INLAND STRANDED OIL HABITAT FACT SHEET FOR RESPONSE:

Sand and Gravel Beaches/Sand Bar

I. Habitat Description

Beaches: areas infrequently flooded with nonvegetated sand or gravel. It typically includes sand spoil banks, beaches, and other sandy areas that are upland. This general class may have small inclusions of grasses or forbs (<10%), trees (<10%), or shrubs (<25%).

Sand Bar: areas that are temporarily flooded and exposed with nonvegetated sand flats. They are typically found in or near the main channel and are often associated with wing dams, shorelines, and islands. Sand bars may become exposed due to low water levels. This general class may have small incursions of grasses or forbs (<10%) or shrubs (<25%), but usually does not support plant life.

Beach on Mississippi River. Image: Washington University, St. Louis

II. Sensitivity to Oil Spills

Due to lack of vegetation and low biodiversity, sand and gravel beaches and sand bars are moderately sensitive to oil spills. However, oil can stick to sand, and has the ability to flow downward in spaces between sand grains and gravel, accumulating in lower levels, making recovery more difficult and increasing the chance of groundwater contamination. Beaches and sandbars are also ideal nesting and foraging habitat for a variety of shorebirds, including the endangered interior population of Least Tern (*Sternula antillarum*) and the threatened Piping Plover (*Charadrius melodus*). These areas are also popular recreation sites and exposure to oil may have significant socioeconomic impacts.

Emergent sandbar habitat for Least Terns on the Missouri River. Image: USACE

Least Tern and nest. Image: USFWS

Piping Plover. Image: Cornell Lab

References/Additional Information:

General Classification Handbook for Floodplain Vegetation in Large River Systems (http://pubs.usgs.gov/tm/2005/tm2A1/)

Inland Oil Spills: Options for Minimizing Environmental Impacts for Freshwater Spill Response (http://www.michigan.gov/documents/deq/deq-wb-wws-FreshwaterResponse_NOAA102706_265069_7.pdf)

USACE Missouri River Recovery Program (http://moriverrecovery.usace.army.mil/mrrp/f?p=136:132:0::NO:::)

Understanding Oil Spills and Oil Spill Response Chapter 4: Shoreline Cleanup of Oil Spills (http://www.epa.gov/osweroe1/docs/oil/edu/oilspill_book/chap4.pdf)

Information compiled by UMRBA staff from NOAA, USFWS, and U.S. EPA sources, March 2016.

INLAND STRANDED OIL HABITAT FACT SHEET FOR RESPONSE:

Sand and Gravel Beaches/Sand Bar

Beach Type	Grain Size
Pebble-Cobble	2-256 mm (0.078-10.07 in.)
Mixed sediment/sand- gravel	0.1-64 mm (0.0039-2.52 in.) and cobbles up to 256 mm (10.07 in.)
Sand	0.1-2 mm (0.0039-0.078 in.)

III. Sensitivity to Response Methods

The following text describes potential adverse impacts to this habitat resulting from various oil spill response methods and provides recommendations to reduce impact when these methods are implemented. This is not intended to preclude the use of any particular methods, but rather to aid responders in balancing the need to remove oil with the possible adverse effects of removal. More detail about the response methods themselves can be found in the Inland Response Tactics Manual.

Least Adverse Habitat Impacts

Sorbents

- Physical removal rates of lighter oil will be fastest, so more oil will be mobilized for recovery by sorbents
- Forcing contact between pads and the oil drives the oil into the sand
- Overuse generates excessive waste
- Snare and pom-poms are used along shorelines or in light sheen situations
- Most effective on sand beaches

Low-Pressure, Ambient-Water Flushing

- If water pressures are too high, the substrate may be disturbed and oil may be pushed into lower levels of sediment
- Effectiveness increases with lighter oils because less residual oil is left in the environment
- Most effective on pebble-cobble or mixed sediment beaches

Hand Tool Oil Removal/Cleaning

- Used where persistent oil occurs in heavy amounts and where sensitive resources are likely to be oiled
- Raking may driver oil into lower levels of sediment.
- This includes removal of surface soil contamination not gross digging

Some Adverse Habitat Impact

Vacuum

- Most effective where access is good and substrate can support vehicles
- Only useful when oil is pooled
- Can be used in combination with flooding to pool oil

Light Equipment Oil Removal

- Mixing of oil and disturbance of sediments may be reduced by controlling access routes or using boards placed on surface
- Needed to remove heavy debris and dead trees

Most Adverse Habitat Impact

Heavy Equipment Oil Removal

- Mixing of oil and disturbance of sediments may be reduced by controlling access routes or using boards placed on surface
- Needed to remove heavy debris and dead trees

Sediment Removal

- Vacuum/dredge sediments and dewater using geotube/settling tank. Treat the water and dispose of sediment.
- Excavate the sediment. Dewater the area before excavation.
- The hydrology may change and it may be difficult to restore conditions that existed prior to the spill incident.
- Permits will be required for sediment removal and for water discharge.