John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

SEP 29 2014

Environmental Protection Agency
EPA Docket Center (EPA/DC)
Mail Code 28221T
Attention Docket ID No. EPA–HQ–OAR–2012–0918
1200 Pennsylvania Ave. NW.
Washington, DC 20460

Re: Comments on US EPA August 19, 2014 Response to State and Tribal 2012 Primary Annual Fine Particle Designation Recommendations

Dear Administrator Hedman:

On December 13, 2013 Ohio EPA submitted *Ohio's Recommended Designations for the 2012 Annual PM 2.5 Standard* (herein referred to as "Ohio EPA's previous recommendations"). On August 19, 2014 Ohio EPA received your letter and detailed description of areas where US EPA intends to modify the designations recommended by Ohio EPA for the 2012 primary annual $PM_{2.5}$ National Ambient Air Quality Standards. Ohio EPA has reviewed the US EPA designation recommendations and technical support documentation (TSD) and would like to take this opportunity to comment on the US EPA proposed designations. Ohio EPA maintains the belief that the nonattainment designations proposed in the previous recommendations remain appropriate to adequately address Ohio 2012 $PM_{2.5}$ annual NAAQS nonattainment. The proposed Ohio EPA and US EPA nonattainment areas are summarized in Table 1.

Table 1. Ohio EPA and US EPA Proposed Nonattainment Counties for the 2012 PM2.5 Annual NAAQS

Area	Ohio EPA's Recommended Nonattainment Counties	US EPA's Proposed Nonattainment Counties (Ohio Only)
Canton-Massillon, OH	Stark	Stark, Summit, Wayne (partial)
Cleveland, OH	Cuyahoga	Cuyahoga, Lake, Lorain
Cincinnati-Hamilton, OH-KY	Butler, Clermont, Hamilton	Butler, Clermont, Hamilton, Warren (partial)

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Cincinnati-Hamilton, Ohio-Kentucky Recommended Nonattainment Area

US EPA intends to designate Butler, Clermont, Hamilton and portions of Warren County as nonattainment for the Cincinnati-Hamilton, OH area. US EPA also intends to designate portions of Kentucky counties as part of the same nonattainment area; however, this letter does not address the Kentucky portion of the nonattainment area. As proposed in Ohio EPA's previous recommendations, we are in agreement with the nonattainment designation for Butler, Clermont and Hamilton Counties. Ohio EPA believes Warren County in its entirety should be designated as attainment. Warren County has been proposed by US EPA as nonattainment based on a percent contribution of pollutants and vehicle miles traveled (VMT) in the area evaluated, however, as described in the TSD for the area, "wind roses and kernel density indicate that Warren Co[unty] is a weak contributor". Warren is located northeast of the violating monitors and surrounding wind data indicates a low frequency of northeasterly winds. The TSD also states "VMT is having a localized impact with the direct PM, and the VMT is associated with commuting patterns into the Cincinnati area with the violating monitors." As presented in Ohio EPA's previous recommendations, only 5.2% of those working in Hamilton County commute in from Warren County (Table 2). Ohio EPA believes this small percentage of vehicle source emissions in combination with wind and kernel density data does not warrant inclusion of any portion of Warren County in the Cincinnati-Hamilton nonattainment area.

Table 2. Commuter Travel In and Out of Hamilton County

Hamilton	Percent of workers living in county that work outside the county	17.7%
	Percent of workers that live outside the county	37.7%

Number of workers living in Hamilton County		**377,348**
Commute Out To	Number	Percent
Butler Co. OH	20,856	5.5%
Warren Co. OH	11,619	3.1%
Kenton Co. KY	8,260	2.2%
Clermont Co. OH	8,176	2.2%
Boone Co. KY	6,736	1.8%
Campbell Co. KY	3,333	0.9%
Montgomery Co. OH	1,632	0.4%
Dearborn Co. IN	1,312	0.3%
Franklin Co. OH	524	0.1%
Greene Co. OH	346	0.1%
Marion Co. IN	245	0.1%
Ripley Co. IN	208	0.1%
Percent is of workers living in county.		

Number of workers working in Hamilton County		**498,465**
Commute In From	Number	Percent
Butler Co. OH	45,965	9.2%
Clermont Co. OH	40,247	8.1%
Warren Co. OH	25,797	5.2%
Kenton Co. KY	19,752	4.0%
Campbell Co. KY	14,183	2.8%
Boone Co. KY	10,662	2.1%
Dearborn Co. IN	8,330	1.7%
Montgomery Co. OH	3,293	0.7%
Brown Co. OH	3,036	0.6%
Franklin Co. IN	1,615	0.3%
Ripley Co. IN	1,146	0.2%
Clinton Co. OH	1,239	0.2%
Percent is of workers working in county.		

Source: U.S. EPA Designations Guidance and Data: http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2

In summary, Ohio EPA reiterates its original recommendation for the Cincinnati-Hamilton nonattainment area submitted to US EPA on December 13, 2013. Considering our original analysis and the additional information discussed above, Ohio EPA recommends US EPA designate Warren County as attainment.

Cleveland, Ohio Recommended Nonattainment Area

US EPA has proposed including Cuyahoga, Lake and Lorain Counties in the Cleveland, Ohio nonattainment area. As proposed in Ohio EPA's previous recommendations, we are in agreement with the Cuyahoga County nonattainment designation and still assert that violations in this county are being caused by local sources. As reported in the US EPA Cleveland Area TSD, "there are 6 point sources within 10 miles of the violating monitor" all of which are located within Cuyahoga County.

Ohio EPA believes that Lake and Lorain should be designated as attainment. The monitoring ID 39-085-0007 in Lake County is in attainment. Lake County is located east of Cuyahoga County where the nonattainment monitors are located. Therefore, an easterly wind pattern would be necessary to cause emissions in Lake County to contribute to violations in the Cleveland area. However, as indicated by the meteorological wind data US EPA reported "there is a pattern across the area of predominantly south to west winds, mostly at mid-level speeds of 4 to 10 meters per second, suggesting that potential emission sources in the south-through-west upwind direction should be considered for analysis". In addition, the eastern monitor in Cuyahoga County is also in attainment (located between Lake County and the nonattainment monitor).

US EPA also reported that Lake County emits the greatest amount of direct $PM_{2.5}$ and precursors in the Cleveland area including 44% of the SO_2 emissions. The Cleveland Electric Illuminating Company Eastlake Plant (Eastlake Power Plant) contributed approximately 93% of the total point source emissions evaluated for Lake County and is located 18 miles from the nearest nonattainment monitor. For nearly 2 years (2013 and 2014 emission reporting years) the largest units at the Eastlake Power Plant, units 4 (240 MW) and 5 (597 MW), have been shutdown (generators have been removed and cannot resume operation). The facility has already made significant reductions in $PM_{2.5}$ and $PM_{2.5}$ precursors to date as demonstrated by the facility fee emission report data presented in Table 3. A proposed shutdown of the remaining units 1, 2 and 3 (132 MW each) by April 2015 has been submitted for approval to PJM Interconnection Regional Transmission Organization (RTO). These proposed shut down of the remaining units is included in the PJM Interconnection RTO Generator Deactivation Summary Sheets available at http://www.pjm.com/planning/generation-deactivation/gd-summaries.aspx and will result in further dramatic reductions in direct $PM_{2.5}$ and precursor emissions prior to the impending $PM_{2.5}$ annual NAAQS attainment date. Eastlake Power Plant has also informed Ohio EPA they are in agreement with zeroing out their SO_2 emissions for the purpose of future attainment demonstration modeling for the 2010 SO_2 NAAQS SIP document due in spring of 2015.

Table 3. Eastlake Power Plant 2012-2013 annual emissions data.

Air Pollutant	2012 Total Emissions Reported (Tons)	2013 Total Emissions Reported (Tons)	Reported Pollutant Reduction (Tons)
NH3	8.56	0.00	8.56
NOx	7,124.90	920.40	6,204.50
PM2.5	96.50	9.59	86.91
SO2	54,852.30	11,587.90	43,264.40
VOC	58.92	7.72	51.20
Total	62,141.18	12,525.61	49,615.57

Source: Fee Emission Reporting data submitted to Ohio EPA Air Service eBusiness Center

Ohio EPA believes all of Lake County should be designated as attainment. This recommendation is further supported by HYSPLIT KDE (HYbrid Single-Particle Lagrangian Integrated Trajectory Kernel Density Estimation) plots presented in the US EPA Cleveland TSD. The KDE plots show that for each quarter evaluated (2010-2012) Carmeuse Lime, Incorporated – Grand River Operations, which is 28 miles away from the nearest nonattainment monitor, is not located within a KDE grid with a frequency of 75% or higher of observed trajectory endpoints. Painesville Municipal Electric Plant, which is also 28 miles from the nearest nonattainment monitor, only had an estimated density in the 75% or higher range during the second quarter of years 2010-2012, when the quarterly average at all of the Cuyahoga County monitoring sites was below 12.0 ug/m^3. If US EPA insists on including Lake County in the Cleveland nonattainment area, Ohio EPA strongly urges that only the western portion that encompasses the area including and west of the Eastlake Power Plant. Although Ohio EPA disagrees commuter travel between Lake County and Cuyahoga County would warrant including Lake County in the nonattainment area, designating only the following townships in the western portion of Lake County would capture the majority of commuter VMT emission between Lake and Cuyahoga Counties: Eastlake, Lakeline, Timberlake, Wickliffe and Willowick. These townships also surround the Eastlake Power Plant. However, as presented in Ohio EPA's original recommendations, although the number of commuters traveling into Cuyahoga from Lake County was among the highest evaluated, only 5.2% of the workers working in Cuyahoga County commute in from Lake County (Table 4). Ohio EPA believes this small percentage of vehicle source emissions does not warrant inclusion of any portion of Lake County in the Cleveland nonattainment area.

Table 4. Commuter Travel In and Out of Cuyahoga County

Cuyahoga	Percent of workers living in county that work outside the county	10.2%
	Percent of workers that live outside the county	27.3%

Number of workers living in Cuyahoga County		**579,485**
Commute Out To	Number	Percent
Summit Co. OH	15,992	2.8%
Lake Co. OH	13,334	2.3%
Lorain Co. OH	10,475	1.8%
Medina Co. OH	5,383	0.9%
Portage Co. OH	2,969	0.5%
Geauga Co. OH	2,830	0.5%
Stark Co. OH	764	0.1%
Franklin Co. OH	589	0.1%
Erie Co. OH	318	0.1%
Trumbull Co. OH	316	0.1%
Percent is of workers living in county.		

Number of workers working in Cuyahoga County		**715,297**
Commute In From	Number	Percent
Lorain Co. OH	42,171	5.9%
Lake Co. OH	37,191	5.2%
Summit Co. OH	35,883	5.0%
Medina Co. OH	28,550	4.0%
Geauga Co. OH	16,321	2.3%
Portage Co. OH	12,909	1.8%
Ashtabula Co. OH	2,641	0.4%
Trumbull Co. OH	2,018	0.3%
Erie Co. OH	1,740	0.2%
Mahoning Co. OH	1,149	0.2%
Percent is of workers working in county.		

Source: U.S. EPA Designations Guidance and Data: http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2

Lorain County is located west of Cuyahoga County and the Cleveland area nonattainment monitors. Monitor ID 39-093-3002 located centrally along the northern border of Lorain County (6 miles from Avon Lake Power Plant) and monitor ID 39-035-1002 on the west side of Cuyahoga County between Lorain and the violating monitors are both in attainment. Avon

Lake Power Plant is the only major point source in Lorain County. It is located in northeast corner of Lorain County approximately 19 miles from the nearest nonattainment monitor. Avon Lake Power Plant announced June 30, 2013 that it will be converting to natural gas; Ohio EPA granted a Mercury Air Toxics Toxic Standards (MATS) extension to April 16, 2016 for the facility (Appendix A). Ohio EPA expects that this conversion will result in dramatic PM2.5 and PM2.5 precursor emissions from the Avon Lake Power Plant, therefore Ohio EPA believes Lorain County should be designated as attainment.

The VMT in Lorain County (2,787,828,581) were the second highest in the evaluation area, but still significantly lower than those of Cuyahoga County (8,534,134,941). However, as presented in Ohio EPA's original recommendations, only 5.9% of the workforce in Cuyahoga County commutes in from Lorain County (Table 4). Ohio EPA believes this small percentage of vehicle source emissions does not warrant inclusion of any portion of Lorain County in the Cleveland nonattainment area. Ohio EPA recommends that Lorain County be designated as attainment.

In summary, Ohio EPA continues to believe the violations at the Cuyahoga County monitors are caused by local sources for reasons indicated above and in Ohio EPA's original recommendation for the Cleveland nonattainment area submitted to US EPA on December 13, 2013. Considering our original analysis and the additional information discussed above, Ohio EPA recommends US EPA designate Lake and Lorain Counties as attainment.

Canton-Massillon, Ohio Recommended Nonattainment Area

US EPA intends to include Stark, Summit and portions of Wayne County in the Canton-Massillon, Ohio nonattainment area. Ohio EPA believes that Summit and the entire Wayne County should be designated as attainment. Both of the monitoring sites (monitor ID 391530017, 391530023) located in Summit County are in attainment. US EPA considered Summit County in the nonattainment analysis for the Cleveland, Ohio area as well as the Canton Massillon, Ohio area. The previous Ohio EPA recommendation and analysis submitted on December 13, 2013 still holds true for Summit's impact on violations in the Cleveland nonattainment area. The Ohio EPA recommendations for the Summit County's impact on the Canton-Massillon nonattainment area, as well as the Wayne County impact, are discussed below. While Ohio EPA agrees that Summit County is best suited in the Canton-Massillon nonattainment area as opposed to the historically designated Cleveland area, Ohio EPA still asserts that Summit County should not be designated nonattainment.

The three major point sources located in Summit are within 4 miles of the two Summit County attaining monitors. Wind data indicates that the majority of the winds near these three major point sources are westerly to southerly which would move pollutants away from the nonattainment monitor in Stark County. The majority of the northerly winds observed in Summit County are low speed ranging from 2-6 mph. Back-trajectories of the first, second, third and fourth maximum concentration days over three years (2010-12) at the Stark County nonattainment monitor 39-151-0017 were analyzed using NOAA's Model, HYSPLIT. The back-trajectory simulations also included the trajectories of exceedance days of 24-hr $PM_{2.5}$ standard for years 2010-12 at the same monitor. The purpose of trajectory analyses was to determine the cause of violation by simulating the flow of 24-hour air trajectory patterns in the backward mode. The results of the analysis are presented in Appendix B. The analysis indicates that none of the 24 hour backward trajectory patterns originated from areas directly

north or northeast of the monitor indicating that the trajectories were not influenced by Summit County sources. Although Summit County has the highest VMT for the counties evaluated in the Canton-Massillon area, as indicated in Ohio EPA's original recommendations, only 5.5% of the workers commuting into Stark County travel from Summit County (Table 5). Ohio EPA believes that this small percentage of commuters in combination with the wind trends and beck trajectory data support a Summit County attainment designation.

Table 5. Stark County workers commuting into and out of Stark County, Ohio.

Stark	Percent of workers that work outside the county	23.2%
	Percent of workers that live outside the county	20.3%

Number of workers living in Stark County		**177,234**
Commute Out To	Number	Percent
Summit Co. OH	22,673	12.8%
Cuyahoga Co. OH	3,043	1.7%
Wayne Co. OH	2,478	1.4%
Tuscarawas Co. OH	2,119	1.2%
Portage Co. OH	1,892	1.1%
Mahoning Co. OH	1,071	0.6%
Columbiana Co. OH	991	0.6%
Carroll Co. OH	940	0.5%
Medina Co. OH	874	0.5%
Holmes Co. OH	332	0.2%
Percent is of workers living in county.		

Number of workers working in Stark County		**165,038**
Commute In From	Number	Percent
Summit Co. OH	9,158	5.5%
Tuscarawas Co. OH	5,824	3.5%
Carroll Co. OH	4,959	3.0%
Columbiana Co. OH	3,358	2.0%
Mahoning Co. OH	2,263	1.4%
Wayne Co. OH	2,100	1.3%
Portage Co. OH	1,831	1.1%
Cuyahoga Co. OH	764	0.5%
Medina Co. OH	513	0.3%
Holmes Co. OH	325	0.2%
Percent is of workers working in county.		

Source: U.S. EPA Designations Guidance and Data: http://www.epa.gov/pmdesignations/2012standards/techinfo.htm#F2

The cumulative VMT in Wayne County (1,192,145,098 miles in 2012) is less than 1/3 of the VMT in Stark County (3,838,738,336 miles in 2012), and as shown in Table 5, only 1.3% of the workers commuting into Stark County commute in from Wayne County. Ohio EPA believes this small percentage of vehicle source emissions does not warrant inclusion of Warren County in the nonattainment area. The major point sources in Wayne County are located approximately 18-24 miles west-northwest of the nonattainment monitor in Stark County. Ohio EPA believes that point sources located at this great of a distance are not significantly contributing to violations at the Stark County monitors, especially when considering there are two major Stark County point sources located within 3 miles of the nonattainment monitor. As reported by US EPA, the Department of Public Utilities, City of Orrville (Orville Power Plant) contributes 74% of the major point source total direct $PM_{2.5}$ and precursor emissions evaluated in Wayne County. This facility is subject to the Boiler Maximum Achievable Control Technology (MACT) rules established in 40 CFR 63 Subpart DDDDD. It is also likely that the Orville Power Plant will be evaluated under the SO_2 NAAQS. Under these regulations, Ohio EPA believes that the Orville Power Plant will experience significant reductions in $PM_{2.5}$ and $PM_{2.5}$ precursors prior to the impending $PM_{2.5}$ attainment date. If US EPA insists on designating Wayne County as nonattainment, Ohio EPA believes that only Orrville Township in Wayne County should be designated as nonattainment similar to the approach used for designating Ashtabula Township as nonattainment for the 2006 $PM_{2.5}$ NAAQS. In this approach the emissions in Ashtabula Township (a portion of Ashtabula County, Ohio) were found to be primarily attributable to Cleveland Electric Illuminating's Ashtabula plant and therefore only Ashtabula Township (rather than all of Ashtabula County) was designated as nonattainment. Using this approach, Orrville Township would be the only portion designated as nonattainment in Warren County.

It is Ohio's belief that the violations at the Stark County monitors are due to local industrial sources located within Stark County, two of which are located within 2-3 miles of the nonattainment Stark County monitor. Therefore, Ohio recommends only Stark County be designated nonattainment in the Canton-Massillon nonattainment area. Ohio EPA believes that Summit and Wayne Counties should be designated as attainment.

The significance of a nonattainment designation status will have lasting and substantial economic impacts to the areas discussed above. Since our initial $PM_{2.5}$ annual NAAQS recommendations we have made great strides in improving air quality throughout Ohio. We should not burden additional counties and townships with requirements applicable to nonattainment areas in an already struggling economy in Ohio when apparent attainment is projected in the near future. In addition, Ohio EPA believes US EPA should not finalize designations until 2014 data is complete and state and federal regulators have an opportunity to consider areas that may have come into attainment. It would be a very minimal delay in the designations and would eliminate the need to needlessly subject these areas to further nonattainment requirements and burden states and the federal government with developing plans, redesignation requests and maintenance plans for areas that clearly do not necessitate these activities.

I appreciate the opportunity to provide additional recommendations and will work cooperatively with US EPA as we move forward in the $PM_{2.5}$ designation process. If you have any quesitons concerning these recommendations please feel free to contact Jennifer Van Vlerah of the Division of Air Pollution Control at (614) 644-3696.

Sincerely,

Craig Butler
Director

Cc: Susan Hedman, Regional Administrator, US EPA Region 5
Robert Hodanbosi, Chief, Ohio EPA Division of Air Pollution Control

Appendix A - Avon Lake Generating Station Mercury Air Toxics (MATS) Extension Request

Ohio EPA
40 years and moving forward
John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

OHIO E.P.A.
SEP -6 2013
ENTERED DIRECTOR'S JOURNAL

SEP 05 2013

I certify this to be a true and accurate copy of the official documents as filed in the records of the Ohio Environmental Protection Agency.

By: Jordy Lassiter **Date:** 9-6-13

Keith A. Schmidt
Environmental Director
NRG Energy Southpointe Operations Center
121 Champion Way Ste 300
Canonsburg, PA 15317

Re: **Avon Lake Generating Station (TVOP# 02-47-03-0013)**
Gas Addition Project
Mercury and Air Toxics Standards (MATS) Extension Request

Dear Mr. Keith A. Schmidt:

This letter is to inform you that the Ohio Environmental Protection Agency, Division of Air Pollution Control (Ohio EPA, DAPC) received your request for an extension of the compliance deadline under 40 CFR Part 63, Subpart UUUUU, the *National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units,* also known as the Mercury and Air Toxics Standards (MATS), on July 2, 2013. On August 2, 2013, Ohio EPA issued a determination that the contents of the request application were technically and administratively complete.

Ohio EPA has completed a technical review of the request and has determined that the Gas Addition Project at the Avon Lake Generating Station will require additional time to achieve compliance with the MATS rule. Pursuant to 40 CFR Part 63, Subpart UUUUU, Ohio EPA, as the Title V permitting authority in the State of Ohio, has the authority to act upon this request. Therefore, Ohio EPA is granting an extension to NRG Energy of up to one year to achieve compliance. The final compliance date is extended to April 16, 2016. Additionally, Ohio EPA agrees that once converted to natural gas, Units 7 and 9 at Avon Lake Generating Station will be considered natural gas-fired units and therefore exempt from MATS requirements.

This extension is being granted based on NRG's June 28, 2013 submittal to Ohio EPA that includes the major project milestones proposed by NRG and listed in the table below. Ohio EPA requests that quarterly reports be submitted to Ohio EPA no later than 15 days after the end of the quarter. The first submission may begin after the quarter ending December 31, 2013. Failure to achieve final compliance by the extended deadline will result in NRG being subject to an enforcement action by Ohio EPA or U.S. EPA.

Per your June 28, 2013 letter:

PIPELINE	
Project	**Milestone**
Procurement: ROW Agent sourcing to provide vendor final contracts	September 10, 2013
Procurement: ROW Agent: Issuance of purchase order	September 17, 2013
Procurement: Issuance of specs for bid	July 14, 2014
Procurement: Receive bids	October 7, 2014
Procurement: Selection of vendor	October 21, 2014
Procurement: Erection sourcing provides vendor final contract documents	November 14, 2014
Procurement: Erection contract finalized	December 1, 2014
Procurement: Erection purchase order issued	December 8, 2014
Permitting: NRG application submission to Ohio Power Siting Board	July 14, 2014
Permitting: Results of Ohio Power Siting Board review and decision	March 20, 2015
Permitting: Zoning Permits	May 8, 2015
Permitting: Private Permits	September 17, 2014
Pipeline Erection and tie-in	March 31, 2015 - April 6, 2016

GAS ADDITION	
Project	**Milestone**
Gas Procurement: Issuance of specs for bid	March 3, 2014
Gas Procurement: Bids received and reviewed	June 17, 2014
Gas Procurement: Selection of vendor	June 17, 2014
Gas Procurement: Vendor final contracts	July 18, 2014
Gas Procurement: Gas vendor purchase ordered issued	August 1, 2015
Gas Engineering and Erection: Ongoing/major construction	Present - September 23, 2016

The quarterly status updates shall be submitted to Christopher Beekman at Ohio EPA, Division of Air Pollution Control, Central Office and a copy to Ed Fasko of the Northeast District Office of the Ohio EPA. Information in the quarterly updates shall include, at a minimum, the project status of major construction milestones such as pipeline procurement, pipeline route development, pipeline permitting and Ohio Power Siting Board approval, erection of burner equipment, and the status of final commissioning activities.

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of $70.00 which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director of the Ohio Environmental Protection Agency (Ohio EPA) within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
77 South High Street, 17th Floor
Columbus, OH 43215

If you have any questions or comments regarding this letter, please contact Christopher Beekman at 614-644-3597 or via email at christopher.beekman@epa.state.oh.us.

Sincerely,

Scott J. Nally
Director

cc: George Czerniak, USEPA Region V
Genevieve Damico, USEPA Region V
Ed Fasko, Ohio EPA NEDO, DAPC
Christopher Beekman, Ohio EPA CO, DAPC
Drew Bergman, Ohio EPA Legal

Appendix B - Back Trajectory Analysis using HYSPLIT

Back-Trajectory Analysis using HYSPLIT

Back-trajectories of the first, second, third and fourth maximum concentration days over three years (2010-12) at the Monitor 39-151-0017 in Stark County, Ohio were analyzed using NOAA's Model, HYSPLIT. The back-trajectory simulations also included the trajectories of exceedance days of 24-hr $PM_{2.5}$ standard for years 2010-12 at the above monitor. Monitor 39-151-0017 has been exceeding both annual and 24-hr $PM_{2.5}$ standard based on 2010 to 2012 air quality data. The purpose of trajectory analyses was to determine the cause of violation by simulating the flow of 24-hour air trajectory patterns in the backward mode.

Back-trajectory analyses of maximum concentration days (first, second, third and fourth) over three years were simulated at three different heights i.e., 10 m, 50 m, and 100 m. The reason behind simulating trajectories at heights below 100 m was due to the fact the air masses below this level were most likely to affect the concentration at the monitor, especially trajectories at 10 m height, which is close to the height of sampler. However, it was expected that trajectories below 100 m could be influenced by the terrain features in the region. Nevertheless, the back-trajectories below 100 m height were helpful in visualizing the air parcels patterns and their comparison against trajectories at 100 m height.

It was noticed from the trajectory simulations that the exceedances at the Monitor 39-151-0017 were primarily associated with the wind between southeast and southwest sectors of the monitor. These trajectories coincided to locations of industries in Tuscarawas and Carroll Counties, and facilities located near the monitor in Canton area in Stark County.