

Shoreline Treatment Recommendation Report

Segment Location: Grand Isle

Segment(s): LAJF01-008 through LAJF01-003 **Segment Length:** 7 miles

Shoreline: Sand Beach (primary)

Oiled Areas for Treatment:

Along the entire length of Grad Isle is a 2 to 4 meter band of oiling that has saturated the sand down to 2-3cm. Distribution in the band ranges from 10 to 100%. Oiled debris (vegetation and garbage) is present in the band.

Cleanup Recommendations:

A 3 phase approach for cleanup is suggested. Phase 1 consists of using mechanical mobile beach cleaners to first remove the oiled debris in an area and then remove the oiled sand layer. The oiled sand would be stored in containment areas for potential washing at a later time. Phase 2 consists of cleanup crews walking the previously cleaned area and manually removing any patties, debris or oiled sand that the mobile beach cleaners missed. Phase 3 consists of mechanical relocation of remaining oiled sand into the surf zone for surf washing.

Staging and Logistics Constraints/Waste Issues:

Storage locations need to be developed to temporarily hold oiled sediment from Phase 1 operations.

Ecological Concerns:

Do not remove any unoiled vegetative debris. Minimize the amount of clean sand removed.

Cultural/Historical Concerns:

None known at this time

Safety Concerns:

Attachments:

None Attached
SOSC-LA

[Signature]
BP Shoreline Response
Program Manager
6/10/10

CLEANING SAND BEACHES

OBJECTIVE

- Remove oil while minimizing sediment removal

OPTIONS

TECHNIQUE	ADVANTAGES	DISADVANTAGES
MANUAL REMOVAL	<ul style="list-style-type: none"> • Removes much less sediment than mechanical removal • Good for surface layer of Thick oil and Cover • Generates least amount of waste, though more waste than in situ options 	<ul style="list-style-type: none"> • Slow, inefficient • Labor intensive • Not appropriate for buried or oil that has penetrated deeply (>1 foot)
MECHANICAL REMOVAL	<ul style="list-style-type: none"> • Rapid • Good for surface layer of Thick oil and Cover • Can remove all of the oil • Minimal labor requirement 	<ul style="list-style-type: none"> • Can remove as much as x 10 sediment volume when compared to manual removal
MOBILE BEACH CLEANERS	<ul style="list-style-type: none"> • In situ treatment • Removes surface layers and tar balls • Minimal sand loss • Can clean miles/day • Minimal labor requirement 	<ul style="list-style-type: none"> • Does not remove Stains
SAND TREATMENT PLANTS	<ul style="list-style-type: none"> • In situ treatment • Removes Coats and Stains • Zero sand loss • Can process >50 tons/hour • Good for surface and subsurface Cover, Coat and Stain • Minimal labor requirement 	<ul style="list-style-type: none"> • Relatively expensive • Stationary system and may involve multi transfers to/from beach • Not good for tar balls
SEDIMENT RELOCATION	<ul style="list-style-type: none"> • In situ treatment • Zero sand loss • Can clean miles/day • Good for surface and subsurface Coat and Stain • Minimal labor requirement • Single step action 	<ul style="list-style-type: none"> • Public perception • May need to repeat
MIXING	<ul style="list-style-type: none"> • In situ treatment • Zero sand loss • Can clean miles/day • Good for surface and subsurface Coat and Stain • Minimal labor requirement • Single step action 	<ul style="list-style-type: none"> • Public perception • May need to repeat
COMBINATIONS OF THE ABOVE		

GRAND ISLE SAND CLEANING

ASSUMPTIONS

- Length = 7 miles
- Oil width >6 feet
- Distribution 51-90%
- TO and CV

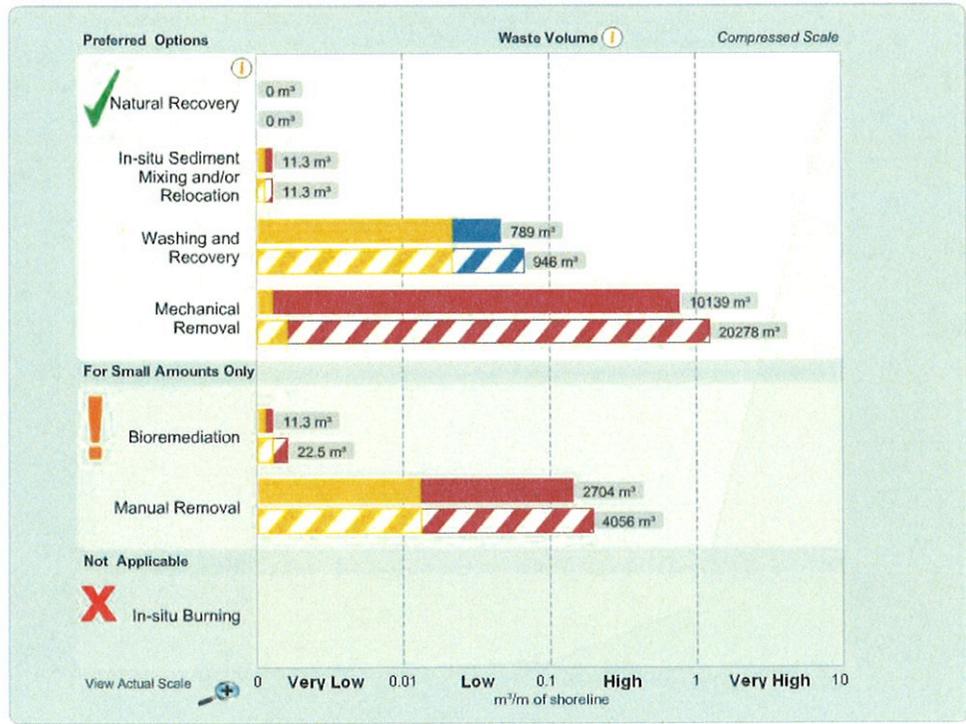
ESTIMATED WASTE GENERATION

- | | |
|----------------------|--------------------------------|
| ■ Manual Removal | 2,700 – 4,000 m ³ |
| ■ Mechanical Removal | 10,000 – 20,000 m ³ |
| ■ In Situ Treatment | 10 m ³ |

Summary

Input						
Substrate:	Sand-mixed Sediment		Surface Oil Category:	Heavy		
Oil Type:	Medium		Shoreline Length:	7 miles		

Results	Bulk Removal			Reduce to Stain		
	m ² /m	Volume (m ³)	Operational Waste %	m ² /m	Volume (m ³)	Operational Waste %
✓ Preferred Options						
Natural Recovery	0	0	0	0	0	0
In-situ Sediment Mixing and/or Relocation	0.001	11.3	50	0.001	11.3	50
Washing and Recovery	0.07	789	57.14	0.084	946	47.62
Mechanical Removal	0.9	10139	0.111	1.8	20278	0.111
! For Small Amounts Only						
Bioremediation	0.001	11.3	50	0.002	22.5	50
Manual Removal	0.24	2704	8.33	0.36	4056	5.56
X Not Applicable						
In-situ Burning	--	--	--	--	--	--



MOBILE BEACH CLEANERS

OBJECTIVE

- Remove surface oil while minimizing sediment removal

ACTION

- Use self-propelled or towed mobile beach cleaners to mechanically remove oil, oiled debris and oiled sand. Oiled sand can be stored and treated with other techniques then replaced.

ADVANTAGES AND APPLICATIONS

- In situ treatment
- Removes debris, surface layer and tarballs
- Minimal sand loss
- Can clean miles/day
- Minimal labor requirement

HISTORY

- American Trader, California, 1990
- Pacific Adventurer, Australia, 2009

CONCERNS

creates large volumes of oiled sand which must be removed

- Oiled sand can be safely stored and cleaned with other techniques then replaced

still leaves an oil stain on remaining sand

- Only the first stage of treatment, other stages can be employed to remove oil stain. Sediment relocation (surf washing) can then be used to remove stains.

09 June 2010



SEDIMENT RELOCATION (a.k.a. "surf washing")

OBJECTIVE

- Accelerate natural weathering and microbial degradation

ACTION

- Relocate oiled sands using earth moving equipment to the water line at low tides for "washing" by waves

ADVANTAGES AND APPLICATIONS

- works really well for stained sands
- oiling goes to "non-detect" levels and sands pass the "white towel test"
- may have to do twice
- proven effective even in low-energy areas (e.g. Tampa Bay, August 1993)
- no additional ecological effects
- does not affect beach stability
- much preferred over sediment removal

HISTORY

- huge success on Tampa Bay spill, an oil heavier than from the MC-252
- also used on "Exxon Valdez", "Sea Empress", "Selendang Ayu"

CONCERNS

just "big yellow machines" pushing oil around

- creates minute emulsions which are moved into the water column
- greatly accelerates biodegradation, which actually makes the oil "go away" completely

oil goes into the water and sinks

- emulsion particles are positively or neutrally buoyant
- field studies have found no accumulation on nearshore bed or in water column ("Sea Empress" spill, Svalbard Trials)



WASHING RIP RAP

OBJECTIVE

- Remove oil to a Coat or Stain (i.e. 1/8" thick)

ACTION

- Use low or high pressure, ambient sea water to wash, flush and contain/recover within booms

ADVANTAGES AND APPLICATIONS

- Clears oil that could be remobilized
- Reduced wildlife contact risk
- Reduces but may not fully prevent subsequent tar ball releases
- A "Stain" remains

HISTORY

- used on large scale on "Cosco Busan"

CONCERNS

oil goes into the water and sinks

- oil still floats and is contained and recovered by skimmers or sorbents



Shoreline Treatment Recommendation Report

Segment Location: East end of Grand Isle and west end of Grand Terre

Segment(s): LAJF01-S002, 3, 4, 5, 6 and Grand Terre

Shoreline: Riprap (primary)

Oiled Areas for Treatment:

Riprap pier and shoreline on east end of Grand Isle (State Park) including the riprap seabreaks off shore of Grand Isle and the riprap shoreline surrounding Fort Livingston on Grand Terre.

Cleanup Recommendations:

Use low or high pressure, ambient sea water to wash, flush and contain/recover within booms. Deluge flushing and/or use of header flushing should be used to prevent stranding of freed oil. Riprap located on sand that is exposed at low tides should only be treated during higher tides when sand is submerged to prevent stranding of freed oil. Hard boom and sorbent boom should be used to contain oil and skimmers must be present at work sites to recover oil.

Staging and Logistics Constraints/Waste Issues:

See Attached Maps.

Map 1: Riprap pier should be reached by main beach access at State Park, beach can be used for staging and access. Riprap shoreline to north of pier can be reached by main beach access at State Park but beach near shoreline **can not** be used for access or staging. A boardwalk must be constructed next to riprap shoreline and the only access to the shoreline must be either by boardwalk or boat.

Map 2: Riprap seabreaks should be accessed by boat.

Map 3: Fort Livingston should be avoided, sand beach can be used for staging. At this time oil on Fort Livingston should not be treated.

Ecological Concerns:

Photo 1: Boardwalk must be built along riprap and riprap can only be accessed by boardwalk due to sensitive wildlife habitat behind riprap shoreline.

Cultural/Historical Concerns:

Photo 3: Do not stand on or stage equipment on or near Fort Livingston. Archeologist must approve staging and access areas before treatment occurs and must be present during any treatment operations.

Safety Concerns:

Attachments:

3 Maps

Z. Sachus
BP Shoreline Response
Program Manager.
6/10/10

Andrew
SOFC
LA

Prepared by: Andy Graham

Date Prepared: 9 June 2010

GENERAL INFORMATION		Date (dd/mm/yy) 05/06/10	Time (24h standard/daylight) 1000 hrs to 1100 hrs	Tide Height L/M/H H/M/L
Segment ID: LAJFO1-5003				
Segment Name:				
Survey By: (Foot) / Boat / Helicopter / Overlook / (ATV)	Sun / Clouds / Fog / Rain / Snow / Windy			
Name	Organization	Phone Number		
Andy Graham	PARIS PARIS	206 419 1745		
Darion Suggs	NER NER	225 315 3827		
Doug Helton	NOAA			
David Brown	STPD			

Total Length 1800 @/yd Length Surveyed 1800 @/yd Datum: WGS84 or _____

Start GPS: LAT 29.2641 LONG 89.7497

End GPS: LAT 29.2503 LONG 89.7572

Select only ONE Primary (P) and ANY Secondary types. CIRCLE those oiled.

<input type="checkbox"/>	Rocky Cliffs	<input type="checkbox"/>	Riprap
<input type="checkbox"/>	Exposed Man-made Structures	<input type="checkbox"/>	Exposed Tidal Flats
<input type="checkbox"/>	Wave-cut Platforms	<input type="checkbox"/>	Sheltered Rocky Shores
<input checked="" type="checkbox"/>	Fine-Medium grained Sand Beaches	<input type="checkbox"/>	Sheltered Man-made Structures
<input type="checkbox"/>	Coarse-grained Sand Beaches	<input type="checkbox"/>	Sheltered Tidal Flats
<input type="checkbox"/>	Mixed Sand and Gravel Beaches	<input type="checkbox"/>	Wetlands
<input type="checkbox"/>	Gravel Beaches	<input checked="" type="checkbox"/>	Other: <u>Dunes - backshore</u>

Oiled Debris? Yes / No Type veg/garbage Amount > 20 bags

Direct backshore access? Yes / No Access description/restrictions _____

Alongshore access from next segment? Yes / No Suitable backshore staging? Yes / No

Begin with "A" in the lowest tidal zone

Zone ID	Shore Type	Tidal Zone				Oil Cover			Oil Thickness					Oil Character						
		LI	MI	UI	SU	Length (m/ft)	Width (m/ft)	Distr. %	PO	CV	CT	ST	FL	FR	MS	TB	TC	SR	AP	No
A	S			X		1800	2.5	70	X	(X)										
B	Riprap			X		150	4	70		X										
C	S			X		1600	2	10		X										

Use letter of Zone location plus Number of trench, e.g., "A1"

Trench No.	Tidal Zone				Trench Depth (cm/in)	Oiled Interval (cm-in/in-in)	Subsurface Oil Character					Water Table (cm/in)	Sheen Color (B,R,S,N)	Clean Below? (Yes/No)
	LI	MI	UI	SU			OP	PP	OR	OF	TR			
A1			X		15	5-10			X					
C1			X		10	2-3		X						

Cleanup Recommendations; Ecological/Recreational/Cultural Issues/Wildlife Observations

Zone A - runs entire segment, ranges in dist from 20-100% and widths up to 5-7m - buried oil, being covered by clean sand

Zone B - 89.9498/29.2633, 89.9483/29.2621 - riprap, likes runs entire length but did not investigate due to safety broken oiled boom on shore @ end of riprap should be removed

Sketch: Yes No Photos: Yes No Photographer Name: _____

Zone C - 89.9496/29.2616, 89.9590/29.2501 - lower in intertidal zone than zone A, oil also in swash zone + submerged some buried oil under clean sand

Some clean up taking place

June 2009

SHORELINE OILING SUMMARY FORM for MC 252

Spill Page 1 of 2

GENERAL INFORMATION		Date (dd/mm/yy)	Time (24h standard/daylight)	Tide Height
Segment ID: <u>LAF01-5004</u>	<u>05/06/10</u>	<u>1100</u> hrs to <u>1115</u> hrs		L/M/H H/M/L
Segment Name:		Survey By: Foot / Boat / Helicopter / Overlook / <u>(ATV)</u>		
Name		Sun / Clouds / Fog / Rain / Snow / Windy		
Organization		Phone Number		
<u>Andy Graham</u>		<u>PARIS 720 740 7927</u>		
<u>Darion Suggs</u>		<u>DER 728 735 7327</u>		
<u>Doug Helton</u>		<u>NOAA</u>		
<u>David Brown</u>		<u>SAPD</u>		

Total Length <u>1400</u> @/yd	Length Surveyed <u>1400</u> @/yd	Datum: WGS84 or
Start GPS: LAT <u>29.2502</u>	LONG <u>89.9593</u>	
End GPS: LAT <u>29.2439</u>	LONG <u>89.9702</u>	

Select only ONE Primary (P) and ANY Secondary types. CIRCLE those oiled.

<input type="checkbox"/>	Rocky Cliffs	<input type="checkbox"/>	Riprap
<input type="checkbox"/>	Exposed Man-made Structures	<input type="checkbox"/>	Exposed Tidal Flats
<input type="checkbox"/>	Wave-cut Platforms	<input type="checkbox"/>	Sheltered Rocky Shores
<input checked="" type="checkbox"/>	Fine-Medium grained Sand Beaches	<input type="checkbox"/>	Sheltered Man-made Structures
<input type="checkbox"/>	Coarse-grained Sand Beaches	<input type="checkbox"/>	Sheltered Tidal Flats
<input type="checkbox"/>	Mixed Sand and Gravel Beaches	<input type="checkbox"/>	Wetlands
<input type="checkbox"/>	Gravel Beaches	<input checked="" type="checkbox"/>	Other: <u>Dunes - Backshore</u>

Oiled Debris? Yes / No Type veg/garbage Amount > 20 bags

Direct backshore access? Yes / No Access description/restrictions _____

Alongshore access from next segment? Yes / No Suitable backshore staging? Yes / No

Begin with "A" in the lowest tidal zone

Zone ID	Shore Type	Tidal Zone				Oil Cover			Oil Thickness					Oil Character						
		LI	MI	UI	SU	Length m/ft	Width m/ft	Dist. %	PO	CV	CT	ST	FL	FR	MS	TB	TC	SR	AP	No
<u>A</u>	<u>S</u>			<u>X</u>		<u>1400</u>	<u>3.5</u>	<u>70</u>	<u>X</u>	<u>(X)</u>										

Use letter of Zone location plus Number of trench, e.g., "A1"

Trench No.	Tidal Zone				Trench Depth cm/in	Oiled Interval cm-cm / in-in	Subsurface Oil Character						Water Table cm/in	Sheen Color B,R,S,N	Clean Below? Yes/No
	LI	MI	UI	SU			OP	PP	OR	OF	TR	No			

Cleanup Recommendations; Ecological/Recreational/Cultural Issues/Wildlife Observations

Zone A - surveyed by ATV, similar to segment 5003
zone runs entire length of segment
did not dig pits due to time/weather constraints but
likely buried oil

Sketch: Yes No Photos: Yes No Photographer Name: _____

Some clean up taking place

GENERAL INFORMATION		Date (dd/mm/yy) <u>05/06/10</u>	Time (24h standard/daylight) <u>1115</u> hrs to <u>1125</u> hrs	Tide Height L/M/H <input checked="" type="checkbox"/> H/M/L
Segment ID: <u>LAFJOL-5005</u>				
Segment Name:				
Survey By: Foot / Boat / Helicopter / Overlook / <u>ATV</u>		Sun / Clouds / Fog / Rain / Snow / Windy		
Name	Organization	Phone Number		
<u>Andy Graham</u>	<u>Polaris 1908740279902</u>	<u>206 419 1745</u>		
<u>Daron Suggs</u>	<u>DER 1998740279902</u>	<u>225 315 3827</u>		
<u>Doug Helton</u>	<u>NDA</u>			
<u>David Brown</u>	<u>SHPO</u>			

Total Length 2500 ft/ yd Length Surveyed 2500 ft/ yd Datum: WGS84 or _____

Start GPS: LAT 29.2439 LONG 89.9707

End GPS: LAT 29.2516 LONG 89.9927

Select only ONE Primary (P) and ANY Secondary types. CIRCLE those oiled.

<input type="checkbox"/>	Rocky Cliffs	<input type="checkbox"/>	Riprap
<input type="checkbox"/>	Exposed Man-made Structures	<input type="checkbox"/>	Exposed Tidal Flats
<input type="checkbox"/>	Wave-cut Platforms	<input type="checkbox"/>	Sheltered Rocky Shores
<input checked="" type="checkbox"/>	Fine-Medium grained Sand Beaches	<input type="checkbox"/>	Sheltered Man-made Structures
<input type="checkbox"/>	Coarse-grained Sand Beaches	<input type="checkbox"/>	Sheltered Tidal Flats
<input type="checkbox"/>	Mixed Sand and Gravel Beaches	<input type="checkbox"/>	Wetlands
<input type="checkbox"/>	Gravel Beaches	<input checked="" type="checkbox"/>	Other: <u>Dunes - Backshore</u>

Oiled Debris? Yes / No Type veg/garbage Amount > 20 bags

Direct backshore access? Yes / No Access description/restrictions _____

Alongshore access from next segment? Yes / No Suitable backshore staging? Yes / No

Begin with "A" in the lowest tidal zone

Zone ID	Shore Type	Tidal Zone				Oil Cover			Oil Thickness					Oil Character						
		LI	MI	UI	SU	Length ft	Width ft	Dist. %	PO	CV	CT	ST	FL	FR	MS	TB	TC	SR	AP	No
<u>A</u>	<u>5</u>			<u>X</u>		<u>2500</u>	<u>3.5</u>	<u>70</u>	<u>X</u>	<u>X</u>	---									

Use letter of Zone location plus Number of trench, e.g., "A1"

Trench No.	Tidal Zone				Trench Depth cm / in	Oiled Interval cm-cm / in-in	Subsurface Oil Character						Water Table cm / in	Sheen Color B,R,S,N	Clean Below? Yes / No
	LI	MI	UI	SU			OP	PP	OR	OF	TR	No			

Cleanup Recommendations; Ecological/Recreational/Cultural Issues/Wildlife Observations

Zone A - runs entire length of segment
Surveyed by ATV
did not dig pits due to time/weather but likely buried
oil and submerged oil in smash zone

Sketch: Yes / No Photos: Yes / No Photographer Name: _____

Some cleanup taking place

SHORELINE OILING SUMMARY FORM for MC 252 Spill Page 1 of 4

GENERAL INFORMATION		Date (dd/mm/yy) 05/06/10	Time (24h standard/daylight) 1125 hrs to 1135 hrs	Tide Height L/M/H H/M/L
Segment ID: LAJFO1-006				
Segment Name:				
Survey By: Foot / Boat / Helicopter / Overlook / <u>ATV</u>		Sun / Clouds / Fog / Rain / Snow / Windy		

Name	Organization	Phone Number
Andy Graham	Polaris	206 419 1745
Daron Suggs	DER	225 315 3827
Doug Helton	NDA	
David Brown	SAPO	

Total Length 1300 yd Length Surveyed 1700 yd Datum: WGS84 or _____

Start GPS: LAT 29.2315 LONG 89.9927

End GPS: LAT 29.2253 LONG 90.0095

Select only ONE Primary (P) and ANY Secondary types. CIRCLE those oiled.

<input type="checkbox"/>	Rocky Cliffs	<input type="checkbox"/>	Riprap
<input type="checkbox"/>	Exposed Man-made Structures	<input type="checkbox"/>	Exposed Tidal Flats
<input type="checkbox"/>	Wave-cut Platforms	<input type="checkbox"/>	Sheltered Rocky Shores
<input checked="" type="checkbox"/>	Fine-Medium grained Sand Beaches	<input type="checkbox"/>	Sheltered Man-made Structures
<input type="checkbox"/>	Coarse-grained Sand Beaches	<input type="checkbox"/>	Sheltered Tidal Flats
<input type="checkbox"/>	Mixed Sand and Gravel Beaches	<input type="checkbox"/>	Wetlands
<input type="checkbox"/>	Gravel Beaches	<input checked="" type="checkbox"/>	Other: <u>Dunes - backshore</u>

Oiled Debris? Yes / No Type veg/garbage Amount >20 bags

Direct backshore access? Yes / No Access description/restrictions _____

Alongshore access from next segment? Yes / No Suitable backshore staging? Yes / No

Begin with "A" in the lowest tidal zone

Zone ID	Shore Type	Tidal Zone				Oil Cover			Oil Thickness					Oil Character						
		LI	MI	UI	SU	Length m / ft	Width m / ft	Distr. %	PO	CV	CT	ST	FL	FR	MS	TB	TC	SR	AP	No
A	S			X		1300	3.5	60		X					X					

Use letter of Zone location plus Number of trench, e.g., "A1"

Trench No.	Tidal Zone				Trench Depth cm / in	Oiled Interval cm-cm / in-in	Subsurface Oil Character						Water Table cm / in	Sheen Color B,R,S,N	Clean Below? Yes / No
	LI	MI	UI	SU			OP	PP	OR	OF	TR	No			

Cleanup Recommendations; Ecological/Recreational/Cultural Issues/Wildlife Observations

Zone A runs entire length of segment surveyed by ATV, did not dig pits but likely buried oil some cleanup taking place

Sketch: Yes / No Photos: Yes / No Photographer Name: _____

Segment ID: <u>LAF01-5007</u>		Date (dd/mm/yy): <u>05/06/10</u>	Time (24h standard/daylight): <u>1135</u> hrs to <u>1145</u> hrs	Tide Height: <u>L/M/H</u>
Segment Name:		Survey By: Foot / Boat / Helicopter / Overlook / <u>ATV</u>		
Survey By: Foot / Boat / Helicopter / Overlook / <u>ATV</u>		Sun / Clouds / Fog / Rain / Snow / Windy		
Name	Organization	Phone Number		
<u>Andy Graham</u>	<u>Polaris</u>	<u>206 419 1745</u>		
<u>Daron Suggs</u>	<u>DER</u>	<u>225 315 3827</u>		
<u>Doug Helton</u>	<u>NOAA</u>			
<u>David Brown</u>	<u>STPD</u>			

Total Length 2400 ft / yd Length Surveyed 2400 ft / yd Datum: WGS84 or _____

Start GPS: LAT 29.2254 LONG 90.004

End GPS: LAT 29.2132 LONG 90.0248

Select only ONE Primary (P) and ANY Secondary types. CIRCLE those oiled.

<input type="checkbox"/>	Rocky Cliffs	<input type="checkbox"/>	Riprap
<input type="checkbox"/>	Exposed Man-made Structures	<input type="checkbox"/>	Exposed Tidal Flats
<input type="checkbox"/>	Wave-cut Platforms	<input type="checkbox"/>	Sheltered Rocky Shores
<input checked="" type="checkbox"/>	Fine-Medium grained Sand Beaches	<input type="checkbox"/>	Sheltered Man-made Structures
<input type="checkbox"/>	Coarse-grained Sand Beaches	<input type="checkbox"/>	Sheltered Tidal Flats
<input type="checkbox"/>	Mixed Sand and Gravel Beaches	<input type="checkbox"/>	Wetlands
<input type="checkbox"/>	Gravel Beaches	<input checked="" type="checkbox"/>	Other: <u>Dunes - Backshore</u>

Oiled Debris? Yes / No Type veg/garbage Amount > 20 bags

Direct backshore access? Yes / No Access description/restrictions _____

Alongshore access from next segment? Yes / No Suitable backshore staging? Yes / No

Begin with "A" in the lowest tidal zone

Zone ID	Shore Type	Tidal Zone				Oil Cover			Oil Thickness					Oil Character						
		LI	MI	UI	SU	Length ft	Width ft	Distr. %	PO	CV	CT	ST	FL	FR	MS	TB	TC	SR	AP	No
<u>A</u>	<u>5</u>			<u>X</u>		<u>2400</u>	<u>3.5</u>	<u>60</u>		<u>X</u>										

Use letter of Zone location plus Number of trench, e.g., "A1"

Trench No.	Tidal Zone				Trench Depth cm / in	Oiled Interval cm-cm / in-in	Subsurface Oil Character						Water Table cm / in	Sheen Color B,R,S,N	Clean Below? Yes / No
	LI	MI	UI	SU			OP	PP	OR	OF	TR	No			

Cleanup Recommendations; Ecological/Recreational/Cultural Issues/Wildlife Observations

zone A runs entire length of segment surveyed by ATV

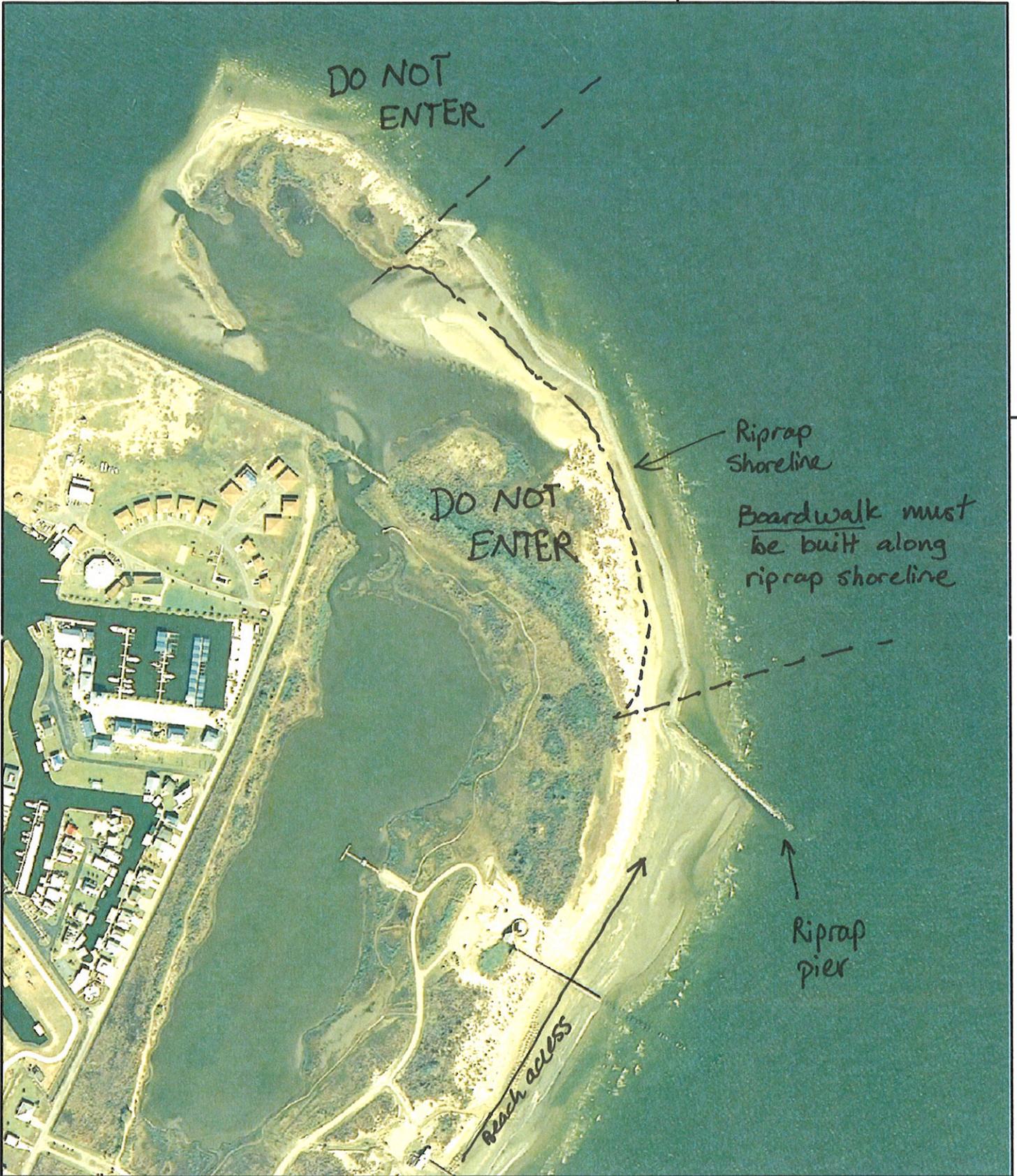
some cleanup taking place

Sketch: Yes No Photos: Yes No Photographer Name: _____

89°57'0"W

29°16'0"N

29°16'0"N



89°57'0"W

Segment:

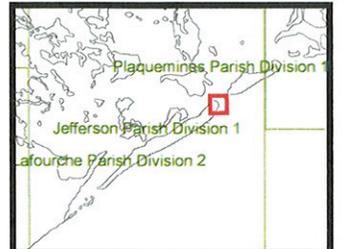
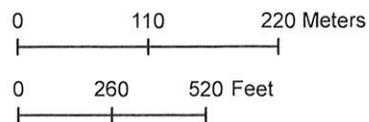
PHOTO 1

Date:

Team/Leader:

Comments:

MC 252



89°59'0"W

89°58'0"W

89°57'0"W

29°16'0"N

29°16'0"N

29°15'0"N

29°15'0"N

29°14'0"N

29°14'0"N



Riprap sea breaks

89°59'0"W

89°58'0"W

89°57'0"W

Segment:

PHOTO 2

Date:

Team/Leader:

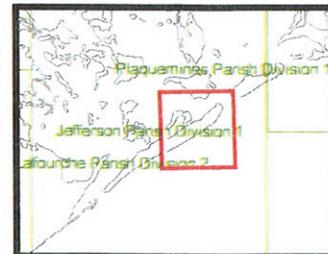
Comments:

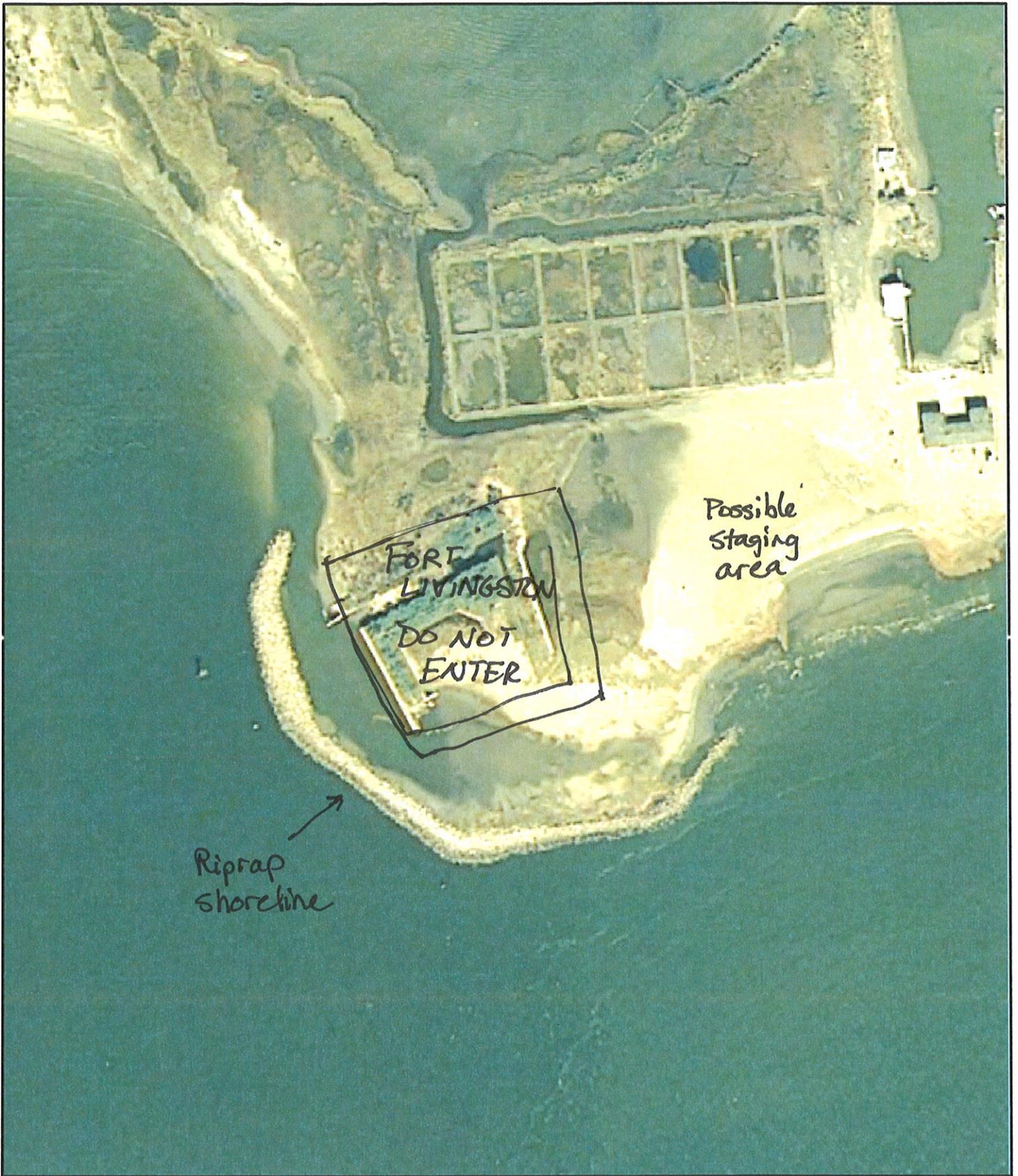
MC 252



0 490 980 Meters

0 1,200 2,400 Feet





Segment:

PHOTO 3

Date:

Team/Leader:

Comments:

MC 252



0 50 100 Meters

0 150 300 Feet



CLEANING SAND BEACHES

OBJECTIVE

- Remove oil while minimizing sediment removal

OPTIONS

TECHNIQUE	ADVANTAGES	DISADVANTAGES
MANUAL REMOVAL	<ul style="list-style-type: none"> • Removes much less sediment than mechanical removal • Good for surface layer of Thick oil and Cover • Generates least amount of waste, though more waste than in situ options 	<ul style="list-style-type: none"> • Slow, inefficient • Labor intensive • Not appropriate for buried or oil that has penetrated deeply (>1 foot)
MECHANICAL REMOVAL	<ul style="list-style-type: none"> • Rapid • Good for surface layer of Thick oil and Cover • Can remove all of the oil • Minimal labor requirement 	<ul style="list-style-type: none"> • Can remove as much as x 10 sediment volume when compared to manual removal
MOBILE BEACH CLEANERS	<ul style="list-style-type: none"> • In situ treatment • Removes surface layers and tar balls • Minimal sand loss • Can clean miles/day • Minimal labor requirement 	<ul style="list-style-type: none"> • Does not remove Stains
SAND TREATMENT PLANTS	<ul style="list-style-type: none"> • In situ treatment • Removes Coats and Stains • Zero sand loss • Can process >50 tons/hour • Good for surface and subsurface Cover, Coat and Stain • Minimal labor requirement 	<ul style="list-style-type: none"> • Relatively expensive • Stationary system and may involve multi transfers to/from beach • Not good for tar balls
SEDIMENT RELOCATION	<ul style="list-style-type: none"> • In situ treatment • Zero sand loss • Can clean miles/day • Good for surface and subsurface Coat and Stain • Minimal labor requirement • Single step action 	<ul style="list-style-type: none"> • Public perception • May need to repeat
MIXING	<ul style="list-style-type: none"> • In situ treatment • Zero sand loss • Can clean miles/day • Good for surface and subsurface Coat and Stain • Minimal labor requirement • Single step action 	<ul style="list-style-type: none"> • Public perception • May need to repeat
COMBINATIONS OF THE ABOVE		

GRAND ISLE SAND CLEANING

ASSUMPTIONS

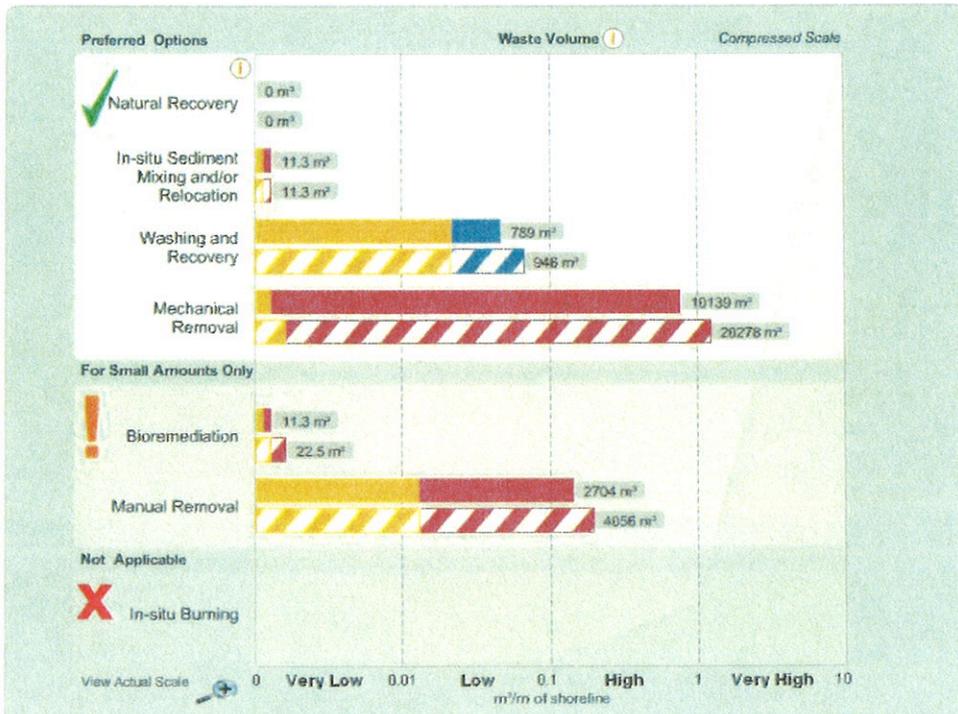
- Length = 7 miles
- Oil width >6 feet
- Distribution 51-90%
- TO and CV

ESTIMATED WASTE GENERATION

- | | |
|----------------------|--------------------------------|
| ■ Manual Removal | 2,700 – 4,000 m ³ |
| ■ Mechanical Removal | 10,000 – 20,000 m ³ |
| ■ In Situ Treatment | 10 m ³ |

Summary

Input						
Substrate:	Sand-mixed Sediment		Surface Oil Category:	Heavy		
Oil Type:	Medium		Shoreline Length:	7 miles		
Results						
	Bulk Removal			Reduce to Stain		
	m ² /m	Volume (m ³)	Operational Waste %	m ² /m	Volume (m ³)	Operational Waste %
Preferred Options						
Natural Recovery	0	0	0	0	0	0
In-situ Sediment Mixing and/or Relocation	0.001	11.3	50	0.001	11.3	50
Washing and Recovery	0.07	789	57.14	0.084	946	47.82
Mechanical Removal	0.9	10139	0.111	1.8	20278	0.111
For Small Amounts Only						
Bioremediation	0.001	11.3	50	0.002	22.5	50
Manual Removal	0.24	2704	8.33	0.36	4056	5.56
Not Applicable						
In-situ Burning	--	--	--	--	--	--



SEDIMENT RELOCATION (a.k.a. "surf washing")

OBJECTIVE

- Accelerate natural weathering and microbial degradation

ACTION

- Relocate oiled sands using earth moving equipment to the water line at low tides for "washing" by waves

ADVANTAGES AND APPLICATIONS

- works really well for stained sands
- oiling goes to "non-detect" levels and sands pass the "white towel test"
- may have to do twice
- proven effective even in low-energy areas (e.g. Tampa Bay, August 1993)
- no additional ecological effects
- does not affect beach stability
- much preferred over sediment removal

HISTORY

- huge success on Tampa Bay spill, an oil heavier than from the MC-252
- also used on "Exxon Valdez", "Sea Empress", "Selendang Ayu"

CONCERNS

just "big yellow machines" pushing oil around

- creates minute emulsions which are moved into the water column
- greatly accelerates biodegradation, which actually makes the oil "go away" completely

oil goes into the water and sinks

- emulsion particles are positively or neutrally buoyant
- field studies have found no accumulation on nearshore bed or in water column ("Sea Empress" spill, Svalbard Trials)





Habitat Type	Stage 2 Cleanup Goals	Allowable Stage 2 Cleanup Methods	Constraints
Sand Beaches Mixed Sand and Gravel/Shell Beaches	Removal of bulk oil, heavily oiled sediments, and heavily oiled debris on the surface	Manual removal with hand tools so to minimize removal of clean sediments on/under oiled layers Mechanical equipment is allowed for transportation of wastes	Minimize removal of clean sediments Do not disturb vegetated areas, even if oiled No foot traffic in vegetated areas Use of mechanical equipment will need to be approved and access/egress areas will be pre-identified by the EU
Marsh Fringe and Open-water Areas between Broken Marsh	Removal of bulk oil to the point where only a sheen remains so that it no longer releases oil that can re-oil adjacent habitats or affect highly sensitive areas, such as bird concentration areas	Skimming and vacuum of floating oil on the water surface Use flushing with sea water along the marsh fringe to release trapped oil Where remaining oil poses a significant threat to bird concentration areas, sorbent snare may be deployed. Such areas will be identified by the EU	All work is to be conducted from boats; there will be no foot traffic in vegetation areas Do not stage boats such that the vegetation is crushed During flushing, prevent suspension of bottom sediments (do not create a muddy plume) Do not disturb any marsh soils or peat No cutting of vegetation allowed Areas where oil inside marshes should be removed will be identified by the EU
Tidal Flats	Removal of bulk oil to the point where only a sheen remains so that it no longer releases oil that can re-oil adjacent habitats or affect highly sensitive areas, such as bird concentration areas	Any cleanup has to be approved by the EU	Any cleanup has to be approved by the EU
Man-made Shorelines in Industrial Areas (e.g., riprap, seawalls, pilings, docks)	Removal of bulk oil to the point where only a sheen remains during normal tidal and wave washing	Flooding and low-pressure, ambient water flushing to remove mobile oil; flush only to the point where a sheen remains; use booms for containment and skimmers/vacuum for recovery of released oil Minimal use of sorbents	None
Residential Areas/High Public Use Shoreline Areas (excluding beaches)	Removal of bulk oil to the point where only a sheen remains during normal tidal and wave washing	Flooding and low-pressure, ambient water flushing to remove mobile oil; flush only to the point where a sheen remains; use booms for containment and skimmers/vacuum for recovery of released oil Minimal use of sorbents	Use barriers and signs to prevent access to oiled areas
Oiled Debris	Removal of all readily accessible heavily oiled debris (releases liquid oil when disturbed)	Manual removal using appropriate hand tools (rakes, pitchforks, etc.)	Do not remove clean or likely oiled debris All work is to be conducted from boats; there will be no foot traffic in vegetation areas Do not stage boats such that the vegetation is crushed No cutting of vegetation allowed Removal of oiled debris from inside marshes will be identified by the EU

WASHING RIP RAP

OBJECTIVE

- Remove oil to a Coat or Stain (i.e. 1/8" thick)

ACTION

- Use low or high pressure, ambient sea water to wash, flush and contain/recover within booms

ADVANTAGES AND APPLICATIONS

- Clears oil that could be remobilized
- Reduced wildlife contact risk
- Reduces but may not fully prevent subsequent tar ball releases
- A "Stain" remains

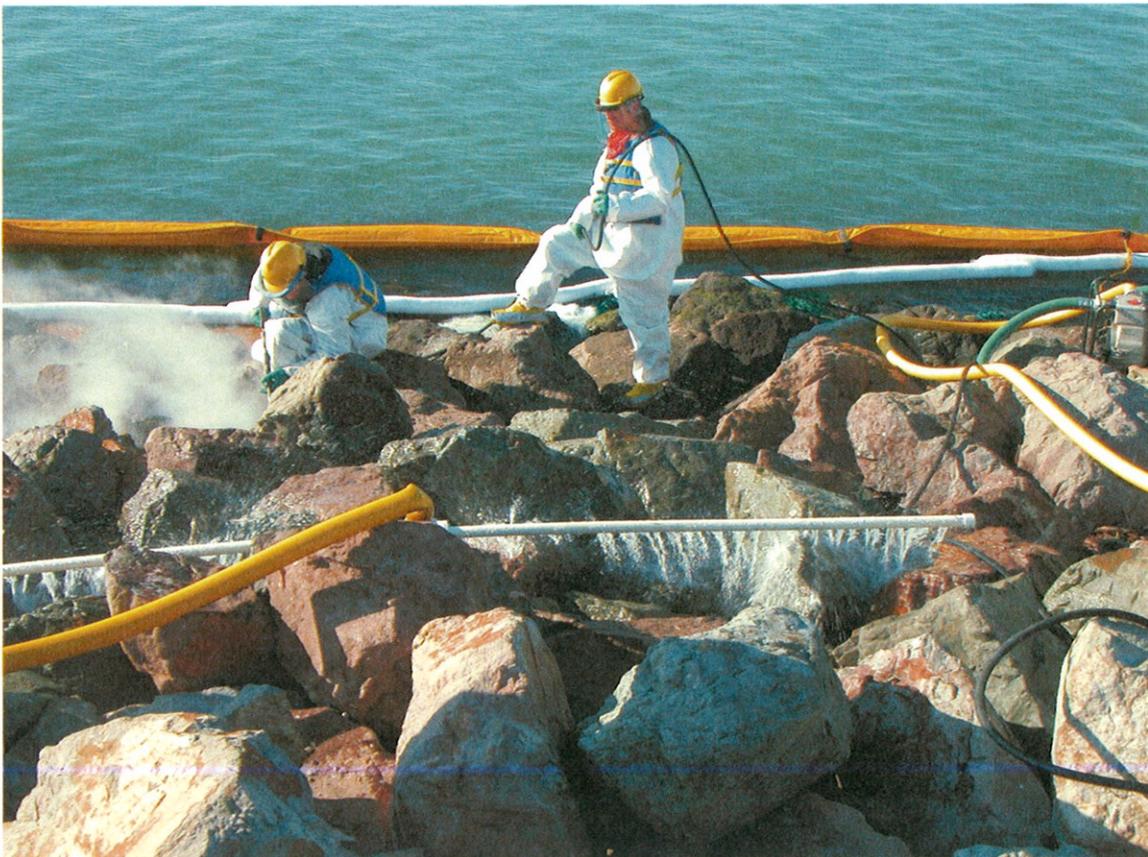
HISTORY

- used on large scale on "Cosco Busan"

CONCERNS

oil goes into the water and sinks

- oil still floats and is contained and recovered by skimmers or sorbents



90°00'W

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