

# Developing Cleanup Endpoints for Inland Oil Spills

*Thinking about net environmental benefit-  
“How clean is clean?”*

# Objectives

- Understand key drivers for setting cleanup endpoints
- Understand the common cleanup endpoints and how they may be applied
- Understand the role SCAT Team Members are likely to play in endpoint development.

# General Cleanup Priorities

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





# New Orleans Riverwalk



# SCAT Team Actions

1. **SCAT conducts field assessment, makes initial treatment AND ENDPOINT recommendations. These could be **GENERIC** or **UNIQUE Treatment Methods**.**
2. Submit forms. Information reviewed and provided to Ops.
3. Monitor effectiveness of treatment methods. Work with Ops/EUL to modify methods or endpoints as needed.
4. Conduct final inspection. Has endpoint been reached?
5. If no, recommend additional cleanup.

# Basis for Treatment: Inland Spills

- Protection of public health and safety
- Protection of sensitive resources and habitats
- Removing aesthetic impacts in high-use areas
- Removing contact hazard (humans/wildlife)
- Meeting environmental standards (WQ, etc.)

# 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

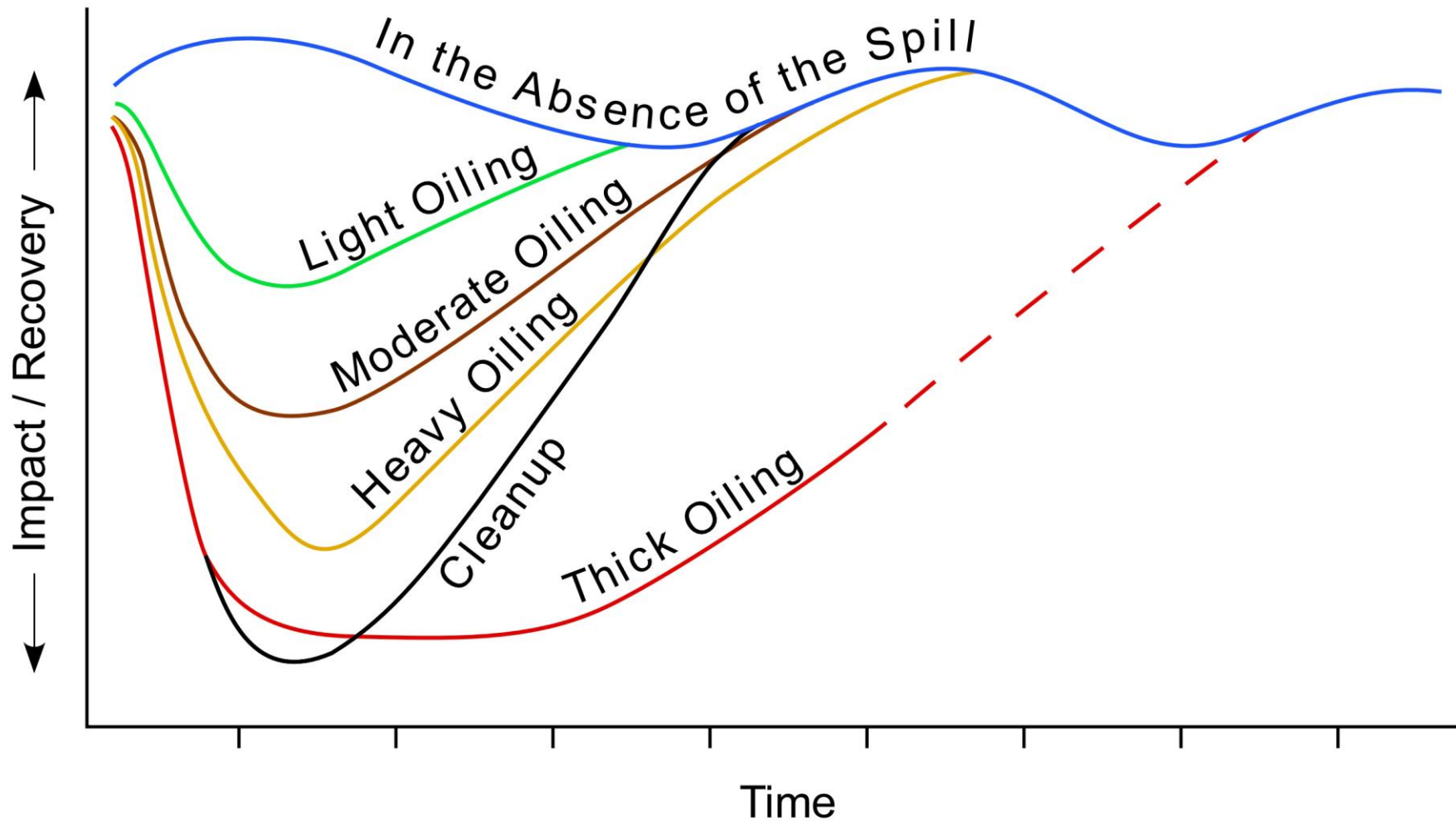


# Key Drivers for Inland Response Endpoints- Human Concerns

- Water is a precious resource-emotional connection
- Proximity to human habitation or high use area
  - Safety
  - Aesthetics-recreation, economy
- Public concern and unfamiliarity with oil
- Regulatory WQ or sediment quality minimums

# Key Drivers for Inland Response Endpoints – Operational/Environmental

- Persistence and toxicity of product
- Increased sensitivity of isolated habitats to cleanup methods
- Logistical challenges for Operations in gaining access
- Water level variability
- Presence or use by T&E species and important plant habitats
- Others?



# Always Involves Tradeoffs...

- Many “sensitive” resources with competing priorities (drinking water, ESA-listed species, commercial waterways)
- Imperfect knowledge of what will really happen

# 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



# No Visible Oil

Visual inspections (qualitative) preferred vs. chemical analyses (quantitative):

- Sampling is difficult (and expensive!)
  - High variability
  - Turnaround time for results
  - No guidelines on what oil levels are safe
- But...may be State water/sediment quality standards- would Idaho?

# No More than Background

## Have to determine “Background”

- Almost never any historical data
- Inland areas have lots of legacy contaminants
- Chemical fingerprinting will often be required

# No Longer Releases Sheens that Affect Sensitive Resources

## Consider:

1. Amount and duration of sheening, distance to resources of concern
2. Degree of exposure: High energy breaks up sheens; Low energy, sheens more persistent; episodic
3. Timing of fish/wildlife presence use of area

# Sheens in the Kalamazoo River on 23 October 2012



# 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





Often Applied to Oiled Vegetation:  
Yellowstone River Spill –  
Oiled vegetation was surgically cut





# Use of Fixatives to Meet Endpoints





# Use of a Surface Washing Agent in Public Areas



# 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-still mobile!
- Monitor to verify assumptions on natural removal and recovery

# Actionable Cleanup Endpoints

- Qualitative Endpoint
  - Define endstate based on location and thickness of acceptable oiling. ie: no remaining black oil along shoreline that releases a rainbow sheen.
- Operational Endpoint
  - Define endstate based on field test Ops can do. ie: flush until no black or brown oil is released.

No Observed **Oil character** (at/on) **Location** with >

*Step 1*

*Step 2*

**Thickness** (and/or) **Distribution** (and/or) **Size**

*Step 3*

*Step 4*

*Step 5*



You're the Ops Chief:

What do you want to see in an endpoint?

(what makes an “actionable” endpoint?)

# Example (Kalamazoo River)

Operational Endpoint for Immediate Shorelines (Phase 1, removing mobile oil):

- All oiled debris removed.
- No pooled black oil along shoreline.
- All rock and gravel banks have been flushed.
- All manmade structures have been pressure washed.
- Some banks have oil saturated soil and are generating a persistent sheen.

---How would you improve this endpoint?---

# Shoreline Assessment Process, Cont.

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# In Summary (obstacles)...

- Many different perspectives and interests
- Some resource(s) may take precedent
- Always uncertainty in the rate of:
  - natural removal
  - duration and amount of sheening
  - oil weathering to non-sticky
  - risks to wildlife who use oiled habitats

# SCAT Team Member Role

- Guidance on endpoints worked by EUL or SCAT Coordinator in Command Post, agreed to by UC.
- Initial SCAT Team on small spill may recommend initial endpoints.
- Ongoing SCAT Teams may recommend modifying endpoints.