

# **Swanson Creek Marsh Oil Spill**

## **“How Clean is Clean”**

**Debbie Lindsey**  
**US EPA Region 3**  
**Federal On-Scene Coordinator**

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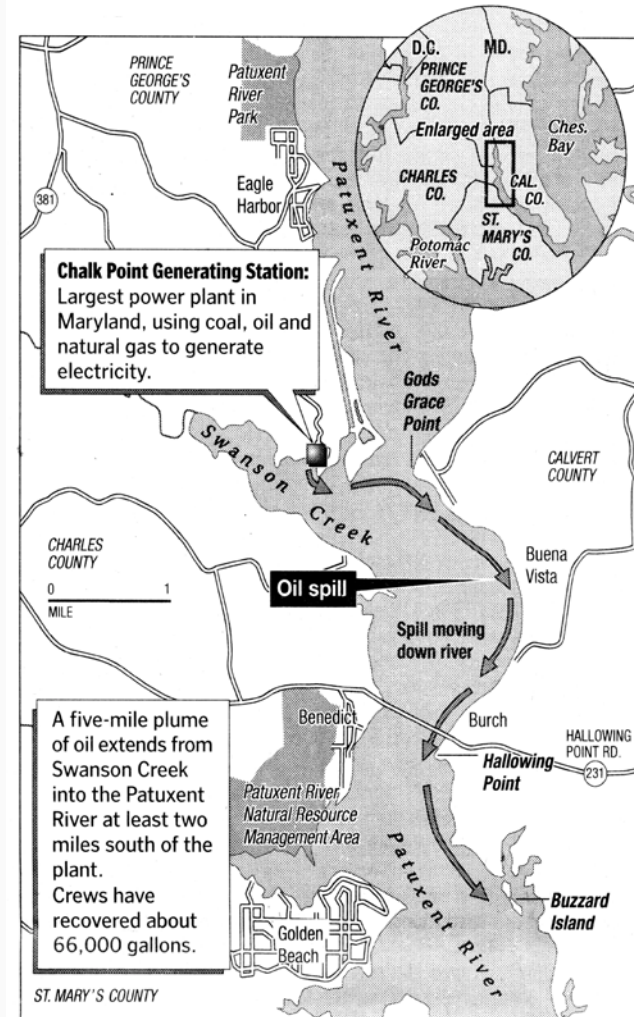


## Swanson Creek Marsh Oil Spill “How Clean Is Clean”

- April 7, 2000 – release of 129,000 gallons of fuel oil into a subsurface tidal marsh
- Spill occurred at the PEPCO Chalk Point Power Plant in Aquasco, Maryland – impacting the Patuxent River
- Release occurred when a 12-inch pipeline which typically carried No. 6 oil was being flushed with a No. 2 oil

## Swanson Creek Marsh Oil Spill “How Clean Is Clean”

- Response efforts were hampered when a 50-year storm impacted the area within the first 24-hours of the response
- 17 miles of river impacted
- 44 linear miles of shoreline impacted





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## Swanson Creek Marsh Oil Spill “How Clean Is Clean”

- Cleanup and recovery efforts implemented
- Divided impacted areas into 53 zones
- SCAT Teams assessed the zones to identify degree of oiling

- Defined 2 Phases of Response Activities

Phase I – Emergency Response Phase

Phase II – Longterm Cleanup





Figure 1. Spill location, work zones and highest degree of oiling assessed from 14-24 April 2000. (No SCAT oiling level surveys after 24 April.)



# Swanson Creek Marsh Oil Spill “How Clean Is Clean”

Phase I Emergency Response Guidelines:

1. Removal of free-floating oil from the Patuxent River Channel
2. Containment and removal of sufficient oil in environmentally sensitive and heavily affected shorelines to prevent recontamination



# Phase I Guidelines

|   |  |
|---|--|
| Sandy Beaches                             | <ul style="list-style-type: none"><li>• Free of substantial mobile, liquid or black oil, pavement, “cow pies” or tar patties</li><li>• Oil stains may still be present but using the best professional judgement, further treatment or cleanup at this stage may be detrimental to the environment</li><li>• Oil stains may produce rainbow sheen when mixed by wave action but should not produce unacceptable brown oil or brown sheen</li></ul> |
| Man-Made Structures                       | <ul style="list-style-type: none"><li>• Oiled riprap, pilings, docks, and sea walls should be free of bulk oil and no produced unacceptable brown sheen</li><li>• Oil stains that cannot be scratched off with a fingernail may be allowed to weather and degrade naturally</li></ul>  |
| Vegetated Sandy or Hard-Bottom Shorelines | <ul style="list-style-type: none"><li>• Area should be free of pooled and potentially mobile oil</li><li>• Oil that, in using best professional judgement, is not likely to directly affect wildlife may be allowed to weather and degrade naturally until the Phase II evaluation</li><li>• No action should be taken which could accelerate further damage</li></ul>   |
| Wetlands (Marshes)                        | <ul style="list-style-type: none"><li>• Area should be free of pooled and potentially mobile oil</li><li>• Oil that, in using best professional judgement, is not likely to directly affect wildlife may be allowed to weather and degrade naturally until the Phase II evaluation</li><li>• No action should be taken which could accelerate further damage</li></ul>   |



## Swanson Creek Marsh Oil Spill “How Clean Is Clean”

### Phase I Sign-Off Process

- SCAT Team made recommendation to the Zone Manager that a zone met the Phase I guidelines
- Phase I Sign-Off Team conducts inspection and makes recommendation for approval – if passes the criteria  
(Phase I Sign-Off Team made up of representatives from Federal and State Stakeholders participating in the response)
- Unified Command provided final approval to sign-off of the zone

**All Zones received Phase I Sign-Off by May 11, 2000**



# Phase II Cleanup Guidelines

|                      |   |
|----------------------|---|
| Beaches              | <ul style="list-style-type: none"><li>• Areas will be clear of recoverable, potentially mobile and black oil such that a sorbent pad placed on the area does not become stained (e.g. no tar balls present)</li><li>• Minimal oil staining</li><li>• No rainbow sheen</li><li>• No silver sheen present except as when noted and agreed to by the Stakeholders that no further operational activities are feasible for elimination of the sheen</li></ul> |
| Man-Made Structures  | <ul style="list-style-type: none"><li>• Areas will be clear of recoverable, potentially mobile and black oil</li><li>• Minimal oil staining present so that a sorbent pad pressed against the area is not stained</li><li>• No rainbow sheen</li><li>• Oil that produces a silver sheen may be present and will be allowed to degrade naturally</li></ul>   |
| Marshes and Wetlands | <ul style="list-style-type: none"><li>• Areas will be clear of recoverable, potentially mobile and black oil</li><li>• Minimal oil staining</li><li>• No rainbow sheen on the sediment, soil or water</li><li>• Oil that produces a silver sheen may be present and will be allowed to degrade naturally</li></ul>  |



## Swanson Creek Marsh Oil Spill “How Clean Is Clean”

- Phase II Cleanup Guidelines negotiated between:
  - EPA
  - Responsible Party
  - MDE
  - MDNR
  - NOAA
  - USFW



## Swanson Creek Marsh Oil Spill “How Clean Is Clean”

- Phase II Cleanup Sign-off process was similar to the Phase I process
- Phase II Cleanup Sign-off taking a lot longer to meet
  - Active Operations from May 2000 – December 2002
  - 40 of the 53 zones passed Phase II Cleanup Criteria
  - Majority of the remaining 13 zones met Phase II Criteria
  - Specific locations in the remaining 13 zones that continue to not pass
  - Sensitive areas – natural attenuation



## Swanson Creek Marsh Oil Spill “How Clean Is Clean”

### Phase II Provisional Approval

- Areas that have received Provisional Approval allow closeout of shoreline areas within zones that do meet the Phase II criteria and a mechanism to place the remaining areas into a long-term monitoring program
- **101 monitoring locations within the 13 Provisional Approval Zones**
- Establishment of a Long-Term Monitoring Program





# Swanson Creek Marsh Oil Spill “How Clean Is Clean”

## Long-Term Monitoring Program

To periodically assess designated areas for the presence of residual oil from the April 2000 oil spill which included:

- assessment of residual oil in the intertidal and subtidal sediments in the Patuxent River and its tributaries,
- assessment of bivalves in Swanson Creek to measure long-term water quality,
- to visually monitor oiled intertidal zones along the Patuxent River and tributaries that have received Provisional Phase II Approval and continue to evaluate these areas against the Phase II criteria.



## Swanson Creek Marsh Oil Spill “How Clean Is Clean”

### Long-Term Monitoring Program

- Qualitative Monitoring Program
  - ✓ Annual inspection of 101 Monitoring Stations to evaluate against the Phase II Cleanup Criteria
  - ✓ As of 2016 – closed out 93 monitoring locations and 9 zones
  - ✓ Success ?



## Monitoring Location Conditions -2016





# Swanson Creek Marsh Oil Spill “How Clean Is Clean”

## Long-Term Monitoring Program

- Quantitative Monitoring Program

| Program Element              | # of Stations     | Analyses  | Endpoint                   |
|------------------------------|-------------------|---|----------------------------|
| Intertidal/Subtidal Sediment | 6 + 1 background  | TPH, TOC, TPAH                                    | TU < 0.9                   |
| Marsh Cores                  | 10 + 1 background | TPH, TOC, selective TPAH                          | TU < 0.9<br>(0-6 in. deep) |
| Marsh Surface Sediment       | 8                 | TPH, TOC, TPAH                                    | TU < 0.9                   |
| Vegetation Monitoring        | 10 + 1 background | stem height/ density, condition & aerial coverage | 85% coverage               |
| Bivalve Tissue               | 2                 | TPAH  | reference data             |

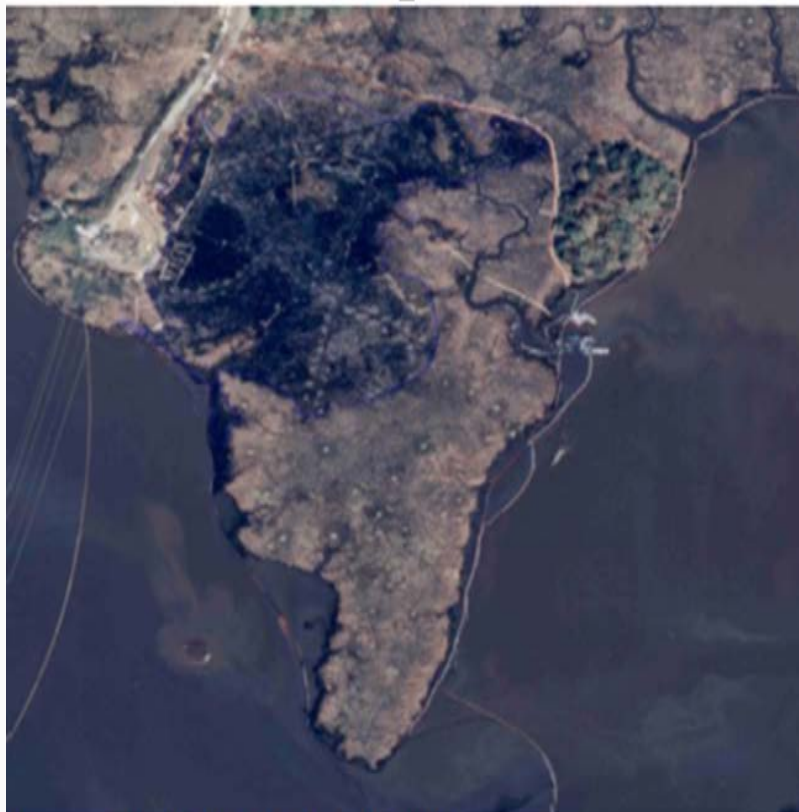


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## Long-Term Monitoring Program

- Quantitative Monitoring Program Results

|                              |                         |
|------------------------------|-------------------------|
| Intertidal/Subtidal Sediment | Completed (2004)        |
| Marsh Cores                  | 2 of 10 stations remain |
| Marsh Surface Sediment       | Completed               |
| Vegetation Monitoring        | 1 of 10 stations remain |
| Bivalve Tissue               | Completed (2005)        |



Swanson Creek Marsh - May 1, 2000



Swanson Creek Marsh - September 4, 2001