

## Antero Resources Corporation

### Award Submission in the Category of *Large Company*

Program Title: Spill Conveyance Mapping and Emergency Response Preparation

#### **Description**

Antero Resources has been at the forefront of emergency preparedness in the Oil and Gas Exploration industry in their Utica and Marcellus Shale Operations. Directed by Aaron Goddard, Antero Resources initiated a Spill Conveyance Mapping Program for their oil and gas operations in Ohio and West Virginia. This program was developed and implemented two years prior to Ohio EPA's regulation *1501: 9-2-02 (h) Emergency Release Conveyance Map* came into effect, and the program is significantly more detailed than what is required in the Ohio EPA regulation. In addition, Antero has adopted the program in West Virginia, where there are currently no similar regulatory requirements. Antero's Spill Conveyance Program is a measure of preparation of emergency response, aimed to prepare well pad facilities on the most effective spill capture methods and interception locations in the event a spill leaves the well pad. But above all, this program was developed and implemented to better protect people, property, and the environment, if an incident were to occur.

#### **Purpose**

The primary goal of any spill or release is to: capture and contain it within Antero's well pad, and remove the spilled material as soon as possible. If the release does manage to leave the well pad, then just like any other emergency, time is of the essence to take control of the situation and prevent further migration of the material and potential impacts to the environment. Proper planning and preparation for these events will *save time*, and therefore limit impacts to the environment by creating a more effective response. The Spill Conveyance Mapping Program (Program) implemented by Antero Resources assesses all potential situations in which a release may leave a well pad, and establishes a mitigation and response strategy for each situation to limit migration and impacts to the environment. During this process, the Program identifies the most sensitive receptors, and creates protocols to capture and mitigate a potential release before it has a chance to reach these areas.

#### **Process**

Antero's Spill Conveyance Mapping Program is used to supplement their Emergency Response Plan in the event of a major release of a contaminant that escapes containment of the facility into the environment. The program identifies potential flow paths from well pads and identifies watersheds that are sensitive including potential habitat for federally listed threatened or endangered aquatic species (e.g. mussels) and Public Water Protection Areas. A field investigation is conducted along the flow paths to identify interception points at which countermeasures can be implemented to stop the contaminant, focusing primarily on culverts or bridges which are easy locations to access and implement countermeasures. Each interception point is documented with coordinates and photos of the location along with stream dimensions and recommended method of countermeasure to stop the flow of the release. Recommended countermeasures are determined for each interception point based on the size of the stream and type of structure present. Several emergency response trailers are staged throughout the operating region equipped with all necessary equipment (e.g. sandbags, booms, culvert caps, etc.) to employ countermeasures. Surface flow path modeling is performed to give the responders an idea of 1) how

quickly these spill can migrate, and 2) which off-pad areas require attention first. Estimated travel times to interception points are based on a 10-year storm event are used to predict the time it takes for the released substance to reach each interception point. The goal is to capture the release as close to the source as possible; however, secondary and tertiary interception points are identified in the event that countermeasures cannot contain the release at the closest point, or if countermeasures could not be implemented quickly enough to capture the initial wave of the contaminant.

The result of the Conveyance Mapping Program is the development of a Spill Response and Risk Management Report for each well pad which presents all of the data and recommendations for each interception point and conveyance maps depicting the locations and sensitive watersheds. Antero Resources has implemented an information sharing program with the county Emergency Management Agency Directors that provides them with copies of Antero Resources' Spill Prevention Control and Countermeasure Plans, Spill Conveyance Maps, Preparedness Prevention and Contingency Plans, and Emergency Response Plans.

Please refer to **Attachment 1** for a copy of the "Risk Management & Emergency Response" PowerPoint presentation that Mr. Goddard presented during the Ohio S.T.E.P.S. meeting at Zane State College in Cambridge, Ohio. Specifically, the presentation discusses and provides specific examples of a typical conveyance plan. The speaker's notes and full size slides are also provided for reference.

### **Contributions to the Environment**

Antero's Spill Conveyance Mapping Program allowed Antero to take a leading step in the industry by taking preemptive action to prepare for an emergency response of a release from a well pad site before it is state or federally regulated, and in Ohio implementing procedures that go above and beyond what is required by regulation to help protect and preserve the environment. The Spill Conveyance Mapping Program identifies where the facility is in relation to public water sources and potential habitat for federally listed threatened or endangered aquatic species. These resources are clearly identified on site specific mapping. The interception points aim to stop a release before reaching these sensitive locations. Without knowledge of where a release may travel, or where to intercept it, and what equipment might be needed, a contaminant could potentially reach a public water source or impact endangered species and cause immeasurable damages to the environment and community. Efficient capture of a contaminant is critical in the preservation of these resources and to reduce the impact to the environment. Fortunately, there have not been any releases to the environment that would require the implementation of the strategies developed in the program, however all well pads that the program has been implemented for have the mapping and strategies ready on pad to implement at a moment's notice. "Mock Spills" are performed using hypothetical situations to assess the effectiveness of the program and the practicality of the supporting documents. To date, there has been very positive reaction to the Program from everyone associated with the emergency response teams.

### **Accomplishments**

In 2013, Antero Resources initiated their Spill Conveyance Mapping Program for their Ohio operations, which contains elements that are well above and beyond the OHEPA regulatory requirements established in 2015. With the successful implementation of the program in their Ohio operations, and the obvious value pre-planning brings to emergency preparedness, the program has recently been adopted for well

pads in Antero's West Virginia operations as well, despite the fact there are no similar regulations being developed for the state.

Antero interacts with Municipal Responders to ensure they are properly equipped and trained to handle situations they may encounter if called to an Antero well pad, and has implemented an information sharing program with the county Emergency Management Agency Directors and interacts with the Muskingham Water Conservation District and Ohio Environmental Protection Agency to develop regulations and procedures to prepare for emergency responses associated with spills in order to help protect the environment and aquatic resources. Antero continues to assess risks and develop programs to address potential environmental hazards in order to stay at the forefront of the industry in Emergency Management.

**Attachment 1 – “Risk Management & Emergency  
Response” PowerPoint Presentation**

February 2015

## Risk Management & Emergency Response



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## Overview

### RISK MANAGEMENT & EMERGENCY RESPONSE

1. **Site Assessment & Hazard Identification**
  - Risk Assessment
2. **Planning**
  - Emergency Response Plan
  - Spill Conveyance Mapping
3. **Mitigation**
  - Engineering Controls
  - Best Management Practices
4. **Preparedness**
  - Training
  - Equipment
  - Agency Relationships
5. **Response**

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**Slide 2 - Overview** – Today, we'll discuss the methods and processes used by an operator to assess, prevent, and address spills or other emergencies related to oil and gas operations. Specifically, we will review the following:

Site Assessment & Hazard Identification: How do we assess project work sites and identify potential hazards before they can become a problem.

Planning: After potential hazards are identified, assess the hazards and develop a plan or strategy for addressing each. Examples are an ERP, Spill Conveyance Mapping, Spill Timing Maps/Models, Public Water Withdrawal Maps (or other sensitive Receptors), Spill Equipment Mapping, ect.

Mitigation: Put planning into action. Install engineering controls, implement BMP's, ect.

Preparedness: Get set up to implement a plan. Make sure everyone is trained, purchase and inspect equipment, perform mock runs, develop relationships with the regulatory agencies to ensure smooth notification and response

Response: Overview of procedures

## SITE ASSESSMENT & HAZARD IDENTIFICATION

### Identify Hazards:

- Chemical Storage
- Accidents
- Equipment Malfunction



### Identify Environmentally Sensitive Features:

- Rivers, Streams, Springs, Wetlands
- Private or Public Water Supplies
- Stormwater Features: Culverts, Catch Basins, Drains



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The first step in preparing for a spill or emergency begins with knowing what you're in for. This means taking time to identify all potential environmental and safety concerns with your job sites.

Review the operational process, site lay out, chemical and material storage set ups, personnel responsibilities and behaviors. Assume worst case scenarios. Can this piece of equipment or storage tank fail release a chemical to the environment? Is the Site prepared for that?

In addition, assess any environmentally sensitive features in the vicinity of site operations that needs to be protected from an incident? Are there any surface water bodies such as streams or springs? Is there a stormwater catch basin that leads to the river? What's about private or public drinking water supplies?

This all must be taken into account when assessing risk for a job site.

## SITE ASSESSMENT & HAZARD IDENTIFICATION

### Methods of Assessment:

- Site Visit
- Mapping
- Interviews



### Use Existing References:

- Spill Plans
- EMA Documents

**PREPAREDNESS, PREVENTION AND CONTINGENCY (PPC) PLAN**

**EMERGENCY RESPONSE PLAN**

**OIL SPILL CONTINGENCY PLAN**

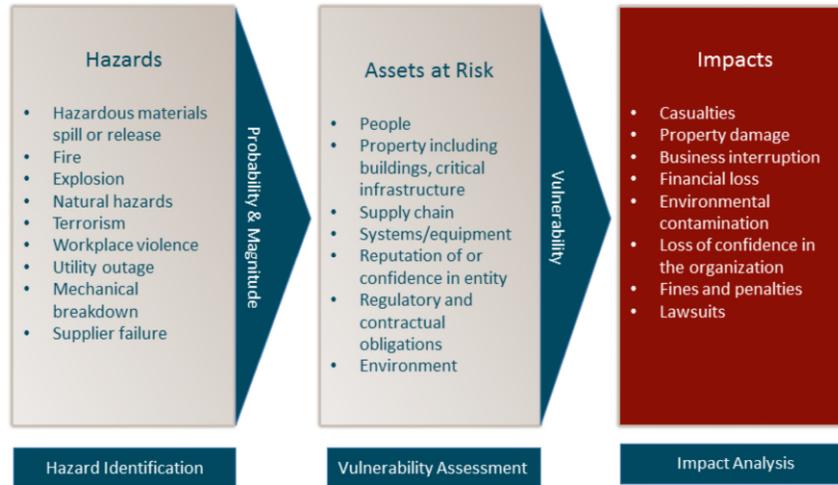
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There are several different methods for assessing risk for a job site. Boots on the ground may be most effective to observe site operations, but you must also consider several other resources such as operational site schematics, topographic maps, and work descriptions.

In addition, interviewing work site managers and surrounding property owners is an excellent opportunity to acquire this information.

Does your company already own documents that may identify potential hazards and/or receptors? Was an environmental assessment performed prior to construction? Does an overall spill prevention plan exist for the regional area? It's best to search for these documents before starting unnecessary tasks. Efficiency is key!

## SITE ASSESSMENT & HAZARD IDENTIFICATION



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The following diagram provides a general overview of :

1. Potential Hazards
2. Items at risk to be affected by the hazard
3. Potential fallout as a result of the impacts

\*Review the diagram for open discussion\*

## **PLANNING – Emergency Response Plan**

**Purpose:** *Document Procedures & Guidance for Response to Emergencies and Spills*

**Defines:**

1. *Roles and Responsibilities*
  - *Incident Command System (ICS)*
2. *Emergency Contact Information*
3. *Emergency Response Procedures*
  - *Notification*
  - *Immediate Response*
  - *Assessment*
  - *Containment*
  - *Clean-up*

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An Emergency Response Plan is prepared to provide guidance and procedures for the activation and operation of the Resource's Incident Command System and Emergency Operations Center in the event of an emergency.

The ERP focuses on the notification and response phase of emergency management and the transition to recover. Specifically, the document defines:

1. Roles and Responsibilities within the ICS. It outlines the chain of command, notification process, responsibilities for each individual.
2. A detailed list of emergency contacts (included with chain of command)
3. Emergency Response Procedures (discussed in detail later in this presentation)

## PLANNING – Emergency Response Plan

### Defines:

#### 4. Post Emergency Procedures:

- Remediation
- Restoration
- Incident Review

#### 5. Supporting Documents:

- Equipment Lists
- Mapping
- ICS Field Forms
- Medical Plan

### Spill Cart Inventory Checklist On Every Active Location

SPILL CART ITEMS – General	
Instruction Sheet, Laminated	1 each
DOT Spill Guidebook	1 each
Spill Kit Inventory List	1 each
Antero ID Label	1 each
Sump Booklet	1 each
Blank Pre-Drain Checklists	20 each

SPILL CART ITEMS – PPE	
Chemical Gloves, 11 mil Nitrile	1 each
Chemical Coveralls, Hood & Boots	1 each
Face Shield, Disposable	1 each

CART ITEMS – Cleanup / Sampling	
Universal Sorbent Pad 19" X 15"	2 pack
Universal Sorbent Socks 3' X 4'	10 each
Universal Sorbent Socks 3' X 12'	10 each
Universal Sorbent Booms 5' X 10'	2 each
Super Sorbent Particulate 20 lb. bags	2 each
Super Sorbent Shaker Cartons 1.75 lb.	12 each
StarDust Super Absorbent	4 each
Non-Sparking Shovel	1 each
10' Deck Brush	1 each
Telescoping Handle	1 each

CART ITEMS – Cleanup / Sampling REQUIRED	
Chloride Check II Strips (50 per bottle)	15 each
pH Test Strip Wheel	1 wheel
Telescoping 250 ml Polycup Sampler	1 each

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The document provides brief procedures on what needs to be completed following an incident. For example:

1. Was remediation completed to acceptable standards?
2. Was the area restored to it's previous state?
3. Is there any follow up reporting?

Finally, the document supplies the user with several supporting documents including equipment lists, mapping of spill chart locations or sensitive receptors, field forms, checklists, and medical or health and safety documents

## PLANNING – Spill Conveyance Mapping

- **Purpose:**
  - Predict High Risk Spill Paths
  - Identify Potential Receptors.
- **Supported by:**
  - Hazard Identification
  - Flow modeling
  - Field Surveys
- Required by DRAFT Horizontal Well Site Construction Rules: *1501: 9-2-02 (h) - Emergency Release Conveyance Map*

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The purpose of Spill Conveyance Mapping is to identify and predict pathways to environmentally sensitive receptors (public water supply, streams, ect) in the event of a spill and develop ways minimize or eliminate the impact.

The primary and most effective means of spill containment will be methods and practices implemented on the well pad.

However, Spill Conveyance Mapping can identify interception points that are located outside of the well pad in the event that a spill cannot be contained. The maps focus on off-site interception methods only.

In addition, the maps are required per the DRAFT horizontal well site construction rules associated with the well permitting process.

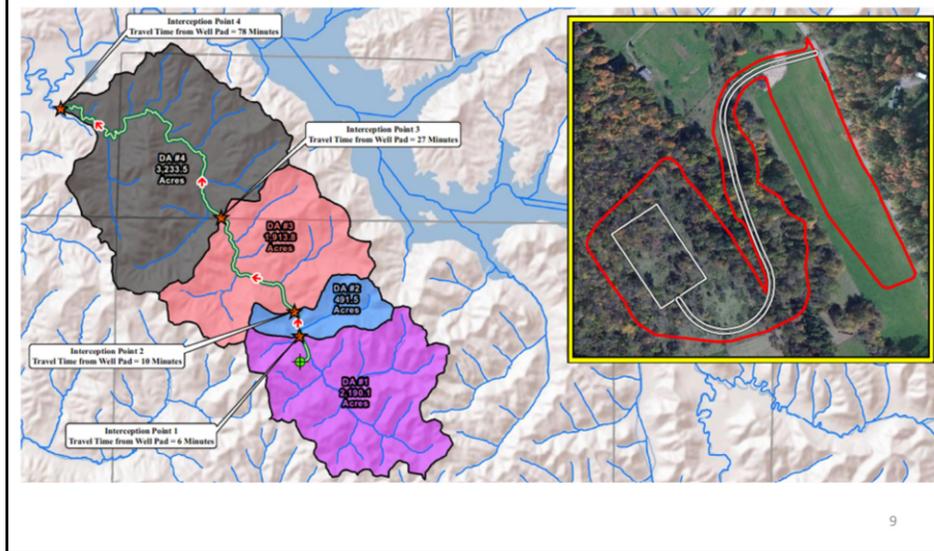
# PLANNING –

## Spill Conveyance Mapping

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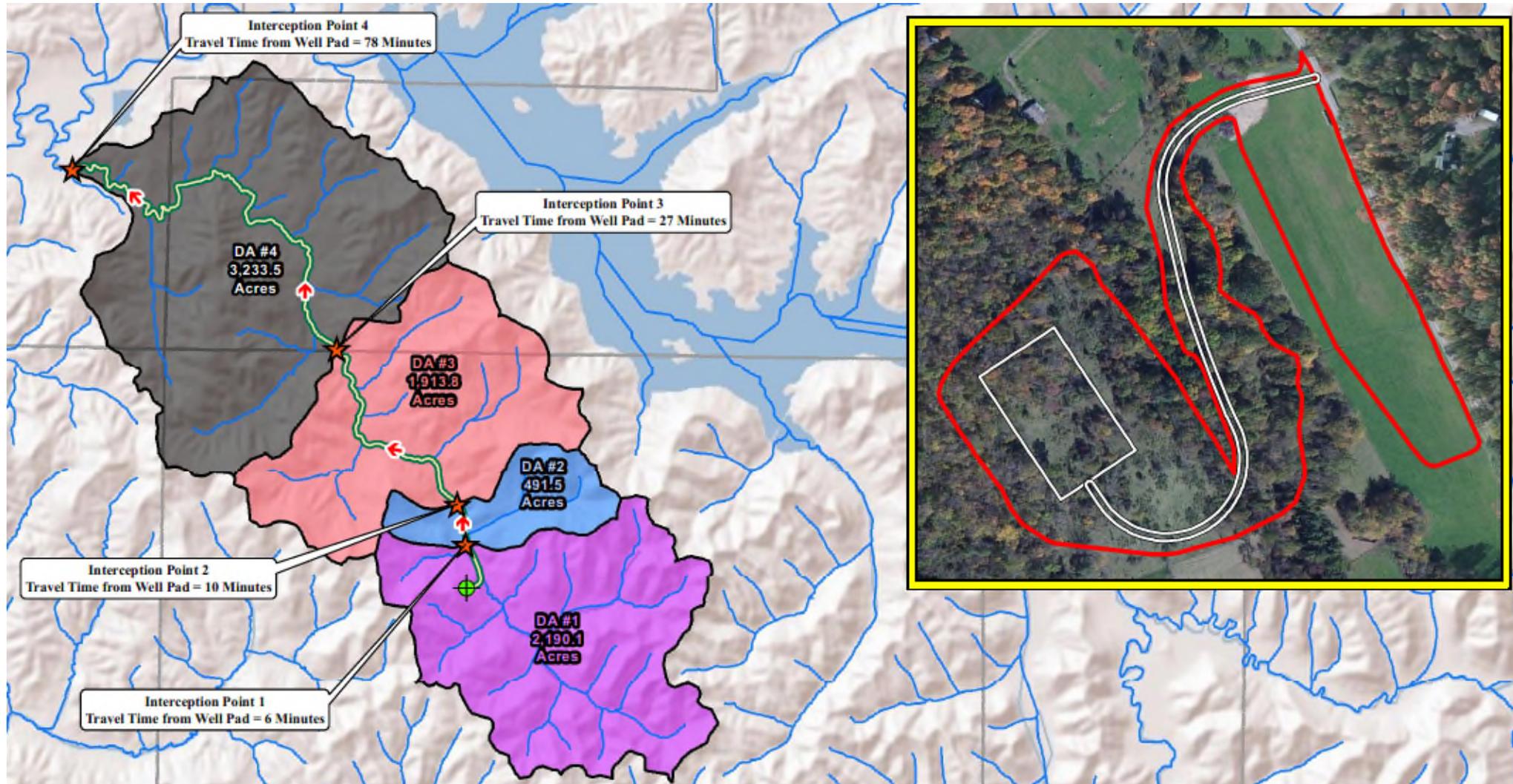
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## PLANNING – Spill Conveyance Mapping

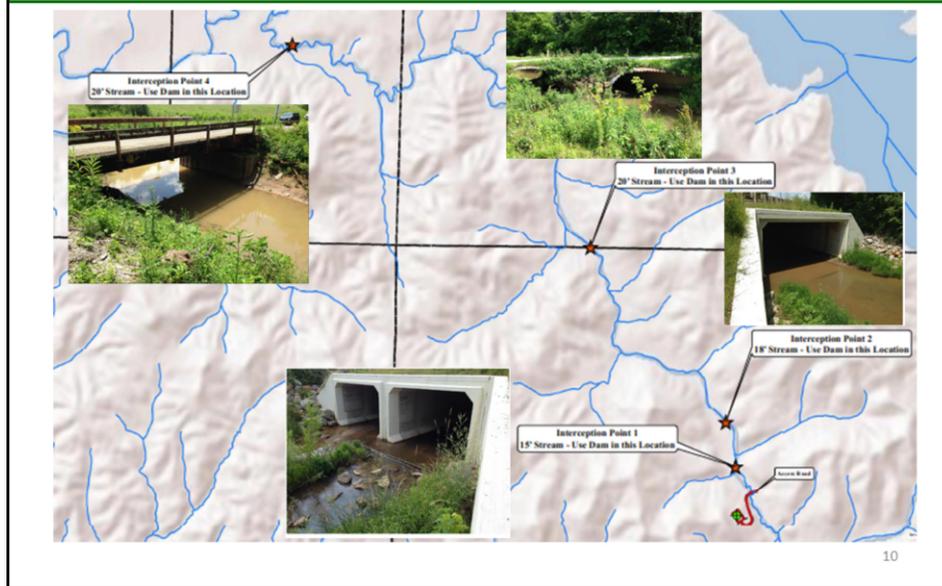


**Drainage Area Map:** Geographic information needed to identify well pad spill interception points. The map also includes average 5 year travel time from the well pad to any given interception point.

# PLANNING – Spill Conveyance Mapping



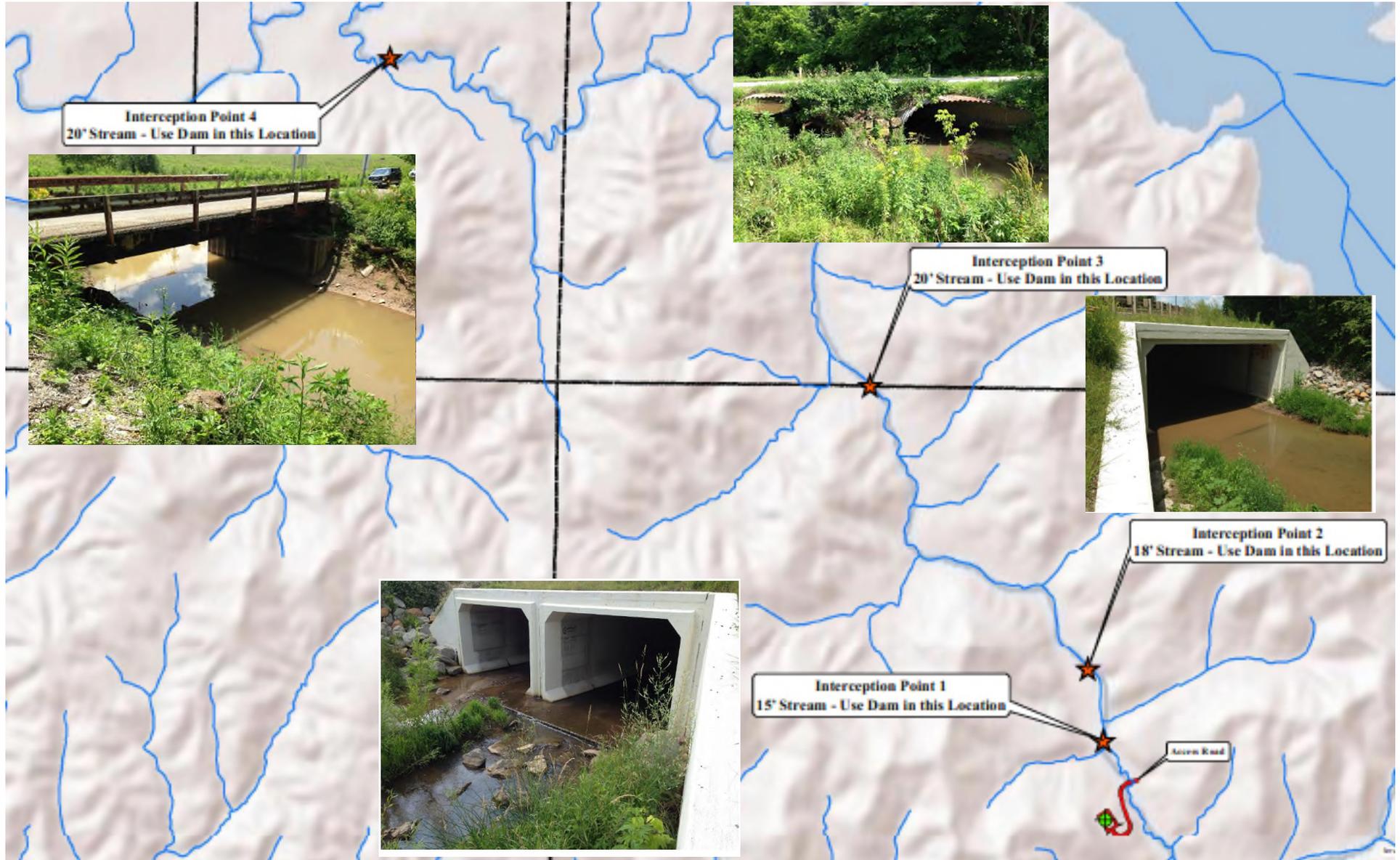
## PLANNING – Spill Conveyance Mapping



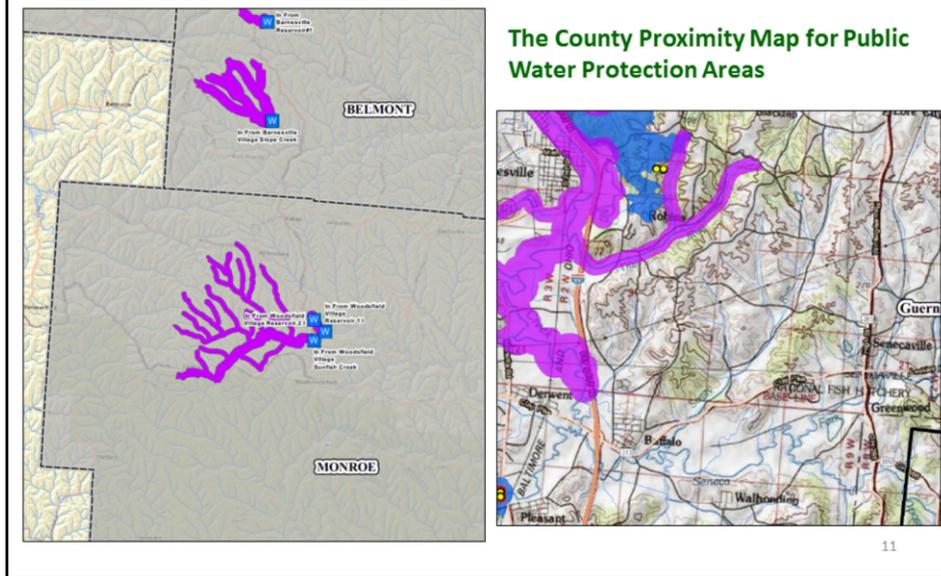
The General Vicinity Map provides the location for accessing the interception points and the type of mitigation method required at each location.

In the event of an incident, this map is helpful for finding the most efficient route to each interception point when time is of the essence.

# PLANNING – Spill Conveyance Mapping



## PLANNING – Spill Conveyance Mapping

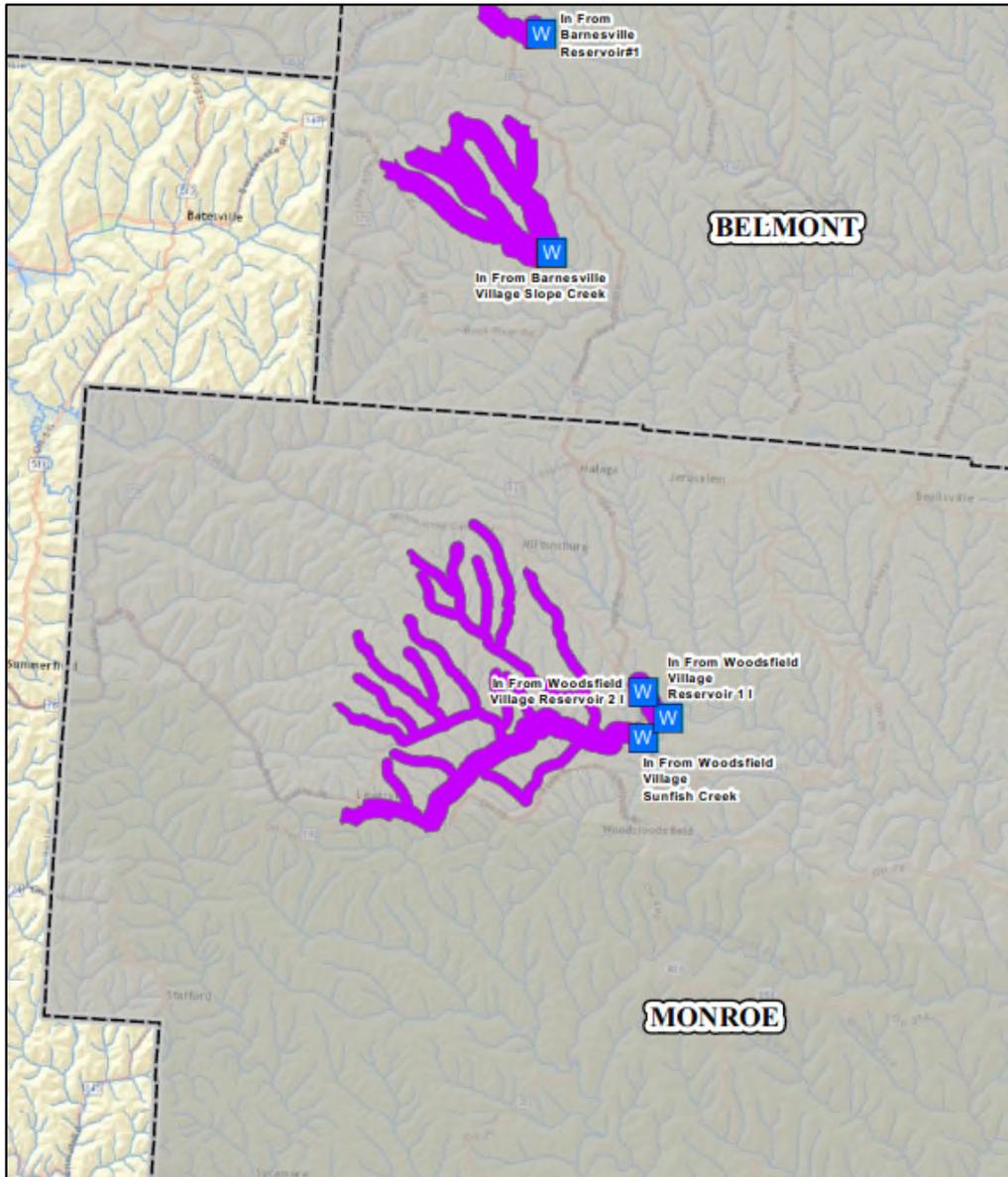


The County Proximity Map for Public Water Protection Areas shows the proximity of the well pad to public water protection areas within the County.

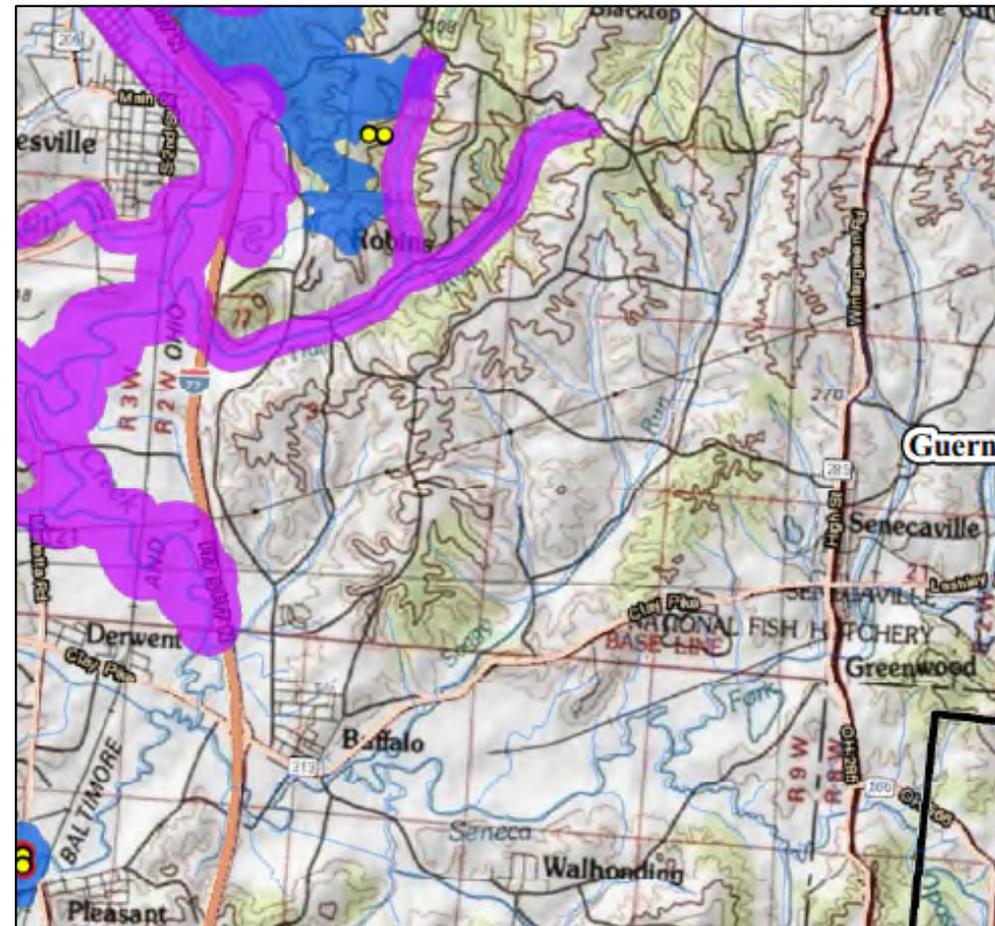
Yellow dots are public water wells locations

You see in this example that the site is very far from any of these protected areas.

# PLANNING – Spill Conveyance Mapping



The County Proximity Map for Public Water Protection Areas



## **MITIGATION – Engineering Controls**

- **Designed and Constructed to Isolate and Control Spills or Other Hazards**
- **Some Controls Minimize Hazards Instead of Eliminating Them**
- **Can Prevent the Need for Emergency Response in the Event of an Incident**

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Accidents happen, but they can be minimized and/or eliminated with the right tools in place. Engineering controls can be utilized to aid in stopping an incident before it happens or help minimize the impact.

Why not just use engineering controls that eliminate a hazards? Several reasons can apply:

1. Cost too high
2. Interferes with operations
3. May create a large hazard in the process

Need to use professional judgment when choosing which control is adequate for your operation.

No matter which control you decide on, it should be adequate in preventing a major emergency and the need for an emergency response.

## MITIGATION – Engineering Controls

### Secondary Containment



### Stormwater Basins



### Berms & Mats



### Well Pad Sump Protection



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Let's review a few example of engineering controls:

**Secondary Containment:** In the event of a release or overflow, the containment will capture the material for easy cleanup instead of releasing it to the environment.

**Berm:** Designed to capture spills or leaks within a large working areas. Berms should be frequently inspected to confirm the structural integrity was not compromised during work activities.

**Stormwater Basins:** Although not designed or recommended for spill control, a site's stormwater system can aid in diverting a release to an area for cleanup before it has an opportunity to leave the site.

**Well Pad Sumps:** Designed to capture contaminated stormwater or other releases before they have the opportunity to leave the site.

## MITIGATION – Engineering Controls

Overfill Alarms



Hose Connection Bibs



Barriers



Jersey Barrier  
Protects Tanks  
& Containment  
from Truck  
Traffic

Spill Pallets



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A few more examples of engineering controls:

**High-Level Alarms** – Used to prevent overfilling of storage tanks

**Double-walled tanks** - Leaks from the primary tank are contained in the interstitial space of the secondary tank

**Barriers** - Tanks surrounded by concrete jersey barriers or steel bollards protect them from vehicular impact and subsequent rupture.

**Polyethylene spill pallets** – Provide secondary containment for mobile or temporary containers. Perfect for 55 gallon drums or 330 gallon poly tanks when a containment berm is not available.

## MITIGATION – Best Management Practices

### ▪ Loading/Unloading

- Visually checks
  - Hoses
  - Valves
- Areas in Containment?



### ▪ Materials Storage

- Monitor liquid levels
- Ensure containers are not stored directly on the ground

### ▪ Waste Management

- Train employees and subcontractors in the proper handling of wastes

### ▪ Routine Inspection Program

### ▪ Standard Operating Procedures / Training

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In addition to constructing engineering controls to prevent an incident, operators should employ BMP's to correct human behaviors that lead to unsafe actions, and subsequently, incidents or emergencies.

Examples of BMP's related to spill control:

1. Leak checks for loading/unloading
2. Monitoring tanks when storing chemicals or waste
3. Proper handling of chemicals or waste
4. Routine inspections of:
  1. Tanks
  2. Containment
  3. Piping
  4. SW Controls
  5. Vehicles
  6. Equipment

These procedures should be distributed (and documented) to personnel via SOP's or Training sessions (in-class or tailgate). The company's environmental program can support this effort by developing policy consistent with operational needs and legislative requirements.

<b>Containment Volumes &amp; Retention Times Exercise</b>		
<b><u>Engineering Control:</u></b>	<b><u>Running Retention Volume:</u></b>	<b><u>Fill Times:</u></b> <small>Assume 10-yr 24 hour storm event; no withdrawal</small>
<b>Seven Well Pad Sumps:</b> <ul style="list-style-type: none"> <li>• 1,300 gallon/sump x 7 sumps</li> </ul>	<b>9,100 gal</b>	<b>57 Minutes</b>
<b>Pad Containment:</b> <ul style="list-style-type: none"> <li>• Pad water @ 18" deep over pad area of 105,000 sf</li> </ul>	<b>1,187,358 gal</b>	<b>5.1 Days</b>
<b>Retention Pond Containment:</b> <ul style="list-style-type: none"> <li>• Culvert plug installed to obtain capacity to emergency spillway</li> <li>• 100 yr @ spillway crest 998.3' = 312,436 gal</li> </ul>	<b>1,499,794 gal</b>	<b>1.2 Hours</b>

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A brief example of how properly installed and maintained engineering controls can keep a very large release from leaving a well pad.

Retention times based upon volume calculated from 10-year, 24 hour storm event with constant intensity with **no** withdrawal.

Would equal to a spill rate of **9,655 gal/hr.**

## PREPARDNESS – Training

- **Hazardous Waste Operations and Emergency Response (HAZWOPER)**
  - Guidelines Produced and Maintained by OSHA
  - Regulates Hazardous Waste Operations and Emergency Services
  - General Site Workers Require 40 Hour Training and 8 Hour Annual Refreshers
  - HAZWOPER Training Required for Individuals Engaged in Cleanup or Emergency Response Operations per the Following: 1910.120(a)(1)(i-v) and 1926.65(a)(1)(i-v)
- **First Aid & CPR**
  - Required for ALL Field Personnel

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HAZWOPER is a set of guidelines produced and maintained by OSHA that regulates hazardous waste operations and emergency services.

ANY personnel responding to:

1. Emergency Response;
2. Cleanup operation;
3. Voluntary cleanup operation; or
4. Operation involving hazardous waste

MUST complete this training no matter what their work function is.

There are different levels of training, but typically anyone working at a site must attend the full 40 hour training.

In addition, each first responder to an incident must be certified in First Aid and CPR

## PREPARDNESS – Training

### ▪ Incident Command System (ICS)

*Standardized on-scene incident management concept designed specifically to allow responders to adopt an integrated organizational structure equal to the complexity and demands of any single incident or multiple incidents without being hindered by jurisdictional boundaries.*

### ▪ Seven Components:

1. **Standardization**
2. **Functional Specificity**
3. **Manageable Span of Control**
4. **Unit Integrity**
5. **Unified Command**
6. **Management by Objectives**
7. **Comprehensive Resource Management**

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The operator should develop and adopt a specific ICS to support incidents associated with oil & gas operations. The specifics of the ICS is detailed in the ERP. All employees associated with these activities should review and understand the ICS. Generally, there are 7 components of an ICS:

1. **Standardization:** Across the company, use standardized names and functions to avoid confusion in the event of an emergency
2. **Functional Specificity:** Define the division of labor for each of these units so everyone knows their role.
3. **Manageable Span of Control:** Establish a limit to the number of subordinates directly supervised by each manager. This prevents any manager supervising an aspect of the emergency to become overwhelmed.
4. **Unit Integrity:** People with a specific discipline or skill set are assigned to their respective tasks
5. **Unified Command:** Select a single incident commander for the emergency. The IC will help manage several teams, if needed, to respond to an incident
6. **Management by Objectives:** Senior Managers develop action plans that include measurable objectives to evaluate progress and performance.
7. **Comprehensive Resource Management:** The IC or team leaders must manage resources appropriately to allow the proper completion of tasks.

## PREPARDNESS – Training

### ICS Training:

- **IS-700 NIMS Instruction**
  - **National Incident Management System (NIMS)**
  - **Discussed in the Following Slide**
- **ICS 100 - Introduction to Incident Command System**
  - **Required for All Responders**
- **ICS 200 - Single Resources and Initial Action Incidents**
  - **Designed for Supervisors or Others Working with ICS**
- **ICS-300 Intermediate ICS**
  - **Designed for Supervisors**

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- ICS 100, Introduction to the Incident Command System, introduces the Incident Command System (ICS) and provides the foundation for higher level ICS training. This course describes the history, features and principles, and organizational structure of the Incident Command System. It also explains the relationship between ICS and the National Incident Management System (NIMS).
- ICS 200 is designed to enable personnel to operate efficiently during an incident or event within the Incident Command System (ICS). ICS-200 provides training on and resources for personnel who are likely to assume a supervisory position within the ICS
- ICS 300 This 18-hour classroom course is designed for front-line personnel with supervisory responsibilities, such as the Incident Commander or Planning Section Chief. The three-day curriculum includes instruction in general principles associated with incident command, along with various tabletop exercises that allow students to put this knowledge to practical use.

## PREPARDNESS – Training

### ▪ National Incident Management System (NIMS)

- Standardized System for Managing Emergency Preparedness/Response
- Builds On ICS Framework
- Six Components:
  1. Command & Management
  2. Preparedness
  3. Resource Management
  4. Communication & Information Management
  5. Supporting Technologies
  6. Ongoing Management & Maintenance

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The NIMS was created in the wake of the 9/11 terrorist attacks to develop a standardized system for managing emergency preparedness and emergency response. It was developed after realizing regional ICS framework was too different from one another.

NIMS builds off ICS framework to help standardize ICS's across the county. There are 6 components (here's a very broad overview):

- 1. Command and Management:** Defines Multi-Agency coordination systems and sets up a process for communication at a wide scale
- 2. Preparedness:** Involves an integrated combination of planning, training, exercises, personnel qualifications standards, equipment acquisition, and publication management processes and activities.
- 3. Resource Management:** Requires inventory or resources according to a standardized system. Lists rules for determining what resources will be needed for an incident, how they are ordered, mobilized, tracked, reported, ect.
- 4. Communication & Information Management:** established standards for communications at an incident and specifies processes for managing information
- 5. Supporting Technologies:** encourages locals to acquire and continually review the available new technology for incident management.
- 6. Ongoing Management & Maintenance:** establishes activities for NIMS oversight, review, and refinement.

## **PREPARDNESS – Training**

### **Emergency Response Drills or Mock Spill Runs**

- **Developed by Environmental Team**
- **Utilized to Assess**
  - Operational Readiness;
  - Effectiveness of the ICS; and
  - Emergency Response Team Performance
- **Designed to Test Team’s Responsibilities**
- **Teams are Graded and Evaluated**

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### Emergency Response Drills or Mock Spill Runs

1. Developed and Conducted by Environmental Team
2. Utilized to Assess Operational Readiness, Effectiveness of the ICS, and Emergency Response Team Performance
3. Fictional Scenarios Designed to Test Several Aspects the Team’s Responsibilities
4. Teams are Graded and Evaluated to Identify Strengths and Weaknesses

## PREPARDNESS – Equipment

Spill Trailer



Chemical Absorbents



Shallow Water Curtain Boom



Absorbent Pads



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Examples of some basic equipment used by Spill Response Teams:

**Spill Trailer:** Self-contained, all-weather, trailer mounted unit stocked with enough supplies for several types of spills. Several trailers are staged throughout the lease area to minimize response times by clean up crews.

**Absorbent Powders:** Typically used on paved areas. Can be used to neutralize a specific hazard such as acid, base, or other corrosive. The responder must have a good knowledge of the spill material before applying this type of absorbent.

**Hydrophobic Oil Socks:** Contains and absorbs oil in dry or saturated environments. Use stings to tie down in creek beds or stormwater features.

**Absorbent Pads:** Used to Contain and absorb spills. Can be purchased as hydrophobic or absorb specific types of chemicals

## PREPARDNESS – Agency Relationships

### Ohio Department of Natural Resources

- County inspectors
- Jurisdiction for Incidents within the limits of an Oil & Gas Facility



### Ohio Environmental Protection Agency



- Emergency Response Program
- Provides Assistance to Environmental First Responders

### County Emergency Management Agency

- Coordinates response to disasters and major emergencies



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After an initial spill assessment is completed, Environmental personnel must notify the regulatory agencies as applicable. The notification process is documented in the company's ERP.

Pursuant to state law, an operator is required to report a release or emergency within the limits of an oil and gas facility to the ODNR. KNOW YOUR COUNTY INSPECTOR and keep he/she in the loop on spills or emergencies as they progress.

If a release warrants reporting to the OH EPA, do so in a timely and effective manner. For large scale releases or impacts to sensitive receptors, the OH EPA Emergency Response Program will mobilize to the Site to provide assistance to the first responders.

The County Emergency Management Agency will respond to wide scale disasters and emergencies to aid with Emergency & Resource Management.

## EMERGENCY RESPONSE

### EXAMPLE - Spill Response Procedure :

#### 1. Witness Notifies Supervisor Immediately

- If it's an Emergency, call 911 first!
- Supervisor initiates ICS; notifies Environmental & Safety Teams
- Initiate Reporting
- Notify the Appropriate Regulatory Agencies



#### 2. Initial Response

- Environmental & Safety Teams Mobilize to the Site

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Let's look at an example set of procedures for Emergency Response. Specifically: a Spill Response.

**Please Note:** These procedures should be documented in the company ERP.

1. Witness Notifies Supervisor Immediately
  - If it's an Emergency, call 911 first!
  - Supervisor initiates ICS; notifies Environmental & Safety Teams
  - Initiate Reporting
  - Notify the Appropriate Regulatory Agencies (**Refer to ERP for Decision Matrix**)
2. Initial Response
  - Environmental & Safety Teams Mobilize to the Site (**Identify which spill trailer is closest to the incident, do no break traffic laws when traveling to the site**)

## EMERGENCY RESPONSE

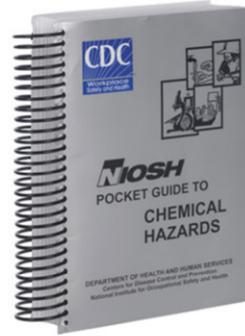
### 3. Identify Hazards & Potential Receptors

- Evaluate Hazards from a Distance
- Use MSDS, NIOSH Pocket Guide, ect.
- Communicate Status with Site Personnel



### 4. Immediate Response

- Stop Release at its Source if Safe
- Stop Ignition Sources
- Ventilate Area if Needed
- Evacuate?



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### 3. Identify Hazards & Potential Receptors

- Evaluate Hazards from a Distance
- Use MSDS, NIOSH Pocket Guide, ect.
- Communicate Status with Site Personnel (**confirm stoppage of work and that everyone is aware of the release**)

### 4. Immediate Response

- Stop Release at its Source if Safe
- Stop Ignition Sources
- Ventilate Area if Needed (**Most likely N/A**)
- Evacuate?

## EMERGENCY RESPONSE

### 5. Spill Assessment

- Call for Outside Responders if Needed:
  - Spill Contractors
  - Environmental Consultants



### 6. Spill Containment

- Spill Kits
- Absorbents
- Berms
- Barriers



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### 5. Spill Assessment

- Call for Outside Responders if Needed:
  - Spill Contractors (**Use specialized equipment to contain and remove the release**)
  - Environmental Consultants (**Delineate the extent of the impacts**)

### 6. Spill Containment

- Spill Kits
- Absorbents
- Berms
- Barriers

## EMERGENCY RESPONSE

### 7. Clean Up

- Cover Spill from the Elements if Needed
- Dispose of Absorbent Materials
- Excavate if Needed
- Collect Samples to Properly Characterize Extent of Release
- Disposal of Impacted Material



### 8. Continue Remediation

- Continue Cleanup Efforts Until No Further Action is Required



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### 5. Clean Up

- Cover Spill from the Elements if Needed
- Dispose of Absorbent Materials
- Excavate if Needed
- Collect Samples to Properly Characterize Extent of Release
- Disposal of Impacted Material (**collect samples for waste characterization?**)

### 6. Continue Remediation

- Continue Cleanup Efforts Until No Further Action is Required (**Per State Regulation**)

## QUESTIONS?



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