



**M6 Destruction Project
Camp Minden
March 31, 2016**



Schedule

- Currently conducting training and final systemization
- Week of 11Apr2016 for first live fire
- 30 days of ramp up
- Conduct CPT of stack emissions ~ 7 days
- ~ 2 weeks of down time waiting on partial (SVOC) analytical results/report/review
- Full Production

Reporting

Daily

CEMS Stack & Community Air Monitors, Destruction Progress Report

Weekly

Air Monitor locations for SVOC, VOC

Quarterly

Groundwater, Stack Emissions (VOC & SVOC)

Semi-annual

Dioxin & Furan (Stack & Community Air Monitors)

Data Validation/Submittal to LMD for posting

Dashboard

Website: www.esicampminden.com

- Updates every 5 minutes to provide most recent data
- Scrolls the last 24 hours
- Real time stack emission, community air monitoring and destruction progress data

Camp Minden Background Air Monitoring/Sampling Program

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March 31, 2016

| OUTLINE

- Background Air Monitoring Plan
- Data presentation and interpretation
- Discussion of results and ongoing efforts

EPA Baseline Monitoring Approach

Baseline Air and Soil Quality Assurance Sampling Plan, Camp Minden, Minden, Webster and Bossier Parishes, Louisiana

**Table 3-1
Baseline Air Operations**

Parameters	Type	Analytical Method	Equipment	No. of Primary Samples per Location	Sample Duration (hours)	Time Interval	Sample Shipments to Laboratory / Data Updates	Laboratory TAT
SVOCs	Sample	TO13A	PS-1 PUF Sampler	2	24	Noon to Noon	1/week	2 Weeks
Dioxin/ Furans	Sample	TO9A	PS-1 PUF Sampler	1	48	Noon to Noon	1/week	2 Weeks
PM2.5	Sample	40 CFR	BGI PQ200	2	24	Noon to Noon	1/week	2 Weeks
PM10	Sample	40 CFR	BGI PQ200	2	24	Noon to Noon	1/week	2 Weeks
VOCs	Sample	TO15	Summa Canister	2	24	Noon to Noon	1/week	2 Weeks
PM2.5	Monitor	40 CFR	MetOne BAM1020	NA	Continuous	60-min ave	Daily	NA
NOx	Monitor	40 CFR	Thermo 42i	NA	Continuous	1, 15 & 60 min ave(s)	Daily	NA
SO2	Monitor	40 CFR	Thermo 43i	NA	Continuous	1, 15 & 60 min ave(s)	Daily	NA
CO	Monitor	40 CFR	Thermo 48iTLE	NA	Continuous	1, 15 & 60 min ave(s)	Daily	NA
CO2	Monitor	40 CFR	Teledyne-API Model 360E	NA	Continuous	1, 15 & 60 min ave(s)	Daily	NA

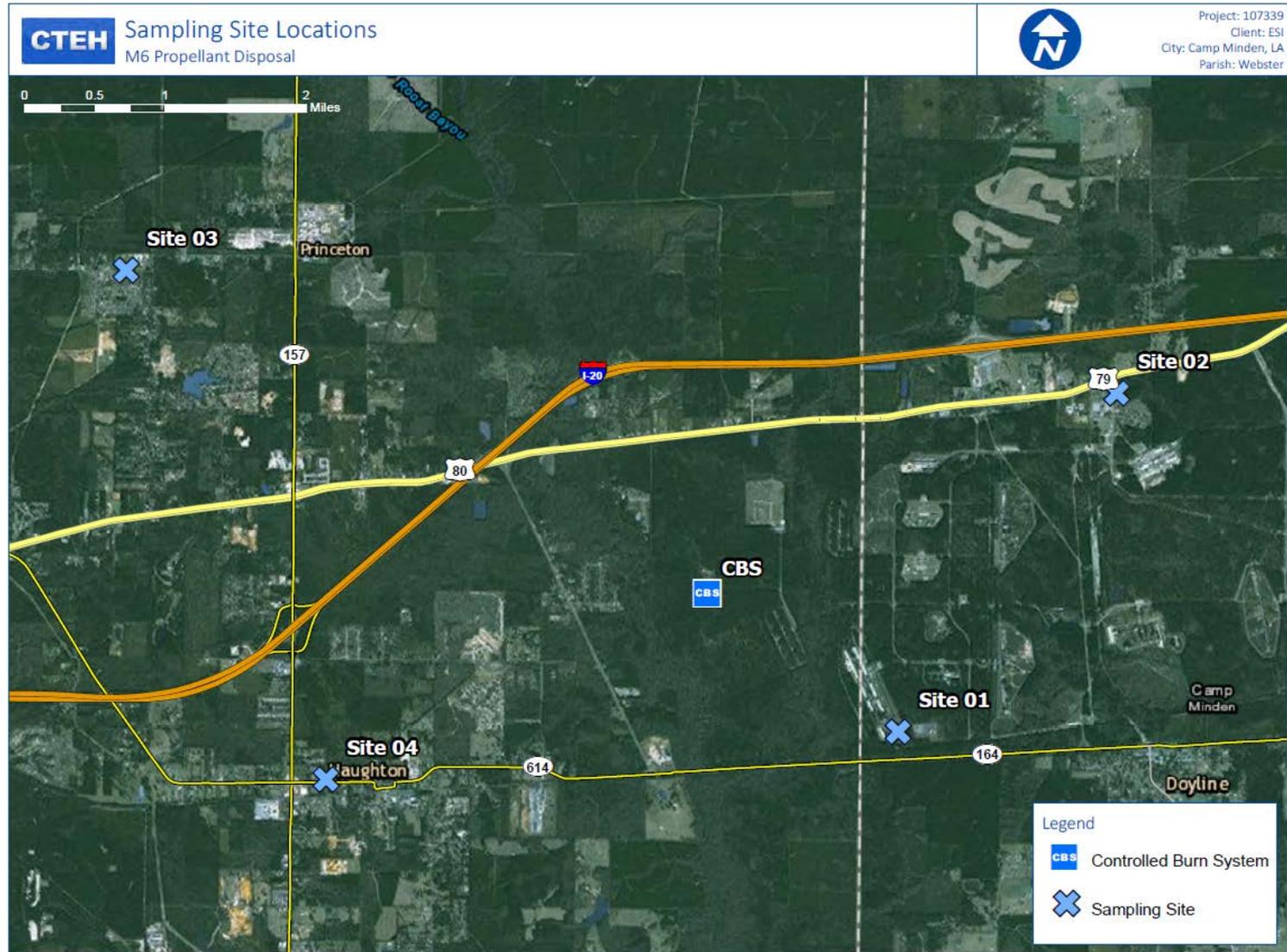
| Background Air Monitoring Study

- Purpose:
 - 1) Adopt EPA Baseline air monitoring/sampling methods
 - 2) Determine what levels of what chemicals are already in the air in the region (ie. establish “What is normal for this region”);
 - 3) Compare results to applicable air quality standards, ie. NAAQS; EPA Regional Screening Levels (RSLs)
 - 4) Troubleshoot air monitoring/sampling equipment and data collection systems prior to contained burn activities.

Background Air Monitoring Study



Background Air Monitoring/Sampling Study



Background Data Analysis and Interpretation

- Analytical data (VOC, SVOC, Ds/Fs, PM_{2.5}, PM₁₀):
 - Sampling conducted at each of 4 sampling trailers on Feb. 25, 26, 27 and March 2, 3, 7, and 13 (still ongoing every 6th day except Ds/Fs)
 - Results compared to EPA Regional Screening Levels (RSLs)
 - Data validation in progress
- Real-time data (CO, CO₂, NO_x, SO₂, PM_{2.5})
 - Calculated averages of chemical levels detected by instruments at each of 4 monitoring trailers
 - Monitoring conducted 24/7 from March 6- March 29 (and still ongoing 24/7)
 - Comparison with National Ambient Air Quality Standards (NAAQS)

Background Data Analysis and Interpretation: Health Comparisons

- What are the EPA RSLs?
 - Risk-based screening levels; not indicators of disease
 - “SLs are considered by the Agency to be protective for humans (including sensitive groups) over a lifetime”
 - “The RSL tables provide comparison values for residential and commercial/industrial exposures to soil, air, and tapwater (drinking water).”
 - RSLs are provided for potential cancer and non-cancer end-points as applicable.
 - If sampling results are below RSLs, we can be confident that a significant health risk does not exist.
 - Exceedance of a RSLs does not necessarily mean that a true health hazard exists; may warrant further investigation:
 - How frequently is the RSL exceeded?
 - By how much is the RSL exceeded?
 - Are there site-specific characteristics to consider?

EPA National Ambient Air Quality Standards (NAAQS)

- What are the NAAQS?
 - “The [Clean Air Act](#), which was last amended in 1990, requires EPA to set National Ambient Air Quality Standards (40 CFR part 50) for pollutants considered harmful to public health and the environment. The Clean Air Act identifies two types of national ambient air quality standards. **Primary standards** provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. **Secondary standards** provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.”

EPA National Ambient Air Quality Standards (NAAQS)

Pollutant [links to historical tables of NAAQS reviews]		Primary/Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Nitrogen Dioxide (NO₂)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb ⁽²⁾	Annual Mean
Particle Pollution (PM)	PM _{2.5}	primary	1 year	12.0 µg/m ³	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m ³	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO₂)		primary	1 hour	75 ppb ⁽⁴⁾	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

Background Data Analysis and Interpretation: Analytical Sampling (1)

- What volatile organic chemicals (VOCs) were detected (>50 target chemicals)?
 - **Methyl Ethyl Ketone**- solvent; commonly found in outdoor air
 - Found in 1/20 samples at 2.9 ug/m³
 - RSL= 5,200 ug/m³
 - **Acetone**- fingernail polish; solvent that also occurs naturally
 - Found in 3/20 samples at 12-18 ug/m³
 - RSL= 32,000 ug/m³
 - **Benzene**- hydrocarbon in gasoline and vehicle exhausts
 - Found in 1/20 samples at 3.2 ug/m³ (normal for rural and urban air)
 - RSL= 0.36 ug/m³ (C)
 - **Carbon Disulfide**- solvent; common in marshy areas
 - Found in 1/20 samples at 10 ug/m³
 - RSL= 730 ug/m³

Background Data Analysis and Interpretation: Analytical Sampling (2)

- What volatile organic chemicals (VOCs) were detected (>50 target chemicals)?
 - **Chloromethane**- R-40 refrigerant, common in outdoor air
 - Found in 13/20 samples on 4 different days; results= 1.7-2.2 ug/m³
 - RSL= 94 ug/m³
 - **Dichlorodifluoromethane**- Freon-12, common in outdoor air
 - Found in all samples on all days at 2.2-3 ug/m³
 - RSL= 100 ug/m³
 - **Toluene**- hydrocarbon/solvent in gasoline, vehicle exhaust, paints
 - Found in 2 samples at 2 sites on separate days at 1.9 and 2.4 ug/m³
 - RSL= 5,200 ug/m³
 - Other chemicals detected at very low “estimated” levels

Background Data Analysis and Interpretation: Analytical Sampling (3)

- What semivolatile organic chemicals (SVOCs) were detected (>60 target chemicals)?
 - ***Bis(2-chloroethyl)ether***- industrial solvent
 - Found in 1/23 samples; results= 0.15 ug/m³
 - RSL= 0.0085 ug/m³ (C); ATSDR MRL= 100 ug/m³
 - ***Di-N-butyl phthalate***- plastic softener; found in shower curtains, raincoats, food wraps, bowls, car interiors, vinyl fabrics, floor tiles; **and M6**
 - Found in 22/24 samples at 0.4-120 ug/m³
 - RSL= Not available for air
 - Other chemicals detected at very low “estimated” levels

Background Data Analysis and Interpretation: Analytical Sampling (4)

- What dioxins and furans (Ds/Fs) were detected (17 target chemicals + 10 Total Ds/Fs congener groups)?
 - **4 Congener groups- products of combustion**
 - Total TCDD- 2/4 samples- 0.065-0.16 pg/m³
 - Total TCDF- 5/5 samples- 0.041-0.24 pg/m³
 - Total PeCDF- 1/4 samples- 0.18 pg/m³
 - Total HpCDD- 1/4 samples- 0.26 pg/m³
 - **RSL= 0.74 pg/m³ (C)- TCDD**
 - Other chemicals detected at very low “estimated” levels

Background Data Analysis and Interpretation: Analytical Sampling (5)

- What levels of Particulate Matter ($PM_{2.5}$ and PM_{10}) were detected?
 - ***$PM_{2.5}$ - 22 samples collected****
 - Feb. 25- 3.4-4.2 $\mu\text{g}/\text{m}^3$
 - Feb. 26- 5.4-9.2 $\mu\text{g}/\text{m}^3$
 - Mar. 2- 6.9-8.0 $\mu\text{g}/\text{m}^3$
 - Mar. 3- 4.5-5.1 $\mu\text{g}/\text{m}^3$
 - Mar. 7- 6.9-7.2 $\mu\text{g}/\text{m}^3$
 - Mar. 13- 8.1-8.2 $\mu\text{g}/\text{m}^3$
 - ***PM_{10} - 26 samples collected****
 - Feb. 25- 4.4-7.2 $\mu\text{g}/\text{m}^3$
 - Feb. 26- 7.9-14.2 $\mu\text{g}/\text{m}^3$
 - Mar. 2- 10.4-11.9 $\mu\text{g}/\text{m}^3$
 - Mar. 3- 10.8-14.6 $\mu\text{g}/\text{m}^3$
 - Mar. 7- 14.1-17.1 $\mu\text{g}/\text{m}^3$
 - Mar. 13- 17.4-21.1 $\mu\text{g}/\text{m}^3$

NAAQS= 35 $\mu\text{g}/\text{m}^3$ **

NAAQS= 150 $\mu\text{g}/\text{m}^3$ ***

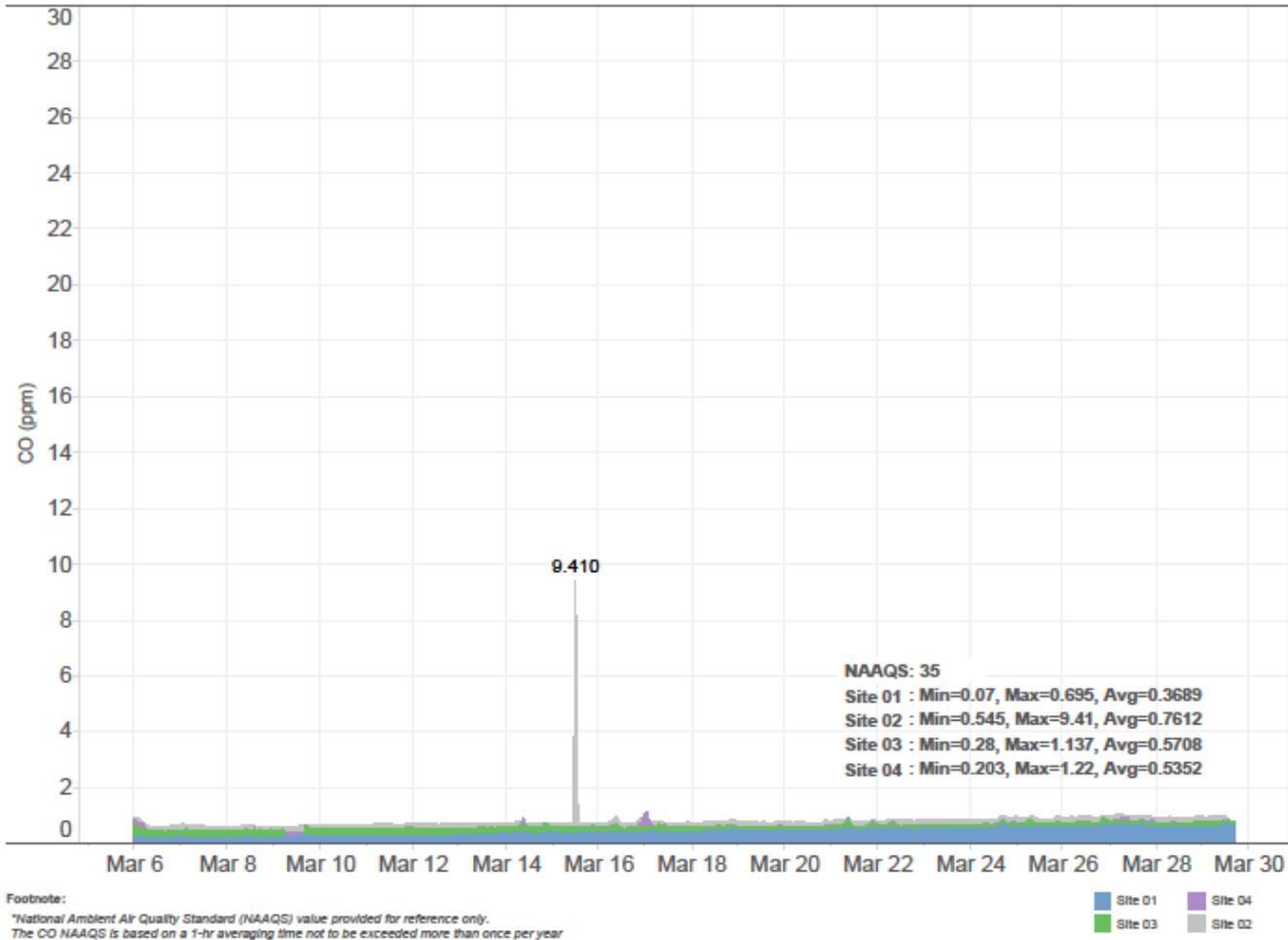
****Raw values***

*****NAAQS for $PM_{2.5}$ - 24 hrs; 98th percentile, averaged over 3 years***

******NAAQS for PM_{10} - 24 hrs; Not to be exceeded more than once per year on average over 3 years***

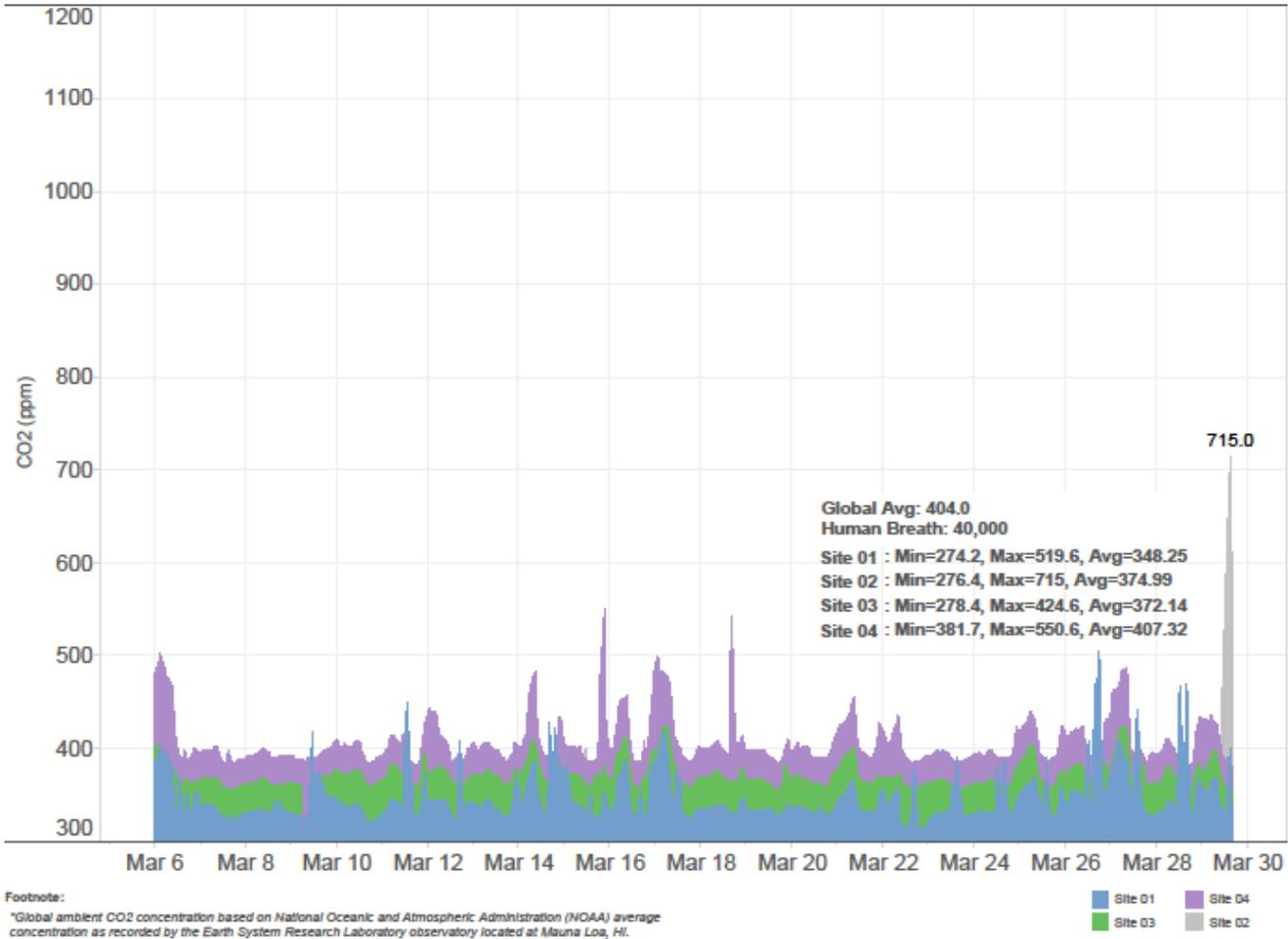
Background Data Analysis and Interpretation: Air Monitoring (CO)

Hourly CO Concentration : March 06, 2016 to March 29, 2016



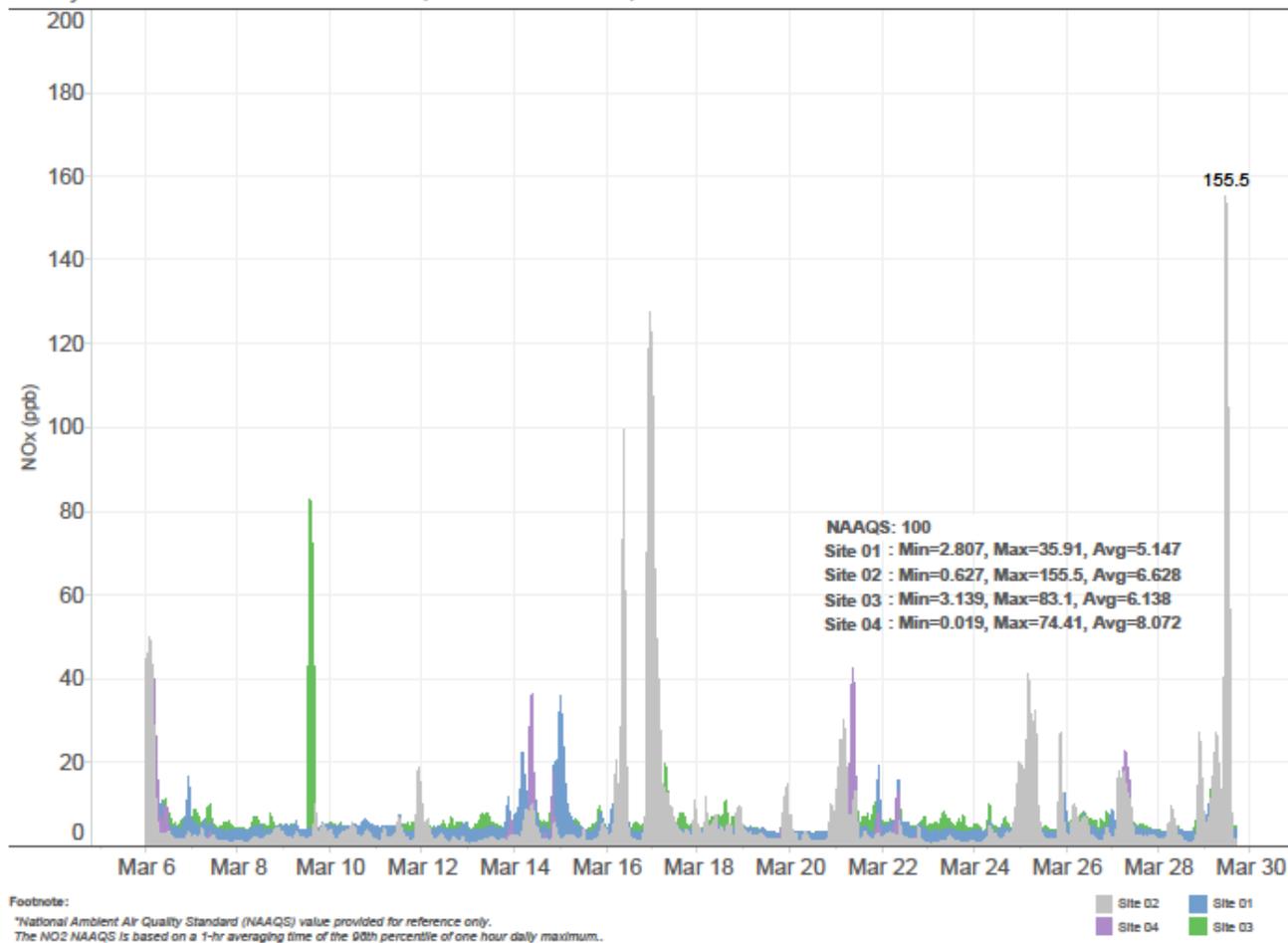
Background Data Analysis and Interpretation: Air Monitoring (CO2)

Hourly CO2 Concentration : March 06, 2016 to March 29, 2016



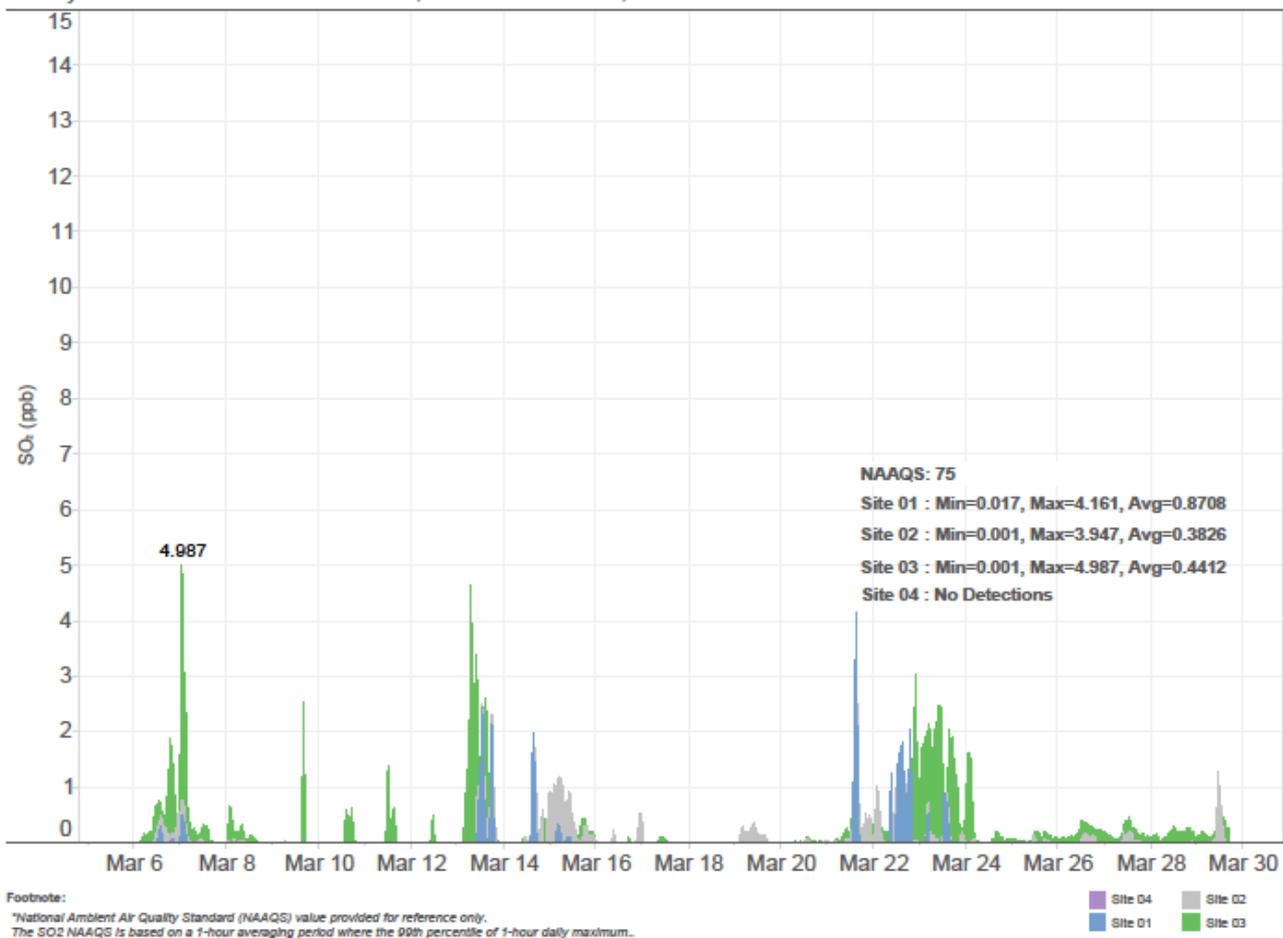
Background Data Analysis and Interpretation: Air Monitoring (NOx)

Hourly NOx Concentration : March 06, 2016 to March 29, 2016



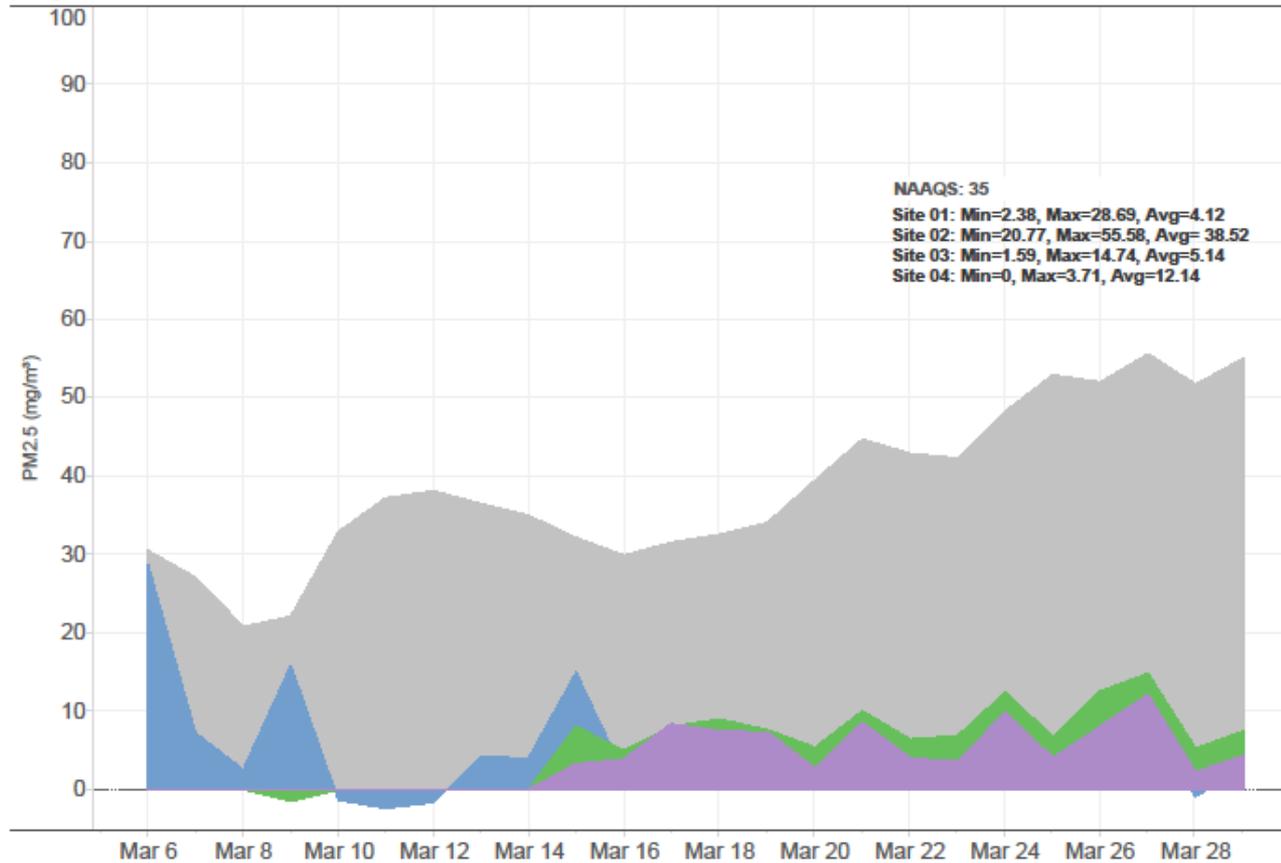
Background Data Analysis and Interpretation: Air Monitoring (SO₂)

Hourly SO₂ Concentration : March 06, 2016 to March 29, 2016



Background Data Analysis and Interpretation: Air Monitoring (PM_{2.5})

Daily PM_{2.5} Concentration : March 06, 2016 to March 29, 2016



Footnote:

*National Ambient Air Quality Standard (NAAQS) value provided for reference only.
The PM_{2.5} NAAQS is based on a 24-hr averaging period not to be exceeded more than once per year on average over three years.

Site 04 Site 01
Site 03 Site 02

Background Data Discussion

- Our analytical sampling methods are VERY sensitive.
- Analytical results show variable but very low levels of detected chemicals that are below RSLs and/or not associated with health hazards.
- Our air monitoring instruments are VERY sensitive (finicky).
- Air monitoring results show variations possibly due to a variety of sources:
 - Vehicle traffic, dust, mowing, community activities, seasonal (pollen)
- Hourly and/or 24-hour averages for NAAQS pollutants suggest majority of levels are well below NAAQS standards.
- Interpretation of data during M6 destruction will include observations of meteorology and unrelated activities.

Questions?