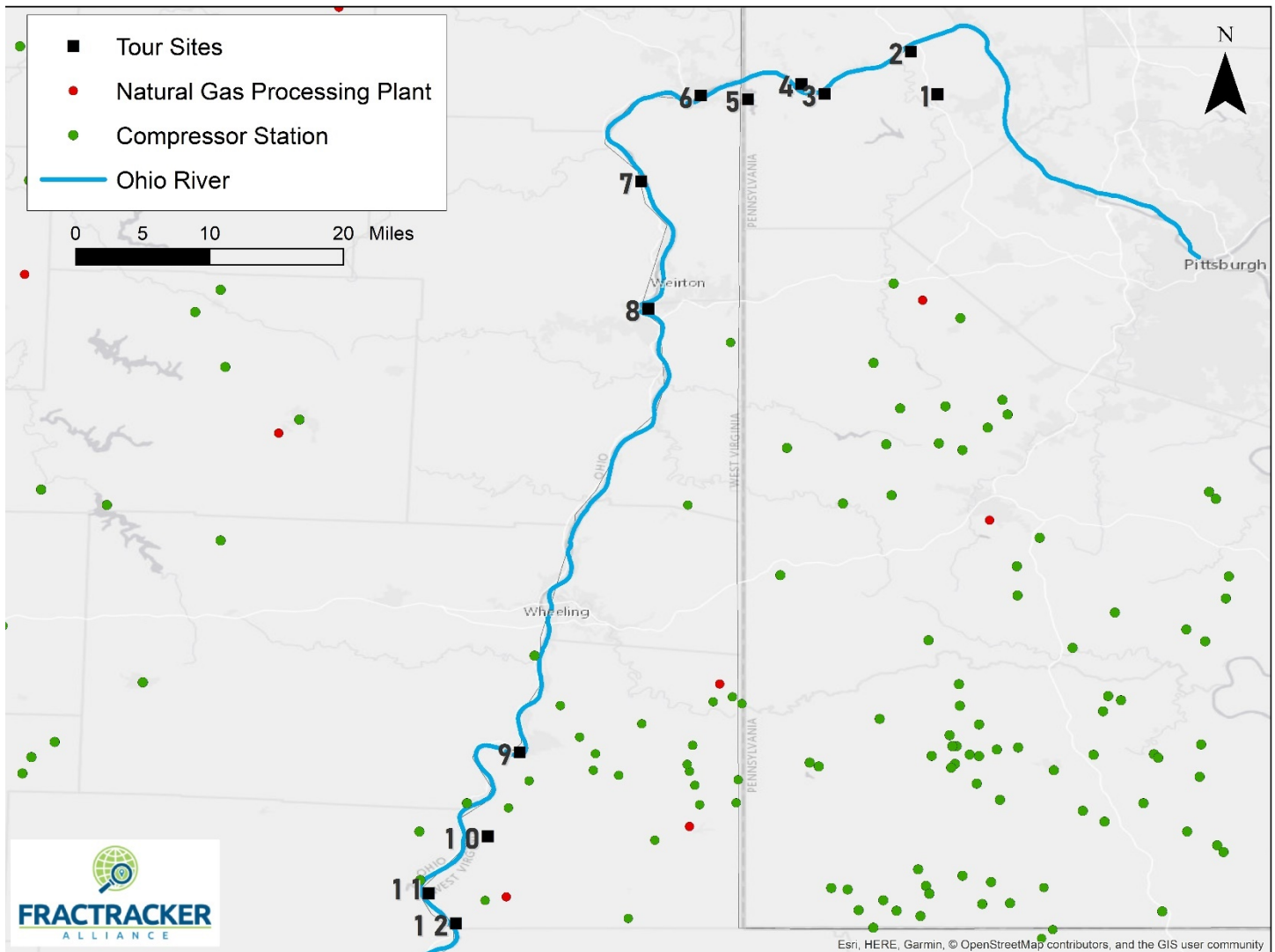


OHIO RIVER VALLEY PETROCHEMICAL BUS TOUR

May 31, 2019



The map above shows compressor stations, which aid the flow of natural gas through pipelines, and processing stations, which process natural gas for its intended use. The map also includes numbered spots we'll pass on the tour. While our focus is on the impacts of the expanding petrochemical industry, we'll see several other sites that show the existing hazardous waste burden on the Ohio River and highlight the region's industrial history.

TOUR SITES



1. Revolution Pipeline explosion site – The location where Energy Transfer Partner's (ETP) natural gas pipeline exploded on 9/10/18. A landslide caused the explosion, which destroyed one home and damaged other nearby property. ETP has since failed to stabilize the land. Another pipeline currently under construction will cross the Revolution's path less than 500 feet from the explosion to bring natural gas to the Shell Ethane Cracker. The Revolution pipeline crosses the Ohio River.



2. Shell Ethane Cracker – The construction site of the Shell Ethane Cracker, which will “crack” ethane into ethylene to create an estimated 1.6 million tons of polyethylene plastic pellets per year. It will discharge waste into the Ohio River using permits “grandfathered in” from the former facility at this location, which are not in compliance with new regulations established in 2010.

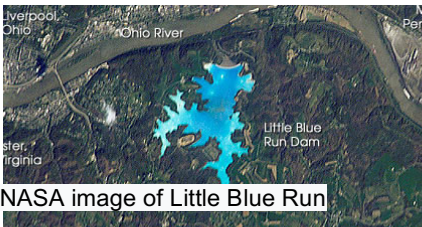


3. Beaver Valley Nuclear Power Station – FirstEnergy’s nuclear power plant, which operates two pressurized water reactors, producing 1,815 megawatts of electricity. The plant is facing the possibility of closing within the next 2 years. It discharges waste into the Ohio River.



4. ATI Allegheny Ludlum – Allegheny Technologies Inc.’s steel plant in Midland, PA, which was recently denied exemption to the Trump administration’s steel tariffs. A 2012 report by the EPA’s Toxics Release Inventory showed that the plant released 1.11 million pounds of toxins into the Ohio river in 2010.

(Beaver County Times Staff File)



NASA image of Little Blue Run

5. Little Blue Run – The largest coal ash impoundment in the U.S., Little Blue Run received billions of gallons of coal waste from Bruce Mansfield Power Plant up until 2016. The PA DEP has found over 100 monitoring locations that have been contaminated by Little Blue Run. FirstEnergy is seeking a permit to fix these contaminated sites by routing the waste to the primary discharge location along the Ohio River.



(First Choice Energy Services)

6. First Choice Energy Services – Provides propane, diesel, gasoline, and lubricants for customers throughout the Ohio River Basin. The company also provides services for Utica and Marcellus Shale oil and gas exploration.



7. First Energy/W.H. Sammis Power Plant – A coal-fired power plant that includes 7 coal-fired units and five oil-fired units. The ponds are permitted to discharge into the Ohio River. The site contains 2 ponds to store bottom ash and wastewater produced by plant operations. The ponds are above the FEMA 100-yr flood elevation, and according to a report prepared by Geosyntec Consultants, the river has reached the toe of the embankments twice in the last 74 years.



8. Arcelor Mittal (formerly Weirton Steel) – produces cold-rolled and tin plate products, and distribution services along the Ohio River. The plant discharges waste into the Ohio River, near water intake sites that supply Weirton, West Virginia, and Steubenville, Ohio residents.



9. Proposed site for PTTGC Ethane Cracker – The proposed site of the region’s 2nd ethane cracker, which would produce 1.6 million tons of plastic per year if built. The image shows land PTTGC has purchased for the plant, totaling roughly 500 acres. The Ohio EPA has issued PTTGC a wastewater discharge permit allowing the plant to discharge to the Ohio River.



10. Marshall County Coal Company – Owned by Murray Energy Corporation, the largest privately-owned coal company in the U.S. Murray Energy is a major advocate for reviving the coal industry and has funded legal action challenging natural gas projects. Marshall County Coal Co. works with FirstEnergy Corp. to reuse coal combustion byproducts from the Bruce Mansfield Plant.



11. Blue Racer Midstream Fractionation plant – A plant that separates dry natural gas from natural gas liquids (NGLs), such as ethane, propane, and butane. The facility has recently applied to the WV DEP for a permit to modify the plant, involving increases in emissions.

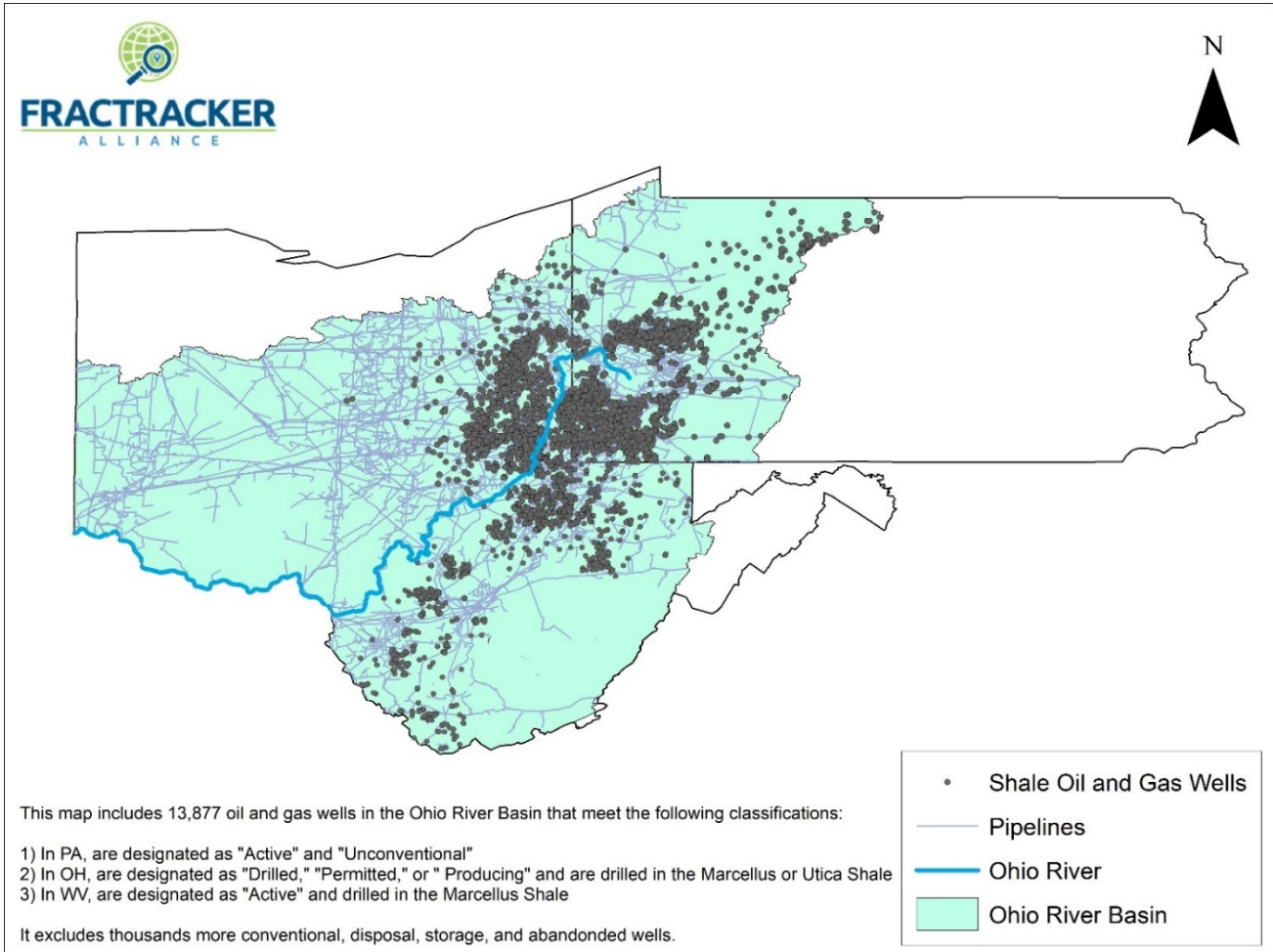
Energy Storage Ventures would like to build pipelines beneath the Ohio River to deliver NGLs from the plant to a proposed storage site in underground salt caverns (the Mountaineer NGL Storage Project).



12. Covestro LLC – Covestro is a polymer and plastic producer. This site manufactures thermoplastic urethanes and urethane intermediates which are used for cushioning and structural support.

Primus Green Energy, Inc. is proposing to construct a Marcellus Methanol Plant at this site. The plant would convert methane and other hydrocarbons to methanol.

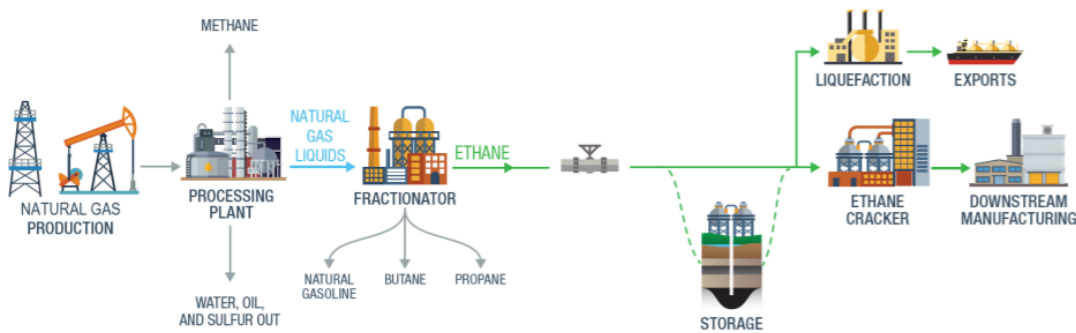
Oil and gas extraction and transport in the Ohio River Basin



According to ORSANCO, the Ohio river provides drinking water for over 5 million people, and over 25 million live within the Ohio River Basin. The basin lies above multiple shale rock formations which trap oil and gas resources– the feedstock of the petrochemical industry.

How is oil and gas transformed by the petrochemical industry into plastic and resins?

Methane is the primary component of the natural gas stream extracted from fracked wells and used for energy. Wells in the Ohio River Basin also extract relatively high volumes of natural gas liquids (NGLs). These NGLs are processed, separated out, and turned into plastic in ethane crackers or exported for manufacturing elsewhere.



Source: US

Energy: <https://www.energy.gov/sites/prod/files/2018/12/f58/Nov%202018%20DOE%20Ethane%20Hub%20Report.pdf>

Department of