# Air Quality Monitoring DASHBOARD REPORT

August – September 2015





# **Continuous Monitoring Stations**

## **Cold Lake**

## Nitrogen Dioxide (ppb) 150 100 50 9-Aug 17-Aug 26-Aug Sulphur Dioxide (ppb) 200 160 120 80 40 0 1-Aug 9-Aug 17-Aug 26-Aug Hydrocarbons (ppm) 20 15 10 5 1-Aug 9-Aug 17-Aug 26-Aug Reduced Sulphurs (ppb) 16 12 8 9-Aug 17-Aug 26-Aug Ozone (ppb) 100 80 60 40 20

9-Aug 17-Aug 26-Aug

9-Aug 17-Aug 26-Aug

Fine Particulates (μg/m³)

100

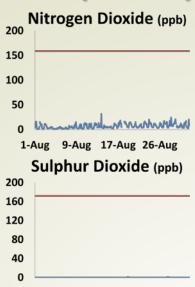
80

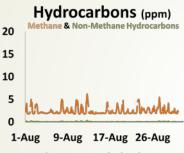
60

40

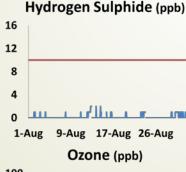
20

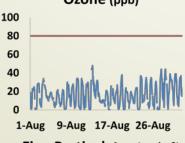
## PAMS (Elk Point)



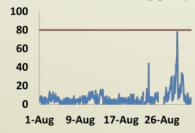


1-Aug 9-Aug 17-Aug 26-Aug

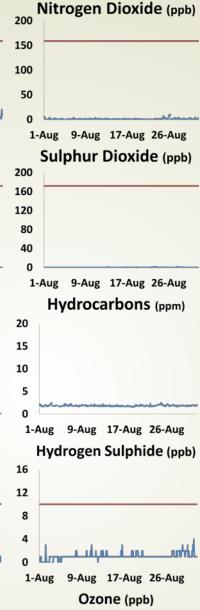


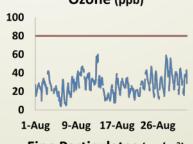


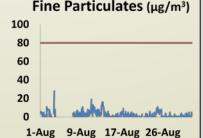
Fine Particulates (µg/m³)



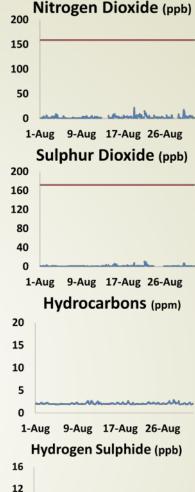
## St. Lina







## Maskwa



#### Notable observations for Aug 2015:

9-Aug 17-Aug 26-Aug

8

1-Aug

- Air quality was rated as "Low Risk" over 80% of the time at the Cold Lake, St. Lina, and portable monitoring stations.
- In this series of charts, the blue line indicates the pattern of measurements over a onemonth period; the red line indicates the applicable Alberta Ambient Air Quality Objective (AAAQO) established for the respective parameter; in the case of Fine Particulates, the red line indicates the Alberta Ambient Air Quality Guideline.
- The St. Lina monitoring station had less than 90% operational time for particulate matter during the month of August 2015 (Reference #303701). Under the Oil Sands Monitoring Plan, LICA will systematically replace the TEOM-FDMS particulate matter monitoring units with beta attenuation light scattering technology starting in 2015; by 2017, all units will be phased over to the newer, more reliable method.

# **Continuous Monitoring Stations**

## **Cold Lake**

### Nitrogen Dioxide (ppb) 150 100 50 9-Sep 17-Sep 26-Sep 1-Sep Sulphur Dioxide (ppb) 200 160 120 80 40 0 9-Sep 17-Sep 26-Sep Hydrocarbons (ppm) 20 15 10 5 9-Sep 17-Sep 26-Sep Reduced Sulphurs (ppb) 16 12 8 9-Sep 17-Sep 26-Sep 1-Sep Ozone (ppb) 100 80 60 40 20 0 9-Sep 17-Sep 26-Sep Fine Particulates (μg/m³) 100 80

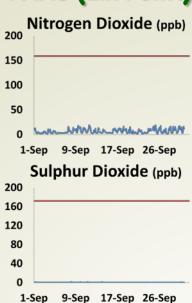
60

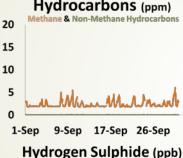
40

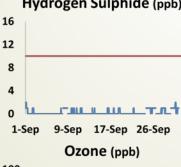
20

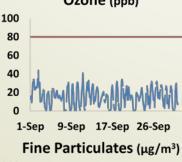
9-Sep 17-Sep 26-Sep

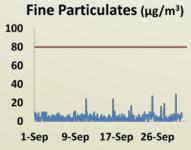
## PAMS (Elk Point)



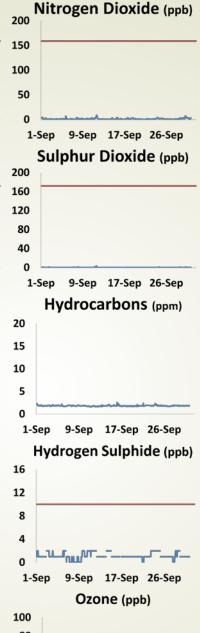


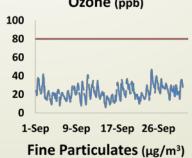


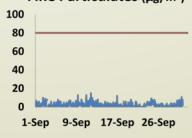




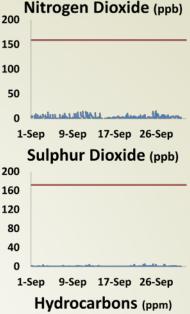
## St. Lina

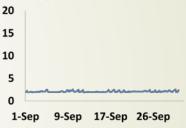


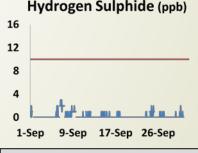




## Maskwa







#### Notable observations for Sept 2015:

- Air quality was rated as "Low Risk" over 80% of the time at the Cold Lake, St. Lina, and portable monitoring stations.
- In this series of charts, the blue line indicates the pattern of measurements over a onemonth period; the red line indicates the applicable Alberta Ambient Air Quality Objective (AAAQO) established for the respective parameter; in the case of Fine Particulates, the red line indicates the Alberta Ambient Air Quality Guideline.

# **Passive Monitoring Stations**

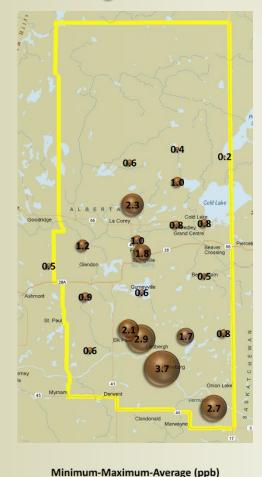
September 2015

Community Association

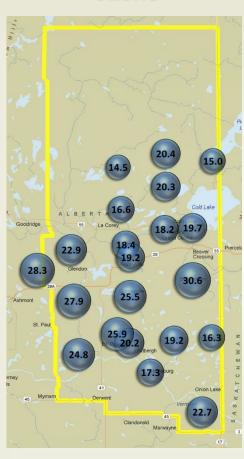
This series of bubble maps present monthly average concentrations in parts per billion (ppb) over a two-month period.

Displaying data this way illustrates the spatial patterns of the parameters monitored in the LICA passive monitoring network.

## Nitrogen Dioxide



## **Ozone**

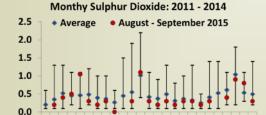


**Sulphur Dioxide** 



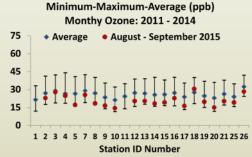
Hydrogen Sulphide

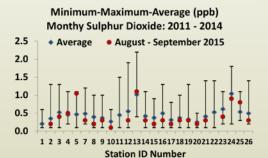


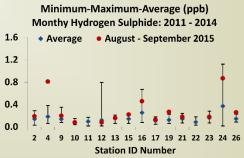


1 2 3 4 5 7 8 9 1011121314151617181920212223242526

Station ID Number

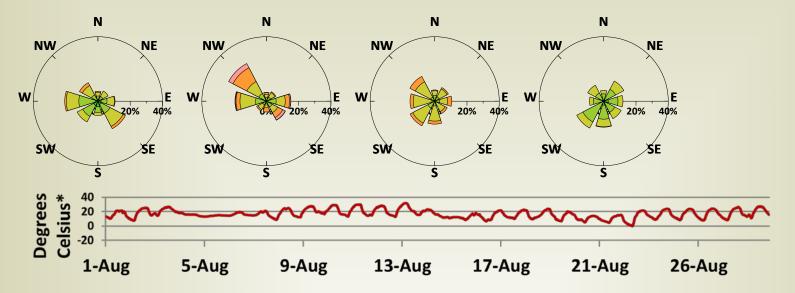






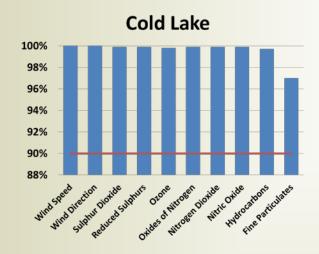
# Wind Speed, Wind Direction, Temperature

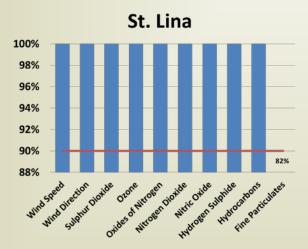


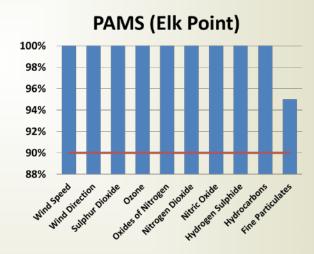


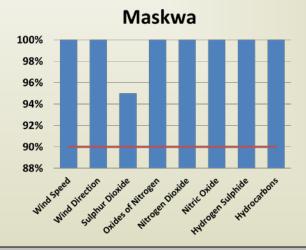
\* Temperature in Cold Lake

# **Operational Uptime**





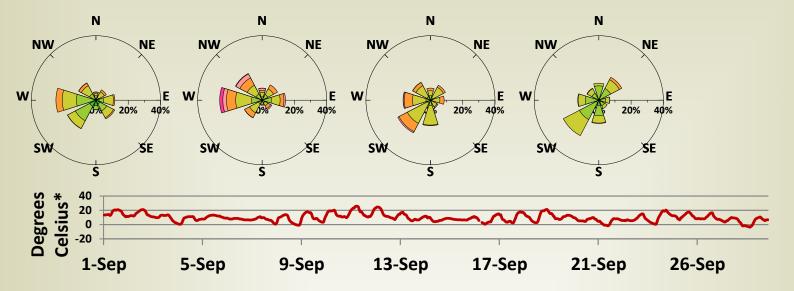




**Notes on instrument uptime:** The Alberta Air Monitoring Directive (1989) requires that real time instrumentation must be operational at least 90% of the time on a monthly basis (indicated by the red line on the above charts). The St. Lina monitoring station had less than 90% operational time for particulate matter during the month of August 2015 (Reference #303701). Under the Oil Sands Monitoring Plan, LICA will systematically replace the TEOM-FDMS particulate matter monitoring units with beta attenuation - light scattering technology starting in 2015; by 2017, all units will be phased over to the newer, more reliable method.

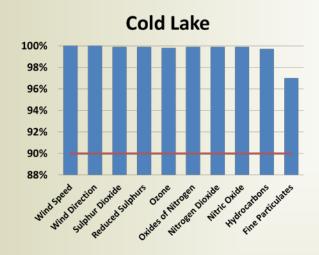
# Wind Speed, Wind Direction, Temperature

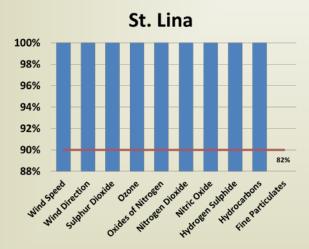


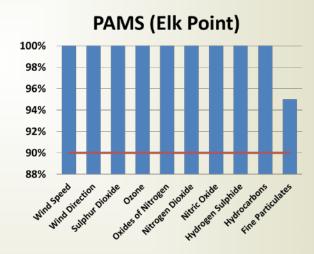


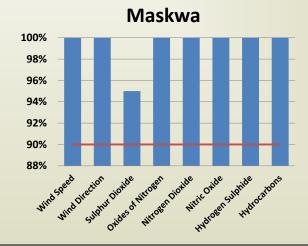
#### \* Temperature in Cold Lake

# **Operational Uptime**









**Notes on instrument uptime:** The Alberta Air Monitoring Directive (1989) requires that real time instrumentation must be operational at least 90% of the time on a monthly basis (indicated by the red line on the above charts).

# **Regional Monitoring Network Map**







Passive Monitor: Sulphur Dioxide



Passive Monitor:

Ozone



**Passive Monitor:** 

Nitrogen Dioxide



**Passive Monitor:** 

Hydrogen Sulphide



#### **Continuous Monitor:**

Sulphur Dioxide, Hydrogen Sulphide, Oxides of Nitrogen, Total Hydrocarbons, Meteorology



#### **Continuous Monitor:**

Sulphur Dioxide, Hydrogen Sulphide, Oxides of Nitrogen, Ozone, Methane/Non-Methane Hydrocarbons, Particulate Matter, Meteorology



#### **Continuous Monitor:**

Sulphur Dioxide, Hydrogen Sulphide, Oxides of Nitrogen, Ozone, Total Hydrocarbons, Particulate Matter, Meteorology



#### **Continuous Monitor:**

Sulphur Dioxide, Total Reduced Sulphurs, Oxides of Nitrogen, Ozone, Total Hydrocarbons, Particulate Matter, Meteorology



**Polycyclic Aromatic and Speciated Hydrocarbons:** 

Routine 1-in-6 Day Samples



#### **Polycyclic Aromatic and Speciated Hydrocarbons:**

Routine 1-in-6 Day Samples High Non-Methane Hydrocarbon Triggered Samples



#### **Soil Acidification Monitoring Plot:**

pH, Soil Texture, Electrical Conductivity, Soluble Ions, Cation Exchange Capacity – Buffered,/Unbuffered, Exchangeable Cations, Total Carbon, Total Nitrogen, Total Sulphur, Available Ammonium, Available Nitrates, Available Phosphorous

## Nitra

**Station Identification** 

- 1 Sand River
- 2 Therien
- 3 Flat Lake
- 4 Lake Eliza
- 5 Telegraph Creek
- 7 Muriel-Kehewin
- 8 Dupre

- 9 La Corev
- 10 Wolf Lake
- 11 Foster Creek
- 12 Primrose
- 13 Maskwa
- 14 Ardmore
- .**5** Frog Lake

- 16 Clear Range
- 17 Fishing Lake
- **18** Beaverdam
- 19 Cold Lake South
- 20 Medley-Martineau

**Burnt Lake** 

21 Fort George

- **23** Mahihkan
- 24 Hilda Lake
- 25 Town of Bonnyville
- **26** St. Lina
- 27 Portable Station

