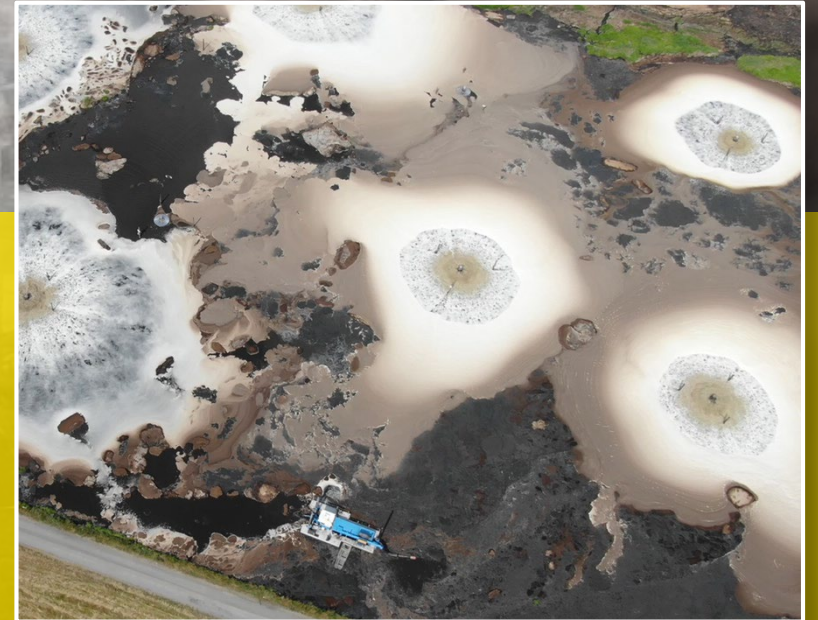


# **Attachment 7**

# New-Indy Containerboard



- **Air Pollution**
- **Wastewater Contamination**
- **Corrective Action/Remediation**



# Introductions

David Hoyle

Residents' Co-Lead Counsel, Motley Rice





## Fixing New-Indy's Problems



# Purpose of Meeting

- To create a collaborative relationship with EPA similar to our relationship to DHEC to help solve New-Indy's environmental problems.
- To share with EPA results of our 8-month investigation and the opinions of our nationally recognized air and wastewater experts.
- To correct misconceptions created by New-Indy regarding monitoring, modeling and reporting.
- To offer effective solutions, both immediate and longer term, to rectify the ongoing air, odor, wastewater, and health issues attributable to the New-Indy mill.

## Fixing New-Indy's Problems



# Meeting Agenda

- Inadequate and Insufficient Air Monitoring.
  - Rick Osa, QEP
- Actual April 2021 Emissions Orders of Magnitude Higher than New-Indy Predicted.
  - Steven Hanna, Ph.D
- Critical WWTP Emission Estimates Used by New-Indy in Its October 2021 Modeling Are Wrong.
  - Ken Norcross
- Corrective Action/Remediation
  - Roger Truitt
- Next Steps



# Air Monitoring Concerns



## Rick Osa QEP

*- Ambient Air Quality Expert*

- Leads ERM's ambient air quality monitoring practice, with competence in air emission source permitting and atmospheric dispersion modeling.
- 40 years of experience in air quality issues, including pulp and paper industry consulting.
- MS, Engineering Management from Northwestern University; Graduate studies, Environmental Engineering, and BS, Physics from Illinois Institute of Technology.

An aerial photograph of an industrial facility, likely a refinery or chemical plant. The facility features several large white buildings, tall smokestacks, and a complex network of pipes and structures. A multi-lane highway runs alongside the facility, with a large plume of white smoke or steam rising from the industrial area. The surrounding area includes some greenery and a parking lot with several vehicles.

## Air Monitoring Concerns

# Inadequate Air Monitoring

- New-Indy is monitoring only for hydrogen sulfide.
- New-Indy's fence-line monitoring leaves big gaps.
- New-Indy's community monitoring stations do not cover large areas of citizen complaints.
- As a consequence, unaccounted emissions are causing odors and health effects to continue unabated.





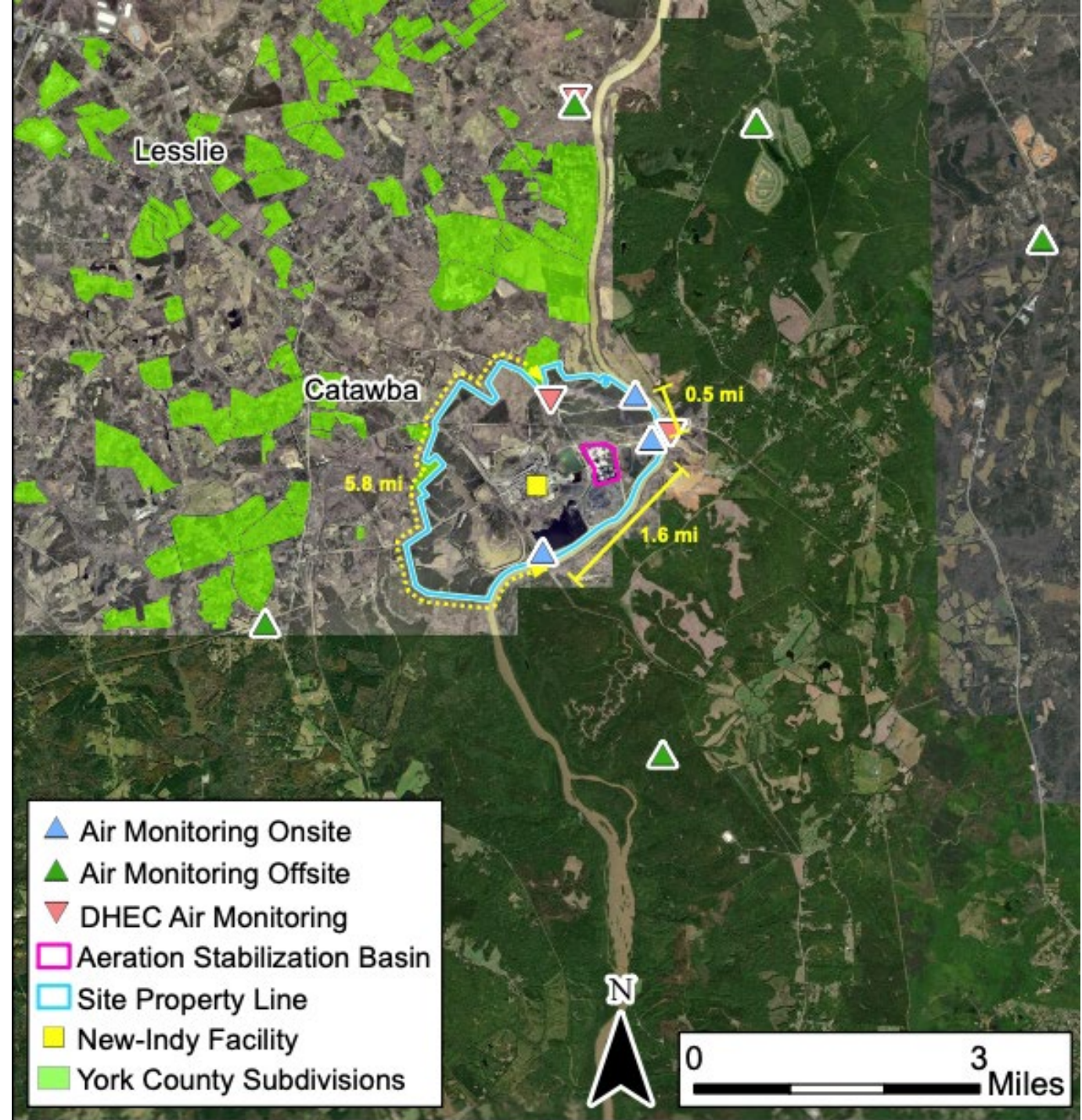
## Air Monitoring Concerns

# New-Indy Is Monitoring Only for H<sub>2</sub>S

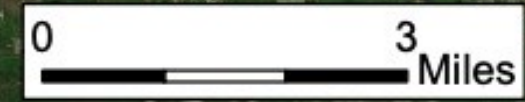
- In addition to H<sub>2</sub>S, New Indy's foul condensate and other sources of air emissions include other malodorous and potentially toxic TRS compounds including **methyl mercaptan, dimethyl sulfide, and dimethyl disulfide.**
- Methyl mercaptan has been designated as a toxic air pollutant by DHEC, with much more stringent property line limits (10 ug/m<sup>3</sup>) than H<sub>2</sub>S (140 ug/m<sup>3</sup>).
- New-Indy's Corrective Action Plan estimates that up to 90% of the TRS emitted from WWTP components is non-H<sub>2</sub>S constituents.
- **Therefore, New-Indy is not monitoring for 90% of its TRS emissions.**



# Air Monitoring Concerns



- ▲ Air Monitoring Onsite
- ▲ Air Monitoring Offsite
- ▼ DHEC Air Monitoring
- Aeration Stabilization Basin
- Site Property Line
- New-Indy Facility
- York County Subdivisions





An aerial photograph of an industrial facility, likely a refinery or mill, showing several large buildings, smokestacks, and a highway. The facility is surrounded by a fence line. The text 'Air Monitoring Concerns' is overlaid on the top left of the image.

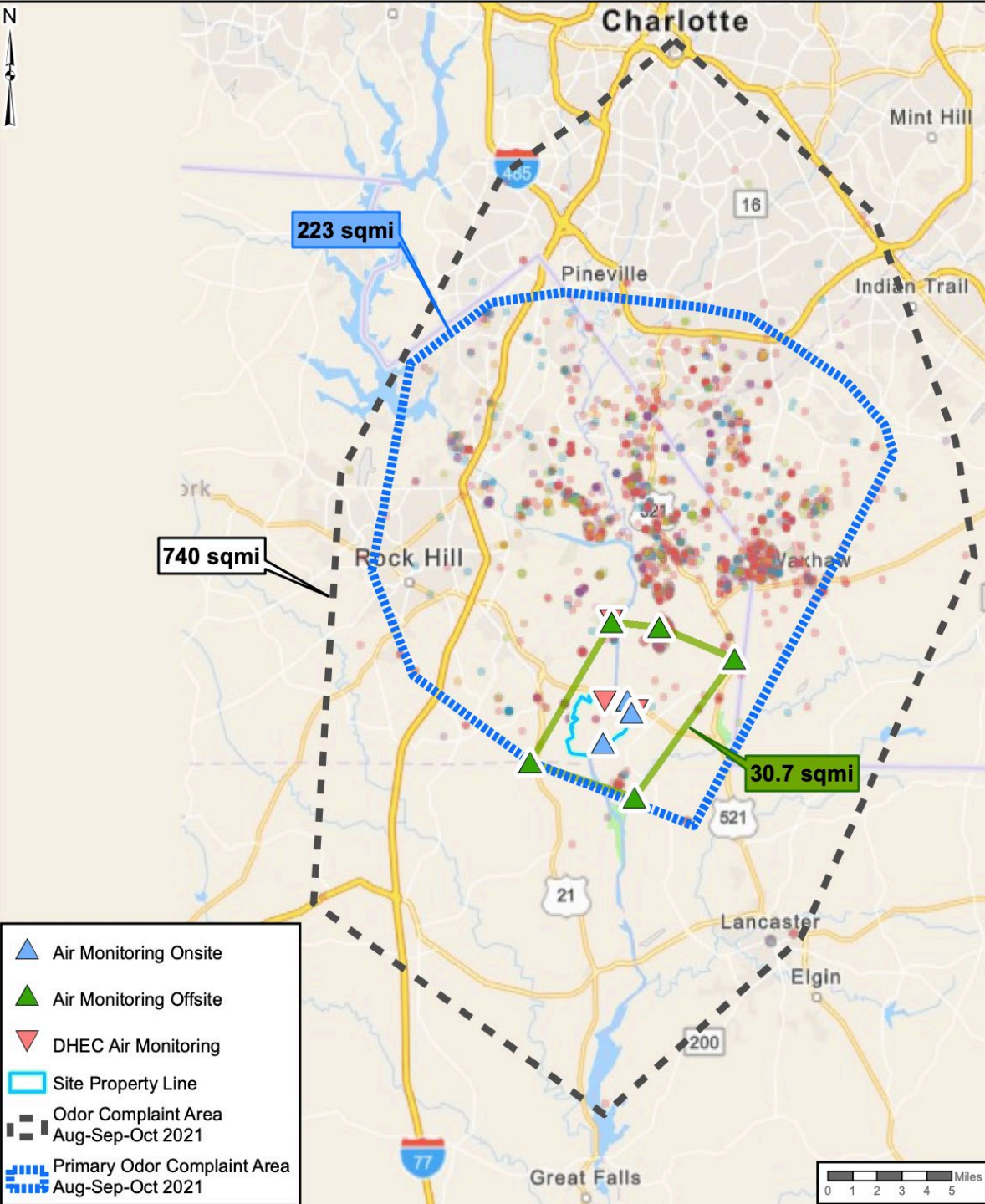
## Air Monitoring Concerns

# New-Indy's Fence-Line Monitoring Leaves Big Gaps

- New-Indy's fence-line around the approximate 1,100-acre mill site is six miles long.
- New-Indy has installed only three monitors to cover six miles of fence-line (see Figure).
- There are no fence-line monitors to measure H<sub>2</sub>S levels released to residential areas W, NW, and SW of New-Indy's mill (see Figure).
- There are huge gaps of up to 5.8 miles between some of the existing three H<sub>2</sub>S monitors required under EPA's Order.
- EPA's regulations of petroleum refinery fence-line monitoring would require at least 18 monitoring locations for a facility this large.



# New-Indy's community monitoring stations do not cover large areas of citizen complaints.



- New-Indy and DHEC is monitoring H<sub>2</sub>S at only 8 off-site locations covering approximately 30 square miles extending only 5.8 miles from the mill.
- Thousands of citizen odor complaints have consistently been lodged with DHEC from between 6-10 miles distant from the NI mill with some as far away as 25 miles covering approximately 300 square miles (10 times the area being monitored).
- *This problem is ongoing.* By way of example, the figure on the left shows complaints lodged from August-October 2021.
- NI should install, calibrate, and operate continuous real-time H<sub>2</sub>S and TRS monitors and report daily readings on 15 minute intervals for at least 25 locations in the broader community.

## Air Modeling Concerns

# Catastrophic Failure and Implications

- New-Indy (NI) sought and obtained permission to disconnect stripper and change process
  - New-Indy represented that no PSD was required because H<sub>2</sub>S was projected to increase from 9.7 to 11.9 tpy, with a net increase being 2.2 tpy compared to significant increase threshold of 10 tpy.
  - New-Indy estimated TRS emissions would increase 6.9 tpy compared to significant increase threshold of 10 tpy.
  - Prediction was based on NCASI Model for WWTP emissions.
  - New-Indy's WWTP operating conditions failed to meet the requirements of the NCASI Model, and thus gave inaccurate emissions estimates.
  - Community blanketed with emissions
  - Back-calculation and reverse modeling to show actual emissions.



# Air Modeling Concerns



## Steven R. Hanna, Ph.D.

- Adjunct Associate Professor; Exposure Epidemiology, and Risk Program; Harvard University, School of Public Health
- Specialist in atmospheric turbulence and dispersion, and in the development, evaluation, and application of air quality models.
- Fellow of the American Meteorological Society.
- Currently chief scientist of a DOD and DHS research study, regarding emissions estimates and downwind effects of toxic industrial chemical releases.
- He published a review of source term estimation (STE) models and evaluated the performance of several operational STE models using observations from field experiments.

# Air Modeling Concerns




**EPA GMAP van H<sub>2</sub>S concentration observations on 4/27/21 while driving on road about 500 to 1000 m N of edge of pond. Begins at 0530 EDT, Max C of 408 ppb.**





## Air Modeling Concerns

An aerial photograph of an industrial facility, likely a wastewater treatment plant, showing several large rectangular aeration ponds, smokestacks, and a road. The facility is surrounded by trees and some parking areas with vehicles.

## Methodology and Conclusions

- Using observations of concentrations from EPA's GMAP van sampling system on 4/27 (winds moderate out of SSW), and wind observations from Rock Hill weather station, a basic science integral dispersion model was used to back calculate the emissions rate that would produce the observations.
- The results were checked using concentration observations at 1, 6, and 9 km.
- Observations were compared for the four days of field testing to see if there are major differences.
- This resulted in a total emission rate over the aeration pond (of dimension 430 x 630 m) of 106 g/s, equivalent to **3650 tons per year**.

# Comparison of Actual Emission Rate to New-Indy Representations

- Recall New-Indy predicted a TRS increase of 2.2 tons per year as compared to the 10 tpy significance threshold.
- Actual emission rate closer to **3650 tons per year.**
- Demonstrates that NI misrepresented on the front end.
- Demonstrates that PSD requirements were violated.
- With the help of AERMOD, will demonstrate the magnitude of community exposure.



# Air Modeling – Current Emissions



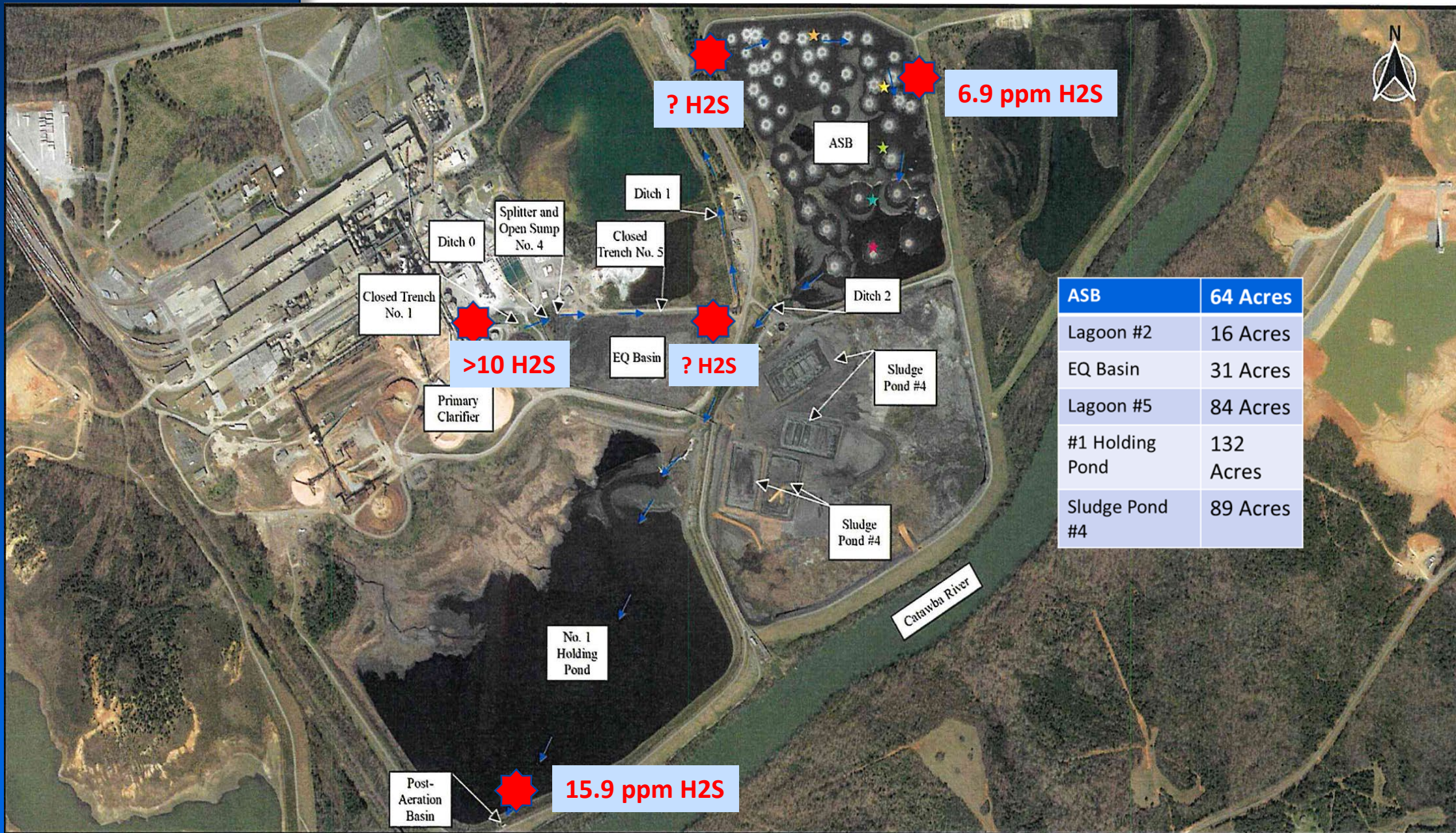
## **Ken Norcross**

*- Wastewater Engineer*


- Wastewater Engineering Consultant/Expert.
- 42 years of experience designing and troubleshooting industrial wastewater plants.
- Consulted on nine (9) pulp and paper wastewater plants.
- 19 patents in wastewater and water treatment.
- Bachelor of Environmental and Water Resources Engineering and Masters of Science in Water Quality Engineering from Vanderbilt University.



# Locations of H<sub>2</sub>S Detected by EPA – 4-15-2021







Wastewater  
Issues –  
MODELING  
VS.  
MEASURING

## NCASI Modeling of Wastewater is Not a Substitute for Measuring Air Emissions from Kraft Mill WWTPs

NCASI Tech Bulletin 956 describes the methods for measuring emissions from Kraft Mill WWTPs:


- NCASI model is based on actually measured emissions from well-aerated basins operated using state of the art management.
- “Aerated stabilization basins where foul condensates were directly introduced via a submerged enclosed pipe were found to be the most significant source of emissions of the three organic reduced sulfur compounds. Emission rates for the same unit often varied considerably over time, and similar units at different plants generally did not have equivalent emission rates.”

# New-Indy's Oct. 2021 Air Dispersion Modeling Analysis is Misleading based on Incorrect Emissions Estimates



Model Parameter	Value Applied	Actual Value	Comment
Influent Sulfide	0.02 mg/l	0.07 - >22 mg/l	Sulfide formation ignored; Underestimate emissions
Dissolved Oxygen	0.3 – 2.0	Zero in the 20-Acre Sludge zone	Sludge-filled Lagoon ignored; Underestimate emissions
Active Biomass	300 mg/l	150 mg/l	Underestimate Emissions





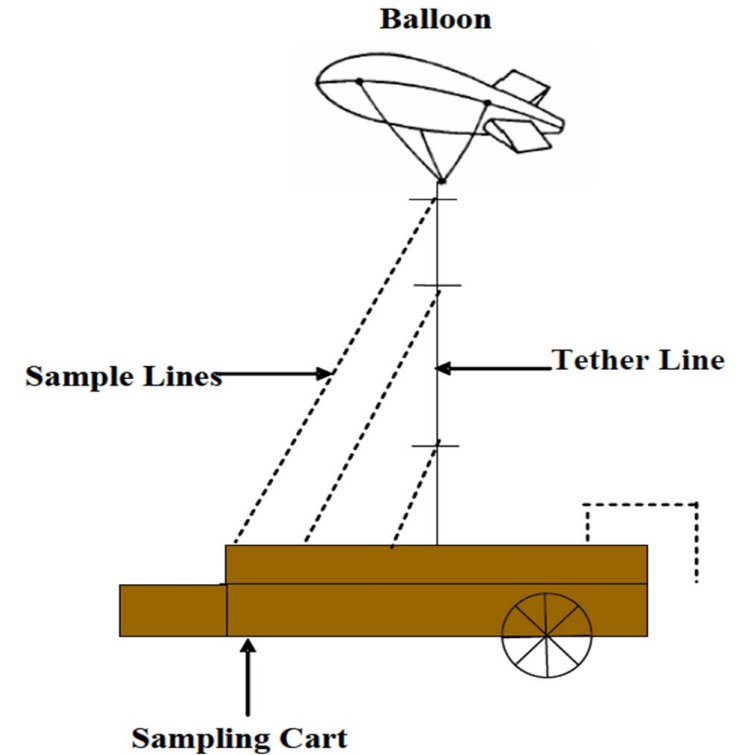
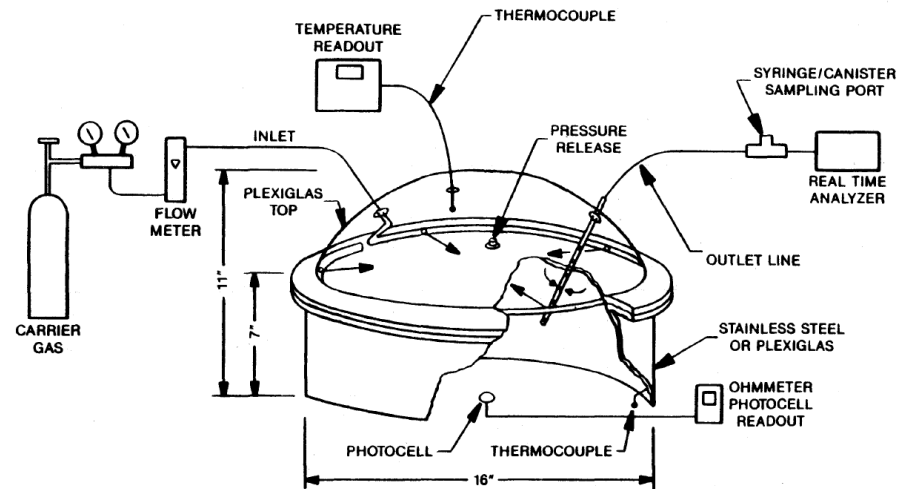
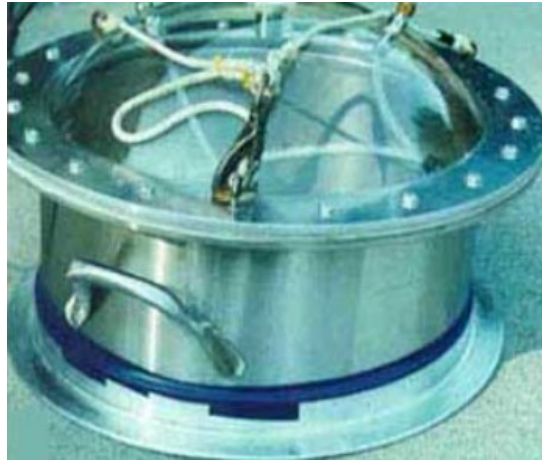
Wastewater  
Issues –  
MODELING  
VS.  
MEASURING

## TRS Emissions Should be Measured Not Modeled

- There are three methods for quantifying fugitive emissions from New Indy's WWTP:
  1. Install temporary total enclosure and use traditional source testing methods - As was done for the Post Aeration Basin.
  2. Measure emissions using flux chamber or boundary layer methods.
  3. Use a suitable emissions model; requires **all** the following:
    - Accurate input data
    - Validation for the type and size of emission source
    - Must be used within the parameter limits of the validation demonstration
    - New-Indy's application of H2SSIM is deficient on all three of the above requirements
- New-Indy should be required to use Methods 1 or 2 above to measure actual emissions from the WWTP.

## Flux Chamber

- Best for well-mixed, open surface impoundments
- NCASI validation



## Boundary Layer Emission Monitoring

- Not constrained by degree of mixing or surface obstructions
- NCASI validation
- Can provide *speciated* TRS emission rates (i.e. H<sub>2</sub>S, methyl mercaptan, etc.).



# Remediation Plan

## Immediate Action Items (within 30-60 days)

- **Reduce generation of foul condensate** to a flowrate and loading that can be fully processed by the existing steam stripper (approx. 500k to 700k gpd).
- **Install**, calibrate, and operate continuous real-time H<sub>2</sub>S and TRS monitors approved by Residents' experts and report daily readings to Residents on 15-minute intervals for both H<sub>2</sub>S and TRS for **at least 18 evenly-spaced H<sub>2</sub>S and TRS monitors located along New-Indy's fence-line or perimeter.**
- **Install**, calibrate, and operate **continuous real-time H<sub>2</sub>S and TRS community monitoring stations** approved by Residents' experts.
- **Require New-Indy to measure actual H<sub>2</sub>S, methyl mercaptan, and TRS emissions from the ASB and other WWTP units** under typical operating conditions to use as fugitive inputs to air dispersion model.



# Remediation Plan

## Short-Term Action Items (within 12 months)

- **Install new steam stripper with sufficient capacity to treat all foul condensate generated in the mill.**
- **Convert Temporary Wastewater Holding Lagoon (Lagoon # 5) to an additional aerobic stabilization basin** by lining and installing baffles and aerators to increase treatment capacity and efficiency and add standby capacity for future unexpected high load or upset events.
- **Remove sludge from Holding Pond # 1** to prevent generation of odors and properly dispose of sludge as approved by Residents' experts.





# Remediation Plan

## Longer-Term Action Items (1-3 years)

- **Add a second Primary Clarifier** of at least 275-ft diameter to provide more reliable operation and capacity to handle future spills, failures, and mill upsets.
- **Reconfigure the Equalization Basin** to separate the influent wastewater flow from the thickening of clarifier sludge.
- **Reconfigure Holding Lagoon # 1** to separate the ASB effluent solids-settling function from the effluent flow equalization function. Alternatively, install two new secondary clarifiers between the ASB and Holding Lagoon # 1 to provide vastly improved process control ability and to ensure that ASB effluent solids are not settled into Holding Lagoon # 1 and cause release of H<sub>2</sub>S and TRS to the air.
- **Add a second Post-Aeration Basin** and equip each basin with a sulfide monitoring system that controls both the aerators and chemical feed pumps to add oxygen and sulfide-destroying oxidant as necessary.
- **Construct a replacement facility for Sludge Lagoon # 4** (which is nearing the end of its service life) that meets current standards and provides capacity to properly stabilize, dewater, and dispose of all sludge generated at the site for the next 30 years.



## Call to Action

# Conclusion

- **New-Indy continues to dump up to 500k gallons of toxic and malodorous foul condensate every day** into a poorly functioning wastewater treatment plant resulting in more than hundreds of odor and health-related complaints still being made by residents to DHEC every month.
- New-Indy's **outdated and undersized WWTP** discharges 20 million gallons of wastewater per day to the Catawba river. **The plant needs major upgrades.**
- **Monitoring stations** at New-Indy's fence-line and in the community are **inadequate in number, location, and air pollutants** being monitored.
- **New-Indy's current Air Dispersion Model Analysis is inaccurate and misleading.** The **Corrective Action Plan is woefully inadequate** and needs to be reassessed and expanded.
- New-Indy's response to EPA's and DHEC's orders has been too slow and too meager, such that the **ongoing air pollution continues to cause odors and health problems.**
- If EPA elects to work with our team of nationally recognized environmental experts and consultants, together we can bring New-Indy into compliance and achieve a long-term solution to **protect the residents from the toxic air and water pollution emanating from the New-Indy mill.**

