Responding to Natural Resource Damage Associated with the Enbridge Line 6b Oil Spill

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Responding to Natural Resource Damage Associated with the Enbridge Line 6b Oil Spill

- Incident
- DNR Response
- Incident Command
- Wildlife Recovery and Rehab
- NRDA Process
- NRDA Activities
Incident

July 26, 2010
Incident

- 30” Pipeline Ruptured
- Over 1 million gallons of tar sands crude oil released
DNR Early Response

• Wildlife Recovery
DNR Early Response

• Wildlife Recovery and Rehabilitation
• USFWS (lead), USDA, MDA, MDNR, Binder Park Zoo, Volunteers, and Enbridge Contractors.
Wildlife Recovery and Rehabilitation Center
Wildlife Recovery and Rehabilitation Center
DNR Early Response

- Safety Training
- HazMat Training
DNR Early Response
DNR Early Response

- Equipment Decontamination
Incident Command

- Enbridge Marshall Office
- Calhoun County Emergency Command
- Marshall High School
- Warehouse in Marshall
Incident Command

- ICS-204
- Standard Operating Procedures
- Safety and Deployment Meetings
Incident Command

- Excellent Communications
Wildlife Rehab
## Wildlife Rehab

<table>
<thead>
<tr>
<th></th>
<th># Rehabilitated</th>
<th>% Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds</td>
<td>170</td>
<td>84</td>
</tr>
<tr>
<td>Turtles</td>
<td>3,000</td>
<td>97</td>
</tr>
<tr>
<td>Mammals</td>
<td>38</td>
<td>68</td>
</tr>
</tbody>
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NRDA Process

• Natural Resource Damage Assessment and Restoration

• A structured process defined in regulations:
  – Determine injury through time to natural resources due to a release of oil
  – Assess damages for injuries to recover and restore trust resources and their services
  – Recover damages as money or restoration projects via a negotiated settlement or litigation
  – Implement and evaluate restoration
  – Government agencies (Trustees) act on behalf of the public
  – Compensatory, polluter pays
NRDA Statutory Authority

- National Contingency Plan (NCP)
- Oil Pollution Act (OPA)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Clean Water Act (CWA)
- State laws (NREPA)
NRDA”R” GOAL

• Restore injured natural resources and the services they provide

• For NRDAR, “restore” means:
  – restore, rehabilitate, replace, or acquire the equivalent of injured natural resources and services

• Make the environment and public whole for injuries to natural resources and services resulting from an incident involving a discharge or substantial threat of a discharge of oil (OPA)
NRDA Process

• Trustees seek to determine:
  – What natural resources are/have been injured?
  – What was the extent of the injury?
  – Spatial extent
  – Duration
  – Severity
  – How long will the injury take to recover?
  – How much restoration is needed to compensate for the injuries over time?
NRDA - Trustees

- Trustees act on behalf of the public
Assessing Damage
Trustee Approach to Assessment

• Identify probable injuries
• What data are response agencies collecting that can be used for injury characterization?
  – Coordinate with response agencies to share the data
  – Identify data gaps, develop sampling plans
• What baseline data are available and how informative are they?
  – Is it possible to conduct similar surveys post-spill?
Overview of NRDA Data Collected

- Wildlife oiling, recovery, and release
- Water and sediment chemistry
- Extent of oiling in floodplain habitats
- Fish
- Aquatic macroinvertebrates
- Mussels
- Floodplain vegetation
- Impacts resulting from response actions
Floodplain Oiling Survey

• Objectives
  – Identify and characterize extent and degree of oiling in the floodplains
  – Characterize the general floodplain habitat types in the areas of the spilled oil

• Methods and Results
  – Transects at 50m intervals
  – 744 transects surveyed representing 23 river miles and associated floodplains
  – 66% of transects were oiled to some extent

• Field observations provided to Response and data later used by Response
Fish Kill Surveys

• Conducted by state fishery biologists
• Followed previously published standard protocols
• No fish kills in impacted area

Fish Status And Trends

• Conducted by state fishery biologists
• Followed standard protocols
  - 6 locations (2 upstream reference sites)
  - Baseline data at two sites - including a long-term monitoring site
Fish Status and Trends

• Fish data included:
  – Catch per effort and length of all species
  – Age and growth of smallmouth bass.

• Habitat data included:
  – Conductivity, temperature, substrate, channel width and depth, velocity, bank and riparian condition, and large woody debris density

• Results
  – Talmadge Creek fish community was reduced and habitat greatly diminished in 2010. Some recovery in 2011; further cleanup activities necessitate continued monitoring.
  – Some declines in fish community diversity and abundance at some of the sites on the Kalamazoo River.
PAH Analysis

• Water column
  – 8 locations
  – 3 sampling events (July – August 2010)

• Mussel tissue and co-located sediment
  – 12 composite samples at 4 locations

• Field filtered water samples
  – 8 locations, probable fish spawning habitats
  – 6 sampling events (April – July 2011)
Fish Exposure and Health

• Data collected in cooperation with USGS
  – 110 fish from 4 sampling locations
    (includes 1 upstream reference)

• Analyses include:
  – Histopathology of gill, spleen, head kidney tissues
  – Differential analysis of blood smears
  – Health assessment index
  – Collected and archived bile samples for possible future analysis
Aquatic Macroinvertebrate Survey

- State biologists followed preexisting protocols
  - 7 locations
  - Including locations with historical reference data
- Results
  - Spill response activities removed some vegetation, exposing more of the stream channel to sunlight, thus there were changes in diversity and abundance.
  - In 2011, scores improved at most impacted sites but abundance was still impacted compared to upstream reference sites and pre-spill baseline data.
  - Ongoing cleanup work requires further monitoring.
Response Actions

• 2,500 workers on site
Response Activities
Response Activities
Mussel Shell Survey

- Assessed physical condition of post-mortem mussel shells:
  - Broken vs. crushed
  - Degree of weathering, ranging from “fresh dead” to “heavily worn”

- 18 species were documented
- Crushed and freshly dead shells found within the spill area but not in reference area
**Rapid Vegetation Survey**

- Identify types of vegetation present
- Identify rates of invasive plant species in order to compare over time

**Erosion**

- Proactively raised concerns to Response based on field observations
- Reviewing response plans and monitoring results
Recreational Use

• Lost use
  – Kayaking
  – Canoeing
  – Boating
  – Park use
  – Fishing
  – Hunting
NRDA Data Collection Summary

• Standard state-wide monitoring programs provided baseline data for comparison with post-incident data
  – Standard protocols for monitoring programs facilitate collection of comparable post-incident data at additional sites

• Trustees worked with Response agencies to communicate field conditions and minimize duplicative sampling efforts

• Trustees implemented studies that addressed data gaps specific to the incident and site characteristics
Thank You