

Appendix C: Wildlife Response Report



**Wildlife Response Activities for
the July 25-26, 2010**

**Enbridge Line 6B Oil Discharges near
Marshall, MI**

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Table of Contents

Introduction and Overview	3
Definitions	3
Incident Command System: Structure and Functions	5
Wildlife Response Activities	12
Wildlife Deterrence	13
Oiled Wildlife Hotline	14
Wildlife Response Center Development.....	16
Field Teams and Tactics	18
Use of Decoys/Bait at Cannon Net Stations (Waterfowl)	20
Use of Hand-Held Net Deployment Devices (Super Talon).....	21
Use of Walk-in Traps (Waterfowl)	22
Use of Alpha-Chloralose on Flighted Geese.....	22
Hand-feeding Park Geese and Ducks/Hand-capture	23
Use of Leghold Traps (Great Blue Heron and Sandhill Crane)	23
Use of Live Traps (Mammals).....	24
Turtle Trapping Techniques	24
Volunteers and the Public.....	25
Wildlife Rehabilitation.....	26
Wildlife Release	30
Training.....	30
Branch Management.....	31
Wildlife Response Chronology	33

Introduction and Overview

On Monday, July 26, 2010, Enbridge Energy Partners (Enbridge) reported that a 30-inch pipeline had ruptured and discharged an estimated 819,000 gallons of crude oil near Marshall, Michigan. Oil discharged from Enbridge's Lakehead Line 6B on July 25–26, 2010, entered wetlands near the rupture and then flowed through Talmadge Creek to the Kalamazoo River, where it continued to flow downstream for approximately 38 miles. Aquatic and floodplain habitats were oiled as were birds, mammals, turtles and other wildlife.

Michigan Department of Natural Resources and Environment (MDNRE) and United States Fish and Wildlife Service (USFWS) mobilized on-site and received the first reports of oiled wildlife on July 26, 2010. USFWS advised Enbridge to mobilize professional rehabilitators and begin building rehabilitation facilities that evening. A wildlife hotline was established that night so that the public and responders could report sightings of oiled wildlife. Enbridge mobilized their contractor, Focus Wildlife, overnight and they then built a complete rehabilitation facility (Wildlife Response Center or WRC) over the next several days.

The USFWS developed and led the Wildlife and Environmental Assessment Branch within the Operations Section of the Incident Command System (ICS), which was used to manage the overall response to the oil discharges. This Branch provided technical assistance to U.S. Environmental Protection Agency (USEPA) on natural resource issues and field observations; led reconnaissance, capture, rehabilitation, and release of oiled animals; installed deterrence measures to try to minimize wildlife oiling and road fatalities; and provided a link between natural resource damage assessment (NRDA) field activities and the ICS management of the overall response. The USFWS, MDNRE, U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS), and contractors employed by USFWS and Enbridge performed daily reconnaissance for oiled wildlife, responded to hotline calls, and captured oiled wildlife when possible on a daily basis until mid-October of 2010 when responsibility was turned over to Enbridge and their contractors. Enbridge and Focus Wildlife led the rehabilitation functions, with Binder Park Zoo taking a major role in rehabilitation of turtles and other reptiles and amphibians. Personnel from additional zoos and volunteers also assisted in animal care and cleaning oiled wildlife. Releases of rehabilitated animals were coordinated among USFWS, MDNRE, Enbridge, and contractors.

This report describes the operations of the Wildlife and Environmental Assessment Branch from July 26, 2010 through October of 2010.

Definitions

Administration/Finance – a person(s) responsible for day to day financial and administrative operations during the incident.

Branch Director – a position within the Incident Command System that has management responsibility of the entire branch and oversees all aspects of implementation of the incident objectives in the Incident Action Plan that are assigned to the branch. The Branch Director serves

as the main contact with their respective Section Chief (e.g., Operations) and the Incident Commander or Unified Command.

Enbridge – Enbridge Energy, L.P., Enbridge Pipelines (“Lakehead”) L.L.C., Enbridge Energy Partners, L.P., Enbridge Energy Management, L.L.C., Enbridge Energy Company, Inc. , Enbridge Employee Services, Inc., Enbridge Operational Services, Inc., and Enbridge Pipelines Inc.

Entrix – a private contractor hired by Enbridge to provide environmental and NRDA expertise.

Focus Wildlife – a private contractor hired by Enbridge to provide wildlife operations.

GIS Support – a person(s) assigned to provide mapping and geographical spatial data support to field operations and Incident Command.

HRM – Herpetological Resource & Management, a contractor for U.S. Fish and Wildlife Service.

IAP – Incident Action Plan, provides a concise, coherent means of capturing and communicating the overall incident priorities, objectives, and strategies in the contexts of both operational and support activities.

ICP – Incident Command Post, a centralized meeting point for Unified Command during the incident. The ICP housed representatives from each responding agency, consistent with methodology of ICS.

ICS – Incident Command System, a standardized on-scene emergency management construct specifically designed to provide an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents. It is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations.

Logistics – a person(s) designated to ensure materials, services and equipment are provided for response to the incident.

MDNRE – Michigan Department of Natural Resources and Environment.

NRDA – Natural Resource Damage Assessment as described in the National Contingency Plan and either the Comprehensive Environmental Response, Compensation, and Liability Act or the Oil Pollution Act, as applicable. In this incident, NRDA teams assessed damages to natural resources and the service they provide, including collecting ephemeral data in parallel with response activities. NRDA field team conducted surveys of impacts to surface water, sediments, soil, vegetation, benthic invertebrates, fish and wildlife and coordinated these field activities through the Wildlife/Environmental Damage Assessment Branch.

Public Information Officer (PIO) – a position within the Incident Command System that manages and disseminates information related to the incident for incident personnel, the public, and media.

Safety Officer – a position within the Incident Command System, that oversees all aspects of safety and administers corrective measures in the event of a safety breach within the branch.

Stantec – a contractor hired by Enbridge to provide herpetological expertise.

Unified Command – In incidents involving multiple jurisdictions, a single jurisdiction with multi-agency involvement, or multiple jurisdictions with multi-agency involvement, Unified Command allows agencies with different legal, geographic, and functional authorities and responsibilities to work together effectively to make decisions to coordinate the response without affecting individual agency authority, responsibility, or accountability.

USDA-APHIS-WS – United States Department of Agriculture Animal and Plant Health Inspection Service – Wildlife Services

USEPA – United States Environmental Protection Agency.

USFWS – United States Fish and Wildlife Service.

Wildlife Care – specialized teams in the animal husbandry, veterinary care and rehabilitative progress of oiled wildlife. The teams consisted of veterinarians, veterinary assistants, zoologists, rehabilitators and volunteers.

Wildlife Recovery – specialized teams in locating, observing and recovering oiled wildlife for transport to the Wildlife Response Center for rehabilitation. The teams consisted of personnel from USFWS, USDA-APHIS-WS, MDNRE, Focus Wildlife, Entrix, HRM, Stantec and volunteers.

Wildlife Response Center (WRC) – a facility located in Marshall, Michigan that housed the Wildlife/Environmental Damage Assessment Branch. The facility was developed for intake, rehabilitation and conditioning of wildlife. In addition, office space was available for wildlife response agencies. This allowed for effective communications and cooperation amongst all disciplines of the branch.

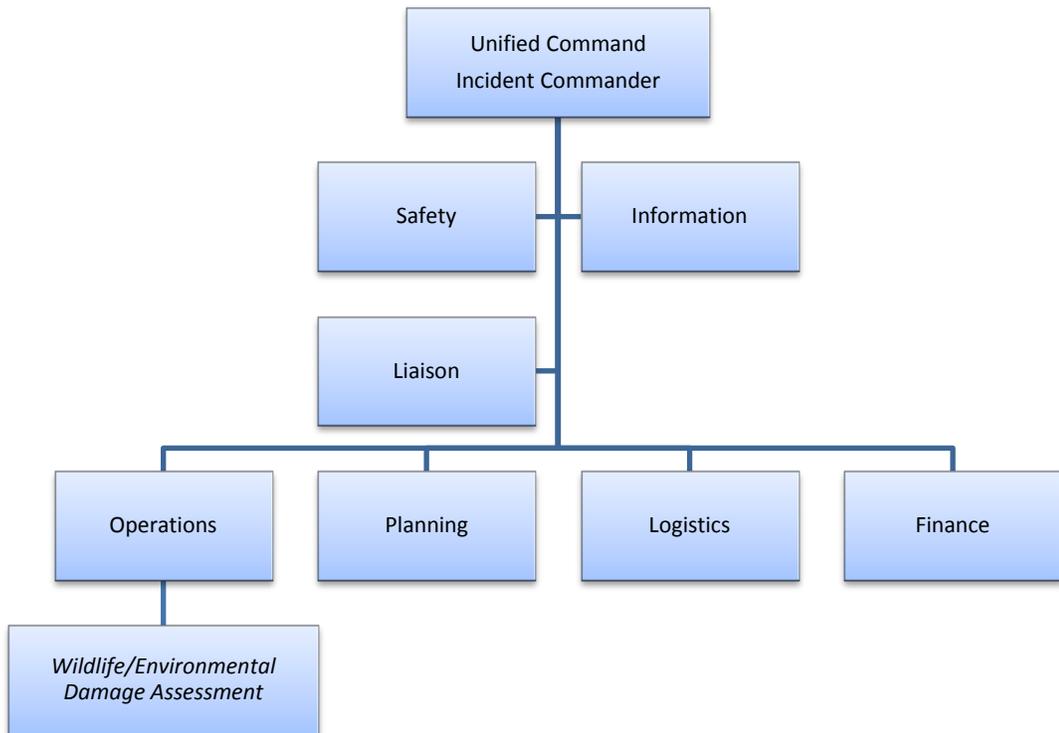
Incident Command System: Structure and Functions

ICS is a pre-determined method of response organization that clearly identifies the responsibilities, lines of communication and strategies used during any incident. ICS is designed to work across political and physical boundaries, allowing for interoperability during any emergency situation, regardless of the size.

ICS was used from the onset of the Line 6B incident, first led by Enbridge and then by a Unified Command with U.S. EPA serving as the Federal On-scene Coordinator and Incident Commander.

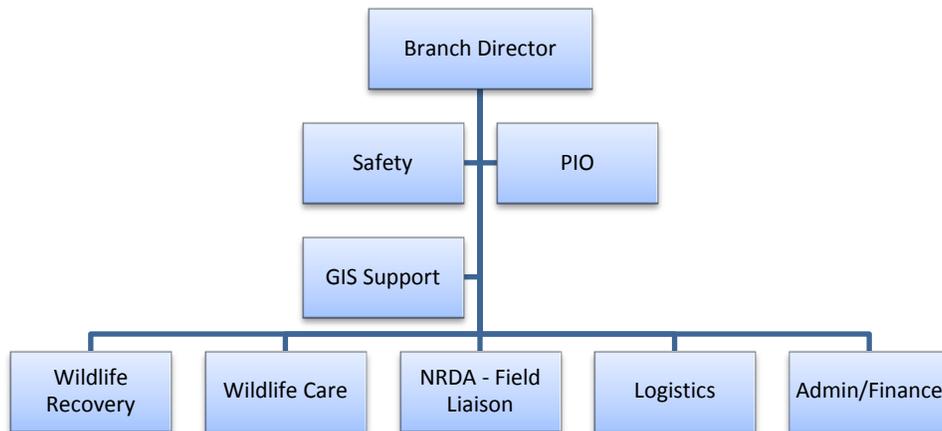
Personnel from the USFWS Fire Program assisted EPA in establishing ICS and improving its overall effectiveness, as well as being part of the leadership team for the Wildlife/Environmental Damage Assessment Branch. Within the ICS organizational structure, the Wildlife/Environmental Damage Assessment Branch was placed as one of the branches in Operations:

Incident Command



During most of the spill response, the Wildlife/Environmental Damage Assessment Branch was organized into groups and teams aligned along the following basic structure:

Wildlife/Environmental Damage Assessment Branch



The Wildlife/Environmental Damage Assessment Branch structure replicates the ICS model and is broken down into specific groups. These groups, with their descriptions, are as follows:

Branch Director

The Branch Director position was filled by USFWS personnel from the beginning of the spill through September 24, 2010, when USFWS turned over the position to Enbridge. Through most of the first three months of the response, the Branch Director was assisted by two Deputy Directors; one from USFWS and one from Enbridge. The Branch Director and Deputies were assigned oversight of all wildlife operations and reported to Unified Command through the Operations Section.

During the height of the response, the Branch Director and Deputies were assisted by Division/Group Supervisors who worked specifically with the various groups within the Branch. Division/Group Supervisors supported the groups and coordinated completion of ICS planning forms each operational period.

Safety

The Branch Safety Officer developed a Health and Safety Plan specifically for the Branch; did daily safety briefings; and, monitored working conditions, use of PPE, and waste handling for the Wildlife Response Center. Important safety concerns were exposure to oil (including volatile components like benzene), the potential for zoonotic diseases, injuries from wildlife, slip/trip/fall hazards, overheating, dehydration, and electrical hazards (especially around water in tanks, conditioning ponds, and washing areas). The Safety Officer for the Branch provided daily Safety Messages in accordance with the IAP. The Branch Safety Officer conducted continuous inspections of the WRC and took immediate corrective measures on any matters involving unsafe conditions. In addition, the Branch Safety Officer maintained a running log for all watercraft activities (float plan) and Safe Work Permits (documentation required by Enbridge). The Branch Safety Officer also helped develop and provide site-specific Hazardous Waste Operations and Emergency Response (HAZWOPER) training as needed for personnel. As the response continued, the Branch Safety Officer also wrote a Fatigue Management Plan for the Branch. No serious incidents were recorded for the Wildlife Branch.

PIO

The USFWS provided a Public Information Officer (PIO) to the Branch to address press releases and other media issues. The PIO was on-site for the first few weeks of the incident and then was located off-site for the remainder of the initial response period. The PIO also assisted with coordinating public meetings and press conferences. Originally press conferences were held daily, but then were held weekly or less often as the incident progressed.

GIS Support

MDNRE provided on-site GIS support with specialists and equipment. Mapping needs and other GIS information were channeled through this position, allowing for fast document turnaround time. GIS specialists in the WRC created maps specific to wildlife operations and managed general site maps obtained through Unified Command. GIS specialists within the branch supplied information to Unified Command on both the ongoing wildlife response and sensitive environmental areas.

Wildlife Recovery Group

Initial field teams and assignments consisted of the following teams and assignments:

- Terrestrial Teams
 - Capture/transport/survey of oiled wildlife
 - Develop alternate strategies and tactics for wildlife capture
 - Monitor/document locations/conditions where oiled birds (that could fly long distances) landed
 - Respond to Oiled Wildlife Hotline calls as needed
- Herp Teams
 - Concentrate on turtle recovery efforts
 - Coordinate with other branch/division/group operational personnel concerning turtle traps, utilizing ICS 204 (Field Assignment form) information
- Aquatic Teams
 - Survey, recover and document fish and wildlife impacted in waterways and wetland areas

As the incident progressed, additional field teams were deployed, which consisted of the following teams and assignments:

- Focus Terrestrial Team
 - Respond to Hotline calls as needed
 - Capture/transport/patrol of oiled wildlife
 - Develop alternative strategies and tactics for wildlife capture
 - Monitor/document locations/conditions where oiled birds(that could fly long distances) landed
 - Develop/provide Hazmat training as needed for necessary personnel
 - Participate in scientific support team
 - Coordinate activities using ICS 204 information
- Focus Recon Team
 - Perform reconnaissance
 - Capture/transport/patrol of oiled wildlife
 - Participate in scientific support team
 - Coordinate activities using ICS 204 information
- Beaver Trapping Team
 - Perform recon
 - Collect oiled animal locations
 - Develop/provide Hazmat training as needed for necessary personnel

- Participate in scientific support team
- Coordinate activities using ICS 204 information
- Trap and recover beaver and transport back to the Wildlife Response Center
- Heron Capture Team
 - Capture/transport/patrol of oiled wildlife
 - Develop alternate strategies and tactics for heron capture
 - Respond to hotline calls as needed
 - Monitor/document locations/conditions where oiled heron land
 - Develop/provide Hazmat training as needed for necessary personnel
 - Participate in scientific support team
 - Coordinate activities using ICS 204 information
- Wildlife Data
 - Collect and process wildlife data
 - Develop/provide Hazmat training as needed for necessary personnel
 - Participate in scientific support team
 - Coordinate activities using ICS 204 information
- Stantec Herp Team Coordinator
 - Continue to concentrate on turtle recovery effort
 - Configure personnel into teams and make assignments
 - Coordinate with other branch/division/group operational personnel concerning turtle traps, utilizing ICS 204 information
 - Develop/provide Hazmat training as needed for necessary personnel
 - Participate in scientific support team
 - Coordinate activities using ICS 204 information

In addition, all teams were directed to conduct a heat stress assessment in accordance with the Health and Safety Plan for the incident. A strict work/rest schedule was enforced due to high heat and humidity levels during response. Teams also followed a lightning safety protocol for inclement weather.

Wildlife Care Group

The Wildlife Care Group operated primarily in the Wildlife Response Center (WRC), located in Marshall, Michigan. The Wildlife Care Group consisted of the following teams and assignments:

- Animal Area Intake Crew/Stabilization Area/Response Veterinarian
 - Document and photograph animal intake
 - Conduct initial examination and assessment of animals
 - Stabilize animals per Focus Wildlife policy
- Animal Care Manager/Release Coordinator
 - Document progress of treatment and rehabilitation
 - Oversee medical treatment and follow-up care for animals
 - Oversee and assist with animal release plans
- Facilities Coordinator
 - Ensure facilities are functioning appropriately for animal intake and rehabilitation
 - Develop and maintain intake, holding, cleaning and conditioning areas

- Turtle Area Crew
 - Assist veterinary staff with all aspects of turtle stabilization, feeding, rehabilitation and preparation for release
 - Develop techniques and methods for safe custody of wintering turtles
- Animal Kitchen Crew
 - Organize and maintain animal kitchen
 - Prepare and record food for varying animal species per veterinary guidelines
- Cleaning Area Crew
 - Organize and maintain cleaning area
 - Provide for safe cleaning environment for team members and animals
 - Clean oiled wildlife by using accepted practices and veterinary guidelines
 - Maintain equipment used for cleaning and ensure materials are in stock
- Conditioning Area Crew/Rehab Supervisor/Release Coordinator
 - Organize and maintain conditioning area
 - Provide for safe environment for animals to ensure reduced opportunity for escape and/or injury
 - Assist with conditioning and rehabilitation of animals using veterinary guidelines
 - Prepare animals for transport to release location
- Wildlife Deterrent Task Force
 - Develop wildlife deterrent techniques
 - Maintain deterrent devices (fencing, decoys, etc.)
 - Assist with other tasks as needed

All personnel were required to adhere to the Wildlife Response Center Safety Plan. Crew leaders also provided task-specific training to crews and volunteers.

Natural Resource Damage Assessment (NRDA) – Field Liaison

NRDA teams determined their study priorities separately from ICS, but coordinated their field activities with the rest of the response through an NRDA Field Liaison with the Wildlife/Environmental Damage Assessment Branch. The NRDA Field Liaison also ensured that all safety protocols, permit requirements, and messages from ICS reached the NRDA teams. NRDA teams conducted surveys throughout the response area to evaluate impacts to surface water, sediment, soil, vegetation, benthic invertebrates, fish and wildlife. The NRDA teams reported any of their sightings of oiled wildlife to the Branch so that dispatchers could direct wildlife response teams to the indicated locations. In addition, the Branch was able to facilitate the transfer of floodplain oiling survey information from the NRDA teams to the Planning Section.

Logistics – Wildlife Support Group

The Wildlife Support Group operated primarily in the Wildlife Response Center (WRC) and was comprised of the following:

- Dispatch/Volunteer Coordination
 - Provide radio and telephone communications with field teams
 - Relay hotline information for response
 - Maintain sign-in sheet for personnel and visitors to the WRC

- Coordinate and assign volunteers for wildlife operations
- Equipment/Supplies Stock
 - Ensure required materials are on-hand
 - Work with local spill donation center and Logistics Section to obtain equipment and supplies
 - Develop and maintain inventory list

Administration/Finance

- Administration/Purchasing
 - Provide for support in ordering materials and equipment for wildlife response and rehabilitation
 - Work with Wildlife Support Group to ensure operational readiness of WRC
- Finance
 - Ensure financial requirements for response are met
 - Monitor daily expenditures to ensure alignment with incident funds allocation
 - Assist with payroll

Technical Assistance to the U.S. Environmental Protection Agency (EPA)

Agency personnel within the Wildlife Branch also provided technical assistance to EPA through communications with Unified Command, Operations Section, and Planning Section:

- Reviewing and commenting on Enbridge submittals
 - Operational Health and Safety Plan
 - Sampling and Analysis Plan and Quality Assurance Project Plan
 - “Remediation” plans for source area and downstream areas
 - “Restoration” plans
- Science Team/Environmental Advisory Group
 - Cleanup recommendations
 - Submerged oil
 - Seasonal outlook
- Data for removal actions and closure approvals
 - Observations of response activities and field conditions
 - Discovery and evaluation of extent of submerged oil
 - Floodplain survey data from NRDA teams
- ICS Assistance



Oiled Goose in Flight

Wildlife Response Activities

The mission of the Wildlife/Environmental Damage Assessment Branch was to:

- Provide protection of environmentally and culturally sensitive areas including wildlife and historic properties.
- Protect threatened and endangered species & continue to recover and rehabilitate injured wildlife.

From the early hours of following notification of the oil discharges into the environment, wildlife response was a high priority within the overall response.

The first USFWS biologist arrived on scene on July 26 and began developing strategies for wildlife response. Agency involvement in wildlife reconnaissance and recovery were important for the following reasons:

- Public and wildlife safety
 - Leadership, credibility and visibility
 - Local knowledge and contacts
- Validation of number and degree of oiled wildlife
- Independent observations of impacts of oil and response activities
 - Submerged oil
 - Fen
 - Other sensitive habitats
 - Worker techniques

The operation of the Branch was under USFWS leadership, but was successful because the cooperation and work contributed by many agencies, contractors, and others, including personnel from the following:

- USFWS
- MDNRE
- USDA APHIS Wildlife Services
- Michigan Department of Agriculture, Emergency Response Unit
- Stantec
- HRM
- Focus Wildlife
- Binder Park Zoo
- Manpower
- Volunteers

The following sections describe wildlife deterrence, oiled wildlife hotline, WRC development, field teams and tactics, wildlife rehabilitation, wildlife release, volunteers and the public, training, and Branch management

Wildlife Deterrence

Efforts to prevent un-oiled wildlife from becoming oiled were implemented in the early days of the spill. Deterrence crews worked on foot to construct barriers to prevent animals from entering the river. Additional deterrence strategies included:

- Silt Fencing
- Snow Fencing
- Scare Tape
- Propane Cannons
- Predator “Scarecrows”
- Response Work
 - >1,500 workers
 - Flotillas of airboats
 - Helicopters
 - Vacuum trucks



Coyote “Scarecrow” Decoy



Deterrence Fencing and Scarecrow

Deterrence fencing was also placed along a road that was being heavily used by response vehicles in order to reduce the risk to turtles after a spotted turtle was found in the area. The spotted turtle is listed by the State of Michigan as a threatened species.



Oiled Wildlife Hotline

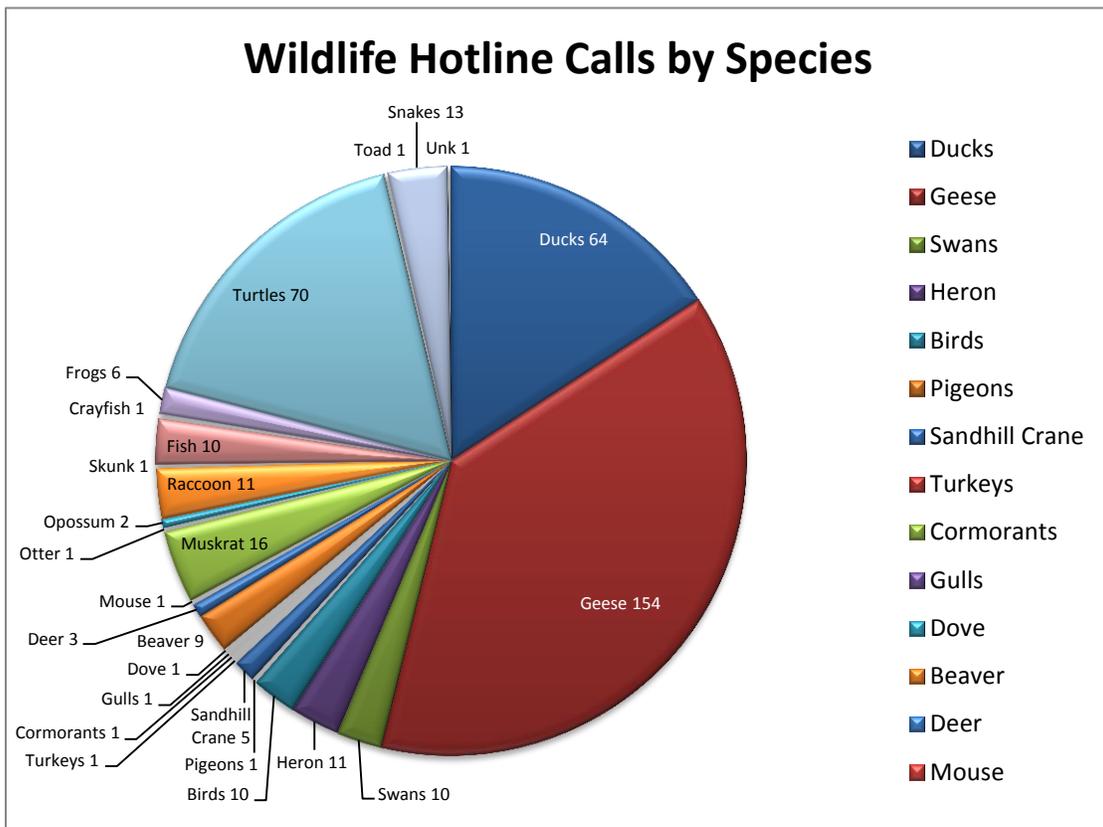
Enbridge developed and maintained an Oiled Wildlife Hotline that provided a single-source reporting location for members of the community and spill responders. The reports of oiled wildlife were forwarded to the Wildlife Response Center for dispatch, which allowed for timely response by wildlife field crews.

The hotline number was advertised continually, using a variety of approaches:

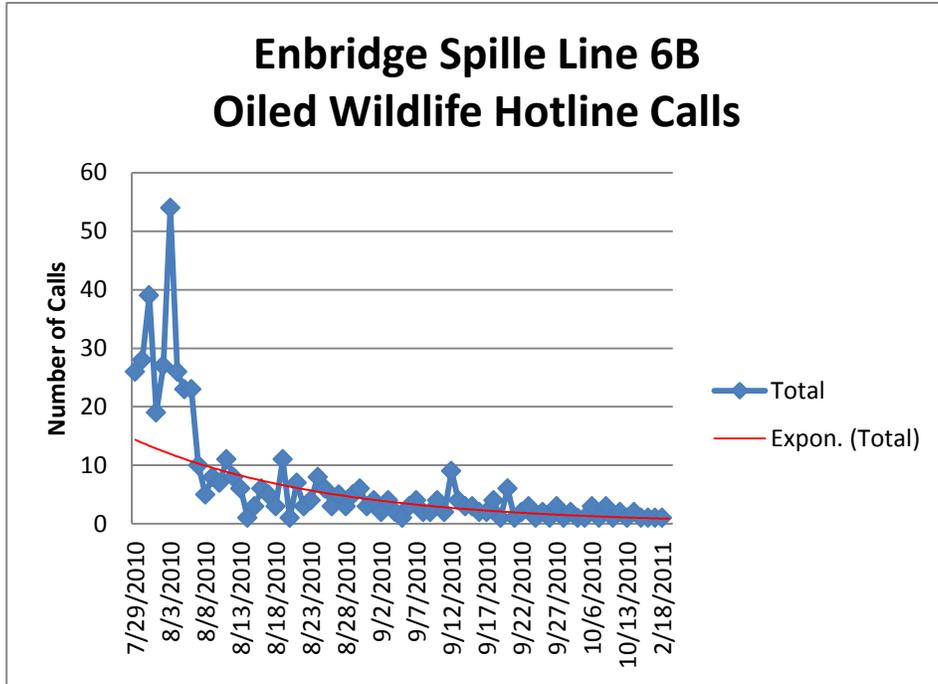
- Press conferences
- Press releases
- IAPs
- Flyers/Leaflets
- Business Cards
- Magnetic Door Shields
- Websites
- Wildlife Trapping Notice Signs



Heron Trapping Area



The majority of wildlife hotline calls were reports of oiled geese, turtles and ducks. Other wildlife species were also reported but with less frequency. Additionally, the hotline was used more during the first week of the spill response. Its use diminished as the incident progressed with time.



Number of Hotline Calls by Date

Waterproof business cards with the Oiled Wildlife Hotline number on its face were provided to wildlife field crews and were distributed during face to face contacts with local residents and spill responders. Several reports came in to the WRC as a result of the cards, many of which were generated by spill responders. Additionally, magnetic door shields that displayed the hotline number were provided for use on wildlife recovery vehicles. This allowed for high visibility of teams when on the road and afield and also identified responders as incident staff when stopped along roadways and near private residences.

In addition, the hotline was used for general information about the oil spill. Volunteers could use the hotline to sign up to assist at the spill. General wildlife questions could also be asked.

Wildlife Response Center Development

On Day 2 of the response, Focus Wildlife personnel arrived on-scene and began establishing the Wildlife Response Center (WRC). Enbridge and Focus Wildlife identified a facility previously used by the Firekeepers Casino in Marshall, Michigan, as having characteristics that met wildlife recovery needs. The building included office space for responding agencies and organizations and eventually was equipped with telephones and internet access. A conference room was also available and was used for daily briefings and meetings. Adequate floor space for wildlife intake, rehabilitation and conditioning allowed for flexibility in use and design. The physical structure

within the building changed frequently to address the needs of wildlife care. A large parking area on-site allowed for convenient parking of personnel and response equipment. In addition, a large conditioning facility, complete with water pools, filtration and secure housing, was established close to the main building, yet far enough from the main parking lot to minimize disturbances to recovering wildlife by vehicles and other equipment. Storage was available in two large sea containers. A large, unattached garage provided additional conditioning and storage areas.

Focus Wildlife and Enbridge built systems for water supply, handling and disposal on-site and had to make adjustments to heating, cooling, and electrical systems to provide proper climate control for recovering wildlife. To get sufficient water volume and pressure, they worked with local authorities to use nearby fire hydrants to supplement the water supply to the facility. They installed on-demand water heaters and pressure controllers to provide a reliable supply of water at the narrow range of temperature and pressure required for washing large numbers of oiled animals. They also installed several large holding tanks for waste water and arranged for vacuum trucks from the overall incident response to empty them as needed.



Wildlife Response Center



Conditioning pen area



Wastewater tanks and vacuum truck

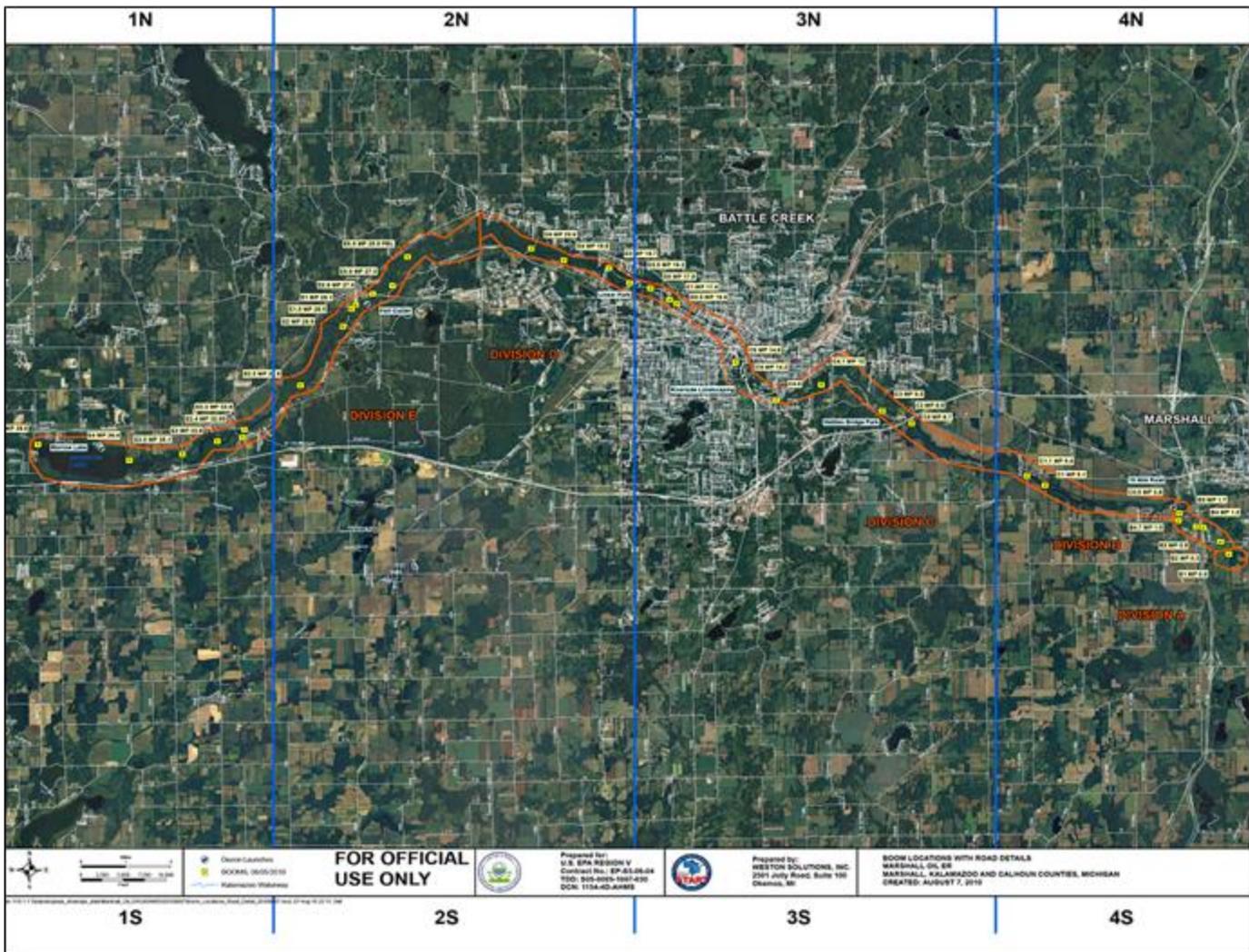


Conditioning pen

Field Teams and Tactics

Field teams were established with personnel from USFWS, USDA-APHIS-WS, MDNRE, Focus Wildlife, Stantec and a few volunteers. The teams initially located and documented oiled wildlife while the WRC was being constructed and outfitted. The teams quickly moved from observation and documentation to response and recovery once the WRC was able to accept oiled wildlife. Early in the spill, teams were accompanied by industrial hygienists to monitor concentrations of volatile compounds, particularly benzene. Later, the Branch obtained simplified meters and trained team members to use them until monitoring was no longer required by the Safety Officer.

Wildlife recovery teams used different tactics over time as the conditions changed. In the beginning of the response, the teams focused on the heavily oiled birds. Crews responded to reports from the public and response workers and were able to pick up oiled animals with hand held nets. As the most heavily oiled birds were brought in for rehabilitation, the remaining birds became wary of capture teams and crews gained more access to the river. As a result, the Branch developed geographic divisions to allow for efficient team deployment and systematic searching. In addition, specialty teams were used for targeting specific wildlife.



Geographical Response Areas

A large number of Canada Geese and other waterfowl were oiled but still able to fly. Over time, the birds appeared to learn to recognize team vehicles, to the point that certain geese would fly away upon arrival of team vehicles at potential capture sites, and to avoid certain tactics. Because of this, tactics and techniques were evaluated and new methods implemented. Original capture techniques involved teams approaching geese with large hand nets and slowly working into their locations. The teams would attempt to net the geese when they became cornered or when they would attempt to take flight. This method was ineffective for flighted birds. Tactics meetings, conducted by wildlife response personnel, identified alternative capture methods which included the following:

- Use of decoys and bait at cannon net stations
- Use of hand-held net deployment devices (Super Talon)
- Use of walk-in traps (waterfowl)

- Use of modified soft-catch leghold traps (Great Blue Heron and Sandhill Crane)
- Use of live traps (mammals)
- Use of box traps and commercial traps (turtles)
- Use of Alpha-chloralose on flighted geese
- Hand-feeding park geese and ducks/hand-capture



Oiled Canada Geese Watching Hand Net Operation

Use of Decoys/Bait at Cannon Net Stations (Waterfowl)

A pair of CO₂ powered cannon nets were deployed in rural areas where oiled Canada Geese repeatedly congregated. Original discussion of tactics for luring the geese into netting range included the use of goose decoys and/or bait (corn). The use of decoys was not implemented but placement of corn was used. The cannon nets were deployed successfully. Difficulty arose when trying to keep un-oiled geese from eating the bait. On several occasions the oiled geese were harassed by the un-oiled geese, causing the oiled geese to move away from the bait. During one operation at the Nottawa Painted Horse Farm trapping location, oiled geese flew into the bait before the un-oiled geese, allowing for a successful net deployment and the capture of nine birds. At the Eaton Proving Grounds trapping location, oiled geese were observed and corralled into cannon net range. Two geese were successfully captured in that attempt. Total observation and trapping effort occurred over a nine day period.



Cannon Net w/ Bait

Use of Hand-Held Net Deployment Devices (Super Talon)

Wildlife Recovery personnel made use of a hand-held net launcher called the Super Talon. The Super Talon fired a 16 foot diameter net from a hand-held launcher. Carbon dioxide (CO₂) is the propulsion source and is easily re-armed and reloaded. The net mesh comes in varying sizes, allowing for large animal or small bird capture. Additional Super Talon devices were ordered and presented to field crews. After a brief training session, the Super Talons were deployed on several capture attempts with positive results. The Super Talon's effective range varied from 5 to 10 meters.

Super Talons were fired with good overall effectiveness from stationary ground positions and from vehicles in motion. No injuries were sustained by birds captured with the devices. The devices are supplied with a relatively large mesh net that was effective for Canada geese, but mallards were able to escape. Crews experimented with a smaller net size with some success.



Super Talon Deployment

Use of Walk-in Traps (Waterfowl)

Walk-in traps were used for ducks and geese with limited success. Small walk-in traps were initially used for ducks, resulting in no captures. A large walk-in trap was constructed over time to capture Canada Geese, again with no captures. Late in the spill response, a walk-in trap was gradually constructed on a small Island that was frequented by oiled ducks on the Kalamazoo River. Bait (corn) was placed inside the trap to lure the birds inside. The trap was successfully deployed, capturing four oiled ducks. The trap's design was repeatedly modified to fit existing conditions at the trap location.



Walk-in Trap for Ducks w/ Bait

Use of Alpha-Chloralose on Flighted Geese

Alpha-chloralose, a drug that can be used to tranquilize geese, was approved for use by the MDNRE state veterinarian. APHIS personnel were able to dose individual geese by tossing treated food directly to the individual they hoped to capture. Unfortunately, geese captured this way arrived at the WRC in a stressed condition, and it was difficult to manage the timing of capture and care at intake. Working together, the agencies, Focus Wildlife, and Enbridge leaders within the Branch decided to discontinue use of alpha-chloralose for this incident.



Geese Dosed with Alpha-Chloralose

Hand-feeding Park Geese and Ducks/Hand-capture

Ducks and geese that were accustomed to hand feeding in city parks were sometimes captured by baiting them within grabbing distance. Wildlife crews would feed the birds and when close, capture the birds by hand. This method required great time in gaining confidence of the birds, but was effective in urban settings.

Use of Leghold Traps (Great Blue Heron and Sandhill Crane)

A significant number of oiled Great Blue Heron and a small number of oiled Sandhill Cranes were observed by field crews. A determination was made that a specialized team would need to be in place to capture these species of birds. Rita Seston from Entrix, a contractor for Enbridge, provided soft-catch leghold traps from her heron research with Michigan State University. She and Mike Nadeau, who had worked with her on her research, trained two USFWS personnel in proper capture and handling techniques. Mike Nadeau worked as a contractor with the USFWS personnel.

The team initially used bait fish purchased at a local bait shop to attract herons to the trap site. They discovered that bluegill were more attractive to the herons and so discontinued the use of purchased bait fish in favor of using locally caught small bluegills. The bait was placed in a partially-submerged bait box. Up to 60 leghold traps were placed around the outside of the bait box. The traps were secured to a staked main line, which would prevent the heron from flying away with the trap. To prevent injuries to herons, soft-catch traps were modified by lowering jaw tension and providing shock absorption within the tether that secured the trap to the main line.

The original clips for securing the traps were rusted and not fully functional. The clips were replaced with stainless steel decoy snaps that worked very effectively. The decoy snaps not only secured the traps to the main line but also aided in fast setup and takedown.

The strategy worked very effectively, accounting for the capture of nine Great Blue Herons. Because of the nomadic nature of Sandhill Cranes, the team was not able to effectively deploy traps to target them.



Great Blue Heron Trap Set

Use of Live Traps (Mammals)

Initial attempts to capture furbearing animals yielded mixed results. Baited live traps were deployed but resulted in the capture of primarily un-oiled raccoons. Snares were used to attempt beaver capture. One beaver received minor injuries due to the friction of the snare. Snaring was stopped and a contractor who specialized in animal control was hired. Dave Bowers of Bowers Wildlife Control utilized various live traps for capturing beaver, muskrat and other furbearing animals. The animals were handled according to protocols established by MDNRE and Focus Wildlife and no further injuries resulted from capture.



Live Trap with Raccoon

Turtle Trapping Techniques

HRM initially attempted to use basking traps to capture oiled turtles but had poor success rates. Turtles were able to escape from the initial trap design. Stantec deployed commercial turtle traps with much greater success rates. Basking and commercial traps were often times subject to disturbance because of the high volume of vessel traffic on the river, especially airboats. As the incident progressed into cooler months, two-person teams of a boat operator and wildlife technician became very effective at capturing oiled turtles with hand held nets.



Basking Trap



Commercial Turtle Trap

Volunteers and the Public

Using the hotline, press conferences, public meetings, and other outreach efforts, USFWS and MDNRE urged the public to report oiled wildlife, but not to pick up oiled wildlife themselves both for their own safety and to minimize handling stress on the wildlife. Nonetheless, some members of the public did pick up wildlife and attempt to clean them in the first few days of the spill. The Branch attempted to recover these animals for additional treatment or carcass disposal.

Thousands of people volunteered to help the animals impacted by the spill. Calhoun County provided staff to take calls from volunteers and compile data on potential volunteers. In addition to the spill information and wildlife reporting hotlines, people in the Calhoun County area were also directed to dial 211 or visit www.handsonbc.org to volunteer. The Wildlife Branch then used that information, as well as personal contacts with known individuals, to bring volunteers in for training and work. Within the Wildlife Branch, a Volunteer Manager position was established to screen, schedule, organize, and track volunteers. Enbridge staffed the Volunteer Manager position with a contractor. Overall, approximately 150 individual volunteers contributed over 7,000 hours of work.

Throughout the response, the volunteers were managed by Enbridge and their contractors. The volunteers were all adults, and were mostly women. Some volunteered as parts of groups or organizations and others were unaffiliated. A few had previous experience with oiled wildlife spill response, but most were trained on-site by Focus Wildlife. Some volunteers became contract employees. The volunteers were primarily used in supporting the rehabilitation efforts being managed by Enbridge and their contractors, and the task for which the largest number of volunteer hours was used was washing oiled turtles. A few volunteers participated in reconnaissance and capture crews for several days, but those volunteers did not return on subsequent days and this practice was discontinued.

Local wildlife rehabilitators who attempted to set up their own wildlife washing stations were encouraged by the USFWS and MDNRE to turn over any wildlife already in their care to the Wildlife Response Center and were invited to sign in and be trained as volunteers within the Wildlife Branch. This was eventually successful in providing efficient, state-of-the-art wildlife care, control of animal and waste handling and tracking, and ensuring the safety of everyone working with oiled wildlife.

In addition to volunteering, members of the public and local businesses donated generous amounts of supplies like towels, cleaning supplies, boxes and crates, bottled water, and snacks. The donations threatened to overwhelm staff and space at the Wildlife Response Center, and fortunately a local church set up a donation center near the Wildlife Response Center. The church and their volunteers set up a large tent and organized supplies. The donation center operated independently of the Incident Command structure, but the volunteers there implemented suggestions from the Wildlife Branch and made it possible for Wildlife Branch personnel to obtain donated materials very easily as needed.

Wildlife Rehabilitation

Focus Wildlife managed the day-to-day wildlife rehabilitation activities with oversight from USFWS and MDNRE. Initially they also were assisted by veterinarians and specialists with the Michigan Department of Agriculture's animal emergency response unit. Focus Wildlife brought in professionals experienced in working with oiled birds and mammals and also used local rehabilitators and volunteers with appropriate on-site training. Focus Wildlife used their established protocols that are consistent with the USFWS's manual *Best Practices for Migratory Bird Care During Oil Spill Response* (available at http://www.fws.gov/Contaminants/FWS_OSCP_05/FWSContingencyTOC.htm#D). The general steps in the rehabilitation process were as follows:

- Intake examination
- Stabilization with hydration, feeding, and medications as needed until the animal was healthy enough to undergo the intensive washing process
- Washing and rinsing
- Recovery
- Conditioning
- Veterinarian examination for fitness to release

HRM initiated turtle care at the WRC and then Dr. Chris Tabaka from Binder Park Zoo and his staff led the care, cleaning and rehabilitation of turtles. Eventually, Focus Wildlife and then Stantec led the care for turtles as well. Because the oil was often stiff and tacky on turtles, individual turtles were usually cleaned over several sessions, between which the turtles were allowed to rest and recover from being handled. Most turtles were cleaned by hand with pads, brushes, and cotton swabs; large snapping turtles were anesthetized by a veterinarian and cleaned with gentle pressure washing in wading pools.

In general, care was highly successful, with survival to release rates of 84% for birds and 98% for turtles. Great Blue Heron survival was lower than for other species. Approximately half of them

developed skin lesions, lost weight, and either died or were euthanized because of their deteriorating condition, despite the best efforts of the veterinarians and animal care workers.

MDNRE and USFWS conducted or closely monitored intake documentation and received copies of all in-care records for individual animals. The agencies also supervised carcass documentation and storage, with USFWS law enforcement officers supervising the locked freezers for migratory birds.



Intake Examination of Great Blue Heron



Oiled Canada Geese



Pre-wash Stabilization Area for Birds and Mammals



Washing of Turtles (left) and Birds (right)



Mineral Oil Application to Loosen Oil on Canada Goose



Turtle Washing



Washing Snapping Turtle



Turtle Care and Recovery Area

Wildlife Release

Planning for release of rehabilitated wildlife was complicated by the often conflicting goals of releasing animals back to their capture locations as soon as they were fit and protecting them from additional oiling or disturbance. With an impacted corridor of nearly 40 miles, oil persisting in floodplains and submerged sediments, as well as ongoing response operations, made it difficult to find appropriate release sites for some species.

Birds were taken to locations away from the Kalamazoo River where they would be protected from disturbance when released. These sites included the Allegan State Game Area and the Kellogg Bird Sanctuary. Most birds were banded before release. Waterfowl received a special color band that indicated that this was an “oil spill bird” and gave a toll free number to call for more information.

Turtles were released in a variety of locations either upstream of the oiled areas, in tributaries to the Kalamazoo River, or in previously impacted areas that were thought to be free of oil. Turtles were marked with PIT tags or shell notches. Through subsequent re-capture of individual turtles, we learned that at least some turtles were returning to their capture locations (or had at least moved in that direction from their release point) and were becoming re-oiled.

Training

Training was provided for wildlife response personnel who did not have Hazardous Waste Operations and Emergency Response (HAZWOPER) 40-hour certification. Unified Command approved a four hour, site-specific, training program, entitled 4-Hour Safety Awareness Training for Oil Spill Workers, to familiarize response workers with oil spill hazards and operations. The training certification applied only to the Enbridge Line 6B incident location.

All USFWS personnel working on site had either the 24-hour or 40-hour HAZWOPER training, with some of them completing the 24-hour program just prior to deployment to the scene.

The state of Michigan utilizes a state-of-the-art 800 MHz trunked radio system. Wildlife response teams used the radios as part of the Wildlife Branch Communications Plan. Because of their complex features and unique operating environment, one of the Branch staff with extensive experience with the radios developed in-house training and provided it to Wildlife Branch personnel. This training program was then used as the training standard for all responders who carried radios.

Enbridge required all response personnel to receive specific safety training. The training was specific to Enbridge operations and safety protocols. Each responder was required to watch a 17 minute training video and pass a written examination. Upon successful completion of the training, a certification decal was awarded which had to be worn on the responder’s helmet or identification card.

Off-road Utility Vehicles, or UTVs, were used extensively as the spill event progressed, so a safety training program was established. All operators of UTVs were required to complete the training and carry a UTV operator card.

Branch Management

As part of ICS, the Branch had a daily cycle of regular meetings, planning, and reporting of activities. The meetings included key personnel and were used to convey important information pertaining to the Incident Action Plan (IAP), safety and other operational issues. The meeting structures were as follows:

Morning Meeting

- Review the plan
- Safety message
- Any urgent issues for groups, needs for next day
- Break into groups
- Submit changes to Incident Action Plan (IAP) for next day

Evening Meeting

- What was planned?
- What actually happened and why?
- Plan tomorrow

Meeting times varied during the spill response to address specific needs of the Wildlife Branch. Meetings were scheduled to allow field crews the ability to maximize their work efficiency while afield.

At the conclusion of the morning Branch meetings, team leaders would assemble their respective teams and provide a tail gate meeting. The purpose of the tail gate meeting was to allow team leaders to assess the team's makeup, share vital safety information and develop team unity. Teams reviewed a prepared safety briefing, which was then signed by the team leader and all team members. This briefing sheet was carried while crews were deployed and needed to be presented to safety officers upon request. In addition, the Incident Action Plan (IAP) was also carried afield and used as a daily operations plan. Team leaders also filed a Safe Work Permit, which was required by Enbridge. If a team were to deploy on watercraft, a float plan had to be filed with the branch safety officer. The teams would then embark on their assigned tasks for the day.

Unless additional work was required, most field teams were back at the WRC for the evening meetings. Some crews worked night time operations (night ops), requiring them to re-group after the meeting and prepare for deployment. Surveillance for Canada Geese was often times performed during night ops, allowing crews to observe flight patterns, feeding habits and night roosting habits.



Night Ops Surveillance

During the course of the day, the Branch Director and staff used data and information from the Branch field teams, Operations Section, Planning Section, and Unified Command to develop and write plans for the next operational period of the response (e.g. ICS forms 204 and 215 for Assignment Lists and Operational Planning Sheet, respectively). They also wrote summaries of Branch activities for the Situation Unit in the Planning Section; updated costs and personnel numbers for the Finance Section; reviewed intake and care records; reported on the number of animals captured, in care, and released; provided technical assistance to EPA by reviewing various work plans and participating on the Science Team/Environmental Advisory Group; prepared for press conferences and public meetings; and attended meetings of the Operations Section and with Unified Command and General Staff. They also managed personnel and worked with their home and regional offices to arrange for appropriate rotations of staff over time. The Branch Director also spoke at press conferences and evening public meetings in Marshall, Battle Creek, and Kalamazoo. At the height of the Branch's activities, approximately 120 people from multiple organizations and agencies were working together to find, treat, and release oiled wildlife.

Wildlife Response Chronology

July 26, 2010, Day 1:

- U.S. Fish and Wildlife Service lead person on site
- Enbridge mobilized Focus Wildlife for wildlife care and rehabilitation
- Oiled Wildlife Hotline established and maintained by Enbridge
- Rehabilitation facility planning begins
- Additional USFWS personnel requested
- Oiled wildlife observed and recorded

July 27, 2010, Day 2:

- Incident Command System (ICS) implemented, Wildlife Branch organized with USFWS, MDNRE and Law Enforcement
- Volunteer coordination began
- Sensitive natural resources maps created and analyzed for planning
- Press conference held
- Reconnaissance of oiled fish and wildlife
- Focus Wildlife arrived on scene, Wildlife Response Center (WRC) established
- Incident Command briefings occur at 6:00 am and 6:00 pm
- Teams by Response Type:
 - Recon Teams - 1 Team

July 28, 2010 - July 31, 2010, Days 3-6

- Wildlife response underway
 - Teams primarily responded to hotline calls and locations documented on previous days
- Safety was paramount
 - Training
 - Monitoring
 - Communications Plan
- Wildlife deterrence plan implemented
- Data integrity an area of priority within the WRC
- Public outreach
 - Press
 - Rehabilitators
 - Legislators
 - Governor
- Logistical issues for WRC worked out
 - Internet access
 - Supplies allocation
 - Donations distribution and storage
 - Continued construction of intake and holding areas
- Additional USFWS personnel arrived on-scene

- Wildlife Response
- Teams by Response Type:
 - Hotline Response – 2 Teams
 - Geographic Coverage
 - Marshall
 - Roaming
 - Roaming/Transport – 1 Team
 - Geographic Coverage
 - Roaming
 - Hours of Operation: Not Known

August 1, 2010 – August 2, 2010, Days 7–8:

- USDA APHIS Wildlife Services specialists arrived on–scene
- Tactics meetings held, new capture techniques developed and implemented
- WRC fully functional, animal intake flowing smoothly
- Record keeping streamlined and working effectively
- Communications between wildlife response teams and WRC improved
- 4–hour HAZWOPER training provided to personnel
- Enbridge safety training provided to personnel
- Teams by Response Type:
 - Hotline Response – 3 Teams
 - Geographic Coverage
 - Ceresco/Marshall
 - Battle Creek (2 Team coverage)
 - Roaming/Transport – 1 Team
 - Geographic Coverage
 - Roaming
 - Hours of Operation: Not Known

August 3, 2010 – August 4, 2010, Days 9–10:

- Tactics Team developed to review and implement special capture tactics outside of hand net capture of Canada Geese
- Teams by Response Type:
 - Terrestrial Teams – 2 Teams
 - Geographic Coverage
 - Battle Creek Area
 - Marshall Area
 - Tactics Team – 1 Team
 - Tactics Deployed
 - Cannon Net
 - Super Talon Net Gun (STNG)
 - Geographic Coverage

- Marshall Area
- Roaming/Transport – 1 Team
 - Geographic Coverage
 - Division C
- Hours of Operation: 0700 hrs – 1900 hrs (Tactics Team until 2200 hrs)

August 5, 2010 – August 6, 2010, Days 11–12:

- Teams by Response Type:
 - Terrestrial Team – 2 Teams
 - Geographic Coverage
 - Battle Creek Area
 - Marshall Area
 - Tactics Team – 1 Team
 - Tactics Deployed
 - Cannon Net
 - Super Talon Net Gun (STNG)
 - Geographic Coverage
 - Roaming
 - Scouting/Recon Team – 4 Teams
 - Geographic Coverage
 - Battle Creek Inland
 - Battle Creek Lake
 - Marshall Inland
 - Marshall Lake
 - HRM Aquatics Team – 2 Teams
 - Geographical Coverage
 - Division C Upstream from Dam
 - Turtle Trap Deployment
 - DNRE Aquatics Team – 7 Teams
 - Geographical Coverage
 - All Divisions
 - Turtle Trap Deployment
 - Hours of Operation
 - 0700 hrs – 1900 hrs

August 7, 2010 – August 11, 2010, Days 13–17:

- Wildlife Response Geographic Zones established 8/7/10
 - Simplified tracking of effort
 - Allowed for strategic response
 - Provided systematic geographic coverage
- Teams by Response Type:
 - Terrestrial Team – 4 Teams
 - Geographic Coverage
 - 4 South, Rocket Net/Night Ops

- 4 North
- 3 South
- 1 North
- Focus Wildlife – 1 Team
 - Geographic Coverage
 - 4 South
- HRM Aquatics Team – 2 Teams
 - Geographical Coverage
 - Division C Upstream from Dam
- DNRE Aquatics Team – Removed from IAP
- Hours of Operation
 - 0700 hrs – 1800 hrs

August 12, 2010 – August 15, 2010, Days 18–21:

- Specialized team development expanded
- Incident Division designations utilized in addition to Geographic Zones
- Teams by Response Type:
 - Terrestrial Team – 3 Teams
 - Geographic Coverage
 - Muskrat Trapping in Div. B, C, and D
 - 3 North (2 team coverage)
 - Focus Recon Team – 1 Team
 - Geographic Coverage
 - All Divisions
 - Wildlife Hotline Response – 1 Team
 - Geographic Coverage
 - All Divisions
 - HRM Aquatics Team – 2 Teams (Demobilized on 8/13/10)
 - Geographic Coverage
 - Mill Pond (C5–C6 Upstream of Ceresco Dam)
 - Division C (Ceresco Dam and Mill Pond)
 - DNRE Aquatics Team – 4 Teams
 - Geographic Coverage
 - Division C, Electro Fishing
 - Stantec Herp Team – 3 Teams
 - Geographic Coverage
 - Divisions C & E
 - Hours of Operation
 - 0700 hrs – 1800 hrs

August 16, 2010 – August 20, 2010, Days 22–26:

- Heron Capture Team and Focus Terrestrial Team added to operations
- Teams by Response Type:
 - Terrestrial Team – 3 Teams

- Geographic Coverage
 - 3 South
 - 3 North (2 teams)
- Focus Recon Team - 1 Team
 - Geographic Coverage
 - All Divisions
- Wildlife Hotline Response Team - 1 Team
 - Geographic Coverage
 - All Divisions
- Heron Capture Team - 1 Team
 - Geographic Coverage
 - All Divisions
- Stantec Herp Team - 3 Teams
 - Geographic Coverage
 - Divisions C & E
- Stantec Herp Team Coordinator position added to IAP (8/19/10)
- Hours of Operation
 - 0700 hrs - 1800 hrs

August 21, 2010 - August 28, 2010, Days 27-34:

- Trapping Team added to operations
- Evening cannon net operations added
- Teams by Response Type:
 - Terrestrial Team - 1 Team
 - Geographic Coverage
 - Division B am
 - Division E pm
 - Horse Farm Net Deployment in pm
 - Focus Terrestrial Team - 1 Team
 - Geographic Coverage
 - Arbor Inn area
 - Wildlife Hotline Response
 - Geographic Coverage
 - All Divisions
 - Recon Divisions B and C
 - Heron Capture Team - 1 Team
 - Geographic Coverage
 - All Divisions
 - Trapping Team
 - Geographic Coverage
 - All Divisions
 - Stantec Herp Team
 - Geographic Coverage
 - Divisions C & E
 - Hours of Operation

- 0700 hrs – 1800 hrs (Except for Night Ops, until 2330 hrs and Heron Capture Team, until dark)

August 29, 2010 – September 23, 2010, Days 35–60:

- USDA APHIS Wildlife Services staff demobilized
- Each team’s geographic coverage = all Divisions
- Teams by Response Type:
 - Focus Terrestrial Team – 1 Team
 - Focus Recon Team – 1 Team
 - Heron Capture Team – 1 Team
 - Trapping Team – 1 Team
 - Hours of Operation
 - 0715 hrs – 1730 hrs (Except for Heron Capture Team, until dark)

September 25, 2010 – September 29, 2010, Days 61–66:

- Additional Heron Team activated
- Each team’s geographic coverage = all Divisions
- Teams by Response Type
 - Focus Terrestrial Team – 1 Team
 - Focus Recon Team – 1 Team
 - Heron Capture Team 2 Teams
 - Trapping Team – 1 Team
 - Stantec Herp Team – Team Numbers Coordinated with Focus Teams and Wildlife Care Group
 - Hours of Operation
 - 0715 hrs – 1730 hrs (Except for Heron Capture Teams, until dark)

September 30, 2010 – October 15, 2010, Days 67–82:

- Heron Teams and Trapping Team demobilized
- Wildlife Submerged Oil Team activated
- Teams by Response Type
 - Focus Terrestrial Team – 1 Team
 - Geographic Coverage
 - All Divisions
 - Focus Recon Team – 1 Team
 - Geographic Coverage
 - All Divisions
 - Wildlife Submerged Oil Team – 1 Team
 - Geographic Coverage

- River System
- Hours of Operation
 - Not Known

October 16, 2010 – October 19, 2010, Days 83–86:

- Focus Terrestrial Team and Focus Recon Team demobilized
- Teams by Response Type
 - Wildlife Response Team – 2 Teams
 - Geographic Coverage
 - All Divisions
 - Hours of Operation
 - Not Known

October 20, 2010 – October 31, 2010, Days 87–98:

- Wildlife Response Teams demobilized
- Team by Response Type
 - Hotline Response
 - Geographic Coverage
 - All Divisions
 - Stantec Coordinating Wintering of Turtles with Wildlife Care Group
 - Hours of Operation
 - Not known