

Wood River Spent Sulfuric Acid Release





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- On June 2, 2021 at approximately 1800 hours c.s.t. NRC Report is received regarding one railcar that released sulfuric acid into the atmosphere. Hazmat team was en route to fix the car.
 - Early morning of June 3, 2021 an additional three railcars were experiencing the same conditions as the first car the previous night.
 - USEPA Duty Officer dispatched Federal On-Scene Coordinator to the scene.
 - Confirmed four railcars were having a reaction of spent sulfuric acid, causing the pressure relief device (PRD) to open.
 - Venting of sulfur dioxide to the atmosphere was occurring



What is going on?

- The railcars experiencing the reaction were loaded at the Phillips 66 Woodriver refinery with spent sulfuric acid which is used in their refining process.
- The railcars were resting on Norfolk Southern line.
- At this time, unknown why the reaction is occurring.
- The material is shipped to a regeneration facility in Northeast, where it is cleaned and shipped back to the facility for reuse.



Field Operations

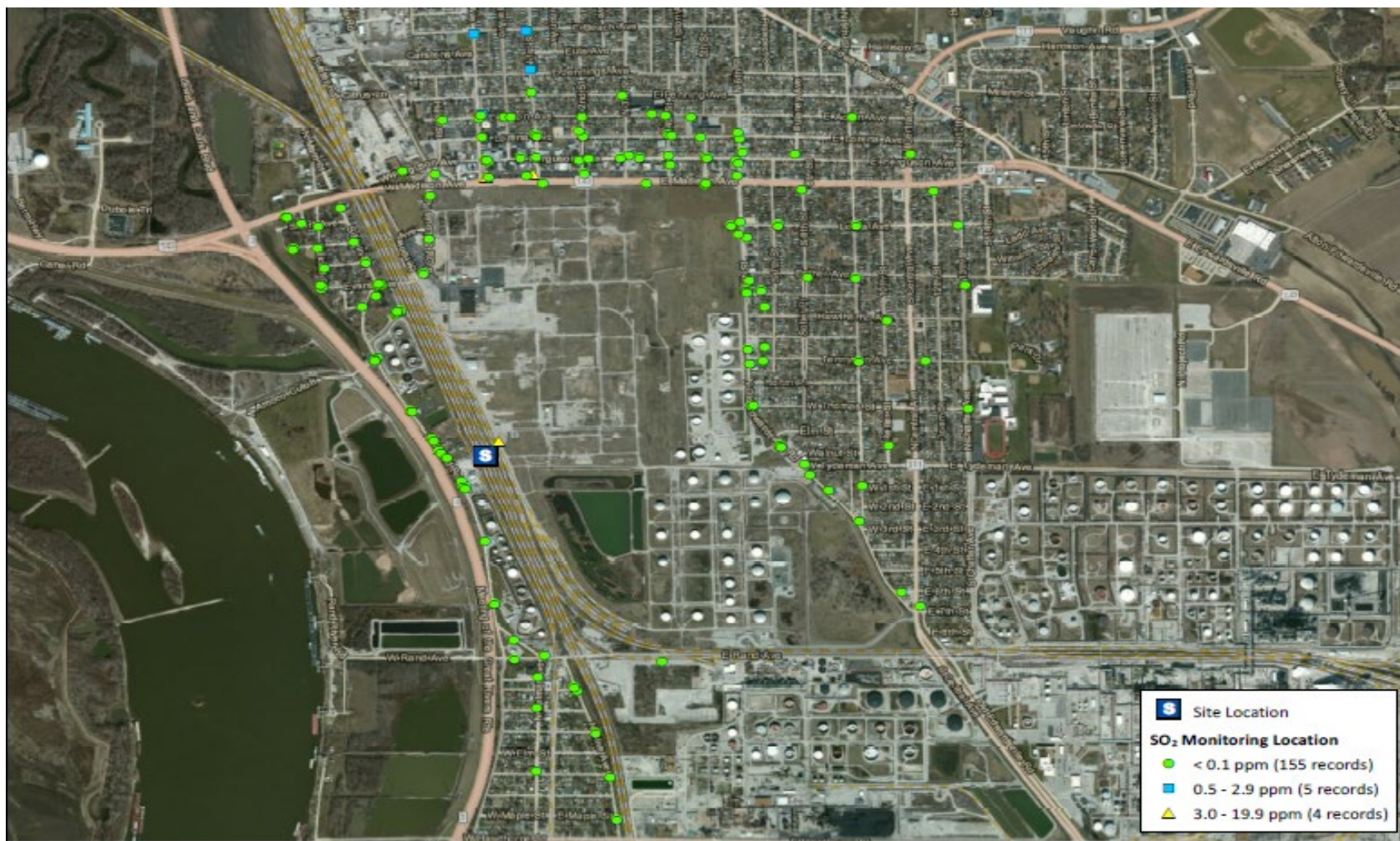
- A water curtain was being applied to the dome of the railcars in an effort to mitigate vapors from entering the atmosphere.
- Unified command was established consisting of USEPA, IEPA, Wood River FD, Phillips 66, NS, and Madison County EMA.
- Entry teams would go down range periodically and check pressures on cars and assess railcar conditions.



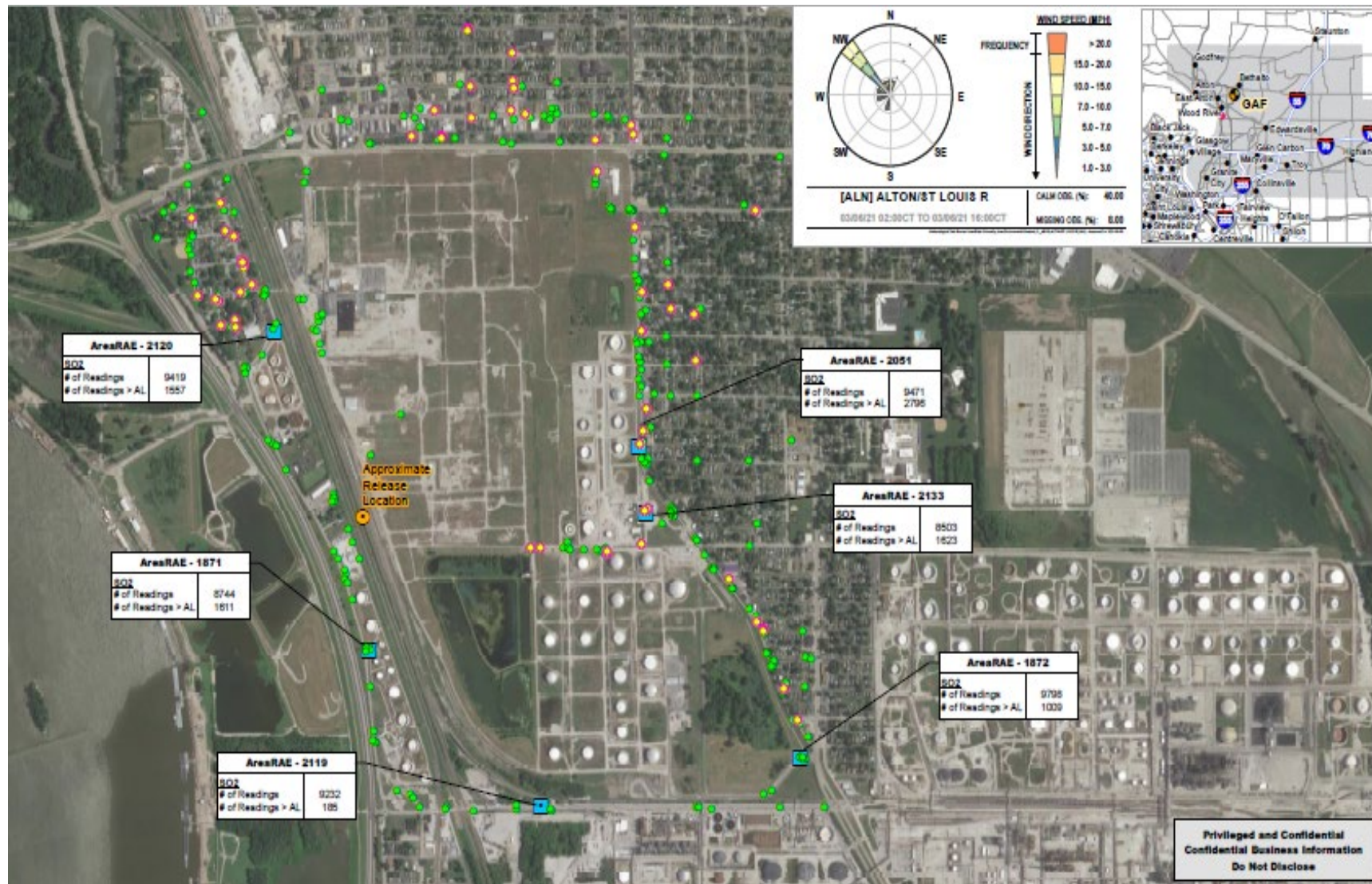
Air Monitoring

- Air monitoring was performed by USEPA START contractor, NS environmental contractor, and Phillips 66 contractor.
- Monitoring was performed near the railcars and first responders near the cars, perimeter of the incident, and the surrounding communities.
- Real time monitoring for SO₂, VOC's, Sulfuric Acid, Oxygen, LEL, H₂S
- 24/7 Monitoring throughout the whole incident.
- Real time data patched into Incident Command Center

Air monitoring locations



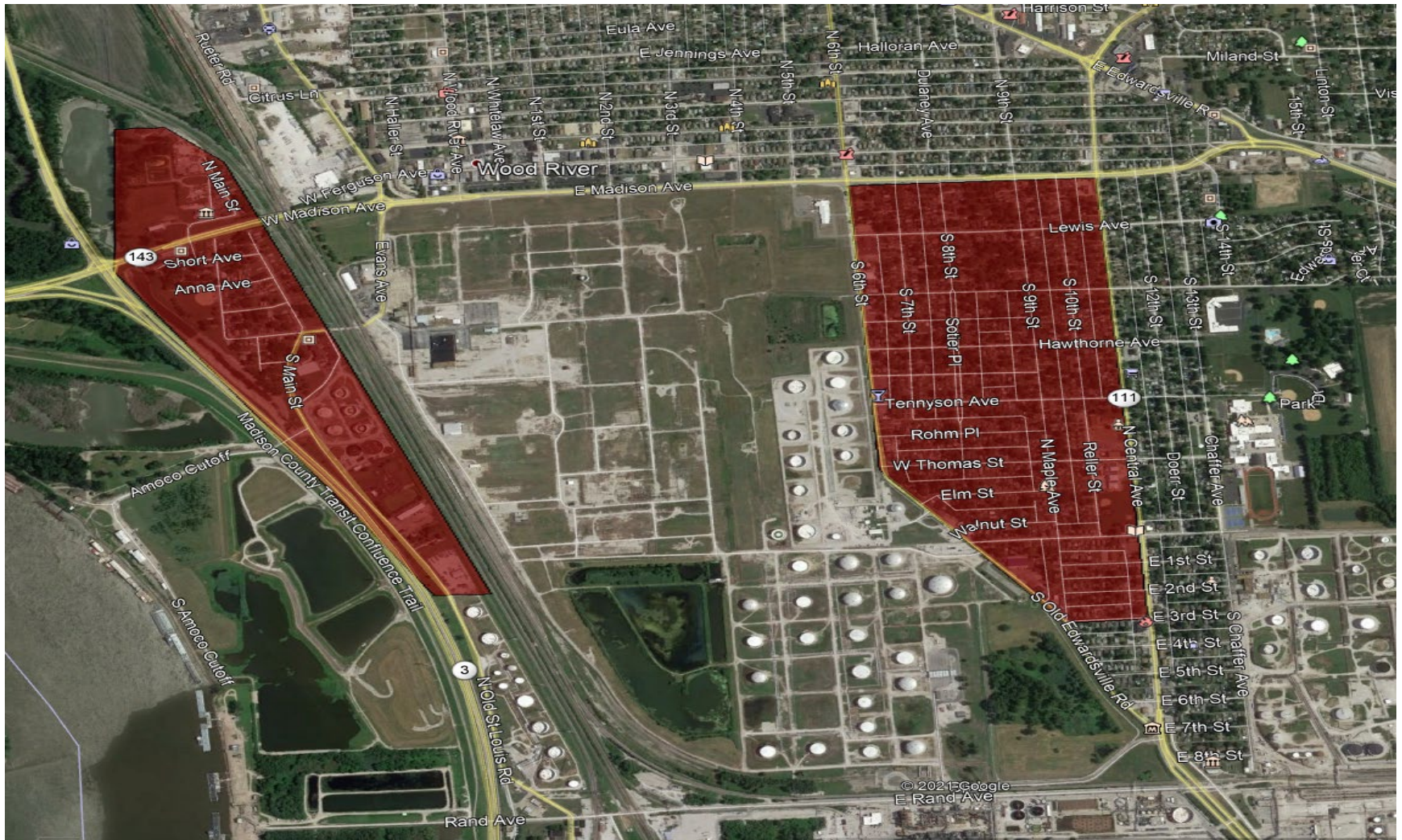
Air monitoring continued





Incident Issues

- Although water curtain was assisting in suppression of vapors coming out of railcars, did not prevent all vapors from escaping into community and surrounding area
- Temperatures were hot during the day, then cooler in evening and early morning.
- The mornings of June 3,4,and 5 temporary shelter in place was ordered for community due to weather anomalies that caused vapors to migrate off-site.
- Decisions were made by IC using real time data from monitoring locations.





Attempt to capture vapors

- Decision was made to attempt to capture the vapors emitting from the railcars due to decreasing pressure in the cars.
- A specialized high-haz team from Texas was going to attempt to secure a blast bag over the dome of the cars and used vac trucks to pull vapors into scrubbing units. Hadn't been done and was unsure if it would work.

Solution



Blast bags with vac trucks hooked up





Vapor recovery system

- Early morning of June 6, 2021 the "blast bag" vapor recovery system was in place and running
- Blast bags were secured via ratchet straps to the dome of the leaking railcars. Vac truck lines were hooked up to the cam locks of the blast bags.
- Vapors were pulled into the vac trucks which had a slurry of water and soda ash acting like a scrubbing unit
- Vapor emission from vac trucks were monitored for SO₂ and Sulfuric Acid

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- Vapor recovery system was working with little to no vapor migration from around the railcars.
 - No new shelter in place orders executed
 - Water curtains were shut off the afternoon of June 6, 2021, but kept in place
 - Pressures were slowly dropping in the railcars throughout the evening of June 6 and morning of June 7, 2021
 - 24/7 air monitoring continued



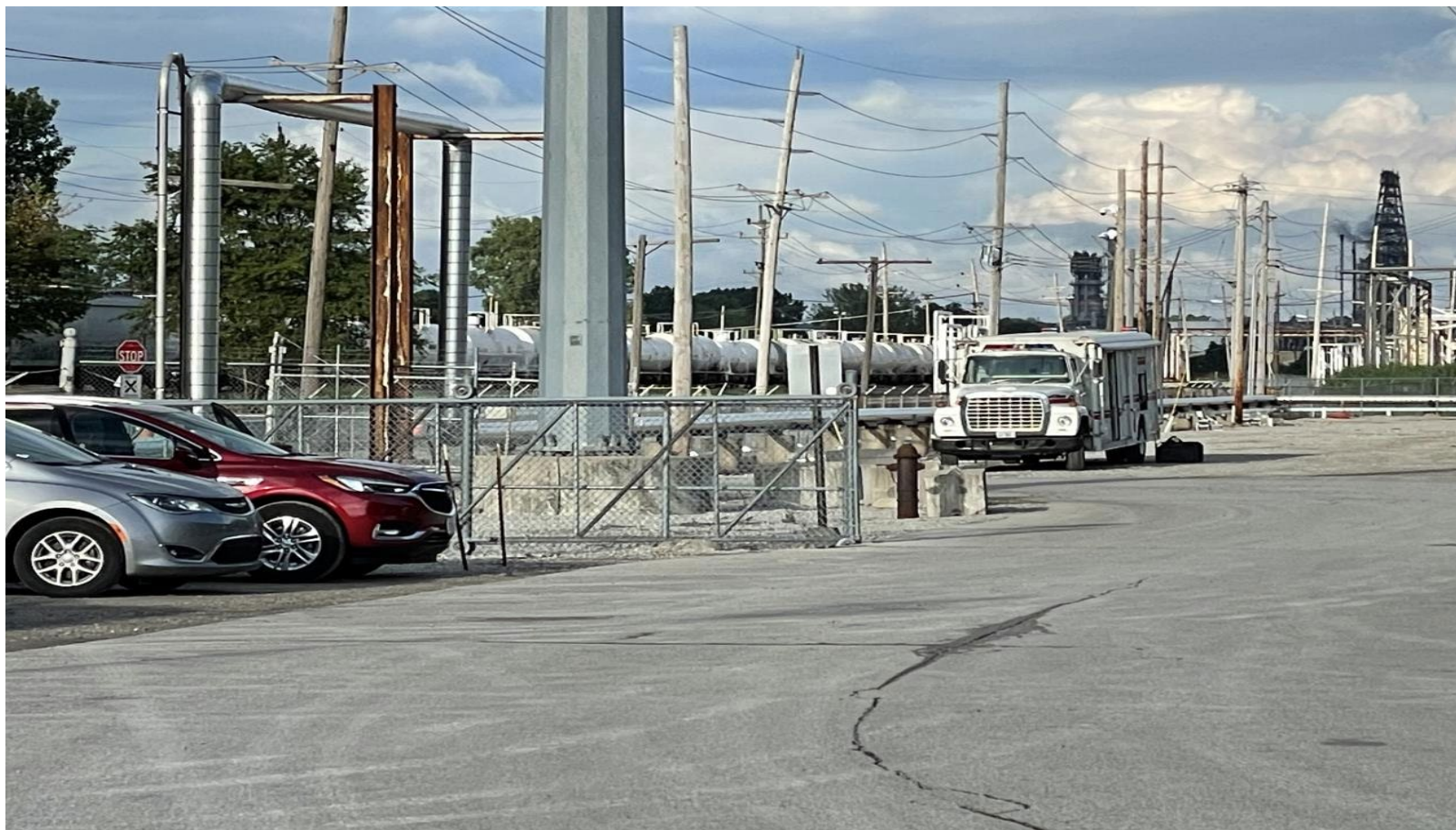
Next steps?

- On June 7, 2021 the decision was made by UC that if the pressure of the railcars got below 10 p.s.i. and were holding steady, the cars could be moved off the track back into the Phillips 66 refinery
- Vapor recovery system was continuing to operate. High haz team would go and monitor the cars.
- A transportation plan was generated for safe transport back to refinery.
- FRA approval to move the railcars.
- Phillips 66 would have same vapor recovery system in place when railcars were received at facility.



Transport of railcars

- On June 8, 2021 all four railcars were below the recommended p.s.i. limit for transport back to the refinery.
- New hardware (valves, flanges, gauges) were placed on the damaged railcars.
- At approximately 1800 hours on June 8, 2021 the railcars were transported back to the Phillips 66 Refinery.
- The railcars were hooked back up to the scrubbing units, and air monitoring continued at the facility and surrounding community.





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- Emergency response phase was called off once the railcars were secure in the refinery
 - Railcars sat at the refinery till pressure inside cars were atmospheric and reaction had ended.
 - Railcars and contents will be properly disposed of.



Issues

- Staffing of first responders 24/7
- Water run-off
- How long will the reaction take to complete
- Community impact



Questions??????

Contact



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