Oregon LEPC Conference HAZMAT Incident Tabletop Exercise (TTX)

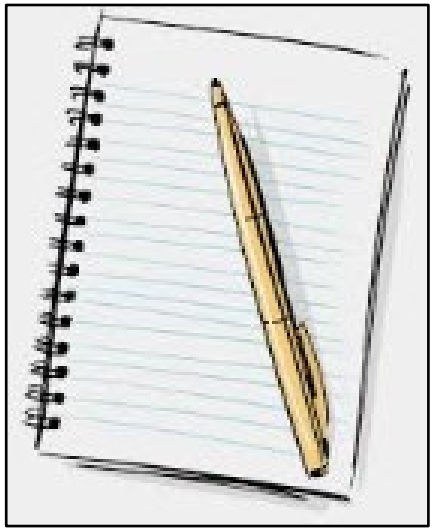
Alliance Solutions Group, Inc.

TTX Agenda

Time	Topics
8:00 a.m. - 8:05 a.m.	Introduction and Administrative Notes
8:05 a.m. - 8:45 a.m.	Initial Notification and Response Actions
8:45 a.m. – 9:15 a.m.	Identification and Communication with At-Risk Populations
9:15 a.m. – 9:30 a.m.	Break
9:30 a.m. – 10:00 a.m.	Public Protective Action Decision-Making
10:00 a.m. – 10:25 a.m.	Public Alert and Warning Process
10:25 a.m. – 10:45 a.m.	Public Water System Notification
10:45 a.m. – 11:00 a.m.	Break
11:00 a.m. – 11:25 a.m.	Unified Command
11:25 a.m. – 11:45 a.m.	Recovery Outcomes and Operationalizing Resilience
11:45 a.m. – 12:15 p.m.	TTX Hotwash and Feedback Session

Administrative

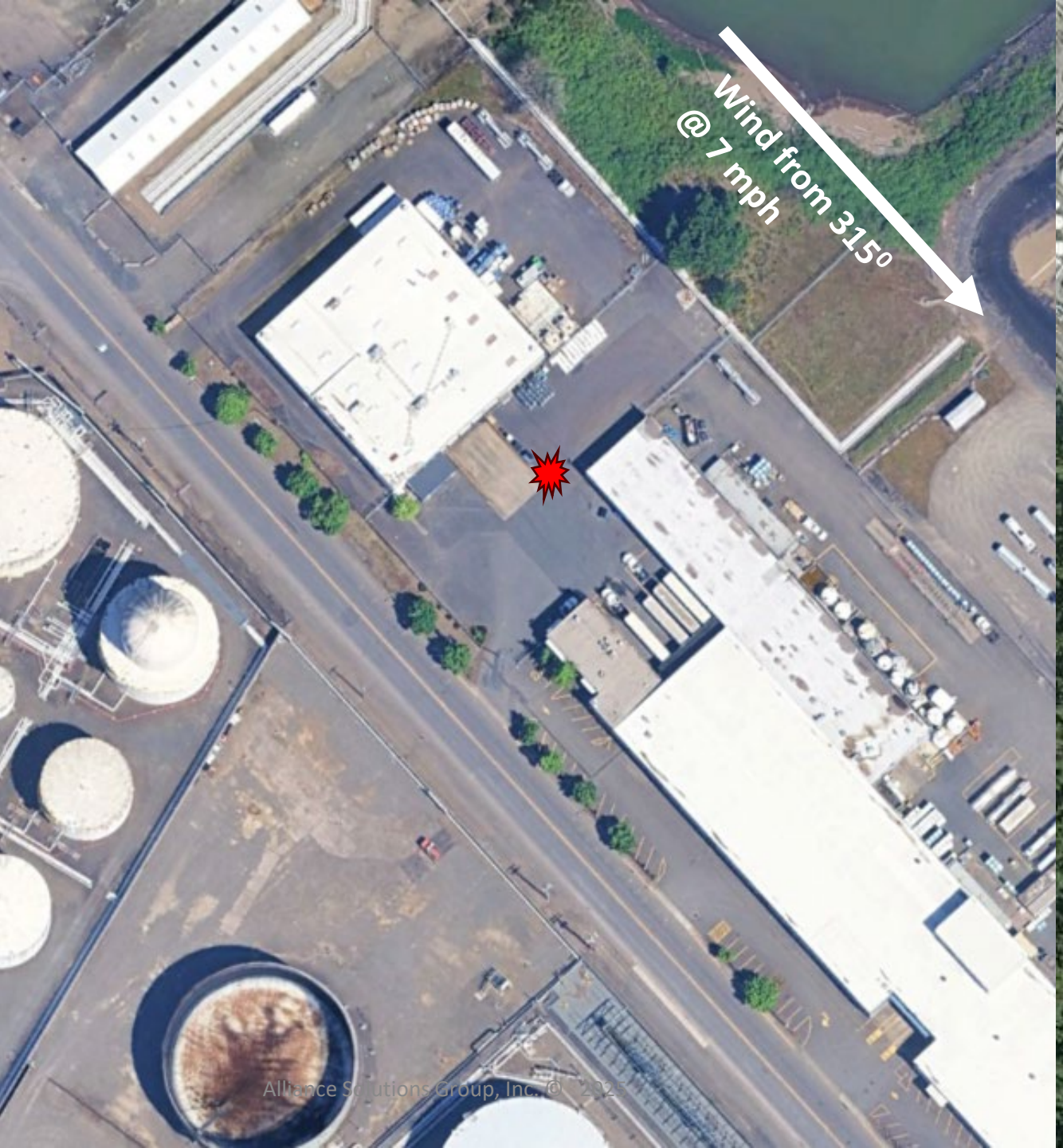
- Please silence all cell phones
- Facility evacuation procedures (fire alarm)
- Restrooms
- Exercise Format
  - Facilitator will present the scenario and discussion topic
  - Participants will discuss among their table how topic is handled in their jurisdiction
  - Table rep will provide a summary to the large group
  - Facilitator will share some common challenges and best practices
  - Facilitator will determine number of report-outs after each topic based on time available
- Breaks
- Introductions – Which LEPCs are represented?

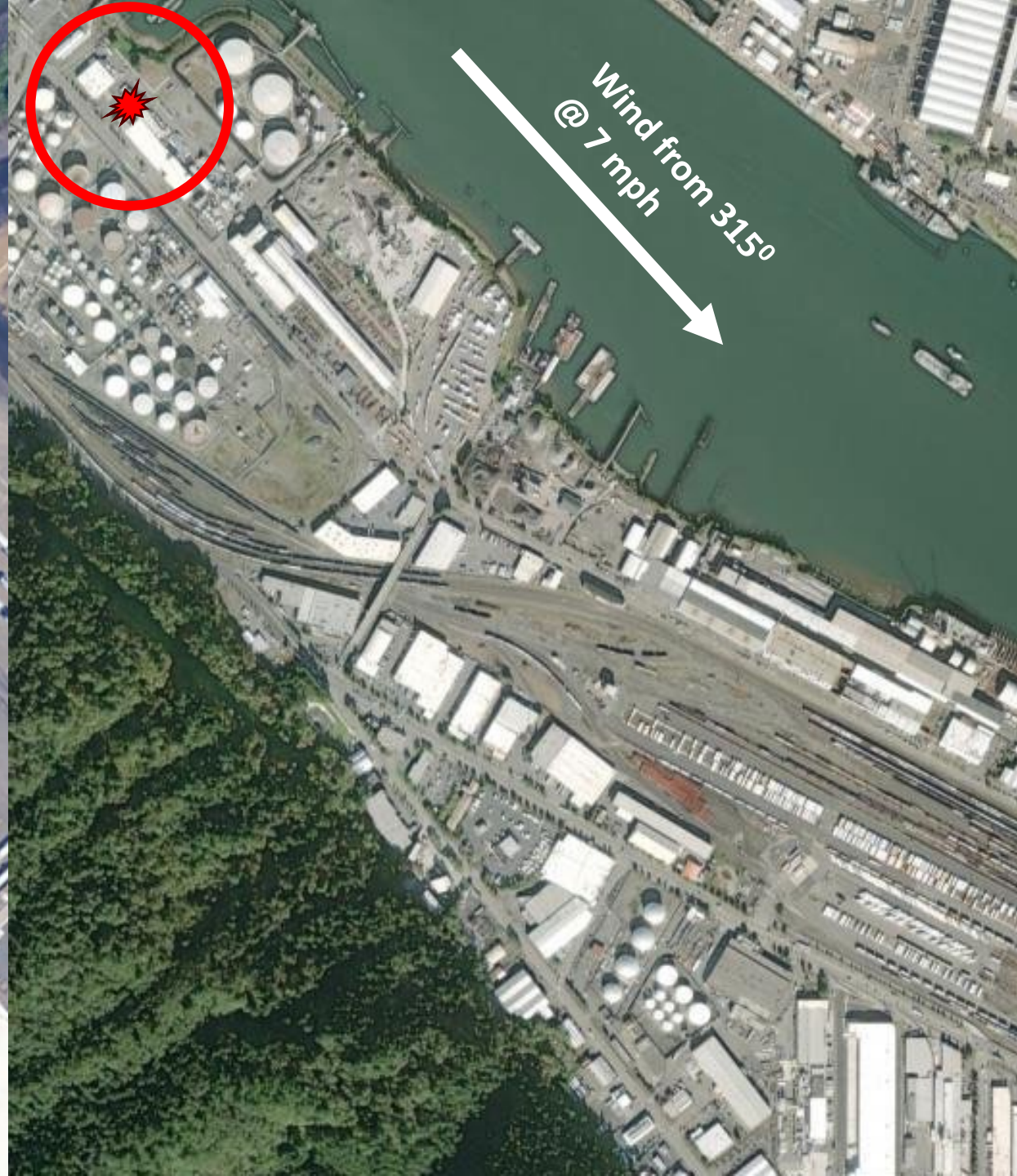


Exercise Objectives

- Understand the usefulness for conducting a TTX based on a presented TTX example
- Discuss procedures/processes within your organization for the following elements:
  - Initial incident notification processes
  - Facility/transportation response
  - Identification and communication with the at-risk populations
  - Public protective action decision-making
  - Public alert and warning process
  - Public water system notification
  - Approach to a Unified Command
  - Recovery outcomes and operationalizing resilience

TTX Scenario





Initial Notification Process

- What are the *expected* initial notification responsibilities and processes for the following organizations?
  - EHS facility
  - Trucking company
  - 9-1-1 Dispatch
  - Others?

Initial Response Actions

- What are the *expected* initial response actions of the following?
  - EHS facility employees
  - Transportation company
  - First responders
    - Fire department
    - Law enforcement
    - EMS

Pitfalls, Best Practices and Lessons Learned

Initial Incident Notification and Response Procedures

- Pitfalls
  - Lack of plans and/or procedures
  - Employee awareness of notification procedures
  - Inadequate/ineffective employee training
  - Intermittently staffed facilities (not 24/7); person who knows procedures is not onsite
  - Initial notification to 9-1-1 dispatch lacks required *initial reporting* elements
- Best practices
  - Complete plans and procedures in place and understood by employees
  - Available spiral-ring flip charts/emergency action plans for employees
  - Routine training and exercises between EHS facilities and responders
  - Ensure plans and procedures include notifications to SERC, LEPC, Fire Dept, DEQ, NRC, etc. Use OSFM templates for initial and follow-on notifications for compliance.
  - Understand facility/transporter capabilities and expectations from responders
- Lessons learned?

EPCRA Provisions

Section 304 – Emergency Release Notifications

- CERCLA Section 103 requires federal notification for release of hazardous substances (<800) – National Response Center
- Section 304: Requires immediate notification of release of a reportable quantity (RQ) of EHS's and CERCLA hazardous substances
  - Immediate information on the amount released, time, duration, health risks, medium released into, contact information, etc.
- Section 304: Written follow-up report as soon as practicable (30-days)
  - Updates immediate notification, details actions taken, additional health information, etc.
- Community Water System notifications (AWIA, 2018)

EPCRA Provisions

Section 304 – Immediate Notification (within 15 minutes)

1. The substance name
2. An indication of whether the substance is an EHS or CERCLA substance
3. An estimate of the quantity released into the environment
4. The time and duration of the release
5. Whether the release occurred into air, water and/or land
6. Any known or anticipated acute or chronic health risks associated with the substance, and where necessary, advice regarding medical attention for exposed individuals
7. Proper precautions, such as evacuation or sheltering in place
8. The name and telephone number of the contact person

EPCRA Provisions

Section 304 – How to Make the Required Initial Notification

1. Notify the LEPC, SERC and NRC if the release meets the "Reportable Quantity" for the substance
   - Typically, LEPCs write into their by-laws that calling 911 meets the LEPC notification requirements
2. Notify the State Emergency Response Commission (SERC)
   - Call the Oregon Emergency Response System (OERS) at 800-452-0311 or 503-378-6377
   - Advise the OERS duty officer that you are making a 304-release notification
   - Provide all required information
3. Contact the National Response Center (NRC) to complete the EPA notification
   - National Response Center (NRC) 800-424-8802
   - Provide all the required information
   - Does your facility border another county?
4. If the release affects any bordering LEPC, (county) notifications are required to be made to that LEPC as well
5. If release "potentially affects" source waters, promptly notify water treatment plant. (AWIA)

The OSFM website provides contact information on Oregon's active LEPCs

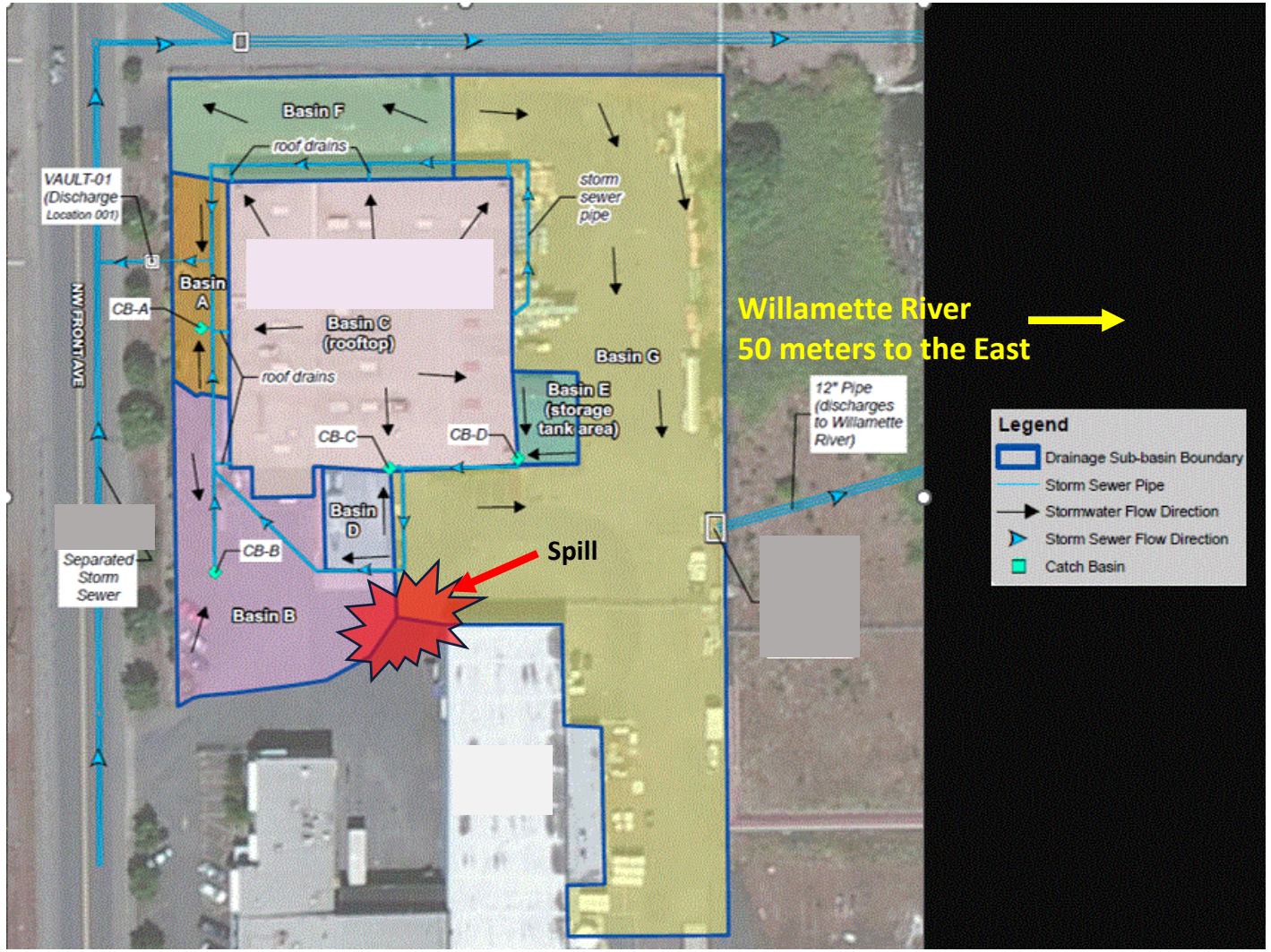
https://www.oregon.gov/osp/programs/sfm/Pages/Local-Emergency-Planning-Committee.aspx

EPCRA Provisions

Section 304 – How to Make the Required Follow-up Notification (30-Day Written Report)

1. Company Name
2. Location Address
3. Company Contact Person
4. Contact Phone Number
5. Chemical Released
6. Amount / State of Release
7. Date / Time of Release
8. Date / Time Stopped
9. Location of Spill
10. Actions Taken
11. Release Reported to
12. Person(s) Agency Reporting Release
13. Known Health Risks
14. Advise for Exposed Individuals
15. Additional Information

Facility Stormwater Protection Map

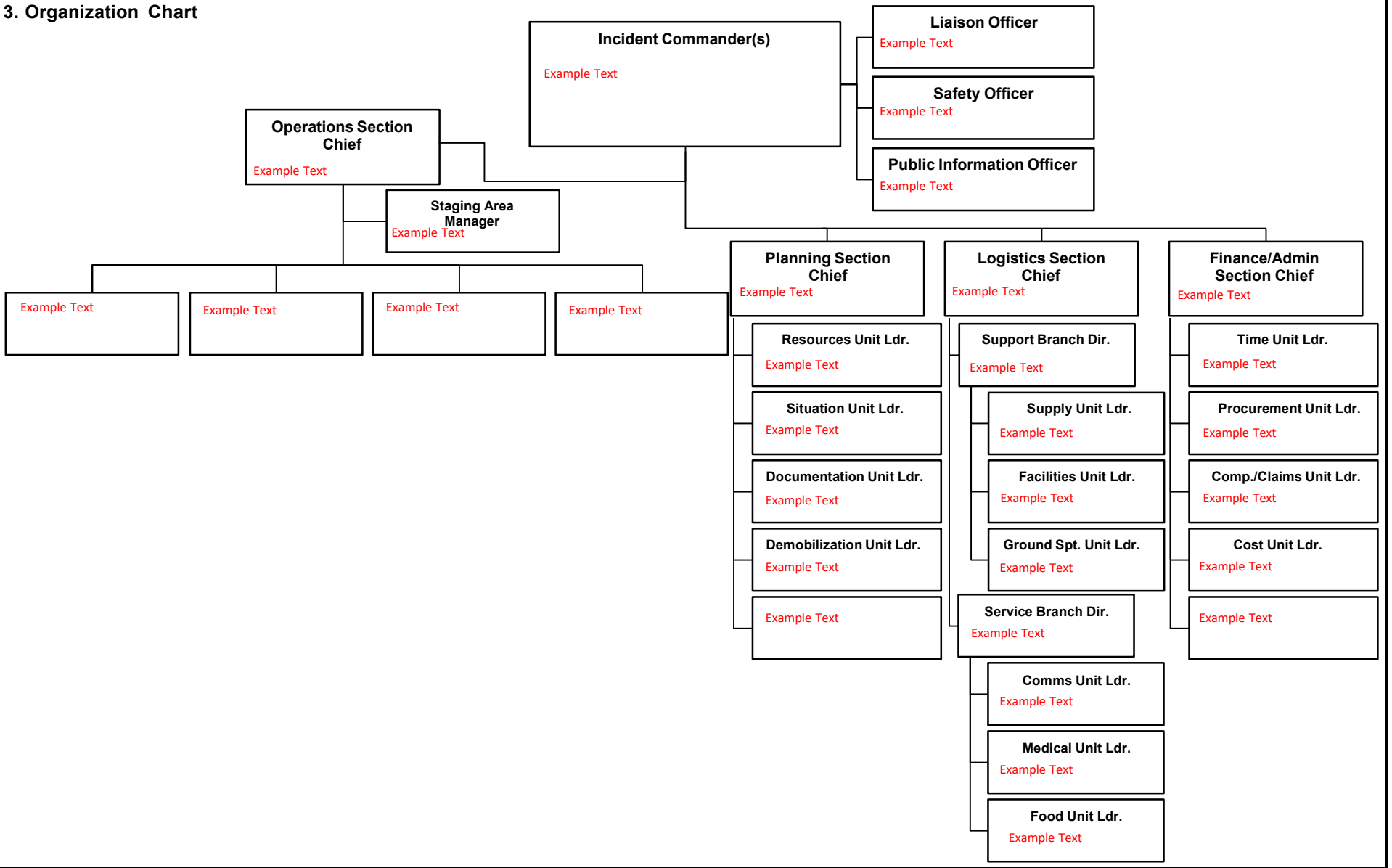


INCIDENT ORGANIZATION CHART (ICS 207)

1. Incident Name: Facility X Hydrochloric Acid Spill

2. Operational Period: Date From: Example Text Date To: Example Text
Time From: Example Text Time To: Example Text

3. Organization Chart



ICS 207 | **IAP Page** 1 | **4. Prepared by:** Name: Example Text Position/Title: Example Text Signature: Example Text Date/Time: Example Text

Scene Size-up Observations

- Flat bed semi-trailer carrying 13 totes of hydrochloric acid overturned near the facility entrance
- Damage occurred to at least nine totes; each tote contains 270 gallons
- Visible liquid pool covering a large paved area near the facility entrance
- Two employees treated at the scene and one required transport to the hospital with chest tightness, burning eyes and throat symptoms
- Employees have evacuated the facility and assembled at the northwest corner of the property (upwind)

Hazard Identification

- Methods to identify an unknown hazard
  - Transportation sources
    - Bill of Lading (trucking)
    - Phone apps (e.g., AskRail)
    - Emergency Response Guidebook (ERG)
  - Stationary sources
    - Safety Data Sheets and chemical inventories
    - Tier II Reports (Oregon's CR2K Database)
    - LEPC HAZMAT Emergency Response Plan
  - Exposure signs and symptoms

GUIDE 157 Substances - Toxic and/or Corrosive (Non-Combustible/Water-Sensitive)

POTENTIAL HAZARDS

HEALTH

- **TOXIC**; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Reaction with water or moist air may release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause environmental contamination.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- UN1796, UN1802, UN1826, UN2032, UN3084, UN3085, and, at concentrations above 65%, UN2031 may act as oxidizers. Also consult GUIDE 140.
- Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Substance may react with water (some violently), releasing corrosive and/or toxic gases and runoff.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

PUBLIC SAFETY

- **CALL 911. Then call emergency response telephone number on shipping paper.** If shipping paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- Keep unauthorized personnel away.
- Stay upwind, uphill and/or upstream.
- Ventilate closed spaces before entering, but only if properly trained and equipped.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer **when there is NO RISK OF FIRE**.
- Structural firefighters' protective clothing provides thermal protection **but only limited chemical protection**.

EVACUATION

Immediate precautionary measure

- Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

Spill

- For highlighted materials: see Table 1 - Initial Isolation and Protective Action Distances.
- For non-highlighted materials: increase the immediate precautionary measure distance, in the downwind direction, as necessary.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Note: Some foams will react with the material and release corrosive/toxic gases.

Small Fire

- CO_2 (except for Cyanides), dry chemical, dry sand, alcohol-resistant foam.

Large Fire

- Water spray, fog or alcohol-resistant foam.
- If it can be done safely, move undamaged containers away from the area around the fire.
- Avoid aiming straight or solid streams directly onto the product.
- Dike runoff from fire control for later disposal.

Fire Involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- All equipment used when handling the product must be grounded.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapor-suppressing foam may be used to reduce vapors.
- DO NOT GET WATER INSIDE CONTAINERS.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

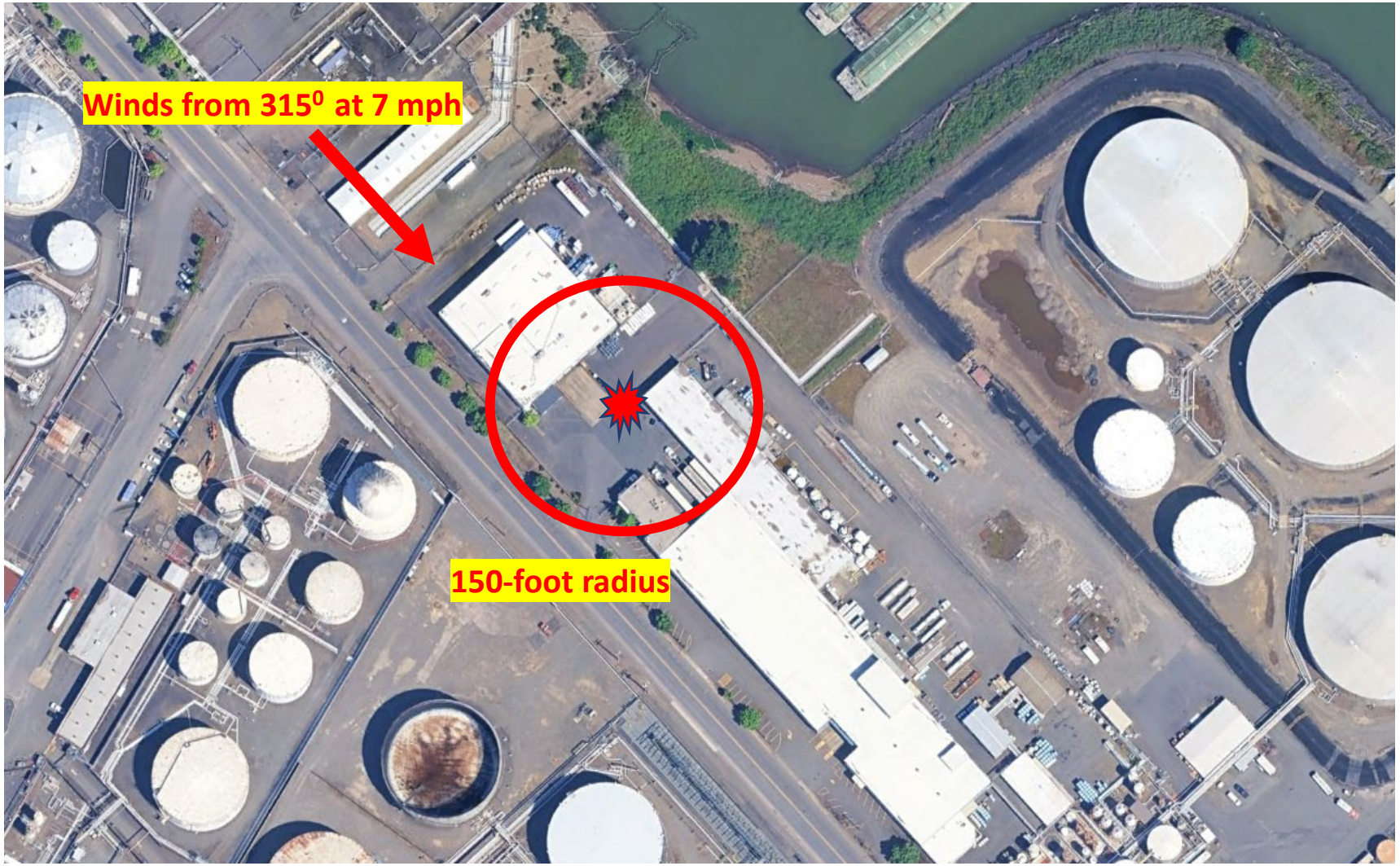
Small Spill

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

FIRST AID

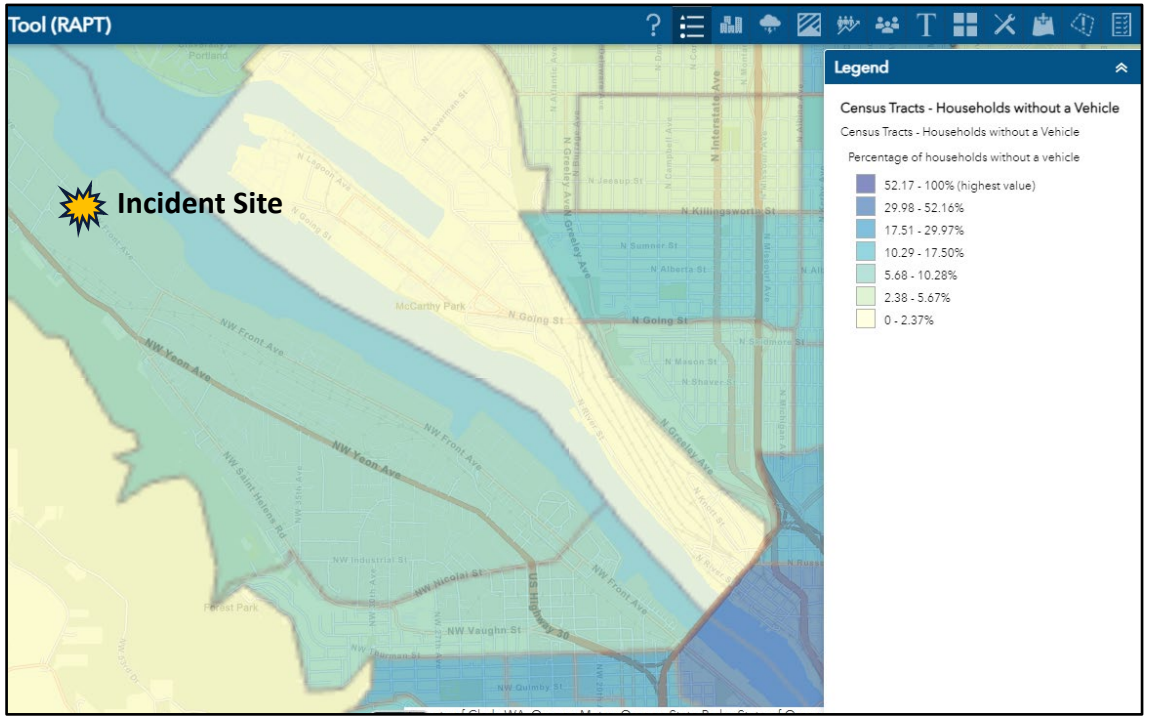
- Call 911 or emergency medical service.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air if it can be done safely.
- Give artificial respiration if victim is not breathing.
- **Do not perform mouth-to-mouth resuscitation if victim ingested or inhaled the substance; wash face and mouth before giving artificial respiration. Use a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- **In case of skin contact with Hydrofluoric acid (UN1790)**, if calcium gluconate gel is available, rinse 5 minutes, then apply gel. Otherwise, continue rinsing until medical treatment is available.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

ERG Initial Isolation Zone – Hydrochloric Acid



At-Risk Populations

- How do you identify at-risk populations around EHS facilities?
- How does your LEPC engages with these populations? Are there any unengaged?
- Describe the vulnerable populations in your community.
- What methods are used to notify vulnerable populations?
- How have facilities planned to promptly notify affected facilities immediately downwind?



Pitfalls, Best Practices and Lessons Learned

At-Risk Populations Identification and Notification

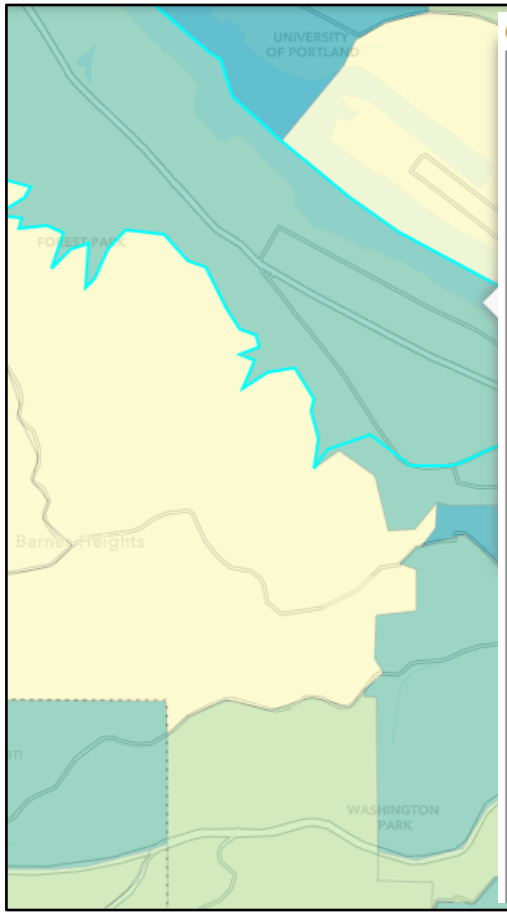
- Pitfalls
  - Off-sight consequence analysis not completed (pre-incident) to determine at-risk populations and strategies to alert and warn these populations
  - Plans often address notification procedures for the impacted facility (e.g., EAP)
  - Unaware of notification procedures with nearby industry
  - Over-reliance on one or two alert/warning technologies
- Best practices
  - Use FEMA's Resilience Analysis Planning Tool, Community Resilience Challenge Index to identify vulnerable populations in your community
  - Build relationships with nearby at-risk facilities
  - Share hazard information and actions to implement upon notification of a release
  - Coordinate with nearby facilities to conduct routine notification drills
  - Outline alert and warning strategies for vulnerable populations
  - Incorporate at-risk/vulnerable facilities into pre-incident plan
- Lessons learned?

Break

Notification Methods

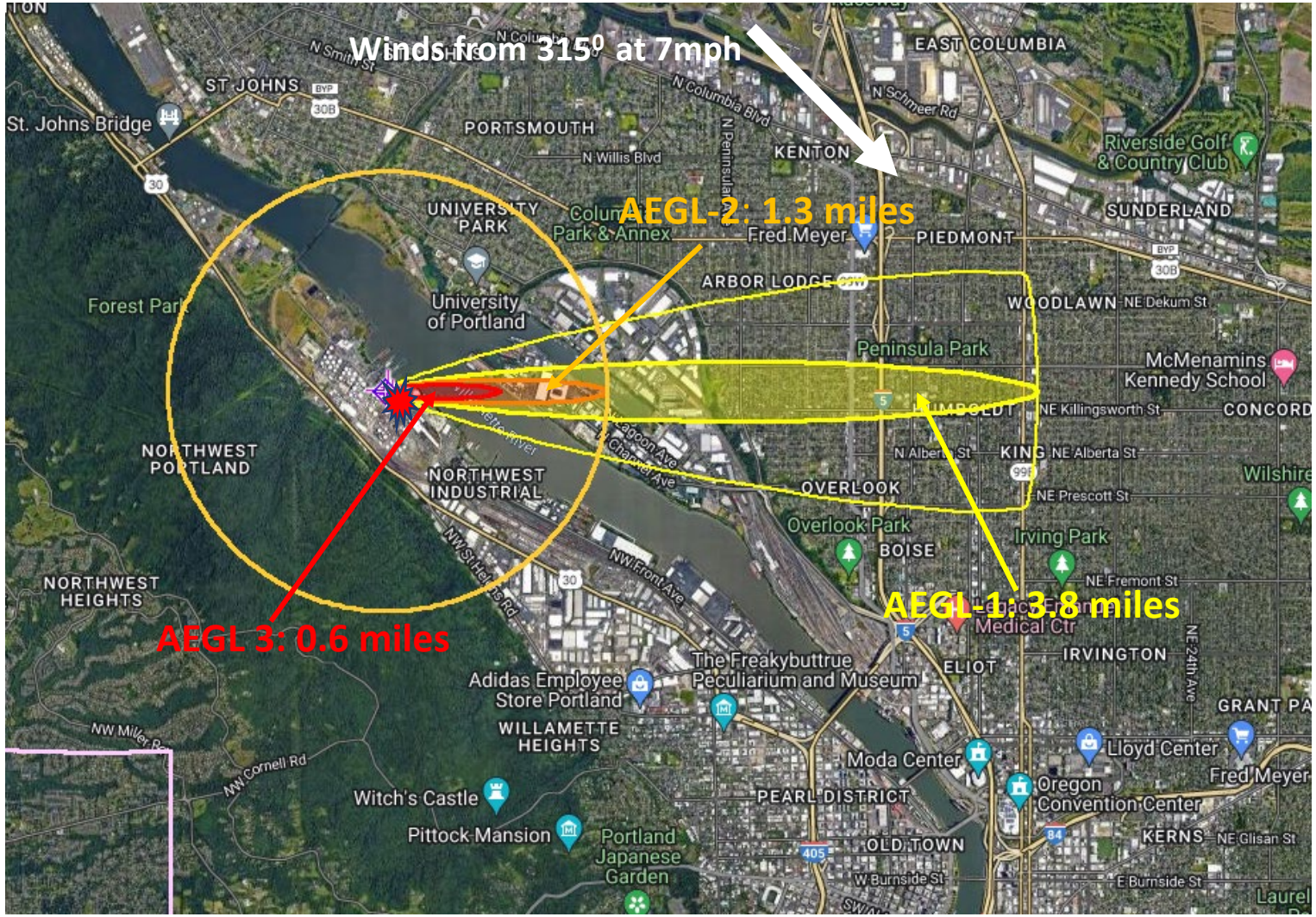
- AM radio
- Wireless Emergency Alerts (WEA)
- Television
- Apps – HazAdapt, EverBridge, CodeRED, etc.
- Community alert system
- Door to door contact

Community Resilience Challenge Indicators



CRCI Indicators	
Percent without HS Diploma	0.58%
Percent Age 65 and Older	15.00%
Percent with a Disability	3.36%
Percent Households without a Vehicle	0.00%
Percent Households with Limited English	0.00%
Percent Single-Parent Households	1.32%
Percent Households without a Smartphone	1.70%
Percent Mobile Homes Relative to Housing	0.00%
Percent Owner-Occupied Housing	83.20%
*Number of Hospitals per 10,000 People	0.10
Number of Medical Practitioners per 1,000 People	59.77
Percent without Health Insurance	0.39%
Percent Below Poverty Level	1.93%
Median Household Income	$226,512
Percent Unemployed Labor Force	5.83%
Percent Unemployed Women in Labor Force	11.22%
Percent Workforce Employed in Predominant Sector	30.25%
Income Inequality (Gini Index)	0.49
*Social/Civic Organizations per 10,000 People	1.04
*Percent without Religious Affiliation	64.89%
*Percent Inactive Voters	8.77%
*Population Change	0.60

Worst-Case Hydrochloric Acid Plume Model Result



Public Protective Actions

- How are public protective actions (PPAs) determined for facility employees?
- What is the process for determining PPAs for downwind populations?
- Who has the authority to implement PPAs?
- Who assists vulnerable populations if needed?

Pitfalls, Best Practices and Lessons Learned

Public Protective Action Decision-Making

- Pitfalls
  - Evacuation is always the preferred action, but may not be the best option (SIP)
  - Unfamiliarity with population demographics
  - Decision-maker indecisiveness/no PPA decision-making processes in place
- Best practices
  - Develop pre-incident plans that contain criteria for triggering various PPAs
  - Conduct routine drills to practice PPA decision-making processes
  - Develop and document anticipated PPAs for releases at high-risk facilities in ERP and share findings with at-risk populations (pre-incident)
- Lessons learned?

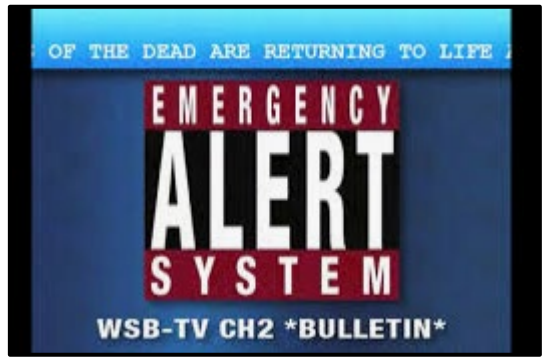
PPA Decisions

Incident Situational Update

- The Incident Commander has ordered SIP implementation for downwind populations located within a half mile
- Populations from 0.5-1 mile downwind of the incident directed to evacuate

Public Emergency Notification

- How are emergency messages drafted and approved for release to the public?
- What method(s) is used to communicate PPAs to the public in your community?
- What do you include in your messaging to ensure it is easy to understand and implement?
- How do you disseminate information to vulnerable populations (e.g., homeless, households without a smartphone, etc.)?
- Choose a method/media and draft a message for this PPA.



Pitfalls, Best Practices and Lessons Learned

Public Emergency Notification

- Pitfalls
  - Disconnect between Incident Commander PPA decision to EOC to JIC/PIO
  - Too much information being disseminated in messages
  - Challenges with using the messaging systems
- Best practices
  - Develop template messages that are clear, concise, and effective based on various PPAs (SIP, Evacuation)
  - Practice disseminating messages to exercise populations to verify message timeliness, effectiveness, and enhance user confidence with activating/using notification system(s)
  - Ensure multiple means of communication are used
  - Deliver coordinated, credible and actionable information promptly – *Be first, Be brief, Be credible*
- Lessons learned?

Public Emergency Notification Methods

- National Warning System (NAWAS) is the primary method of communicating alert and warning messages between state and local authorities
- Oregon Emergency Response System (Public Alerts) provides 24-hour alert, warning, and notification service to county/local warning points
- Emergency Alert System (EAS) utilizes AM and FM radio and television broadcast stations to disseminate emergency information
- Wireless Emergency Alerts (WEA) emergency notification system
- Reverse 9-1-1 Community Emergency Notification System (CENS) – sends automated emergency messages to landline telephones and registered CENS cell phone users in the affected area
- Social media networks to include Facebook, Twitter, Instagram, Nextdoor, Flash Alerts, and Gov Delivery
- Highway Advisory Alert System
- Vehicles equipped with sirens and public-address systems may be used for warning the public during localized, small-scale HAZMAT release by rail emergencies
- Door to door contact if time and emergency conditions allow

Situation Update #1

Incident Situational Update

- Eight totes have released their contents
- Two totes continue to slowly leak and three appear undamaged
- All facility employees safely evacuated and accounted for
- The employee transported to the hospital has been released
- Employees from nearby downwind facilities self-reporting to medical facilities with minor symptoms (burning throat and chest tightness)
- It is unknown whether all citizens in downwind areas have implemented recommended PPAs
- Downwind traffic re-routed to avoid exposure to transient populations
- A large volume of acid has potentially entered the storm drain

Drinking Water Source Protection

- Who makes the decision to notify a drinking water purveyor of a HAZMAT release? Describe this process and all those involved.
- What is the criteria used to make notification decisions?
- How are drinking water purveyors notified of a HAZMAT release that could adversely impact the drinking water?
- Should the water purveyor be notified based on this TTX scenario?

Community Water System Notification

CWS Notification Process

1. 9-1-1 dispatch, HAZMAT owner, or the IC notifies the OERS of the HAZMAT incident
2. OERS notifies the OHA and DEQ
3. The OHA Drinking Water Services provides incident details to the CWS operator(s) if impacted
4. The OHA Drinking Water Services provides remediation details to the CWS as appropriate

Pitfalls, Best Practices and Lessons Learned

Public Water System Notification

- Pitfalls
  - Unfamiliarity with notification process
  - The CWS may not be notified if the OERS is not initially notified of the incident
  - Dependent on evaluation from OHA duty officer to receive message and make decision/notification
- Best practices
  - Add CWS notification to your local plan(s) if contaminants have the potential to impact drinking water sources
  - Conduct drills or functional exercises to practice/test notification process(es)
- Lessons learned?

Break

ICS – Incident Action Planning

- The Incident Commander has prioritized the following incident objectives:
  - Ensure protection of downwind populations with implementation of PPAs
  - Continue to re-route traffic to eliminate exposures to transient populations
  - Assist vulnerable population
- The incident commander has some questions about facility resources and the Stormwater Protection Plan

Unified Command

- Would the establishment of a Unified Command be beneficial in this scenario?
- What organizations would support the Unified Command for this scenario?
- Do EHS facility plans include procedures for establishing a Unified Command?
- Have you conducted exercises to validate the procedures?

Pitfalls, Best Practices and Lessons Learned

Approach to a Unified Command

- Pitfalls
  - Criteria for implementing Unified Command not established
  - Procedures rarely reviewed or exercised; inability to integrate different disciplines (police) and organizations (private sector)
  - Differing incident command structures, interests, and capabilities among EHS facility, Transporter, and Responders
- Best practices
  - Include Unified Command establishment procedures in your local plan(s)
  - Facilities and local responders should review procedures annually
  - Conduct exercises to practice/test establishment procedures with transporters, facilities, and public safety responders – use ICS Form 207, assign people to roles
- Lessons learned?

Resources

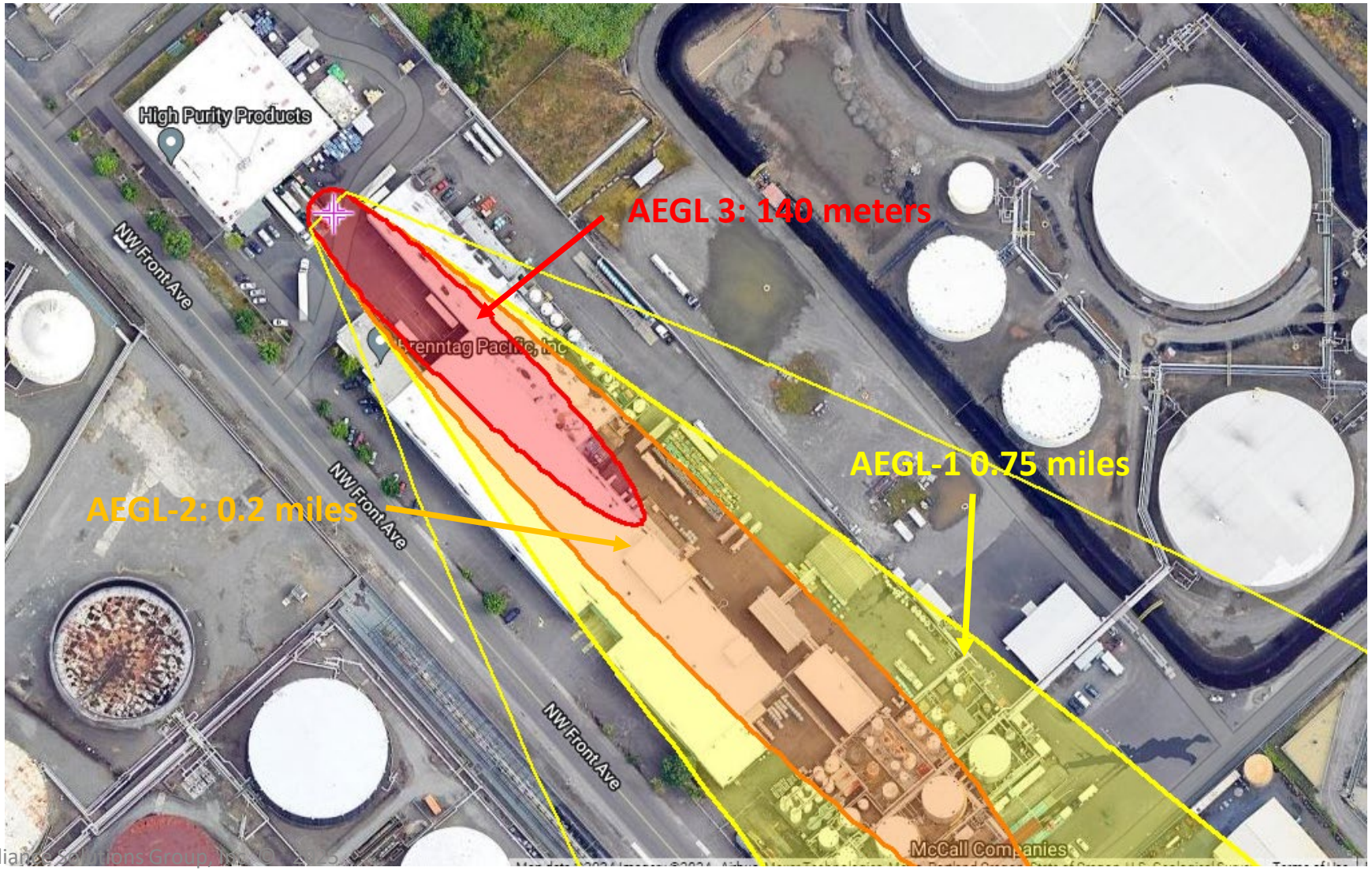
Oregon Regional HAZMAT Response Teams

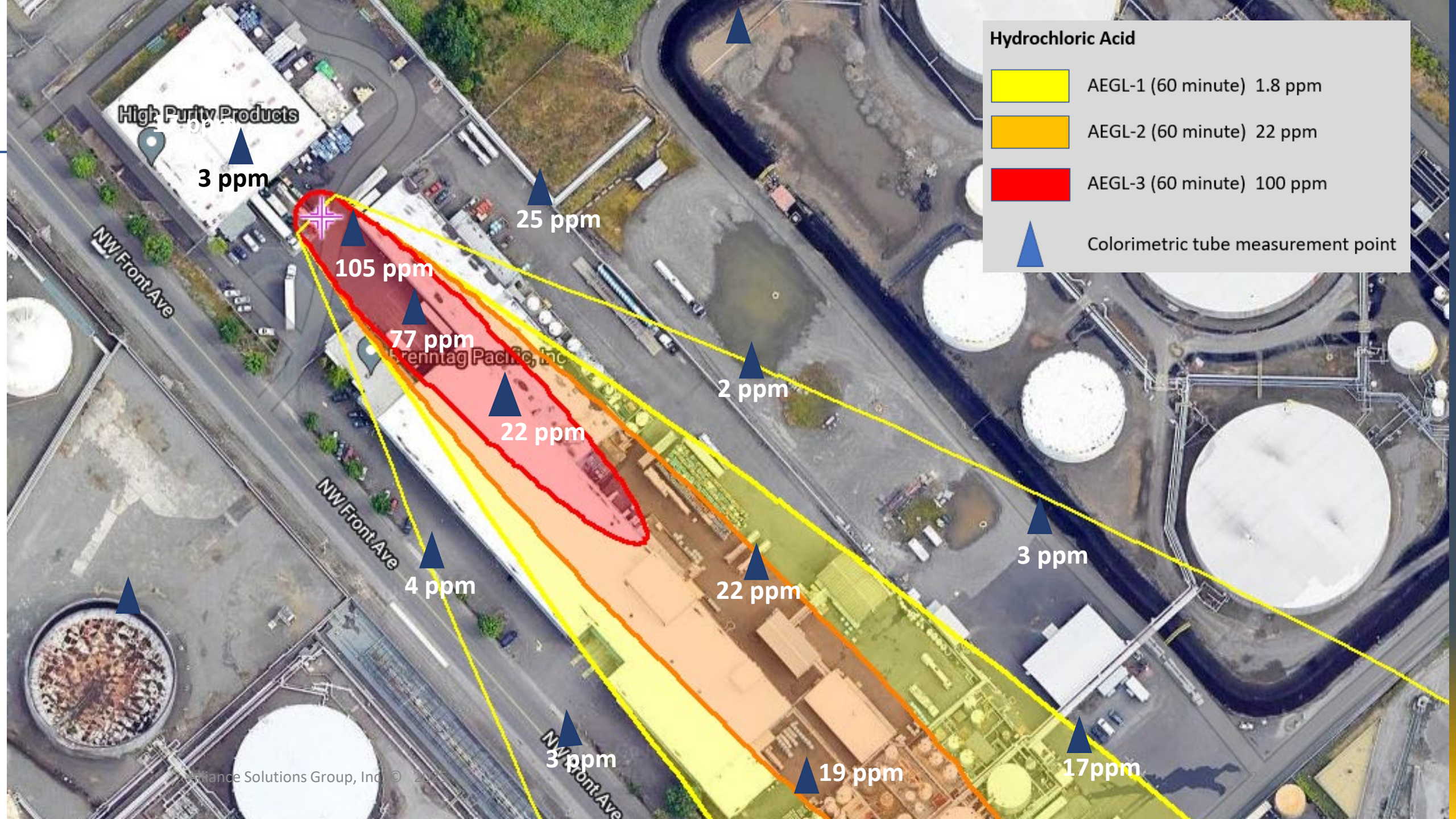
- Which team(s) supports your jurisdiction?
- What is the estimated response time of the regional team to your location?

Situation Update # 2

- RHMRT 7 responders made entry and stopped the leaking totes; an estimated 2,500 gallons of hydrochloric acid released (24k pounds)
- Colorimetric tube monitoring for hydrochloric acid averaged 90 ppm at the incident site
- 45 offsite downwind citizens have self-reported to medical facilities for treatment; 5 admitted to the hospital for supportive care
- Facilities within 0.5 miles have implemented SIP; other areas within one mile have evacuated
- Downwind roadways of the incident site remain closed
- Stormwater drains have been capped and the shutoff valve in the facility's containment basin closed as a precaution

Updated Plume Model Estimate – 2,500 gallons




Hydrochloric Acid
AEGL-1 (60 minute) 1.8 ppm
AEGL-2 (60 minute) 22 ppm
AEGL-3 (60 minute) 100 ppm
Colorimetric tube measurement point
High Purity Products
3 ppm
25 ppm
105 ppm
77 ppm
22 ppm
2 ppm
3 ppm
4 ppm
22 ppm
3 ppm
19 ppm
17ppm
NW Front Ave
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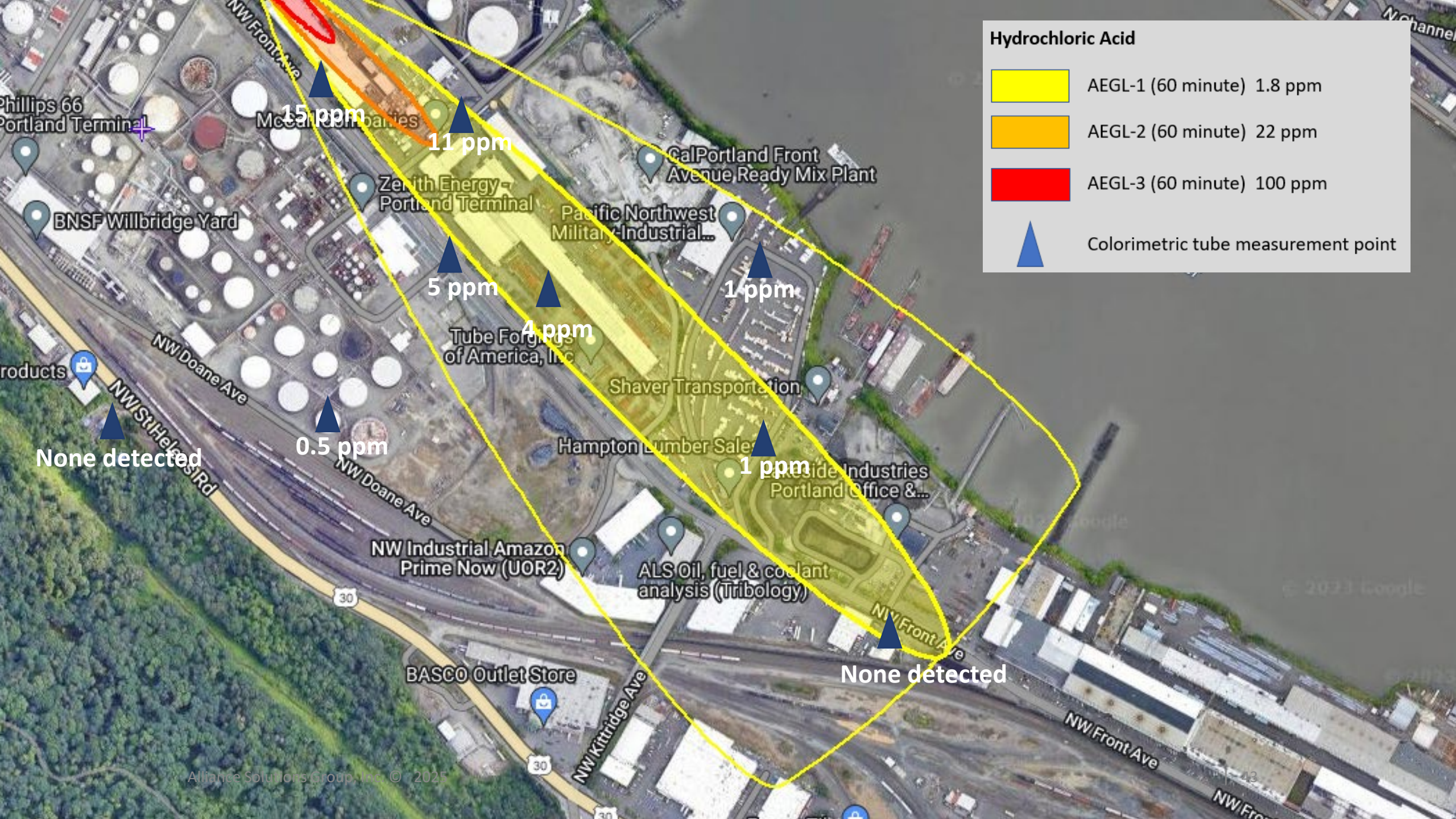

Situational Update # 3

- Totes no longer leaking and spilled material contained
- Downwind populations
  - Downwind areas greater than 0.5 miles away no longer reporting odor and health symptoms
  - Areas within half-mile reporting lessening odor and irritation effects
  - Odor and effects strongest near the incident site
- When would this incident transition from response to recovery?

Incident Recovery

- What is the process for transitioning from response to recovery?
- Who is involved in recovery and what is each organization's role?
- Who coordinates and oversees cleanup operations to ensure adequacy?
- What are the procedures for terminating an incident?
- What are some resilience measures your organization or community can implement to reduce HAZMAT incident impacts?

Pitfalls, Best Practices and Lessons Learned

Recovery Outcomes and Operationalizing Resilience

- Pitfalls
  - Not identifying criteria for transitioning from response to recovery
  - Transitioning incident command decision-making authority to recovery function
  - Lack of recovery contractor oversight
- Best practices
  - Pre-identify/contract with Hazmat contractors to accelerate cleanup operations
  - Engaged industry with responders to ensure seamless integration and coordination
  - Third-party clearance sampling/verification
  - Continue communication channels for public information
  - Comprehensive ERPs that are exercised regularly (exercise series)
  - After action reports developed for all incidents; leads to improvement plan
  - For distant RHMRTs, boost local capabilities to fill reasonable gaps for faster decision-making and ability to contain releases
- Lessons learned?

Conclusion

- This concludes the TTX; thank you for your participation!
- All participants must please complete a feedback form before departing

Grazie - danke – شكرا - THANK YOU – merci - спасибо

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