# Shoreline Assessment Job Aid

**National Oceanic and Atmospheric Administration • NOAA Ocean Service**
Office of Response and Restoration • Hazardous Materials Response Division

This job aid was produced and published by NOAA's Hazardous Materials Response Division (HAZMAT). All photographs, with exception of the one on the cover, where contributed by Miles O. Hayes and Jacqueline Michel of Research Planning, Inc.

HAZMAT draws on two decades of experience in responding with the U.S. Coast Guard to spill emergencies and resolving the often longer-term problems presented by hazardous waste sites, garnering a reputation for rapid, yet carefully considered and cost-effective environmental protection decisions.

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## Shoreline Types continued



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**Cleanup Methods** (continued)

## Shoreline Assessment Job Aid

When oil contaminates shoreline habitats, responders must survey the affected areas to determine the appropriate response. Though general approvals or decision tools for use of shoreline cleanup methods may be developed during planning stages, responders must base specific cleanup recommendations on field data on the shoreline habitats, type and degree of shoreline contamination, and spill-specific physical processes.

A shoreline assessment program is:

- a SYSTEMATIC approach that uses STANDARD terminology to collect data on shoreline oiling conditions and support decision making for shoreline cleanup.
- FLEXIBLE in terms of scale of the survey and detail of the data sets collected.
- MULTI-AGENCY, with TRAINED representatives from all interested parties who have authority to make decisions.

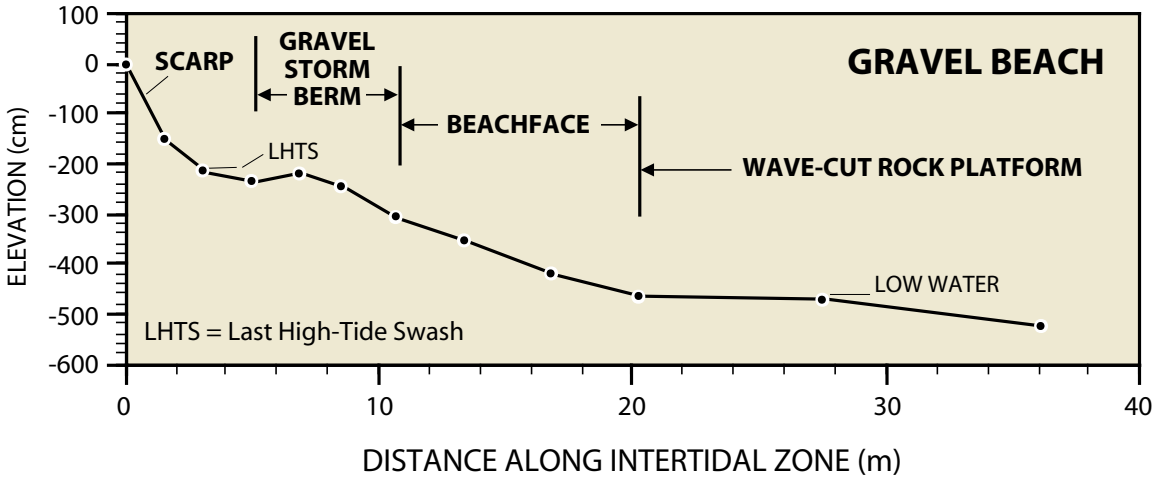
NOAA published the Shoreline Assessment Manual (Report No. HAZMAT 97-4) which outlines methods for planning and conducting shoreline assessment and incorporating the results into the decision-making process for shoreline cleanup at oil spills. This job aid was developed to supplement the manual, providing a visual guide to many of the terms used during shoreline assessments.

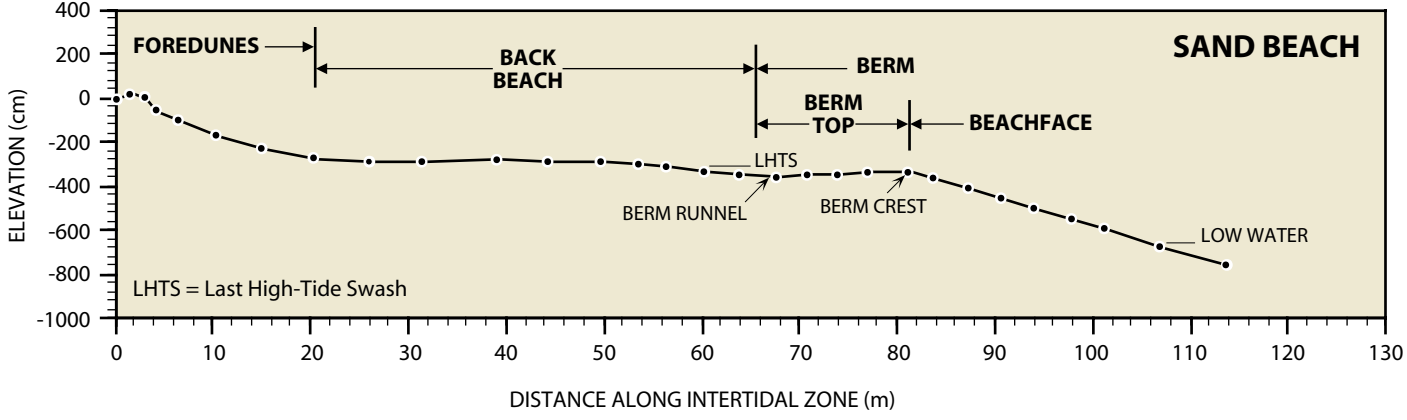
Photographs are included for the following terminology:

- Oil distribution (as ranges in percent oil cover)
- Surface oiling thickness descriptors
- Surface oiling type descriptors
- Subsurface oiling type descriptors
- Sediment types
- Shoreline types
- Cleanup methods

Beach terminology is defined on typical cross-sections of sand and gravel beaches. Percent cover estimation charts are also provided.

At a spill, it is important to "calibrate" by having all team members visit a segment together and agree on how the oiling descriptors will be applied for the specific spill when used with the *Shoreline Assessment Manual*. This job aid is helpful for calibrating and promoting consistency among terms.


GRAVEL BEACH
SCARP
GRAVEL
STORM
BERM
BEACHFACE
WAVE-CUT ROCK PLATFORM
LHTS
LOW WATER
LHTS = Last High-Tide Swash
ELEVATION (cm)
100
0
-100
-200
-300
-400
-500
-600
0
10
20
30
40
DISTANCE ALONG INTERTIDAL ZONE (m)


SAND BEACH
FOREDUNES
BACK BEACH
BERM
BERM TOP
BEACHFACE
LHTS
BERM RUNNEL
BERM CREST
LOW WATER
LHTS = Last High-Tide Swash
ELEVATION (cm)
400
200
0
-200
-400
-600
-800
-1000
0
10
20
30
40
50
60
70
80
90
100
110
120
130
DISTANCE ALONG INTERTIDAL ZONE (m)

C

**Continuous**
91-100% cover

*(seen here as black oil on light sand beach)*

**Broken**
51-90% cover

*(seen here as brown oil on tan sand beach)*

B

P

**Patchy**
11-50% cover

*(seen here as black oil bands on a white sand beachface)*

**Sporadic**
1-10% cover

*(seen here as brown oil bands on a white sand beachface)*

S

PO

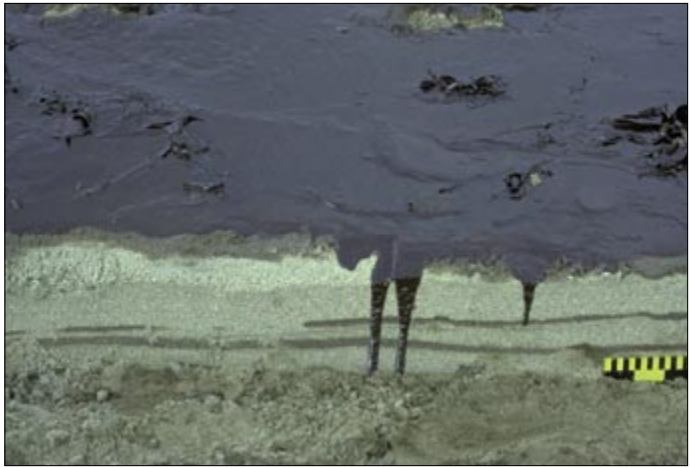
**Pooled Oil**
fresh oil or mousse > 1 cm thick

*(seen here as accumulation around a large boulder)*

**Cover**
oil or mousse > 0.1 cm to < 1 cm thick

*(seen here as oil covering sand beach surface and running into a small trench)*

CV



CT

**Coat**
visible coating of oil < 0.1 cm – can be scraped off with fingernail

*(seen here as a thin layer of oil on riprap)*

**Stain**
visible oil which cannot be scraped off with fingernail

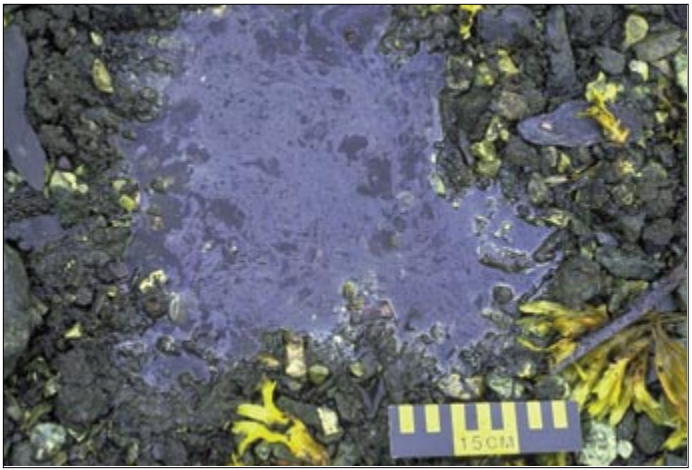
*(seen here as splotches on cobbles)*

ST

FL

**Film**
transparent or iridescent sheen, or oily film

*(seen here as oil sheen floating on water)*



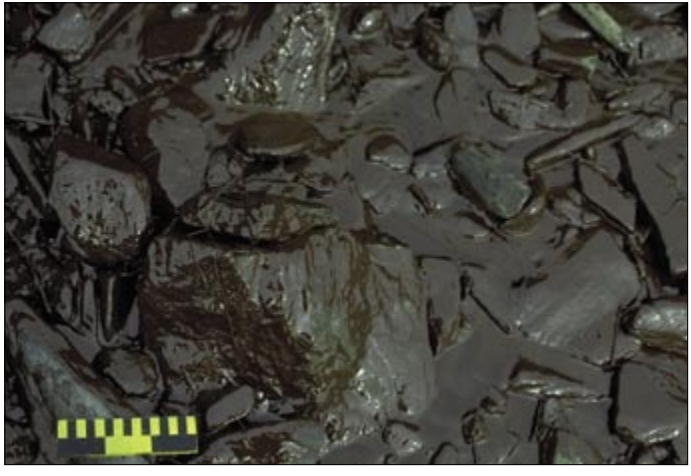
FR

**Fresh Oil**
unweathered, liquid oil

**Mousse**
emulsified oil

*(seen here as brown oil coating cobbles)*

MS



TB

**Tarballs**
discrete accumulations of oil < 10 cm in diameter

*(seen here scattered on sand beach)*

**Patties**
discrete accumulations of oil > 10 cm in diameter

*(seen here as single black patty on sand beach)*

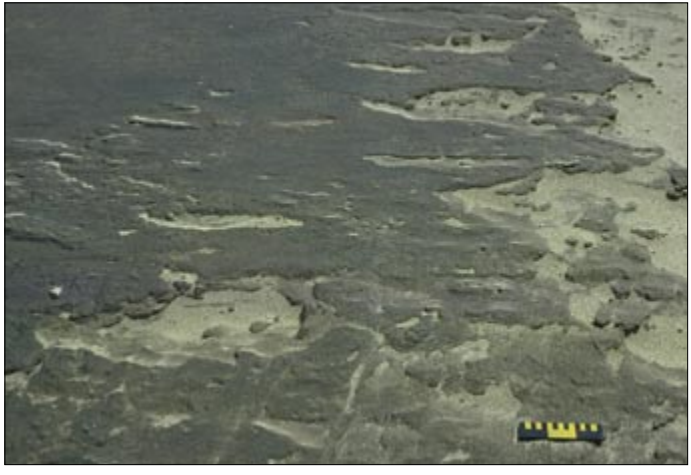
PT


TC

**Tar**
highly weathered oil of nearly solid consistency

**Surface Oil Residue**
non-cohesive, heavily oiled surface sediments characterized as soft, incipient asphalt pavements

SR



AP

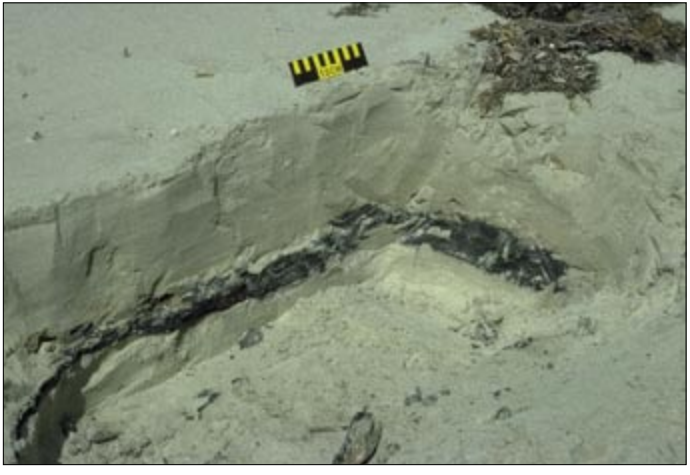
**Asphalt Pavements**
cohesive, heavily oiled surface sediments

*(seen here as thick black deposit on a beachface)*

SAP

**Subsurface Asphalt Pavement**
a buried layer of hardened oil

*(seen here as black layer buried in a white sand beach)*



**Oil-filled Pores**
pore spaces are completely filled with oil to the extent that oil flows out of sediments when disturbed

*(seen here as brown oil pebbles)*

OP

PP

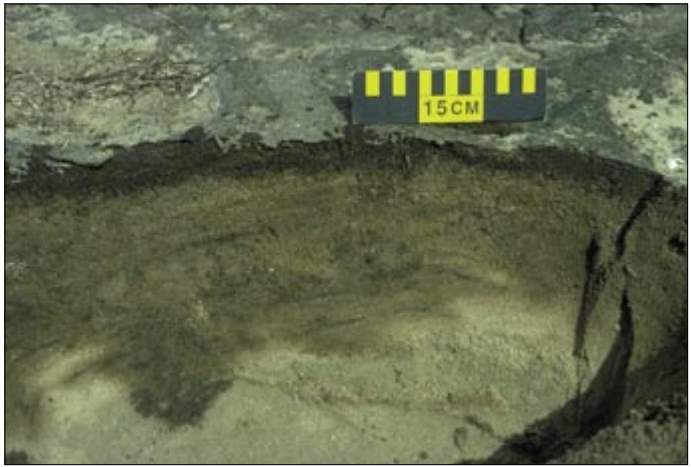
**Partially Filled Pores**

pore spaces filled with oil, but generally does not flow out when disturbed

**Oil Residue**

sediments visibly oiled with black/brown coat or cover on clasts, but little or no accumulation of oil within pore spaces

OR

OF

**Oil Film**
sediments are lightly oiled with an oil sheen or stain on the clasts.

R

**Bedrock Outcrop**

**Boulder**
>256 mm in diameter

B

C

**Cobble**
64 – 256 mm in diameter

**Pebble**
4 – 64 in diameter

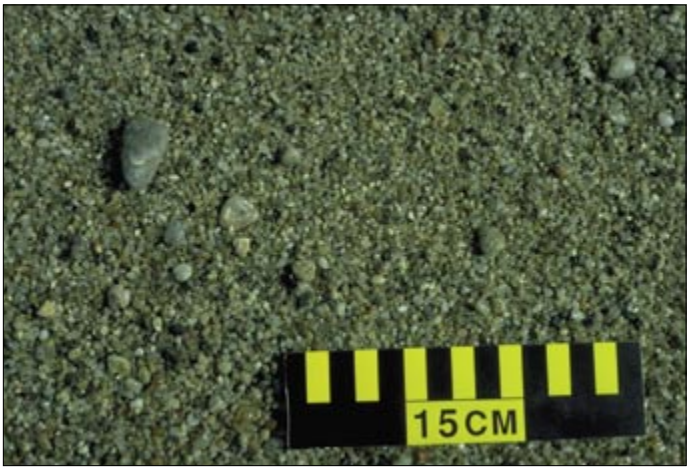
P


G

**Granule**
2 – 4 mm

**Sand**
0.06 – 4 mm

S




M

**Mud**
silt and clay

1

## Exposed Rocky Shores

*(also includes exposed seawalls)*

## Exposed Rocky Platforms

*(also includes clay scarps)*

2

3

**Fine-grained Sand Beaches**
*(also includes scarps in sand)*

4

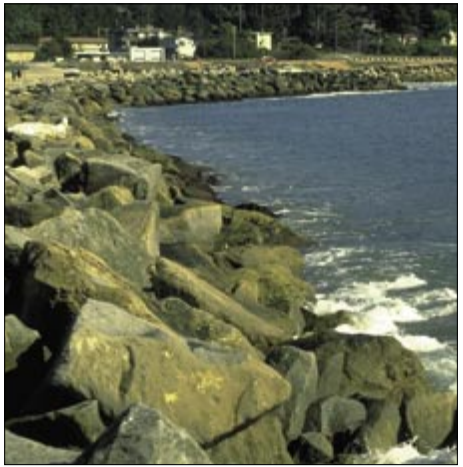
**Course-grained Sand Beaches**

**Mixed Sand and Gravel Beaches**
*(also includes mixed sand and shell beaches)*

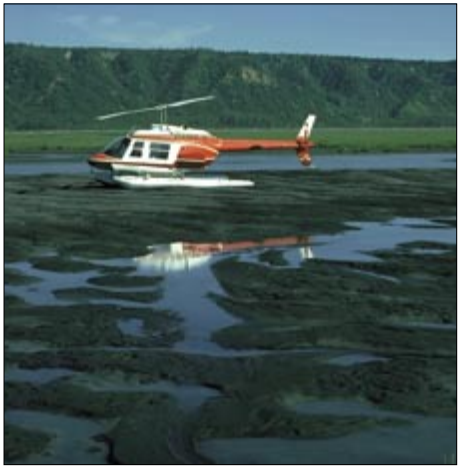
5

## 6a Gravel Beaches
*(also includes shell beaches)*

## 6b Riprap Structures



## Exposed Tidal Flats 7



## 8a Sheltered Rocky Shores

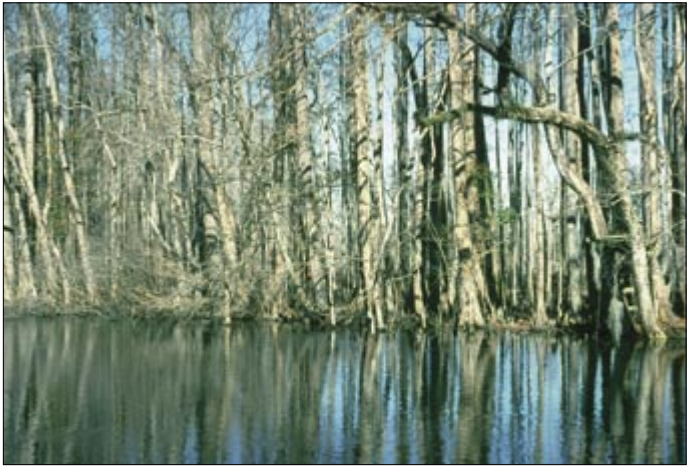
## 8b Sheltered Man-made Structures

## 9 Sheltered Tidal Flats

## 10a Salt to Brackish Marshes

## Freshwater Marshes 10b

10c **Swamps**



**Mangroves** 10d

**Barriers/Berms**

**Physical Herding**

**Manual Oil Removal/Cleaning**

**Mechanical Oil Removal**

**Sorbents**

**Vacuum**

**Debris Removal**

**Sediment Reworking/Tilling**

**Vegetation Cutting/Removal**

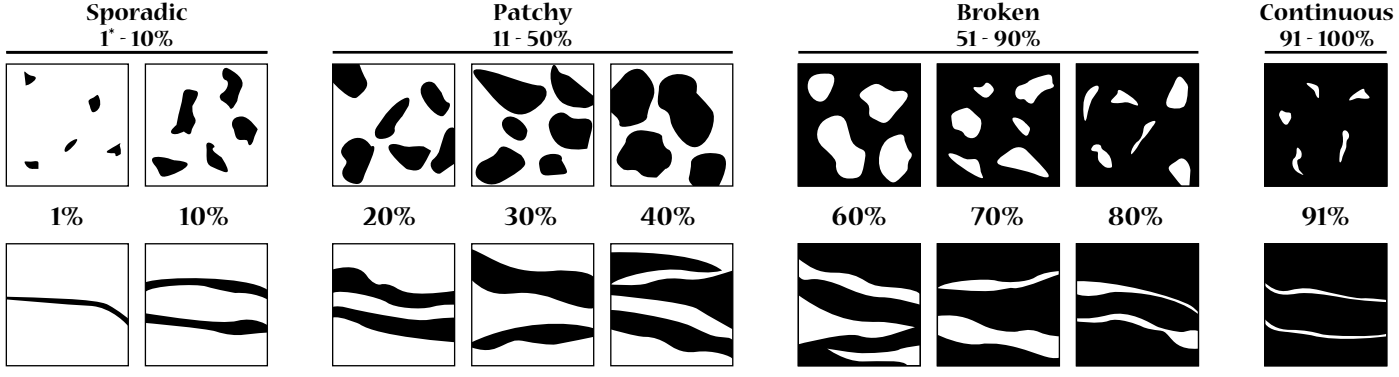
**Flooding (deluge)**

**Low-pressure Flushing**

**High-pressure Flushing**

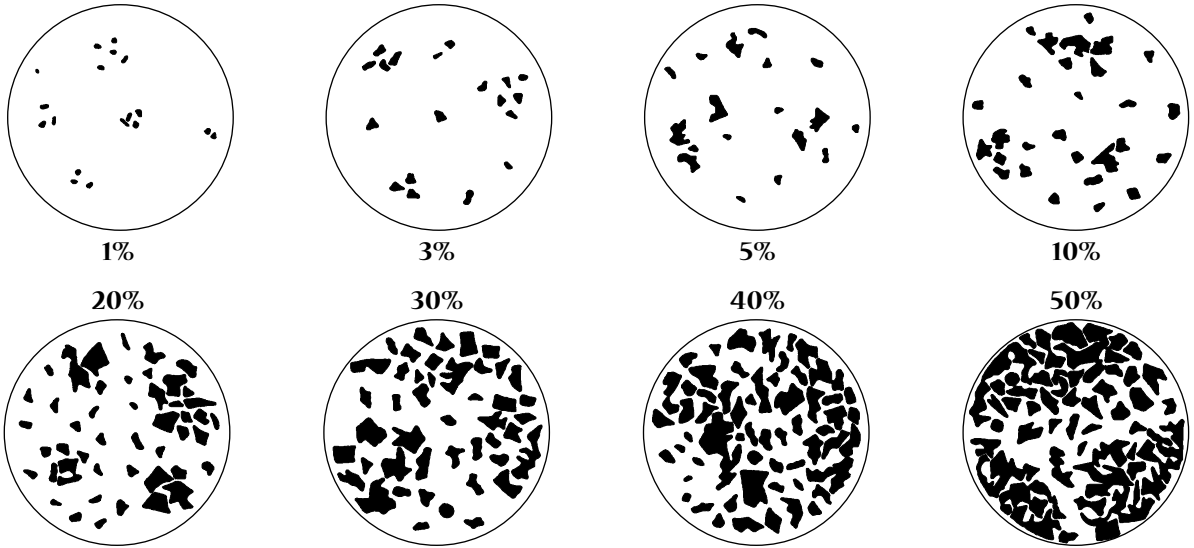
**High-pressure, Hot-water Flushing**

These charts are aids to help you estimate the percent oil coverage in the area you are observing. The black shading represents oil. Do not spend time trying to get a precise measure of percent cover; the four ranges listed are usually sufficient. The chart below would prove most helpful in oil band situations; the one on the following page is best for discrete oil deposits such as tarballs.




* Trace = < 1%

Chart source: Owens, E.H., and G.A. Sergy. Field Guide to the Documentation and Description of Oiled Shorelines. Environment Canada, Edmonton, Alberta, Canada. March 1994. ISBN 0-662-22048-X.


1%
3%
5%
10%
20%
30%
40%
50%

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