

RRT III Fact Sheet

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SHORELINE ASSESSMENT And SHORELINE CLEANUP

Shoreline Cleanup

As it is almost impossible to fully prevent shoreline oiling during a spill, how responders approach the cleanup of an oiled shoreline is as important as how

they approach the containment and protection priorities. The need for responders and planners to think through cleanup methods in advance of a moving oil slick is critical. Several considerations must be made before a proper cleanup plan can be initiated.

First, the type and quantity of the oil that will likely impact the shore must be determined. Oil types vary greatly and have a major influence on the degree of impact, ease of cleanup and persistence of the contamination. For example, lighter fuels (diesel, home heating fuel and light crude oils) will evaporate quickly, but tend to be more toxic and penetrate the shoreline sediments to a greater degree. Heavy oils (bunker C, #6 fuel and heavy crude oils) are less toxic to shoreline ecosystems and do not penetrate finer sediments, but they are very persistent, difficult to clean and may smother shoreline organisms.

Second, the type of shoreline which is predicted to be impacted must be identified and mapped. Both state and federal mapping projects have successfully categorized much of the

US shoreline in terms of habitat sensitivity to spilled oil. The most widely used

characterization scheme for shorelines is the NOAA Environmental Sensitivity Index (ESI). The ESI ranks shorelines in terms of their relative sensitivity to oil spill impacts, predicted rates of removal of stranded oil by processes such as waves and currents which naturally clean the shoreline, and ease of cleanup.

Shoreline types, from least to most sensitive are:

1. Exposed rocky cliffs & seawalls
2. Wave cut rocky platforms
3. Fine to medium-grained sand beaches
4. Coarse-grained sand beaches
5. Mixed sand and gravel beaches
6. Gravel beaches/Riprap
7. Exposed tidal flats
8. Sheltered rocky shores/man-made structures
9. Sheltered tidal flats
10. Marshes

Once responders have a clear understanding as to the type and degree of impact and the type of shoreline, they can begin developing an effective cleanup strategy. The goal of all the methods discussed is to clean only to the level that would speed recovery and use of the shoreline. Cleaning strategies

that will do greater injury to the resource than the oils itself are rejected.

Defining Cleanup Options

Many areas have preplanned shoreline cleanup methodologies organized in a matrix of oil and shoreline types. Under most circumstances, the process is inclusive of the federal, state and local resource managers. Often non government organizations such as universities and local nonprofit environmental groups are solicited for input. The types of cleanup methods discussed vary from natural recovery to technologies such as surface washing agents and localized burning. The shorelines are discussed by category rather than by location. For example, the planned cleanup options for exposed seawalls might include high pressure washing with ambient sea water during the mid to high tide stages of the tidal cycle. Areas with unique features (e.g., active seal pupping or bird nesting sites) are discussed individually. One cleanup option commonly used and commonly misunderstood is that of natural recovery. In more sensitive environments (e.g., wetlands, tidal flats) the activity associated with the cleanup can be more damaging than the oil itself. It is common in these environments for oil to remain on the surface of the sediments. The disturbance caused by an active

cleanup will often drive the contaminant below the surface and make them available to the root systems of the plant and the organisms that burrow into the sediments. Responders choose natural recovery in cases where the natural flushing of the tides is the least harmful method of removing the oil, even though the process will be slower than with human intervention.

Mobilizing the Cleanup

Once the cleanup options are defined and agreed upon, responders must determine where cleanup teams should be mobilized. This is determined by the Shoreline Cleanup Assessment Team (SCAT). Individuals experienced in marine sciences and oil spill response walk the impacted shorelines (in some cases it is necessary to use boats or helicopters for the SCAT surveys). These teams catalogue the shoreline in terms of type, degree of oiling, location of specific sensitive resources to be avoided or protected, and other logistical information. The team then recommends to the OSC cleanup methods for that shoreline area, choosing from the agreed upon cleanup options for that shoreline type. Although this process may seem redundant, it enables the cleanup team to determine the need and priority for cleanup by identifying areas of pooled oil which could remobilize and foul other shorelines. It also enables the cleanup team to decide on the most appropriate cleanup method for the specific shoreline conditions and noting site-specific constraints in order to minimize further damage during cleanup. In addition, it creates a record of the shoreline impacts that is detailed enough for managers to use in assessing the effectiveness of the cleanup effort.

Shoreline Cleanup Methods

Listed below are examples of shoreline cleaning methods. All of the actions are considered carefully before they are approved. The italics represent methods that require special approvals under federal law. It should be noted that some shoreline cleaning methods may require special approval under state (and/or local) law.

1. Natural recovery
2. Manual removal
3. Mechanical removal
4. Passive collection with sorbents
5. Vacuum
6. Debris removal
7. Sediment teworking/tilling
8. Vegetation cutting/removal
9. Flooding (deluge)
10. Ambient water washing -
 low pressure (< 50 psi)
 - high pressure (> 100 psi)
11. Warm water washing (< 90 F)
12. Hot water washing (> 90 F)
13. Slurry sand blasting
14. Solidifiers
15. Shoreline cleaning agents
16. Nutrient enrichment
17. Burning

Please contact our RRT Coordinator through the web site or at (757) 3986620 for more information.