



# Memorandum

April 30, 2018

To: David Morrison, United States Environmental Protection Agency      Ref. No.: 11156937  
Kristina Miller, United States Environmental Protection Agency  
James Mitchell, United States Environmental Protection Agency  
Jacob Hassan, United States Environmental Protection Agency  
Robert Thiboldeau, Wisconsin Department of Health Services  
John Sager, Wisconsin Department of Natural Resources  
Pat Schanen, Douglas County  
Kathy Ronchi, Douglas County  
Dave Longsdorf, Douglas County

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From: GHD/dh/11      Tel: 501-224-1926

CC: Dyron Hamlin, MS, PE, CIH; Bradley Free

**Subject: Summary of Perimeter Air Monitoring Results for April 29, 2018 11:30 – April 29, 2018 23:30**

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The purpose of this memorandum is to provide Superior Refining Company LLC (SRC) site management and local, state and federal regulators a summary of GHD's site perimeter air monitoring activities and results at the Husky Superior Refinery conducted from April 29, 2018 11:30 CDT through April 29, 2018 23:30 CDT. This was the first shift that GHD performed site perimeter air monitoring using fixed instruments. Air monitoring activities were conducted in accordance with the Air Monitoring Plan developed in consultation with the United States Environmental Protection Agency, Wisconsin Department of Natural Resources, Wisconsin Department of Health Services, Douglas County Emergency Management Agency, and Douglas County Health and Human Services.

During this shift, GHD placed ten calibrated AreaRAE monitors at the refinery site perimeter and began continuous air quality monitoring at these fixed stations. Meter placement and maintenance was conducted by GHD with escort by SRC personnel. The AreaRAE monitors were equipped with a photo ionization detector (PID) (10.6 eV lamp) for monitoring volatile organic compounds (VOCs) and electrochemical sensors specific for carbon monoxide (CO), hydrogen sulfide (H<sub>2</sub>S), and flammability (LEL). GHD monitored meter status and continuous air quality monitoring results via telemetry from the refinery control room and advised Husky operations staff on air quality at the selected locations so that Husky could monitor site conditions and take appropriate actions. Results were documented through data logging. Low level H<sub>2</sub>S readings were detected above the community action levels and automatically recorded at the fence line air



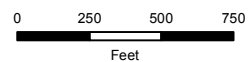
monitoring locations. Held-held air monitoring equipment was deployed to investigate the low level H<sub>2</sub>S detections. Based on these investigations, the low level H<sub>2</sub>S detections were determined to be sensor drift and not representative of ambient air quality. Perimeter monitoring locations and status with respect to community action levels over the period 11:30 to 23:30 on April 29, 2018 are presented on Figure 1. Perimeter air monitoring results for volatile organic compounds (VOCs) and hydrogen sulfide (H<sub>2</sub>S) over the this period are summarized on Figures 2 and 3.

The information contained in this memorandum will be considered preliminary until a final Quality Assurance/Quality Control (QA/QC) review of the data is completed. At the completion of the project, all data collected through real-time monitoring and integrated sampling analyses will be compiled, summarized, and reported to SRC. Data contained in the final report will go through GHD's final QA/QC process, including review by a GHD Certified Industrial Hygienist (CIH).





Sources: 2015 TIGER/Line Shapefiles, prepared by the U.S. Census Bureau, 2015; U.S. Geological Survey, National Geospatial Technical Operations Center - National Elevation Dataset, 2015; Imagery © Google.



Coordinate System:  
NAD 1983 HARN StatePlane  
Wisconsin North FIPS 4801 Feet



**Legend**

**Perimeter Monitoring Locations**

- COIs Below Community Action Levels
- COIs Above Community Action Levels
- Hot Zone Perimeter



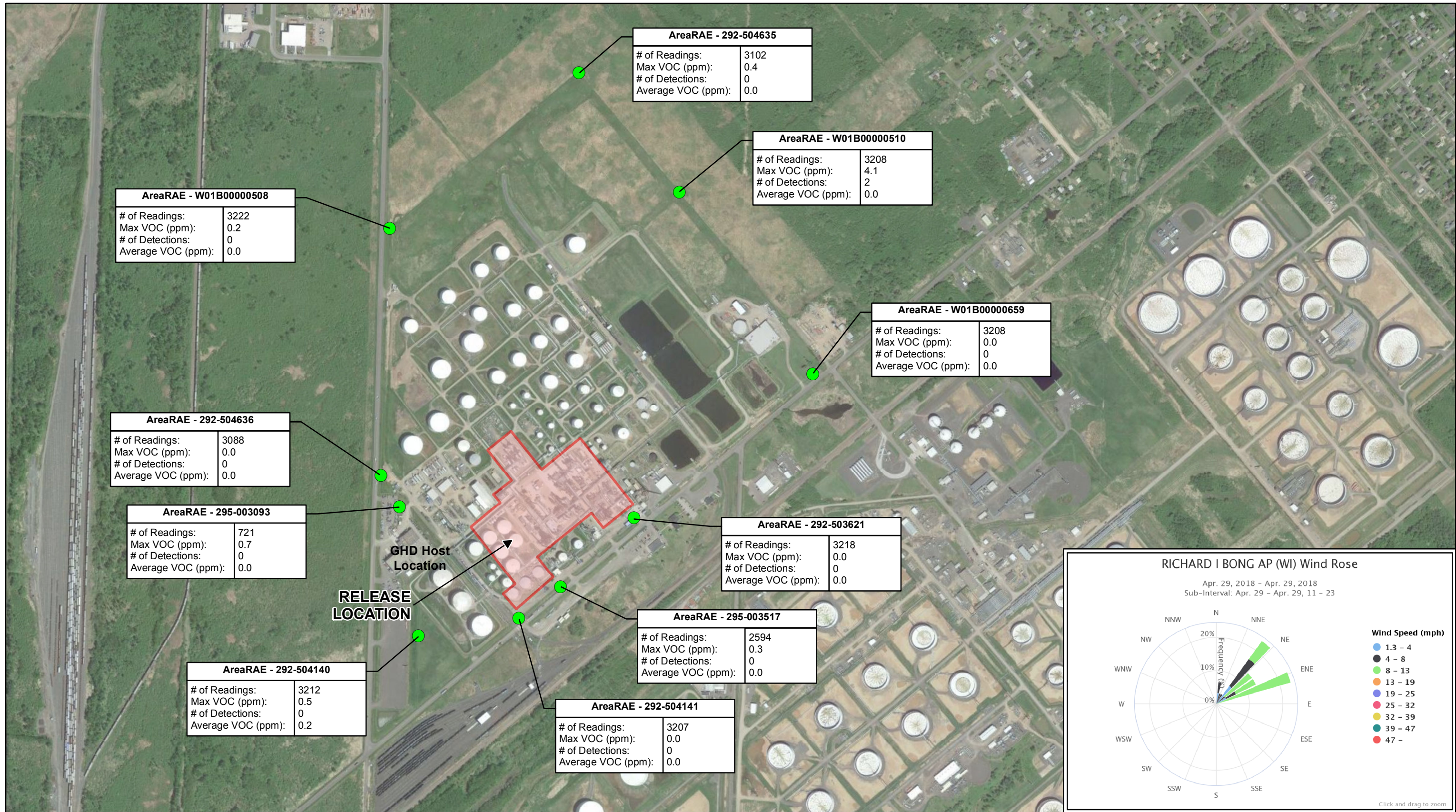
HUSKY ENERGY – SUPERIOR REFINERY FIRE  
SUPERIOR, WISCONSIN

SUMMARY OF PERIMETER ZONE AIR MONITORING RESULTS  
11:30 APRIL 29 TO 23:30 APRIL 29, 2018

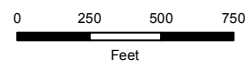
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FIGURE 1





Sources: 2015 TIGER/Line Shapefiles, prepared by the U.S. Census Bureau, 2015; U.S. Geological Survey, National Geospatial Technical Operations Center - National Elevation Dataset, 2015; Imagery © Google.



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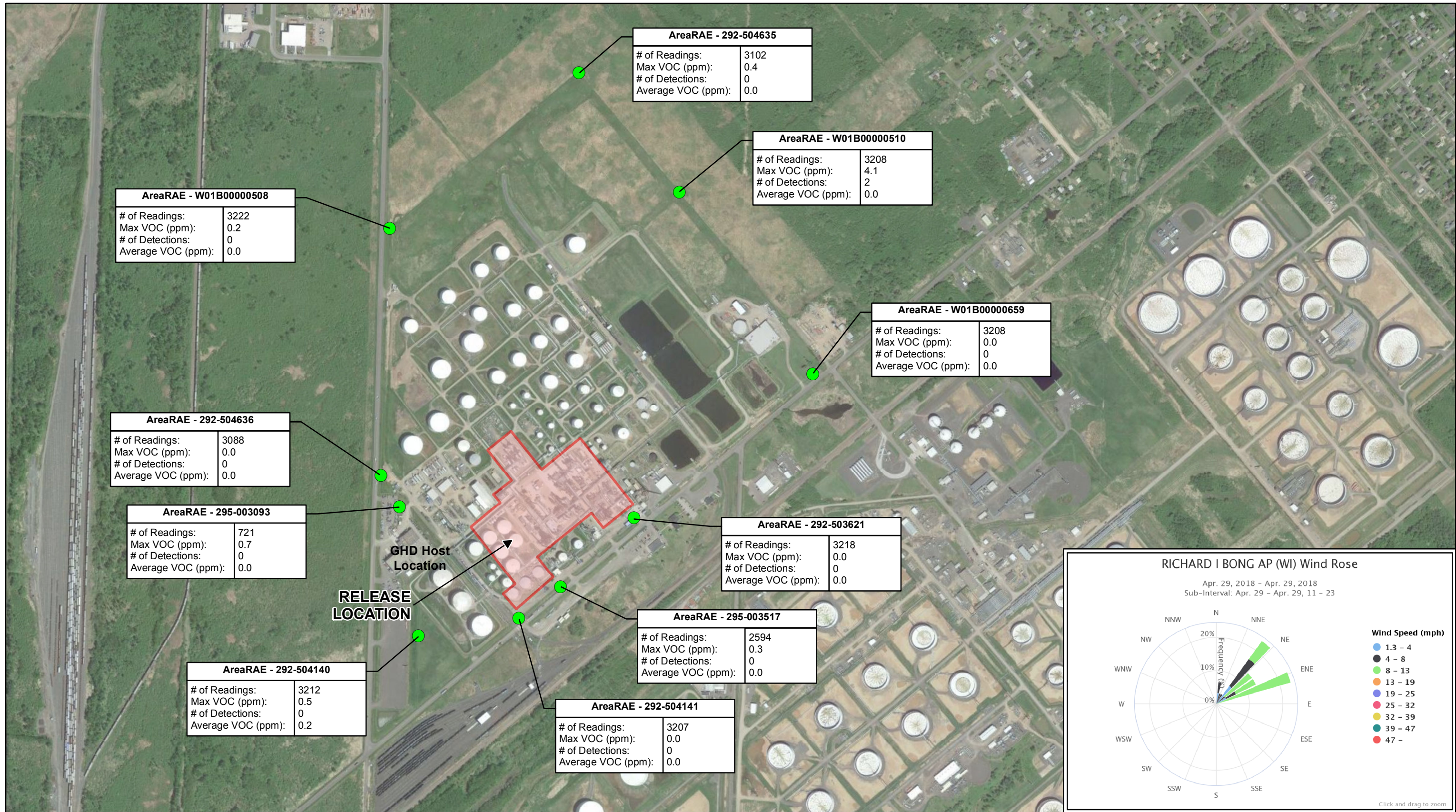
HUSKY ENERGY – SUPERIOR REFINERY FIRE  
 SUPERIOR, WISCONSIN

PERIMETER ZONE AIR MONITORING RESULTS - VOCS (PPM)  
 11:30 APRIL 29 TO 23:30 APRIL 29, 2018

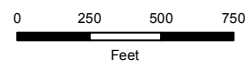
11156937-00  
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FIGURE 2





Sources: 2015 TIGER/Line Shapefiles, prepared by the U.S. Census Bureau, 2015; U.S. Geological Survey, National Geospatial Technical Operations Center - National Elevation Dataset, 2015; Imagery © Google.



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HUSKY ENERGY – SUPERIOR REFINERY FIRE  
SUPERIOR, WISCONSIN

PERIMETER ZONE AIR MONITORING RESULTS - VOCS (PPM)  
11:30 APRIL 29 TO 23:30 APRIL 29, 2018

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FIGURE 2