Emergency Response Plans and Progress

ENBRIDGE

Presentation Overview

- About Enbridge
- Actions and Learnings
- Plan Improvements
- Program Improvements
- First Responder Education

ABOUT ENBRIDGE

- **Operates world's longest liquids pipeline system and Canada's largest natural gas distribution company**
- **Owns an interest in 50,000 miles of pipelines**
- **Delivers 2 million barrels/day crude and liquid petroleum**
  - *Delivering over 50% of crude oil needs to Great Lakes refineries*
  - *Connected to Cushing & Gulf*
- **Handles 5 billion cubic ft/day of natural gas**
- **Employs 6,000 people**
- **Wind development capacity of 270 megawatts**
- **The "Lakehead System" is the crude oil/NGL pipeline in the Great Lakes area, not limited to:**
  - *Line 5 (Wisc. to Sarnia through Upper Peninsula) built in 1953*
  - *Line 6B (Griffith to Sarnia) built in 1969*

Actions and Learnings

- The world of Emergency Management and our Industry….has changed
- Organizations are focused
  - Preparedness is key
  - Industry is connecting more than ever
  - Crisis Management
  - Resources
- Are we ready?
- What does good look like?

Actions and Learnings

- Ability to ramp up
- Internal Support Groups
- External Support (consultants)
- Training, organizational readiness
- Worst case planning scenarios
- Records Management

Enbridge has worked closely with DOT/PHMSA

Significant efforts included:

- Several conference calls and in person meetings
- Adoption and implementation of new ICP model
- Improved information and detail in the plan regarding:
  - » Worst Case Discharge
  - » OSRO identification
  - » Notification
  - » ICS roles and responsibilities
  - » Training Requirements
  - » Qualified Individual
  - » Appropriate integration of regulations with USCG and EPA

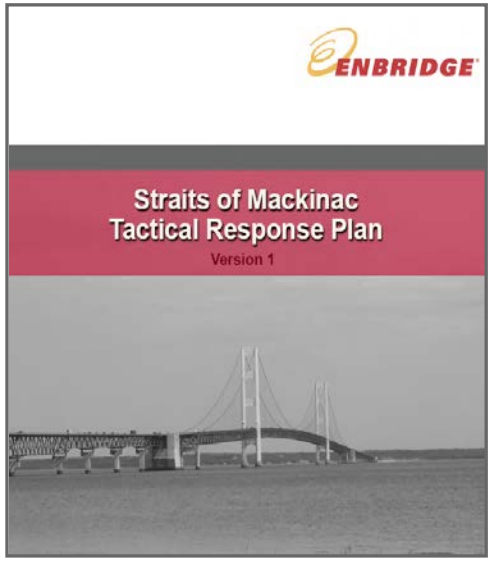
Planning

Integrated Contingency Plan

- Core ER Plan
- Zone Response Plans

Tactical Plans

- Recovery Remediation
- Strategies for specific areas
- Responder task assignments



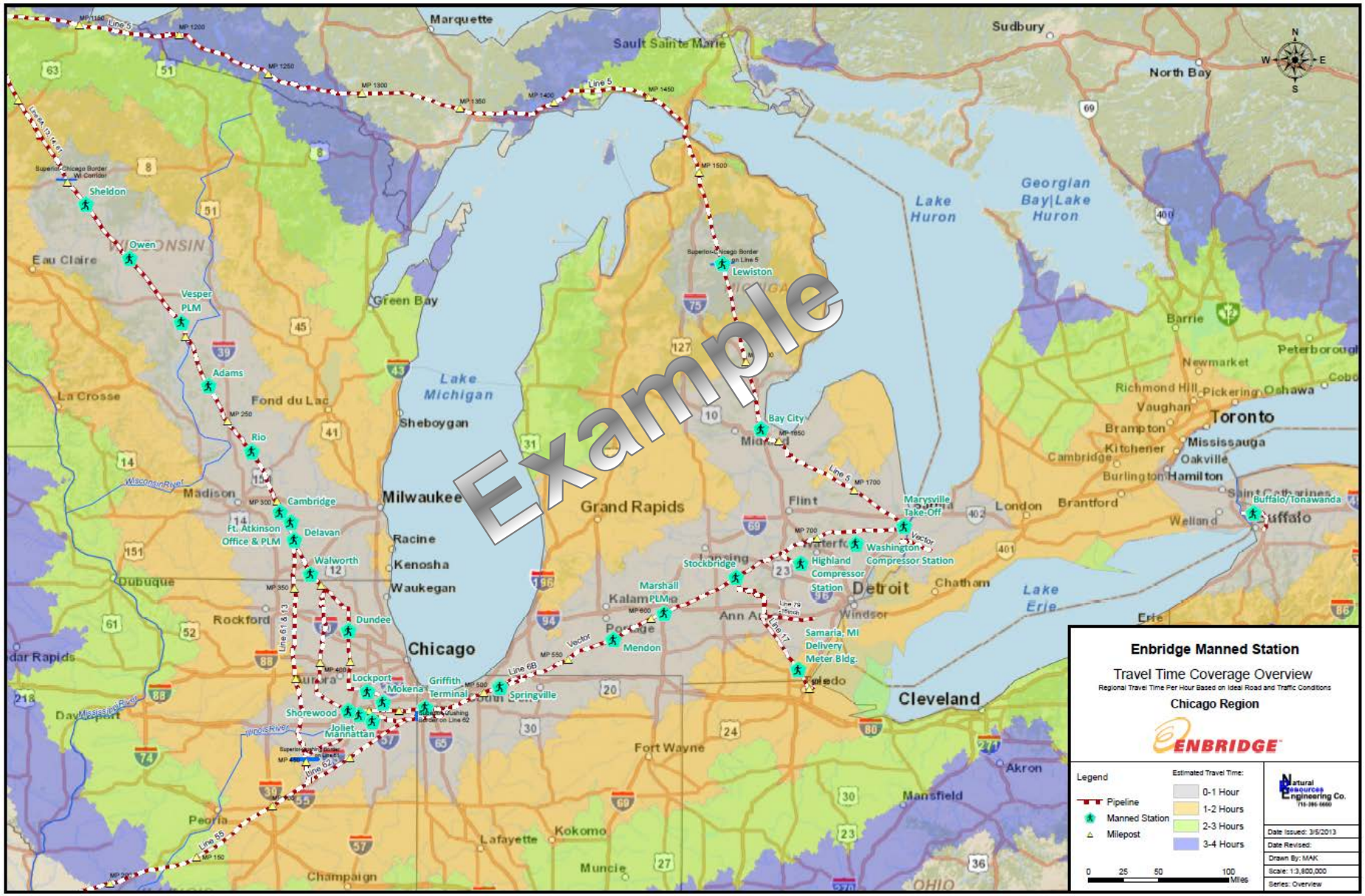
Control Point Mapping

- Detailed description of access points for equipment and personal

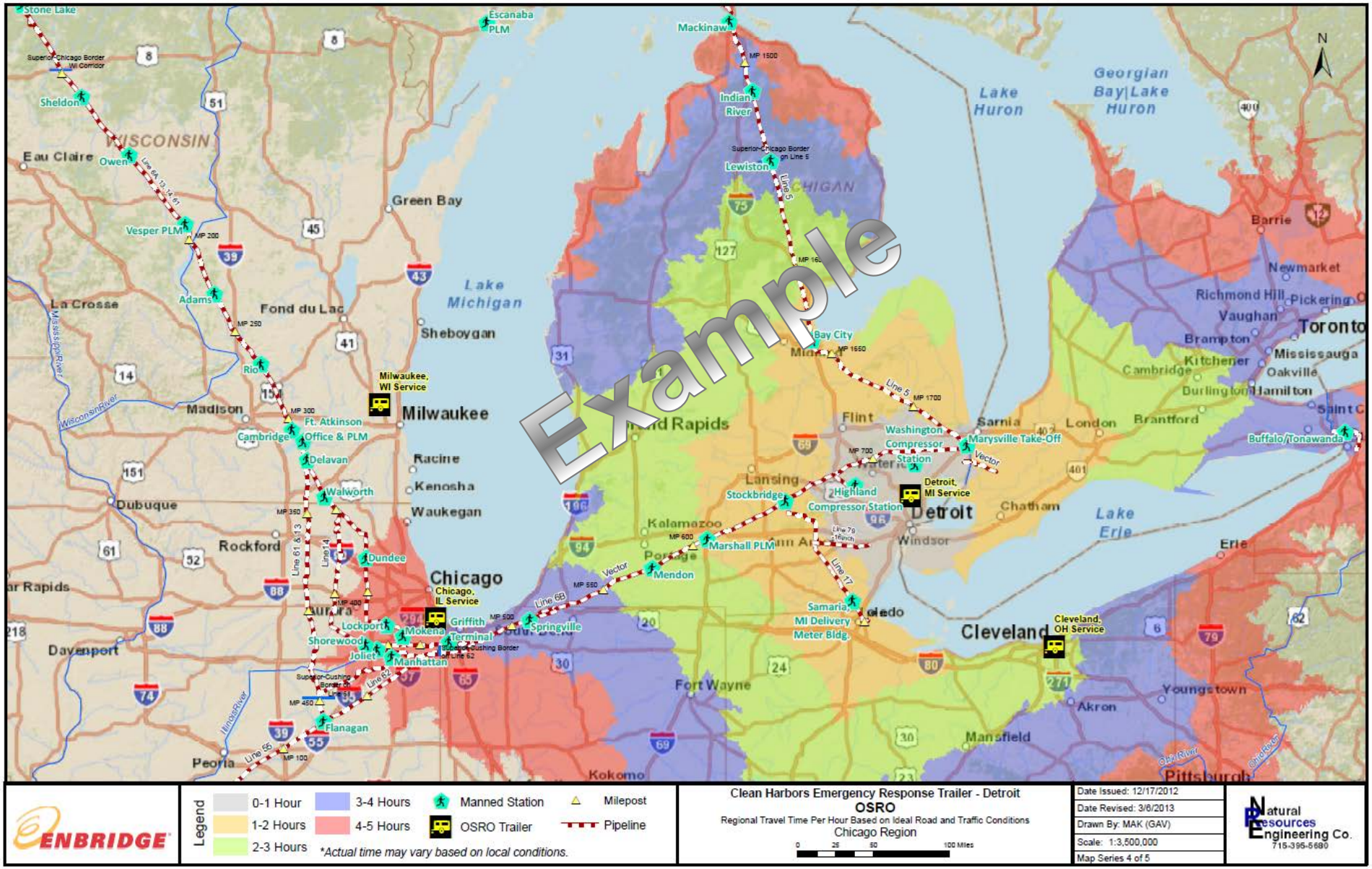
Response Time Mapping

- Understanding response time is critical during the incipient stages of an incident
- Enbridge has improved its mapping in many key areas
  - Legibility, color coding
  - Enbridge-owned equipment
  - OSRO owned equipment
  - Environmentally sensitive areas

Chicago Region Manned Station Response Time



Clean Harbors Detroit Response Trailer



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Legend

0-1 Hour	3-4 Hours	Manned Station	Milepost
1-2 Hours	4-5 Hours	OSRO Trailer	Pipeline
2-3 Hours			

*Actual time may vary based on local conditions.

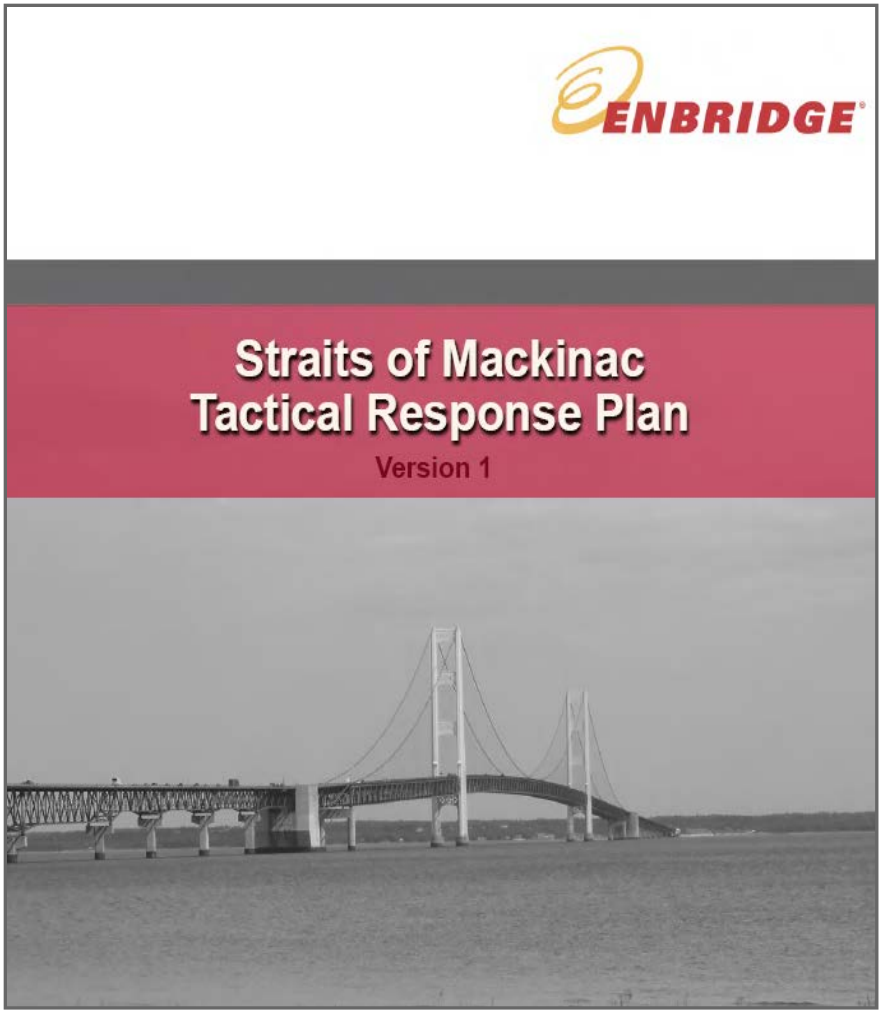
Clean Harbors Emergency Response Trailer - Detroit
OSRO
Regional Travel Time Per Hour Based on Ideal Road and Traffic Conditions
Chicago Region
0 25 50 100 Miles

Date Issued:	12/17/2012
Date Revised:	3/6/2013
Drawn By:	MAK (GAV)
Scale:	1:3,500,000
Map Series	4 of 5

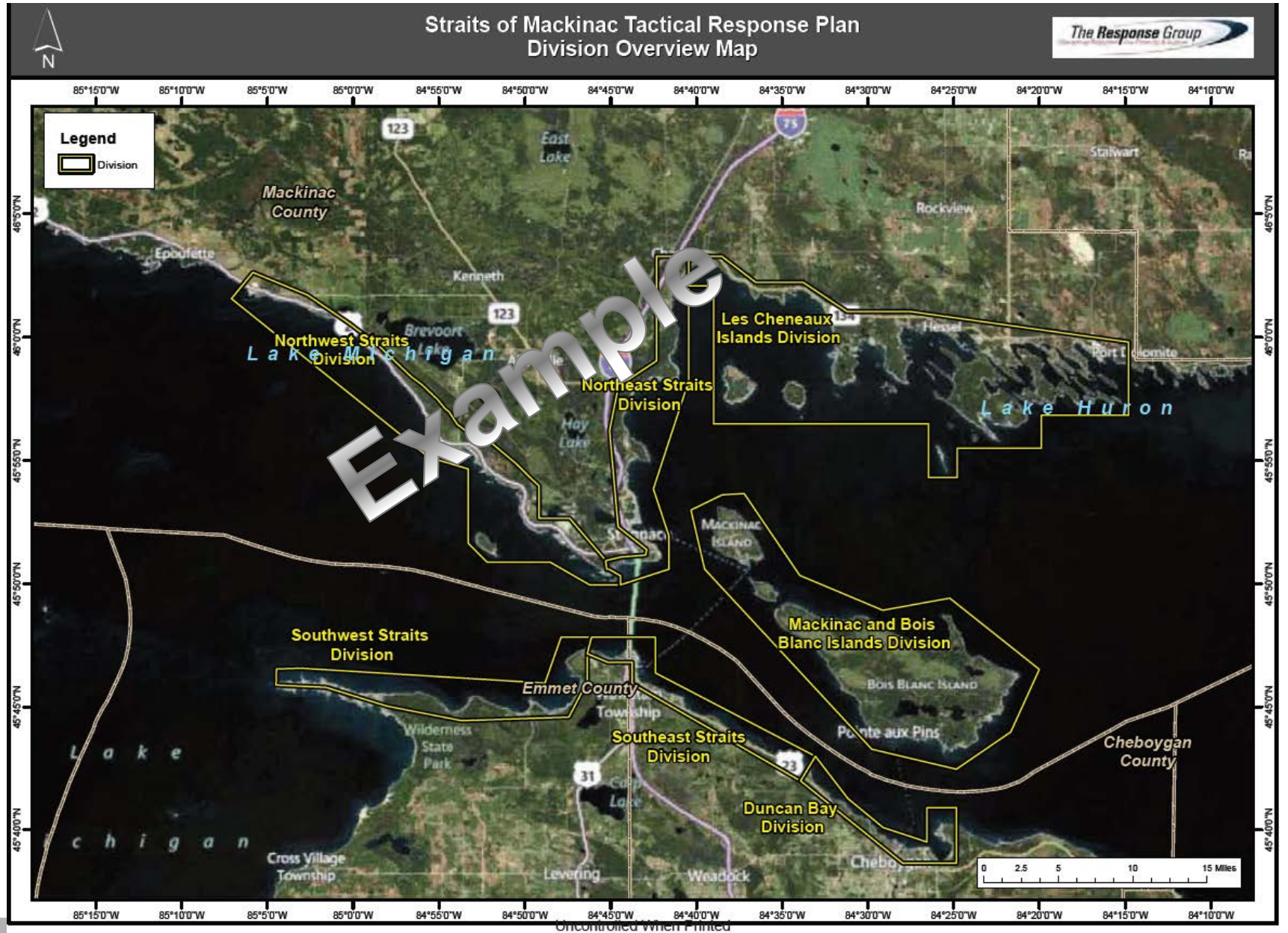
Natural Resources Engineering Co.
715-395-5680

Tactical Plans

- Enbridge has identified areas of improvement and planning beyond minimum regulatory standards.
- Tactical plans are intended to provide significant pre-planning information to a response in areas of high consequence.
- This level of planning and detail provides, industry leading, detail to support the Integrated Contingency Plan (ICP).



Tactical Plan Detail



Tactical Response Strategy Detail

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Northwest Straits Division
NWST-1- CP1477-0.0: Point La Barbe and Green Island
Strategy Map - Recovery/ Staging Area

The Response Group

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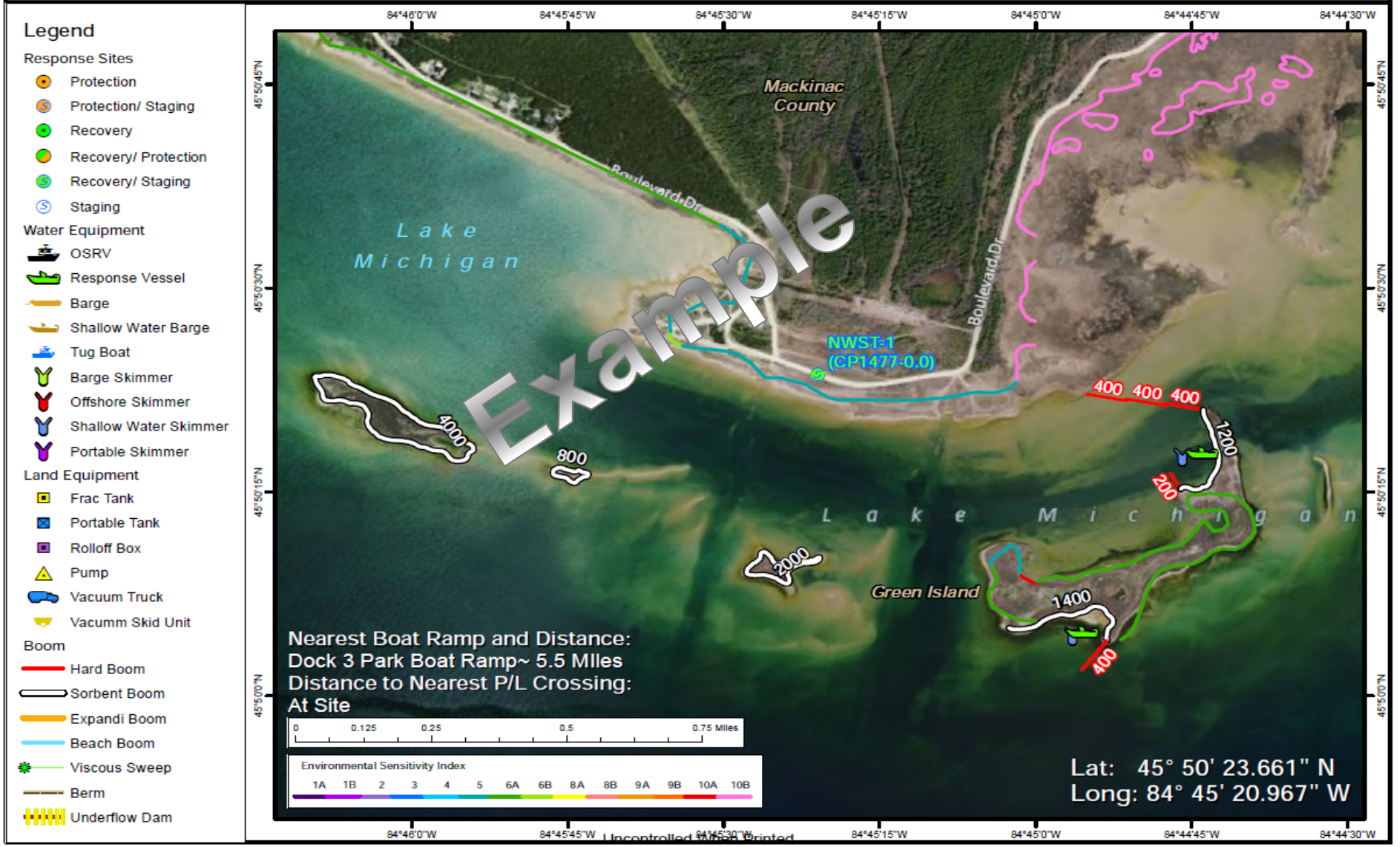
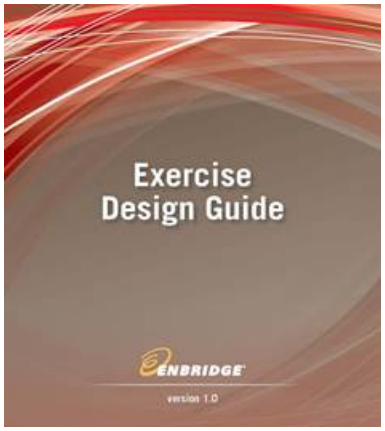


Uncontrolled When Printed

Response Job Aids

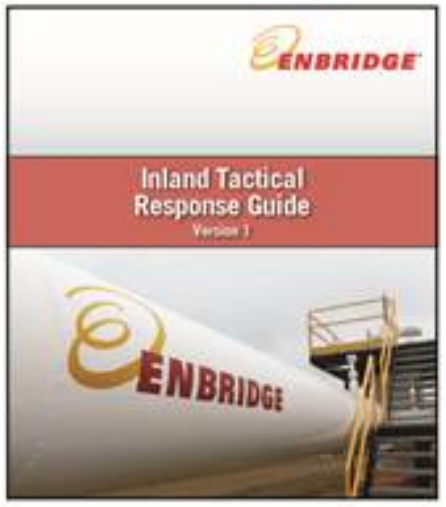
- Incident Management Handbook
  - ICS-201” Packets
  - ICS-214” Individual logs

- Exercise Design Guide
  - Planning of Exercises



- Inland Tactical Response Guide

  (under development)



How does this all fit?

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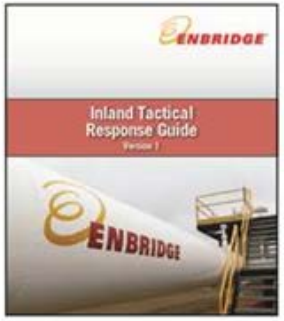
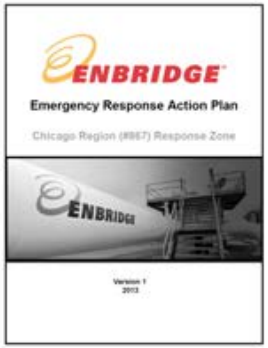
Integrated Contingency Plan

Chicago Region (#867) Response Zone

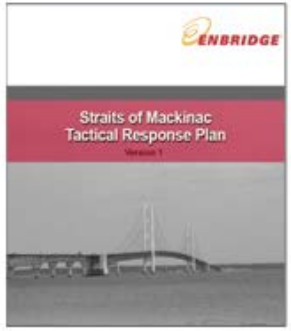
Version 1
2013

Emergency Response Job Aids & Tools





ICS 201 – Initial Response Packet



ICP approval, Implementation Activities

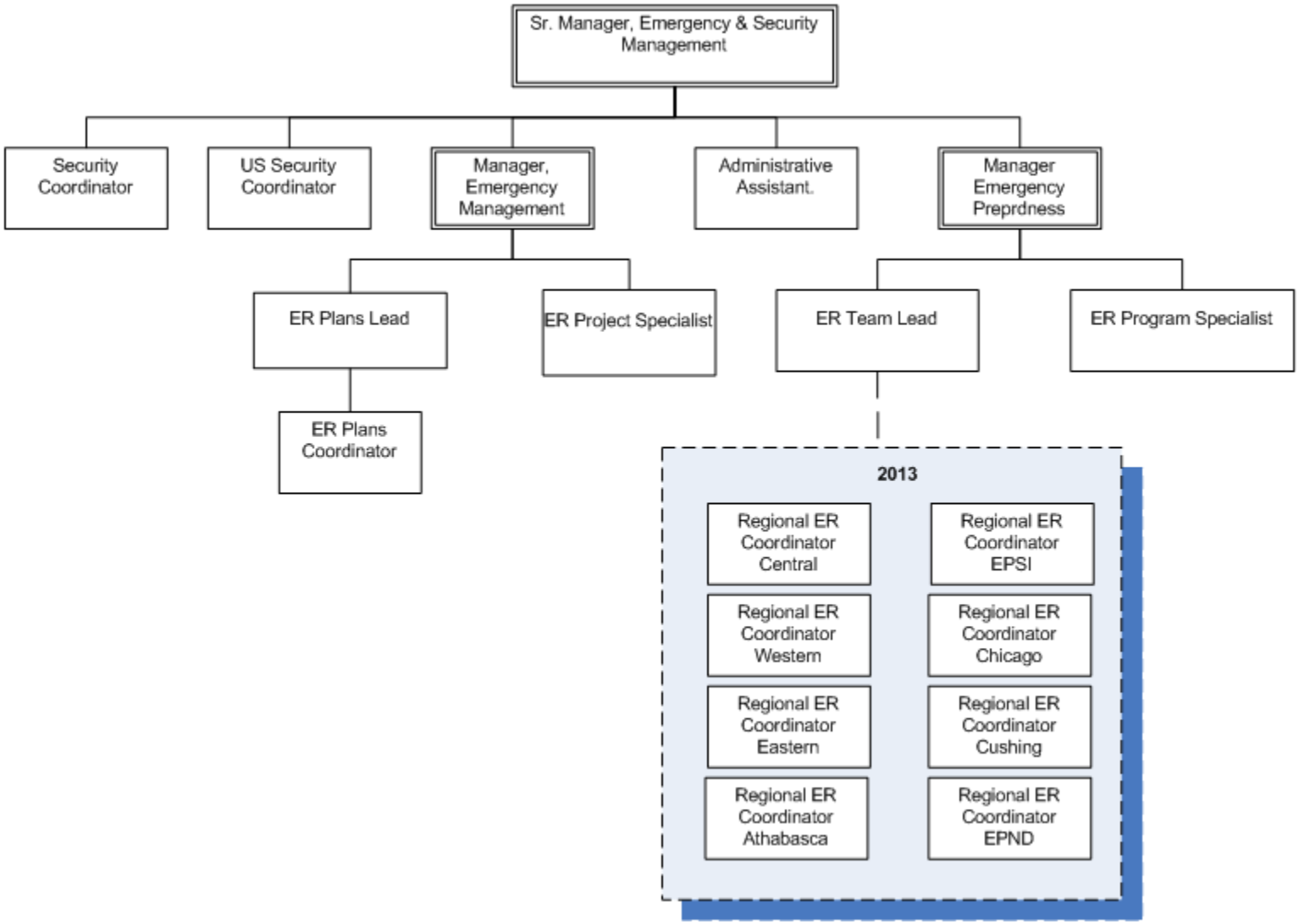
- ICP model is a “best practice;” in light of this Enbridge has been proactive in communicating to our Operating Regions about the new ICP format.

- All US Regions have had dedicated training sessions. The agenda included:
  - Safety Moment
  - Plan Components
  - Regional Specifics
  - Notification protocols
  - Regional IMT contacts
  - Qualified Individual (QI) identification
  - Training expectations
  - Exercise and Drill Expectations
  - Table top exercise on Worst Case Discharge

Program Improvements

- ER Internal Organization
- ER Capability Assessment
- ER Equipment enhancement
- ICS Training
- ICS Support
- Enterprise support E3RT
- First Responder Education

Emergency Management Department



Capability Assessment

Engaged 3rd party expert focusing on several areas;

- Categorization and classification of operational emergencies
- Notifications and communications
- Consequence assessment
- Emergency facilities and equipment
- Emergency plans
- Training and drills

Some Key Findings:

- Enbridge has a robust, leading, Tier 1 Response capability
- Continue to source and build response contractor relationships
- Develop a long-term Exercise & Training plan
- Continue to connect with Local Response Agencies

Incremental Equipment

~ $50 million in new equipment across system

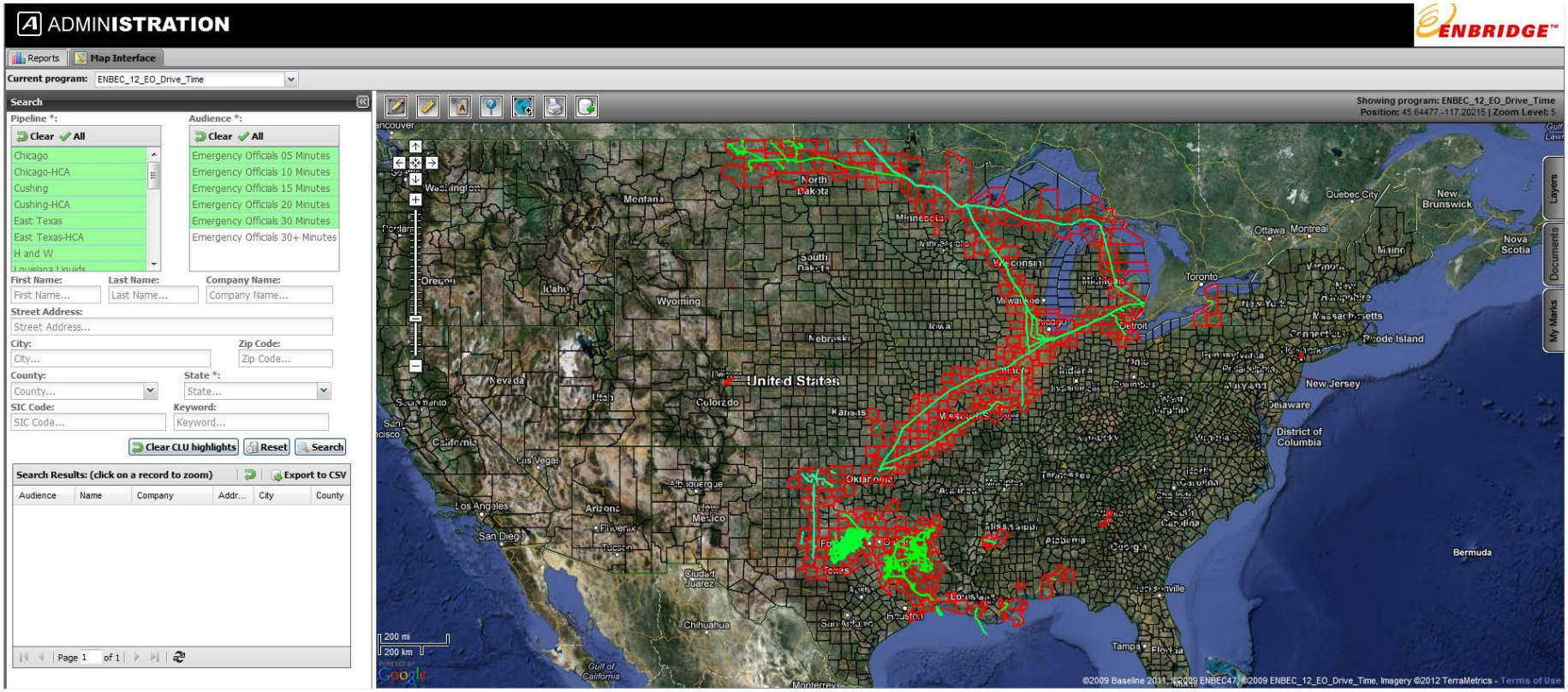
- Boom
- Skimmers
- Tiger Dams
- Boats
- Command Posts
- Rig Mats
- Bladders

E3RT Model

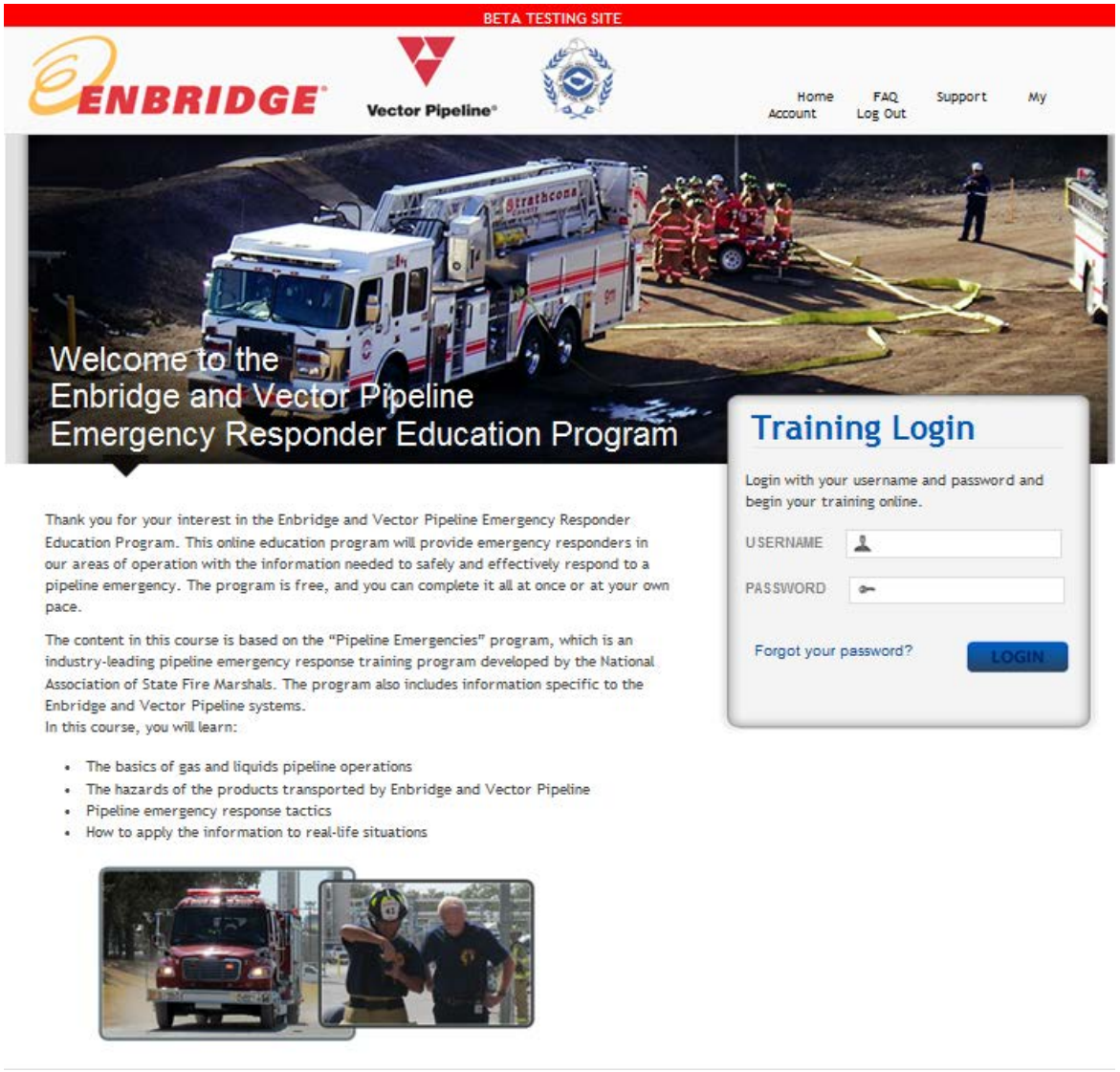
- Response Organization with depth and talent that is scalable to needs and size of incident
- Positions recruited from existing staff and trained as appropriate
- 90+ people Enterprise-wide
- Enterprise-wide functional exercise and training regularly

E3RT ICS Response Drill

EMERGENCY RESPONDER INTERNAL DATABASE



ONLINE PROGRAM



Crude Oil

Crude oil is unrefined petroleum and can be both a liquid and a gas petroleum product. Although crude is referred to as oil, most crude is actually a mixture of oil, gas, water and other impurities such as metallic compounds and sulfur.

Its color can range from yellow to black and its odor is similar to gasoline or diesel fuel. Some crudes and condensates contain hydrogen sulfides (H_2S), which have a rotten egg smell and are toxic in high concentrations.

Crude oils may be characterized as either "sweet" or "sour." Sour crude is highly toxic and volatile and has high sulfur content. Crude oil containing little or no sulfur is often referred to as "sweet crude."

Crude oil flows with the land profile and the flow depends on temperature and viscosity. Crude oil can be thick and slow-moving or light and able to move quickly. Crude oil includes various petroleum fractions with a wide range of boiling points.

Of the hundreds of components in crude oil, benzene has the potential to be toxic and volatile. Benzene content in crude oils varies greatly.

Principles of ICS (cont'd):

Incident Command Structures

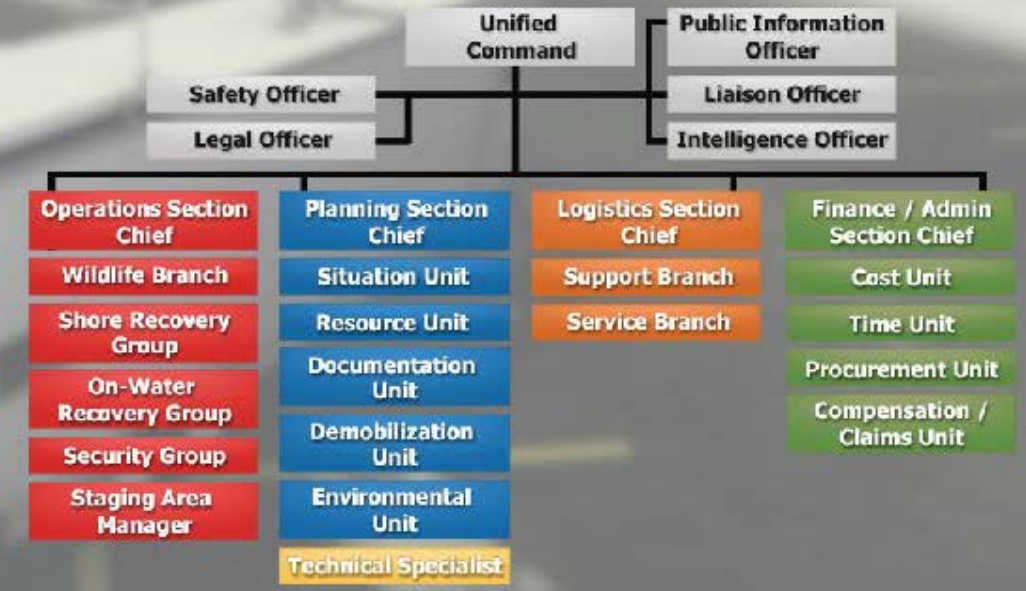
ICS — Example 1

ICS — Example 2

ICS — Example 3

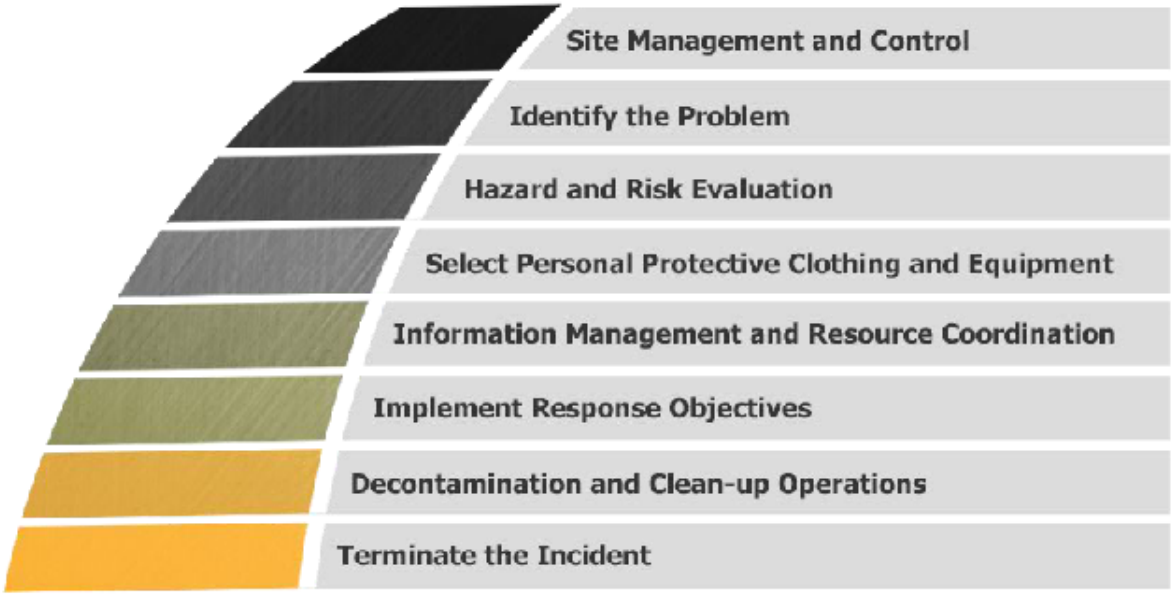
ICS — Example 4

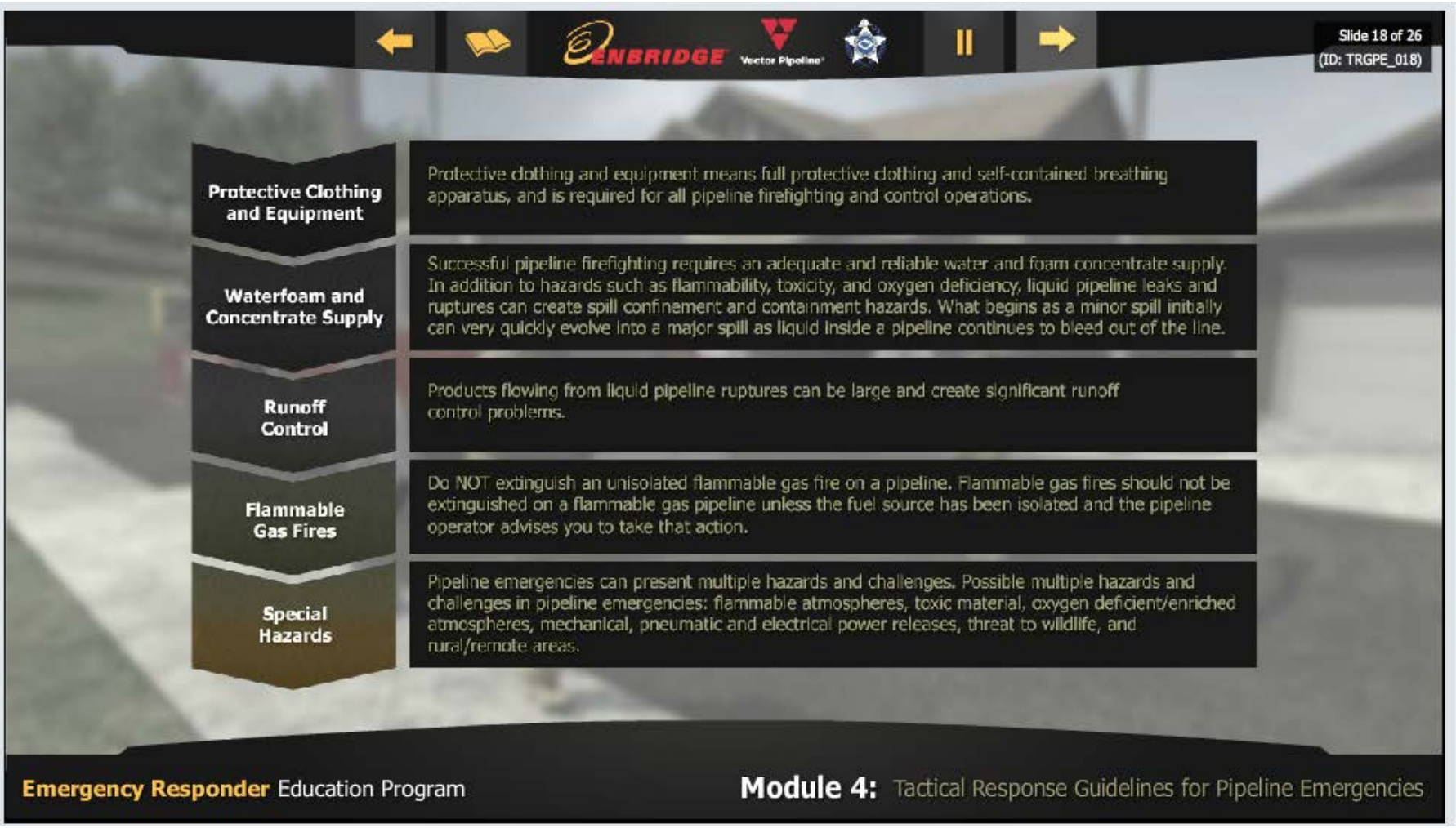
Incident Command Structure Organization



Tactical Response

The Eight Step Process

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(ID: TRGPE_018)
Protective Clothing and Equipment
Protective clothing and equipment means full protective clothing and self-contained breathing apparatus, and is required for all pipeline firefighting and control operations.
Waterfoam and Concentrate Supply
Successful pipeline firefighting requires an adequate and reliable water and foam concentrate supply. In addition to hazards such as flammability, toxicity, and oxygen deficiency, liquid pipeline leaks and ruptures can create spill confinement and containment hazards. What begins as a minor spill initially can very quickly evolve into a major spill as liquid inside a pipeline continues to bleed out of the line.
Runoff Control
Products flowing from liquid pipeline ruptures can be large and create significant runoff control problems.
Flammable Gas Fires
Do NOT extinguish an unisolated flammable gas fire on a pipeline. Flammable gas fires should not be extinguished on a flammable gas pipeline unless the fuel source has been isolated and the pipeline operator advises you to take that action.
Special Hazards
Pipeline emergencies can present multiple hazards and challenges. Possible multiple hazards and challenges in pipeline emergencies: flammable atmospheres, toxic material, oxygen deficient/enriched atmospheres, mechanical, pneumatic and electrical power releases, threat to wildlife, and rural/remote areas.
Emergency Responder Education Program
Module 4: Tactical Response Guidelines for Pipeline Emergencies

THANK YOU !

QUESTIONS?

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