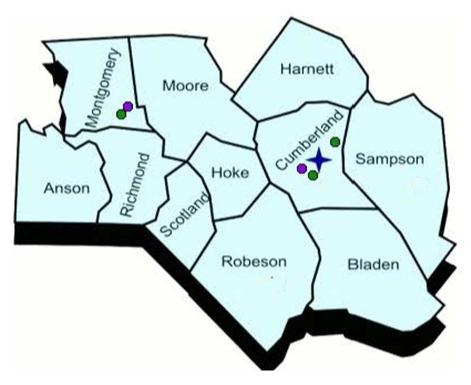


2016-2017 Annual Monitoring Network Plan for the North Carolina Division of Air Quality

Volume 2

Site Descriptions by Division of Air Quality Regional Office and Metropolitan Statistical Area

E. The Fayetteville Monitoring Region



July 1, 2016



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E. The Fayetteville Monitoring Region

The Fayetteville monitoring region, shown in Figure E1, consists of three sections: (1) the non-Metropolitan Statistical Area, MSA, portion of the Fayetteville monitoring region (Bladen, Harnett, Montgomery, Moore, Richmond, Robeson, Sampson and Scotland counties, (2) the Fayetteville MSA (Cumberland and Hoke Counties) and (3) the southeastern portion of the Charlotte-Gastonia-Concord MSA (Anson County), previously discussed as part of the Mooresville Monitoring Region in Section C.

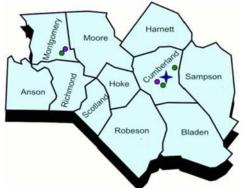


Figure E1. The Fayetteville monitoring region
The dots show the approximate locations of
most of the monitoring sites in this region.

(1) The Non-MSA Portion of the Fayetteville Monitoring Region

The non-MSA portion of the Fayetteville monitoring region contains eight counties (Bladen, Harnett, Montgomery, Moore, Richmond, Robeson, Sampson and Scotland). It has no MSAs. The Southern Pines-Pinehurst Micropolitan Statistical Area is located in Moore County. The Dunn Micropolitan Statistical Area is located in Harnett County and the Lumberton Micropolitan Statistical Area is located in Robeson County. The North Carolina Division of Air Quality, DAQ, currently operates one monitoring site in this area of the Sand Hills at Candor in Montgomery County. The location of the Candor monitoring site is shown in Figure E2.

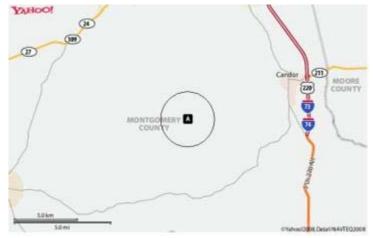


Figure E2. Location of the Candor monitoring site

A is the Candor fine particle monitoring site.

The circle approximates the neighborhood scale (0.5 to 4 kilometers [Km]).

At the Candor site, the DAQ operates a continuous fine particle beta attenuation monitor, BAM; a rotating every third year PM₁₀ monitor; air toxics volatile organic compound and carbonyl monitors; and ambient temperature, relative humidity, wind speed and direction sensors. Table

E1 summarizes monitoring information for the site. Figure E3 through Figure E7 show the site and views looking north, east, south and west. The Candor site is collocated with a Clear Air Status and Trends Network, CASTNET, site.

Table E1. Site Information Table for Candor

Site Name:	Can	dor			A	QS Site	e Idei	ntifi	cation	Num	iber 37	7-123	-0001	
Location:	136	Perry Drive,	Candor, North C	Carolina							•			
CBSA:		Not in a CE	BSA			CBS	\ #:	C	00000		Elevat	tion	173	.1 meters
Latitude		35.2632	Longitude -	79.8366	513	Datu	m:	N	NAD83	3				
Parameter								etho			Sample		Sampli	
Name		Method					Re	Reference ID			Duration		Schedule	
PM 2.5 local			AM-1020 Mass 1	Monitor	w/V	SCC								
conditions, B		(170)					EQ	EQPM-0308-170			-170 1-hour		Year round	
PM10 total 0-	-												Year ro	/
10um STP			eta Attenuation I			EÇ	PM	I-0798	-122	1-hour			nird year	
Volatile organ	nic		ssurized canister	С					0.4.1			ixth day,		
compounds			ration: GC/MS	TIDI .		No	t ap	plicab	le	24-hou	r	year ro		
Carbonyl			H-CART-KI O3	Scrub	HPLO	C	N.T.	,	1. 1	1	0.4.1			ixth day,
compounds	TO 4	(202)	DM 0.5.1 1	1'					plicab		24-hour		year ro	
Date Monito	r Esta	abusnea	PM 2.5 local co		_				or, BA	VI			g. 1, 2013	
		ŀ	PM10 total 0-10				nonii	or					. 16, 201 26, 200	
		-	Volatile organic Carbonyl comp		ounas	8								
Nearest Road	J.		McCallum Rd		Tr.	affic (Ya		270		Vee		3, 2013 Count:	2013
Nearest Road	u:						oun	l:	270		Y ear	1 01 C	ount:	2013
Parameter N	lomo.		Distance to Road	Direct Road	tion	10	Mo	nita	n Trm	.	Statomon	t of I	Dumaca	
rarameter N	ame		Kuau	Koau					r Typ		Statement of Purpose			_
PM 2.5 local	condi	tions RAM	1079 meters	North	nort	hoost			purpo ulator	arpose Real-time data reporting			g.	
1 W1 2.3 IOCal	contai	uons, DAM	1079 meters	NOITH	ΠΟΙ	iicast	поп	-icg	uiatoi	tory AQI reporting. Prevention of significant			nt	
PM10 total 0-	.10um	STP	1079 meters	North	norf	heast	Sne	cial	purpo		deteriorat			
Volatile organ			1079 meters	North					gulator		General b			
Carbonyl con			1079 meters	North				_	gulator		General b			
cure on jr con	трошт		Toyy Incorp	1,0111	11011		1 (01	_						to Move
Parameter N	ame		Monitoring O	biectiv	e	Scale	Suitable for			ison to NAAQS			r Chang	
			General backg				Scale Compani			ison to MAAQS				5-
PM 2.5 local	condi	tions, BAM	welfare related		ts	Region	nal			No			No	ne
PM10 total 0-			General backg			Region				Yes			No	
Volatile organ	nic co	mpounds	General backg			Regio			Not	applio	cable		No	ne
Carbonyl con	npoun	ds	General backg	round		Region	nal			applic			No	ne
					N	Aeets I	art 5	8 R	Requir	emen	ts for:			
Parameter N	ame		Appendix	A		oendix					dix D	A	ppendi	хE
PM 2.5 local	condi	tions, BAM	Yes			Yes				Ye				es
PM10 total 0-	-10um	STP	,			Yes				Ye				es
Volatile organ	nic co	mpounds	Yes Not applicable Not applicable			Y	es							
Carbonyl con	Ŭ Î							licable		Y	es			
• •			Dist	tance t	o Suj	ppo	rt	Dista	ance to T	rees	Ol	stacles		
PM 2.5 local conditions, FRM 2.46				mete			>20 meters			None				
	total 0-10um STP 3.17			2.87	2.87 meters			>20 meters		rs]	None		
Volatile organ			3.91		1.117 meters > 20 meters			None						
Carbonyl con			3.91			1.117					> 20 mete			None
Carbonyi Con	ipouli	u u	2.,,1											

Each CASTNET dry deposition station measures:

- Weekly average atmospheric concentrations of sulfate, nitrate, ammonium, sulfur dioxide and nitric acid; and
- Hourly concentrations of ambient ozone levels.

The CASTNET meteorological equipment was transferred to the DAQ in 2012.

The Candor site is located on the eastern edge of the Uwharrie National Forest. In 2013 the DAQ added a beta attenuation monitor, BAM, and a one-in-six-day carbonyl sampler to support a background monitoring study. July 1,2015, the BAM became the primary monitor at the site and the FRM was shut down.



Figure E4. Looking north from the Candor site



Figure E5. Looking west from the Candor site



Figure E3. The Candor CASTNET, air toxics, mercury deposition and particle monitoring site, 37-123-0001



Figure E6. Looking east from the Candor site



Figure E7. Looking south from the Candor site

There are no new monitoring requirements that will require additional monitoring in this area.

(2) The Fayetteville MSA

The Fayetteville MSA consists of two counties: Cumberland and Hoke. The major metropolitan area is the City of Fayetteville. The DAQ currently operates three monitoring sites in the Fayetteville MSA. These sites are all located in Cumberland County at William H. Owen

Elementary School and Honeycutt Elementary School in Fayetteville and at Wade. The Golfview site in Hope Mills was shut down on Oct. 31, 2014. The locations of these monitors are shown in Figure E8.



The Honeycutt ozone and sulfur dioxide monitoring site is the green dot to the south; the Wade ozone monitoring site is the green dot to the northeast the William Owen particle monitoring site is the red dot in the center.

Figure E8. Monitors located in the Fayetteville MSA

At the **Honeycutt** site, the DAQ operates a seasonal ozone monitor and a special purpose sulfur dioxide monitor that operates for 12 months every three years. DAQ established this site in April 2015. The DAQ discovered in February 2014 that the golf course where the Golfview monitoring station was located was closed and the property where the monitor was located was for sale. The property owner agreed to allow DAQ to continue using the site until the property sold. The property sold in August 2014 and the new owner requested the DAQ move the monitoring station as soon as possible. The DAQ investigated surrounding properties to identify a potential location for the monitoring station. The property abuts YMCA property on one side and city property on the other. The DAQ considered relocating the monitoring station about 100 meters southeast to the YMCA property, however, the YMCA never responded to the request. As a result, the DAQ worked with the school system to move the site to Melvin E. Honeycutt Elementary School at 4665 Lakewood Drive, Fayetteville, North Carolina. As shown in Figure E9, the school is located about 3.2 kilometers northwest of the former Golfview location.

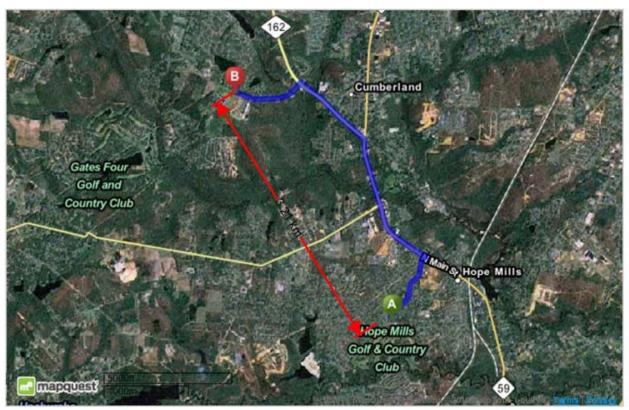


Figure E9. Location of Honeycutt site (B) relative to Golfview (A)

Figure E10 through Figure E14 show the site and views looking north, east, south and west. Table E2 summarizes monitoring information for the site. The Honeycutt ozone site is the upwind site for the Fayetteville MSA. Sulfur dioxide monitoring occurs here every third year because the site is a good background site for obtaining data for Prevention of Significant Deterioration modeling requirements. This sulfur dioxide monitor operated May 2015 to May 2016 and will operate again in 2018. In July 2015 the U.S. Census Bureau, Population Division, estimates 376,509 people lived here.



Figure E10. Honeycutt ozone and sulfur dioxide monitoring site, 37-051-0010



Figure E11. Looking north from the Honeycutt site



Figure E12. Looking east from the Honeycutt site



Figure E13. Looking west from the Honeycutt site



Figure E14. Looking south from the Honeycutt site

Table E2. Site Information Table for Honeycutt

Site Name:	Honey	cutt				AQS Site Identification Number:						37-05	1-0010
Location:	4665 l	Lakewoo	d Drive, F	ayette	ville, Nor	th Carolii	na						
CBSA:		Fayette	ville, NC						CBSA	#:		22180)
Latitude		35.0010	55	Long	itude	-78.990)75		Datur	n:		WGS	84
Elevation		59.1 me	eters										
Parameter Name Method				Method Reference Samp ID Durat				Sampling Schedule					
Ozone	Instrumental with ultra violet photometry (047)			EQOA-	0880	-047	7	1-H	our	Apr. 1	to Oct. 31		
Sulfur dioxid	e		nental with cence (060		d	EQSA-()486-	060)	1-H		Year-round; every thin year	
Date Monitor Established: Ozone Sulfur dioxide									May 9, 2015 May 9, 2015				
Nearest Road	d:	Lakewo	od Drive		Traffic	Count: 14,000		Y	Year of Co		2012		
Parameter N	lame	Distanc	e to Road		Directio	tion to Road N		Monitor Type Stat		Stateme	ement of Purpose		
								~-			forecast	ing.	I reporting and
Ozone		4	0 meters		North	northeast			AMS				/NAAQS.
Sulfur dioxid	e	4	0 meters		North	northeast						significant PSD, modeling	
Parameter N	lame	Monito	ring Obje	ective	Scale				table fo		mparisor		oposal to Move Change
Ozone		Populati	on exposu	ire	Neighbo	rhood				Yes		No	ne
Sulfur dioxid	e	Populati	on exposu backgrou	ıre	Neighbo	orhood				Yes		No	ne

Table E2. Site Information Table for Honeycutt

Parameter Name	Meets Part 58 Appendix A Requirements	Meets Part 58 Appendix C Requirements	Meets Part 58 Appendix D Requirements	Meets Part 58 Appendix E Requirements
Ozone	Yes	Yes	Yes	Yes
Sulfur dioxide	Yes	Yes	Yes	Yes
Parameter Name	Probe Height (m)	Distance to Support	Distance to Trees	Obstacles
Ozone	3.73 meters	1.016 meters	>20 meters	None
Sulfur dioxide	3.73 meters	1.016 meters	>20 meters	None

Because 40 CFR 58 Appendix D requires MSAs with more than 350,000 people to have two ozone monitors, this site is the second required ozone site for the Fayetteville MSA.

At the Wade site, the DAQ operates a seasonal ozone monitor. A picture of the site as well as views looking north, east, south and west are provided in Figure E15 through Figure E19. Table E3 summarizes monitoring information for the site. The Wade site was established as the downwind site for the Fayetteville MSA. 40 CFR 58 Appendix D currently requires the Fayetteville MSA to have two ozone monitoring sites.



Figure E15. Wade ozone monitoring Site, 37-051-0008



Figure E16. Looking north from Wade site



Figure E18. Looking east from the Wade site



Figure E17. Looking west from the Wade site



Figure E19. Looking south from the Wade site

Table E3. Site Information Table for Wade

Site Name:	Wade	QS Site	tific	ation Numb	er:	37-051-0008					
Location:	7112 Covingto	on Lane, Wade,	North Carolin	a	CBS	A:	Fayetteville	e, NC	CBSA	#:	22180
Latitude	35.158686 Longitude -78.728035 Date					W	GS84	Elevat	tion	43 m	neters

Table E3. Site Information Table for Wade

Parameter Name	Metho	od		Method Reference ID			Sample Duration	Sampling Schedule		
Ozone	Instrui	mental with ultra viol	et photo	metry (047)	EQOA-0880-047 1			7 1-Hour	Apr. 1 to Oct. 31
Date Monitor Established: Ozone										May 8, 1990
Nearest Road: Dunn Road - Hwy 301 Traff						ic Count: 1600Year of Count: 20				
Parameter N	lame	Distance to Road Direction to Road				Moni	tor T	'ype	Statement of	Purpose
Ozone		241 meters	N	orthwe	st				v/NAAQS. Real-time g & forecasting.	
Parameter N	Vame	Monitoring Object	tive	Sca	ıle		Suitable for Compariso to NAAQS			on Proposal to Move or Change
Ozone		Highest concentration	on	Urb	an				Yes	None
]	Meets 4	40 CFR	Part 5	58 Re	quire	nents for:	
Parameter N	lame	Appendix A		Appe	endix C		Appendix D		endix D	Appendix E
Ozone		Yes		Ţ			,	Yes	Yes	
Parameter N	lame	Probe Height	Probe Height (m) Distance to			Support Distance to T			nce to Trees	Obstacles
Ozone		3.73		1	.016 me	eter	**			None

At the William Owen site, the DAQ operates a one-in-three-day fine particle FRM and continuous fine particle and PM₁₀ monitors. Figure E20 shows the site. Table E4 summarizes monitoring information for the site. Views looking north, northeast, east, southeast, south, southwest, west and northwest are provided in Figure E21 through Figure E28. The meteorological tower with wind speed and wind direction sensors, ambient temperature sensors at 10 meters and 2 meters, rainfall and solar radiation sensors was shut down on Nov. 12, 2014. In 2016 the collocated high-volume PM₁₀ monitors at the site were shut down and replaced with a low-volume continuous PM₁₀ monitor. At the end of 2015 the well impactor ninety-six, WINS, on the FRM was replaced with a very sharp cut cyclone, VSCC. This change was made because the VSCC is easier and less expensive to maintain.



Figure E20. The William Owen particle monitoring site

Table E4. Site Information Table for William Owen School

Site Name: Wi	lliam Ower	n School			A	QS Sit	e Identific	ation Nun	ber	37-0	51-0009		
Location: 453	33 Raeford	Road, Fay	ettev	ille, North	Carol	lina							
	tteville, NO				C	BSA#	22180)					
Latitude 35.04	41416]	Longitude	-	78.953112	Da	atum:	WGS	84	Eleva	tion	63 n	neters	
Parameter Name	Metho	d					Method R	deference I		Sampling Schedule			
PM 2.5 local	R & P	Model 20	25 PN	M-2.5 Seque	ential	Air					Every sixth day;		
conditions, FRM	Sample	er w/VSC	C - G	ravimetric .	Anal	ysis	RFPS-1006-145 24-Hour				year r	ound	
PM 2.5 local	Met O	ne BAM-1	022 1	Mass Monit	or w	/							
conditions, BAM	VSCC						EQPM-10	13-209	1- I	Hour	Year	round	
PM10 total 0-10ur	m												
STP, primary	Met O			ation BAM-			EQPM-07	98-122	1-I	Hour	Year	round	
				conditions, p							Jan. 1	, 1999	
Date Monitor Est	tablished:			,								30, 2015	
		PM10 tot	tal 0-1	10um STP,	prim	ary mo	nitor				Jan. 1	, 1999	
Nearest Road:		Raefo	rd Ro	oad	Tı	raffic (Count:	40,000	Y	ear of	Count:	2012	
			D	istance to	Dire	ection	Monitor						
Parameter Name	<u> </u>		R	oad	to R	oad	Type	Statemen	t of P	urpose	<u> </u>		
PM 2.5 local cond					Nort		SLAMS						
PM 2.5 local cond					Nort		SLAMS Real-time AQI reporting						
PM10 total 0-10ur	m STP, prii	•			Nort	h	SLAMS	` 1 U					
Parameter Name	:		Moni Obje	itoring ective		Scale		Suitable f Comparis		_	Proposa or Char	d to Move	
PM 2.5 local cond	litions, prin	nary	Popu:	lation expo	sure	Urbar					None		
PM 2.5 local cond	litions, con	tinuous	Popu	lation expo	sure	Urbai	1	1	Vо		None		
PM10 total 0-10ur	m STP, prii	mary	Popu:	lation expo	sure	Urbar	ı	Y	'es		None		
								8 Require	nents	for:			
Parameter Name			Ap	pendix A	Apj	pendix	: C	Appendi	x D		Appen	dix E	
PM 2.5 local cond				Yes			es		Yes			Yes	
PM 2.5 local conditions, continuous Yes							Yes		Yes			Yes	
PM10 total 0-10um STP, primary Yes						Y	es		Yes			Yes	
Parameter Name	Probe He	ight	(m)	Distance t	to Support	Dist	ance t	o Trees	Obstacles				
PM 2.5 local conditions, primary				2.38			> 2 meters			>20 meters		None	
PM 2.5 local conditions, continuous				4.6	666		> 2 meters			>20 meters		None	
PM10 total 0-10um STP, primary				2.	64		2.	.38	-	>20 meters		None	



Figure E21. Looking north from the William Owen site



Figure E22. William Owen Site looking northeast



Figure E23. William Owen site looking northwest



Figure E24. Looking west from the William Owen site



Figure E25. William Owen Site looking southwest



Figure E26. Looking east from the William Owen site



Figure E27. William Owen site looking southeast



Figure E28. Looking south from the William Owen site

Additional monitoring could be required in the Fayetteville MSA to comply with the 2010 **lead monitoring** requirements. In the 2014 toxics release inventory Fort Bragg calculated its 4 fugitive lead emissions to the ambient air from its firing ranges using AP-42 emission factors and determined it emitted less than 0.5 tons. DAQ requested a waiver from either placing a monitor at the fence line of the base or to doing modeling to show that the air beyond the fence line of the base is less than 50 percent of the standard. Because the emissions are lower than 0.5 tons, the EPA is not requiring any lead monitoring at this time. There are no other new monitoring requirements that will require additional monitoring in this area.

Appendix E.1 Annual Network Site Review Forms for 2015

Candor

Honeycutt

Wade

William Owen in Fayetteville

Site Information

Region_FRO	Site Na	Site Name Candor AQS Site # 37-123-0001					
Street Address-136 Per	ry Dr			City Candor			
Urban Area Not in a	n Urban	Area	Core-base	d Sta	ntistical Area Nor	ie	
]	Enter E	xact					
Longitude <u>-79.836</u>	<u>613</u>	Latitude	<u>35.2649</u>			od of Me	
In Decimal Degrees		In Decimal	Degrees		Interpolation Ex	planatio	n: Google Earth
Elevation Above/below I						<u>173.1</u>	
Name of nearest road to inle	et probe 1	McCallum Rd	ADT 270 Y	ear la	test available 2013		
Comments:							
Distance of site to nearest n	najor road	(m) <u>1079.0</u>	O Direction fro	m site	to nearest major road	NNE	
Name of nearest major road	McCall	um Rd ADT	270 Year 20	13			
Comments:							
Site located near electrical s	substation	/high voltage	power lines?				Yes 🔲 No 🛛
Distance of site to neares	t mailmand	l tun als		()	9797 Dimentio	m to DD E	NE □NA
Distance of site to neares			former		8787 Direction SSW	n to KK <u>E</u>	NE LINA
Distance between site and d						ower	⊠NA
Explain any sources of pe							
construction activities, fa						,	,
None expected		_					
ANSWER ALL APPLICA	DIFO	TECTIONS.					
Parameters		onitoring Ob	niective		Scale	ι .	Ionitor Type
NA SO2 (NAAQS) SO2 (trace-level) NO _x (NAAQS) HSNO _y O ₃ NH ₃ Hydrocarbon Air Toxics HSCO (Not Micro) CO (trace-level)	Gen High Max Popt Sout	eral/Backgrounest Concentration Exposite Oriented_ asport rind Background Fare Related I	ation ration ration ure und	Nei	Micro Middle ghborhood Urban Regional	SPM_ Monitor Affiliatio	Network
Probe inlet height (from gr Distance of outer edge of p Actual measured distance of Distance of outer edge of p Is probe > 20 m from the n *Is probe > 10 m from the *Distance from probe to tro Are there any obstacles to *Identify obstacle	from outer from outer probe inlet earest tree nearest tree ee (m)air flow?	r edge of probet from other med drip line? ee drip line? Direction*Yes (ans)	ntal (wall) and be to supporting nonitoring prol Yes *No Yes *No On from probe wer *'d question	or ver	etical (roof) supporting cture (meters) 1.11 ets > 1 m? answer *'d questions) e *Height of tree	Yes Yes	>1 m? Yes ⊠ No ☑ No □ NA □
*Is distance from inlet prol Distance of probe to neares	be to obsta	acle at least tv	wice the height	that t	he obstacle protrudes	above the p	

2015 CandorSite Review Revised 8/07/2015 1

Parameters	Monitoring Objective	Scale	Monitor Type
NA □ NO _y (trace- level)	General/Background Highest Concentration Max O3 Concentration Population Exposure	Micro Middle Neighborhood	SLAMS
	Source Oriented	Urban	Monitor Network Affiliation
	Transport	Regional	NCORE
	Upwind Background Welfare Related Impacts		
Probe inlet height (from	ground) 10-15 m? Yes No se from probe inlet to ground (meters)		
	f probe inlet from horizontal and/or ver e from outer edge of probe inlet to sup		
Distance of outer edge of	f probe inlet from other monitoring pro	bbe inlets > 1 m?	Yes 🔲 No 🗌 NA 🗍
Is probe > 20 m from the	e nearest tree drip line? Yes 🔲 *N	No (answer *'d questions))
*Is probe > 10 m from the	ne nearest tree drip line? Yes 🔲 *N	No 🔲	
*Distance from probe to	tree (m) Direction from probe	to tree *Height of tree	e (m)
Are there any obstacles	to air flow? *Yes 🗌 (answer *'d quest	ions) No 🗌	
1.00	_ Distance from probe inlet (m)		· —
*Is distance from inlet p	robe to obstacle at least twice the heigh	nt that the obstacle protrudes	above the probe? Yes ☐ No
Distance of probe to nea	rest traffic lane (m) Direction	n from probe to nearest traffi	c lane
Parameters	Monitoring Objective	Scale	Monitor Type
NA Air flow > 200 L/min PM10	Highest Concentration	Micro	Monitor Type SLAMS SPM
NA Air flow > 200 L/min	Highest Concentration	Micro	Monitor Type SLAMS
NA Air flow > 200 L/min PM10 TSP	Highest Concentration Population Exposure Source Oriented Background Transport	Micro Middle Neighborhood Urban	Monitor Type SLAMS SPM
NA Air flow > 200 L/min PM10 TSP TSP Pb	Highest Concentration Population Exposure Source Oriented Background Transport Welfare Related Impacts	Micro Middle Neighborhood Urban Regional	Monitor Type SLAMS SPM Monitor Network Affiliation NCORE
NA Air flow > 200 L/min PM10 TSP TSP TSP Pb	Highest Concentration Population Exposure Source Oriented Background Transport	Micro Middle Neighborhood Urban Regional 7-15 m	Monitor Type SLAMS SPM Monitor Network Affiliation
NA Air flow > 200 L/min PM10 TSP TSP TSP Pb Probe inlet height (from Actual measured distance	Highest Concentration Population Exposure Source Oriented Background Transport Welfare Related Impacts ground)	Micro Middle Neighborhood Urban Regional 7-15 m	Monitor Type SLAMS SPM Monitor Network Affiliation NCORE > 15 m
NA Air flow > 200 L/min PM10 TSP TSP TSP Pb Probe inlet height (from Actual measured distance of outer edge of Actual measured distance actual measured distance of outer inlet opening of of the control of the contro	Highest Concentration Population Exposure Source Oriented Background Transport Welfare Related Impacts ground) <2 m 2-7m et from probe inlet to ground (meters) for probe inlet from horizontal (wall) and the from probe to supporting structure (not collocated PM-10, TSP or TSP Pb Sampolice from probes and the from probes are ground to support the from probes to support the from probes are from probes to support the from probes are from probes and probability and the from probes to support the from probes are from probes and probability an	Micro Middle Neighborhood Urban Regional 7-15 m d/or vertical (platform or root neters) plers (X) within 2 to 4 m of e	Monitor Type SLAMS SPM Monitor Network Affiliation NCORE 1) > 15 m supporting structure > 2 m? Yes No No NA NA NA NA NA NA NA NA
NA Air flow > 200 L/min PM10 TSP TSP TSP Pb Probe inlet height (from Actual measured distance of outer edge of Actual measured distance of the company of t	Highest Concentration Population Exposure Source Oriented Background Transport Welfare Related Impacts ground)	Micro Middle Neighborhood Urban Regional 7-15 m d/or vertical (platform or root neters) plers (X) within 2 to 4 m of early both (all) collocated probe is	Monitor Type SLAMS SPM Monitor Network Affiliation NCORE 1 > 15 m supporting structure > 2 m? Yes No No NA inlets (meters)
NA Air flow > 200 L/min PM10 TSP TSP TSP Pb Probe inlet height (from Actual measured distance of outer edge of Actual measured distance of the company of t	Highest Concentration Population Exposure Source Oriented Background Transport Welfare Related Impacts ground) <2 m 2-7m er from probe inlet to ground (meters) of probe inlet from horizontal (wall) and the from probe to supporting structure (resolution of the probe inlet openings of the edge of any high volume inlet & ar	Micro Middle Neighborhood Urban Regional 7-15 m d/or vertical (platform or root neters) plers (X) within 2 to 4 m of early both (all) collocated probe is	Monitor Type SLAMS SPM Monitor Network Affiliation NCORE 1) Supporting structure > 2 m? Yes No No NA cach other? Yes No NA cach other? Yes No NA
NA Air flow > 200 L/min PM10 TSP TSP TSP Pb Probe inlet height (from Actual measured distance of outer edge of Actual measured distance actual measured distance (Y) between on Is probe > 20 m from the "Is probe > 10 m from the "Distance from probe to	Highest Concentration Population Exposure Source Oriented Background Transport Welfare Related Impacts ground) < 2 m 2-7m re from probe inlet to ground (meters) of probe inlet from horizontal (wall) and re from probe to supporting structure (not collocated PM-10, TSP or TSP Pb Sample (X) including entire inlet openings of atter edge of any high volume inlet & are rearest tree drip line? Yes ** The ne nearest tree drip line? Yes ** The tree (m) Direction from probe	Micro Middle Neighborhood Urban Regional 7-15 m d/or vertical (platform or roof neters) plers (X) within 2 to 4 m of e f both (all) collocated probe is not only other high or low volume. The first of tree *Height of *Height of *Height of *Height of *Height of *Height of _	Monitor Type SLAMS SPM Monitor Network Affiliation NCORE 1 > 15 m supporting structure > 2 m? Yes No such other? Yes No NA inlets (meters) inlet > 2 m? Yes No NA inlet > 2 m? Yes No NA NO NA inlet > 2 m? Yes NO NA NO NA
NA Air flow > 200 L/min PM10 TSP TSP TSP Pb Probe inlet height (from Actual measured distance of outer edge of Actual measured distance actual measured distance (Y) between on Is probe > 20 m from the "Is probe > 10 m from the "Distance from probe to	Highest Concentration Population Exposure Source Oriented Background Transport Welfare Related Impacts ground) < 2 m 2-7m re from probe inlet to ground (meters) f probe inlet from horizontal (wall) and re from probe to supporting structure (not collocated PM-10, TSP or TSP Pb Sample (X) including entire inlet openings of atter edge of any high volume inlet & are nearest tree drip line? Yes ** The ne nearest tree drip line? Yes ** The ne nearest tree drip line? Yes ** The nearest tree drip line? Y	Micro Middle Neighborhood Urban Regional 7-15 m d/or vertical (platform or roof neters) plers (X) within 2 to 4 m of e f both (all) collocated probe is not only other high or low volume. The first of tree *Height of *Height of *Height of *Height of *Height of *Height of _	Monitor Type SLAMS SPM Monitor Network Affiliation NCORE 1 > 15 m supporting structure > 2 m? Yes No such other? Yes No NA inlets (meters) inlet > 2 m? Yes No NA inlet > 2 m? Yes No NA NO NA inlet > 2 m? Yes NO NA NO NA
NA Air flow > 200 L/min PM10 TSP TSP TSP Pb Probe inlet height (from Actual measured distance) Distance of outer edge of Actual measured distance Entire inlet opening of of Actual measured distance Distance (Y) between on Is probe > 20 m from the "Is probe > 10 m from the "Distance from probe to Are there any obstacles"	Highest Concentration Population Exposure Source Oriented Background Transport Welfare Related Impacts ground) < 2 m 2-7m re from probe inlet to ground (meters) of probe inlet from horizontal (wall) and re from probe to supporting structure (not collocated PM-10, TSP or TSP Pb Sample (X) including entire inlet openings of atter edge of any high volume inlet & are rearest tree drip line? Yes ** The ne nearest tree drip line? Yes ** The tree (m) Direction from probe	Micro Middle Neighborhood Urban Regional 7-15 m d/or vertical (platform or roof neters) blers (X) within 2 to 4 m of ef both (all) collocated probe by other high or low volume wold (answer *'d questions) to (answer *'d questions) to to tree *Height of trections) No	Monitor Type SLAMS SPM Monitor Network Affiliation NCORE 1 > 15 m supporting structure > 2 m? Yes No No NA cach other? Yes No NA cach other?
NA Air flow > 200 L/min PM10 TSP TSP TSP Pb Probe inlet height (from Actual measured distance) Actual measured distance Actual measured distance Entire inlet opening of cactual measured distance Distance (Y) between on Is probe > 20 m from the "Is probe > 10 m from the "Distance from probe to Are there any obstacles" "Identify obstacle	Highest Concentration Population Exposure Source Oriented Background Transport Welfare Related Impacts ground) <2 m	Micro Middle Neighborhood Urban Regional 7-15 m d/or vertical (platform or roof neters) blers (X) within 2 to 4 m of ef both (all) collocated probe in yother high or low volume wood (answer *'d questions). It to tree *Height of treations) No Direction from probe inlet to	Monitor Type SLAMS SPM Monitor Network Affiliation NCORE 1) > 15 m Supporting structure > 2 m? Yes No No NA cach other? Yes No Na cach other?

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Parameters	Monitoring Objective	Scale		Site Type
□ NA	General/Background	☐Micro	SLAMS_	
Air flow < 200 L/min ☐ PM2.5 FRM	Highest Concentration	☐Middle	□SPM_	
PM10 FRM		□ Neighborhood		work Affiliation
PM10 Cont. (BAM)	Population Exposure	Neighborhood		
☐ PM10-2.5 FRM	Source Oriented		NCORE.	
PM10-2.5 BAM	Transport	Urban	SUPPLE	MENTAL SPECIATION
☐ PM10 Lead (PB) ☐ PM2.5 Cont.	☐Welfare Related Impacts	⊠Regional	_	
(TEOM)			Monitor NA	AQS Exclusion
PM2.5 Cont. (BAM)				
PM2.5 Spec. (SASS)			NONRE	GULATORY
PM2.5 Spec. (URG)				
Probe inlet height (from a	∥ ground)	<u> </u> -7m	`	> 15 m
	e from probe inlet to ground (mete			
	probe inlet from horizontal (wall	151 1	rm or roof) su	pporting structure > 2 m?
Actual measured distance	e from outer edge of probe inlet to	supporting structure (n	neters)	Yes 🛛 No 🗌
Distance (Y) between ou low volume monitor at the	ter edge of probe inlets of any low ne site = 1 m or greater?	volume monitor and a	ny other	Yes 🔲 No 🔲 NA 🛛
Distance (Y) between ou	ter edge of all low volume monito	r inlets and any Hi-Vol	ume PM-10	Yes No NA
or TSP inlet = 2 m or gre Are collocated PM2.5 M	ater? onitors (Two FRMs, FRM & BAN	M. FRM &		
TEOM, BAM & TEOM)	Located at Site?	*Yes	(answer *	'd questions) No 🛛 NA
	collocated PM 2.5 samplers (X) w			_1
each other?	ampler inlets within 1 m vertically			Give actual (meters)
	collocated with a SASS monitor			
	collocated speciation samplers inl			
Give actual (meters)	_			
	on sampler inlets within 1 m verti		s 🗌 No 🔲 G	live actual (meters)
Is a low-volume PM10 m site to measure PM10-2.	nonitor collocated with a PM2.5 m	onitor at the *Yes	(answer *	'd questions) No 🛛 NA 🔲
	collocated PM10 and PM2.5samp		within	
2 to 4 m of each other?	conocacca i wiro and i wiz.55amp	1015 101 1 11110-2.5 (21)	Yes	No 🗌
	nd PM2.5 sampler inlets within 1 i			No 🗆
Is probe > 20 m from the	nearest tree drip line? Yes ⊠	*No 🔲 (answer *'d	questions)	
	e nearest tree drip line? Yes		-h+ -f+ ()	
Are there any obstacles to	tree (m) Direction from po air flow? *Yes (answer *'d o	nuestions) No 🔽	ght of tree (m)	r
	Distance from probe inlet (m)		ha inlat to obe	rtoola
*Is distance from inlet pr	obe to obstacle at least twice the h	Direction from pro	protrudes abov	ve the probe? Yes No
Distance of probe to near	est traffic lane (m) 1079 Direc	tion from probe to near	est traffic lane	NNE
RECOMMENDATIONS		<u> </u>		
Maintain current site s		er *'d questions)		
	bjective? Yes ☐ (enter new ob	n n	1	
	esentativeness? Yes [(enter r			
Comments:				
Date of Last Site Pictures	12/9/15 New Pictures Sul	bmitted? Yes 🛛 No [
Reviewer Jennifer McHor				Date December 11, 2015
Ambient Monitoring Coo	AND THE PERSON OF THE PERSON OF		DateI	December 15, 2015
	erromore e militale).			

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Site Information

Region_FRO	ame <u>Honeycı</u>	AQS Site #	37-	<u>051-0010</u>						
Street Address-4	665 Lakewo	od Dr			City <u>Fayetteville</u>					
Urban Area FA	YETTEVIL	LE (Core-base	d Sta	tistical Area Fayettevi	lle, l	NC			
	Enter E	xact								
	7899053 <u>6</u>	Latitude	35.001	803	Method of					
In Decimal Degre		In Decimal			Interpolation Expla					
Elevation Above/		`				0.04				
Name of nearest i	road to inlet p	probe Fisher	<u>Rd</u> ADT	1600	00 Year latest available	<u>201</u>	<u>14</u>			
Comments: Lake	wood Dr - 13	3,000 (2014)								
Distance of site to	nearest maj	or road (m)	40.00 Dire	ection	from site to nearest ma	ijor i	road <u>NNE</u>			
Name of nearest 1	najor road <u>l</u>	Bingham Dr -	Hwy 162	ADT	31000 Year latest av	aila	ble <u>2014</u>			
Comments:										
Site located near	electrical sub	station/high	voltage po	wer 1	ines?		Yes No 🛛			
Distance of site to	nearest railr	oad track		(m)	Direction to	RR	NA			
Distance of site to w/transformer	nearest pow	er pole		(m)	77 Direction E					
Distance between s	ite and drin li	ne of water toy	ver (m)		Direction from site to wat	er to	wer NA			
					elds, loose bulk storage,					
tracks, construction						beece	in, veins, rainous			
	, , , , , , , , , , , , , , , , , , , ,	140010041400	,		mining pools					
none expected										
ANSWER ALL	APPLICABLI	E QUESTIONS	S:							
Parameters	M	onitoring Obje	ctive		Scale		Monitor Type			
Ozone (O ₃)	General/Ba	alarand			Micro		SLAMS			
	=	ncentration			Middle	_	SPM			
		oncentration			Neighborhood	╵╵	DFWI			
	Population				Urban					
	Source Ori				Regional					
	Transport	ented			Regional					
	=	alessave d								
	Upwind Ba	-								
Probe inlet height (f		elated Impacts	No 🗆	C	ive actual measured height t	Fuana	around (matara) 122			
	_				rtical (roof) supporting struc					
						iuie -	> I III i les Mino [
	Actual measured distance from outer edge of probe to supporting structure (meters) 1.2 Distance of outer edge of probe inlet from other gas monitoring probe inlets > 0.25 m? Yes No NA									
Is probe > 20 m from					(answer *'d questions)					
*Is probe > 10 m fro	om the nearest to	ree drip line?	Yes 🔲 *N	lo 🗌						
	*Distance from probe to tree (m) Direction from probe to tree *Height of tree (m)									
Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒										
	*Identify obstacle Distance from probe inlet (m) Direction from probe inlet to obstacle									
	_				the obstacle protrudes above	the j	probe? Yes 🗌 No 🔲			
Distance of probe to	nearest traffic	lane (m) 34 I	Direction fro	m pro	be to nearest traffic lane N		1			

1) Maintain current monitor status? Yes *No (answer *'d questions) *2) Change monitoring objective? Yes (enter new objective) No - *3) Change scale of representativeness? Yes (enter new scale) No *4) Relocate monitor? Yes No *4) No *4) Relocate monitor? Yes No *4 **ANSWER ALL APPLICABLE QUESTIONS: **Parameters Monitoring Objective Scale Monitor Type **SO ₂ (NAAQS) General/Background Micro SLAMS						
*3) Change scale of representativeness? Yes (enter new scale) No *4) Relocate monitor? Yes No Comments: ANSWER ALL APPLICABLE QUESTIONS: Parameters Monitoring Objective Scale Monitor Type SO ₂ (NAAQS) General/Background Micro SLAMS						
*4) Relocate monitor? Yes No Comments: ANSWER ALL APPLICABLE QUESTIONS: Parameters Monitoring Objective Scale Monitor Type SO ₂ (NAAQS) General/Background Micro SLAMS						
*4) Relocate monitor? Yes No Comments: ANSWER ALL APPLICABLE QUESTIONS: Parameters Monitoring Objective Scale Monitor Type SO ₂ (NAAQS) General/Background Micro SLAMS						
ANSWER ALL APPLICABLE QUESTIONS: Parameters Monitoring Objective Scale Monitor Type SO ₂ (NAAQS) General/Background Micro SLAMS						
Parameters Monitoring Objective Scale Monitor Type						
Parameters Monitoring Objective Scale Monitor Type						
SO₂(NAAQS)						
□ SO₂(trace-level) □ Highest Concentration □ Middle □ Neighborhood □ Source Oriented □ Urban □ Regional □ Upwind Background						
Welfare Related Impacts						
Probe inlet height (from ground) 2-15 m? Yes No Give actual measured height from ground (meters) 4.2						
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (roof) supporting structure > 1 m? Yes 🛛 No						
The latter of caref eage of proce lines from non-zoniar (wany and of ventour (1001) supporting structure of the latter of t						
Actual measured distance from outer edge of probe to supporting structure (meters) 1.5						
Distance of outer edge of probe inlet from other monitoring probe inlets > 1 m? Yes ☒ No ☐ NA ☐						
Is probe > 20 m from the nearest tree drip line? Yes ✓ *No ☐ (answer *'d questions)						
*Is probe > 10 m from the nearest tree drip line? Yes \(\begin{array}{c} *\text{No} \emptyset{\Box} \end{array}						
*Distance from probe to tree (m) Direction from probe to tree *Height of tree (m)						
Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒						
*Identify obstacle Distance from probe inlet (m) Direction from probe inlet to obstacle						
*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes No						
Distance of probe to nearest traffic lane (m) $\underline{36}$ Direction from probe to nearest traffic lane \underline{N}						
SULFUR DIOXIDE MONITOR RECOMMENDATIONS: 1) Maintain current monitor status? Yes *No (answer *'d questions) *2) Change monitoring objective? Yes (enter new objective) No - *3) Change scale of representativeness? Yes (enter new scale) No - *4) Relocate monitor? Yes No -						
Comments:						
Date of Last Site Pictures 12/3/15 New Pictures Submitted? Yes ☑ No ☐						
Reviewer Jennifer McHone SidesDate_December 11, 2015						
Ambient Monitoring Coordinator Mitchell Revels Date December 15, 2015						
Revised 2015-12-15						

Site Information

Region_FRO Site Name Wade AQS Site # 37-051-0008						
Street Address_7112 Covington Rd			City Wade			
Urban Area FAYETTEVILLE Core-based Statistical Area Fayetteville, NC						
Enter Exact						
Longitude <u>-7</u>	8.7280	Latitude <u>35.1586</u>		Meth	ethod of Measuring	
In Decimal Degrees		In Decimal Degrees		Interpolation Ex	planation: Google Earth	
Elevation Above/bei	Elevation Above/below Mean Sea Level (in meters) 45.72					
Name of nearest road to inlet probe Covington Rd ADT 130 Year latest available 2014						
Distance of ozone probe to nearest traffic lane (m) $\underline{97}$ Direction from ozone probe to nearest traffic lane \underline{W}						
Comments: <u>Dunn Rd - 1600 (2014)</u> , Wade-Stedman Rd - 1300 (2014)						
		ADT <u>46000</u> Year 1				
Distance of site to n	earest major r	oad (m) 771.00 Dire	ection fro	m site to nearest maj	or road <u>SE</u>	
Comments:						
Site located near ele	ctrical substat	tion/high voltage pow	er lines?		Yes No 🛛	
Distance of site to n				841 Direction to RR	NW NA	
Distance of site to nearest power pole w/transformer (m) 99 Direction W						
		e of water tower (m)				
					acks, vents, railroad tracks,	
	es, fast food r	estaurants, and swim	ming poo	ls.		
Cultivated fields						
ANSWER ALL APP	LICABLE OU	JESTIONS:				
Parameters	T	ring Objective		Scale	Site Type	
1 at afficters					Site I vibe	
			Пмі			
☐ O ₃	General	/Background	□Mi	ero	SLAMS SLAMS	
	☐General ☑Highest		□Mie	ero	⊠SLAMS	
	General Highest Max O3 Populati	/Background Concentration Concentration ion Exposure	Mie	ero ddle		
	General Highest Max O3 Populati	/Background Concentration Concentration ion Exposure Oriented	☐Mie	ero ddle ghborhood	⊠SLAMS	
	General Highest Max O3 Populati Source G	/Background Concentration Concentration ion Exposure Oriented	□Mid □Nei	ero ddle ghborhood oan	⊠SLAMS	
	General Highest Max O3 Populati Source O Transpo	/Background Concentration Concentration ion Exposure Oriented ort Background	□Mid □Nei	ero ddle ghborhood	⊠SLAMS	
⊠ O ₃	General Highest Max O3 Populati Source Transpo Upwind	Background Concentration Conce	□Mie □Nei □Urb □Reg	ero ddle ghborhood oan	⊠SLAMS	
Probe inlet height	General Highest Max O3 Populati Source Transpo Upwind Welfare	/Background Concentration Concentration ion Exposure Oriented ort Background	☐Mio ☐Nei ☐Urb ☐Reg	ero ddle ghborhood oan	⊠SLAMS	
Probe inlet height Give actual measu	General Highest Max O3 Populati Source O Transpo Upwind Welfare (from groun	/Background Concentration Concentration ion Exposure Oriented ort Background Related Impacts id) 2-15 m? Yes	☐ Mid ☐ Nei ☐ Vei ☐ Reg ☑ No ☐ ☑ 3.73	cro ddle ghborhood oan gional	⊠SLAMS □SPM	
Probe inlet height Give actual measu	General Highest Max O3 Populati Source O Transpo Upwind Welfare (from groun	Background Concentration Conce	☐ Mid ☐ Nei ☐ Vei ☐ Reg ☑ No ☐ ☑ 3.73	cro ddle ghborhood oan gional	⊠SLAMS □SPM	
Probe inlet height Give actual measu Distance of outer structure > 1 m?	General Highest Max O3 Populati Source Transpo Upwind Welfare (from groun ured height fi edge of prob	Background Concentration Concentration Concentration Concentration Concentration Concentration Background Related Impacts Impa	☐ Mid ☐ Nei ☐ Urb ☐ Reg ☑ No ☐ ☐ 3.73 ntal (wal	ero ddle ghborhood pan gional]]] and/or vertical (1)	SLAMS SPM coof) supporting	
Probe inlet height Give actual measured Structure > 1 m? Note that Actual measured	General Highest Max O3 Populati Source Transpo Upwind Welfare (from groun ared height fi edge of prob	Background Concentration Conce	☐ Mid ☐ Nei ☐ Urb ☐ Reg ☑ No ☐ ☑ 3.73 ntal (wal	ero ddle ghborhood gional l) and/or vertical (a	SLAMS SPM coof) supporting meters) 1.01	
Probe inlet height Give actual measured Structure > 1 m? Year Actual measured Is probe > 20 m fr	General Highest Max O3 Populati Source Transpo Upwind Welfare (from groun ared height fi edge of prob	Background Concentration Concentration Concentration Concentration Concentration Concentration Concentration Concentration Background Related Impacts	☐ Mid ☐ Nei ☐ Urb ☐ Reg ☑ No ☐ ☑ 3.73 atal (walk) Dee to sup	ero ddle ghborhood pan gional l) and/or vertical (r porting structure (r *No [] (answer	SLAMS SPM coof) supporting meters) 1.01	
Probe inlet height Give actual measured Structure > 1 m? Year Actual measured Is probe > 20 m fr	General Highest Max O3 Populati Source Transpo Upwind Welfare (from groun ared height fi edge of prob Yes No distance from the near	Background Concentration Conce	☐ Mid ☐ Nei ☐ Ves ☐ Nei ☐ Reg ☐ No ☐ ☐ Reg ☐ No ☐ ☐ Reg ☐ No ☐ ☐ Reg ☐ Yes ☐ ☐ Yes ☐	ero ddle ghborhood pan gional l) and/or vertical (r porting structure (r *No [] (answer	SLAMS SPM coof) supporting meters) 1.01	
Probe inlet height Give actual measure Distance of outer structure > 1 m? Y Actual measured Is probe > 20 m fi *Is probe > 10 m *Distance from pro-	General Highest Max O3 Populati Source O Transpo Upwind Welfare (from groundared height fredge of probedistance from the near-obe to tree (/Background Concentration Conc	☐ Mid ☐ Nei ☐ Nei ☐ Reg ☐ No ☐ ☐ Reg ☐ No ☐ ☐ Reg ☐ No ☐ ☐ Reg ☐ Yes ☐ Yes ☐ ☐ Trom	cro ddle ghborhood pan gional l) and/or vertical (r porting structure (r *No (answer probe to tree	SLAMS SPM coof) supporting meters) 1.01 r*'d questions)	
Probe inlet height Give actual measured Structure > 1 m? Y Actual measured Is probe > 20 m from *Is probe > 10 m *Distance from probe Are there any obs	General Highest Max O3 Populati Source O Transpo Upwind Welfare (from groun ared height fi edge of prob Yes No C distance from from the near	Background Concentration Conce	Mid Nei Nei Ves No □ No	cro ddle ghborhood pan gional l) and/or vertical (r porting structure (r *No (answer probe to tree questions) No	SLAMS SPM coof) supporting meters) 1.01 r*'d questions) *Height of tree (m)	
Probe inlet height Give actual measured Structure > 1 m? Y Actual measured Is probe > 20 m fi *Is probe > 10 m *Distance from probe Structure any obs *Identify obstacle	General Highest Max O3 Populati Source O Transpo Upwind Welfare (from groun ared height fiedge of prob Yes No C distance from from the near	Background Concentration Conce	Mid Nei Nei Nei Nei Nei Nei Nei No Santal (walker to sup Yes on from wer *'d	cro ddle ghborhood pan gional l) and/or vertical (r porting structure (r *No (answer probe to tree questions) No	SLAMS SPM coof) supporting meters) 1.01 r*'d questions) *Height of tree (m)	

Revised 2015-12-15

RECOMMENDATIONS.	
1) Maintain current site status? Yes ⊠ *No □ (answer *'d ques	stions)
*2) Change monitoring objective? Yes [(enter new objective:) No 🗌
*3) Change scale of representativeness? Yes [] (enter new scale:) No 🔲
*4) Relocate site? Yes No No	
Comments:	
Date of Last Site Pictures: <u>December 10, 2015</u> New Pictures Submit	ted? Yes 🛛 No 🗌
Reviewer Jennifer McHone Sides	Date: <u>December 11, 2015</u>
Ambient Monitoring Coordinator Mitchell Revels	Date: <u>December 15, 2015</u>

Instructions:

RECOMMENDATIONS:

If the annual network review has indicated that the monitoring objectives and scale of representativeness for the site have not changed and the siting criteria still meets those monitoring objectives and that scale of representativeness and there are no other reasons to modify the site in any way, check "Yes" to the question "Maintain current site status?" and skip the rest of the recommendations section.

If the annual network review has indicated that the monitoring objectives, scale of representativeness, or siting criteria have changed for some reason or there is another reason to modify the site in some way, check "No" to the question "Maintain current site status?" and complete the rest of the recommendations section. If the monitoring objective or scale of representativeness needs to be changed, check the "Yes" box and write in the new monitoring objective or scale of representativeness on the line. Otherwise check the "No" box. If the site needs to be relocated, check the "Yes" box. If the site needs to be shut down, write "Shut down" in the comments line. Also use the comments line to explain any change requested.

Check the site picture archive to find out when the last set of site pictures were taken and write the date down on the line. If the pictures are more than five years old or if something at the site has changed in the past year, take new site pictures. Changes that require new site pictures include additions, removals, or movement of monitors at the site, growth or removal of trees and other shrubs at the site, and construction of roads or buildings at or in the vicinity of the site.

Pictures of the site should at a minimum include at least one picture showing the site itself and pictures standing at the probe or inlet or as close as possible to the probe or inlet looking in the four compass directions (north, east, south, and west). If meteorological data are collected at the site, pictures standing at the meteorological tower looking southwest and northeast should also be included. Sometimes pictures looking at the site from the four compass directions are also helpful.

Be sure to correctly identify the pictures as to which compass direction they show. This documentation may be achieved by using good notes when taking the pictures, holding a compass in front of the camera, or placing a sign with the appropriate direction indicated somewhere in the picture. Label the pictures with the name of the site using the two digit logger ID (HC, JW, etc.), the direction (N, NE, E, SE, S, SW, W, NW), and the date taken (YYYYMMDD) and transfer the pictures to the group drive in the appropriate Incoming/Regional Office directory.

3

Site Information

Region_FRO	Site Name William Owen			AQS Site # 37- <u>051</u> - <u>0009</u>				
Street Address <u>-4533 Raeford Rd</u>			City <u>Fayetteville</u>					
Urban Area FAYETTEVILLE Core-based Statistical Area Fayetteville, NC								
Enter Exact								
	95311 Latitude <u>35.04142</u>			Method of Measuring				
In Decimal Degrees		In Decima			Interpolation Explanation: Google Earth			<u>le Earth</u>
Elevation Above/below Mean Sea Level (in meters) 63.7								
Name of nearest road to inlet probe Raeford Rd ADT 42000 Year latest available 2014								
Comments:								
Distance of site to ne	arest maj	or road (m)	210.00 Dire	ecti	on from site to neare	st majo	road <u>N</u>	
Name of nearest maj	or road	Raeford Rd	ADT 42000	0 Ye	ear <u>2014</u>			
Comments:								
Site located near elec	trical sub	station/higl	h voltage pov	ver l	lines?		Yes	No 🛛
Distance of site to ne	Distance of site to nearest railroad track (m) 837 Direction to RR N NA				NA			
Distance of site to ne	Distance of site to nearest power pole w/transformer (m) 28 Direction N							
					⊠NA			
Explain any sources	of potent	ial bias; incl	lude cultivate	d fi	elds, loose bulk stora	ige, sta	cks, vents,	railroad
tracks, construction a	ctivities,	fast food re	estaurants, an	d sv	vimming pools.			
None expected								
Parameters	M	onitoring Obj	ective		Scale		Monitor T	ype
□ NA Air flow > 200 L/min □ PM10 □ TSP □ TSP Pb	Popul Source Backs	est Concentrat lation Exposur se Oriented ground sport are Related Im	re		Micro Middle Neighborhood Urban Regional	_	AMS	
Probe inlet height (from ground)								
Actual measured distance from probe inlet to ground (meters) 2.64								
Distance of outer edge of probe inlet from horizontal (wall) and/or vertical (platform or roof) supporting structure > 2 m? Actual measured distance from probe to supporting structure (meters) 2.38 Yes X No X								
Entire inlet opening of collocated PM-10, TSP or TSP Pb Samplers (X) within 2 to 4 m of each other? Yes 🖾 No 🗌 NA 🗍								
Actual measured distance (X) including entire inlet openings of both (all) collocated probe inlets (meters) 3.22								
Distance (Y) between outer edge of any high volume inlet and any other high or low volume inlet ≥ 2 m? Yes No NA NA Is probe > 20 m from the nearest tree drip line? Yes X *No (answer *'d questions)								
*Is probe > 10 m from the nearest tree drip line? Yes *No *Distance from probe to tree (m) *Direction from probe to tree *Height of tree (m) *Direction from probe to tree *Height of tree (m) *Height of tree (m) *Height of tree (m) *Direction from probe to tree *Height of tree (m) *Direction from probe to tree *Direction from probe to tree *Height of tree (m) *Direction from probe to tree *Direction from probe to tree *Height of tree (m) *Direction from probe to tree *Direction from								
Are there any obstacles to air flow? *Yes ☐ (answer *'d questions) No ☒								
*Identify obstacle Distance from probe inlet (m) Direction from probe inlet to obstacle *Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes No								
Distance of probe to nearest traffic lane (m) 210 Direction from probe to nearest traffic lane N								

Parameters	Monitoring Objective	Scale	Monitor Type			
□NA		□N.G	SLAMS			
Air flow < 200 L/min	General/Background	Micro	□SPM			
	Highest Concentration	Middle	Monitor Network Affiliation			
PM10-2.5	Population Exposure	Neighborhood				
PM10 Lead (PB)	Source Oriented	Urban	SUPPLEMENTAL			
PM2.5 Cont. (TEOM)	Transport		SPECIATION			
PM2.5 Cont. (BAM)	Upwind Background	Regional	Monitor NAAQS Exclusion			
PM2.5 Spec. (SASS) PM2.5 Spec. (URG)	Welfare Related Impacts		NONREGULATORY			
PM2.5 Cont. Spec.						
Probe inlet height (from gro			> 15 m			
Actual measured distance fr	rom probe inlet to ground (meters) $\underline{2}$.38				
	robe inlet from horizontal (wall) and/					
	om outer edge of probe inlet to support		Yes No			
	edge of probe inlets of any low volume	me monitor and any other	Yes ☐ No ☐ NA 🛛			
low volume monitor at the s	edge of all low volume monitor inlet	ts and any Hi-Volume PM	10			
or TSP inlet = 2 m or greate		as and any 111- volume 11vi	Yes No NA NA			
	itors (Two FRMs, FRM & BAM, FR	M& *Vac 🗖 (one)	wer *'d questions) No 🔲 NA			
TEOM, BAM & TEOM) Lo	ocated at Site?	Tes (ans)	wer a questions) No I NA			
* Entire inlet opening of co	llocated PM 2.5 samplers (X) within	2 to 4 m of				
each other?		Yes N	o Give actual (meters) 10.05			
	pler inlets within 1 m vertically of ea					
	llocated with a SASS monitor at the					
	llocated speciation samplers inlets (X) within 2 to 4 m of each of	other? Yes No			
Give actual (meters)* * Are collocated speciation sampler inlets within 1 m vertically of each other? Yes \[\subsetent \] No \[\subseteq \] Give actual (meters)						
Is a low-volume PM10 monitor collocated with a PM2.5 monitor at the site to measure PM10 2.52						
site to measure PM10-2.5?			wer * d questions) No 🛛 NA 🔝			
* Entire inlet opening of collocated PM10 and PM2.5samplers for PM10-2.5 (X) within Yes No No						
2 to 4 m of each other?						
*Are collocated PM10 and PM2.5 sampler inlets within 1 m vertically of each other? Yes No Is probe > 20 m from the nearest tree drip line? Yes x *No I (answer *'d questions)						
*Is probe > 10 m from the nearest tree drip line? Yes *No *Direction from probe to tree *Height of tree (m)						
Are there any obstacles to air flow? *Yes \(\text{(answer *'d questions) No } \text{\infty}						
*Identify obstacle Distance from probe inlet (m) Direction from probe inlet to obstacle						
*Is distance from inlet probe to obstacle at least twice the height that the obstacle protrudes above the probe? Yes No						
	t traffic lane (m) 210 Direction fro					
RECOMMENDATIONS:						
	us? Yes X *No ☐ (answer *'d	quartions)				
		• .				
	ective? Yes [(enter new objectiv					
	ntativeness? Yes (enter new so	cale) No 🗌				
*4) Relocate site? Yes	No 🗆					
Comments: None						
	12/4/15 New Pictures Submitte	do Vac 🗖 Na 🗖				
Date of Last Site Pictures _	12/4/15 New Pictures Submitte	curres No I				
Reviewer Jennifer McHone	Sides		DateDecember 11, 2015			
Ambiant Maritania - Carali	noton Mitch all Dayr-1-		Data Dagamah and 15, 2015			
Ambient Monitoring Coordi	HALOI IVIILENEII KEVEIS		DateDecember 15, 2015			

Appendix E-2. Scale of Representativeness

Each station in the monitoring network must be described in terms of the physical dimensions of the air parcel nearest the monitoring station throughout which actual pollutant concentrations are reasonably similar. Area dimensions or scales of representativeness used in the network description are:

- a) Microscale defines the concentration in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
- b) Middle scale defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometers.
- c) Neighborhood scale defines concentrations within an extended area of a city that has relatively uniform land use with dimensions ranging from about 0.5 to 4.0 kilometers.
- d) Urban scale defines an overall citywide condition with dimensions on the order of 4 to 50 kilometers.
- e) Regional Scale defines air quality levels over areas having dimensions of 50 to hundreds of kilometers.

Closely associated with the area around the monitoring station where pollutant concentrations are reasonably similar are the basic monitoring exposures of the station.

There are six basic exposures:

- a) Sites located to determine the highest concentrations expected to occur in the area covered by the network.
- b) Sites located to determine representative concentrations in areas of high population density.
- c) Sites located to determine the impact on ambient pollution levels of significant sources or source categories.
- d) Sites located to determine general background concentration levels.
- e) Sites located to determine the extent of regional pollutant transport among populated areas.
- f) Sites located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts and in support of secondary standards.

The design intent in siting stations is to correctly match the area dimensions represented by the sample of monitored air with the area dimensions most appropriate for the monitoring objective of the station. The following relationship of the six basic objectives and the scales of representativeness are appropriate when siting monitoring stations:

Table E5. Site Type Appropriate Siting Scales

1. Highest concentration	Micro, middle, neighborhood (sometimes urban
	or regional for secondarily formed pollutants)
2. Population oriented	Neighborhood, urban
3. Source impact	Micro, middle, neighborhood
4. General/background & regional transport	Urban, regional
5. Welfare-related impacts	Urban, regional