

Near-Road Air Monitoring Status Report
Michigan Department of Environmental Quality/Air Quality Division
(May 19, 2015)

Background

On February 9, 2010, the United States Environmental Protection Agency (USEPA) promulgated regulations requiring states to establish air monitoring stations in close proximity to major roadways (75 FR 6474). The impetus for these regulations was to quantify the impacts that roadways have on air quality, particularly their impact on nitrogen dioxide (NO₂) levels. In 2011, when the carbon monoxide (CO) National Ambient Air Quality Standard (NAAQS) was reexamined (76 FR 54294), the USEPA added requirements for the monitoring of CO at these stations as well.

Originally, USEPA's regulations required that Michigan have three near-road sites: two in the Detroit-Warren-Livonia Metropolitan Statistical Area (MSA) and one in the Grand Rapids-Wyoming MSA. However, given the costs associated with establishing these sites, the USEPA implemented a phased deployment. For Michigan, the highest priority was given to one station in the Detroit-Warren-Livonia MSA to be operational by January 2014. The next highest priority was to establish a second Detroit-Warren Livonia MSA site along highly traveled I-275 near 7 Mile Road by January 2015. At this time, the USEPA has not set a date to deploy the third phase Grand Rapids-Wyoming MSA site.

Fortunately for the Michigan Department of Environmental Quality (MDEQ), the USEPA's Office of Research and Development (ORD), in cooperation with the Federal Highway Administration (FHWA), initiated a separate near-road monitoring effort in Detroit in September 2010¹. This effort consisted of four sites located at I-96 and Telegraph Road near the City of Detroit's Eliza Howell Park.

When the ORD and the FHWA concluded their study in July 2011, The Michigan Department of Environmental Quality (MDEQ) took over monitoring at two of these four sites, collecting nitric oxide (NO), NO₂ and CO data. These sites are located 10 meters (Eliza Howell Roadway) and 100 meters (Eliza Howell Downwind) away from I-96.

Summary of Data Collected

Figures 1, 2 and 3 show NO, NO₂ and CO data, respectively, that has been collected at MDEQ's Eliza Howell monitoring sites from 2011 through 2014. For comparison purposes these figures also show NO, NO₂ and CO data from MDEQ's other monitoring stations.

As can be seen from these figures, the NAAQS for CO and NO₂ are being met at all sites. While no NAAQS exists for NO, it is included in these figures as it is an indicator of automobile exhaust.

¹http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/near_road_study/detroit_michigan/index.cfm

In all cases, the highest pollutant concentrations were recorded at the Eliza Howell Roadway monitoring site. However, NO, NO₂ and CO concentrations observed at the Eliza Howell Downwind site more closely tracked MDEQ's neighborhood scale monitors located at East 7 Mile and Allen Park.

Future Work

Given continued site access and adequate funding, MDEQ will continue to collect NO, NO₂ and CO data at the two Eliza Howell monitoring sites in Detroit as well as at the new I-275 and 7 Mile Road station in Livonia. In addition, particulate matter less than 2.5 micrometers in diameter (PM_{2.5}) will be collected at the Livonia site to 1) ascertain the roadway impact upon PM_{2.5} concentrations; and 2) determine the PM_{2.5} gradient that exists between the roadway and the MDEQ PM_{2.5} monitor operating approximately 135 meters to the northwest.

MDEQ will also work with the USEPA to secure funding if the USEPA develops a deployment schedule for the near-road site in the Grand Rapids-Wyoming MSA.

Figure 1:

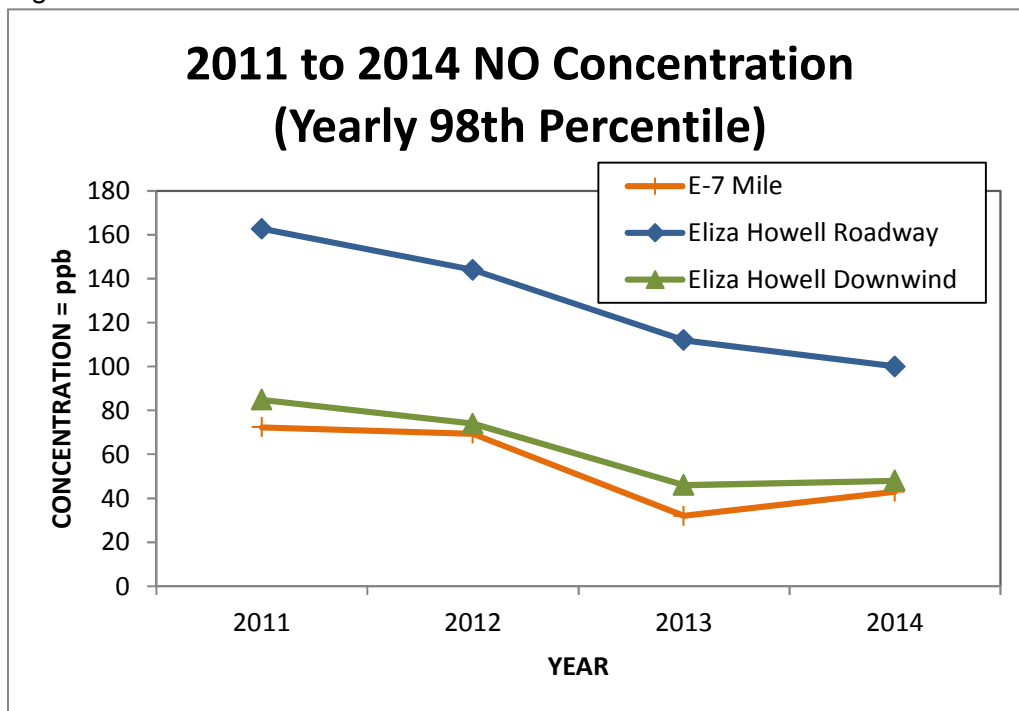


Figure 2:

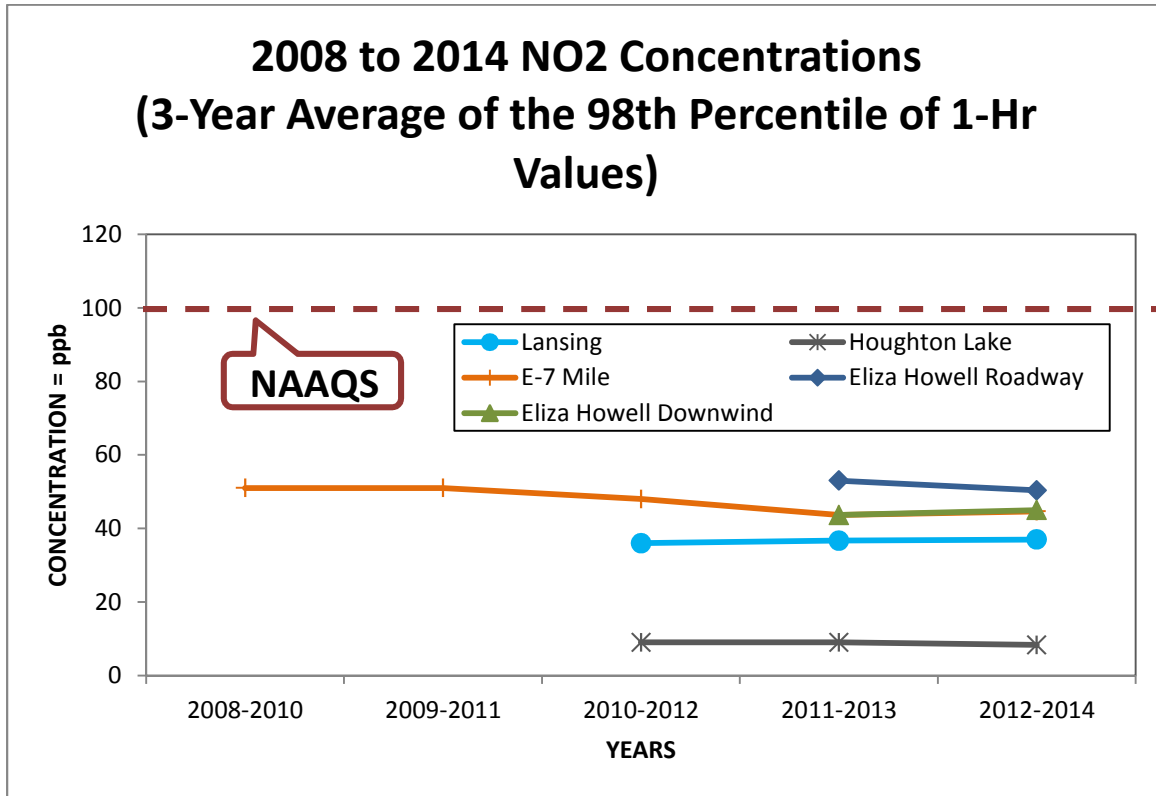


Figure 3:

