Hyper-Local Air Quality Sensor Network in the Town of Cheverly, Maryland

Air Sensors International Conference
May 11, 2022
Session 1C: Sensor Neworks
From nuts to bolts to real-world impacts

Karen Moe (NASA Retired)
karen.moe@earthlink.net
Green Infrastructure Committee
Cheverly, Maryland
Cheverly Air Quality Monitoring Map

Map of Town boundary and location of existing Purple Air monitors, potential locations, new developments and potential sources of air pollution. 293 views.

All changes saved in Drive

Purple Air Residential Sites

- Individual styles
  - PurpleAir +1
  - Potential Host
  - Potential Host

- W1_1
- W1_2
- W1_3
- W1_4
- W1_5
- W2_1
- W2_2
- W2_3
- W2_4
- W3_1
- W4_1
- W4_2
- W4_3
- W5 Potential Host
  - W6_1
  - W6_2
  - W6_3
  - W6_4

AQY1

AQ Monitoring

Hyper-Local Network
- Purple Air PM2.5&10
- New Aeroqual AQY1: PM2.5&10, O3, NO2

Aerqual AQY1 Purple Air 10/2021 Home Installation
Cheverly Targeted Inspection Initiative

MDE's Air and Radiation Administration is working in partnership with the Town of Cheverly and the Community Engagement, Environmental Justice, and Health (CEEJH) Laboratory at the University of Maryland School of Public Health to implement a local air monitoring program in the Cheverly area using low-cost sensors to look at community scale air quality. Click here to learn more about the project. A fact sheet about the project is available here.

As part of this partnership, MDE has begun to implement a targeted inspection initiative in and around the Cheverly area. MDE will be conducting inspections (on-site and virtually) and random observations (off-site) at potential sources of air pollution in the area. Below is a daily log of our activity under this initiative and links to any inspection reports that have been finalized.

Cheverly Targeted Inspection Initiative - Area Sources

| MDE Targeted Inspection Initiative |  |  |
|-----------------|-----------------|
| This map was made with Google My Maps. Create your own. |  |  |

<table>
<thead>
<tr>
<th>Cheverly Area Sites</th>
<th></th>
<th>Select date range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection Date</td>
<td>Cheverly Area Sites</td>
<td>Additional Sites</td>
<td>Result</td>
</tr>
<tr>
<td>Mar 24, 2021</td>
<td>Mary Hoa Property (1701 College Blvd, #1, College Park, MD 20740)</td>
<td></td>
<td>Delivered VCC Compliance Advisory Leadership Request</td>
</tr>
<tr>
<td>Mar 24, 2021</td>
<td>Major Supply Property (1701 College Blvd, #1, College Park, MD 20740)</td>
<td></td>
<td>Delivered VCC Compliance Advisory Leadership Request</td>
</tr>
<tr>
<td>Mar 25, 2021</td>
<td>Major Supply Property (1701 College Blvd, #1, College Park, MD 20740)</td>
<td></td>
<td>Delivered VCC Compliance Advisory Leadership Request</td>
</tr>
<tr>
<td>Mar 25, 2021</td>
<td>Mary Hoa Property (1701 College Blvd, #1, College Park, MD 20740)</td>
<td></td>
<td>Delivered VCC Compliance Advisory Leadership Request</td>
</tr>
<tr>
<td>Mar 25, 2021</td>
<td>Aggregate Industries</td>
<td></td>
<td>Delivered VCC Compliance Advisory Leadership Request</td>
</tr>
<tr>
<td>Mar 25, 2021</td>
<td>Aggregate Industries</td>
<td></td>
<td>Delivered VCC Compliance Advisory Leadership Request</td>
</tr>
<tr>
<td>Mar 25, 2021</td>
<td>Backhoe Property (1701 College Blvd, #1, College Park, MD 20740)</td>
<td></td>
<td>Delivered VCC Compliance Advisory Leadership Request</td>
</tr>
<tr>
<td>Mar 25, 2021</td>
<td>Aggregate Industries</td>
<td></td>
<td>Delivered VCC Compliance Advisory Leadership Request</td>
</tr>
<tr>
<td>Mar 25, 2021</td>
<td>Backhoe Property (1701 College Blvd, #1, College Park, MD 20740)</td>
<td></td>
<td>Delivered VCC Compliance Advisory Leadership Request</td>
</tr>
<tr>
<td>Mar 25, 2021</td>
<td>Backhoe Property (1701 College Blvd, #1, College Park, MD 20740)</td>
<td></td>
<td>Delivered VCC Compliance Advisory Leadership Request</td>
</tr>
</tbody>
</table>
Cheverly AQ Monitoring Project

Cheverly MD Air Quality Data Sources:

- Cheverly & U of Maryland’s “hyper-local” air quality sensor network:
  - 26 Purple Air PM2.5 monitors, 2 Aeroqual AQY1 (ozone, nitrogen dioxide)
- NASA AIST “Digital Twin” intern project for Purple Air and EPA Air Quality monitors

Cheverly Town Managers & Community Advisory Board:

- Relevant maps and data to complement sensors, e.g.,
  - Health statistics, zoning, weather patterns, AQ
- Analysis tools to explore the data, identify questions
- Actionable data products
  - Town managers and residents
In 2020, the Cheverly AQM project partnered with the University of Maryland School of Public Health to install PurpleAir sensors to measure PM2.5 (2.5 micron particulate matter), a key air pollutant affecting public health. The goal is to monitor the environmental factors contributing to AQ and produce an AQ baseline. Monitoring the current AQ helps us assess the impact of cumulative air pollution from traffic and other industrial and residential sources, and provide useful information to the public as well as state and local government.

This AQM report shows the current range of the EPA AQI values continually produced every 10 minutes for the 3 sensors nearest to the Public Works facility. The average AQI for this period, 48.3, is borderline acceptable or fair with sensitive groups experiencing minor to moderate symptoms with long-term exposure.

Contact: Karen Moe <karen.moe@earthlink.net>
Cheverly Green Infrastructure Committee
Air Quality Cluster
Promoting innovative understanding of shared needs in providing useful Air Quality information to non-traditional research users.

Los Angeles

How a local government can better reach individuals with actionable information regarding the threat of adverse air quality.

How to use citizen science to build a seasonal baseline of localized air quality to help assess and adapt to change.

Want to be part of the Air Quality Cluster?
Contact: Beth Huffer beth@lingualogica.net
Steve Young syoung@innovateteam.com
Join: esip-aqcluster@lists.esipfed.org

Tags:
air quality, community resilience, health, GIS, citizen science, EPA

www.esipfed.org ESIP is supported by &150+ partner organizations, including