EPA Region 6 Environmental Justice Forum

Benefits of Air Monitoring in Environmental Justice Communities

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Air Monitoring Programs

- Air monitoring programs in environmental justice communities, conducted by state and federal agencies and industrial facilities, have resulted in environmental justice communities gaining knowledge:
  - of the existence of contaminants in the air they breathe
  - the concentrations of the chemicals in their air
  - the health impacts associated with the chemical in their air

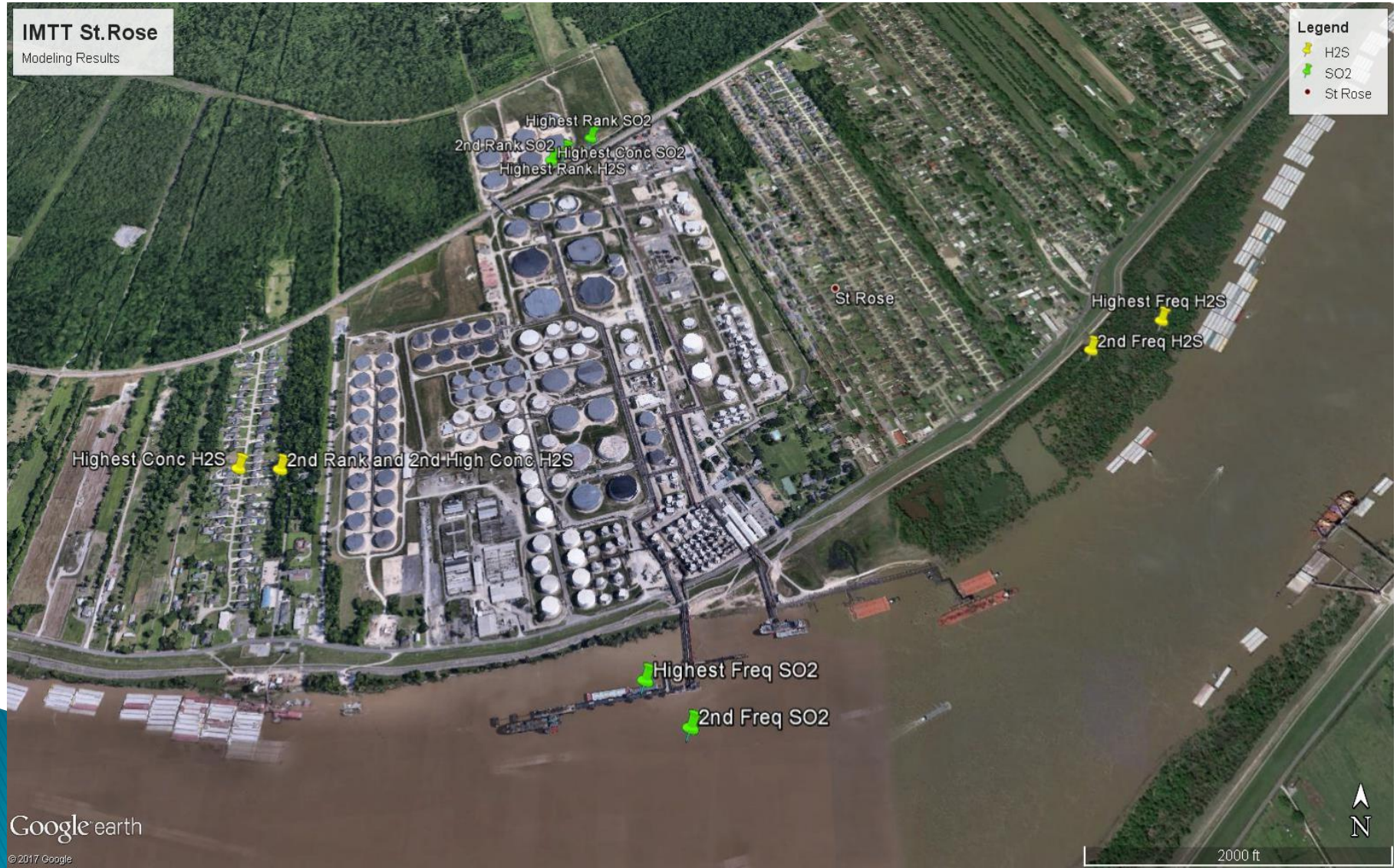
Use of Air Contaminants Data by Environmental Justice Communities

- EJ communities have used the knowledge they gained from Air Monitoring to work with federal, state and local environmental and health agencies and industries to:
  - address their situations
  - reduce air emissions
  - reduce their exposure to toxic chemicals

St. Rose, St. Charles Parish, Louisiana

- Located on the east bank of the Mississippi River just up river from the New Orleans Airport. Industrial facilities adjacent to the EJ community of St. Rose
- International Matex Tank Terminal (IMTT) – gas and chemical storage and shipping facility
- Shell Asphalt Production Plant

Map of St. Rose Community and Industrial Facilities



- Since 2014, the St. Rose community has complained and voiced frustrations to local and state government agencies concerning the severe, unbearable strong odors in their community.
- Louisiana State Officials identified air emissions from the crude oil handled by IMTT, which contain high levels of sulfur compounds, and the air emissions from the asphalt facility as the sources of the odors in St. Rose.
- Health Impacts Experienced by Community – breathing problems, eye irritation and vomiting.

An Air Monitoring Program is Beginning in 2018 and Continuing for Two Years – Monitor Location in Community Adjacent to Industrial Facilities

Continuous monitoring for:

- Sulfur Dioxide
- Hydrogen Sulfide
- Total Reduced Sulfur
- Methane/NonMethane Hydrocarbons – set point to activate canister sample over 25 minutes for Volatile Organic Compounds
- Wind speed and direction
- Emphasis of Sulfur based compounds and Volatile Organic Compounds

St. John the Baptist Parish – Reserve and LaPlace, La Chloroprene Emissions from Denka, Previously DuPont Pontchartrain Works Facility – Neoprene Production

- The Neoprene production facility has been manufacturing Chloroprene and using the Chloroprene to manufacture Neoprene since 1969. The process releases the largest quantity of Chloroprene into the air in the US.

- The National Air Toxics Assessment (NATA) classified Chloroprene as a likely human carcinogen in December 2015 with a long term cancer comparison level for a 100 in1 million cancer risk of 0.2 ug/m3.

St. John the Baptist Parish – Reserve and LaPlace, La Chloroprene Emissions from Denka, Previously DuPont Pontchartrain Works Facility – Neoprene Production Cont'd

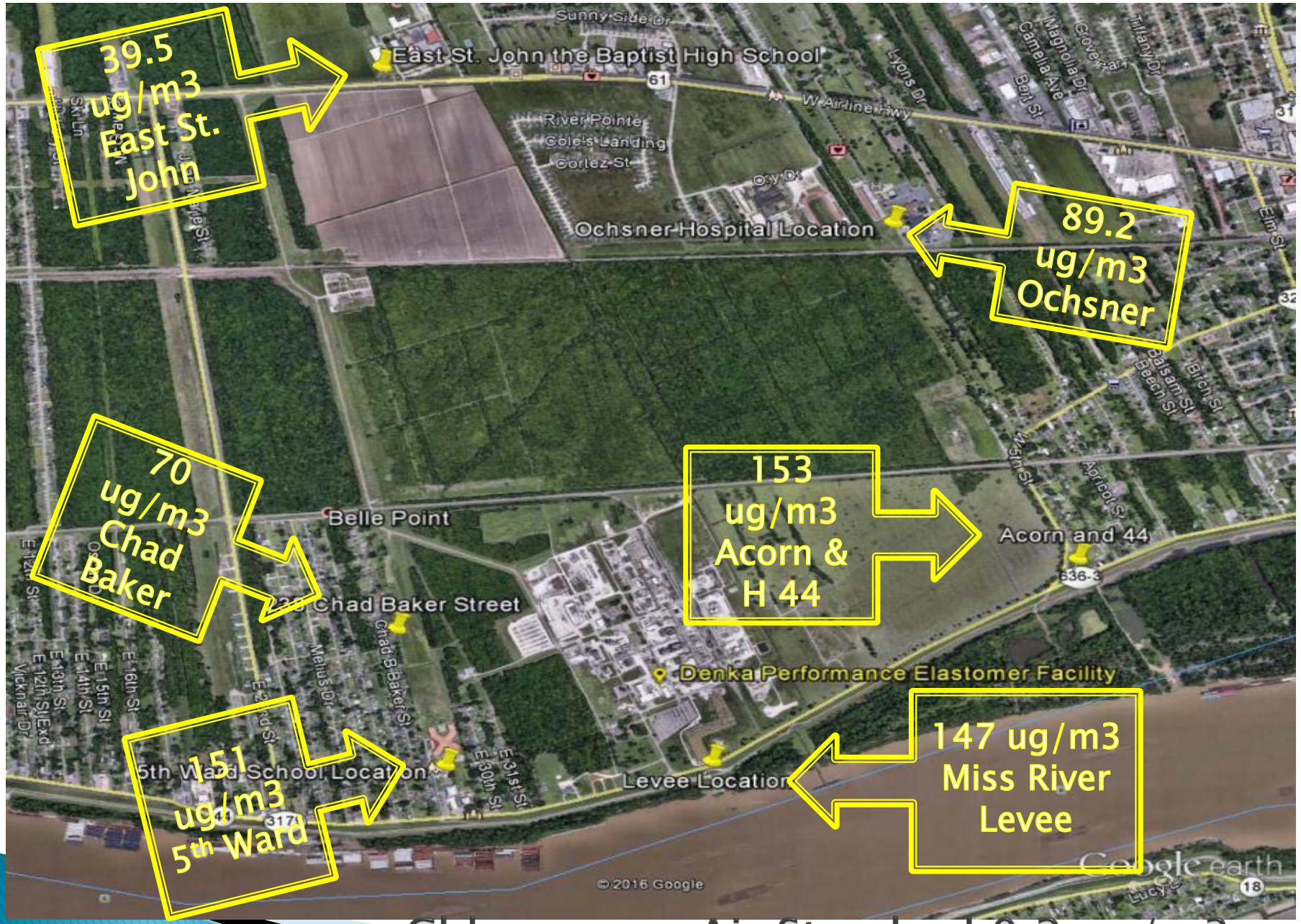
- NATA estimated higher than expected levels of Chloroprene in the community of LaPlace/Reserve.
- NATA/EPA identified the DuPont Denka facility as creating the greatest offsite risk of cancer of any manufacturing facility in the US.

Chloroprene

- Studies have demonstrated that Chloroprene increases the risk of cancer in humans associated with liver, lung , kidney and colon cancer and leukemia.

Chloroprene Cont'd

- The Concerned Citizens of St. John are extremely concerned about their exposure to Chloroprene in the air in their community and the associated health impacts. The Environmental Justice community has been involved in reviewing data, evaluating and tracking developments, educating community members and requesting assistance and support from local government agencies as well as LADEQ and EPA.



Chloroprene Air Standard 0.2 ug/m3

EPA Air Sample Results, Highest Concentration at Each Location, Covering the Sampling Period May 25, 2016 Through December 2017

Location	Chloroprene	Date	Exceeds 0.2 ug/m3
Acorn and Hwy 44	153 ug/m3	11-21-16	765 X
Fifth Ward Elementary	**151 ug/m3**	**11-28-17**	**755 X**
Miss. River Levee	147 ug/m3	11-21-16	735 X
Ochsner Hospital	89.2 ug/m3	11-25-17	446 X
238 Chad Baker	70 ug/m3	11-28-17	350 X
East St. John High	**39.5 ug/m3**	**11-25-17**	**197.5 X**

Control Technologies

- Based on the Chloroprene Ambient Air Concentrations Collected by EPA in 2016, the Louisiana Department of Environmental Quality along with Region 6 Environmental Protection Agency required Denka to install control technologies to reduce the air emissions of Chloroprene.
- Denka agreed to reduce their Chloroprene air emissions by 85% by installing four control technologies during 2017.

Control Technologies Cont'd

- Even with the control technologies installed and functioning, the Chloroprene in the ambient air in St. John the Baptist parish in 2018 is still substantially over the 0.2 ug/m3 concentration as documented by the EPA Ambient Air monitoring.

EPA Air Monitoring – Ambient Air Concentrations Around the Denka Facility in 2018

Location	Chloroprene	Date	Exceeds 0.2 ug/m3
238 Chad Baker	32.0/33.2 ug/m3	2-6-18	163 X
Fifth Ward Elementary	32.4 ug/m3	2-6-18	162 X
East St. John High	30.3 ug/m3	1-31-18	151.5 X
Miss. River Levee	28.3 ug/m3	3-14-18	141.5 X
Acorn and Hwy 44	13.8 ug/m3	3-14-18	69 X
Ochsner Hospital	5.37 ug/m3	1-15-18	27 X
The ambient air concentrations of Chloroprene are still in excess of 0.2 ug/m3.			

Biomonitoring

- Biomonitoring was conducted on Individuals in the Reserve/LaPlace area and school children from the two schools.
- The pathways of exposure to Chloroprene are inhalation, ingestion and absorption. The liver metabolizes Chloroprene. Urine samples were collected.
- The metabolites, specific to Chloroprene, were detected in every single urine sample. This demonstrates completed pathways of exposure to Chloroprene.

Eight Mile Mercaptan Spill and Associated Odors

- Mobile Gas operated the Whistler Junction transfer facility in Eight Mile, northwest of Mobile, Alabama.

- In 2008, from January through June, over a six month period, Mobile Gas released 6,000 pounds of mercaptan (ethylmethyl sulfide and tertiary butyl mercaptan) from an underground transfer line to the groundwater.

Eight Mile Mercaptan Spill and Associated Odors Cont'd

- In October 2011, over three years later, EJ residents detected severe mercaptan odors in Eight Mile. It was determined that the mercaptan had migrated to a deep ground water aquifer and migrated down dip to a beaver pond with springs. The mercaptan was being released into the air from the springs and making residents very very ill.

Treatment Systems to Capture and Treat the Mercaptan

- After many years of odor and illness complaints from community members, two treatment systems to capture the odors were installed, one at the springs in the beaver pond and one along a right of way consisting of 24 recovery wells. When the second control technology was turned on, in November 2015, the intensity of the odors increased. With the increase in intensity of the odors, the community health impacts and odor complaints increased.

Treatment Systems to Capture and Treat the Mercaptan Cont'd

- In December 2012, Alabama Department of Environmental Management (ADEM) initiated weekly odor patrols at eight fixed locations and between the eight location.
- The odor patrols along with the continued community odor complaints has finally resulted in ADEM requiring Spire, the new facility operator, to perform additional ground water contamination investigations in 2018.

New Mercaptan Investigations

- Evaluation of the use of soil vapor extraction at the **source area** of the spill.
- Install borings to determine the mechanisms for the mercaptan to have migrated between the two recovery system and the existing legacy concentrations of mercaptan in the groundwater below the treatment systems that were present prior to the installation of the treatment systems.

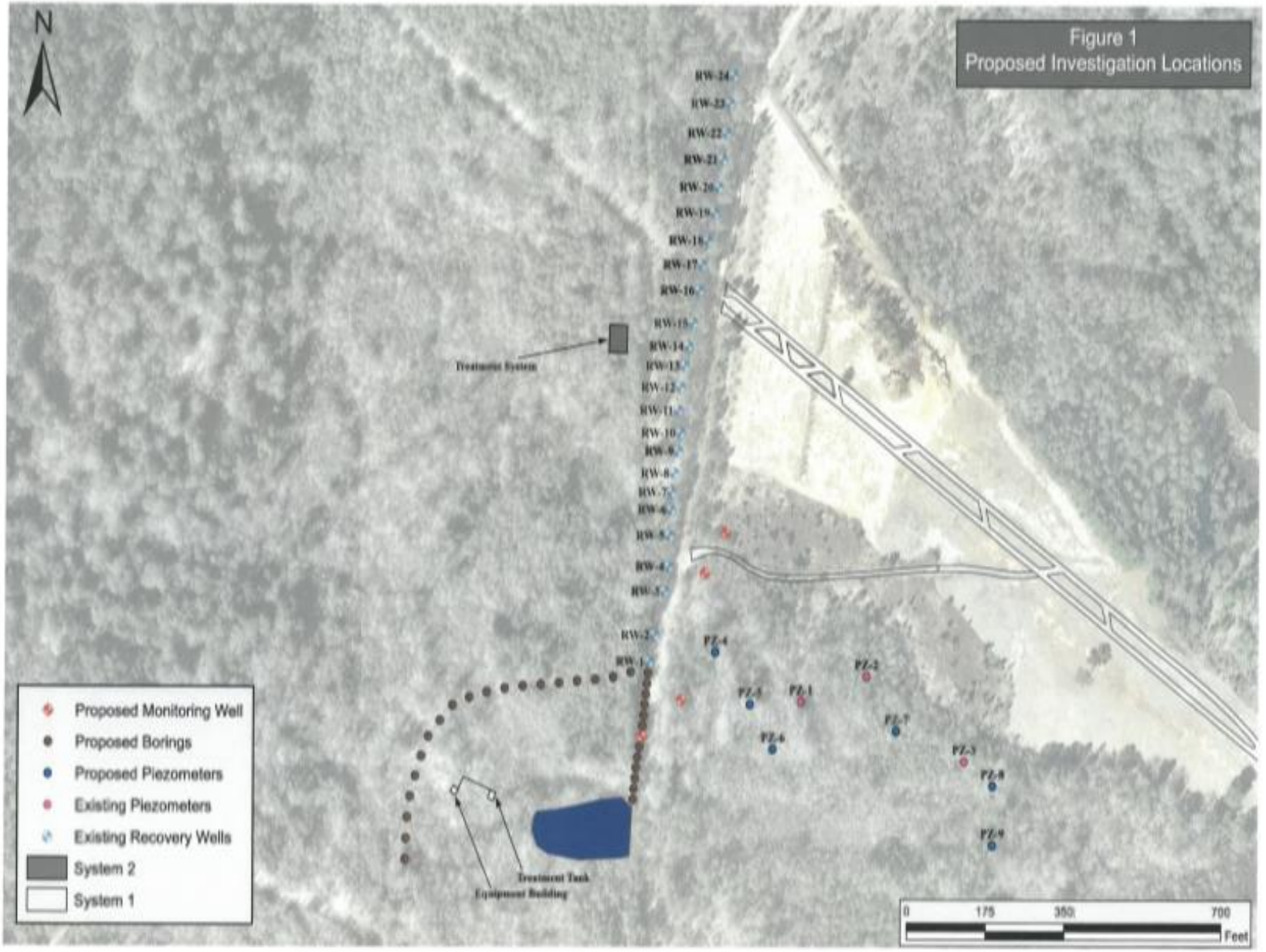


Figure 1
Proposed Investigation Locations
N
RW-24
RW-23
RW-22
RW-21
RW-20
RW-19
RW-18
RW-17
RW-16
RW-15
RW-14
RW-13
RW-12
RW-11
RW-10
RW-9
RW-8
RW-7
RW-6
RW-5
RW-4
RW-3
RW-2
RW-1
Treatment System
PZ-4
PZ-2
PZ-5
PZ-1
PZ-7
PZ-6
PZ-3
PZ-8
PZ-9
Treatment Tank
Equipment Building
Proposed Monitoring Well
Proposed Borings
Proposed Piezometers
Existing Piezometers
Existing Recovery Wells
System 2
System 1
0
175
350
700
Feet

Crossett, Arkansas Hydrogen Sulfide Air Emissions

- The Crossett Concerned Citizens for Environmental Justice have been concerned with the toxic air emissions released into their environment by the Georgia-Pacific Paper Mill, Chemical Plant and the previous plywood facility.

Crossett, Arkansas Hydrogen Sulfide Air Emissions Cont'd

- The wastewater treatment facility for the Georgia-Pacific facilities is located in the Environmental Justice Community of West Crossett.

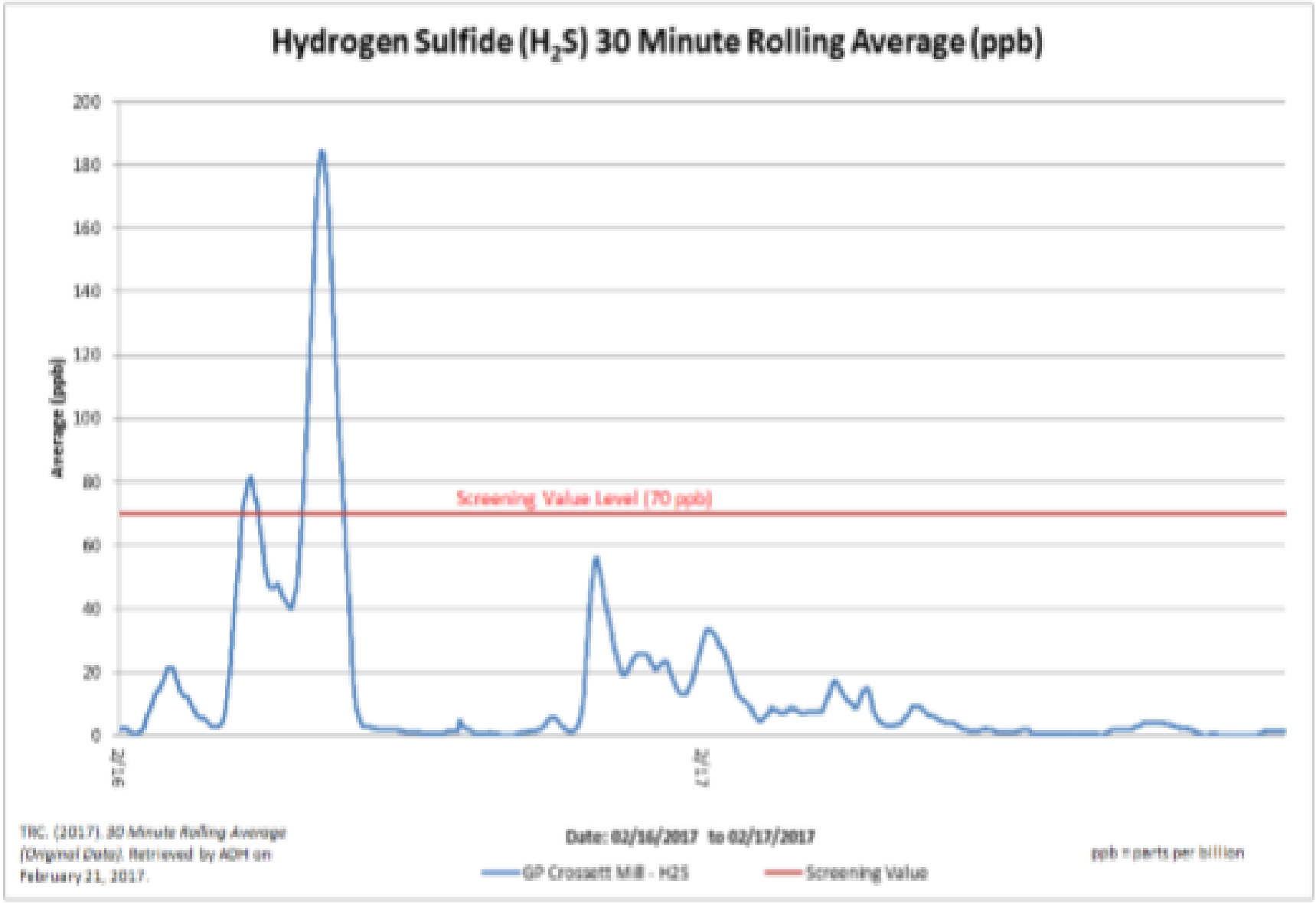
- Hydrogen Sulfide emissions are particularly severe in association with the aeration basins of the wastewater treatment facility.

Hydrogen Sulfide Continuous Monitoring

- Beginning in October 2014, EPA Region 6, Arkansas Department of Environmental Quality, (ADEQ) and Arkansas Department of Health began a continuous monitoring of hydrogen sulfide near the community in West Crossett.

Hydrogen Sulfide Continuous Monitoring Cont'd

- The data was made available every two weeks. A screening value level of 70 ppb of hydrogen sulfide was set.
- From January through June 2017, EPA performed passive hydrogen sulfide monitoring in Crossett to determine emission sources of airborne hydrogen sulfide in the wastewater treatment system at the Georgia-Pacific facility in Crossett and the potential for exposure in the community.


Hydrogen Sulfide (H_2S) 30 Minute Rolling Average (ppb)
Average (ppb)
200
180
160
140
120
100
80
60
40
20
0
Screening Value Level (70 ppb)
2016
2017
TNC. (2017). 30 Minute Rolling Average (Original Data). Retrieved by ADH on February 21, 2017.
Date: 02/16/2017 to 02/17/2017
GP Crossett Mill - H2S
Screening Value
ppb = parts per billion

Title V Permit Modification

- As a results of the Hydrogen Sulfide data collected by the agencies, modeling was performed of the sources of hydrogen sulfide in the wastewater system. Based on the results of monitoring and modeling, for the first time, permit emission limits for Hydrogen Sulfide were established in the air permit renewal and modification of the Title V Air permit that went to a public hearing in December 2017.

Title V Permit Modification Cont'd

- The Hydrogen Sulfide limit from the paper operation was limited to 14 tons/year and 141 tons per year for Hydrogen Sulfide air emissions from the Wastewater Treatment System.
- Hydrogen Sulfide concentrations in the air of West Crossett have been decreased.
- While the West Crossett community members still suffer from Hydrogen Sulfide air emissions, at least enforceable permit limits has been established.

Air Emissions and Environmental Justice Communities

- Environmental Justice communities have used air monitoring data to address specific issues in their communities and reduced their exposure associated with the chemicals being released into their air.
- There is a desperate need for additional specific air monitoring programs to be established in a whole host of Environmental Justice communities.

Air Emissions and Environmental Justice Communities Cont'd

- Financial resources are one of the largest stumbling blocks to establish air monitoring programs.
- Regulatory agencies can often require or request industries to finance air monitoring programs and use independent consultants to perform the work and separate the industries from the monitoring.
- Supplemental or Beneficial Environmental Projects can also be a mechanism to finance air monitoring programs.