UTAH DEPARTMENT of ENVIRONMENTAL QUALITY

Division of Air Quality

Annual Monitoring Network Plan 2017

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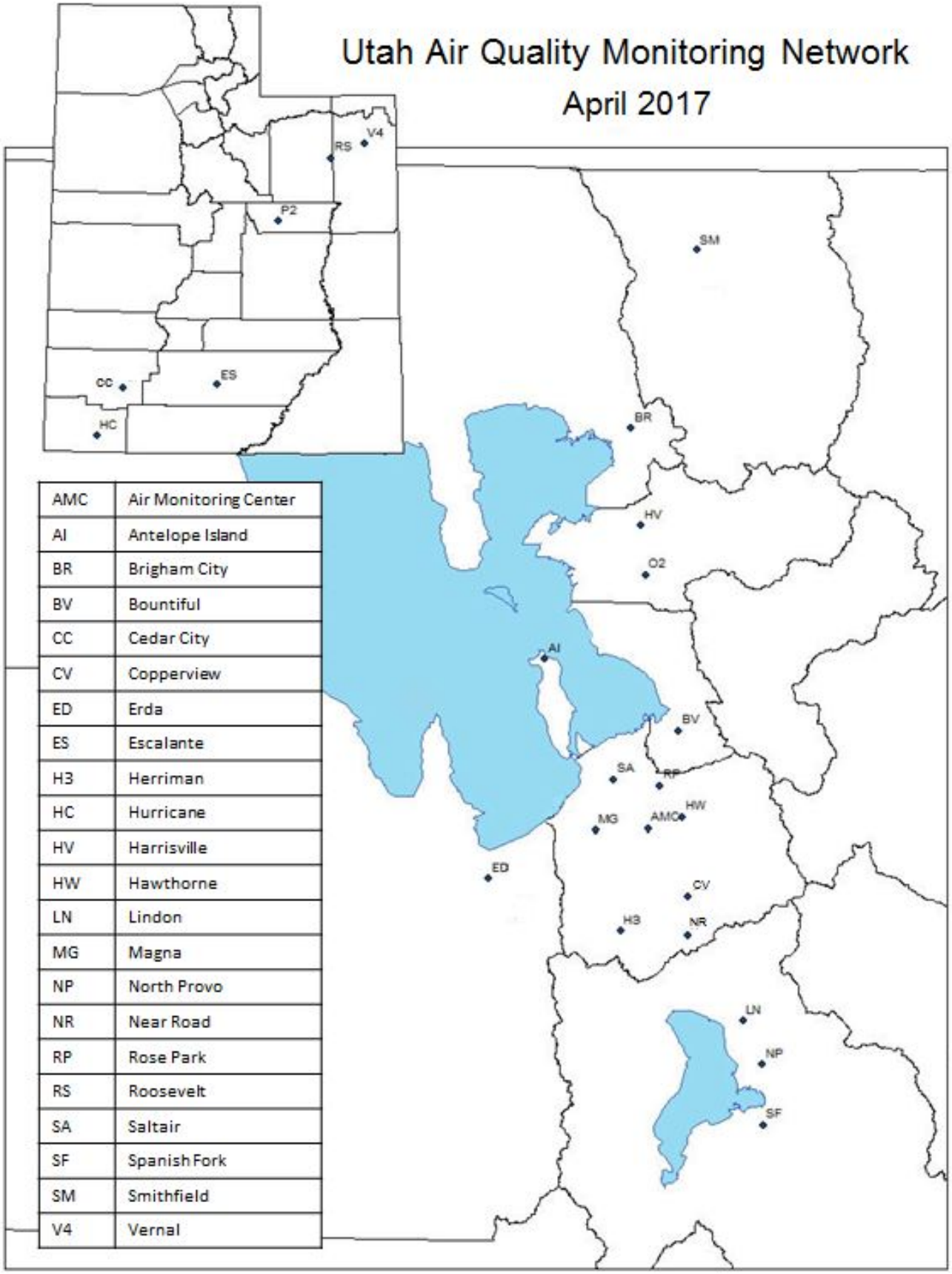


AMC	Air Monitoring Center
AI	Antelope Island
BR	Brigham City
BV	Bountiful
CC	Cedar City
CV	Copperview
ED	Erda
ES	Escalante
H3	Herriman
HC	Hurricane
HV	Harrisville
HW	Hawthorne
LN	Lindon
MG	Magna
NP	North Provo
NR	Near Road
RP	Rose Park
RS	Roosevelt
SA	Saltair
SF	Spanish Fork
SM	Smithfield
V4	Vernal

Site Parameters

County	Site	PM 2.5			PM 10			PM Coarse	Speciation PM 2.5	Lead	O_3	NO_x	NO_y	SO_2	CO	Hg	NH_3	Toxics PAMS	MET.
		Primary	Co-located	Real-time	Primary	Co-located	Real-time												
Cache	Smithfield	1/1	1/6	X	1/1	1/6	X	X			X	X							X
Box Elder	Brigham City	1/1		X							X								X
Weber	Ogden #2	1/1		X	1/1		X	X			X	X			X				X
	Harrisville										X								X
Davis	Bountiful	1/1		X	1/1	1/60			X		X	X						X	X
	Antelope Island																		X
Salt Lake	AMC															X	X		X
	Hawthorne	1/1		X	1/1		X	X	X		X	X	X	X	X				X
	Herriman			X	1/1		X	X			X	X							X
	Magna	1/1			1/1					X									X
	Rose Park	1/1	1/6	X			X	X											X
	Saltair																		X
Tooele	Erda	1/1		X							X	X							X
Utah	North Provo	1/1		X	1/1	1/6	X	X			X	X			X				X
	Lindon	1/1	1/6	X	1/1		X	X	X										X
	Spanish Fork	1/1									X								X
Uintah	Vernal			X							X	X							X
Duchesne	Roosevelt			X							X	X							X
Carbon	Price #2										X	X							X
Garfield	Escalante										X								
Washington	Hurricane			X							X	X							X

Current Site Addresses

County	EPA AIRS Code	Station Name - Code	Station Address	UTM Northing	UTM Easting	Elevation (meters)
Cache	490050007	Smithfield - SM	675 West 220 North, Smithfield	4632671	429270	1377
Box Elder	490030003	Brigham City - BR	140 West Fishburn Dr., Brigham City	4593978	415045	1334
Weber	490571003	Harrisville - HV	425 West 2550 North, Harrisville	4572829	417416	1331
	490570002	Ogden #2 - O2	228 East 32nd Street, Ogden	4562188	418249	1316
Davis	490110004	Bountiful - BV	171 West 1370 North, Bountiful	4528360	425503	1309
	490116001	Antelope Island - AI	Great Salt Lake	4543850	396506	1359
Salt Lake	490353011	Air Monitoring Center, AMC	2861 West Parkway Blvd., West Valley	4507220	418827	1292
	490353006	Hawthorne - HW	1675 South 600 East, Salt Lake City	4509639	426361	1306
	490353012	Herriman #3- H3	14058 Mirabella Drive, Herriman	4483371	412184	1534
	490353005	Saltair - SA	Great Salt Lake	4517750	411449	1282
	490351001	Magna - MG	2935 South 8560 West, Magna	4506790	407536	1317
	490353010	Rose Park - RP	1354 West Goodwin Ave., Salt Lake City	4516479	421458	1295
Utah	490494001	Lindon - LN	50 North Main Street, Lindon	4465692	439400	1442
	490490002	North Provo - NP	1355 North 200 West, Provo	4456141	443590	1402
	490495010	Spanish Fork - SF	Spanish Fork Airport, Spanish Fork	4443095	443761	1380

Current Site Addresses

County	EPA AIRS Code	Station Name - Code	Station Address	UTM Northing	UTM Easting	Elevation (meters)
Tooele	490450004	Erda - ED	2163 West Erda Way, Erda	4495298	385355	1320
Duchesne	490130002	Roosevelt - RS	290 South 1000 West, Roosevelt	4460879	584230	1588
Uintah	490471003	Vernal – V4	628 North 1700 West, Vernal	4480337	622012	1667
Carbon	490071003	Price #2 - P2	351 South 2500 East, Price	4382915	519750	1740
Garfield	490170004	Escalante - ES	755 West Main, Escalante	4181091	445865	1789
Washington	490530007	Hurricane - HC	147 North 870 West, Hurricane	4117231	295368	992

Detailed Site Information

Site:	Air Monitoring Center (AMC)	**Longitude:**	-111.9612	**Station Type:**	SPM
AQS#:	49-035-3011	**Latitude:**	40.7118	**MSA:**	Salt Lake City
Address:	2861 West Parkway Blvd.	**Elevation (m):**	1292		
City:	West Valley				
County:	Salt Lake				

Site Objective:
This site is established to determine Mercury in Wet Deposition and Dry Deposition.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located at the Air Monitoring Center, in the city of West Valley, Salt Lake County.
Can data from this site be used to evaluate NAAQS?: No

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Dry Dep. Mercury	Cold Vapor Atomic Absorption	Continuous	Population Exposure	SPM- Transport Regional
Wet Dep. Mercury	Manual NADP MDN	Integrated 7 days	Population Exposure	SPM- Transport Regional
Ammonia	Manual NADP AMoN	Integrated 14 days	Population Exposure	SPM- Transport Regional

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Pressure	Barometric Pressure Transducer	Continuous	2 meters	Urban
Relative Humidity	Elec. Thin Film	Continuous	4 meters	Urban
Leaf Wetness		Continuous	4 meters	Urban
Ambient Temperature	Elec. Resistance	Continuous	4 meters	Urban
Wind Direction	Sonic 2D	Continuous	4 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	4 meters	Urban
Wind Speed	Sonic 2D	Continuous	4 meters	Urban

Site:	Antelope Island (AI)	**Longitude:**	-112.2313	**Station Type:**	SPM
AQS#:	49-011-6001	**Latitude:**	41.0393	**MSA:**	Ogden-Clearfield
Address:	Antelope Island	**Elevation (m):**	1359		
City:	N/A				
County:	Davis				

Site Objective:
This site is established to collect meteorological information for air quality modeling inputs.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is on Antelope Island State Park, near the ranger residences, in Davis County.
Can data from this site be used to evaluate NAAQS?: No

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Relative Humidity	Elec. Thin Film	Continuous	6 meters	Urban
Ambient Temperature	Elec. Resistance	Continuous	6 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	6 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	6 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	6 meters	Urban

Site:	Bountiful Viewmont (BV)	**Longitude:**	-111.8845	**Station Type:**	SLAMS
AQS#:	49-011-0004	**Latitude:**	40.903	**MSA:**	Ogden-Clearfield
Address:	1380 North 200 West	**Elevation (m):**	1309		
City:	Bountiful				
County:	Davis				

Site Objective:

The Bountiful Viewmont site is established to determine public exposure to air pollution. The site also monitors emissions from nearby oil refineries and local sand and gravel operations. Previous monitoring and saturation studies have recorded high ozone concentrations. This site is chosen for intensive speciation of $PM_{2.5}$ under the EPA Chemical Speciation Network (CSN) and gaseous Volatile Organic Compounds under the EPA National Air Toxics Trends Network (NTTN) including hexavalent chromium and carbonyl compounds. Nitrogen dioxide is monitored in support of the ozone monitoring.

Does the site meet the objective:

Yes, all objectives are met.

Site Description:

The site is located near Viewmont High School at the north end of the city of Bountiful, Davis County.

Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	SLAMS- Population Neighborhood
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	SLAMS-High Neighborhood
$PM_{2.5}$	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$ Real Time	Synchronized Hybrid Ambient Real Time Particulate Monitor	Continuous	Air Quality Index	SLAMS- Population Neighborhood
PM_{10} Metals	Manual Gravimetric	1 in 6 days	Population Exposure	SLAMS- Population Neighborhood
PM_{10} Metals Co-located	Manual Gravimetric	6 samples/year	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$ Speciation	Manual EPA CSN	1 in 6 days	Population Exposure	SLAMS- Population Neighborhood
VOC	Manual EPA NTTN	1 in 6 days	Population Exposure	SLAMS- Population Neighborhood
Semi-volatile	Manual EPA NTTN	1 in 6 days	Population Exposure	SLAMS- Population Neighborhood
Carbonyl compounds	Manual EPA NTTN	1 in 6 days	Population Exposure	SLAMS- Population Neighborhood
Black Carbon	Aethalometer	Continuous	Population Exposure	SLAMS- Population Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Pressure	Barometric Pressure Transducer	Continuous	1 meter	Urban
Relative Humidity	Elec. Thin Film	Continuous	10 meters	Urban
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Brigham City (BR)	**Longitude:**	-112.0176	**Station Type:**	SLAMS
AQS#:	49-003-0003	**Latitude:**	41.4929	**MSA:**	Ogden-Clearfield
Address:	140 West Fishburn Dr.	**Elevation (m):**	1334		
City:	Brigham City				
County:	Box Elder				

Site Objective:

This site is established to determine the boundary of ozone concentrations greater than the NAAQS and $PM_{2.5}$ comparison to Cache County.

Does the site meet the objective:

Yes, all objectives are met.

Site Description:

The site is located in a neighborhood area of Brigham City in Box Elder County.

Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$ Real Time	Continuous Gravimetric	Continuous	Population Exposure	SLAMS- Population Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Erda (ED)	**Longitude:**	-112.3550	**Station Type:**	SLAMS
AQS#:	49-045-0004	**Latitude:**	40.6005	**MSA:**	Salt Lake City
Address:	2163 West Erda Way	**Elevation (m):**	1320		
City:	Erda				
County:	Tooele				

Site Objective:
This site is established to determine population exposure to air pollutants.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located in the city of Erda, Tooele County, and replaces the Tooele site.
Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	SLAMS- Population Neighborhood
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	SLAMS- High Neighborhood
$PM_{2.5}$	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$ Real Time	Synchronized Hybrid Ambient Real Time Particulate Monitor	Continuous	Air Quality Index	SLAMS- Population Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Relative Humidity	Elec. Thin Film	Continuous	3 meters	Urban
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Escalante (ES)	**Longitude:**	-111.614722	**Station Type:**	SPM
AQS#:	49-017-0004	**Latitude:**	37.775556	**MSA:**	NA
Address:	755 West Main	**Elevation (m):**	1789		
City:	Escalante				
County:	Garfield				

Site Objective:

This site is established to measure ozone near Escalante National Monument.

Does the site meet the objective:

Yes, all objectives are met.

Site Description:

The site is located at the Escalante National Monument visitor's center in Escalante, Garfield County. This site is funded by the Bureau of Land Management.

Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	Regional

Site:	Harrisville (HV)	**Longitude:**	-111.9865	**Station**	SLAMS
AQS#:	49-057-1003	**Latitude:**	41.3028	**MSA:**	Ogden-Clearfield
Address:	425 West 2550 North	**Elevation (m):**	1331		
City:	Harrisville				
County:	Weber				

Site Objective:
This site is established in response to an ozone saturation study indicating this as a potentially high ozone concentration area.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located on the grounds of an elementary school in the city of Harrisville, Weber County.
Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	SLAMS- Population Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Hawthorne (HW)	**Longitude:**	-111.8721	**Station Type:**	SLAMS
AQS#:	49-035-3006	**Latitude:**	40.7343	**MSA:**	Salt Lake City
Address:	1675 South 600 East	**Elevation (m):**	1306		
City:	Salt Lake City				
County:	Salt Lake				

Site Objective:
This site is established to represent population exposure in the Salt Lake City area. The Hawthorne site is also designated as the EPA NCore site for Utah.

Does the site meet the objective:
Yes, all current objectives are met. NCore monitoring began in January 2011.

Site Description:
The site is located at Hawthorne Elementary School in the southeast section of Salt Lake City, Salt Lake County.

Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Carbon Monoxide, Trace	Instrumental Gas Phase Correlation	Continuous	Population Exposure	SLAMS-High Neighborhood
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	SLAMS-High Neighborhood
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	SLAMS-High Neighborhood
NOy Trace Level	Instrumental Chemiluminescence	Continuous	Population Exposure	SLAMS- Population Neighborhood
SO2 Trace Level	Pulsed Fluorescence	Continuous	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$ Speciation	Manual EPA CSN	1 in 3 days	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$ Real Time NCore	Continuous Gravimetric	Continuous	Air Pollution Index	SLAMS- Population Neighborhood
PM_{10}	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
PM_{10} Real Time NCore	Continuous Gravimetric	Continuous	Air Pollution Index	SLAMS- Population Neighborhood
PM_{coarse}	Manual Gravimetric Subtraction	Daily	Population Exposure	SLAMS- Population Neighborhood
Organic & Elemental Carbon	NIDR	Continuous	Population Exposure	SLAMS- Population Neighborhood
PAMS C2 to C12	Instrumental Gas Chromatography	Continuous	Ozone modeling input	Population Neighborhood
Visibility	Instrumented	Continuous	Public Information	Population Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Pressure	Barometric Pressure Transducer	Continuous	3 meters	Urban
Relative Humidity	Elec. Thin Film	Continuous	10 meters	Urban
Solar Radiation	Elec. EPPLY	Continuous	4 meters	Urban
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Herriman #3 (H3)	**Longitude:**	-112.036305	**Station Type:**	SLAMS
AQS#:	49-035-3012	**Latitude:**	40.496408	**MSA:**	Salt Lake City
Address:	14058 Mirabella Drive	**Elevation (m):**	1534		
City:	Herriman				
County:	Salt Lake				

Site Objective:
Site established to assess population exposure in southwest Salt Lake County.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located at Fort Herriman Middle School in southwest Salt Lake County.
Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	SLAMS- Population Neighborhood
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$ Real Time	Continuous Gravimetric	Continuous	Air Quality Index	SLAMS- Population Neighborhood
PM_{10}	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
PM_{10} Real Time	Continuous Gravimetric	Continuous	Air Quality Index	SLAMS- Population Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Temperature	Instrumental/ Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
Wind Speed	Instrumental/ Elec. Chopped Signal Level 1	Continuous	10 meters	Urban
Barometric Pressure	Pressure Transducer	Continuous	10 meters	Urban
Relative Humidity	Instrumental/ Elect. Thin Film	Continuous	10 meters	Urban

Site:	Hurricane (HC)	**Longitude:**	-113.3051	**Station Type:**	SLAMS
AQS#:	49-053-0007	**Latitude:**	37.1791	**MSA:**	St George
Address:	147 North 870 West	**Elevation (m):**	992		
City:	Hurricane				
County:	Washington				

Site Objective:
This site is established to determine population exposure to ozone in Washington County.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
This site is located behind the Hurricane City offices.
Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Ozone	Instrumental Ultra Violet	Continuous	High Winter Ozone Study	Regional
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	High Winter Ozone Study	Regional
$PM_{2.5}$ Real Time	Synchronized Hybrid Ambient Real Time Particulate Monitor	Continuous	Air Quality Index	SLAMS- Population Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Regional
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Regional
WD Sigma	Elec. EPA Method	Continuous	10 meters	Regional
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Regional
Barometric Pressure	Pressure Transducer	Continuous	2 meters	Regional

Site:	Lindon (LN)	**Longitude:**	-111.7133	**Station Type:**	SLAMS
AQS#:	49-049-4001	**Latitude:**	40.3396	**MSA:**	Provo - Orem
Address:	50 North Main	**Elevation (m):**	1442		
City:	Lindon				
County:	Utah				

Site Objective:
This site is established to determine PM emissions from commercial and industrial sources. Historically, this site has reported the highest PM values in Utah County.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located at the Lindon Elementary School in the City of Lindon, Utah County.
Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
$PM_{2.5}$	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population
$PM_{2.5}$	Manual Gravimetric Co-located	1 in 6 days	Precision and Accuracy Assessment	SLAMS- Population
$PM_{2.5}$ Speciation	Manual EPA CSN	1 in 6 days	Population Exposure	SLAMS- Population
$PM_{2.5}$ Real Time	Continuous Gravimetric	Continuous	Air Quality Index	SLAMS- Population
PM_{10}	Manual Gravimetric	Daily	Population Exposure	SLAMS-Impact Neighborhood
PM_{10} Real Time	Continuous Gravimetric	Continuous	Air Quality Index	SLAMS-Impact Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Relative Humidity	Elec. Thin Film	Continuous	10 meters	Urban
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Magna (MG)	**Longitude:**	-112.0947	**Station Type:**	SLAMS
AQS#:	49-035-1001	**Latitude:**	40.7068	**MSA:**	Salt Lake City
Address:	2935 South 8560 West	**Elevation (m):**	1317		
City:	Magna				
County:	Salt Lake				

Site Objective:
This site is established to determine particulate matter and Pb concentrations from Kennecott smelter.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located on the roof of Brockbank Junior High School in the city of Magna in western Salt Lake County.
Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
$PM_{2.5}$	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
PM_{10}	Manual Gravimetric	Daily	Population Exposure	SLAMS-High Neighborhood
Pb	Manual Gravimetric	1 in 6 days	Population Exposure	SLAMS-High Neighborhood
Pb Co-located	Manual Gravimetric	1 in 12 days	Population Exposure	SLAMS-High Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	North Provo (NP)	**Longitude:**	-111.6633	**Station Type:**	SLAMS
AQS#:	49-049-0002	**Latitude:**	40.2538	**MSA:**	Provo - Orem
Address:	1355 North 200 West	**Elevation (m):**	1402		
City:	Provo				
County:	Utah				

Site Objective:
This site is established to determine population exposure to air pollutants.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located at north end of the city of Provo, Utah County. It is located on the grounds of the Dale Rex Army Armory.
Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Carbon Monoxide	Instrumental Gas Phase Correlation	Continuous	Population Exposure	SLAMS- Population Neighborhood
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	SLAMS-High Neighborhood
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$ Real Time	Continuous Gravimetric	Continuous	Air Quality Index	SLAMS- Population Neighborhood
PM_{10}	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
PM_{10}	Manual Gravimetric Co-located	1 in 6 days	Precision and Accuracy Assessment	SLAMS- Population Neighborhood
PM_{10} Real Time	Continuous Gravimetric	Continuous	Air Quality Index	SLAMS- Population Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Ogden #2 (O2)	**Longitude:**	-111.9751	**Station Type:**	SLAMS
AQS#:	49-057-0002	**Latitude:**	41.207	**MSA:**	Ogden-Clearfield
Address:	228 East 32nd Street	**Elevation (m):**	1316		
City:	Ogden				
County:	Weber				

Site Objective:
This site is established replace the original Ogden site to determine population exposure to air pollutants.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located in the city of Ogden in Weber County.
Can data from this site be used to evaluate NAAQS?: Yes

Gas/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Carbon Monoxide	Instrumental Gas Phase Correlation	Continuous	Population Exposure	SLAMS-Population Neighborhood
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	SLAMS-Population Neighborhood
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	SLAMS-High Neighborhood
$PM_{2.5}$	Manual Gravimetric	Daily	Population Exposure	SLAMS-High Neighborhood
$PM_{2.5}$ Real Time	Continuous Gravimetric	Continuous	Air Quality Index	SLAMS-High Neighborhood
PM_{10}	Manual Gravimetric	Daily	Population Exposure	SLAMS-High Neighborhood
PM_{10} Real Time	Continuous Gravimetric	Continuous	Air Quality Index	SLAMS-High Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Relative Humidity	Elec. Thin Film	Continuous	10 meters	Urban
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Price #2 (P2)	**Longitude:**	-110.77	**Station Type:**	SPM
AQS#:	49-007-1003	**Latitude:**	39.5958	**MSA:**	Price
Address:	351 South Weasel Run Road	**Elevation (m):**	1740		
City:	Price				
County:	Carbon				

Site Objective:
This site is established in response to a three state ozone study. It is funded by the Bureau of Land Management.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
This site is located in a farm field 3.6 Km east of Price.
Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Ozone	Instrumental Ultra Violet	Continuous	High Ozone Winter Study	Regional
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	High Ozone Winter Study	Regional

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Regional
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Regional
WD Sigma	Elec. EPA Method	Continuous	10 meters	Regional
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Regional

Site:	Roosevelt (RS)	**Longitude:**	-110.009	**Station Type:**	SPM
AQS#:	49-013-0002	**Latitude:**	40.2941	**MSA:**	NA
Address:	290 South 1000 West	**Elevation (m):**	1588		
City:	Roosevelt				
County:	Duchesne				

Site Objective:
This site is established to determine maximum ozone and $PM_{2.5}$ concentrations in Duchesne County.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located in the city park North West section of Roosevelt.
Can data from this site be used to evaluate NAAQS?: Yes

Gas/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Ozone	Instrumental Ultra Violet	Continuous	High Ozone Winter Study	Regional
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	High Ozone Winter Study	Regional
$PM_{2.5}$ Real Time	Synchronized Hybrid Ambient Real Time Particulate Monitor	Continuous	Population Exposure	Regional

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Sonic Method	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Sonic Method	Continuous	10 meters	Urban
Relative Humidity	Elec. Thin Film	Continuous	10 meters	Urban
Ambient Temperature	Elec. Resistance	Continuous	2 meters	Urban
Temperature Difference	Math Channel	Continuous	10-2 meters	Urban

Site:	Rose Park (RP)	**Longitude:**	-111.9309	**Station Type:**	SLAMS
AQS#:	49-035-3010	**Latitude:**	40.7955	**MSA:**	Salt Lake City
Address:	1354 West Goodwin Avenue	**Elevation (m):**	1295		
City:	Salt Lake City				
County:	Salt Lake				

Site Objective:
This site is established to better represent $PM_{2.5}$ exposure in this area of Salt Lake City.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located in the community of Rose Park at the north end of Salt Lake City, Salt Lake County.
Can data from this site be used to evaluate NAAQS?: Yes

Gas/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
$PM_{2.5}$	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$	Manual Gravimetric Co-located	1 in 6 days	Precision and Accuracy Assessment	SLAMS- Population Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Saltair (SA)	**Longitude:**	-112.0497	**Station Type:**	SPM
AQS#:	49-035-3005	**Latitude:**	40.8061	**MSA:**	Salt Lake City
Address:	6640 West 1680 North	**Elevation (m)**	1282		
City:	Salt Lake City				
County:	Salt Lake				

Site Objective:
This site is established to collect meteorological information for air quality models.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located west of the Salt Lake Airport in Salt Lake County.
Can data from this site be used to evaluate NAAQS?: No

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Relative Humidity	Elec. Thin Film	Continuous	10 meters	Urban
Solar Radiation	Elec. LiCor	Continuous	2 meters	Urban
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Smithfield (SM)	**Longitude:**	-111.851944	**Station Type:**	SLAMS
AQS#:	49-005-0007	**Latitude:**	41.842778	**MSA:**	Logan
Address:	675 West 220 North	**Elevation (m):**	1377		
City:	Smithfield				
County:	Cache				

Site Objective:
Site established to replace Logan site and determine general population exposure.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
This site is located at Birch Creek Elementary School in Cache County. It is approximately 7 miles north of Logan.
Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Nitrogen Dioxide	Instrumental Chemiluminescence	Continuous	Population Exposure	SLAMS- Population Neighborhood
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
$PM_{2.5}$	Manual Gravimetric	1 in 6 days	Precision and Accuracy Assessment	SLAMS- Population Neighborhood
$PM_{2.5}$ Real Time	Continuous Gravimetric	Continuous	Air Quality Index	SLAMS- Population Neighborhood
$PM_{2.5}$ Real Time	Synchronized Hybrid Ambient Real Time Particulate Monitor	Continuous	Air Quality Index	SLAMS- Population Neighborhood
PM_{10}	Manual Gravimetric	Daily	Population Exposure	SLAMS- Population Neighborhood
PM_{10}	Manual Gravimetric Co-located	1 in 6 days	Precision and Accuracy Assessment	SLAMS- Population Neighborhood
PM_{10} Real Time	Continuous Gravimetric	Continuous	Air Quality Index	SLAMS- Population Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Relative Humidity	Elec. Thin Film	Continuous	10 meters	Urban
Solar Radiation	LiCor	Continuous	10 meters	Urban
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Spanish Fork (SF)	**Longitude:**	-111.6603	**Station Type:**	SLAMS
AQS#:	49-049-5010	**Latitude:**	40.1364	**MSA:**	Provo - Orem
Address:	312 West 2050 North	**Elevation (m):**	1380		
City:	Spanish Fork				
County:	Utah				

Site Objective:
This site is established to determine the boundary of the high ozone and $PM_{2.5}$ concentrations in Utah County.
Does the site meet the objective:
Yes, all objectives are met.
Site Description:
The site is located at the Spanish Fork airport in the city of Spanish Fork, Utah County.
Can data from this site be used to evaluate NAAQS?: Yes

Gas/Particulate Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Monitoring Objective	Spatial Scale
Ozone	Instrumental Ultra Violet	Continuous	Population Exposure	SLAMS-Population Neighborhood
$PM_{2.5}$	Manual Gravimetric	Daily days	Population Exposure	SLAMS-Transport Regional

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Urban
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Urban
WD Sigma	Elec. EPA Method	Continuous	10 meters	Urban
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Urban

Site:	Vernal (V4)	**Longitude:**	-109.560733	**Station Type:**	SLAMS
AQS#:	49-047-1003	**Latitude:**	40.464971	**MSA:**	NA
Address:	628 North 1700 West	**Elevation (m):**	1667		
City:	Vernal				
County:	Uintah				

Site Objective:
This site is established was set up in response to an ozone study.
Does the site meet the objective:
Yes, all objectives are met.
Can data from this site be used to evaluate NAAQS?: Yes

Gaseous/Particulate Parameters

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Ozone	Instrumental Ultra Violet	Continuous	High Winter Ozone Study	Regional
Nitrogen Dioxide	Instrumental Ultra Violet	Continuous	High Winter Ozone Study	Regional
$PM_{2.5}$ Real Time	Instrumental Ultra Violet	Continuous	Air Quality Index	SLAMS-Population Neighborhood

Meteorological Parameters:

Parameter	Sampling & Analysis Method	Operating Schedule	Tower Height	Spatial Scale
Relative Humidity	Elec. Thin Film	Continuous	10 meters	Regional
Ambient Temperature	Elec. Resistance	Continuous	10 meters	Regional
Wind Direction	Elec. Resistance Level 1	Continuous	10 meters	Regional
WD Sigma	Elec. EPA Method	Continuous	10 meters	Regional
Wind Speed	Elec. Chopped Signal Level 1	Continuous	10 meters	Regional
Barometric pressure	Pressure Transducer	Continuous	2 meters	Regional

Planned Network Changes SFY2018

Several changes are proposed for the Utah monitoring network for the next 18 months. These changes aim to improve the data available for health advisories, characterization of urban and rural areas, modeling of high pollution periods, and removal of redundant sites and monitoring activities. All the identified changes are subject to available monies, personnel, and consultation with EPA.

- Efforts have been made to establish a multi-pollutant monitoring site in the southeast area of Salt Lake County at Copperview Elementary School. Security issues have delayed progress at this site, but stronger fence construction in 2017 will prevent future problems and allow for completion of the monitoring site.

- The total population of Cedar City CBSA is expected to exceed the threshold of federal monitoring requirements in 2018. The plan is to establish a site in Iron County due to this expected population growth. A site has been selected in Enoch, Utah, following data from an ozone saturation study. The station will be installed in 2017 and operational by January 1, 2018. $PM_{2.5}$, ozone, NO_x and met parameters will be monitored at this site.

- The location for a required NO_2 near-road monitoring site in Salt Lake County is on the west side of I-15 near 4900 South. This site has been approved by EPA and work is progressing. Due to the high average daily traffic counts, a second near-road monitoring site will potentially be added within the Salt Lake City CBSA. The best location for a second site is being evaluated.

- Monitoring shelters at Magna (MG) and Spanish Fork (SF) need to be moved due to scheduled construction at the existing sites.

    - MG: Currently, lease negotiations are progressing with Salt Lake County to establish a new site at a nearby senior center in Magna. The FRM $PM_{2.5}$ monitors and meteorological equipment will be moved. Permission to shut down the lead (Pb) monitors has been requested from the EPA. Lead will be sampled until EPA approves the removal or until December 2017, whichever comes first. Additional monitoring for SO_2 will be conducted at the new Magna Senior Center site as this also corresponds to a modeled max concentration SO_2 site.

    - SF: Station will need to be moved by January 1, 2018, due to airport construction. Modelers have identified potential site areas around Spanish Fork (see attached report). Site identification and selection will continue over the next two months, creating a tentative installation date of September 2017. Data collection will continue at the current SF site to prevent data loss until the new station is operational and approved by the EPA.

- Wet and dry mercury sampling at the Air Monitoring Center will be shut down in 2017 after consultation with the EPA. As this data is not regulatory and is not required for SIP planning, it is cost and resource effective to halt sampling once the current consumables run out (approximately August 2017).

- Previous plans proposed consolidating the North Provo (NP) and Lindon (LN) sites to one site. Due to increased incidents with vagrants living in the area and security issues, the NP site is slated to be closed down by the end of 2017. The CO monitor at NP will be turned off for the foreseeable future or until a better location can be identified.

Planned Network Changes SFY2018, continued

- All stations will be reviewed annually to ensure that they continue to meet required siting criteria. Any sites that do not meet applicable criteria will be evaluated for future actions.

- The DAQ plans on moving from filter based sampling to continuous sampling for PM_{10} primary data reporting on January 1, 2018, if all the required infrastructure and instrumentation is in place by then. Due to the nature of the PM_{10} rules this change can only take place at the end of a calendar year. This will result in the elimination of filter based sampling for PM_{10} at most current locations. At least one filter based sampler will be maintained for QC requirements and other uses.

Public Comment

The Utah Division of Air Quality will establish a 30-day public comment period from May 29, 2017, to June 29, 2017, for this report.

Spanish Fork Monitoring Station Relocation Analysis

By
Roman Kuprov and Chris Pennell
DAQ 2017

Station Overview

Location

The Spanish Fork (SF) sampling station is part of the Utah Air Monitoring Network and is located in the city limits of Spanish Fork, Utah on the grounds of the city airport. It is one of the three stations designated for air pollution monitoring in the Provo/Orem metropolitan statistical area (MSA). The other two sites are Lindon (LN) and North Provo (NP).

The SF station was established on June 15, 1998, with the commencement of ozone monitoring. The initial purpose for the station was to serve as a boundary sampling point for the Provo/Orem area. The station would accommodate $PM_{2.5}$, ozone, and meteorological monitoring. $PM_{2.5}$ sampling at SF began on January 1, 1999, and has continued until the present day. Until 2015, the ozone monitoring program prescribed seasonal monitoring (May – September) for most of the stations in the network. Beginning in April 2015, SF along with the rest of the ozone monitors in the network began year-around ozone monitoring.

The following table indicates the method and instrumentation that are currently used for air quality monitoring at SF.

Parameter	Instrument	Method
$PM_{2.5}$	Thermo 2025	Gravimetric
Ozone	API 400-E	UV absorbtion
Wind Speed	Met One 010C	Lexan cup anemometer
Wind Direction	Met One 020C	Airfoil vane
Temperature	Met One	Resistance element

Reason for Removal

Spanish Fork Airport notified DAQ that it was planning an expansion in 2018. The construction activity would take place at the current location of the monitoring station. Because concurrent construction activities would overflow into the immediate area of the station shelter, the station needs to be relocated.

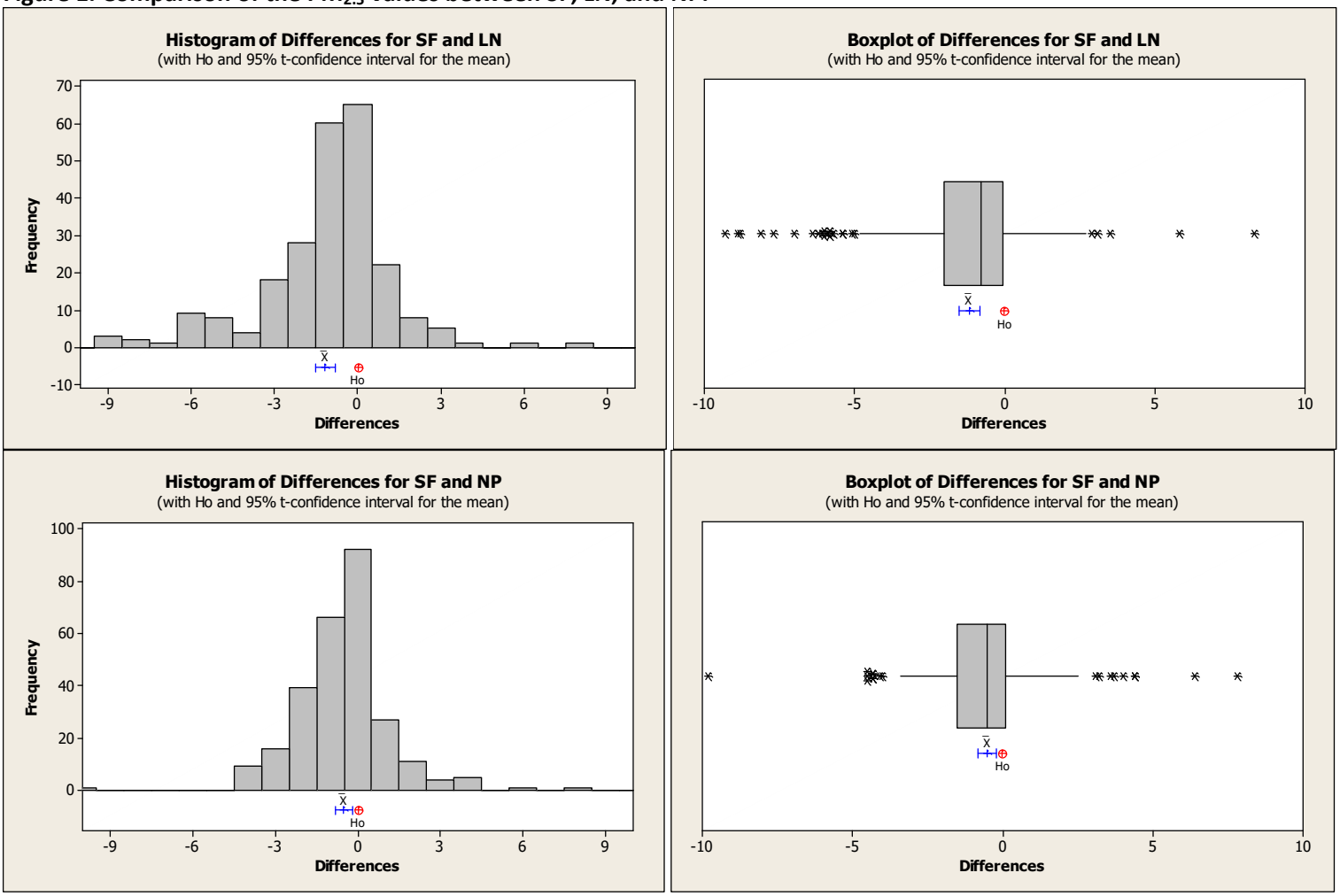
The original relocation plan that was approved by EPA Region 8 was to move the monitoring station across the street to an empty lot. However, the airport authorities notified DAQ that the in question will be under heavy development in the next 3-5 years, rendering a permanent monitoring location non-viable.

Data

The pollution and meteorological data at SF is collected year-round. The $PM_{2.5}$ sampler operated on 1-in-3-days schedule until 2016, when network-wide daily $PM_{2.5}$ sampling began. The ozone and met monitors deliver hourly-averaged values 24 hours per day. The other stations in the Provo/Orem MSA collect air pollution data on day-to-day basis.

A paired T-test was used to compare the mean $PM_{2.5}$ concentrations between SF, Provo, and Lindon. However, no ozone measurements were collected at the Lindon sampling site, so the ozone comparison was done only between North Provo and Spanish Fork. The data for the $PM_{2.5}$ comparison was taken from calendar year of 2016. Figure 1 shows the comparison of means between SF, LN, and NP.

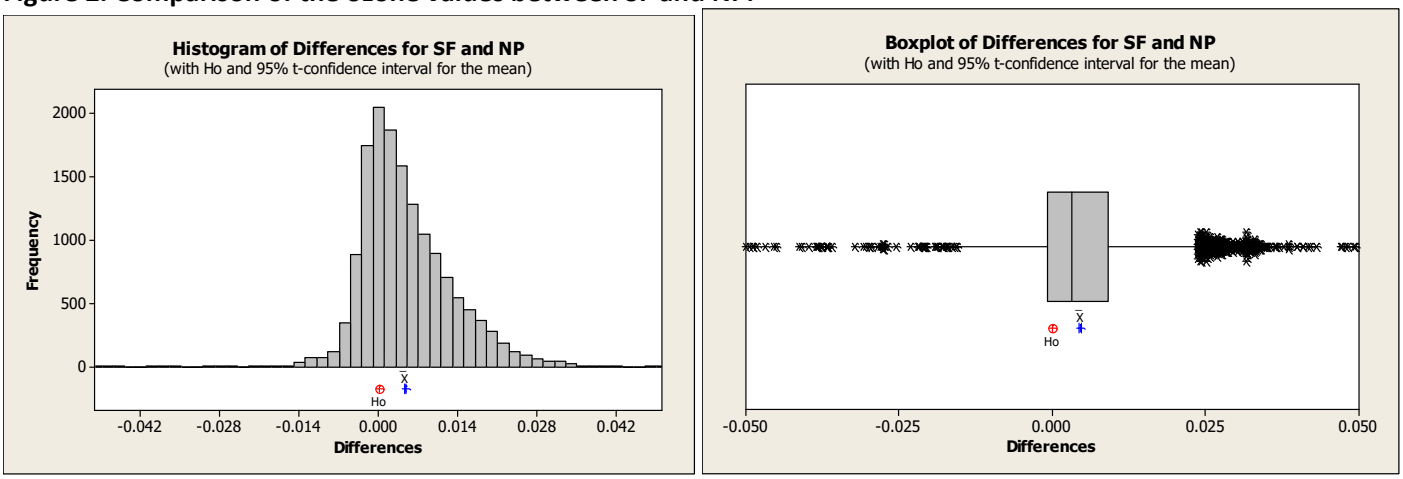
Figure 1. Comparison of the $PM_{2.5}$ values between SF, LN, and NP.



The data indicates that there is statistically significant differences between the SF mean $PM_{2.5}$ values, which were lower, and those observed in either Provo or Lindon. The 95% confidence for the greatest differences in the data (between SF and Lindon) was between -1.5 and 0.8 micrograms per cubic meter.

The ozone data for SF and NP was converted to the 8-hour rolling average values. This was done in order to keep the data consistent with the form used in determining the design values for ozone. Additionally, the 8-hour average would decrease the amount of noise in the data resulting from the high sampling frequency. The comparison of 8-hour rolling averages between SF and NP is presented in Figure 2.

Figure 2. Comparison of the ozone values between SF and NP.



The data in Figure 2 indicates that the 8-hour rolling averages of ozone are higher in Spanish Fork than at the North Provo site at a 95% confidence level. This is consistent with the greater level of urban activity at North Provo than in Spanish Fork that would result in increased NO_x scrubbing of ozone at the North Provo site.

Modeling Results

$PM_{2.5}$ Modeling

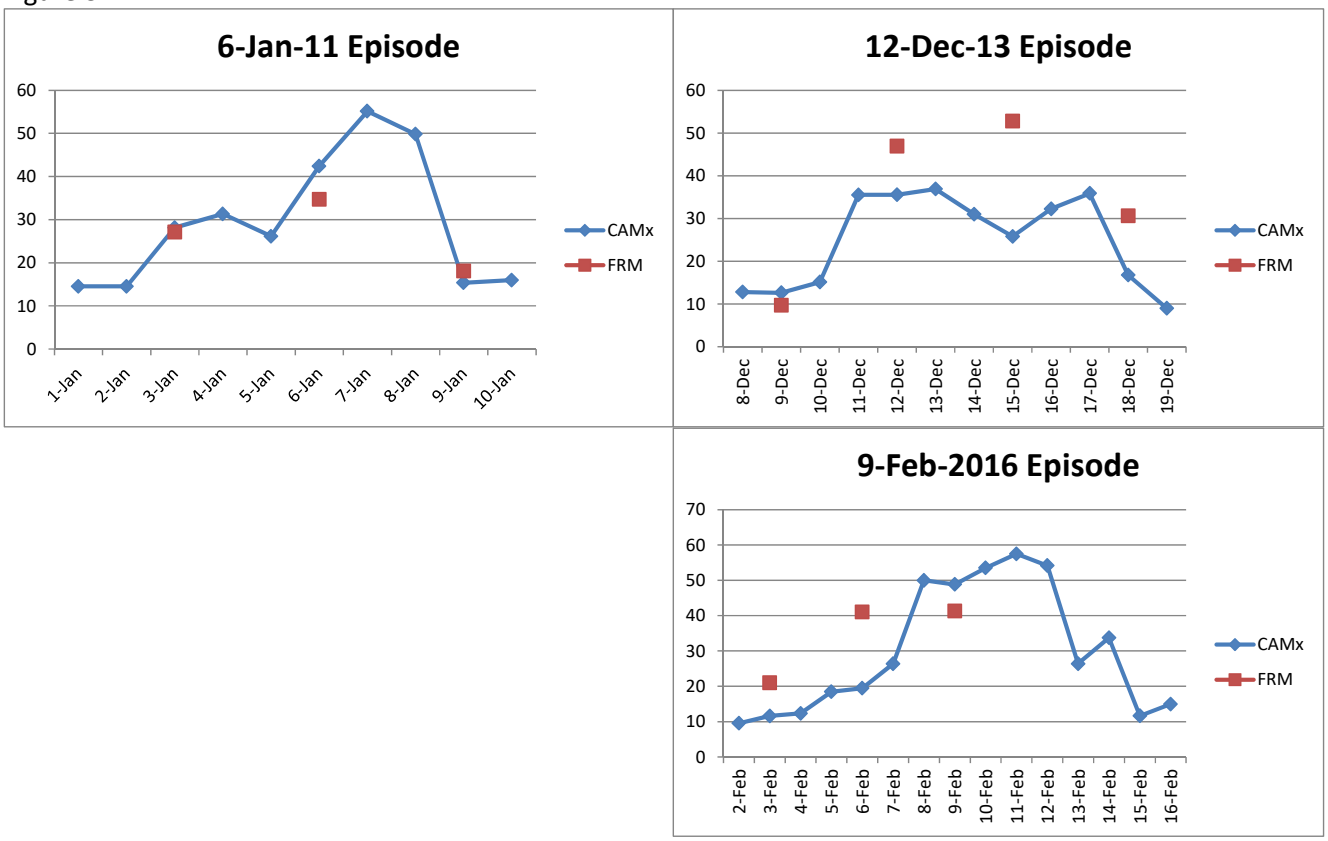
For the modeling-based analysis, DAQ used the Comprehensive Air Quality Model with Extensions (CAMx) 6.30 air quality model (www.camx.com). The CAMx modeling domain featured a high-resolution 1.33 kilometer grid that covered all of Utah County.

DAQ took the 24-hour average of simulated $PM_{2.5}$ for three different days where agreement of the model with measurements met model performance standards. These three days also featured measurements that were well above the NAAQS (35ug/m3). Historical 24-hour $PM_{2.5}$ measurements were taken from the Lindon, Utah FRM monitor. The days chosen for the analysis were:

January 6, 2011
December 12, 2013
February 9, 2016

A rectangular window (or subdomain) of grid-cells was then constructed as to be centered on the Spanish Fork area. The window is geographically constrained to the immediate area around Spanish Fork. This was done to improve the resolution to avoid local values being overwhelmed by those from the Provo/Orem metropolitan area. FRM measurements at SF and the model outputs are shown in Figure 3.

Figure 3.

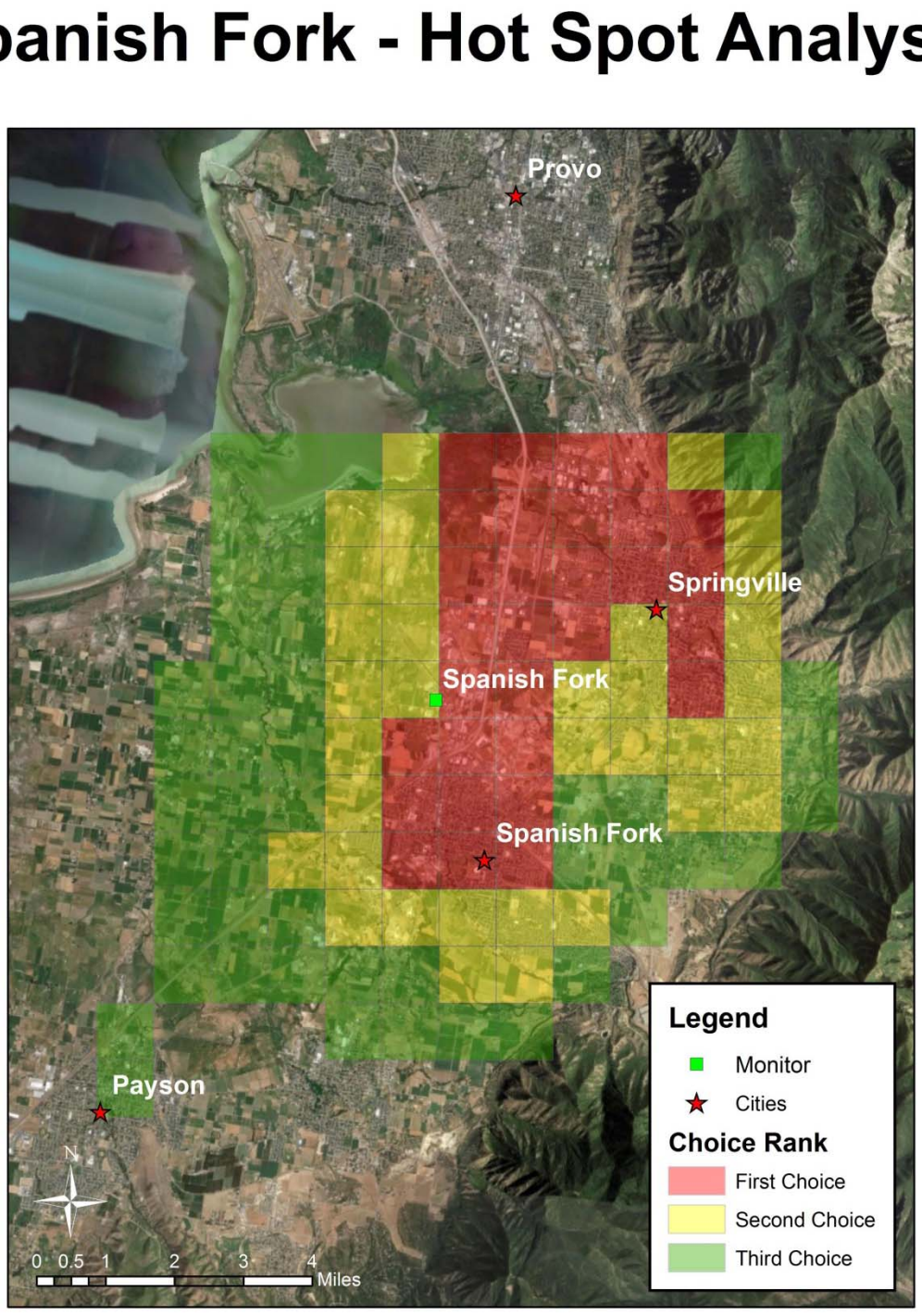


During the high-pollution events, the photochemical model tended to underestimate the FRM measurements to a greater degree than overestimate. During three out of five days when the $PM_{2.5}$ was greater than 30µg/m^3, the model under-predicted the filter mass by an average of 40%. During the other two days, the model overestimated the $PM_{2.5}$ concentrations by 20%.

For this analysis the modeled 24-hour $PM_{2.5}$ values each of the three days were normalized such that the highest value in the window was 1. The normalization was done to negate the variability in peak $PM_{2.5}$ over the different periods. Finally, a gridded composite was made by averaging all three episodes.

Composite values between 90% and 100% are considered prime candidates for monitor relocation. Values between 80% and 90% are considered appropriate, while values between 70% and 80% are considered non-optimal choices. Values below 70% are not to be considered for monitor relocation as hypothetical $PM_{2.5}$ measurements taken in these are not likely to be significant. The map of the local area with the appropriate relocation grid cells overlaid is presented in Figure 4.

Figure 4. Normalized grid cells overlaid on the topographical map of the area



The numerical representation of the grid is presented below in Figure 5.

Figure 5. Normalized numerical values for the cells averaged for the three episodes.

32	0.49	0.60	0.67	0.71	0.74	0.79	0.85	0.91	0.99	0.99	0.96	0.84	0.80
31	0.50	0.61	0.69	0.73	0.76	0.81	0.85	0.92	0.98	0.98	0.99	0.98	0.83
30	0.50	0.61	0.69	0.74	0.77	0.82	0.85	0.92	0.97	0.97	0.97	1	0.83
29	0.50	0.59	0.69	0.73	0.77	0.82	0.87	0.93	0.92	0.90	0.87	0.96	0.82
28	0.52	0.60	0.70	0.74	0.77	0.83	0.88	0.933	0.90	0.83	0.85	0.92	0.87
27	0.52	0.60	0.70	0.74	0.78	0.84	0.92	0.98	0.92	0.81	0.85	0.86	0.85
26	0.52	0.61	0.71	0.75	0.79	0.86	0.97	0.97	0.94	0.79	0.76	0.80	0.80
25	0.52	0.62	0.72	0.76	0.82	0.87	0.92	0.95	0.93	0.78	0.72	0.75	0.75
24	0.54	0.63	0.72	0.77	0.78	0.81	0.85	0.88	0.89	0.84	0.71	0.65	0.69
23	0.56	0.66	0.73	0.71	0.74	0.76	0.79	0.80	0.81	0.76	0.69	0.57	0.54
22	0.60	0.71	0.70	0.68	0.70	0.72	0.72	0.73	0.71	0.66	0.56	0.45	0.38
21	0.66	0.71	0.67	0.62	0.63	0.66	0.67	0.66	0.64	0.56	0.42	0.27	0.20
20	0.68	0.67	0.60	0.57	0.58	0.61	0.61	0.59	0.57	0.47	0.30	0.17	0.13
19	0.64	0.61	0.54	0.52	0.53	0.55	0.56	0.56	0.51	0.38	0.20	0.11	0.10
18	0.57	0.54	0.49	0.45	0.45	0.47	0.48	0.50	0.41	0.24	0.11	0.08	0.07
	48	49	50	51	52	53	54	55	56	57	58	59	60

The grid suggests that moving the station down to the cells south of the cell containing SF could increase the observed $PM_{2.5}$ by 2%-5%. As a side note, the exact location of the Spanish Fork station is on the border between 0.88 and 0.933 cells. Thus, it is likely that the observed $PM_{2.5}$ values at a new location within the appropriate cells could deliver even higher $PM_{2.5}$ values.

Ozone

Ideally, a process similar to the one performed for $PM_{2.5}$ would be used for determining a suitable location for ozone monitoring. To accomplish that, a new CAMx modeling run would need to be set up and run for the ozone episodes in the summer. However, at this time DAQ does not have a summertime emission inventory that could be used as a basis for such modeling.

A local ozone saturation study could provide an alternative and viable way of determining the best monitoring location for ozone. The study would consist of a number of portable ozone monitors spread around the local area with the sampling period extended through the ozone season. Post-sampling modeling would include the addition of meteorological parameters to the ambient ozone data collected during the study. Unfortunately, the DAQ does not have the resources or time available to conduct such a study before the station removal deadline. As it stands, neither option for ozone is available, so the station relocation will be conducted with the consideration of maximizing the projected $PM_{2.5}$ concentrations only.

Recommendation

Because the relocation of the current SF monitoring station is inevitable and needs to be done within a span of the next few months, we recommend moving the current station within one of the suggested, prime candidate grid-cells that are directly south of the current location. The search for the exact location will begin in May.

The DAQ will keep EPA Region 8 updated on the progress or any changes that may happen during the station relocation process.