

Guidelines for Selecting Appropriate Cleanup Endpoints at Oil Spills

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Objectives

- Understand the process by which *spill-specific* cleanup endpoints are developed
- Understand the concept of tradeoffs
- Learn the importance of SCAT to identify:
 - Environmental constraints
 - Safety constraints
 - Resource constraints




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Response Objectives

1. Protect human health & safety
 - Responder & public
 - On the vessel, on the water, and ashore
2. Minimize overall environmental impact
 - Reduce impacts from the oil
 - Minimize impacts from response activities
 - Accelerate recovery
3. Minimize economic impacts



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Looking for the Answer to the Primal Question:

When can we stop cleanup and go home?



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Shoreline Assessment Process





General Cleanup Objectives

- 1) Minimize exposure hazards for human health
- 2) Speed recovery of impacted areas
- 3) Reduce the threat of additional or prolonged natural resource impacts



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↑
Impact/Recovery
↓

Conditions in the Absence of a Spill

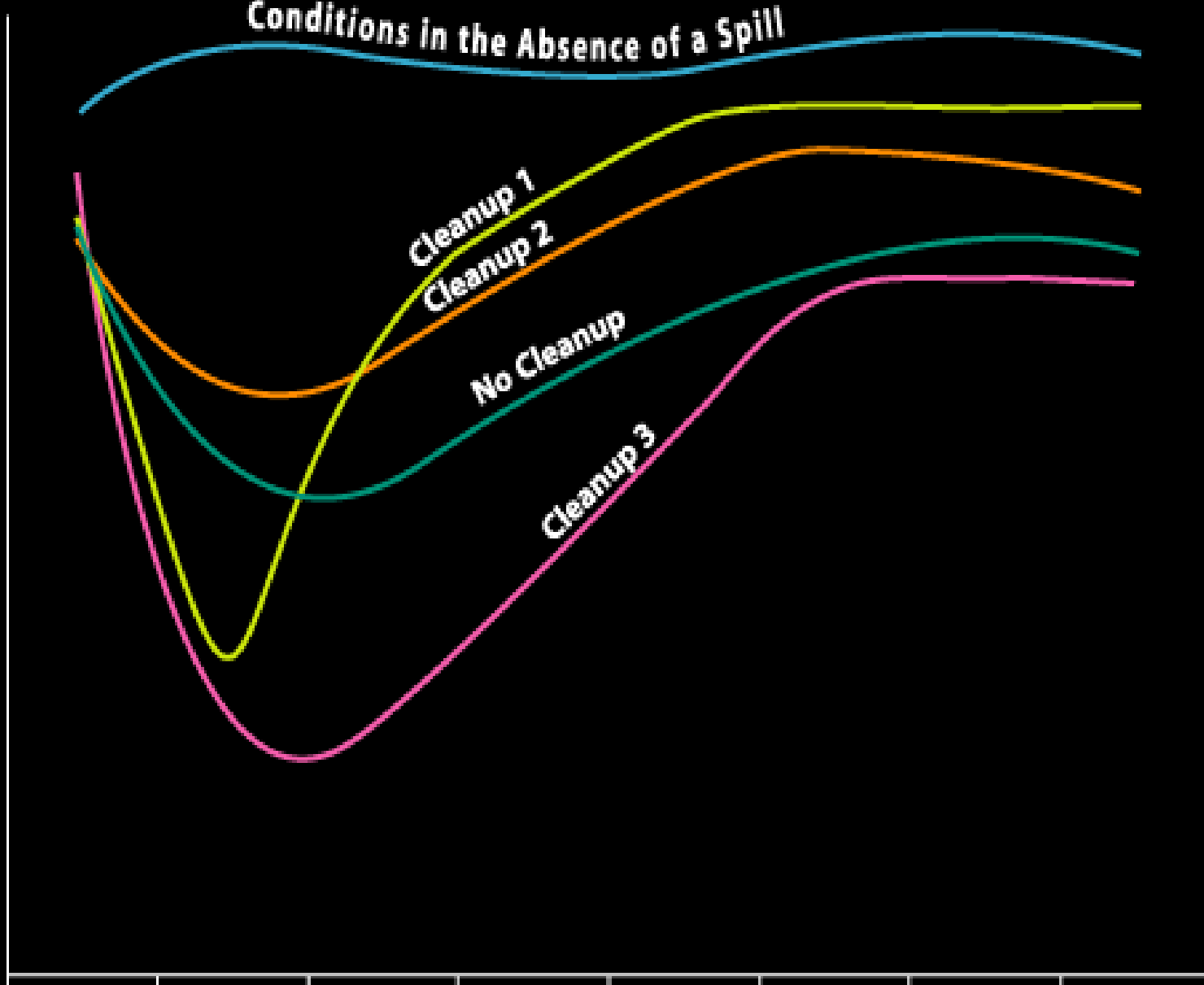
Cleanup 1

Cleanup 2

No Cleanup

Cleanup 3

Time





Always Involves Tradeoffs...

- No one resource takes precedent
- Imperfect knowledge of what will really happen



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How Clean is Clean?



- It depends...
 - Intended use, regional preferences,
 - existing background, and
 - ability to process oil naturally all play a part



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A Hierarchy of Cleanup Endpoints

- No visible oil
- No more than background
- No longer releases sheens that will affect sensitive areas, wildlife, or human health
- No longer rubs off on contact
- Oil removal to allow recovery without causing more harm than natural removal

**SAM -
Table 2, pg. 28**



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What Do Clean-up Endpoints Look Like?

- Clear, concise, & measureable
- Provides systematic way to evaluate progress
- Should be done early in the response & modify as necessary
- Should include monitoring



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No Visible Oil

Visual inspections preferred over chemical analyses:

- Sampling is difficult
- High variability
- Turnaround time for results
- Costs
- No guidelines on what levels are safe



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No More than Background

Have to determine “Background”

- Survey similar but unoiled areas
- Local, knowledgeable staff participate in surveys to determine when background has been reached
- Repeat surveys using visual or chemical differences



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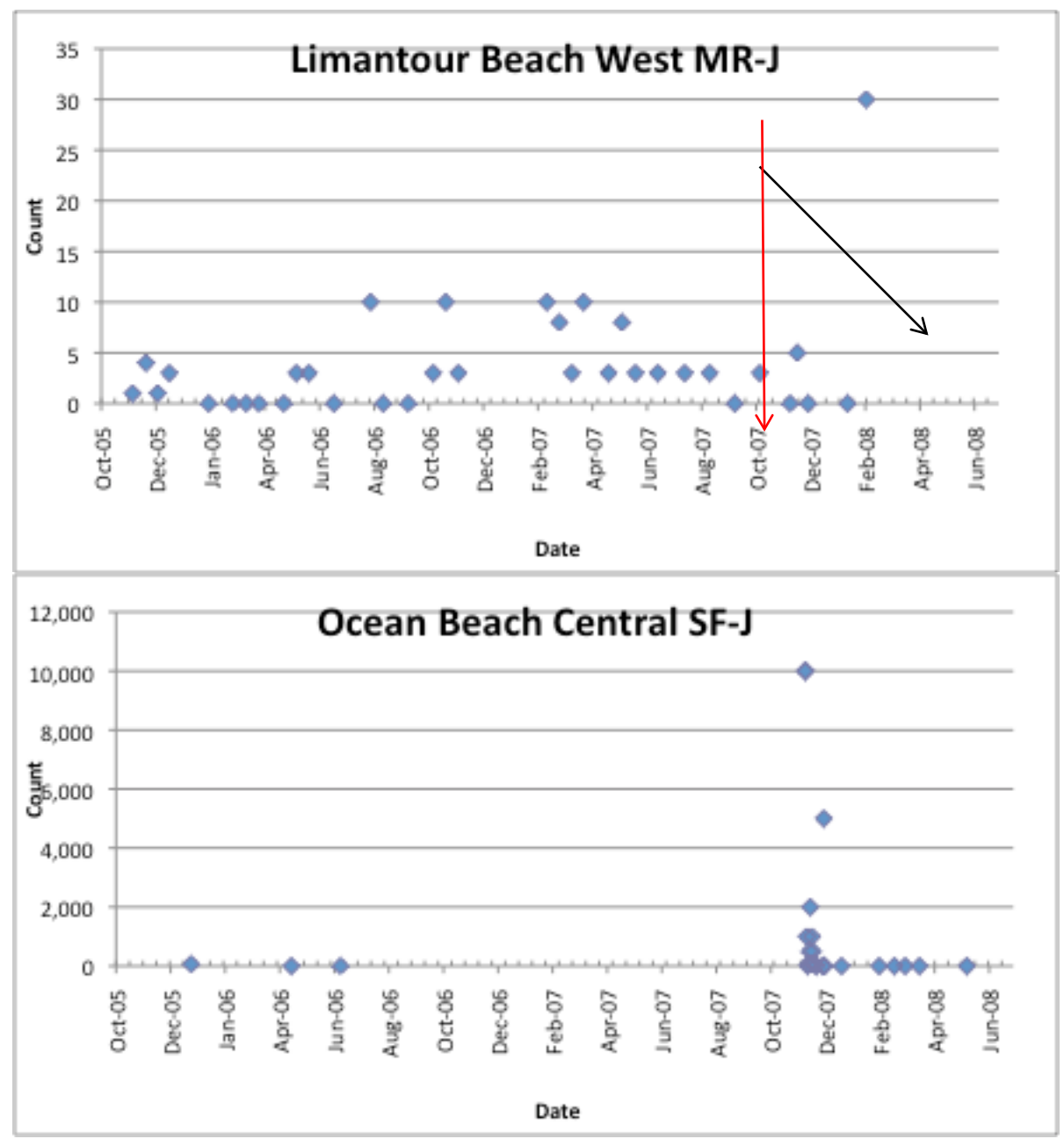


Cosco Busan San
Francisco Bay
Nov 2007

“Beach Watch”
tarball counts

Limantour with a
high background

Ocean Beach with
a low background





No Longer Releases Sheens that Affect Sensitive Resources

Consider:

- 1) Amount and duration of sheening, distance to resource
- 2) Degree of exposure: High energy breaks up sheens; Low energy, sheens more persistent; episodic
- 3) Timing of resource presence or use



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Sheens...

- Represent a very small amount of oil
- They are very difficult to pick up
- **Key Issue:** potential for sheens to affect sensitive areas



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No Longer Rubs off on Contact

- Oil removal to a stain or coat, or weathering so it is no longer sticky
- Hard substrates and vegetation
- Prevent oiling during contact with oiled surfaces
- Consider the degree and timing of use



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Removal to where Recovery can Occur without Causing More Harm than Leaving the Oil in Place

- Most difficult to explicitly define
- Often used for more sensitive shorelines, remote areas
- Passive oil recovery required to minimize off-site impacts
- Monitor to verify assumptions on natural removal and recovery



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The Goal of Shoreline Cleanup is...

"to take actions that will reduce to minimum the time needed for an impacted segment to recover"

otherwise natural recovery is generally preferred



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Cleanup Endpoints for Sand Beaches

Trade-off Issues

- High public use = quick cleanup and high degree of cleanliness
- Sand beach cycle is short, so rapid natural removal
- Wave action can be final “polishing” process
- Surface oil on sand beaches is easy to clean
- Buried oil = high sediment removal
- Sand can be re-nourished



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Cleanup Endpoints for Sand Beaches

- Class discussion on appropriate endpoints for sand beaches
- Refer to pages 33-34 in the SAM
- Discuss differences for amenity vs non-amenity beaches



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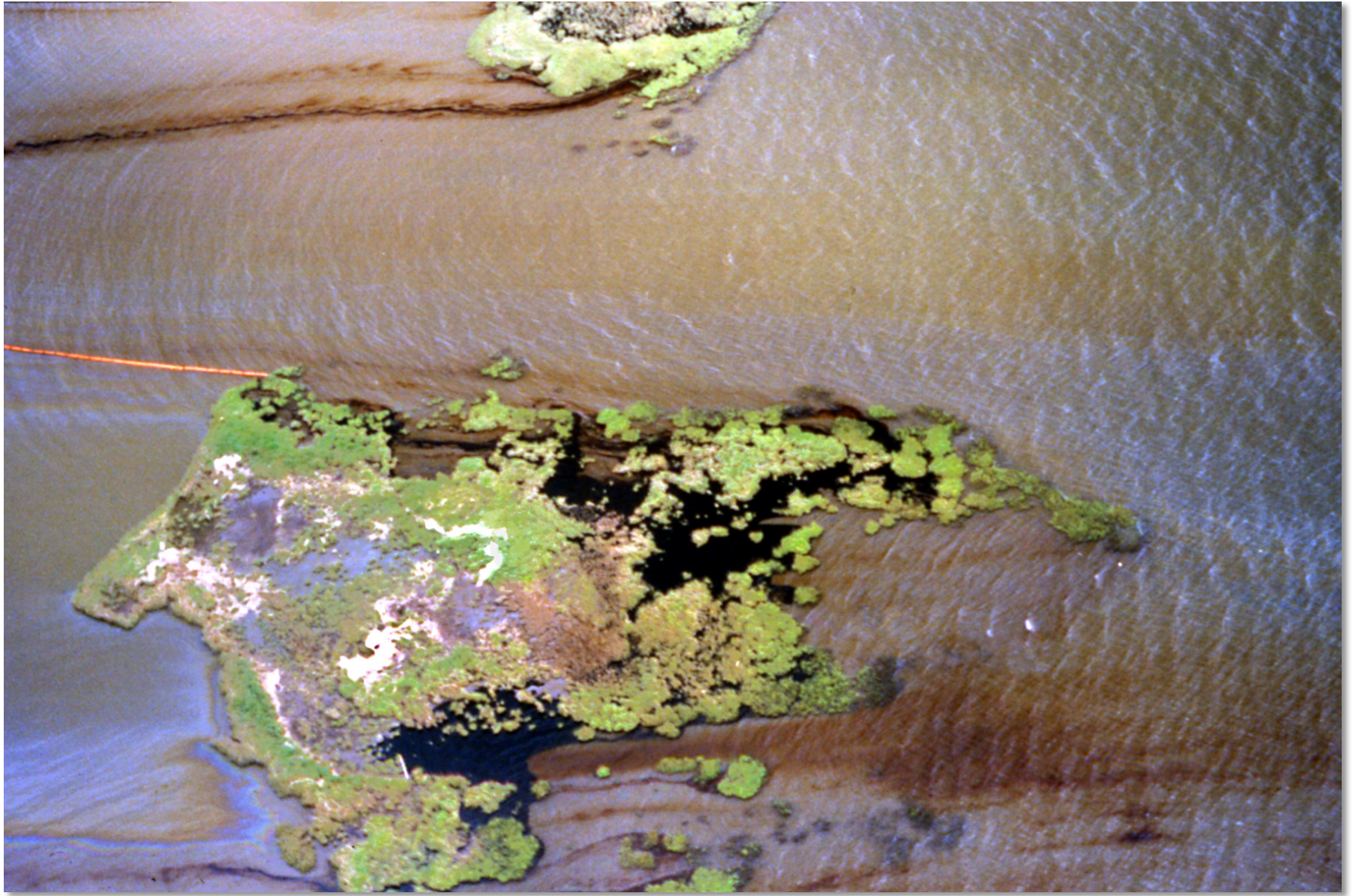
Cleanup Endpoints for Marshes/Mangroves

Trade-off Issues

- Natural removal rates are slow/seasonal
- Recover free oil trapped in the marsh
- Deploy sorbents to pick up sheens
- Active cleanup can slow recovery
- Oil on vegetation weathers to a dry coat within weeks



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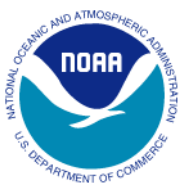






Cleanup Endpoints for Marshes

- Class discussion on appropriate endpoints for marshes
- Refer to page 35 in the SAM



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Selecting Cleanup Endpoints

- 1) Formulate them early in the process
- 2) Realize they should and will be modified
- 3) Proceed with cleanup as long as it speeds recovery
- 4) Stop when it becomes:
 - ineffective
 - offers no value to natural recovery
 - slows the recovery process



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In Summary...

- Many different perspectives
- No one resource takes precedent
- Always uncertainty in the rate of:
 - natural removal
 - duration and amount of sheening
 - oil weathering
 - risks to animals who use oiled habitats



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