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

Jay K. Wesley
Southern Lake Michigan Unit Manager
Fisheries Division
Michigan Department of Natural Resources

Stephanie Millsap, Ph.D.
Contaminants Specialist
U.S. Fish and Wildlife Service

Michigan Chapter
Soil & Water Conservation Society
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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

Incident

Ceresco Dam

Morrow Dam

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


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ECO OPTIONS

DNR Early Response

- Safety Training
- HazMat Training

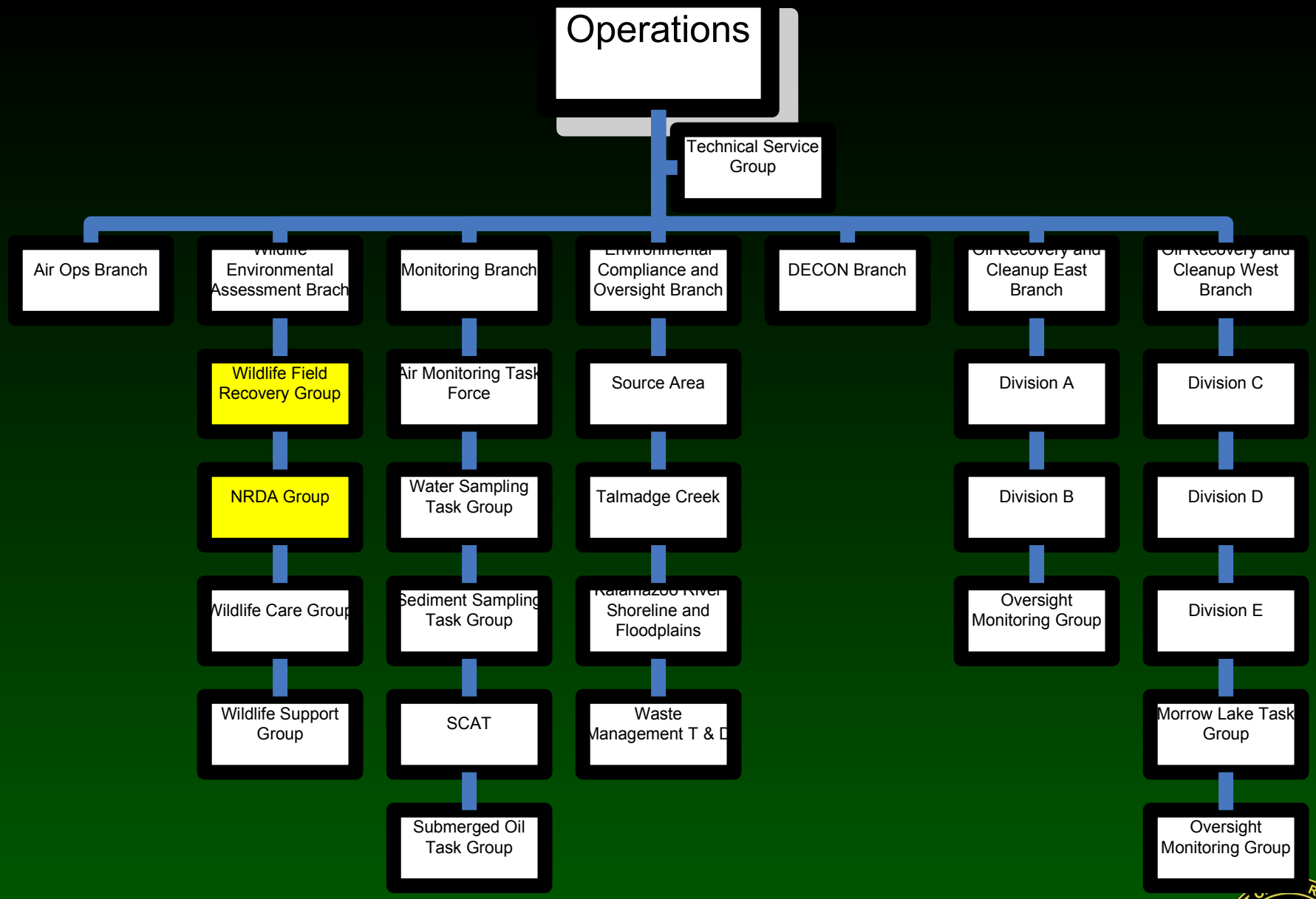
DNR Early Response

DNR Early Response

- Equipment Decontamination

Incident Command

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


Operations
Technical Service Group
Air Ops Branch
Wildlife Environmental Assessment Brach
Wildlife Field Recovery Group
NRDA Group
Wildlife Care Group
Wildlife Support Group
Monitoring Branch
Air Monitoring Task Force
Water Sampling Task Group
Sediment Sampling Task Group
SCAT
Submerged Oil Task Group
Environmental Compliance and Oversight Branch
Source Area
Talmadge Creek
Kalamazoo River Shoreline and Floodplains
Waste Management T & D
DECON Branch
Oil Recovery and Cleanup East Branch
Division A
Division B
Oversight Monitoring Group
Oil Recovery and Cleanup West Branch
Division C
Division D
Division E
Morrow Lake Task Group
Oversight Monitoring Group

Incident Command

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

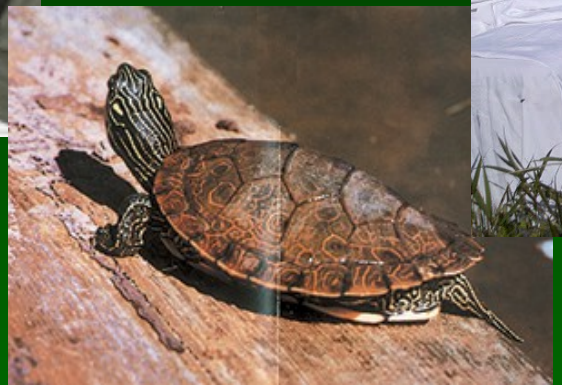
Incident Command

- Excellent Communications

Wildlife Rehab

Wildlife Rehab

	# Rehabilitated	% Recovery
Birds	170	84
Turtles	3,000	97
Mammals	38	68



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 Activites

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

Part of Liquids Pipelines business segment

- Enbridge Pipelines Inc.
- Enbridge Pipelines (NW) Inc.
- Enbridge Pipelines (Athabasca) Inc.
- Enbridge Pipelines (Toledo) Inc.
- Mustang Pipe Line Partners
- Chicap Pipe Line Company
- Frontier Pipeline Company
- Spearhead Pipeline
- Olympic Pipe Line Company
- Waupisoo Pipeline

Part of Sponsored Investments business segment

- Lakehead System
- North Dakota System
- Enbridge Pipelines (Saskatchewan) Inc.
- Ozark Pipeline
- West Tulsa

Thank You