

# Introduction to the SCAT Team

## Member Course:

### *Rehobeth Beach, DE*

Frank Csulak  
NOAA, SSC  
May 3, 2016



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# Team Member Course Objectives

- Use of ESI for planning and response
- Fate and behavior of different types of oil spills
- The Shoreline Assessment process, team roles, field methods, and products
- Shoreline cleanup methods and when they should be applied



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# Team Member Course Objectives

- Oil behavior and cleanup methods for different shoreline types
- Identification of shoreline types, processes, and ecological resources during field exercises
- Implementation of shoreline assessments, field sketches, completion of SCAT forms



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# Team Member Course Objectives

- Understand types of shoreline cleanup endpoints
- Selection of appropriate cleanup methods for different shoreline types and oil types
- Application of all these topics through case studies and field exercises



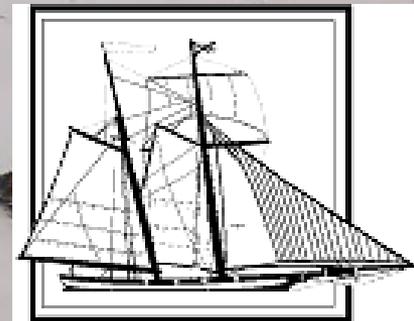
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# SCAT

In  
ICS

Subset of Environmental Unit Training

Jason Maddox  
Gallagher Marine Systems



# Shoreline Evaluation Process

The shoreline evaluation process requires a commitment of trained personnel to assess, evaluate, and communicate the impacts of oil on the shoreline, as well as to recommend countermeasures to mitigate adverse impacts. At most spills, a repetitive, detailed, and systematic survey of the extent and degree of shoreline contamination is needed for:

- 1 Assessment of the need for shoreline cleanup
- 2 Selection of the most appropriate cleanup method
- 3 Determination of priorities for shoreline cleanup
- 4 Documentation of the spatial oil distribution over time

# Where does SCAT belong in the organization?

- SCAT is under the Planning section

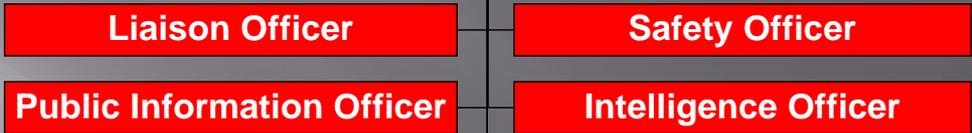
▣ Why?



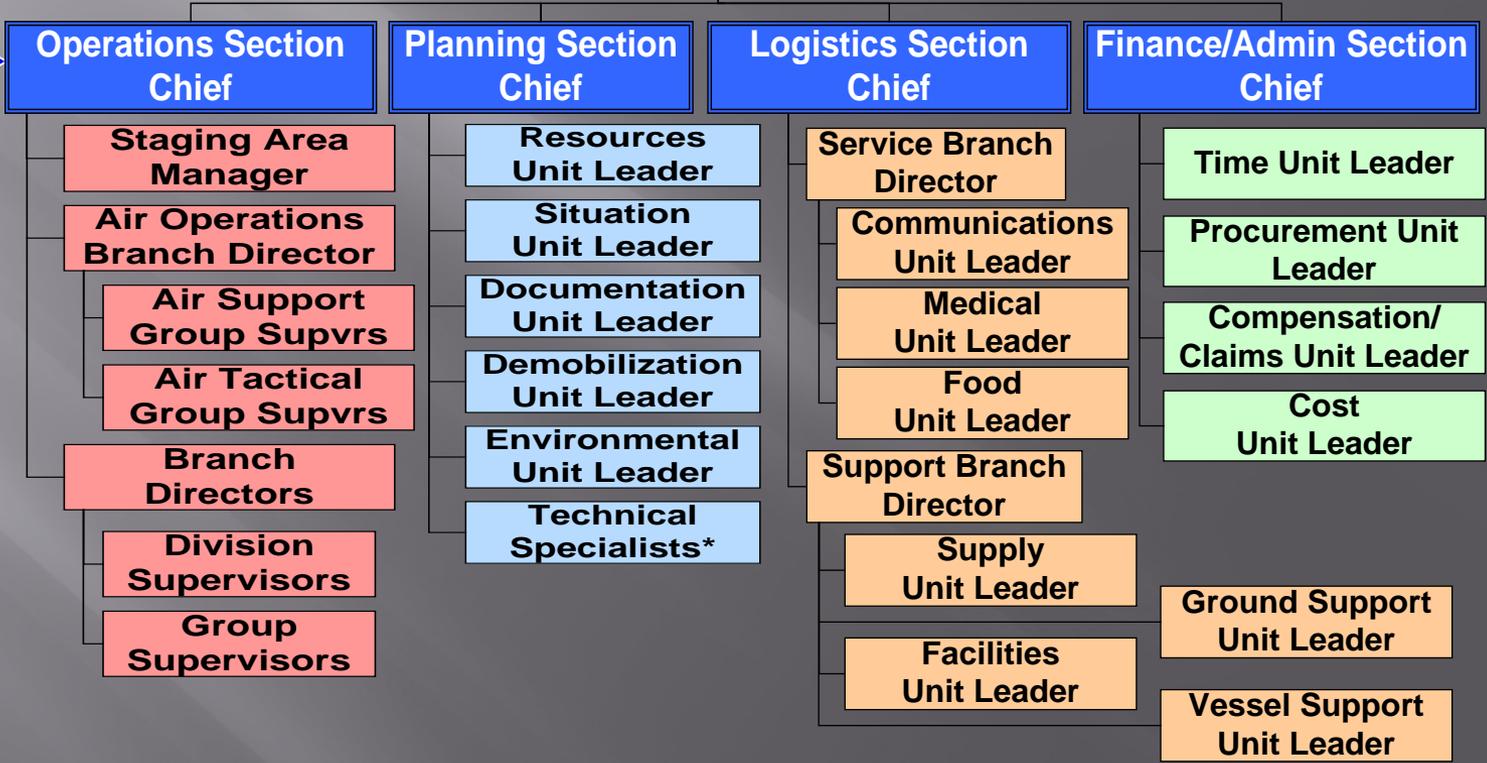
# Organization

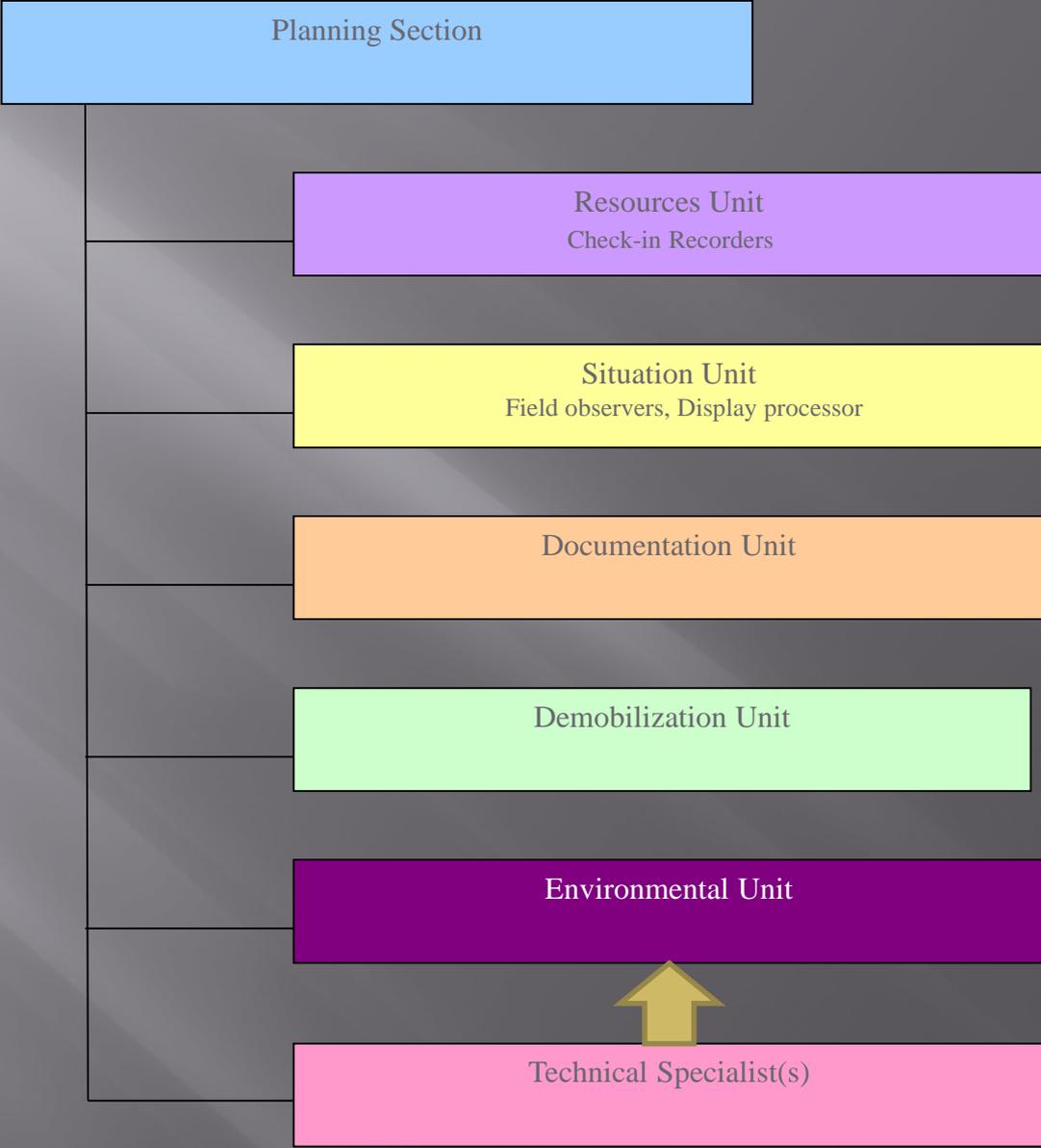
**Unified Command**

Command Staff



General Staff





# Building the EU Organization

## Bottom Up

Span of Control

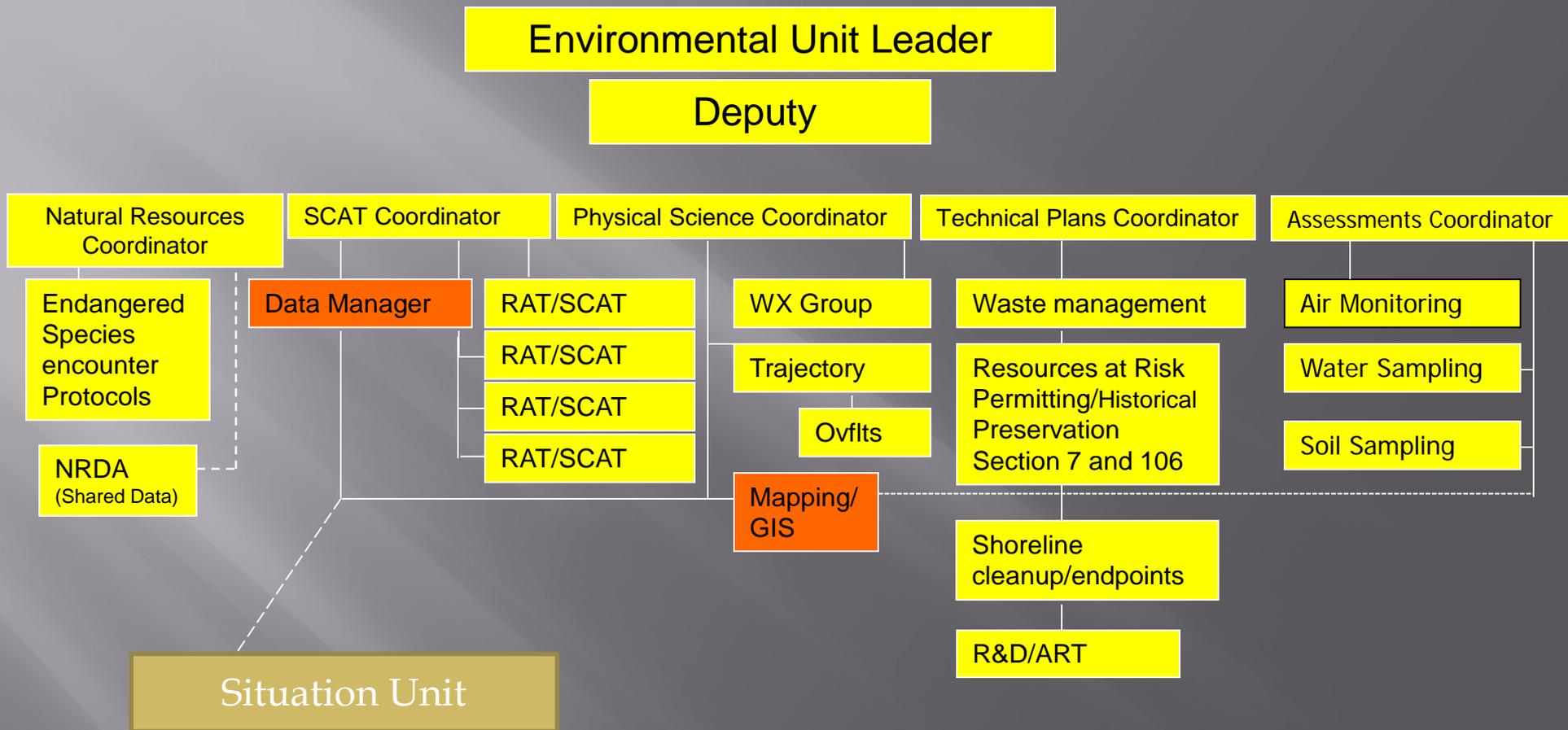
(1:1-7 Range)

(1:3-5 optimum)

**NO MORE THAN 7**



# EXAMPLE OF EU SET-UP (EAGLE OTOME)



The Environmental Unit Leader is the Manager of the Environmental Unit and all its moving parts

# SCAT Coordinator

- ▣ Responsibilities:
  - Report to the Environmental Unit Leader
  - Assemble teams for assessment of impacted shorelines
  - Determine appropriate Forms to be utilized
  - Direct Data Manager/GIS personnel for segmentation of shoreline for surveying and tracking status of impacted conditions (i.e. colors depicting heavy, moderate, light, or no observed oiling [criterion](#))
  - Determine end-point criteria based on input from stakeholders and subject matter experts
  - Provide Shoreline Treatment Recommendations to Environmental Unit Leader
  - Maintain constant cleanup monitoring of Operations
  - Provide signoff procedures and protocols to Environmental Unit Leader (Evaluate & construct entire SCAT process\*)

\* Shown in later slide

# Rapid Assessment Teams

## Field Observers

Are 2 to 3-person teams, usually representatives from the U.S. Coast Guard the State lead agency and RP, which can quickly deploy to problem sites;

Verbally report to the Situation Unit, who then passes the information on to the appropriate units;

Become members of the shoreline assessment team, if appropriate.

# SCAT Teams

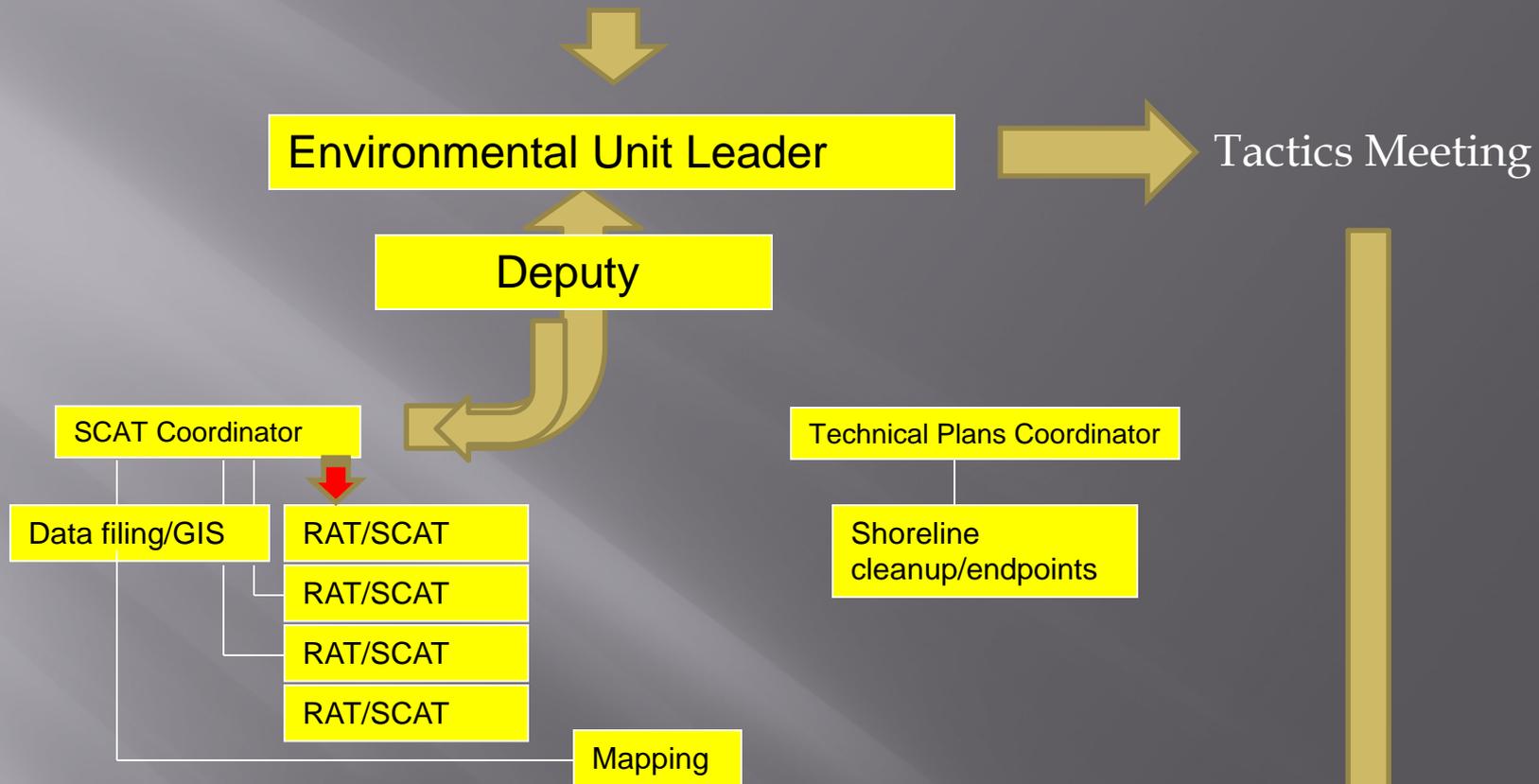
## Members

Three or four trained personnel prepared to evaluate a section of shoreline, equipped with proper protective gear and suitable transportation to and from the site.

The assessment group should have representatives of the OSC, State, responsible party, and trustees.

Team members must have basic site safety training and training sufficient to complete the Shoreline Oiling Survey Form.

Specific recommendations for cleanup may be included under this phase of the assessment.



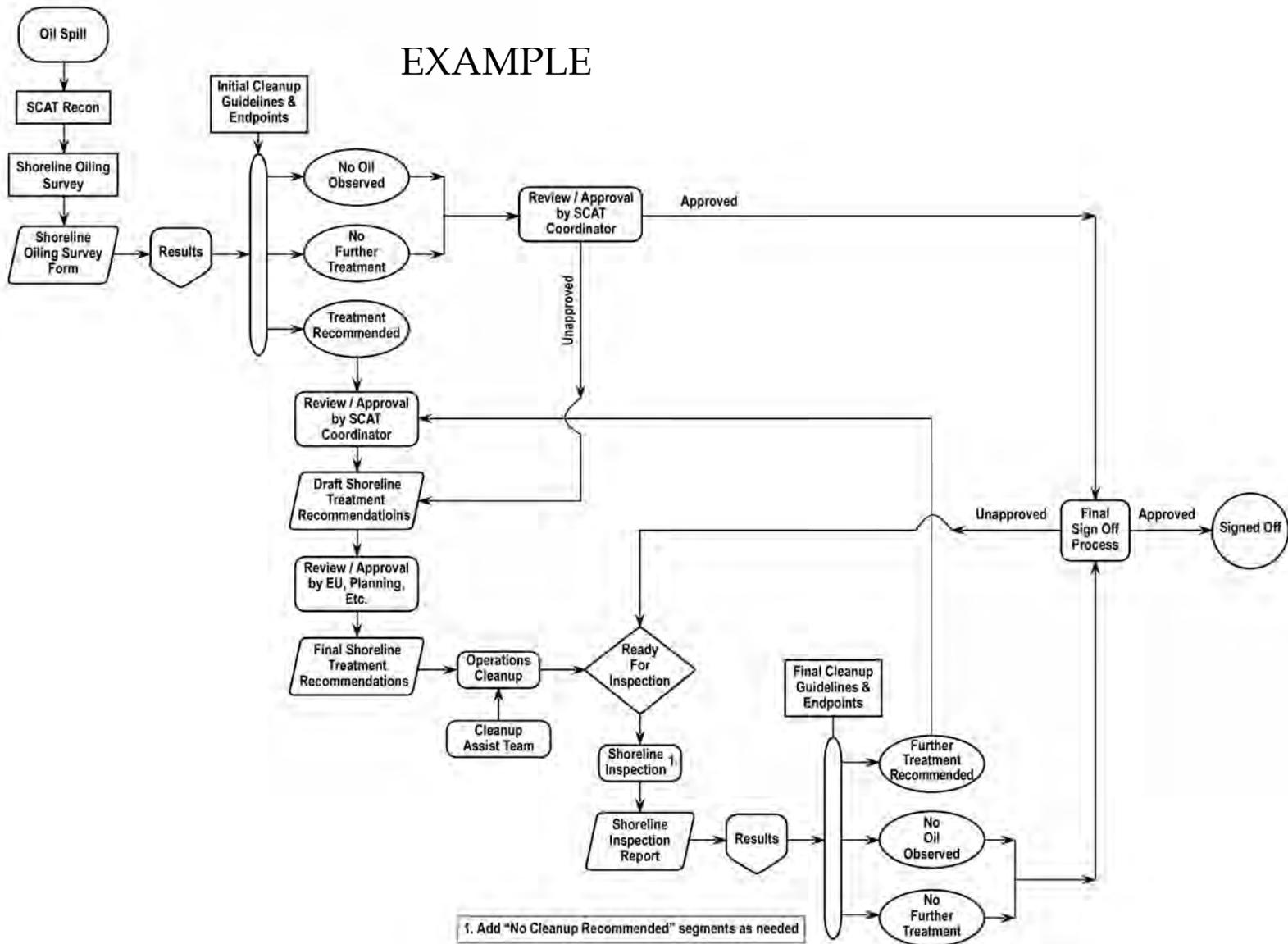
## OPERATIONS

Transportation Resources  
IAP's 204's

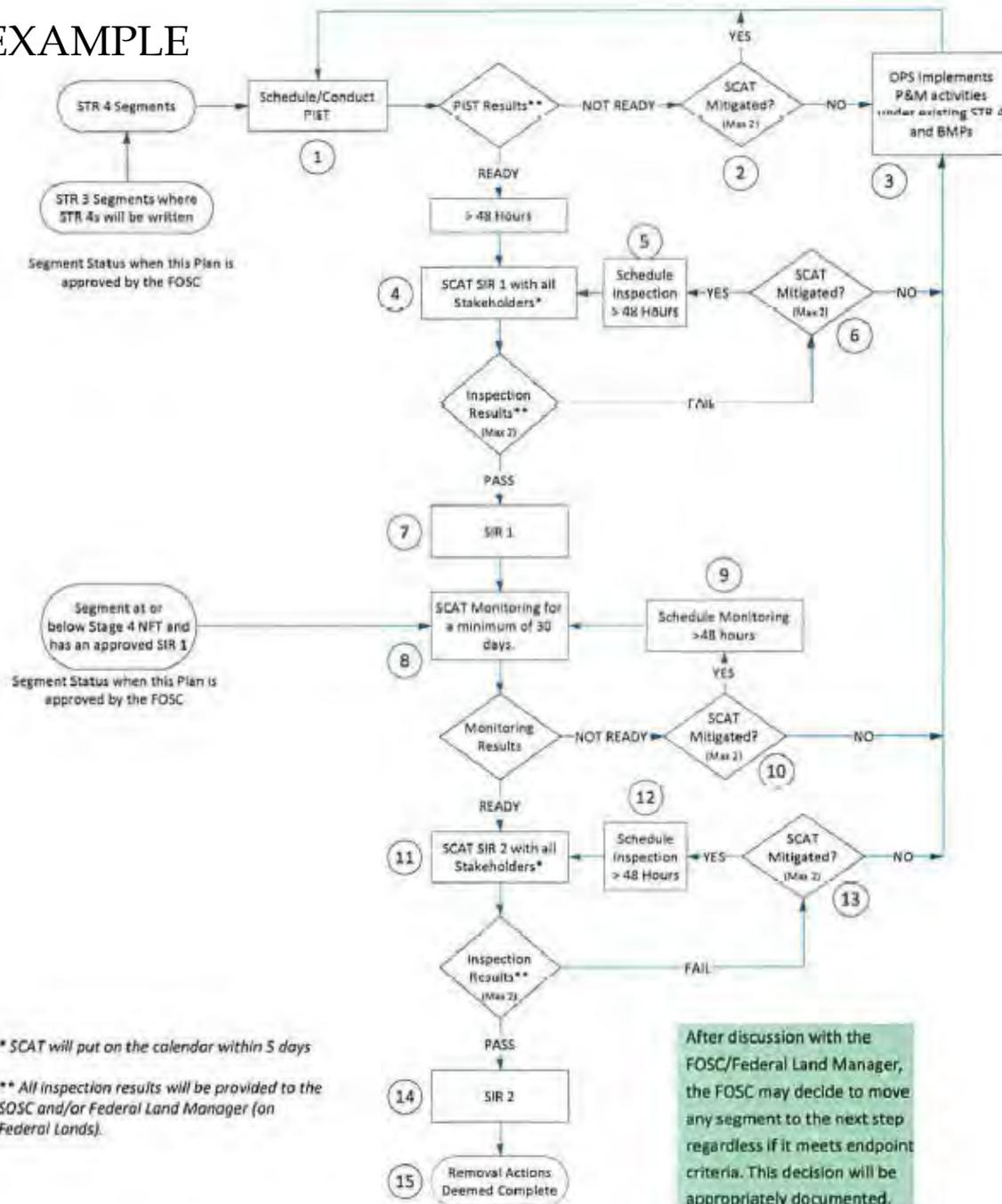
Click triangle



# EXAMPLE



# EXAMPLE





# Shoreline Cleanup Assessment Technique: SCAT Process Part 1

Frank Csulak  
SSC, NOAA  
RRTIII May 2006



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# Shoreline Assessment

- Overview of the Process
- Roles and Responsibilities
- Activities under Each Step
- Terminology and Forms



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# What is a SCAT Program?

- A systematic approach that:
  - uses standard methods and terminology
  - to collect data on shoreline oiling conditions
  - to support decision-making for shoreline cleanup



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# What is a SCAT Program?

- It is flexible in terms of the scale of the survey and detail of the data sets collected.
- It is multi-agency:
  - Responsible Party
  - Various agency representatives
  - Resource Managers
  - Land Owners



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# Role of SCAT

- Conduct shoreline assessment surveys (generate data on shoreline types, lengths, and oiling conditions)
- Identify sensitive resources (ecological, recreational, cultural)
- Determine the need for treatment



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# Role of SCAT (cont.)

- Recommend shoreline treatment methods (to do's and to don't)
- Recommend treatment priorities
- Monitor treatment effectiveness and effects



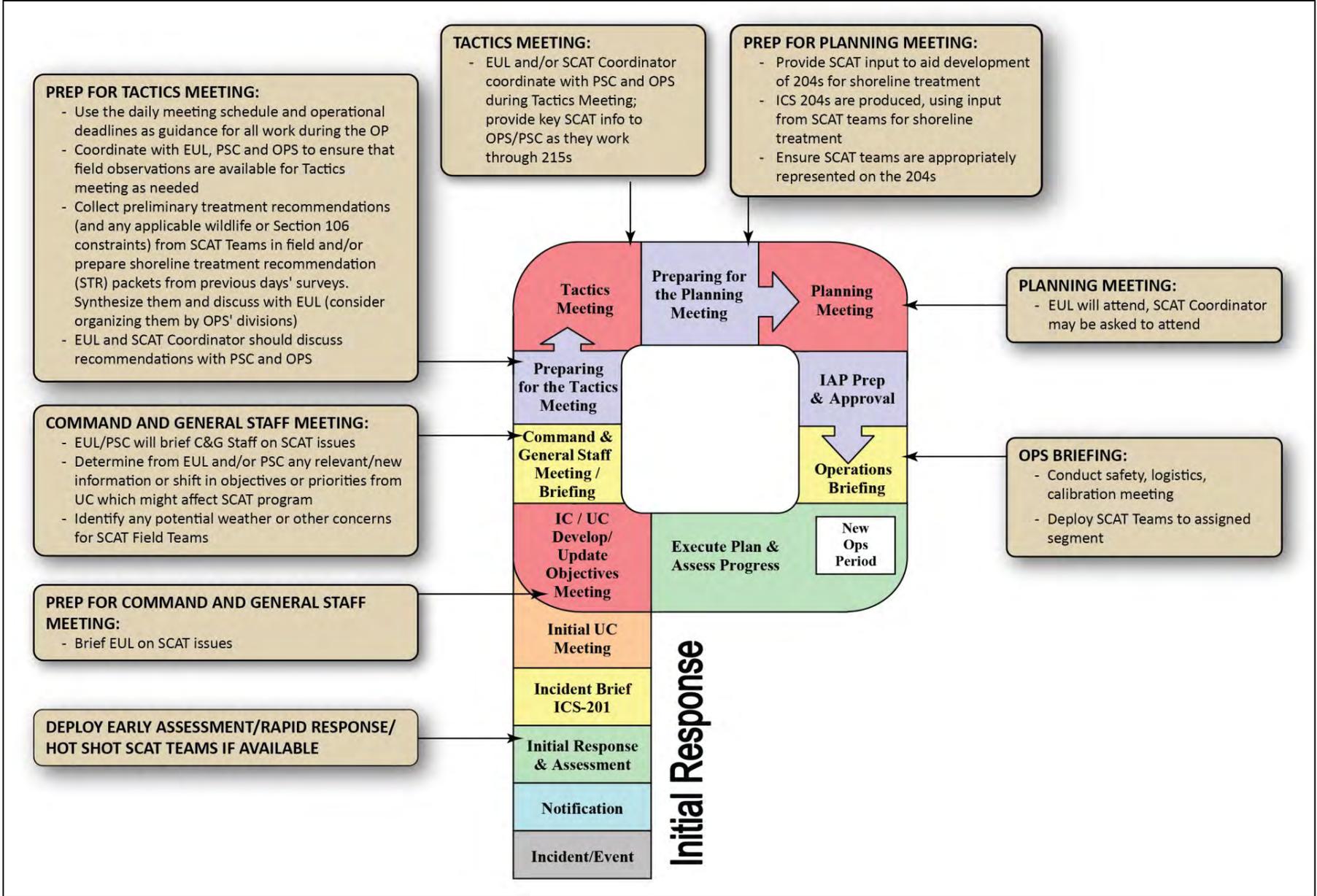
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# SCAT Data Should Answer the Following Questions:

- Is treatment necessary at this site?
- What treatment methods are appropriate or recommended?
- What constraints are needed to protect sensitive resources?
- What is the priority for treatment at this site?



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# SCAT Products in the Planning Process

# SCAT Team Members

- SCAT Coordinator
- Team Leader
- Agency Reps
  - Federal On-Scene Coordinator rep
  - State On-Scene Coordinator rep
  - Land Managers when surveying Fed or State Lands
- Others as needed
  - Safety
  - Archaeologist
  - Operations



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# SCAT Coordinator

- Manages all things related to SCAT Teams
- Participates in developing Cleanup Endpoints and Treatment Methods
- Participates in Planning Section meetings
- Prepares Shoreline Treatment Recommendations
- Briefs EU and Operations on issues related to shoreline treatment effectiveness and effects
- Data QA and oversight of all SCAT products
- Resolution of conflicts among stakeholders



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# SCAT Team Roles: Team Leader

- Should be the most experienced person on team
- Responsible for management of the team
- Completes the forms and sketches in the field
- Guides the team toward consensus on cleanup recommendations, priorities, special constraints, and notes dissenting opinions
- Briefs the SCAT Coordinator, Planning, and Operations staff, as needed
- Acts as the team Safety Officer



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# SCAT Team Roles: Agency Representatives

- Assist in data collection on shoreline types, oiling conditions, and special considerations
- Provides expertise in resource sensitivity and priorities
- Recommends site-specific constraints or precautions to be followed during cleanup
- Makes recommendations on cleanup methods and priorities
- Monitors effectiveness of cleanup operations



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# SCAT Team Roles: Operations Representative

- Evaluate appropriateness of cleanup techniques
- Identify logistical constraints and solutions
- Assist in data collection on oiling conditions
- Estimate the level of effort needed for cleanup

This role can be taken by one of the team members (e.g., USCG)



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# SCAT Team Roles: Data Manager

- Creates base maps with segments, sensitive areas, etc. for SCAT teams to use in recording data
- Conducts QA of daily SCAT forms
- Downloads the team's track line to generate maps for the team to delineate segments, zones, treatment areas, pits, etc.



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# SCAT Team Roles: Data Manager

- Downloads and geo-references SCAT team photographs
- Enters daily SCAT data
- Generates daily summaries:
  - shoreline cleanup status,
  - maps of shoreline cleanup status
  - specific data summaries requested by the UC



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# SCAT Activities

1. Reconnaissance survey
2. Segmenting the shoreline
3. Developing spill-specific cleanup guidelines and endpoints
4. Pre-survey planning and team assignments
5. Shoreline surveys



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# SCAT Activities

6. Generate shoreline treatment recommendations, tables, maps, etc.
7. Monitoring cleanup operations
8. Post-treatment inspections
9. Final sign-off of cleanup activities



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# SCAT Activity 1: Reconnaissance Survey



## Objectives

- Get an overall perspective on shoreline types and degree of contamination
- Determine the extent of oiling on the shoreline
- Identify logistical constraints for shoreline access for both SCAT and cleanup teams



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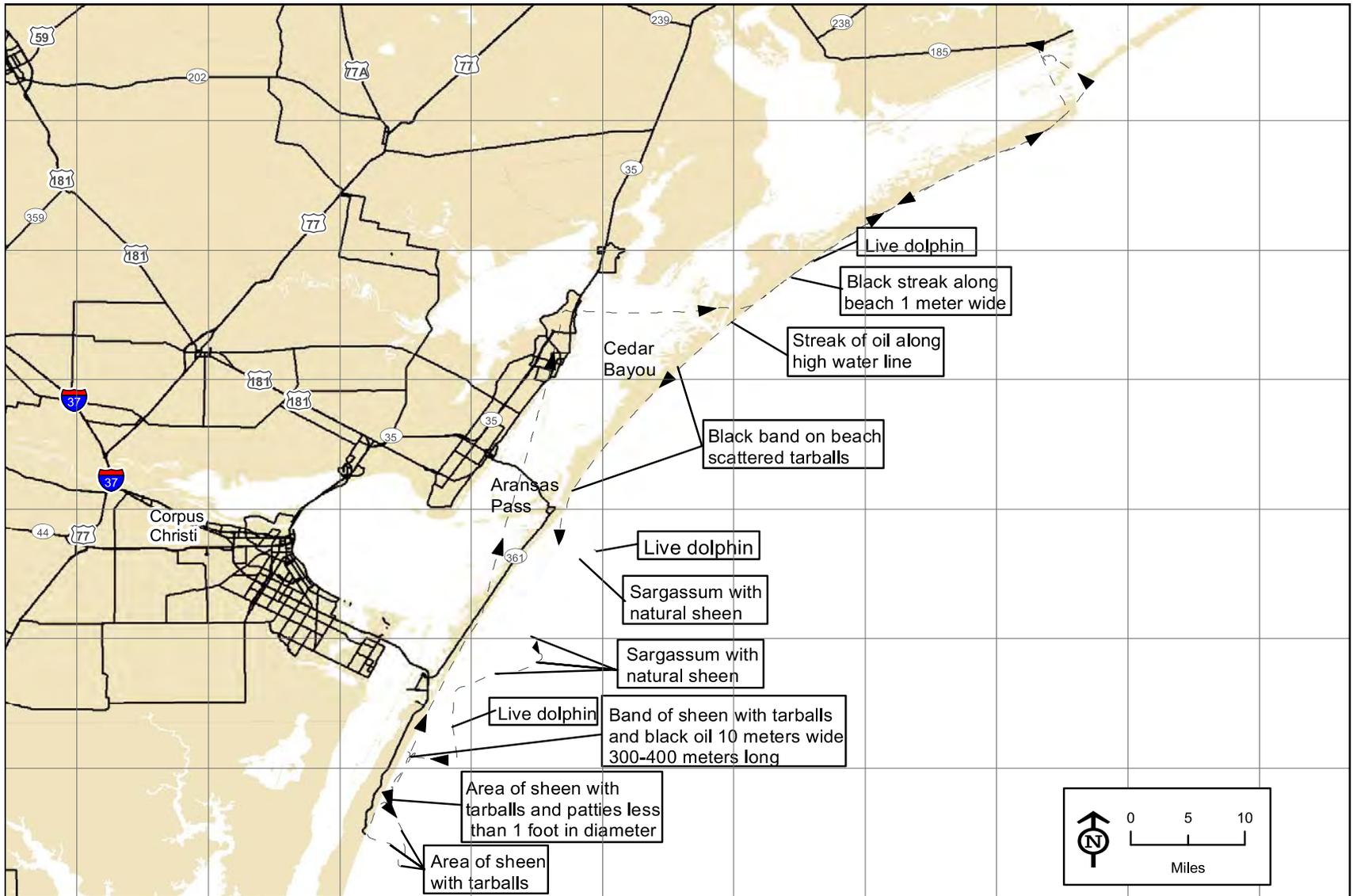
# SCAT Activity 1: Aerial Reconnaissance Survey

## Methods

- Fly entire impact area at 400-500 feet and 70-80 knots in helo or high-wing aircraft
- Use charts or GPS to record:
  - Flight path, including date and time
  - General degree of shoreline oiling (H, M, L: with definitions)
  - References to photographs/video taken



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# SCAT Activity 2: Shoreline Segmentation

## Objective

- Divide shoreline into units, called segments, for recording and tracking survey data, Operations activity, and final sign off



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# SCAT Activity 2: Segmenting the Shoreline

## Methods

- Use appropriate maps for consistent coverage
- Mark segments based on homogeneity of geomorphology (ESI maps) and degree of oiling (from reconnaissance flight)
- Should include local staff familiar with area



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Example of Simple SCAT Segments



Texas City Y SCAT Segments

# SCAT Activity 2: Segmenting the Shoreline

## Methods (cont.)

- Segment boundaries should be readily recognizable in the field
- Size appropriate to spill conditions (0.2-2 km)
- Pre-number segments with alphanumeric code



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# SCAT Activity 3: Cleanup Guidelines and Endpoints

## Objectives

- Guide Operations in conducting cleanup using methods to minimize impacts
- Provide Operations with environmental and safety constraints for cleanup in specific habitats
- Identify resource-specific constraints



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# Cleanup Matrix for Sand Beaches

Response Method	Oil Category			
	I	II	III	IV
Natural Recovery	A	B	B	C
Barriers/Berms	B	B	B	B
Manual Oil Removal/Cleaning	D	B	A	A
Mechanical Oil Removal	D	B	B	B
Sorbents	-	B	A	A
Vacuum	-	-	B	A
Debris Removal	-	A	A	A
Sediment Reworking/Tilling	D	B	B	B
Vegetation Cutting/Removal	-	C	C	C
Flooding (deluge)	A	A	A	B
Low-pressure, Ambient Water Flushing	B	B	B	B
High-pressure, Ambient Water Flushing	-	-	-	-
Low-pressure, Hot Water Flushing	-	-	C	C
High-pressure, Hot Water Flushing	-	-	-	-
Steam Cleaning	-	-	-	-
Sand Blasting	-	-	-	-
Solidifiers	-	-	B	-
Shoreline Cleaning Agents	-	-	C	C
Nutrient Enrichment	-	A	A	B
Natural Microbe Seeding	-	I	I	I
In-situ Burning	-	-	C	C

# SCAT Activity 3: Cleanup Guidelines and Endpoints

## Methods (cont.)

- Observe actual operations to confirm proper use
- Develop plans to monitor effectiveness or effects of new methods, as needed
- Modify cleanup endpoints as methods become ineffective or unacceptable impacts occur during use



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# SCAT Activity 4: Pre-survey Planning and Team Assignments

Determine where to survey, logistics, and team assignments

SATURDAY, APRIL 6 <sup>th</sup>	SURVEY AREA	LOGISTICS	TIME
<b>SCAT TEAM #1</b> TL: MARY KULP LIEQ: DAVID GEBERHARDT FED: MGTZ MILLINGTON SAFETY	<b>LAFOURCHE</b> → WEST TIMBAUER (04-077-2) PIST - LAUF01-026-20 (zones 2+3) SIR-1 - LATE04-010-10 & LATE04-010-20	MEET @ HOUMA FOB DEPART HOUMA FOB BY VAN #1 MEET @ FOURCHON MARINA DEPART FOURCHON MARINA 3 CREWBOATS & 2 AIRBOATS	0500 0515 0645 0700 TIDE < 5 WAVE 1500
<b>SCAT TEAM #2</b> TL: SHANNON MACDONALD + 2 LIEQ: JEREMY MOORE FED: MGTZ HANSEN/MGTZ REED SAFETY	<b>LAFOURCHE</b> → CASEE-FETE (04-034+1) PIST - LAUF01-045-10 (zones 2+3)	MEET @ HOUMA FOB DEPART HOUMA FOB BY VAN #2 MEET @ FOURCHON MARINA DEPART FOURCHON MARINA 2 CREWBOATS & 2 AIRBOATS	0845 0600 0730 0745 TIDE < 5 WAVE 1500
<b>SCAT TEAM #3</b> TL: DUNKAN FITZGERALD + OPS + HPA LIEQ: CAGUS HEAD FED: MGTZ LAVENDER SAFETY	<b>LAFOURCHE</b> → FOURCHON BEACH (04-017) SIR-2 - LAUF02-007-10	MEET @ HOUMA FOB DEPART HOUMA FOB BY VAN #3 MEET @ FOURCHON TRAILERS DEPART FOURCHON TRAILERS NO VESSELS - 1 UTV	0615 0620 0800 0815 TIDE < 5 WAVE 1500
<b>SHOREL SCAT BT</b> TL: PHIL BELLILES LIEQ: JEFF PARHAM FED: MGTZ WHITTEN SAFETY	<b>LAFOURCHE</b> → FOURCHON BEACH	MEET @ FOURCHON GATE	0815
<b>SHOREL SCAT BT</b> TL: EYAN WILLIAMS LIEQ: JIM CAGANOKA FED: GIBSON	<b>JEFFERSON</b> → GRAND TERRE I.	MEET @ SAND DOLLAR MARINA	0815



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# SCAT Activity 4: Pre-survey Planning and Team Assignments

- Revise the SCAT codes and forms if needed to fit spill conditions
- Form teams with appropriate membership
- Assign survey areas (primary and backup) for each team, based on priorities, logistics, local expertise, and ownership
- Distribute segment maps for primary and backup areas; base sketch maps if available



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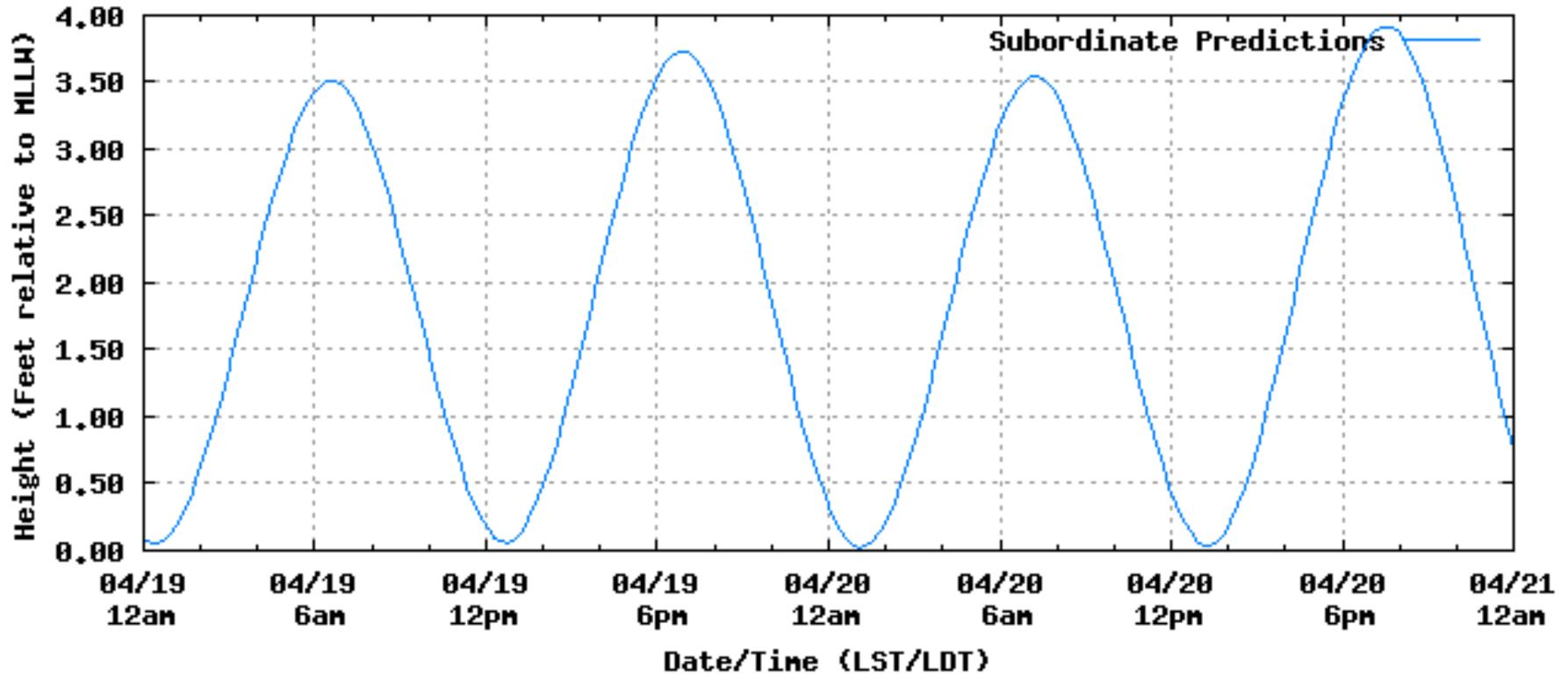
# SCAT Activity 4: Pre-survey Planning and Team Assignments

- Distribute field equipment (checklist in the SAM)
- Brief team on survey objectives, logistics, and safety issues
- Identify team roles
- Discuss cleanup options and criteria for priorities
- Everyone must read and sign the SCAT Site Safety Plan



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# Tides are Important!



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# Customize SCAT Terminology to Support Operations!!!

## High Priority for Removal

- Thick Oil/Mobil Oil
  - Large amount of oil that could re-float and oil other areas, or penetrate deeper into porous substrates
- High Recreational Use
  - To return areas to public use
- High Biological Sensitivity
  - High use by animals now, or those arriving soon



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# General Information on the Segment

## All SCAT Forms

COMBINED SHORELINE OIL SUMMARY (CSOS) FORM: \_\_\_\_\_ Spill Page \_\_\_ of \_\_\_

<b>1. GENERAL INFORMATION</b>		Date (dd/Month/yyyy) (please use month name)	Time (24h standard/daylight) (00:00 to 00:00)  ____:____ to ____:____	Tide Height  L / M / H  Rising / Falling
Segment ID:				
Segment Name:				
Survey By: Foot /ATV/ Boat / Helicopter / Overlook / Other _____			Weather: Sun / Clouds / Fog / Rain / Snow / Windy / Calm	
<b>2. SURVEY TEAM</b>	Name	Organization	Name	Organization
Team Number				
<b>3. SEGMENT</b>	Total Length:	m	Length Surveyed:	m
Survey Start GPS:	WP:	LAT:	LONG:	Datum: WGS84
Survey End GPS:	WP:	LAT:	LONG:	
<b>4a. BACKSHORE CHARACTER:</b> Indicate only ONE Primary type and ALL Secondary types				
Cliff/Slope	Lowland	Beach	Dune	Wetland
Lagoon	Delta	Channel	Man-Made	:
<b>4b. ESI SHORELINE TYPE:</b> Indicate only ONE Primary (P) and ANY Secondary (S) types. CIRCLE those oiled.				
Primary:	Secondary:			
<b>5. OPERATIONAL FEATURES</b>	Oiled Debris? Yes / No	Type:	Amount:	(bags)
Direct backshore access? Yes / No	Alongshore access from next segment? Yes / No	Suitable for backshore staging? Yes / No		
Access Description / Restrictions:				

# SOS

**6. OILING DESCRIPTION:** Indicate overlapping zones in different tidal zones by numbering them (e.g. A1, A2)

Zone ID	ESI Type	WP Start	WP End	Tidal Zone				Oil Cover					Oil Thickness					Oil Character							
								Area		Distribution		Size													
				LI	MI	UI	SU	Length (m)	Width (m)	Distr % >1	# per unit area	Avg Size (cm)	Large Size (cm)	TO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR	AP

**7. SUBSURFACE OILING CONDITIONS:** Format: Zone ID dash Trench Number in that Zone, e.g., "A-1, B-1, B-2"

Pit #	WP	Substrate Type Surface / Subsurface	Tidal Zone				Pit Depth (cm)	Oiled Interval (cm-cm)	Subsurface Oil Character									Water Table (cm)	Sheen Color B,R,S,N	Clean Below Yes / No						
			LI	MI	UI	SU			OP	PP	OR	OF	TR	TB	SR	AP	NO				%					

**8. COMMENTS:** Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Observations; Oiling Descriptions

# Wetland SCAT

WETLAND SHORELINE OILING SUMMARY (S0OS) FORM: \_\_\_\_\_ Spill Page \_\_\_ of \_\_\_

<b>1. GENERAL INFORMATION</b>		Date (dd/Month/yyyy)				Time (24h standard/daylight) ____:____ to ____:____				Tide Height															
Segment ID:		Segment Name:								L / M / H															
Ops Zone:		Survey Type:								Rising/Falling															
Survey By: Foot/ATV/Boat/Helicopter/Overlook/Other _____						Weather: Sun / Clouds / Fog / Rain / Snow / Windy / Calm																			
<b>2. SURVEY TEAM</b>		Name		Organization		Name		Organization																	
Team Number																									
<b>3. SEGMENT</b>		Total Length:		m		Length Surveyed:		m		Datum: WGS84															
Survey Start GPS:		WP:		LAT: .		LONG: .																			
Survey End GPS:		WP:		LAT: .		LONG: .																			
<b>4a. WETLAND CHARACTER</b>																									
Physical Setting: <i>Fringing Marsh / Tidal Channel / Marsh Interior / Mud Flat / Lagoon / Other:</i>																									
Wetland Type: <i>Salt Marsh / Fresh Marsh / Mangrove / Hardwood Bottomland / Other:</i>																									
Dominant Vegetation Type/Species: <i>Reeds / Grasses / Mangrove / Other</i> _____																									
<b>4b. BACKSHORE CHARACTER</b> <i>Indicate only ONE Primary (P) type and ALL Secondary (S) types</i>																									
Unconsolidated Bluff/Bank Flat/Lowland Beach Marsh/Wetland Tidal Channel Delta Channel Man-Made																									
<b>5. OPERATIONAL FEATURES</b>				Oiled Debris? Yes / No				Type:				Amount (bags)													
Direct backshore access? Yes / No				Alongshore access from next segment? Yes / No				Suitable for backshore staging? Yes / No																	
Access description / restrictions:																									
Surface bearing capability suitable for: Personnel / Marsh Vehicles / Other:																									
<b>6. SURFACE OILING CONDITIONS:</b> Identify oil on vegetation vs. substrate by adding a V (for Vegetation) or an S (for sediment) after the Zone ID (e.g. AV, BV). Indicate overlapping zones in different tidal zones by numbering them (e.g. AV1, AV2)																									
Zone ID	WP zone start	WP zone stop	Tidal Zone				Oil Cover						Oil Thickness					Oil Character						Height of Oil on Plants (cm)	
							Area		Distribution		Size														
			LI	MI	UI	SU	Length (m)	Width (m)	Dist % (>1)	# per unit area	Avg Size (cm)	Large Size (cm)	TO	CV	CT	ST	FL	FR	MS	TB	TC	SR	AP		No
A																									
<b>7. SUBSURFACE OILING CONDITIONS:</b> Use Comments Section and indicate on the cross-section below																									
<b>8. COMMENTS:</b> Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Observations; Oiling Descriptions																									



# SCAT Activity 5: Shoreline Surveys

## Objectives

- Collect data on shoreline types, oiling conditions, ecological/human-use resources
- Reach agreement on cleanup recommendations



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# SCAT Activity 5: Shoreline Surveys

## Methods

- Confirm segment boundaries
- Using standard terms and codes to describe:
  - Shoreline characteristics
  - Surface oil conditions
  - Subsurface oil conditions
  - Special considerations (ecological, recreational, cultural)



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# SCAT Activity 5: Shoreline Surveys

## Methods (cont.)

- Sketch the segment, focusing on the oil and special considerations
- Log and locate all photographs taken
- Discuss and agree upon cleanup recommendations and priorities



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# SKETCH MAP

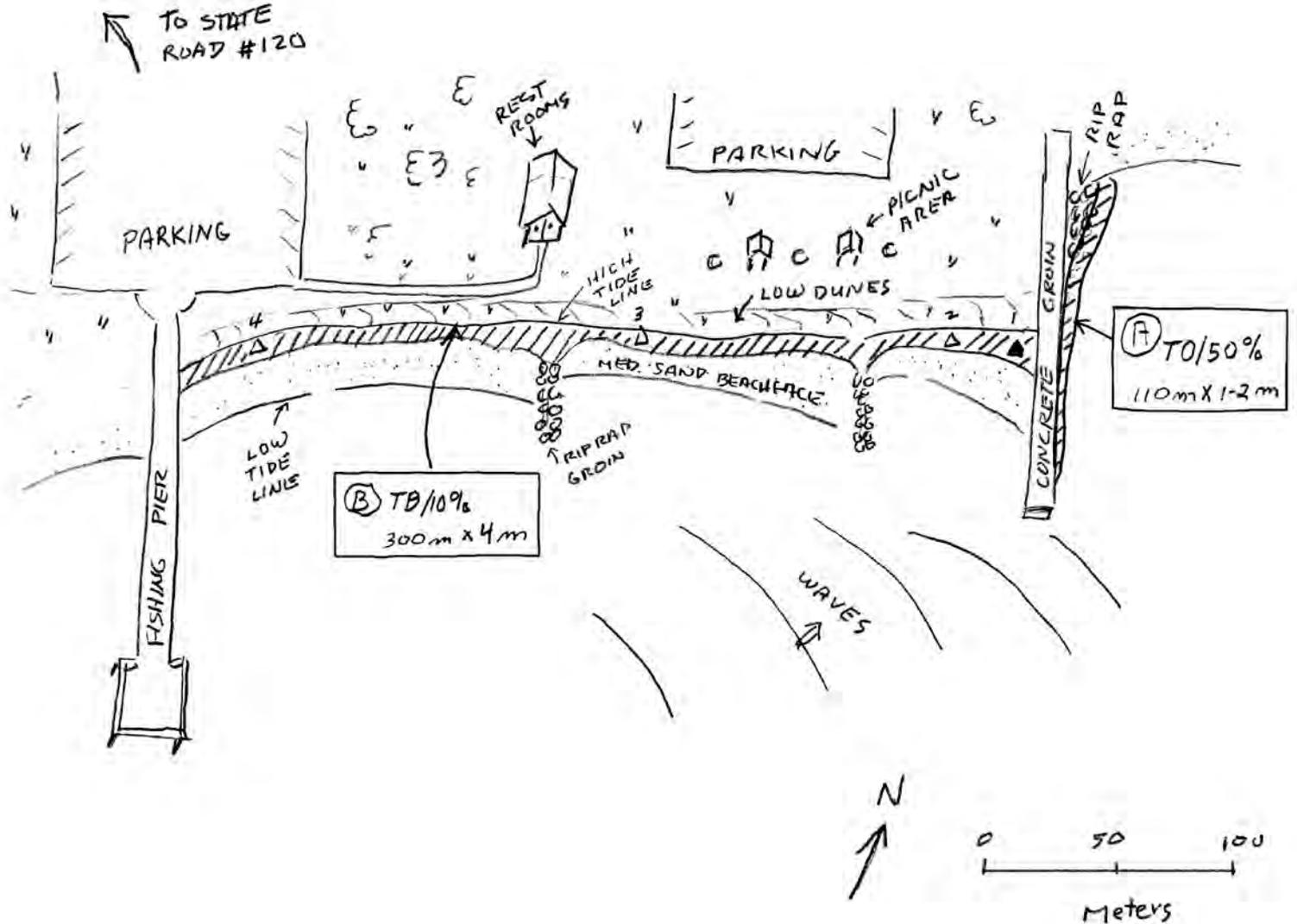
Segment ID: NORTH BEACH  
 Segment Name: CC-1A  
 Date (dd/mm/yy): 30 JULY 2012  
 Name: MOH/JM/IB

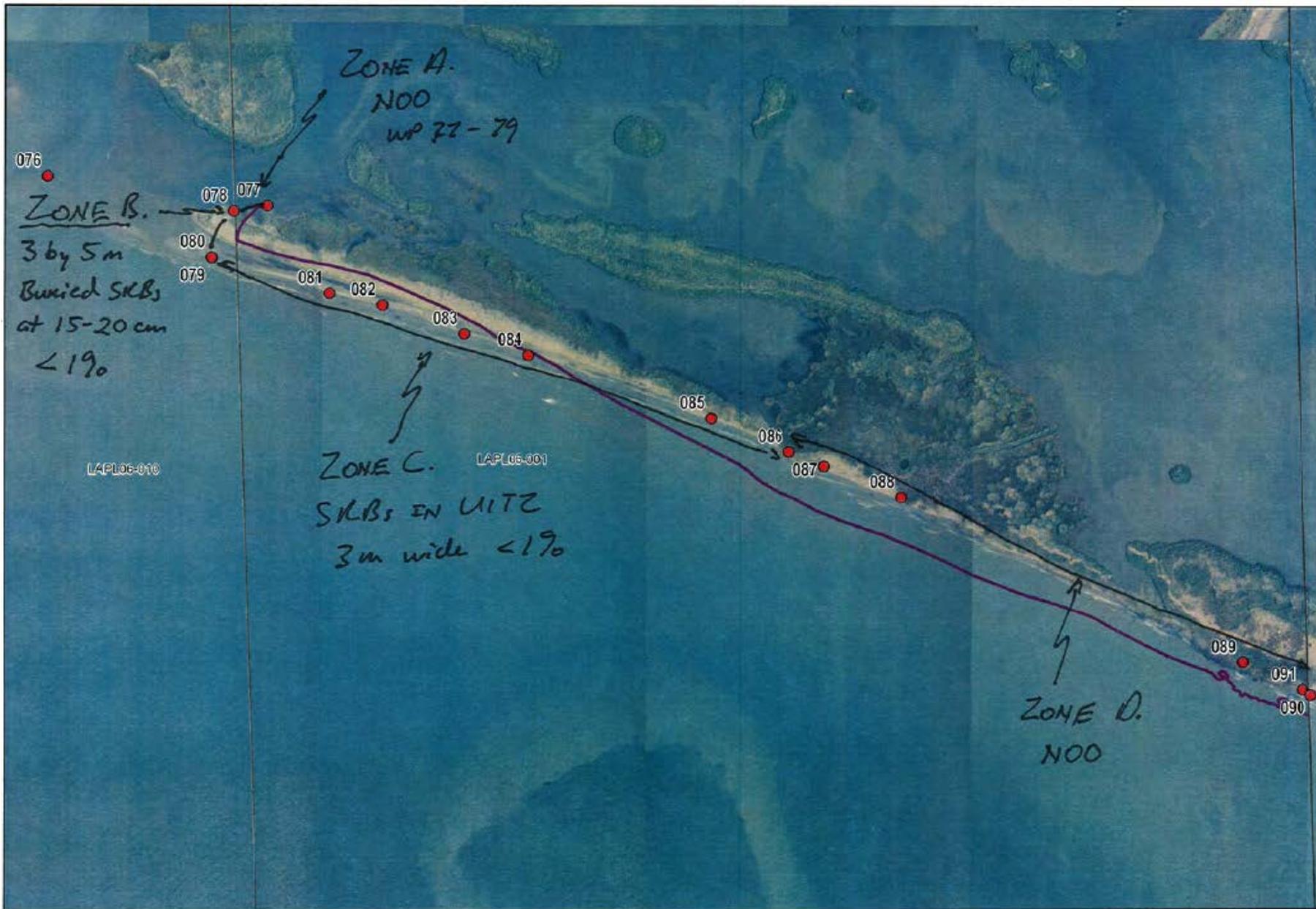
## Checklist

- ✓ North Arrow
- ✓ Scale
- ✓ Oil Distribution
- ✓ High Tide Line
- ✓ Low Tide Line
- ✓ Substrate Types
- ✓ Trench Locations

## Legend

- 1△  
Trench Number.  
No Subsurface Oil
- 2▲  
Trench Number.  
Subsurface Oil
- #●→  
#●  
Photo Location  
Direction and  
Frame No.





**6. OILING DESCRIPTION:** Indicate 100% overlapping zones in different tidal zones by numbering them (e.g. A1, A2)

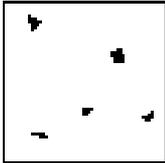
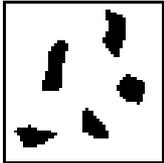
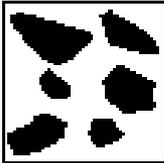
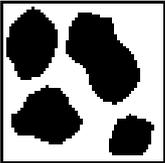
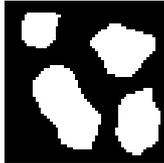
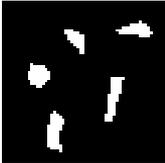
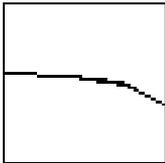
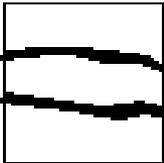
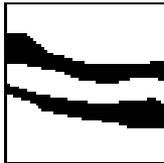
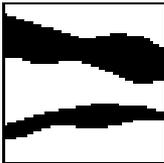
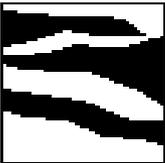
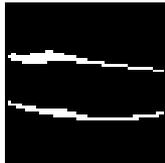
Zone ID	ESI Type	WP Start	WP End	Tidal Zone				Oil Cover					Oil Thickness					Oil Character						
								Zone Area		1-100	<1%	Size												
				LI	MI	UI	SU	Length (m)	Width (m)	Distr. %	# per unit area	Avg. Size (cm)	Large Size (cm)	TO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR
A	3A	77	79	←————→																				X
B	3A	78				X		5m	3m	<1%													B	
C	3A	79	86			X		3		<1%	1/40m <sup>2</sup>	2cm	6cm										B	
D	3A	86	90	←————→																				X

**7. SUBSURFACE OILING CONDITIONS:** Format: Zone ID dash Trench Number in that Zone, e.g., "A-1, B-1, B-2 #4 (not in zone)

Pit #	WP #	Substrate Type Surface / Subsurface	Tidal Zone				Trench Depth (cm)	Oiled Interval (cm-cm)	Subsurface Oil Character							Water Table (cm)	Sheen Color B,R,S,N	Clean Below Yes/No		
			LI	MI	UI	SU			AP	OP	PP	OR	OF	TR	NO				%	
1	78	Sand			X		30cm	18 - 20				X					<1%	30cm	-	Yes
2	78	Sand			X		30cm	15 - 16				X					<1%	30cm	-	Yes
3	80	Sand			X		35cm	-								X		35cm		Yes
4	81	Sand			X		35cm									X		35cm		Yes
5	82	Sand			X		50cm	-								X		50cm		Yes
6	83	Sand			X		40cm	-								X		40cm		Yes



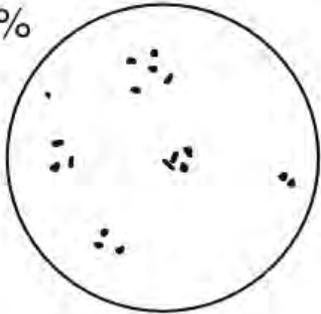
## OIL COVER ESTIMATION CHART

SPORADIC 1*-10%		PATCHY 11-50%			BROKEN 51-90%			CONTINUOUS 91-100%
								
1%	10%	20%	30%	40%	60%	70%	80%	91%
								

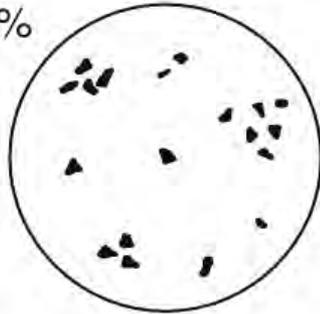
\*TRACE = <1%

## Comparison Chart for Visual Percent Cover Estimation

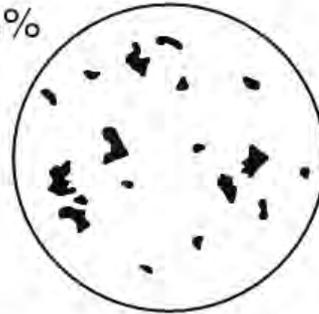
1%



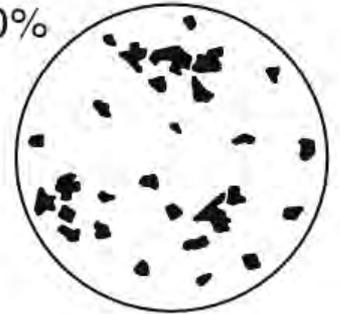
3%



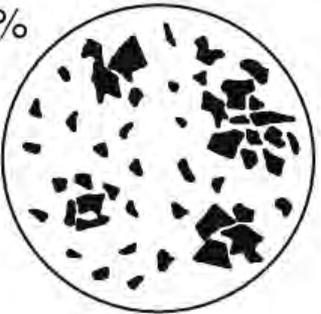
5%



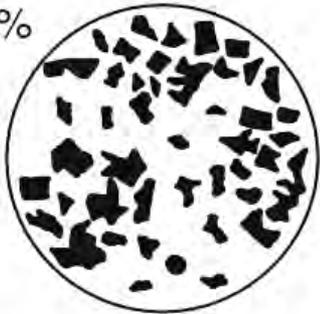
10%



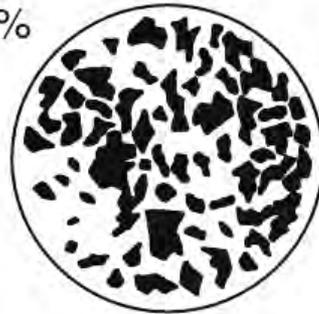
20%



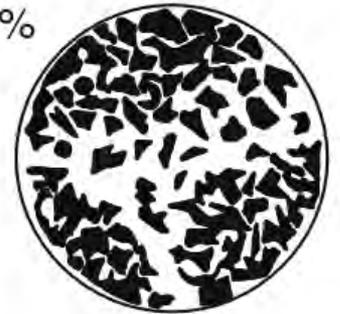
30%



40%



50%



# SCAT Terminology

## Surface Oil Distribution

C	Continuous	91-100% cover
B	Broken	51-90%
P	Patchy	11-50%
S	Sporadic	<1-10%
T	Trace	<1%



*noaa*



## Continuous (91-100% Cover)



B

Broken (51-90% cover)



P

Patchy (11-50% cover)



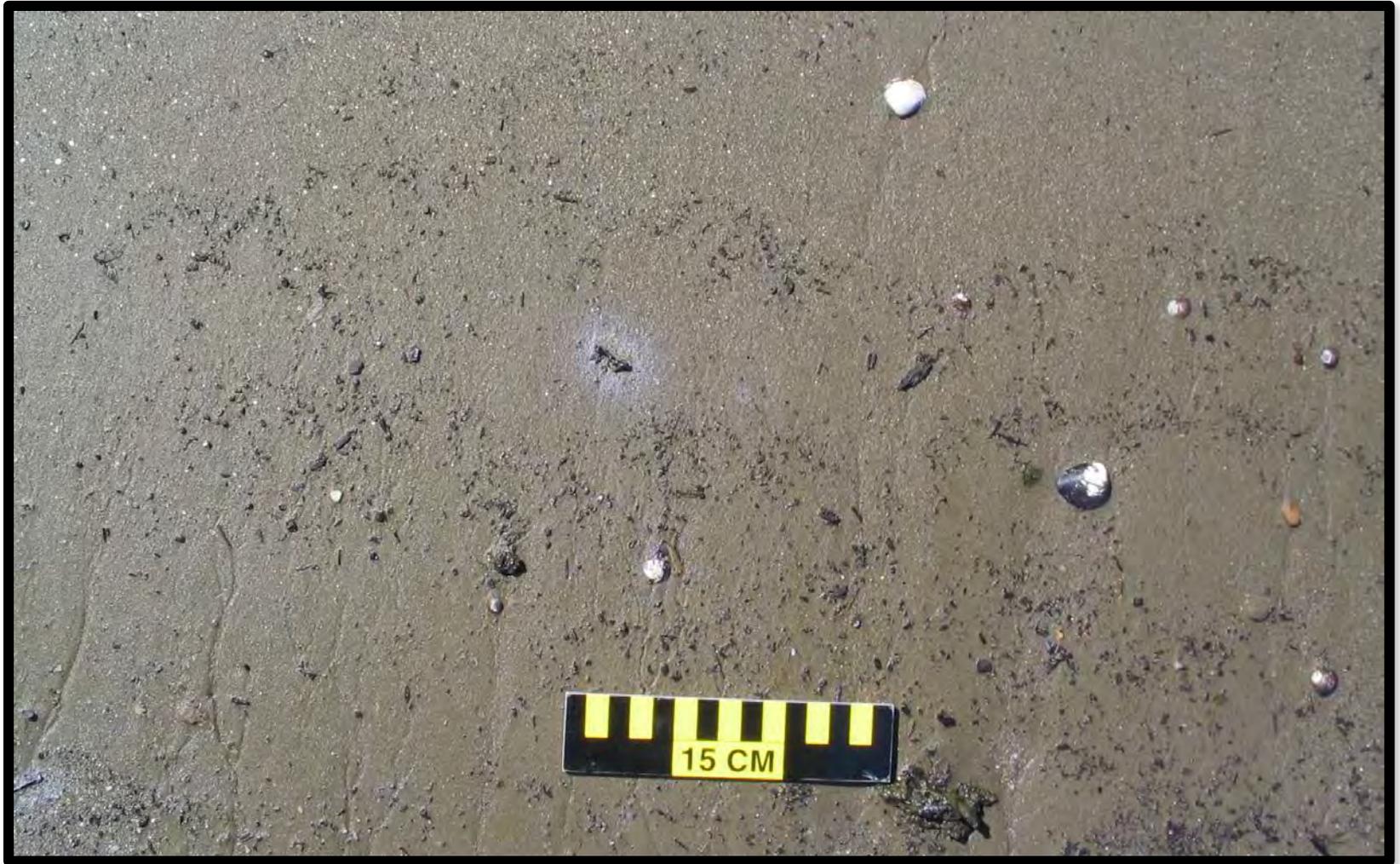


Sporadic (1-10% cover)



T

Trace (<1% cover)



# SCAT Terminology

## Surface Oiling Descriptor – THICKNESS

- TO** Pooled/Thick Oil (fresh oil or mousse > 1 cm)
- CV** Cover (oil or mousse >0.1 cm to <1 cm on any surface)
- CT** Coat (visible oil <0.1 cm, can be scraped off with fingernail)
- ST** Stain (visible oil, cannot be scraped off with fingernail)
- FL** Film (transparent or iridescent sheen or oily film)



*noaa*

PO

## Pooled /Thick Oil

Fresh or emulsified oil > 1cm thick





## Cover

Fresh or emulsified oil      0.1 - 1.0 cm thick





## Coat

Visible oil < 0.1cm can be scraped off with fingernail





## Stain

Visible oil that cannot be scraped off with fingernail





## Film

Transparent or iridescent sheen or oily film



# SCAT Terminology

## Surface Oiling Descriptors - TYPE

- FR** Fresh Oil (unweathered, liquid oil)
- MS** Mousse (emulsified oil occurring over broad areas)
- TB** Tarballs (discrete accumulations of oil <10 cm in diameter)
- TC** Tar (highly weathered oil, of tarry, nearly solid consistency)



*noaa*



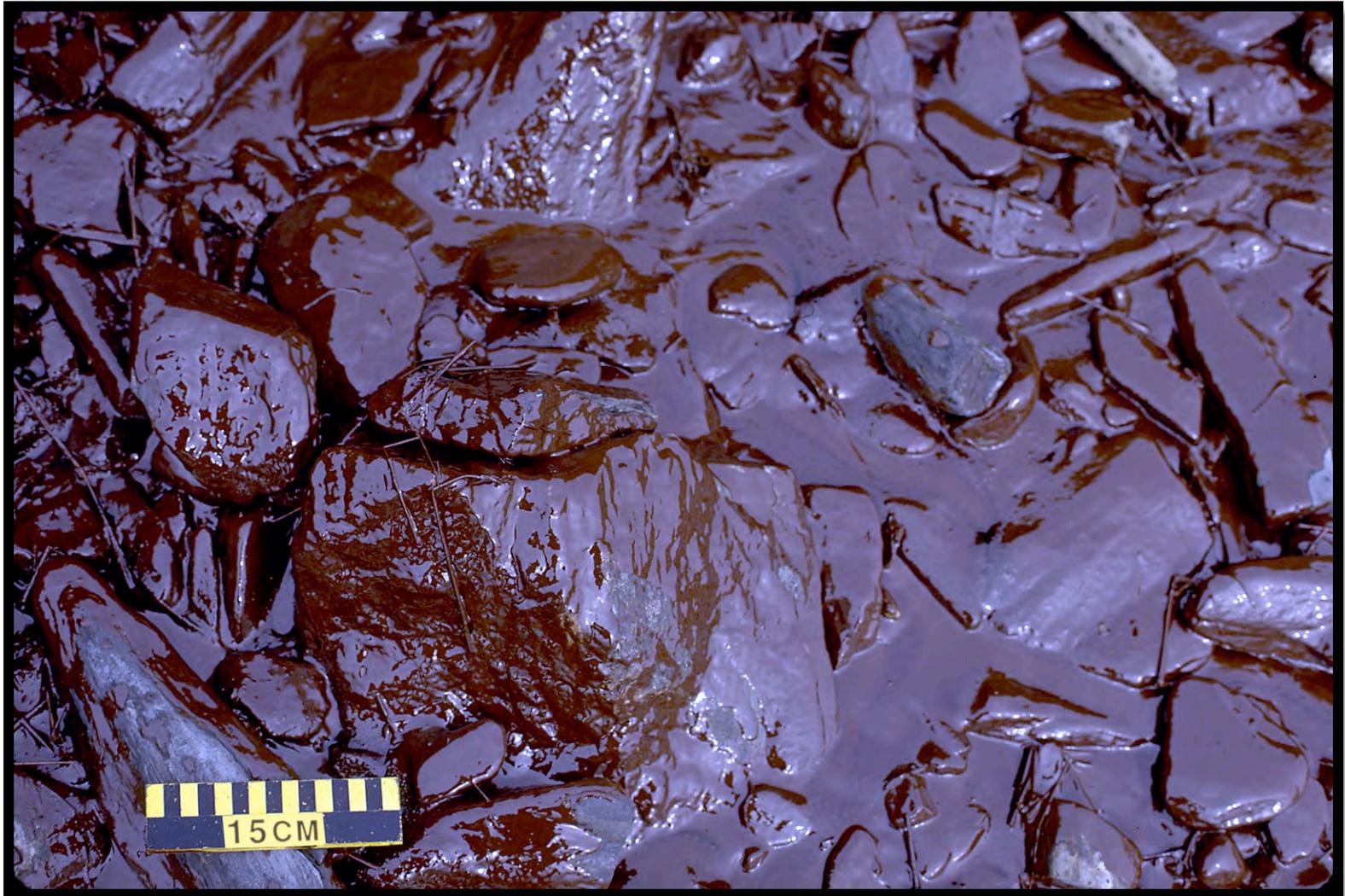
# Fresh Oil

Unweathered liquid oil





**Mousse**  
Emulsified oil





## Tar Balls

Discrete accumulations of oil < 10 cm in diameter





## Patties

Discrete accumulations of oil > 10 cm in diameter





## Tar

Highly weathered oil of nearly solid consistency



# SCAT Terminology

## Surface Oiling Descriptors – TYPE

- SR** Surface Oil Residue (non-cohesive, oiled surface sediments)
- AP** Asphalt Pavements (cohesive, heavily oiled surface sediments)
- NO** No oil (no evidence of any type of oil)



*noaa*



## Surface Oil Residue

Non-cohesive, heavily oiled surface sediments





# Surface Oil Residue Balls (SRBs)

Tar ball sized pieces of surface residue





## Asphalt Pavement

Cohesive, heavily oiled surface sediments



# SCAT Terminology

## Subsurface Oiling Descriptors - TYPE

- OP Oil-Filled Pores (pore spaces completely filled with oil)
- PP Partially Filled Pores (oil does not flow out of the sediments when disturbed)
- OR Oil Residue (sediments are visibly oiled with black/brown coat or cover on the clasts, but little or no accumulation of oil within the pore spaces)



*noaa*

OP

## Oil-Filled Pores

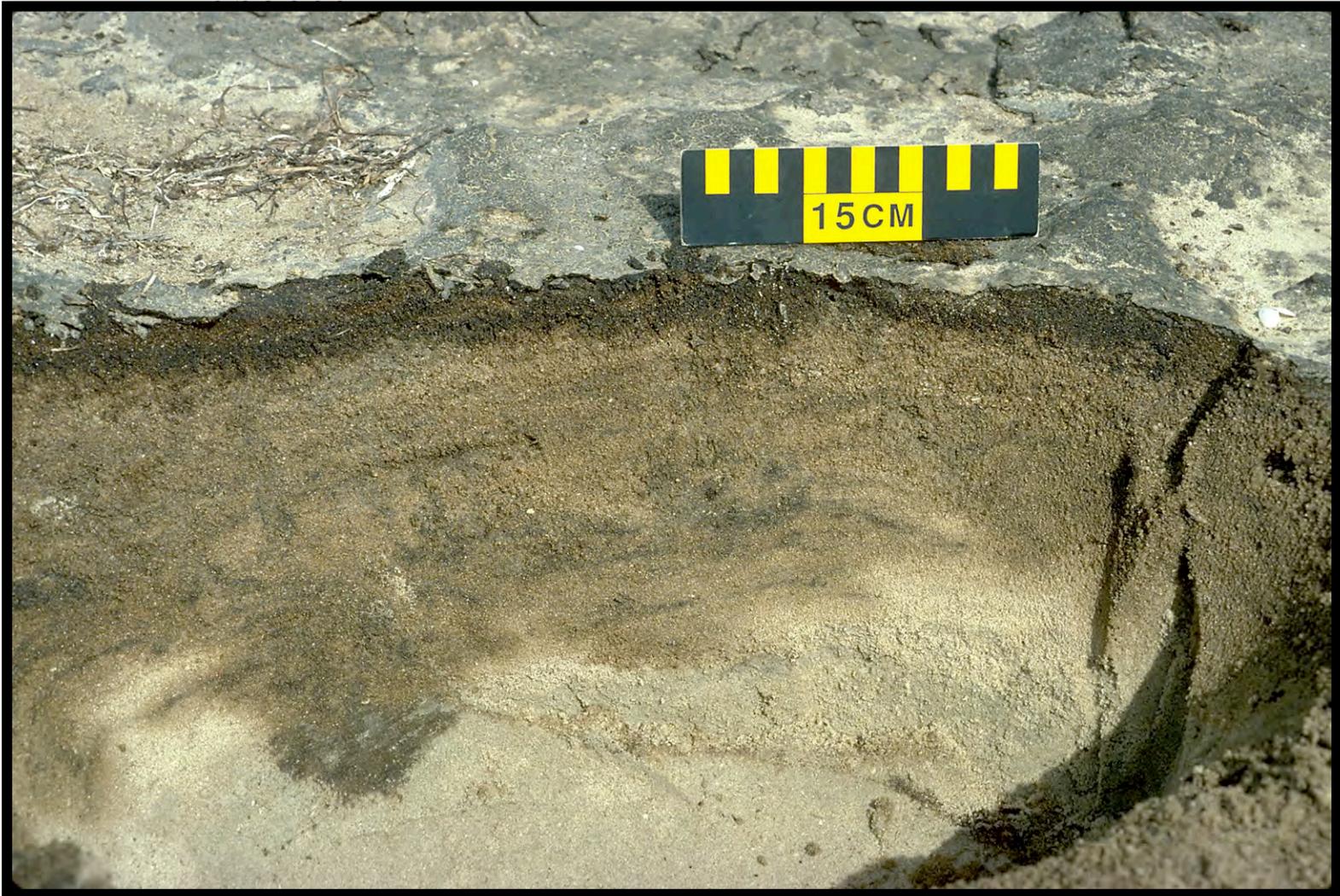
Pore spaces filled with liquid oil that flows out



OR

## Oil Residue

Sediments visibly coated but no free oil in pore





# Oil Residue (OR), Oil Residue Balls (ORB)



# SCAT Terminology

## Subsurface Oiling Descriptors – TYPE

- OF Oil Film (sediments are lightly oiled with an oil film, or stain on the clasts)
- TR Trace (discontinuous film or spots of oil, or an odor or tackiness)



*noaa*

OF

## Oil-Film

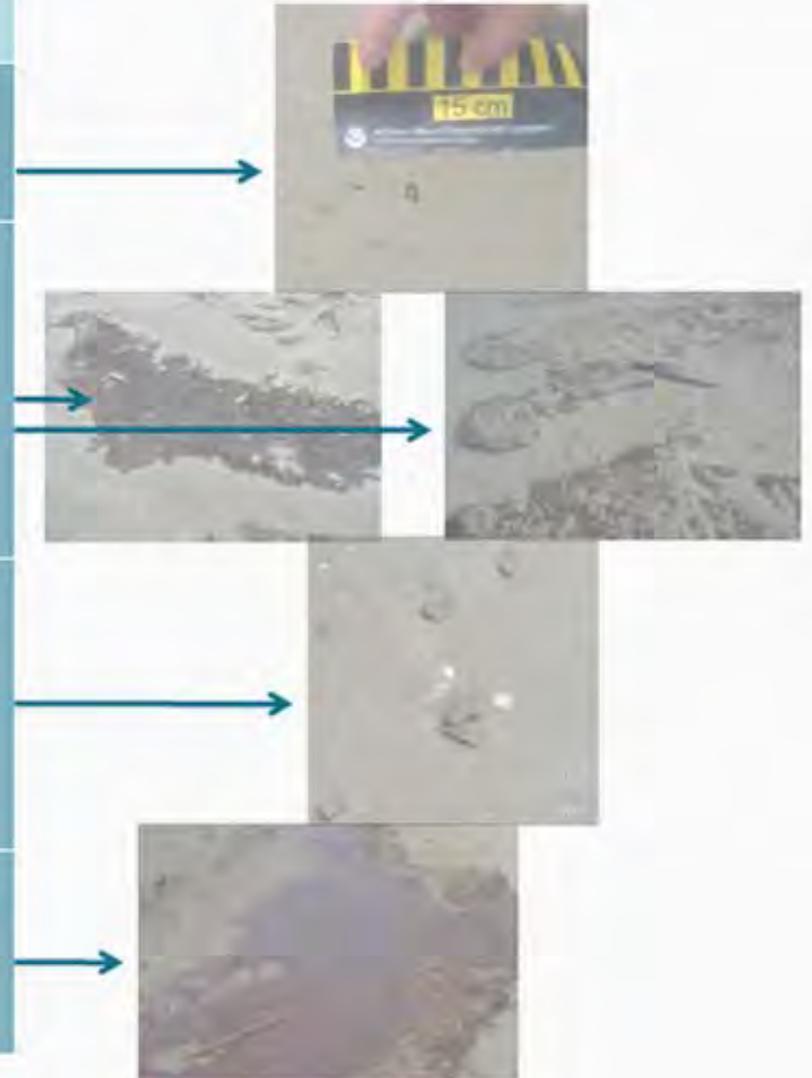
Sediments are lightly oiled with an oil sheen or stain



## Macondo Spill Sandy Beach Surface Oil Terms

### Surface Oil Categories - Sandy Beaches – Macondo Spill

SOP	<p>Small Oil Particles          mouse drops, sticky, classified in TB as SOP if less than 10cm – if greater classified as Mousse (MS)</p>
SR	<p>Surface Residue          Non-cohesive, oiled surface sediments up to 5cm deep, soft/crumblly,          Sediments may contain some oil filled/partially filled pore spaces and have some liquid consistency but majority is sand saturated with oil          May or may not be partially buried</p>
SRB/SRP	<p>Surface Oil Residue Ball/Patty          Discreet, non-cohesive, sand saturated oiled sediments in a ball (&lt;10cm) or patty (10cm-1m) – may be SOP with sand that has become incorporated by wind or waves or may have broken off zones of SR</p>
MS	<p>Mousse          Emulsified oil with rusty orange to dark brown colour, liquid consistency          may sink into sand, saturating and then becoming SR</p>



# SCAT-OPS JOB AID

## Sub Surface Oil Character

AP	Asphalt pavement, cohesive mixture weathered oil and sediment
OP	Oil filled pores, pore spaces are completely filled with oil, oil flows out when disturbed
PP	Partially filled pores, pore spaces filled with oil but generally does not flow out when disturbed
OR	Cover ( $\geq 0.1 - 1$ cm) or Coat ( $> 0.01m - 0.1cm$ ) of oil residue on sediments and/or some pore spaces partially filled with oil – surface oil residue balls (SRB)
OF	Stain ( $\leq 0.01cm$ ) or film oil residue on sediment surfaces, non-cohesive
TR	Trace, discontinuous film or spots of oil on sediments, or an odour/tackiness with no visible evidence of oil
NO	No Oil



# SCAT Process Part 2:

Data Submittal, Products, STRs,  
Sampling Methods, eSCAT

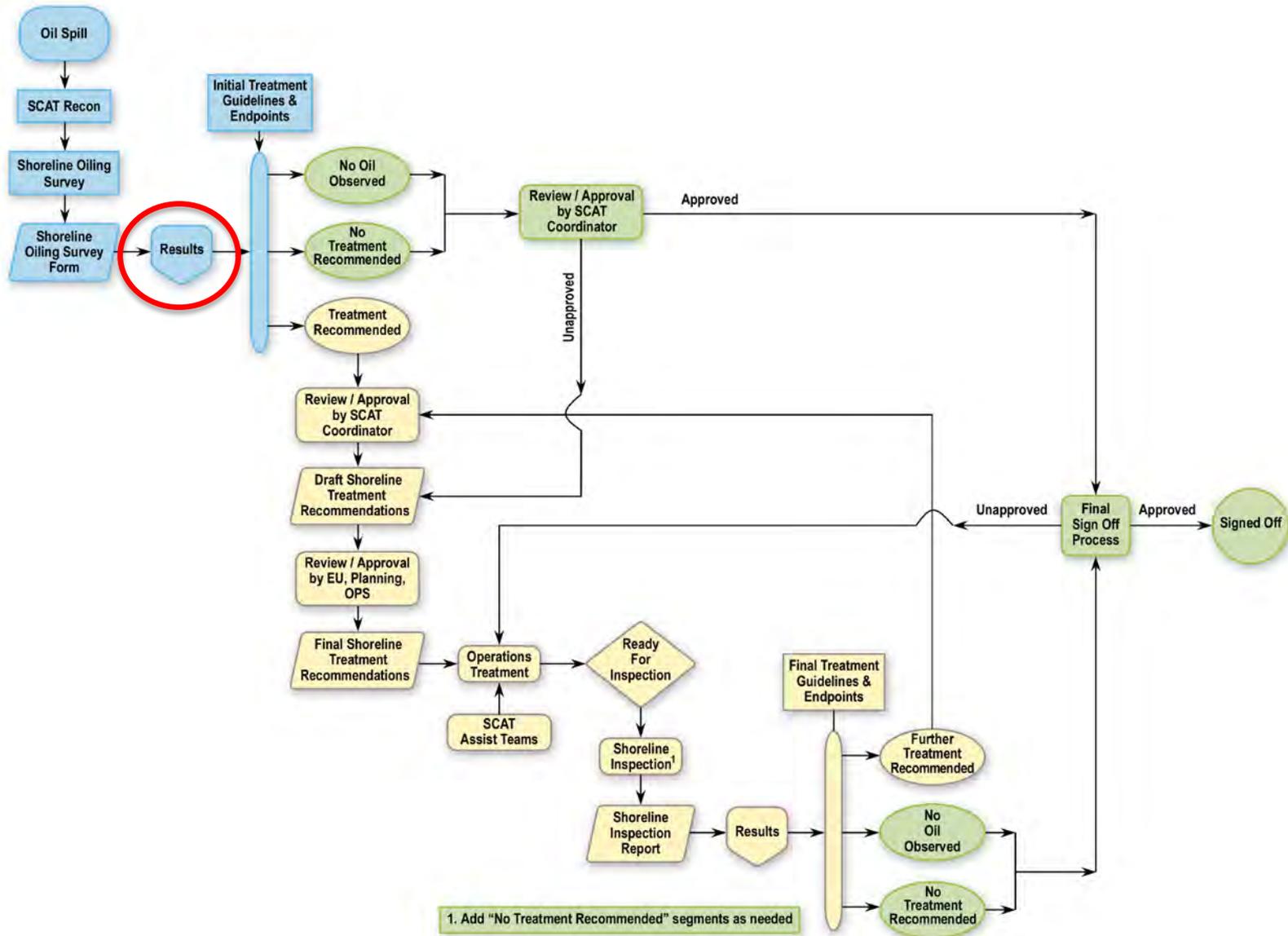
Frank Csulak

May 3, 2016

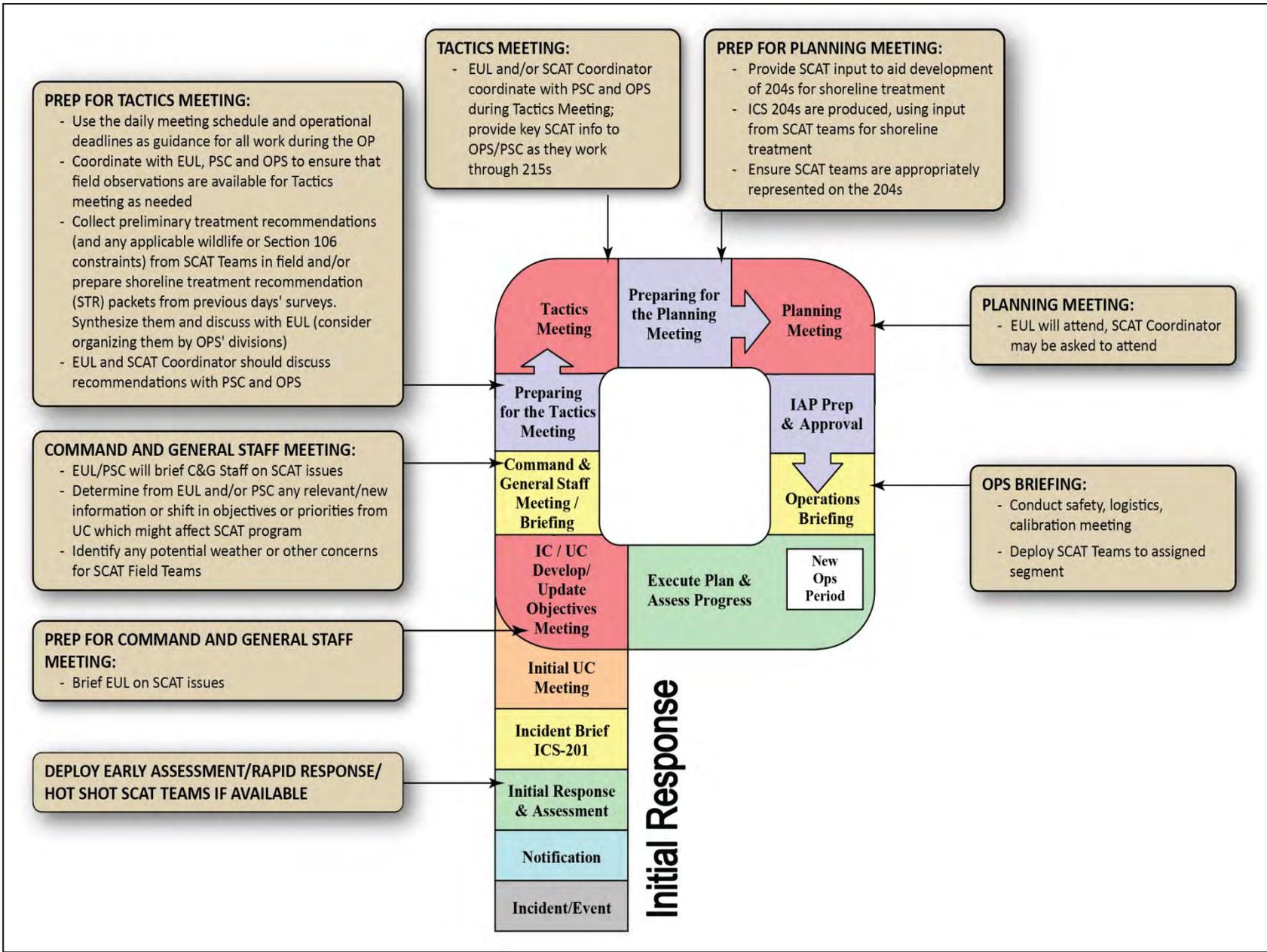
RRTIII Meeting



*noaa*



General SCAT Process Flowchart

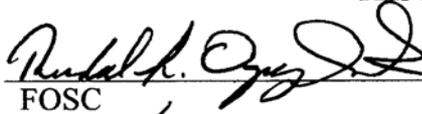


# SCAT Product in the Planning P

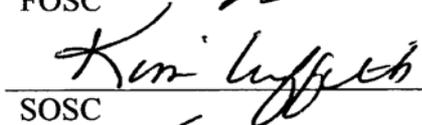
SHORELINE CLEANUP ASSESSMENT TEAM  
WORK PLAN: MATAGORDA BRANCH

*(Texas City Y Spill)*

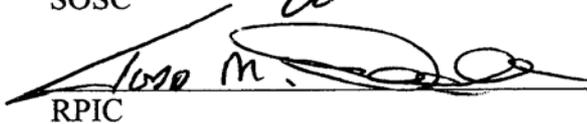
This incident-specific SCAT plan is approved:

 Capt, USCG  
\_\_\_\_\_  
FOSC

27 Mar 14  
Date

\_\_\_\_\_  
SOSC

3-27-14  
Date

\_\_\_\_\_  
RPIC

27 MAR 14  
Date

cc: Operations Section, Shoreline Cleanup Supervisor  
Operations Section Chief  
National Oceanographic and Atmospheric Administration, SSC  
U.S. Environmental Protection Agency  
U.S. Department of Interior, U.S. Fish and Wildlife Service  
State Historic Preservation Officer  
State Agencies

# **Table of Contents**

- 1. Plan Purpose and Objectives**
- 2. Health and Safety**
- 3. Organization, Staffing, and Schedule**
- 4. SCAT Survey Methods**
- 5. Field Documentation**
- 6. Command Post Data Management and Results**
- 7. Spill Cleanup Endpoints Standards**

**Appendix A: Shoreline Oiling Summary Form**

**Appendix B: Shoreline Treatment Recommendation Form**

**Appendix C: Segment Inspection Report**

# Result of a SCAT Survey

- No oil observed (NOO)
- No Further Treatment (NFT) recommended
- Shoreline Treatment Recommendation (STR)



# SCAT Activity 6: Generate Treatment Recommendations

## Methods

- Check for accuracy, completeness, legibility
- Data are entered and reports generated
- Generate shoreline treatment recommendations
- Generate maps and tables on shoreline oiling, treatment status, etc.
- Debrief Planning/Operations staff as needed on special issues, problems, recommendations



**“Yah, I was late again. How about you?”**

# USCG Response Types

- Type 5: one operational period and one responder
- Type 4: one operational period and multiple responders
- Types 3-1: may extend into multiple operational periods and involve increasingly complex organizational structures

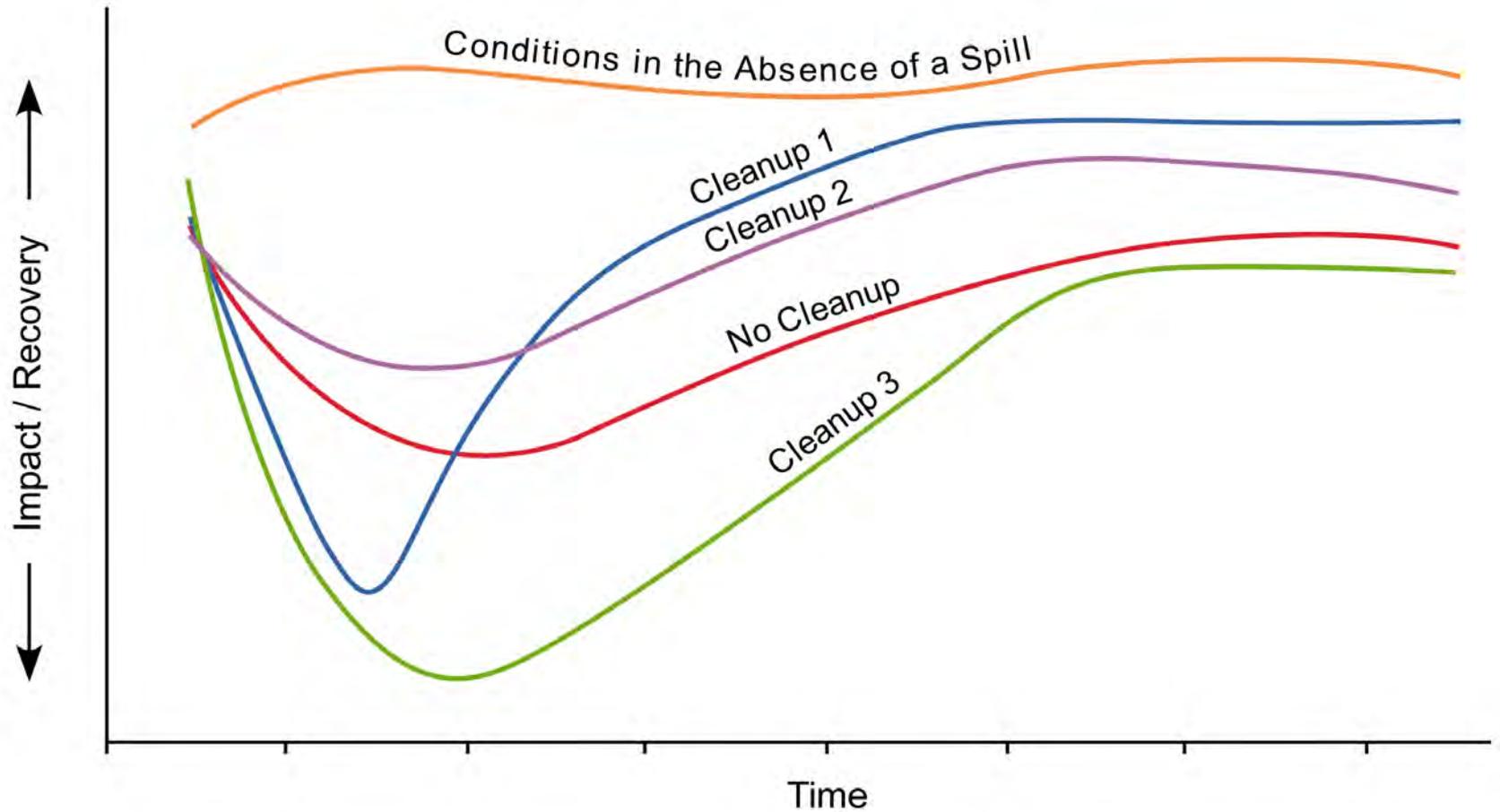


*noaa*

# Products/Tools by Incident Type

Products/ Tools	Type 3	Type 2	Type 1
<b>Shoreline Treatment Recommendation/Priorities</b>	Map showing segments and attached table with habitat-specific cleanup guidelines and endpoints; list priorities for cleanup	Printout of SCAT data and STR by segment/date; sort by new data, status, task force, etc.	Generate segment-specific STR from the SCAT database
<b>Shoreline Operational Stage Map</b>	Manual transfer of operational stage on computer-generated base map	Digitize operational stage on computer-generated base map and/or kmz file	Track operational stage in the SCAT database, to generate updated status maps using GIS
<b>Shoreline Inspection Report</b>	Typed list of sign-off status	Printout of updated spreadsheet list with sign-off status	Database/GIS tracking of sign-off status

# Selecting the Right Cleanup Methods Involve Tradeoffs



# Shoreline Treatment Recommendation (STR)

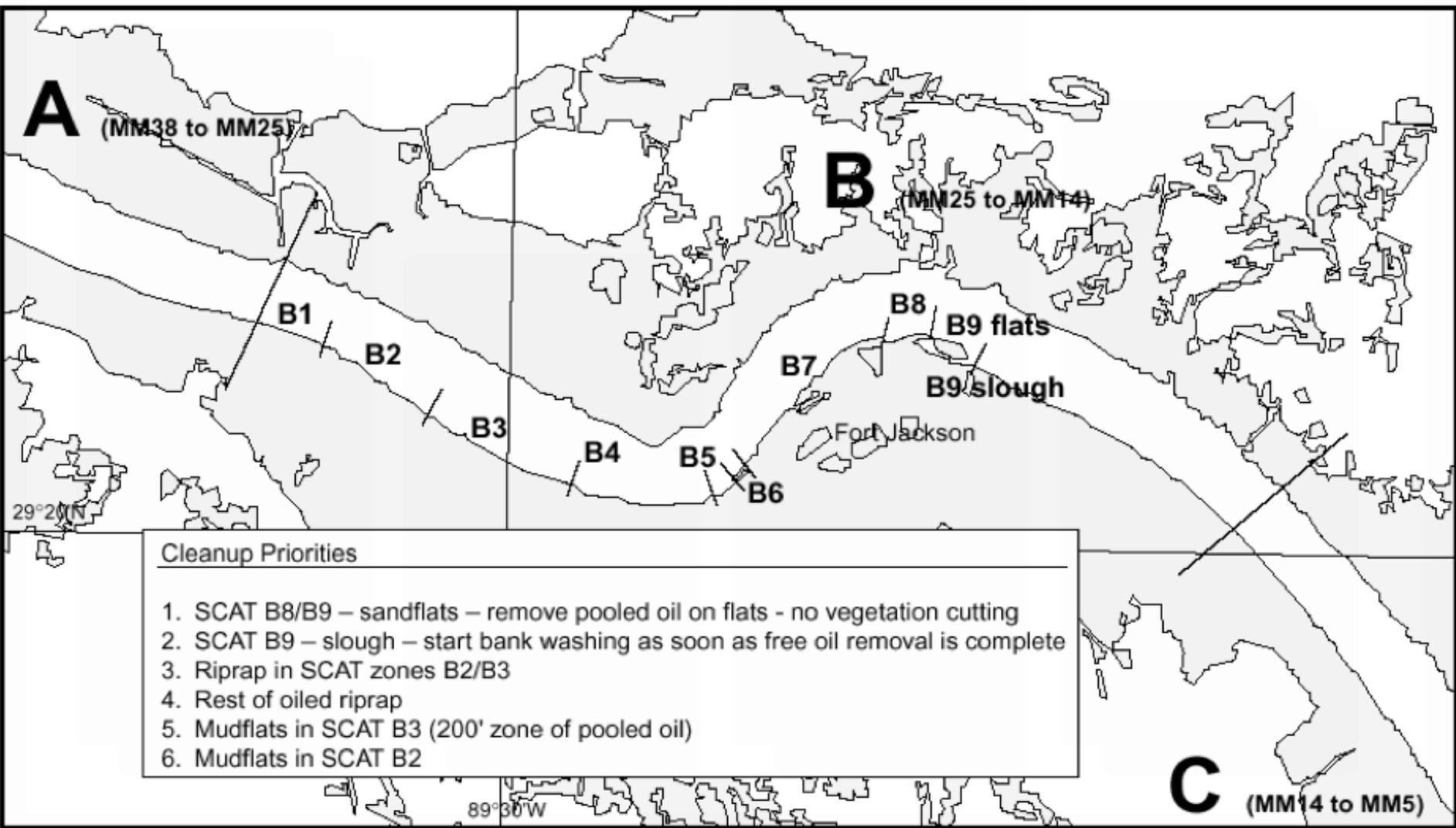
Habitat Type	Cleanup Endpoint	Allowable Cleanup Methods
Sand Beaches	Sand Beaches should be visibly free of all oil and oil residue. No oil odor should be evident and there should be no subsurface oil existing.	<ul style="list-style-type: none"> <li>• Manual removal with shovels/rakes; minimize removal of clean sediments on/under oiled layers</li> <li>• Use of heavy equipment will require additional approval.</li> <li>• Passive recovery of sheen with sorbents.</li> </ul>
Marshes  <b><i>Vegetated Spoil Banks Scarps</i></b>  Forested Wetlands	General: No potentially mobile oil as evidenced by sheen remaining on substrate. Residual oil does not rub off on contact (no oil greater than stain).	<ul style="list-style-type: none"> <li>• Remove loose oiled debris (use best mgt guidelines).</li> <li>• Passive removal using snares on a rope or other sorbent material as appropriate.</li> <li>• Minimize foot traffic, and avoid disturbance and removal of peat mat or soil</li> <li>• Other options to be determined on a site-specific basis include flushing, manual pickup of pooled oil, and monitoring.</li> <li>• Aggressive cleanup methods should not be employed.</li> <li>• Natural recovery should be considered</li> </ul>

# M/V Westchester Spill

SCAT Cleanup Recommendations and Priorities  
SCAT Site Nos.

Date/Time: 03 Dec 00  
Platform:  
Observers:  
USE ONLY AS A GENERAL REFERENCE

prepared by NOAA



# Shoreline Treatment Recommendation (STR)

## Guidelines for Hot-Water Flushing of Oiled Riprap/Bulkheads

- Water temperature not to exceed 120°F.
- Spray nozzle will be held at a distance of 5 inches or greater from the surface. All spraying/flushing will be into water for collection.
- No attached seaweed will be sprayed with hot water.
- Once the water level reaches the seaweed, hot-water flushing will be terminated.
- Once hot-water washing is terminated, all released oil will be recovered immediately. Cold-water flushing of the seaweed is allowed when oil has accumulated in it.
- Removal of heavily oiled seaweed will be allowed in specific areas identified by SCAT. If seaweed is to be cut, the root attachment and a 30-cm stem will be left.
- Cold-water flushing will be conducted until no more oil is mobilized.
- Hot-water flushing will be repeated until no free oil is released by the hot wash and no more than a stain (cannot be scraped off with a fingernail) remains on the surface.
- Sorbents will be deployed along areas where sheens are being released from the shoreline.

**NOTE:** *The guidelines will be revised, as needed, in response to changing conditions as the oil weathers.*



# SCAT Database

**DRAFT - This data set not for general distribution; for internal use only. This data set has not undergone complete QA/QC.**

Incident: **MC252**

Data File: **2011 0425 SCATdb Data Houma 3.7**

## Review / Add

Paper Forms

Surveys

Segments

Field Reports

STRs

People

Organizations

Divisions

## Admin

DB Setup

Incident Info

Check Survey Data

Helper DB Setup

Update Status/STR/SIR Data

Check Survey Report

## Record Counts

Divisions	<b>60</b>
Segments:	<b>1468</b>
Surveys:	<b>4966</b>
STRs:	<b>228</b>
Zones:	<b>9519</b>
Trenches:	<b>3606</b>

## Zone Oiling Counts

Heavy:	748	Heavy TB Oiling:	20
Moderate:	843	Moderate TB Oiling:	164
Light:	1679	Light TB Oiling:	368
Very Light:	985	Negligible TB Oiling:	49
NOO:	4663		

## Trench Oiling Counts

Heavy:	30
Moderate:	160
Light:	490
Very Light:	825
NOO:	2096

Interface File: SCATdb Interface v3.7.2.mdb

Data File Path: Y:\Data\NewSCAT101\NoaaScatDB\2011 0425 SCATdb Data Houma 3.7.mdb

Change File

Help



Exit



# SCAT Field Maps and GIS



SCAT #3 13-June-10

SCAT  
Annotated  
Field Sketch  
Map

GIS Shoreline  
Current Oiling  
Layers



# 2-Step Process to Calculate Oiling Degree

Step 1

		Width of Oiled Area			
		Wide >6 m	Medium >3 m to 6 m	Narrow >0.5 m to 3 m	Very Narrow <0.5 m
Oil Distribution	Continuous 91 – 100%	Heavy	Heavy	Moderate	Light
	Broken 51 – 90%	Heavy	Heavy	Moderate	Light
	Patchy 11 – 50%	Moderate	Moderate	Light	Very Light
	Sporadic 1 – 10%	Light	Light	Very Light	Very Light
	Trace < 1%	Very Light	Very Light	Very Light	Very Light



Step 2

		Initial Categorization of Surface Oil			
		Heavy	Moderate	Light	Very Light
Average Thickness	Pooled Oil > 1 cm	Heavy	Heavy	Moderate	Light
	Cover 0.1 – 1.0 cm	Heavy	Heavy	Moderate	Light
	Coat 0.01 – 0.1 cm	Moderate	Moderate	Light	Very Light
	Stain/Film < 0.01 cm	Light	Light	Very Light	Very Light

# *Cosco Busan, November 2007*

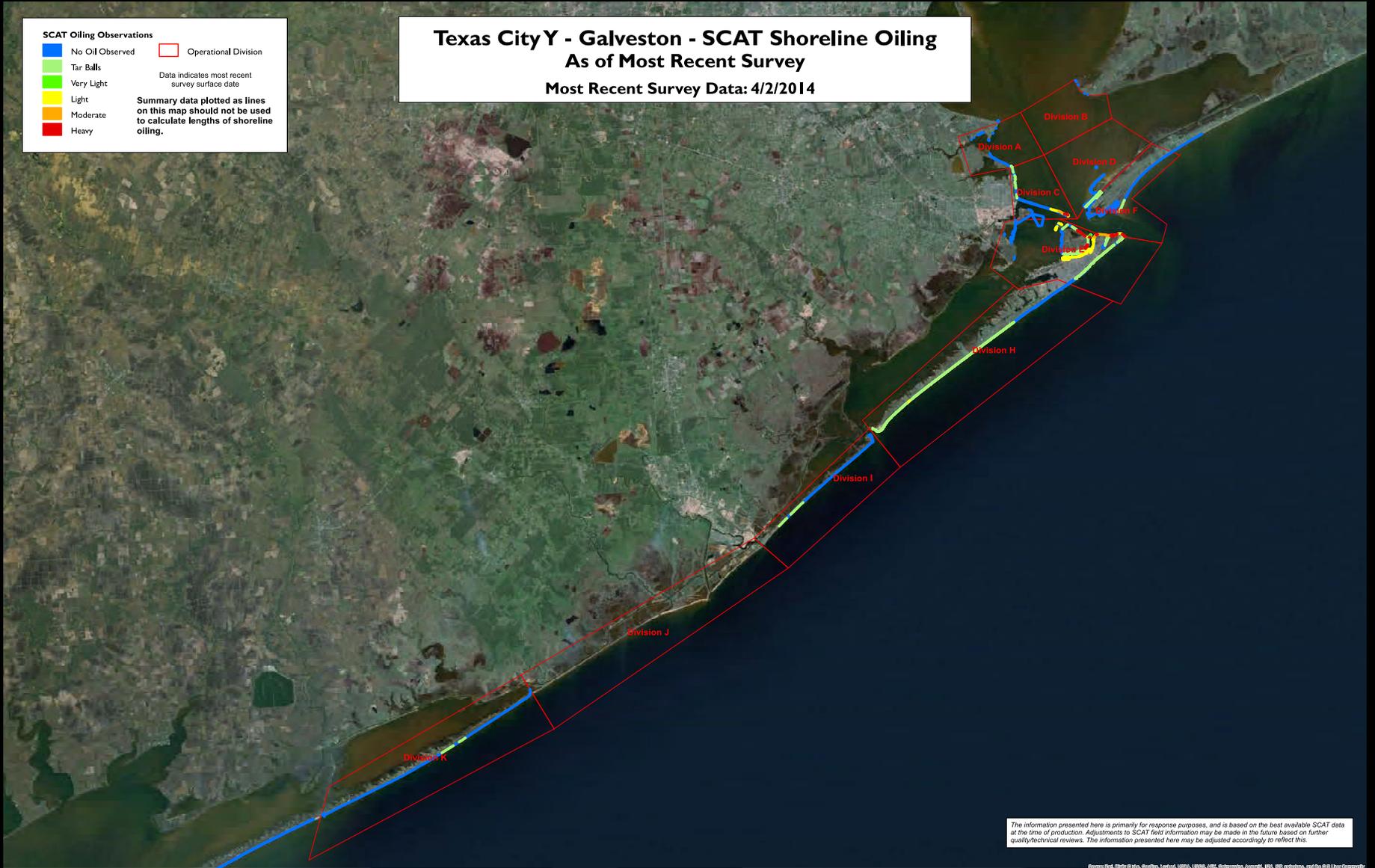


# Texas City Y - Galveston - SCAT Shoreline Oiling As of Most Recent Survey

Most Recent Survey Data: 4/2/2014

## SCAT Oiling Observations

- No Oil Observed
  - Tar Balls
  - Very Light
  - Light
  - Moderate
  - Heavy
- Operational Division
- Data indicates most recent survey surface date
- Summary data plotted as lines on this map should not be used to calculate lengths of shoreline oiling.



The information presented here is primarily for response purposes, and is based on the best available SCAT data at the time of production. Adjustments to SCAT field information may be made in the future based on further quality/technical reviews. The information presented here may be adjusted accordingly to reflect this.

Local Name: Keel Boat Pass Island STR #: S4-009.r.2

Survey Date:

## Shoreline Treatment Recommendation

**Segment Name**

LASB05 - 014-20

LASB05 - 015-10

**Location:** Keel Boat Pass Island St. Bernard Division 5**Shoreline Type:** Salt- and brackish-water marsh  
Mixed sand and shell beaches**Treatment Type:**  Surface    Subsurface    Submerged    Manual    Mechanical**Oiled Area For Treatment:**

Zone A: salt marsh with 30 yd x 5 yd topographic low with pooled mousse and oiled organic material (coffee grounds).

Zone B: salt marsh, 230 yd x 1-2 yd area with heavily oiled wrack and patches of pooled mousse.

Zone C: salt marsh/shell berm, 150 yd x 2-3 yd area with heavily oiled shell hash, heavily oiled wrack, and patches of pooled oil.

Zone D: salt marsh/shell berm, 130 yd x 4 yd area with heavily oiled shell hash, heavily oiled wrack, and patches of pooled oil.

Zone E: salt marsh/shell berm, 10 yd x 3 yd area with heavily oiled shell hash, heavily oiled wrack, and some pooled oil.

Zone F: salt marsh/shell berm, 15 yd x 4 yd area with oiled shell hash.

Zone G: salt marsh/shell berm, 115 yd x 1 yd area with heavily oiled shell hash and pooled oil in numerous locations

Zone H: salt marsh/shell berm, 85 yd x 2 yd area with heavily oiled shell hash with pooled oil.

New Zones in r.2 with similar oiling conditions:

Zone B1: 50 yds

Zone I: 200 yds

Zone J: 612 yds

Zone K: 84 yds

Refer to the attached map.

If oiling conditions similar to those described above are observed in other shoreline locations on this island, these areas can be treated under this STR. The SCAT teams and SCAT-Ops Liaisons can assist with decisions regarding additional treatment areas if such oiling conditions are observed.

**Cleanup Recommendation:**

Manually remove the heavily oiled shell, oiled wrack that is tacky and poses risk to wildlife, oiled coffee grounds, and pooled oil using shovels, rakes, other appropriate hand tools, and/or gloved hands.

Loose sorbent materials can be used to remove/reduce pooled surface mousse or liquid oil. In areas of higher concentrations and minimal live vegetation, loose organic sorbent materials (e.g., bagasse, kenaf, etc.) can be applied and raked across the area to increase the oil sorption, both on the surface and where the oil is soaked into the soil. The oiled sorbent material will then be raked up and bagged. All sorbents applied to pooled oil and oil-saturated sorbent materials must be removed. In areas with lower concentrations or more vegetation, and as a final treatment step in the raked areas, a thin layer of the loose organic sorbent materials can be applied in a targeted and judicious manner, to any remaining tacky oil residues on the substrate and/or vegetation, as a means of short-term wildlife protection. This material can be left in place to naturally degrade (as approved by the RRT on 8 April 2011). The on-site monitors

## Deepwater Horizon MC252

### Shoreline Treatment Recommendation - Operational Permit to Work

Local Name: **Keel Boat Pass Islan STR #: S4-009.r.2**

Survey Date:

human remains, or other cultural resources are discovered in the project area, all work in the immediate area must cease. The onsite Operations Supervisor must be notified, who must contact the Section 106 Team. Work shall not resume until the Operations Supervisor has been advised by the Section 106 Team. Contact the Section 106 Team at: section106@bpgom.com and/or call the SCAT Lead Archaeologist in Houma (520-850-2944) or Alvin Banguilan (404-229-5451).

#### Safety Concerns:

Follow the site safety plan.

#### Comments:

Revision 2 addresses additional oiling zones and allows the use of loose organic sorbents.

Attachments:  Segment Map  Sketch  SCAT Form  FactSheet Other: Photos, BMPs

Prepared By: Zengel, Scott

Date Prepared: 14-Apr-2011

Final Approval: Print Samuel Broussard William CARTER BEA STUNG

Sign Samuel W. Broussard William Carter Bea Stung  
SOSC 4/18/11 0905 FOSC 4/18/11 1031 BP EUL

**\*\* When Treatment is Completed, send a Segment Completion Report to SCAT \*\***

# Shoreline Treatment Recommendation      Operational Permit to Work

Local Name: Keel Boat Pass Islan STR #: S4-009.r.2

Survey Date:

Segment Name
LASB05 - 014-20
LASB05 - 015-10

**Location:** Keel Boat Pass Island St. Bernard Division 5

**Shoreline Type:** Salt- and brackish-water marsh  
Mixed sand and shell beaches

**Treatment Type:**  Surface    Subsurface    Submerged    Manual    Mechanical

## Oiled Area For Treatment:

Zone A: salt marsh with 30 yd x 5 yd topographic low with pooled mousse and oiled organic material (coffee grounds).

Zone B: salt marsh, 230 yd x 1-2 yd area with heavily oiled wrack and patches of pooled mousse.

Zone C: salt marsh/shell berm, 150 yd x 2-3 yd area with heavily oiled shell hash, heavily oiled wrack, and patches of pooled oil.

Zone D: salt marsh/shell berm, 130 yd x 4 yd area with heavily oiled shell hash, heavily oiled wrack, and patches of pooled oil.

Zone E: salt marsh/shell berm, 10 yd x 3 yd area with heavily oiled shell hash, heavily oiled wrack, and some pooled oil.

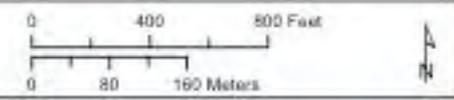
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Zone G: salt marsh/shell berm, 115 yd x 1 yd area with heavily oiled shell hash and pooled oil in numerous locations

Zone H: salt marsh/shell berm, 85 yd x 2 yd area with heavily oiled shell hash with pooled oil.



St. Bernard Division 5 | Keel Boat Pass Island | STR S4-009.r.2  
14 April 2011



## Cleanup Recommendation:

Manually remove the heavily oiled shell, oiled wrack that is tacky and poses risk to wildlife, oiled coffee grounds, and pooled oil using shovels, rakes, other appropriate hand tools, and/or gloved hands.

Loose sorbent materials can be used to remove/reduce pooled surface mousse or liquid oil. In areas of higher concentrations and minimal live vegetation, loose organic sorbent materials (e.g., bagasse, kenaf, etc.) can be applied and raked across the area to increase the oil sorption, both on the surface and where the oil is soaked into the soil. The oiled sorbent material will then be raked up and bagged. All sorbents applied to pooled oil and oil-saturated sorbent materials must be removed. In areas with lower concentrations or more vegetation, and as a final treatment step in the raked areas, a thin layer of the loose organic sorbent materials can be applied in a targeted and judicious manner, to any remaining tacky oil residues on the substrate and/or vegetation, as a means of short-term wildlife protection. This material can be left in place to naturally degrade (as approved by the RRT on 8 April 2011). The on-site monitors will advise on the appropriate thickness of the loose sorbent to be left on the surface in the treatment areas.

Minimize disturbance to live marsh vegetation in oil removal locations.

Minimize the removal of clean shell material.

Do not disturb or remove any natural debris, beach wrack, or other organic materials that are not oiled unless they are blocking access to or are mixed with oiled sediments. Where blocking access, unoiled wrack or other materials should be moved as little as necessary to the nearest tidally influenced area.

If the cleanup crews will be walking in the marsh, past the firm shell/sand edge of the platform, the on-site SCAT-Ops Liason should determine whether to require walking boards to avoid marsh impacts in soft areas.

To limit disturbance to pelicans and other birds, manual work crews should be limited in size and number to the minimum number of crews and personnel needed to get the work done in a reasonably efficient time frame. Have work crews and personnel work as closely together as possible during cleanup operations, rather than spread across the entire work area.

## Ecological Concerns:

### WILDLIFE CONCERNS

Certain species of colonial nesters believed to utilize this island may initiate nesting during the continuation of this work; therefore, Louisiana Department of Wildlife and Fisheries (LDWF) survey the island at regular intervals and determine whether the proposed activity will create a disturbance to wildlife. Contact Matthew Weigel (985 665 1083) with LDWF for assistance with avoiding disturbance to pelicans and nesting birds during on-site cleanup operations.

Piping plover, a federally listed species, as well as other migratory shorebirds and nesting birds, may occur in the area. The U.S. Fish and Wildlife Service (USFWS) has representatives in each of the Louisiana Branches. The USFWS or its representatives shall coordinate with LDWF staff to assist operations in the implementation of all BMPs to minimize impact to vegetated areas, the wrack line, tidal foraging habitat, and natural beach topography. This effort may include establishing temporary exclusion zones, delineating travel corridors, and recommending adaptive measures to minimize disturbance. They can also be contacted for technical assistance with avoiding disturbance to shorebirds in this area.

Refer to the March 17, 2011 "Guidance for Avoiding and Minimizing Disturbance of Nesting Migratory Birds and Listed Birds Near Shoreline Cleanup Areas" for all response activities. NRAs/READs will continue to document all BMPs that were, and were not, complied with by any and all Response personnel on the BMP Implementation Checklist and in their 214/DUD reports, including those exceptions specifically pre-arranged in an STR.

All STRs and Field Plans require NRA and/or READ staffing for implementation to ensure compliance with trust resource laws and regulations. As specified in the BMPs, Section 7 in consultation with Section 106 will provide recommendations regarding the appropriate number/type of NRAs/READs required based on geography, needs of trust resources, safety and methodologies used by Operations.

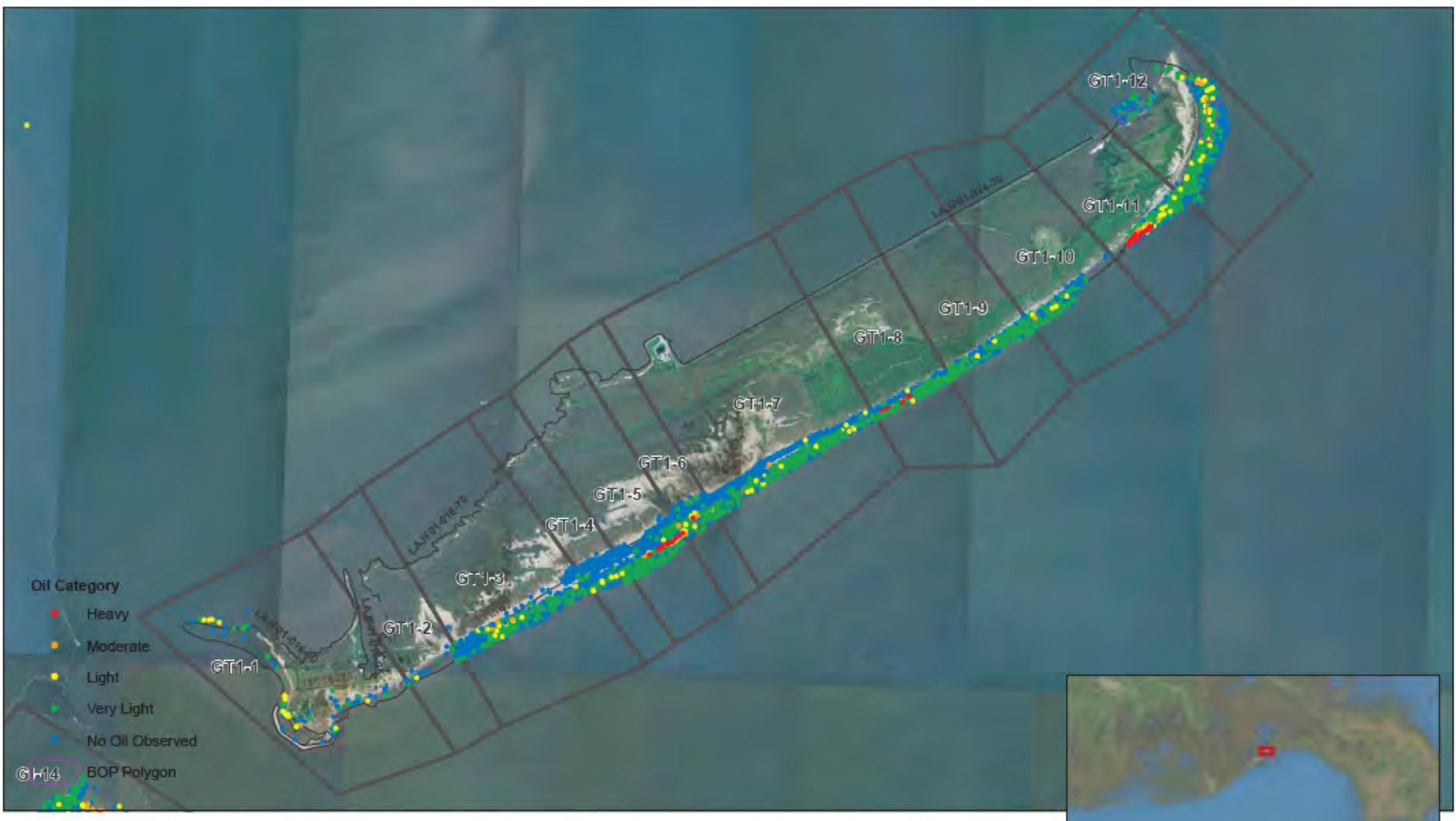


**Pooled Mousse and Oiled Organic Matter (Coffee Grounds)**

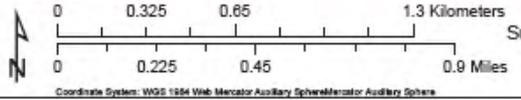


**Pooled Mousse and Oiled Organic Matter (Coffee Grounds)**



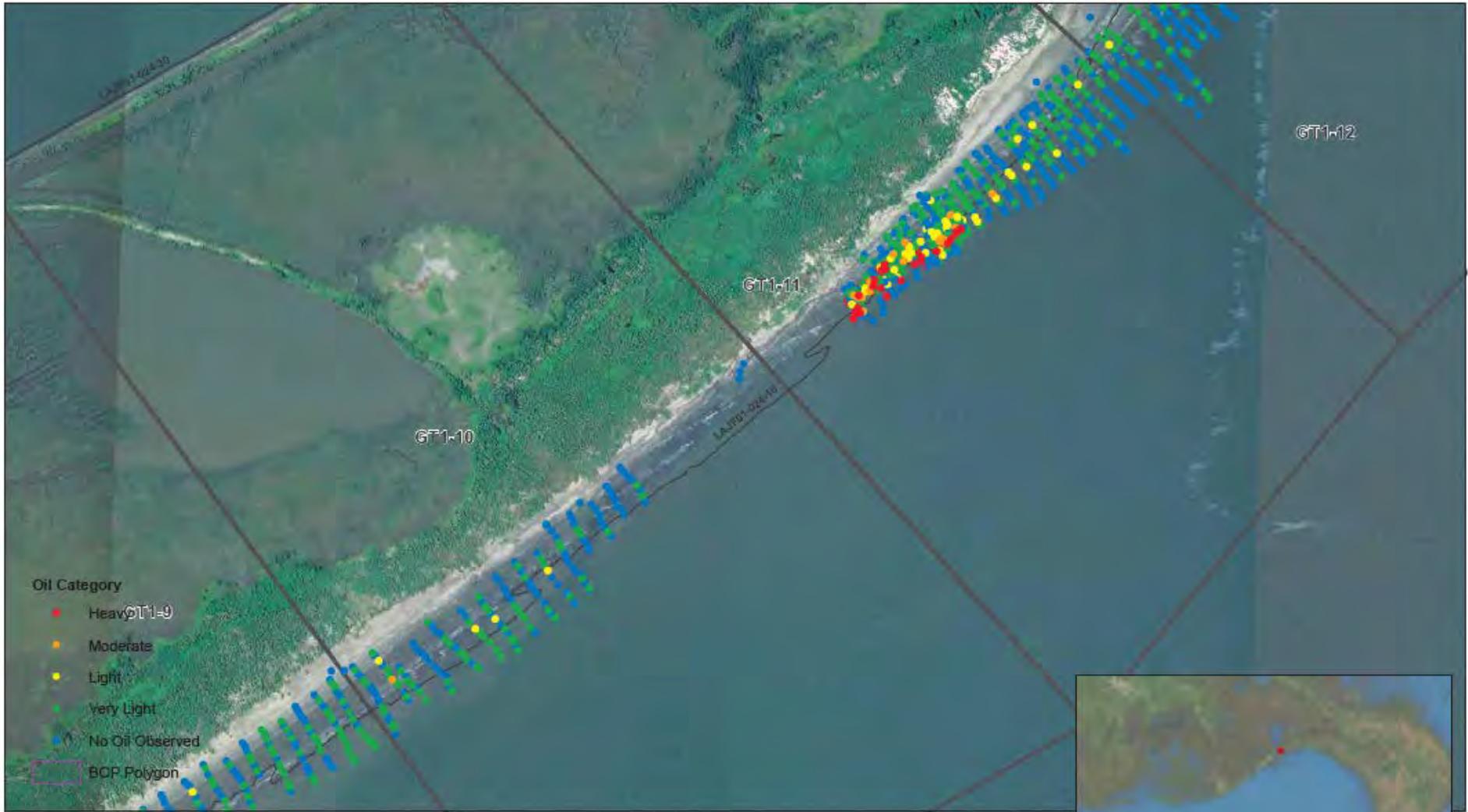


Cumulative Subsurface (Auger/SCAT/Snorkel)  
01 Aug 2013 - Grand Terre I

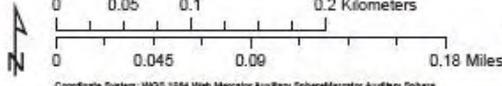


Imagery Date: Spring 2013  
Subsurface Data as of: 2013-08-01  
Map Created: 2013-08-08  
1:16,570





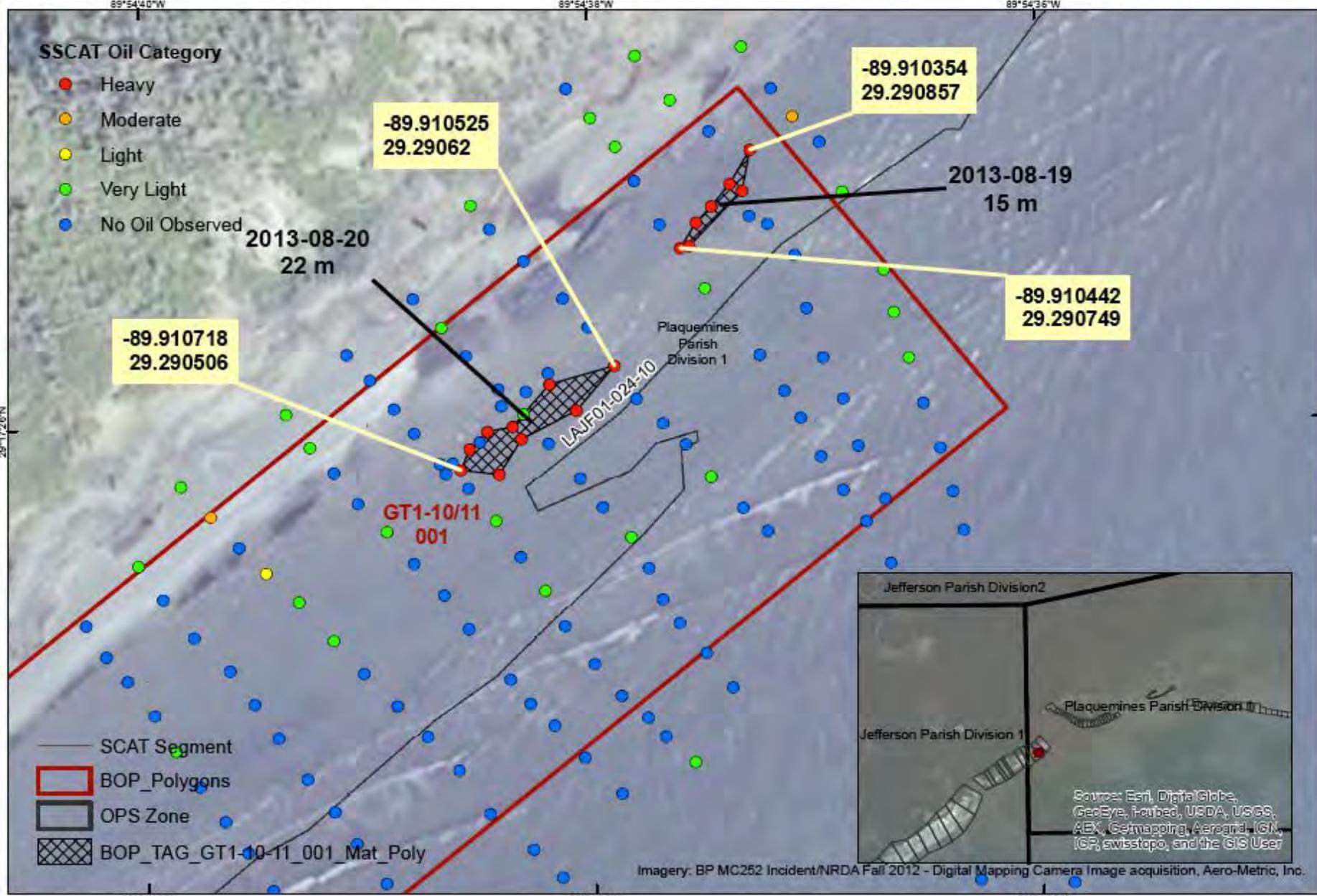
Cumulative Subsurface (Auger/SCAT/Snorkel)  
 01 Aug 2013 - Grand Terre I (10-11)



Imagery Date: Spring 2013  
 Subsurface Data as of: 2013-08-01  
 Map Created: 2013-08-08  
 1:3,390



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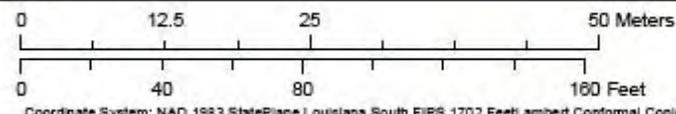


**SSCAT Oil Category**

- Heavy
- Moderate
- Light
- Very Light
- No Oil Observed

- SCAT Segment
- BOP\_Polygons
- OPS Zone
- BOP\_TAG\_GT1-10-11\_001\_Mat\_Poly

BOP (TAG) Polygon - GT1-10/11 (001) - MAT ID  
 Plaquemines Parish Division 1 - Grand Terre 1



SSCAT Data as of: 2013-08-20  
 Map Created: 2013-08-21

Imagery: BP MC252 Incident/NRDA Fall 2012 - Digital Mapping Camera Image acquisition, Aero-Metric, Inc.

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGR, swisstopo, and the GIS User

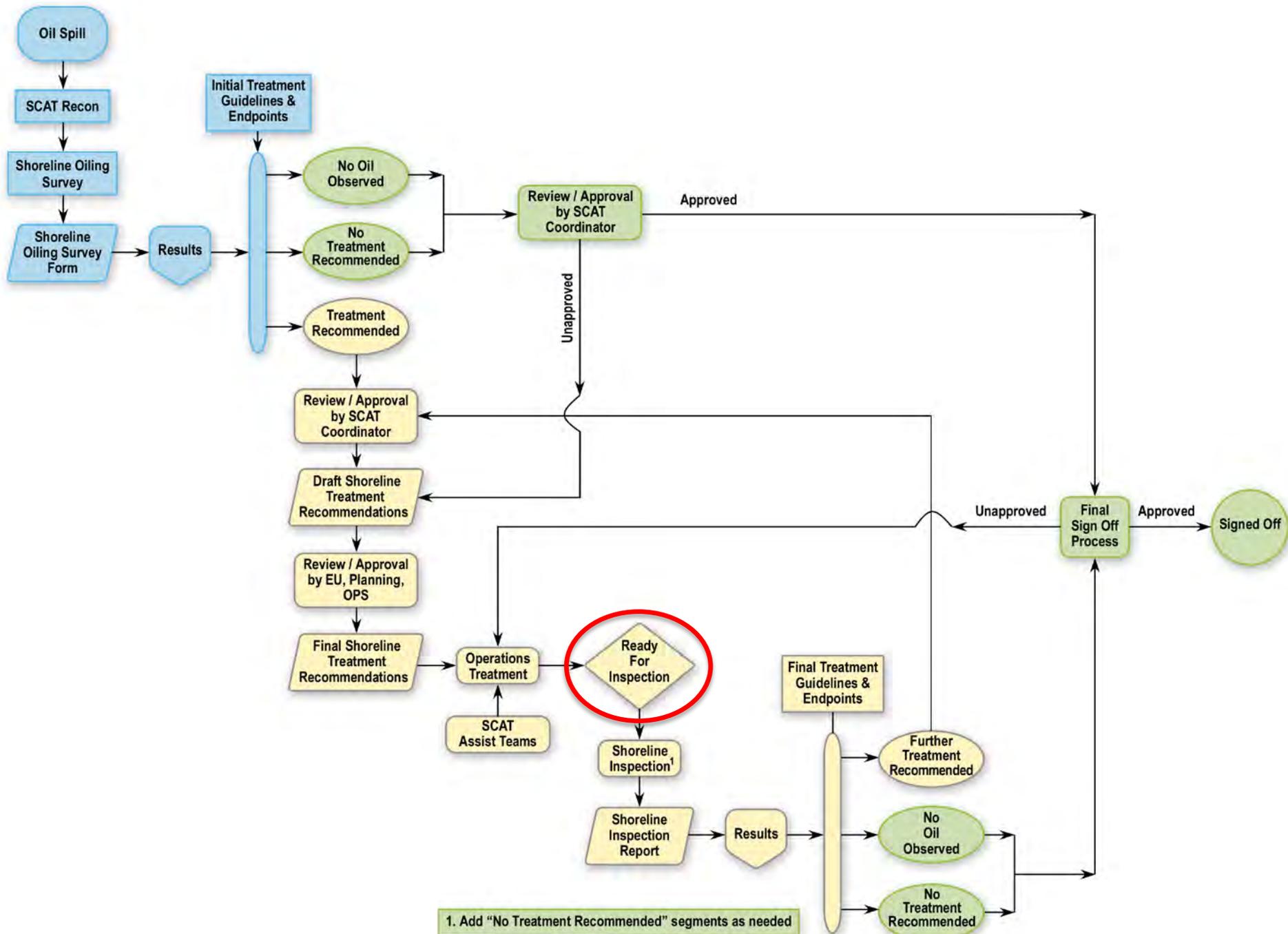
# SCAT Activity 7: Monitoring Cleanup Operations

## Objective

- Assist Operations with implementation of the treatment recommendations, as requested
- Conduct field assessment to evaluate new methods or equipment



*noaa*



1. Add "No Treatment Recommended" segments as needed

# SCAT Activity 8: Post-Treatment Inspections

## Objective

- Inspect segments determined by Operations to be ready for SCAT inspection prior to final approval for sign-off



*noaa*

# SCAT Activity 8: Post-Treatment Inspections

## Methods

- Receive notification from Operations that a segment is ready for inspection
- Inspect segment against final cleanup endpoints
- Identify additional cleanup needed, using SCAT forms/sketches
- Recommend segment for final sign-off



*noaa*

**Segment Inspection Report for** \_\_\_\_\_

**Segment ID:** \_\_\_\_\_ **Segment Name** \_\_\_\_\_

**Survey Date:** \_\_\_\_\_ **Survey Time:** \_\_\_\_\_

**Tides:** \_\_\_\_\_ **Weather:** \_\_\_\_\_

**Inspection Completed Along Entire Segment:** Yes / No

**Result/Recommendation:**

- No oil observed.
- Meets cleanup endpoints.
- No further treatment recommended.
- Further treatment recommended.

(Provide written details of issues and required actions.)

- Continued monitoring required.

(Provide written details of frequency and schedule.)

**SCAT Team Members:**

Name	Signature
_____ FOSC Rep	_____
_____ SOSC Rep	_____
_____ RP Rep	_____
_____ Landowner/Other Rep	_____

**Bayou Perot Oil Spill: Shoreline Cleanup and Assessment Team (SCAT) Inspection Form**

<b>1. GENERAL INFORMATION</b>		Date (dd/mm/yy)	Time (24h standard/daylight)	Tide Height L/M/H
Site Name:				
Division/Segment:			hrs to          hrs	H/M/L
Inspection By: Foot / Boat / Helicopter /			Sun / Clouds / Fog / Rain / Snow / Windy	
<b>2. INSPECTION TEAM</b>		Name		Organization
				Signature
3. SEGMENT Description of Shoreline Surveyed:				
4. SHORELINE TYPES Select Primary (P) and Secondary (S) types present				
Marsh or Wetlands (includes Floating Marsh)			Riprap	
Tidal Flats/Mud Flats			Wave-cut Scarps	
Sand, Shell or Mixed Sand & Shell Beaches			Other:	
5. CLEANUP ENDPOINTS <b>REFER TO REVISED SHORELINE CLEANUP PLAN (28 Jan. 2007)</b>				
<input type="checkbox"/> Yes <input type="checkbox"/> No Floating or potentially mobile heavy oil present that is a substantial secondary pollution threat? If yes, describe:				
<input type="checkbox"/> Yes <input type="checkbox"/> No Oily debris present that is a pollution risk and should be removed? If yes, describe:				
<input type="checkbox"/> Yes <input type="checkbox"/> No Oil coat or stain present that is a substantial risk to the public or wildlife? If yes, describe:				
<input type="checkbox"/> Yes <input type="checkbox"/> No Observed sheening at site that is a source of secondary pollution and a risk to wildlife? If yes, describe:				
Other oiling conditions or observations:				
<b>6. RECOMMENDATIONS</b>				
<input type="checkbox"/> Yes <input type="checkbox"/> No Recommend Additional Active Cleanup (Stage 1). Comments:				
<input type="checkbox"/> Yes <input type="checkbox"/> No Recommend continued maintenance of passive sorbent recovery for sheens (Stage 2). Comments:				
<input type="checkbox"/> Yes <input type="checkbox"/> No Site meets the cleanup endpoints (Stage 3). Recommend natural recovery for residual pollution.				
Attachments: Sketch/Map: Yes / No      Photos: Yes / No      Additional Comments: Yes / No				

## Bayou Perot Oil Spill: Shoreline Cleanup and Assessment Team (SCAT) Inspection Form

<b>1. GENERAL INFORMATION</b>		Date (dd/mm/yy)	Time (24h standard/daylight)  hrs to                      hrs	Tide Height L/M/H H/M/L
Site Name:				
Division/Segment:				
Inspection By: Foot / Boat / Helicopter /			Sun / Clouds / Fog / Rain / Snow / Windy	
<b>2. INSPECTION TEAM</b>	Name	Organization	Signature	
<b>3. SEGMENT</b>	Description of Shoreline Surveyed:			
<b>4. SHORELINE TYPES</b>	Select Primary (P) and Secondary (S) types present			
	Marsh or Wetlands (includes Floating Marsh)		Riprap	
	Tidal Flats/Mud Flats		Wave-cut Scarps	
	Sand, Shell or Mixed Sand & Shell Beaches		Other:	

5. CLEANUP ENDPOINTS

**REFER TO REVISED SHORELINE CLEANUP PLAN (28 Jan. 2007)**

Yes  No Floating or potentially mobile heavy oil present that is a substantial secondary pollution threat?  
If yes, describe:

Yes  No Oily debris present that is a pollution risk and should be removed? If yes, describe:

Yes  No Oil coat or stain present that is a substantial risk to the public or wildlife? If yes, describe:

Yes  No Observed sheening at site that is a source of secondary pollution and a risk to wildlife?  
If yes, describe:

Other oiling conditions or observations:

## 6. RECOMMENDATIONS

Yes  No Recommend Additional Active Cleanup (Stage 1). Comments:

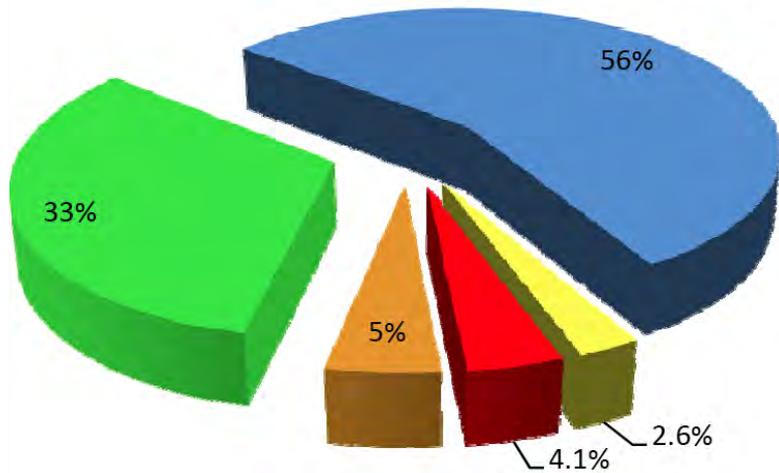
Yes  No Recommend continued maintenance of passive sorbent recovery for sheens (Stage 2). Comments:

Yes  No Site meets the cleanup endpoints (Stage 3). Recommend natural recovery for residual pollution.

Attachments: Sketch/Map: Yes / No      Photos: Yes / No      Additional Comments: Yes / No



**All States  
(As Of 21 May, 2011)**



- Active Stage III STRs
- Generated or Active Stage 4 STRs
- Shoreline At or Below NFT
- Operationally Inactive
- Operational Pause for Wildlife

State	Total Segment Length Surveyed	Length of shoreline by Segments within Status Category (miles)				
		STR Process	SIR1 Process	(Pending Approval) Removal Actions Deemed Complete	Removal Actions Deemed Complete	Operational Pause
Louisiana	3191	105	97	11	2977	0
Mississippi	228	26	5	19	176	2
Alabama	238	41	5	15	177	0
Florida	480	28	10	1	441	0
DOI	239	65	7	2	152	14
<b>All States*</b>	<b>4375</b>	<b>265</b>	<b>123</b>	<b>48</b>	<b>3924</b>	<b>16</b>

# Updated NOAA Job-Aids

## An FOSC's Guide to NOAA Scientific Support



Second edition, July 2010

U.S. Department of Commerce  
NOAA's Office of Response and Restoration • Emergency Response Division

## Characteristic Coastal Habitats

### Choosing Spill Response Alternatives



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Ocean Service  
Office of Response and Restoration  
Emergency Response Division

June 2018

## Characteristics of Response Strategies:

### A Guide for Spill Response Planning in Marine Environments



A joint publication of:  
U.S. DEPARTMENT OF COMMERCE  
U.S. Coast Guard  
U.S. Environmental Protection Agency  
American Petroleum Institute

June 2013

# New/Updated NOAA Job-Aids

## Oil Spills in Mangroves

PLANNING & RESPONSE CONSIDERATIONS



U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration • National Ocean Service • Office of Response and Restoration

## Oil Spills in Marshes

PLANNING & RESPONSE CONSIDERATIONS

September 2013



U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration  
National Ocean Service • Office of Response and Restoration



AMERICAN PETROLEUM INSTITUTE

## Oil and Sea Turtles

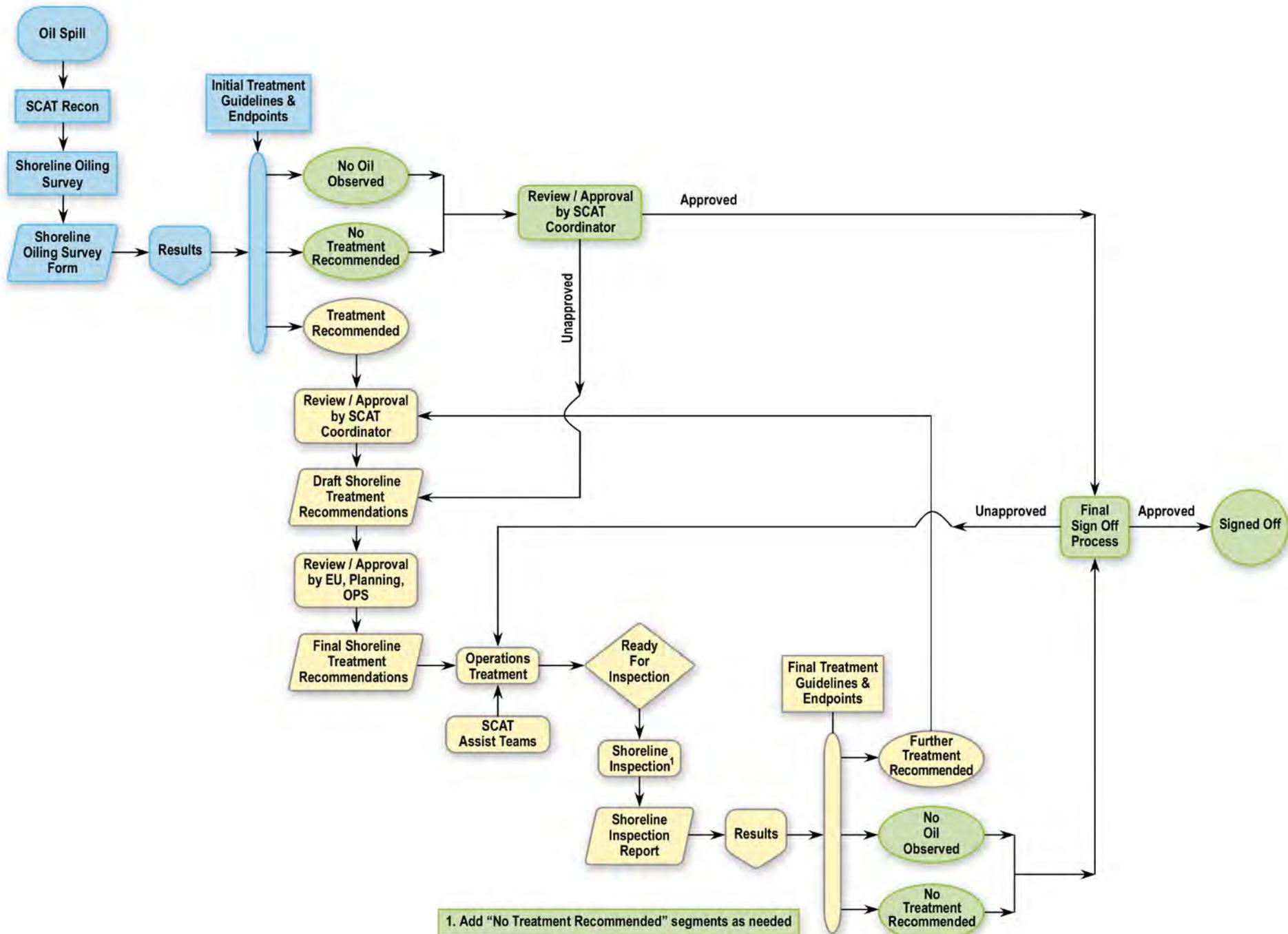
BIOLOGY, PLANNING, AND RESPONSE



U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration • National Ocean Service • Office of Response and Restoration

reprints



1. Add "No Treatment Recommended" segments as needed

# eSCAT

- Field computers for direct data capture:
  - GPS coordinates of start/end of segment
  - Waypoints for photos, pits, etc.
  - Digital photographs
  - Wireless connection for download
- Status:
  - Many prototypes, seldom actually used, but this will change over time



*noaa*

# Sample Collection by SCAT

- Why would SCAT collect a sample?
  - For fingerprinting to determine if the oil was a match or not with the source oil
  - For treatability studies
  - For assessment of weathering
- SCAT does not sample for:
  - NRDA
  - Any other requests outside of the response



*noaa*

# Sample Collection Methods

- Develop uniform sample ID protocol (segment, date, matrix, team, sequence #) and label the container
- Wear new Nitrile gloves for each sample
- Skim oil directly into the jar or use gloved hand or clean spoon/scoop
- Dry/clean outside of the container, wrap in bubble wrap or a sorbent pad and place in ziploc bag
- Place on ice and keep cold and under chain of custody until transferred
- Fill out a chain of custody form for all samples collected



*noaa*

# What is Chain of Custody?

- A legal term that refers to the ability to guarantee the identity and integrity of a sample through reporting of the test results
- Samples are in your “custody” when they are:
  - In your physical possession
  - In your view after being in your physical possession
  - In your physical possession then locked up so that tampering cannot occur;
  - In a secured area, with access restricted to authorized personnel only
- A CoC form is the tool used to track possession of a sample



*noaa*

# CLEANUP METHODS:

Objectives

Description

When to Use

Environmental Effects

Constraints



# Objectives

- Develop a basic understanding of common cleanup methods and appropriate guidelines on when and where they should be used.
- Understand how SCAT can make recommendations and place constraints on cleanup
- Understand how oil type, quantity, shoreline type, habitat sensitivity, and certain other factors effect selection and use of countermeasures



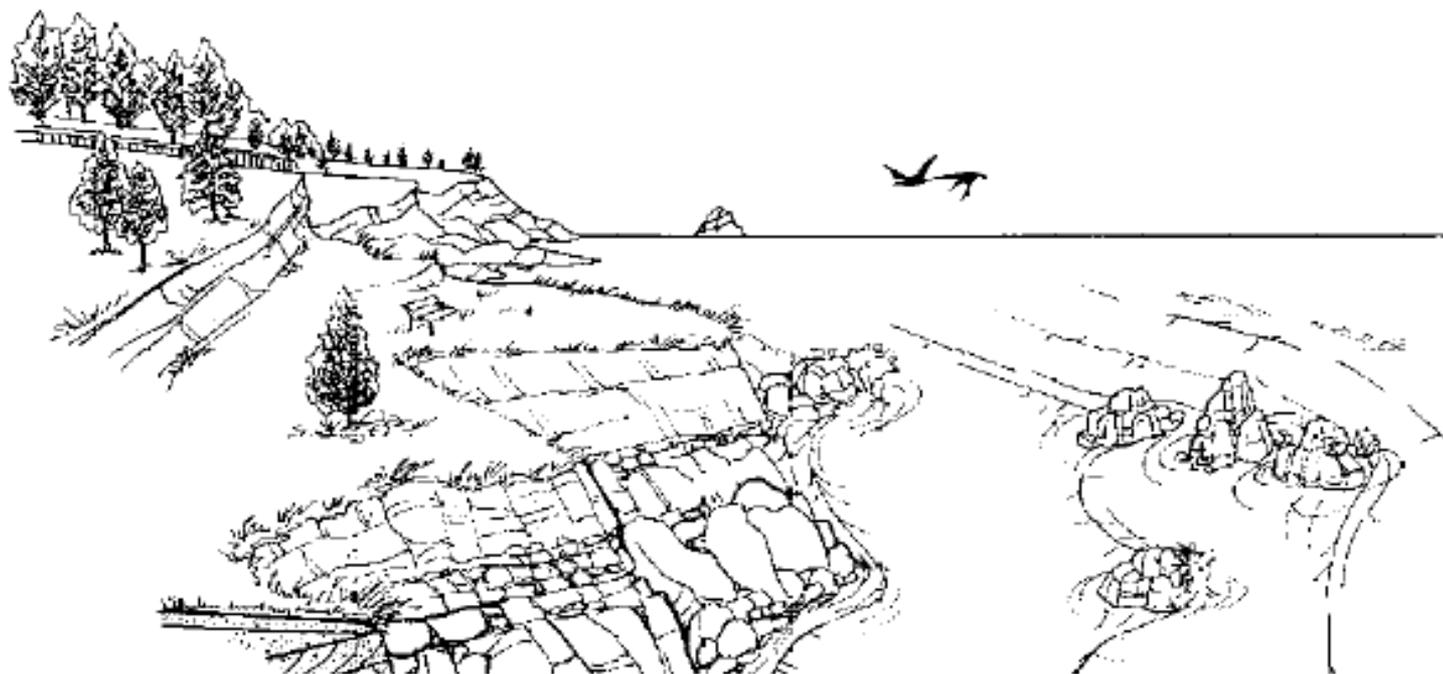
# Objectives

- Understand the potential that countermeasures may cause collateral injuries to the environment
- Know of several job-aids available to SCAT for making cleanup recommendations
- Refer to Appendix B of the SAM
- Refer to pictures in the SCAT Job-Aid



# Characteristic Coastal Habitats

## Choosing Spill Response Alternatives



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**National Ocean Service**  
**Office of Response and Restoration**  
**Emergency Response Division**

June 2010

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# Cleanup Matrix for Sand

Response Method	Oil Category			
	I	II	III	IV
Natural Recovery	A	B	B	C
Barriers/Berms	B	B	B	B
Manual Oil Removal/Cleaning	D	B	A	A
Mechanical Oil Removal	D	B	B	B
Sorbents	-	B	A	A
Vacuum	-	-	B	A
Debris Removal	-	A	A	A
Sediment Reworking/Tilling	D	B	B	B
Vegetation Cutting/Removal	-	C	C	C
Flooding (deluge)	A	A	A	B
Low-pressure, Ambient Water Flushing	B	B	B	B
High-pressure, Ambient Water Flushing	-	-	-	-
Low-pressure, Hot Water Flushing	-	-	C	C
High-pressure, Hot Water Flushing	-	-	-	-
Steam Cleaning	-	-	-	-
Sand Blasting	-	-	-	-
Solidifiers	-	-	B	-
Shoreline Cleaning Agents	-	-	C	C
Nutrient Enrichment	-	A	A	B
Natural Microbe Seeding	-	I	I	I
In-situ Burning	-	-	C	C

# Why SCAT Needs to Know about Cleanup Methods

- SCAT Teams recommend specific cleanup methods, constraints, and habitats to avoid
- SCAT are the eyes of the EU in the field; **they observe and report** back when the recommended methods are:
  - Not being properly implemented
  - No longer effective
  - Causing more harm than good



**6. OILING DESCRIPTION:** Indicate overlapping zones in different tidal zones by numbering them (e.g. A1, A2)

Zone ID	ESI Type	WP Start	WP End	Tidal Zone				Oil Cover					Oil Thickness					Oil Character						
								Zone Area		1-100%	<1%	Size												
				LI	MI	UI	SU	Length (m)	Width (m)	Distr. %	# per unit area	Avg Size (cm)	Large Size (cm)	TO	CV	CT	ST	FL	FR	MS	TB	PT	TC	SR

**7. SUBSURFACE OILING CONDITIONS:** Format: Zone ID dash Trench Number in that Zone, e.g., "A-1, B-1, B-2"

Pit #	WP	Substrate Type Surface / Subsurface	Tidal Zone				Trench Depth (cm)	Oiled Interval (cm-cm)	Subsurface Oil Character								Water Table (cm)	Sheen Color B,R,S,N	Clean Below Yes / No							
			LI	MI	UI	SU			OP	PP	OR	OF	TR	TB	SR	AP				NO	%					

**8. COMMENTS:** Cleanup Recommendations; Ecological/Recreational/Cultural Issues; Wildlife Observations; Oiling Descriptions

# Shoreline Cleanup Methods

- Objective
- Description
- Applicable Habitat Types
- When to Use
- Biological Constraints
- Environmental Effects
- Waste Generation



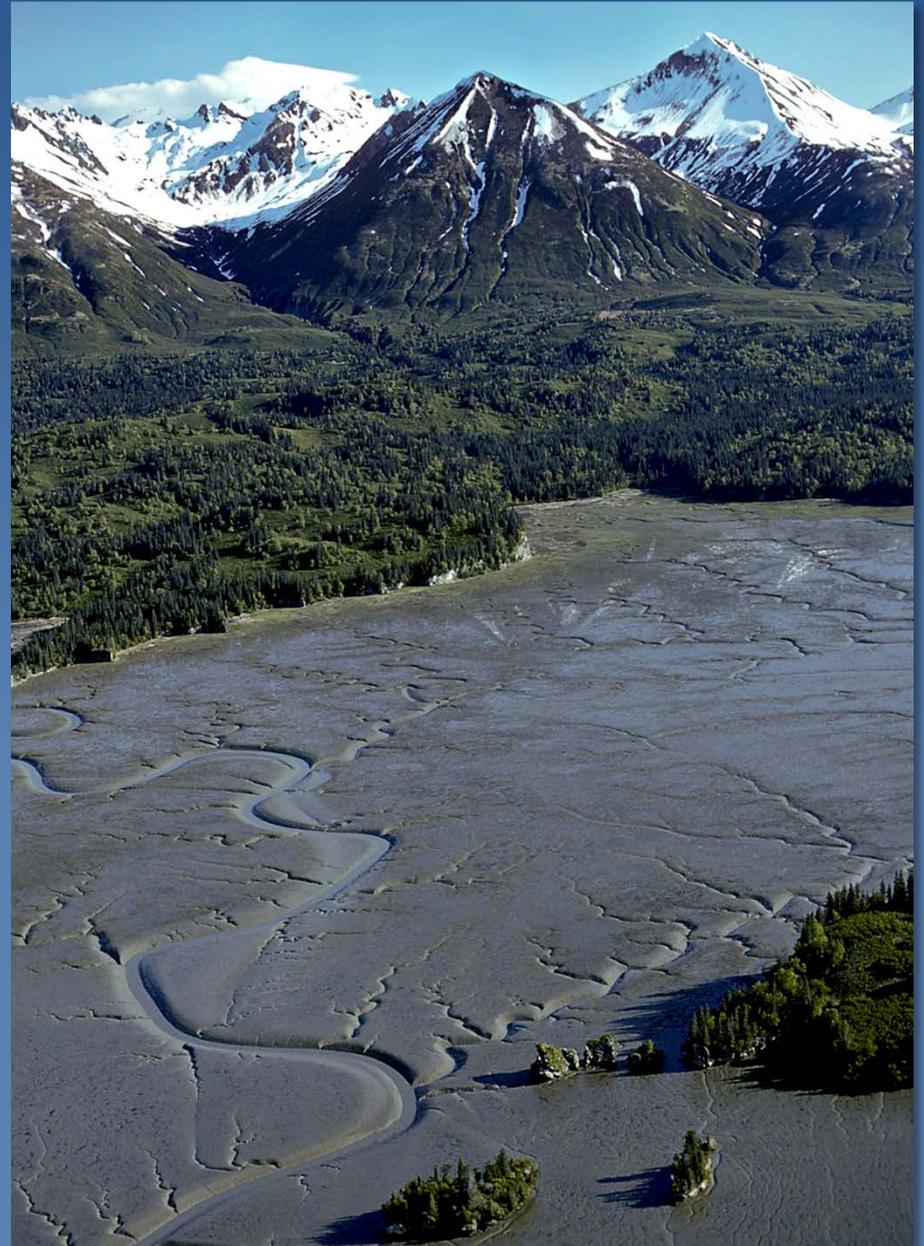
# Natural Recovery



**Amoco Cadiz spill, 1978. Natural recovery is appropriate when natural removal rates are fast, as in this high-energy coastline.**

# Natural Recovery

Natural recovery is appropriate when access is severely restricted such as this muddy tidal flat in Cook Inlet, AK.



# Deepwater Horizon Spill

3 July 2010



*Deepwater Horizon* oil spill

27 July 2010



# Barriers and Berms



**North Cape spill of 828,000 gallons of home heating oil off Point Judith, RI in February 1996**

# Physical Herding

Stream that drains into the Komi River in Russia



# Manual Removal

Morris J. Berman spill of No. 6 fuel oil in 1993 in Puerto Rico.



# Manual Removal



Morris J. Berman spill in Puerto Rico

# Manual Removal



# Manual Removal



Manual removal can include the use of sorbents and scrapers to remove the oil. Cleanup workers are perched on steep riprap at the spill of 53,000 gallons of a heavy fuel oil from the Cosco Busan spill in San Francisco Bay in November 2007.

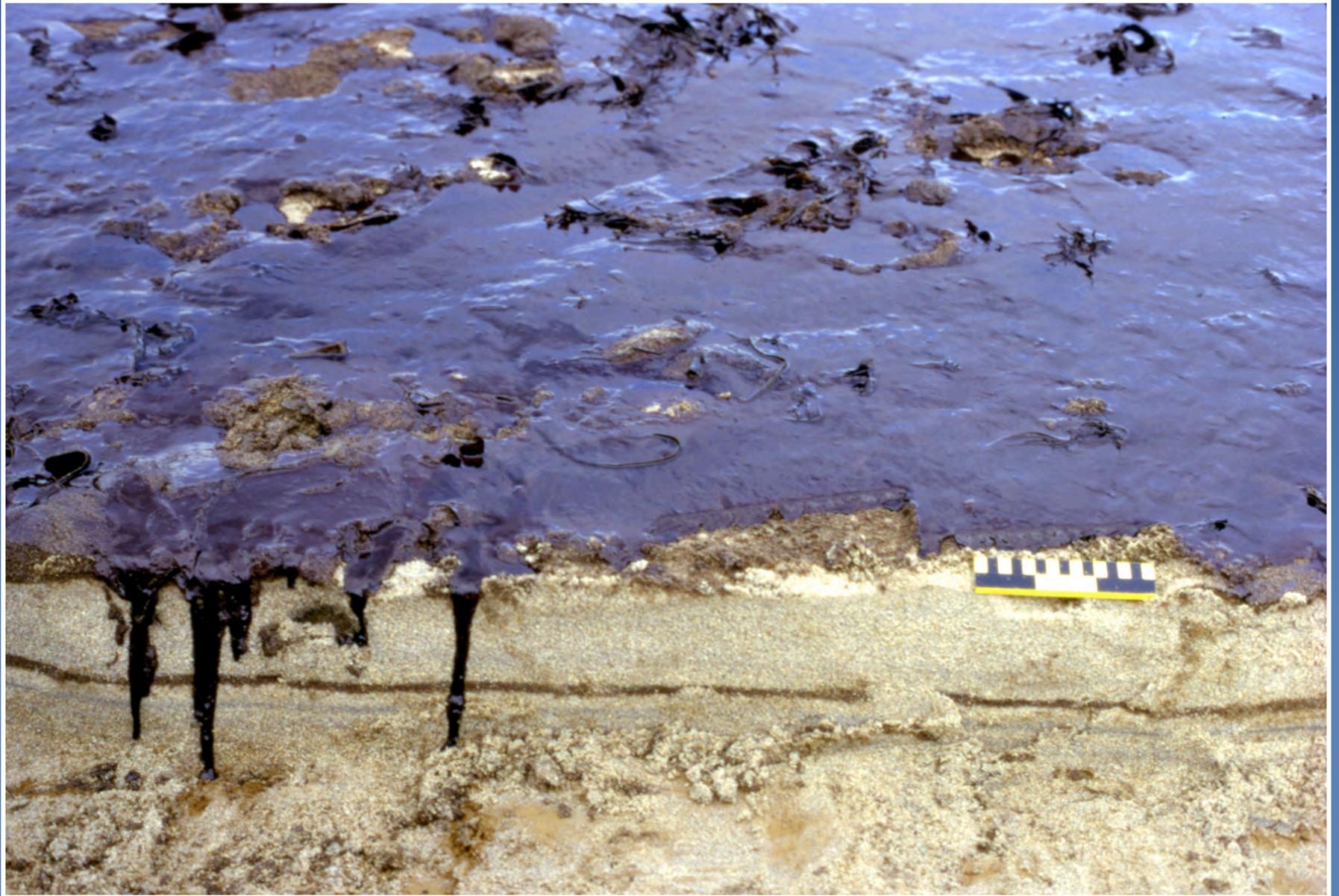
Demonstrates that manual removal can have significant safety concerns.

# Manual Removal



Deepwater Horizon spill, 2011

# Mechanical Removal



1976 spill from the Urquiola in Spain

# Mechanical Removal



Mechanical removal of heavily oiled soils along the Kalamazoo River from the Enbridge pipeline spill in July 2010 during a major flood.



West Dauphin Island Deep  
Clean – 13 Jan 2011  
Excavation of sand from a  
depth of 4 ft; stockpiling the  
sand, allowing it to dry;  
then screening it  
Deepwater Horizon,  
Alabama, 2011



# Sorbents



# Sorbents



# Sorbents



Chalk Point spill in 2000 in the  
Patuxent River, MD

# Sorbents



# Sorbents



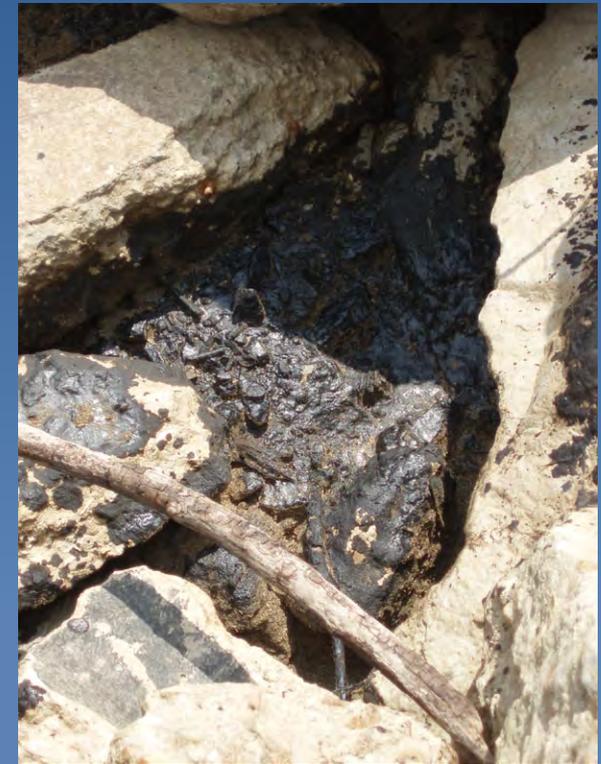
# Loose Sorbent Application: DM932 Spill, New Orleans



Before



During Blown Application



After

Testing of a loose sorbent on riprap during the DM932 spill in New Orleans in 2008.



# Loose Natural Sorbent Application



Application of bagasse (ground up sugar cane stalks)



# Vacuum



# Vacuum

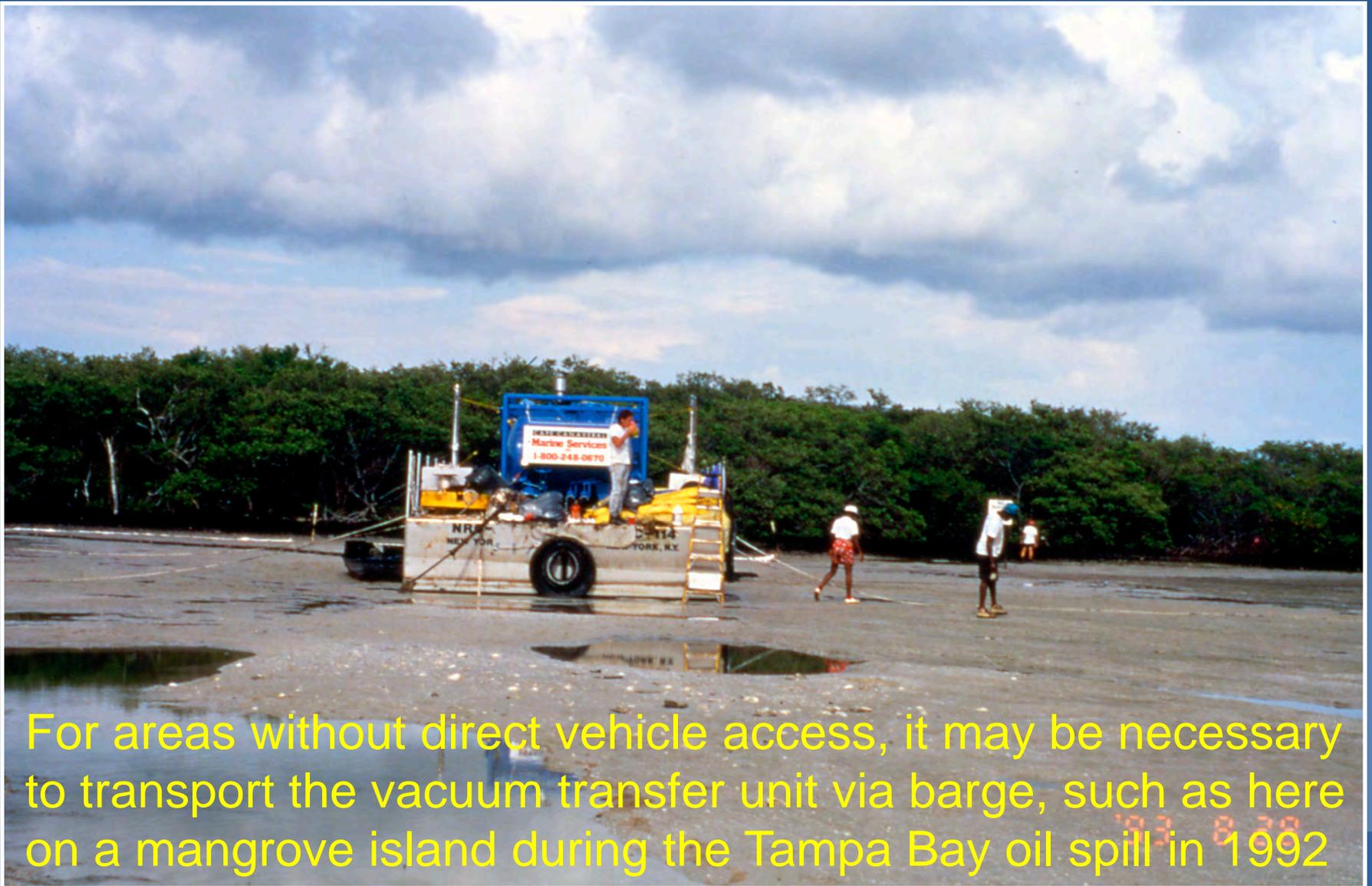


# Vacuum



Morris J. Berman spill in Puerto Rico

# Vacuum



For areas without direct vehicle access, it may be necessary to transport the vacuum transfer unit via barge, such as here on a mangrove island during the Tampa Bay oil spill in 1992

# Vacuum



# Debris Removal



Sugarland Run spill of diesel

# Debris Removal



# Debris Removal



# Sediment Re-working/Tilling

Exxon Valdez oil spill in Prince William Sound in 1990, during the second year of cleanup



# Sediment Re-working/Tilling



# Sediment Re-working/Tilling





Large-scale berm relocation on remote beaches on Unalaska Island



Tilling:  
Bring  
subsurface oil to  
the surface for  
removal by  
sifting

Break up larger  
oil particles to  
speed  
degradation



# Mechanical Beach Cleaners for Sediment Sifting



Beach Tech



Barber 600 HD Surf Rake



Sand Shark



Cherrington

# Vegetation Cutting

Cutting can be to access oiled areas, as on the left for a spill in the Miss River Delta.



Removing of oiled vegetation as on the right for the DWH spill in Barataria Bay.



# Flooding/Deluge



Exxon Valdez oil spill in 1989

# Flooding/Deluge



PEPCO spill in the Patuxant River, MD, 2000

# Flooding/Deluge



# Low-pressure, Ambient-temperature Flushing



# Low-pressure, Ambient-temperature Flushing



# Low-pressure, Ambient-temperature Flushing



# High-Pressure Flushing



# High-Pressure Flushing



# High-Pressure Flushing



# High-Pressure, Hot-Water Flushing



Cosco Busan spill in SFB 2007

# High-Pressure, Hot-Water Flushing



26 10:11AM

DM932 spill in New Orleans

# High-Pressure, Hot-Water Flushing



Athos spill in the Delaware River, November, 2004

# Surface Washing Agents



# In-Situ Burning



2001 Mosquito Bay spill of S. Louisiana

# In-Situ Burning



Pipeline in Minnesota

# You should now ...

- Have a basic understanding of common cleanup methods and appropriate guidelines on when and where they should be used
- Understand how SCAT can make recommendations and place constraints on cleanup
- Understand how oil type, quantity, shoreline type, habitat sensitivity, and certain other factors effect selection and use of countermeasures



# You should now ...

- Understand the potential that countermeasures may cause collateral injuries to the environment
- Know of several job-aids available to SCAT for making cleanup recommendations



# SCENARIO

For SCAT



# SCENARIO

- On the morning of May 1, 2016 at 02:30 local time, the M/T SABLE (277,734 DWT -owned/operate by OilTran Inc. of Greece) is anchored approximately 15 miles off Rehoboth Beach, DE. Arrangements have been made to lighter the Gullfaks crude oil off the SABLE for delivery to Philadelphia Energy Solutions.
- The lightering vessel OSG 310 is alongside to port conducting the operation when sudden surge of the SABLE's pumps causing overpressure failure of the transfer hose. Shut down of pumps was delayed for several minutes.
- Approximately 50, 250 gallons of Gullfaks crude oil discharges into the water.







Tue May 3	Wed May 4	Thu May 5	Fri May 6	Sat May 7
Rain possible in the p.m.	A couple of t-storms possible	A couple of showers possible	Partly sunny	A thunderstorm possible
63° Lo 52°	70° Lo 51° <small>more</small>	70° Lo 51° <small>more</small>	71° Lo 53° <small>more</small>	68° Lo 51° <small>more</small>

**Daily** ★ Hourly Morning Afternoon Evening Overnight

Hi **63°**  
RealFeel® 65°  
Precipitation 35%

Lo **52°**  
RealFeel® 48°  
Precipitation 25%

**Day**

Mostly cloudy with a chance of rain in the afternoon

**NE 9 mph**  
Gusts: **13 mph**

**Night**

Partly cloudy

**NE 7 mph**  
Gusts: **13 mph**

