Assessment of the Impact of Emissions Controls

from 2018 Wind Fencing and Vegetation as well as Additionally Proposed Fence Arrays

(March 19, 2018)

CALPUFF modeling has been conducted to evaluate the potential impact of emissions control measures from 2018 wind fencing and vegetation areas, as well as additionally proposed fencing areas encircled by eight polygons (see Figure 1, herein referred to as additional polygons).

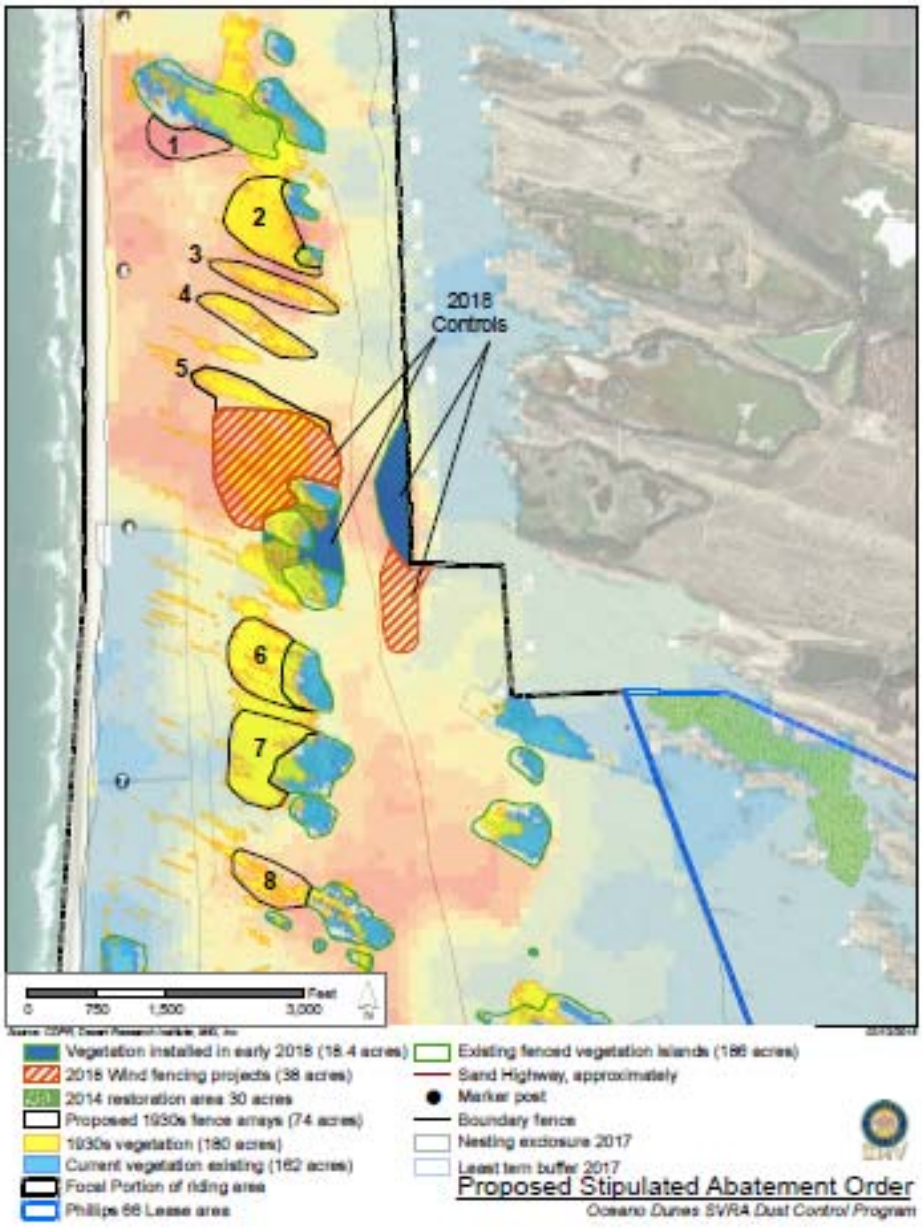

Figure 1: 2018 wind fencing, vegetation and additionally proposed fence array areas

PM10 concentrations are calculated at the locations shown in Figure 2.

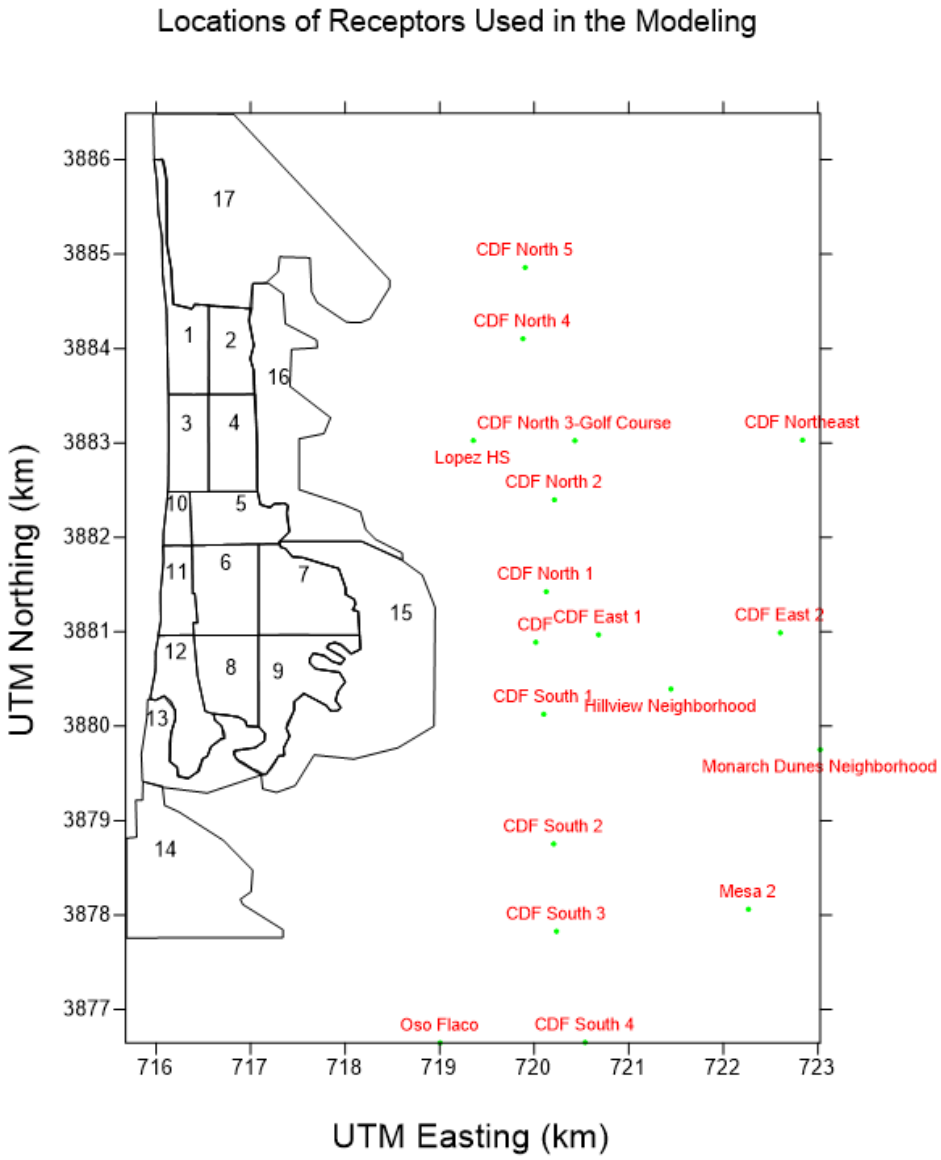

Figure 2. Locations of receptors at which PM10 concentrations are calculated.

It should be noted that PM10 concentrations presented here only represent contributions from dust emissions originating from the 17 emissions zones as shown in Figure 2. Some dust emissions, especially from sandy areas upwind of Mesa 2 and Oso Flaco, are not included in the modeling.

The effect of emissions reductions from the 2018 vegetation and wind fencing areas is examined with the assumption that the effectiveness of dust control is 100% for vegetation and 75% for the wind fencing.

Further, the effect of the additional polygon areas is examined with the assumption that 75% emissions reduction is achieved.

Dispersion modeling is conducted for the 4-month period from May 1 through August 31, 2013. Table 1 shows the highest 24-hour average PM10 concentrations at 18 locations.

Table 1. Highest 24-hour Average PM10 Concentrations (in $\mu g/m^3$) in the 4-month Modeling Period

Receptor name	PM10	Date	Reduction with 2018 controls	Reduction with 2018 controls and controls in additional polygons
CDF	181.6	May 22	17.7	21.3
Mesa 2	88.6	May 22	0.7	1.5
Oso Flaco	26.7	May 22	0.0	0.0
Lopez HS	189.7	May 23	0.1	8.1
Hillview Neighborhood	109.9	May 23	6.8	9.3
Monarch Dunes Neiborhood	63.8	May 23	2.9	5.3
CDF North 1	163.7	May 23	17.9	26.2
CDF North 2	167.1	May 23	0.6	11.4
CDF North 3	89.9	May 23	0.0	1.7
CDF North 4	53.8	May 26	0.0	0.1
CDF North 5	36.5	May 26	0.0	0.0
CDF East 1	138.0	May 23	13.2	17.5
CDF East 2	77.0	May 23	0.9	3.9
CDF South 1	215.5	May 22	4.5	8.7
CDF South 2	119.5	May 22	0.0	1.1
CDF South 3	45.4	May 22	0.0	0.1
CDF South 4	20.9	May 22	0.0	0.0
CDF Northeast	23.4	May 26	0.0	0.1

Figure 3 presents a graphic comparison of 24-hour average PM10 concentrations for the base case (no control) and emission control cases. At each receptor, the first bar represents the base case (labeled as 'Base'), the second bar is for the case with 2018 control measures (labeled as 'B-V-F'), and the third bar is for the case of 2018 control and additional control from eight proposed fence polygons (labeled as 'B-V-F-AP').

Figure 4 essentially presents the same information but shows changes relative to the base case.

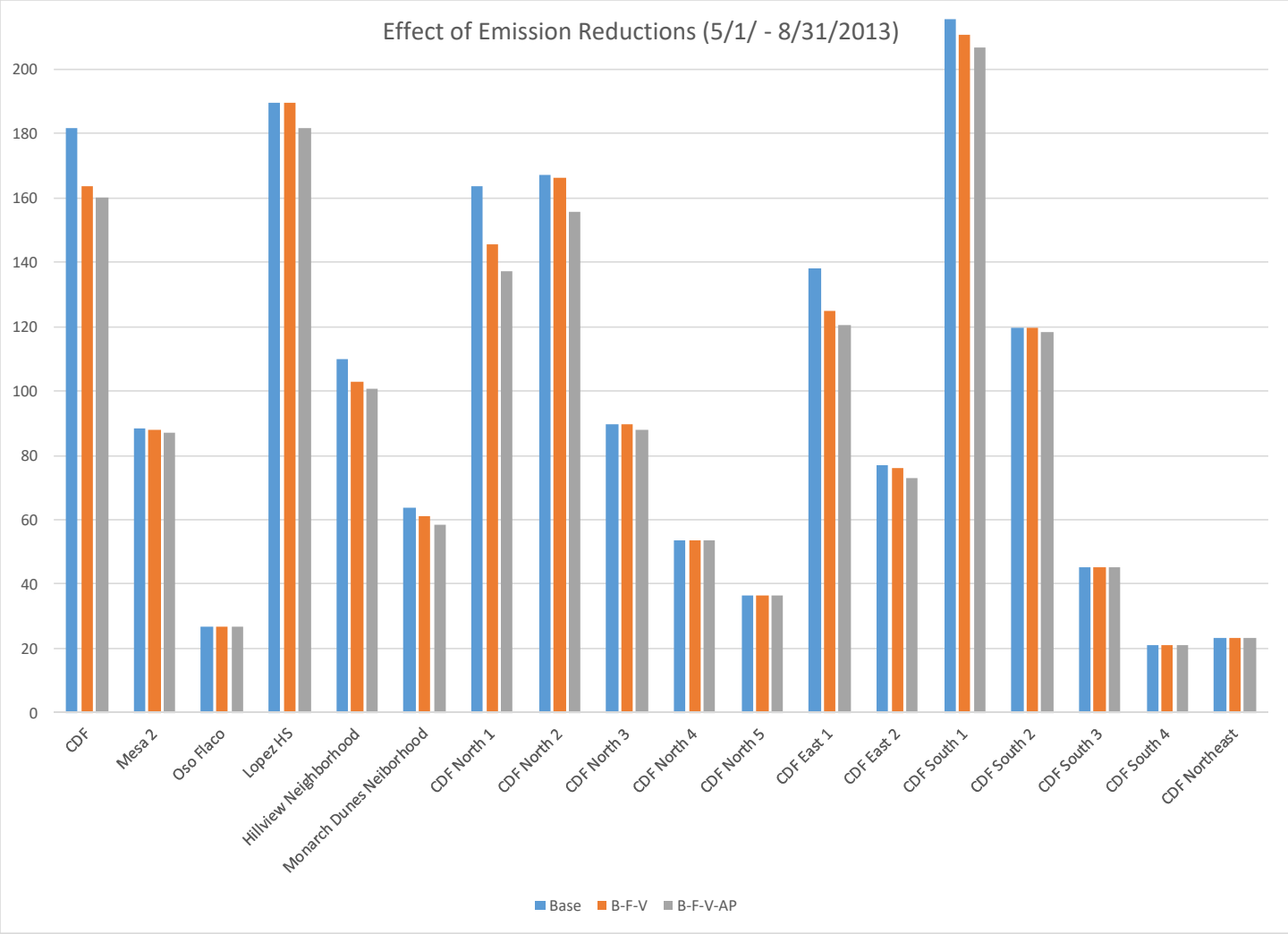

Figure 3. Comparison of PM10 concentrations for the base case and the control cases. Peak concentrations are the highest daily average in the 4-month period.

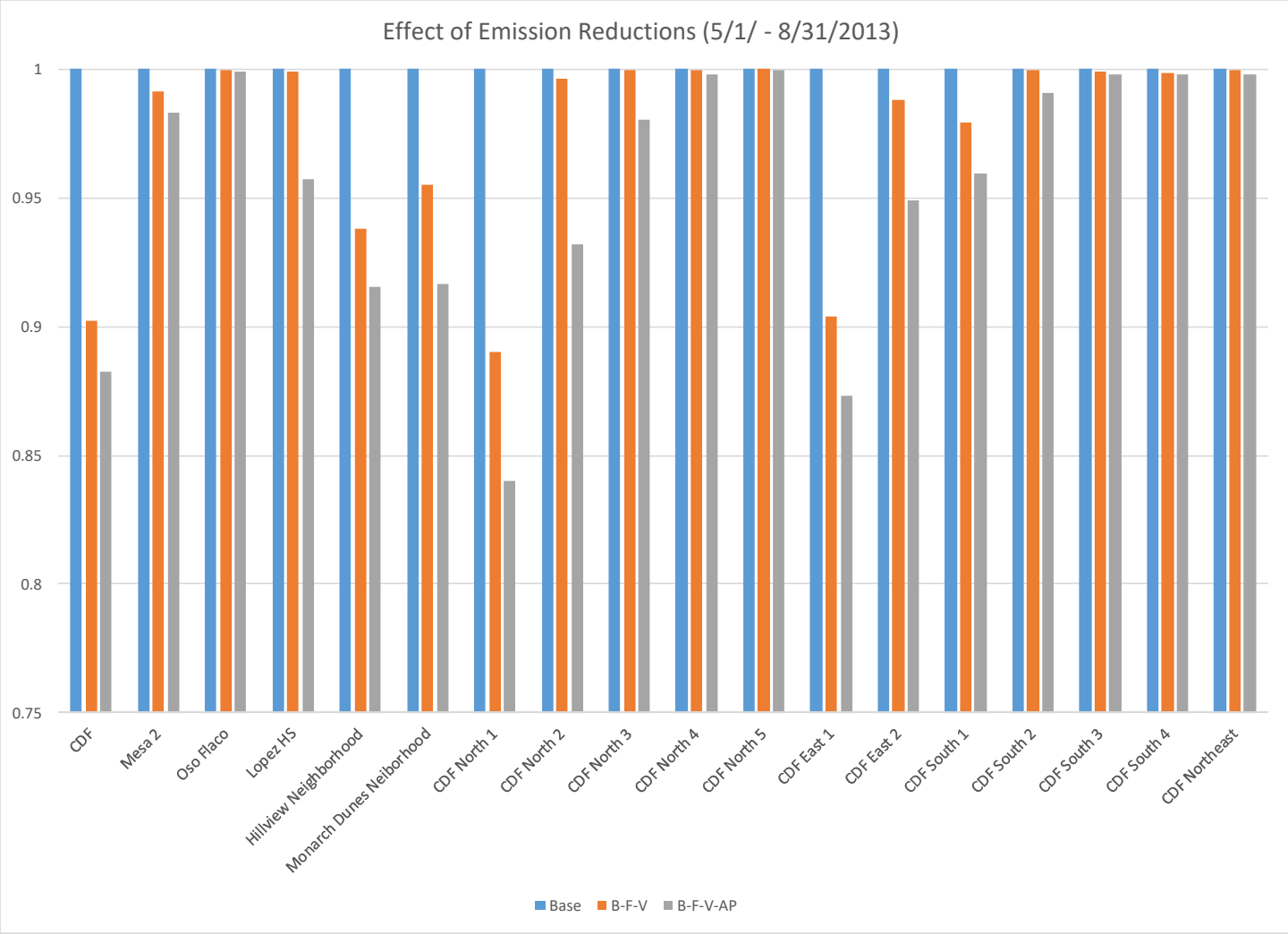

Figure 4. Changes with controls relative to the base case (based on highest daily average concentrations in the 4-month period).

As the peak concentrations occur on May 22 at CDF, Mesa 2 and Oso Flaco, modeling results for that day alone are presented below. Table 2 lists base case PM10 concentrations as well as the concentration reductions associated with emission control measures. Figure 5 shows PM10 concentrations with and without control measures and Figure 6 shows relative changes with different control measures.

Table 2. Highest 24-hour Average PM10 Concentrations (in μg/m^3) on May 22, 2013

Receptor name	PM10	Reduction with 2018 controls	Reduction with 2018 controls and controls in additional polygons
CDF	181.6	17.7	21.3
Mesa 2	88.6	0.7	1.5
Oso Flaco	26.7	0.0	0.0
Lopez HS	167.2	0.1	6.6
Hillview Neighborhood	105.6	5.4	7.9
Monarch Dunes Neiborhood	56.0	2.0	4.2
CDF North 1	152.7	13.7	21.5
CDF North 2	146.5	0.7	9.2
CDF North 3	75.5	0.0	1.5
CDF North 4	35.1	0.0	0.0
CDF North 5	18.4	0.0	0.0
CDF East 1	130.6	10.3	14.6
CDF East 2	64.4	0.7	2.9
CDF South 1	215.5	4.5	8.7
CDF South 2	119.5	0.0	1.1
CDF South 3	45.4	0.0	0.1
CDF South 4	20.9	0.0	0.0
CDF Northeast	15.2	0.0	0.0

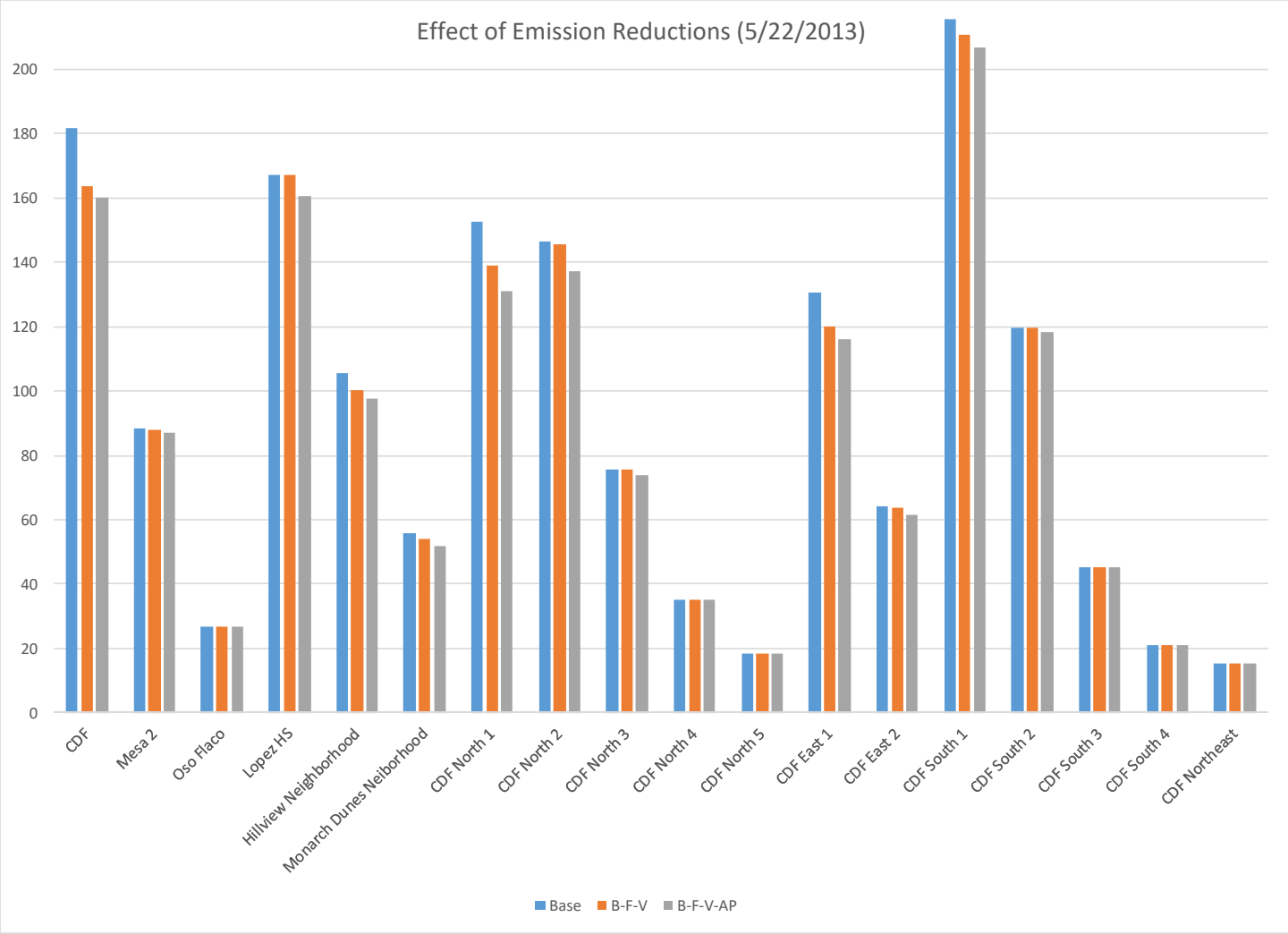

Figure 5. Comparison of PM10 concentrations for the base case and the control cases. Concentrations are the daily averages on May 22, 2013.

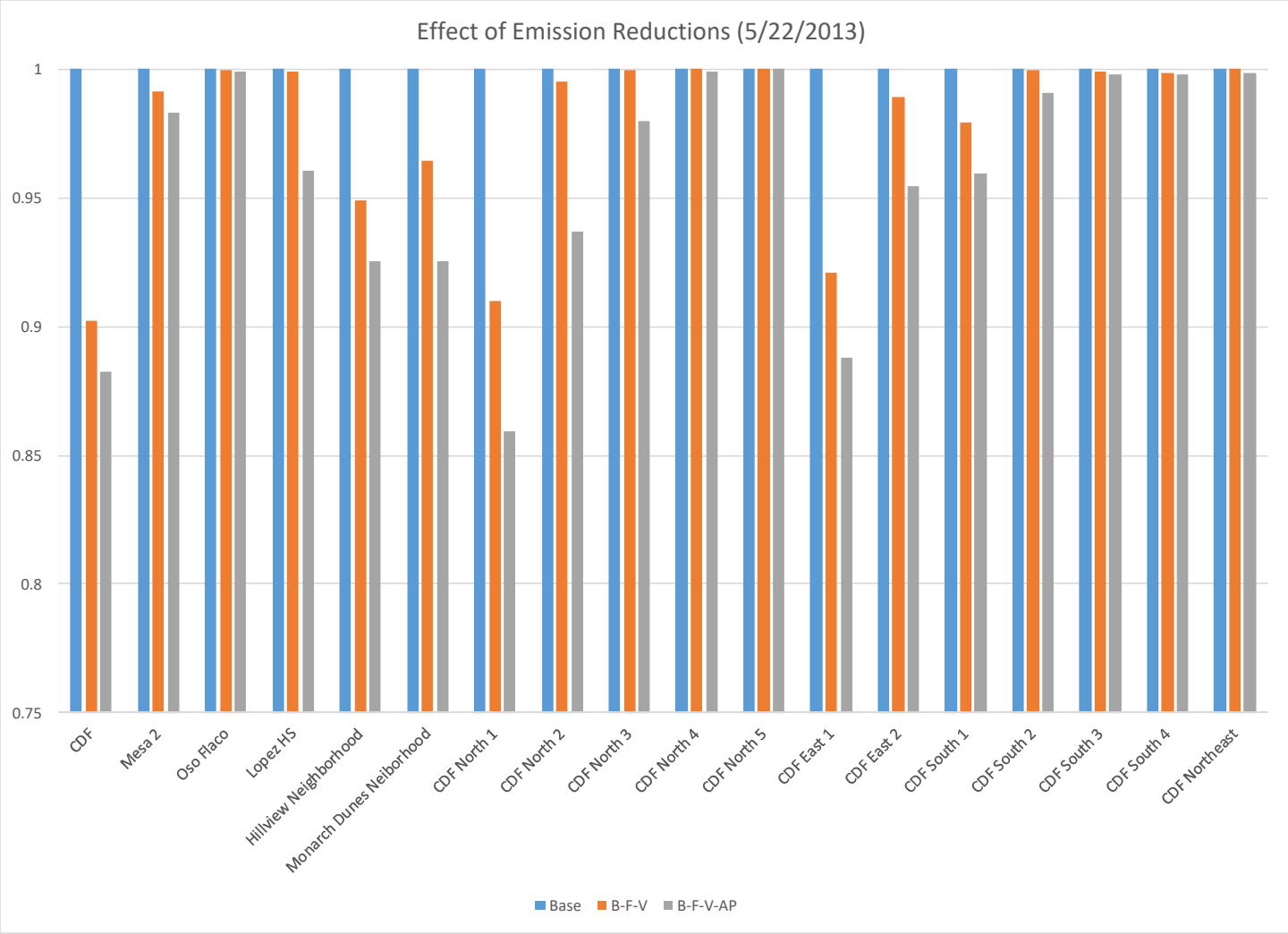

Figure 6. Changes with controls relative to the base case. Based on daily average concentrations on May 22, 2013.