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From: Russ, Timothy
Sent: Mon 6/20/2016 8:56:13 PM
Subject: Potential Error Found in Background Concentration Used in 2035 PM10 Hot-spot Conformity Analysis: I-70 East Project FEIS

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Hi Everyone,

EPA, Region 8 and our Office of Transportation and Air Quality (OTAQ), have been reviewing the background PM_{10} value that was used in the I-70 East project's FEIS PM_{10} hot-spot conformity analysis. We believe there may have been an error in the PM_{10} background value that was selected for the modeling. The PM_{10} background value is stated as 89µg/m^3 in section 5.10 "Air Quality" and as shown in "Exhibit 5.10-12. In addition, Attachment J of the FEIS, the Air Quality Technical Report, notes how this background value was established:

Updated EPA guidance (included in correspondence with EPA and OTAC, Appendix J) requires use of the fourth highest PM_{10} value over a three-year period, excluding exceptional events, to represent background concentrations. For the Final EIS, the background concentrations were estimated using 2011 to 2013 data, resulting in a background PM_{10} value of 89 µg/m^3.

EPA's November, 2015 PM Hot-spot modeling guidance ("Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas") notes the following in section 9.3.4 *24-hour PM_{10} NAAQS*:

Calculating Design Values and Determining Conformity

The 24-hour PM_{10} design value is calculated at each receptor by directly adding the sixth-highest modeled 24-hour concentrations (if using five years of meteorological data) to the appropriate monitor value for the 24-hour background concentration from three years of monitoring data, based on Exhibit 9-6.[153] Exhibit 9-6: Monitor Value Used for Design Value Calculation

Number of Background Concentration Values from the Monitor	Monitor Value Used for Design Value Calculation
< 347	Highest Monitor Value
348 -695	Second Highest Value
696 -1042	Third Highest Value
1043 -1096	Fourth Highest Value

PM_{10} data from the Commerce City monitoring site is provided in the table below:

EPA/OTAQ Table of Data

Year	N	Highest value	2nd highest	3rd highest	4th highest
2013	357	144	97	93	89
2012	308	113	86	76	75
2011	351	82	65	64	61

"N" = the number of days of valid data recovery.

As the number of days of data recovery at the Commerce City monitor is 1016 (357+308+351=1016), the third highest value should have become the background value for the PM_{10} hot-spot modeling assuming the method in Section 9.3.4. of the PM hot-spot guidance was used (with a total number of background concentration values between 696-1042, the appropriate monitor value is the third highest value).

Therefore, in considering our table above ("EPA/OTAQ Table of Data"), the background concentration that should have been selected for 2011-2013 would have been the third highest overall value or **97** µg/m^3 (144, 113, & 97). Please review our above analysis and advise us of CDOT/FHWA's evaluation and conclusions.

Please also be advised that we have looked at the data that would be used for selecting the background PM_{10} concentration that would need to be used for CDOT/FHWA's 2040 PM_{10} hot-spot modeling analysis. The last full year of data from this monitor is from 2014 and therefore the years to examine are 2012-2014. Based on the number of monitoring values in this time period (33+357+308) = 1004, the 3rd highest overall value from this monitor is appropriate to use for background, and this value is **113** µg/m^3 (144, 117, & 113).

Year	N	Highest value	2nd highest	3rd highest	4th highest
2014	339	117	97	92	89
2013	357	144	97	93	89
2012	308	113	86	76	75

"N" = the number of days of valid data recovery.

Please let me know if you have any questions.

Thanks!

Tim

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