IMPERIAL COUNTY
AIR POLLUTION CONTROL DISTRICT

Postcards from Imperial Valley, California San Diego History Center:
http://sandiegohistory.org/communities/imperialvalley/images/meyers.jpg

April 29, 2018 to May 1, 2018
Exceptional Event Documentation
For the Imperial County PM_{10} Nonattainment Area

An exceedance of the National Ambient Air Quality Standard (NAAQS) for PM_{10} at the Brawley, Niland, and Westmorland monitors in Imperial County, California on April 29, 2018 to May 1, 2018

TABLE OF CONTENTS

SECTION PAGE

LIST OF FIGURES

FIGURE PAGE

LIST OF TABLES

TABLE **PAGE**

ACRONYM	DESCRIPTIONS
AOD	Aerosol Optical Depth
AQI	Air Quality Index
AQS	Air Quality System
BACM	Best Available Control Measures
BAM 1020	Beta Attenuation Monitor Model 1020
BLM	United States Bureau of Land Management
BP	United States Border Patrol
CAA	Clean Air Act
CARB	California Air Resources Board
CMP	Conservation Management Practice
DCP	Dust Control Plan
DPR	California Department of Parks and Recreation
EER	Exceptional Events Rule
EPA	Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
GOES-W/E	Geostationary Operational Environmental Satellite (West/East)
HC	Historical Concentrations
HYSPLIT	Hybrid Single Particle Lagrangian Integrated Trajectory Model
ICAPCD	Imperial County Air Pollution Control District
INPEE	Initial Notification of a Potential Exceptional Event
ITCZ	Inter Tropical Convergence Zone
KBLH	Blythe Airport
KCZZ	Campo Airport
KIPL	Imperial County Airport
KNJK	El Centro Naval Air Station
KNYL/MCAS	Yuma Marine Corps Air Station
KPSP	Palm Springs International Airport
KTRM	Jacqueline Cochran Regional Airport (aka Desert Resorts Rgnl Airport)
PST	Local Standard Time
MMML/MXL	Mexicali, Mexico Airport
MODIS	Moderate Resolution Imaging Spectroradiometer
MPH	Miles Per Hour
MST	Mountain Standard Time
NAAQS	National Ambient Air Quality Standard
NCAR	National Center for Atmospheric Research
NCEI	National Centers for Environmental Information
NEAP	Natural Events Action Plan
NEXRAD	Next-Generation Radar

NOAA	National Oceanic and Atmospheric Administration
nRCP	Not Reasonably Controllable or Preventable
NWS	National Weather Service
PDT	Pacific Daylight Time
PM_{10}	Particulate Matter less than 10 microns
$PM_{2.5}$	Particulate Matter less than 2.5 microns
PST	Pacific Standard Time
QA/QC	Quality Assured and Quality Controlled
QCLCD	Quality Controlled Local Climatology Data
RACM	Reasonable Available Control Measure
RAWS	Remote Automated Weather Station
SIP	State Implementation Plan
SLAMS	State Local Ambient Air Monitoring Station
SMP	Smoke Management Plan
SSI	Size-Selective Inlet
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UTC	Coordinated Universal Time
WRCC	Western Regional Climate Center

I Introduction

In 2007, the United States Environmental Protection Agency (US EPA) adopted the "Treatment of Data Influenced by Exceptional Events Rule" (EER)[1] to govern the review and handling of certain air quality monitoring data for which the normal planning and regulatory processes are not appropriate. Under the terms of the EER, the US EPA may exclude monitored exceedances of the National Ambient Air Quality Standard (NAAQS) if a State adequately demonstrates that an exceptional event caused the exceedance.

The 2016 revision to the EER added sections 40 CFR §50.1(j)-(r) [Definitions], 50.14(a)-(c) and 51.930(a)-(b) to 40 Code of Federal Regulations (CFR). These sections contain definitions, criteria for US EPA concurrence, procedural requirements and requirements for State demonstrations. The demonstration must satisfy all of the rule criteria for US EPA to concur with the requested exclusion of air quality data from regulatory decisions.

Title 40 CFR §50.14(c)(3)(iv) outlines the elements that a demonstration must include for air quality data to be excluded:

TABLE 1-1 TITLE 40 CFR §50.14(c)(3)(iv) CHECKLIST EXCEPTIONAL EVENT DEMONSTRATION FOR HIGH WIND DUST EVENT (PM_{10})		DOCUMENT SECTION
1	A narrative conceptual model that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s)	Pg. 9
2	A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation	Pg. 20
3	Analyses comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times to support the requirement at paragraph (c)(3)(iv)(B) of this section	Pg. 33
4	A demonstration that the event was both not reasonably controllable and not reasonably preventable	Pg. 40
5	A demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event	Pg. 47

[1] "Treatment of Data Influenced by Exceptional Events; Final Guidance", 81 FR 68216, October 2, 2016

Aside from the above, a State must demonstrate that it has met several procedural requirements during the demonstration process, including:

	TABLE 1-2 PROCEDURAL CHECKLIST EXCEPTIONAL EVENT DEMONSTRATION FOR HIGH WIND DUST EVENT (PM_{10})	DOCUMENT SECTION
1	**Public Notification [40 CFR §50.14(c)(1)]** – In accordance with mitigation requirement at 40 CFR 51.930(a)(1), notification to the public promptly whenever an event occurs or is reasonably anticipated to occur which may result in the exceedance of an applicable air quality standard	Pg. 3 and Appendix C
2	**Initial Notification of Potential Exceptional Event [40 CFR §50.14(c)(2)]** - Submission to the Administrator of an Initial Notification of Potential Exceptional Event and flagging of the affected data in US EPA's Air Quality System (AQS) as described in 40 CFR §50.14(c)(2)(i),	Pg. 3
3	**Public Comment Process [40 CFR §50.14(c)(3)(v)]** - Documentation of fulfillment of the public comment process described in 40 CFR §50.14(c)(3)(v), and	Pg. 4 and Appendix C
4	**Mitigation of Exceptional Events [40 CFR §51.930]** - Implementation of any applicable mitigation requirements (Mitigation Plan) as described in 40 CFR §51.930	Pg. 4

The Imperial County Air Pollution Control District (ICAPCD) has been submitting criteria pollutant data since 1986 into the US EPA's Air Quality System (AQS). In Imperial County, prior to 2017, Particulate Matter Less Than 10 Microns (PM_{10}) was measured by either Federal Reference Method (FRM) Size Selective Instruments (SSI) or Federal Equivalent Method (FEM) Beta Attenuation Monitor's, Model 1020 (BAM 1020). Effective 2017 Imperial County stopped utilizing FRM instruments relying solely on BAM 1020 monitors to measure PM_{10}. It is important to note that the use of non-regulatory data within this document, typically continuous PM_{10} data prior to 2013, measured in local conditions, does not cause or contribute to any significant differences in concentration difference or analysis.

As such, this report demonstrates that a naturally occurring event caused an exceedance observed on Sunday, April 29, 2018 to Tuesday, May 1, 2018 which elevated particulate matter within San Diego, Riverside and Imperial Counties and affected air quality. The analyses contained in this report includes regulatory and non-regulatory data that provides support for the elements listed in **Table 1-1** and **Table 1-2**. This demonstration

substantiates that this event meets the definition of the US EPA Regulation for the Treatment of Data Influenced by Exceptional Events (EER)[2].

I.1 Public Notification [40 CFR §50.14(c)(1)]

The ICAPCD utilizes a web-based public notification process to alert the public of forecasted weather conditions and potential changes in ambient air concentrations that may affect the public. The ICAPCD identifies these public notifications as Advisory Events. On Friday, April 27, 2018 the ICAPCD updated its Advisory Events notice three times to inform the public of the most recent NWS forecasts and advisories from the San Diego and Phoenix NWS offices regarding the windy conditions forecast over the weekend. The final update published late Friday advised the public of high winds and blowing dust forecast for southeast California beginning Sunday. On Monday, April 30, 2018 and Tuesday, May 1, 2018, the ICAPCD published subsequent updates regarding the area-wide windy conditions and expected air quality impacts. **Appendix C** contains copies of notices pertinent to the April 29, 2018 to May 1, 2018 event.

I.2 Initial Notification of Potential Exceptional Event (INPEE) [40 CFR §50.14(c)(2)]

When States intend to request the exclusion of one or more exceedances of a NAAQS as an exceptional event a notification to the Administrator is required. The notification process identified within the EER as the Initial Notification of Potential Exceptional Event (INPEE) is twofold: to determine whether identified data may affect a regulatory decision and whether a State should develop/submit an EE Demonstration.

On Sunday, April 29, 2018 to Tuesday, May 1, 2018, a naturally occurring event elevated particulate matter within San Diego, Riverside and Imperial Counties, causing an exceedance at the Brawley (06-025-0007), Niland (06-025-4004), and Westmorland (06-025-4003) air quality monitors. Subsequently, the ICAPCD made a formal written request to the California Air Resources Board (CARB) to place preliminary flags on SLAMS measured PM_{10} hourly concentrations from the Brawley, Niland, and Westmorland monitors on April 29, 2018 to May 1, 2018. After review, CARB submitted the INPEE, for the April 29, 2018 to May 1, 2018 event in July of 2019. The submitted request included a brief description of the meteorological conditions for the days including April 29, 2018 to May 1, 2018, indicating that a potential natural event occurred. The ICAPCD has engaged in discussions with US EPA Region IX regarding the demonstration prior to formal submittal.

[2] "Treatment of Data Influenced by Exceptional Events; Final Guidance", 81 FR 68216, October 2, 2016

I.3 Public Comment Process [40 CFR §50.14(c)(3)(v)(A-C)]

(A) The CARB and USEPA have reviewed and commented on the draft version of the April 29, 2018 to May 1, 2018 exceptional event prepared by the ICAPCD. After addressing all substantive and non-substantive comments by both CARB and USEPA the ICAPCD has published a notice of availability in the Imperial Valley Press announcing a 30-day public review process. The published notice invites comments by the public regarding the request, by the ICAPCD, to exclude the measured concentrations of 310 µg/m^3; 270 µg/m^3 and 157 µg/m^3 measured by the Brawley monitor; 243 µg/m^3 and 162 µg/m^3measured by the Niland monitor and 206 µg/m^3 and 207 µg/m^3measured by the Westmorland monitor on April 29, 2018 to May 1, 2018.

(B) Concurrently with the Public Review period for the April 29, 2018 to May 1, 2018 exceptional event, the ICAPCD is formally submitting to CARB for remittance to USEPA the Final April 29, 2018 to May 1, 2018 exceptional event.

(C) Upon the ending of the review period the ICAPCD will remit to CARB and USEPA all comments received during the Public Review period along with a formal letter addressing any comments that dispute or contradict factual evidence in the demonstration.

The ICAPCD acknowledges that with the submittal to US EPA of the 2018 exceptional events, there is supporting evidence of documented recurring seasonal events that affect air quality in Imperial County.

I.4 Mitigation of Exceptional Events [40 CFR §51.930]

According to 40 CFR §51.930(b) all States having areas with historically documented or known seasonal events, three events or event seasons of the same type and pollutant that recur in a 3-year period, are required to develop and submit a mitigation plan to the US EPA.

The ICAPCD received notice from US EPA September 15, 2016 identifying Imperial County as an area required to develop and submit a mitigation plan within two years of the effective date, September 30, 2016, of the final published notification to states with areas subject to mitigation requirements. On September 21, 2018, after notice and opportunity for public comment the ICAPCD submitted the High Wind Exceptional Event Fugitive Dust Mitigation Plan (Mitigation Plan) for review and verification. Subsequently, on November 28, 2018 CARB received verification from US EPA of its review and approval of the

Mitigation Plan. For a copy of the Mitigation Plan visit the Imperial County Air Pollution Control District website at
https://www.co.imperial.ca.us/AirPollution/otherpdfs/MitigationPlan.pdf

The Imperial County Mitigation Plan contains important geographical and meteorological descriptions, pages 3 through 6, of the areas within Imperial County and the surrounding areas that are sources of transported fugitive dust. **Figure 1-1** helps depict the geological aspects that are within Imperial County and outside of Imperial County that affect air quality.

Essentially, the Anza-Borrego Desert State Park, which lies in a unique geologic setting along the western margin of the Salton Trough, extends north from the Gulf of California (Baja California) to the San Gorgonio Pass and from the eastern rim of the Peninsular Ranges eastward to the San Andreas Fault zone along the far side of the Coachella Valley. These areas are sources of transported fugitive dust emissions into Imperial County when westerly winds funnel through the unique landforms causing in some cases wind tunnels that cause increase in wind speeds.

During the monsoonal season, natural open desert areas to the east, southeast, and south of Imperial County are sources of transported fugitive dust emissions when thunderstorms cause outflows to blow winds across natural opens desert areas within Arizona and Mexico.

FIGURE 1-1
IMPERIAL COUNTY

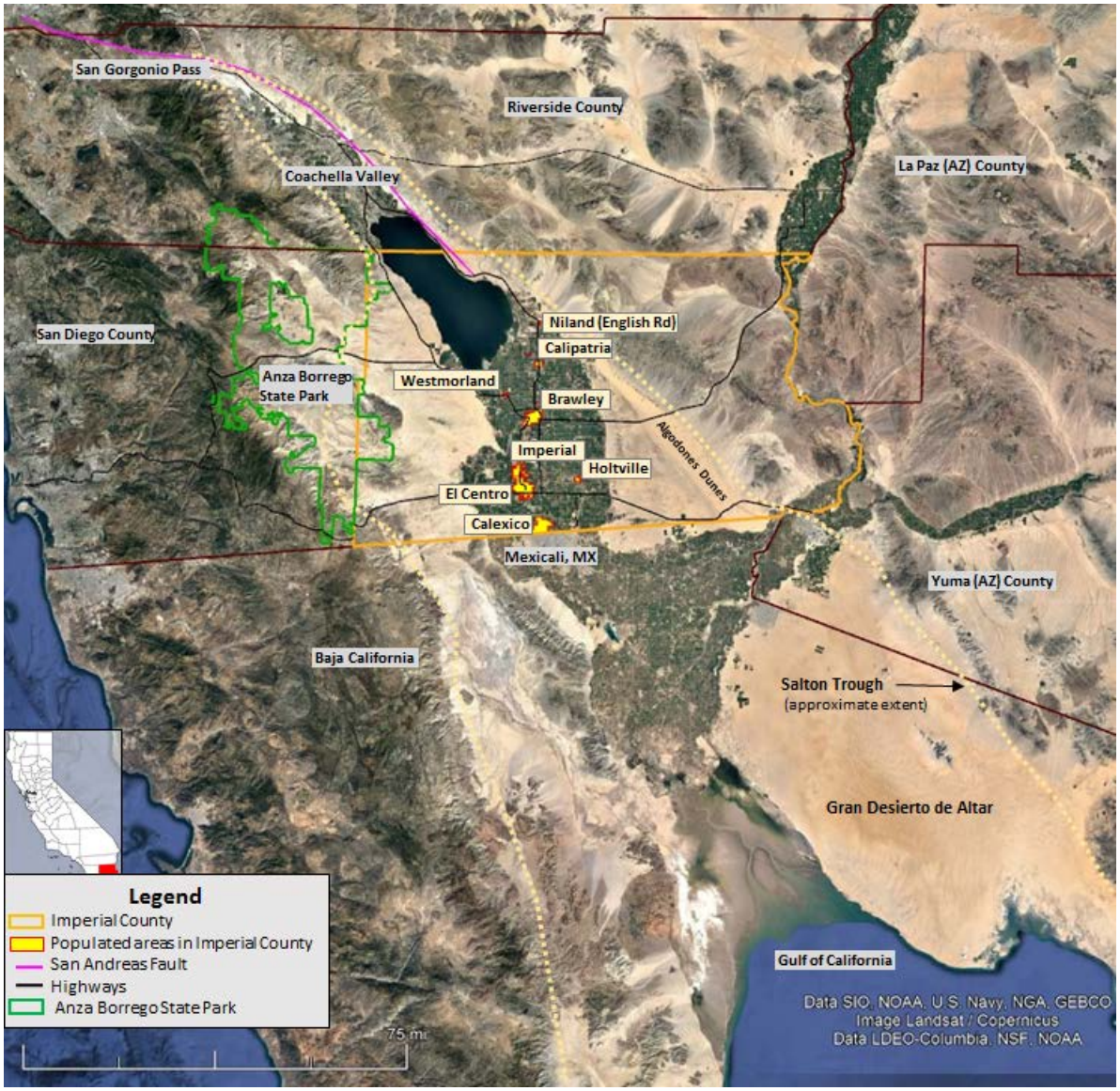


Fig 1-1: Imperial County a Southern California border region, within far southeast California bordering Arizona and Mexico has a small economically diverse region with a population of 174,528

Likewise, the Mitigation Plan contains a high wind event meteorological analysis broken down into four types of seasonal natural occurrences that cause elevated particulate matter that affects Imperial, San Diego, Riverside and Yuma Counties. The historical analysis has defined the meteorological events that lead to high winds and elevated PM_{10} events in Imperial County, page 7, as follows:

- **Type 1:** Pacific storms and frontal passages;
- **Type 2:** Strong pressure and surface pressure gradients;
- **Type 3:** Monsoonal Gulf Surges from Mexico; thunderstorm downburst, outflow winds and gust fronts from thunderstorms
- **Type 4:** Santa Ana wind events

A complete description of these events begins on page 8 of the Mitigation Plan. While there is some overlap in discussed components between the Mitigation Plan and this demonstration such as the public notification process and the warning process, the Mitigation Plan does elaborate a little further. The Mitigation Plan discusses in detail the educational component, the notification component, the warning component and the implementation of existing mitigation measures, such as Regulation VIII.

Finally, the Mitigation Plan contains a complete description of the methods, processes and mechanisms used to minimize the public exposure, page 14, retain historical and real-time data, page 15, and the consultation process with other air quality managers to abate and minimize air impacts within Imperial County, page 16.

In all, the Mitigation Plan helps explain the recurring events, by type and influence upon Imperial County and provides supporting justification of a natural event.[3]

[3] Title 40 Code of Federal Regulations §50.1 (k) defines a Natural Event as meaning an event and its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. For purposes of the definition of a natural event, anthropogenic sources that are reasonably controlled shall be considered to not play a direct role in causing emissions.

FIGURE 1-2
MONITORING SITES IN AND AROUND IMPERIAL COUNTY

Fig 1-2: Depicts a select group of PM_{10} monitoring sites in Imperial County, eastern Riverside County, and southwestern Arizona (Yuma County). Generated through Google Earth

II Conceptual Model – A narrative that describes the event causing the exceedance and a discussion of how emissions from the event led to the exceedance at the affected monitors

II.1 Description of the event causing the exceedance

As early as Friday, April 27, 2018 the San Diego and Phoenix NWS offices began discussing a trio of weather disturbances set to move through the region starting Sunday, April 29, 2018 through Tuesday, May 1, 2018.[4] The San Diego office discussed that this type of weather pattern was somewhat rare for late April (AFD San Diego 2114 PDT April 27, 2018). Although the weather systems contained moisture, only trace precipitation was measured sporadically over the three-day period at El Centro NAF (KNJK). Still, the increased moisture acted to tamp down fugitive dust which prevented more monitors from exceeding on April 29, 2018, April 30, 2018 and May 1, 2018. Both the San Diego and Phoenix offices issued comprehensive forecasts detailing the chain of weather systems forecasted to impact southeastern California.[5] Excerpts are as follows:

> FOR APRIL 29: "By late Sunday, the first shortwave will move through our region but is not expected to bring any precipitation as the system is relatively moisture starved. However, height falls will tighten surface pressure gradients and drive strong winds, mainly over SE California. Areas of blowing dust will be the major concern over much of SE California on Sunday and could make for particularly difficult travel near El Centro and along highway 78 and 86. Gusts 35-45 mph are expected over the area with speeds reaching 50 mph in windiest locations" (AFD Phoenix 1423 MST April 28, 2018)
>
> FOR APRIL 30: "An enhanced jet and persistently tight pressure gradient through the area will continue to support locally windy weather. This will particularly be the case in the lee of the San Diego mountains where rotors and down sloping winds will once again produce strong, gusty winds and some blowing dust in SW Imperial County into the overnight hours. Height falls will be reestablished heading through Tuesday morning in association with the trailing PV anomaly and current wind advisory was merely expanding through Tuesday afternoon." (AFD Phoenix 1430 MST April 30, 2018)

[4] National Weather Service, Area Forecast Discussion, Apr. 27, 2018, San Diego office, 908am PDT
[5] National Weather Service, Area Forecast Discussion, Apr. 28, 2018, Phoenix office, 243pm MST

> FOR MAY 1: "The aforementioned storm system will dig south into southern California by Tuesday morning. Associated with this upper-level trough is a surface cold front that is forecast to be situated in southeast California by 12Z Tuesday and in Western Arizona by 00Z Wednesday. Strong southerly winds will develop ahead of the front, with strong westerlies forecast behind the front. Winds will generally be gusting in the 20 to 30 mph range, with stronger gusts to 40 mph expected across southeast California. Due to stronger wind speeds, patchy blowing dust will also be a possibility on Tuesday. In addition to strong winds and blowing dust, a nice plume of moisture will move into central and eastern Arizona ahead of the aforementioned cold" (AFD Phoenix 0345 MST April 30, 2018)

Aside from the above forecast discussions, Urgent Weather Messages and Wind Advisories were issued over a multi-day period for Imperial County and the San Diego County mountains and deserts. **Appendix A** contains all pertinent NWS notices.

II.2 How emissions from the event led to an exceedance

Starting April 29, 2018 through May 1, 2018, regulatory air monitors in Imperial, Riverside and Yuma counties measured elevated concentrations of particulate matter when several forecasted low pressure systems moved across the region in rapid succession. The strong gusty westerly winds associated with the systems generated emissions from within the open mountain ranges and surrounding open natural deserts within San Diego and Imperial Counties. These windblown dust emissions were transported to all the Imperial County regional air quality monitors causing an exceedance of the PM_{10} NAAQS at the Brawley, Niland, and Westmorland monitors (**Table 2-1**).

FIGURE 2-1
MONITORING AND METEOROLOGICAL SITES

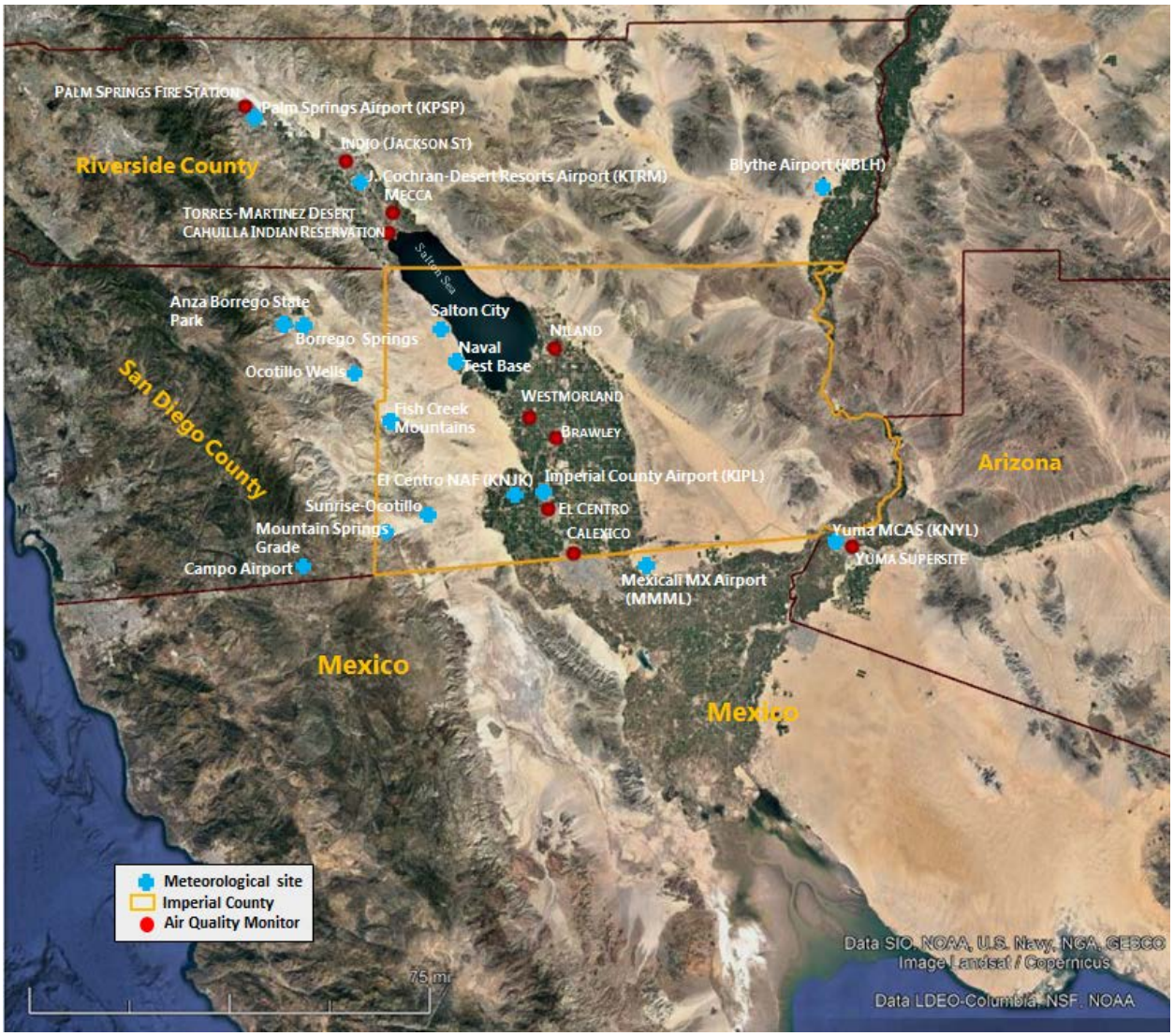


Fig 2-1: Includes a general location of the sites used in this analysis. The site furthest south is in Mexicali, Mexico and the site furthest north is the Palm Springs Fire Station

TABLE 2-1
HOURLY CONCENTRATIONS OF PARTICULATE MATTER

SITE	DATE	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Hrly MAX	24-HR AVERAGE
NILAND	20180428	59	35	50	49	49	40	48	65	83	48	24	21	16	22	93	133	142	157	235	234	163	127	199	167	235	94
	20180429	198	105	116	43	32	58	66	49	44	50	31	36	25	31	112	381	995	995	888	426	320	220	283	378	995	245
	20180430	204	108	50	41	33	26	18	21	26	34	23	21	19	14	26	180	437	697	277	158	412	667	270	200	697	165
	20180501	79	58	98	53	85	49	65	129	86	208	141	208	311	261	170	301	341	360	186	141	56	28	19	13	360	143
	20180502	12	13	13	9	8	14	11	13	9	9	6	6	7	7	7	5	5	6	19	46	13	10	12	10	46	11
WESTMORLAND	20180428	37	25	19	14	39	47	65	50	38	37	41	38	27	30	59	58	72	109	80	119	148	97	129	217	217	66
	20180429	194	251	122	186	83	50	49	26	73	36	22	17	23	21	147	351	845	611	286	421	527	356	137	142	845	207
	20180430	218	62	33	23	43	27	36	32	37	25	28	19	22	47	77	152	174	142	995			995	995	398	995	208
	20180501	387	75	57	87	196	78	54	60	118	134	140	220	247	334	278	101	248	256	269	101	148	36	15	24	387	152
	20180502	12	20	8	13	14	29	83	31	16	14	12	23	12	18	16	15	11	27	42	36	15	7	12	15	83	20
BRAWLEY	20180428	26	36	26	44	30	48	38	48	47	41	30	27	20	25	48	59	161	606	319	267	661	94	38	144	661	120
	20180429	183	308	194	73	104	63	36	31	21	18	24	22	49	123	149	499	733	995	995	995	608	410	499	355	995	311
	20180430	276	254	120	23	61	28	41	59	47	38	14	20	17	23	60	227	347	318	647	995	995	995	683	257	995	272
	20180501	50	117	58	54	31	28	45	39	47	65	54	48	295	344	511	146	525	663	305	95	285	39	12	9	663	161
	20180502	5	9	11	21	13	20	15	25	18	11	9	13	14	18	14	20	23	35	43	18	21	17	13	7	43	17
CALEXICO	20180428	38	28	21	23	18	26	44	31	37	28	50	86	51	41	53	89	84	109	65	56	52	63	36	38	109	48
	20180429	52	25	22	14	15	28	23	36	56	51	45	34	46	45	108	178	130	43	162	75	62	41	76	76	178	60
	20180430	56	50	20	18	30	33	26	28	20	29	22	25	32	59	114	117	175	39	87	100	102	524	687	85	687	103
	20180501	18	22	19	20	22	44	51	41	37	31	28	38	98	167	217	175	128	81	168	119	27	11	19	10	217	66
	20180502	7	5	5	9	13	24	23	38	25	14	18	17	17	9	17	36	142	18	17	21	24	22	15	16	142	23
EL CENTRO	20180428	28	21	16	14	18	18	27	30	21	24	22	27	19	24	48	78	69	73	98	68	42	71	78	42	98	40
	20180429	21	26	26	17	22	16	27	27	75	88	18	24	35	72	126	156	144	113	52	50	56	90	88	52	156	59
	20180430	37	43	27	28	27	33	36	34	22	19	21	25	23	45	50	105	70	37	38	96	367	373	68	40	373	69
	20180501	24	27	17	33	30	27	43	58	37	42	65	47	72	137	39	69	118	58	36	17	18	9	19	10	137	43
	20180502	7	10	12	10	14	11	21	17	22	12	9	12	10	12	13	14	21	10	16	9	24	13	17	16	24	13
YUMA AZ SUPERSITE (PST)	20180428	42	40	50	45	29	52	31	84	33	28	30	20	19	25	30	48	59	108	81	94	111	81	63	57	111	52
	20180429	50	74	74	85	83	57	74	75	46	30	30	19	34	42	53	51	101	288	525	254	263	178	83	80	525	110
	20180430	127	175	114	105	100	66	38	52	58	86	46		177	34	40	29	36	86	84	156	477	219	241	118	477	115
	20180501	75	35	25	19	20	30	36	46	66	55	188	88	31	62	41	123	74	122	188	108	83	38	14	13	188	65
	20180502	24	8	7	7	12	23	24	35	23	30	29	25	39	20	22	22	20	25	29	38	29	20	24	16	39	22
YUMA AZ SUPERSITE (MST)	20180428	62	42	40	50	45	29	52	31	84	33	28	30	20	19	25	30	48	59	108	81	94	111	81	63	111	52
	20180429	57	50	74	74	85	83	57	74	75	46	30	30	19	34	42	53	51	101	288	525	254	263	178	83	525	109
	20180430	80	127	175	114	105	100	66	38	52	58	86	46		177	34	40	29	36	86	84	156	477	219	241	477	114
	20180501	118	75	35	25	19	20	30	36	46	66	55	188	88	31	62	41	123	74	122	188	108	83	38	14	188	70
	20180502	13	24	8	7	7	12	23	24	35	23	30	29	25	39	20	22	22	20	25	29	38	29	20	24	39	22
INDIO	20180428	31	21	27	30	26	32	37	29	30	26	20	19	21	24	35	61	94	58	65	314	150	71	48	42	314	54
	20180429	44	32	30	41	37	41	70	44	27	20	25	27	24	37	70	73	142	88	153	77	113	86	65	43	153	58
	20180430	33	21	25	29	21	23	24	40	34	27	19	22	23	26	31	42	39	49	61	77	42	23	17	13	77	31
	20180501	10	7	6	8	10	11	13	12	18	18	18	15	14	18	23	27	47	37	23	24	16	15	12	10	47	17
	20180502	8	5	5	5	3	7	27	3	5	3	4	5	6	10	9	7	30	18	12	14	9	7	7	5	30	8
MECCA	20180428	44	38	34	30	38	44	46	37	45	29	24	20	17	23	41	52	136	94	73	296	687	121	106	35	687	87
	20180429	43	54	41	39	44	37	58	76	34	23	29	27	25	28	45	175	1300	531	767	232	141	105	207	28	1300	170
	20180430	28	23	39	22	21	15	22	40	64	53	48	23	28	24	25	77	94	128	110	109	83	54	27	22	128	49
	20180501	9	7	4	7	14	13	13	26	17	91	32	38	23	23	21	44	72	35	28	23	22	16	22	13	91	25
	20180502	15	11	9	14	12	16	27	29	5	5	6	12	16	10	11	9	16	40	33	29	15	10	9	6	40	15
PALM SPRINGS FIRE STATION	20180428	21	28	28	21	19	25	30	24	29	25	24	28	12	19	37	43	32	29	45	35	40	30	31	28	45	28
	20180429	25	28	25	28	27	33	30	24	22	24	24	23	24	27	34	38	65	91	35	20	30	29	18	23	91	31
	20180430	25	22	19	18	16	14	16	17	17	15	19	22	20	22	18	25	15	20	29	43	18	17	12	11	43	19
	20180501	10	13	7	11	15	9	13	14	19	17	20	18	18	22	20	21	13	11	15	15	13	14	11	8	22	14
	20180502	7	5	4	3	8	10	8	5	4	9	6	8	8	8	8	9	12	10	6	7	6	8	7	8	12	7
TORRES-MARTINEZ TRIBAL	20180428	53	44	44	34	36	54	45	45	60	80	42	43	39	29	31	47	190	194	402	337	262	256	104	94	402	106
	20180429	61	94	62	56	50	46	64	70	60	43	40	34	34	33	47	140	297	447	150	130	160	171	167	84	447	105
	20180430	82	73	54	80	92	112	39	40	30	30	25	29	26	39	46	82	58	54	39	165	77	41	28	23	165	56
	20180501	15	16	11	64	19	61	29	20	30	18	17	19	17	20	50	75	80	20	25	27	22	20	34	29	80	30
	20180502	16	12	10	10	11	50	36	15	14	14	12	8	27	16	27	17	23	45	27	28	26	22	11	9	50	20

Color coding information – **Red bold** highlighted sites indicate sites that exceeded the NAAQS. **Bold Blue** dates indicate date of Exceptional Event. **Red fill and Red bold** hourly concentrations represent concentrations above 100 µg/m^3. Pink squares around concentrations identify peak hourly concentrations

FIGURE 2-2
CONCENTRATIONS FOR ALL SITES LISTED IN TABLE 2-1

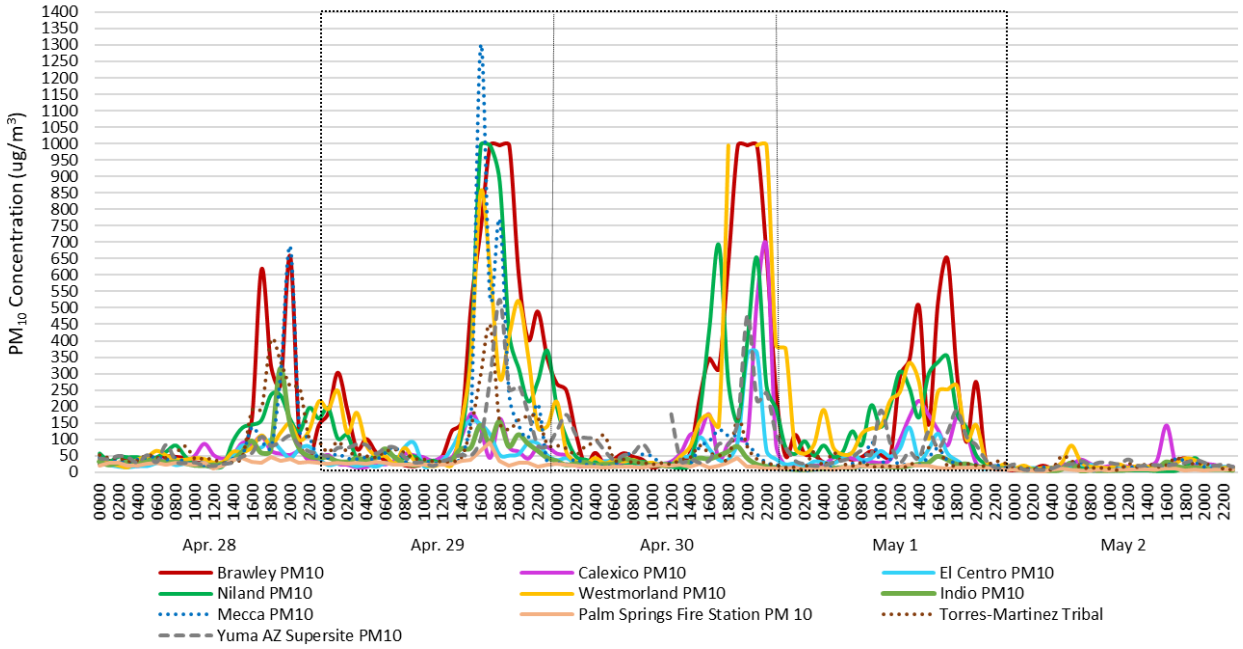


Fig 2-2: is a five-day graphical representation of the PM_{10} concentrations measured at the sites identified in **Table 2-1**. Elevated concentrations are notable among sites, including the evening of April 28, 2018

Wind speed, wind direction and airflow patterns combined all help explain how windblown emissions resulting from the strong westerly winds affected all of the monitors in Imperial County on Sunday, April 29, 2018 to Tuesday, May 1, 2018.[6]

As mentioned above, the early weather forecast notices and advisories issued by both the San Diego and Phoenix NWS offices indicated that a trio of Pacific low pressure systems and an associated cold front moving inland over California would increase the onshore pressure gradient and generate widespread windy conditions. The winds were expected to pick up Saturday (April 28, 2018) as the first of the systems moved in, and increase into Sunday, April 29, 2018. Continuous windy conditions were forecasted for April 30, 2018 and May 1, 2018 as well. The expected strength of the winds prompted the San Diego NWS office to issue 16 Urgent Weather Messages advising the public of advisory level winds for all of Imperial County and the San Diego Mountains and deserts (**Appendix A**).

Figures 2-3 and 2-4 depict the compiled wind data for regional and neighboring airports and upstream sites. Airports within Imperial, Riverside, San Diego and Yuma counties measured wind speeds at or above 25 mph or measured wind gusts at or above 25 mph

[6] Note elevated particulate concentrations the evening of Saturday, April 28, 2018 coincident with elevated wind speeds.

FIGURE 2-3
LOCAL AND VICINITY AIRPORT WIND SPEEDS AND GUST

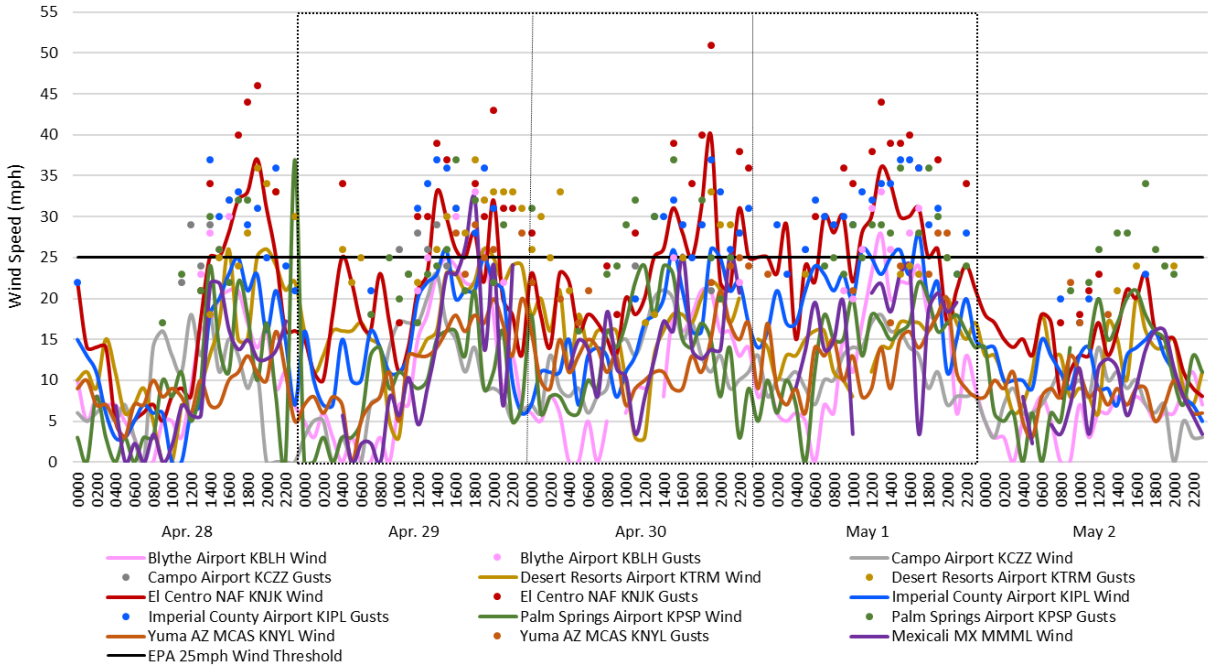


Fig 2-3: is a five-day graphical representation of the measured wind speed and wind gusts (if available) from local and neighboring airports. All data derived from the Local Climatological Data Hourly Observations (LCDHO) reports released by the NOAA https://www.ncdc.noaa.gov/. MMML is from the University of Utah's Meso West https://mesowest.utah.edu/index.html

FIGURE 2-4
WIND SPEEDS AND GUST UPSTREAM SITES

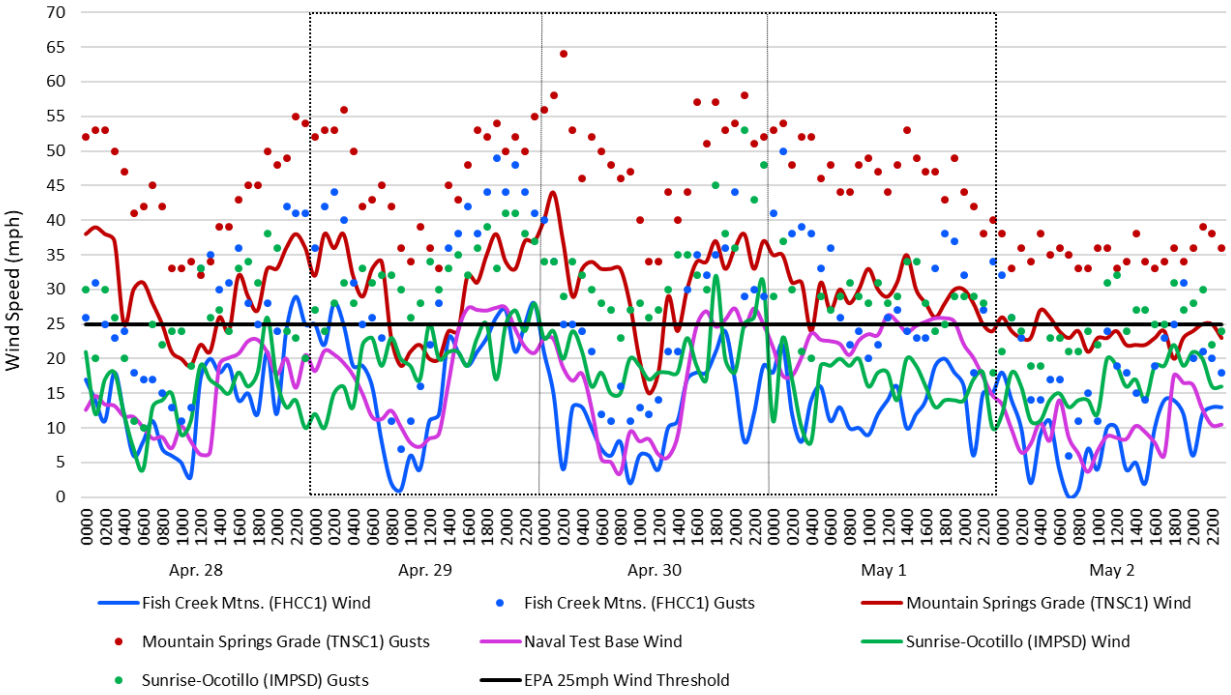


Fig 2-4: is a five-day graphical representation of the measured wind speed and wind gust (if available) from sites located upwind from the monitors in Imperial County on April 29, 2018 to May 1, 2018 (boxed areas). All data derived from the University of Utah's Meso West https://mesowest.utah.edu/index.html

The National Oceanic and Atmospheric Administration (NOAA) Laboratory HYSPLIT back-trajectory models[7] provide supporting evidence of the westerly airflow within Imperial County on April 29, 2018 to May 1, 2018. As a three day event, the HYSPLIT back-trajectory models in **Figures 2-5 through 2-8** depict the airflow during the morning (0100 PST), the late afternoon (1700 PST) on April 29, 2018, the late afternoon (1800 PST) on April 30, 2018 and late afternoon (1700 PST) on May 1, 2018 to help illustrate the shift of airflow from a northwesterly direction, to a generally due west direction.

Figure 2-5 depicts the airflow from a northwest direction coincident with elevated concentrations above 100 µg/m^3 at the Westmorland, Brawley and Niland monitors. **Figure 2-6** depicts the late afternoon airflow shift to the west coincident with peak hourly measured concentrations at the Brawley and Niland monitors on April 29, 2018. **Figure**

[7] The Hybrid Single Particle Lagrangian Integrated Trajectory Model (**HYSPLIT**) is a computer model that is a complete system for computing simple air parcel trajectories to complex dispersion and deposition simulations. It is currently used to compute air parcel trajectories and dispersion or deposition of atmospheric pollutants. One popular use of HYSPLIT is to establish whether high levels of air pollution at one location are caused by transport of air contaminants from another location. HYSPLIT's back trajectories, combined with satellite images (for example, from NASA's MODIS satellites), can provide insight into whether high air pollution levels are caused by local air pollution sources or whether an air pollution problem was blown in on the wind The initial development was a result of a joint effort between NOAA and Australia's Bureau of Meteorology. Source: NOAA/Air Resources Laboratory, 2011.

2-7 depicts the continued westerly airflow during the late afternoon coincident with the hourly peak concentration at the Westmorland monitor on April 30, 2018. **Figure 2-8** depicts the continued westerly airflow during the late afternoon coincident with the hourly peak concentration at the Brawley and Niland monitors on May 1, 2018. As the system moved further east, concentrations reduced significantly.

FIGURE 2-5
HYSPLIT MODEL All SITES APRIL 29, 2018 0100 PST

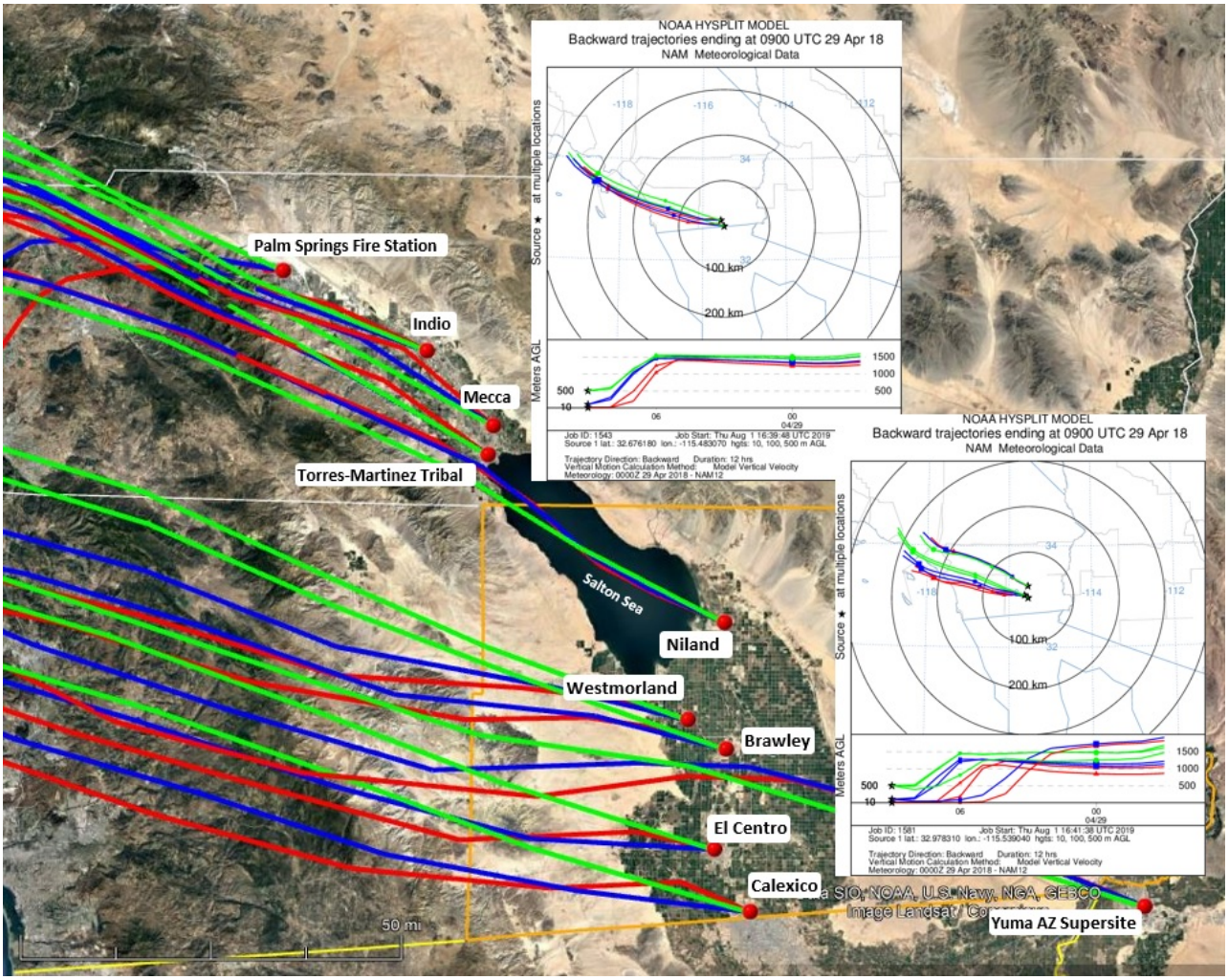


Fig 2-5: A 12-hour HYSPLIT back-trajectory ending at 0100 PST on April 29, 2018 for all sites identified in **Table 2-1**. Red trajectory indicates airflow at 10 meters AGL (above ground level); blue indicates airflow at 100m; green indicates airflow at 500m. Yellow line indicates the international border. Dynamically generated through NOAA's Air Resources Laboratory HYSPLIT model. Base map from Google Earth

FIGURE 2-6
HYSPLIT MODEL All SITES APRIL 29, 2018 1700 PST

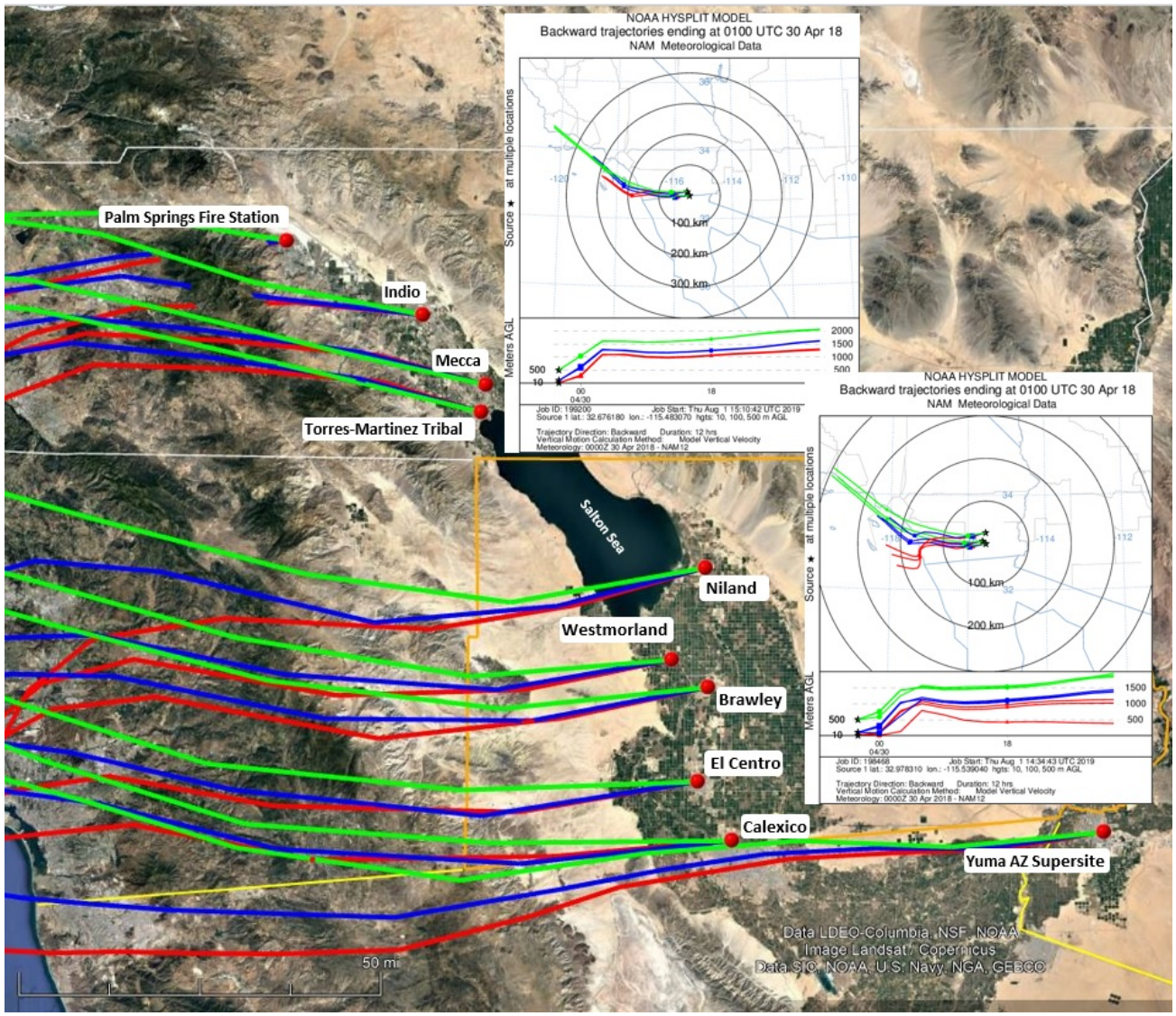


Fig 2-6: A 12-hour HYSPLIT back-trajectory ending at 1700 PST for all sites identified in **Table 2-1**. Red trajectory indicates airflow at 10 meters AGL (above ground level); blue indicates airflow at 100m; green indicates airflow at 500m. Yellow line indicates the international border. Dynamically generated through NOAA's Air Resources Laboratory HYSPLIT model. Base map from Google Earth

FIGURE 2-7
HYSPLIT MODEL All SITES APRIL 30, 2018 1800 PST

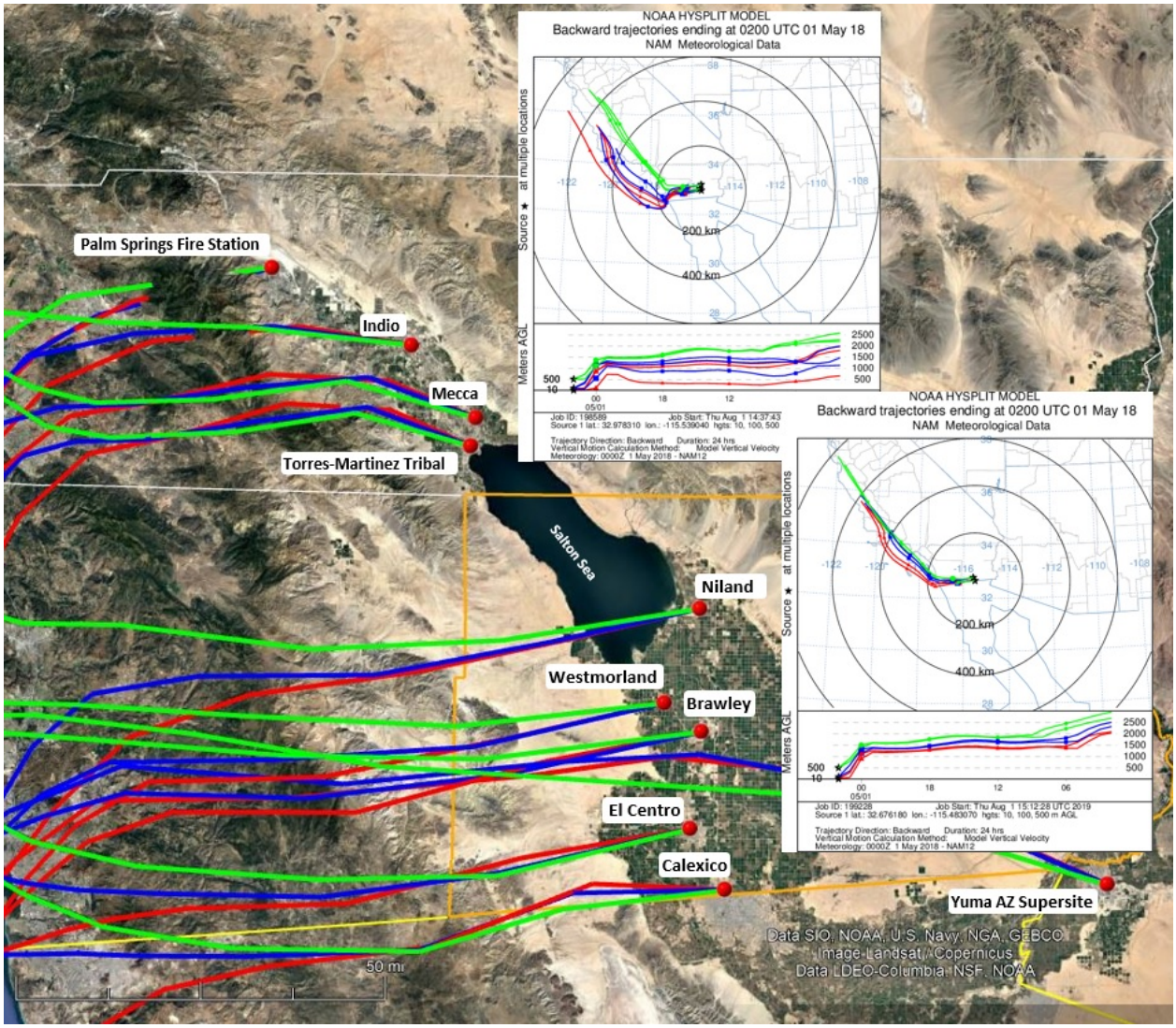


Fig 2-7: A 24-hour back-trajectory HYSPLIT ending at 1800 PST on April 30, 2018 for all sites identified in **Table 2-1**. It was this continuous strong gusty west wind that entrained emissions west of the monitors. Red trajectory indicates airflow at 10 meters AGL (above ground level); blue indicates airflow at 100m; green indicates airflow at 500m. Yellow line indicates the international border. Dynamically generated through NOAA's Air Resources Laboratory HYSPLIT model. Base map from Google Earth

FIGURE 2-8
HYSPLIT MODEL All SITES MAY 1, 2018 1700 PST

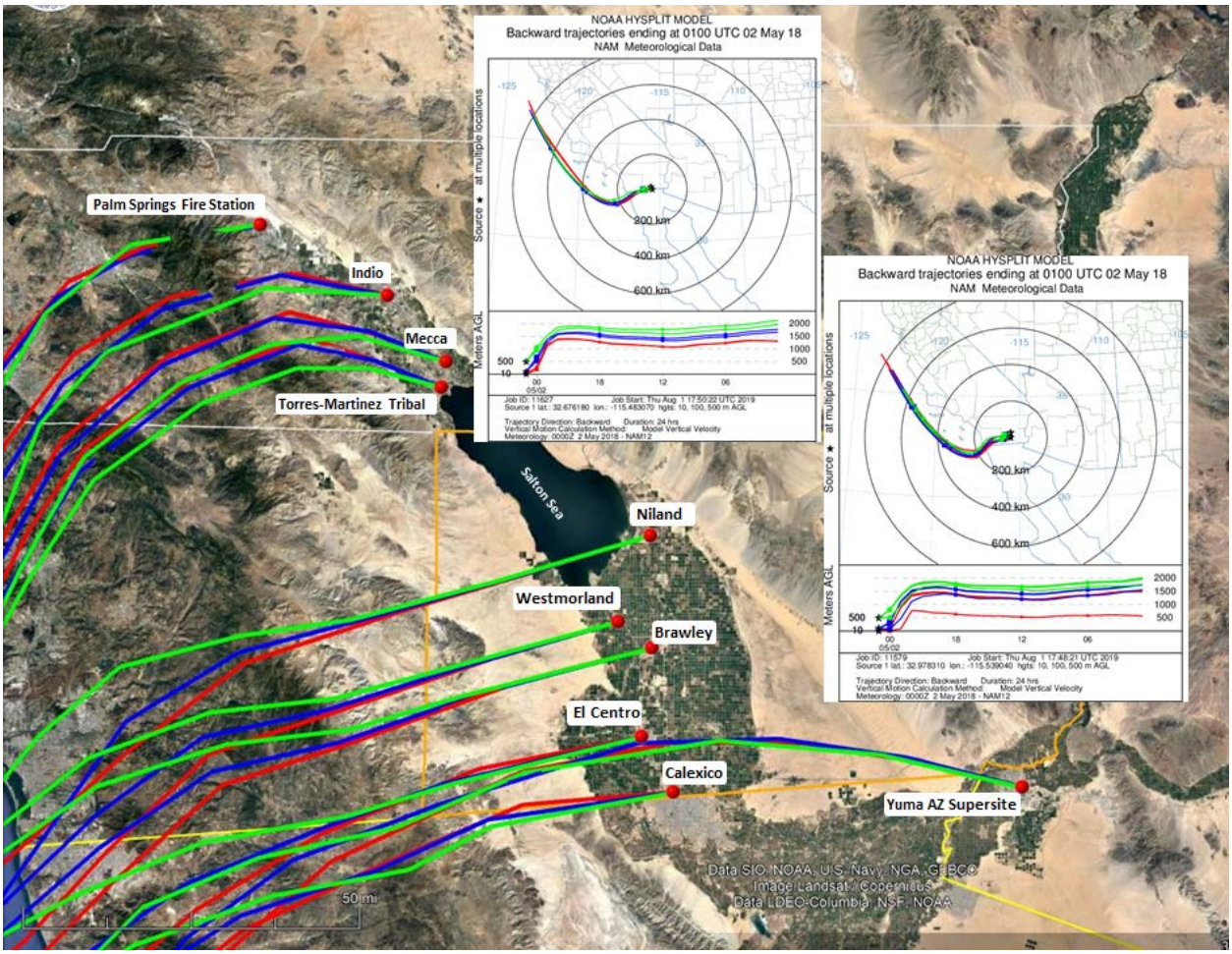


Fig 2-8: A 24-hour back-trajectory HYSPLIT ending at 1700 PST on May 1, 2018 for all sites identified in **Table 2-1**. Red trajectory indicates airflow at 10 meters AGL (above ground level); blue indicates airflow at 100m; green indicates airflow at 500m. Yellow line indicates the international border. Dynamically generated through NOAA's Air Resources Laboratory HYSPLIT model. Base map from Google Earth

As strong gusty westerly winds blew over open natural mountains and desert areas west of Imperial County, fugitive windblown dust significantly affected all air quality monitors within Imperial County. As noted above, sixteen (16) Urgent Weather Messages were issued by the NWS in response to the advisory level winds resulting from three different Pacific low systems that passed through the region April 29, 2018 to May 1, 2018. Both the Imperial County Airport (KIPL) and the El Centro NAF (KNJK) measured winds at or above (some in excess of) 25 mph on April 29, 2018 to May 1, 2018.

III Clear Causal Relationship – A demonstration that the event affected air quality illustrating the relationship between the event and the monitored exceedance

As mentioned above, a series of low-pressure systems moved across southern California April 29, 2018 through May 1, 2018 generating strong gusty westerly winds across the desert southwest. The NWS offices in San Diego and Phoenix, both, discussed the atmospheric pattern features resulting from a large trough of low-pressure off the coast of Northern California. However, the Phoenix office best described the series of events as follows:

> "…much drier air (PW~0.2 inches) from California is being ushered into the state. This is in response to the southwesterly flow aloft which is supported by an incoming trough of low pressure currently positioned over the Pacific Northwest…a series of short waves pinwheeling around this trough will move through our region. By late Sunday, the first shortwave will move through our region but is not expected to bring any precipitation as the system is relatively moisture starved. However, height falls will tighten surface pressure gradients and drive strong winds, mainly over SE California. Areas of blowing dust will be the major concern over much of SE California on Sunday and could make for particularly difficult travel near El Centro and along highway 78 and 86. Gusts 35-45 mph are expected over the area with speeds reaching 50 mph in windiest locations…Weaker, although sill breezy winds are expected for Monday as cooler air continues to filter into our CWA…By Tuesday, yet another system will move through our area. Strong winds look to be a near certainty for SE California yet again with gusts similar to what we are expecting for Sunday. Blowing dust will also likely cause an issue for travelers and create more air quality concerns. One difference with this system is that there is decent moisture advection out ahead of it. This will bring a chance of precipitation over our area Starting Tuesday evening."[8]

The weather systems brought a small amount of precipitation within the Coachella Valley, where Palm Springs measured 0.02 inches on Tuesday, May 1, 2018 as did Borrego Springs. Similarly, on Tuesday, May 1, 2018, the San Diego Mountain regions of Mount Laguna and Campo measured 0.06 inches. Finally, the El Centro NAF (KNJK) measured trace precipitation.[9]

While elevated wind speeds play a significant and important role in the transportation of dust, gusts and precipitation play an equally significant role in deposition of particulates onto a monitor and the overall affect onto ambient air.[10] As winds and gusts increased April 29, 2018 to May 1, 2018 and transported windblown dust from open natural mountains and deserts into Imperial County air quality degraded. As mentioned in

[8] National Weather Service, Area Forecast Discussion, Apr. 28, 2018, Phoenix office, 243pm MST
[9] National Weather Service, Quantitative Precipitation Forecast, May 1, 2018, San Diego office, 336pm PDT
[10] Gust is a rapid fluctuation of wind speed with variations of 10 knots or more between peaks and lulls; National Weather Service Glossary https://w1.weather.gov/glossary/index.php?letter=g

Section I.1 above, the ICAPCD issued an advisory of the potential for elevated particulate matter and the potential of degradation of air quality to a moderate or unhealthy level. In addition, the NWS service issued Area Forecast Discussions and sixteen (16) Urgent Weather Messages advising of the potential for advisory level winds and blowing dust. Finally, blowing dust was mentioned in NOAA's Satellite Smoke Text Product effective through 1830 PST April 29, 2018 (**Appendix C**).

Figures 3-1 to 3-3 below provide illustrations of some of the meteorological conditions, as described above and demonstrated in the HYSPLITs, for April 29, 2018 to May 1, 2018, which affected air quality in Imperial County causing an exceedance at the Brawley, Niland, and Westmorland monitors. As windblown dust emissions, generated within the natural open mountains within San Diego blew into and over natural open deserts within Imperil County air quality was affected by a significant amount of dust.

FIGURE 3-1
VISUAL RAMP-UP ANALYSIS AS DISCUSSED FOR APRIL 29, 2018

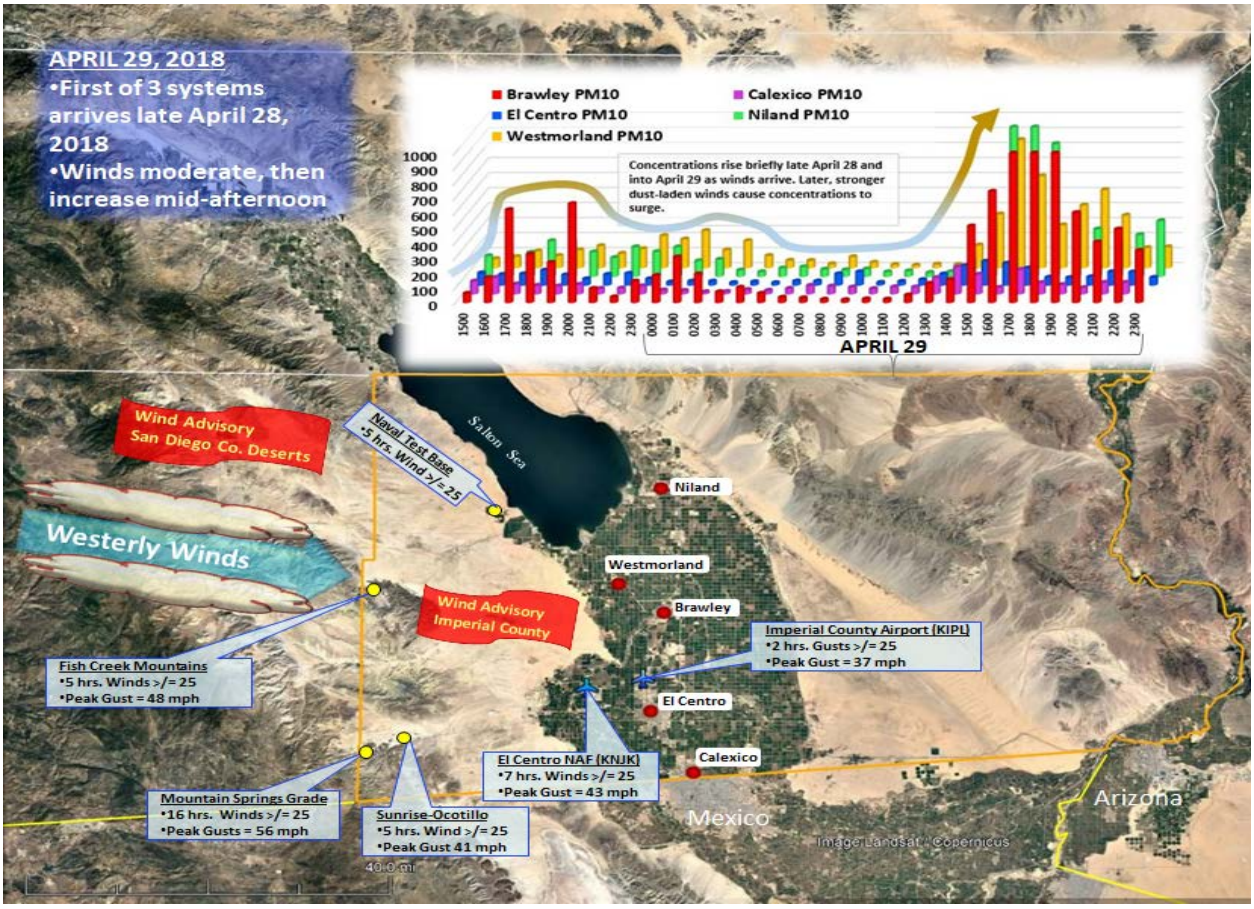


Fig 3-1: On April 29, 2018, a low-pressure system moved over the region and increased the onshore surface pressure gradient, creating strong gusty westerly winds. Transported windblown dust on April 29, 2018 ultimately caused an exceedance of the PM_{10} NAAQS at the Brawley, Niland, and Westmorland monitors. Google Earth base map

FIGURE 3-2
VISUAL RAMP-UP ANALYSIS AS DISCUSSED FOR APRIL 30, 2018

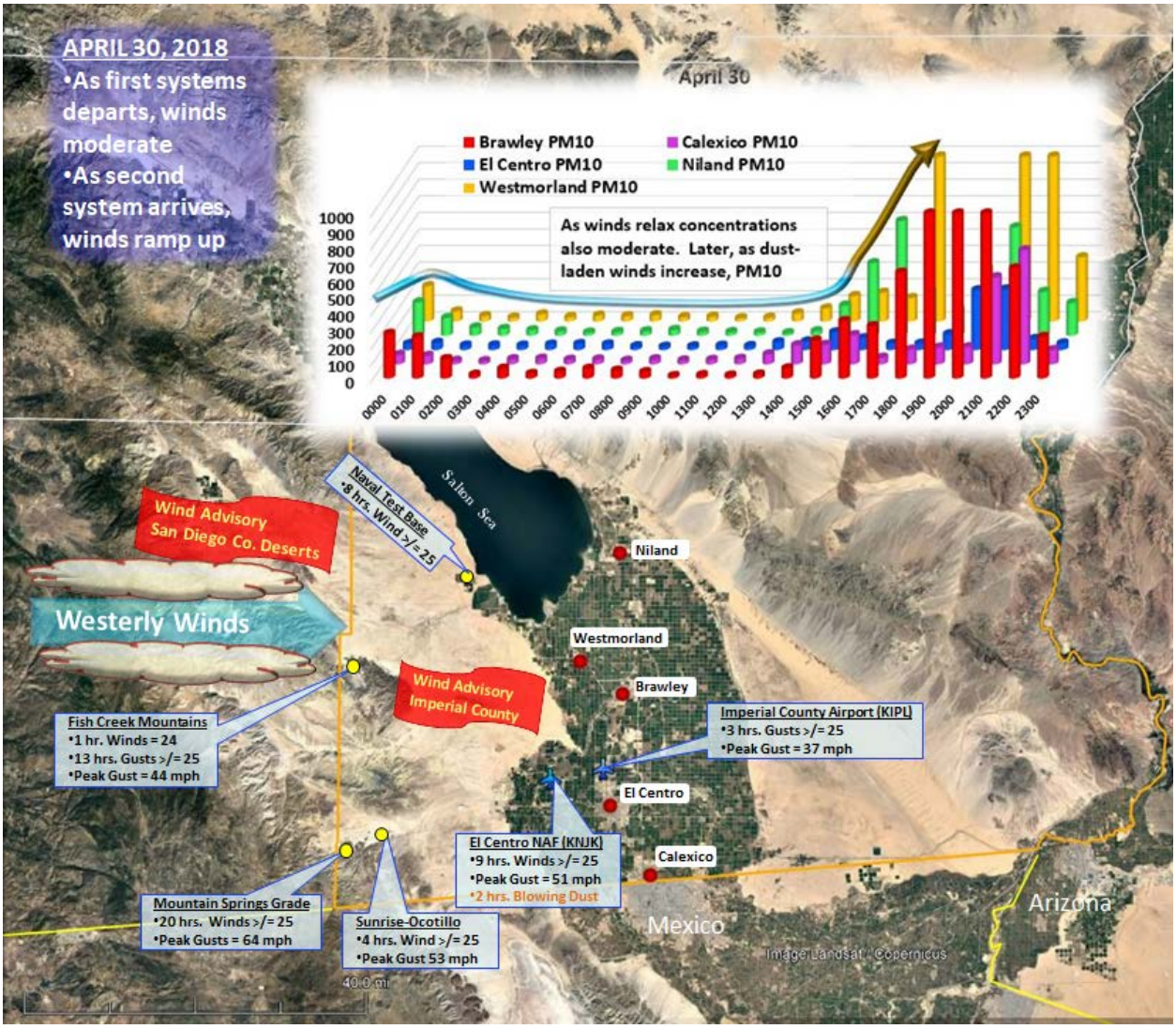


Fig 3-2: On April 30, 2018, the second of the three systems moved through the area. As the first system departed, winds relaxed and concentrations moderated. As transported windblown dust arrived during the afternoon of April 30, 2018 concentrations increased, ultimately causing an exceedance of the PM_{10} NAAQS at the Brawley, Niland, and Westmorland monitors. Google Earth base map

FIGURE 3-3
VISUAL RAMP-UP ANALYSIS AS DISCUSSED FOR MAY 1, 2018

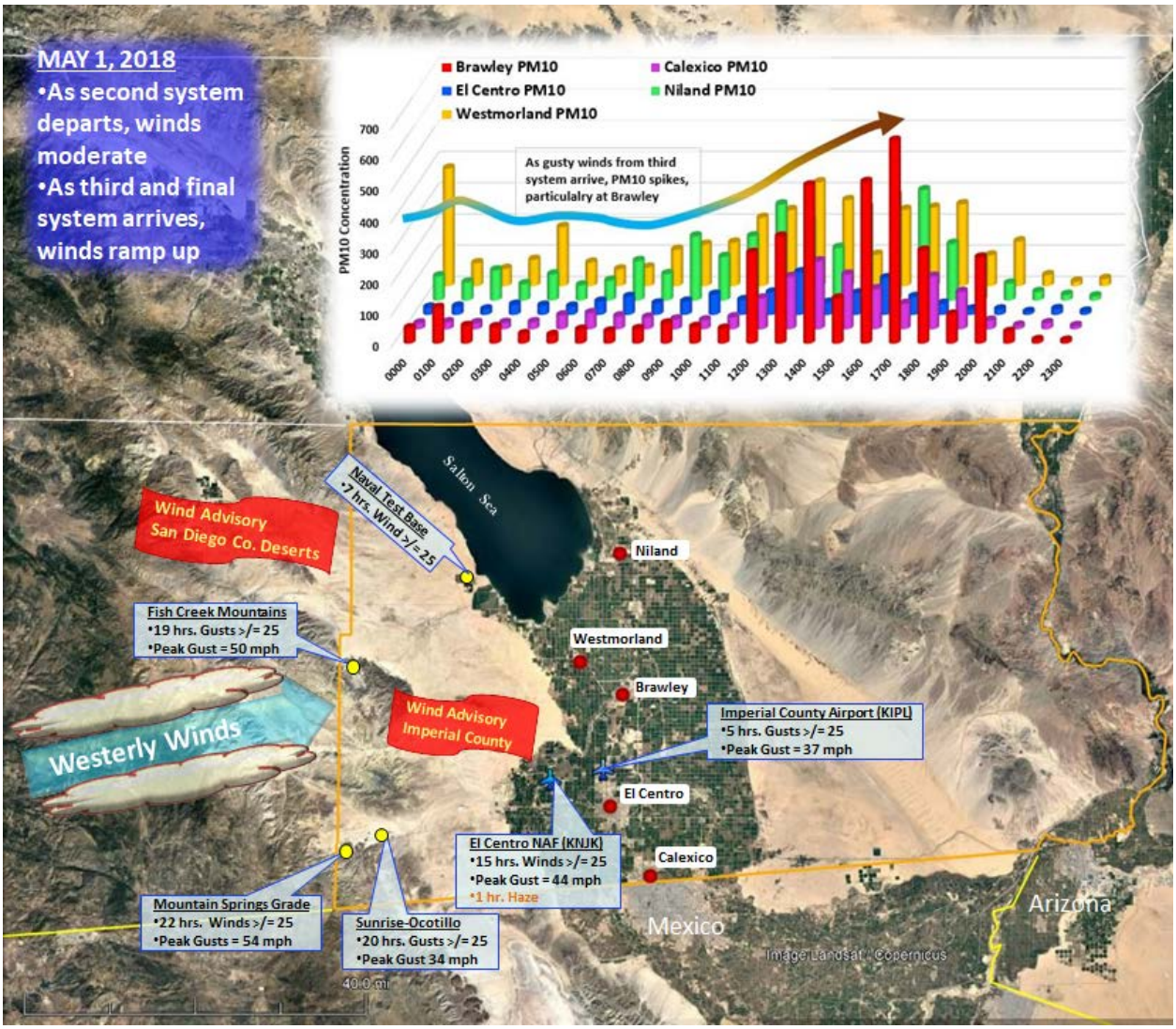


Fig 3-3: On May 1, 2018, the third of the three systems moved through the area. Southwesterly winds transported windblown dust during the afternoon of May 1, 2018 coincident with elevated concentrations, ultimately causing an exceedance of the PM_{10} NAAQS at the Brawley monitor. Google Earth base map

An indicator of the affect to air quality can be discerned from the level of visibility at any given time and day. While the ICAPCD air monitoring stations do not measure levels of visibility the local and surrounding airports do so.[11] The Imperial County Airport (KIPL),

[11] According to the NWS there is a difference between human visibility and the visibility measured by an Automated Surface Observing System (ASOS) or an Automated Weather Observing System (AWOS). The automated sensors measure clarity of the air vs. how far one can "see". The more moisture, dust, snow, rain, or particles in the light beam the more light scattered. The sensor measures the return every 30 seconds. The visibility value transmitted is the average 1-minute value from the past 10 minutes. The sensor samples only a small segment of the atmosphere, 0.75 feet. Therefore, a representative visibility utilizes an algorithm. Siting of the visibility

and the El Centro Naval Air Facility (KNJK) reported reduced visibility coincident with elevated wind speeds, wind gusts and elevated hourly concentrations of particulates at the Brawley, Westmorland and the Niland air quality monitors. **Figure 3-4** and **Tables 3-1 to 3-3** provide information regarding the reduced visibility in Imperial County and the relation to hourly concentrations at local air monitors.

While **Figure 3-4** is a graphical representation of the reduced visibility within Imperial County and surrounding areas, **Tables 3-1 to 3-3** provide a temporal relationship of wind speeds, wind direction, wind gusts (if available), and PM_{10} concentrations at the Brawley, Niland, and Westmorland monitors. Together, the data provides the supporting relationship between the elevated winds, blowing dust and reduced visibility.

According to the compiled information found in **Figure 3-4,** visibility reduced at the two major airports, the El Centro NAF (KNJK), and the Imperial County Airport (KIPL) on April 29, 2018 to May 1, 2018 coincident with elevated hourly concentrations at the air quality monitors in Imperial County.

FIGURE 3-4
72-HOUR TIME SERIES PM_{10} CONCENTRATIONS AND VISIBILITY

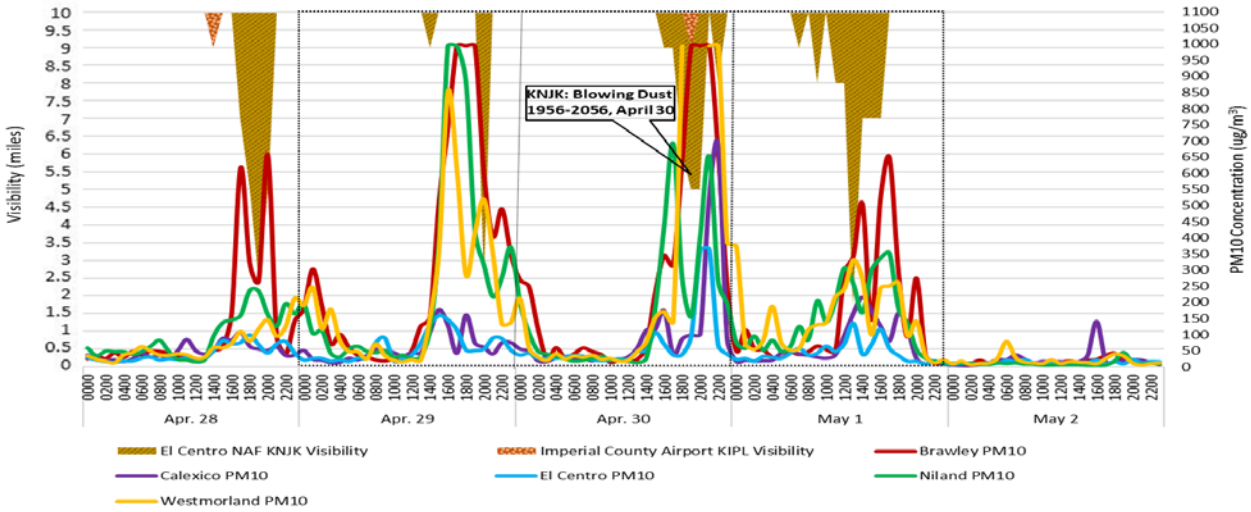


Fig 3-4: is a graphical representation of the compiled data from the Imperial County Airport (KIPL) and the El Centro NAF (KNJK). Reported reduced visibility is coincident with elevated winds and hourly levels of concentrations either just prior to peak concentrations or after. Visibility data from the NCEI's QCLCD data bank https://www.ncdc.noaa.gov/

sensor is critical and large areas should provide multiple sensors to provide a representative observation; http://www.nws.noaa.gov/asos/vsby.htm

Because the EPA accepts a high wind threshold for sustained winds of 25 mph in California and 12 other states[12] the **Tables 3-1 to 3-3** are provided in support of the relationship between the elevated winds and elevated concentrations. In each table the measured elevated concentrations of PM_{10} either follow or occur during periods of elevated winds or gusts. Each table has a select group of meteorological sites that compare the hourly winds with the closest measured hourly concentration at each of the exceeding monitors.

TABLE 3-1
WIND SPEEDS AND PM_{10} CONCENTRATIONS *APRIL 29, 2018

	MOUNTAIN SPRINGS GRADE (TNSC1)			SUNRISE-OCOTILL0 (IMPSD)			EL CENTRO NAF (KNJK)				IMPERIAL COUNTY AIRPORT (KIPL)			NAVAL TEST BASE		WSTMLD	BRLY	NLND	EC	CX
HOUR	W/S	W/G	W/D	W/S	W/G	W/D	W/S	W/G	W/D	OBS.	W/S	W/G	W/D	W/S	W/D	PM_{10} (ug/m^3)				
1500	24	39	232	15	24	260	25		240		20	30	250	20	263	60	61	137	81	89
1600	32	43	220	18	33	254	28		250		23	32	250	21	253	74	166	146	71	84
1700	29	45	209	16	34	255	32	40	250		25	33	250	23	253	111	618	160	75	109
1800	27	45	217	18	31	245	33	44	250	HZ	21	29	250	23	259	81	322	237	99	65
1900	33	50	216	26	38	246	37	46	260	HZ	23	31	260	21	265	119	267	235	68	56
2000	33	48	206	17	36	254	31		250	HZ	16	25	270	18	261	147	658	163	42	52
2100	36	49	206	13	24	256	25	33	250		21	36	260	20	263	96	93	126	71	63
2200	38	55	220	14	23	276	16		250		15	24	260	16	258	127	37	197	78	36
2300	36	54	211	10	20	268	16		270		7	21	310	21	281	214	142	165	42	38
000	32	52	214	12	27	314	15		260		16		290	18	269	191	180	196	21	52
100	38	53	208	10	24	291	11		250		10		280	21	263	247	303	104	26	25
200	36	53	207	15	28	268	10		290		7		320	21	272	119	190	114	26	22
300	38	56	204	16	31	267	18		270		7		340	19	273	180	71	42	17	14
400	32	50	207	13	28	259	25	34	280		15		280	18	274	81	101	31	22	15
500	29	42	211	22	33	246	22		270		10		300	15	271	49	61	56	16	28
600	33	43	219	23	31	235	17		270		10		280	12	300	48	35	64	27	23
700	34	45	221	19	32	250	16		260		16	21	280	11	332	26	31	48	27	36
800	23	42	221	23	32	237	23		270		14		260	13	338	73	21	44	75	56
900	19	36	198	20	30	238	17		260		11		270	10	354	36	18	50	89	51
1000	21	34	231	19	26	238	11	17	250		11		260	8	8	22	24	31	18	45
1100	22	39	241	17	28	251	14		260		13		260	7	56	17	22	37	25	34
1200	20	36	258	25	34	235	21	30	240		20	31	260	9	53	24	50	26	36	46
1300	20	33	245	20	30	249	23	30	250		22	34	250	9	39	22	127	32	74	45
1400	24	45	245	21	33	247	33	39	250		23	37	250	17	286	151	153	115	129	108
1500	24	43	241	21	35	252	30	37	240		26	36	250	24	270	358	509	387	159	178
1600	32	48	228	19	32	253	26		250		20	31	260	27	260	853	740	995	146	130
1700	31	53	223	23	36	250	25		250		21		260	27	256	612	995	995	114	43
1800	35	52	227	25	39	248	28	34	260		21	28	260	27	253	285	995	884	52	162
1900	38	54	224	17	33	265	22	30	260		25	36	270	27	259	417	995	422	50	75
2000	34	50	221	25	41	238	32	43	270		22	31	280	27	259	520	599	316	55	62
2100	33	52	224	27	41	238	20	31	270		21		280	24	258	350	403	217	89	41
2200	37	50	210	24	38	236	18	31	280		10		270	22	254	134	489	278	87	76
2300	37	55	209	28	37	234	13		280		6		310	21	257	139	347	371	51	76

*Dates in **Blue** represent April 28, 2018. Wind data for KIPL and KNJK from the NCEI's QCLCD system. Wind data for Mountain Springs Grade (TNSC1) and Sunrise-Ocotillo (IMPSD) from the University of Utah's MesoWest system https://mesowest.utah.edu/index.html. Naval Test Base from AQMIS2. Wind speeds = mph; Direction = degrees. **HZ**= Haze, **BLDU** = blowing dust. Due to the different times that wind data and air quality data is sampled at various sites, the hour given represents the hour in which the measurement was taken

[12] "Treatment of Data Influenced by Exceptional Events; Final Guidance", FR Vol. 81, No. 191, 68279, October 3, 2016

TABLE 3-2
WIND SPEEDS AND PM_{10} CONCENTRATIONS APRIL 30, 2018

	MOUNTAIN SPRINGS GRADE (TNSC1)			SUNRISE-OCOTILL0 (IMPSD)			EL CENTRO NAF (KNJK)				IMPERIAL COUNTY AIRPORT (KIPL)			NAVAL TEST BASE		WSTMLD	BRLY	NLND	EC	CX
HOUR	W/S	W/G	W/D	W/S	W/G	W/D	W/S	W/G	W/D	OBS.	W/S	W/G	W/D	W/S	W/D	PM_{10} (ug/m^3)				
000	40	56	211	23	34	239	23	28	260		7		260	23	270	213	269	200	36	56
100	44	58	204	24	34	248	18		280		11		290	23	271	60	248	106	42	50
200	37	64	209	20	29	248	14		290		11		280	19	264	32	117	49	26	20
300	29	53	218	24	34	241	23		260		11		270	17	268	22	22	40	27	18
400	33	46	206	21	32	245	22		270		15		290	18	275	42	59	32	26	30
500	34	52	205	16	30	246	16		260		7		280	13	291	26	27	25	32	33
600	33	50	207	18	28	240	18		270		13		270	6	289	35	40	18	35	26
700	33	48	216	15	27	241	17		260		14		270	5	266	31	58	21	33	28
800	33	46	207	15	23	244	15	24	270		13		280	4	351	37	47	26	22	20
900	28	47	209	20	27	237	13	18	260		8		300	9	308	25	38	34	19	29
1000	20	40	239	19	28	240	20		250		11		270	8	290	28	14	23	21	22
1100	15	34	227	17	26	245	18	28	240		13	20	250	8	262	19	20	21	25	25
1200	18	34	232	18	27	235	20		240		17		260	6	249	22	17	19	23	32
1300	29	44	214	18	30	244	25		240		18	30	250	6	244	48	23	14	46	59
1400	24	40	253	18	35	255	26		240		20	30	260	9	249	78	61	26	51	114
1500	30	44	241	23	35	246	31	39	240		26	32	240	18	266	153	228	181	106	117
1600	34	57	227	19	32	248	28		260		21	29	250	25	262	173	346	437	70	175
1700	34	51	208	17	30	268	25	34	260		16	25	270	27	272	141	315	692	37	39
1800	37	57	207	32	45	240	31	40	280		16	29	280	25	264	995	638	274	38	87
1900	33	53	211	20	38	258	40	51	270	BLDU	26	37	280	26	269		995	156	95	100
2000	36	54	220	18	36	257	22		260	BLDU	25	33	270	27	265		995	404	360	102
2100	38	58	218	25	53	275	21		260		21	26	270	25	255	995	995	653	365	524
2200	33	51	214	26	43	273	31	38	260		22	28	280	27	258	995	664	264	66	687
2300	37	52	219	31	48	279	25	36	260		17	31	270	25	258	387	250	196	39	85

Wind data for KIPL and KNJK from the NCEI's QCLCD system. Wind data for Mountain Springs Grade (TNSC1) and Sunrise-Ocotillo (IMPSD) from the University of Utah's MesoWest system https://mesowest.utah.edu/index.html. Naval Test Base from AQMIS2. Wind speeds = mph; Direction = degrees. **HZ**= Haze, **BLDU** = blowing dust. Due to the different times that wind data and air quality data is sampled at various sites, the hour given represents the hour in which the measurement was taken

TABLE 3-3
WIND SPEEDS AND PM_{10} CONCENTRATIONS MAY 1, 2018

	MOUNTAIN SPRINGS GRADE (TNSC1)			SUNRISE-OCOTILL0 (IMPSD)			EL CENTRO NAF (KNJK)				IMPERIAL COUNTY AIRPORT (KIPL)			NAVAL TEST BASE		WSTMLD	BRLY	NLND	EC	CX
HOUR	W/S	W/G	W/D	W/S	W/G	W/D	W/S	W/G	W/D	OBS.	W/S	W/G	W/D	W/S	W/D	PM_{10} (ug/m^3)				
000	35	53	219	11	29	271	25		270		14		280	22	258	376	49	77	23	18
100	35	54	219	23	37	282	25		250		16		290	18	264	73	114	57	26	22
200	31	48	213	17	30	269	23		260		21	29	260	18	259	55	56	96	17	19
300	31	52	209	10	21	252	29		270		17	23	270	20	257	84	52	52	32	20
400	24	52	211	8	20	284	15		250		17		270	24	264	189	30	83	29	22
500	31	46	220	19	29	249	24		260		21	26	260	23	264	75	27	48	26	44
600	27	48	212	19	27	245	22	30	250		24	32	260	23	267	53	44	63	42	51
700	30	44	203	20	29	240	30		260		23	30	260	22	265	59	38	126	57	41
800	28	44	220	19	31	243	28		260		21	29	260	21	270	116	46	84	36	37
900	30	48	209	20	29	245	30	36	270		23	30	260	23	268	132	64	205	42	31
1000	33	49	213	16	28	247	22	34	260		20	29	270	24	268	139	53	139	64	28
1100	30	47	222	18	31	240	28		280		26	33	280	23	271	218	47	205	47	38
1200	29	44	225	18	28	238	30	38	270		25	32	270	26	277	243	290	307	71	98
1300	31	48	219	14	29	263	36	44	270	HZ	23	34	270	25	267	332	342	258	136	167
1400	35	53	219	20	34	250	34	39	260		25	34	270	24	268	275	506	168	39	217
1500	30	49	211	19	34	264	30	39	270		26	37	260	25	267	100	144	298	68	175
1600	28	47	222	16	28	256	30	40	270		23	37	260	25	270	244	517	336	117	128
1700	26	47	224	13	24	259	31	36	260		28	36	270	26	267	251	649	353	57	81
1800	28	43	224	14	25	257	25		270		20	29	270	26	263	262	297	181	35	168
1900	30	49	224	14	29	266	26	37	270		22	31	280	25	259	98	92	137	17	119
2000	30	44	219	14	29	254	17		280		11		290	22	256	143	275	54	17	27
2100	28	42	216	17	29	251	21		270		15	23	280	20	262	35	37	27	9	11
2200	25	38	213	18	28	277	24	34	260		20	28	270	17	262	14	11	18	18	19
2300	24	40	221	10	18	268	21		260		15		270	15	258	23	9	13	10	10

Wind data for KIPL and KNJK from the NCEI's QCLCD system. Wind data for Mountain Springs Grade (TNSC1) and Sunrise-Ocotillo (IMPSD) from the University of Utah's MesoWest system https://mesowest.utah.edu/index.html. Naval Test Base from AQMIS2. Wind speeds = mph; Direction = degrees. **HZ**= Haze, **BLDU** = blowing dust. Due to the different times that wind data and air quality data is sampled at various sites, the hour given represents the hour in which the measurement was taken

As mentioned above, Area Forecast Discussions and Urgent Weather Messages containing a Wind Advisory described the gusty westerly winds for the region extending from the San Diego County Mountains and deserts, Imperial County and western Arizona. The weather disturbances passing through the area April 29, 2018 to May 1, 2018 created strong westerly winds that affected different regional air monitors in Riverside County, Imperial County and Arizona (**Table 2-1**).

The ICAPCD monitors air quality for each of its stations and issues web-based Air Quality Indices in response to changes in air quality.[13] As transported windblown dust entered Imperial County on April 29, 2018 through May 1, 2018, air quality degraded in Imperial

[13] The AQI is an index for reporting daily air quality. It tells you how clean or polluted your air is, and what associated health effects might be a concern for you. The AQI focuses on health affects you may experience within a few hours or days after breathing polluted air. EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particle pollution (also known as particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, EPA has established national air quality standards to protect public health. Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in this country. Source: https://airnow.gov/index.cfm?action=aqibasics.aqi

County. Overall, the strong gusty westerly winds associated with the low-pressure system affected air quality in Imperial County.

FIGURE 3-5
IMPERIAL VALLEY AIR QUALITY INDEX FOR BRAWLEY
APRIL 29, 2018

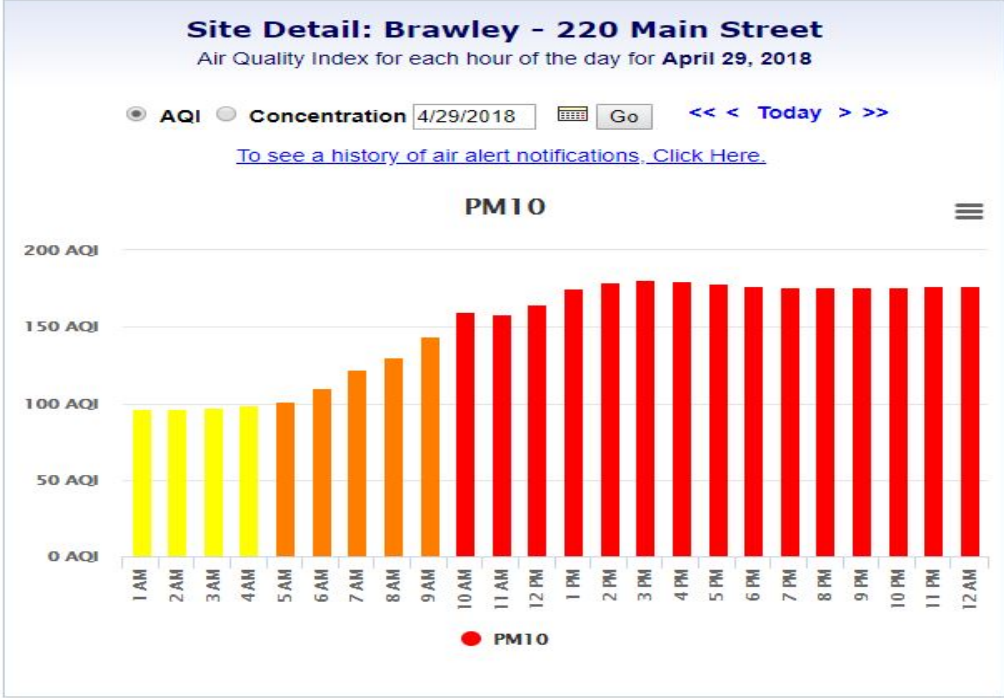


Fig 3-5: The degradation, or affect upon air quality, maybe determined when the AQI changes from a "Yellow" or Moderate level to a "Red" or Unhealthy level

FIGURE 3-6
IMPERIAL VALLEY AIR QUALITY INDEX FOR NILAND
APRIL 29, 2018

Fig 3-6: The degradation, or affect upon air quality, maybe determined when the AQI changes from a "Yellow" or Moderate level to a "Orange" or Unhealthy for Sensitive Groups

FIGURE 3-7
IMPERIAL VALLEY AIR QUALITY INDEX FOR WESTMORLAND
APRIL 29, 2018

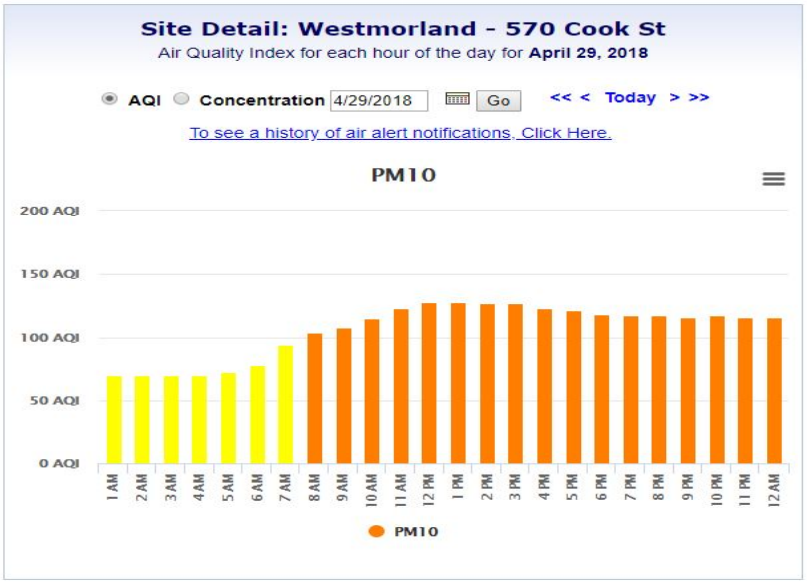


Fig 3-7: The degradation, or affect upon air quality, maybe determined when the AQI changes from a "Yellow" or Moderate level to a "Orange" or Unhealthy for Sensitive Groups

FIGURE 3-8
IMPERIAL VALLEY AIR QUALITY INDEX FOR BRAWLEY
APRIL 30, 2018

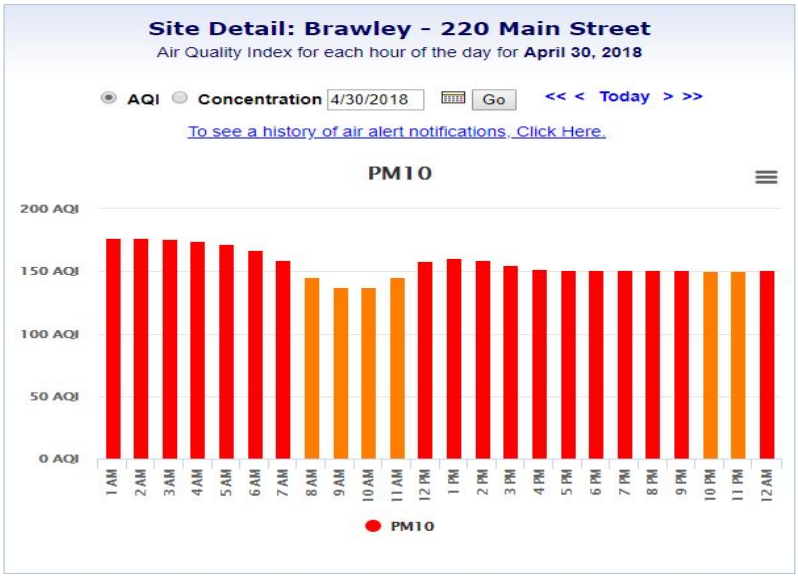


Fig 3-8: The degradation, or affect upon air quality, maybe determined when the AQI changes to "Red" or Unhealthy level

FIGURE 3-9
IMPERIAL VALLEY AIR QUALITY INDEX FOR NILAND
APRIL 30, 2018

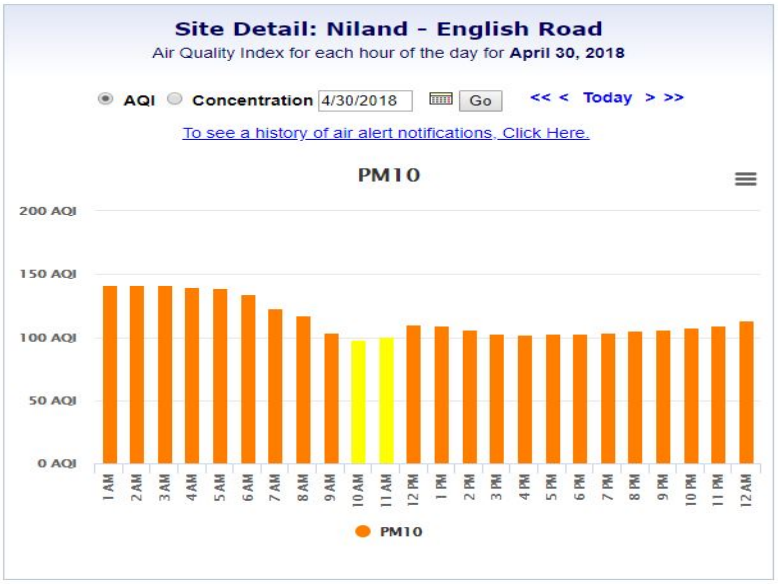


Fig 3-9: The degradation, or affect upon air quality, maybe determined when the AQI changes to a "Orange" or Unhealthy for Sensitive Groups

FIGURE 3-10
IMPERIAL VALLEY AIR QUALITY INDEX FOR WESTMORLAND
APRIL 30, 2018

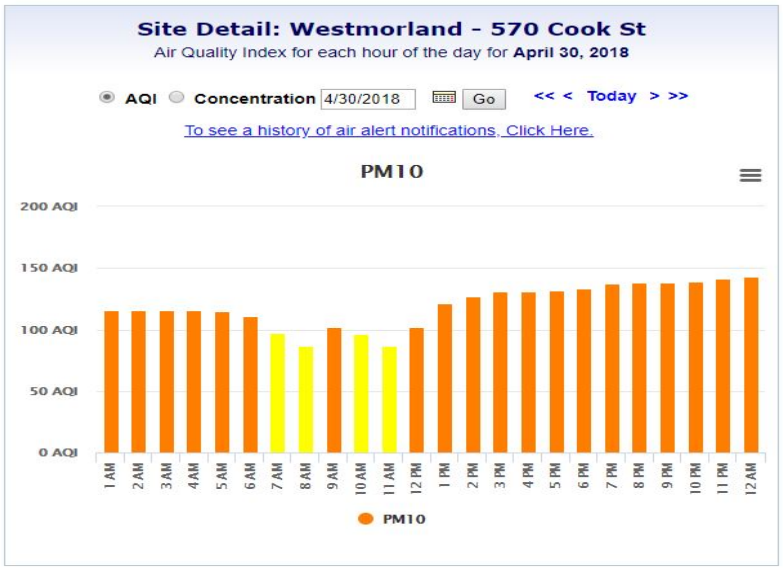


Fig 3-10: The degradation, or affect upon air quality, maybe determined when the AQI changes to a "Orange" or Unhealthy for Sensitive Groups

FIGURE 3-11
IMPERIAL VALLEY AIR QUALITY INDEX FOR BRAWLEY
MAY 1, 2018

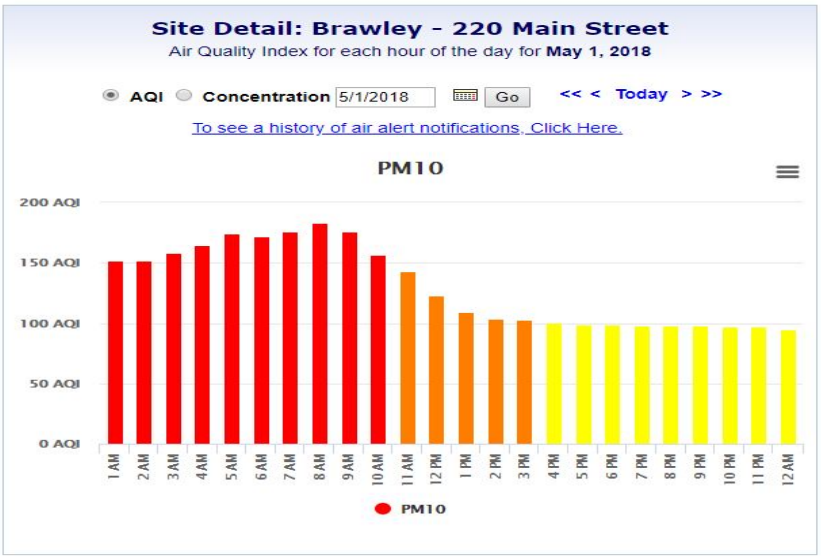


Fig 3-11: The degradation, or affect upon air quality, maybe determined when the AQI changes to "Red" or Unhealthy level

III.1 Summary of Forecasts and Warnings

Area Forecast Discussion issued by the NWS offices in Phoenix and San Diego described a series of Pacific low-pressure systems that moved inland and east towards Arizona April 29, 2018 to May 1, 2018. Both NWS offices issued several Area Forecast Discussions anticipating gusty westerly winds through the region April 29, 2018 to May 1, 2018. The magnitude of the winds caused the NWS offices to issue sixteen (16) Urgent Weather Messages, advising of advisory level winds within the San Diego Mountains and deserts and Imperial County. **Appendix A** contains all pertinent NWS notices

III.2 Summary of Wind Observations

As demonstrated above wind data during the event were available from airports in eastern Riverside County, southeastern San Diego County, southwestern Yuma County (Arizona), northern Mexico, and Imperial County as well as from other automated meteorological instruments upwind from the monitors. Data analysis indicates that on April 29, 2018 to May 1, 2018 different sites measured wind speeds at or above (and some far in excess of) 25 mph.

IV Concentration to Concentration Analysis – An analyses comparing the event-influenced concentrations to concentrations at the same monitoring site at other times

While naturally occurring high wind events may recur seasonally and at times frequently and qualify for exclusion under the EER, historical comparisons of the particulate concentrations and associated winds provide insight into the frequency of events within an identified area.

Figures 4-1 through 4-6 show the time series of available FRM and BAM 24-hr PM_{10} concentrations at the Westmorland and Niland air quality monitors for the period of January 1, 2010 through April 30, 2018 and at the Brawley monitor for the period of January 1, 2010 through May 1, 2018. The compiled data set below includes non-regulatory data prior to 2013. As a consequence, continuous monitoring data (hourly concentrations) prior to 2013 were not reported into the US EPA Air Quality System (AQS).[14] The difference between the standard and local condition concentrations is not significant enough to change the outcome of the analysis.

Compiled and plotted 24-hour averaged PM_{10} concentrations, between January 1, 2010 and May 1, 2018 as measured by the Brawley, Westmorland and Niland monitors, were used to establish the historical and seasonal variability over time.[15] All figures illustrate that the exceedances, which occurred on April 29, 2018, April 30, 2018 and May 1, 2018, were outside the normal historical concentrations when compared to event and non-event days. Air quality data for all graphs obtained through the EPA's AQS data bank.

[14] Pollutant concentration data contained in EPA's Air Quality System (AQS) are required to be reported in units corrected to standard temperature and pressure (25 C, 760 mm Hg). Because the PM_{10} concentrations prior to 2013 were not reported into the AQS database all BAM (FEM) data prior to 2013 within this report are expressed as micrograms per cubic meter (mg/m^3) at local temperature and pressure (LTP) as opposed to standard temperature and pressure (STP 760torr and 25C). The difference in concentration measurements between standard conditions and local conditions is insignificant and does not alter or cause any significant changes in conclusions to comparisons of PM_{10} concentrations to PM_{10} concentrations with in this demonstration.

[15] FRM sampling ended December 2016.

FIGURE 4-1
BRAWLEY HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO MAY 1, 2018

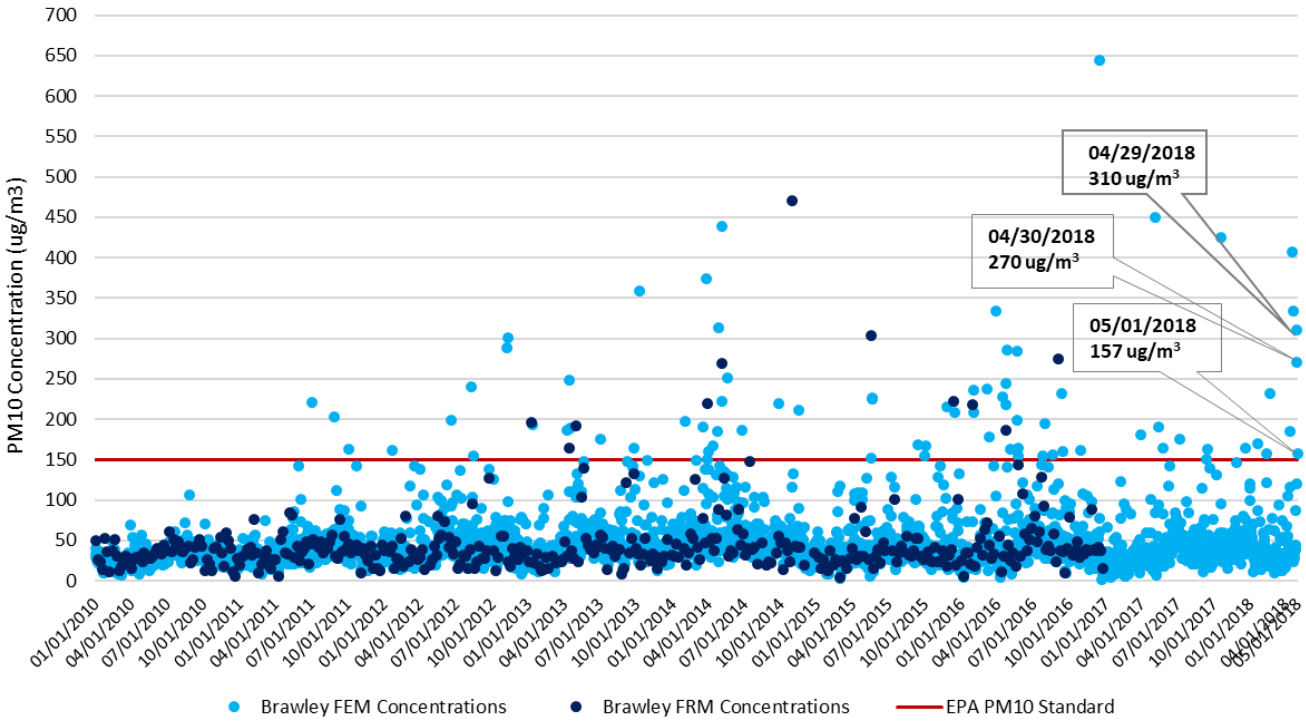


Fig 4-1: A comparison of PM_{10} historical concentrations demonstrates that the measured concentrations of 310 µg/m^3, 270 µg/m^3, and 157 µg/m^3 on April 29, 2018, April 30, 2018 and May 1, 2018, respectively, by the Brawley monitor was outside the normal historical concentrations when compared to similar event days and non-event days

The time series, **Figure 4-1,** for Brawley includes 3,043 sampling days (January 1, 2010 through May 1, 2018). Of the 3,043 sampling days the Brawley monitor measured 76 exceedance days which translates an occurrence rate less than 2.5%. Historically, there were fourteen (14) exceedance days measured during the first quarter; thirty-three (33) exceedance days measured during the second quarter; sixteen (16) exceedance days measured during the third quarter; and thirteen (13) during the fourth quarter.

FIGURE 4-2
NILAND HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO APRIL 30, 2018

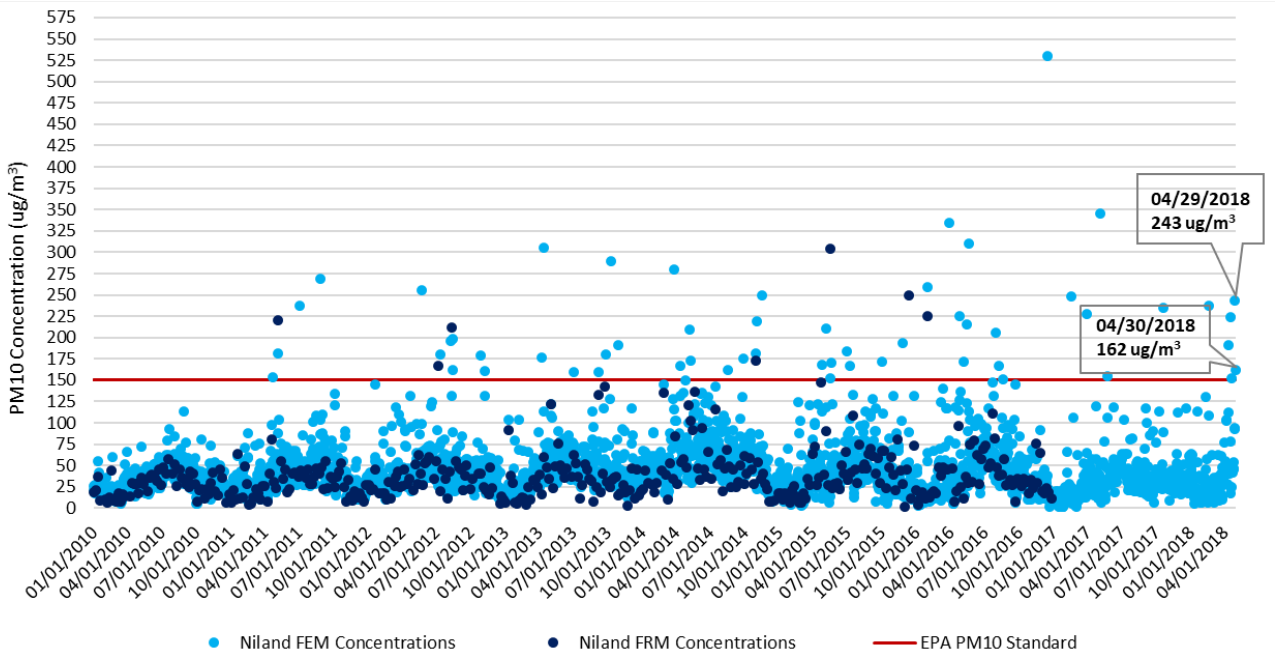


Fig 4-2: A comparison of PM_{10} historical concentrations demonstrates that the measured concentrations of 243 µg/m^3 and 162 µg/m^3 on April 29, 2018 and April 30, 2018, respectively, by the Niland monitor was outside the normal historical concentrations when compared to similar event days and non-event days

The time series, **Figure 4-2,** for Niland includes 3,042 sampling days (January 1, 2010 through April 30, 2018). Of the 3,042 sampling days the Niland monitor measured 55 exceedance days which translates an occurrence rate less than 2%. Historically, there were six (6) exceedance days measured during the first quarter; twenty-two (22) exceedance days measured during the second quarter; fifteen (15) exceedance days measured during the third quarter; and twelve (12) exceedance days measured during the fourth quarter.

FIGURE 4-3
WESTMORLAND HISTORICAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
JANUARY 1, 2010 TO APRIL 30, 2018

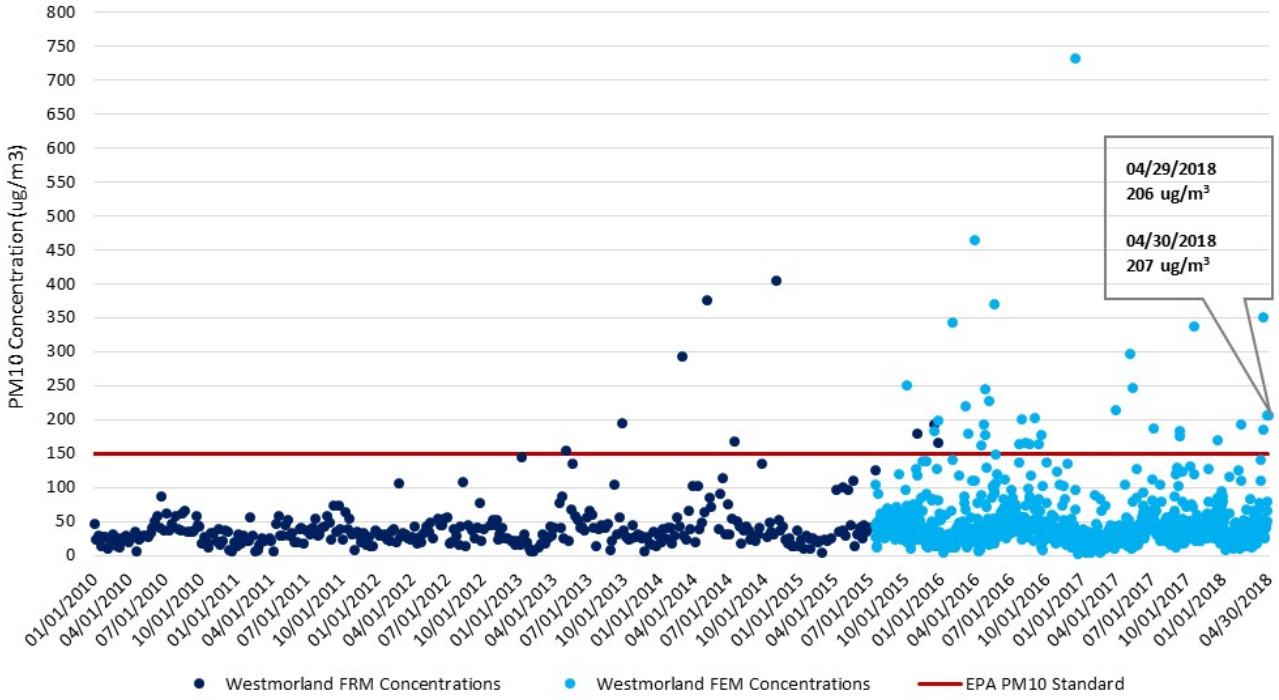
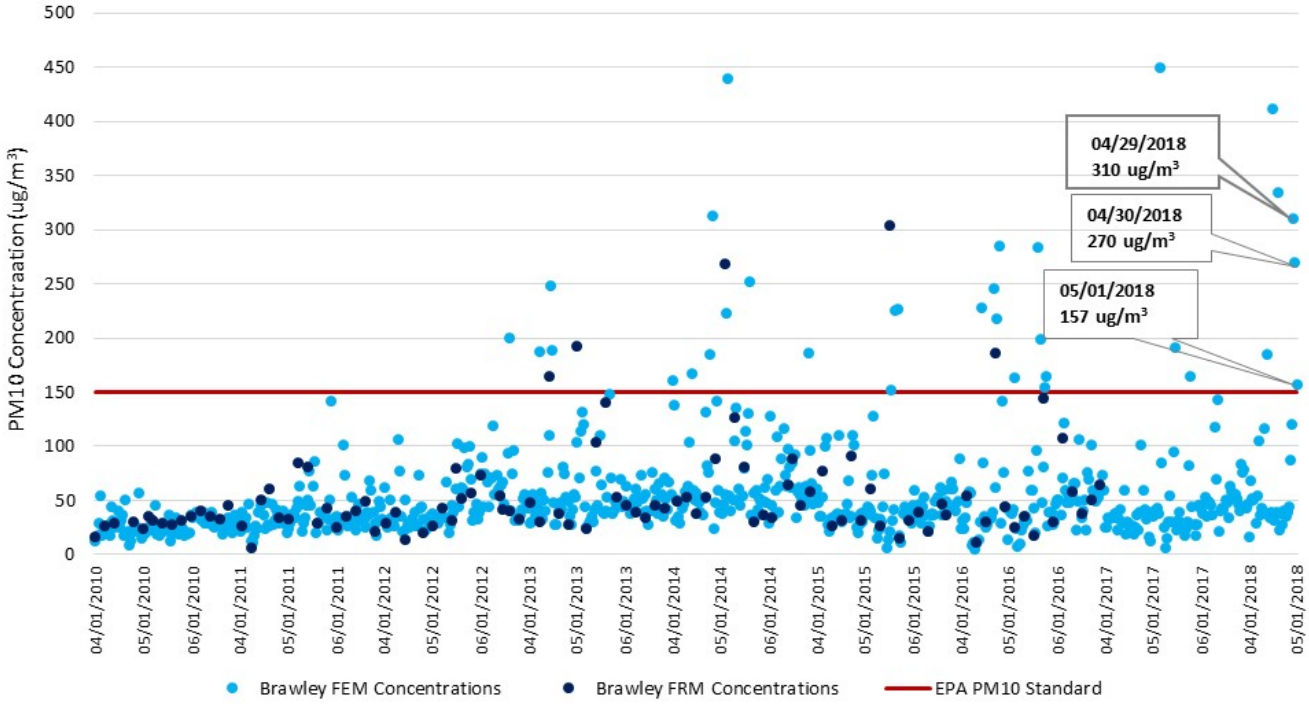


Fig 4-3: A comparison of PM_{10} historical concentrations demonstrates that the measured concentrations of 206 µg/m^3 and 207 µg/m^3 on April 29, 2018 and April 30, 2018, respectively, by the Westmorland monitor was outside the normal historical concentrations when compared to similar event days and non-event days

The time series, **Figure 4-3,** for Westmorland includes 1,371 sampling days (January 1, 2010 through April 30, 2018). Of the 1,371 sampling days the Westmorland monitor measured 41 exceedance days which translates into an occurrence rate less than 3%. Historically, there were seven (7) exceedance days measured during the first quarter; 14 (fourteen) exceedance days measured during the second quarter; twelve (12) exceedance days measured during the third quarter; and eight (8) exceedance days measured during the fourth quarter.

FIGURE 4-4
BRAWLEY SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO MAY 1, 2018**

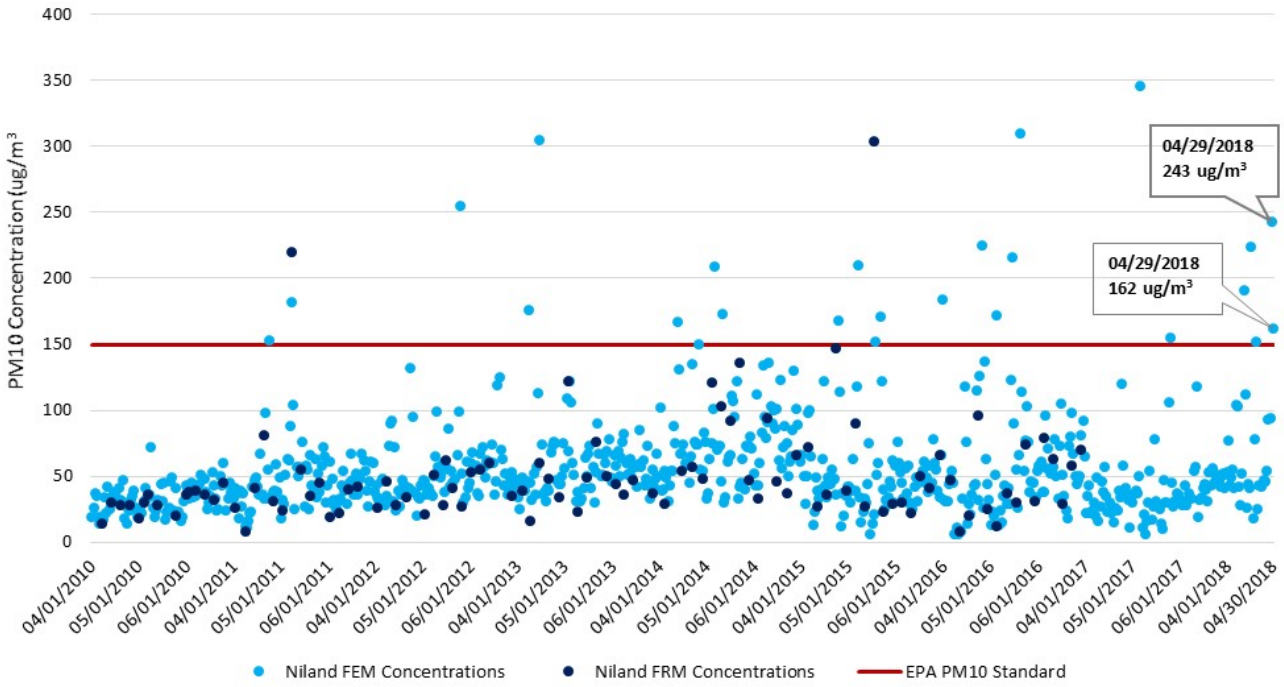


***Quarterly: April 1, 2010 to June 30, 2017 and April 1, 2018 to May 1, 2018**

Fig 4-4: A comparison of PM_{10} seasonal concentrations demonstrate that the measured concentrations of 310 µg/m^3, 270 µg/m^3, and 157 µg/m^3 on April 29, 2018, April 30, 2018, respectively, and May 1, 2018 was outside the normal seasonal concentrations when compared to similar days and non-event days

Figure 4-4 illustrates the seasonal fluctuations over a period of 759 sampling days, 862 credible samples and thirty-three (33) exceedance days. This translates to less than a 1.5% seasonal exceedance occurrence rate.

FIGURE 4-5
NILAND SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO APRIL 30, 2018**

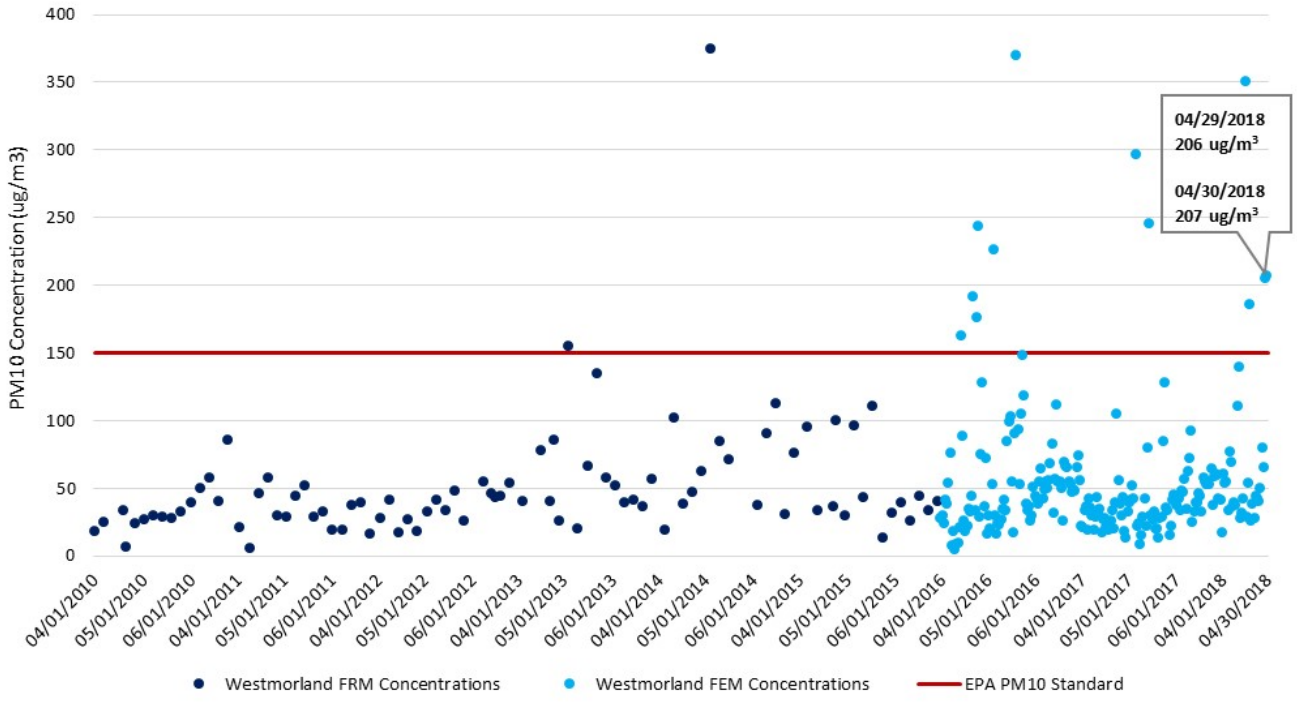


***Quarterly: April 1, 2010 to June 30, 2017 and April 1, 2018 to May 1, 2018**

Fig 4-5: A comparison of PM_{10} seasonal concentrations demonstrate that the measured concentrations of 243 µg/m^3 and 162 µg/m^3 on April 29, 2018 and April 30, 2018, respectively, by the Niland monitor was outside the normal seasonal concentrations when compared to similar days and non-event days.

Figure 4-5 illustrates the seasonal fluctuations over a period of 758 sampling days, 858 credible samples and 22 exceedance days. This translates to less than a 2.5% seasonal exceedance occurrence rate.

FIGURE 4-6
WESTMORLAND SEASONAL COMPARISON
FRM AND FEM PM_{10} 24-HR AVG CONCENTRATIONS
***APRIL 1, 2010 TO APRIL 30, 2018**



***Quarterly: April 1, 2010 to June 30, 2017 and April 1, 2018 to May 1, 2018**

Fig 4-6: A comparison of PM_{10} historical concentrations demonstrates that the measured concentrations of 206 µg/m^3 and 207 µg/m^3 on April 29, 2018 and April 30, 2018, respectively, by the Westmorland monitor was outside the normal seasonal concentrations when compared to similar days and non-event days

Figure 4-6 illustrates the seasonal fluctuations over a period of 307 sampling days, 300 credible samples and fourteen (14) exceedance days. This translates to less than a 4.6% seasonal exceedance occurrence rate.

Examining the historical and seasonal time series concentrations as they relate to the April 29, 2018 to May 1, 2018 measured exceedances, the exceedances measured on April 29, 2018 to May 1, 2018 are clearly outside the normal concentration levels when comparing to similar event days and non-event days.

V Both Not Reasonably Controllable and Not Reasonably Preventable – A demonstration that the event was both not reasonably controllable and not reasonably preventable

The analysis above, under the Clear Causal Relationship, indicates that the primary sources affecting air quality in Imperial County originated within the natural open areas of the San Diego Mountains and the natural open deserts to the west and southwest of Imperial County. The origination of these emissions from these areas affected all the air quality monitors significantly April 29, 2018 to May 1, 2018. Since Imperial County does not have jurisdiction over emissions emanating from San Diego County, it is not reasonably controllable or preventable by Imperial County. For a brief description of the controls implemented by sources beyond the control of Imperial County see section V.1 below.

As mentioned above in section I.4, Mitigation of Exceptional Events contains significant information regarding the application of Best Available Control Measures that are used as measures to abate or minimize contributing controllable sources of identified pollutants (**Page 12, sub-section II.2 of the High Wind Mitigation Plan**). In addition, the mitigation plan explains the methods utilized to minimize public exposure to high concentrations of identified pollutants, the process utilized to collect and maintain data pertinent to any identified event, and the mechanisms utilized to consult with other air quality managers within the affected area regarding the appropriate responses to abate and minimize affects.

Inhalable particulate matter (PM_{10}) contributes to effects that are harmful to human health and the environment, including premature mortality, aggravation of respiratory and cardiovascular disease, decreased lung function, visibility impairment, and damage to vegetation and ecosystems. Upon enactment of the 1990 Clean Air Act (CAA) amendments, Imperial County was classified as moderate nonattainment for the PM_{10} NAAQS under CAA sections 107(d)(4)(B) and 188(a). By November 15, 1991, such areas were required to develop and submit State Implementation Plan (SIP) revisions providing for, among other things, implementation of reasonably available control measures (RACM).

Partly to address the RACM requirement, ICAPCD adopted local Regulation VIII rules to control PM_{10} from sources of fugitive dust on October 10, 1994, and revised them on November 25, 1996. USEPA did not act on these versions of the rules with respect to the federally enforceable SIP.

On August 11, 2004, USEPA reclassified Imperial County as a serious nonattainment area for PM_{10}. As a result, CAA section 189(b)(1)(B) required all BACM to be implemented in the area within four years of the effective date of the reclassification, i.e., by September 10, 2008.

On November 8, 2005, partly to address the BACM requirement, ICAPCD revised the Regulation VIII rules to strengthen fugitive dust requirements. On July 8, 2010, USEPA finalized a limited approval of the 2005 version of Regulation VIII, finding that the seven Regulation VIII rules largely fulfilled the relevant CAA requirements. Simultaneously, USEPA also finalized a limited disapproval of several of the rules, identifying specific deficiencies that needed to be addressed to fully demonstrate compliance with CAA requirements regarding BACM and enforceability.

In September 2010, ICAPCD and the California Department of Parks and Recreation (DPR) filed petitions with the Ninth Circuit Federal Court of Appeals for review of USEPA's limited disapproval of the rules. After hearing oral argument on February 15, 2012, the Ninth Circuit directed the parties to consider mediation before rendering a decision on the litigation. On July 27, 2012, ICAPCD, DPR and USEPA reached agreement on a resolution to the dispute, which included a set of specific revisions to Regulation VIII. The October 16, 2012 adopted revision reflects the specific revisions to Regulation VIII, which USEPA approved on April 22, 2013. Since 2006, ICAPCD had implemented regulatory measures to control emissions from fugitive dust sources and open burning in Imperial County.

FIGURE 5-1
REGULATION VIII GRAPHIC TIMELINE DEVELOPMENT

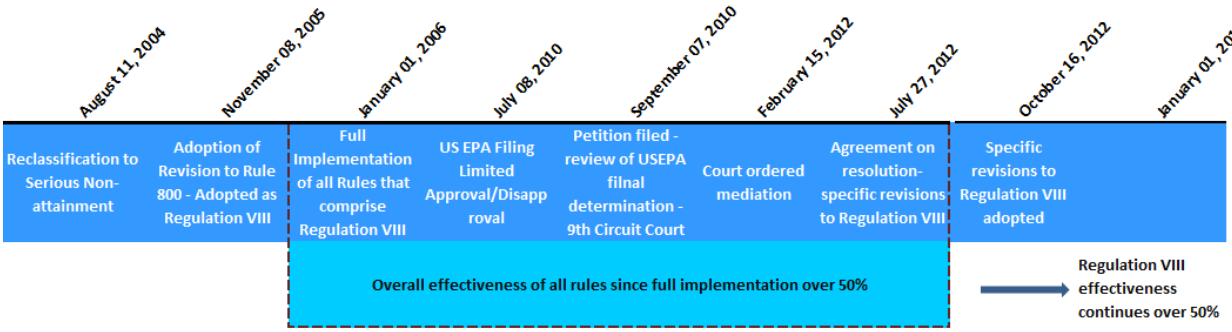


Fig 5-1: Regulation VIII Graphic Timeline

V.1 Other PM_{10} Control Measures

In addition to the rules and regulations listed above, other PM_{10} control measures have been committed to, and implemented by, local California air districts bordering ICAPCD. San Diego County (to the west of Imperial County) and eastern Riverside County (outside

of the Coachella Valley Planning Area and to the north and northeast of Imperial County) are both designated unclassified for the PM_{10} NAAQS and are not required to have BACM controls for PM_{10}. The Coachella Valley Planning Area in Riverside County, to the north and northwest of Imperial County, is designated a PM_{10} nonattainment area, and a redesignation request and maintenance plan were submitted to USEPA in 2010. These three areas and their relevant PM_{10} rules are indicated in **Tables 5-1 to 5-3**.

TABLE 5-1
SAN DIEGO AIR POLLUTION CONTROL DISTRICT (SDAPCD)

RULES REGULATING EXISTING AND NEW NON-POINT SOURCES IN SAN DIEGO COUNTY	
RULE NUMBER AND TITLE	DESCRIPTION
Rule 52 – Particulate Matter	Limits the amount of particulate matter that may be discharged from any source.
Rule 52.1 – NSPS and NESHAPS Particulate Matter Requirements	Ensures that sources subject to NSPS or NESHAPS also conform to Regulation X and XI, respectively.
Rule 54 – Dust and Fumes	Minimizes the amount of dust that can be discharged in a specified time period.
Rule 55 – Fugitive Dust Control	Provides a mechanism to regulate operations that may cause fugitive dust emissions.
Rule 101 – Burning Control	Establishes conditions, including high winds, under which burning would be curtailed or prohibited.

TABLE 5-2
MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT (AQMD)

RULES REGULATING EXISTING AND NEW NON-POINT SOURCES IN EASTERN RIVERSIDE COUNTY OUTSIDE OF THE COACHELLA VALLEY PLANNING AREA	
RULE NUMBER AND TITLE	DESCRIPTION
Rule 403 – Fugitive Dust	Limits the amount of particulate matter that may be discharged from specific sources, not including unpaved public roads or farm roads, or industrial or commercial facilities.
Rule 404 – Particulate Matter Concentration	Limits the concentration of PM_{10} allowed in discharged gas.
Rule 405 – Solid Particulate Matter Weight	Limits the amount of PM_{10} that can be discharged on an hourly basis.

TABLE 5-3
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)
RULES REGULATING
EXISTING AND NEW NON-POINT SOURCES IN RIVERSIDE COUNTY
AND THE COACHELLA VALLEY, INSIDE OF THE COACHELLA VALLEY PLANNING AREA

RULE NUMBER AND TITLE	DESCRIPTION
Rule 403– Fugitive Dust	Requires implementation of control measures to prevent, reduce, or mitigate fugitive dust emissions.
Rule 403.1 – Supplemental Fugitive Dust Control Requirements for Coachella Valley Sources	Establishes special requirements for Coachella Valley dust sources under high-wind conditions and requires SCAPCD approval of dust control plans for sources not subject to local government ordinances.
Rule 1156 – Further Reductions of Particulate Emissions from Cement Manufacturing Facilities	Establishes requirements to reduce particulate matter emissions from cement manufacturing operations and properties.
Rule 1157 – PM_{10} Emission Reductions from Aggregate and Related Operations	Establishes additional source specific performance standards and specifies operational PM_{10} controls specific to aggregate and related operations.
Rule 1186 – PM_{10} Emissions from Paved and Unpaved Roads and Livestock Operation	Limits the amount of particulate matter entrained as a result of vehicular travel on paved and unpaved public roads, and at livestock operations.
Rule 1466 – Control of Particulate Emissions from Soils with Toxic Air Contaminants	Establishes a PM_{10} ambient dust concentration limit, dust control measures, and notification requirements prior to earth-moving activities or when PM_{10} dust concentrations are exceeded.

V.2 Wind Observations

As previously discussed wind data analysis indicates that on April 29, 2018 to May 1, 2018 different sites measured wind speeds at or above 25 mph. Wind speeds of 25 mph are normally sufficient to overcome most PM_{10} control measures. During the April 29, 2018 to May 1, 2018 event, wind speeds were above the 25 mph threshold, overcoming the BACM in place.

V.3 Review of Source Permitted Inspections and Public Complaints

A query of the ICAPCD permit database was compiled and reviewed for active permitted sources throughout Imperial County and specifically around the Brawley, Niland, and Westmorland monitors during the April 29, 2018 to May 1, 2018 PM_{10} exceedances. Both permitted and non-permitted sources are required to comply with Regulation VIII

requirements that address fugitive dust emissions. The identified permitted sources are Aggregate Products, Inc., US Gypsum Quarry, Imperial Aggregates (Val-Rock, Inc., and Granite Construction), US Gypsum Plaster City, Clean Harbors (Laidlaw Environmental Services), Bullfrog Farms (Dairy), Burrtec Waste Industries, Border Patrol Inspection station, Centinela State Prison, various communications towers not listed and various agricultural operations. Non-permitted sources include the wind farm known as Ocotillo Express, and a solar facility known as CSolar IV West. Finally, the desert regions are under the jurisdiction of the Bureau of Land Management and the California Department of Parks (Including Anza Borrego State Park and Ocotillo Wells).

An evaluation of all inspection reports, air quality complaints, compliance reports, and other documentation indicate no evidence of unusual anthropogenic-based PM_{10} emissions on April 29 and April 30, 2018, officially declared as a No Burn Days, related to agricultural burning, waste burning or dust. On May 1, 2018, there was a single complaint received concerning dust near the construction of the international border wall along the United States-Mexico international border. This project was issued an exemption status by the United States from any environmental regulations or conditions. In any event, the site was located beyond the prevailing wind direction that entrained and transported dust to the Brawley monitor, which was the only monitor to exceed on May 1, 2018.

FIGURE 5-2
PERMITTED SOURCES

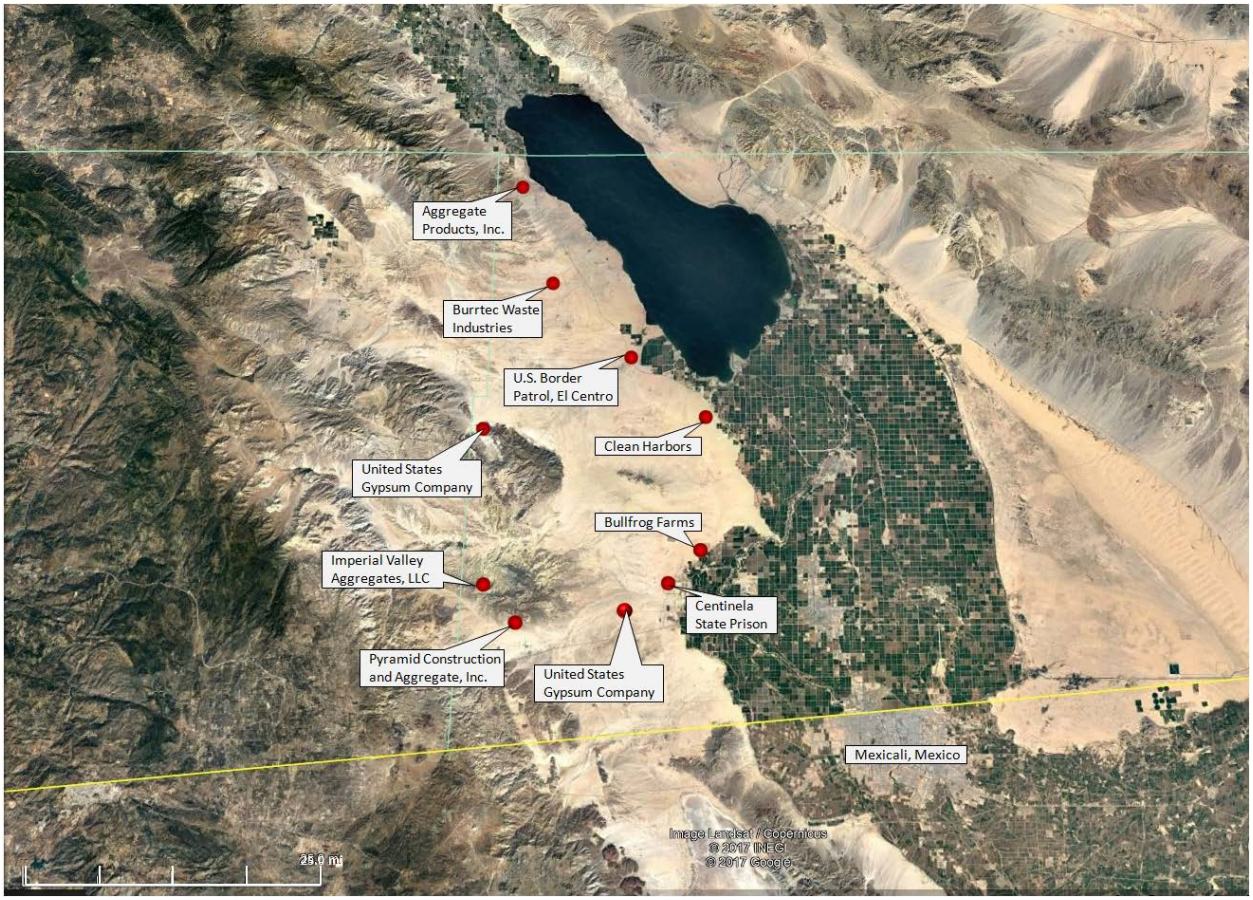


Fig 5-2: The above map identifies those permitted sources located west, northwest and southwest of the Brawley, Niland, and Westmorland monitors. The green line to the north denotes the political division between Imperial and Riverside counties. The yellow line below denotes the international border between the United States and Mexico. The green checker-boarded areas are a mixed use of agricultural and community parcels. In addition, either the Bureau of Land Management or the California Department of Parks manages the desert areas. Base map from Google Earth

FIGURE 5-3
NON-PERMITTED SOURCES

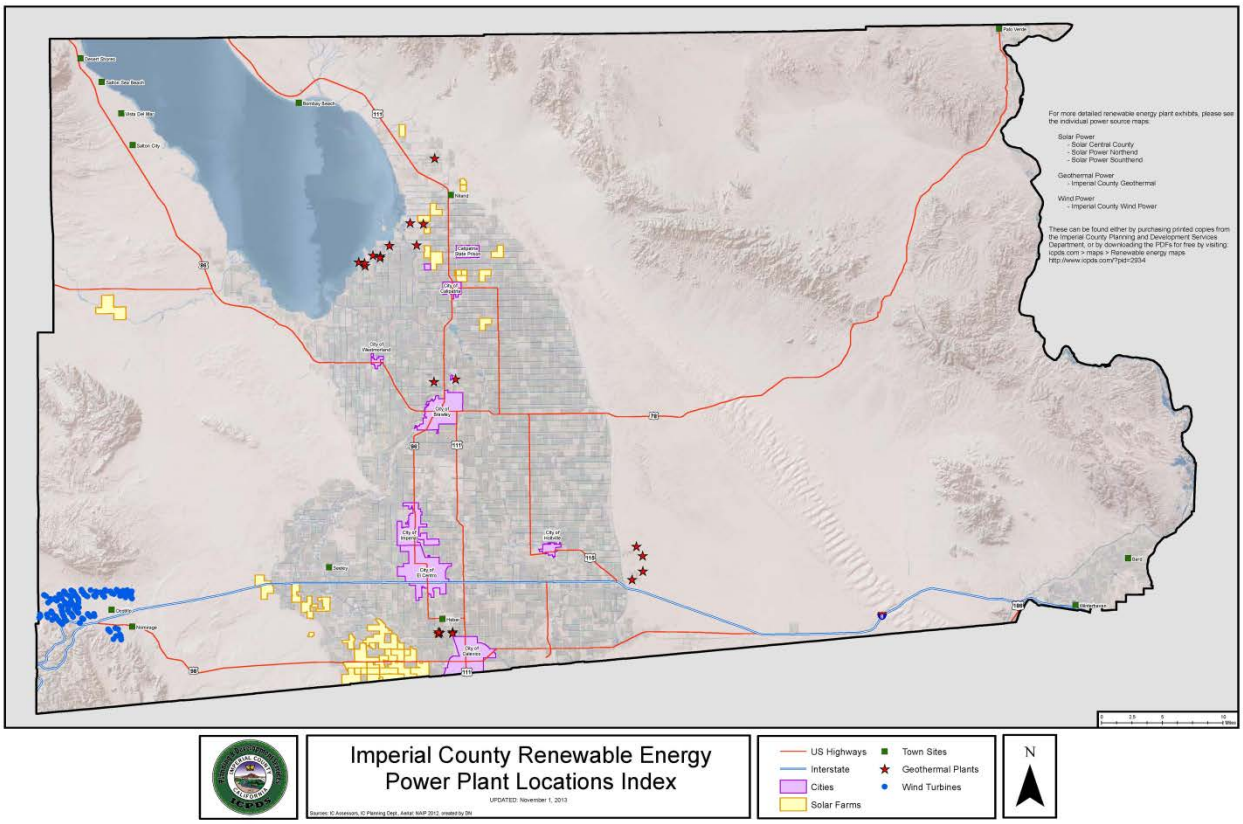


Fig 5-3: The above map identifies those power sources located west, northwest and southwest of the Brawley, Niland, and Westmorland monitors. Blue indicate the Wind Turbines, Yellow are the solar farms and stars are geothermal plants

VI A Natural Event – A demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event.

Typically, Pacific weather disturbances during this time of year will bring westerly winds into the region. The strong gusty westerly winds that developed on April 29, 2018 to May 1, 2018 resulted from what the NWS identified as a "series of short waves pinwheeling around a trough of low-pressure."[16] With the weather system came cooling, light rain and strong gusty westerly winds into the mountains and deserts each afternoon and evening of each day. The strength of the gusty westerly winds were of a magnitude that prompted the NWS offices in San Diego and Phoenix to issue sixteen (16) Urgent Weather Messages advising the public of advisory level winds in excess of 25 mph along mountain ridgetops and deserts.

Although the weather system on Sunday, April 29, 2018 was moisture deprived, the system that moved through the area April 30, 2018, Monday night into Tuesday, May 1, 2018 provided sufficient levels of precipitation within the Coachella Valley, Borrego Springs and Imperial County west. With the passing of the system temperatures dropped leaving behind cold temperatures, and snow levels dropped within the San Diego County mountains.[17] Some local locations in the mountains, and the El Centro NAF (KNJK), did measure a trace or more of precipitation (**Table 6-1**). With precipitation levels in upwind site, transported emissions, reduced sufficiently to allow only the Brawley monitor to exceed the NAAQS on Tuesday, May 1, 2018.

TABLE 6-1

PRECIPITATION TOTALS			
LOCATION*	**4/29/2018**	**4/30/2018**	**5/1/2018**
El Centro NAF	T	T	T
Campo			0.6
Borrego Springs			0.2

*KNJK from QCLCD. Pine Valley and Descanso from Weather Underground.

[16] National Weather Service, Area Forecast Discussion, Apr. 28, 2018, Phoenix office, 243pm MST
[17] National Weather Service, Quantitative Precipitation Forecast, May 1, 2018, San Diego office, 336pm PDT

VI.1 Affects Air Quality

The preamble to the revised EER states that an event is considered to have affected air quality if it can be demonstrated that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation. Given the information presented in this demonstration, particularly Section III, we can reasonably conclude that there exists a clear causal relationship between the monitored exceedances and the April 29, 2018 to May 1, 2018 event, which changed or affected air quality in Imperial County.

VI.2 Not Reasonably Controllable or Preventable

In order for an event to be defined as an exceptional event under section 50.1(j) of 40 CFR Part 50 an event must be "not reasonably controllable or preventable." The revised preamble explains that the nRCP has two prongs, not reasonably preventable and not reasonably controllable. The nRCP is met for natural events where high wind events entrain dust from desert areas, whose sources are controlled by BACM, where human activity played little or no direct causal role. This demonstration provides evidence that the primary source areas of windblown dust transported into Imperial County came from San Diego where Imperial County has no jurisdiction. In any event, despite BACM in place within Imperial County, high winds overwhelmed all BACM controls where human activity played little to no direct causal role. The PM_{10} exceedance measured at the Brawley, Westmorland and Niland monitors was caused by naturally occurring strong gusty westerly winds that transported windblown dust into Imperial County and other parts of southern California from areas located within the Sonoran Desert regions to the west-southwest and west of Imperial County. These facts provide strong evidence that the PM_{10} exceedance at the Brawley, Niland, Westmorland monitors April 29, 2018 to May 1, 2018, was not reasonably controllable or preventable.

VI.3 Natural Event

The revised preamble to the EER clarifies that a "Natural Event" (50.1(k) of 40 CFR Part 50) is an event with its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. Anthropogenic sources that are reasonably controlled are considered not to play a direct role in causing emissions. As discussed within this demonstration, the PM_{10} exceedance that occurred at the Brawley, Niland, and Westmorland monitors April 29, 2018 to May 1, 2018, was caused by the transport of windblown dust into Imperial County by strong westerly winds associated with a series of low-pressure systems that passed through the region. At the time of the event, anthropogenic sources, within Imperial County were reasonably controlled with

BACM. The event therefore qualifies as a natural event.

VI.4 Clear Causal Relationship

The comparative analysis of different meteorological sites to PM_{10} concentrations measured at the Brawley, Niland, and Westmorland monitors in Imperial County demonstrates a consistency of elevated gusty westerly winds with elevated concentrations of PM_{10} on April 29, 2018 to May 1, 2018. In addition, temporal analysis indicates that the elevated PM_{10} concentrations and the gusty westerly winds were an event that was widespread, regional and not preventable. Days before the high wind event PM_{10} concentrations were well below the NAAQS. Overall, the demonstration provides evidence of the strong correlation between the natural event and the transported windblown dust to the exceedance on April 29, 2018 to May 1, 2018.

VI.5 Concentration to Concentration Analysis

The historical annual and seasonal 24-hr average PM_{10} measured concentrations at the Brawley, Niland, and Westmorland monitors were outside the normal historical concentrations when compared to event and non-event days.

VI.6 Conclusion

The preceding discussion, graphs, figures, and tables provide wind direction, speed and concentration data illustrating the spatial and temporal effects of the strong gusty westerly winds that preceded the identified series of low-pressure systems as they passed through California and into Arizona. The information provides a clear causal relationship between the entrained windblown dust and the PM_{10} exceedance measured at the Brawley, Westmorland and Niland monitors in Imperial County on April 29, 2018 to May 1, 2018.

In particular, the clear causal relationship and not reasonably controllable or preventable sections provide evidence that high gusty westerly winds transported fugitive emissions from open natural Mountain and desert areas, located within San Diego County and Imperial County (all part of the Sonoran Desert). In addition, because anthropogenic sources in upwind areas were reasonably controlled at the time of the event, this event meets the definition of a Natural Event.[18]

[18] Title 40 Code of Federal Regulations part 50: §50.1(k) Natural event means an event and its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. For purposes of the definition of a natural event, anthropogenic sources that are reasonably controlled shall be considered to not play a direct role in causing emissions.