically for leakage and broken, twisted, or submerged sections. The deployment angle may require periodic adjustment in the event of significant wind or current changes, oil entrainment beneath the boom, or excessive oil buildup behind the boom. The shoreline anchor point may require occasional repositioning due to tidal fluctuations.

**Cleanup:** Recover residual oil sheens using sorbents. See Section C-4 for specific shoreline cleanup techniques.

**Variations:** For very low-energy shorelines, a secondary boom can be anchored parallel to the shore just beyond the surf line with the down current end connected to the diversion boom. As the oil is diverted towards the shore, the secondary boom prevents contamination of the shoreline.

### ***1.3 Exclusion Booming***

**Use:** Booms are used to exclude oil from sensitive shorelines by deploying them along the area's periphery.

**Limitations:** Accessibility, implementation time, adequate water depth for effective boom placement, wave action, and current velocities.

**General Instructions:** Place booms across the area to be protected and anchor both ends to the shore. For inlets or harbor entrances, booms should be placed inside the openings where current velocities and wave action are lowest. To allow vessel passage through harbor waters, one boom end may be attached to a small, manned boat. Booms may also be deployed in a cascading configuration, as described in Section 1.4, which provides vessel passage and the exclusion of oil. To maintain boom integrity, anchors should be placed at 100-foot intervals if substantial boom lengths are required. Wind and wave conditions may necessitate more frequent intervals or heavier anchors. Several exclusion techniques are shown in Figures C-7 through C-9.

**Equipment Required:** Anchors, boom deployment equipment (boats, tow lines, etc.), and hand tools.

**Maintenance:** Check boom periodically for integrity, leakage, or twisted, broken or submerged sections. In tidal waters or areas with fluctuating water levels, reposition the boom and/or its anchor points as water levels change.

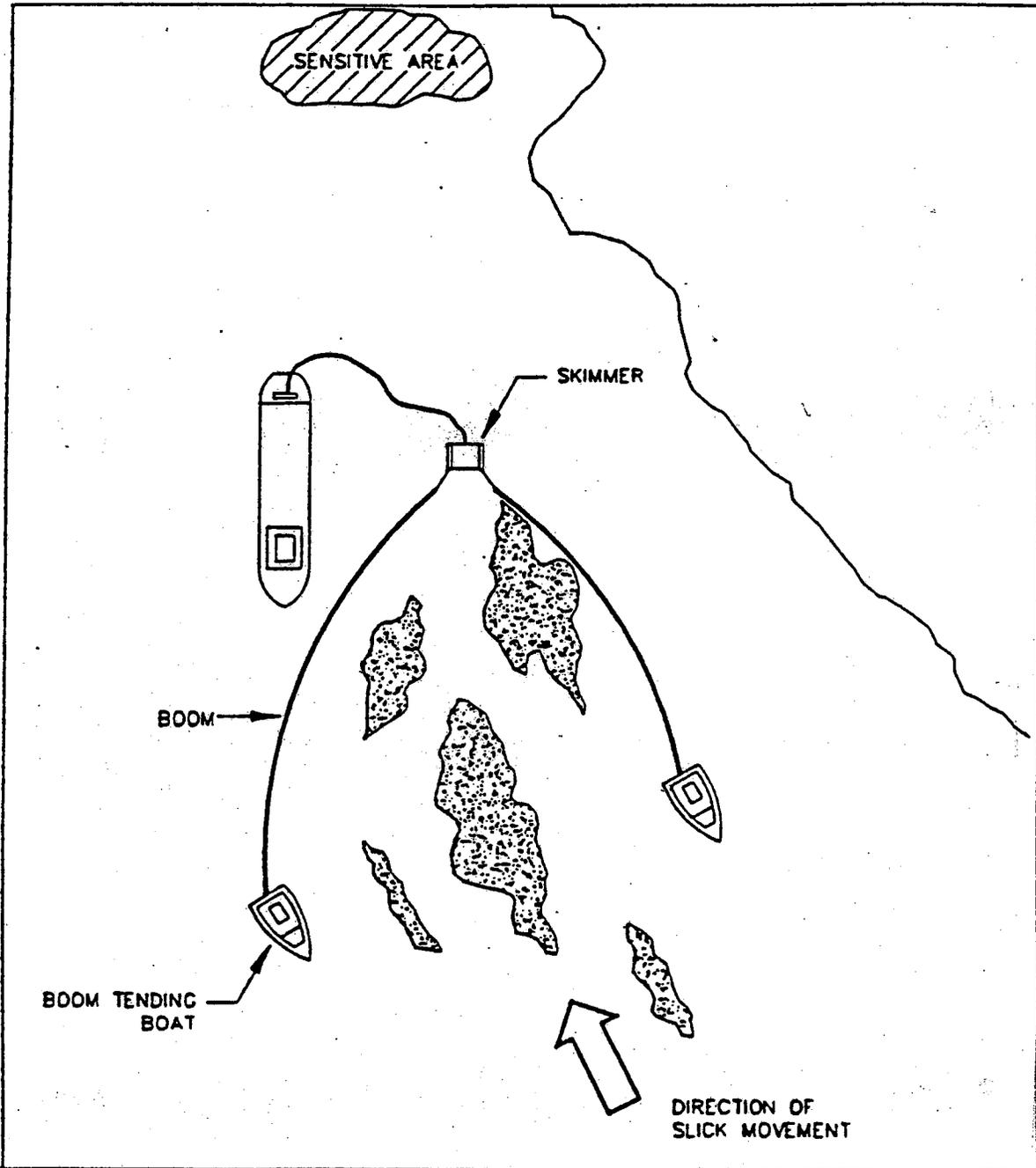
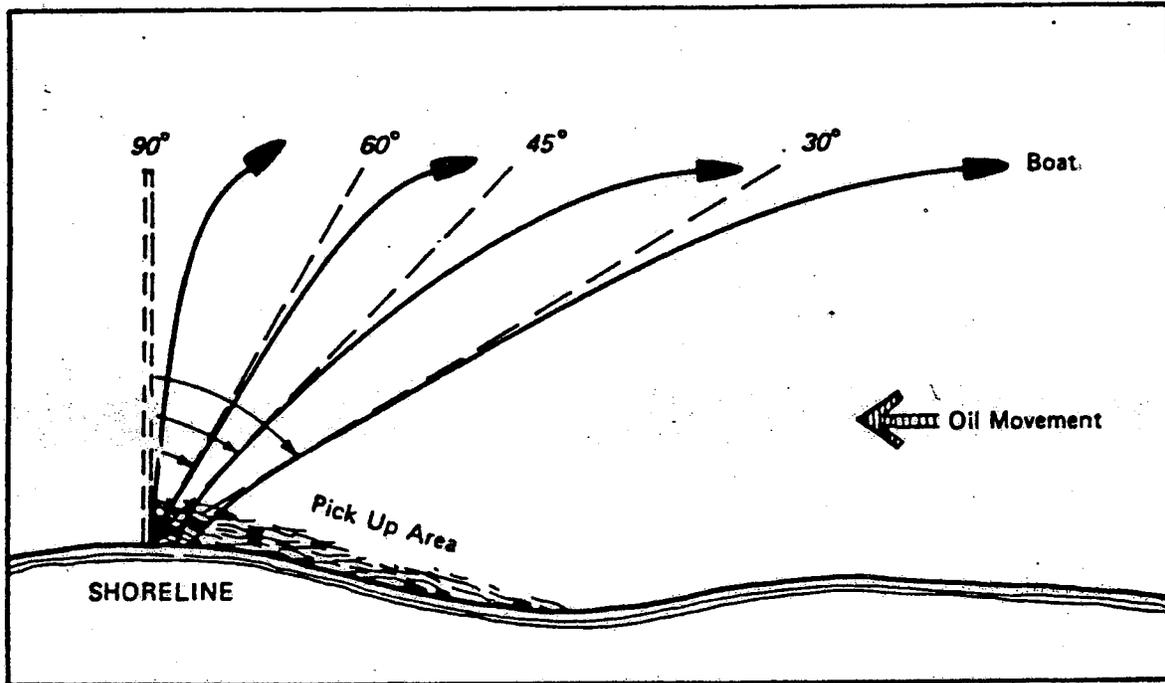


Figure C-5. Shoreline Containment: Diversion Booming to Skimmer



<u>Current (kts.)</u>	<u>Current (fps.)</u>	<u>Boom (angle)</u>
1.5	2.5	70
1.6	2.7	60
1.7	2.8	55
1.8	3.0	50
2.0	3.4	45
2.2	3.7	40
2.5	4.2	35
2.8	4.8	30

Difficulty in deployment will increase and effectiveness will decrease as a function of water velocity

Figure C-6. Shoreline Containment: Boom Deployment Angles

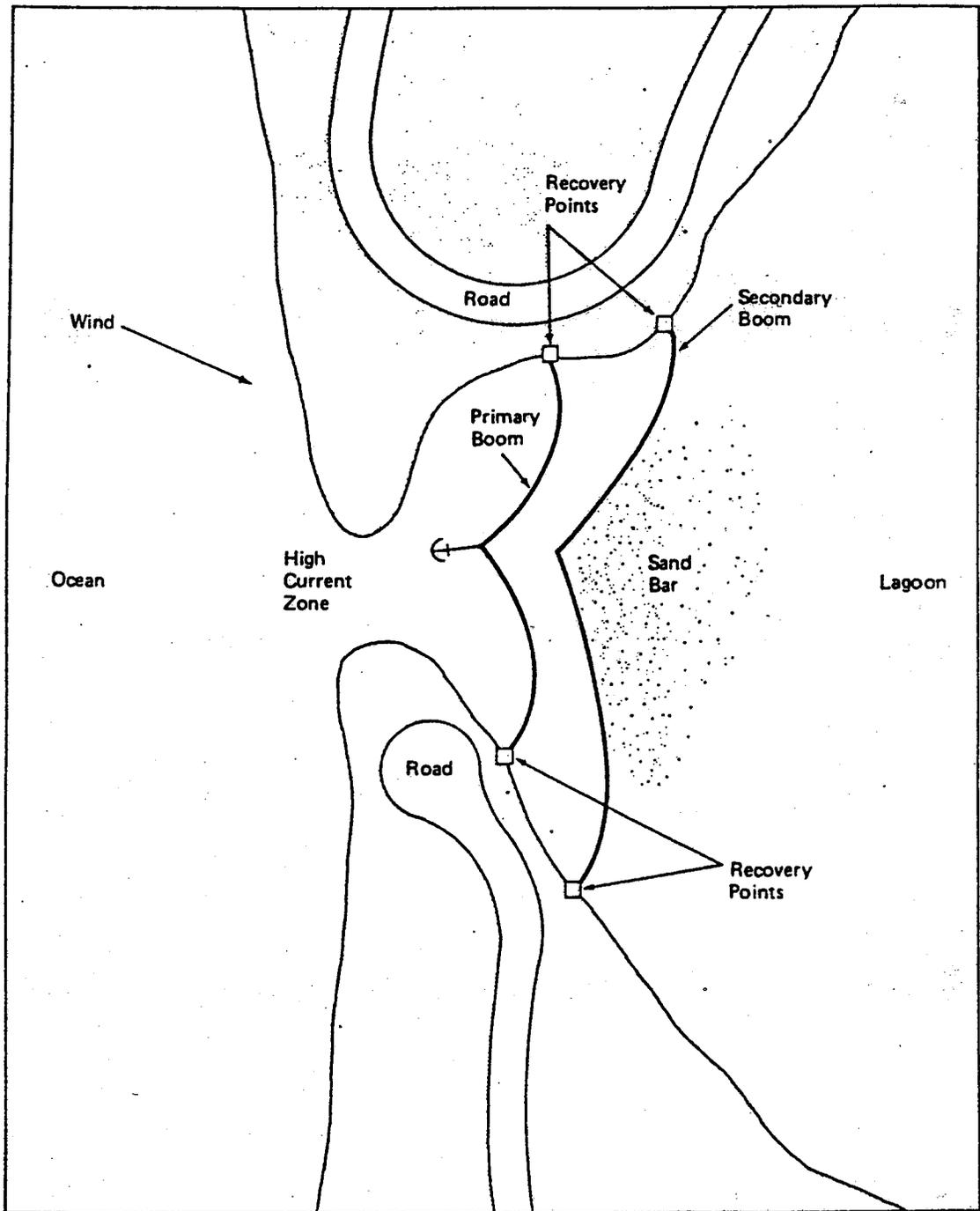


Figure C-7. Shoreline Containment: Exclusion Booming

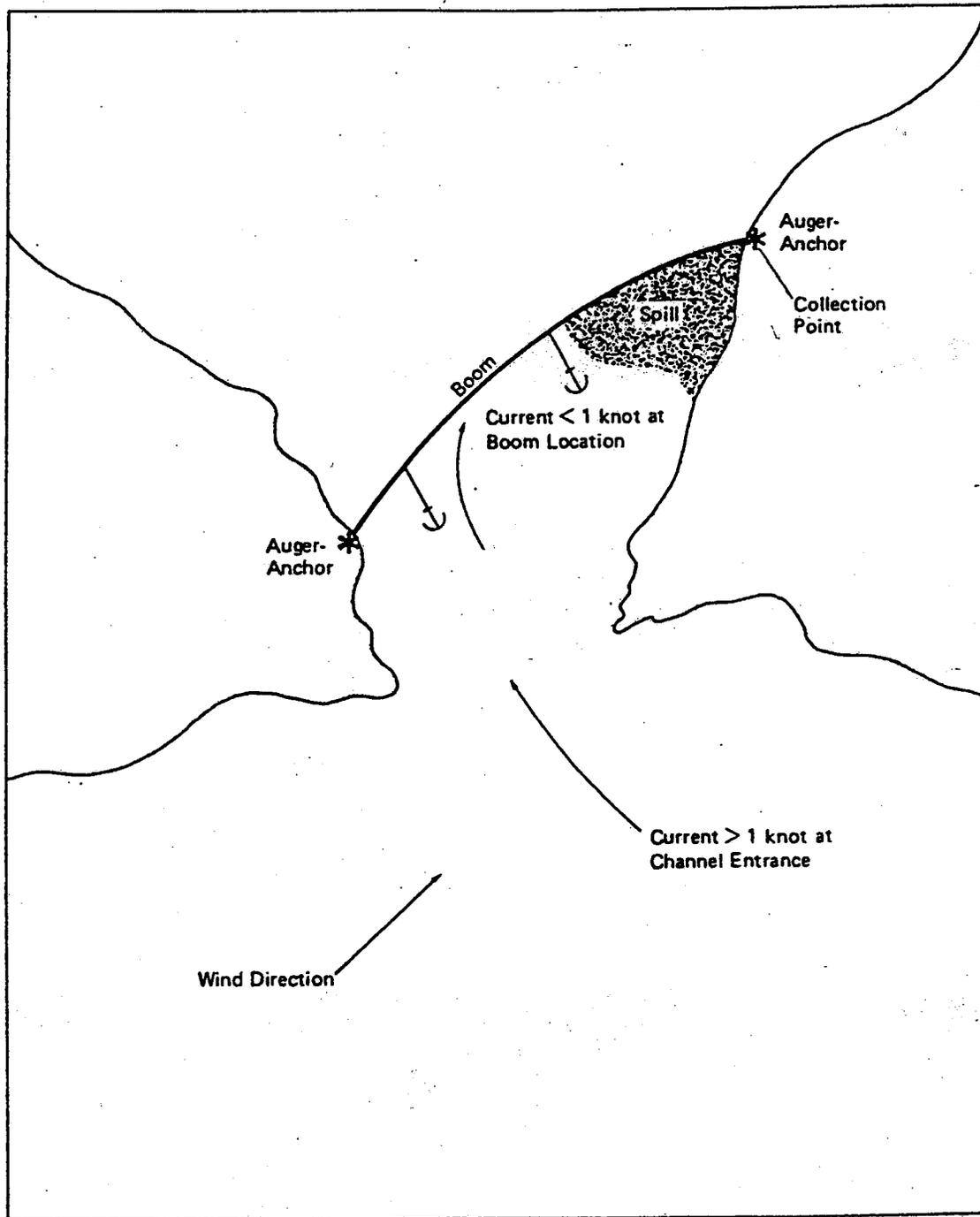


Figure C-8. Shoreline Containment: Exclusion Booming at Inlet with High Channel Currents

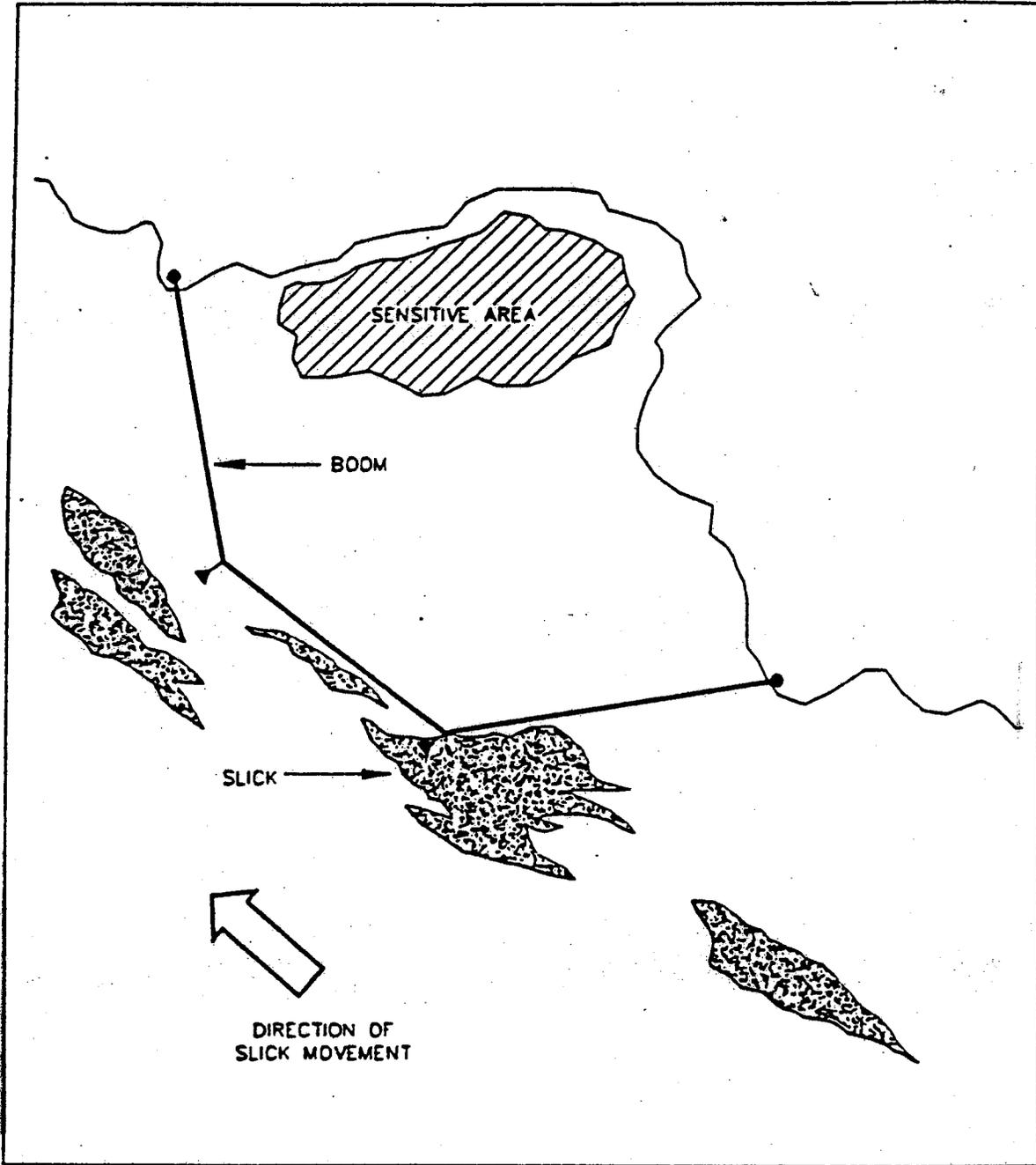


Figure C-9. Shoreline Containment: Exclusion Booming

**Cleanup:** Recover contained oil by skimming or pumping. Adjacent shorelines can be cleaned using techniques described in Section C-4.

**Variations:** Double or triple booming may be employed in areas with high currents. Position a primary boom in the area of strongest currents and deploy secondary or tertiary booms several hundred yards behind the first as a backup safety measure.

### ***1.4 Cascading Booms***

**Use:** A series of booms deployed in a cascading formation are used on rivers or coastal areas where currents are too strong for standard containment booming. Cascading booms direct oil to the shore for recovery.

**Limitations:** Accessibility, implementation time, currents over 2.5 knots, and soft stream bottoms.

**General Instructions:** Tow the lead boom to the opposite shore or to some point mid-stream and anchor it at an angle to the current. Deploy a second boom angled toward the shoreline, and anchor the free end 25 to 30 feet downstream from the first so that it overlaps the trailing end of the lead boom. Deploy successive booms in the same manner until the shoreline is reached (Figures C-10 and C-11). Diverted oil is recovered by skimming, pumping, or using vacuum trucks. A containment pit can be dug into the riverbank or shoreline to assist oil recovery. The optimum boom deployment angle decreases as current velocity and boom length increase, unless several anchor points are set along the length of the boom.

**Equipment Required:** Deployment boat, anchors, backhoe (to dig containment pit), and hand tools.

**Maintenance:** Periodically check the boom for leakage and adjust the deployment angle, if necessary. Also, check the boom for damaged, twisted, or submerged sections. Check anchors for security.

**Cleanup:** Remove booms and recover remaining sheens with sorbents. Clean shorelines using techniques described in Section C-4.

**Variations:** If booms are unavailable or if the water is too shallow, berms may be constructed using streambed or near-site materials arranged in a cascading configuration (see Figure C-12). Cascade berming can also make use of existing streambed bars.

### ***1.5 Shoreline Berming***

**Use:** Berms constructed along the mid-zone of a shoreline are used to prevent the spread of oil to backshore areas.

**Limitations:** Implementation time – generally only effective for one to two tidal cycles, and not applicable on high-energy shorelines or during heavy storms.

**General Instructions:** Operate a motor grader parallel to the surf line to cast a windrow along the mid-intertidal area. Several passes are usually required to produce an adequate berm height. A bulldozer is usually required to assist the motor grader when it gets stuck. Bulldozers can also be used to build sand berms. If heavy equipment is unavailable, shovels may be used to construct berms.

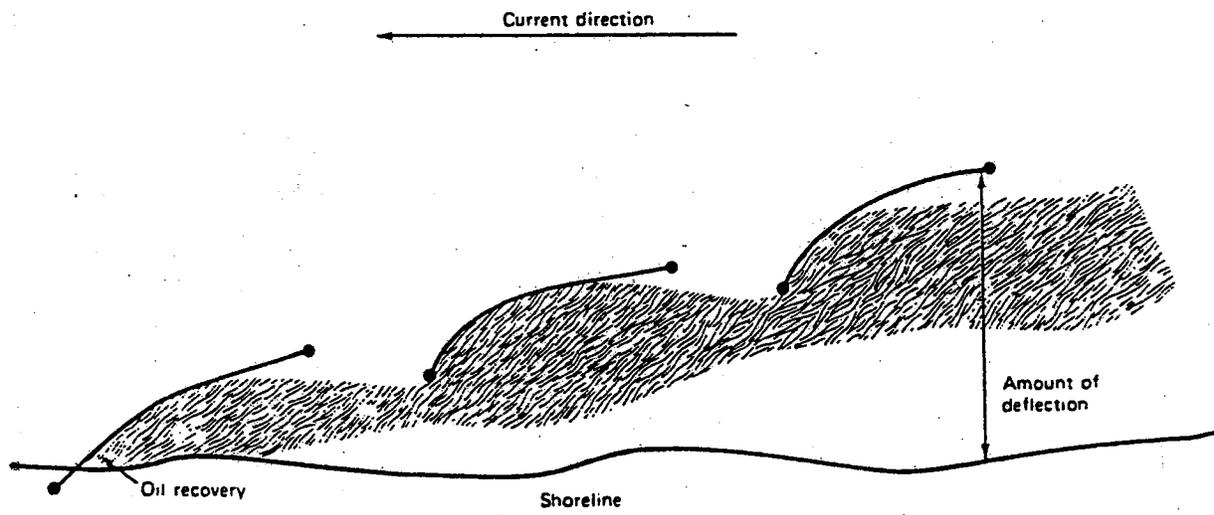


Figure C-10. Placement Configuration of 3 Lengths of Boom (Cascading Deflection Booms)

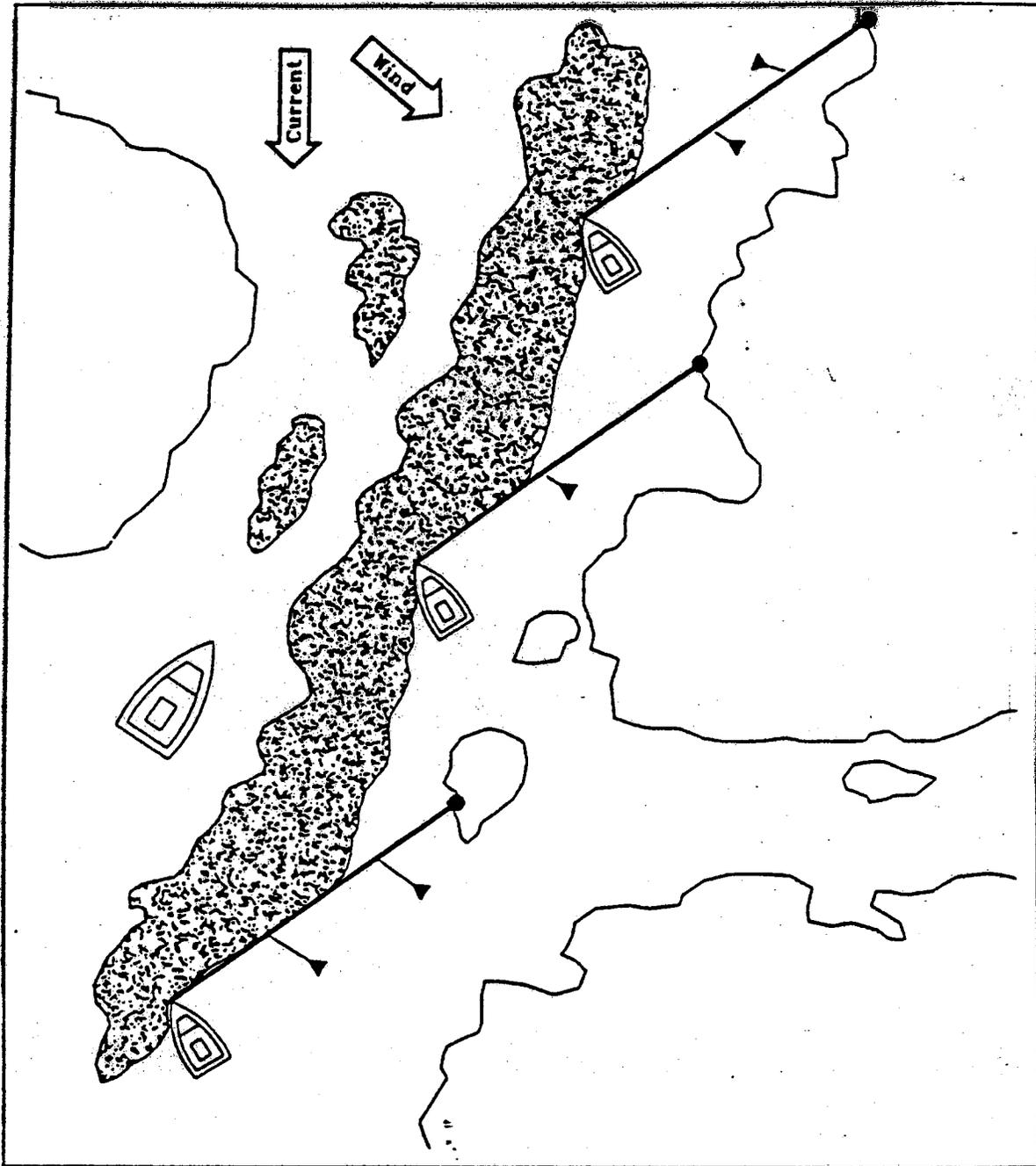


Figure C-11. Cascading Diversion Booms

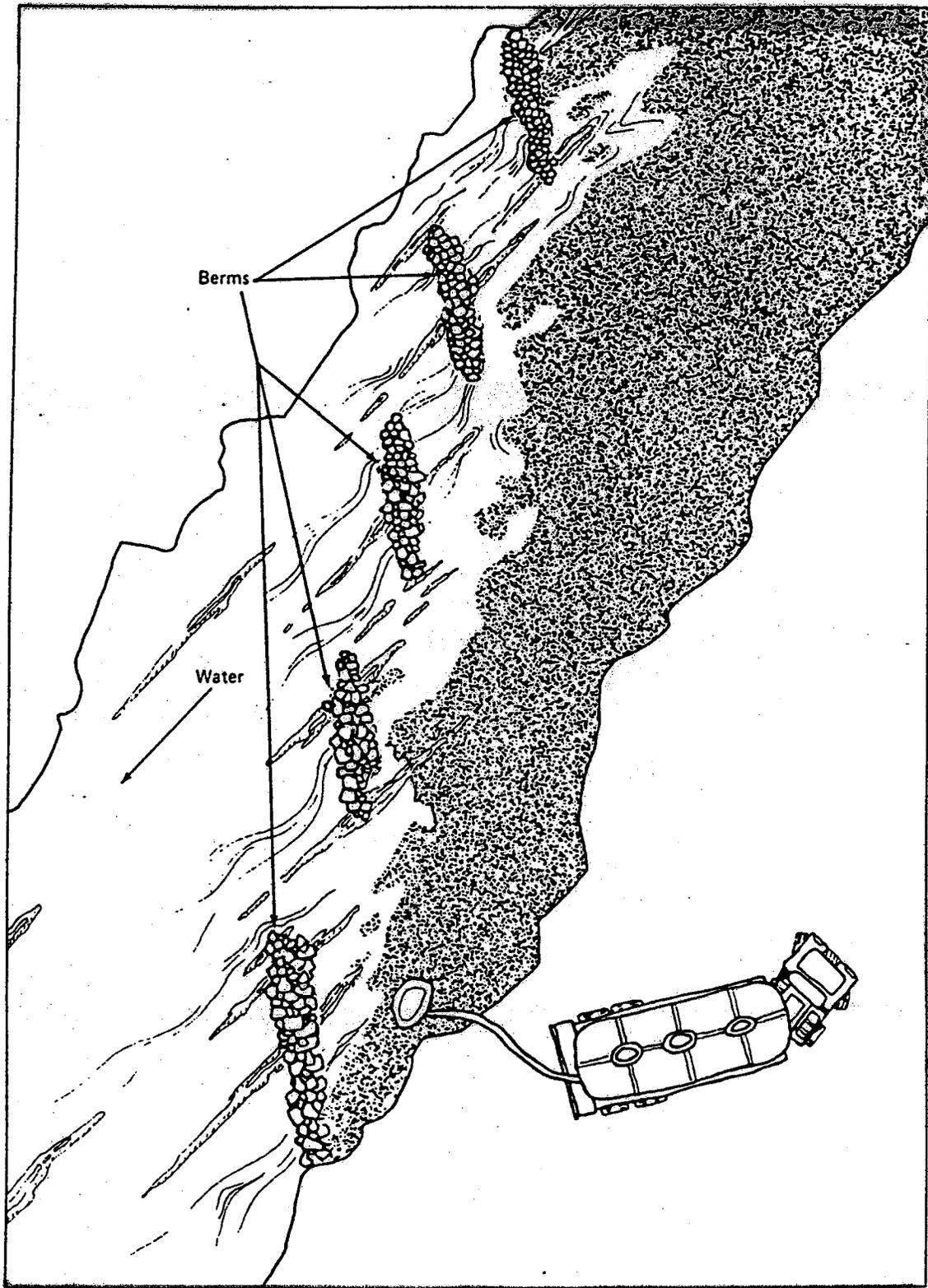


Figure C-12. Cascading Berming

**Equipment Required:** Motor grader and bulldozer and/or hand tools.

**Maintenance:** Continually check berm for adequate height. Maintain or increase berm height as necessary.

**Cleanup:** Remove or treat oiled beach material using techniques described in Section C-4.

**Variations:** A trench may be dug on the seaward side of the berm to assist in collecting incoming oil for subsequent removal (see Figure C-13). This could, however, allow deeper product penetration into the sediments.

Berms with trenches on the backshore side can aid in containing product runoff when flushing contaminated backshore and upper intertidal areas.

### ***1.6 Shoreline Sumps***

**Use:** Sumps excavated on shorelines are used to contain oil migration down beaches.

**Limitations:** Accessibility, shoreline must have some longshore drift, wave action cannot be extreme, and tidal range should be small.

**General Instructions:** Dig a sump across the intertidal zone of the beach with a trench extending towards the surf at decreasing depths. Pile excavated material on the down current side of the trench and sump. As oil moves down the beach, it is intercepted by the berm and trench, which then channel the oil into the sump. Recover the oil by skimming, vacuuming, or pumping. Figure C-14 illustrates this technique. Several strategically located sumps may be required on long stretches of beach.

**Equipment Required:** Backhoe and/or hand tools.

**Maintenance:** Berm materials must be continually replaced as they are eroded away by waves. Oil may have to be pushed into the sump with boards or squeegees to increase cleanup efficiency.

**Cleanup:** Remove or treat oiled beach materials using techniques described in Section C-4 and fill in the sump.

Variations: None.

## **C-2 – Inland Waterway Spill Containment, Protection and Recovery Techniques**

### ***2.1 Calm Water Containment***

**Use:** Booms are deployed to encircle and contain oil in calm waters where wind, wave, and current effects are minimal.

**Limitations:** Accessibility and implementation time.

**General Instructions:** Contain oil flowing into a body of water at its entry point. Anchor one end of the boom to the shoreline. Using a boat, pull the other end out around the leading edge of the slick and back to the shore on the other side of the slick, as illustrated in Figure C-15.

Small slicks or patches of oil can be contained by completely encircling them with the boom. Anchor one boom end near the edge of the slick. Pull the other end around the perimeter of the floating oil and attach it to the anchored end.

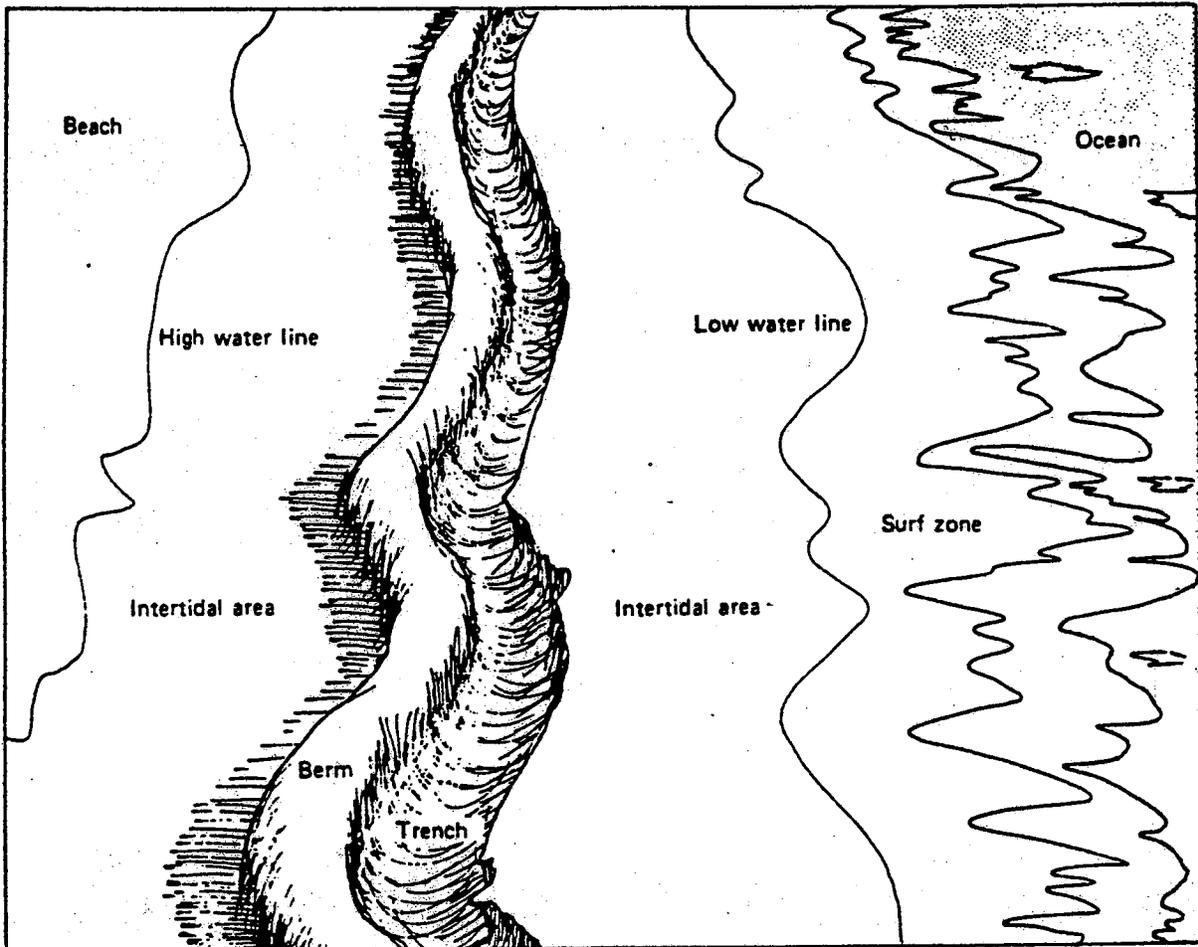


Figure C-13. Beach Berm

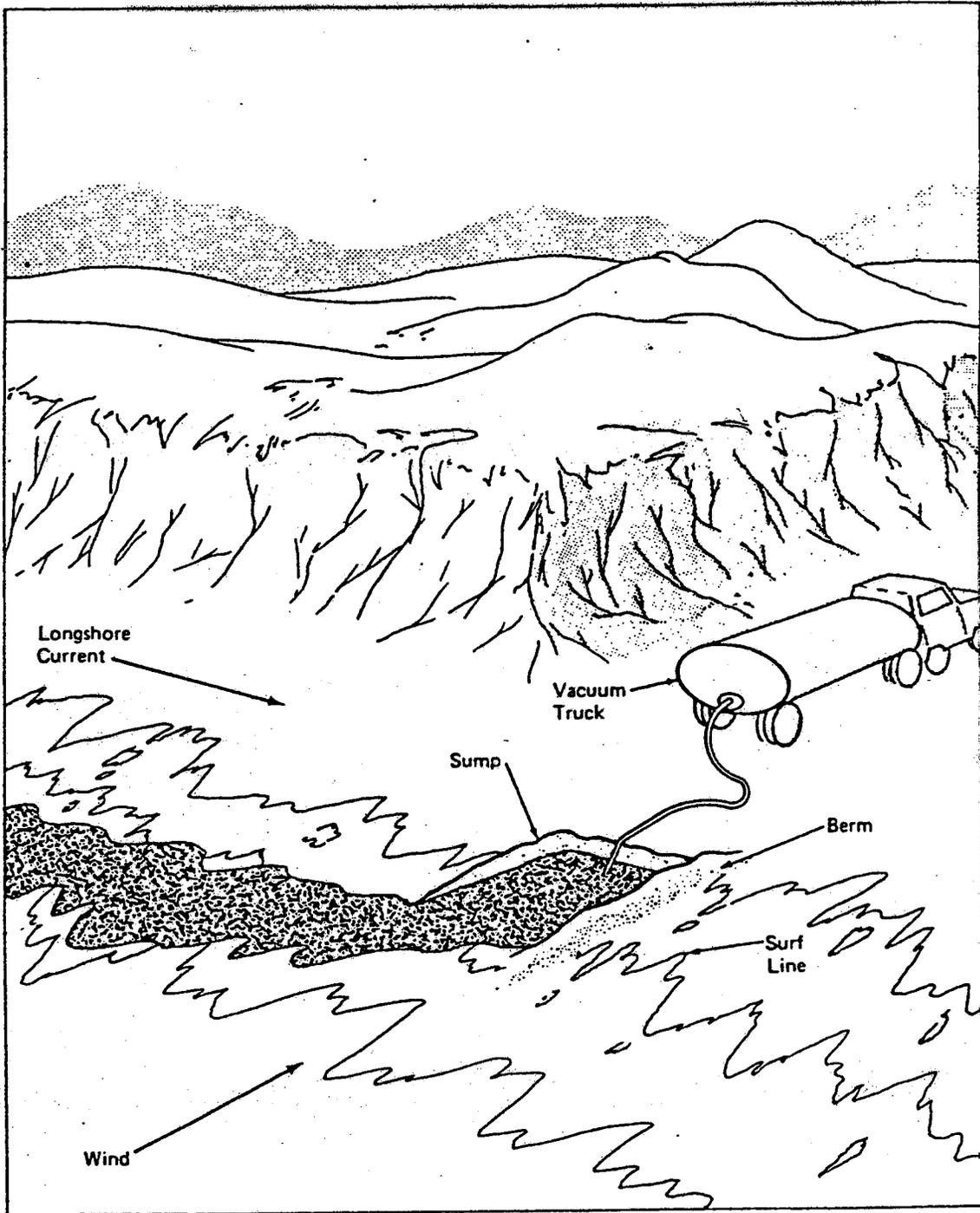


Figure C-14. Collection of Oil on Beaches with Sumps

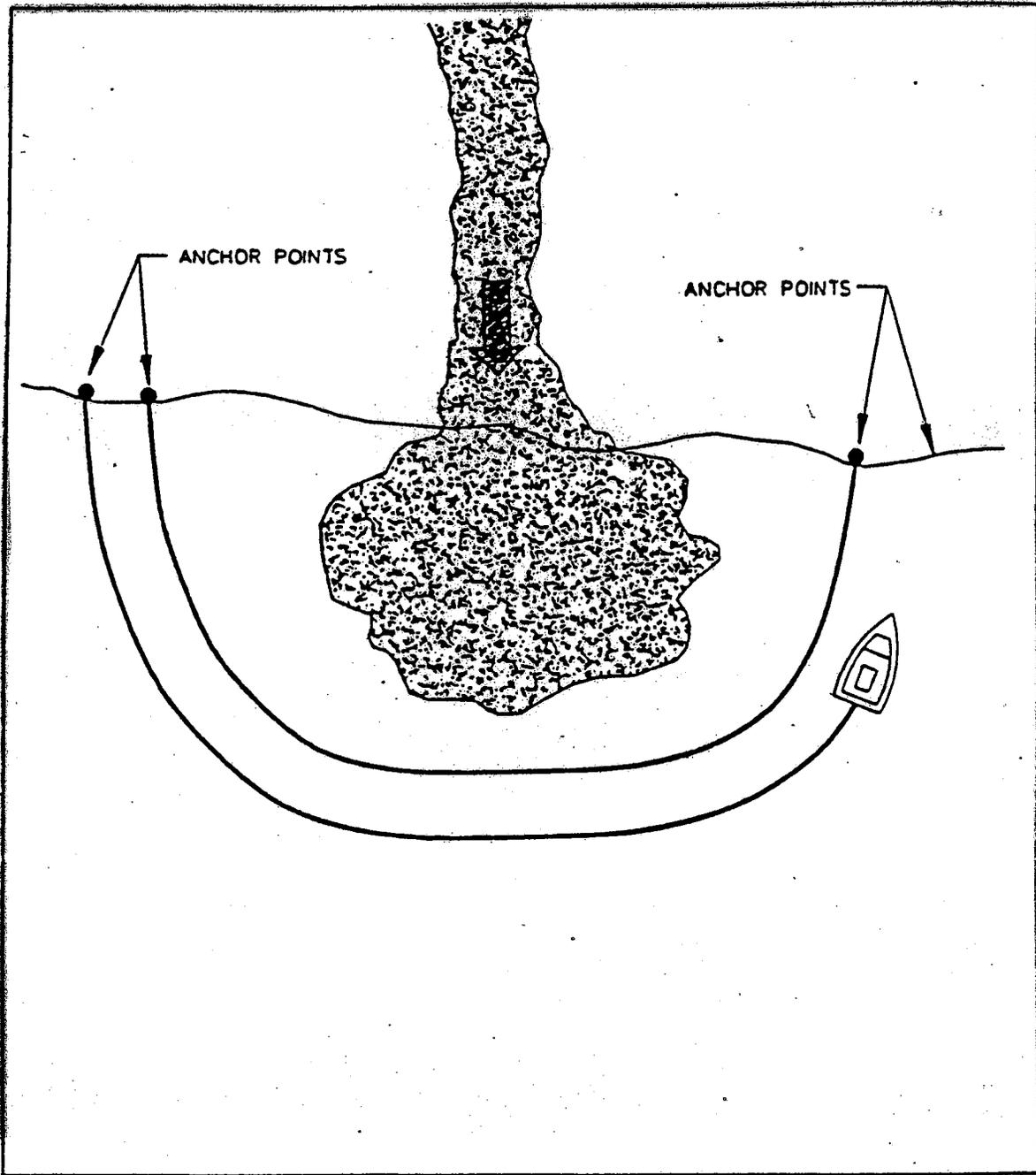


Figure C-15. Calm Water Containment at Point of Entry

**Equipment Required:** Boat(s) with adequate power to tow the boom, anchors, and hand tools.

**Maintenance:** Check booms periodically for leakage or broken, twisted, or submerged sections.

**Cleanup:** Oil contained within the boom is recovered by skimming. Remaining sheens are removed by sorbents. Refer to Section C-4 for specific shoreline cleanup techniques.

**Variations:** If a spill in an estuary is too large for containment, oil may eventually migrate to the estuary outlet. Booms can be placed across the outlet to contain and concentrate the oil for recovery.

## ***2.2 Flowing Water Containment Booms***

**Use:** Booms are deployed at an angle across a waterway to contain oil floating downstream for subsequent recovery.

**Limitations:** Accessibility, implementation time, current in excess of 1 knot, and water depths less than 1 foot below the boom skirt.

**General Instructions:** Use the currents to assist in the streaming and placement of the boom. For example, anchor one boom end to the shoreline. Use a boat or winch to pull the free end across the river and anchor it slightly upstream (Figure C-16). The optimum deployment angle depends on current velocity, boom length, and boom stability. In general, boom length should be four times the width of the waterway. As current velocity and boom length increase, the deployment angle relative to the shoreline decreases. To improve boom stability, anchor it in several places (Figure C-17).

Remove oil from the downstream end of the boom by skimming, pumping, or using vacuum trucks. A containment pit dug into the shoreline can expedite the containment and recovery process (See Figure C-18).

**Equipment Required:** Boat or winch, anchors, backhoe (to dig containment pit), and hand tools.

**Maintenance:** Periodically check the boom for leakage and adjust its placement angle, if necessary. Also check the boom for twisted, damaged, or submerged sections. Check anchors for security.

**Cleanup:** Remaining sheens are recovered with sorbents. Booms are removed. Refer to Section C-4 for shoreline cleanup methods.

**Variations:** For wide rivers, deploy two or more booms from each bank with one positioned slightly downstream from the other. Anchor the free ends so that they overlap slightly past the midstream point. If not enough boom is available, deploy a single boom from the side of the river with the heaviest concentration of oil or from the outside shore of a bend in the river where oil concentrates naturally.

## ***2.3 Blocking Dams***

**Use:** Dams are constructed across streambeds, ditches, or other dry drainage courses to block and contain any flowing oil and to prevent oil migration during a rising tide.

**Limitations:** Accessibility, implementation time, adequate storage behind the dam, flowing water, and the availability of construction materials.

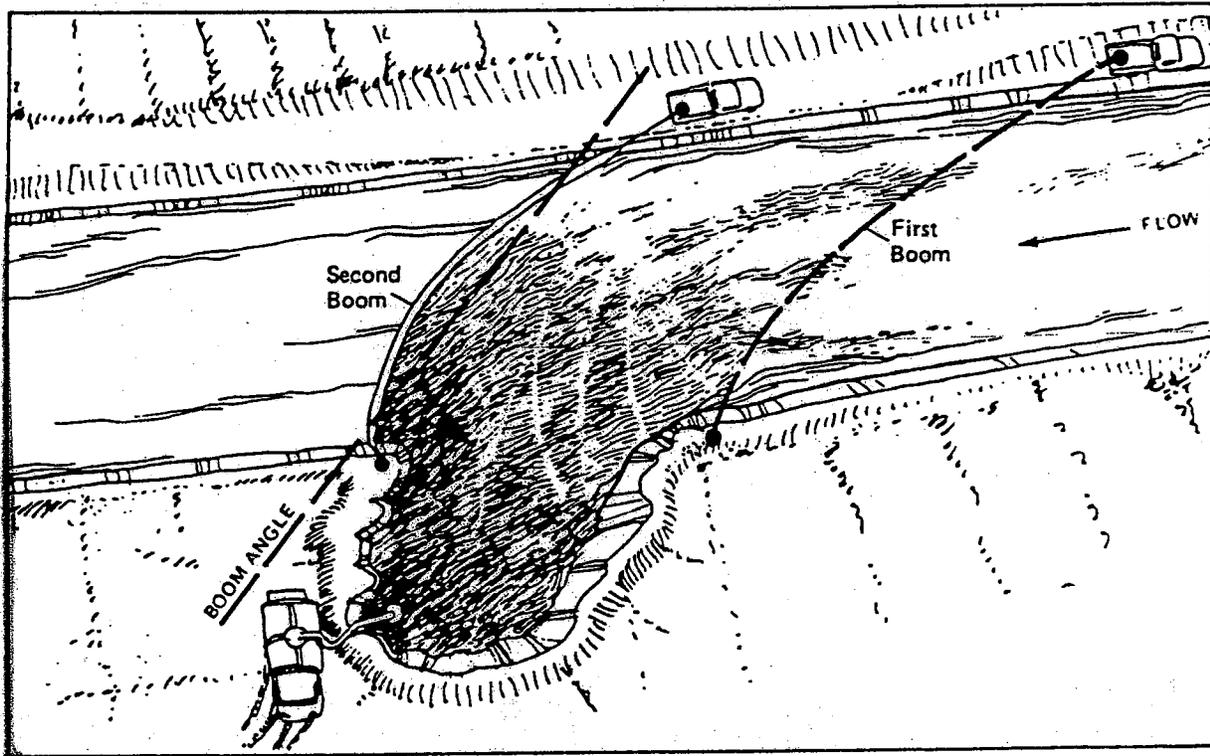


Figure C-16. River Containment Boom

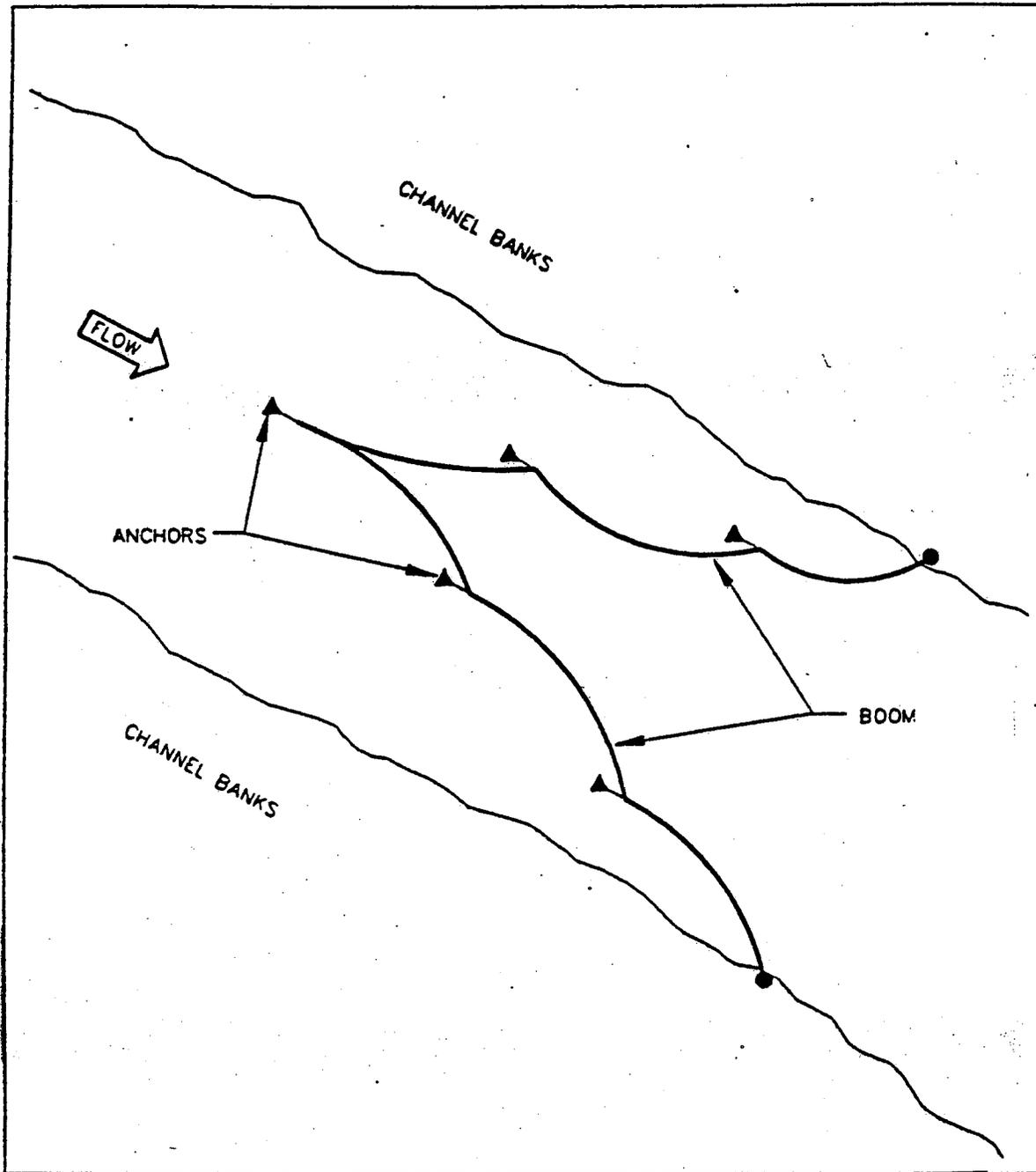


Figure C-17. Multiple Anchoring of Booms

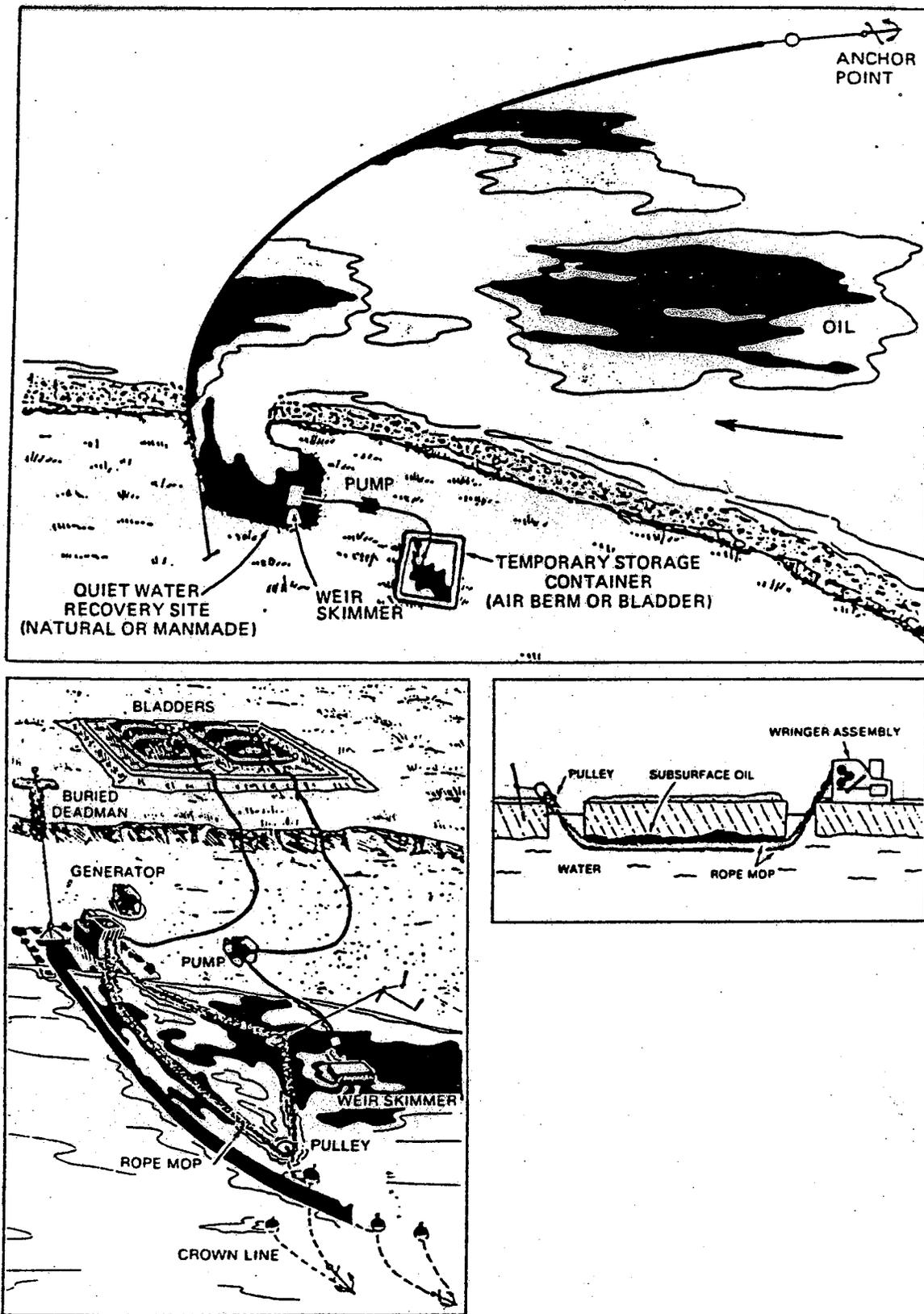


Figure C-18. Use of Skimmers Along a Shoreline

**General Instructions:** Dam locations should have high banks on the upstream side with the dam well keyed into the banks.

Construct the dam using on- or near-site earthen materials, such as sandbags, plywood sheets, or any material that blocks the flow of oil (see Figure C-19). Excavate earthen materials from the upstream side to increase storage capacity. Oil is recovered from behind the dam by pumping or using vacuum trucks. Plastic sheeting should be placed over the dam to prevent oil penetration and erosion.

**Equipment Required:** Bulldozer, front-end loader, backhoe, or hand tools.

**Maintenance:** Periodically check the dam for leaks, structural integrity, and excessive oil buildup.

**Cleanup:** Recover remaining oil concentrations or sheen with sorbents. Remove or treat oiled sediments. Dismantle the dam or replace earthen materials in excavation site.

**Variations:** Containment area behind the dam can be water flooded to limit oil penetration into sediments.

## ***2.4 Flowing Water Dams***

**Use:** Dams are constructed across culverts, ditches, shallow streams, etc., to contain floating oil while not obstructing the water flow.

**Limitations:** Accessibility, implementation time, availability of dam materials, water depth, and high current velocities.

**General Instructions:** Dam locations should have high banks on the upstream side with the dam well keyed into the banks. Construct dam with on- or near-site earthen materials, such as sandbags, plywood sheets, etc. Use heavy equipment or manual labor to excavate materials from the upstream side to increase dam storage capacity. Make the upstream side impermeable with plastic sheeting, if required. Underflow dams utilize inclined or valved pipes that have a flow capacity greater than the stream flow rate. Place valved pipe(s) on the streambed and build a dam on top. Adjust the valve opening(s) until a constant water/oil level is achieved behind the dam. Inclined pipes are placed in the dam at the lower end of the upstream side. The height of the raised end determines the water level behind the dam. Both techniques are illustrated in Figure C-20A.

For overflow dams, water flows over the top of the dam and booms positioned behind the dam contain the floating oil. Construct the dam as described above and cover it with plastic sheeting to prevent erosion. Anchor the boom several feet behind the dam (see Figure A-20B). Pumps or siphons can also be used to pass water over the dam. To be effective, the pumping rate should be greater than the stream flow rate. These techniques are depicted in Figures A-20C and D.

**Equipment Required:** Front-end loader, bulldozer, backhoe, pipes, pumps, hoses and hand tools.

**Maintenance:** Check dam periodically for leakage and integrity, replace eroded materials, and continually monitor water/oil level. Valved pipes, pumps, or a number of siphons may require periodic adjustment to compensate for changes in the stream flow rate.

**Cleanup:** Remaining sheens are recovered with sorbents and dam materials are returned to borrow sites. Refer to Section C-4 for shoreline cleanup techniques.

**Variations:** None.

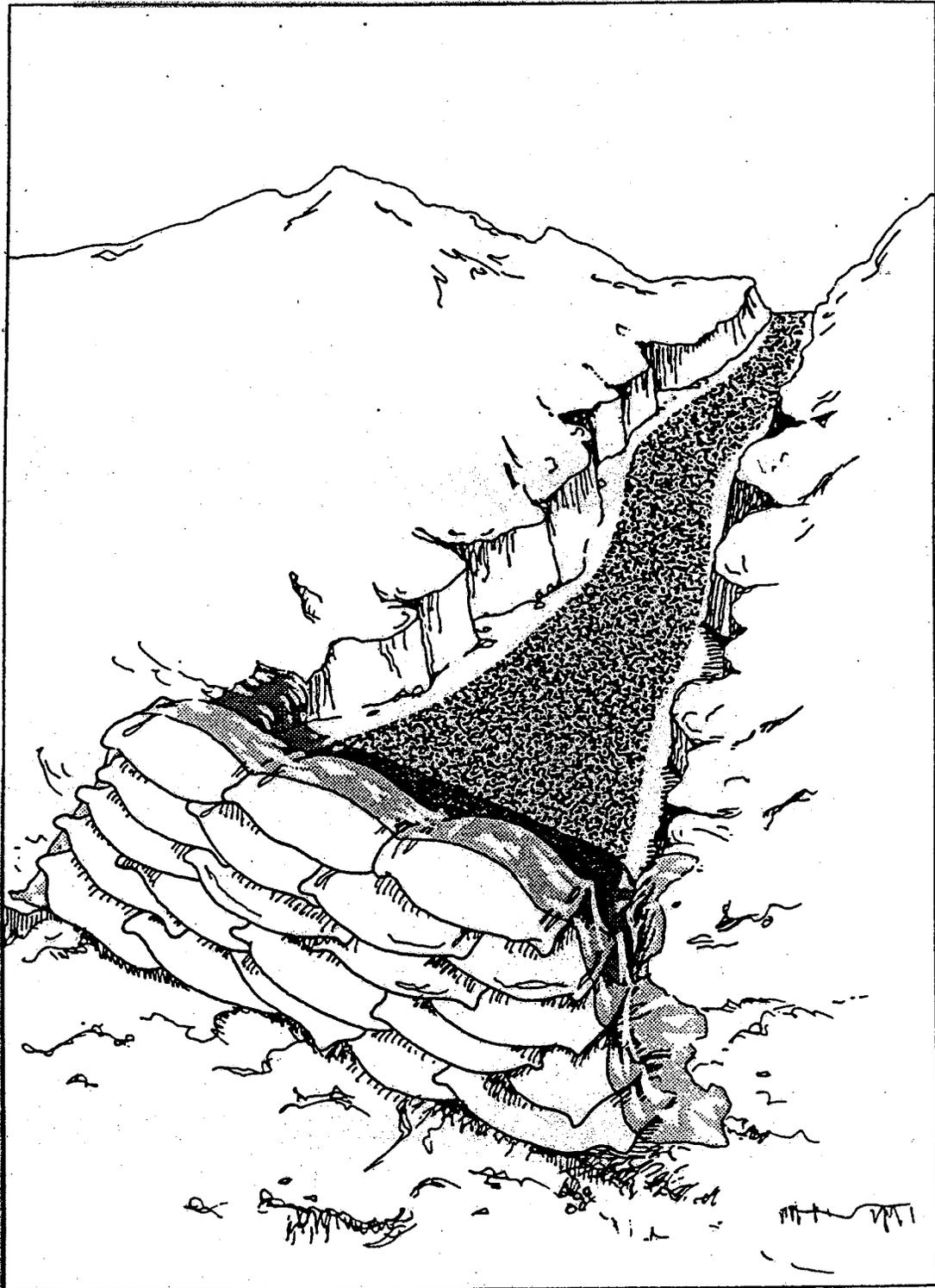
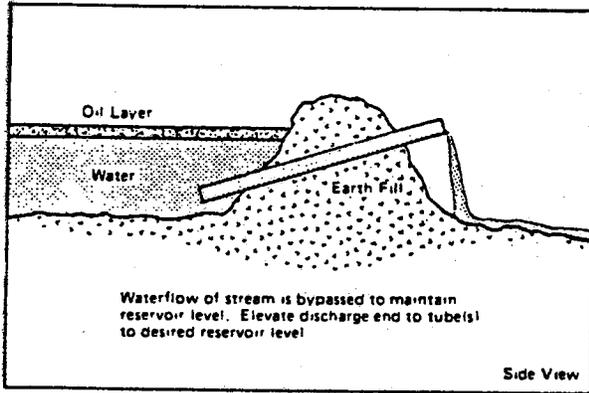
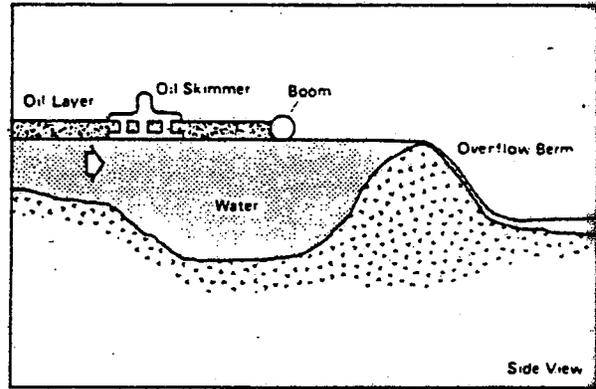


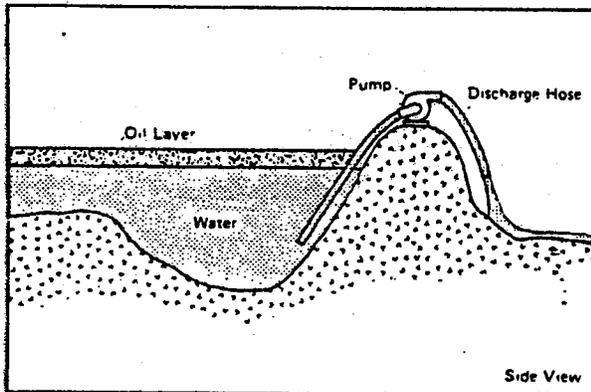
Figure C-19. Sandbag Blocking Dam



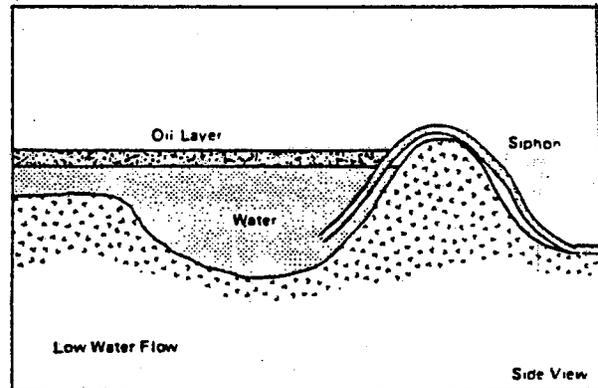
A. Underflow dam



B. Overflow berm



C. Overflow dam with pump



D. Overflow dam with siphon

Figure C-20. Flowing Water Dams

## ***2.5 Sorbent Booms/Barriers***

**Use:** Sorbent booms or barriers constructed with fencing and sorbent materials are used to contain and recover oil floating on creeks, streams, or tidal channels. They are also effective when deployed behind skimmers to pick up oil that escapes skimmers.

**Limitations:** Implementation time, large quantities of oil, high current velocities, and excessive water depth for barriers.

**General Instructions:** Deploy sorbent booms across the waterway with each end anchored to the shore. Position each successive boom a few feet downstream from the previous boom.

Construct single-sided barriers by driving a line of posts into the stream bottom with wire mesh screen fastened to the upstream side. Place oil snare squares in front of the screens and the current will hold them in place. In tidal channels with reversing currents, construct a double-sided barrier. As depicted in Figure C-21, erect two parallel lines of posts across the channel and attach screen along each line of posts. Place oil snare in the area between the screens to trap floating oil and oiled debris.

Screen height for both types of barriers must be sufficient to prevent the scattering of loose sorbent from above or beneath the barrier as tidal flow levels change. The screen mesh must be compatible with the type and size of filler sorbent and able to withstand prevailing currents.

**Equipment Required:** Hand tools, rope.

**Maintenance:** Turn booms or sorbents regularly for maximum absorbency and replace them when they are completely saturated with oil. Check booms and barriers periodically for leakage or damage.

**Cleanup:** Store used sorbents in leak-proof containers.

**Variations:** If significant quantities of oil are to be encountered, construct multiple barriers. Recover oil pooling behind the barrier by skimming, pumping, or using sorbents.

## ***2.6 River Diversion Booming***

**Use:** Booms are deployed on rivers at an angle to divert oil away from environmentally sensitive areas when currents are too great for containment.

**Limitations:** Accessibility, implementation time, currents over 2 knots, and water depths less than 1 foot below bottom of boom skirt.

**General Instructions:** Anchor one end of the boom to the shoreline just upstream of the area to be protected. Tow free end by boat to a point that angles the boom downstream and towards the opposite shore. Optimum deployment angle is dependent on the current speed and the length and type of boom used. The angle must be smaller in strong currents than in weak currents. The same relation is true with regard to boom length. If the spill is large or continuing, the boom should be anchored in place at the optimum angle. Figure C- 22 illustrates this technique.

**Equipment Required:** Boat, anchors, and hand tools.

**Maintenance:** Periodically check boom for leakage and adjust angle if necessary. Also check boom for broken, deflated, or submerged sections, and check anchor points for security.

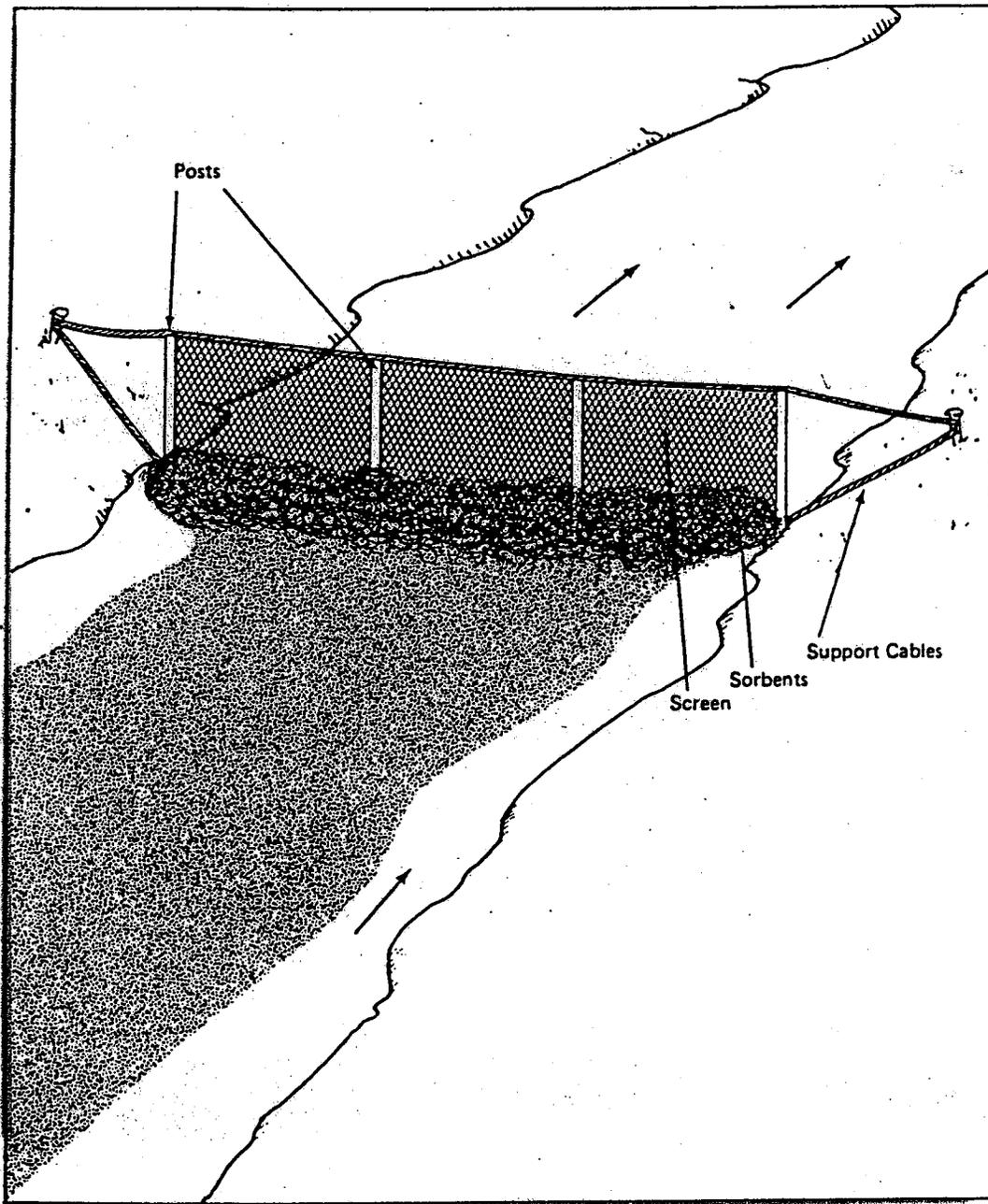


Figure C-21. Sorbent Barrier (Water)

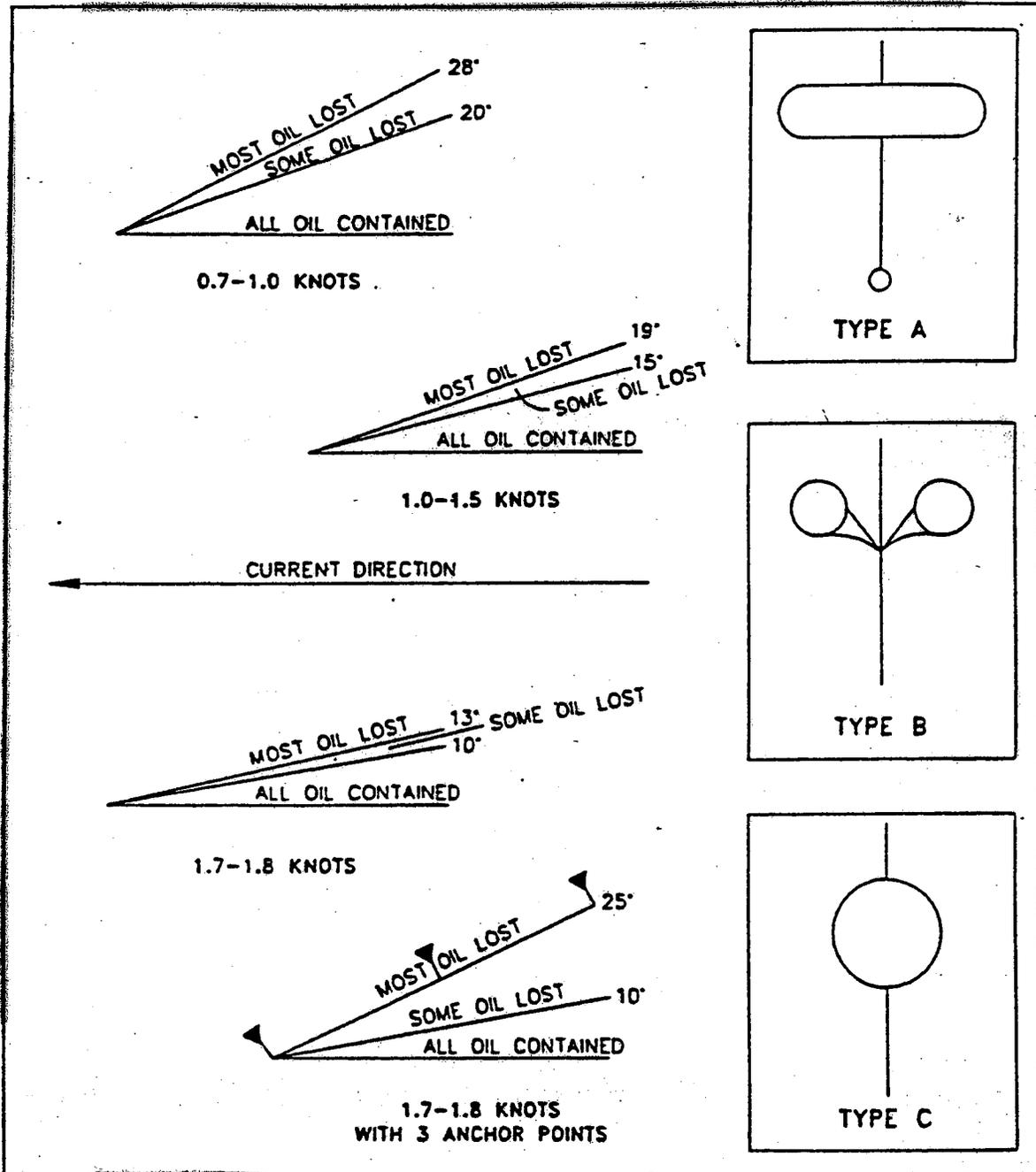


Figure C-22. Cross Sections of Three High-Stability Boom Types and Optimum Deployment Angles

**Cleanup:** Oiled shorelines can be cleaned by techniques discussed in Section C-4.

**Variations:** If the area to be protected is large, additional diversion booms may be deployed downstream in the same manner.

### ***2.7 Bird Warning Systems***

**Use:** Primarily used on coastal shorelines or inland areas with high bird concentrations to deter birds from entering the spill area and becoming oiled.

**Limitations:** Accessibility, proper deployment, and acclimation of birds to warning systems.

**General Instructions:** Place warning system at the spill site in areas most frequented by birds. Human activity during cleanup will repel most birds; therefore, the device should be equally spaced in unattended areas or single units placed in areas of least human activity. Low-flying aircraft may also be used to repel birds.

**Equipment Required:** Bird warning systems include electronic sound devices, pyrotechnics (shotguns, firecrackers), propane cannons, and aircraft. Figure C-23 shows a typical propane cannon. The number of units required is generally 4 to 5 units per mile of shoreline, or 1 to 2, per acre, or 1 aircraft for either.

**Maintenance:** Reposition device periodically to avoid acclimation and check for adequate fuel or battery charge.

**Cleanup:** Not applicable.

**Variations:** Device may be placed on small boats in near shore waters or on rafts in the middle of offshore spills and allowed to drift with the slick.

## **C-3 Terrestrial Spill Containment, Protection and Recovery Techniques**

### ***3.1 Earth Containment Berms***

**Use:** Low barriers constructed with available materials (e.g., earth, gravel, sandbags, etc.) are used to contain surface oil flow on relatively flat or low-sloped terrain or wetlands.

**Limitations:** Accessibility, implementation time, highly permeable soils and low-viscosity oils, and environmental damage inflicted by excavation of berm materials.

**General Instructions:** Use earthmoving equipment or manual labor to construct berms by forming materials into windrows or ridges in a "horseshoe" configuration. Width of containment opening should exceed that of the leading edge of the oncoming oil. Berm height and the size of the containment area are dependent upon the physical characteristics of the oil.

**Equipment Required:** Motor graders, bulldozers, front-end loaders, clam shells, and/or hand tools.

**Maintenance:** Check berms periodically for leakage and adequate height.

**Cleanup:** Use sorbents to recover residual oil pools. Remove or treat oiled sediments. Backfill excavated area upon completion of cleanup operations.

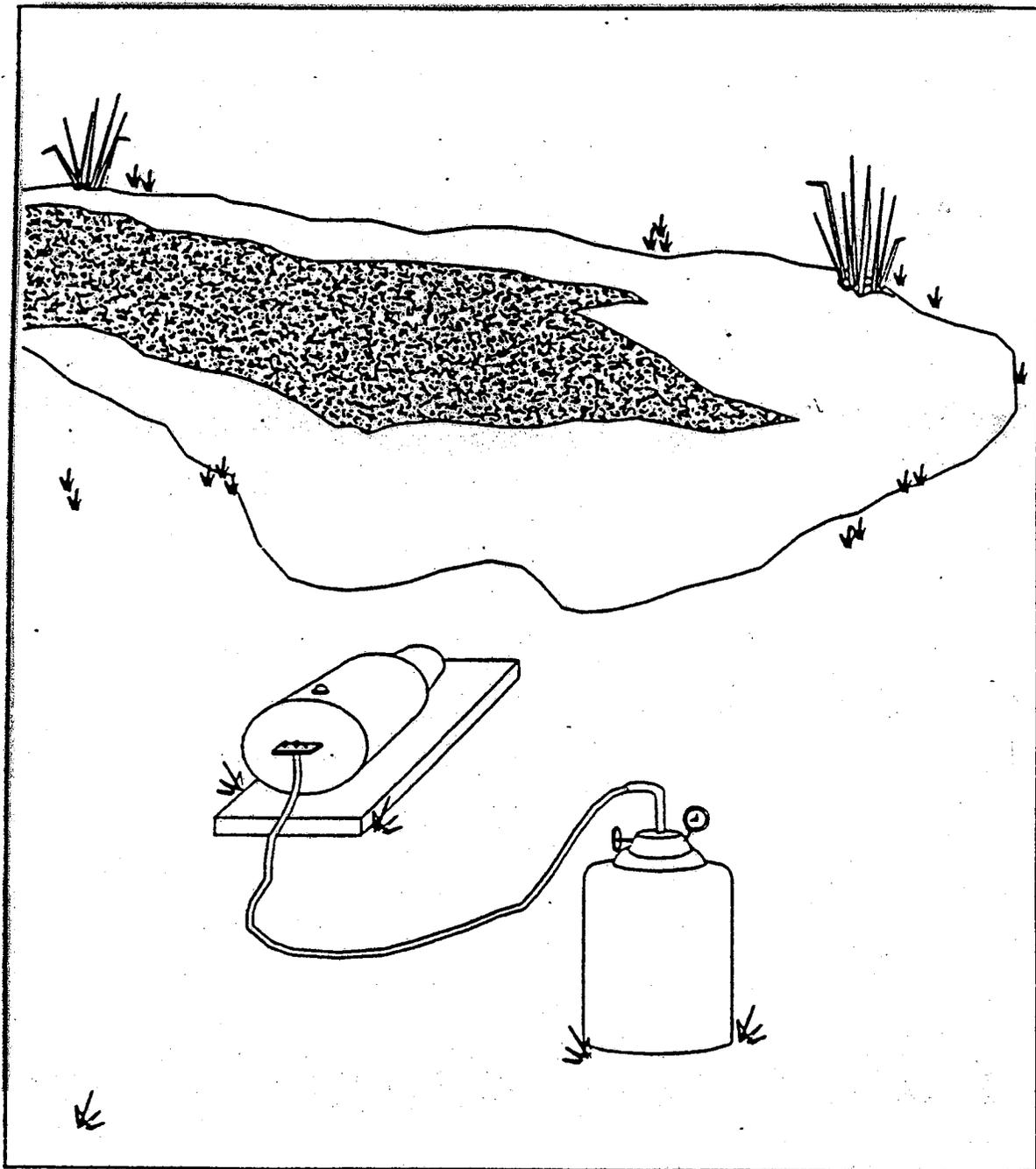


Figure C-23. Bird Warning Devices

**Variations:** In areas with a high groundwater table or high soil permeability, the containment area may be flooded and/or lined with plastic sheeting to inhibit soil penetration. Oil can be recovered from the water surface by skimming. This technique is shown in Figure C-24 and may be useful in controlling oil movement through secondary wetland drainages or wetland fringes. Earth containment berms can minimize surface disruption and restore normal circulation when cleanup has been completed.

### ***3.2 Street Containment***

**Use:** Barriers constructed across streets can be used to contain oil flowing onto urban streets or highways.

**Limitations:** Storage behind barriers, implementation time, and the availability of recovery equipment.

**General Instructions:** Construct barriers with sandbags, soil, or gravel. If coarse materials are used, the upslope side should be made impermeable with plastic sheeting or similar material. Barrier height should equal curb height. If no curb is present, construct the barrier in a "horseshoe" shape. Should a greater storage area be needed, a diversion barrier can be constructed at an angle across the street to direct oil into a parking lot or open field where a larger containment barrier has been constructed (see Figure C-25).

In constructing containment barriers, care must be exercised to minimize potential fire hazards. To avoid causing sparks, the blades of earthmoving equipment should not scrape the pavement, if present. The exhaust and ignition systems of on-scene motorized equipment should be shielded. (Spark arresters and elevated exhaust will be required on all equipment; use diesel-powered equipment when available.)

**Equipment Required:** Front-end loader and/or hand tools.

**Maintenance:** Periodically check barrier for leakage and adequate height.

**Cleanup:** Oiled areas should be flushed with water. Direct the spray towards the containment site where the oil can be skimmed or pumped out. Oiled barrier materials must be removed for disposal. Remaining oil can be removed with sorbents.

**Variations:** The area behind the barrier may be flooded with water in order to float the oncoming oil. This makes recovery easier and prevents further surface oiling.

### ***3.3 Culvert Blocking***

**Use:** Boards, sandbags, inflatable plugs, or earthen materials are used to block culverts as a means of containing oil flowing into ditches, creeks, or other drainage courses that feed into culverts. Culvert blocking may also be used to prevent oil from entering tidal channels that are connected to the ocean through culverts.

**Limitations:** Accessibility, implementation time, storage area behind culvert, flowing water, and culvert size.

**General Instructions:** Block the culverts by piling dirt, sand, or similar material over the upstream end of the culvert, thereby creating a containment dam. Sandbags or plywood sheets are also effective (see Figure C-26). Inflatable plugs work best if available at the site.

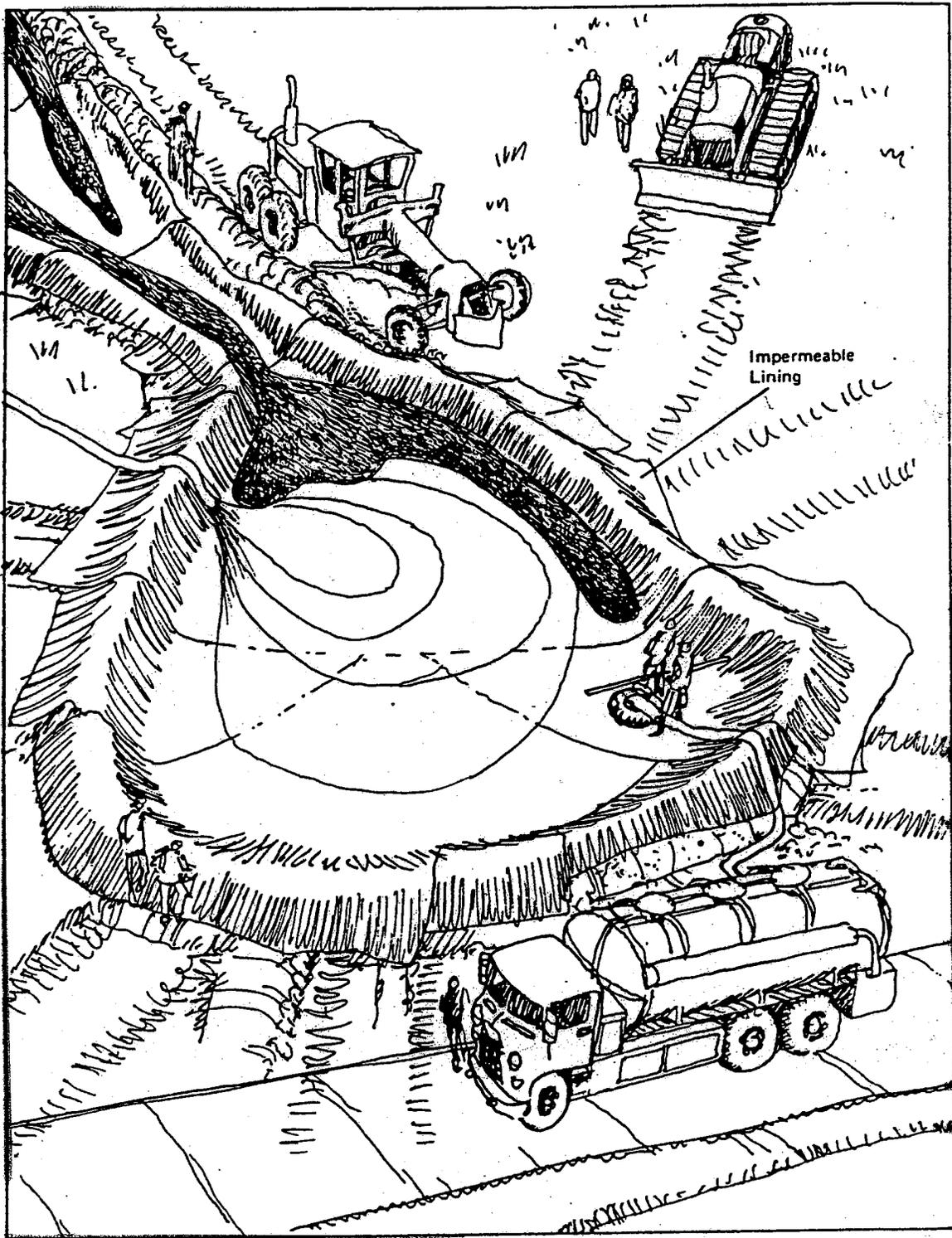


Figure C-24. Earth Containment Berm (Lined)

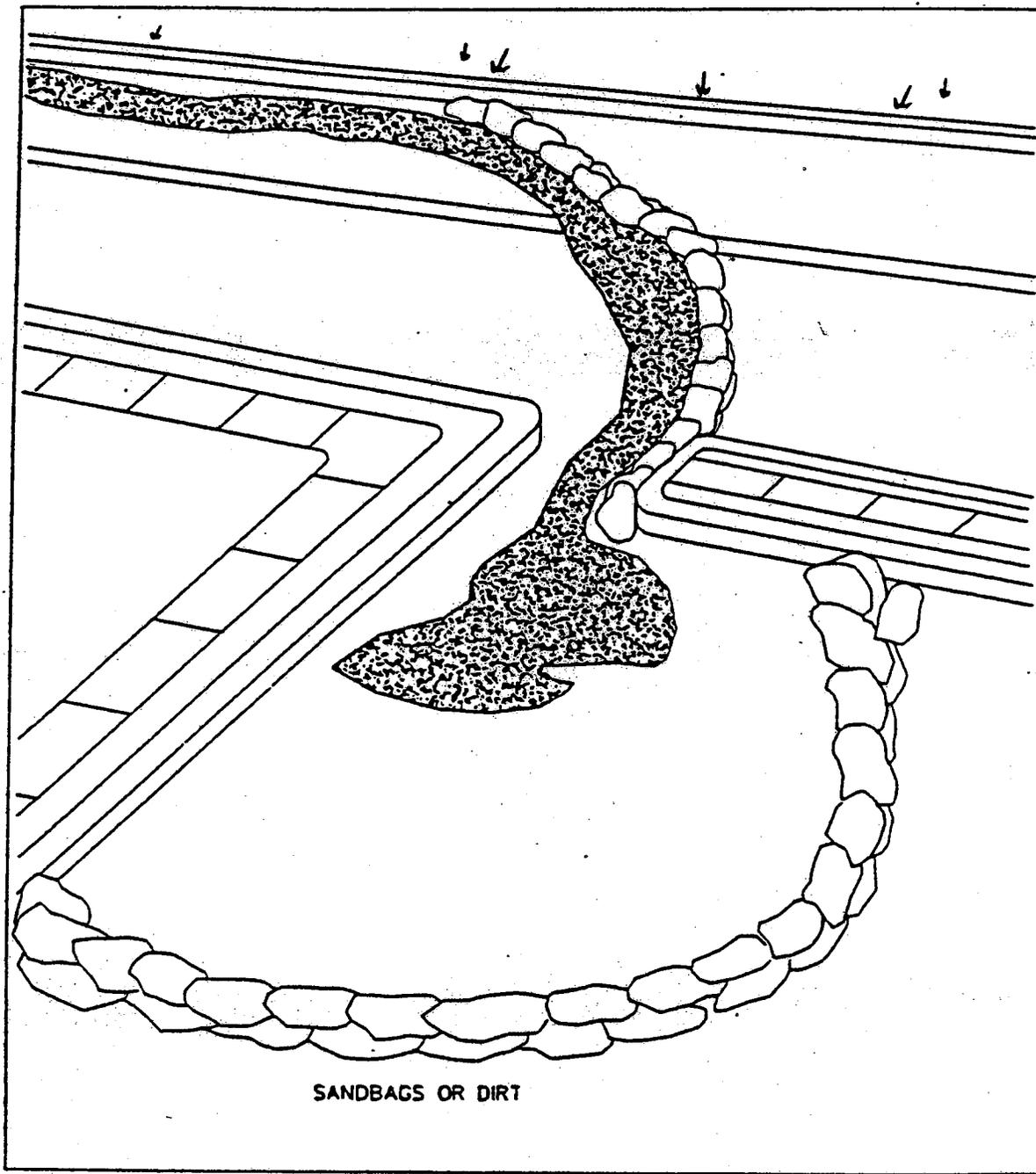


Figure C-25. Dam on a Large Paved Area

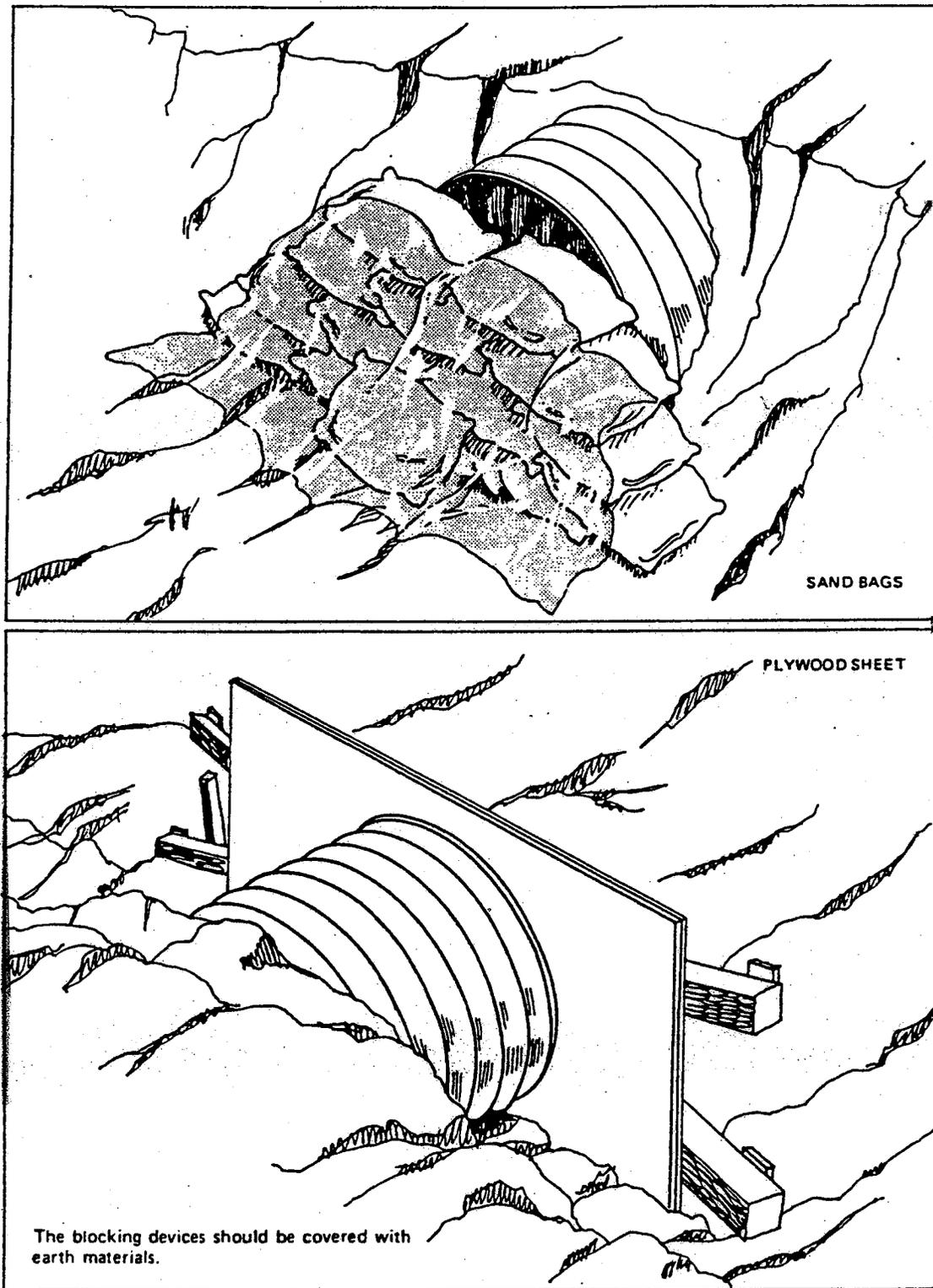


Figure C-26. Culvert Blocking

**Equipment Required:** Front-end loader and/or hand tools.

**Maintenance:** Periodically check culvert for leakage.

**Cleanup:** Remove or treat oiled sediments using techniques described in Section C-4 and remove the block from the culvert.

**Variations:** If water is flowing into a drainage ditch, it can be removed by pumping or siphoning to the culvert outlet or a nearby drainage course.

If there is little or no storage area upslope from a culvert, it may be advantageous to permit the oil to pass through the culvert and to contain the spill at the culvert outfall. In areas where a culvert outfall discharges into a borrow ditch, the borrow ditch can be dammed to form a storage area for the spilled oil. If there is no borrow ditch or similar structure draining the culvert outfall, a storage area can be created by constructing a horseshoe-shaped dam around the outfall. Refer to Figure C-27.

### ***3.4 Storm Drain Blocking***

**Use:** Sandbags, boards, and specially constructed mats are used to prevent oil spilled on roadways from entering urban storm drains.

**Limitations:** Implementation time.

**General Instructions:** For curb inlets, position a board over the curb inlet and hold it in place with a sandbag. Street inlets can be blocked similarly with board or plastic sheeting. Both inlet-blocking techniques are illustrated in Figure C-28. Specially constructed mats can be used expeditiously if they are kept on hand.

**Equipment Required:** None.

**Maintenance:** Periodically check for leakage.

**Cleanup:** Water-flush streets to remove remaining oil. Remove blocking materials from storm drains.

**Variations:** Other materials may be used to block inlets.

### ***3.5 Sorbent Barrier***

**Use:** Low barriers constructed of sorbents stacked on the ground are used on relatively flat or low-slope terrain to contain minor oil flows and recover a portion of the oil. Sorbents used in this manner also tend to immobilize oil and can be used to limit penetration into permeable soils.

**Limitations:** Implementation time, steep slopes, and cleanup/disposal problems.

**General Instructions:** Stack or pile sorbent to form a continuous barrier across the entire leading edge of the advancing oil mass with the ends curved toward the oncoming flow. A sorbent barrier is shown in Figure C-29. Collected oil is recovered by physical removal of spent sorbents or by vacuuming or pumping if quantity exceeds absorption capabilities of the sorbents.

**Equipment Required:** No special equipment. Roll and granular sorbents generally work best.

**Maintenance:** Turn sorbents periodically to maximize recovery and replace saturated sorbents. Add additional material as necessary.

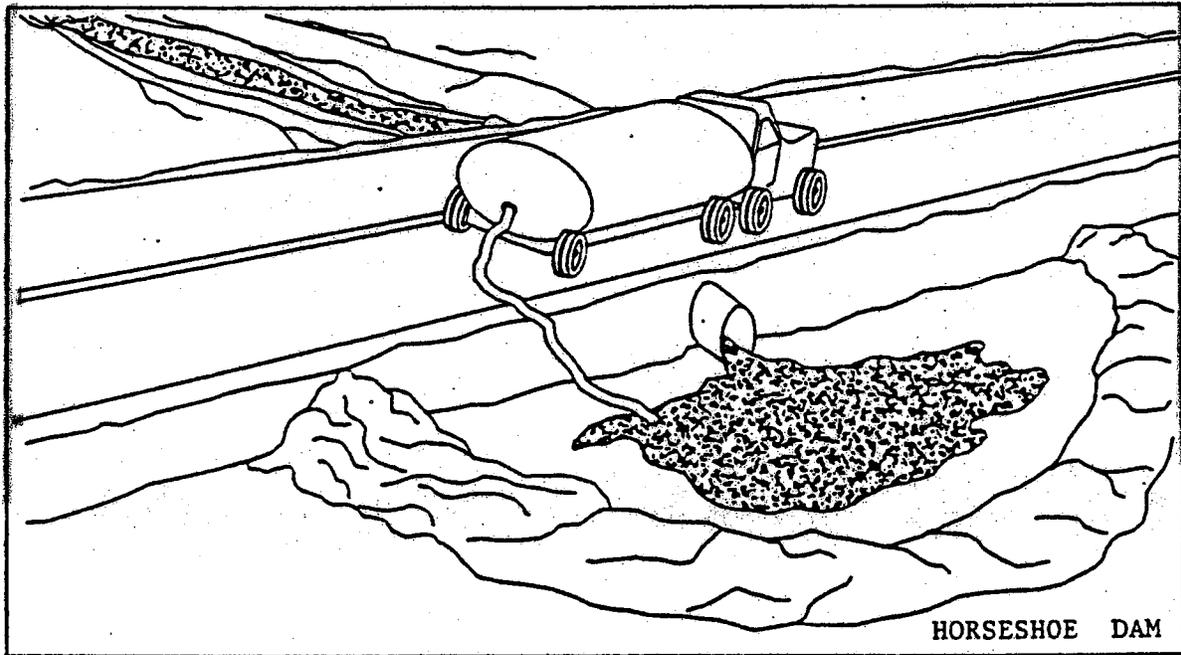
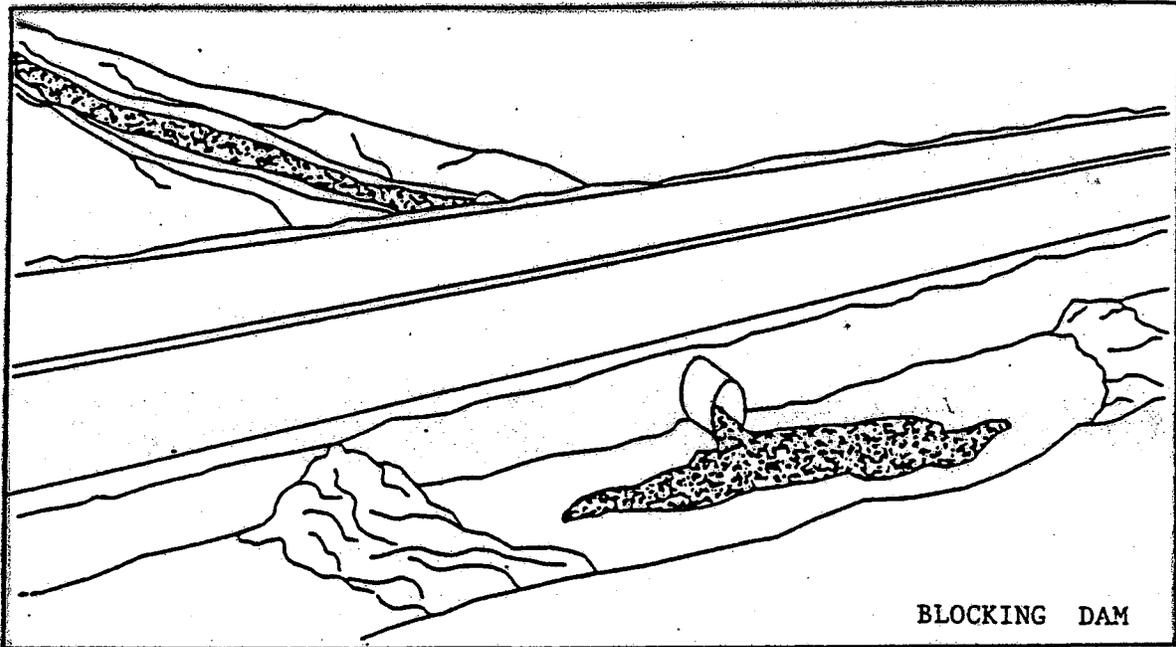


Figure C-27. Damming Flow at Borrow Ditch

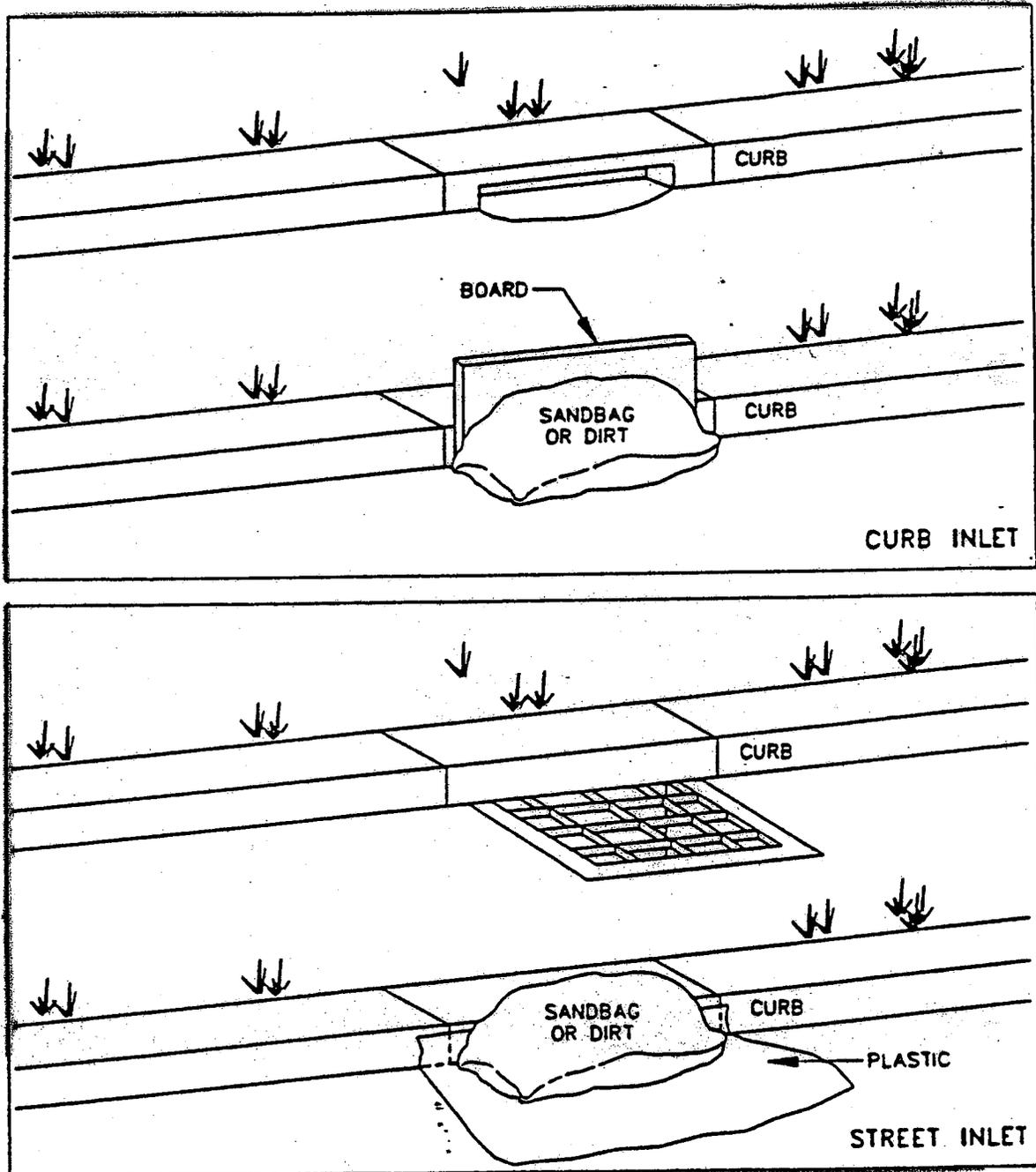


Figure C-28. Storm Drain Blocking Techniques

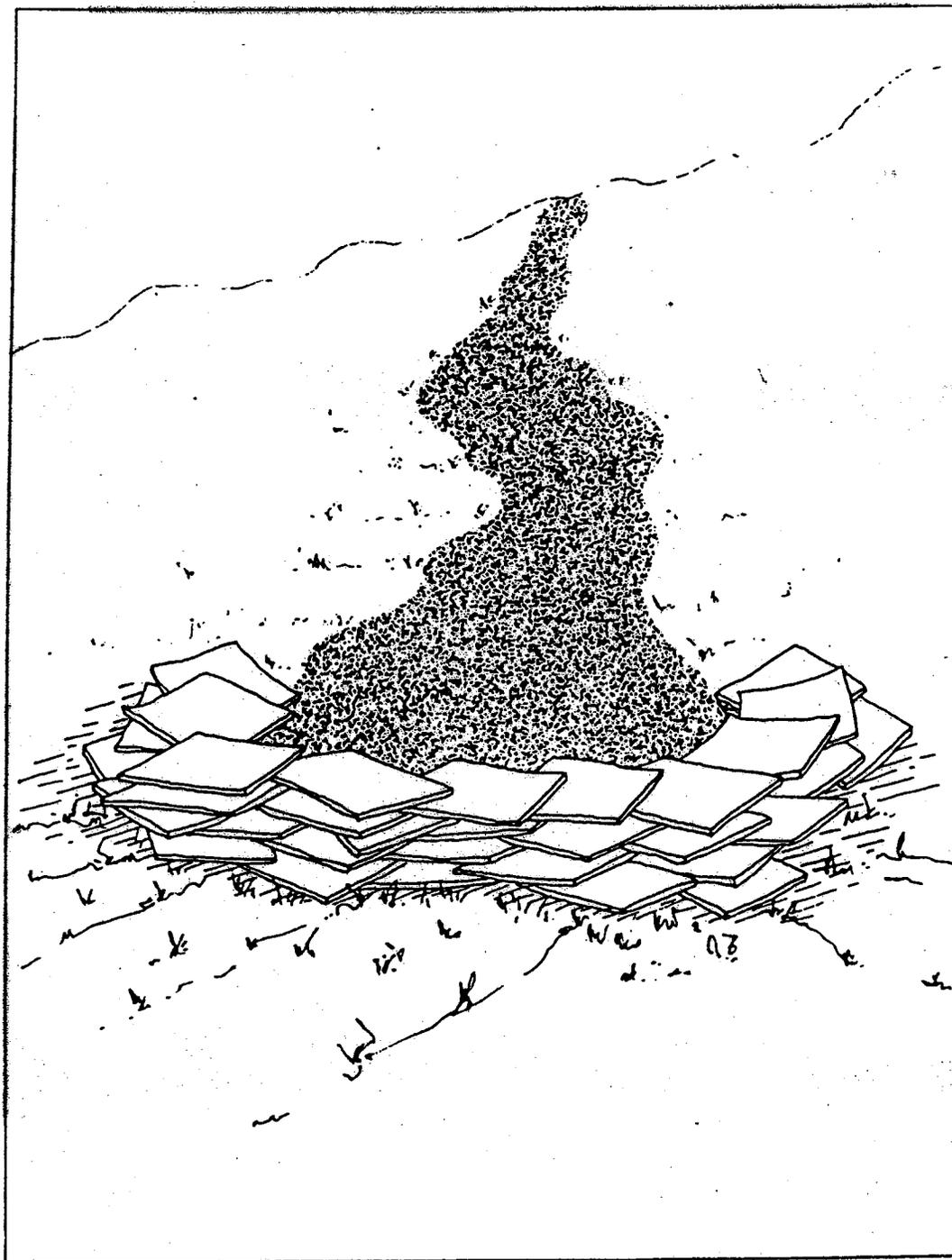


Figure C-29. Sorbent Barrier (Land)

**Cleanup:** Place oiled sorbents in leak-proof containers (drums or plastic bags) for disposal. Do not store recovered material onsite. Minimize manpower and surface disruption during cleanup.

**Variations:** Entire spill surface may be covered to immobilize oil.

### ***3.6 Diversion Trench***

**Use:** Excavated trenches are used to intercept surface oil flows on most terrain types and divert them to recovery points or around sensitive areas.

**Limitations:** Accessibility, implementation time, low-viscosity oils on highly permeable soils, high water table, and environmental damage inflicted by trench excavation.

**General Instructions:** Excavate trench in the desired direction of oil flow. Angle trench slightly downhill to avoid excessive flow backup. Trench must completely intercept the oncoming oil and divert it to the recovery point or well past the sensitive area as shown in Figure C-30. Trench width and depth is volume dependent. Pile excavated materials on downhill side of trench. For relatively flat areas, such as wetlands, trench depth should increase slightly towards recovery or discharge point to maintain adequate flow in that direction.

**Equipment Required:** Backhoe, trenching machine, or hand tools.

**Maintenance:** Periodically check for adequate flow, blockages caused by trench walls sloughing in, and debris.

**Cleanup:** Flush trench with water (if applicable), recover remaining oil pools with sorbents, remove or treat soil, and backfill trench.

**Variations:** Partially flood trench with water to inhibit sediment penetration and stimulate flow. Trench can be dug perpendicular to the slope to contain, rather than divert, the oil flow. In tidal wetlands, dig trenches across the mid-intertidal area to intercept incoming oil and/or collect oil draining from back areas. Oil is then diverted to recovery point by increasing the trench depth. Stranded oil can also be drained from back areas by a series of increasing depth trenches.

### ***3.7 Earth Diversion Berm***

**Use:** Low barriers are constructed of available materials (earth, gravel, sandbags, etc.) to divert oil flows to a recovery point or around a sensitive area. Used primarily on low- to moderate-slope terrains.

**Limitations:** Accessibility, implementation time, rugged terrain, and environmental damage inflicted by berm material excavation.

**General Instructions:** Use earthmoving equipment or manual labor to construct berm(s) by forming materials or placing sandbags in windrows or ridges along the desired path of oil flow. If onsite materials are used, excavate from the downhill side of the berm. Figure C-31 depicts a diversion berm.

**Equipment Required:** Bulldozer, front-end loader, motor grader, or hand tools.

**Maintenance:** Periodically check for berm erosion, leakage, and adequate height.

**Cleanup:** Remove or treat oiled sediments. Recover pooled oil by pumping, vacuuming, or with sorbents. Backfill excavated areas after completion of cleanup operations.

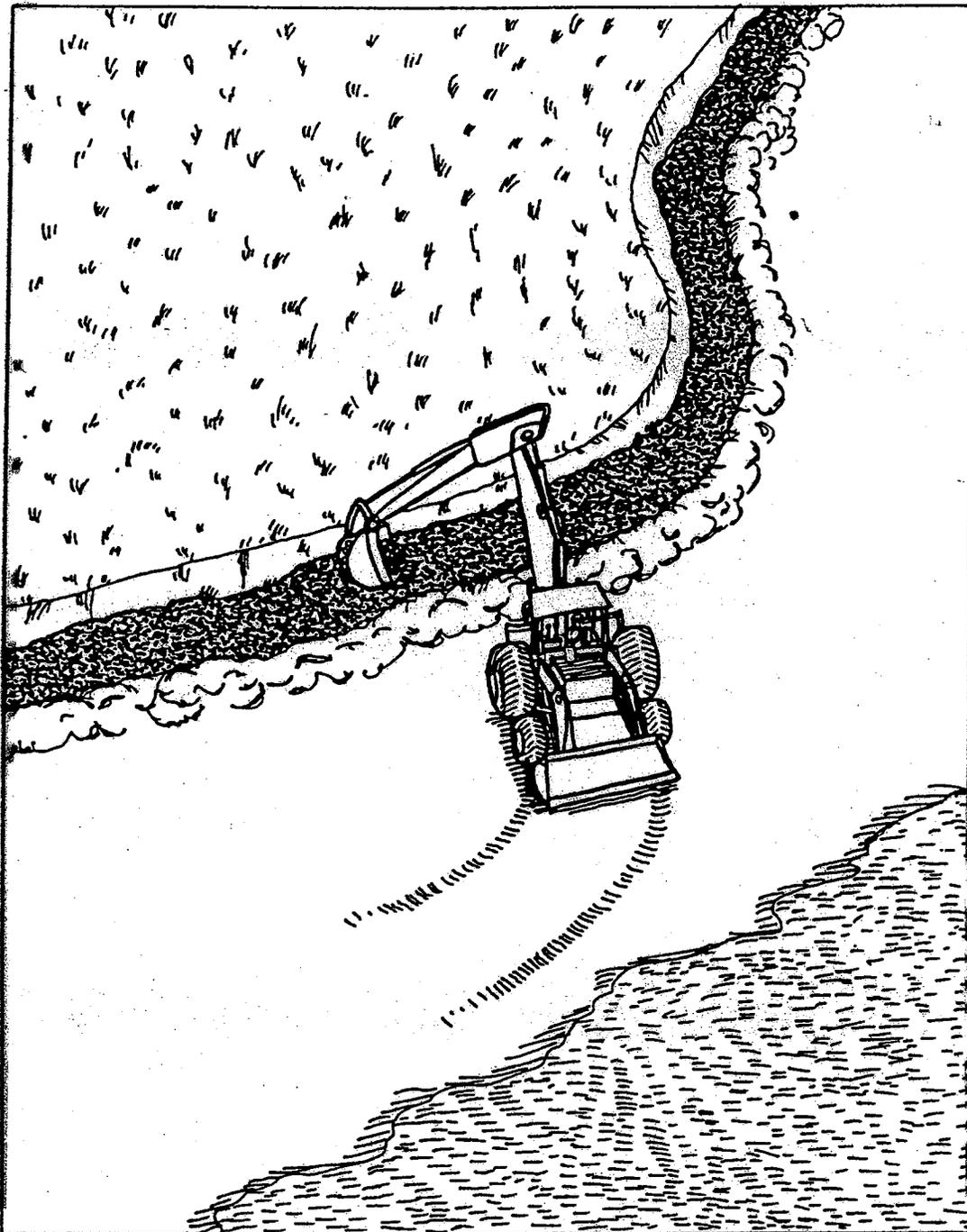


Figure C-30. Diversion Trench

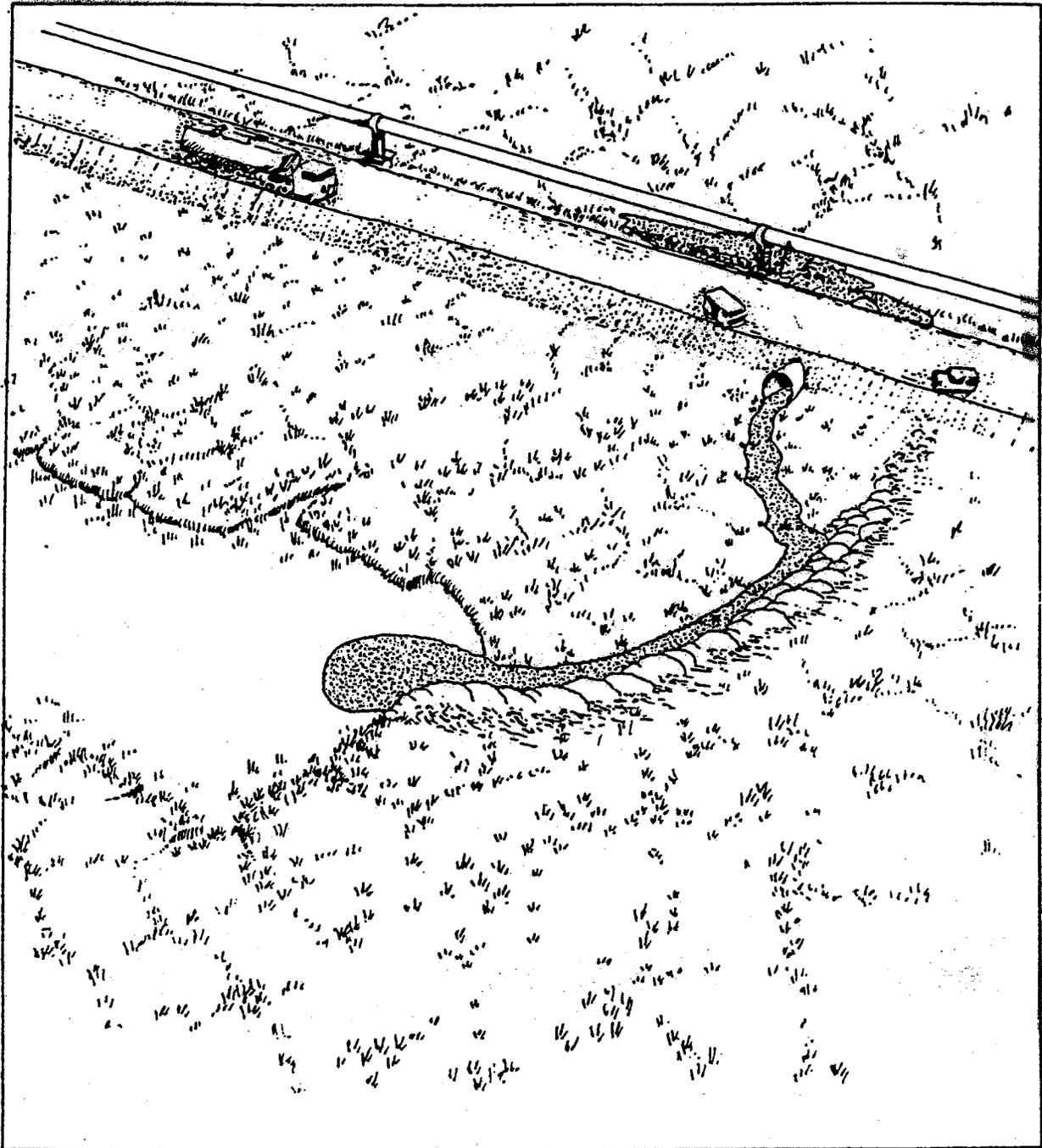


Figure C-31. Earth Diversion Berm

**Variations:** In areas with little gradient, diversion berms can be constructed on each side of oil flow to limit spread and channel oil to a recovery site (e.g., excavated sump or natural depression). Berms constructed along roadways can prevent oil from crossing road and/or divert oil to a recovery site, as shown in Figure C-32.

## **C-4 – Cleanup and Recovery Techniques**

### **4.1 Open Water Recovery Techniques**

Most open water recovery techniques fall into the following categories or combinations of these categories:

- Suction devices,
- Rotating discs or belts,
- Weir devices,
- Sorbents.

**Suction Devices:** Oil can either be lifted or skimmed from land or the surface of water with a variety of vacuum or suction devices. These devices are only partially successful for several reasons. They are more effective on relatively thick slicks, and most require partial or total immersion of the nozzle in the oil. If oil is floating on water, a considerable amount of water may be recovered with the oil and the devices often require gravity separation or decanting tanks as a secondary operation to minimize the fluid recovered. Also, heavier oils and debris tend to clog intake lines, rendering many suction devices inoperable.

Suction pumps or vacuum devices can be useful for picking up oil pooled on land or which has collected in a thick layer on water. It is important to minimize the amount of water picked up. The two primary vacuum/suction devices are vacuum trucks and portable skimmers/pumps.

**Vacuum Trucks:** The vacuum tank truck uses atmospheric air pressure to force oil into an enclosed truck mounted storage tank. An oil spill on water should first be contained. The vacuum truck, with its high suction and high velocity pick-up through an intake tube, can then vacuum up the oil. Any water picked up can be released through a sump drain on the tank. General instructions for vacuum trucks are presented in Section 4.1.1.

**Portable Skimmers/Pumps:** A typical device to reduce the amount of water collected when using a suction device is the Slickskim Manta Ray®. This device has a “ray”-shaped head that floats on the surface of the water or is immersed in oil pooled on land. Oil enters through ports along the perimeter and passes through a suction housing and pumps. Manta Ray heads can be used along shorelines and in shallow streams as they can operate in as little as 3-inches of water. Hoses from the heads may be connected to a pump or a vacuum unit. General instructions for the use of portable skimmers and pumps are presented in Section 4.1.2 and 4.1.3.

**Rotating Discs or Belts:** A number of devices that employ rotating discs or an endless belt are currently available. The oil is removed from the water surface by the natural oleophilic properties of the exposed surfaces of the discs or belt. A squeeze roller or blade may then remove the oil that adheres to the exposed surfaces. Units employing hydrophobic, oleophilic, or other sorbent materials may require squeezing to recover the oil. Another type employs long rolls of sorbent material that retain the oil for later disposal, but has no capacity to separate this oil from the sorbent material.

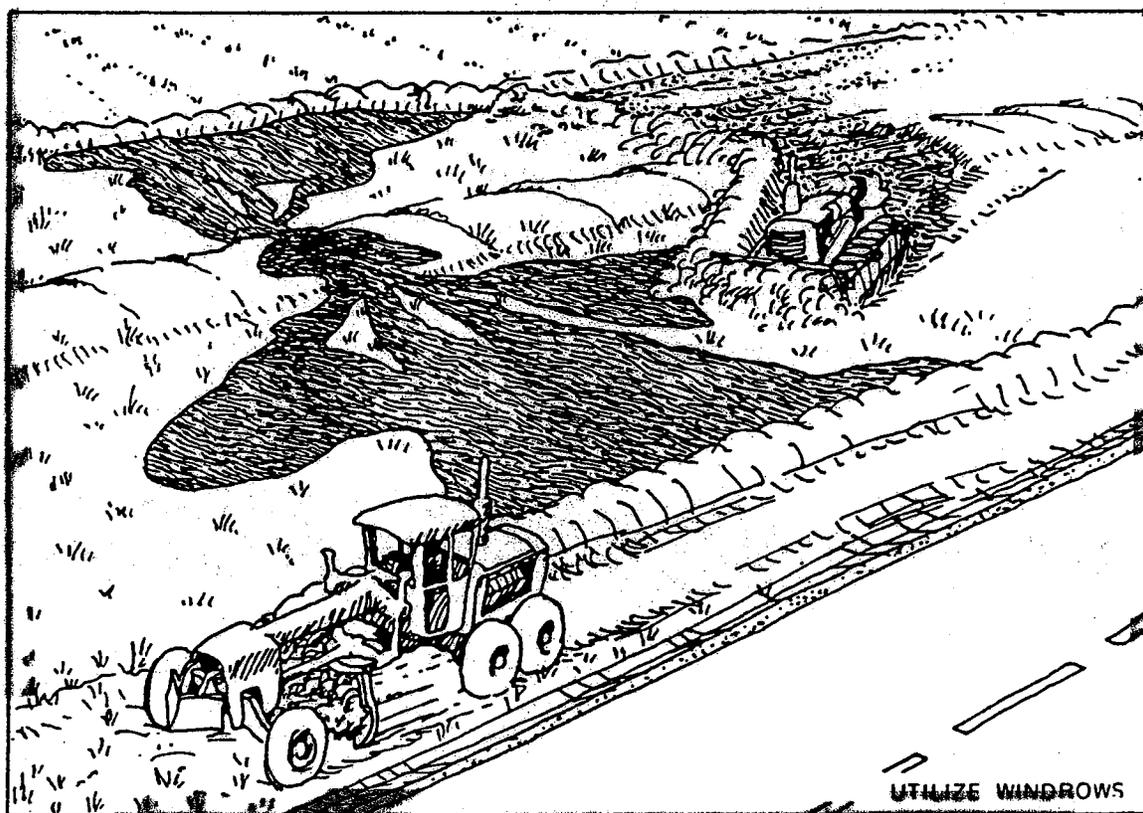
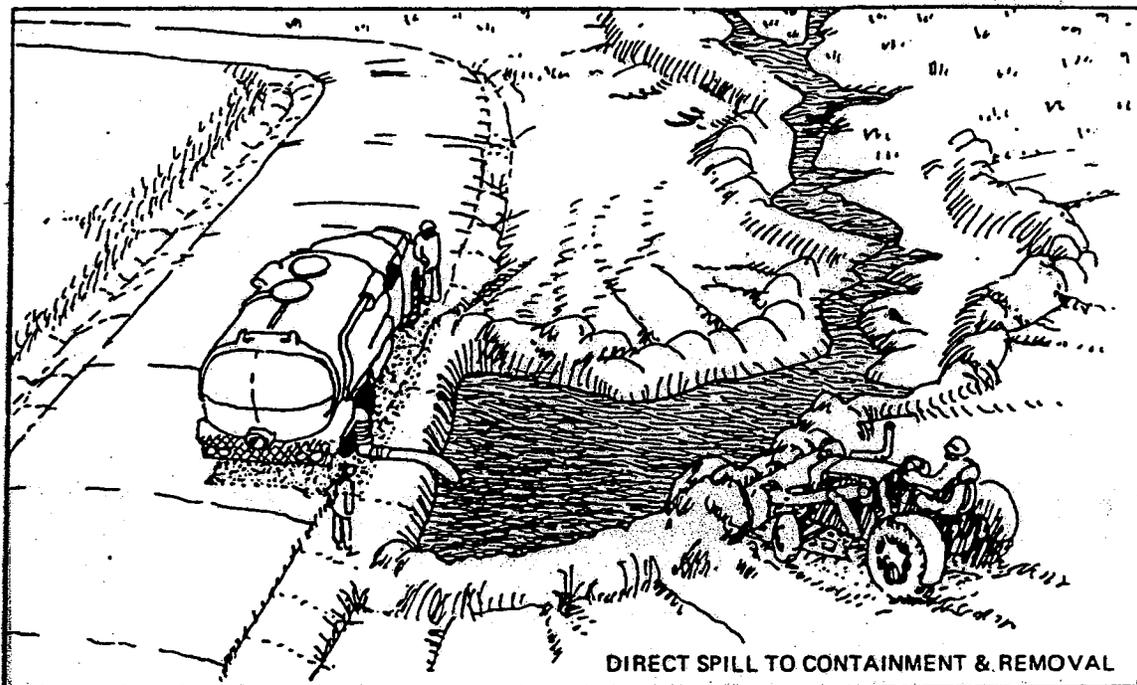


Figure C-32. Alternate Earth Diversion Berm

The primary disadvantage of these devices is that both the discs and belt become less efficient as oil becomes thick or viscous due to weathering. Also, most rotating discs and endless belt devices are adversely affected by waves although some belts are aided by surface chop. In favorable water surface conditions, the proportion of oil to water recovered may exceed 90% for some devices.

**Weir Devices:** Weir devices are used in many places where oil is floating on water. Support equipment such as hoses, pumps, and storage tanks are required. The weir-type skimmer operates on the gravity principle. The top of the weir is positioned as close as possible to the oil/water interface and the skimmer moves through the slick or is positioned in the current to intercept the oil. The oil and water flow across the weir into a sump or enclosed area, then a suction pump transfers the mixture to another tank for further separation.

Like most skimmers, this device works best in calm water on thick slicks. However, larger, heavily constructed models have been successful in waves up to 6-foot in height. By carefully adjusting the weir, a maximum amount of oil and a minimum of water can be skimmed. Booms can be used effectively to increase the width skimmed and to concentrate the oil.

**Sorbents:** The proper use of sorbents is an integral part of the overall containment and recovery plan. Sorbents may be used whenever mechanical skimming/suction devices cannot be used or are unavailable. Sorbents are also used frequently in conjunction with mechanical equipment.

Sorbents should not be used on water unless there is a definite way to recover them. Although sorbent material can be reused after squeezing the collected oil into a recovery container, this is not normally done in practice. General instructions for sorbent recovery are presented in Section 4.1.4.

Sorbents are a practical approach for handling small spills on water and for cleaning up light sheens on water from larger spills. Sorbents often provide the only environmentally acceptable means for cleanup of small terrestrial spills. Sorbents can also be used to prevent oiling of facilities (walkways, work areas, etc.) on which oil spill cleanup equipment and/or personnel are mobilized during the cleanup operations.

A sorbent is any material which absorbs oil or to which oil adheres (adsorbs). A sorbent should be oleophilic and hydrophobic. Oil sorbents currently available may be divided into three general classes by origin:

- Naturally occurring materials,
- Modified or chemically treated natural materials,
- Synthetic or man-made products.

**Natural Origin** - Sorbents derived from vegetable sources include straw, hay, seaweed, kelp, ground corncobs, natural grasses, wood bark, ground bark, sawdust, reclaimed fibers from paper processing, and peat moss. Sorbents derived from mineral sources include the various clays (mont-morillinite, kaolin, fuller's earth, diatomaceous earth, etc.); vermiculite and the other micas; many forms of silicates; perlite; and pumice.

**Modified Natural Materials** - Most of the above-mentioned sorbents can be treated to produce a more desirable result. Typical examples include expanded perlite, charcoal, stearate-coated talc, and sawdust and vermiculite coated with silicones.

**Synthetic Products** – These sorbents include a vast array of substances broadly categorized as plastics and rubber, but more specifically as the polyurethanes, polypropylenes, ethylenes, styrenes, resins, polymers, and co-polymers.

Sorbents are also classified according to their composition or physical form. These forms include preformed slabs or sheets; powdery, granular, fibrous materials; and synthetic foams generated at the time and place of use. Sorbent materials are presently available in four distinct forms:

- Squares and strips (pads),
- Rolls,
- Sorbent booms, mats, and pillows,
- Loose material.

**Squares and Strips (pads)** – Squares and strips of sorbent material can be used in small, contained areas to pick up small quantities of oil that are difficult to remove with mechanical equipment (skimmers, vacuum equipment, etc.). In such areas, they can be left for a period of time to increase their effectiveness.

However, squares and strips present a recovery problem. If they are placed in an area where tidal action, currents, or winds can affect them, they may float or be blown away and will be difficult to retrieve. A tether line attached to the sorbent material will assist in their recovery.

To increase the oil pickup efficiency of sorbent pads, continual moving and turning of the pads is necessary. Caution must be exercised when removing the pads from the oiled area to minimize the dripping of oil onto clean surfaces. A 55-gallon drum or other suitable recovery container must be readily available to receive the used pads.

**Rolls** – Rolls of sorbent can be used in the same manner as squares and strips and are usually made of similar materials. They are generally easier to use than squares or strips since they can be employed in either short or long lengths. Like squares and strips, their absorption is limited unless they are continually turned or removed. Disposal of used rolls is easier since they can be rolled up to be placed into a recovery suitable container.

Rolls of sorbent materials are very effective in protecting walkways, boat decks, working areas, etc., from oiling. Areas onto which oil or oil-covered debris are to be placed should be covered with rolls of sorbent material. They can also be used as a protective barrier to keep oil from contaminating clean areas.

**Sorbent Pillows** – Sorbent pillows are generally open-mesh bags or sorbent material that can be placed on spill areas to absorb oil. These pillows are recommended for oil pickup in small, confined areas.

**Sorbent Mats** – Sorbent mats are made from sorbent squares or rolls, reinforced with canvas and nylon netting, and include metal grommets for easy handling. The sorbent mats can be used as flat booms on streams and in cleaning up pooled oil. Because of the nylon net reinforcement, the mats are stronger than sorbent rolls, and therefore, can be tied across streams to soak oil from the water surface. The flat surface of the mat offers a much greater surface area for sorbing oil than does the cylindrical sorbent boom.

***Loose Materials*** – Loose sorbent materials may have limited use in the cleanup of oil from land areas where pools of oil have formed in depressions, etc. However, some loose sorbent materials tend to clog skimmers and pumping equipment. Loose-type sorbent materials should not be used on spills on large bodies of water because:

- Recovery of sorbents in the form of loose materials (straw, polyurethane foam, peat moss, etc.) on a large scale in open water has never been attempted and at present, no commercial equipment is available for the harvesting of loose sorbents;
- Loose sorbents, particularly natural materials such as straw or peat moss, may sink;
- Without efficient means of recovering loose sorbents, tidal action, wind, and currents may disperse soaked sorbents over a large area, thus increasing the cleanup effort.

#### ***4.1.1 Vacuum Trucks***

**Objectives:** To recover oil from concentrated areas on land and water surfaces using suction generated by a vacuum truck for transport to reprocessing or disposal facilities.

**Limitations:** Access to spill site, high viscosity oils, very shallow oil layer, and heavy debris.

**General Instructions:** Position truck adjacent to area of heaviest oil concentration such as behind booms, berms, trenches, sumps, etc. Suction hose nozzle is placed in the oil and maneuvered manually for maximum recovery. Light sheens of oil should be recovered with sorbents. Screens should be fitted over nozzle to prevent ingestion of sediments or debris. When recovering oil on water, a duckbill or “ray-“type skimmer head should be attached to the suction nozzle. This technique is illustrated in Figure C-33.

**Logistics:** The logistical requirements for vacuum truck techniques are given in Table C-I.

**Variations:** For contained spills on open water and in the absence of skimmers, a vacuum truck may be placed on a workboat or barge and brought to the containment site for oil recovery using the above method. Vacuum trucks may be left onsite with recovered oil pumped periodically to tank trucks (to improve turn-around time, and in some cases to act as a primary oil-water separator).

#### ***4.1.2 Portable Skimmers/Pumps***

**Objectives:** To recover small to moderate concentrations of oil from terrestrial or aquatic areas, where larger equipment cannot be brought in.

**Limitations:** Accessibility, high viscosity oils, sheens, adequate means of storage or disposal, and adverse environmental conditions (excessive wave heights or currents).

**General Instructions:** Position the skimmer or pump suction hose in the area of heaviest oil concentration such as behind booms, berms, trenches, etc., or where water currents will drive the oil to the skimmer or hose intake. Continually reposition the intake into area of thickest oil concentration. Duckbill type skimmer heads should be fitted to suction hose for aquatic spills; screens for terrestrial spills. Pump recovered oil to a temporary storage facility such as a tank truck, 55-gallon drums, Baker tanks, pillow tanks, or lined pit. This technique is illustrated in Figure C-34.

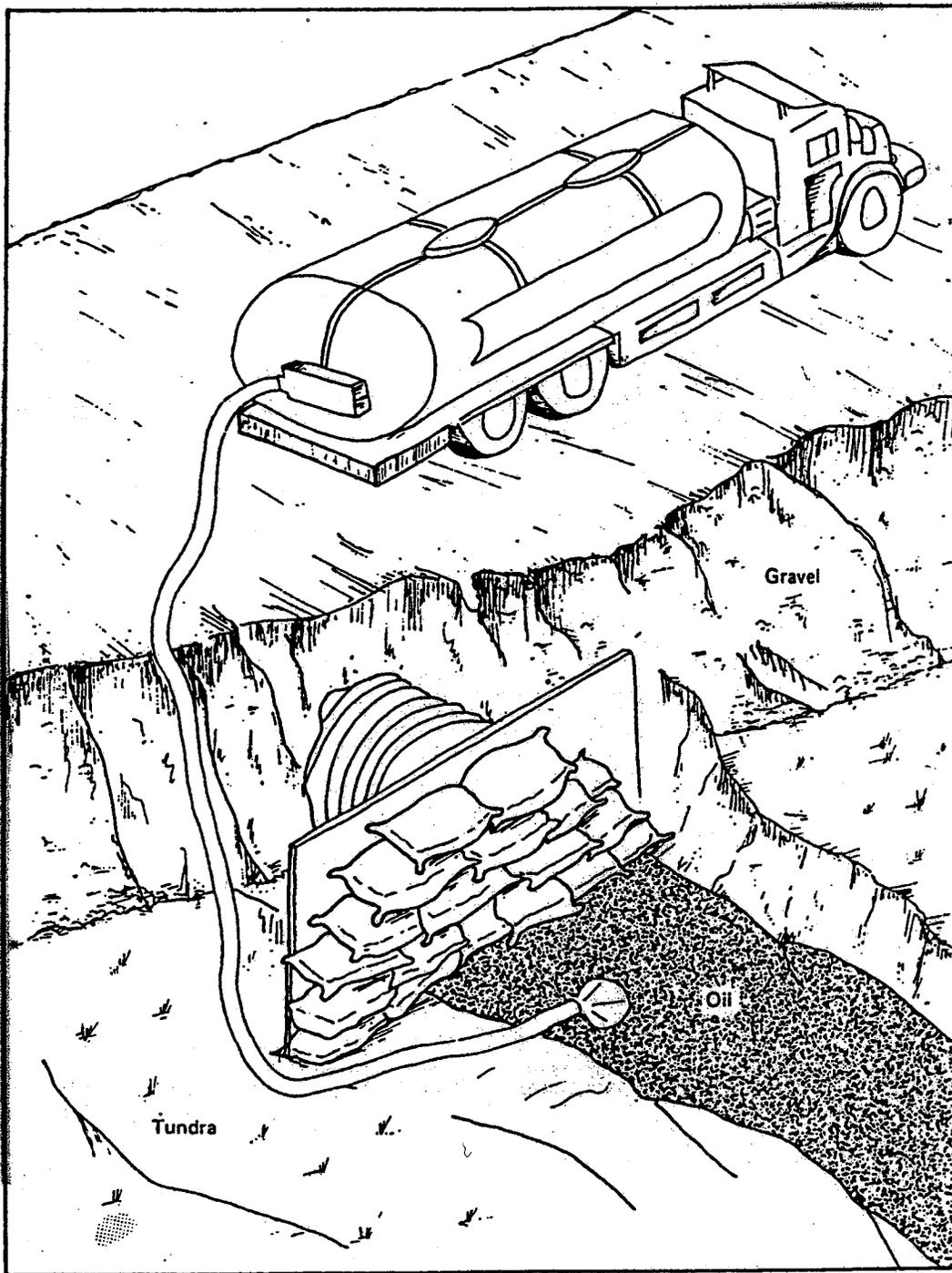


Figure C-33. Vacuum Truck Oil Recovery

Table C-I

## Logistical Requirements for Use of Vacuum Truck

Equipment	Terrestrial/Shoreline	Surface Water
<ul style="list-style-type: none"> <li>Vacuum truck w/3" suction hose</li> </ul>	Typical Suction Rate for pooled oil, 100 gpm (75% oil); fill time for 110-barrel truck, ¾ hour	Typical Suction Rate for oil on water, 50 gpm (5% oil), fill time for 110-barrel truck, 1-½ hours.
<ul style="list-style-type: none"> <li>Number of vacuum trucks required</li> </ul>	Dependent of quantity of oil and number of pools present	Dependent on quantity of oil, number of recovery sites, and oil/water ratio.

**Personnel** - 1 person per suction hose and 1 to 2 persons for manual skimming and concentrating of oil, and 1 supervisor.

**Support**

- Vacuum truck, 6 to 140 barrel (42 gallons/barrel)  
 6" suction hose, 700 to 800-900 gpm max.<sup>a</sup>  
 4" suction hose, 500 to 600 gpm max.<sup>a</sup>  
 3" suction hose, 300 to 400 gpm max.<sup>a</sup>
- Devices for concentrating oil on water
- Booms, skimming boards, low-pressure water hoses

**Access requirements** - heavy equipment, barge, or landing craft

<sup>a</sup> Intake completely submerged, drawing water with little or no suction lift.

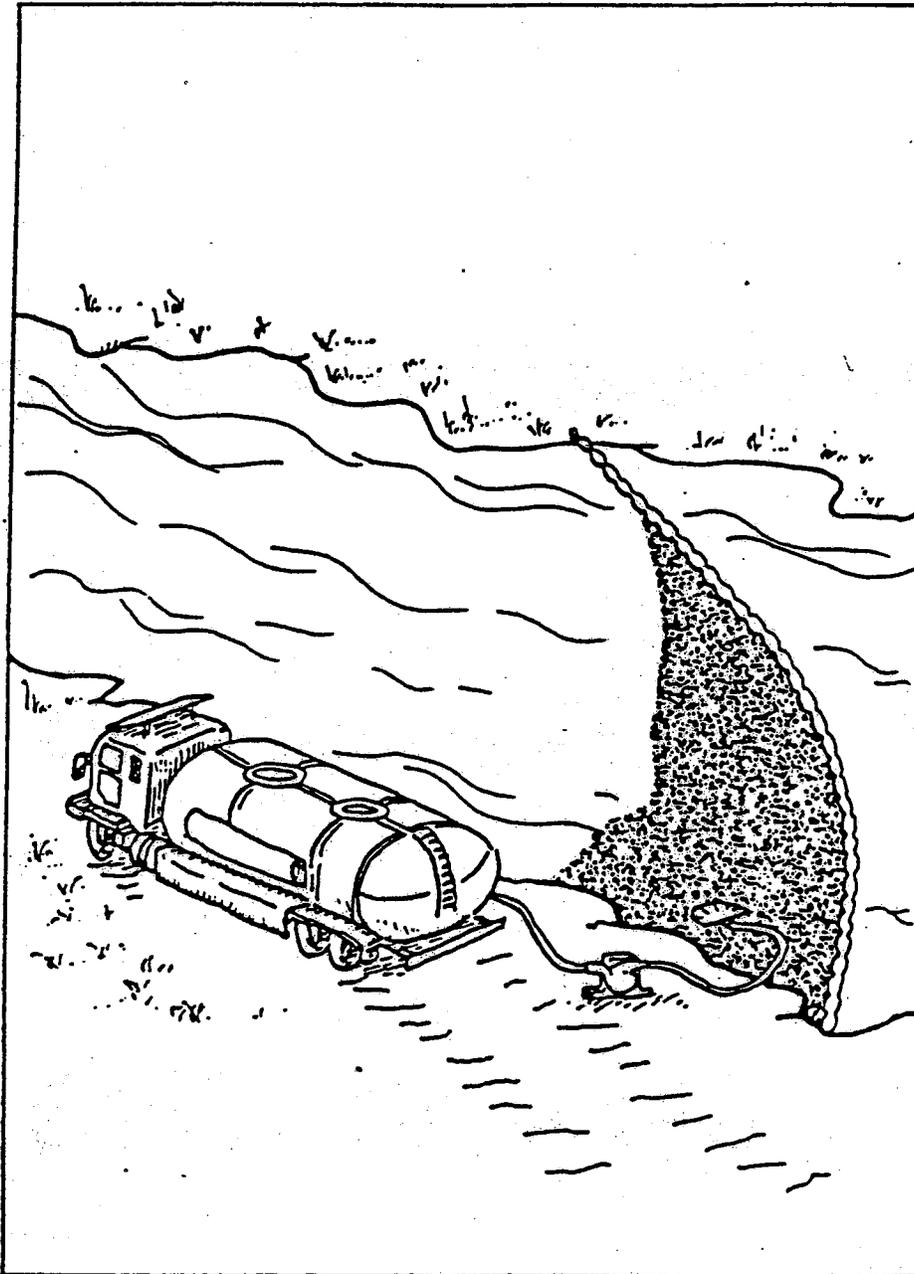


Figure C-34. Oil Recovery Using Portable Pump, Skimmer Head, and Tank Truck

When using portable skimmers in shallow water, a hole may have to be excavated in the bottom of the shallow waterway if the skimmer draft is greater than the water depth. Oil can now be herded or forced to the skimmer location by low pressure water flushing or by deploying a boom around a floating slick and pulling it to the floating skimmer.

Logistics: The primary logistical requirements for using portable skimmers or pumps are given in Table C-II.

Variations: Portable skimmers can also be deployed from boats to recover open water spills contained by booms. Skimmer is operated as described previously and may be used with a floating bladder tank for oil storage as illustrated in Figure C-35. Portable endless rope skimmers have particular application in shallow water areas such as wetlands or creeks. A typical configuration is shown in Figure C-36.

#### ***4.1.3 Open Water Skimming***

Objectives: To recover large contained or uncontained spills on open water areas using self-propelled or towed skimmers.

Limitations: High viscosity or solidified oils, and adverse environmental conditions (e.g., wave height, currents, winds).

General Instructions: Large spills contained by booms are best recovered using self-propelled skimmers operating within the containment area to continually remove the heaviest oil concentrations. Portable skimmers are used to recover any remaining patches of oil. Sheens are cleaned up with sorbents, or left to disperse naturally.

A self-propelled or towed skimmer with booms to concentrate the oil is usually required for large uncontained spills. Figure C-37 shows the proper relationship of boats, booms, skimmer, and oil slick when it is possible to contain the entire leading edge. Use bridles to stabilize booms and maintain proper configuration. If the slick is too wide for complete containment, begin skimming on the downwind side and make successive passes across the slick, staying on the downwind side as shown in Figure C-38. Skimming velocity for most skimmers should be approximately 1 to 2 knots. Recovered oil is kept onboard the skimmer if adequate storage exists, or pumped into a barge or floating storage container towed behind the skimmer.

Logistics: The logistical requirements are directly related to the areal extent and thickness of the slick. The amount of oil a skimmer encounters is the primary factor determining the recovery rate, not the skimmer's rated capacity. Figure C-39 can help determine the encounter rate of a skimmer with a known sweep width and skimming speed for various surface concentrations of oil per acre (or slick thickness). The encounter rates represent an ideal situation and do not reflect any time lost for maneuvering, offloading of recovered oil, or transit time to an offloading site.

Using a recovery factor of 90 percent of the encounter rate, Figure C-39 can also be used to determine the number of skimmers required to produce an acceptable overall recovery rate. In general, 100 to 150 feet of boom are attached to each side of the skimmer to yield a sweep width of 70 to 100 feet. Two workboats and an oil storage barge or floating bladder tank are also required for each skimming unit. Self-propelled skimmers may be operated alone in small spills, but sweep widths are generally limited to 8 to 12 feet.

<b>Table C-II</b>		
<b>Logistical Requirements for Portable Skimmer/Pumps</b>		
Logistics	Typical Recovery Rate for Thick Oil Layer (2 mm)	Typical Recovery Rate for Thin Oil Layer (.1 mm)
<b><u>Equipment</u></b>		
• High capacity trash pump w/3" suction hose	75 gpm (50% oil)	50 gpm (5% oil)
• Portable weir skimmer	_____	_____
• Portable disc skimmer	_____	_____
• Number of pumps or skimmers	Dependent upon quantity of oil and rate of introduction to skimmer or pump.	
<b><u>Personnel</u></b> - 1 person per pump suction hose, 1 to 2 persons for skimming and concentrating of oil, and 1 supervisor.		
<b><u>Support</u></b>		<b><u>Range of Capacities</u></b>
• Vacuum truck	6 to 140 barrels	
• Tank truck	20 to 160 barrels	
• 3" Suction hose	300 to 400 gpm max.	
• Pillow tanks	2 to 2,500 barrels	

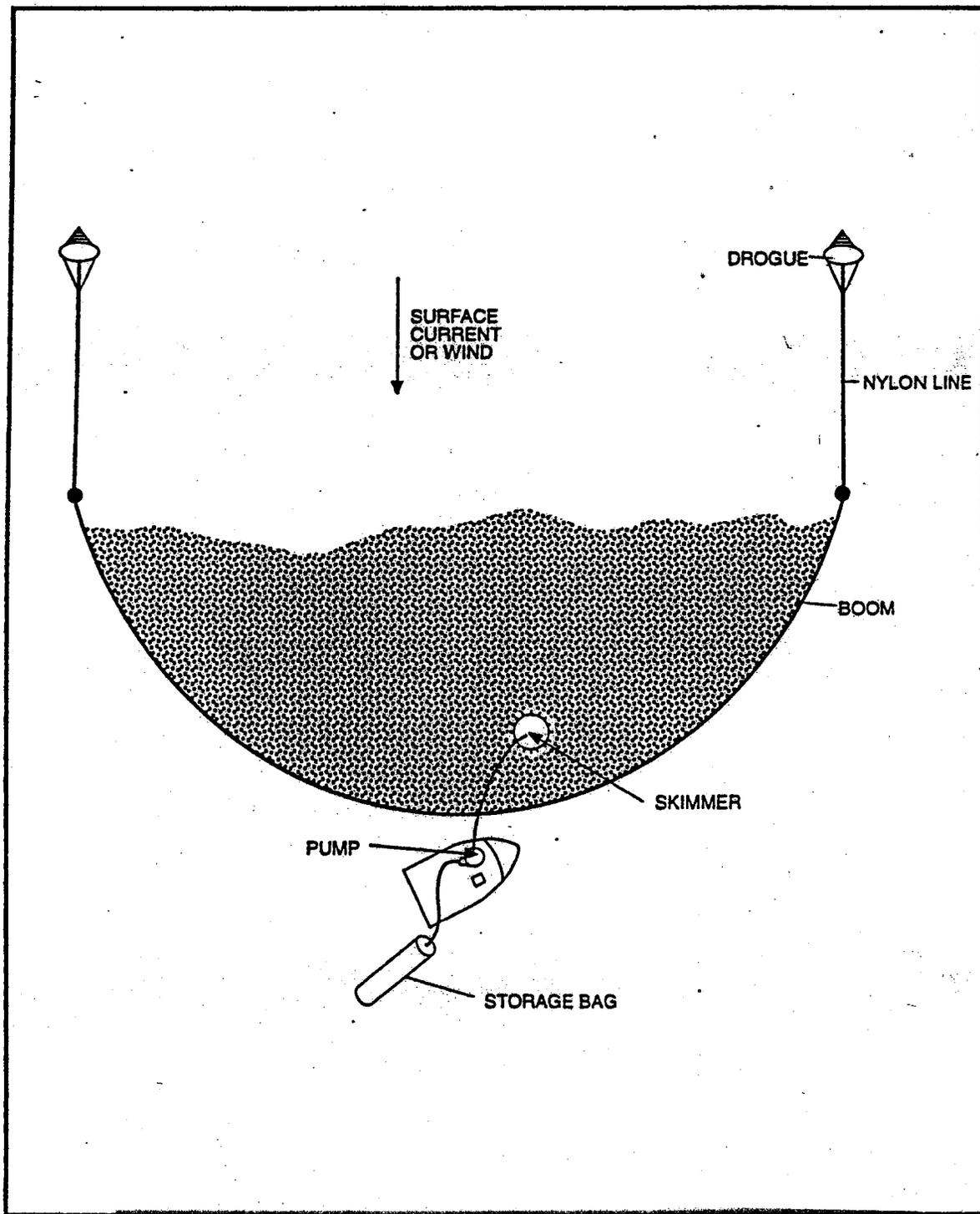


Figure C-35. Contained Oil Skimming with Portable Skimmer

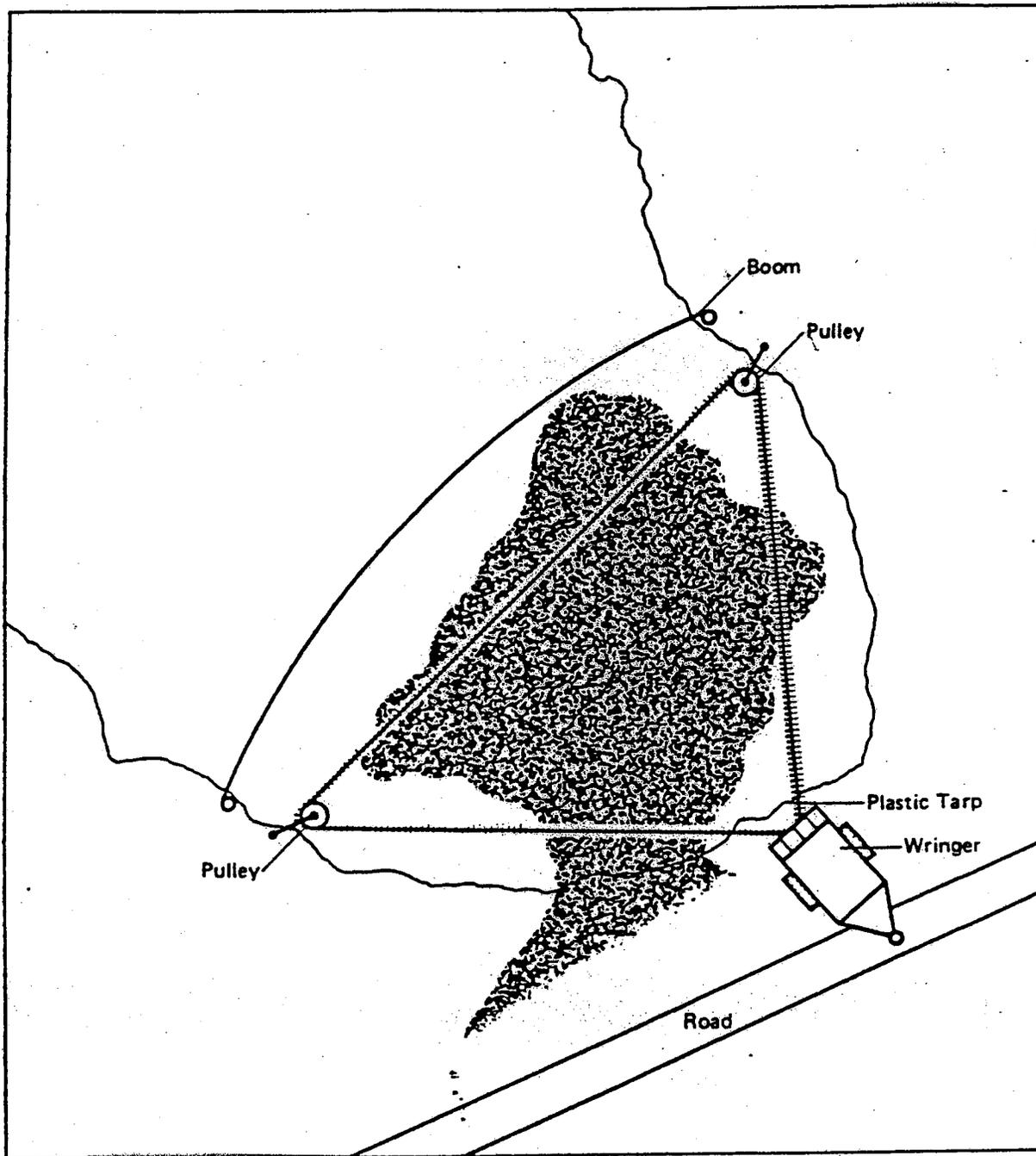


Figure C-36. Endless Rope Skimmer

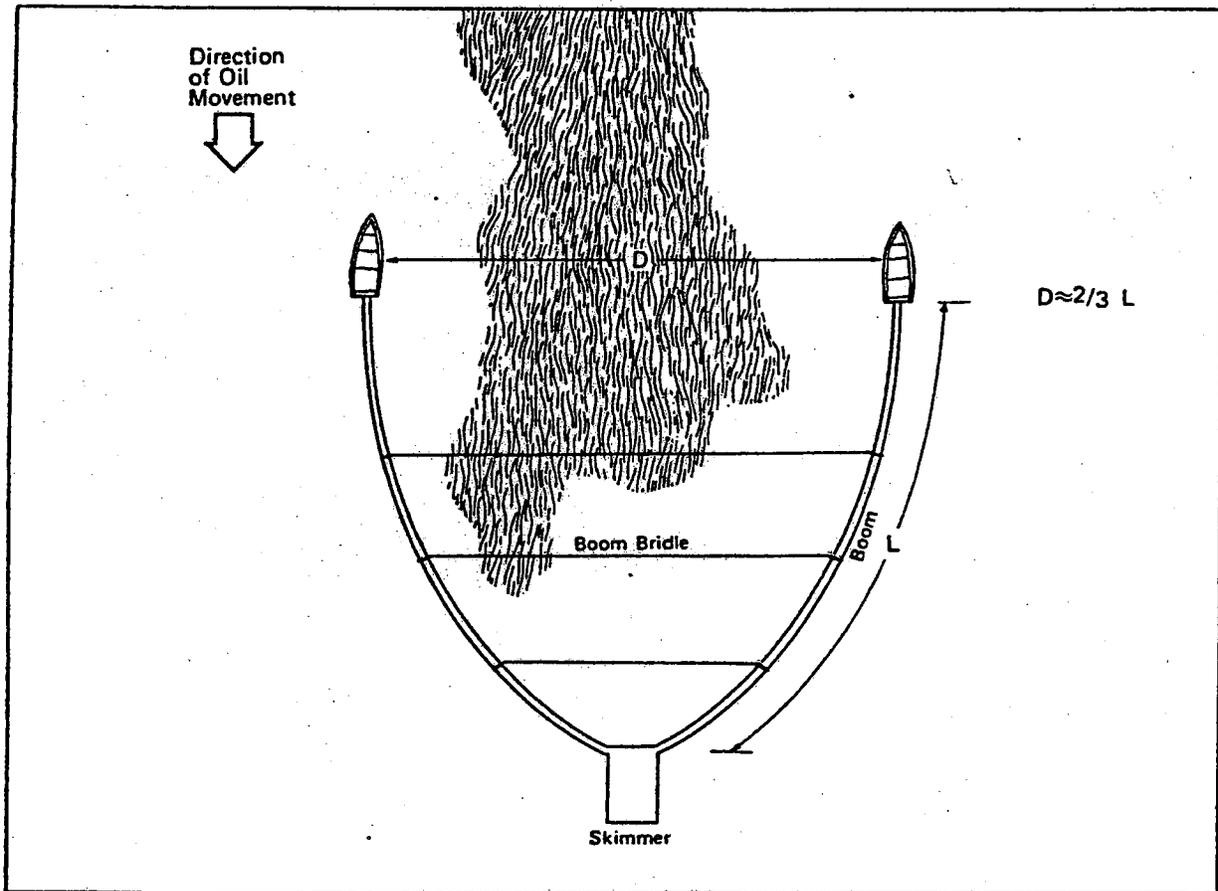


Figure C-37. Boat, Boom, and Skimmer Relationship

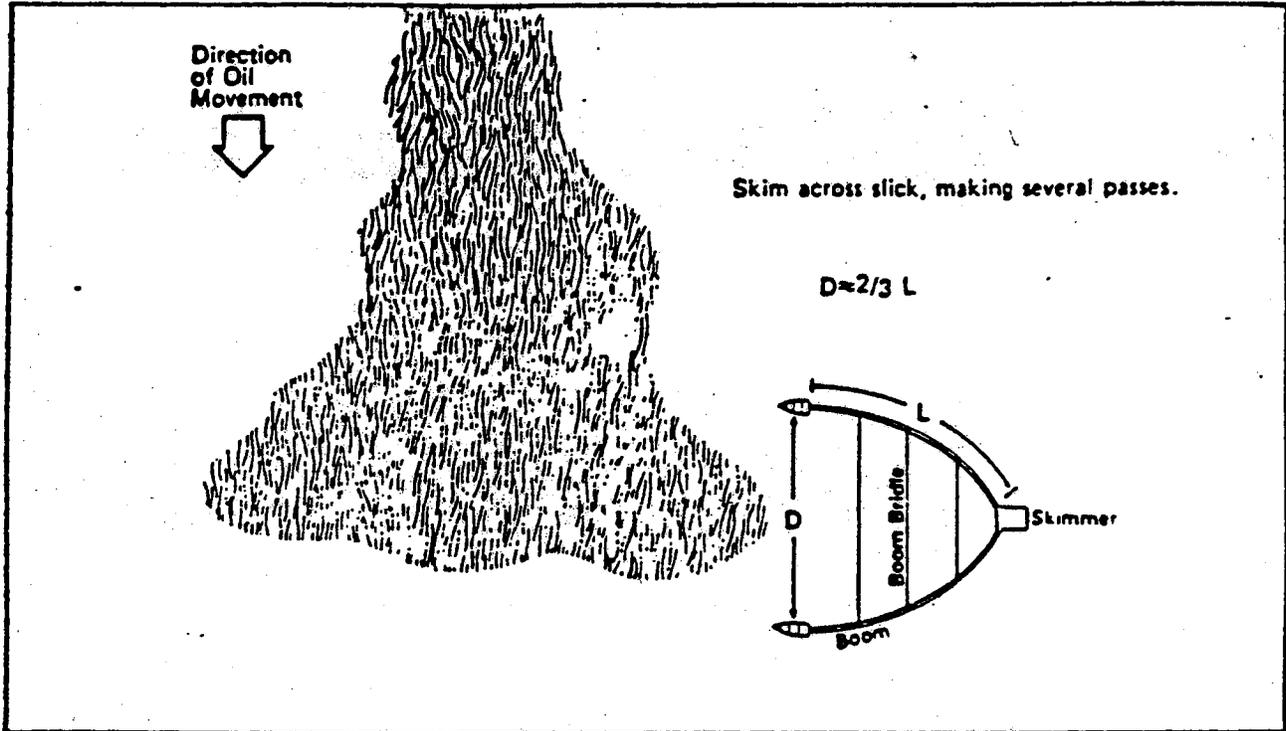


Figure C-38. Skimming a Larger Slick

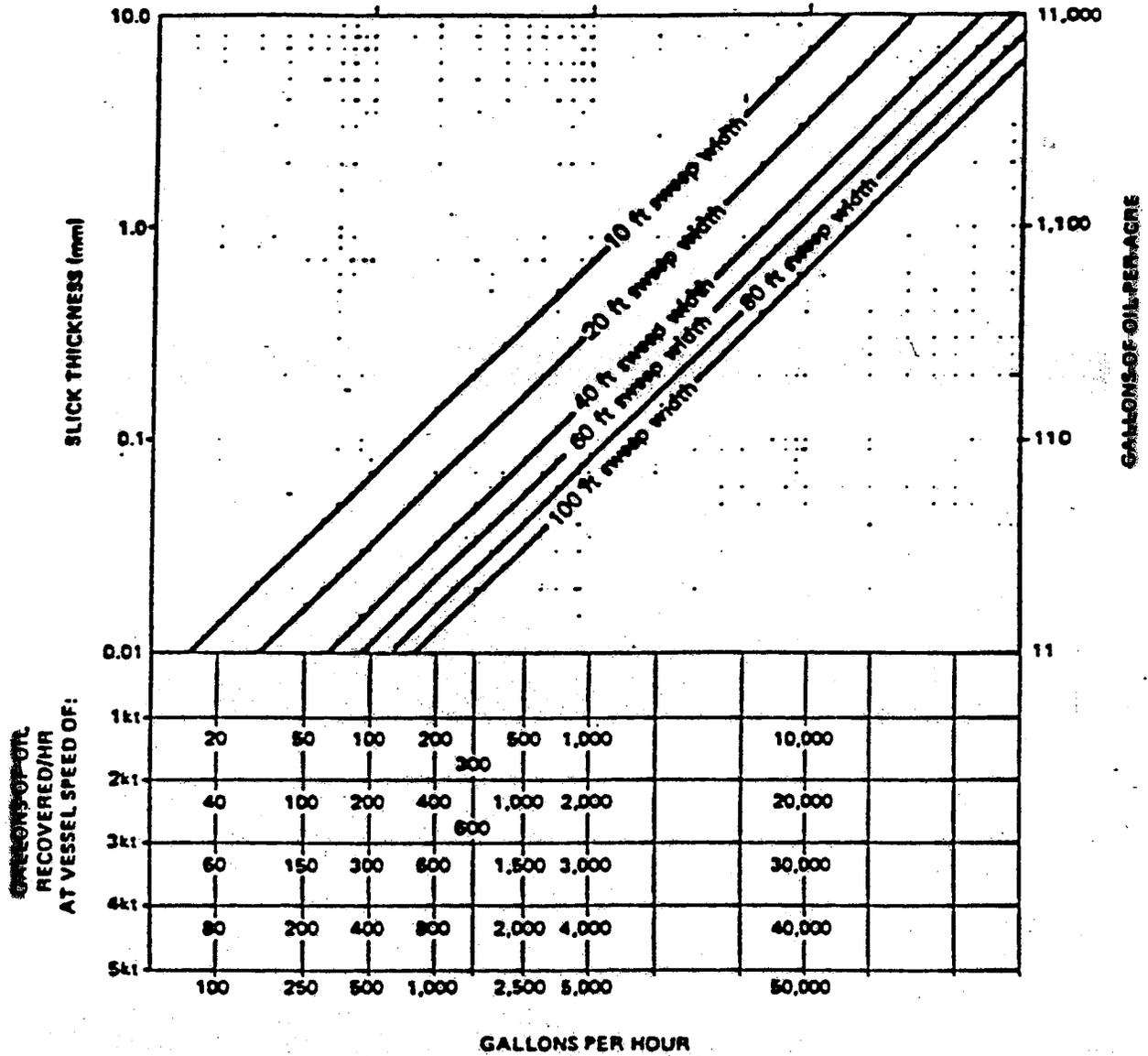


Figure C-39. Recovery Rates of Skimmers for Different Sweep Widths and Vessel Speeds Versus Slick Thickness

**Variations:** Self-propelled skimmers can operate alone to recover uncontained spills in the same manner as when used with booms. Small spills or streamers can be recovered using a single boom and boat and a self-propelled or towed skimmer as shown in Figure C-40. Figure C-41 shows the use of skimmers in stationary modes.

#### **4.1.4 Sorbent Recovery**

**Objectives:** To recover small quantities of oil from terrestrial or aquatic areas, especially films or sheens remaining after skimming or pumping operations have been completed.

**Limitations:** Solidified or highly weathered oil, recovery and disposal of oiled sorbents, and potential interface with granular sorbents by surface collecting agents, if used simultaneously.

**General Instructions:** Place sorbents directly on the oil and turn continually until completely oiled. Put oiled sorbents in plastic bags or leak proof containers and replace with clean ones. Inert substrates can be wiped clean with sorbent pads or sheets. Sorbent sweeps or booms may be pulled between two boats across aquatic areas or anchored across slow moving streams to recover sheens.

**Logistics:** The logistical requirements are heavily dependent on the type and degree of oiling and therefore cannot be accurately quantified prior to a spill. Some of the basic equipment and materials required for sorbent recovery are pitchforks, rakes, shovels, boats (if needed), and plastic bags, drums, debris boxes, or other leak proof recovery containers.

**Variations:** Sorbents can be placed on the ground in areas of heavy spill activities to prevent oiling of facilities, paths, work areas, etc.

#### **4.1.5 Trawls**

**Objectives:** Utilize trawl nets to recover uncontained spills of oil that have solidified on the water.

**Limitations:** Size of modified oil mass, degree of solidification, and adversity of environmental conditions.

**General Instructions:** Two vessels tow a trawl or fishing net between them as shown in Figure C-42. The net is deployed in front of the advancing slick and the vessels proceed slowly up each side, trapping the oil in the net. When the net is full, it is placed on deck of one of the vessels. If space permits, debris containers should be placed on deck to receive the recovered oil.

**Logistics:** The logistical requirements for recovering solidified oil with trawl nets will vary the quantity spilled. In general, each recovery unit should consist of two 40- to 60-foot work boats or fishing vessels, one large trawl or fishing net, and one or two debris containers, depending on the available deck space.

**Variations:** Spills of solidified oil can also be recovered by placing a frame conveyor with a mesh belt inside the boomed area. The conveyor is mounted at an angle of 25° from the horizontal on the side of a workboat (30-40 feet long) or barge. Oil picked up by the conveyor is directed by a side chute mounted at the top of the conveyor to a debris container on the deck of the vessel or barge, as shown in Figure C-43. Certain commercial skimmers can also be used to recover floating solidified oil. These skimmers use a conveyor system with a nylon mesh belt and removable foam filter pads. The filter pads, used to recover liquid oil, can be removed so that the mesh belt can recover solidified oil or floating debris.

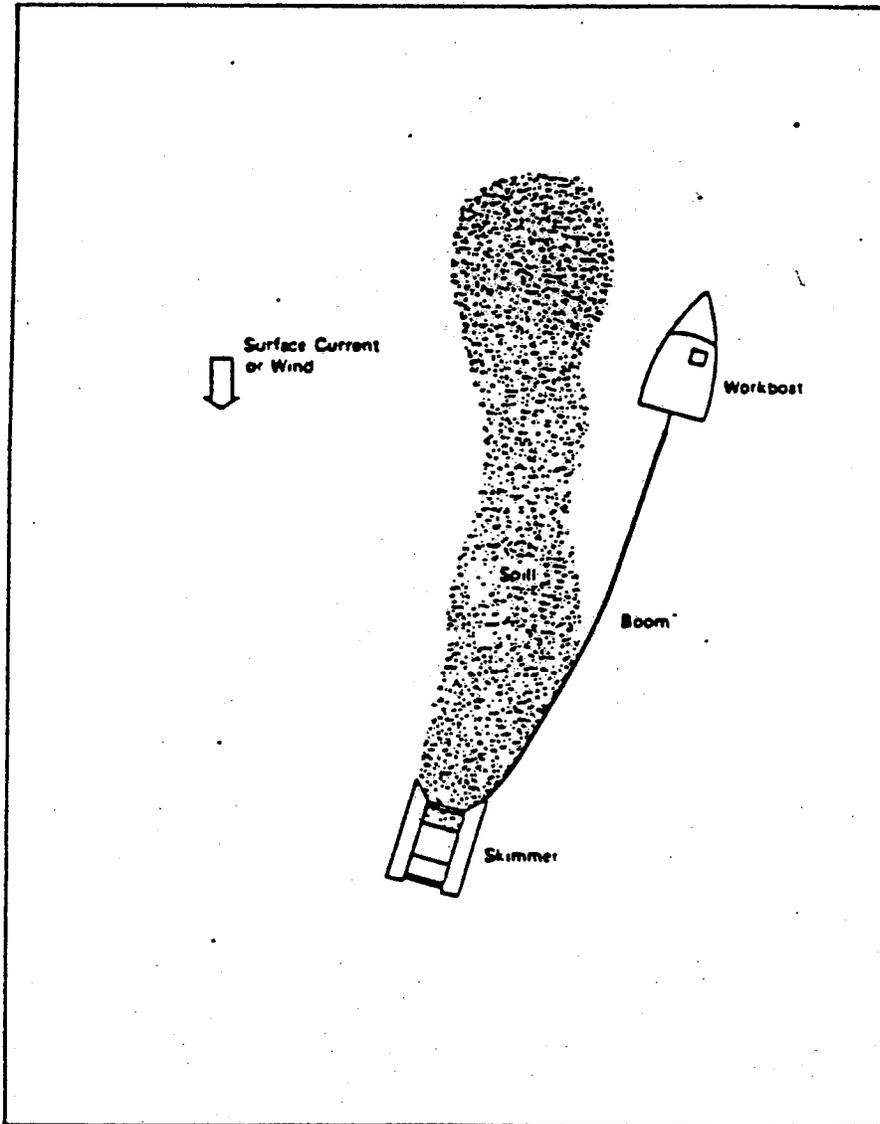


Figure C-40. Skimming with Single Boom

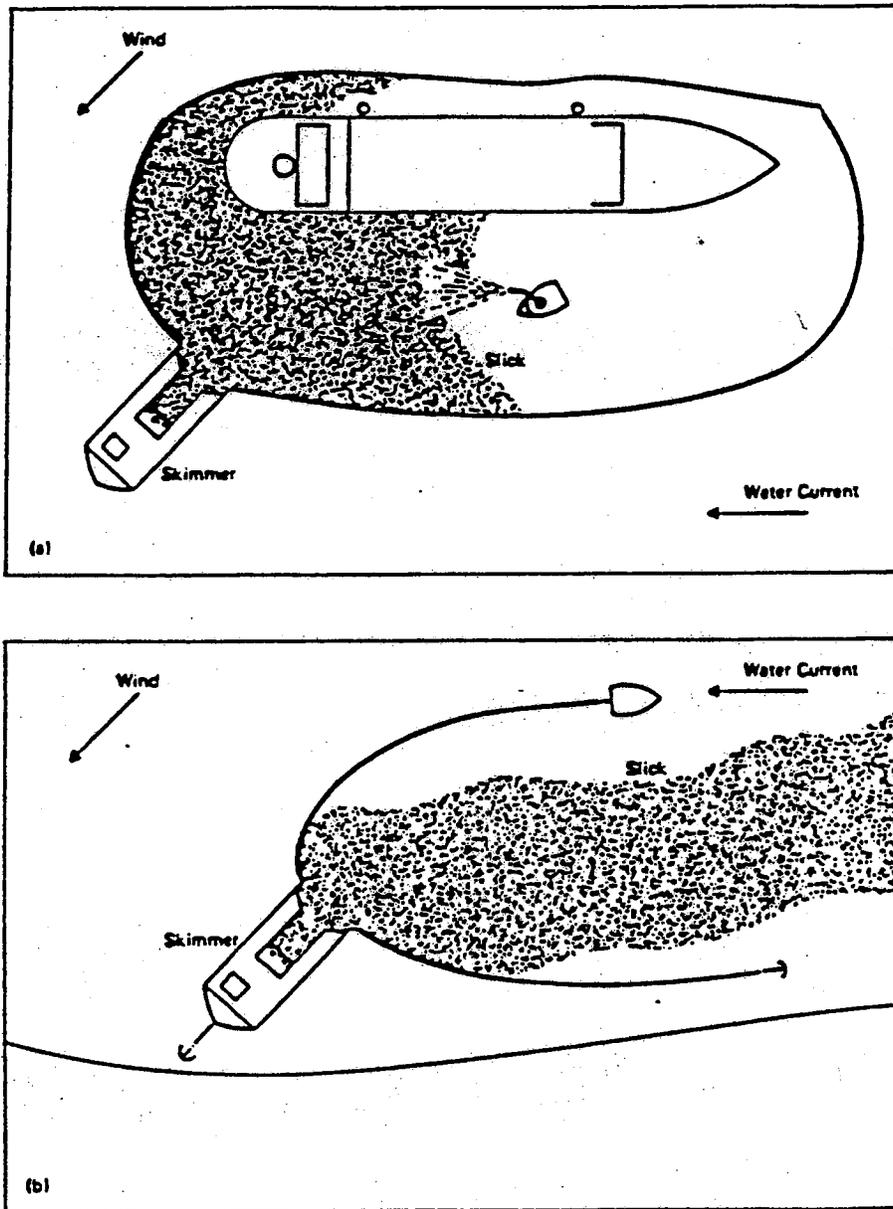


Figure C-41. Use of Skimmers in Stationary Mode

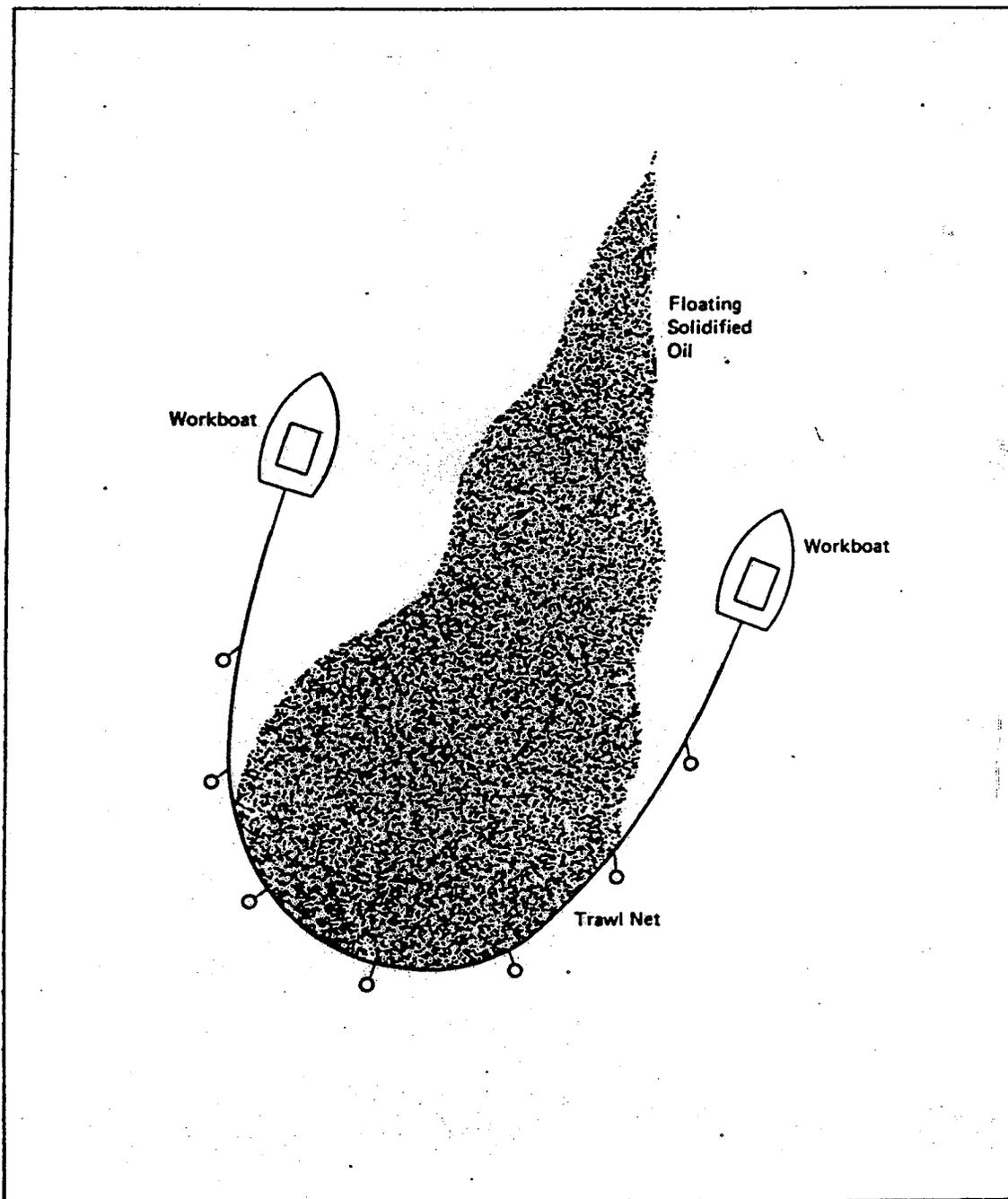


Figure C-42. Cleanup of Solidified Oil with Trawl Net

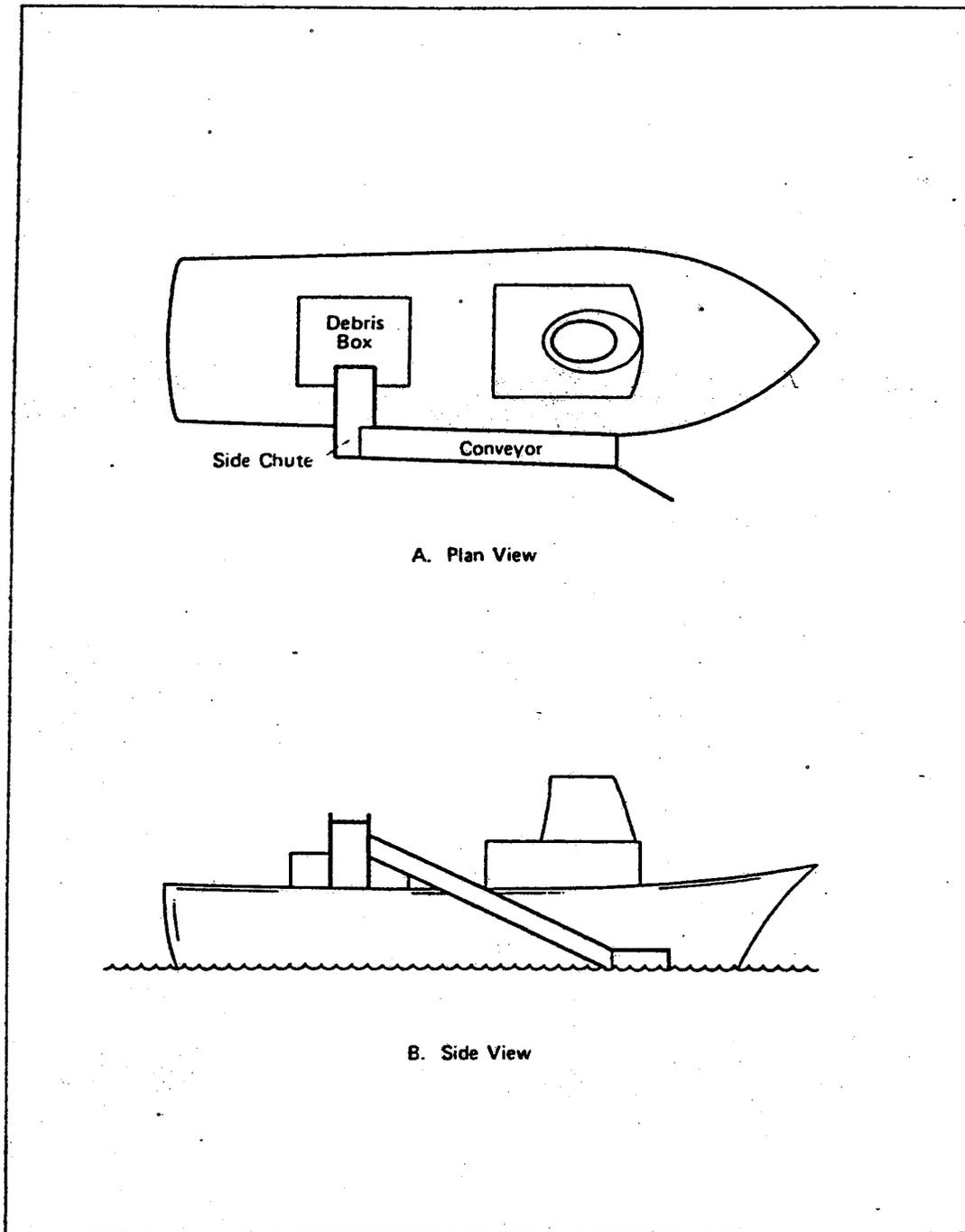


Figure C-43. Vessel Mounted Oil Recovery Conveyor

#### ***4.2 Oiled Surfaces, Shorelines and Terrestrial Spill Recovery Techniques***

The surface conditions and topography of oiled areas and the manner in which the oil has been deposited will dictate the choice of cleanup procedures. The cleanup of the affected areas should start immediately after emergency control actions have been completed.

Basic cleanup techniques and combinations thereof include:

- Manual Recovery,
- Mechanized Recovery,
- Flushing,
- Sorbents (as discussed in Section 4.1).

In some situations access roads may have to be prepared prior to use. Temporary roads may be needed between permanent roads and the shoreline, recovery area or work area, necessitating grading, laying of a gravel base, and so forth. When constructing and using temporary roads, it may be necessary to provide protection to environmental resources from human and vehicular traffic.

The restriction of outsiders from the cleanup area is vital, especially when a spill affects high public use area such as shorelines and beaches. Proper deployment of security (i.e., security guards, access limits, and traffic control) can be a higher priority than the cleanup itself.

In certain spill locations, it may also be necessary to provide security to prevent cleanup operations from intruding into adjacent lands, to protect sensitive environmental and cultural resources (wildlife, habitats, archaeological sites), or to protect cleanup personnel from dangerous wildlife.

Intrusive activities such as constructing berms and digging pits or other disturbance of shorelines, streambeds, or wetlands may require ICS and regulatory agency notification and/or approval. Operations on privately or publicly owned lands might require issuance of a permit from the landowner or land manager.

The following details operational considerations for the cleanup of shoreline along inland waterways, open land and highways.

**Creeks, Ponds, and Bogs:** Most of the preliminary cleanup in these areas will take place in conjunction with containment actions. Bogs and marshes will be the most difficult to clean. The soils in these areas are highly porous and will absorb large quantities of oil. In addition, they will not support light or heavy equipment. Thus, cleanup operations will be limited to the use of sorbents, hand-operated pumps with skimming heads, and small tools. Water flooding may be useful if large amounts of oil have reached a depression and lie beneath the vegetative cover. Oiled vegetative cover can be removed by hand.

Shorelines of ponds and banks of creeks can be cleaned by hand with sorbents and manual pumps with skimming heads. Contaminated grasses (except where there are soil erosion constraints) and debris will have to be removed by hand. In addition, if the creek bed is wide enough, front-end loaders and draglines can remove large quantities of oiled sand and gravel. Small slicks can be removed from the water surfaces with sorbents, small skimmers, booms, and hand-operated pumps with skimming heads.

**Flood Plains and Large Rivers:** Cleanup activities on flood plains and large rivers may be initiated simultaneously with containment actions. Booms and berms are used to divert and contain spills on large rivers. One or more skimming devices are used with the booms and berms. A hand-operated skimmer with a floating head may be used in conjunction with the sorbents.

Rocks, boulders, and sand/gravel bars may be covered with a film of oil as the spill flows downstream. Rocks and boulders can be cleaned by hand scraping or with pressurized equipment. Removing the contaminated sand, gravel, and debris can clean sand/gravel bars. Removal can be accomplished manually or with front-end loaders, draglines, and backhoes. In order to prevent the removed in-stream materials from flowing downstream, sorbent booms and pads should be deployed or dispersed around the object being cleaned. Replacement with clean materials may be necessary if a significant quantity is removed.

Spills that have migrated to a considerable depth in floodplain gravels can be treated in several ways. The gravel can be removed, the area can be water flooded and the oil skimmed off or the oily water can be pumped out through a drilled hole or an excavated trench. It is likely that oil penetrating to significant depths cannot be entirely removed.

In the case of a large spill, there will probably be large amounts of oiled debris in the floodplain. This will have to be removed either mechanically or by hand. Large pieces can be removed with a crane or similar piece of equipment. Care should be taken to ensure that the material being removed does not further contaminate clear water surfaces, soil surfaces or biota. Small oiled pieces can be collected by hand. Oiled vegetation growing on the floodplain can be clipped if there is danger of oil being transported to the water.

**Large Lakes and Bays:** Cleanup activities on large lakes coincide with containment actions. The primary means of containing and cleaning up spills on large lakes and bays is the use of booms, skimmers, and sorbents. Skimmers should be used to remove oil from the water surface for transfer to storage for subsequent disposal. Self-powered skimmers with onboard storage will be needed if the oil is not concentrated adjacent to the shoreline where smaller floating skimmers or vacuum pumps can be used. Sorbents should be used for spills of small volumes and for final cleanup of large spill volumes.

Cleanup along the shoreline is done in much the same way as along a river. Oiled vegetation can be clipped and removed. Sands and gravels can be removed and replaced. Sorbents can be used to pick up small slicks and sorbent booms deployed to clean up continuing seeps of oil.

**Open Land and Forest:** Cleanup activities in open land and forest regimes will center on the use of light equipment and land-cleaning techniques unless the spill presents a threat to human life. Spills that present a threat to human life must be removed as rapidly as possible.

Presently, there are no known means for effectively cleaning vegetation. It is likely that a spill will kill low-lying shrubs, grasses, and any plants that absorb oil through its roots. Large trees with oil on their trunks should be left alone. Pools of oil can be removed with sorbents, small hand-operated pumps with skimming heads, and rakes and shovels. Care should be taken not to damage the vegetative layer. In general, excessive vehicle traffic and human activity will do more damage in these areas by working oil into the plant/soil/active layer rather than leaving the spill untreated.

A spill may be absorbed into the vegetative mat and flow beneath it. When this occurs, it may be feasible to "wash" the area by flooding with water, which floats some of the oil to the surface. The oil can then be removed with sorbents and small pumps and by hand.

Large, bare rocks and boulders that are covered with a film of oil can be cleaned with pressurized washers. The ground area surrounding the surface to be cleaned should be covered with sorbents before cleaning begins. Isolated rocks can be hand-scraped.

Removal of oiled soil and replacement with mixed mineral-organic material has been used for some spills. This is a disruptive technique and this option should only be required when conditions warrant and after consultation with the ICS and the appropriate agencies.

Highways and paved areas: Cleanup activities on and along highways and paved areas are most efficient if heavy equipment is used. If highways are involved, Caltrans and the California Highway Patrol should be contacted as part of the response activities. Refer to *Section 3.0 – Terrestrial Spill Containment, Protection and Recovery Techniques* for instructions on how to handle oil spills on highways, roadways and paved areas, including culverts and storm drains.

It is likely that most of the oil will flow off the surface of a paved area and into adjacent ditches or storm drains. Oiled materials in the highway ditch can be removed with a motorized grader. If the ditch is somewhat inaccessible or narrow, a backhoe can be used. Front-end loaders can place the removed material into dump trucks to be hauled to a disposal area. The oil and water could be removed by vacuum trucks or by pumping into recovery containers. If the road surface becomes slippery, sand can be spread over the oil to improve traction and later removed. Regardless of the methods used, care should be exercised to prevent the spill from oiling additional portions of the right-of-way.

#### ***4.2.1 Manual Recovery***

Objectives: To recover oil using manual methods such as scraping, shoveling, brushing, etc., in areas inaccessible to cleanup equipment or with sporadic oiling. Manual recovery can also be used in the final stage of a cleanup operation.

Limitations: Environmental sensitivity of the area to extensive human activity.

General Instruction: Remove small pools of oil with hand pumps or buckets, and oiled debris/vegetation with shovels, rakes, or pitchforks. Oil layers on rocky outcrops or cliffs, boulders, manmade structures, etc., are removed by scraping or wire brushing. Small quantities of oil or oily debris can be placed in plastic bags for disposal. Larger quantities can be placed in barrels or debris boxes for disposal, or lined pits for temporary storage. On beaches or rivers, all material must be stored above the high-water line. Oil and oiled materials can be removed manually or by truck or boat.

Logistics: The logistical requirements for manually cleaning a shoreline will vary with the degree of oiling. Table C-III gives the primary logistical requirements for both light and heavy oiling of a 1 mile by 50-foot area.

Variations: None.

<b>Table C-III</b>		
<b>Logistical Requirements for Manual Removal of Oiled Material<sup>a</sup></b>		
	For Light or Sporadic Oiling	For Heavy Oiling
<b><u>Equipment</u></b>		
• Debris box	2	3-4
• Helicopter (if used)	1	1-2
• Boat or barge (if used)	1	2-3
• Truck (if used)	1	2-3
<b><u>Personnel</u></b>		
• Workers	10-20	50-100
• Supervisors	1	2-3
<b><u>Access requirements</u> -</b>		
foot, light vehicular, shallow craft, or helicopter.		

**<sup>a</sup> For 1 mile by 50-foot area.**

### ***4.2.2 Mechanized Recovery***

**Objectives:** Removal of oiled sediments using various types of earthmoving equipment.

**Limitations:** Adequate access, environmental sensitivity and traffic ability of spill area, substrate type, and approval by local authorities.

**General Instructions:** Operating instructions and recommended use for each type of equipment are discussed below. Methods of operation for various equipment are summarized on Table C-IV.

**Motor Grader/Elevating Scraper:** This equipment is used on sand and gravel beaches or unconsolidated soil where penetration does not exceed 1-inch. They are also used on mudflats if traffic ability permits. Motorized graders cut and remove surface layer of oiled sediments, forming it into windrows that motorized elevating scrapers pick up and haul to unloading area or disposal sites. The motor grader blade should be set at a 140° angle from the direction of travel with the cut depth equal to the depth of oil penetration. The windrows should be cast parallel to the surf or along the length of the oiled area. Elevating scrapers straddle the windrows with the cutting blade set to the depth of oil penetration and pick up the windrows with their forward movement. Figure C-44 shows the operational sequence for a motor grader/front-end loader/elevating scraper combination.

**Motorized Elevating Scrapers:** This equipment is used on sand, gravel, or unconsolidated soil substrates where oil penetration exceeds 1-inch or to remove tar balls, oil patties, or debris. The scraper should operate parallel to the surf or along the length of the oiled area. Figure C-45 shows the operation pattern for a motorized elevating scraper. Set the cutting blade to the depth of oil penetration for oil removal or for a skim cut for oily debris removal. Once the hopper is full, the scraper is driven to the unloading area where the collected material is transferred to the waste holding areas or containers.

**Unloading Ramp and Conveyor System:** This system is used to transfer oiled sediments from elevating scrapers into dump trucks for disposal. Tar balls, oily debris, or oily clumps of sand can also be separated out and the clean sand returned to the beach. As shown on Figure C-46, the ramp system consists of two cribs constructed of railroad ties, placed on either side of a pit excavated to receive the hopper of the conveyor system. The crib walls are then backfilled with material (soil, sand, gravel) and ramps constructed. The ramps and cribs contain approximately 100 cubic yards of material, which may be found on site or brought in.

Railroad ties are placed across the top of the crib and spiked down with timber spikes. Railroad rails are used to bridge the opening between the cribs and are welded to bearing plates bolted to each crib. Factors that influence the selection of the conveyor-screening system and design of the unloading ramp include:

<b>Table C-IV</b>	
<b>Summary of Cleanup Techniques</b>	
<b>Equipment/Technique</b>	<b>Method of Operation</b>
1. Combination of motorized graders and scrapers	Motorized graders cut and remove surface layer of sediments and form large windrows. Motorized scrapers pick up windrowed material and haul to disposal area for dumping or to unloading ramp-conveyor system for transfer to dump trucks. Screening system utilized to separate debris such as straw and vegetation from sediments when large amounts of debris are present.
2. Motorized elevating scrapers	Motorized elevating scrapers, working singly, cut and pick up surface layer of sediments and haul to disposal area for dumping or to unloading ramp-conveyor system for transfer to dump trucks. Screening system utilized to separate debris.
3. Combination of motorized graders and front end loaders	Motorized graders cut and remove surface layer of sediments and form large windrows. Front-end loaders pick up windrowed material and load material into trucks. Trucks remove material to disposal area or to conveyor-screening system for separation of large amounts of debris from sediments.
4. Front-end loader	Front-end loaders, working singly, cut and pick up surface layer of sediments and load material into trucks. Trucks remove material to disposal area or to conveyor-screening system for separation of large amounts of debris from sediments.
5. High Pressure Flushing	High pressure water jets remove oil from solid surfaces, and runoff oil/water is controlled and collected.
6. Steam and Hot Water Cleaning	High-pressure steam or hot water heats oil, allowing it to flow off a surface for collection.
7. Water Flooding	High volume, low pressure water is used to move stranded oil into collection trenches where it can be contained, concentrated, and collected.
8. Bioremediation	Nutrients or genetically-engineered micro-organisms are applied to areas to accelerate the natural degradation of oil. Formal approval for use must be obtained.

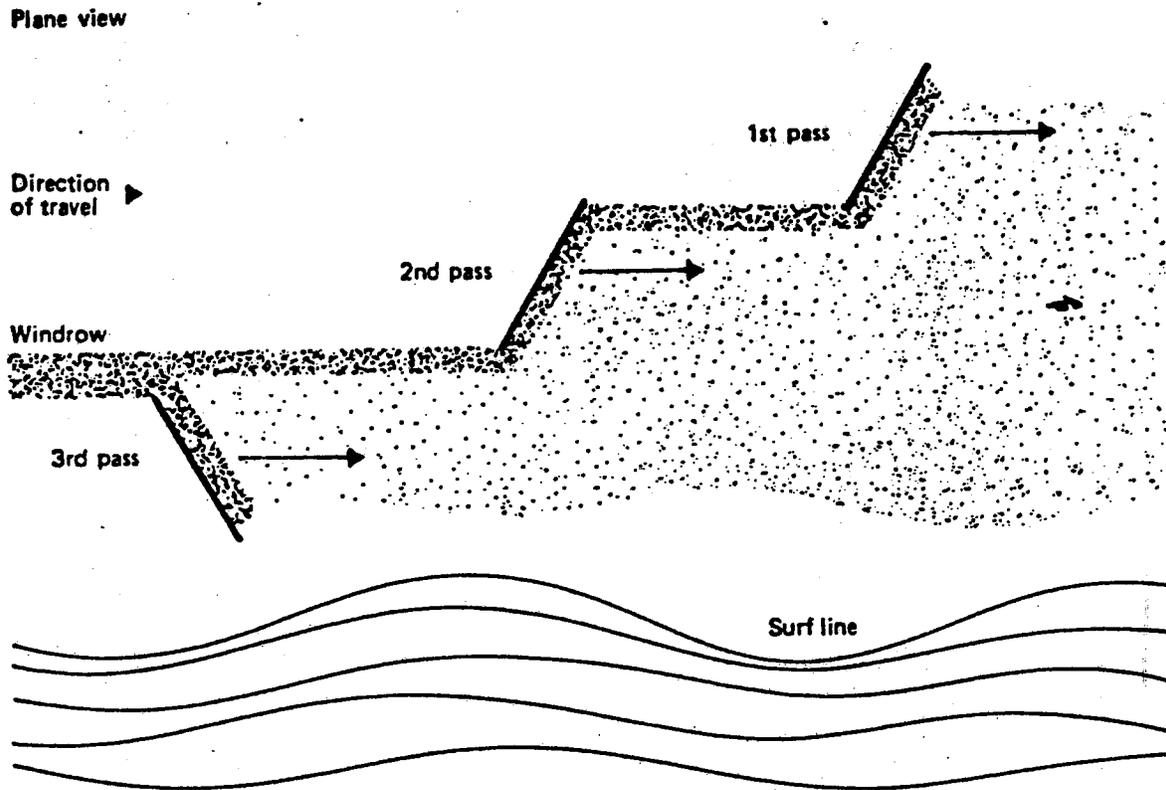


Figure C-44. Motor Grader/Front-End Loader/Elevating Scraper Operational Sequence

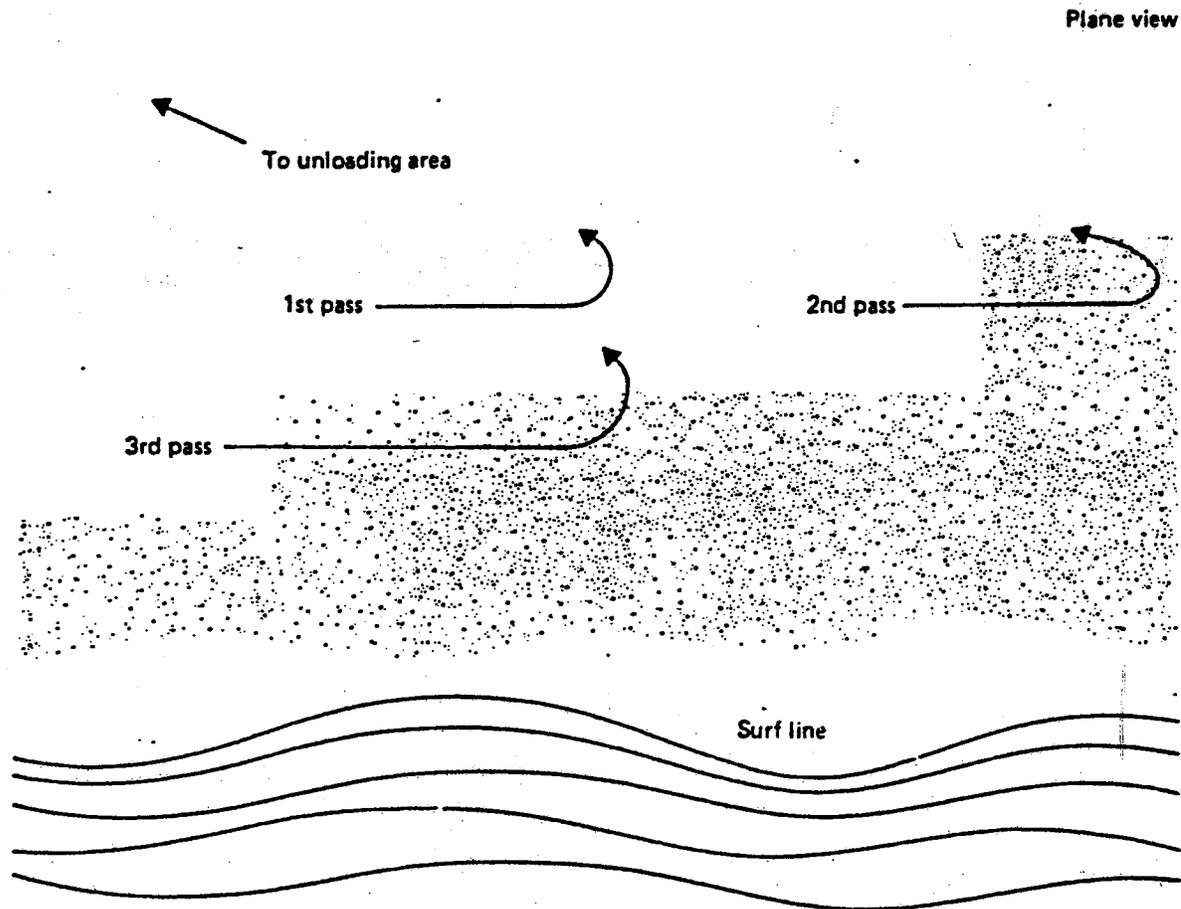


Figure C-45. Operation Pattern for a Motorized Elevation Scraper

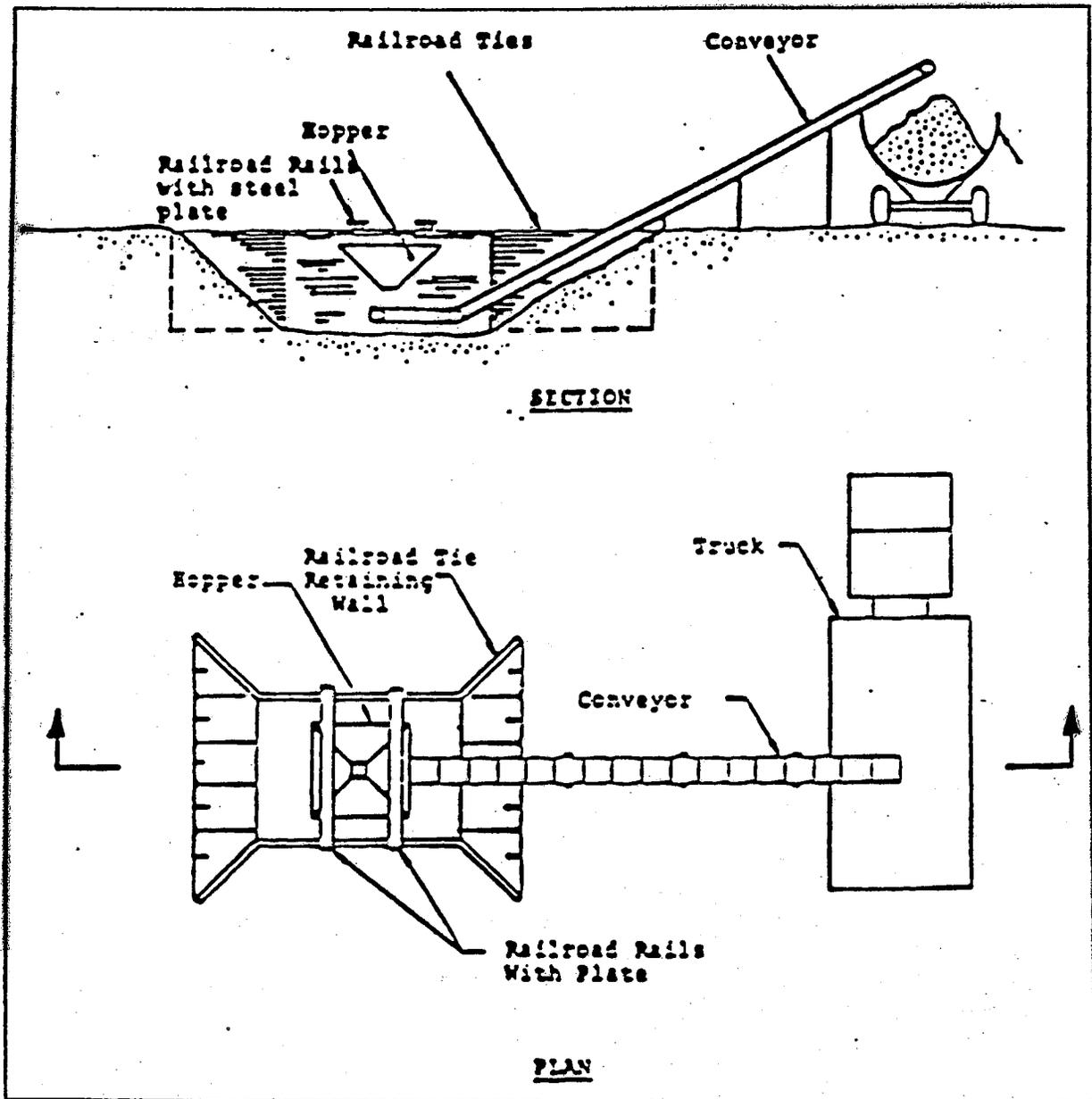


Figure C-46. Illustration of Unloading Ramp and Conveyor System

1. Conveyor capacity – Depends on estimated volume of material per hour that will be produced by restoration procedures.
2. Conveyor length – Depends on height above ground required to load trucks.
3. Hopper capacity – Requires sufficient capacity to receive total load of largest elevating scraper.
4. Screening system – Depends on the condition of material removed by cleanup procedures; e.g., oil-sand mixture, and debris.
5. Ramp height - Depends on overall height of conveyor and hopper and depth of pit.
6. Ramp width – Depends on the maximum width of largest elevating scraper.
7. Ramp opening – Depends on the length of bowl opening of largest elevating scraper.

The loaded scraper drives over the ramp, dumping its load onto a conveyor underneath as it moves forward. The conveyor then transfers the material up and into a dump truck as shown in Figure C-47. A vibrating screen can be attached to the upper end of the conveyor to separate out clean soil/sand/gravel into an empty scraper or second dump truck for replacement at spill site.

**Motor Grader/Front-End Loader:** As previously described, motor grader are used to cast windrows. Front-end loaders are used in place of elevating scrapers to pick up windrowed material and transfer it to nearby unloading areas or directly into trucks for disposal. Figure C-47 shows the operational sequence for a motor grader/front-end loader/elevating scraper combination. Front-end loaders are described in detail below.

**Bulldozer/Front-End Loader:** This equipment is used on coarse sand, gravel, or cobble beaches or rough terrain areas where penetration is deep, oiling extensive, and traffic ability poor. Operate bulldozer to push oiled material into piles for removal by the front-end loader to a nearby unloading site or dump truck. The cut depth should not exceed the depth of oil penetration. When operating in a tidal environment, cleaning should be done at low tide and material pushed up the beach above the high water line.

**Backhoe:** This equipment is used to remove oiled sediments (primarily mud or silt) on steep banks where other types of equipment cannot operate. Position backhoe at the top of the bank with the boom fully extended. Maneuver the bucket to the downhill edge of oiling and move up the bank, scraping the layer of oiled sediments into it. The collected materials can be temporarily stockpiled on-site or loaded directly into dump truck.

**Front-End Loaders:** This equipment is used to load stockpiled or windrowed material into trucks but may also be used to pick up debris or to clean areas with patchy oiling and/or poor traffic ability. Front-end loaders are either rubber-tired or tracked. They are fitted with buckets for various uses with capacities ranging from 3/4 to 10 cubic yards. Rubber-tired loaders with 4-in-1 buckets are preferred. Bucket should only be filled to 2/3 capacity to prevent spillage during transport and loading. Figure C-48 shows the operational sequence for a front-end loader.

**Hauling Trucks:** All trucks should be lined with plastic sheeting before loading to prevent oil from leaking onto the streets. New liners shall be used for each load. Tarpaulin covers should be used to minimize blowing or spilling of loads. Washing of truck wheels with pressure water hoses may be required before trucks leave the transfer locations to avoid tracking oil and dirt onto city streets. Trucks may be loaded with wheel type front-end loaders.

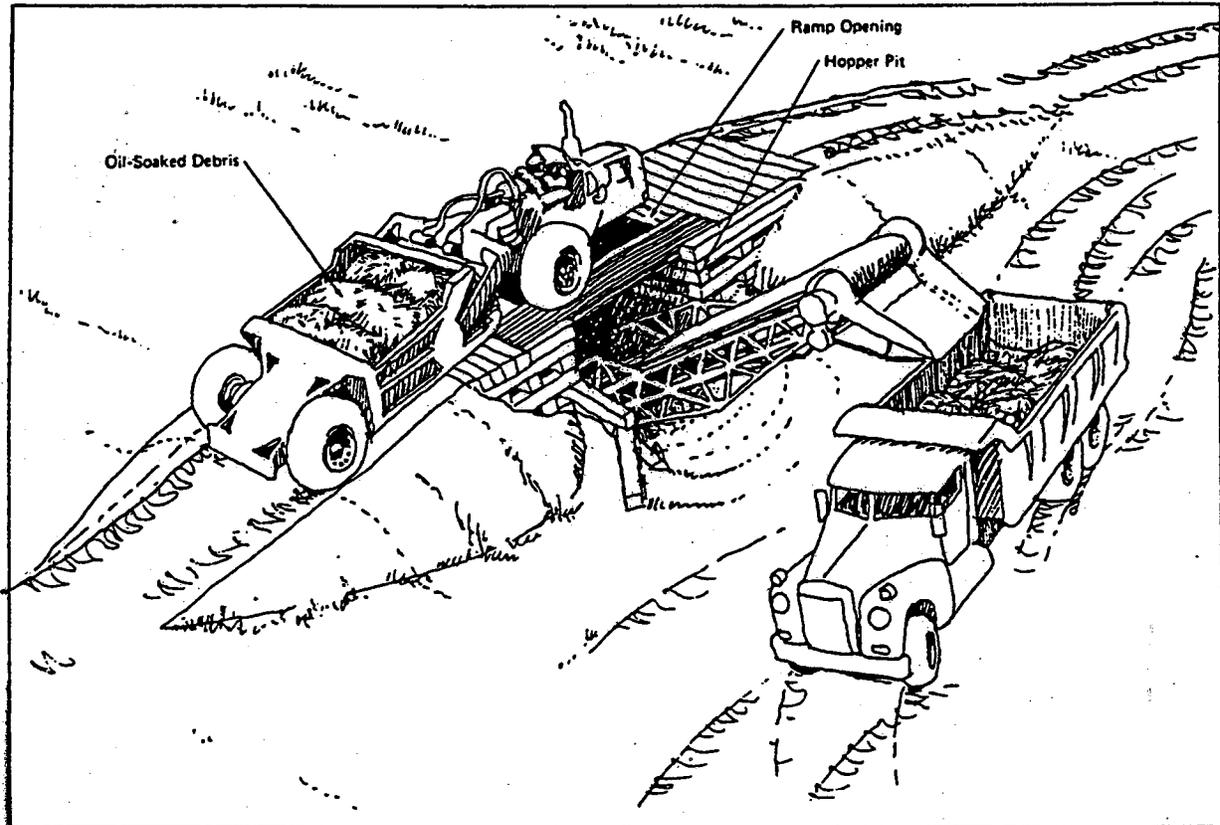


Figure C-47. Unloading Ramp and Conveyor-Screening Plant

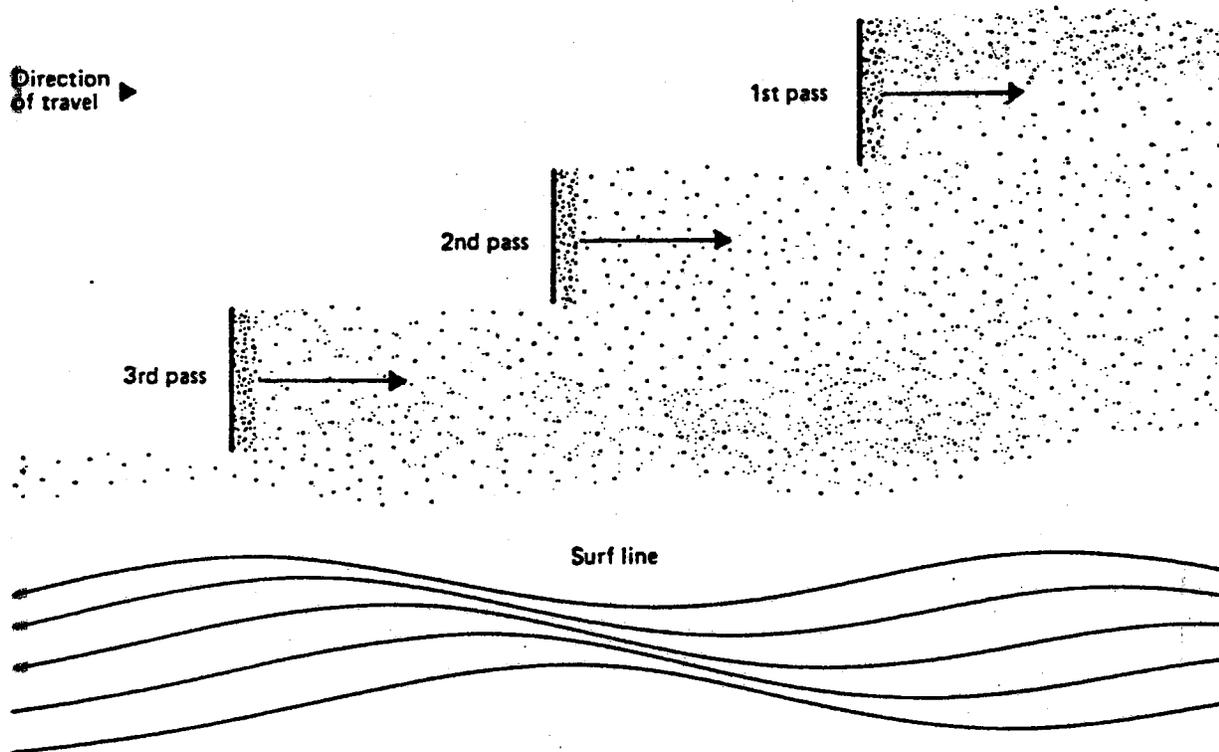


Figure C-48. Operational Sequence for a Front-End Loader

The time required for hauling oiled soil/sand/gravel from the transfer locations to the recovery, recycling, treatment, disposal facility will depend on the type and number of trucks used. The most suitable and available types of trucks are the 10-wheel single-bed dumps or truck-trailer combinations. Ten-wheel dump trucks have a capacity of approximately 8 cubic-yards.

**Discing:** For small spills of very light oil or for final cleanup, the most effective cleanup technique may be a simple "discing-in" of the oil. Before this procedure can be used, ICS and agency officials must review and approve the discing-in method.

In this technique the oil is not removed but buried into the top layer of sediments and left to degrade naturally. The oil is disced into the sediment using a tracked loader or tractor towing a discer. The following procedure shall be followed:

1. Begin discing along the shoreward edge of the oiled area.
2. Operate the tractor in second gear and continue to the end of the oiled area.
3. Turn the tractor around and start a new pass adjacent to, and slightly overlapping the previous pass (Figure C-49).

**Logistics:** Logistic requirements depend on the loading capacity of the equipment and the haul distance to the unloading area. Logistic requirements for each of these techniques to clean a 1-mile by 50 foot oiled area are given in Table C-V.

**Variations:** None.

#### ***4.2.3 Flushing***

**Objectives:** This technique is used to remove oil from manmade structures, rocky, boulder, cobble, or sandy shorelines, or any substrate with relatively few or no living organisms, by flushing with high- or low-pressure water streams. Prior to the use of high-pressure flushing, qualified personnel are required to inspect oiled surfaces for biological activity. The use of high-pressure water streams will remove attached plant and animal life, which may take several years to recolonize.

**Limitations:** Accessibility, substrate erosion potential, biological activity.

**General Instructions:** Begin flushing at the highest point of oiling, working down to the lowest point. In tidal areas it should be timed so that the lowest point is reached at low tide. Oil flushed off by the water streams can be recovered by using berms, boards, or trenches to channel the oil to a sump or other collection point for recovery. For aquatic areas, the oil may be allowed to run back into the water where containment booms have been positioned. Pumps, vacuum trucks, skimmers, and/or sorbents are used to recover oil from the containment areas or collection points. Place plastic sheets over adjacent surfaces to prevent oiling and to direct oil and water to the desired collection area. For large areas a series of berms or ditches is used to channel the oily runoff to recovery areas as shown in Figure C-50. High- pressure flushing (hydroblasting) is used for removing sticky, weathered, or high-viscosity oils from solid substrates, whereas low-pressure flushing should be used for non-sticky oils or unconsolidated substrates.

**Logistics:** The logistical requirements for using hydroblasting or low-pressure flushing to clean a 1-mile by 50 foot lightly oiled area are approximated in Table C-VI.

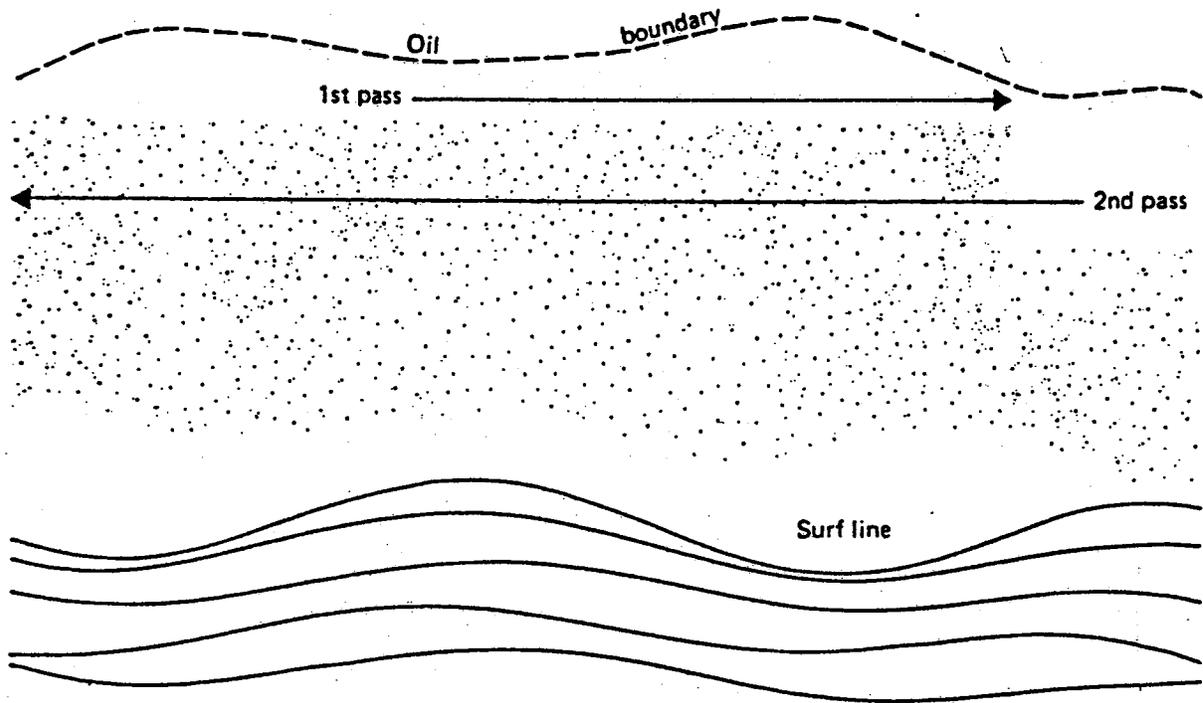


Figure C-49. Discing-in Operation for Light Oil Deposits, Stains, or Final Cleanup (Cleaning pattern for use of Beach Cleaner)

Table C-V

## Logistical Requirements for Mechanized Recovery\*

Technique and Equipment	Load Capacity	Number of Units Required For:						No. of Truck Loads/Hour	Diesel Fuel Requirements, Gal/Hour	Individual or Combined Cleaning Rate
		No Haul Distance	100 ft. Haul Distance	500 ft. Haul Distance	2,000 ft. Haul Distance					
<b>Motor Grader/Elevating Scraper*</b>										
Motor grader			1	1		1		3-6		
Elevating scraper	20 yd <sup>3</sup>		1	2		4		9-15	1-½ hr/acre	
Elevating scraper	10 yd <sup>3</sup>		1	4		8		11-18		
<b>Motor Grader/Front-End Loader</b>										
Motor grader			1	1		1		3-6		
Loader - rubber tired	3 yd <sup>3</sup>		1	4		4		2-6	1-½ hr/acre	
Loader - tracked	3 yd <sup>3</sup>		1	2		6		5-8	1-¾ hr/acre	
Dump truck	10 yd <sup>3</sup>						19	6-12		
<b>Buildozer/Front-End Loader</b>										
Buildozer			1	1		1		4-14		
Loader - rubber tired	3 yd <sup>3</sup>		1	4		4		2-6	5-½ hr/acre	
Dump truck	10 yd <sup>3</sup>						23	6-12		
<b>Front-End Loader</b>										
Loader - rubber tired	3 yd <sup>3</sup>		1	2		4		2-6	3-½ hr/acre	
Loader - tracked	13 yd <sup>3</sup>		1	2		6		5-8	4-½ hr/acre	
Dump truck	10 yd <sup>3</sup>						23	6-12		
<b>Backhoe</b>										
Backhoe	16 ft <sup>3</sup>		8					2-4	7 hr/acre	
Backhoe	12 ft <sup>3</sup>		4					2-4		
Dump truck	10 yd <sup>3</sup>						23	6-12		
<b>Personnel</b> - 1 operator for each piece of equipment and 1 supervisor.										
<b>Access</b> - Heavy equipment, barge, or landing craft.										

\*Logistical requirements for the elevating scraper operating alone are the same as those listed for motor grader/elevating scraper.

\* For 1 mile by 50-foot area.

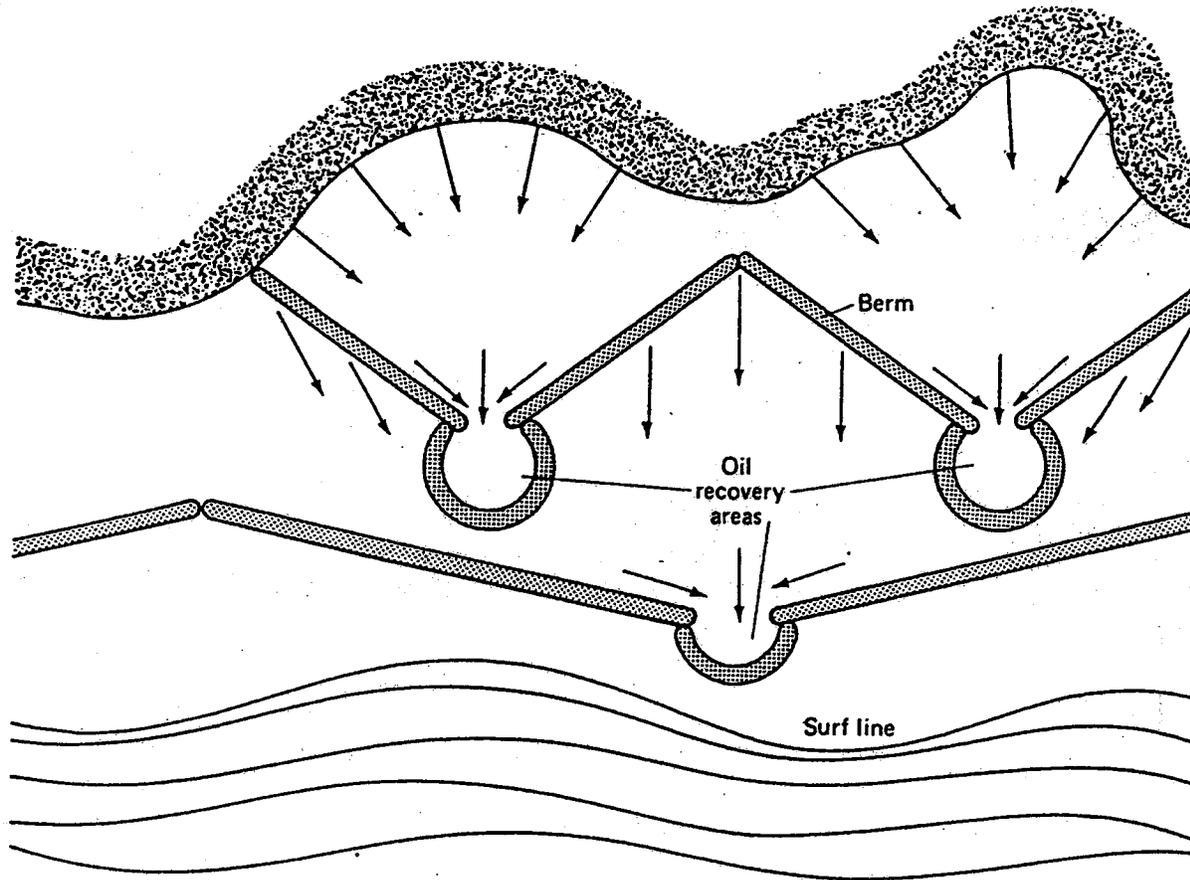


Figure C-50. Low Pressure Flushing Tactics

<b>Table C-VI</b>		
<b>Logistical Requirements for Flushing Inert Substrates</b>		
	Type	No. Required
<b>Equipment</b>		
• Hydroblasting unit	Self-contained, 10 gpm, @ 4,000 to 12,000 psi	2-3
• Flushing unit	Pump and hoses, 50 to 100 gpm @ 10 to 20 psi	3-5
<b>Support</b>		
• Vacuum Truck	60 to 80 bbl. capacity <sup>1</sup> 110 bbl. capacity <sup>2</sup>	1 1-2
• Trash pump and tank truck	25 to 50 gpm <sup>1</sup> 50 to 75 gpm <sup>2</sup> 60 to 80 bbl. capacity <sup>1</sup> 110 bbl. capacity <sup>2</sup>	1 1-2 1 1-2
<b>Personnel</b>	- 1 to 2 operators per flushing or hydroblasting unit and 1 to 2 per recovery equipment, and 1 supervisor.	
<b>Access requirements</b>	- heavy equipment; barge or landing craft for trucks and light vehicles; shallow craft or helicopter for flushing unit.	

<sup>1</sup> Hydroblasting.

<sup>2</sup> Low-pressure flushing.

**Variations:** If authorized by the ICS and appropriate agency representatives, dispersants may be mixed in low concentrations with the flushing water to aid oil removal and prevent reoiling by, and re-coalescing of the removed oil. Low-pressure water streams are also used to flush out oil stranded in backwater areas or under docks and herd it into containment or recovery devices.

#### ***4.2.4 Flushing Wetlands***

**Objectives:** To remove concentrations of oil from wetland vegetation without significant sediment or vegetation disturbance by low-pressure water flushing.

**Limitations:** Accessibility, environmental sensitivity of the area, oil viscosity (most effective with nonsticky oils), and sediments (effectiveness limited with oiled sediments).

**General Instructions:** Test flush an area to determine effectiveness. Begin flushing at back of oiled area and work towards front. Flush from small boats whenever possible to avoid substrate disturbance. Any direct application of water stream to oiled substrate is undesirable, as erosion or damage to plant and animal life may result. Bathing the substrate will usually float oil off the surface without any adverse effects. Oil must also be removed from plant stems and leaves. Channel oily runoff with berms or trenches to containment pits or sumps for recovery. Runoff may also be flushed back into the water within the confines of a boom and herded to a recovery point with water jets as illustrated in Figure C-51.

**Logistics:** The primary logistical requirements for cleaning as 1 mile by 50 foot contaminated area are given in Table C-VII.

**Variations:** None.

#### ***4.2.5 Wetland Cutting***

**Objectives:** To manually or mechanically remove oiled vegetation where required to avoid leaching, reoiling, or direct oiling of biota.

**Limitations:** Accessibility, water depth, and environmental sensitivity to cutting or to heavy foot traffic associated with manual methods. Some logistic requirements for wetland cutting are listed in Table C-VIII.

**General Instructions:** Conduct detailed survey to determine the extent of cutting required. Remove material using tools listed in Table C-VIII. Dispose of cut oiled material. Revegetate if necessary.

**Variations:** None.

#### ***4.2.6 Soil Removal***

**Objectives:** Remove persistent oiled sediments in cases where no other treatment is possible.

**Limitations:** Environmentally damaging, expensive, replacement of removed material usually required, disposal problems.

**General Instructions:** Conduct detailed survey to determine the extent of removal required. Remove material using conventional earth moving or dredging techniques. Dispose of recovered oiled material. Replace removed material in type and quantity. Revegetate if necessary.

**Variations:** None.

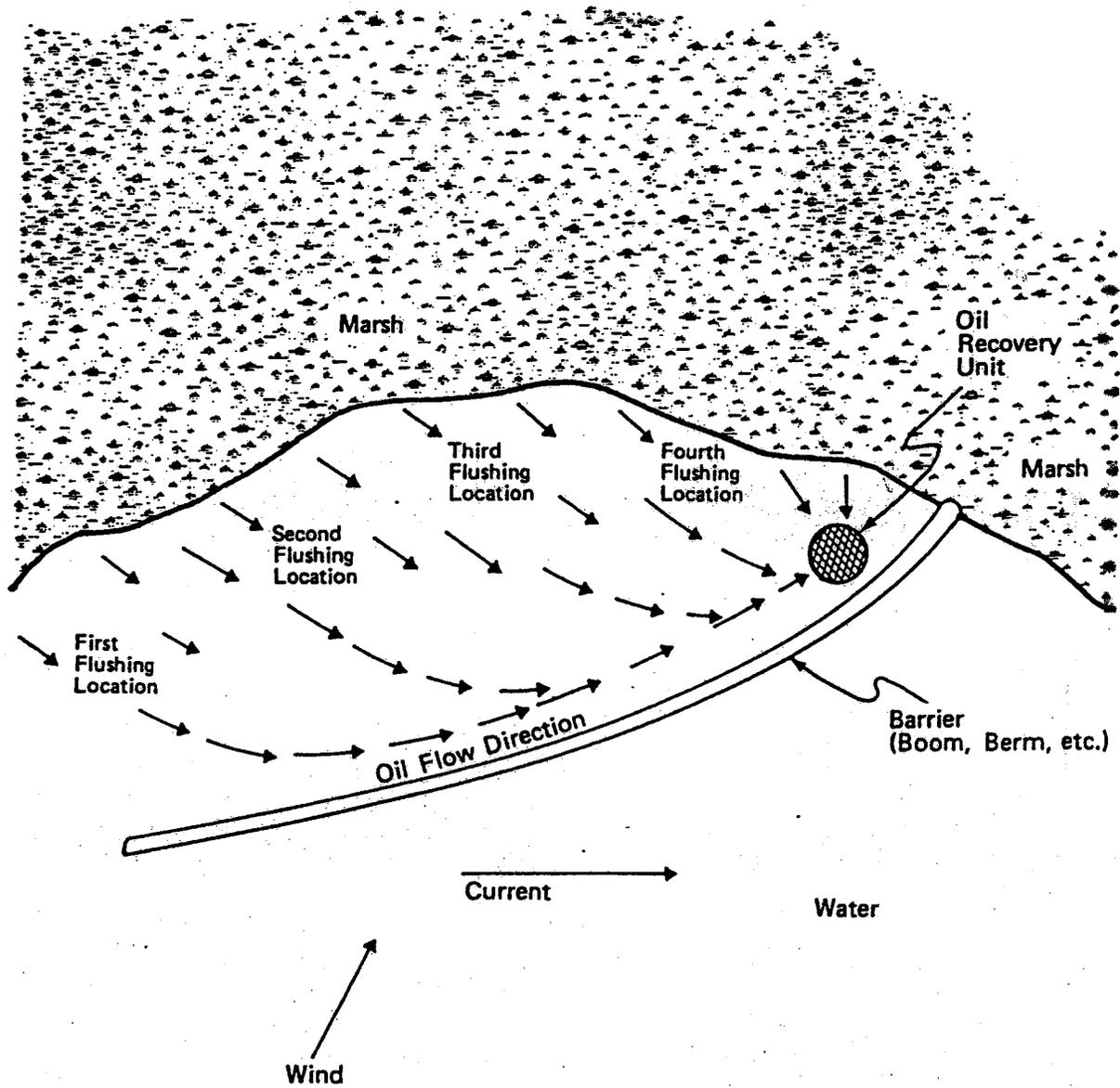


Figure C-51. General Wetland Flushing Tactics

<b>Table C-VII</b>		
<b>Logistical Requirements for Flushing Wetlands<sup>a</sup></b>		
	Type	Number Required
<b><u>Equipment</u></b>		
• Flushing unit (pump and hoses) vacuum truck	10-20 psi pressure @	3-5
	50-100 gals/min 110 barrel capacity	1-2
or		
• Trash pump and tank truck	50-75 gals/min	1-2
	125 barrel capacity	1-2
<b><u>Personnel</u></b> - 1 to 2 per flushing or recovery unit and 1 supervisor.		
<b><u>Access requirements</u></b> - heavy equipment, barge or landing craft for trucks and light vehicular, shallow craft, or helicopter for flushing unit.		

- For a 1 mile by 50 foot area.

<b>Table C-VIII</b>	
<b>Logistical Requirements for Wetland Cutting<sup>a</sup></b>	
	<b>Number Per Crew</b>
<b><u>Equipment</u></b>	
• Aquatic weed cutter	2
• Kelp harvester	2
• Cutting tools - (Scythes, power cutters, shears, etc.)	3-4 <sup>b</sup>
• Collecting tools - (pitchforks, rakes, etc.)	4-6
• Plastic or burlap bags	75-100
• Rolls of ground cover - (plastic film, burlap, sorbents, etc.)	1-3
 <b><u>Personnel</u></b> - 5 crews of 10 workers each and 1 supervisor.	
<b><u>Access requirements</u></b> - foot, shallow craft, or helicopter.	

<sup>a</sup> For a 1 mile by 50 foot area.

<sup>b</sup> Should have 1 or 2 extra in case of breakage or blades becoming dull.

#### ***4.2.8 Assisted Natural Recovery***

**Objectives:** Application of in-situ treatments to the oiled area as a means of stimulating or accelerating natural degradation of the oil.

**Limitations:** Accessibility, traffic ability, depth of penetration, energy level of marine shorelines, environmental sensitivity of the area to the oil, and public or private utilization of the area.

**General Instructions:** Several techniques have been developed to break up the oil layer or oiled substrate, thereby increasing the oil's surface area exposed to photochemical oxidation and microbial degradation. These techniques are primarily used on non-recreational, low-amenity areas or coastal shorelines where sediment removal will cause backshore erosion. Each is described individually below.

**Push Oil Sediments Into Surf:** This technique is used on light to moderately oiled beaches where sediment removal may cause erosion. At low tide operate the bulldozer to push the oiled sediments onto the lower intertidal area where the increased sediment movement breaks up the oil. Sediments are returned to the beach through natural wave and tidal action.

**Disc Into Substrate:** This technique is used on lightly contaminated, nonrecreational sand or gravel beaches or inland substrates. Tow discing equipment by tractor or tracked loader. Conventional or chisel plows should be used where penetration exceeds 8 inches. Operate the tractor parallel to the surf line or perpendicular to the direction of slope for inland areas. Discing should be done periodically to aerate the sediments as much as possible.

**Breaking Up Pavement:** This technique is used on cobble, sand, or gravel beaches where thick layers of oil have formed an asphaltic pavement. Attach a ripper consisting of two or three large, curved teeth to the back of a tractor, tracked loader, or bulldozer and drag it through the pavement, breaking it up into smaller pieces. This allows natural wave action to further break up the pavement for rapid degradation.

**Bioremediation:** This technique is used in conjunction with discing on inland areas to accelerate or maintain a high rate of biodegradation. After discing, fertilize the oiled soil with a standard spreader, using a nitrogen, phosphorus, and potassium (NPK) inorganic fertilizer to supplement natural nutrient supplies. A nitrogen to oil ratio of 1:10 by weight is recommended. The ICS and appropriate agencies should analyze the situation before bioremediation is started.

**Logistics:** The equipment required depends on the technique used and the size and degree of oiling. Table C-IX gives the primary logistical requirements for assisted natural recovery. Most of the equipment needed are standard farm items.

Table C-IX

## Logistical Requirements for Assisted Natural Recovery

Item	50 ft. Wide Area	150 ft. Wide Area	Cleaning Rate
<u>Equipment</u>			
• Tractor/Ripper	1	2	1-1/2 hr/acre
• Track-type tractor w/8 ft. wide discer	1	1	1-1/2 hr/acre
• Track-type tractor w/12 ft. wide discer	1	1	1/3 hr/acre
• Bulldozer	2	5	1 hr/acre
• Spreader	1	1	N/A
<u>Personnel</u> - 1 operator for each piece of equipment and 1 supervisor.			
<u>Support</u>		<u>Diesel Fuel Requirements</u>	
• Tracked-type tractor		2-1/2 - 9 gallons/hr	
• Bulldozer		4 - 14 gallons/hr	
<u>Access requirements</u> - heavy equipment, light vehicular, barge, or landing craft.			

## **Volume II (Section 9800) Local ACP Response Concerns and Preparedness for Environmental, Economic, and Cultural Resources**

### **9800 Introduction**

A primary focus of spill response contingency planning is the identification and protection of environmental, cultural, and economic resources at risk. Section 9800 is a catalog of environmental, cultural, and economic concerns which have been identified by the Area Committees. Strategies to protect these sites from oil and collateral impacts are included for many of these resources which may be at risk during an event. During a spill event, the sites which may be at risk and the measures which should reasonably be deployed are determined by the probable trajectory from the spill, prevailing conditions which may favor or constrain feasible deployments, and the type of product released and the threat it poses to resources at risk. These in combination with geographic constraints that impact spill response measures at the respective locales define the response need and focus response decisions.

### **9800.1 Organization of Section 9800**

Section 9800 provides geographically organized information about ecologic, cultural/historic, economic, and other significant resources that may be at risk from spills, for the two included ACPs: ACP 4 - San Luis Obispo, Santa Barbara, Ventura Counties; and ACP 5 – Los Angeles and Orange Counties.

Within each Committee Area the Area Contingency Plan information is grouped by Geographic Response Areas (GRAs). In some instances, the GRAs fall along political boundaries such as county lines, but emphasis is given to local hydro-geographic areas, where contaminants such as oil are likely to circulate. Section 9800 is organized first by Area Contingency Plan, then by GRA or county and then into topical subsections for each county or Geographic Response Area. The Statewide template for organization is shown below for each geographic grouping, though local variations accommodate the needs of each of California's Area Committees (not all ACPs have all the topical subdivisions shown or in some cases have additional sections):

#### **9810 ACP Domain**

##### **9811 County or Geographic Response Area Subdivision**

**9811.1 Sensitive Sites** (Note: Southern California Area Committees have subdivided this into two subsections one for Sensitive Sites and one for endangered birds)

##### **9811.2 Cultural and Other Resources at Risk**

**9811.21 Cultural notes** (if any)

**9811.22 Essential Fish Habitat** (usually reference to 9802.2)

**9811.23 Other Concerns** (possible examples "Waterfowl Concentration by Season" or "local eelgrass distribution")

##### **9811.3 Economic Sites**

##### **9811.4 Operational Divisions**

##### **9811.5 Shoreline Access**

##### **9811.6 Other Local Information**

Each Area Plan subsection of 9800 has a table of contents following the above format to provide quick reference to include information.

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## **9800.2 Reserved**

**9801 Reserved**

**9802 Reserved**

**9803 Reserved**

**9804 Reserved**

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### **9806 California Strategy Concepts, Systems Approach, and Nomenclature**

Every geographic area has its own approach and a certain amount of variability in language. This section will aid responders unfamiliar with California response understand local methods, concepts, and vernacular.

#### **9806.1 Booming Systems**

Boom and booming systems are described here to enable planners and operations staff to better achieve their objectives. First, boom terminology used on the west coast is different than much of the rest of the U.S. and the World Oil Spill Catalog. In general, harbor boom (see definition below) is used as primary site protection in the San Francisco Bay/Delta Area, although some strategies call for swamp boom (river boom - see below). For response and planning purposes, harbor boom may be substituted for swamp boom and two consecutive layers of swamp boom are roughly equivalent to one layer of harbor boom. Swamp boom may be used in low energy applications: areas with little chop or waves and light currents.

However, responders should be aware of several issues and amend actions as necessary. Long-skirted booms in shallow channels can aggravate entrainment problems. In such instances, it may be inadvisable to substitute harbor boom for swamp boom.

Also, wherever oil accumulates against booms in rough or choppy conditions, there can often be the problem of oil washing over the flotation. This nullifies the booming. To avoid this problem, protective strategies are designed to avoid collection of oil in pockets (except for the purposes of skimming), and instead, are oriented to keep oil moving along booms to collection or deflection as much as the situation permits. Responders, both in operations and planning will need to adjust boom configurations to prevent excessive "pocketing" so as to minimize entrainment and over-wash. This may mean altering boom angles. This may also be unavoidable and require back-up layering of boom. Some strategies include this as a contingent alternative, but regardless, if over-wash is a problem, then a second layer should be viewed as the containment and deployed in the "shadow" of the becalming first layer. In some instances the lesser freeboard of swamp boom may provide adequate control once the wave has been broken.

Regardless of strategy design, deployment and adjustment remain key to successful booming. If strategies are not properly deployed, whether prescribed or amended, and maintained through proper anchoring and tending, the protective booming will be neutralized. Every effort by managers and responders should be made to ensure proper execution.



## 9806.2 Skimming Systems

This paragraph provides an introduction to skimming issues in site strategies. In the following strategies, the inclusion of self-powered skimming vessels is minimized in recognition that the first response resource priority is on-water skimming: the best protection for sensitive sites is to minimize oil impacting sites by best available means (ON WATER RECOVERY). However, shore-side skimming and defection offshore to skimming are integral parts of protecting the sensitive site or nearby sites at risk. The philosophy of strategy development includes the intent to leverage opportunities to control, capture, immobilize or collect oil at shorelines where possible. Once oil has been immobilized, either contained or confined near shore, oil skimming efficacy dramatically improves. Also, once oil has impacted a site, it may be a reasonable tactic to keep it at that locale rather than let it re-mobilize to impact yet another site.

Since there are a variety of skimming units that may be included in the strategy, this preamble provides an opportunity to define skimming systems so that the elaborate descriptive verbiage need not be repeated in each strategy. A number of acronyms for skimming systems are included in the Acronyms and Nomenclature section below: TSA, SFS, SPS, and SSS.

A skimming system includes four elements: a skimming device, storage for skimmed oil, a pumping device to move captured oil from skimming device to storage, and a power supply capable of enabling all devices.

## 9807 Glossary of Acronyms and Nomenclature Used in Strategies

To minimize repetitious verbiage in protection strategies, the following acronyms and nomenclature may be used in strategies and in Strategy Pages (and SISRS database).

**Anchoring Systems** – Whether expressly stated or not, anchoring systems must be sufficient to hold boom in the aggressive currents where boom may be deployed. To insure successful anchoring, the anchoring system should include: anchors with anchor buoys to control placement, anchor chains which equal or exceed the weight of anchors indicated, enough line to produce adequate scope to hold anchors (rule of thumb is 3:1 (line to depth), but 5-7:1 for high current areas), and a buoy between anchor line and boom (crown buoys) to keep the anchor from sinking the boom under tension conditions.

**BBE** - boom boat equivalent – the capability of a vessel to transport and deploy 600 feet of Hboom or 1800 ft of swamp boom.

**Boom boats** - a boat suitable for transporting, towing and deploying large amounts of boom, usually crewed with a helmsman and two crew for deployment, usually referenced in terms of BBE. Boom boats must be capable of grounding without sustaining damage. (Also see Shallow Water Boom boats and Very Shallow Water Boom Boats.)

**Bboats** - see boom boat

**Danforth** - refers to “danforth anchors” with chain, typically presented as a number of anchors and minimal weight (e.g., 3/12+ - means three anchors of a minimum of 12 lbs each) with at least an equal weight of anchor chain weight whether specified or not. Without substantial anchor chain weight, anchors will not hold. Northill anchors are equivalent.

**5-310 -A Site Strategy - Anaheim Bay (Seal Beach National Wildlife Refuge)****5-310 -A**County: **Orange Co.**  
USGS Quad: **Seal Beach**Thomas Guide Location: 826 G5  
NOAA Chart: **18749**ACP Division: **OR-A**Decimal Minutes: **(b) (7)(F), (b) (3)**  
Decimal Degrees:

Latitude N

Longitude W

Last Page Update: **4/21/2005****CONCERNS and ADVICE to RESPONDERS:**

To protect endangered and sensitive species and wetland habitat. Responders should watch for and avoid nesting birds and minimize disturbances to vegetation. Avoid the spread of oil into the wetland through response activities.

**HAZARDS and RESTRICTIONS:**

The Navy may impose security restrictions in the event of a spill. This could effectively close off a portion of Anaheim Bay and deployment of the preferred strategies. Strategies 5-310.1, 5-310.2, and 5-310.3 could be delayed until the Navy reopens this area to responders. If the Navy closes this area, alternative strategies 5-310.4, 5-310.5, and 5-310.6 will have to be deployed. Watch weather and sea conditions.

**SITE STRATEGIES****Strategy 5-310.1 Objective: Exclusion of oil entry to Seal Beach National Wildlife Refuge.**

Use deflection boom to deflect oil to the east beach fronts.

**Strategy 5-310.2 Objective: Exclusion of oil entry to Seal Beach National Wildlife Refuge.**

Use deflection boom at entrances to deflect oil to the north and south beach fronts.

**Strategy 5-310.3 Objective: Exclusion of oil entry to Seal Beach National Wildlife Refuge.**

Use deflection boom at entrances to bay to deflect oil to collection points.

**Strategy 5-310.4 Objective: Navy Security Alternative. Exclusion of oil entry to Seal Beach National Wildlife Refuge.**

Use this strategy if the origin of the spill is offshore. Towed boom array using OSRO vessels and vessels of opportunity (each boom 660' to 750') as necessary.

**Strategy 5-310.5 Objective: Navy Security Alternative. Exclusion of oil entry to Seal Beach National Wildlife Refuge.**

Use this strategy if the origin of the spill is from the secure area. Use a single stretch of 24" boom from the northeast corner of the PCH bridge to the small beach/mudflat next to the Simple Green building.

**Strategy 5-310.6 Objective: Navy Security Alternative. Exclusion of oil entry to Seal Beach National Wildlife Refuge.**

Use this strategy if the origin of the spill is from the secure area. Use a single stretch of 18" boom to line the inlets to Anaheim Bay.

**Table of Response Resources**

number	boom	boom	boom type	boom	no	type and gear	boat	punts	No	Type	No	and	kinds	deploy	tend
5-310.1	1500	0	0	0	4	Danforth 40 lb	1	0	0	0				4	
5-310.2	3100	0	0	0	5	Danforth 40 lb	1	0	0	0				4	
5-310.3	750	0	0	0	0		1	0	0	0				4	
5-310.4	0	0	1500	Ocea	0		4	0	0	0				4	
5-310.5	5000	0	0	0	8	Danforth 40 lb	2	2	2	Stakes				4	
5-310.6	0	6000	0	0	8	Danforth 40 lb	2	2	8	Stakes				4	

**LOGISTICS**

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

Boat launches available in Huntington Harbor. From Bolsa Chica St. in Huntington Beach, go west on Edinger Ave. until it ends at Sunrise Aquatic Park. Additional launching at PCH and Warner Ave. (next to Huntington Beach Fire Station No. 7).

**LAND ACCESS:** Land access on the Seal Beach Naval Weapons Station (SBNWS).

**WATER LOGISTICS:** Shallow water and strong currents. Heavy small boat traffic.

Limitations: depth, obstruction

Launching, Loading, Docking All services available.

and Services Available:

**FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:**

Marine Spill Response Corporation has pre-staged 8,950 ft of boom located throughout the SBNWS. Both boat launch locations have adequate space for parking and staging.

**COMMUNICATIONS PROBLEMS:** None.

**ADDITIONAL OPERATIONAL COMMENTS:**

Contact the Commanding Officer (CO) at the SBNWS for deployment of pre-staged boom across the channel in the event of impact. Primary boom placement is under the control of the SBNWS CO.

**Hboom** - see harbor boom

**Harbor boom** - an inland waters type boom (greater than 18" and less than 42" overall (flotation and skirt)) of a curtain boom design (skirted boom with solid flotation). Some strategies clarify boom size by indicating flotation and skirt as follows: 9X9+ which indicated a boom with at least 9" of flotation and 9" of skirt.

**sorbm** - sorbent boom, with or without a skirt

**Shallow water boom boats** - a boom boat capable of working in three feet of water or less, and should be able to withstand stranding without sustaining damage.

**Skiff** - a small two person craft able to operate in 3 foot waves or larger and capable of delivering personnel and equipment to shores.

**Skf** - see skiff

**SFS** - stationary floating skimmer - a floating platform supporting a skimmer and storage – which could be a VOSS.

**SPS** - self-propelled skimmer - a small to medium sized skimmer with its own propulsion and storage – which could be a VOSS.

**SSS** - shore side skimmer, includes a skimming unit, such as a rope-mop or weir skimmer and its support pack and a storage container such as a vacuum truck, baker tank, or other tank.

**swpbm** - see swamp boom

**Swamp boom** - a river boom type (less than 18" overall) of a curtain boom design

**Towed skimming array** - a skimming system with two boats towing collection booms which funnel oil to a skimming system

**TSA** - towed skimming array - an array with two boats towing collection booms which funnel oil to a skimming system

**VOSS** – Vessel of Opportunity Skimming System – a skimming system (skimming device, pump, power supply, and storage) placed on a vessel which was not designed for skimming per se.

**VSA** – “V”-Skimming Array -Same as TSA

**“V”-Skimming Array** -Same as TSA

**Very shallow water boom boats** - a boom boat capable of working in two feet of water or less, and should be able to withstand stranding without sustaining damage.

**xboom** – is any boom other than harbor boom, swamp, or sorbent boom. This term is used to simplify equipment tables. A type designator should be used as well as a length. Type designators include:

**TB or TBB** – tidal barrier boom

**OB** – ocean boom

**FB** – fence boom

**OS** – oil snare

**BB** – bushy boom

**9808 Reserved**

**5-310 -A Site Summary- Anaheim Bay (Seal Beach National Wildlife Refuge) 5-310 -A**County: **Orange Co.**  
USGS Quad: **Seal Beach**Thomas Guide Location: **826 G5**  
NOAA Chart: **18749**ACP Division: **OR-A**Latitude N Longitude W  
Decimal Minutes: **(b) (7)(F), (b) (3)**  
Decimal Degrees:

Last Page Update: 3/10/2008

**SITE DESCRIPTION:**

One of the most extensive and valuable wetlands in Orange County. Coastal lagoon, with extensive wetlands and marsh. Opening of bay has been channelized and lined with riprap, but inside bay past the Hwy1/Pacific Coast Highway bridge are extensive wetlands.

**SEASONAL and SPECIAL RESOURCE CONCERN**

Rank A - All year.

**RESOURCES OF PRIMARY CONCERN**

Coastal lagoon and wetlands complex.

California Least Tern (Federal and State endangered species), Snowy Plover (foraging area) (Federal endangered species), California Brown Pelican (Federal and State endangered species), Light-footed Clapper Rail (Federal and State endangered species), Peregrine Falcon (State endangered species), Belding's Savannah Sparrow (State endangered species), Black Skimmer, waterfowl, shorebirds, and seabirds.

Juvenile finfish - nursery grounds.

Intertidal mudflat.

Salt Marsh Bird's Beak (Federal and State endangered species) and Eel Grass.

**CULTURAL, HISTORIC, and ARCHEOLOGICAL SENSITIVITIES**

Contact the California Dept. of Parks and Recreation - Office of Historical Preservation at (916) 653-6624 and the South Central Coastal Information Center at (714) 278-5395 for specific information on historic or cultural resources in this area.

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

Type	Name / Title	Organization	Phone
T		Seal Beach National Wildlife Refuge	(562) 598-1024
O		Orange County Harbor Patrol (24 hr)	(949) 723-1002
T		Calif. Dept. of Fish and Game (24 hr)	(916) 358-1300
T		U.S. Fish and Wildlife Service (24 hr)	(760) 271-6934
T		U.S. Fish and Wildlife Service (8 am - 5 pm)	(760) 431-9440
TE		USN Dispatch - NWSSB (after hours)	(562) 626-7229
TE		U.S. Navy Environmental Office (M-F 730am-4pm)	(562) 626-7776
T		Calif. Dept. of Fish and Game (Los Alamitos)	(562) 342-7100
T	OSPR Environmental Scientist	Calif. Dept. of Fish and Game OSPR	(562) 598-6203
T	OSPR Technical Specialist	Calif. Dept. of Fish and Game OSPR	(562) 598-4052

**ADDITIONAL SITE SUMMARY COMMENTS:**

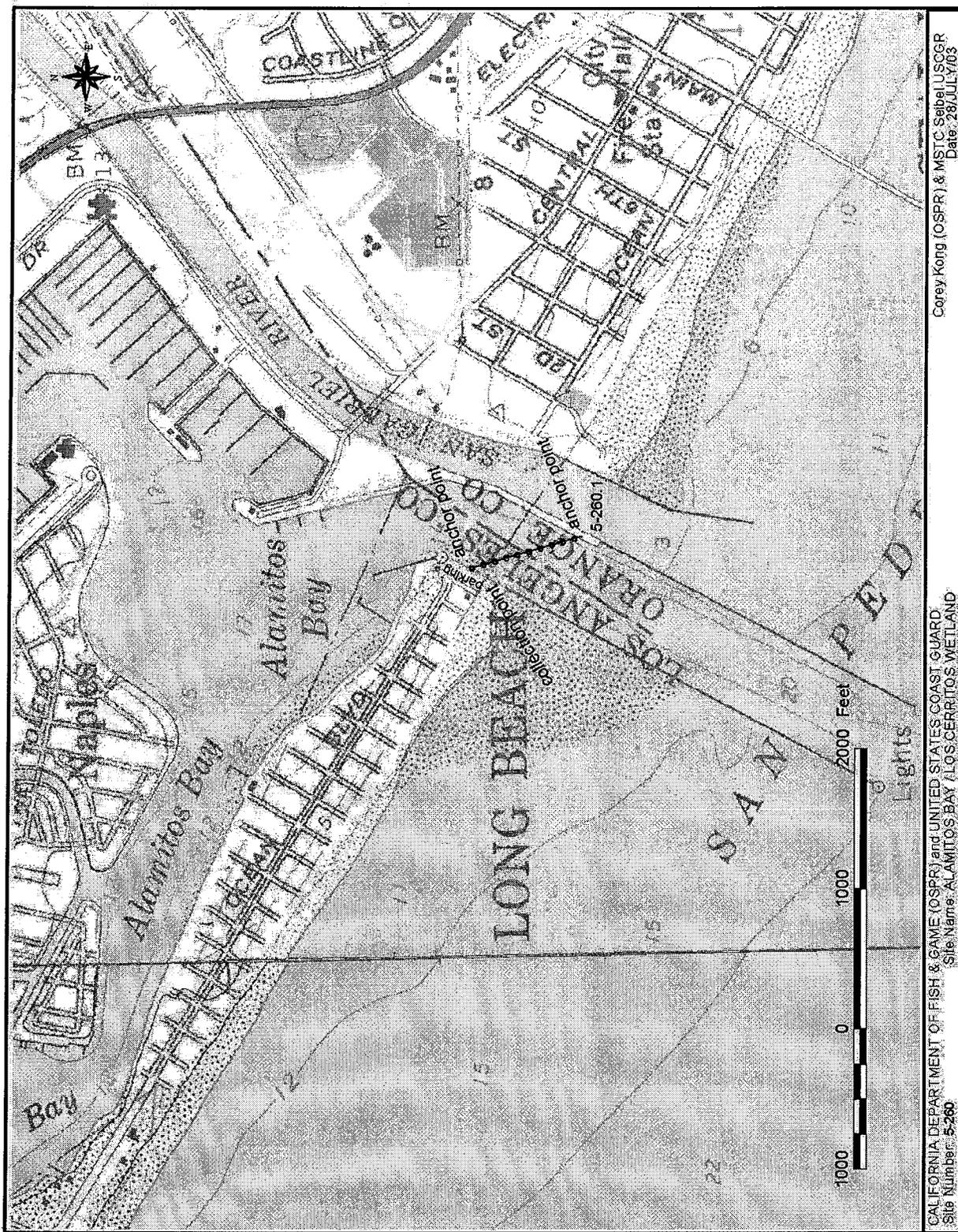
**9809 Reserved**

Additional information may be drawn from:

- California Wildlife Response Plan – RCP Appendix XXII
- *Ecological Sensitivity Atlases for the California Coast* – CA Dept. of Fish and Game and NOAA
- *Rare Find Database* - CA Dept of Fish and Game - endangered species both Federal and State listed species
- *Wildlife Habitats Relational Database* – CA Dept of Fish and Game – species associated with habitat types
- *CHRIS* – a database of identified cultural and historic properties – State Historic Preservation Officer, CA Dept of Parks and Recreations
- CALIFORNIA IMPLEMENTATION GUIDELINES FOR FEDERAL ON-SCENE COORDINATORS for the PROGRAMMATIC AGREEMENT ON PROTECTION OF HISTORIC PROPERTIES DURING EMERGENCY RESPONSE UNDER THE NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN. Regional Contingency Plan, Appendix XIX.

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Corey Kong (OSPR) & MSTC Seibel USCGR  
Date: 28/JULY/03

CALIFORNIA DEPARTMENT OF FISH & GAME (OSPR) and UNITED STATES COAST GUARD  
Site Name: ALAMITOS BAY / LOS CERRITOS WETLAND  
Site Number: 5-260

	Harbor / Curtain Boom		Sorbent boom		SSS - Shoreside Skimming System
	Swamp / River Boom		Berm, Dam, or Dike		SFS - Stationary Floating Skimmer
	all other boom types		Filter fence		SPS - Self Propelled Skimmer
			Boom tow		TSA - Towed Skimming Array

**5-250 -A Site Summary- Golden Shore Marine Reserve****5-250 -A**

County: **Los Angeles Co.** Thomas Guide Location: **825 C1**  
 USCS Quad: **Long Beach** NOAA Chart: **18749**

ACP Division: **LA-H**

Decimal Minutes:

Latitude N Longitude W  
**(b) (7)(F), (b) (3)**

Decimal Degrees:

Last Page Update: 3/11/2008

**SITE DESCRIPTION:**

This tidal saltmarsh was constructed as mitigation for impacts from the Queensway Bay project. The area is primarily a mud flat during low tides with fringing vegetation. During the highest tides, a major portion of the wetland is flooded.

**SEASONAL and SPECIAL RESOURCE CONCERN**

Rank A - All year.

**RESOURCES OF PRIMARY CONCERN**

Coastal lagoon and wetlands complex with resting and feeding seabirds, shorebirds, and waterfowl.

California Brown Pelican (Federal and State endangered species), California Least Tern (Federal and State endangered species), Belding's Savannah Sparrow (State endangered species), waterfowl, and shorebirds.

Juvenile California Halibut and other finfish species.

Intertidal mudflat.

**CULTURAL, HISTORIC, and ARCHEOLOGICAL SENSITIVITIES**

Contact the California Dept. of Parks and Recreation - Office of Historical Preservation at (916) 653-6624 and the South Central Coastal Information Center at (714) 278-5395 for specific information on historic or cultural resources in this area.

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

Type	Name / Title	Organization	Phone
O		Long Beach Fire Dept. (24 hr)	(562) 570-9400
T		Calif. Dept. of Fish and Game (24 hr)	(916) 358-1300
T		U.S. Fish and Wildlife Service (24 hr)	(760) 271-6934
T		U.S. Fish and Wildlife Service (8 am - 5 pm)	(760) 431-9440
T		Calif. Dept. of Fish and Game (Los Alamitos)	(562) 342-7100
T	OSPR Environmental Scientist	Calif. Dept. of Fish and Game OSPR	(562) 598-6203
T	OSPR Technical Specialist	Calif. Dept. of Fish and Game OSPR	(562) 598-4052

**ADDITIONAL SITE SUMMARY COMMENTS:**

**5-260 -A Site Strategy - Alamitos Bay/Los Cerritos Wetlands****5-260 -A**

County: **Los Angeles Co.** Thomas Guide Location: 826 D4  
 USGS Quad: **Seal Beach** NOAA Chart: **18749**

ACP Division: **LA-H**

Latitude N Longitude W  
 Decimal Minutes: **(b) (7)(F), (b) (3)**  
 Decimal Degrees:  
 Last Page Update: 4/21/2005

**CONCERNS and ADVICE to RESPONDERS:**

To protect endangered and sensitive species and wetland habitat.

**HAZARDS and RESTRICTIONS:****SITE STRATEGIES**Strategy 5-260.1 Objective: Exclusion of oil entry to Alamitos Bay.

Boom to prevent oil entry to bay: Harbor boom (800') stored at Alamitos Bay Yacht Club. Anchor points on both sides of channel.

**Table of Response Resources**

number	boom	boom	boom type	boom	no	type and gear	boat	punts	No	Type	No	and	kinds	deploy	tend
5-260.1	800	0	0	0	0		1	0		0					2

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

Boat launch available at Alamitos Bay. From PCH in Long Beach, go west on Second St. Boat launch is at 6201 E. Second St.

**LAND ACCESS:** Parking lot at 72nd Pl. and Ocean Blvd.**WATER LOGISTICS:** Strong currents. Heavy small boat traffic.

Limitations: depth, obstruction

Launching, Loading, Docking All services available.  
 and Services Available:

**FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:**

Pre-staged booms available adjacent to the Alamitos Bay Yacht Club at Ocean Blvd. and 72nd Place. There is parking and staging at public parking lot.

**COMMUNICATIONS PROBLEMS:** None.**ADDITIONAL OPERATIONAL COMMENTS:**

800 feet of 20" boom is pre-staged in storage containers located at the Alamitos Bay Yacht Club to be used to close off the channel. The boom can be deployed by Long Beach Lifeguards. There are several locations along Marina Dr. and Ocean Blvd. that have access to the beach.

**5-250 -A Site Strategy - Golden Shore Marine Reserve****5-250 -A**

County: **Los Angeles Co.** Thomas Guide Location: **825 C1**  
 USGS Quad: **Long Beach** NOAA Chart: **18749**

ACP Division: **LA-H**

Decimal Minutes:  
 Decimal Degrees:

Latitude N Longitude W  
**(b) (7)(F), (b) (3)**

Last Page Update: **4/21/2005****CONCERNS and ADVICE to RESPONDERS:**

To protect endangered and sensitive species and wetland habitat. Responders should watch for and avoid nesting birds and minimize disturbances to vegetation. Avoid the spread of oil into the wetland through response activities.

**HAZARDS and RESTRICTIONS:****SITE STRATEGIES****Strategy 5-250.1 Objective: Exclusion of oil entry to wetland.**

Boom to prevent oil entry to inlet. Support with sorbent boom inside harbor boom.

**Strategy 5-250.2 Objective: Exclusion of oil entry to wetland.**

Cross channel deflection boom to boat ramp on north side of channel.

**Table of Response Resources**

number	boom	boom	boom type	boom	no	type and gear	boat	punts	No	Type	No	and	kinds	deploy	tend
5-250.1	200	0	0	200	0		0	0	0	0				2	
5-250.2	2000	0	0	0	4	Danforth 40 lb	1	0	0	0				4	

**LOGISTICS**

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

To site: from Ocean Blvd. in Long Beach, go south on Golden Shore to the parking lot adjacent to wetland. To boat launch: from Ocean Blvd., go south on Queensway Bay and then west to 590 Queensway Dr.

**LAND ACCESS:**

**WATER LOGISTICS:** Shallow water and strong currents.

Limitations: depth, obstruction

Launching, Loading, Docking All services available.  
 and Services Available:

**FACILITIES, STAGING AREAS, POSSIBLE FIELD POSTS AND EQUIPMENT AVAILABLE:**

**COMMUNICATIONS PROBLEMS:** None.

**ADDITIONAL OPERATIONAL COMMENTS:**

The site has a permanent exclusion boom at the opening to the wetland.

**5-260 -A Site Summary- Alamitos Bay/Los Cerritos Wetlands****5-260 -A**

County: **Los Angeles Co.** Thomas Guide Location: **826 D4**  
 USGS Quad: **Seal Beach** NOAA Chart: **18749**

ACP Division: **LA-H**

Decimal Minutes:

Latitude N Longitude W  
**(b) (7)(F), (b) (3)**

Decimal Degrees:

Last Page Update: 3/11/2008

**SITE DESCRIPTION:**

Developed coastal embayment. Many marinas/boat slips but still contains a large area of sand and mud shoreline, particularly inside seawall and deep in back bay.

**SEASONAL and SPECIAL RESOURCE CONCERN**

Rank A - All year.

**RESOURCES OF PRIMARY CONCERN**

Coastal lagoon and wetlands complex.

California Brown Pelican (Federal and State endangered species) shorebirds, seabirds, and waterfowl.

Juvenile California Halibut and other finfish species. Green Sea Turtle.

Intertidal mudflat.

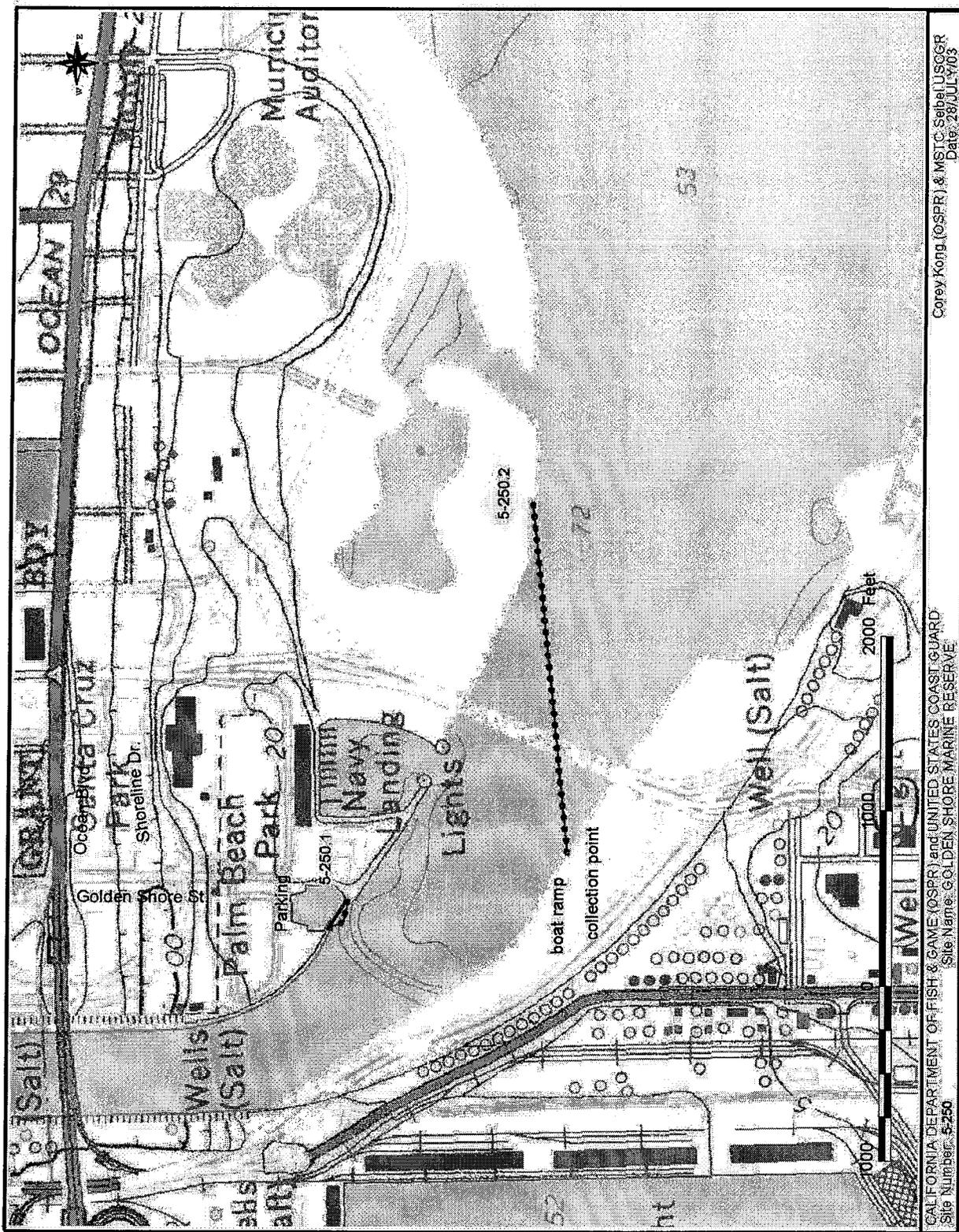
**CULTURAL, HISTORIC, and ARCHEOLOGICAL SENSITIVITIES**

Contact the California Dept. of Parks and Recreation - Office of Historical Preservation at (916) 653-6624 and the South Central Coastal Information Center at (714) 278-5395 for specific information on historic or cultural resources in this area.

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

Type	Name / Title	Organization	Phone
O		LA Dept. of Water & Power (24 hr)	(562) 431-2578
O		AES Power - Long Beach	(562) 493-7803
O		Long Beach Fire Dept. (24 hr)	(562) 570-9400
T		Calif. Dept. of Fish and Game (24 hr)	(916) 358-1300
T		U.S. Fish and Wildlife Service (24 hr)	(760) 271-6934
T		U.S. Fish and Wildlife Service (8 am - 5 pm)	(760) 431-9440
O		Long Beach Lifeguards (8 am - 6 pm)	(562) 570-1360
T		Calif. Dept. of Fish and Game (Los Alamitos)	(562) 342-7100
T	OSPR Environmental Scientist	Calif. Dept. of Fish and Game OSPR	(562) 598-6203
T	OSPR Technical Specialist	Calif. Dept. of Fish and Game OSPR	(562) 598-4052

**ADDITIONAL SITE SUMMARY COMMENTS:**



Corey Korg (OSPR) & MSTC Seibel USCGR  
Date: 28/JULY/03

CALIFORNIA DEPARTMENT OF FISH & GAME (OSPR) and UNITED STATES COAST GUARD  
Site Name: GOLDEN SHORE MARINE RESERVE  
Site Number: 5-250


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## 2.0 SUMMARY OF RESPONSE METHODS AND HABITATS

Tables 6 through 13 provide overviews of the physical, chemical, and biological response methods for four different oil types as applied to all water environments and shoreline habitats. Detailed information regarding specific habitats is provided in Section 3. Users of this guide should consult the matrices and summaries in Section 3 for descriptions of assumptions and circumstances applicable to the various methods. We encourage you to refer to Section 4 for more information on each response method. Also, the references listed in Appendix A can provide valuable, detailed information on specific topics or applications.

It is important to note that the classifications primarily reflect the likely relative environmental impact resulting from properly implementing a response method within each habitat. However, when there are overriding effectiveness or safety issues associated with a specific oil type or habitat, these methods have been classified as "not applicable" and are denoted with a dash (—) on the matrices. In the case of response to gasoline-type spills, many methods have been classified as "not applicable" because of the fire hazard to the responders. Although responders have used many of these methods at gasoline spills to protect resources or clean up the spill, discussion of the spill-specific circumstances that made their use possible are beyond the scope of this document.

Natural recovery is included in the tables since natural processes can be adequate, on their own, to remediate impact from an oil spill. It also presents no added environmental stress due to human spill response activities. Therefore, natural recovery is often classified as having the least adverse habitat impact in the summary tables.

Since there is little information regarding the environmental impact of *in situ* burning, chemical treatment, and biodegradation enhancement in freshwater habitats, the evaluation and discussion are based on the best available knowledge on how they work and any past use. In most cases this knowledge results from past experience with marine spills. Where there is too little information to evaluate a technique (e.g., chemical shoreline pretreatment), an "I", for insufficient information, is used in the tables.

Spill response techniques described in this guide for inland water habitats include protection, recovery, and cleanup methods. The main objective of protection is keeping oil out of a habitat, or reducing the amount of oil that enters. Recovery consists of removal of floating oil from the water surface. Cleanup consists of removal of stranded oil. Frequently, these methods may be used for several response phases, such as deploying boom for protection or for containing oil washed off a river bank during cleanup.

**Table 5. Key to ESI codes used in Tables 7, 9, 11, and 13.**

<b>ESI No.</b>	<b>Shoreline Type</b>
1A	Exposed rocky cliffs
1B	Exposed solid seawalls
2	Shelving bedrock shores
3	Eroding scarps in unconsolidated sediments
4	Sand beaches
5	Mixed sand and gravel beaches
6A	Gravel beaches
6B	Riprap structures
7	Exposed tidal flats (not present in Great Lakes)
8A	Sheltered rocky shores
8B	Sheltered, solid, manmade structures
9A	Sheltered vegetated low banks/bluffs
9B	Sheltered sand/mud flats
10A	Freshwater marshes (herbaceous vegetation)
10B	Freshwater swamps (woody vegetation)

**Table 10. MEDIUM OILS: Summary of relative environmental impact from response methods for spills in water environments.**

Response Method	WATER ENVIRONMENT			
	Open Water	Large Rivers	Small Lakes/Ponds	Small Rivers/Streams
<b>PHYSICAL RESPONSE METHODS</b>				
Natural Recovery	B	B	C	C
Booming	A	A	A	A
Skimming	A	A	A	A
Barriers/Berms	-	-	-	A
Physical Herding	B	B	B	B
Manual Oil Removal/Cleaning	-	B	C	C
Mechanical Oil Removal	-	B	C	C
Sorbents	B	B	A	A
Vacuum	A	A	A	A
Debris Removal	-	B	B	B
Sediment Reworking	-	-	-	-
Vegetation Removal	B	B	B	B
<i>In Situ</i> Burning	A	B	B	B
Flooding	-	-	-	-
Low-Pressure, Cold-Water Flushing	-	-	-	-
High-Pressure, Cold-Water Flushing	-	-	-	-
Low-Pressure, Hot-Water Flushing	-	-	-	-
High-Pressure, Hot-Water Flushing	-	-	-	-
Steam Cleaning	-	-	-	-
Sand Blasting	-	-	-	-
<b>CHEMICAL RESPONSE METHODS</b>				
Dispersants	B	C	D	D
Emulsion Treating Agents	B	B	I	I
Visco-Elastic Agents	B	B	B	B
Herding Agents	B	D	B	D
Solidifiers	B	B	B	B
Chemical Shoreline Pretreatment	-	-	-	-
Shoreline Cleaning Agents	-	-	-	-
<b>BIOLOGICAL RESPONSE METHODS</b>				
Nutrient Enrichment	I	I	I	I
Natural Microbe Seeding	I	I	I	I

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, using the following definitions:

- 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 at this time.
- = Not applicable for this oil type.

**Table 11. MEDIUM OILS: Summary of relative environmental impact from response methods for spills in shoreline habitats.**

Response Method	SHORELINE HABITAT							
	Bedrock	Man-Made	Sand	Vegetated Shores	Sand and Gravel	Gravel	Mud	Wetlands
<b>PHYSICAL RESPONSE METHODS</b>	1,2,8*	1,8	3,4	9	5	6	7,9	10
Natural Recovery	A	B	B	B	B	B	A	A
Booming	-	-	-	-	-	-	-	-
Skimming	-	-	-	-	-	-	-	-
Barriers/Berms	-	-	-	-	-	-	-	-
Physical Herding	-	-	-	-	-	-	-	-
Manual Oil Removal/Cleaning	B	B	A	B	A	B	C	C
Mechanical Oil Removal	-	-	B	C	B	C	D	D
Sorbents	A	A	A	B	A	A	A	A
Vacuum	B	B	B	B	B	B	B	B
Debris Removal	A	A	A	B	A	A	B	B
Sediment Reworking	-	-	B	D	B	B	D	D
Vegetation Removal	-	-	-	B	-	-	-	C
<i>In Situ</i> Burning	B	B	B	B	B	B	C	B
Flooding	B	B	A	A	A	A	A	A
Low-Pressure, Cold-Water Flushing	A	A	B	A	A	A	C	A
High-Pressure, Cold-Water Flushing	B	A	D	C	C	B	D	D
Low-Pressure, Hot-Water Flushing	B	B	C	D	C	C	C	D
High-Pressure, Hot-Water Flushing	C	B	D	D	D	D	D	D
Steam Cleaning	D	C	-	-	D	D	-	-
Sand Blasting	D	C	-	-	-	-	-	-
<b>CHEMICAL RESPONSE METHODS</b>								
Dispersants	-	-	-	-	-	-	-	-
Emulsion Treating Agents	-	-	-	-	-	-	-	-
Visco-Elastic Agents	-	-	-	-	-	-	-	-
Herding Agents	-	-	-	-	-	-	-	-
Solidifiers	B	B	B	D	B	B	C	D
Chemical Shoreline Pretreatment	I	I	I	I	I	I	I	I
Shoreline Cleaning Agents	B	B	B	I	B	B	D	I
<b>BIOLOGICAL RESPONSE METHODS</b>								
Nutrient Enrichment	C	C	B	B	B	B	I	I
Natural Microbe Seeding	I	I	I	I	I	I	I	I

\*Key to ESI codes in Table 5 on page 12.

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, using the following definitions:

- 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 at this time.
- = Not applicable for this oil type.

**Table 12. HEAVY OILS: Summary of relative environmental impact from response methods for spills in water environments.**

Response Method	WATER ENVIRONMENT			
	Open Water	Large Rivers	Small Lakes/Ponds	Small Rivers/Streams
<b>PHYSICAL RESPONSE METHODS</b>				
Natural Recovery	B	C	C	C
Booming	A	A	A	A
Skimming	A	A	A	A
Barriers/Berms	-	-	-	A
Physical Herding	B	B	B	B
Manual Oil Removal/Cleaning	B	B	B	B
Mechanical Oil Removal	B	B	C	C
Sorbents	B	B	A	A
Vacuum	A	A	A	A
Debris Removal	-	B	B	B
Sediment Reworking	-	-	-	-
Vegetation Removal	B	B	B	B
<i>In Situ</i> Burning	A	B	B	B
Flooding	-	-	-	-
Low-Pressure, Cold-Water Flushing	-	-	-	-
High-Pressure, Cold-Water Flushing	-	-	-	-
Low-Pressure, Hot-Water Flushing	-	-	-	-
High-Pressure, Hot-Water Flushing	-	-	-	-
Steam Cleaning	-	-	-	-
Sand Blasting	-	-	-	-
<b>CHEMICAL RESPONSE METHODS</b>				
Dispersants	-	-	-	-
Emulsion Treating Agents	B	B	I	I
Visco-Elastic Agents	-	-	-	-
Herding Agents	-	-	-	-
Solidifiers	-	-	-	-
Chemical Shoreline Pretreatment	-	-	-	-
Shoreline Cleaning Agents	-	-	-	-
<b>BIOLOGICAL RESPONSE METHODS</b>				
Nutrient Enrichment	I	I	I	I
Natural Microbe Seeding	I	I	I	I

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, using the following definitions:

- 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 at this time.
- = Not applicable for this oil type.

**Table 13. HEAVY OILS: Summary of relative environmental impact from response methods for spills in shoreline habitats.**

Response Method	SHORELINE HABITAT							
	Bedrock	Man-Made	Sand	Vegetated Shores	Sand and Gravel	Gravel	Mud	Wetlands
<b>PHYSICAL RESPONSE METHODS</b>	1,2,8*	1,8	3,4	9	5	6	7,9	10
Natural Recovery	B	B	B	B	B	B	B	B
Booming	-	-	-	-	-	-	-	-
Skimming	-	-	-	-	-	-	-	-
Barriers/Berms	-	-	-	-	-	-	-	-
Physical Herding	-	-	-	-	-	-	-	-
Manual Oil Removal/Cleaning	A	A	A	B	A	A	C	C
Mechanical Oil Removal	-	-	A	C	B	C	D	D
Sorbents	B	B	B	B	B	B	B	A
Vacuum	B	A	B	B	B	B	B	B
Debris Removal	A	A	A	B	A	A	B	B
Sediment Reworking	-	-	B	D	B	B	D	D
Vegetation Removal	-	-	-	B	-	-	-	C
<i>In Situ</i> Burning	B	B	B	B	B	B	C	B
Flooding	C	C	B	B	C	C	A	B
Low-Pressure, Cold-Water Flushing	C	C	B	B	B	B	C	B
High-Pressure, Cold-Water Flushing	B	B	D	D	C	B	D	D
Low-Pressure, Hot-Water Flushing	B	B	B	D	B	B	C	D
High-Pressure, Hot-Water Flushing	C	B	D	D	D	D	D	D
Steam Cleaning	D	C	-	-	D	D	-	-
Sand Blasting	D	C	-	-	-	-	-	-
<b>CHEMICAL RESPONSE METHODS</b>								
Dispersants	-	-	-	-	-	-	-	-
Emulsion Treating Agents	-	-	-	-	-	-	-	-
Visco-Elastic Agents	-	-	-	-	-	-	-	-
Herding Agents	-	-	-	-	-	-	-	-
Solidifiers	-	-	-	-	-	-	-	-
Chemical Shoreline Pretreatment	I	I	I	I	I	I	I	I
Shoreline Cleaning Agents	B	B	B	I	B	B	D	I
<b>BIOLOGICAL RESPONSE METHODS</b>								
Nutrient Enrichment	D	D	C	B	C	C	I	I
Natural Microbe Seeding	I	I	I	I	I	I	I	I

\*Key to ESI codes in Table 5 on page 12.

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, using the following definitions:

- 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 at this time.
- = Not applicable for this oil type.

## 1.6 CLASSIFICATION OF OIL RESPONSE METHODS

The classifications developed for this guide compare the relative environmental impact of specific response methods for a given environment or habitat and oil type. It should be noted that the methods were compared among themselves, and no one method was used as a standard. The relative effectiveness of a response technique's ability to protect a habitat or remove oil is not explicitly considered. Relative effectiveness is only incorporated into the classification where less effective methods could result in longer application and thus greater ecological impacts, or leave higher oil residues in the habitat.

The classification categories are defined as follows:

- 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 at this time

Those techniques that are clearly ineffective (e.g., herding agents on heavy oils) or inapplicable for an oil type or habitat (e.g., sand blasting of mud habitats) are indicated with a dash (—).

## 1.7 ASSUMPTIONS USED IN THE DISCUSSION OF METHODS

This guide was prepared with several assumptions:

### *Proper Application of Methods*

It is assumed that methods will be properly applied by trained personnel. For example, if booms are recommended, these guidelines assume that the booms will be effectively located and correctly deployed. Improper application of almost any technique can render it ineffective or cause additional damage. For general guidance on application, see the publications listed in Appendix A. In cases where instruction for using a protection or cleanup method may be habitat-specific, see Section 4.

**Table 4. The four types of oil used in this guide and their characteristics.**

*Gasoline Products*

- Very volatile and highly flammable (flash point near 100°F/40°C)
- High evaporation rates
- Narrow cut fraction with no residues
- Low viscosity; spread rapidly to a thin sheen
- Specific gravity less than 0.80
- High acute toxicity to biota
- Do not emulsify
- Will penetrate substrate; nonadhesive

*Diesel-like Products and Light Crude Oils*

*(No. 2 fuel oil, jet fuels, kerosene, West Texas crude, Alberta crude)*

- Moderately volatile (flash point varies 100-150°F/40-65°C)
- Refined products can evaporate to no residue
- Crude oils do have a residue after evaporation is completed
- Low to moderate viscosity; spread rapidly into thin slicks
- Specific gravity of 0.80-0.85; API gravity of 35-45
- Moderate to high acute toxicity to biota; product-specific toxicity related to type and concentration of aromatic compounds
- Can form stable emulsions
- Tend to penetrate substrate; fresh spills are not adhesive
- Stranded light crudes tend to smother organisms

*Medium-grade Crude Oils and Intermediate Products*

*(North Slope crude, South Louisiana crude, No. 4 fuel oil, IFO 180, lube oils)*

- Moderately volatile (flash point higher than 125°F/50°C)
- Up to one-third will evaporate in the first 24 hours
- Moderate to high viscosity
- Specific gravity of 0.85-0.95; API gravity of 17.5-35
- Variable acute toxicity, depending on amount of light fraction
- Can form stable emulsions
- Variable substrate penetration and adhesion
- Stranded oil tends to smother organisms

*Heavy Crude Oils and Residual Products*

*(Venezuela crude, San Joaquin Valley crude, Bunker C, No. 6 fuel oil)*

- Slightly volatile (flash point greater than 150°F/65°C)
- Very little product loss by evaporation
- Very viscous to semisolid; may become less viscous when warmed
- Specific gravity of 0.95-1.00; API gravity of 10-17.5
- Low acute toxicity relative to other oil types
- Can form stable emulsions
- Little penetration of substrate likely, but can be highly adhesive
- Stranded oil tends to smother organisms

The differences in oil behavior, persistence, and need for cleanup between sheltered and exposed sites are addressed in the discussion of these habitats.

Sensitivity issues of special concern to inland areas include strong seasonal variations in biological productivity and exposure to physical processes, urban areas with extensive manmade structures along the shoreline, and populated areas that are very near shorelines and bodies of water when human-health concerns can dominate cleanup issues. Important seasonal considerations include presence of ice in winter; variations in water level, which greatly influence habitats likely to be exposed to oil, flooding of stranded oil, and natural removal rates; sensitivity of vegetation to direct oiling impact; and use of habitats by migratory birds.

### 1.5 IMPACT OF RESPONSE METHODS IN THE ABSENCE OF OIL

The following criteria were used to evaluate the *relative impact* of each technique in the absence of oil, primarily due to physical disturbances of mechanical methods and toxic impacts from chemical and biological methods. The results are shown in Table 3. Impacts from use of individual products and equipment types vary. The information provided to evaluate impacts in the absence of oil addresses generic characteristics of the response techniques and does not consider those variations. Additional information on environmental impacts is provided in the discussions of each technique in Section 4.

- *Low* Physical damage to the substrate and vegetation is minimal. Toxic impact is likely to be of limited areal extent and short duration. Restabilization or repopulation of the habitat is likely within six months.
- *Moderate* Physical damage to the substrate and vegetation may occur, with increased erosion potential in sedimentary habitats. Toxic impact is such that restabilization or repopulation of the habitat may take six to twelve months.
- *High* Physical damage to the substrate and vegetation is expected. Erosion potential may be high for the technique. The ecosystem may be adversely affected. Restabilization or repopulation of the habitat may take more than twelve months.

Those techniques that are clearly ineffective or inapplicable for a habitat are indicated with a dash (—). For cases where there is insufficient information to evaluate impact in the absence of oil, an "I" is used.

Table 3. Relative impact of response methods in the absence of oil.

Response Method	WATER ENVIRONMENT					SHORELINE HABITAT						
	Open Water	Small Lakes/Ponds	Large Rivers	Small Rivers/Streams	Bedrock	Man-Made Sand	Vegetated Shores	Sand and Gravel	Gravel	Mud	Wetlands	
<b>PHYSICAL RESPONSE METHODS</b>												
Natural Recovery	-	-	-	-	-	-	-	-	-	-	-	-
Booming	L	L	L	L	L	-	-	-	-	-	-	-
Skimming	L	L	L	L	L	-	-	-	-	-	-	-
Barriers/Berms	-	-	-	-	-	-	-	-	-	-	-	-
Physical Herding	L	L	L	L	L	-	-	-	-	-	-	-
Manual Oil Removal/Cleaning	L	H	L	L	M	L	L	H	M	M	H	H
Mechanical Removal	L	H	H	H	H	-	M	M	H	M	M	H
Sorbents	L	L	L	L	L	L	L	L	L	L	M	M
Vacuum	L	L	L	L	L	L	L	L	M	L	L	M
Debris Removal	-	-	-	-	-	L	L	L	L	L	L	M
Sediment Reworking	-	-	-	-	-	-	-	-	M	H	M	H
Vegetation Removal	L	H	M	M	H	-	-	-	-	-	-	-
In Situ Burning	L	M	L	M	M	L	L	M	M	M	M	H
Flooding	-	-	-	-	-	L	L	L	L	L	L	L
Low-Pressure, Cold-Water Flushing	-	-	-	-	-	L	L	L	M	L	L	L
High-Pressure, Cold-Water Flushing	-	-	-	-	-	L	L	L	H	H	H	H
Low-Pressure, Hot-Water Flushing	-	-	-	-	-	M	L	H	H	H	M	H
High-Pressure, Hot-Water Flushing	-	-	-	-	-	M	L	H	H	H	H	H
Steam Cleaning	-	-	-	-	-	M	L	H	H	H	H	H
Sand Blasting	-	-	-	-	-	H	M	-	-	-	-	-
<b>CHEMICAL RESPONSE METHODS</b>												
Dispersants	L	H	L	L	H	-	-	-	-	-	-	-
Demulsifiers	L	L	L	L	M	-	-	-	-	-	-	-
Visco-Elastic Agents	L	M	L	L	L	-	-	-	-	-	-	-
Herding Agents	L	M	L	L	H	-	-	-	-	-	-	-
Solidifiers	L	L	L	L	L	-	-	-	-	-	-	-
Chemical Shoreline Pretreatment	-	-	-	-	-	L	L	M	M	L	M	M
Shoreline Cleaners	-	-	-	-	-	M	L	M	L	M	M	M
<b>BIOLOGICAL RESPONSE METHODS</b>												
Nutrient Enrichment	L	M	L	L	L	L	L	L	L	L	L	L
Natural Microbe Seeding	L	L	L	L	L	L	L	L	L	L	L	L

L = Low; M = Moderate; H = High; - = Incomplete Information; — = Not applicable for this oil type

# **WILDLIFE RESPONSE PLAN FOR CALIFORNIA**

**California Department of Fish and Game  
Office of Spill Prevention and Response**

**June 30, 2005**





**WILDLIFE RESPONSE PLAN**

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**Acronyms Used in the Oiled Wildlife Response Plan**

ACP	Area Contingency Plan
ART	Applied Response Technology
ATV	All Terrain Vehicle
CWHR	California Wildlife Habitat Relationship System
DFG	Department of Fish and Game
DPR	Department of Parks and Recreation
DWR	Department of Water Resources
EPA	U. S. Environmental Protection Agency
ESI	Environmental Sensitivity Index
FOSC	Federal On-scene Coordinator
GIS	Geographic Information System
GPS	Global Positioning System
IAP	Incident Action Plan
ICS	Incident Command System
ISB	In-situ Burning
MMSN	Marine Mammal Stranding Network
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
OPA-90	Oil Pollution Act of 1990
OSPR	Office of Spill Prevention and Response
OSPRA	Lampert-Keene-Seastrand Oil Spill Prevention and Response Act
OWCN	Oiled Wildlife Care Network
RP	Responsible Party
SCAT	Shoreline Cleanup Assessment Team
SLC	State Lands Commission
SOSC	State On-scene Coordinator
SWRCB	California State Water Resources Control Board
UC	Unified Command
USCG	U. S. Coast Guard
USFWS	U. S. Fish and Wildlife Service

## **3600 - WILDLIFE RESPONSE PLAN FOR CALIFORNIA**

### **3600.1 PREFACE**

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 Federal Spill Pollution Act of 1990 (OPA 90) requires that a Fish and Wildlife and Sensitive Environments Plan 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 (OSPRA) 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 Response Plan for California (Wildlife Plan) has been developed by a group of federal and state agencies and other interested parties. The Wildlife Plan is part of the Regional Response Plan/Area Contingency Plan for California, a joint document of U.S. Coast Guard (USCG) and California Department of Fish and Game, Office of Spill Prevention and Response (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 for oil spill response. The Wildlife Operations Branch structure needed in California and detailed in this plan is expanded beyond that described in the USCG Incident Management Handbook at the Group level. As is always true, 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.

The Wildlife Response Plan for California was first drafted and adopted in 1999 as the state-wide plan for wildlife response. Prior to this, each Captain of the Port Area Contingency Plan

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had its own wildlife response element and each bore great resemblance. The advent of the Oiled Wildlife Care Network and the experience of several intervening spills revealed that greater clarity and uniformity were needed to fully address the statutory requirements. The 1999 Wildlife Plan provided state-wide consistency and better explanation as to the responsibilities and capabilities of the Wildlife Operations Branch within the Incident Command System.

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 California Department of Fish and Game Office of Spill Prevention and Response 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 Game, 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 OSPRA 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.

## 3600.2 INTRODUCTION AND BACKGROUND

When oil spills occur in California the Incident Command System (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 this Wildlife Response Plan, readers should realize positions and duties may be combined (or not needed).

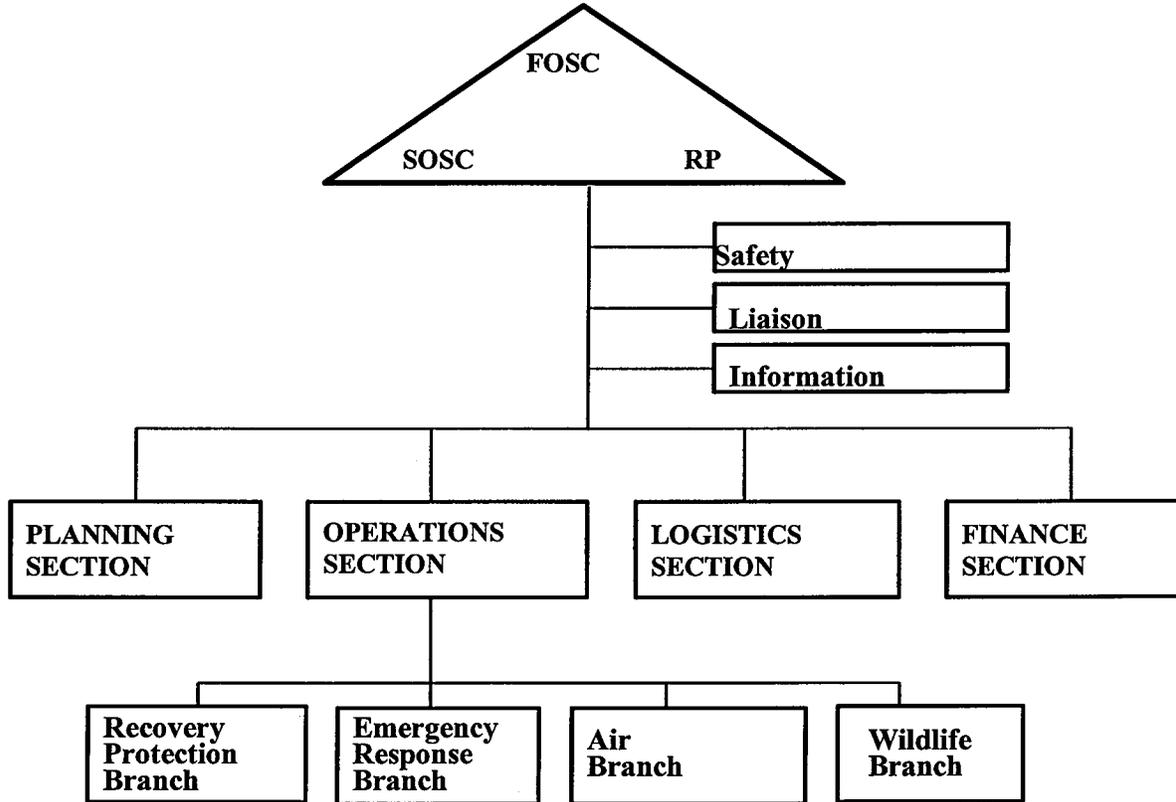
The ICS organizational structure typically includes the Unified Command and the Operations, Planning, Logistics and Finance Sections. In California, response actions concerning the protection, identification, rescue, processing and rehabilitation of oiled or threatened wildlife are performed by the Wildlife Branch (commonly referred to as Wildlife Operations), a branch in the Operations Section within the Unified Command/Incident Command System (Figure 1).

This Wildlife Response Plan for California describes the responsibilities and capabilities of the Wildlife Operations Branch within a Unified Command during an oil spill. The Plan describes procedures to be used along with personnel and equipment needed to meet wildlife protection responsibilities of Federal and State governments during a spill. The Wildlife Response Plan is a section within the Regional Response Plan and local Area Contingency Plans, the primary guidance documents regarding natural resource protection during a spill in California. This Plan can also be used as a stand-alone document.

Primary responsibility for oiled wildlife protection, rescue and rehabilitation will most likely be handled by Department of Fish and Game, Office of Spill Prevention and Response (OSPR) because it has specialized expertise on California wildlife and has legal mandates as the lead state trustee agency for fish, wildlife and their habitats (Fish and Game Code Sections 1802 and 711.7). Also, under OSPRA, OSPR has the mandate and the capacity to mobilize its wildlife response resources immediately, if necessary, to provide the best achievable protection for the state's wildlife in the event of a marine oil spill, in accordance with the State Contingency Plan and the Area Contingency Plan (ACP) (Government Code §§ 8574.7, 8670.3(c) (1), 8670.5, and 8670.7(b)). Barring any unusual circumstances, an OSPR employee usually assumes the role of Wildlife Branch Director. Therefore, when a spill has occurred, it is imperative to notify OSPR in a timely manner, because the best time to prevent or minimize adverse effects upon wildlife is during the earliest stages of the spill response.

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.

Figure 1. Wildlife Branch position in the Unified Command/ICS Organization.



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Even though Wildlife Operations is self-directed and self-contained in many ways, coordination between the Wildlife Branch and other Sections within the ICS is critical. The Wildlife Branch provides the Planning Section with known wildlife concerns and wildlife reconnaissance data. The Planning and Operations Sections use this information to aid in strategic assessment and for planning response strategies. The Planning Section should use this information to evaluate different response countermeasures and strategies, including "no action", in order to reduce or prevent adverse effects to wildlife and wildlife habitat from response actions. Through the Situation and Environmental Units in the Planning Section, the Wildlife Branch Director also must provide the Unified Command with updated wildlife statistics during the response. This information is also frequently relayed to the Public Information Officer to be used in press releases. The Wildlife Branch Director needs information from the other Sections. For example, the Resources at Risk Specialist in Planning can provide information about sensitive species and habitats, maps of sensitive areas, and sensitive cultural resource location information for use when planning Wildlife Branch Operations.

Under the direction of the Wildlife Branch Director, the principle objectives of Wildlife Operations during spill response and cleanup are:

- 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.

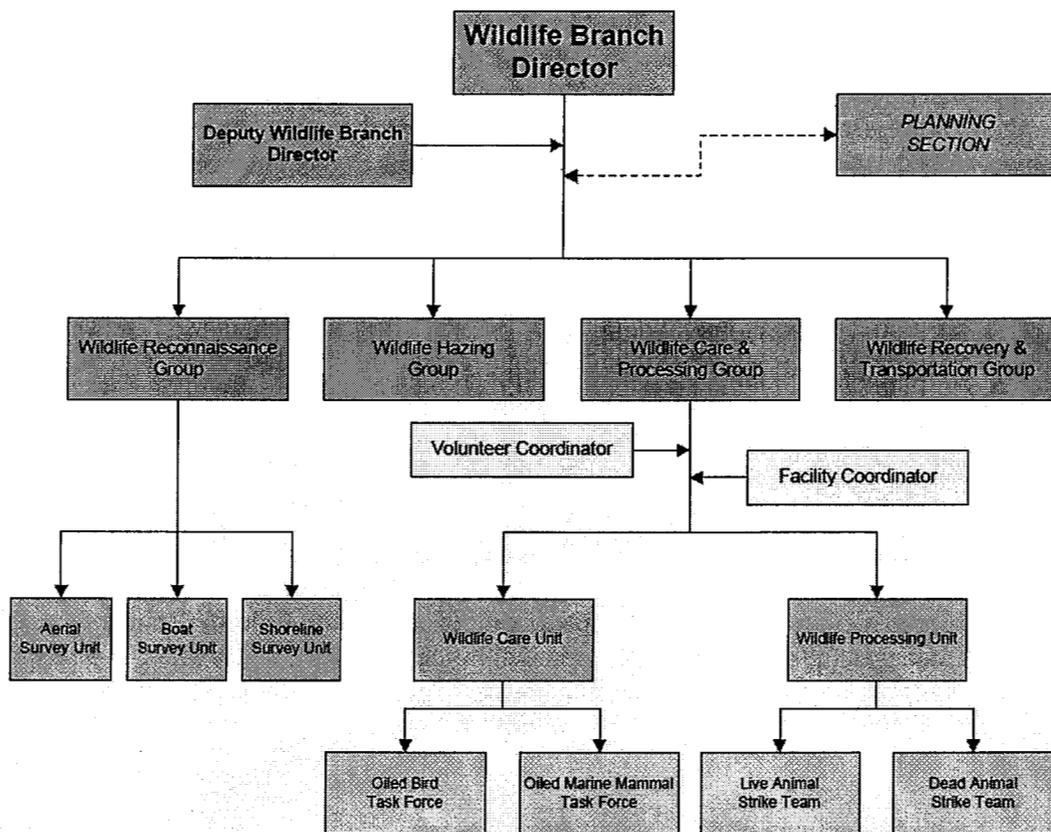
To ensure these objectives are achieved with maximum efficiency, the Wildlife Branch Director coordinates and manages the activities of all personnel in the Wildlife Branch who fall under the authority of the Unified Command during spill response. These include federal, state, and local agencies along 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 (aerial, ground, and on-water reconnaissance of wildlife in the spill area),
- Wildlife Hazing,
- Wildlife Recovery and Transportation (search and collection), and
- Wildlife Care and Processing (rehabilitation and logging in).

Figure 2 shows the relationship of these Groups within the Wildlife Branch, and the Units and Teams that operate under each Group. The roles, responsibilities, and duties of these Groups are described in detail in Section 3600.6 below. It shows the Wildlife Branch structure in California is expanded beyond the two groups -- Recovery and Wildlife Rehabilitation Center Manager -- described in the U.S. Coast Guard Incident Management Handbook.

**Figure 2: Wildlife Branch Organization**



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The Wildlife Response Plan describes:

- The statutory, policy and procedural bases for Wildlife Operations;
- The activation criteria and factors to consider when developing response actions; and
- The organizational infrastructure for wildlife response operations.

The Plan's Appendices include:

- A complete bibliography of the documents cited in the text;
- Detailed protocols;
- The Sea Otter Oil Spill Contingency Plan;
- Oiled Wildlife Care Network and volunteer information;
- Various forms to be used in Wildlife Operations; and
- Examples of special procedures.

**Special Note:** The Appendices are not included in the hardcopy version of the Area Contingency Plan. The Appendices can be found in their entirety on the OSPR web site at [www.dfg.ca.gov/ospr/index.html](http://www.dfg.ca.gov/ospr/index.html).

The Wildlife Response Plan for California was developed jointly by a working group of government agencies and interested parties. The Working Group included personnel from: OSPR, U.S. Coast Guard, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, California Department of Parks and Recreation, National Park Service, the California Coastal Commission, Oiled Wildlife Care Network, and industry. The Plan has been developed to meet the National Area Contingency Plan's Fish and Wildlife and Sensitive Environments Plan requirements set forth in 40 CFR Part 300, Sections 300.210(c)(4), and to be used throughout California.

This plan has been designed to cover oil spills in marine waters. However, 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.

### **3600.2.1 Federal and State Law Mandates**

As part of the National Contingency Plan for Oil Spills, the Federal Oil Pollution Act of 1990 (OPA-90) requires that a Fish and Wildlife and Sensitive Environment Plan be developed, in consultation with the U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration (NOAA), and other interested parties, including state fish and wildlife agencies (33 U.S.C. § 1321(d)(2)(M)). The plan must include "immediate and effective protection, rescue, rehabilitation of, and the minimization of risk of damage to fish and wildlife resources and habitat that are harmed or that may be jeopardized by a discharge." 40 CFR Part 300, Section 300.210(c)(4) sets forth the requirements for this plan as an annex to Area Contingency Plans. This Wildlife Response Plan has been written in conjunction with other sections of the ACP to address the Federal requirements.

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In most respects, the fish and wildlife provisions of California's Lempert-Keene-Seastrand Oil Spill Prevention and Response Act (OSPRA) (Government Code §§ 8574.7, 8670.37.5) parallel or exceed the OPA 90 provisions for fish and wildlife protection during spill responses. Under OSPRA, OSPR's Administrator has several duties regarding living natural resources. The OSPR Administrator must:

- Develop contingency plans for the protection of fish and wildlife,
- Assess injuries to natural resources,
- Establish rescue and rehabilitation stations for oiled marine wildlife, and
- Require restoration plans for wildlife resources including habitat following spills.

OSPRA also provides for the establishment and funding of the Oiled Wildlife Care Network (OWCN) (Government Code § 8670.37.5) as an essential component of California's wildlife response capability. In addition, the OSPR Administrator has a statutory mandate to "ensure that, as part of the response to any significant spill, biologists or other personnel are present and provided any support and funding necessary and appropriate for the assessment of damages to natural resources and for the collection of data and other evidence that may help in determining and recovering damages." (Government Code Section 8670.7 (g)(2)).

### **3600.2.2 Natural Resource Trustees for Wildlife**

**Pursuant to Fish and Game Code Sections 1802 and 711.7, Department of Fish and Game is the lead state trustee agency for fish, wildlife, and their habitats. Other state trustee agencies that are most likely to participate in Wildlife Operations decisions and response activities are:**

- Department of Parks and Recreation
- State Lands Commission (tide lands)
- Department of Water Resources
- State Water Resources Control Board
- Regents of the University of California (on university lands)

Pursuant to OPA 90 and CERCLA, the Governor delegated state trustee authority to the Director of Cal-EPA and the Secretary of the Resources Agency for resources within their purview.

Federal trustee agencies that are most likely to participate in Wildlife Operations decisions and response activities are as follows:

- Department of the Interior
  - National Park Service
  - U.S. Fish and Wildlife Service
- Department of Commerce
  - National Oceanic and Atmospheric Administration
    - National Marine Sanctuaries
    - National Marine Fisheries Service
- Department of Defense

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The U.S. Coast Guard and the U.S. Environmental Protection Agency are not trustee agencies for natural resources, but are the lead federal agencies during a spill response and also participate fully in Wildlife Operations decisions.

In any spill, the responsible party or discharger is responsible to federal and state resource trustees, to federally recognized Indian tribes, and to foreign trustees, all of whom are empowered to enforce remediation and seek compensation for injuries to natural resources which have been caused by a discharge (40 CFR Part 300, Subpart G, and California Govt. Code Section 8670.1 et seq. and Fish and Game Code Sections 2014 and 12016).

Trustee agencies influence the response methods used so that wildlife operations comply with each trustee's governing laws and their obligations to preserve and protect wildlife and habitat. During a spill response, the wildlife trustee agencies will advise the Wildlife Branch Director about local wildlife resources, especially sensitive species or habitats, logistical consideration, and other issues that arise.

### **3600.2.3 Interagency Agreements Regarding Wildlife Response Activities**

In an effort to provide a more efficient and coordinated response, principal federal and state fish and wildlife trustees have signed cooperative agreements regarding a variety of issues that arise during spills of oil and toxic substances. These issues include agency response roles, along with capture, treatment, rehabilitation, and release of injured wildlife. All of the agreements can be found in Appendix V. Following is a synopsis of the agreements.

The "Cooperative Agreement Between the California Department of Fish and Game and the U.S. Fish and Wildlife Service Endangered and Threatened Fish, Wildlife and Plants," pursuant to Section 6(c) of the Endangered Species Act of 1973 and the California Endangered Species Act of 1984, authorizes DFG to take federally endangered and threatened species during emergencies, without a permit, if such action is necessary. Those necessary actions are further defined in the Agreement in Appendix Va. The agreement also gives DFG and its agents, such as Oiled Wildlife Care Network (OWCN), permission to handle protected species (e.g. sea otters) during emergency spill response.

The "Memorandum of Understanding Designating California Department of Fish and Game as Primary Contact for Fish and Wildlife Issues in the Event of Oil or Toxic Substances Spill within the State of California" (Appendix Va) acknowledges that USFWS and DFG share trustee responsibilities for endangered species, migratory birds and migratory fishes. This document directs DFG to designate a primary contact person for support of the Unified Command regarding fish and wildlife issues in California during oil spill response. The stated duties of this person are to:

- Advise on and coordinate activities related to fish and wildlife problems and issues related to the spill;
- Advise and direct efforts to minimize injury to wildlife; coordinate efforts to recover and care for oiled wildlife;
- Maintain communication with USFWS; and
- Adhere to conditions of federal and state wildlife permits.

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DFG entered into a similar agreement with National Marine Fisheries Service (NMFS) to govern the rescue and rehabilitation of pinnipeds (seals and sea lions), cetaceans (dolphins and whales), and sea turtles (Appendix Vb, "Memorandum of Agreement Between the California Department of Fish and Game Office of Oil Spill Prevention and Response and the National Marine Fisheries Service Southwest Region Regarding the California Marine Mammal Stranding Network and the Oiled Wildlife Care Network"). The Appendix gives specific instructions for coordinating with NMFS about dead and live mammal recovery or capture, mammal rescue attempts, transportation, rehabilitation, and the Marine Mammal and Turtle Stranding Report.

The primary purposes of the agreement with NMFS are (a) to ensure that pinnipeds, cetaceans, and sea turtles affected by oil spills in marine waters of the State receive the best achievable treatment and (b) to ensure the collection of sound biological and chemical data on such affected resources. The Agreement ensures consistency with NMFS guidelines and protocols on the rescue and release of live-stranded pinnipeds, cetaceans, and sea turtles and incorporates them into the OWCN protocols for response, rescue, rehabilitation and medical treatment of these animals, as outlined in the NMFS/OSPR Contingency Plan (Attachment A of the Memorandum). Other conditions include:

- The required use of the California Marine Mammal Stranding Network,
- The required use of OWCN personnel and facilities in the rescue and rehabilitation of pinnipeds, cetaceans, and sea turtles,
- Cooperative information and data exchange programs, and
- The development of training materials.

These duties correlate directly with the responsibilities of the Wildlife Branch Director.

The Bureau of Land Management, Department of Interior, the Resources Agency of California, California Department of Fish and Game and California Department of Parks and Recreation developed a Memorandum of Understanding that pertains to collaborative management of the California Coastal National Monument (islands, rocks, exposed reefs and pinnacles above mean high tide within 12 nautical miles from shore). (Appendix Vc).

The Oiled Wildlife Care Network, OSPR, and the Regents of the University of California on behalf of the Wildlife Health Center School of Veterinary Medicine University of California, Davis entered into a Memorandum of Understanding in which U.C. Davis agrees to provide administrative planning and management support for the OWCN. This includes managing all the participating OWCN rehabilitation organizations for wildlife recovery, rehabilitation, and processing. (Appendix Vd).

Because oil spills can cross state and national borders, agreements have been entered into with all the western states, British Columbia and Mexico. The Pacific States of Alaska, California, Hawaii, Oregon, Washington, and the Province of British Columbia entered into a Memorandum of Cooperation in June 2001. This Memorandum was developed to ensure effective coordination between the states and British Columbia in the event of a spill. (Appendix Ve).

International cooperation during spill responses is enabled by the MEXUSPAC, an accord signed by the United States and Mexico (Appendix Vf). This Appendix also includes information needed for spill responders to cross the international border, and information on transporting oiled wildlife back into the United States.

### **3600.3 PERSONNEL, EQUIPMENT, AND OTHER RESOURCES**

#### **3600.3.1 Personnel Safety**

Worker safety must be considered before any wildlife reconnaissance, protection or retrieval effort is conducted. Safety hazards that may confront Wildlife Operations personnel include toxic vapors, fire hazard, hazardous weather and seas, unsafe footing, and injuries inflicted by wild animals. Therefore, all Wildlife Operations activities must conform to the Site Safety Plan for the response, and all personnel involved in Wildlife Operations must have appropriate job-specific safety training (e.g. HAZWOPER training) for the tasks to be performed. They must be adequately protected with the appropriate personal protection equipment (PPE) (such as skid-resistant boots, safety glasses, nitrile gloves, tyvek overalls, etc.). Those people involved with animal handling should be trained in techniques that ensure worker safety and present the least amount of stress to wildlife (Chen, Valet and Camlin, 1995). OWCN manuals contain detailed protocols followed by OWCN personnel, describing the capture, transport, and rehabilitation of oiled wildlife (OWCN 1998a and 1998b).

#### **3600.3.2 Office of Spill Prevention and Response (OSPR)**

Because DFG is the lead state trustee agency for wildlife resources in California, barring any unusual circumstances, OSPR will take the lead as Wildlife Branch Director in implementing Wildlife Operations because DFG personnel have required training and expertise. Further, as discussed previously, OSPR is required by state statute to protect California wildlife in the event of a marine oil spill. As principal developers and custodians of information about environmentally sensitive sites listed in the ACP, OSPR biologists are uniquely knowledgeable about marine and coastal wildlife and are experienced with wildlife issues that arise during spill responses. Thus, in a spill, OSPR will bear significant responsibility for informed and timely decisions about the allocation and deployment of specialized wildlife protection, rescue, and rehabilitation resources. This responsibility includes coordination with the other trustees to make decisions about staffing, equipment, beach access logistics, and wildlife-rehabilitation contractors. For these reasons, the Wildlife Branch Director has been an OSPR employee in all large California spill responses since OSPR was established.

#### **3600.3.3 Oiled Wildlife Care Network (OWCN)**

In addition to OSPR, OWCN, a statewide cooperative system of specialized wildlife health centers and organizations set up by statute (see Government Code § 8670.37.5), is integral to Wildlife Operations. OWCN maintains a corps of veterinarians, paid staff, and professionally-trained volunteers. OWCN has enlisted 28 academic, private non-profit, and rehabilitation organizations to actively participate during oil spill responses, and consists of 12 permanent wildlife care facilities along the California coast (see Figure 3, Table 1, and Appendix IIc) for

use during a spill (Mazet et al., 1999). During a spill if a particular wildlife care facility becomes overwhelmed additional facilities can be utilized. For more information on the OWCN, see Appendix IIa and the OWCN web page at [www.owcn.org](http://www.owcn.org).

When California wildlife is affected by an oil spill, OWCN responders integrate with the Wildlife Branch, within the Incident Command Structure. OWCN responders retrieve oiled animals, evaluate animals' need for treatment, and remove the toxic products from the animals. They then rehabilitate impacted animals, locate suitable release sites, release animals, and monitor post-release survival. OWCN also oversees documentation and collection of evidence samples from all collected wildlife (live and dead) to assist in response and subsequent assessment phases.

### **3600.3.4 Volunteers**

Wildlife Operations personnel may include "pre-trained" volunteers, "convergent" volunteers, or both, whose training may range from none to highly skilled. Most volunteers are provided by OWCN and managed by the OWCN Coordinator. Volunteer management efforts for tasks unrelated to the OWCN volunteers (e.g. Shoreline Cleanup Assessment surveys) are coordinated by the OSPR Statewide Volunteer Coordinator. During a spill, the Wildlife Branch Director, in coordination with the Wildlife Care and Processing Group Supervisors, will determine the need for volunteer assistance and direct activities of the OWCN and OSPR Volunteer Coordinators.

The Coordinators will establish volunteer outreach mechanisms (i.e. toll free numbers, public information announcements, press releases) and manage the influx of convergent and pre-trained volunteers. Wildlife Processing and Care volunteers must have HAZCOM training (which identifies hazards in the workplace) as approved by the OSPR Industrial Hygienist. Volunteers conducting Recovery and Transportation must have current 24 hour HAZWOPER training, unless otherwise approved by the OSPR Industrial Hygienist.

Volunteers who wish to assist with oiled wildlife will be jointly screened by the OWCN and OSPR Volunteer Coordinators. Table 1 and Appendix IIc lists organizations that participate in the Oiled Wildlife Care Network and can provide "pre-trained" volunteers as needed through the Wildlife Operations Branch. Appendix IIb, Oiled Wildlife Care Network and Volunteers, contains all of the details of volunteer management specific to oiled wildlife care.

If there is a need for a Volunteer Operations Center operated by an organization participating in OWCN, the State Volunteer Coordinator and the OWCN Volunteer Coordinator will work directly with the participating organization's volunteer coordinator. The participant organization's volunteer coordinator must be trained by both the State Volunteer Coordinator and the OWCN Volunteer Coordinators on the protocols for volunteer activation during an oil spill response. If the participating organization does not have a designated volunteer coordinator then the Wildlife Rehabilitation Staff will take on these responsibilities.

Figure 3: Map of Oiled Wildlife Care Facilities and Participating Organizations



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<b>Organization</b>	<b>Primary Response Facility</b>	<b>Activation</b>	<b>Maximum Oiled Animal Caseload</b>
North Coast Marine Mammal Center, Crescent City	*	Nov. 1995	15 marine mammals
Humboldt State University, Arcata	*	Jan. 1997	400 birds
Santa Rosa Bird Rescue Center, Santa Rosa		Aug. 1995	25 birds
Point Reyes Bird Observatory, Pt. Reyes		August 2003	No animal care facilities
Wildcare, San Rafael		Aug. 1995	25 birds
The Marine Mammal Center, Sausalito	*	Dec. 1995	40 marine mammals 10 sea otters
International Bird Rescue Research Center, Cordelia	*	May 2000	1000 birds
Wildlife Health Center, UC Davis, School of Veterinary Medicine, Davis		June 1995	Intensive care unit: birds and endangered species as needed
Lindsay Wildlife Museum, Walnut Creek		Aug. 1995	50 birds
Peninsula Humane Society, San Mateo		Aug. 1995	50 birds
UC Santa Cruz, Santa Cruz	*	Aug. 2000	400 birds
Marine Wildlife Veterinary Care Research Center, Santa Cruz	*	July 1997	125 sea otters, 50 birds, 10 other marine mammals
Native Animal Rescue, Santa Cruz		Aug. 1995	25 birds
Monterey Bay Aquarium, Monterey		Apr. 1997	10 sea otters
Monterey SPCA, Monterey		Mar. 1996	25 birds
Pacific Wildlife Care, Morro Bay	*	Apr. 2000	200 birds
UC Santa Barbara, Santa Barbara	*	Pending	100 birds
Santa Barbara Wildlife Care Network, Santa Barbara		Aug. 1995	50 birds
Santa Barbara Marine Mammal Center		Pending	Pending
The California Wildlife Center, Malibu		Pending	200 birds
International Bird Rescue Research Center, San Pedro	*	Sept. 1999	1000 birds
The Marine Mammal Center at Fort MacArthur, San Pedro	*	Nov. 1995	20 marine mammals
Aquarium of the Pacific, Long Beach		Nov. 2001	No animal care facilities
Wetlands and Wildlife Care Center of Orange Co., Huntington Beach	*	Mar. 1997	400 birds
Friends of the Sea Lion Marine Mammal Center, Laguna Beach		Aug. 1995	5 marine mammals
Sea World of California, San Diego	*	Dec. 1996	20 marine mammals including sea otters; 400 birds; sea turtles as needed
Project Wildlife, San Diego		Aug. 1995	25 birds
Wildlife Assist, San Diego		July 2003	No animal care facilities

**3600.3.5 Wildlife Contractors/Experts.**

There are a number of experts and contractors that can assist with Wildlife Operations e.g. for wildlife reconnaissance. OSPR maintains this list of experts in a separate document titled "List of Experts and Contractors for Wildlife Operations".

**3600.3.6 Responsible Party**

A responsible party (contingency plan holder) can name OWCN in its contingency plan(s) as its identified wildlife response organization. The responsible party may include other wildlife care staff in Wildlife Operations Branch positions through the Unified Command. All personnel and equipment supplied by the responsible party to Wildlife Operations will be managed by the Wildlife Branch Director under the Unified Command.

**3600.3.7 Specialized Wildlife Operations Equipment**

Some equipment used within the Operations Section (e.g., booms, skimmers, and shallow water boats) will serve the mission of Wildlife Operations and can be drawn from industry and response-organization inventories. Some equipment, however, is specialized for Wildlife Operations and dedicated to that purpose. See Appendix Id for a list such equipment.

OSPR has equipment such as the following, available for Wildlife Operations:

- Air boats;
- All-terrain vehicles (ATVs);
- Capture boats;
- DFG fixed wing airplane;
- Hazing equipment and capture equipment (various);
- Mobile vet lab;
- Wildlife care trailer;
- Wildlife supplies trailer (contain hazing, capture, and transportation equipment);
- Wildlife Transport Trailer
- Communications Trailer

Additional equipment can be obtained from DFG, other government agencies, OWCN, and response contractors. For example, the equipment that OWCN can provide includes four-wheel drive vehicles, ATVs, a rigid-hull inflatable boat, hand-held dip nets, herding boards, spotlights, animal carriers, cages, crates, protective clothing, all-weather gear, transport vehicles, and medical supplies.

**3600.3.8 Tiered Level Response Resources**

Activation of personnel and equipment is based on a number of variables, but primarily on anticipated adverse effects upon wildlife. The development of Wildlife Operations' initial response strategies and their re-evaluation throughout the spill response is an iterative, dynamic

process that calls for good information, knowledge, experience and judgment. In California, Wildlife Operations experiences have been extremely varied, ranging from a catastrophic release during migratory shorebird and waterfowl season; to “mystery” spills during which very little oil reached the shore, yet significant numbers of seabirds were affected; to a more “typical” spill of a few barrels of petroleum resulting in a few dozen wildlife casualties.

OSPR has developed a Wildlife Operations Resource table (Table 2) to be used as a guide to meet a variety of spills and Wildlife Operations needs. Three levels of Wildlife Operations personnel and equipment response are shown in Table 2. Most often Wildlife Operations will mobilize personnel and equipment at the lowest level, i.e., Level I. Response for each spill should be tailored on a case-by-case basis. Some extraordinary circumstances (e.g., a tanker grounding and rupture, with a known discharge) would justify Level II or III (highest) mobilization at the outset. Wildlife Operations will notify the Unified Command immediately of changes in the deployment of personnel and equipment as they occur. As the Unified Command gets established Wildlife Operations will be integrated.

**Table 2: Wildlife Operations Resource Table - Recommended Tiered Level Response of Personnel and Equipment for Wildlife Operations**

This table should be used as a general guide for Wildlife Operations resource needs during the initial response prior to development of an Incident Action Plan. This table has been developed based on experience from past spills but is based primarily on expected wildlife casualties as outlined for each tier level. This table represents dedicated equipment to be provided by OSPR and OWCN and staffing must be provided by OSPR, OWCN, and other natural resource trustee agencies. OSPR and OWCN will work in conjunction with other trustees and land managers to decide levels of response, resources needed, and resources available. Wildlife Operations resources should be tailored specifically to meet the needs of each incident. **NOTE: For incidents where marine mammals are affected, those categories indicated by a \* would double in number to account for activation of additional personnel and equipment so separate efforts can be devoted to birds and mammals.**

<b>LEVEL I</b>	
Incidents where Wildlife Operations projections are for dozens of marine birds or mammals impacted	
<u>Staff</u>	<u>Equipment</u>
Wildlife Branch Director	Regional primary care facility (OWCN)(1)*
Wildlife Recovery & Transport Group Supervisor (OSPR or OWCN) (1)*	ATVs (OWCN or OSPR) (2, one of which for hazing)
Wildlife Recovery & Transport Unit Staff (Management agency personnel or OWCN) (2-8)*	Vehicle - One-ton truck
Wildlife Care & Processing Group Supervisor (OWCN) (1) (also acts as Wildlife Recovery & Transport Group Supervisor)	Vehicle - Wildlife recovery (OWCN) (2)*
Wildlife Care Unit Leader (OWCN) (1)	Vehicle - Wildlife transport (OWCN) (1)*
Wildlife Care Unit Staff (OWCN) (4-6)*	Air boat (OSPR), (1, for hazing)
Wildlife Processing Unit Leader (OWCN) (1)	Boat - Capture/reconnaissance (OSPR/OWCN) (1)*
Wildlife Processing Unit Staff (OWCN) (1-3)	Sonic Buoy (OSPR), (1, for hazing)
Wildlife Hazing Group Staff (OSPR), (3)	
Volunteer Coordinator (OSPR) (1)	
Volunteer Coordinator (OWCN) (1)*	
Facilities Coordinator (OWCN) (1)*	
Administrative Coordinator (OWCN) (1)	
GIS Technical Specialist (OSPR) (1) *	

<b>TABLE 2 CONTINUED</b>	
<b>LEVEL II</b>	
Incidents where Wildlife Operations projections are for up to low hundreds of marine birds or mammals. All of the resources shown in Level I plus:	
<u>Staff</u> Deputy Wildlife Branch Director (1) Wildlife Recovery & Transport Group Supervisor (OSPR/OWCN) (1) Wildlife Recovery & Transport Unit Staff (Management agency personnel or OWCN) (4-8)* Wildlife Care Unit Staff (OWCN) (6-10)* Wildlife Veterinarian (OWCN) (1)* Wildlife Processing Unit Staff (OWCN) (2-6) Volunteer Coordinator (OWCN) (1)* Administrative Staff (OWCN) (1-2)* Wildlife Hazing Group Staff (OSPR) (5) Reconnaissance Group Staff (15) Wildlife Aerial Response Team (3)	<u>Equipment</u> 2 ATVs (OSPR), (1 of the 2 ATV's for hazing,) Vehicle - One-ton truck Vehicles - Wildlife transport (OWCN) (1-2)* Trailer - Wildlife Supplies (2) Trailer - Wildlife stabilization (OSPR/OWCN) (1)* Boats - Capture/Reconnaissance (OSPR) (3) Air boat (OSPR), (2-3, 1 or 2 of which are for hazing) DFG Fixed Wing Aircraft (1) Helicopter Support (OSPR), (for hazing) Sonic Buoy (OSPR), (2 for hazing)
<b>LEVEL III</b>	
Incidents where Wildlife Operations projections are for high hundreds or thousands of marine birds or mammals. All of the resources shown in Levels I and II plus:	
<u>Staff</u> Deputy Wildlife Care & Processing Group Supervisor (1) Wildlife Processing Unit Staff (OWCN) (2-15) Wildlife Care Unit Staff (OWCN) (6-15)* Wildlife Veterinarian (OWCN) (1-2)* Wildlife Recovery & Transport Unit Staff (Management agency personnel or OWCN) (4-8)* Administrative Staff (OWCN) (1-2)* Wildlife Hazing Group Staff (OSPR), (10-15) Veterinary Pathologist (1)	<u>Equipment</u> Facility - Regional primary care facility (OWCN)(1-2)* Trailer - Wildlife stabilization (OSPR/OWCN) (1-2)* Boat - capture (4) Air boat (OSPR), (4-5, one or two of which for hazing) Trailer - Wildlife Supplies (1) ATV (OSPR), (6, 2 of which for hazing) Helicopter Support (OSPR), (1, one of which is for hazing) Sonic Buoy (OSPR), (10 for hazing)

### 3600.3.9 Wildlife databases

Throughout California, wildlife resources and critical habitats that are sensitive and vulnerable to oil have been identified through the ongoing, systematic collection of baseline data by OSPR, Area Committees' Sensitive Site and Geographic Response Subcommittees, and other agencies. These baseline data are used to project the level of risk to sensitive wildlife resources under different spill scenarios (Bonnell et al., 1993, Ford and Bonnell, 1995). The data include annual aerial censuses of major marine bird colonies (e.g., Carter et al., 1996, etc.), intermittent comprehensive breeding marine bird surveys (Carter et al., 1992), at-sea surveys of resident and migratory marine birds and mammals, semi-annual sea otter surveys, annual pinniped rookery censuses, weekly or monthly shoreline surveys at the National Marine Sanctuaries (Roletto et al., 1998), and sensitive habitat and wetlands identification (RPI, 1994, 1996, 1998).

Relevant baseline data are compiled by OSPR in computerized Geographic Information Systems (GIS). Critical wildlife habitats in the GIS and associated protection strategies in the ACP can be quickly identified and plotted. For example, salt marshes are delineated, along with recommended booming configurations to protect them. GIS coverages and resource information in NOAA's Environmental Sensitivity Index (ESI) can be produced on maps. In advance of a spill, these maps can be a planning tool to determine the relative sensitivity of each coastal

region of California at risk from the spill. The data and maps also can be used in conjunction with those developed from real-time data during on-scene reconnaissance to evaluate the likely wildlife injuries and to guide the response decisions of the Wildlife Branch, Planning Branch, and Unified Command in the early stages of a spill. Wildlife care facilities and spill response equipment have been planned and located using information from these databases.

#### **3600.3.10 GIS Resources**

Within minutes after receiving data from an aerial, boat or shoreline survey team, an OSPR GIS specialist can create a map that depicts operational divisions and resources at risk on open water and shorelines using pre-established grid block units, and provide it to the Unified Command. This map will assist the Wildlife Branch Director in identifying and ranking wildlife response strategies. For example, site-specific booming or hazing actions may be recommended based on this information. Also, the presence of an especially sensitive wildlife species or habitats in a spill trajectory might prompt or preclude the use of dispersants or other Applied Response Technologies. The integration of pre-spill (baseline) data and reconnaissance information provide the Wildlife Branch Director and the Planning Section Chief with the ability to develop a common understanding of wildlife resources at risk during response, and strategies to protect them. Even in small spills, a GIS Specialist is needed early in the response to provide the types of maps listed above.

#### **3600.3.11 Remote Sensing Data**

A combination of satellite and ground-based radar images from consecutive days can be used to derive information about ocean surface currents. This information can help predict wildlife strandings, potential oiling of wildlife, or both. Types of remote sensing data that can be used include: Coastal Radar Data (CODAR), Satellite Synthetic Aperture Radar (SSAR), Advanced Very High Resolution Radiometer (AVHRR), and the Moderate Resolution Imaging Spectroradiometer (MODIS).

### **3600.4 ACTIVATION OF WILDLIFE OPERATIONS**

#### **3600.4.1 Activation of OSPR's Wildlife Operations Resources**

OSPR's early Wildlife Operations will be guided by the ACP, and then will be integrated with the Unified Command as it is formed. Because OSPR has the mandate and the capacity, the Unified Command may anticipate that OSPR will mobilize its wildlife response resources and begin Wildlife Operations immediately upon notification of a spill. When taking early actions, OSPR will maintain close coordination with the evolving Unified Command. Such early but prudent initiation of a wildlife response will ensure timely mobilization of dedicated resources, will minimize adverse effects upon wildlife, and will contribute to effective cost containment. As soon as feasible, but in any event after the first 24 hours of a spill, the Wildlife Branch Director will direct the development of the Wildlife Operations element of the Incident Action Plan, will submit it for review and approval by the Unified Command, and will begin coordinating with the other trustee agencies, as warranted.

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### 3600.4.2 Activation of OWCN Wildlife Operations Resources

OWCN responds hand-in-hand with OSPR during Wildlife Operations and, if needed, activation can be virtually simultaneous. OWCN may be activated by OSPR's Duty Officer (at OSPR's Headquarters Operations Center in Sacramento), by the State On-Scene Coordinator, or by the Responsible Party (if OWCN is listed in RP's contingency plan). Through OWCN, dedicated wildlife operations equipment and specially-trained response personnel can be deployed immediately in combinations dictated by spill-specific circumstances (see Table 2). In consultation with the Unified Command and the Wildlife Branch Director, the OWCN Director (or his or her designee) may begin early notification actions of OWCN response personnel and facilities, placing them on stand-by, and enabling them to prepare their facilities.

OSPR and OWCN can be contacted directly regarding spill notification and Wildlife Operations response, or through USCG at any one of the following telephone numbers:

	DFG OSPR/California Department of Parks and Recreation Dispatch (NORCOM):	(916) 358-1300
OWCN:	General:	(530) 752-4167
	Response Pager	(916) 556-7509
	USCG-National Response Center:	(800) 424-8802
	USCG-Marine Safety Office (MSO) San Francisco Port Area:	(415) 399-3545/3547
	USCG-MSO Los Angeles/Long Beach Port Area:	(562) 980-4444
	USCG-MSO San Diego Port Area:	(619) 557-5860 (day)
		(619) 557-5870 (eve)

### 3600.4.3 Criteria for Activating Wildlife Operations for Oiled Wildlife Events when there is no reported Oil Spill

OSPR or OWCN staff members sometimes get notified directly about oiled wildlife when there has been no report of an oil spill. The following criteria to activate Wildlife Operations in this situation (i.e. when there is no reported oil spill but reports of oiled wildlife) are guidelines based on actual spill response experience. These criteria are primarily for birds because birds are more likely to strand before mammals, but they apply to both birds and mammals.

OWCN's pager should be contacted (916- 556-7509) and OWCN should contact NORCOM to notify the OSPR on-call staff when:

- Greater than 2 live oiled animals or greater than 5 dead oiled animals are reported from the same general location in a single day, or
- There are reports from 3 consecutive days of 1 oiled animal reported per day from the same general location.

The on-call OSPR warden and biologist, in consultation with OWCN, will determine if there is a need to activate Wildlife Operations and whether to notify the Office of Emergency Services (OES). These actions will occur on a case-by-case basis.

OES should be contacted to notify other response agencies and an OES Spill Notification Report should be filed when:

- 5 oiled animals have been reported in a single day from the same general location.

#### **3600.4.4 Criteria for Activating Recovery and Transportation Teams:**

During a response when Wildlife Operations has not been activated or is only partially activated, as a guide, OSPR's criteria to activate Recovery and Transportation Teams is:

- If 3 or more oiled animals from a similar geographic area are reported. The number of animals, degree of oiling, weather, sea states, oil location, and area(s) in which animals were observed or collected will determine whether a single team or multiple teams will be activated and for how many days.

#### **3600.4.5 Criteria for Activating Heightened Awareness Protocols for Recovery and Transportation Teams:**

As a guide, during a response, "heightened awareness protocols", (Appendix IIIb for example) requiring more intensive Recovery and Transportation activities should be developed and implemented when:

- More than 20 oiled birds or mammals are observed in a similar geographic area within a week;
- And/or if a spill occurs in the vicinity of a National Marine Sanctuary.

#### **3600.4.6 Criteria for Deactivating Recovery and Transportation Teams:**

As a guide the Wildlife Branch Director, in consultation with the Planning Chief, the OWCN Response Veterinarian, and other trustee agencies, may deactivate Recovery and transportation for a given operational division when:

- Fewer than 3 oiled animals (live, dead or any combination) are recovered within any operational division for 2 consecutive days.

The Wildlife Branch Director may extend recovery and transportation within a division or geographic area, if warranted by a change in weather or sea state conditions (e.g. on-shore winds, extreme tidal fluctuations, or both) that could likely bring more oiled wildlife ashore.

### **3600.5 PREVENTING AND REDUCING IMPACTS TO WILDLIFE DURING SPILL RESPONSE**

#### **3600.5.1 Considerations for Implementing Response Countermeasures (Offshore and Shoreline Oil Recovery and ART's)**

The primary objectives of Wildlife Operations are to provide the best achievable care to

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impacted wildlife and to minimize wildlife losses, which includes preventing injury to wildlife or habitats from both the oil and from the implementation of response countermeasures. Response countermeasures include mechanical offshore recovery methods, applied response technologies (ARTs, such as dispersants), and shoreline recovery techniques. The application of these countermeasures, whether for wildlife protection or for other aspects of spill response, should at all times be guided by the sensitivity and vulnerability of wildlife and habitats in the spill response area. Similarly, staging areas and site access for equipment and response personnel should be selected carefully to avoid collateral impacts.

The simplest means of protecting marine wildlife from an oil spill is to prevent oil from reaching areas where wildlife are concentrated, through coordination with the Planning and Operations Sections. In many cases, this can be accomplished by tailoring the use of standard spill response equipment and techniques to increase protection of wildlife. The Planning Section, with input from the Wildlife Branch when possible, will evaluate spill response countermeasures for their potential to cause collateral harm to wildlife, and propose the alternative that is least harmful to wildlife and habitats.

In close coordination with the Resources at Risk Specialist in the Planning Section's Environmental Unit, the Wildlife Branch Director should identify known wildlife concerns (e.g., areas containing listed species) and use available wildlife reconnaissance data (e.g. identification of large flocks of pelagic birds) to help the Planning Section evaluate environmental tradeoffs from different response strategies. This must be accomplished quickly but must also be consistent with the overall response needs.

Any time ARTs (e.g., dispersants or in-situ burning) are considered, special attention should be paid to their potential effects on wildlife, their method of application, and monitoring during application. Dispersants should be applied in such a way as to avoid, to the maximum extent practicable, spraying seabirds outside the oil slick being treated, and should not be applied directly to marine mammals within or outside of an oil slick. There is a separate California Dispersant Use Plan that details conditions and constraints for dispersant use. If in-situ burning is considered, the plan should include wildlife hazing within the burn area, or should include capturing wildlife if animals are already oiled. During a spill response approval to use dispersants or in-situ burning would be evaluated and approved of by the Unified Command on a case-by-case basis.

### **3600.5.2 Reducing Human-Related Disturbances to Wildlife During Spill Response**

In order to recover as many spill-affected animals as possible, the Wildlife Branch Director should identify actions to reduce human-related disturbances of wildlife along oiled beaches, shorelines, and known stranding areas. Oiled or injured wildlife typically will not strand on a shoreline that has a constant intensive amount of human activity. This causes the wildlife to stay at sea or search for more isolated locations. A delay in stranding can cause a delay in capture and subsequent rehabilitation, which, in turn, can decrease chances of survival. Thus, when feasible, it is advisable for the Unified Command to close such areas to the public, and allow access only to response personnel designated to capture oiled wildlife.

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To minimize collateral damage, the Wildlife Branch Director must identify locations where response actions may disturb wildlife. In the spring and summer months, personnel involved in response activities, particularly on islands and along shorelines, should be alerted to the presence of nesting birds, bird colonies, pinniped breeding, pupping, and haul-out areas, and cautioned about salt marshes, which are vulnerable to the effects of disturbances and trampling. Sensitive (e.g., breeding) areas should be posted and access should be restricted. The Wildlife Branch Director should consult and work in conjunction with the other trustee agencies and land managers (e.g. the National Park Service, California Department of Parks and Recreation, National Marine Sanctuaries, and National Wildlife Refuge System) in order to reduce or eliminate collateral damages to cultural and natural resources during response efforts.

Both response personnel and the public should be instructed not to attempt to capture, disturb, or dispose of oiled wildlife. The public should also be alerted (via the Joint Information Center) to leave both live stranded animals and dead animals in place and undisturbed so that they may be retrieved by trained response personnel. The locations of live stranded animals can be flagged by cleanup personnel to alert wildlife recovery teams and aid in expedited capture.

### **3600.5.3 Wildlife Hazing**

Wildlife hazing involves actions to keep wildlife away from oil and cleanup operations. If warranted, hazing activities are begun to prevent animals from establishing or continuing regular use patterns within a contaminated area. If adverse effects upon wildlife are deemed to be unavoidable, given the predicted movement of oil in the hours and days following a discharge, then hazing can be used with little risk of worsening those adverse effects. Hazing should always be considered in heavily oiled habitats, particularly when clean sites are present in the area. Hazing is likely to be most effective when birds are concentrated in coastal lagoons, estuaries and bays. Hazing is likely to be ineffective or counterproductive if the spill area is too large to focus deterrent actions or if animals are likely to be pushed into oiled habitat. Wildlife that has already been oiled should not be dispersed, because this can lead to the introduction of oiled animals into uncontaminated areas and populations. Rather, oiled animals should be captured as soon as practical.

Once oiled, habitats that have been traditionally attractive to wildlife may be candidates for hazing actions since wildlife often continue to use their traditional sites even when an area is oiled. If oil-free and disturbance-free habitats are known to be available in the vicinity and traditional use areas are oiled, hazing may protect wildlife (Greer and O'Connor 1994, Thomas 1994, USDA 1997a, 1997b, 1997c).

In addition to the benefits to living natural resources, there is also a strong economic incentive for hazing. For example, in past California spills, the average cost to clean and care for each oiled bird has been about \$500 or more (Jessup 1997). Therefore, successfully hazing of only 300 to 400 birds that might otherwise become oiled could save a lot in rehabilitation costs.

Hazing devices include both visual and auditory techniques. A variety of hazing devices are available and can be deployed to meet the situation, including helicopters, fixed-wing aircraft,

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propane cannons, shell crackers, bird bombs, screamers, launchers, airboats, ATVs, sonic buoys, mylar tape, lasers, flags, distress and alarm calls, and effigies. Specialized hazing equipment, hazing techniques, and special hazing considerations for wildlife are described in detail in the General Wildlife Hazing Plan for Oil Spills in California included in Appendix IIIf.

Hazing activities must take place only under the authority and oversight of trustee agencies, in coordination with the Unified Command. The recommendation to haze will be guided by site-specific and species-specific factors present at the time of the spill, and availability of proven hazing techniques. The Wildlife Hazing Group (Figure 2) is directed by the Hazing Group Supervisor (for duties see Section 3600.6.3) who reports to the Wildlife Branch Director.

### **3600.6 WILDLIFE OPERATIONS BRANCH ORGANIZATION: POSITION ROLES, RESPONSIBILITIES & DUTIES:**

Within ICS the response organizational structure and the response itself grow to fit the level necessary for each specific incident. For that reason, in the following sections when a specific ICS position is discussed, readers should realize positions and duties may be combined (or not needed).

The Wildlife Branch includes the following Groups: Wildlife Reconnaissance, Wildlife Hazing, Wildlife Recovery and Transportation, and Wildlife Care and Processing, which operate under the direction of the Wildlife Branch Director. This structure is expanded beyond the structure described in the USCG Incident Management Handbook, which has only two groups (Recovery Group and Wildlife Rehabilitation Center Manager Group). Figure 2 in the Introduction and Background Section, shows the relationship of the four Groups within the Wildlife Branch, along with the units and teams that operate under each Group.

Duties and issues that relate to a specific position are listed under that position in the sections that follow. General Duties that apply to the Wildlife Branch Director and each Group Supervisor and Unit Leader include but may not be limited to:

- Oversee safety of personnel
- Implement check-in and check-out procedures (includes identifying check-in location(s))
- Receive briefings from immediate supervisor and acquire work materials
- Provide information for wildlife response planning
- Implement the assignments of the current Incident Action Plan
- Develop the section-specific portion of the Incident Action Plan for the next operational period (ICS forms 204 and 215, see Appendix IVb)
- Supervise the operations (organize, assign and brief subordinates)
- Administrative support
- Documentation
- Establish and disseminate communications protocols for timely information gathering and reporting
- Determine resource needs and communicate to the Logistics Section through the Wildlife

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- Branch Director, and confirm dispatch and estimated time of arrival of staff and supplies
- Assemble and disassemble Strike Teams and Task Forces as necessary
- Identify resources that can be released and develop/implement Wildlife Demobilization Plan as directed
- Maintain Unit and Activity Logs (ICS 214)

### **3600.6.1 Wildlife Branch Director Duties**

All California Wildlife Operations during spill response are directed by the Wildlife Branch Director, who supervises Wildlife Branch operations. The Wildlife Branch Director should be a representative of one of the wildlife resource trustee agencies (see Section 3600.2, above. See also Appendix Ib, Tips and Considerations for the Wildlife Branch Director). In addition to the general duties listed in Section 3600.6 above, the Wildlife Branch Director's duties include but are not limited to:

- Supervising the four Groups within the Wildlife Branch: Wildlife Reconnaissance (coordinating aerial, shoreline, and on-water wildlife surveys ); Wildlife Hazing; Wildlife Care and Processing (vet services, establishing rehabilitation center(s) and logging in); and Wildlife Recovery and Transportation (coordinating search and collection and transportation of wildlife),
- Updating the Unified Command, Operations Chief, Environmental Unit (Planning Section), Information Officer, and Liaison Officer of wildlife at risk and spill related wildlife statistics (e.g. numbers of dead/live oiled birds),
- Coordinating with the Sampling Specialist in the Planning Section, Environmental Unit regarding wildlife samples being collected by Wildlife Operations personnel,
- Coordinating with the various land managers and/or trustee agencies (refer to ACP Planning Section, Environmental Sensitivity Indices, Site Summary Sheets for land manager/trustee contact information),
- Identifying methods to minimize collateral damage to wildlife and habitat from recovery, transportation, and reconnaissance operations,
- Coordinating the OWCN and overseeing activities of any other private wildlife care groups in addition to OWCN, including those employed by the RP,
- Updating the media as requested by the Unified Command, and
- Providing input at the Pre-Tactics meetings.

#### **Details of principal duties:**

##### **3600.6.1.1 Safety**

The Wildlife Branch Director oversees personnel safety and is ultimately responsible for ensuring that each Wildlife Operations task is performed safely and properly by qualified personnel. Because wildlife and habitat resources are sensitive and because there are potential dangers when working with wild animals, all Wildlife Operations personnel must receive

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specialized training, on such topics as animal handling, so they may safely and competently complete of their assignments.

#### **3600.6.1.2 Staffing and Resources**

The Wildlife Branch Director must determine resource needs and communicate those needs through the Operations Chief to the Logistics Section and the Resources Unit in the Planning Branch (refer to Table 2, Wildlife Operations Resource Table, for staffing recommendations). To help keep track of Wildlife Operations personnel availability, refer to Appendix IVa, for examples of staff-availability job aids and forms. The Wildlife Branch Director must prepare information needed for work order forms (ICS 215 and 204) for Incident Action Plan preparation and logistics tracking. Form 215 is usually started in the Pre-Tactics Meeting, and is finalized at the Tactics meeting. The information from the 215 form is summarized in the ICS 204 form when the Planning Section prepares the IAP. When submitting 215 forms, the Wildlife Branch Director must clearly indicate which resources are already procured (e.g. resources provided by OWCN) or are on order, and provide estimated time of arrivals. Refer to Appendix IVb for examples of completed ICS 215 and 204 forms.

Even in small spills, the Wildlife Branch Director should request a GIS Specialist early in the response to provide the maps depicting operational divisions and resources at risk on open water and on shorelines. These maps will assist the Wildlife Branch Director in identifying and ranking wildlife response strategies.

If calls from the public are coming in regarding observations of oiled wildlife, consider designating a phone line as a hotline for the public to report their observations. The Wildlife Branch Director should assign staff to regularly check (e.g. once every two hours) and respond to the calls. The information will need to be coordinated with the Recovery and Transportation Group Supervisor. See Appendix I-f, Example Instructions for Bird Hotline.

Depending on the spill size, some duties of the Wildlife Reconnaissance Group teams may be integrated with Wildlife Recovery and Transportation teams or Shoreline Cleanup Assessment Teams, although this is not preferable. Combining duties of Groups is not effective or desirable because these Groups have different 1) objectives, 2) types of information to collect, 3) survey methods, 4) speeds of data collection, 5) and reporting deadlines.

There are a number of experts and contractors who can assist with Wildlife Operations, e.g. for wildlife reconnaissance (OSPR maintains this list in a separate document titled "List of Experts and Contractors for Wildlife Operations").

#### **3600.6.1.3 Information Flow**

The Wildlife Branch Director must update the Unified Command (through the SOSOC), Operations Chief and Planning Section (Situation Unit and Environmental Unit) of adversely affected wildlife and wildlife at risk. This includes keeping the Unified Command informed, through the Situation Unit in the Planning Section, about the status of wildlife. This information

is also relayed to the Liaison Officer to keep other agencies updated and the Public Information Officer to be used in press releases (see Appendix Ie, example press release).

The Wildlife Branch Director can quickly relay wildlife statistics by using the Wildlife Care and Processing Daily Report form (Appendix IVf) to summarize the numbers of wildlife care and processing personnel on scene, numbers of live and dead animals (e.g. numbers of animals washed, unwashed, oiled, unoled, euthanized, and released) at the facility, and listed species information. In addition, the Wildlife Recovery and Transportation Daily Report form (Appendix IVd) summarizes daily numbers of animals collected, live and dead, from the different beaches and divisions, and includes numbers of personnel and equipment being used for recovery. If species-specific information is needed, e.g. numbers of common murrets affected, it can be obtained from the Processing Unit Leader, who keeps the Live and Dead Bird and Mammal Data Logs, which can be sorted by species.

The Wildlife Branch Director must develop communication protocols to ensure information gets exchanged between the Wildlife Branch Director and Group Supervisors prior to each daily planning meeting.

#### **3600.6.1.4 Coordination within ICS**

The Wildlife Branch Director may need to attend tactics meetings, planning meetings, and Unified Command briefings. The Wildlife Branch Director may also need to report on special activities, events, requests and occurrences to Operations Section Chief and the Situation Unit in the Planning Section. The Wildlife Branch Director must coordinate with the Air Operations Branch Director regarding any wildlife overflights. The Wildlife Branch Director must also coordinate with Logistics Branch for any materials needed.

The Wildlife Branch Director must coordinate with the Resources at Risk Specialist in the Planning Section's Environmental Unit to provide the Specialist with information the Planning Section can use to help make decisions about response strategies. The Wildlife Branch Director can provide the Planning Section staff with any known wildlife concerns and with wildlife reconnaissance data. Information received from aerial, boat or shoreline survey teams can be provided to a GIS specialist (usually in the Planning Section) who can create maps depicting resources at risk on open water and on shorelines. This information should be used by the Planning Section for strategic assessment and for planning response strategies. The Planning Section should also use this information to evaluate potential effects of different response countermeasures and response strategies, including -- "no action" -- to cause the fewest adverse effects to wildlife and wildlife habitat from response actions. Likewise, the Resources at Risk Specialist can provide the Wildlife Branch with information about sensitive species and habitat locations, along with maps of sensitive areas, and of sensitive cultural-resource locations. This information can then be taken into account when planning surveys or other Wildlife Branch Operations.

The Wildlife Branch Director must also coordinate with local land managers and trustees regarding beach access, wildlife recovery efforts, response actions, and any non-spill databases

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they may have (refer to ACP Planning Section, Environmental Sensitivity Indices, Site Summary Sheets for land manager/trustee contact information). Ideally, land managers and trustees should be integrated with wildlife recovery, reconnaissance, and with identifying resources at risk, because they are most familiar with their beaches. If marine mammals are a concern, then NMFS, a trustee agency, must be consulted. Refer to Appendix Vb, the Memorandum of Agreement, for specific instructions for coordinating with NMFS about dead and live mammal collection or capture, mammal rescue attempts, transportation, rehabilitation, and the Marine Mammal and Turtle Stranding Report. In addition, land managers and trustees may have concerns about exotic species that will need to be addressed during a response (for example, they may suggest washing equipment [boots or tires] before accessing other sites to reduce dispersal of non-native plants or invertebrates).

Land managers and trustees (e.g. National Marine Sanctuaries) are very familiar with dead and live wildlife on their beaches and often maintain databases that contain information from regular beach surveys, which are not spill-related. For example, Monterey Bay National Marine Sanctuary BeachCombers look for and mark (toe clip) beached birds to monitor causes of mortality, where carcasses wash ashore, what feeds on them and how long they remain. Spill data from bird and mammal recovery and intake should be shared with the trustees, ideally on a daily basis. For example they may be given data from the Wildlife Recovery and Transportation Daily Report form (Appendix IVd), so they can evaluate those data in comparison to their baseline data (e.g. natural mortality trends), and via the Wildlife Branch Director, provide input into response decisions made by the Planning and Operations Sections.

As soon as practical at the conclusion of the spill (ideally within 30 days), or monthly in the case of a protracted event, the Wildlife Branch Director should provide the local land managers and trustees with copies of the Live and Dead Bird and Mammal Data Logs from the Processing Unit for their non-spill databases. These logs note among other items species, date and time animal was collected, collection location, if toe-clipped animals were picked up, and number of toes clipped.

#### **3600.6.1.5 Developing Incident Action Plan**

The Wildlife Branch, supervised by the Wildlife Branch Director, develops the draft Wildlife Operations portion of the Incident Action Plan (IAP) for a response, usually on a daily basis; ICS 204 and 215 forms (Appendix IVb) are usually required for this purpose. Upon spill notification, the Wildlife Branch Director must evaluate a rapidly-changing situation and develop an initial action plan, often literally while on the way to the spill site. Often, the only source of information is the responsible party's initial report of what was spilled, amount, and location, or observations by land managers of oiled wildlife strandings on beaches. It is rare when all variables (e.g., oil type and volume, location, geographic range of spill, and wildlife at risk) are known prior to on-site reconnaissance. This section describes some of the information and variables that the Wildlife Branch Director must consider for establishing the Wildlife Branch and for preparing IAP's.

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The Wildlife Branch Director must evaluate the situation in light of available personnel, equipment and deployment options within the context of the applicable ACP. Many factors will influence the response, and must be considered in order to determine which resources to mobilize. Some of these factors include:

- Type of oil (including persistence and emulsification properties);
- Quantity of oil;
- Frequency of oil deposition and oiled wildlife strandings;
- Concentrations of wildlife in the spill area;
- Presence of threatened or endangered species and/or critical habitat;
- Potentially affected habitats/ESI Rankings;
- Geographic range of reported spill;
- Wildlife resources at risk;
- Human health hazards (Site Characterization);
- Time of Year/Season (i.e., presence of migratory or breeding birds and mammals);
- Land management status (e.g., State Park, Sanctuary, Wilderness Area, Ecological Reserve, etc); and
- Weather and oceanographic conditions.

The Wildlife Branch should review the relevant factors listed below with Wildlife Branch and Planning Section personnel:

- Resources at risk;
- Wildlife Branch resource needs;
- Available wildlife personnel and equipment resources;
- Initial wildlife protection response objectives such as identifying areas with abundant wildlife that must be protected first and the tactics that should be implemented to maximize protection;
- Likely wildlife stranding locations for recovery teams.

When the review is completed the Wildlife Branch Director can formulate the initial Wildlife Operations portion of the Incident Action Plan.

After the initial ICS 204 forms for each Wildlife Operations Group are prepared, the Operational Planning Worksheet (ICS 215 form) is prepared to identify resources required, acquired and still needed. The ICS 215 form is presented at the Tactics meeting and when finalized, is provided to the Logistics Section. Resources to be provided by DFG, other trustee agencies, and OWCN must be clearly articulated on the 204's and 215 forms and provided to the Logistics Section for tracking purposes so that Logistics understands they're already on order or in service, and does not procure these resources again. See Appendix IVb for example of completed ICS 204 and 215 forms. The Wildlife Operations portion of the Incident Action Plan should include, in priority order, response objectives, equipment, Group and Unit designations, and task assignments.

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In addition to the ICS 204 form, an expanded Wildlife Operations Plan can be prepared to provide more details regarding objectives, responsibilities, assignments, and more specifics for each Group. More details can be provided on work locations for teams, survey protocols, equipment needed, safety issues, sensitive species information, communication protocols, beach access directions, division maps, forms, etc. See Appendix IIIa for example spill specific Wildlife Operations Plan.

#### **3600.6.1.6 Wildlife Branch Demobilization**

A Demobilization Plan must be developed and implemented. The Wildlife Branch will produce a list of resources to be released and coordinate recommendation for release of resource with the Resources Unit Leader in Planning Section.

#### **3600.6.2 Wildlife Reconnaissance Group**

While baseline data, as discussed in Section 3600.3.9 are essential, variations from baseline conditions, due to daily and seasonal movements of birds and mammals, necessitate rapid, real-time characterization or reconnaissance of wildlife concentrations in the spill area. Depending upon the size and type of the spill and the habitats involved, real-time data will be collected using aircraft, boat and ground surveys. Survey types are summarized below. Specific standardized, repeatable methods have been developed for each type (ECI, 1992).

Given the types of surveys, it follows that the Wildlife Reconnaissance Group consists of the Aerial, Boat, and Shoreline Survey Units. The main objective of reconnaissance surveys is to evaluate the numbers, species, and locations of animals that could be impacted by the spill. The Wildlife Reconnaissance Group identifies wildlife resources at risk by collecting real-time information about wildlife species, abundance and location. The Wildlife Branch will use those data to assist the Planning Section (Resources at Risk Specialist in the Environmental Unit) to develop response strategies that minimize adverse effects on wildlife, and that take into account wildlife issues (e.g. presence of listed species). Survey results and location and numbers of animals should be plotted on maps.

For sea otters, to supplement aerial and boat surveys, consider obtaining the more accurate sea otter rangewide density-count data which are available by sub-areas throughout the range. These census data are updated every six months and can be obtained by contacting the U.S. Geological Survey at (805) 927-3898 or the DFG Santa Cruz Sea Otter Facility at (831) 469-1719.

For other marine mammals and sea turtles refer to Appendix Vb, a Memorandum of Agreement with NMFS which includes, as an attachment, the contingency plan for response to pinnipeds, cetaceans, and sea turtles. It also contains specific instructions for coordination with NMFS regarding dead and live mammal sightings (free swimming, beached, or both). A Marine Mammal and Turtle Stranding Report must be submitted for dead marine mammal and turtle sightings and, for live animals, upon capture but prior to transport.

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For reconnaissance surveys that must be done in habitat for threatened or endangered species in a National Marine Sanctuary, Congressionally Designated Wilderness Area, or California State Park or Beach, it is necessary to contact and coordinate with the appropriate trustee agency (refer to ACP Planning Section, Environmental Sensitivity Indices, Site Summary Sheets for land manager/trustee contact information). Refer to Appendix IIIh, Example Protocol for Search and Collection in Listed Species Habitat (Snowy Plover Example) and Appendix IIIi, Example Protocol for Monitoring, Reporting, and Collecting in a National Marine Sanctuary (Farallon Island Sanctuary Example).

Depending on the spill size, Wildlife Reconnaissance Group teams may be integrated with Wildlife Recovery and Transportation teams or Shoreline Cleanup Assessment Teams, although it is usually not desirable, because it may over-task the teams. If Reconnaissance Teams recover live animals during their surveys, transfer arrangements must be made promptly, so Transfer Teams can take live birds and mammals to an OWCN rehabilitation facility.

Experienced personnel are essential for effective wildlife surveillance. Observers should be able to identify species, behavioral characteristics, and be knowledgeable about local ecological factors.

#### **3600.6.2.1 The Wildlife Reconnaissance Group Supervisor Duties**

In addition to the general duties listed in Section 3600.6 page 23, the Wildlife Reconnaissance Group Supervisor is responsible for establishing and supervising the Aerial, Boat and Shoreline Reconnaissance Units (see below for duties of each Unit Leader). These Units identify wildlife resources at risk by collecting real-time information about wildlife species, abundance and location. Duties include coordinating with other trustee agencies and land managers as necessary (refer to ACP Planning Section, Environmental Sensitivity Indices, Site Summary Sheets for land manager/trustee contact information). The Group Supervisor will establish and supervise as many units as necessary to survey the spill area from the air, boat, and shoreline. If surveys need to be done in habitats for threatened or endangered species or in a National Marine Sanctuary refer to Appendix IIIh, Example Protocol for Search and Collection in Listed Species Habitat (Snowy Plover Example) and Appendix IIIi, Example Protocol for Monitoring, Reporting, and Collecting in a National Marine Sanctuary (Farallon Island Sanctuary Example).

Because all Wildlife Reconnaissance Units operate in the field, collecting real-time information, it is critical for each to Unit maintain communications with the Command Post. The Group Supervisor is responsible for creating and disseminating protocols for timely information gathering and reporting by Unit leaders. Each Team should receive survey and reporting instructions so that the data can be provided to the Wildlife Branch Director, as required. Reporting instructions should include the phone number and name of the person to whom findings are to be reported, and specific items which need to be reported, (e.g., live vs. dead species, numbers and species of oiled and unoled resources at risk, endangered and threatened species). Each Team should also receive instructions on the disposition of samples or animals collected, survey forms, and the locations of intake stations. Communications must be open throughout the day to provide new direction to Teams or for them to report observations to the Wildlife Branch Director.

The Group Supervisor will report the Wildlife Reconnaissance Group Units' operational activities and results to the Wildlife Branch Director. To assist in the development of response strategies, the Branch Director is responsible to report the Units' observations to the Resources at Risk Specialist in the Planning Section's Environmental Unit. The Group Supervisor should discuss results with Recovery and Transportation Group Supervisor and other trustee agencies (e.g., USFWS), as needed, to determine if threatened, endangered, or other vulnerable species should be preemptively captured to remove them from imminent danger.

Reconnaissance Group personnel may include professional wildlife biologists, trustee agency representatives, OWCN personnel, contractors (e.g. the OSPR Aerial Wildlife Response Team), and other trained people. If specialized surveys for threatened and endangered species are needed, additional wildlife specialists may be called in by the Reconnaissance Group Supervisor or Wildlife Branch Director. These specialists will advise the Branch Director and the Unified Command about threats to listed species, the locations and numbers of oiled animals, and the need for capture, hazing or other protection strategies. These experts will typically use species-specific observation protocols. In 1997 and 1998, for example, such specialists conducted useful surveys of California brown pelicans, western snowy plovers and marbled murrelets during oil spills. A list of experts and contractors is maintained in a separate document by OSPR titled "List of Experts and Contractors for Wildlife Operations".

#### **3600.6.2.2 Aerial Survey Unit & Unit Leader Duties**

In addition to general duties listed in Section 3600.6 page 23, the Aerial Survey Unit Leader, who reports to Wildlife Reconnaissance Group Supervisor, is responsible for coordinating, conducting, and supervising aerial reconnaissance surveys of wildlife at the spill site and in areas at risk from the spill. This includes reporting observations to the Wildlife Branch Director through the Wildlife Reconnaissance Group Supervisor.

Using a standardized protocol (Appendix IIIe, Aerial Survey Methodology for Wildlife Reconnaissance), the Aerial Survey Team will characterize the abundance, distribution, and species identities of on-water marine birds, and mammals, in or near the spill area (ECI, 1992). These surveys are conducted by experienced contractors, using a twin-engine high wing aircraft, typically a Partenavia. Surveys are flown at an altitude of 200ft. (~60m) and a speed of approximately 90 knots (167 km/hr), although in bays and estuaries the aircraft may need to increase its altitude. The survey route and transect design is established just prior to the flight to accommodate the specific areas, issues, and species of concern for a particular spill. Surveys may include near shore, offshore, and bay or estuarine components. While in the air or immediately after landing, summaries of bird and mammal observations are reported to the Command Post to the Group Supervisor who relays the information to the Wildlife Branch.

At present, (2005), OSPR has a contract with experts at the University of California, Santa Cruz to perform aerial surveys for wildlife reconnaissance. A Department of Fish and Game plane is usually used for these flights. These flights complement, but do not replace, operational overflights for mapping oil.

### **3600.6.2.3 Boat Survey Unit & Unit Leader Duties**

In addition to general duties listed in Section 3600.6 page 23, the Boat Survey Unit Leader, who reports to Wildlife Reconnaissance Group Supervisor, is responsible for coordinating, conducting, and supervising boat reconnaissance surveys of wildlife at the spill site and in areas at risk from the spill. The Unit Leader reports observations to the Group Supervisor who relays the information to the Wildlife Branch Director.

Surveys for birds and marine mammals present during an oil spill can provide estimates of the potential effects of a spill upon individuals or populations in the area. Standardized protocols and skilled observers provide invaluable information for immediate evaluation and response, and for long-term planning or mitigation for adversely affected species. Surveys should be started as soon as possible after a spill occurs and continue as long as needed to monitor effects on the surveyed populations. Timely, regularly scheduled reports of observations are essential to keep the Unified Command informed and provide the best possible response. Refer to Appendix III.d, Boat Wildlife Survey Methodology for Oil Spill Response, for details.

Boat Survey Unit teams may be dispatched to assess oiled and at-risk wildlife in offshore or nearshore coastal waters, bays or sloughs, and they are also frequently used to search shorelines inaccessible by land. Teams will characterize species abundance and distribution of wildlife within the spill area. In most cases, personnel will be observing seabirds and marine mammals. Observations of other natural resources, such as schooling fish, sea turtles, and plankton blooms, are also useful. If the situation is changing rapidly, this information is commonly known as “ephemeral” or, more correctly, “time-critical.”

Observers will collect information on species present and their condition (live, dead, oiled, and unoiled); basic weather and sea conditions; and any other notable occurrence which may be useful to response efforts. Upon survey completion, survey results should be transmitted to the Wildlife Reconnaissance Group Supervisor as soon as possible. Information can be recorded on the Wildlife Reconnaissance Survey Form (Attachment IVe).

In some cases, boat reconnaissance survey teams may also be responsible for collecting dead wildlife and catchable live oiled animals (usually, and preferably, this is a Wildlife Recovery and Transportation Group duty). If this is a designated team assignment, personnel on board must have the necessary minimum qualifications, along with specialized training and equipment needed to capture animals expected to be found. Otherwise, sightings of recoverable wildlife must be relayed to the Wildlife Reconnaissance Group Supervisor for immediate follow-up and coordination with the Wildlife Recovery and Transportation Group.

Boat reconnaissance surveys would most likely be done by contracted experts, and are conducted along transects using the Distance Sampling Techniques (Buckland et al. 1993). The survey route and transect design are established just prior to the survey to accommodate the specific areas, issues, and species of concern for a particular spill. Surveys should be adapted to the coastline or bathymetric configuration of the area being monitored, in order to measure population or density of the various seabird and marine mammal species within the area. In determining transect design, the goal is to efficiently and effectively sample areas in and around

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the spill site which represent areas of potential impact and which might contain birds at risk of oiling. Data collection and survey methods generally follow those of Ralph et al. (1995) where one or two observers stand near the bow of the boat and scan a 180 degree arc. This Distance Sampling Technique is used primarily to survey for marbled murrelets. Strip transect survey methodologies could also be appropriate depending upon the species at risk. In all cases, at least one member of the team must be qualified to operate the boat, given the habitat, weather, and sea conditions that exist during the survey. Other personnel must be qualified to observe wildlife at sea and on-water. Depending on the boat and search area, two persons are a minimum crew. However, an optimal and preferable boat crew has three people for safety and search efficiency.

Boat Reconnaissance survey teams may operate from a variety of craft depending on the habitat and conditions. Any coastal surveys will be conducted from a boat certified for ocean use and suitable for expected weather and sea conditions. This may include 20 to 30ft. work boats, such as Boston Whalers™, or inflatable boats. In small bays or sloughs shallow-draft boats are preferred. These may include skiffs, inflatables, airboats, hovercraft, canoes, and kayaks.

Boat Reconnaissance Survey teams should be provided with data on resources at risk, including environmentally sensitive site and response strategy information. Some suggested survey equipment includes:

- Proper and necessary personnel protective equipment (PPE);
- Nautical charts and/or topographic maps;
- Waterproof notebooks and applicable survey forms;
- Binoculars;
- Cellular phones or VHF radios; and
- GPS receiver units.

#### **3600.6.2.4 Shoreline Survey Unit & Unit Leader Duties**

In addition to the general duties listed in Section 3600.6 page 23, the Shoreline Survey Unit Leader, who reports to Wildlife Reconnaissance Group Supervisor, is responsible for coordinating, conducting, and supervising shoreline wildlife reconnaissance operations, which includes reporting observations to the Wildlife Branch Director through the Group Supervisor to aid in response strategy development. Duties also include coordinating with the other trustee agencies and land managers.

The Reconnaissance Group Supervisor or Shoreline Survey Unit Leader will assign tasks and sections of the coast to survey to each Team (Carter and Page, 1989). Each Team should receive survey and reporting instructions and instructions on the disposition of samples or animals, if collected.

Shoreline Survey Team(s) will be dispatched to gather time-critical or “ephemeral” information via surveys in shoreline areas that are oiled or that are expected to be oiled. These reconnaissance surveys will provide information regarding:

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- Biological resources (live and dead; oiled and non-oiled);
- Shoreline habitats;
- Seasonal features such as bird and pinniped rookeries;
- Marine mammal haul-out areas;
- Estuarine mudflats and marshes;
- Streams blocked by natural seasonal berms, and
- Rivers flowing to the ocean.

This information is passed on to the Planning Section through the Group Leader and Wildlife Branch Director to aid in response strategy development. The Unit Leader should discuss results with Group Supervisor to determine if threatened, endangered, or other vulnerable species should be preemptively captured to remove them from imminent danger.

While it is not the primary function of the Shoreline Survey Unit to collect wildlife, Reconnaissance Group teams may at times be asked to help with search and collection (which is normally, and preferably, conducted by the Recovery and Transportation Group). In other instances, attempts have been made to join Wildlife Reconnaissance Teams with Shoreline Cleanup Assessment Teams. In any case, uncaptured, oiled wildlife sightings should be reported to the Recovery and Transportation Group leader.

During the initial stages of a spill, shoreline survey teams will be assembled by the Wildlife Branch Director. One person on each team will be designated as the team leader. This person will be responsible for decisions relating to human safety and data integrity, for reporting reconnaissance information back to the Unit Leader, Group Supervisor or Wildlife Branch Director prior to each daily pre-planning meeting, and for disseminating the following day's assignment to team members.

Survey teams should be provided with data on resources at risk, including information about environmentally-sensitive sites and response strategies so that proper precautions can be taken to minimize adverse effects upon wildlife and the habitat and to minimize conflicts with response actions during surveys. The teams should be briefed on how to avoid collateral injuries to the habitat when surveying by foot in wetlands.

Survey teams should be provided with the Beach Search Effort Log (Appendix IVc) and Wildlife Reconnaissance Survey Form (Appendix IVe). The same version of each form should be used by all shoreline survey teams. GPS receivers should be used, if at all possible, to mark locations of survey beginning and end points, where animals or samples are collected, survey transects lines and pathways, and to augment photo documentation. Other suggested survey equipment includes:

- Proper personnel protective equipment (PPE);
- Regional maps that include consistent beach names, numbers, and access routes;
- Waterproof notebooks and applicable survey forms;
- Binoculars;

- Hand tallies (e.g., “Clicker counters”);
- Cellular phones or VHF radios; and

During moderate-sized spills, survey teams should consist of a minimum of two people for safety and to expedite the surveys, although studies (Roletto et al., 1998) have shown that on long, broad sandy beaches a survey team of three people is optimal for efficiency. Team tasks can be divided among team personnel in any number of ways (e.g., by shore zone, by function, or by expertise). For example, on a two-person team, one member can conduct wildlife observations, recording numbers and species of live birds and mammals, both oiled and unoiled, and assessing the potential for capture of oiled wildlife. The second member can note weather and shoreline type, and investigate the wrack line and shore for evidence of oiling and identification of any dead oiled wildlife, including listed species.

Walking beaches on foot is the most common and most effective method for locating wildlife with little disturbance. A number of survey teams may be needed to expedite data collection and reporting. However, depending on the terrain and the size of the area to be covered, four-wheel drive vehicles or ATVs can also be used effectively to reduce survey or search time.

Situations in which vehicles might cause collateral injuries to wildlife, or in which they might cause damage to rare plants and cultural resources, must be considered and addressed before reconnaissance surveys via ATVs, or other vehicle type, are authorized by the Wildlife Branch Director. However, prior to authorizing any activities using vehicles for surveys or collections, the Branch Director must also obtain authorization from appropriate trustee agencies, such as, National Parks, Congressionally Designated Wilderness Areas, or California State Parks and Beaches.

Because motorized vehicles may haze animals back into the water, caution and planning must be exercised. There should be close coordination with the Recovery Group to avoid unintentional hazing of injured wildlife. If ATVs are used, riders must have specific ATV safety training. Refer to Appendix IIIc for ATV Protocol.

It is always wise to coordinate with local law enforcement agencies and provide them with courtesy notifications about shoreline activities. This will prepare them for any complaints from concerned citizens. To minimize complaints to these agencies, uniforms or other identifying devices and logos should be worn or displayed so the public can understand why ATVs or four-wheel-drive trucks are in an otherwise restricted area.

Shoreline survey teams generally are staffed by professional wildlife biologists, who most likely will have previous experience with oil spills and specific coastal field-observations. At the discretion of the Reconnaissance Group Supervisor, survey teams also may include qualified OWCN staff, personnel from other trustee agencies and land managers, or other trained observers with knowledge of, and experience with oiled wildlife identification and handling. OSPR maintains a list of experts in a separate document titled “List of Experts and Contractors for Wildlife Operations”. At a minimum, personnel conducting wildlife reconnaissance should be experienced at identifying species of pinnipeds and California coastal birds, including gulls,

alcids, shorebirds and diving birds, should be able to identify both breeding and alternate plumage and be able to determine at a distance whether a live bird is oiled.

### **3600.6.3 Wildlife Hazing Group and Hazing Group Supervisor Duties**

In addition to the general duties listed in Section 3600.6 page 23, under the direction of the Wildlife Branch Director, the Wildlife Hazing Group Supervisor is responsible for implementing and supervising wild life hazing operations which, when implemented, are intended to minimize injuries to wildlife by attempting to keep animals away from the oil and cleanup operations. Duties also include coordinating with other trustee agencies (e.g., NMFS and USFWS). Refer to ACP Planning Section, Environmental Sensitivity Indices, Site Summary Sheets for land manager/trustee contact information.

Hazing activities must take place only under the authority and oversight of trustee agencies, in coordination with the Unified Command. The Wildlife Branch Director or Hazing Group Supervisor will make the recommendation to haze to the Unified Command. The recommendation will be guided by site-specific and species-specific factors present at the time of the spill, and availability of proven hazing techniques.

Personnel in the Hazing Group may include personnel, with appropriate training, from state or federal trustee agencies, University of California, or OWCN.

Hazing activities, observations, and results are to be reported to the Wildlife Branch Director and the Planning Section's Environmental Unit Leader.

Hazing usually includes deployment of acoustic or visual hazing devices. For details regarding hazing, refer Section 3600.5.3 and to Appendix III, the General Wildlife Hazing Plan for Oil Spills in California.

### **3600.6.4 Wildlife Recovery and Transportation Group**

Wildlife Recovery and Transportation of oiled wildlife involves collecting dead or capturing live animals and transporting them to processing centers. These activities are performed by the Wildlife Recovery and Transportation Group, in close coordination with the Unified Command along with state and federal trustee agencies. Wildlife collection by any agency or organization must be done under the direction of the Unified Command. Their activities must comply with agreements and permits from the appropriate management agencies (i.e. DFG, NOAA-NMFS, and USFWS) (see 14 CCR 679(d)).

Recovery and Transportation personnel are drawn from OSPR, OWCN, other state and federal trustee agencies, and approved contractors. As with other Wildlife Operations activities, Recovery and Transportation personnel will include a high proportion of professional wildlife biologists under certain circumstances. Trained, qualified volunteers obtained through OWCN or OSPR Volunteer Coordinators, or both can be used as long as training requirements are met and OSHA standards are adhered to. If marine mammals are involved in a spill, NMFS or OWCN can provide assistance with mammal capture (Geraci and Lounsbury, 1993).

Refer to Section 3600.4.4 for criteria to activate and deactivate Recovery and Transportation teams. These criteria are guidelines and were developed from past incidents.

Although not preferable, depending on the spill size, Wildlife Recovery and Transportation teams may be integrated with Wildlife Reconnaissance Group teams or Shoreline Cleanup Assessment Teams.

#### **3600.6.4.1 Survey and Recovery Procedures**

Once animals have become oiled, habitat-specific and species-specific strategies to recover and remove disabled and dead wildlife are required. Systematic surveys for collecting affected wildlife should be carried out several times per day. Preferred search times are at dawn, at dusk, and mid-day. 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. For detailed and specific information on wildlife capture training, techniques and tools, see OWCN 1998a and 1998b.

Surveys are often conducted on foot or by boat, however, the use of ATVs and four-wheel-drive trucks can expedite searches (refer to Appendix IIIc, All Terrain Vehicle Protocol for details on ATV safety). Caution should be exercised when using vehicles because they may scare wildlife back into the water or cause the animal(s) to flee the site. Special considerations pertaining to collateral injuries to the habitat must also be taken into account when surveying in wetlands on foot.

Refer to Appendix IIIg, San Mateo Mystery Spill Oiled Bird Recovery and Transportation Group Protocols for example protocols for field team assignments for Recovery and Transportation Group.

Each team should consist of at least two people, and should be outfitted with the resources and equipment necessary to complete its assignment. At a minimum, the team should use a Beach Search Effort Log (Appendix IVc) to document areas searched, method of search, wildlife collected, field band or tag number for collected animals, etc. GPS receivers should be used to mark locations of each survey's beginning and end points, locations where animals are collected or captured, survey transects lines and pathways, and to locate where photos were taken. This GPS information can be downloaded to a GIS workstation by a specialist who can graphically depict wildlife recovery sites and stranding locations.

In the future, barcodes on labels or other methods of identification for live and dead animal bags may be used, which will allow the Group Supervisor and Wildlife Branch Director to track the individual animals through capture or collection, processing, and for live animals, the rehabilitation and release process. For tracking and chain of custody purposes, all live and dead animals recovered should be banded or tagged (for birds and mammals, respectively). This should happen in the field upon collection. The band or tag number must be noted on the Beach

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Search Effort Log Form (Appendix IVc). Permanent bands or tags will be applied and logged at the processing facility. If bands/tags/labels are not available, a unique identifying number (e.g., first and last initial of collector plus a unique number) must be noted on the animal (or transport container) and on the Beach Search Effort Form and/or any field notes.

Recovery and Transportation Group personnel should provide on each animal transport container the following information:

- Collector's name (and phone number if not part of the Recovery & Transportation Group effort);
- Collection location: general name and GPS coordinates;
- Beach search number (as determined by the Beach Search Effort Log);
- The date the bird was *recovered* from the beach;
- The time the bird was *recovered* from the beach; and
- Preprinted label number or band/tag number or Field ID number (e.g., collector's initials plus unique ID number) if labels/bands/tags are not available.

Specialized equipment is identified in OWCN 1998a, 1998b. Refer to Appendix Ic, "List of Equipment to Bring in Field for Search and Collection" for details. Basic equipment should include:

- Proper PPE;
- Dead bird body bags (collection containers);
- Bird bands and mammal tags, various sizes;
- Field search forms;
- Pillow cases and pet carriers;
- Field tags and "Sharpie" pens to label and record collection information and Chain of Custody;
- Regional and Segment maps;
- Cellular phones or VHF radios;
- GPS receivers; and
- Basic capture equipment (e.g., nets).

#### **3600.6.4.2 Beached Carcass Removal**

Appropriate measures must be undertaken by the RP and the Unified Command to insure that dead animals are collected appropriately, identified, documented held until disposal is approved by the trustees. Oiled wildlife collection, treatment and rehabilitation are legislatively mandated and are important for humane care, spill documentation, and public relations reasons (Jessup and Mazet, 1999). In addition, the prompt removal of disabled and dead oiled animals from the environment can be critical to minimize the effects of secondary oiling such as poisoning of predators and scavengers.

While conducting beach surveys during the response, it is not always feasible, reliable, or practical to attempt to discriminate between spill-related and non-spill-related casualties. For example, scavenged carcasses, birds with dark plumage, wet carcasses, or carcasses with oil sheen or small amounts of oil that may be spill related are not always identifiable in the field as such. In addition, seabirds are known to succumb to the effects of oil ingested during feeding or preening, even when no oil is apparent on their plumage. Also, during a spill response, the public often complains about carcasses on the beach. Finally, because all carcasses found within a spill area are potential evidence, the evidence must be handled according to established protocols. For these reasons, when Recovery and Transportation teams are activated, all live, disabled, and freshly-dead animals, oiled and unoiled, should be collected and processed for triage and rehabilitation or for processing and storage, as appropriate. Processing of carcasses includes analyzing them at a facility using uniform scientific protocols to document whether they suffered any spill-related effects.

#### **3600.6.4.3 Bird Recovery and Transport**

Handling captured birds poses risks to both handler and birds. The potential for birds to inflict injury on the handler means proper PPE is essential. Eye protection should always be worn. Use of appropriate gloves and outer clothing to prevent oiling of the handler are also important. An effective capture occurs swiftly, with minimal pursuit and noise, and uses correct techniques based on conditions and species being pursued. To prevent further injury to wildlife, the use of proper handling techniques by trained personnel is essential. All animal handling should be done in a manner that minimizes stress to the animal. For details on proper handling techniques, see OWCN 1998a and "Wildlife Handling" in Appendix III-1.

Success at recovering wildlife (especially mobile individuals) depends on proper technique and timing. Teamwork is essential to minimize stress in oiled birds (OWCN 1998a). Methods used for search and collection will depend upon spill location and modes of transportation made available through the Unified Command. Bird retrieval techniques are most effective if begun shortly before dawn. As they lose their waterproofing, many species of birds move to shore, first preening on open beaches and river banks, and then later hiding under cover.

Birds should be retrieved by qualified teams on foot with handheld nets. Small projectile nets, linear sections of net placed on the ground, and baited walk-in or swim-in traps may also be used. For more information on capture equipment and techniques, see OWCN 1998a.

After capture, birds should be immediately placed in pillowcases, then transferred to ventilated, solid-sided pet carriers, cardboard boxes, or plastic airline kennels for transport. Attempts should be made to transfer all birds from pillowcases to boxes ASAP to reduce hypothermia, and only one bird should be placed in each box to reduce aggression and potential cross-contamination of feathers. If space or materials are limited, social, nonaggressive birds (such as common murre) can be placed with one or two conspecifics that have been captured at the same location and which have a similar degree of oil exposure. Aggressive species, such as loons and cormorants, should always be individually housed.

Once captured, oiled live birds should be transported to the designated OWCN facility as soon as possible. If marine bird species must be transported for long distances or remain in pet carriers for longer than three hours, net-bottomed floors should be used, and if possible, the animals should receive basic field stabilization (i.e. wiping oil from mouth and nares and feeding of warmed Pedialyte® with a stomach tube). Because hypothermia is a serious biomedical problem which affects oiled wildlife, it is advisable to bring oiled birds into a warm indoor environment as soon as possible, and to transport them in warm, ventilated vehicles. The use of chemical handwarmers have been used in the past to provide warmth to affected wildlife in cardboard pet carriers as long as the warmer is wrapped in a towel to prevent direct contact with the animal. See Appendix IIIj for Bird Transport Protocols which includes specific information for transporting Brown Pelicans..

#### **3600.6.4.4 Marine Mammals Recovery and Transport**

The Wildlife Branch Director should evaluate need for marine mammal capture, on a case-by-case basis, in consultation with those trustee agencies that have specific regulatory authority: USFWS, NMFS, and DFG. Protocols that guide decisions to capture and transport marine mammals are described in OWCN 1998b. In addition, for specific instructions for coordinating with NMFS regarding dead animal recovery and live mammal capture, refer to Appendix Vb, an MOA with NMFS which includes, as an attachment, the contingency plan for response to pinnipeds, cetaceans, and sea turtles. A Marine Mammal and Turtle Stranding Report must be submitted for dead marine mammal sightings and upon capture and prior to transport of live mammals.

If oiled pinnipeds, sea otters, or cetaceans are determined to be ill and to require retrieval, capture will be instituted by the Wildlife Branch Director in conjunction with DFG, NMFS (for pinnipeds), USFWS (for sea otters), and the OWCN. All members of the California Marine Mammal Stranding Network (MMSN) who work with live marine mammals are members of the OWCN. Therefore, use of the expertise from these organizations is ensured.

Capture and transportation of oiled mammals should be performed only by qualified personnel who have received the appropriate training for safety, marine mammal handling and animal restraint. For more information regarding actual techniques for search and collection of marine mammals, see OWCN 1998b.

In general, potential benefits of capture must outweigh potential negative consequences. A decision to capture should consider size of individual animals and their location with respect to other marine mammals. The method of capture may vary accordingly. While sea otters and fur seals can be immediately and acutely affected by oil, other pinnipeds may be able to withstand some short-term external exposure to oil. Captures will generally be considered for isolated individuals on beaches, spits, tide flats or other relatively flat surfaces, using herding boards and nets (brail, breakaway, or steel-frame pole). Less often, captures may be attempted from rock jetties, piers, docks, or even in the water, for severely debilitated animals. Long-handled dip nets, floating bag nets and net guns have all been used with some success. Depending on the

species involved, aquatic captures may use tangle nets, float nets or Wilson traps. Animals will be placed into kennel carriers or similar cages of an appropriate size and with care to not cause hypo or hyperthermia, immediately transported to designated marine mammal care facilities (see Table 1 and Figure 3).

#### **3600.6.4.5 Sea Otter Recovery and Transport**

Southern sea otters are a special case because they are extremely susceptible to oil and they are a federally-listed species. Capture and treatment of sea otters is addressed separately in the Sea Otter Oil Spill Contingency Plan, (Appendix IIIk). In short, in California, sea otters will generally be captured by crews led by federal or state trustee agency personnel. Sea otters that are not visibly oiled, are not acting ill or abnormally, or are not likely to become oiled will not be intentionally captured. If the capture crew has questions or doubts, individual animals may be captured for further evaluation or inspection. Every effort will be made to have petroleum-detection kits capable of rapid oil detection available to assist with the evaluation. When a captured animal does not have obvious evidence of oil, is not debilitated by oil, and is not at risk, the crew will tag it, take a blood sample, and release it immediately. Under dire circumstances, preemptive captures may be considered, if the Unified Command authorizes them, and adequate facilities for transport and holding are available.

#### **3600.6.4.6 Recovery and Transportation Group Supervisor Duties**

The Recovery and Transportation Group is directed by the Recovery and Transportation Group Supervisor, who reports to the Wildlife Branch Director. In addition to the general duties listed in Section 3600.6 page 23, the Group Supervisor is responsible for 1) the recovery of dead and live wildlife that have been identified by the Wildlife Reconnaissance Group or other individuals (Refer to Survey and Recovery Procedures section above for details), and 2) for the transportation of affected wildlife from field-recovery personnel and stabilization facilities to primary care facilities for processing and rehabilitation. Through the Wildlife Branch Director, the Group Supervisor should frequently update and coordinate with the Environmental Unit in the Planning Section about conducting surveys in the spill area. The Group Supervisor should maintain the Wildlife Recovery & Transportation Daily Report form (Appendix IVd) and distribute it to the Wildlife Branch Director and the Planning Section. This form tallies numbers of live and dead animals collected from each beach or division, along with numbers of personnel and equipment in use.

Land managers and trustees (e.g. National Marine Sanctuaries) are very familiar with dead and live wildlife on their beaches and often maintain databases that contain information from regular beach surveys, which are not spill-related (refer to ACP Planning Section, Environmental Sensitivity Indices, Site Summary Sheets for land manager/trustee contact information). For example, Monterey Bay National Marine Sanctuary BeachCombers look for and mark (toe clip) beached birds to monitor causes of mortality, where carcasses wash ashore, what feeds on them and how long they remain. During most spill responses some level of natural background mortality can be expected to contribute to the number of beachcast birds. Local land managers and trustees, in coordination with the Recovery and Transportation Group Supervisor, can evaluate recovery data and make recommendations to the Wildlife Branch Director on future

wildlife response actions.

The Group Supervisor, in consultation with the Wildlife Branch Director, will decide if night Recovery and Transportation operations are needed. Night operations will only be considered if they can be done safely and are approved by the Unified Command.

Because these units all operate in the field, it is critical for each Unit to maintain a means of communication to the command post. The Group Supervisor is responsible for creating and disseminating protocols for timely information gathering and reporting by Unit leaders. Each team should receive survey and reporting instructions. Reporting instructions should include the phone number and name of the person to whom findings are to be reported, and specific items which need to be reported, (e.g., live vs. dead species, numbers and species of oiled and unoiled animals, resources at risk, endangered and threatened species). Each team should also receive instructions on survey forms, the disposition of animals collected, and the locations of intake stations. Members of the survey teams should receive a daily phone list, including a number at the Incident Command Post for the Wildlife Branch Director and his or her alternate, the Group Supervisor, and contacts to gain access to special or secure areas. Communications must be maintained throughout the day to provide new direction to field crews or to report observations to the Command Post.

It may be necessary to establish several Strike Teams or Task Forces to survey the entire spill area. Separate dead and live animal teams may be needed. Under certain circumstances (such as smaller spills), the Wildlife Branch Director may designate the Wildlife Care and Processing Group Supervisor to fill the role of the Wildlife Recovery and Transportation Group Supervisor.

#### **3600.6.4.7 Bird Recovery and Transportation Unit Leader Duties**

In addition to the general duties listed in Section 3600.6 page 23, the Bird Recovery and Transportation Unit Leader, who reports to the Wildlife Recovery and Transportation Group Supervisor, is responsible for staffing the unit for search and recovery of oiled birds, dead and alive (and in some circumstances, unoiled dead birds) and for their transport to processing or rehabilitation centers. This includes collecting and disseminating field data (search effort, animal information, and sample acquisition) to the Group Supervisor, and ensuring the appropriate field stabilization and treatment protocols for oiled birds are followed. The Unit Leader must work cooperatively with other field teams (e.g. resources at risk, shoreline cleanup assessment) for timely dissemination of field data. The Group Supervisor must be briefed daily on activities.

#### **3600.6.4.8 Marine Mammal Recovery and Transportation Unit Leader Duties**

In addition to the general duties listed in Section 3600.6 page 23, the Marine Mammal Recovery and Transportation Unit Leader, who reports to the Wildlife Recovery and Transportation Group Supervisor is responsible for search and recovery of dead and live oiled pinnipeds, small cetaceans, and sea otters, and for their transport to processing or rehabilitation centers. For specific instructions for coordinating with NMFS about dead and live mammal recovery and capture, refer to IIIk, the Sea Otter Oil Spill Contingency Plan and Appendix Vb, an MOA with NMFS which includes, as an attachment, the contingency plan for pinnipeds, cetaceans, and sea

turtles.

The Unit Leader is responsible for staffing the Unit sufficiently for a collecting and disseminating field data (search effort, animal information, and sample acquisition) to the Group Supervisor, and for ensuring the appropriate field stabilization and treatment protocols for oiled mammals are followed. This will require working cooperatively with other field teams (e.g. Resources at Risk and Shoreline Cleanup Assessment Teams) for timely dissemination of field data. The Group Supervisor must be briefed on daily activities.

### **3600.6.5 Wildlife Care and Processing Group & Group Supervisor Duties**

The Wildlife Care & Processing Group within Wildlife Operations has two Units. The Wildlife Care Unit ensures that wildlife exposed to petroleum products receive the best achievable care by providing access to veterinary services and to rehabilitation centers. The Wildlife Processing Unit ensures oiled animals are tracked, so the Unified Command can obtain oiled wildlife statistics which will be used for a variety of purposes, such as response strategy development, media updates, and rehabilitation cost information. Wildlife care includes triage, stabilization, treatment, rehabilitation and release. Wildlife processing includes documenting and recording essential information on live and dead wildlife. The Volunteer Coordinator and Facility Coordinator also work under this Group. This Group is directed by the Wildlife Care & Processing Group Supervisor who reports to the Wildlife Branch Director.

In the majority of past spill responses in California, the Wildlife Care and Processing Group Supervisor position has been filled by the OWCN Director or Response Veterinarian. Although not preferable, the Wildlife Care and Processing Group Supervisor may be the same as the Wildlife Recovery and Transportation Group Supervisor during small spills.

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.

If marine mammals are involved in a spill, NMFS or OWCN can provide assistance with treatment (Geraci and Lounsbury, 1993).

If necessary, OSPR or OWCN mobile veterinary laboratories and animal care trailers can be dispatched to the field so veterinarians and staff can perform preliminary examinations and stabilize wildlife prior to their transport to the rehabilitation facility.

In addition to the general duties listed in Section 3600.6 page 23, the Wildlife Care and Processing Group Supervisor is responsible for:

- Activating and maintaining wildlife rehabilitation and processing centers during a response (there are permanent wildlife rehabilitation facilities located throughout the state see Figure 2 and Table 1)
- Coordinating combined resources and capabilities of OWCN and any other private

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- wildlife care organization to provide optimum treatment and rehabilitation services
- Working with the Wildlife Recovery and Transportation Group Supervisor to coordinate activities and ensure transportation to established treatment centers for oiled animals that need extended care and treatment
- Receiving and processing dead and live wildlife, which includes collecting necessary evidentiary (feather and tissue) samples from all animals, following the detailed procedures outlined in Appendix III-I,
- Arranging for appropriate locked and cataloged storage for dead animals
- Maintaining status (number, type, species, locations, and disposition of oiled wildlife), using the Wildlife Care and Processing Daily Report Form (Appendix IVf)
- Provide local land managers and trustees with copies of the Live and Dead Bird and Mammal Data Logs from the Processing Unit as soon as possible at the conclusion of the spill so these data can be incorporated into their databases.
- Coordinating release of rehabilitated wildlife
- Updating Wildlife Branch Director on activities at least daily

#### **3600.6.5.1 Volunteer Coordinator Duties**

Under the direction of the Wildlife Care and Processing Group Supervisor, the Volunteer Coordinator will manage the influx of pre-trained and convergent volunteers. The Volunteer Coordinator organizes and schedules volunteers, schedules training sessions as needed, and handles logistical needs for volunteers. Most volunteers are provided by and coordinated through OWCN by the OWCN and OSPR Volunteer Coordinators.

When the Volunteer Operations Center is operated at an OWCN affiliate organization's facility, the State Volunteer Coordinator and OWCN's Volunteer Coordinator will work directly with the affiliate's Volunteer Coordinator. If the participating organization does not have a designated Volunteer Coordinator then the Wildlife Rehabilitation Staff will take on these responsibilities.

#### **3600.6.5.2 Facility Coordinator Duties**

Under the direction of the Wildlife Care & Processing Group Supervisor, the Facility Coordinator will:

- Manage the wildlife facility,
- Act as the point of contact with the Group Supervisor and Wildlife Branch Director,
- Ensure complete and accurate chain of custody for samples,
- Direct activities of station personnel,
- Procure equipment and assures functionality of equipment, and
- Keep the facility running smoothly.

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Depending on the size of the spill, there may be more than one facility, and each facility can include a Receiving Center and a Processing Center. The Receiving Center is where animals are received from Recovery and Transportation Group. The Processing Center is where data is recorded on the logs before live animals transfer to veterinary services or before dead animals are transferred to storage.

### **3600.6.5.3 Wildlife Care Unit and Unit Leader Duties**

In addition to the general duties listed in Section 3600.6 page 23, the Wildlife Care Unit Leader, who reports to the Wildlife Care and Processing Group Supervisor, is responsible for receiving, processing, stabilizing, treating, and rehabilitating oiled live wildlife. Duties also include coordinating the release of rehabilitated wildlife. To provide optimum treatment and rehabilitation services, the Unit also coordinates the combined resources and capabilities of OWCN and any other private wildlife care organizations.

Depending on the extent of the spill effects, the Unit can include two task forces to handle specialized wildlife rehabilitation issues: the Oiled Bird and the Oiled Marine Mammal Task Forces.

In most circumstances, the Wildlife Care Unit processes live animals by following the same procedures used by the Wildlife Processing Unit (see Appendix III-1). However, under certain instances (e.g. large scale spills), live animal processing may be accomplished through the Wildlife Processing Unit with the establishment of Live and Dead Animal Processing Strike Teams. Check the OWCN website at [www.owcn.org](http://www.owcn.org) for periodic updates to the processing protocols.

Oiled Wildlife Task Forces (Oiled Bird and Oiled Marine Mammal Task Forces) may be assembled and disassembled as necessary, based on classes of animals either affected or predicted to be affected. Each Task Force Leader is responsible for receiving live oiled birds, pinnipeds, or sea otters requiring extended care and treatment at established treatment centers, recording essential medical information, conducting triage, stabilization, treatment and rehabilitation. Depending on the size of the spill, Strike Teams may be assembled and disassembled as necessary, for medical intake (initial assessment and exam), washing and rehabilitation (care of unwashed and washed animals including, if necessary, multiple stations for oiled animal care, post-wash care, pre-release care, food preparation).

Animals may be received either directly from the Wildlife Recovery and Transportation Group personnel at the facility, or from the Live Animal Strike Team, a component of the Wildlife Processing Unit (see below). If animals arrive directly from the field without being processed by the Wildlife Processing Unit, all evidentiary and log information must be captured by the Strike Team upon intake evaluation.

Specific protocols for care of these animals will not be addressed here because they are highly specialized, requiring special permits, expertise and veterinary attention. Details can be found in

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one or more of the following references: Appendices III<sub>m</sub> and III<sub>n</sub> for OWCN Protocols for the Care of Oil-Affected Birds and Marine Mammals, respectively, and Appendix III<sub>k</sub>, the Sea Otter Oil Spill Contingency Plan. The most current information on rehabilitation protocols can be found on the OWCN website at [www.owcn.org](http://www.owcn.org). Refer to Appendix IV<sub>i</sub> and j for the OWCN Oiled Bird Daily Progress Form, and OWCN Oiled Mammal Daily Progress Form for treatment and progress notes.

Birds are the most abundant wildlife taken in at processing and care centers. They are often treated and released within three weeks of capture, once they meet pre-established physiological and behavioral milestones specified by the detailed protocols. However, time in care depends on spill location, type of oil involved, how oil affects species, pre-existing injuries, seasonal conditions, and other logistical concerns.

When rehabilitated animals are ready for release, clean, non-oiled release sites should be chosen after consulting the appropriate trustee agency or agencies. While exceptions can be made during spill emergencies, some agencies have specific requirements or policies regarding releasing animals on their properties. For example, trustee agencies, such as California State Parks or National Marine Sanctuaries, may only allow the release of an animal on their property if that animal was captured from the subject area or if there has been a determination that the release will not be detrimental to the ecosystem. As a part of spill response actions, birds and mammals are banded or tagged and, in some cases, fitted with telemetry equipment for post-release monitoring.

To guide the Wildlife Care Unit in the treatment of remaining animals, necropsies on selected animals may be conducted by wildlife pathologists during a spill response. However, the Wildlife Branch Director or his designee must obtain pre-approval from the Unified Command for such examinations. There are several reasons for necropsies during a spill response. For example, necropsies may be performed during response activities to determine whether death resulted from natural causes or a pollution event. Another reason is captivity-related diseases may necessitate necropsies to identify pathogens so that corrective medical actions can be taken (Jessup and Leighton, 1996). Fatalities among apparently unoiled wildlife may necessitate necropsies to determine whether animals ingested petroleum.

Veterinary facilities designed for oil spill response must meet minimum space requirements and incorporate all required aspects of wildlife treatment and rehabilitation. An ideal facility should include:

- Areas for intake, physical exam, and evidence processing;
- A veterinary hospital with isolation capabilities,
- Indoor wildlife housing and caging,
- Food storage and preparation facilities,
- Animals washing and rinsing areas,
- Indoor drying pens,
- Outdoor pool and pen areas,

- Pathology facilities,
- An area with restrooms eating and volunteer training,
- Administrative offices with multiple phone and fax lines and conference space,
- Storage,
- Access to a large parking area, and
- Adequate ventilation, hot and cold water, and climate control.

#### **3600.6.5.4 Wildlife Processing Unit and Unit Leader Duties**

In addition to the general duties listed in Section 3600.6 page 23, the Wildlife Processing Unit Leader, who reports to the Wildlife Care and Processing Group Supervisor is responsible for receiving, documenting, and storing all dead (and sometimes live) animals (birds, pinnipeds and sea otters) that have been collected following detailed procedures outlined in Appendix III-1, which includes collecting necessary evidence samples (feathers and tissue) from all animals. Wildlife Processing information is necessary to track costs, in order to provide sufficient information to enable the Unified Command to make timely and accurate statements concerning effects on wildlife, to help determine whether or not the animals collected are spill-related, and for injury determination. This systematic documentation will help provide an understanding of the consequences of an oil spill to wildlife populations in and around affected areas and assist in the guidance of oil spill response actions.

The Unit Leader is also responsible for maintaining and reporting information on wildlife collected including number, type, species, locations, and disposition of oiled wildlife, using the Wildlife Care and Processing Daily Report Form (Appendix IVf). The Group Supervisor and Wildlife Branch Director need to be briefed at least daily.

The Wildlife Processing Unit Supervisor may be the same as the Wildlife Care Unit Supervisor during small spills, i.e. those in which only a few dozen birds are affected.

In most circumstances, only dead animals will be processed by the Wildlife Processing Unit. However, during large-scale incidents, a Live Animal Strike Team and a Dead Animal Strike Team may be mobilized to effectively and efficiently process large numbers of animals. During spills where only the Dead Animal Strike Team is operating under the Processing Unit, all the responsibilities normally taken on by the Live Animal Strike Team will be absorbed by the Wildlife Care Unit and will follow the Live Animal protocols. For large spills, multiple stations for processing may be needed and positions within each station include a manager, receiver, data collector, data recorder, photographer, and animal handler. In such instances a single person may fill several positions simultaneously.

All dead and live wildlife encountered in the spill response area should be retrieved by the Wildlife Recovery and Transportation Group and transported to the wildlife processing and care centers, regardless of the carcass or live animal's condition (degree of decomposition, degree of oiling, etc.) In addition, all capture-related information (e.g. location, name, unique identifying number or band/tag number, GPS coordinates, date, and time) must accompany the animal or

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carcass to the facility. The presence of such documentation will be verified when workers at processing or care centers receive wildlife from the Wildlife Recovery and Transportation Group. Photographs should be taken and feather samples should be collected and preserved for future use if chemical fingerprinting of the oil becomes necessary. Species identification will be determined and oil information documented. All information necessary to complete either the live or dead bird and mammal log is collected before animals enter the rehabilitation process or dead animals are taken to storage. Refer to Appendix IVg and IVh for the OWCN Oiled Animal Data Log – Dead Animals, and the OWCN Oiled Animal Data Log – Live Animal.

In the future, barcodes or other devices will be used on field tag labels which can be scanned so a unique identity can be given immediately to that individual, which it will retain while it remains in the system.

Following intake and documentation, all dead animals and appropriate evidence (photos, feather samples and fur swabs) should be systematically packaged and transported to a secure freezer for storage, such as the ones at the Marine Wildlife Veterinary Care and Research Center at Santa Cruz, San Francisco Bay Oiled Wildlife Care & Education Center in Fairfield, or the Los Angeles Oiled Bird Care & Education Center in San Pedro. This will protect the interests of trustees, RPs, and USCG. If necessary, the carcasses can be re-examined to resolve problems with body counts and species identification, or to secure additional samples for investigations. When federal and state trustee agencies give the authorization, carcasses will be disposed of in accordance with federal and state laws.

### **3600.7 DEMOBILIZATION OF WILDLIFE OPERATIONS**

Upon conclusion of Wildlife Operations, its activities are demobilized, following standard checkout procedures identified through the ICS and coordinated with the Unified Command. (Note: demobilization of other non-wildlife response activities is addressed in the Area Contingency Plan). Wildlife Operations demobilization occurs only after a conclusive determination by the Wildlife Branch Director, in consultation with the Wildlife Care & Processing Group Supervisor, other Wildlife Operations Group Supervisors, and other trustee agencies and land managers, that all wildlife affected by the spill has been accounted for. Demobilization of Wildlife Operations groups and units will generally lag behind that of response equipment and personnel, for several reasons, such as animals remaining in rehabilitative care, the presence of residual oil, and the presence of visibly oiled pinnipeds and free-flying birds. This lag time may last several weeks.

The last resource of the Unified Command to be demobilized will likely be OWCN personnel, equipment and facilities used during the spill. Because cleaning, treatment and rehabilitation of oiled wildlife may last several weeks, animals brought the rehabilitation center late in the response may require care after other response resources have demobilized. In general, the rehabilitation center will continue to operate for three weeks following admission of the last animal into rehabilitation. During that time, as more animals are released and fewer animals remain in care, personnel and equipment resources will be gradually demobilized. Before closing, after the last animal leaves care, the center will be sanitized, decontaminated, restocked

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and prepared for the next response.

Depending on the trustee or land manager, local shoreline survey programs, such as those for the Farallon Islands, Point Reyes National Seashore, Gulf of the Farallones and Monterey Bay Sanctuaries may continue to monitor the occurrence and deposition of oiled wildlife, and to report to the Unified Command any anomalies or low, chronic presence of tar balls and oiled wildlife.



Training Topic

GENERAL TRAINING INFORMATION  
SHP-07 GENLTRAIN

## GENERAL TRAINING INFORMATION (continued)

9. Identify which of the 15 core components of the FRP that were exercised during this drill:

NOTIFICATIONS: \_\_\_\_\_

STAFF MOBILIZATION: \_\_\_\_\_

FRP OPERATIONS (ICS, UC): \_\_\_\_\_

DISCHARGE CONTROL: \_\_\_\_\_

DISCHARGE ASSESSMENT: \_\_\_\_\_

DISCHARGE CONTAINMENT: \_\_\_\_\_

DISCHARGE RECOVERY: \_\_\_\_\_

PROTECTION OF SENSITIVE AREAS: \_\_\_\_\_

WASTE MANAGEMENT: \_\_\_\_\_

COMMUNICATIONS: \_\_\_\_\_

TRANSPORTATION: \_\_\_\_\_

PERSONNEL SUPPORT: \_\_\_\_\_

EQUIPMENT SUPPORT: \_\_\_\_\_

PROCUREMENT: \_\_\_\_\_

DOCUMENTATION:

10. Describe lessons learned and identify persons responsible for follow up of corrective measures:

**(RETURN TO SAFETY OR HUMAN RESOURCES AND FILE FOR AT LEAST THREE YEARS)**

11. Attach supporting documents, if needed.

Certified by: (Name/ICS Section)

Information as of:

Date:

GENERAL TRAINING INFORMATION

JUNE 2008

SHP-07 GENLTRAIN







Drill Name	<b>EQUIPMENT DEPLOYMENT DRILL SHP-07b EQUIPDRILL</b>
<b>EQUIPMENT DEPLOYMENT DRILL (continued)</b>	
<p>11. For deployment of OSRO equipment, was a representative sample (at least 1000 ft of each boom type and at least one of each skimmer type) deployed?    <input type="checkbox"/> Yes    <input type="checkbox"/> No</p> <p>Was the equipment deployed in its intended operating environment:    <input type="checkbox"/> Yes    <input type="checkbox"/> No</p>	
<p>12. Are all facility personnel that are responsible for response operations involved in a comprehensive training program &amp; all pollution response equipment involved in a comprehensive maintenance program?</p> <p><input type="checkbox"/> Yes    <input type="checkbox"/> No</p> <p>If so, describe the program:</p>	
<p>13. Was the equipment deployed by personnel responsible for its deployment in the event of an actual spill?</p>	
<p>14. Was the deployed equipment operational?</p> <p>If not, why?</p>	
<p>15. Identify which of the 15 core components of the FRP that were exercised during this drill:</p> <p>NOTIFICATIONS: _____</p> <p>STAFF MOBILIZATION: _____</p> <p>FRP OPERATIONS (ICS, UC): _____</p> <p>DISCHARGE CONTROL: _____</p> <p>DISCHARGE ASSESSMENT: _____</p> <p>DISCHARGE CONTAINMENT: _____</p> <p>DISCHARGE RECOVERY: _____</p> <p>PROTECTION OF SENSITIVE AREAS: _____</p> <p>WASTE MANAGEMENT: _____</p> <p>COMMUNICATIONS: _____</p> <p>TRANSPORTATION: _____</p> <p>PERSONNEL SUPPORT: _____</p> <p>EQUIPMENT SUPPORT: _____</p> <p>PROCUREMENT: _____</p> <p>DOCUMENTATION: _____</p>	
<p>16. Describe lessons learned and identify persons responsible for follow up of corrective measures.</p>	
<p>17. Attach supporting documents, if needed.</p>	
Certified by: (Name/ICS Section)	Information as of: Date:

Drill Name

NOTIFICATION DRILL  
SHP-07c NOTIFDRILL

## NOTIFICATION DRILL INFORMATION

1. Date Performed:

2. Exercise or Actual Response?

3. Person &amp; Location:

Initials: \_\_\_\_\_

4. Time Initiated:

5. Notification Information:

Person Notified	ICS Position	Contact Method	Time Notified	Comments
Dave Slater	Qualified Individual	<input type="checkbox"/> Telephone <input type="checkbox"/> Mobile Phone <input type="checkbox"/> Pager <input type="checkbox"/> Radio <input type="checkbox"/> Other _____		
Kevin Laney	Alternate QI	<input type="checkbox"/> Telephone <input type="checkbox"/> Mobile Phone <input type="checkbox"/> Pager <input type="checkbox"/> Radio <input type="checkbox"/> Other _____		
Sean McDaniel	Alternate QI	<input type="checkbox"/> Telephone <input type="checkbox"/> Mobile Phone <input type="checkbox"/> Pager <input type="checkbox"/> Radio <input type="checkbox"/> Other _____		
Keith Kerr	Alternate QI	<input type="checkbox"/> Telephone <input type="checkbox"/> Mobile Phone <input type="checkbox"/> Pager <input type="checkbox"/> Radio <input type="checkbox"/> Other _____		
Jim Lee	Reg Spec	<input type="checkbox"/> Telephone <input type="checkbox"/> Mobile Phone <input type="checkbox"/> Pager <input type="checkbox"/> Radio <input type="checkbox"/> Other _____		
		<input type="checkbox"/> Telephone <input type="checkbox"/> Mobile Phone <input type="checkbox"/> Pager <input type="checkbox"/> Radio <input type="checkbox"/> Other _____		
		<input type="checkbox"/> Telephone <input type="checkbox"/> Mobile Phone <input type="checkbox"/> Pager <input type="checkbox"/> Radio <input type="checkbox"/> Other _____		

6. Additional Details:

7. Identify which of the 15 core components of the FRP that were exercised during this drill:

- Notifications
- Communications
- SHP/ICS Emergency Discharge Response Team Mobilization & Operation
- Documentation

8. Describe lessons learned and identify persons responsible for follow up of corrective measures:

Certified by: (Name/ICS Section)

Information as of:

Date:

NOTIFICATION DRILL INFORMATION

FEBRUARY 2008

SHP-07c NOTIF DRILL

<b>Incident Name</b>	<b>Operational Period (Date/Time)</b> From: _____ To: _____	<b>INITIAL INCIDENT INFORMATION</b> <b>SHP-01 INITINF</b>	
NAME OF PERSON REPORTING THE INCIDENT:			
Call-Back Number(s) of person reporting the incident:			
<b>FACILITY INFORMATION</b>			
Facility Name:			
Address:			
Type of Facility: <input type="checkbox"/> Tank Farm <input type="checkbox"/> Gas Plant <input type="checkbox"/> Gathering Lines <input type="checkbox"/> Other _____			
Contact: <b>David L. Slater, V.P. Operations</b>		Phone: <b>(562) 595-6440</b>	
Owner/Operator: <b>Signal Hill Petroleum</b>		Phone: <b>(562) 595-6440</b>	
<b>INCIDENT INFORMATION</b>			
Location:			
Equipment/Pipeline ID:			
Date of Incident Discovery:		Time of Incident Discovery:	
Type of Incident: <input type="checkbox"/> Leak <input type="checkbox"/> Rupture <input type="checkbox"/> Fire <input type="checkbox"/> Explosion <input type="checkbox"/> Other _____			
Extent of Incident: <input type="checkbox"/> Remained On SHP Property <input type="checkbox"/> Exited SHP Property			
Impacted Surfaces: <input type="checkbox"/> Paved <input type="checkbox"/> Nonporous <input type="checkbox"/> Hard Soil <input type="checkbox"/> Soft Soil <input type="checkbox"/> Sand/Gravel <input type="checkbox"/> Other _____			
Water Impacts: <input type="checkbox"/> None <input type="checkbox"/> Entered Sanitary Sewer <input type="checkbox"/> Entered Storm Drain <input type="checkbox"/> Entered Drainage Ditch <input type="checkbox"/> Entered Storm Channel/River			
Waterway Condition: <input type="checkbox"/> N/A <input type="checkbox"/> Dry <input type="checkbox"/> Low Flow (Est Depth _____) <input type="checkbox"/> Normal Flow (Est Depth _____) <input type="checkbox"/> High Flow (Est Depth _____)			
Material(s) Released: <input type="checkbox"/> Crude Oil <input type="checkbox"/> Produced Water <input type="checkbox"/> Other _____			
Estimated Quantity Released:		<input type="checkbox"/> Gallons	<input type="checkbox"/> Barrels
Method Used to Est. Quantity Released: <input type="checkbox"/> Visual <input type="checkbox"/> Other _____			
<b>WEATHER INFORMATION</b>			
Weather Condition: <input type="checkbox"/> Sunny <input type="checkbox"/> Overcast <input type="checkbox"/> Fog <input type="checkbox"/> Dry <input type="checkbox"/> Moderate Humidity <input type="checkbox"/> Humid			
Precipitation Condition: <input type="checkbox"/> Clear <input type="checkbox"/> Drizzle <input type="checkbox"/> Rain			
Temperature Condition: <input type="checkbox"/> Hot (>95°F) <input type="checkbox"/> Warm (75-95°F) <input type="checkbox"/> Moderate (55-75°F) <input type="checkbox"/> Cool (35-55°F) <input type="checkbox"/> Cold (<35°F)			
Wind Speed: <input type="checkbox"/> Calm <input type="checkbox"/> Slight Breeze <input type="checkbox"/> Windy <input type="checkbox"/> Very Windy (constant >40 mph)			
Wind Direction: <input type="checkbox"/> North <input type="checkbox"/> ENE <input type="checkbox"/> East <input type="checkbox"/> ESE <input type="checkbox"/> South <input type="checkbox"/> WSW <input type="checkbox"/> West <input type="checkbox"/> WNW			
Prepared by: (Name/ICS Section)		Information as of:	
		Date:	Time:
<b>INITIAL INCIDENT INFORMATION</b>		<b>MAY 2004</b>	
		<b>SHP-01 INITINF</b>	

<b>Incident Name</b>	<b>Operational Period (Date/Time)</b> From: _____ To: _____	<b>INITIAL INCIDENT INFORMATION</b> SHP-01 INITINF
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**NARRATIVES/NOTES (continued)**

*(This area is intentionally left blank for the user to provide a narrative or notes.)*

<b>Prepared by: (Name/ICS Section)</b>	<b>Information as of:</b>	
	<b>Date:</b>	<b>Time:</b>
<b>INITIAL INCIDENT INFORMATION</b>	<b>MAY 2004</b>	<b>SHP-01 INITINF</b>

<b>Incident Name</b>	<b>Operational Period (Date/Time)</b> From: _____ To: _____	<b>INCIDENT ACTION PLAN</b> <b>SHP-01a ACTPLAN</b>
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**OVERALL INCIDENT OBJECTIVES**

Action Plan is Prepared by Planning Staff

Approved Site Health and Safety Plan is located at: \_\_\_\_\_

Plan Item	IC Section	Responsible Person	Specific Objectives	Date/Start Time	Date End Time
Site Characterization, Forecasts, & Analysis	Planning				
Site Safety, Security, Surveillance	Safety Staff & Logistics				
Logistics Support, Procurement, Communications	Logistics				
Source Stabilization	Operations				
Oil Spill Response Organization	Operations OSRO				
On Water Containment & Recovery/Shoreline Protection & Recovery	Operations OSRO				
Sensitive Areas, Resources at Risk	Planning				
Waste Management	Planning				
Restoration/Mitigation, Demobilization	Planning				
Information Mgt, Training	Information / Liaison				
Financial Mgt, Claims, and Documentation	Finance/ Admin				

**Attachments:**

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Initial Incident Information (SHP-01) | <input type="checkbox"/> Incident Map (SHP-02) | <input type="checkbox"/> Agency Contact Log (SHP-03) |
| <input type="checkbox"/> Health and Safety Plan                | <input type="checkbox"/> _____                 | <input type="checkbox"/> _____                       |
| <input type="checkbox"/> _____                                 | <input type="checkbox"/> _____                 | <input type="checkbox"/> _____                       |

Prepared by:  
(ICS Planning Section)Agency Approval  
(Signature/Name/Agency)      Date

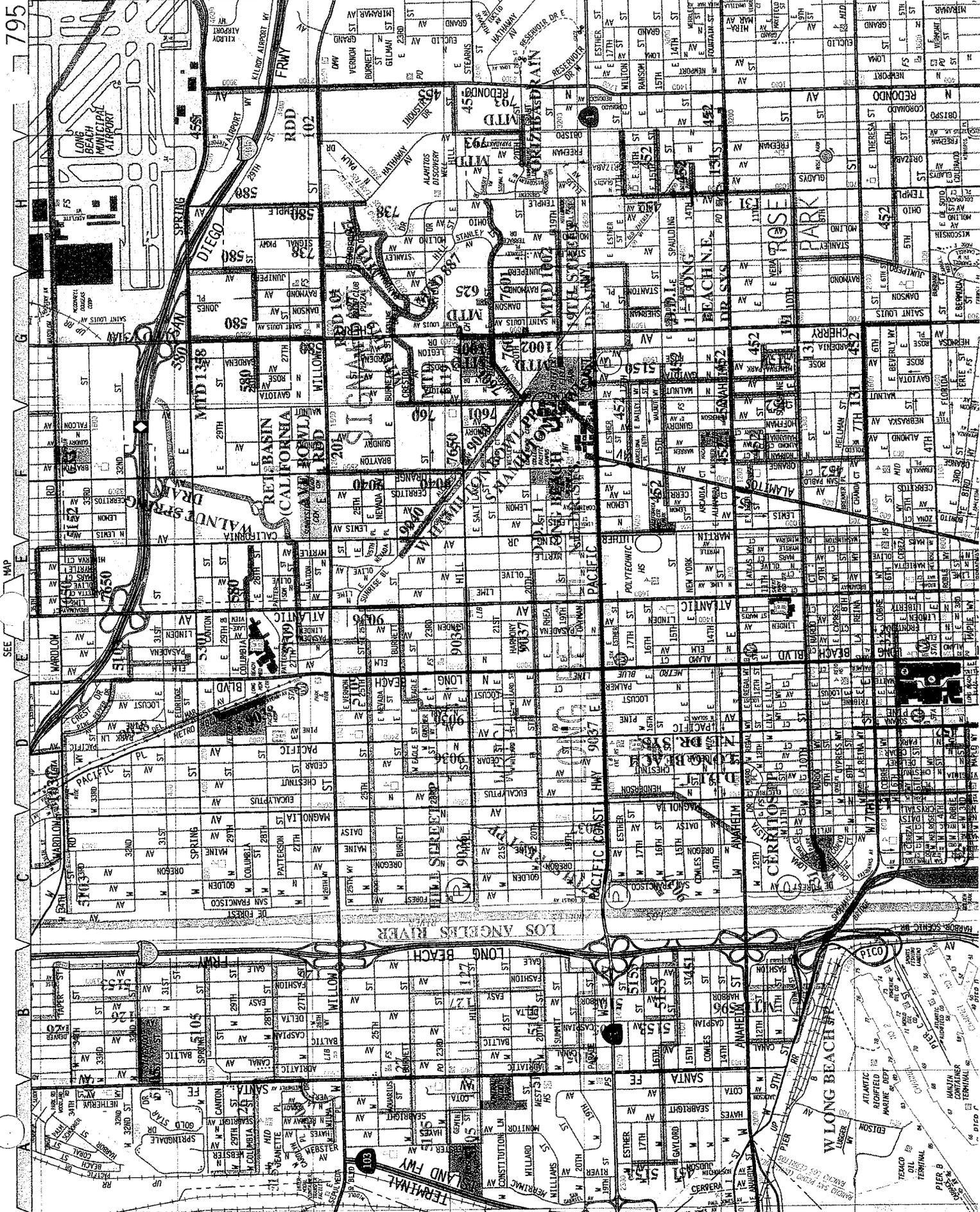
Information as of:

Date:

Time:

**INCIDENT ACTION PLAN****OCTOBER 2003****SHP-01a ACTPLAN**





795

MAP SEE

B

C

D

E

F

G

H

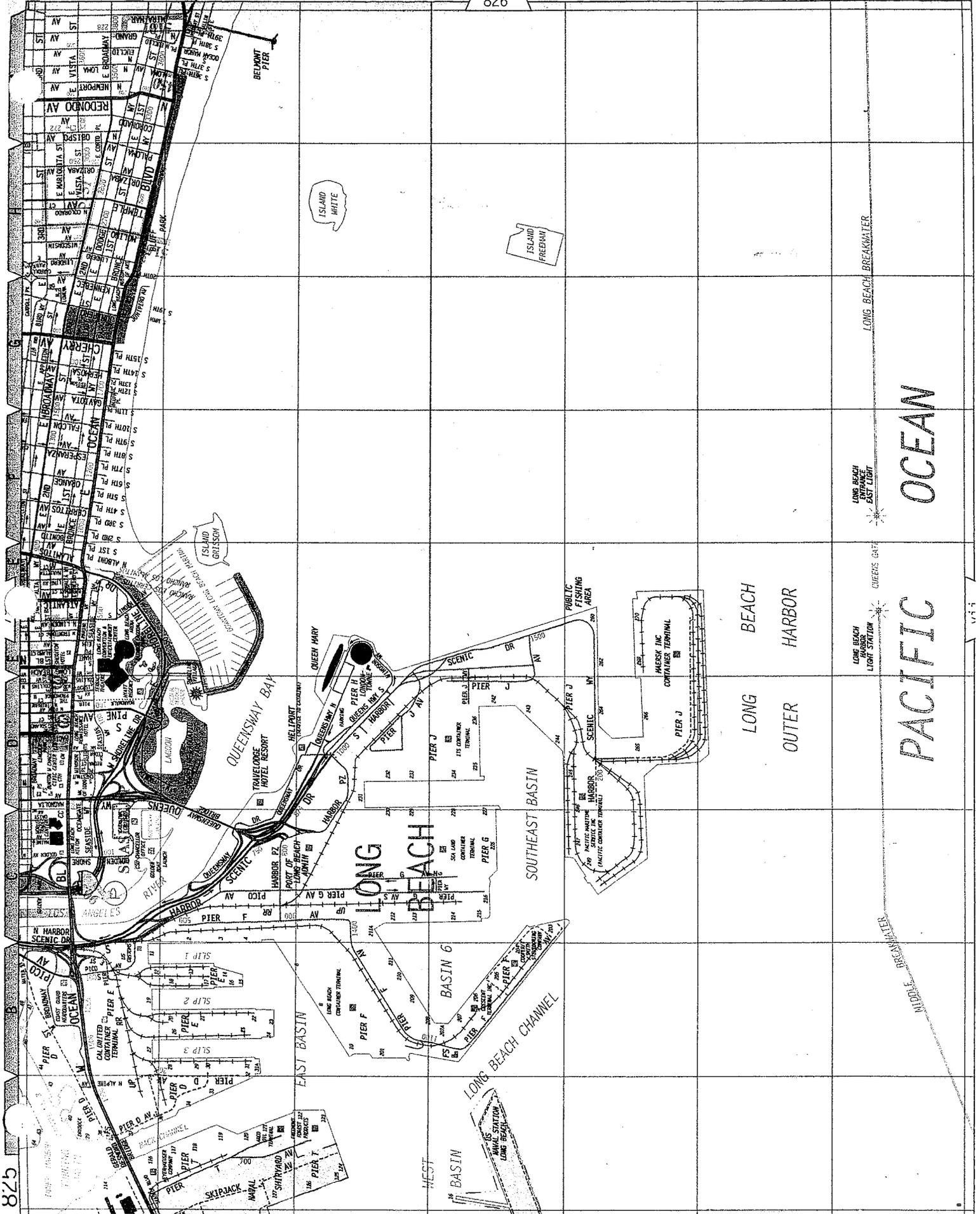
794



96-821

SEE B-D7  
 1 BULLDOG CT  
 2 PASO PASO CT  
 3 SARA LN  
 4 SARA LN  
 5 SARA LN  
 6 SARA LN  
 7 SARA LN  
 8 SARA LN  
 9 SARA LN  
 10 SARA LN  
 11 SARA LN

SEE T-15  
 1 BULLDOG CT  
 2 PASO PASO CT  
 3 SARA LN  
 4 SARA LN  
 5 SARA LN  
 6 SARA LN  
 7 SARA LN  
 8 SARA LN  
 9 SARA LN  
 10 SARA LN  
 11 SARA LN



678

OCEAN

PACIFIC

LONG BEACH OUTER HARBOR

LONG BEACH BREAKWATER

LONG BEACH LIGHT STATION

QUEEN MARY

LONG BEACH LIGHT STATION

MIDDLE BREAKWATER

ISLAND WHITE

ISLAND FREEBORN

ISLAND GRAYSON

LONG BEACH

SOUTHEAST BASIN

LONG BEACH CHANNEL

WEST BASIN

QUEENSWAY BAY

TRANSOCEANIC HOTEL RESORT

QUEEN MARY

PIER H

PIER I

PIER J

PIER K

PIER L

PIER M

PIER N

PIER O

PIER P

PIER Q

PIER R

PIER S

PIER T

PIER U

PIER V

PIER W

PIER X

PIER Y

PIER Z

PIER AA

PIER AB

PIER AC

PIER AD

PIER AE

PIER AF

PIER AG

PIER AH

PIER AI

PIER AJ

PIER AK

PIER AL

PIER AM

PIER AN

PIER AO

PIER AP

PIER AQ

PIER AR

PIER AS

PIER AT

PIER AU

PIER AV

PIER AW

PIER AX

PIER AY

PIER AZ

PIER BA

PIER BB

PIER BC

PIER BD

PIER BE

PIER BF

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PIER BI

PIER BJ

PIER BK

PIER BL

PIER BM

PIER BN

PIER BO

PIER BP

PIER BQ

PIER BR

PIER BS

PIER BT

PIER BU

PIER BV

PIER BV

PIER BW

PIER BX

PIER BY

PIER BZ

PIER CA

PIER CB

PIER CC

PIER CD

PIER CE

PIER CF

PIER CG

PIER CH

PIER CI

PIER CJ

PIER CK

PIER CL

PIER CM

PIER CN

PIER CO

PIER CP

PIER CQ

PIER CR

PIER CS

PIER CT

PIER CU

PIER CV

PIER CV

PIER CW

PIER CX

PIER CY

PIER CZ

PIER DA

PIER DB

PIER DC

PIER DD

PIER DE

PIER DF

PIER DG

PIER DH

PIER DI

PIER DJ

PIER DK

PIER DL

PIER DM

PIER DN

PIER DO

PIER DP

PIER DQ

PIER DR

PIER DS

PIER DT

PIER DU

PIER DV

PIER DV

PIER DW

PIER DX

PIER DY

PIER DZ

PIER EA

PIER EB

PIER EC

PIER ED

PIER EE

PIER EF

PIER EG

PIER EH

PIER EI

PIER EJ

PIER EK

PIER EL

PIER EM

PIER EN

PIER EO

PIER EP

PIER EQ

PIER ER

PIER ES

PIER ET

PIER EU

PIER EV

PIER EV

PIER EW

PIER EX

PIER EY

PIER EZ

PIER FA

PIER FB

PIER FC

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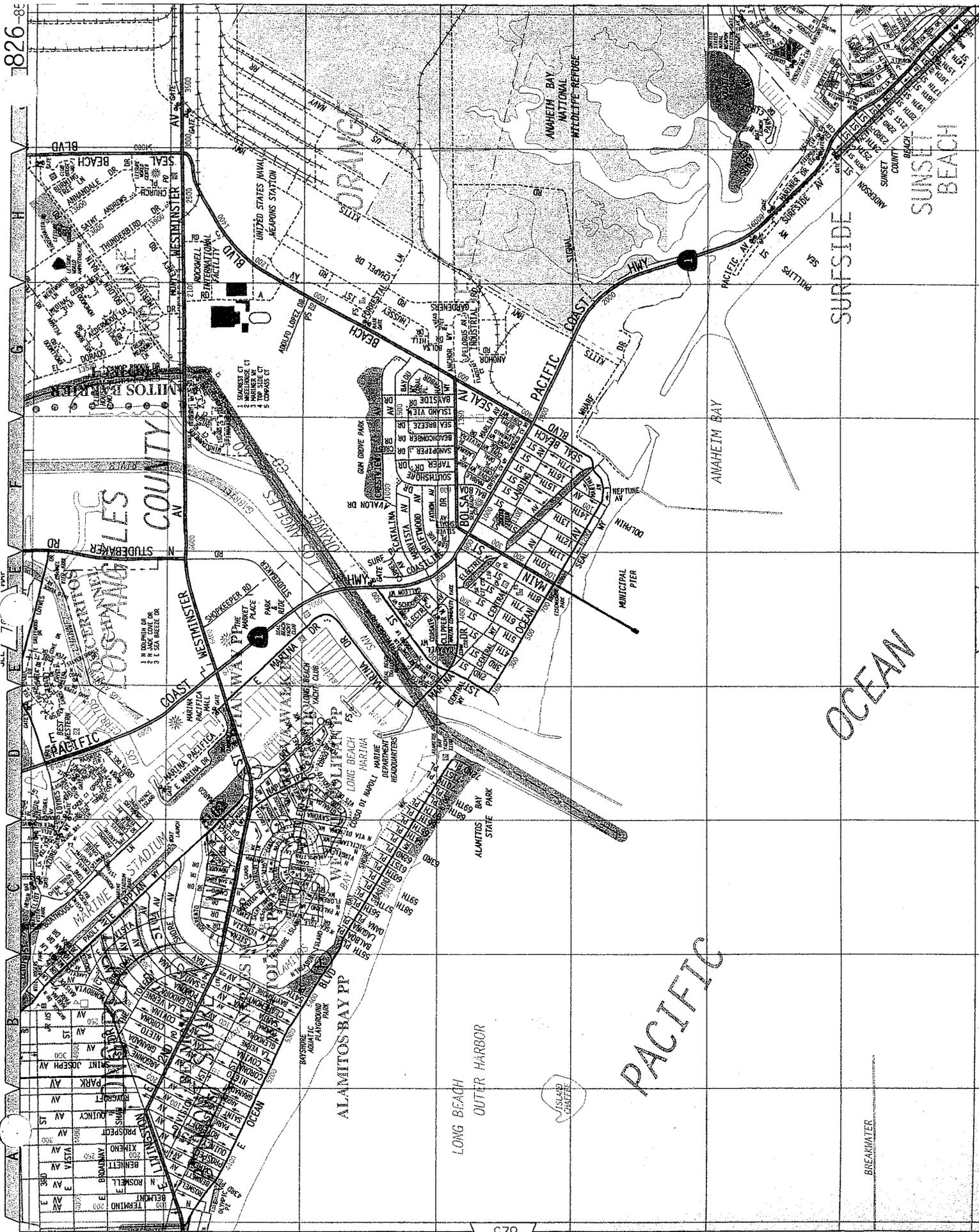
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1826-8E



<b>Incident Name</b>	<b>Operational Period (Date/Time)</b> From: _____ To: _____	<b>INCIDENT STATUS UPDATE</b> <b>SHP-01b STATUP</b>
<b>MULTIPLE SHIFT INCIDENT INFORMATION UPDATE</b>		
Type of Incident: <input type="checkbox"/> Leak <input type="checkbox"/> Rupture <input type="checkbox"/> Fire <input type="checkbox"/> Explosion <input type="checkbox"/> Other _____		
Extent of Incident: <input type="checkbox"/> Remained On SHP Property <input type="checkbox"/> Exited SHP Property		
Impacted Surfaces: <input type="checkbox"/> Nonporous <input type="checkbox"/> Hard Soil <input type="checkbox"/> Soft Soil <input type="checkbox"/> Sand/Gravel <input type="checkbox"/> Other _____		
Water Impacts: <input type="checkbox"/> None <input type="checkbox"/> Entered Sanitary Sewer <input type="checkbox"/> Entered Storm Drain <input type="checkbox"/> Entered Drainage Ditch <input type="checkbox"/> Entered Storm Channel/River		
Waterway Condition: <input type="checkbox"/> N/A <input type="checkbox"/> Dry <input type="checkbox"/> Low Flow (Est Depth _____) <input type="checkbox"/> Normal Flow (Est Depth _____) <input type="checkbox"/> High Flow (Est Depth _____)		
Material(s) Released: <input type="checkbox"/> Crude Oil <input type="checkbox"/> Produced Water <input type="checkbox"/> Other _____		
Estimated Additional Quantity Released: <input type="checkbox"/> Gallons <input type="checkbox"/> Barrels		
Method Used to Est. Add. Quantity Released: <input type="checkbox"/> Visual <input type="checkbox"/> Other _____		
<b>MULTIPLE SHIFT WEATHER INFORMATION UPDATE</b>		
Changes in Weather Condition:		
Changes in Precipitation Condition:		
Changes in Temperature Condition:		
Changes in Wind Speed:		
Changes in Wind Direction:		
<b>NARRATIVES/NOTES ON ADDITIONAL CHANGES/UPDATES</b>		
Prepared by:	Information as of:	
	Date:	Time:
<b>INCIDENT STATUS UPDATE</b>	<b>OCTOBER 2003</b>	<b>SHP-01b STATUP</b>





<b>Incident Name</b>	<b>Operational Period (Date/Time)</b> From: _____ To: _____	<b>RESOURCES AT RISK SUMMARY</b> <b>SHP-01E RARS</b>
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**ENVIRONMENTALLY-SENSITIVE AREAS AND WILDLIFE ISSUES**

Site #	Priority	Site Name &/or Physical Location	Site Issues

**Narrative**

**ARCHAEO-CULTURAL AND SOCIO-ECONOMIC ISSUES**

Site #	Priority	Site Name &/or Physical Location	Site Issues

**Narrative**

<b>Prepared by: (Name/ICS Section)</b>	<b>Information as of:</b>	
	<b>Date:</b>	<b>Time:</b>

<b>Incident Name</b>	<b>INCIDENT MAP SHP-02 MAP</b>	
<p><b>Map/Sketch</b> (Include maps drawn here or attached, showing the total area of operations, the extent of the incident (length, width), the incident site/area, trajectories, storm drains, waterways, sensitive areas, or impacted shorelines. Indicate North with an arrow.)</p>		
<b>Prepared by: (Name/ICS Section)</b>	<b>Information as of:</b>	
	<b>Date:</b>	<b>Time:</b>
<b>INCIDENT MAP</b>	<b>MAY 2004</b>	<b>SHP-02 MAP</b>

**AGENCY CONTACTS**

The following is a partial list of agency contacts and phone numbers in order of call priority. Not all agencies on this list may need to be contacted. The requirement to contact an agency/company will be dependent on incident specifics. Use Blank Sheet (Page 2) of this form for additional agency contacts

Agency	Phone No.	Date	Assigned Case No	Contactor	Rep/Time On Site/Comments
California Emergency Mgt Services (CAL-EMA)	(800) 852-7550 (916) 845-8911 (Alt) (916) 845-8741 (24-hr)				
National Response Center	(800) 424-8802 (202) 267-2675 (Alt)				
Los Angeles County Fire Dept CUPA	(323) 890-4317 911 (Alt)				
Signal Hill Police Dept	(562) 989-7200 911 (Alt)				
Long Beach Fire Dept	911 (562) 591-7631 (dispatch) (562) 436-8211 (Alt)				
Long Beach Police Dept	(562) 435-6711 911 (Alt)				
California Department of Fish and Game	(888) 334-2258 (916) 445-0045 (alt)				
United States Coast Guard (Waterways)	(562) 980-4450 (562) 980-4444 (afterhours)				
Division of Oil and Gas District 1	(714) 816-6847				
Los Angeles County Flood Control (Storm Drains)	(562) 861-0316 (626) 458-4357 (nights) (800) 675-4357 (afterhours)				
SCAQMD (SCAQMD permitted eqpt.)	(800) 288-7664				
City of Signal Hill Public Works	(562) 989-7300				
City of Long Beach CUPA Environmental Health Dept	(562) 570-4131				

Prepared by: (Name/ICS Section) \_\_\_\_\_ Information as of: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

PHMSA 000088955

**Incident Name** \_\_\_\_\_ **Operational Period (Date/Time)** \_\_\_\_\_ **AGENCY CONTACT LOG**  
**From:** \_\_\_\_\_ **To:** \_\_\_\_\_ **SHP-03 AGYCONTLOG**

**AGENCY CONTACTS (continued)**

Use this blank sheet for additional agency contacts not listed on Page 1

Agency	AREA	Phone No.	Time	Date	Assigned Case No.	Contactor	Rep/Time On Site/Comments
City of Long Beach Public Works Dept	LB	(562) 570-6383					
City of Long Beach Water Department	LB	(562) 570-2451					
Long Beach Airport	LB	(562) 435-1371					
California State Fire Marshall (DOT Pipelines)	DOT/PL	(562) 497-9100					
ARCO Wheel/Four Corners Pipeline	ALL	SEE CALL WHEEL					
California Highway Patrol	ALL	(310) 323-5450 (213) 953-7383					
Caltrans	ALL	(213) 897-0383 (213) 669-4472					
DTSC (Hazardous waste, containment releases - Cypress District Office)	ALL	(714) 484-5300					
LA-Regional Water Quality Control Board (Waterway spills)	ALL	(213) 576-6600					
U.S. EPA (Significant Spills)	ALL	(800) 300-2193					
Cal-OSHA (Torrance District Office)	ALL	(310) 516-3734					
Public Utilities Commission (Gas Pipeline releases - LA District Office)	ALL	(213) 576-7000					
Red Cross	ALL	(800) 540-2000 (24hr)					

Prepared by: (Name/ICS Section) \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Information as of: \_\_\_\_\_

JUNE 2010

SHP-03 AGYCONTLOG



## SCAQMD Breakdown Notification Form

SCAQMD requires a phone notification **within 1-hour of discovery**.

A Breakdown occurs when a facility or equipment unexpectedly violates a SCAQMD permit condition or Rule. Breakdowns cannot be called in for CEMS or other emissions monitoring system malfunctions.

Breakdowns cannot be called in for violations due to operator error, neglect or improper operation or maintenance procedures.

A copy of SHP's SCAQMD permits are located in the control rooms. Permits have conditions as well as some rule requirements. The West Unit has a facility permit, other units have equipment permits.

During SCAQMD work hours, you will reach a live person. During off hours, you will reach a recording. The notification will be followed up by a call from a SCAQMD inspector.

**Breakdown coverage only lasts for 24hrs.** An emergency variance must be immediately filed or equipment must be shut down.

**Call Sean McDaniel and Jim Lee to report the incident. Leave a message with details if unreachable. If Sean and Jim can't be reached, the incident must be reported within 1 hour of discovery, to:**

**1-800-CUT-SMOG (1-800-288-7664)**

**Give the following information and fill in what was reported to SCAQMD below:**

**SCAQMD BREAKDOWN REPORT NUMBER** \_\_\_\_\_

**Name of Reporter** [ex: (your name) of Signal Hill Petroleum] \_\_\_\_\_

**Time of Call to SCAQMD** \_\_\_\_\_

**Time of Breakdown or Discovery** \_\_\_\_\_

**Location** [ex: Signal Hill Petroleum, Inc. West Unit in Long Beach] \_\_\_\_\_

**SCAQMD Facility ID** [ex: ID number 101977] \_\_\_\_\_

**Equipment involved** [ex: Turbine and emissions control system] \_\_\_\_\_

**Brief Explanation** [ex: NOx emissions exceeded permit limit of 5 ppm after startup] \_\_\_\_\_

**Cause of Breakdown** [ex: Not known at this time] \_\_\_\_\_

**Steps to Correct Breakdown** [ex: SHP technicians are troubleshooting the system right now] \_\_\_\_\_

**Estimated Duration** [ex: Not known at this time] \_\_\_\_\_

**Responsible Party** [ex: (your name)] \_\_\_\_\_

**Call-Back Number** [ex: (your cell phone)] \_\_\_\_\_

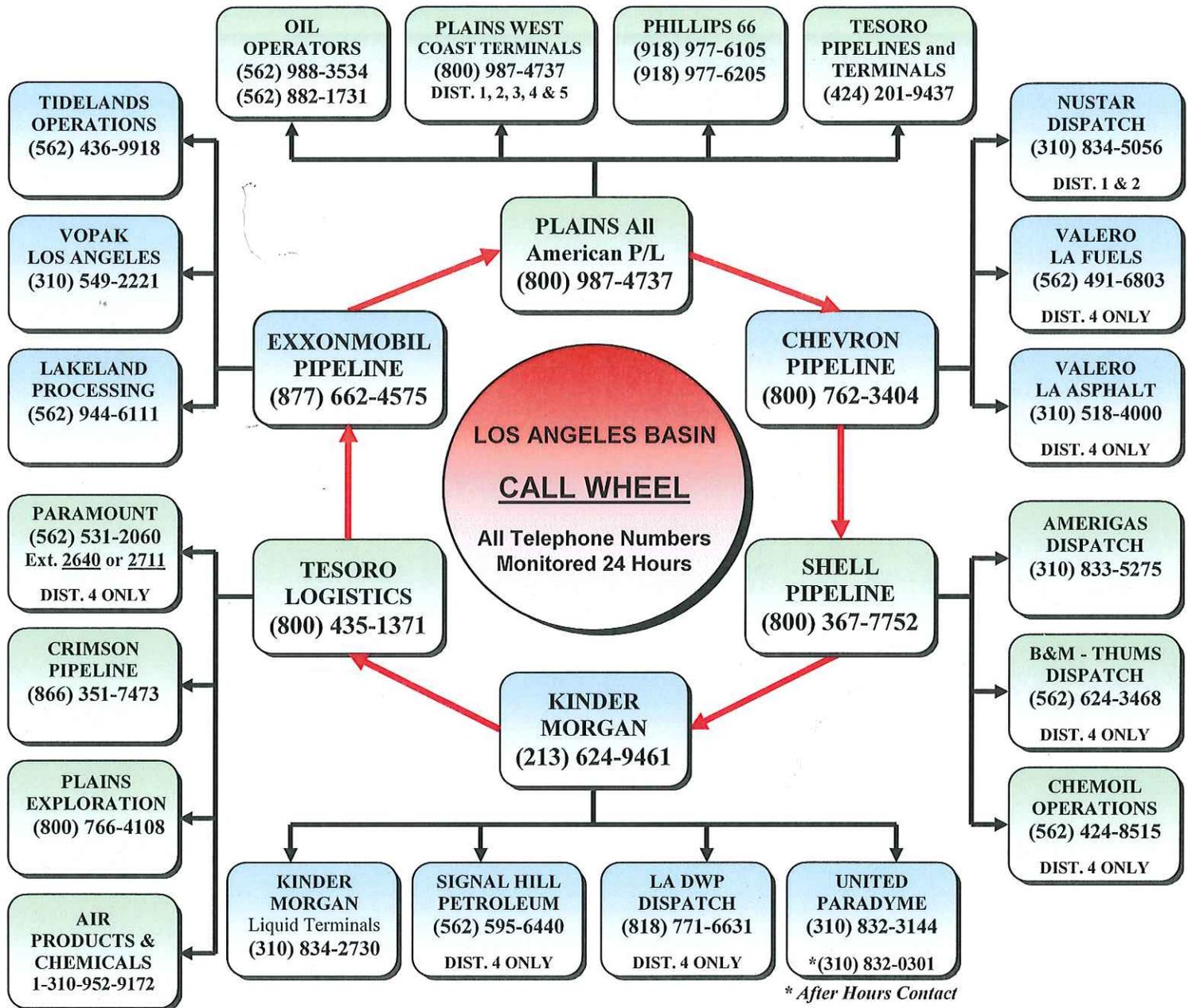
**Name of SCAQMD Inspector** \_\_\_\_\_

**Inspector Phone Number** \_\_\_\_\_

**Inspector Date/Time of Visit/Notes** \_\_\_\_\_

Signal Hill Petroleum, Inc. SCAQMD ID Numbers: West Unit/Gas Plant: 101977  
 Central Unit: 045086  
 East Unit: 058076  
 Long Beach Community: 142231  
 Bryant Lease: 149297

# LOS ANGELES BASIN – EMERGENCY CALL WHEEL



## PURPOSE OF THE CALL WHEEL

The "Call Wheel" is a voluntary and mutually beneficial system serving the industry as well as the local community. The "Call Wheel" is to aid in sharing potential spill or release information and notification to companies on the Call Wheel as well as response information on who may have claimed the leak.

## HOW TO USE THE CALL WHEEL

The companies in the inner wheel of the Call Wheel connect using a nationwide pager and a dial-in conference line. Any company within the inner wheel that becomes aware of a leak may be connected simultaneously with the other companies on the inner wheel. (A satellite company that becomes aware of a leak should contact the inner wheel company to initiate the Call Wheel.) Upon initiating the Call Wheel, take roll call and then pass on the leak information. If any company on the inner wheel is absent for roll call, the company immediately prior to the absent party should call the absent company directly. In the event a company on the inner wheel cannot be contacted, the company immediately prior to the absent party should call the satellite (outer wheel) company that the absent party was supposed to contact. In the event that any of the inner wheel companies are unable to contact their satellite companies, this information should be passed back to the inner wheel companies.

## IF THE WHEEL COMMUNICATION IS NOT AVAILABLE

In the event the nationwide pager does not work, revert to individual telephone calls as indicated on the Call Wheel. The initiating company should call the next party in the Call Wheel sequence. If any of the companies on the inner wheel cannot be contacted, the party immediately prior to the absent party should notify the next party on the inner wheel in sequence after the absent party. The party immediately prior to the absent party should also be responsible for calling the satellites of the absent party.

In the event of a phone number change, please contact Roseanne Rother at Crimson Pipeline at (562) 577-3490 or (562) 285-4103 OR Mark Jensen at Kinder Morgan at (714) 560-4862 as soon as possible.

Incident Name		Operational Period (Date/Time) From: _____ To: _____		COMPANY CONTACT LOG SHP-03a COMPCONTLOG		
COMPANY CONTACTS						
The following is a partial list of company contacts and phone numbers. Not all individuals/companies on this list may need to be contacted. The requirement to contact an individual/company will be dependent on incident specifics.						
Company/Individuals	Phone No.	Time	Date	Contactor	Company/Agency	Time On Site
Oil Spill Response Organization (Patriot)	(800) 624-9136 (24 hr)				Patriot Environmental	
Oil Spill Response Organization (NRC) – Alt & Marine Spills	(800) 337-7455 (24-hr) (562) 432-1304 (alt)				NRC Environmental Services	
Dave Slater Qualified Individual	(562) 595-6440 (b) (6) (Nextel) (562) 254-6312				Signal Hill Petroleum	
Kevin Laney 1 <sup>st</sup> Alt Qualified Individual	(562) 595-6440 (b) (6) (Nextel)				Signal Hill Petroleum	
Sean McDaniel 2 <sup>nd</sup> Alt Qualified Individual	(562) 595-6440 (b) (6) (Nextel)				Signal Hill Petroleum	
Keith Kerr	(562) 595-6440 (b) (6) (Nextel)				Signal Hill Petroleum	
Jim Lee	(562) 595-6440 (b) (6) (Nextel)				Signal Hill Petroleum	
Jim Haas	(562) 595-6440 (b) (6) (Nextel)				Signal Hill Petroleum	
Ron Bates	(562) 595-6440 (b) (6) (Nextel)				Signal Hill Petroleum	
Kristen Kang	(949) 600-7995 (business hours only)				Commercial Global Insurance	
SHP Operator on Duty	(562) 824-1842				Signal Hill Petroleum	
Jim Kisting	(562) 925-9518 (562) 983-4799 (pager)				Jim Kisting Auto Detailing	
Prepared by: (Name/ICS Section)				Information as of:		
				Date:	Time:	
COMPANY CONTACT LOG			JUNE 2010		SHP-03a COMPCONTLOG	

**SIGNAL HILL PETROLEUM  
Personnel List and Contact Numbers**

<b>ICS Center</b>	<b>Voice</b>	<b>Fax</b>	<b>NAME</b>	<b>Cell Phone</b>	<b>Residence</b>
Main Office	(562) 595-6440	(562) 426-4587	Francisco Aceves	(b) (6)	
<b>NAME</b>	<b>Cell Phone</b>	<b>Residence</b>	Eugenio Aguilar		
Antonio Aguilar	(b) (6)		Hilario Aguilar		
Ron Bates			Hilario Aguilar Jr.		
Jim Dare			Everado Aldapa		
Tom Dunn			Pedro Ambriz		
Keith Kerr			Jamie Amundson		
Kevin Laney			Dave Berens		
Jim Lee			Ray Boykins		
Sean McDaniel			Eric Brannon		
John Perry			Steve Clavijo		
Vince Romo			Jose Elizarraraz		
Devon Shay			Jose Elizarraraz Jr.		
Dave Slater			Phil Esparza		
Bill Summerfield			Marco Gandara		
Eric Veinot			Dillon Griffis		
			Jim Haas		
			Derrick Hallion		
			Jae Han		
			Gregg Harrison		
			Jesse Hernandez		
			James Hughes		
			Patrick Hurley		
			Carlos Hurtado		
			Willie Jackson		
			Kevin Johnson		
			Jeremiah Johnson		
			Dan "Bud" Jones		
			Brent Kerr		
			Jimmie Legaspi		
			Franklin Linares		
			Pedro Lopez		
			Jose Martinez		
			Anthony McClellan		
			Frank Mendez		
			Frank A. Mendez		
			Luis Mendez		
			Mike Newman		
			Edgar Osuna Camacho		
			Bernardo Preciado		
			Victor Pulido		
			Alex Ramirez		
			Pedro Rivera		
			Al Rodriguez		
			Nicholas Sisko		
			Dave Stewart		
			Fernando Vazquez		
			David Vititow		
			Jeffery Weaver		
			Dale Weick		
			Sal Zavala		













<b>Incident Name</b>	<b>Operational Period (Date/Time)</b> From: _____ To: _____	<b>INCIDENT CLOSURE INFORMATION</b> SHP-06 INCCLOSURE	
Date of Closure:	Time of Closure:		
<b>INCIDENT CLOSURE INFORMATION</b>			
Describe Changes/Updates/Additions to information given in <i>Initial Incident Information</i> form (SHP-01 INITINF)			
Type of Incident:			
Extent of Incident:			
Impacted Surfaces:			
Water Impacts:			
Waterway Condition:			
Material(s) Released:			
Final Estimated Quantity Released:		<input type="checkbox"/> Gallons	<input type="checkbox"/> Barrels
Final Estimated Cost:		Dollars	
Method Used to Est. Quantity Released: <input type="checkbox"/> Visual <input type="checkbox"/> Engineering Calcs <input type="checkbox"/> Measurement <input type="checkbox"/> Other _____			
<b>WEATHER CLOSURE INFORMATION</b>			
Note weather conditions during the extent of the incident:			
<b>GENERAL CLOSURE INFORMATION</b>			
If any one of the following answers is no, explain on a separate attached sheet			
Has OSRO/Signal Hill removed the entire spill to the satisfaction of government agencies and Signal Hill?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
Has OSRO/Signal Hill cleaned/restored area impacted by spill?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
Has OSRO/Signal Hill removed all spill removal material/devices and response equipment?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
Has OSRO/Signal Hill properly disposed of spill and spill removal materials?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
Have all agencies approved/signed off cleanup/remediation activities?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
Is the California "Emergency Release Follow-up Notification Reporting Form" required?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
Completed and Submitted?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
Is the CERCLA Emergency Release Notification required?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
Completed and Submitted?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
Has financial report for incident closure been prepared?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
Have all activities been properly documented and filed?		<input type="checkbox"/> YES	<input type="checkbox"/> NO
Prepared by: (Name/ICS Section/Signature)		Information as of:	
		Date:	Time:
<b>INCIDENT CLOSURE INFORMATION</b>		<b>MAY 2004</b>	
		<b>SHP-06 INCCLOSURE</b>	

<b>Incident Name</b>	<b>Operational Period (Date/Time)</b> From: _____ To: _____	<b>INCIDENT CLOSURE INFORMATION</b> <b>SHP-06 INCCLOSURE</b>
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**AGENCIES PRESENT DURING INCIDENT/CLOSURE**

Agency	Name	Contact Phone Number	Notes/Actions/Comments

**MEDIA PRESENT DURING INCIDENT/CLOSURE**

Name	Contact Phone Number	Notes/Actions/Comments

**RECOMMENDATIONS TO PREVENT RECURRENCE**

**RECOMMENDATIONS TO FRP/SPCC PLANS**

**ADDITIONAL COMMENTS**

<b>Prepared by: (Name/ICS Section/Signature)</b>	<b>Information as of:</b>	
	<b>Date:</b>	<b>Time:</b>



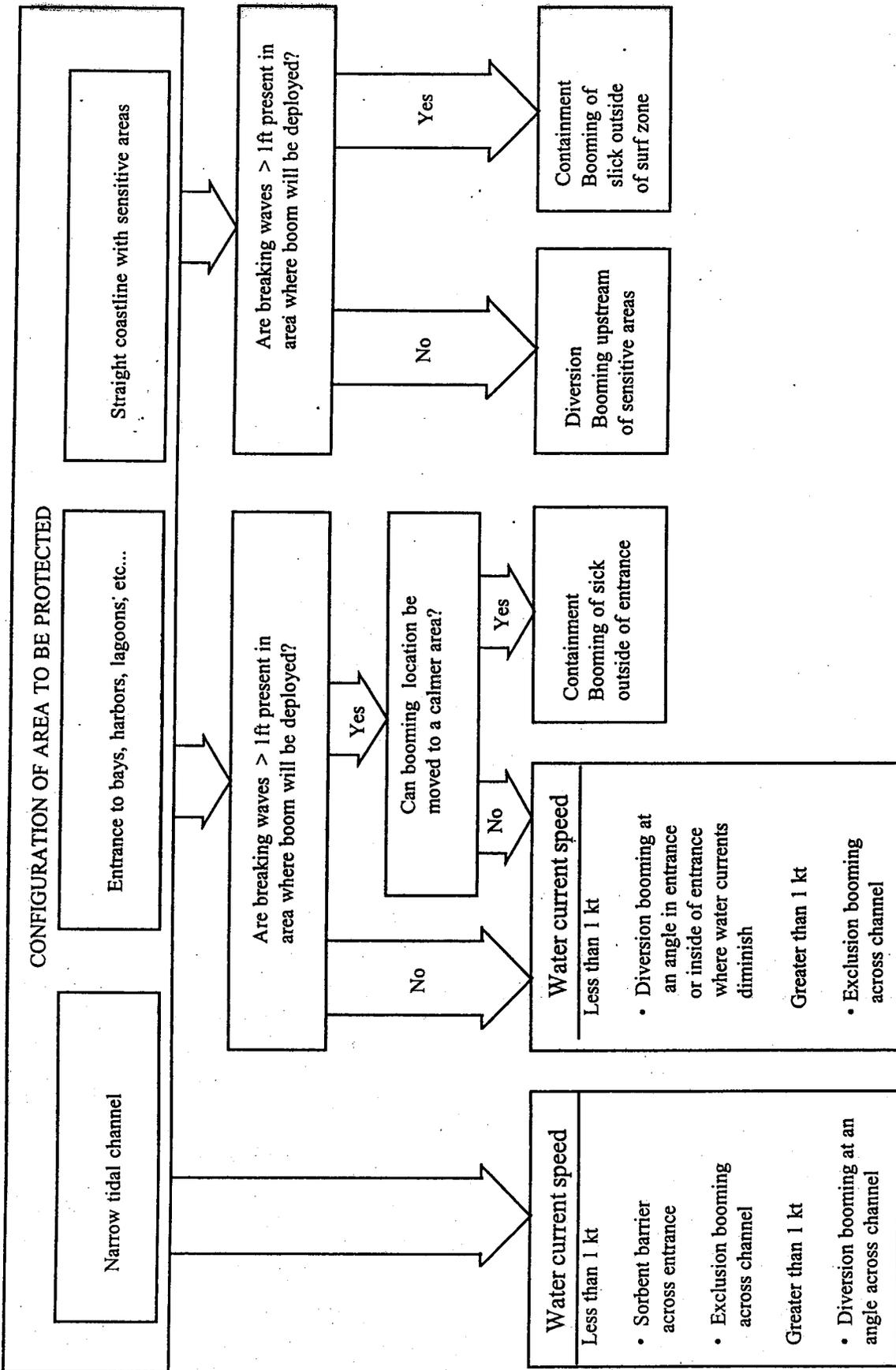
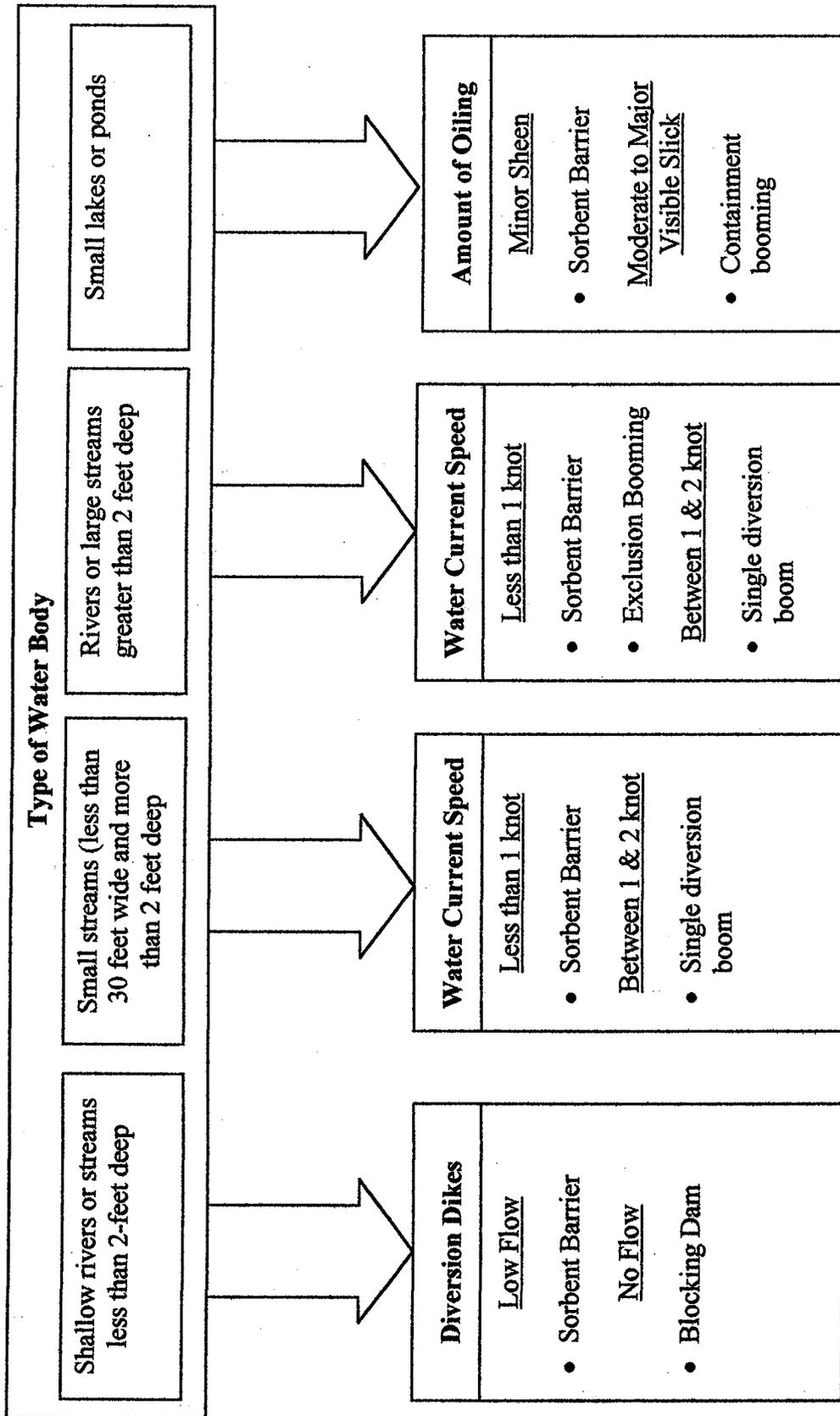
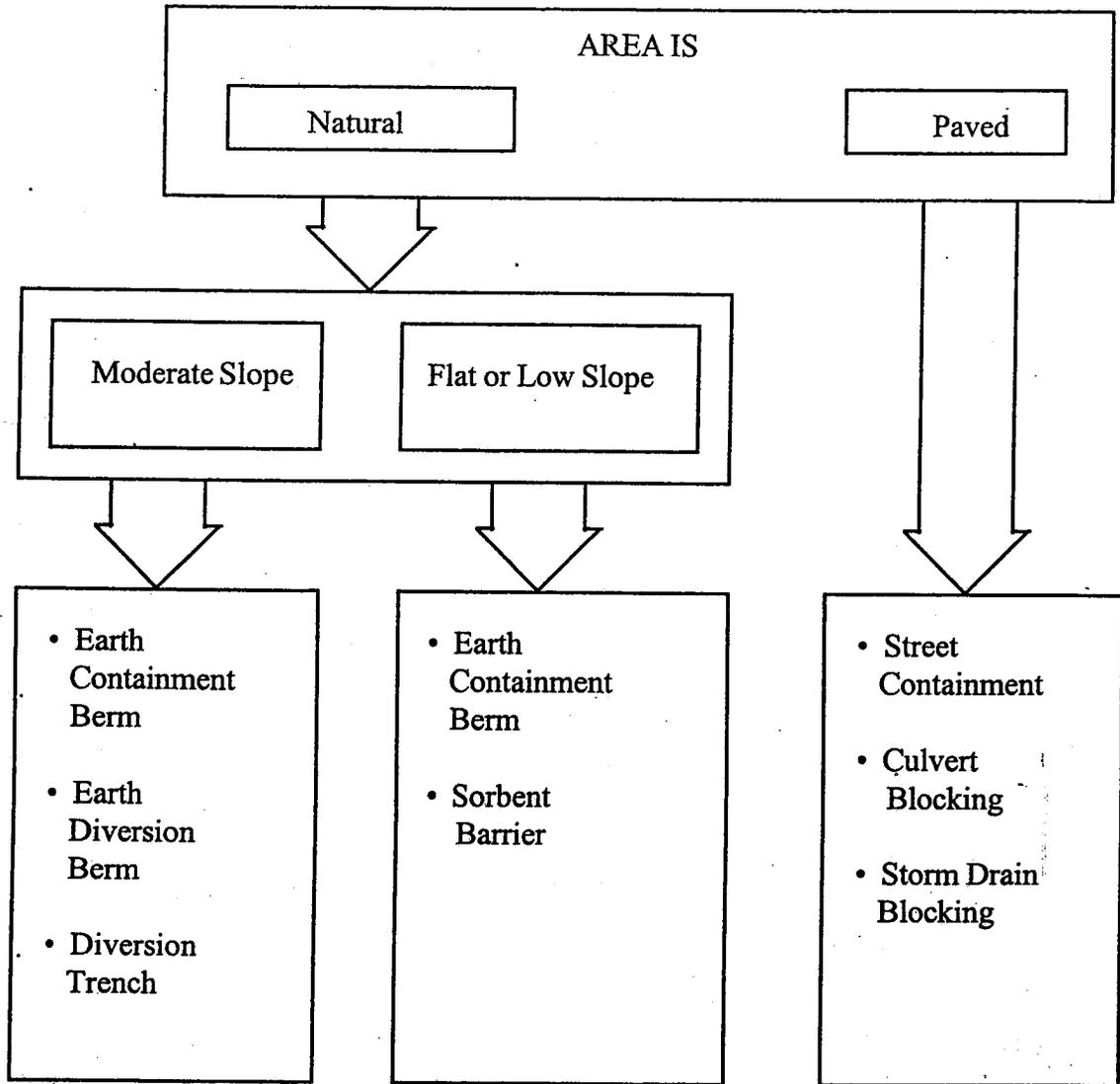


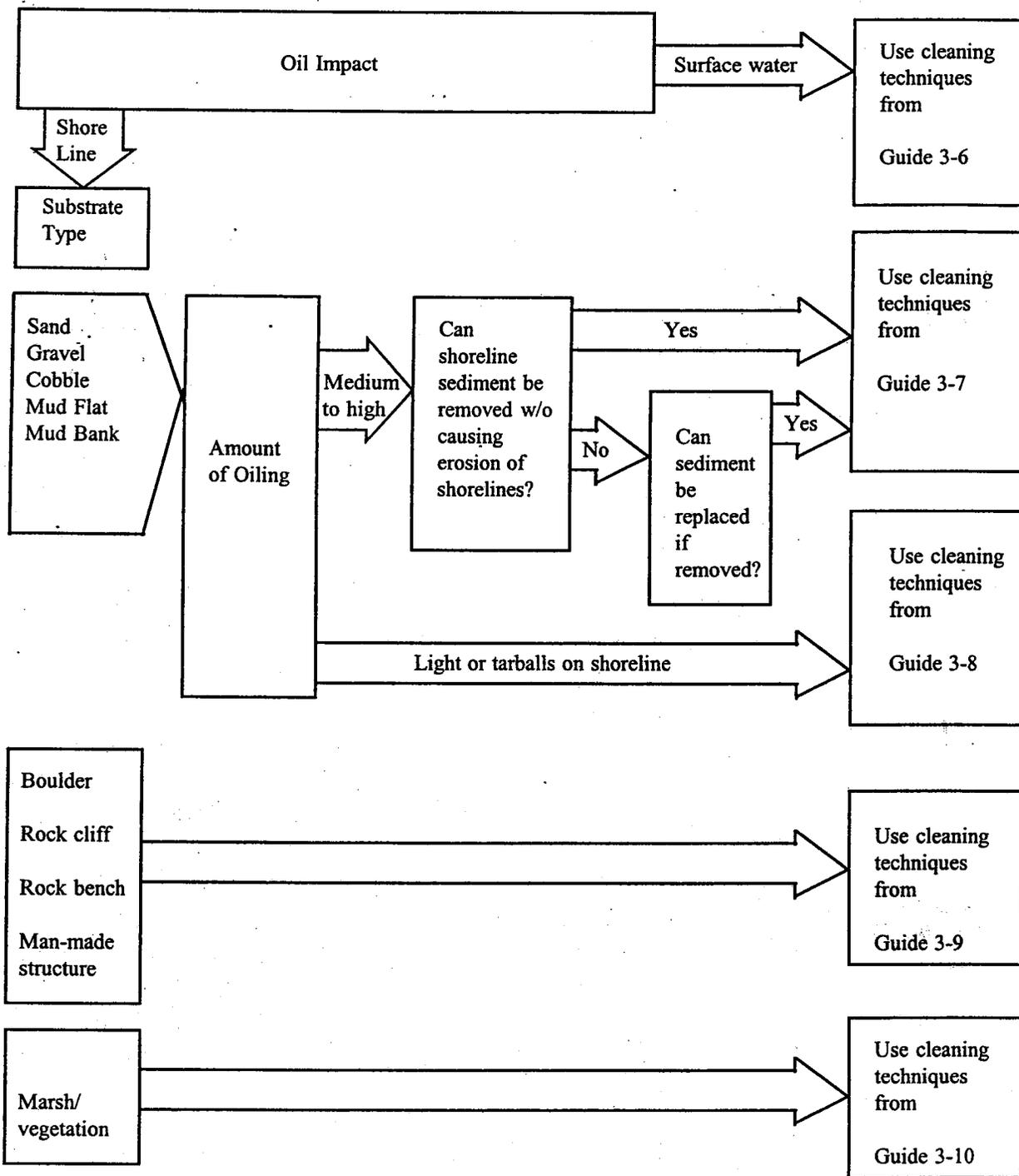
Figure 2-2 Open Water (Coastal Waters)



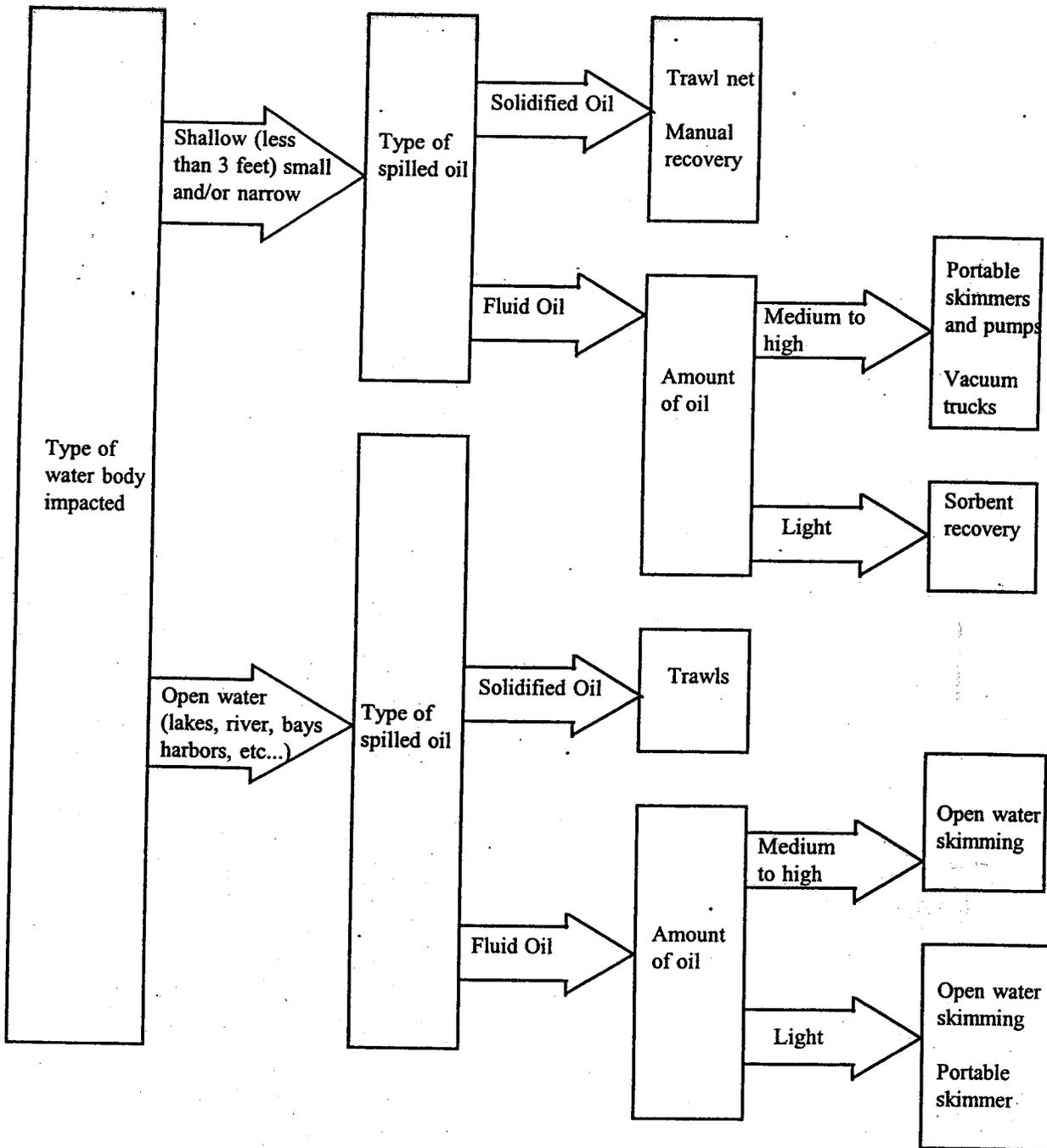
Guide 3-3: Inland Waters



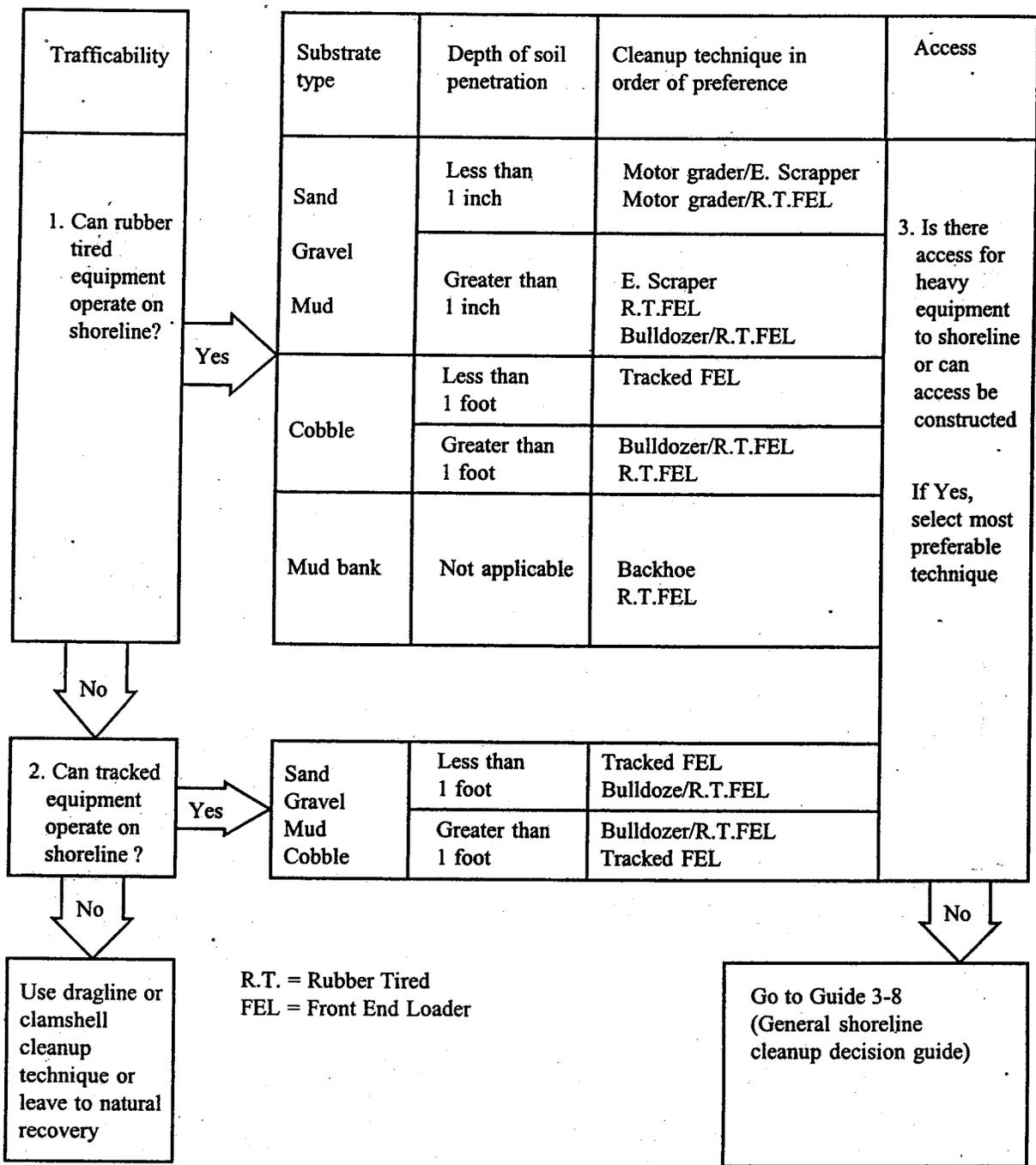
**Guide for Terrestrial Areas**



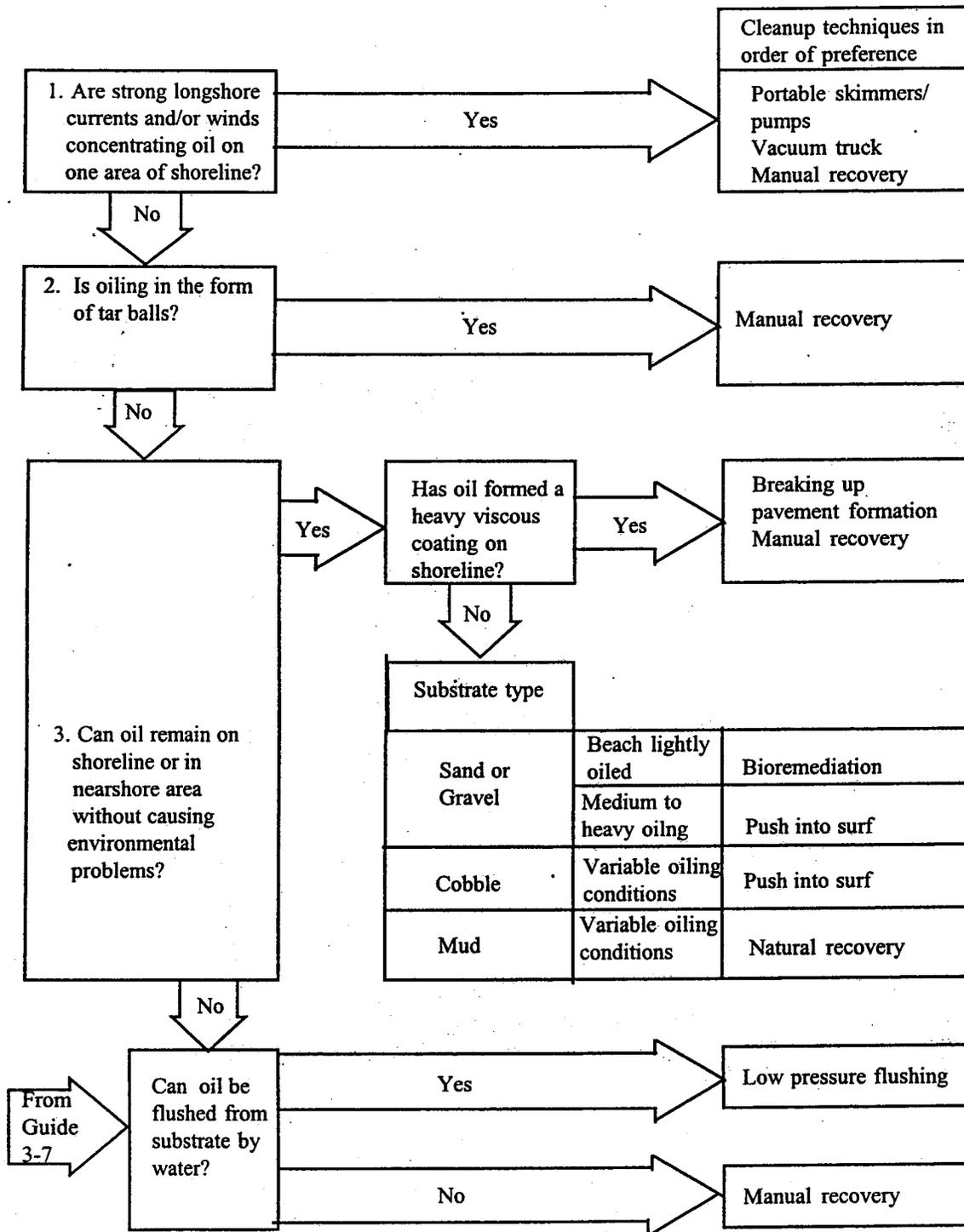
**Guide 3-5 Key to Cleanup Decision Guides**



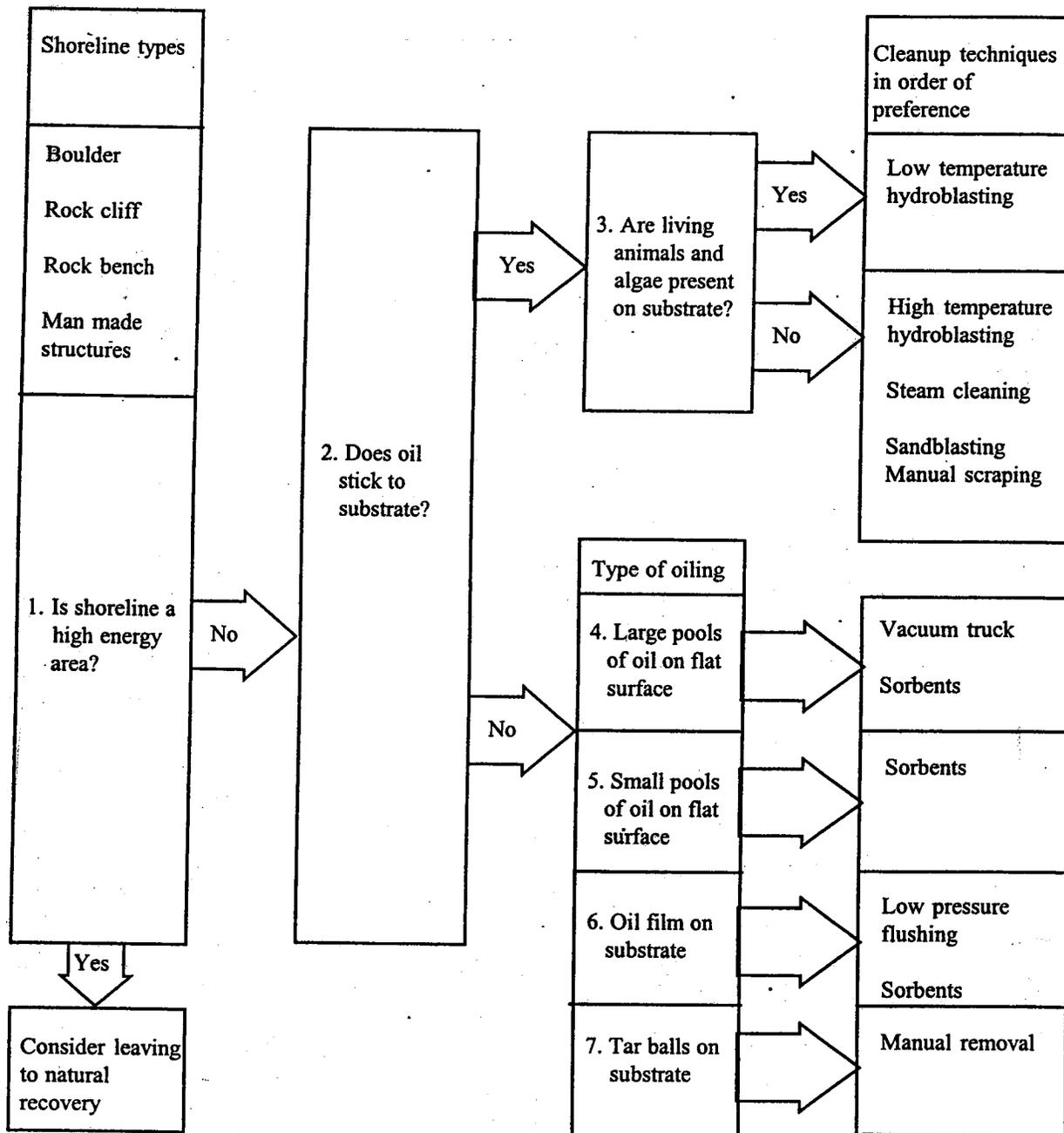
**Guide 3-6 Surface Water Cleanup Decision Guide**



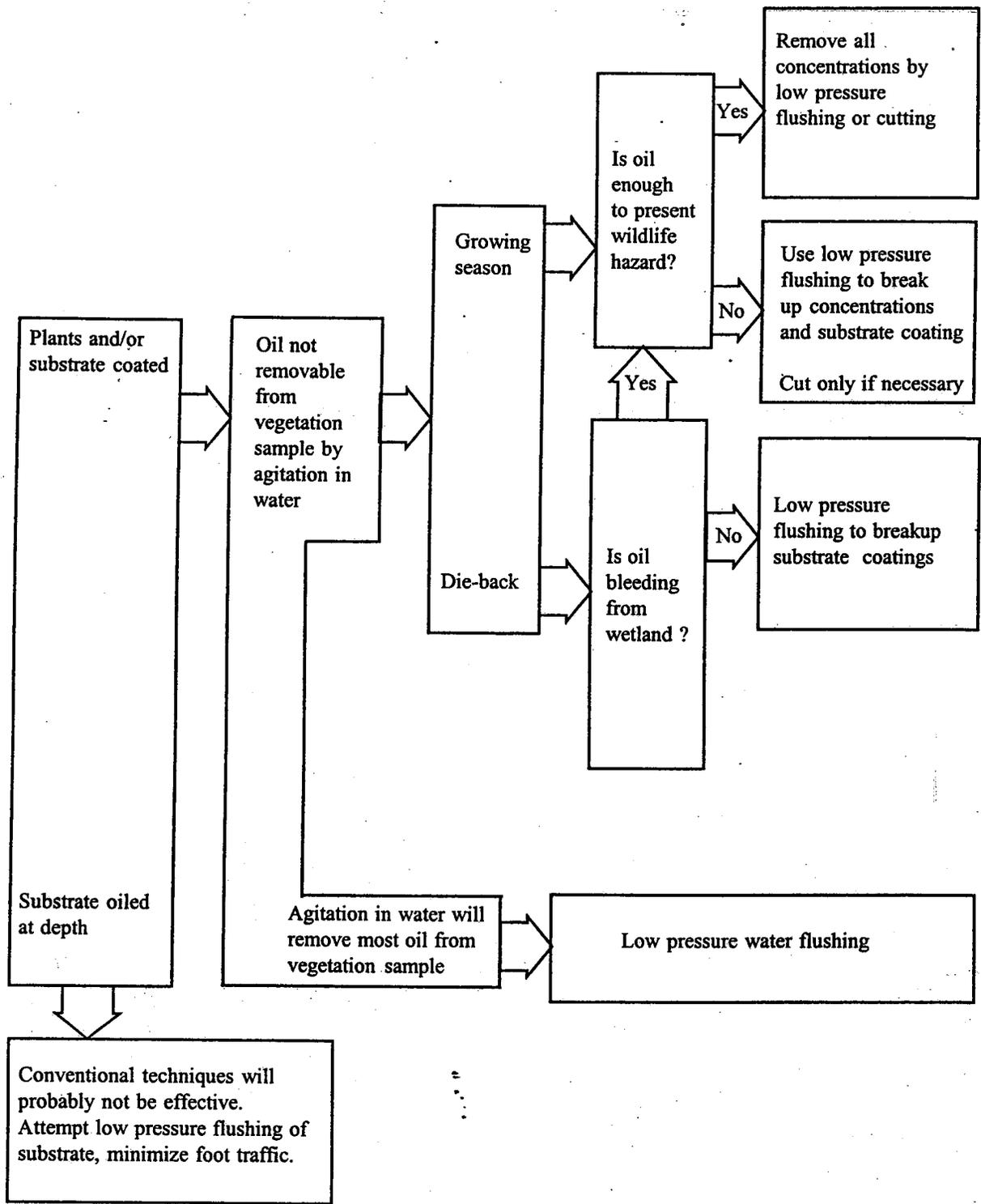
**Guide 3-7 Mechanized Shoreline Cleanup Decision Guide**



**Guide 3-6 General Shoreline Cleanup Decision Guide**



**Guide 3-9 Nonsediment Substrate Cleanup Decision Guide**



**Guide 3-10 Wetland Cleanup Decision Guide**

**Table 3-1  
Potential Impacts Associated with Cleanup Techniques**

<b>Physical Response Techniques</b>			
<b>Cleanup Technique</b>	<b>Description</b>	<b>Potential Physical Effect of Use</b>	<b>Potential Biological Effect of Use</b>
1. Vacuum trucks	Truck is backed up to oil pool or recovery site where oil is picked up via vacuum hose.	Slight surface disturbance and oil spillage in area of recovery.	Minimal.
2. Sump and pump/vacuum	Oil collects in a sump on a water body and is removed by pump or vacuum truck.	Requires excavation of a sump 2 to 4 feet deep on shoreline. Some oil may be buried on shoreline.	Remove organisms at sump location.
3. Sorbent application	Sorbents are applied manually to oiled areas to soak up oil.	Slight for most types. Recovery of loose material can disturb sediments.	Persistence of oil in unrecovered sorbents contains plastic backing that may interfere with birds and small mammals.
4. Flushing inert substrate - High pressure flushing (hydro-blasting)	High-pressure water streams remove oil from substrate; oil is channeled to recovery area, or left to disperse naturally.	May disturb surface of substrate.	Removes most organisms and shells from the substrate, damage to remaining organisms variable. Oil not recovered may impact organisms down slope of cleanup activities.
5. Flushing inert substrate - Low pressure	Low-pressure water streams remove oil from substrate; oil is channeled to recovery area or left to disperse naturally.	Does not disturb surface to any great extent.	Leaves most organisms alive and in place. Oil not recovered may impact organisms down slope of cleanup.
6. Manual scraping	Oil is scraped from substrate manually using hand tools	Selective removal of material. Labor-intensive activity can disturb sediment surfaces.	Removes some organisms from the substrate, crushes others. Typically poor removal effectiveness.
7. Manual removal of oiled materials	Oiled sediments and debris are removed by hand, rakes, shovels, wheel-barrows, etc.	Removes 3 inches or less of beach. Selective removal of material. Mixing of oil with sediments.	Removes and disturbs shallow burrowing organisms. Oil removal usually complete.

**Table 3-1  
Potential Impacts Associated with Cleanup Techniques**

<b>Physical Response Techniques</b>			
<b>Cleanup Technique</b>	<b>Description</b>	<b>Potential Physical Effect of Use</b>	<b>Potential Biological Effect of Use</b>
8. Mechanized recovery - motor grader/elevating scraper	Motor grader forms windrows for pickup by elevating scraper.	Removes only upper 3 inches of beach. Clean sand can be recovered and returned to beach some cases.	May remove shallow burrowing polychaetes, bivalves and amphipods. Recolonization likely to rapidly follow natural replenishment of the substrate.
9. Mechanized recovery - elevating scraper	Elevating scraper picks up oiled material directly off beach.	Removes upper 3 to 6 inches of beach.	Removes shallow and deeper burrowing polychaetes, bivalves and amphipods. Recolonization likely to rapidly follow. Natural replenishment of long-lived indigenous fauna may take several years.
10. Mechanized recovery - motor grader/front end loader	Motor grader forms windrows for pickup by front-end loader.	Removes only upper 3 inches of beach. Potential for mixing oil in sediment.	Removes shallow burrowing polychaetes, bivalves and amphipods. Recolonization likely to rapidly follow natural replenishment of the substrate.
11. Mechanized recovery - front end loader	Front-end loader picks material directly off beach.	Removes 6 to 12 inches of beach. Erosion may be accelerated on some beaches.	Removes almost all shallow and deep burrowing organisms and habitat. Restabilization of the physical environment slow.
12. Mechanized recovery - bulldozer/rubber tired front-end loader.	Bulldozer pushes oiled substrate into piles for pickup by front-end loader.	Removes 1 to 2 feet of beach. Erosion may be accelerated on some beaches.	Removes all organisms and habitat. Restabilization of substrate and repopulation of indigenous fauna may be extremely slow.

**Table 3-1  
Potential Impacts Associated with Cleanup Techniques**

<b>Physical Response Techniques</b>			
<b>Cleanup Technique</b>	<b>Description</b>	<b>Potential Physical Effect of Use</b>	<b>Potential Biological Effect of Use</b>
13. Mechanized recovery – backhoe	Operates from top of a bank or beach to remove oiled sediments and load into trucks.	Removes 1 to 2 feet of beach or bank. Mixing of oil with sediment. May accelerate beach erosion.	Removes all organisms and habitat
14. Mechanized recovery - beach cleaner	Pulled by tractor or self-propelled across beach picking up tar balls or patties.	Minimal. Disturbs 3 to 6 inches of beach.	Minimal. Disturbs and/or removes shallow burrowing organisms.
15. Steam cleaning	Steam removes oil from substrate-where it is channeled to recovery area.	Adds heat (>100°C) to surface.	Removes some organisms from substrate but mortality due to the heat is more likely. Empty shells remaining may enhance population. Oil not -removed can impact orgasms down slope of cleaning activities.
16. Sandblasting	Sand moving at high velocity removes oil from surface.	Adds material to the environment.	Removes all organisms and shells from the substrate. Oil not recovered may impact organisms down slope of cleanup activities.
17. Wetland flushing	Low pressure, high volume water stream used to float oil from surfaces into receiving waters.	May result in some erosion of substrate if improperly used.	May result in some if physical damage to plants. Not all oil removed.
18. Wetland cutting	Oiled vegetation is cut by hand, or mechanically collected, and stuffed into bags or containers for disposal.	May disturb sediments with extensive use of labor; may accelerate bank erosion.	Removes & crushes some organisms. General rapid recovery. Heavy foot traffic may cause root damage & subsequent slow recovery.

**Table 3-1  
Potential Impacts Associated with Cleanup Techniques**

<b>Physical Response Techniques</b>			
<b>Cleanup Technique</b>	<b>Description</b>	<b>Potential Physical Effect of Use</b>	<b>Potential Biological Effect of Use</b>
19. Burning	Upwind end of oiled area is ignited and allowed to burn downwind.	Creates heat and adds heat to substrate.	Kills surface organisms in burn area. Residual mater may be somewhat toxic (heavy metals).
20. Soil removal by dragline or clamshell.	Operates from top of oiled area to remove oiled sediments.	Removes 1 to 2 feet of beach. May accelerate erosion on some beaches.	Removes all organisms and habitats. Restabilization of substrate and repopulation of indigenous fauna is extremely slow.
21. Assisted natural recovery-push oiled substrate into surf.	Bulldozer pushes oiled substrate into surf zone to accelerate natural cleaning.	Mixes oil with surficial sediments and cleaned by surf.	May kill organisms inhabiting the unoiled substrate. May result in oiling of adjacent areas including offshore bars.
22. Assisted recovery-break up pavement.	Tractor fitted with a ripper is operated up and down beach.	Disruption of sediments. Mixes oil with sediment.	Disturbs shallow and deep burrowing organisms.
23. Assisted recovery-disc into substrate.	Tractor pulls discing equipment along contaminated areas.	Leaves oil buried in sand. Disrupts surface layer of substrate.	Disturbs shallow burrowing organisms. Possible toxic effects from buried soil.

**Table 3-1  
Potential Impacts Associated with Cleanup Techniques**

<b>Chemical Response Techniques</b>			
<b>Cleanup Technique</b>	<b>Description</b>	<b>Potential Physical Effect of Use</b>	<b>Potential Biological Effect of Use</b>
24. Dispersants	Chemicals sprayed onto slicks to help break up oil for mixing into water column.	Mixes oil into water. Dispersion of oil may only be partially effective.	Toxicity may affect water-column organisms. Shallow water use may affect benthic resources.
25. Emulsion-Treating Agents	Chemicals applied to slicks to destabilize or prevent emulsified oil.	May aid mechanical efficiency. Oil emulsification may only be partially effective. May mix oil into water.	Insufficient information exists. Toxicity may affect water-column organisms.
26. Visco-Elastic Agents	Chemicals applied to convert oil into fluid, gelatinous or semi-solid form.	May aid mechanical efficiency. All treated oil should be recovered.	Not suitable for vegetation or debris. Should be avoided when wildlife may contact oil. May enhance smothering effect of oil.
27. Herding Agents	Chemicals applied on clean water to help contain and prevent spread of oil.	Must be used early when oil is still fluid. Should be applied in small quantities in still water environments.	May be toxic for surface layer organisms. Not suitable for shallow waters or fish spawning areas.
28. Solidifiers	Chemicals applied to solidify oil.	May create mix of solid and liquid oil. Not used on viscous oils. Slow degradation rate for solidified oil.	Must be able to remove all solidified oil. Low aquatic toxicity.
29. Shoreline Cleaning Agents	Chemicals applied to help soften or lift weathered/heavy oils for flushing.	Softened oil may re-disperse into water column. May be restricted when suspended sediment concentrations are high.	Toxicity may affect water-column organisms. Shallow water use may affect benthic resources.

**Table 3-1  
Potential Impacts Associated with Cleanup Techniques**

<b>Biological Response Techniques</b>			
<b>Cleanup Technique</b>	<b>Description</b>	<b>Potential Physical Effect of Use</b>	<b>Potential Biological Effect of Use</b>
31. Nutrient Enrichment	Nutrients (usually nitrogen and phosphorus) are applied where deficient to speed the rate of natural microbial degradation.	Minimal if discing and aerating is not required. Disruption of sediments if discing is required. Mixes oil with sediment.	May not be suitable for water – little information exists on effects of freshwater. Nutrient addition to shallow waters may lead to eutrophication and formation of toxic compounds (ammonia).
32. Microbe Seeding	Live microbes are added where deficient.	Minimal if discing and aerating is not required. Disruption of sediments if discing is required. Mixes oil with sediment.	May not be suitable for water if contains nutrients (see above) – little information exists on effects of freshwater.

**Table 3-2  
Checklist for Assessing the Natural Recovery Potential of a Shoreline**

Factors Influencing Natural Recovery	Yes	No
1. Is the quantity and mobility of stranded oil such that remobilization by tides, etc. will probably not result in significant contamination of adjacent areas?		
2. Is the presence of oil on the shoreline acceptable in terms of use?		
3. Is the shoreline subject to high shoreline energy (either routinely or periodically)?		
4. Will cleanup activities result in more ecological damage to the shoreline than if no action was taken? (consider status of organisms – are they currently dead or alive; will cleanup remove significant numbers of healthy organisms or those that will probably recover; will activities result in significant mechanical damage to surviving plants and animals; will activities accelerate mixing of oil and sediments?)		
5. Is oiling of nearby benthic or water column communities by naturally released oil unlikely? (consider water column emulsions, soluble components, and sedimentation)		
6. Can the oil be expected to degrade rapidly? (consider evaporation potential, viscosity and tendency to form stable emulsions)		
7. Will sediment removal risk acceleration of local erosion or stripping of adjacent shorelines?		
8. Will cleanup activities cause severe disruption to bird or wildlife colonies?		
9. Is the shoreline in an apparent erosional state?		

**Note:** If most of all of the above questions are answered yes then the shoreline is a good candidate for natural recovery. However, SHP ICS and appropriate agencies should analyze the importance of each factor in relation to the condition and circumstances surrounded each discharge. Natural recovery may be preferred even if there are several negative answers to these questions.



Signal Hill Petroleum, Inc.

Petroleum Crude Oil

## Section 1: Chemical Product and Company Identification

<b>Product Name:</b>	Petroleum Crude Oil	<b>Contact Information:</b>	Signal Hill Petroleum, Inc. 2633 Cherry Ave Signal Hill, Ca 90755
<b>Use:</b>	Refinery feedstock	<b>Emergency Contact Information:</b>	Chemtrec: 800-424-9300
		<b>Non Emergency Number:</b>	562-824-1842

## Section 2: Hazards Identification

**Classification**

Flammable Liquids – Category 2  
 Skin Corrosion/Irritation – Category 2  
 Serious Eye Damage/Eye Irritation – Category 2A  
 Aspiration Hazard – Category 2  
 Specific target organ toxicity – repeated exposure – Category 2  
 Hazardous to the aquatic environment, chronic toxicity – Category 2

**Label Elements****Symbol(s)****Signal Word**

DANGER

**Hazard Statement**

Highly Flammable liquid and vapor  
 Causes skin irritation  
 Causes eye irritation  
 May be harmful if swallowed or enters airways  
 May cause respiratory irritation  
 May cause drowsiness or dizziness  
 May cause damage to organs (liver, kidney, blood, nervous system, skin) through prolonged or repeated exposure  
 Toxic to aquatic life with long lasting effects

**Precautionary Statements****Prevention**

Keep away from heat/sparks/open flames/hot surfaces.  
 No Smoking  
 Keep container tightly closed  
 Ground/bond container and receiving equipment  
 Use explosion-proof electrical/ventilating/lighting equipment  
 Use only non-sparking tools  
 Take precautionary measures against static discharge  
 Wear protective gloves/eye protection/face protection  
 Wash exposed contacted areas thoroughly after handling  
 Avoid breathing fume/gas/mist/vapors/spray  
 Use only outdoors or in well-ventilated area  
 Avoid release to the environment

**Reponse**

**IN CASE OF FIRE:** Use foam, dry chemical, carbon dioxide, or water fog to extinguish.

**IF ON SKIN (or hair):** Take off immediately all contaminated clothing and wash before reuse. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention.

**IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

**IF INHALED:** Remove person to fresh air and keep comfortable for breathing.

If exposed or concerned: Get medical advice/attention. Call a Poison Center/doctor if you feel unwell

Collect spillage and respond pursuant to International, National, State and local spill requirements.

**NFPA RATINGS (SCALE 0-4):** HEALTH=1 FIRE=3 REACTIVITY=0

## Section 3: Composition/Information on Ingredients

Component	CAS#:	Concentration (by wt%)
Petroleum Crude Oil	8002-05-9	100
Xylene	1330-20-07	Less than 0.15%
Benzene	71-43-2	Less than 0.10%
Ethyl Benzene	100-41-4	Less than 0.10%
Toluene	108-88-3	Less than 0.10%
Naphthalene	91-20-3	Less than 0.10%
Hydrogen Sulfide	7783-06-4	Less than 0.10%

## Section 4: First Aid Measures

**Eye Contact:** In case of contact, remove any contact lenses if present and easy to do so. Immediately flush eyes with plenty of clean water for at least 15 minutes. Cold water may be used. Seek immediate medical attention.

**Skin Contact:** Remove contaminated clothing and shoes. Flush with copious amounts of soap and water for at least 15 minutes. Cold water and soap may be used. Wash clothing thoroughly and thoroughly clean shoes before reuse. If irritation or redness develops and persists, seek immediate medical attention.

**Inhalation:** If inhaled, move to fresh air. If breathing is difficult, have qualified person administer oxygen. If not breathing, begin artificial respiration. Seek immediate medical attention.

**Ingestion:** If conscious, wash out mouth with water. Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If drowsy or unconscious, place on the left side with head down and do not leave unattended. Seek immediate medical attention.

**Potential Health Effects:**

**Skin contact:** **Acute Exposure:** irritation, allergic reactions

**Chronic Exposure:** irritation, skin disorders, sensitivity to light

**Eye contact:** **Acute Exposure:** Eye irritation.

**Chronic Exposure:** Eye irritation.

**Ingestion:** **Acute Exposure:** gastrointestinal irritation, nausea, vomiting, diarrhea

**Chronic Exposure:** No information available.

**Inhalation:** **Acute Exposure:** irritation, difficulty breathing, headache, drowsiness, fatigue, dizziness, mood swings, tremors, visual disturbances, suffocation, lung congestion, convulsions, unconsciousness, coma

May contain or release poisonous hydrogen sulfide gas

**Chronic Exposure:** irritation

## Section 5: Fire Fighting Measures

**Fire Fighting Instructions:** Flame can be extinguished with foam, dry chemical, carbon dioxide or water fog. Water spray may be ineffective since it may cause frothing. Although water can be used to cool and protect exposed material, water may not extinguish the fire unless used under favorable conditions by experienced fire fighters trained in fighting all types of flammable liquid fires.



**Special Fire Fighting Procedures:** Clear fire area of unauthorized personnel. Use water spray to cool fire exposed surroundings and containers. Product containers exposed to intense heat may build-up vapor pressure and could result in container rupture/explosion. Product will float and can be reignited on surface of water.

**Fire Fighting Hazards:** Moderate fire hazard – flammable liquid and vapors may cause flash fire. Vapor/air mixtures are explosive above flash point. Vapors are heavier than air. Hazardous concentrations of vapors may accumulate in low lying areas and confined spaces. Vapors may travel long distances to a source of ignition where they can ignite and flash back. This product floats on water, can be reignited and may cause explosion hazards in sewer/drain systems.

**Hazardous Combustion Products:** Sulfur/Nitrogen Oxides, Hydrogen Sulfide, other Elemental Oxides, fumes, carbon monoxide, smoke and other products of incomplete combustion may be released.

**Fire Fighting Protective Actions:** Wear a self-contained breathing apparatus in pressure-demand, NIOSH approved or equivalent and full protective gear.

## Section 6: Accidental Release Measures

**Personal Precautions:** Moderate fire hazard – flammable liquid and vapors may cause flash fire. Vapor/air mixtures can be explosive above flash point. Vapors are heavier than air, may accumulate in low lying areas and may travel long distances to a source of ignition where they can ignite and flash back. This product floats on water, can be reignited and may cause explosion hazards in sewer/drain systems. Hazardous concentrations of vapors can accumulate in low lying areas and confined spaces.

Eliminate all ignition sources, stay upwind if possible and use explosion-proof equipment and ventilation. Avoid direct contact with spilled/released material, secure area, remove unauthorized personnel from the area and notify appropriate emergency contacts. Responders shall use appropriate personal protection equipment including respiratory protection as conditions warrant including area air monitoring (See Section 8).

**Environmental Precautions:** This product is classified as an oil under **Section 311 of the Clean Water Act**, and under the **Oil Pollution Act**. Discharges or spills into or leading to surface waters that cause a sheen must be reported to the National Response Center (1-800-424-8802). Discharges or spills greater than 42 gallons onto land that can affect waters of the State of California require reporting to the State of California Emergency Management Agency (1-800-852-7550). Large releases may require notification to proper authorities/agencies as well as activation of specially trained personnel and equipment.

**Methods for Containment and Cleanup:** Stop release if can be done safely and prevent release from entering sewers, storm drains or other drainage features. Use appropriate protective/containment equipment around and far ahead of spill/release flow path. Promptly use appropriate methods to clean up spilled substances. Absorb spills using an appropriate material. Product will float on surface of water so special sorbent materials may be needed for clean-up. Solid sorbent should be used for solid surface spills. Collect and dispose of all waste in accordance with applicable federal, state and local regulations. Specific spill/release conditions may warrant additional actions to be taken.

## Section 7: Handling and Storage

**Precautions:** Wear suitable protective clothing (See Section 8) and use good hygiene practices. Use spark proof tools, take precautionary measures against static discharge and keep away from ignition sources – **NO SMOKING**. Handle material in a well-ventilated area. Avoid direct contact and breathing vapors. Wash contacted areas immediately after handling. If feeling unwell, seek immediate medical attention.

**Storage:** When possible, store in a well-ventilated place. Keep cool and open any container slowly. Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Keep separated from incompatible substances. Avoid heat, flames, sparks and other sources of ignition. Ground and bond containers and pipelines. Empty containers may contain residues that can ignite.



## Section 8: Exposure Controls/Personal Protection

**Engineering Controls:** The use of explosion-proof ventilation near the source and in confined spaces is recommended to control emissions to below permissible concentrations.

**Respiratory Protection:** Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection noted below is ranked in order from minimum to maximum protection. Consider warning properties, obtain, read and understand all special instructions before use:

- Any chemical cartridge respirator with organic vapor cartridge(s).
- Any chemical cartridge respirator with a full face piece and organic vapor cartridge(s).
- Any air-purifying respirator with a full face piece and an organic vapor canister.

For Unknown concentrations or immediately dangerous to life or health:

- Any supplied-air respirator with full face piece and operated in positive-pressure mode in combination with a separate escape supply.
- Any self-contained breathing apparatus with a full face piece.

**Skin Protection:** Wear impermeable gloves and clothing during activities where there is potential for direct skin contact with chemical. Chemical resistant gloves, such as nitrile or neoprene and splash suits such as Tyvek, are preferred.

**Eye Protection:** Wear primary eye protection such as splash resistant safety goggles or face shield. Provide an emergency eye wash station and quick drench shower in the immediate work area when a significant amount of direct contact with product is anticipated.

## EXPOSURE GUIDELINE (S): OSHA HAZARDS (29 CFR 1910.1200) Exposure Limits 8 hrs TWA (ppm)

COMPONENT	OSHA PEL	ACGIH TLV
Crude Oil	Not Available	Not Available
Ethyl Benzene	100 ppm TWA; 125 ppm STEL	100 ppm TWA 125 ppm STEL
Toluene	200 ppm TWA 150 ppm STEL	20 ppm TWA
Benzene	1 ppm TWA 5 ppm STEL 25 ppm Ceiling	2.5 ppm STEL 0.5 ppm TWA Skin
Hydrogen Sulfide	5 ppm TWA 10 ppm STEL 20 ppm Ceiling	1 ppm TWA 5 ppm STEL

## Section 9: Physical and Chemical Properties

**Appearance:** Dark yellow to brown to greenish-black liquid

**Odor:** Characteristic petroleum/asphalt

**pH:** ND

**Melting Point:** ND

**Boiling Point:** C(F): > 95°F(35°C)

**Flash Point:** < 73 to >200°F (<23 to >93°C)

**Evaporation Rate:** ND

**Lower Flammable Limit:** 1.1%

**Upper Flammable Limit:** 6.0% **Vapor Pressure:** mmHg 20

C: < 300.0

**Vapor Density:** (Air = 1) 3-5 typical

**Solubility in water:** Negligible

**Soluble:** Petroleum solvents

**Specific Gravity:** 0.91 (Water = 1)

**Autoignition Temperature:** ND

**Viscosity:** ND



## Section 10: Stability and Reactivity Data

**Reactivity:** Stable under ordinary conditions of use and storage.

**Stability:** Stable under ordinary conditions of use and storage.

**Conditions to Avoid:** Avoid heat, open flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.

**Incompatible Materials:** Strong oxidizers and strong reducing agents

**Hazardous decomposition products:** Not anticipated under normal conditions of use. When subjected to high thermal conditions or combustion, Sulfur Oxides, Hydrogen Sulfide, Aldehydes, Carbon Monoxide, Carbon Dioxide, and various organic Hydrocarbons are generated by incomplete combustion. AVOID ignition sources, thermal decomposition - pyrolysis or combustion.

## Section 11: Toxicological Information

**Likely Routes of Exposure:** Dermal (skin absorption, skin or eye contact), Ingestion, Inhalation

**Acute Oral, Dermal, Inhalation Toxicity:** Expected low degree of toxicity.

**Skin corrosion/irritation:** Not irritating to skin. Prolonged/repeated contact may cause dermatitis.

**Serious Eye Damage/Irritation:** Causes serious eye irritation.

**Respiratory or skin sensitizer:** Not expected to be a sensitizer.

**Specific target organ toxicity (single exposure):** High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea. Continued inhalation may result in unconsciousness.

**Specific target organ toxicity (repeated exposure):** May cause damage to organs or organ systems (liver, blood, bone marrow, spleen, thymus).

**Aspiration Hazard:** Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis.

**Toxicity to Animals:****Crude Oil**

Acute Toxicity:

Oral	LD50	Rat	>4,300 g/kg
Dermal	LD50	Rabbit	>2,000 mg/kg

**Ethyl Benzene**

Listed: Carcinogenicity

Acute Toxicity:

Oral	LD50	Rat	3,000 mg/kg
Dermal	LD50	Rabbit	15,354 mg/kg

**Toluene**

Listed: Female Reproductive Toxicity, Developmental Toxicity

Acute Toxicity:

Oral	LD50	Rat	636 mg/kg
Dermal	LD50	Rabbit	8390 mg/kg

**Benzene**

Listed: Carcinogenicity, Male Reproductive Toxicity

Acute Toxicity:

Oral	LD50	Rat	1,800 mg/kg
Dermal	LD50	Rabbit	>9,400 ul/kg

**Naphthalene**

Listed: Carcinogenicity

Acute Toxicity:

Oral	LD50	Rat	490 mg/kg
Dermal	LD50	Rabbit	> 20 g/kg



## Section 12: Ecological Information

**ECOTOXICITY DATA:****Crude Oil**

Fish: 96 Hr LC50 *Salmo gairdneri*: 258 mg/L [static]

Invertebrate: 24 Hr EC50 *Daphnia magna*: 36 mg/L; 48 Hr EC50 *Daphnia magna*: <0.26 mg/L [Static]

**Ethyl Benzene**

Fish: 96 Hr LC50 *Oncorhynchus mykiss*: 11.0-18.0 mg/L [static]; 96 Hr LC50 *Oncorhynchus mykiss*: 4.2 mg/L [semi-static]; 96 Hr LC50 *Pimephales promelas*: 7.55-11 mg/L [flow-through]; 96 Hr LC50 *Lepomis macrochirus*: 32 mg/L [static]; 96 Hr LC50 *Pimephales promelas*: 9.1-15.6 mg/L [static]; 96 Hr LC50 *Poecilia reticulata*: 9.6 mg/L [static]

Algae: 72 Hr EC50 *Pseudokirchneriella subcapitata*: 4.6 mg/L; 96 Hr EC50 *Pseudokirchneriella subcapitata*: >438 mg/L; 72 Hr EC50 *Pseudokirchneriella subcapitata*: 2.6 - 11.3 mg/L [static]; 96 Hr EC50 *Pseudokirchneriella subcapitata*: 1.7 - 7.6 mg/L [static]

Invertebrate: 48 Hr EC50 *Daphnia magna*: 1.8 - 2.4 mg/L

**Toluene**

Fish: 96 Hr LC50 *Pimephales promelas*: 15.22-19.05 mg/L [flow-through] (1 day old); 96 Hr LC50 *Pimephales promelas*: 12.6 mg/L [static]; 96 Hr LC50 *Oncorhynchus mykiss*: 5.89-7.81 mg/L [flow-through]; 96 Hr LC50 *Oncorhynchus mykiss*: 14.1-17.16 mg/L [static]; 96 Hr LC50 *Oncorhynchus mykiss*: 5.8 mg/L [semi-static]; 96 Hr LC50 *Lepomis macrochirus*: 11.0-15.0 mg/L [static]; 96 Hr LC50 *Oryzias latipes*: 54 mg/L [static]; 96 Hr LC50 *Poecilia reticulata*: 28.2 mg/L [semi-static]; 96 Hr LC50 *Poecilia reticulata*: 50.87-70.34 mg/L [static]

Algae: 96 Hr EC50 *Pseudokirchneriella subcapitata*: >433 mg/L; 72 Hr EC50 *Pseudokirchneriella subcapitata*: 12.5 mg/L [static]

Invertebrate: 48 Hr EC50 *Daphnia magna*: 5.46 - 9.83 mg/L [Static]; 48 Hr EC50 *Daphnia magna*: 11.5 mg/L

**Benzene**

Fish: 96 Hr LC50 *Pimephales promelas*: 10.7-14.7 mg/L [flow-through]; 96 Hr LC50 *Oncorhynchus mykiss*: 5.3 mg/L [flow-through]; 96 Hr LC50 *Lepomis macrochirus*: 22.49 mg/L [static]; 96 Hr LC50 *Poecilia reticulata*: 28.6 mg/L [static]; 96 Hr LC50 *Pimephales promelas*: 22330-41160 .epsilon.g/L [static]; 96 Hr LC50 *Lepomis macrochirus*: 70000-142000 .epsilon.g/L [static]

Algae: 72 Hr EC50 *Pseudokirchneriella subcapitata*: 29 mg/L

Invertebrate: 48 Hr EC50 *Daphnia magna*: 8.76 - 15.6 mg/L [Static]; 48 Hr EC50 *Daphnia magna*: 10 mg/L

**Naphthalene**

Fish: 96 Hr LC50 *Pimephales promelas*: 5.74-6.44 mg/L [flow-through]; 96 Hr LC50 *Oncorhynchus mykiss*: 1.6 mg/L [flow-through]; 96 Hr LC50 *Oncorhynchus mykiss*: 0.91-2.82 mg/L [static]; 96 Hr LC50 *Pimephales promelas*: 1.99 mg/L [static]; 96 Hr LC50 *Lepomis macrochirus*: 31.0265 mg/L

Algae: 72 Hr EC50 *Skeletonema costatum*: 0.4 mg/L

Invertebrate: 48 Hr LC50 *Daphnia magna*: 2.16 mg/L; 48 Hr EC50 *Daphnia magna*: 1.96 mg/L [Flow through]; 48 Hr EC50 *Daphnia magna*: 1.09 - 3.4 mg/L.

**Persistence and Degradability:** Inherently biodegradable but contains components that may persist in the environment. Volatile constituents will oxidize rapidly in contact with air

**Bioaccumulative Potential:** Contains constituents that are potentially bioaccumulative.

**Mobility in Soil:** Volatile constituents may be mobile in soil depending on amount initially vaporized and amount left in soil. Not considered to be soluble in water although some low molecular weight hydrocarbon compounds are soluble in water.

## Section 13: Disposal Considerations

**Waste Disposal:**

Dispose of contents/containers in accordance with local /regional/national/international regulations. The user of this product must properly characterize the waste generated from the use of this product in accordance with all applicable international, federal, state and/or local laws and regulations in order to determine the proper disposal of the wastes. Crude oil impacting Waters of the U.S. or Waters of the State need to meet special response, recovery, recycling and disposal requirements – refer to applicable regulations. Keep out of water supplies, storm drains and sewers.



## Section 14: Transport Information

Package and transport in accordance with Department of Transportation (DOT) and other regulatory agency requirements.

**DOT Shipping Description:** Petroleum Crude Oil, 3, UN1267, III

**Identification Number:** UN1267

**Shipping Name:** Petroleum Crude Oil

**Transport Hazard Class:** 3

**Packing Group:** III

## Section 15: Other Regulatory Information

**Federal and State Regulations:**

**OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200:** Ensure that the hazards associated with this product are transmitted to employees by means of a hazard communications program, in accordance with federal and state Occupational Safety and Health Administration (OSHA) regulations.

**CERCLA/SUPERFUND HAZARD CATEGORY:** At the time of this document's preparation, one of the ingredients of this product was listed in 40 CFR 302.4. The list should be periodically checked for applicable updates.

Toluene: 1000 lb final RQ; 454 kg final RQ

Ethyl Benzene: 1000 lb final RQ; 454 kg final RQ

This product may be classified as an oil under Section 311 of the Clean Water Act, and under the Oil Pollution Act. Discharges or spills into or leading to surface waters that cause a sheen must be reported to the National Response Center (1-800-424-8802)

**SARA 313 INFORMATION:** At the time of this document's preparation, one or more of the ingredients of this product were listed in 40 CFR 372. The list should be periodically checked for applicable updates.

Benzene: 0.1 % de minimis concentration

Naphthalene: 0.1 % de minimis concentration

Toluene: 1.0 % de minimis concentration

Ethyl Benzene: 0.1 % de minimis concentration

**TOXIC SUBSTANCES CONTROL ACT (TSCA):** All of the compounds in this product are on the TSCA Inventory and/or are subject to a Low Volume Exemption.

**CALIFORNIA PROPOSITION 65:** At the time of this document's preparation, one or more of the ingredients of this product were included on the California Proposition 65 list of chemicals known to cause cancer, developmental or reproductive toxicity. The list should periodically be checked for applicable updates.

Benzene – Carcinogen, male reproductive toxicant, developmental toxicant

Toluene – Female reproductive toxicant, developmental toxicant

Ethyl Benzene – Carcinogen

Naphthalene – Carcinogen

## Section 16: Other Information

**Created:** June 20, 2013

**Disclaimer or Expressed and Implied Warranties:**

*The above information has been compiled from sources we believe to be reliable and, to our knowledge, is accurate. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Signal Hill Petroleum, Inc. be liable for any claims, losses, or damages or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, resulting from any use of the above information even if Signal Hill Petroleum, Inc. has been advised of the possibility of such damages.*

## Signal Hill Petroleum, Inc.

## Brine Water

## Section 1: Chemical Product and Company Identification

<b>Product Name:</b>	Brine Water	<b>Contact Information:</b> Signal Hill Petroleum, Inc. 2633 Cherry Ave Signal Hill, Ca 90755 <b>Emergency Assistance</b> <b>Chemtrec Phone:</b> 800-424-9300 <b>Non Emergency Number:</b> 562-824-1842
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## Section 2: Hazards Identification

**Potential Health Effects:****Skin contact:**

**Acute Exposure:** Irritation  
**Chronic Exposure:** Irritation

**Eye contact:**

**Acute Exposure:** Eye irritation  
**Chronic Exposure:** Eye irritation

**Ingestion:**

**Acute Exposure:** Gastrointestinal irritation, fever, nausea, vomiting, diarrhea, loss of appetite, disorientation, lung congestion, effects on the brain, other central nervous system effects.  
**Chronic Exposure:** Changes in blood pressure

**Inhalation:**

**Acute Exposure:** Irritation, cough, sore throat  
**Chronic Exposure:** No information available

**CARCINOGEN STATUS:**

OSHA: No

NTP: No

IARC: No

**NFPA RATINGS (SCALE 0-4):** HEALTH=1 FIRE=0 REACTIVITY=0

## Section 3: Composition and Information on Ingredients

Component	Percentage	CAS#:	EC NUMBER (EINECS):
Water	90-70%	7732-18-5	231-791-2
Sodium Chloride	10-30%	7647-14-5	231-598-3

# Signal Hill Petroleum, Inc.

## Section 4: First Aid Measures

**Eye Contact:** Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. If itching, reddening, excess tearing and swelling occur, seek medical attention.

**Skin Contact:** Flush with copious amounts of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. If irritation or redness develops, seek medical attention.

**Inhalation:** If inhaled, remove to fresh air and loosen tight clothing. If not breathing or if breathing is difficult, seek immediate medical attention.

**Ingestion:** If conscious, wash out mouth with water and loosen tight clothing. Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause lung damage. Seek immediate medical attention.

## Section 5: Fire Fighting Measures

**Flammability of the Product:** None

**Flash Points:** NA

**Lower Flammable Limit:** NA

**Upper Flammable Limit:** NA

**Fire Fighting Media and Instructions:** NA

**Special Fire Fighting Procedures:** NA

## Section 6: Accidental Release Measures

Stop or reduce discharge, if safe to do so. Prevent entry into water intake or waterways. Use appropriate protective equipment and methods to clean up spilled substances promptly. Absorb spill onto an appropriate material. Collect and dispose of all waste in accordance with applicable laws. Provide mechanical ventilation as needed.

## Section 7: Handling and Storage

### Precautions:

Wear suitable protective clothing. Use material in a well ventilated area. Avoid contact whenever possible. After handling, wash skin and equipment thoroughly with soap and water. Material is slowly corrosive to metals.

### Storage:

Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Keep separated from incompatible substances.

## Section 8: Exposure Controls/Personal Protection

### ENGINEERING CONTROLS:

Keep formation of dusts and mists to a minimum. The use of local exhaust ventilation can be used near the source. Eyewash stations and safety showers are recommended.

### RESPIRATORY PROTECTION:

Under conditions of frequent or heavy exposure, NIOSH approved respiratory protection is recommended.

### SKIN PROTECTION:

Wear impermeable gloves and clothing during activities where there is potential for direct skin contact with chemical. Clean skin thoroughly after contact by washing with soap and water for at least 15 minutes.

### EYE PROTECTION:

Wear eye protection such as splash resistant safety goggles or face shield. An emergency eye wash station and/or a quick drench safety shower in the immediate work area are recommended.

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## EXPOSURE GUIDELINE (S):

OSHA HAZARDS (29 CFR 1910.1200) Exposure Limits 8 hrs. TWA (ppm)

COMPONENT	OSHA PEL	ACGIH TLV
Sodium Chloride	Not Available	Not Available

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Clear/Cloudy Liquid

**Odor:** Odorless/Sea Water

**Molecular Weight:** NA

**Color:** Clear/Cloudy White

**pH:** 6.5 to 8.5

**Boiling Point:** C(F): >100(212)

**Melting Point:** NA

**Vapor Density:** NA

**Vapor Pressure:** NA

**Solubility in water:** 100% Miscible

**Specific Gravity:** 1.01 (Water = 1)

## Section 10: Stability and Reactivity Data

**Stability:** Stable under ordinary conditions of use and storage.

**Conditions of Instability:** NA

**Incompatibility with various substances:** Will slowly corrode most metals

**Thermal decomposition products:** NA (does not burn)

## Section 11: Toxicological Information

**Routes of Entry:** Inhalation, Ingestion

**Toxicity to Animals:**

**Water**

Oral LD50 Rat: > 90 ml/kg

**Sodium Chloride**

Inhalation LC50 Rat: >42 g/m<sup>3</sup>/1H;

Oral LD50 Rat: 3 g/kg;

Dermal LD50 Rabbit: >10 g/kg

## Section 12: Ecological Information

**ECOTOXICITY DATA:**

**General Product Information**

This product has not been tested. A concentrated brine solution will dehydrate animal and vegetive species.

**Sodium Chloride**

Fish: 96 Hr LC50 *Lepomis macrochirus* – 5560-6080 mg/L [flow-through]; 96 Hr LC50 *Lepomis macrochirus* – 12,946 mg/L [static]; 96 Hr LC50 *Pimephales promelas*: 6020-7070 mg/L [static]; 96 Hr LC50 *Pimephales promelas*: 7050 mg/L [semi-static]; 96 Hr LC50 *Pimephales promelas*: 6420-6700 mg/L [static]; 96 Hr LC50 *Oncorhynchus mykiss*: 4747-7824 mg/L [flow-through]

Invertebrate: 48 Hr EC50 *Daphnia magna*: 1000 mg/L; 48 Hr EC50 *Daphnia magna*: 340.7-496.2 mg/L [Static]

## Section 13: Disposal Considerations

**Waste Disposal:**

The user of this product must properly characterize the waste generated from the use of this product in accordance with all applicable federal, state and/or local laws and regulations in order to determine the proper disposal of the waste in accordance with all applicable federal, state and/or local laws and regulations.

# Signal Hill Petroleum, Inc.

## Section 14: Transport Information

Package and transport in accordance with Department of Transportation (DOT) and other regulatory agency requirements.

**DOT Classification:** No classification assigned

**IATA:** No classification assigned

**Identification Number:** No classification assigned

## Section 15: Other Regulatory Information

### Federal and State Regulations:

OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200: Ensure that the hazards associated with this product are transmitted to employees by means of a hazard communications program, in accordance with federal and state Occupational Safety and Health Administration (OSHA) regulations.

CERCLA/SUPERFUND HAZARD CATEGORY: At the time of this document's preparation, none of the ingredients of this product were listed in 40 CFR 302.4. The list should be checked periodically for applicable updates

SARA 313 INFORMATION: At the time of this document's preparation, none of the ingredients of this product were listed in 40 CFR 372. The list should be periodically checked for applicable updates.

TOXIC SUBSTANCES CONTROL ACT (TSCA): All of the compounds in this product are on the TSCA Inventory and/or are subject to a Low Volume Exemption.

CALIFORNIA PROPOSITION 65: At the time of this document's preparation, none of the ingredients of this product were included on the California Proposition 65 list of chemicals known to cause cancer or reproductive toxicity. The list should be periodically checked for applicable updates.

## Section 16: Other Information

**Created:** June 8, 2012

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# SIGNAL HILL PETROLEUM, INC.

## BRYANT LEASE

### FIGURE 1



SIGNAL HILL PETROLEUM



RZ2-B-1 RESPONSE ZONE 2 DIVISION 1



RZ2-B-2 RESPONSE ZONE 2 DIVISION 2



NOT TO SCALE



