

# Regulatory Approaches to Residential Wood Combustion



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**&**

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Nashville, TN**

# Presentation Overview

- Hot Spot Guidance Program
- Complaint Investigation
- Curtailment & Compliance





# Sniffer Vehicle

- Use laptop connected to pDR 1500 to collect PM<sub>2.5</sub> data
- Garmin GPS used to track location



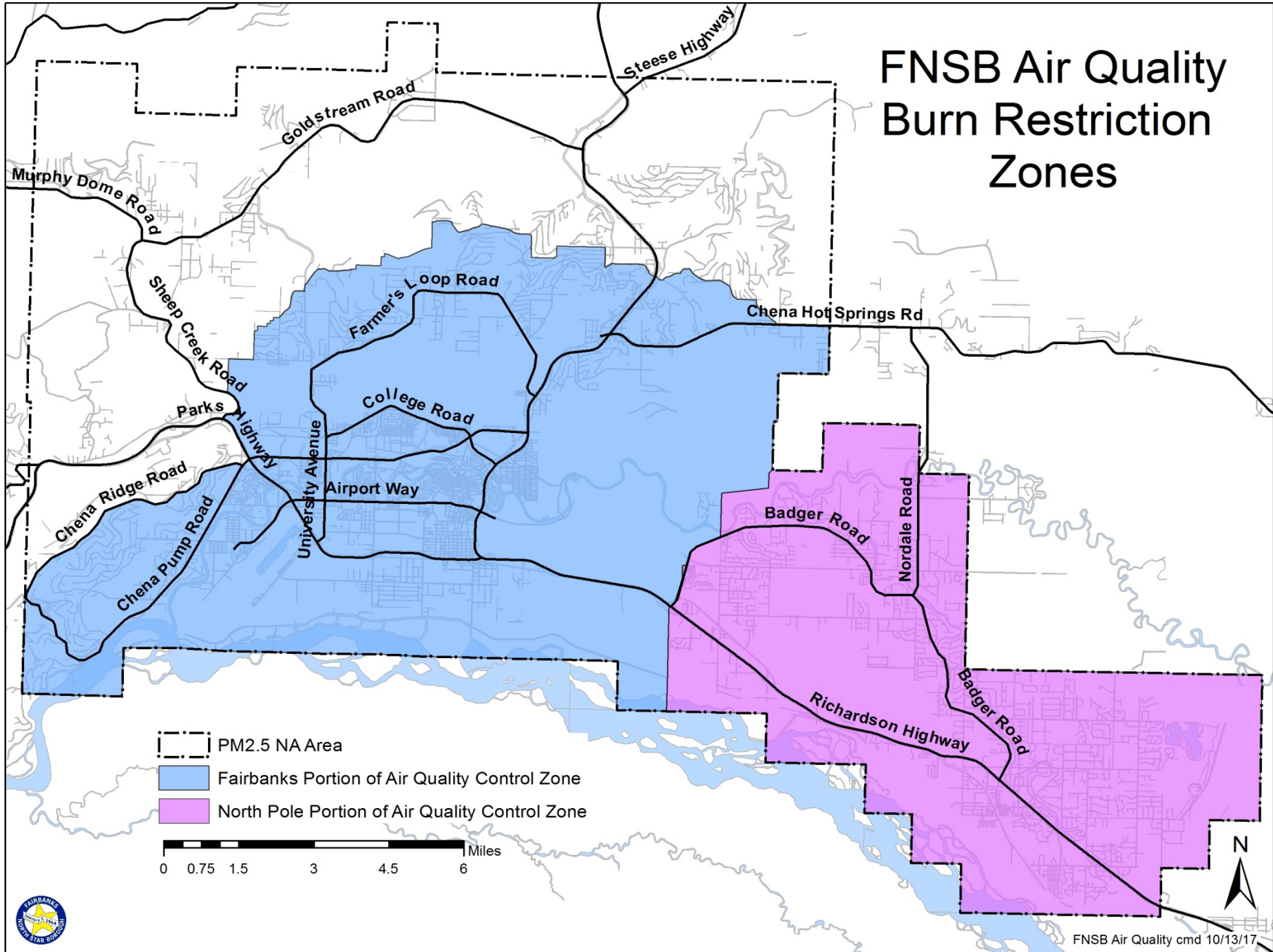


# Hot Spot Guidance Program

- 3 staff drive Monday – Friday, approx. 5am - 8pm
- Rotate through 6 routes, traveling on public roads within the Air Quality Control Zone
- Instantaneous Snapshot of PM<sub>2.5</sub> data collected every 2 seconds with a Thermo pDR 1500
- Data used to produce contour (hot spot) maps using natural neighbor analysis
- Not Regulatory

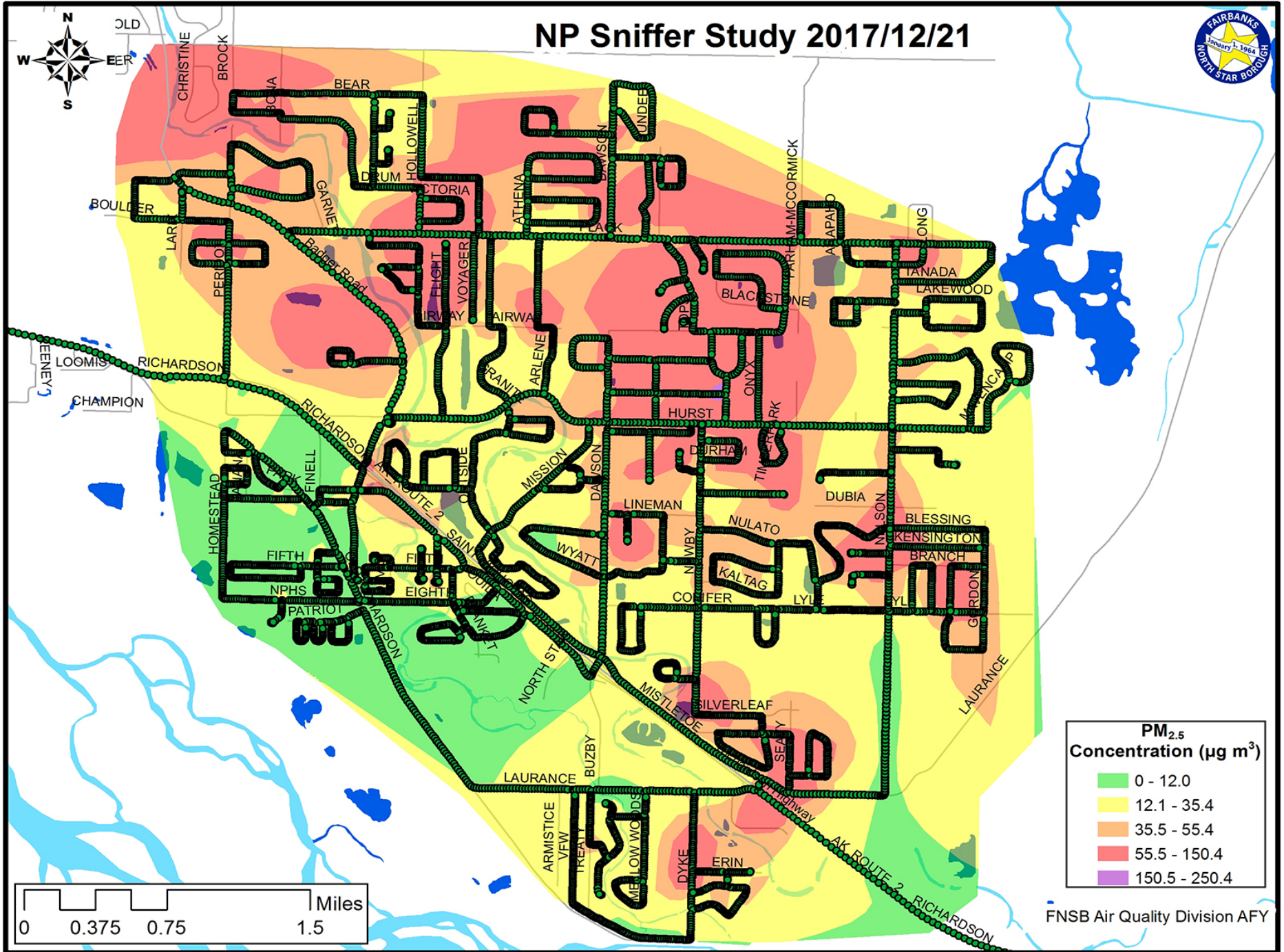


# FNSB Air Quality Burn Restriction Zones

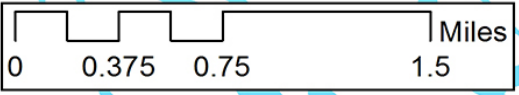




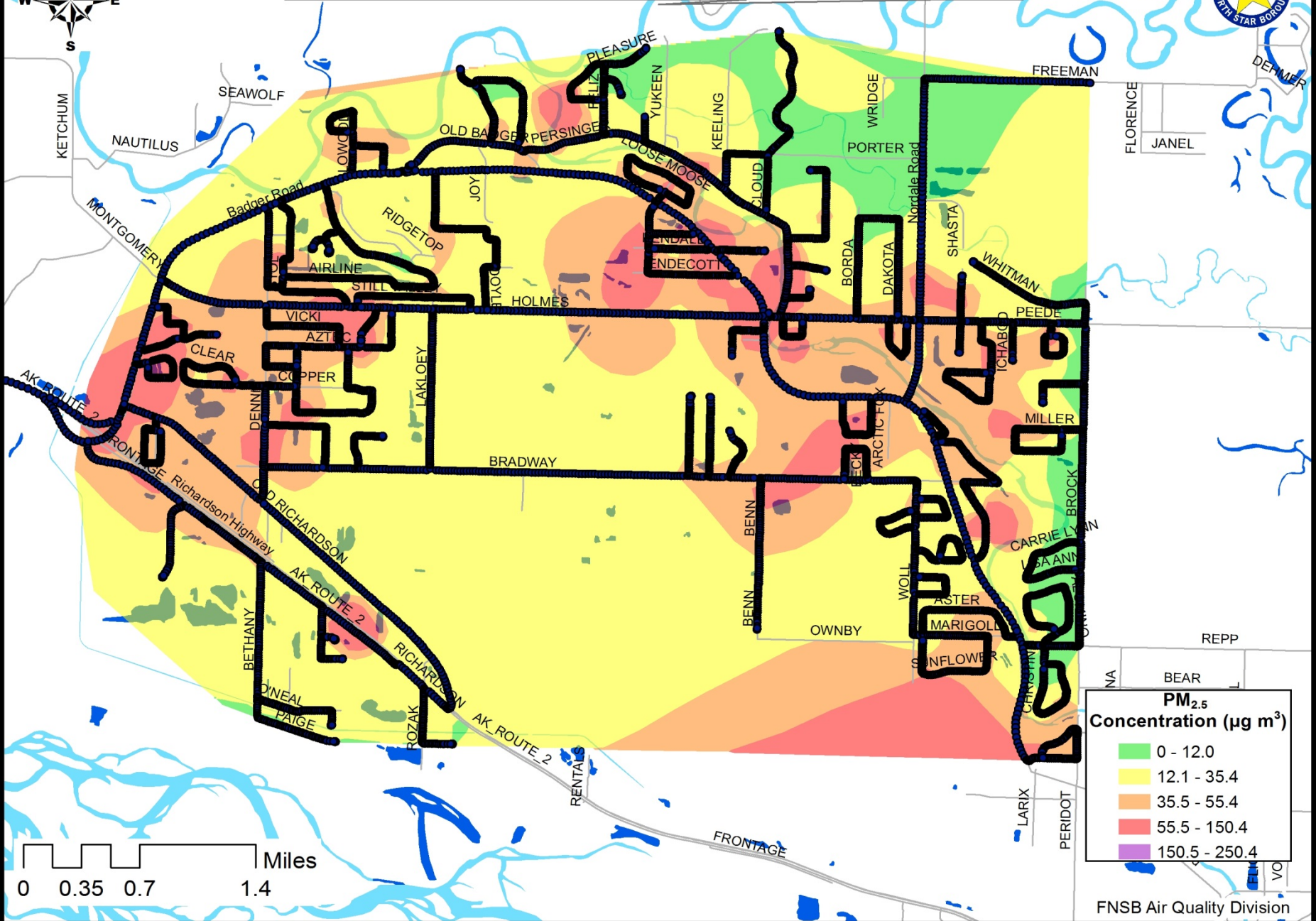
# NP Sniffer Study 2017/12/21



PM <sub>2.5</sub> Concentration (µg m <sup>3</sup> )	
0 - 12.0	Green
12.1 - 35.4	Yellow
35.5 - 55.4	Orange
55.5 - 150.4	Red
150.5 - 250.4	Purple



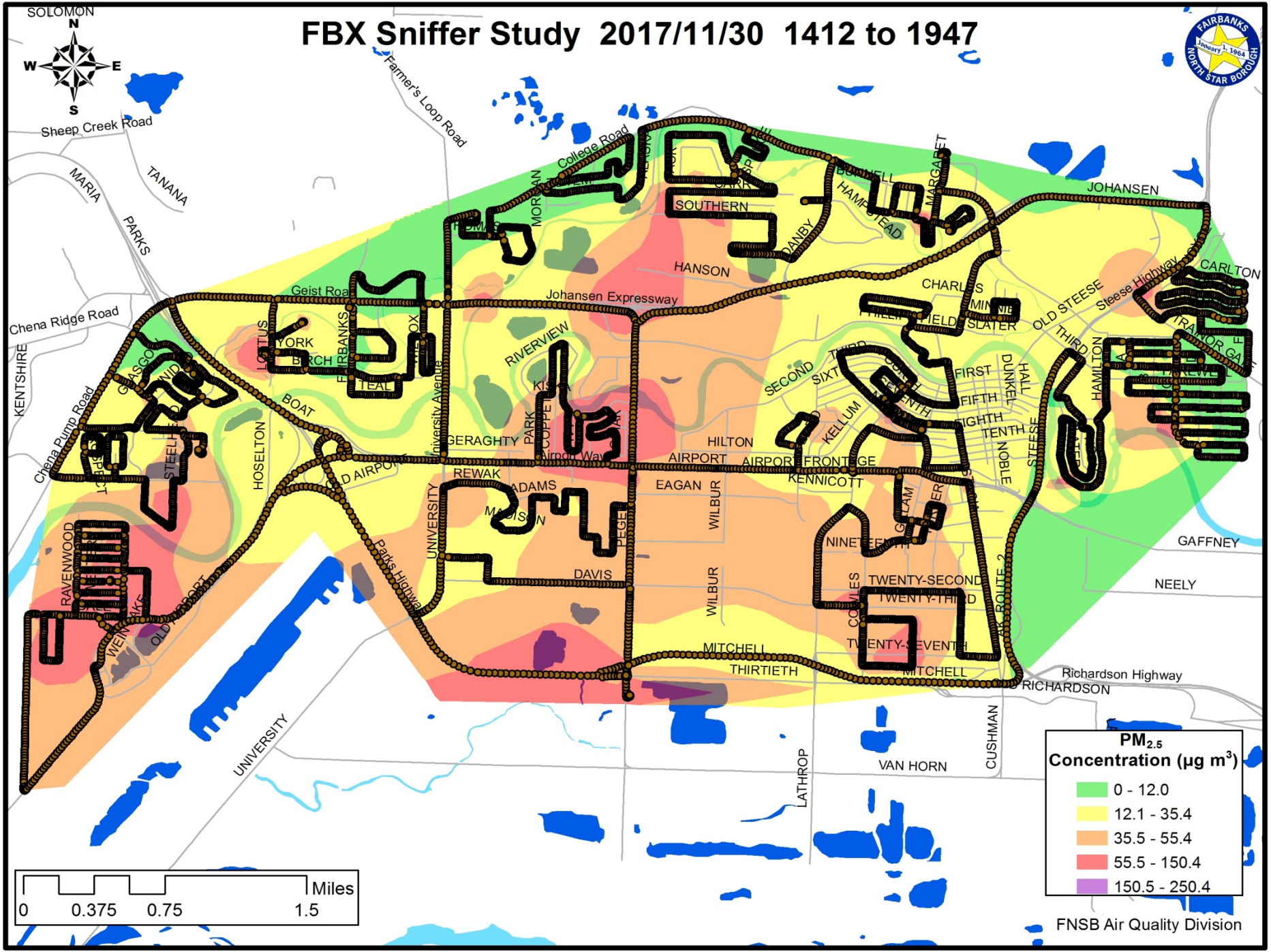
# BDGR Sniffer Study 2017/11/30 0603 to 1227



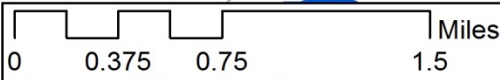
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150.5 - 250.4	Purple



# FBX Sniffer Study 2017/11/30 1412 to 1947



PM <sub>2.5</sub> Concentration ( $\mu\text{g m}^{-3}$ )	
	0 - 12.0
	12.1 - 35.4
	35.5 - 55.4
	55.5 - 150.4
	150.5 - 250.4





# What is the Information Used For?

- Posted online daily at [AQFairbanks.com](http://AQFairbanks.com)
- Prioritizing the Wood Stove Change Out Program
- Help focus compliance efforts and resources
- One of many tools used by local lawmakers and educators to make informed decisions



# Complaint & Compliance Investigations

- 2 staff work 7 days/week, approx. 9am - 8pm
- Primary Enforceable Regulations:
  - ◆ Curtailment Stage Restrictions
  - ◆ Opacity
  - ◆  $PM_{2.5}$  Crossing Property Lines





# PM<sub>2.5</sub> Emissions Crossing Property Lines

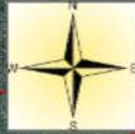
- Affects nonmobile source in the Air Quality Control Zone
- Visible emissions plumes may not cross property lines
- Enforced using combination of EPA Method 22 & collecting data using sniffer vehicle equipped
- Violation occurs if  $25\mu/m^3$  greater than surrounding immediate area background (defined as a 1,200 feet buffer around property) PM<sub>2.5</sub> levels





# Example: Data collection for PM<sub>2.5</sub> Emissions Crossing Property Lines

October 25, 2017 315 Bias Drive East 1219 - 1233



## Legend EPA 24 hr PM<sub>2.5</sub> Levels

- 0 - 12.0
- 12.1 - 35.4
- 35.5 - 55.4
- 55.5 - 150.4
- 150.5 - 250.4
- 250.5 - 350.4

★ Regulatory Monitors

🏫 Schools, and other Education facilities

### Air Quality Mapping Disclaimer

This PM<sub>2.5</sub> concentration map is made from data collected by the FNSB instrumented "sniffer vehicle" traveling on public roads. This map is an instantaneous snapshot of what was happening at a particular location at one point in time, (not a 24-hour average, and not a 1 hour average). The contouring is projected using a "natural neighbor" program, and is only a representation of different concentrations compared from one area to another. All data and results are preliminary.

The contours (colors) correspond to the EPA PM<sub>2.5</sub> 24-hour levels from the Air Quality Index chart. If the 2 sec measured concentrations remained for 24 hours, this would be the health risk category.

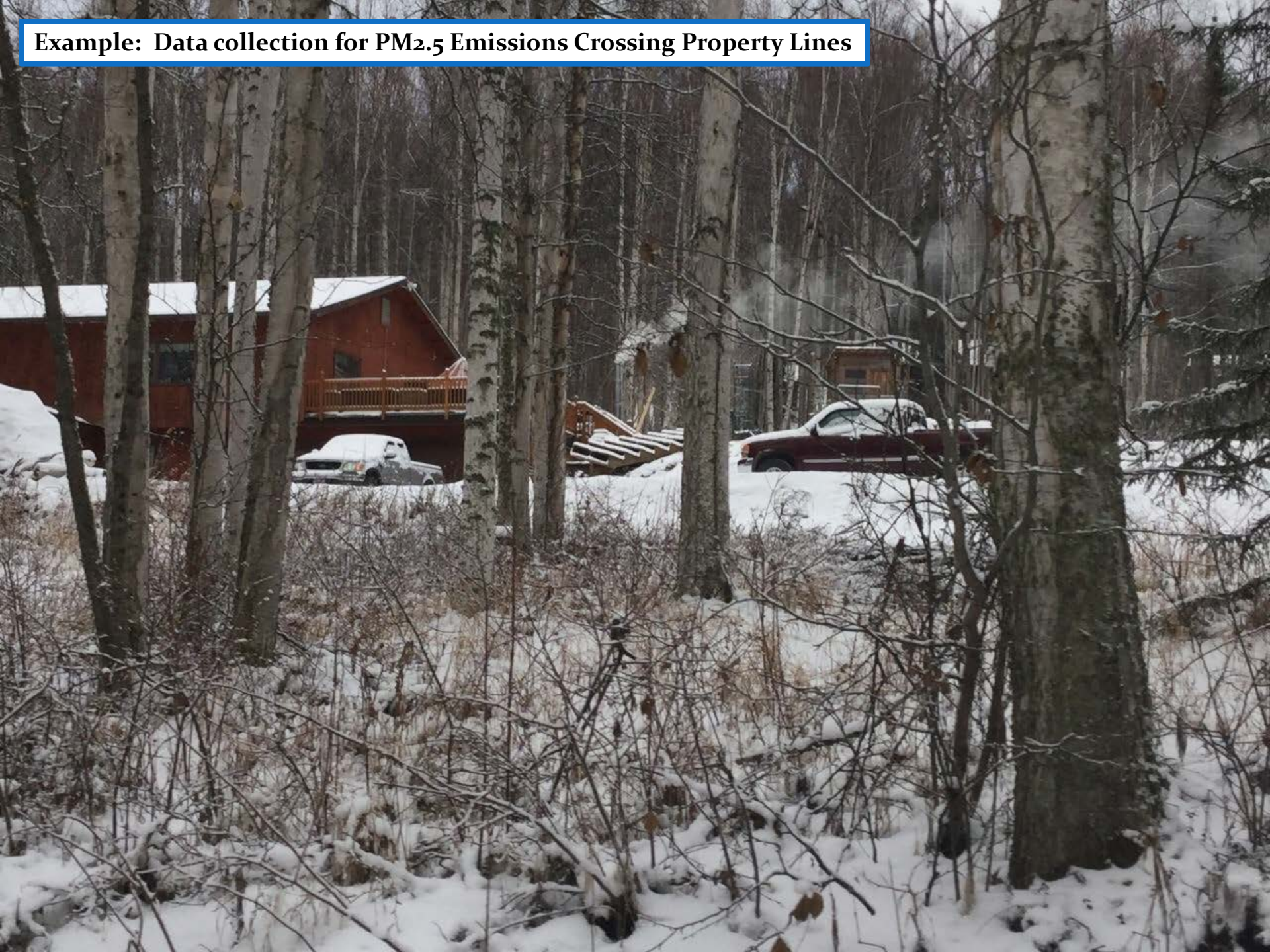
High PM<sub>2.5</sub> Conc 315 Bias Drive E 483.24  
Neighborhood Background 5

0 0.125 0.25 0.5 Miles

FNSB AQ Compliance



**Example: Data collection for PM<sub>2.5</sub> Emissions Crossing Property Lines**





# Real Time GIS Tracking

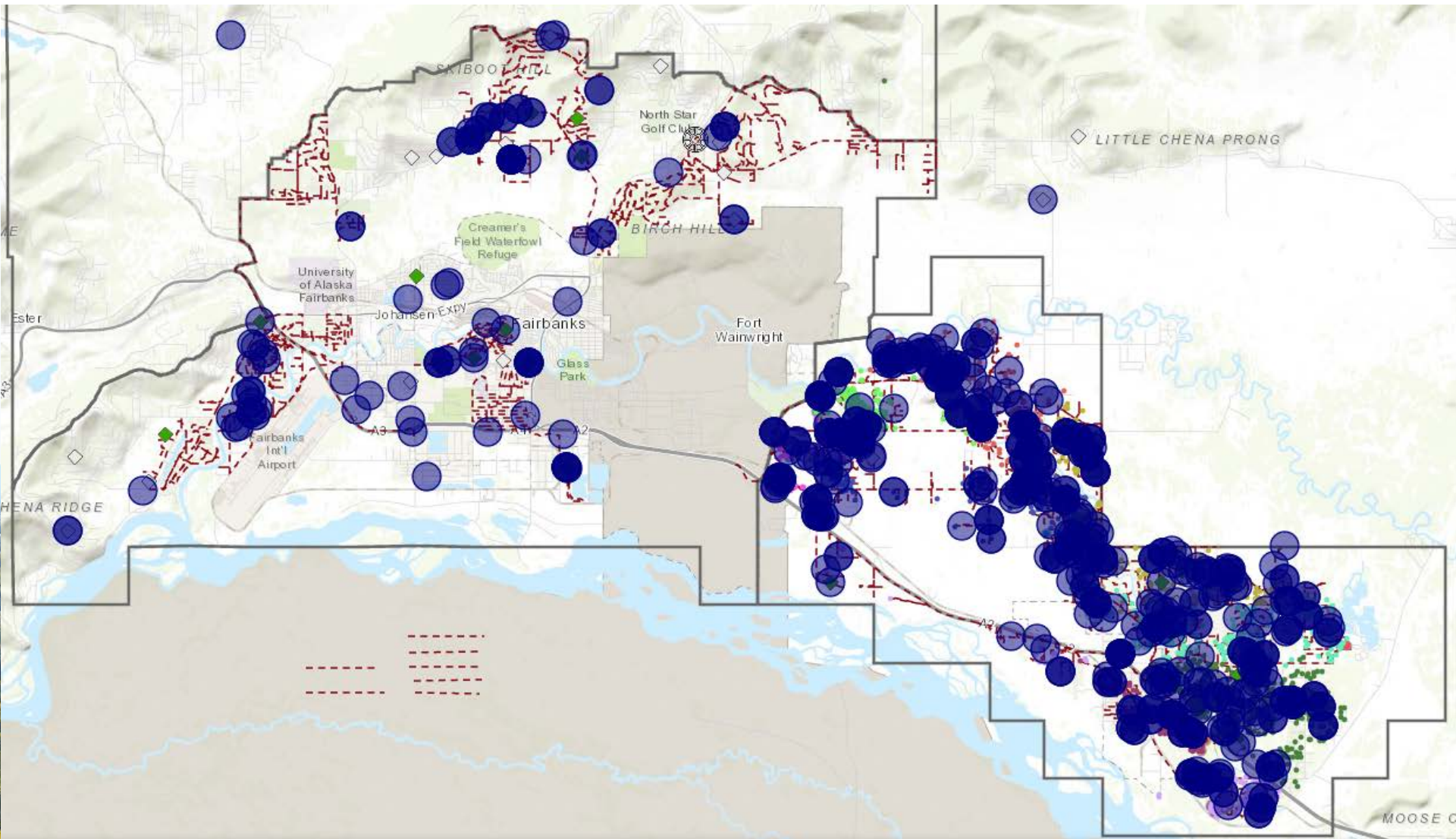
- Developed GIS tool to track complaints, observations & violations
- Streamlined process for field staff
  - Real time access to data
  - Ability to file reports, upload photos via cell service
- Allows for real time QA & QC and same day processing



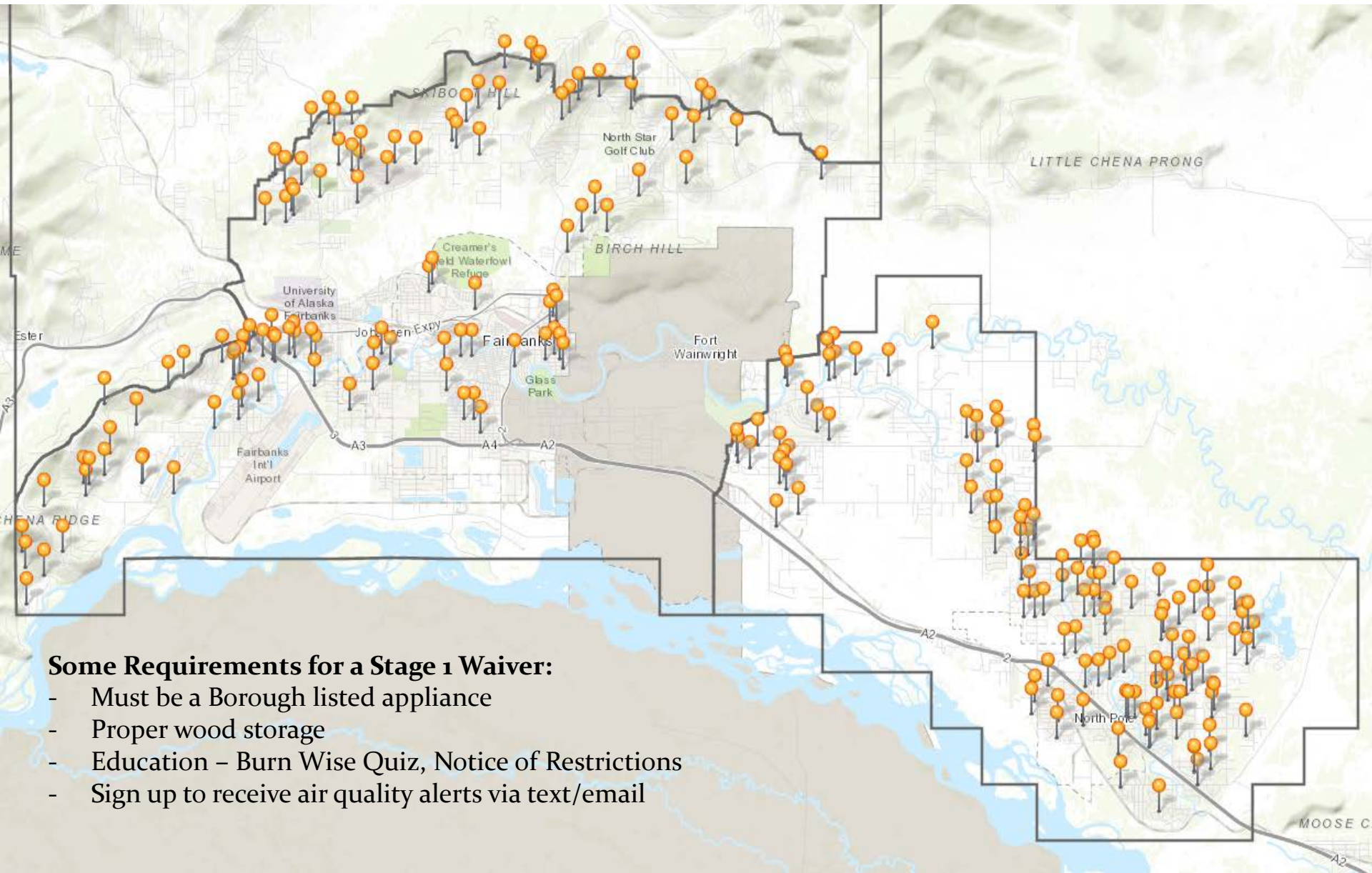


# Complaints and Burn Restriction Violations

October 2017 – February 2018



# Stage 1 Waiver Locations

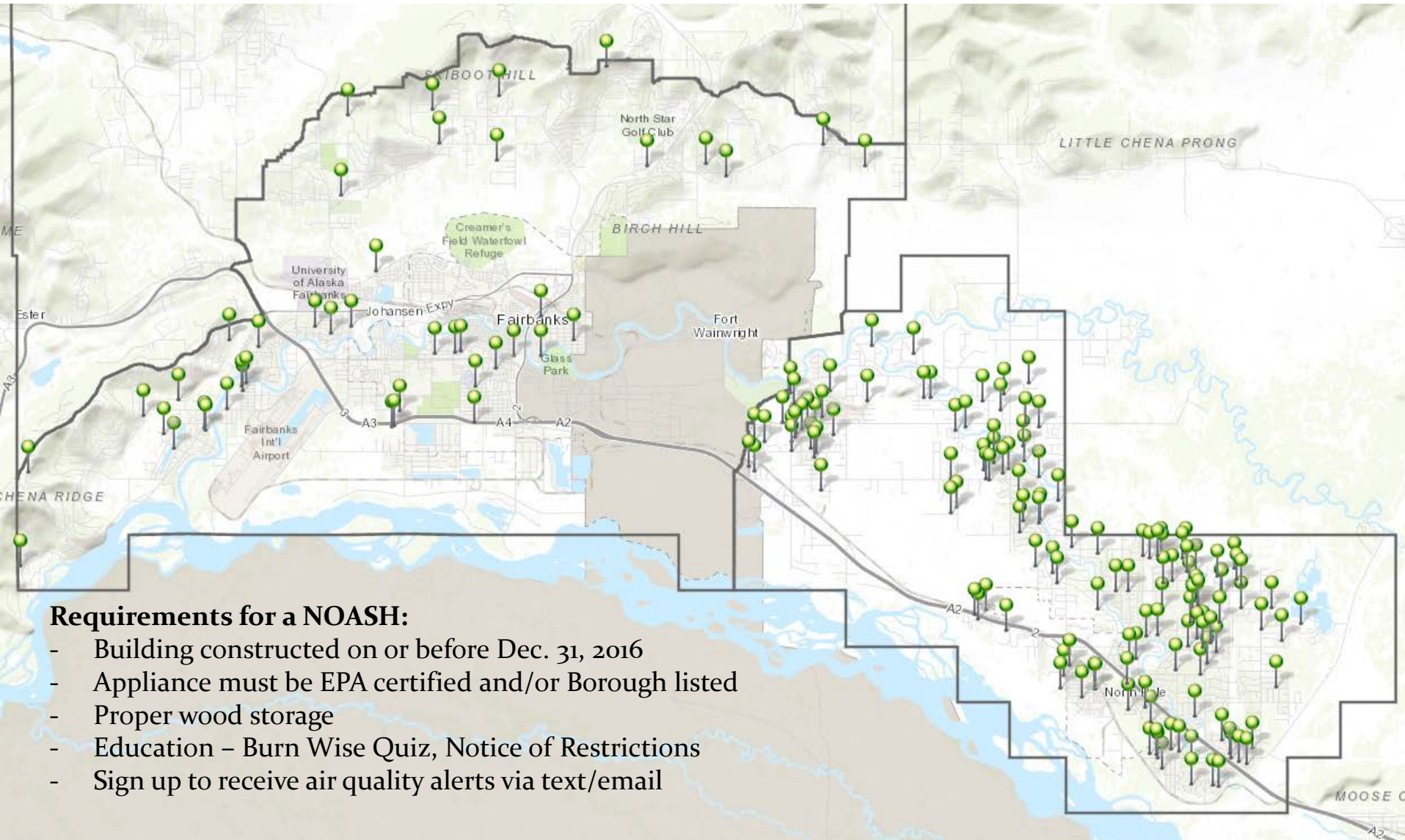


## Some Requirements for a Stage 1 Waiver:

- Must be a Borough listed appliance
- Proper wood storage
- Education – Burn Wise Quiz, Notice of Restrictions
- Sign up to receive air quality alerts via text/email

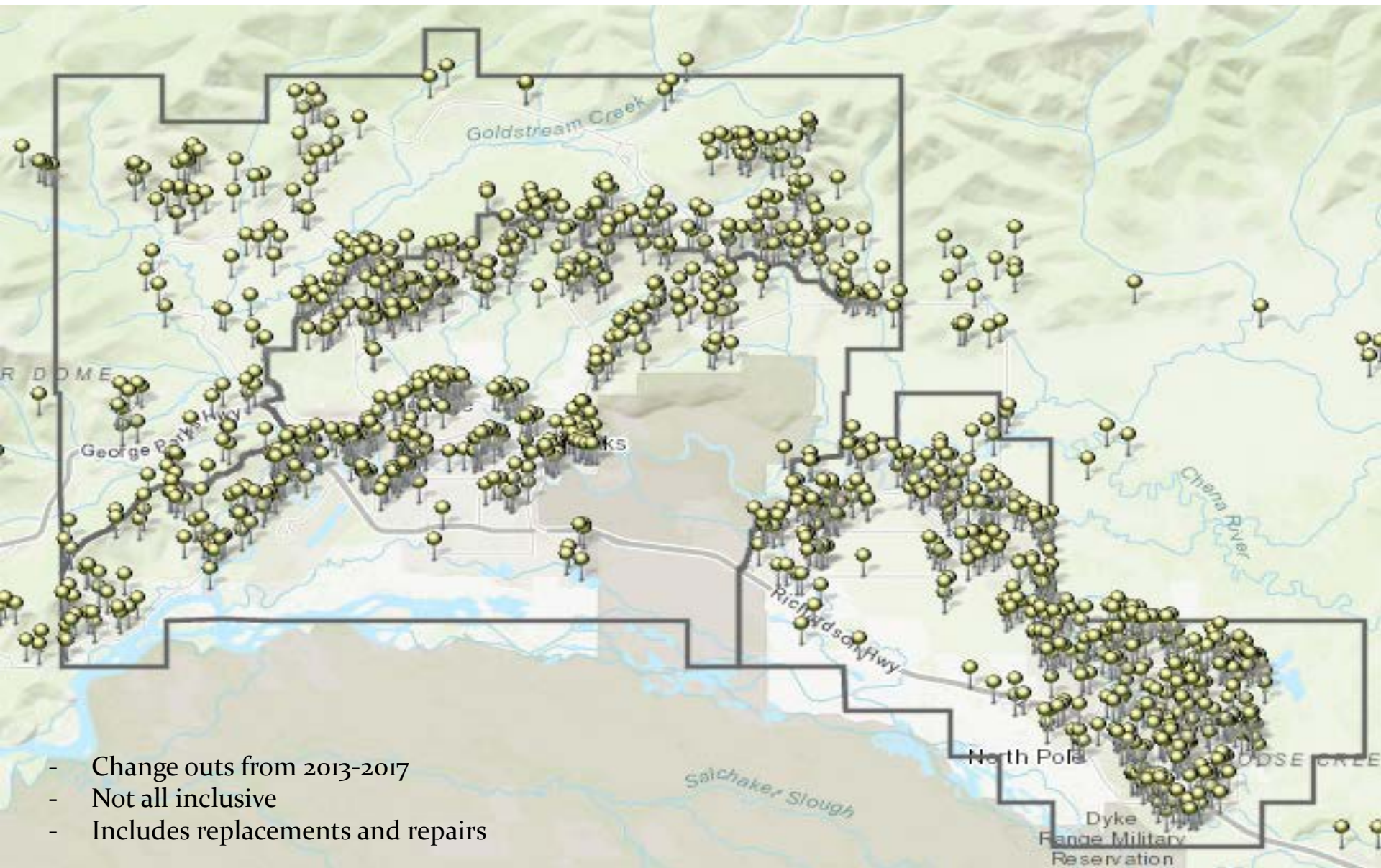


# No Other Adequate Source of Heat (NOASH) Locations



# Wood Stove Change Out Participants

(From 2013-2017, not all inclusive)



- Change outs from 2013-2017
- Not all inclusive
- Includes replacements and repairs



# Visit [AQFairbanks.com](http://AQFairbanks.com) Today!

## Questions?

