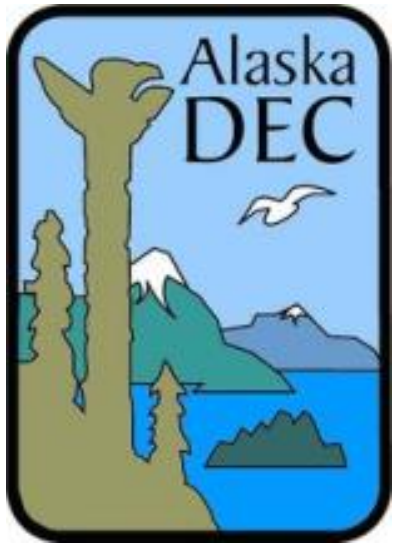


Sharing Community Experiences

ITEP Road Dust Management Series: Webinar 3 of 4

August 5, 2020

Acknowledgments



Facilitator

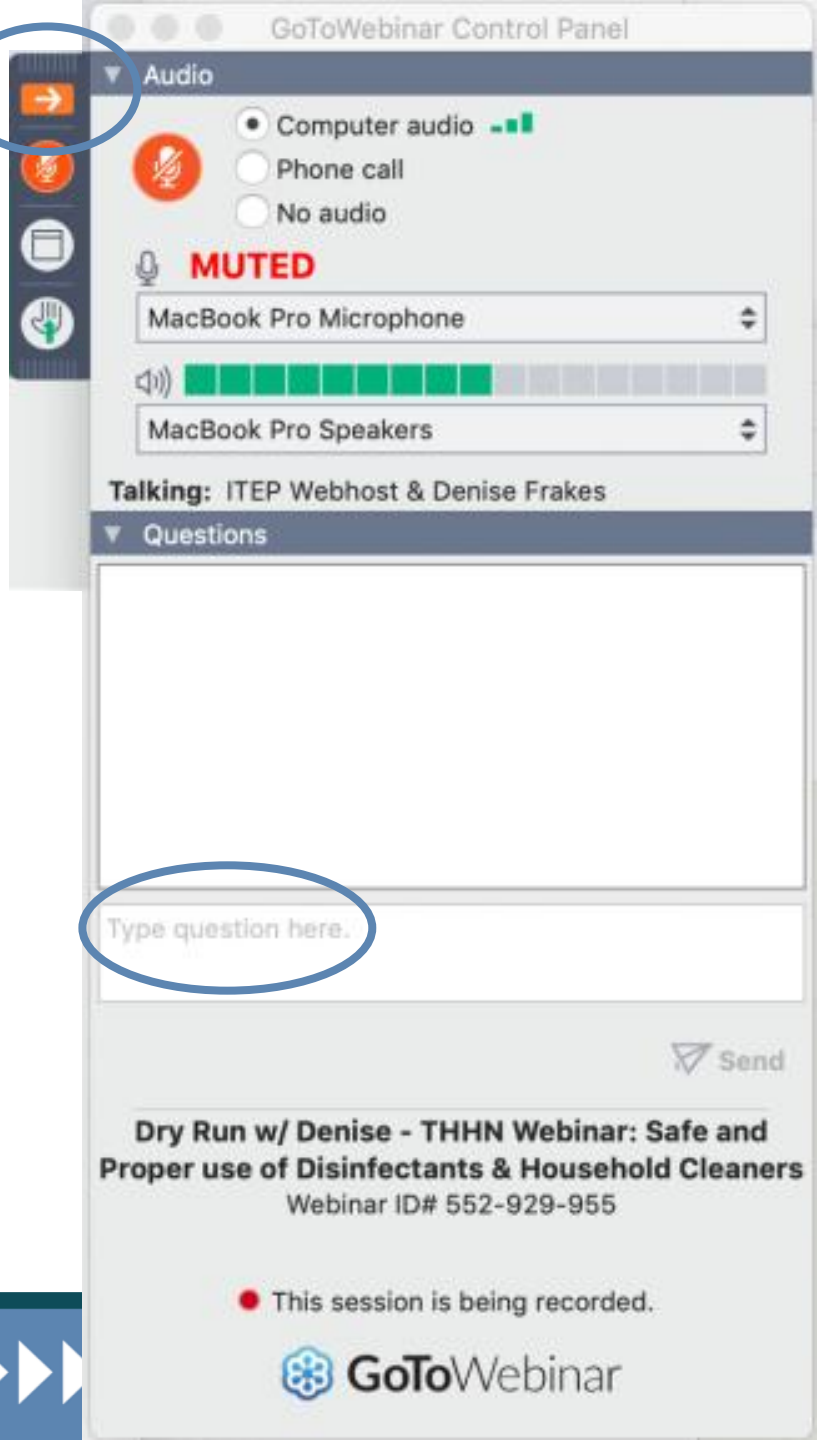
Mansel Nelson

Institute for Tribal Environmental Professionals (ITEP)

mansel.nelson@nau.edu

Welcome to Today's Webinar

If your webinar control panel on the upper right side of your screen is minimized, you can click on the orange arrow on the grab tab **to access the audio and questions box.**



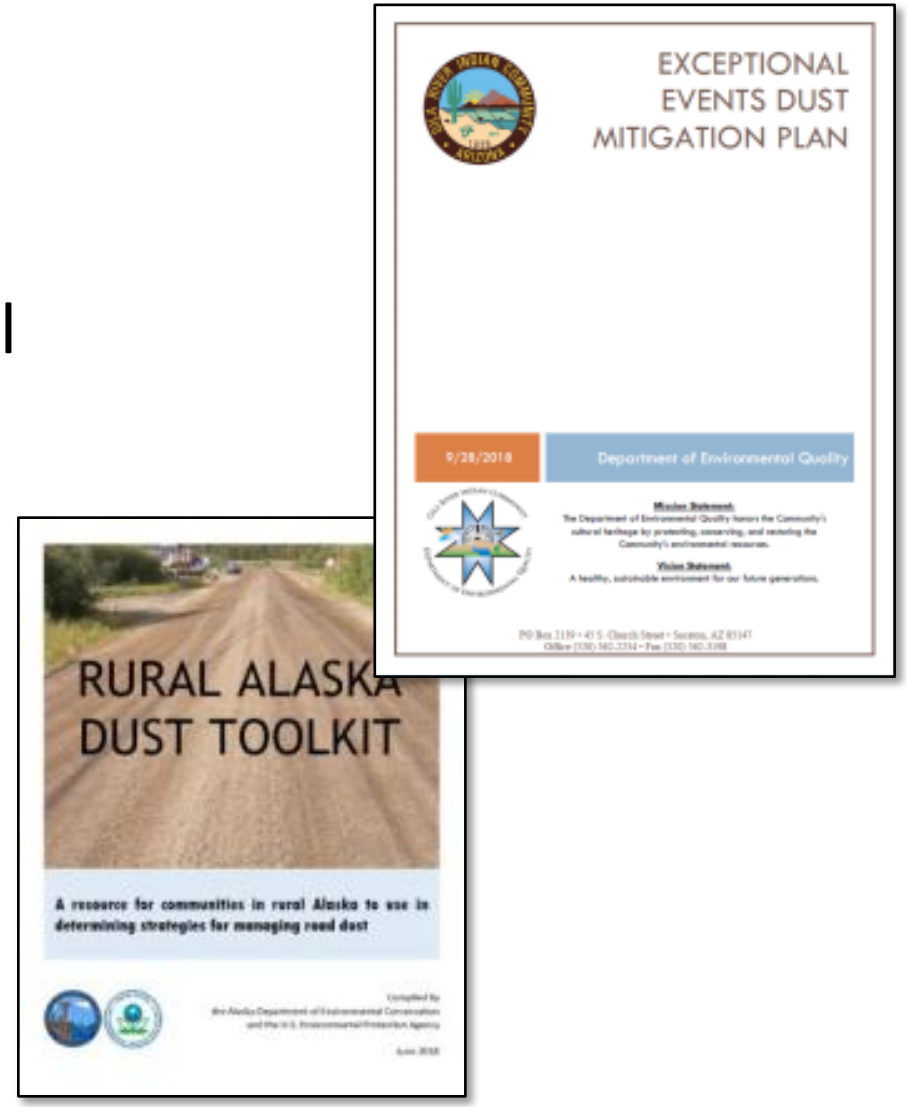
Webinar Logistics

- Webinar is being recorded
  - URL for the recording will be in post-webinar email and posted at https://bit.ly/RoadDust
- Questions
  - Use the Question box in the control panel to submit questions any time
  - You can email Gay.Santina@epa.gov with any further questions
  - We will pause after each presenter for questions on their section only
  - There will be time for all remaining questions at the end of the webinar
- Please complete the webinar feedback survey
  - Link for the feedback survey will be in post-webinar email
- Training Certificates are available for everyone who completes all 4 webinars
  - Webinar #4 will be in August/September (date TBD)

Webinar Materials

The following materials from the webinar will be available via a URL that will be sent in the post-webinar email:

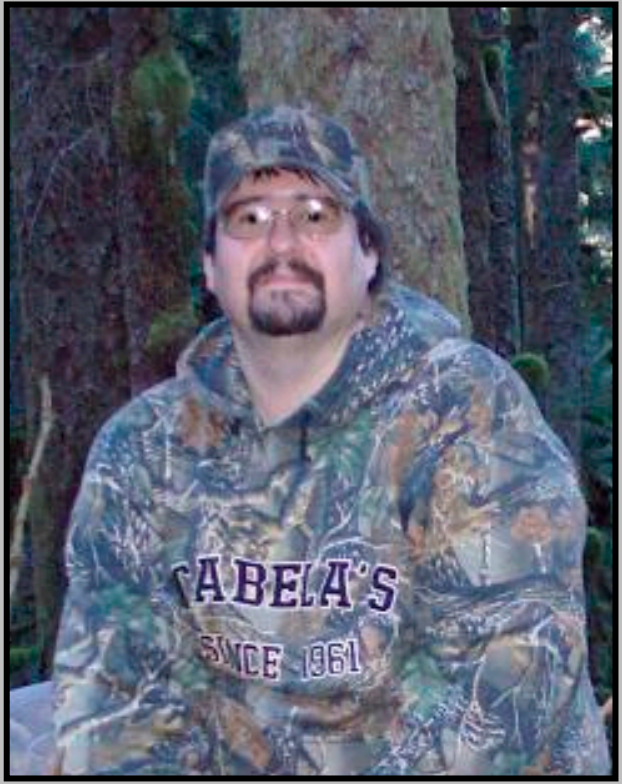
- Slides from Webinar #3
- Presenter Bios
- IGAP Workplan Template for Air Projects and Road Dust
- Gila River Dust Mitigation Plan
- Rural Alaska Dust Toolkit



Presenters

Larry Carmichael
Ugashik Traditional Village
Environmental Coordinator
igap@ugashikvillage.com

Stephen Payton
Seldovia Village Tribe
Environmental Assistant
spayton@svt.org



Michael Opheim
Seldovia Village Tribe
Environmental Coordinator
mopheim@svt.org

Ryan Eberle
Gila River India Community
Air Quality Program Manager
ryan.eberle@gric.nsn.us

Poll 1

Which of the following best describes your role?

- IGAP or other Environmental Staff
- Transportation Coordinator
- Community or Tribal Leader
- Federal or State Partner
- Other

Road Dust

An Overview of Ugashik's IGAP Road Dust Project

Presented by Larry Carmichael


Kuskokwim Bay
Dillingham Census Area
WOOD RIVER MOUNTAINS
Togiak Nat'l Wildlife Refuge
Dillingham
Bristol Bay Borough
Naknek Lake
Lake and Peninsula Borough
Becharof National Wildlife Refuge
Becharof Lake
Bristol Bay
Ugashik
Alaska Maritime Nat'l Wildlife Ref.
Aniakchak National Monument
Aniakchak Preserve

Short history of Ugashik

Yup'ik and Sugpiaq jointly occupied the Ugashik area historically. This Sugpiaq village was first recorded in 1880 as Oogashik. In the 1890s, the Red Salmon Company developed a cannery, and Ugashik became one of the largest villages in the region. The 1919 flu epidemic decimated the population. The cannery has continued to operate under various owners. The Briggs Way Cannery opened in 1963. The village has a small year-round population.

Ugashik is a traditional site of the Alutiiq; however very few people now live in Ugashik year-round. Some of the village's people live in nearby Pilot Point on the coast. Tribal members live throughout Alaska, California, and Washington. Commercial fishing, fish processing, and subsistence activities sustain residents of the area.

Short history of Ugashik

Ugashik, Alaska

Race	Percent of Population
American Indian or AK Native	64.29%
Asian	0.0%
Black or African American	0.0%
Native Hawaiian or Pacific Islander	0.0%
White	35.71%
Other Race	0.0%
Two or More Races	0.0%

Current Population by Age:

Age	Percent of Population
Under 5 years of age	14.29%
5 to 9	0.0%
10 to 14	0.0%
15 to 19	0.0%
20 to 24	0.0%
25 to 34	0.0%
35 to 44	0.0%
45 to 54	42.86%
55 to 59	7.14%
60 to 64	14.29%
65 to 74	14.29%
75 to 84	7.14%
Over 85 years of age	0.0%

Where to start on your road dust problem

Who has the information you need?

- **Internal** (Do you have an existing plan?)
  - Is it in your ETEP?
  - Is it in your IGAP workplan?
  - Are you at the end of your IGAP cycle?
  - Does your village have information on prior work?
  - Has your village already used IGAP funds for this work?
  - Has your village designated prior year funds for this work?

Road dust in Ugashik's ETEP

Tribal Programs and Priorities: Air Quality

- Poor outdoor air quality in Ugashik is the result of two main contributing factors, road dust (pm) and exhaust

Long-Term Goals:

- Reduced road dust emissions in the community and improved safety and health of residents, particularly among vulnerable populations
- Improved ambient air quality of the village through the reduction of point and non-point sources
- of emissions
- Develop and implement ambient and indoor air quality ordinances and design ways for enforcement

Intermediate Objectives/Milestones:

- Increased awareness of community residents and tribal leaders about the production and health impacts of road dust so that informed decisions can be made on developing strategies to address this pollution [C.3.19]
- Identification and implementation of strategies for reducing road dust in the community—intermediate outcomes may include education and outreach activities conducted, applications submitted for additional funding, engagement/formalization of partners, identification of an effective palliative, and base road improvements [C.3.20]

Road dust in Ugashik's ETEP

Road dust in Ugashik's ETEP

Road dust in Ugashik's ETEP

Road dust in Ugashik's IGAP Workplan

Reduced road dust emissions in the community and improved safety and health of residents, particularly among vulnerable populations.

Intermediate Outcome (s) (this work plan period):

- **Increased awareness of community residents and tribal leaders about the production and health impacts of road dust so that informed decisions can be made on developing strategies to address this pollution.**
- **Identification and implementation of strategies for reducing road dust in the community – intermediate outcomes may include education and outreach activities conducted, applications submitted for additional funding, engagement/formalization of partners, identification of an effective palliative, and base road improvements.**
- **Further review and analysis of information gathered this FY and previous FYs for further analysis or strategies to improve roadway or other dust improvement methodologies.**

Estimated Cost: $34,692 | **Estimated Work Years:** 0.43

	COMMITMENTS	ESTIMATED TASK COST (optional)	END DATE	OUTPUTS AND DELIVERABLES
2.1	Obtain training on dust emissions, air quality, health impacts, and mitigation strategies, both in person and via webinar/conference call. Contact EPA, ADEC, or ANTHC for assistance identifying training and written materials.		9/30/2019	Training summary and trip report to EPA and UTVC.
2.2	Inventory education and outreach materials that may be used to raise community awareness about road dust, health concerns, and strategies for reducing dust. Share this information with the villagers via the quarterly newsletter and at winter and/or summer training sessions.		9/30/2019	Summary of materials and/or description of reference resource developed will be retained in GAP file and shared with EPA in quarterly report.
2.3	Identify the agencies and organizations that may be able to contribute funding or technical assistance to your dust mitigation efforts. Communicate with each of the potential partners or resources and find out what assistance may be available to help address the problem. This could be individually or in a joint meeting.		9/30/2019	List of contacts and partners will be retained in GAP file and shared with EPA in the quarterly report. Summarize in the quarterly report the organizations, tribal agencies and other resources available and describe how each might be able to play a role in addressing dust. This information will be shared with Tribal Council.
2.4	Further review and analysis of information gathered this and previous FYs to improve on additional strategies for improving the roadway in order to reduce dust.		9/30/2019	• Share list of ideas with EPA in quarterly report. • Share with Tribal Council.
2.5	Environmental Coordinator will visit Ugashik in the winter and summer to evaluate road dust issues with the input of the EA and village residents. Any work not completed in this FY may carry over to FY20. This will be negotiated with Project Officer.		9/30/2019	• A summary of additional funding sources will be shared with the UTVC as they are located and if this funding is secured and the project began a report of the progress will be filed.

Getting the information you need

External:

Information from the experts (this is not a comprehensive list)

University of Alaska, Fairbanks

- **Billy Connor, P.E. bgconnor@alaska.edu**
  Alaska University Transportation Center
  907-474-5552

ANTHC

- **Mary Mullan, mjmullan@anthc.org**
  Tribal Air Quality Program
  907-454-7055
- **Oxcenia O'domin, orodomin@anthc.org**

ITEP, Northern Arizona University

- **Mansel Nelson, mansel.nelson@nau.edu**
  Tribal Environmental Education Program
  928-523-1275
- **Andy Bessler, andy.bessler@nau.edu**
- **Mariah Ashley, mariah.ashley@nau.edu**

Getting the supplies you need

Vehicle:

- Govdeals.com

Trailer:

- Six Robblees
- Truckwell
- Trailer Craft

Plumbing:

- Zoro: https://www.zoro.com/
- Alaska Rubber
- Central Plumbing

Pump:

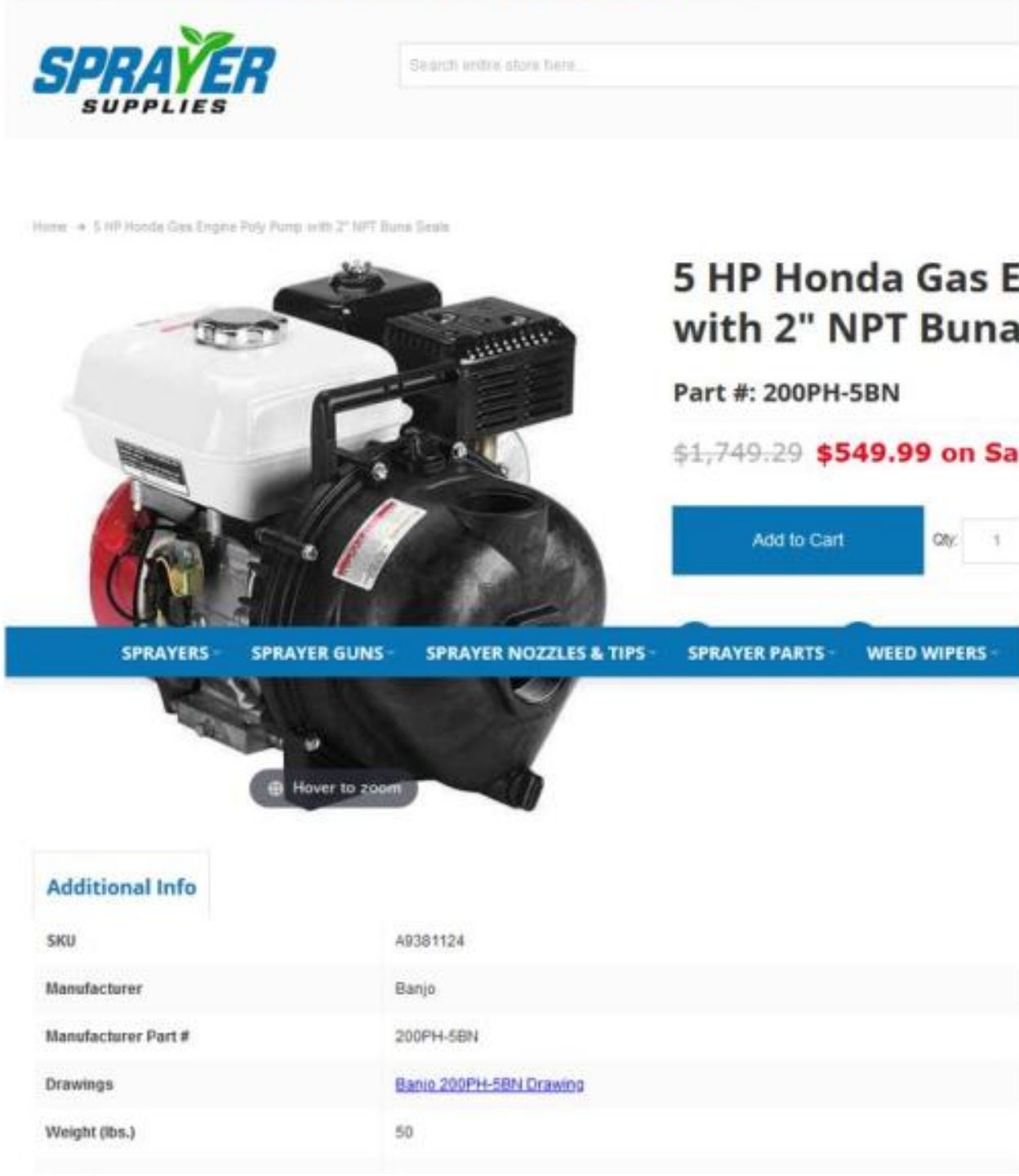
- https://www.sprayersupplies.com/

Expert's example

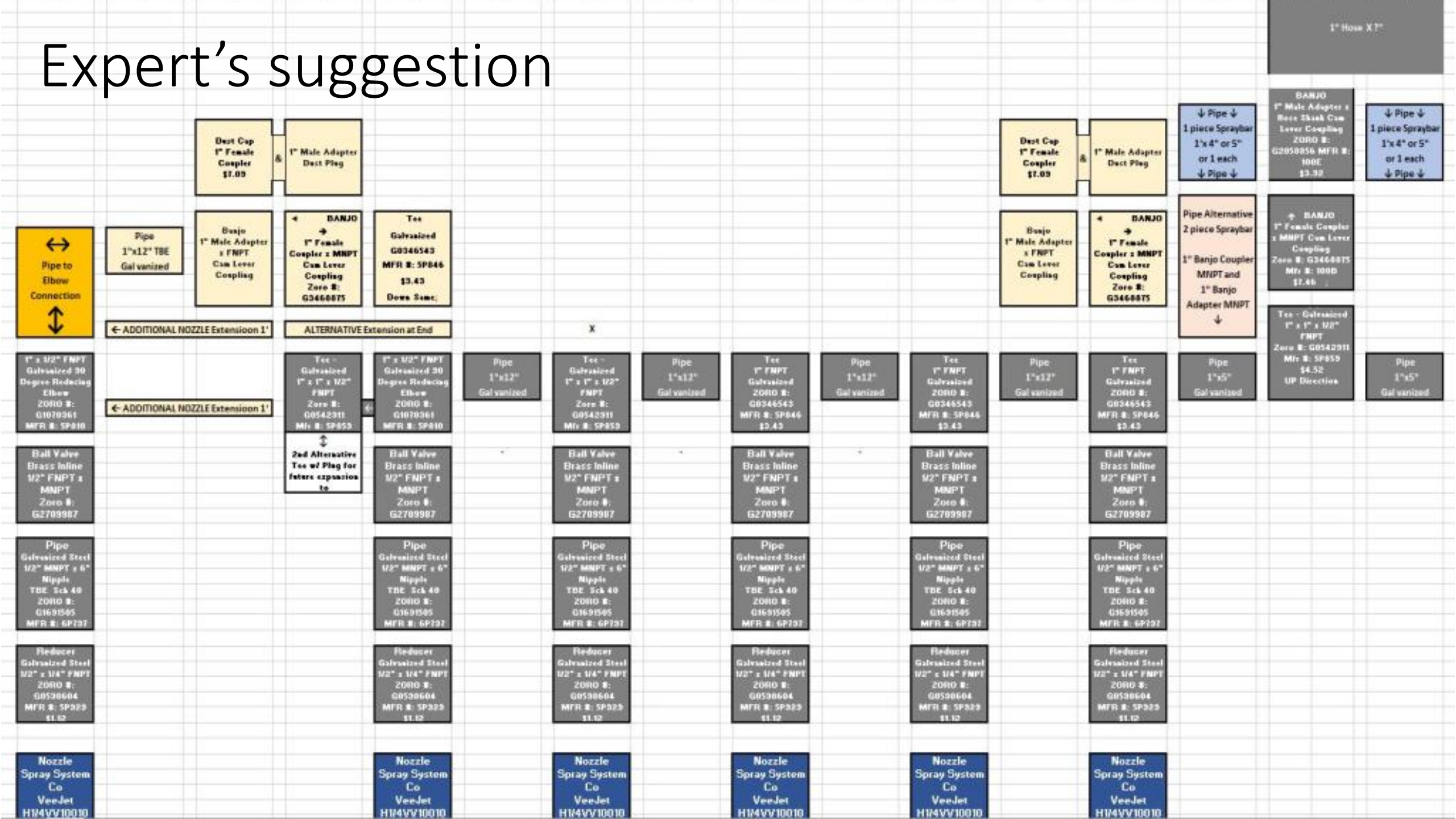
Truck sourced from Govdeals.com

Fluids pallet sourced from village

Pump sourced from online



Expert’s suggestion



Sprayer parts

Finished truck

IGAP as the springboard

- Power of the catalyst: Environmental Director/Coordinator
- Planning vs. implementation
- Funding phases
- Community outreach and education
- Council sponsorship and communication
- Tribal models – key learnings

Questions?

Larry Carmichael
igap@ugashikvillage.com

Poll 2

How many vehicles a day do you estimate drive on the roads in your community?

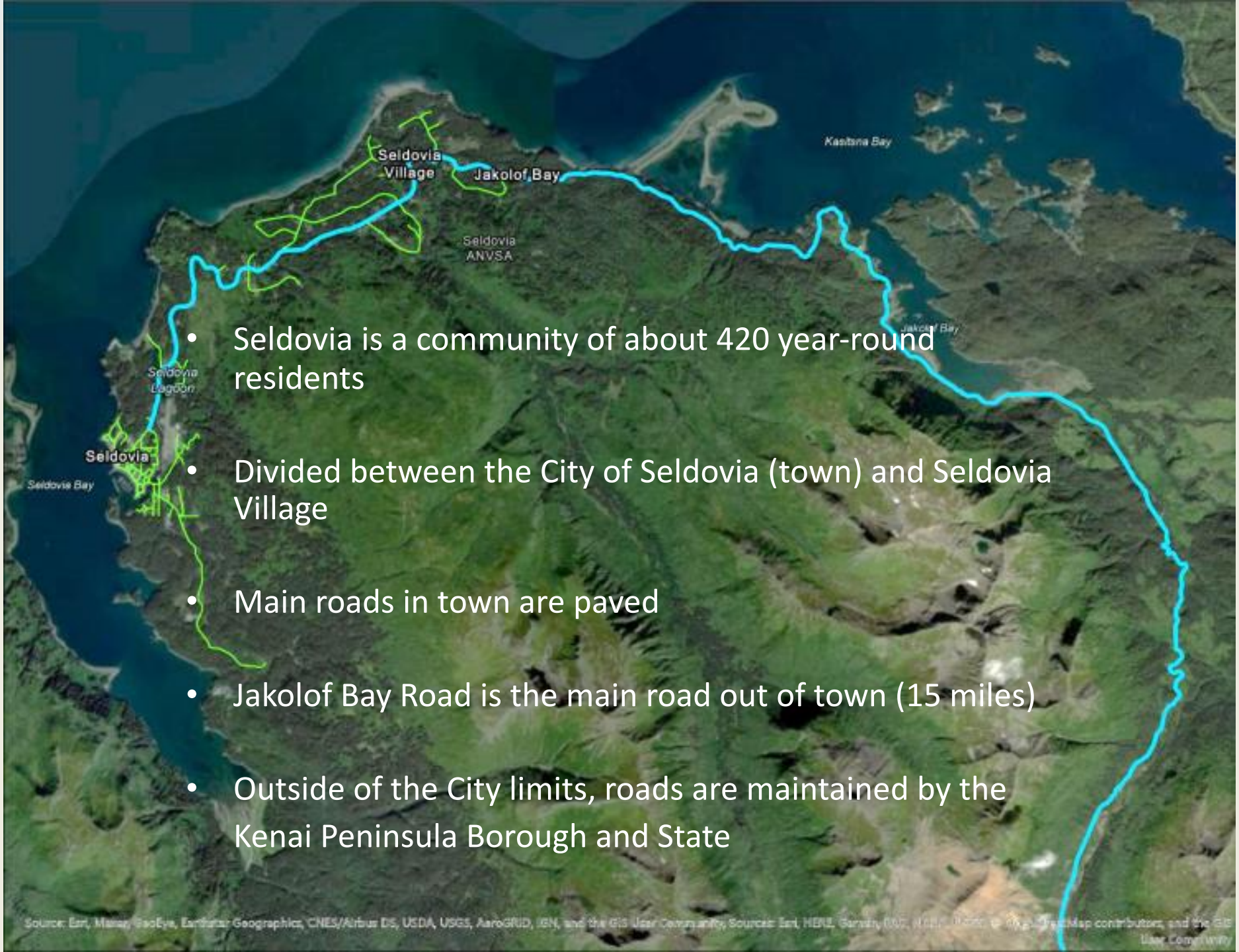
- 0 - 24 vehicles/day
- 25 - 74 vehicles/day
- 75 - 500 vehicles/day
- 500+ vehicles/day
- Not sure

Seldovia Road Dust Monitoring (2012-2015)

Presented By:

Michael Opheim – Environmental Coordinator

Stephen Payton – Environmental Assistant



- Seldovia is a community of about 420 year-round residents
- Divided between the City of Seldovia (town) and Seldovia Village
- Main roads in town are paved
- Jakolof Bay Road is the main road out of town (15 miles)
- Outside of the City limits, roads are maintained by the Kenai Peninsula Borough and State

- 2012: DustTraks at Miles 2 and 4A
- 2013 and 2014: DustTraks and high-volume air samplers; co-located at Miles 3 and 4B
- 2015: DustTraks at Miles 3, 4B, and subdivision “R1” (Fritz Road)

- Prior to 2012, calcium chloride was applied infrequently as funding allowed along Jakolof Bay Road

- Concern over high level of road dust

- In 2012, the City was awarded funding for calcium chloride for one year although palliative is put down by State of Alaska Department Of Transportation

- In 2012, 2013, 2014, and 2015 SVT was awarded Tribal Air Quality Cooperative Agreements (EPA-funded) through the Alaska Native Tribal Health Consortium (ANTHC)

- In 2013 and 2014, Alaska Department of Environmental Conservation (ADEC) loaned SVT air monitoring equipment and provided free filter analyses

- In April 2014, completed an air emissions inventory

- Provided landowners a stipend to keep the equipment on their property
- Conducted Phase I Tribal Air Quality Assessment (from ANTHC) and surveyed community members about air quality priorities
- Collected baseline PM-10 data
  - DustTrak II and DRX Aerosol Monitors
  - High-Volume Samplers

- Analyzed road material for contaminants in 2015 – sent to laboratory

- Graphed and analyzed air monitoring data

- Compared data to NAAQS standard for PM 10:
  * Average PM 10 value for a 24-hour run should not exceed 150 ug/m^3 (or .150 mg/m^3) more than once per year on average over 3 years

- Submitted High-Volume air sampling data into AQS

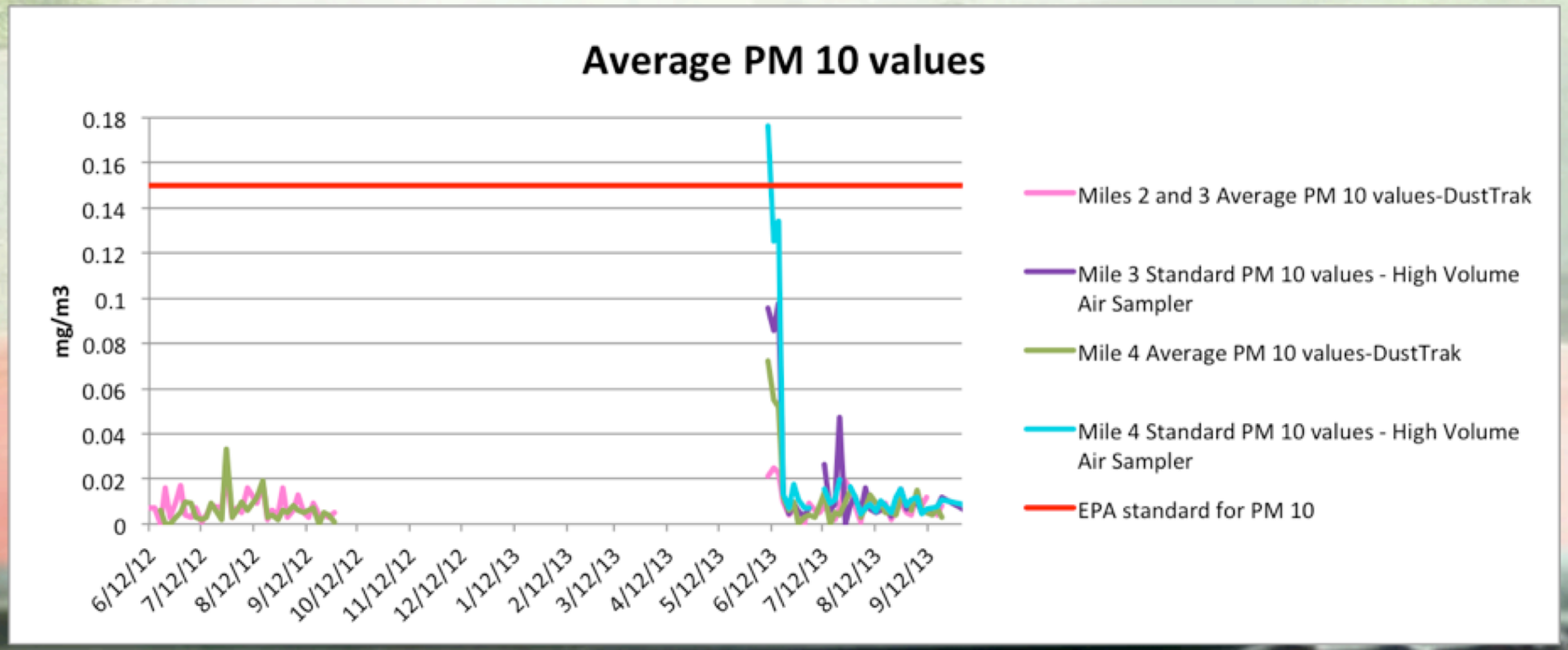
Contaminants we should be most concerned about in dust*:

- Arsenic
- Silica
- Chromium

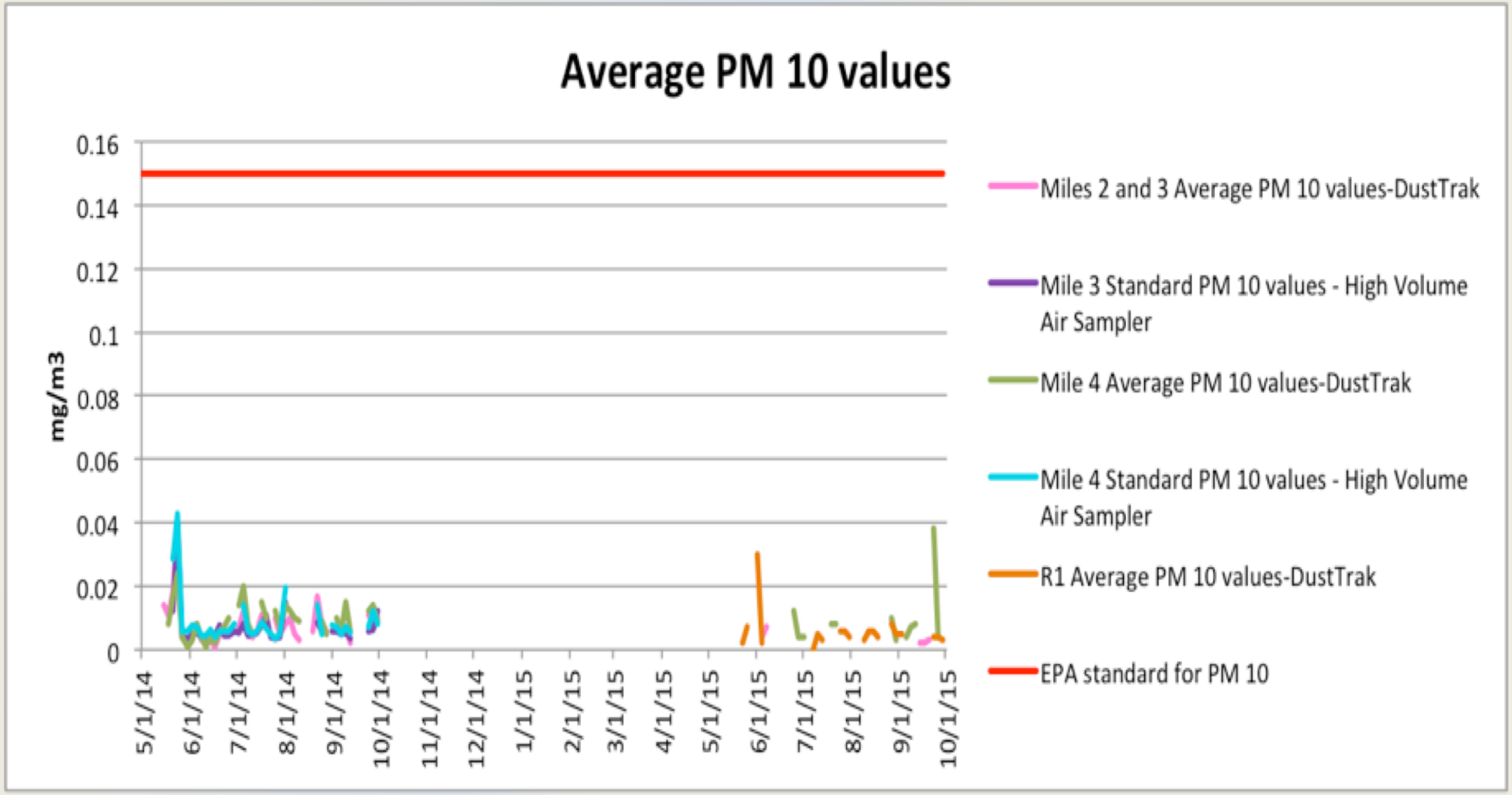
*based on State soil to groundwater contamination clean up levels

Contaminant	Site Collection Depth	Measured level	ADEC Soil Cleanup Levels – direct contact or outdoor inhalation (under 40 inch zone)
Mercury (Total Hg)	Surface down to about one inch	99 ug/Kg	1800 ug/Kg
Mercury (Total Hg)	One inch down to two inches	140 ug/Kg	1800 ug/Kg
Silica (Total ICP)	Surface down to about one inch	390 mg/L	.01 mg/L* *value cited from American Conference of Governmental Industrial Hygienists (1993) for precipitated and gel amorphous Silica, for Silica as Diatomaceous earth (uncalcined), and for Crystalline Silica as Quartz. Values are either as respirable free silica or as total dust containing <1% crystalline silica.
Silica (Total ICP)	One inch down to two inches	340 mg/L	.01 mg/L *value cited from American Conference of Governmental Industrial Hygienists (1993) for precipitated and gel amorphous Silica, for Silica as Diatomaceous earth (uncalcined), and for Crystalline Silica as Quartz. Values are either as respirable free silica or as total dust containing <1% crystalline silica.
Silicon (Total ICP)	Surface down to about one inch	180 mg/L	
Silicon (Total ICP)	One inch down to two inches	160 mg/L	
Arsenic	Surface down to about one inch	4100 ug/Kg	4500 ug/Kg
Arsenic	One inch down to two inches	4100 ug/Kg	4500 ug/Kg
Barium	Surface down to about one inch	69,000 ug/Kg	20,300,000 ug/Kg
Barium	One inch down to two inches	62,000 ug/kg	20,300,000 ug/Kg
Cadmium	Surface down to about one inch	120 ug/Kg	79,000 ug/Kg
Cadmium	One inch down to two inches	94 ug/Kg	79,000 ug/Kg
Chromium	Surface down to about one inch	38,000 ug/Kg	304,000 ug/Kg
Chromium	One inch down to two inches	26,000 ug/Kg	304,000 ug/Kg
Lead	Surface down to about one inch	4500 ug/Kg	400,000 ug/Kg
Lead	One inch down to two inches	4300 ug/Kg	400,000 ug/Kg

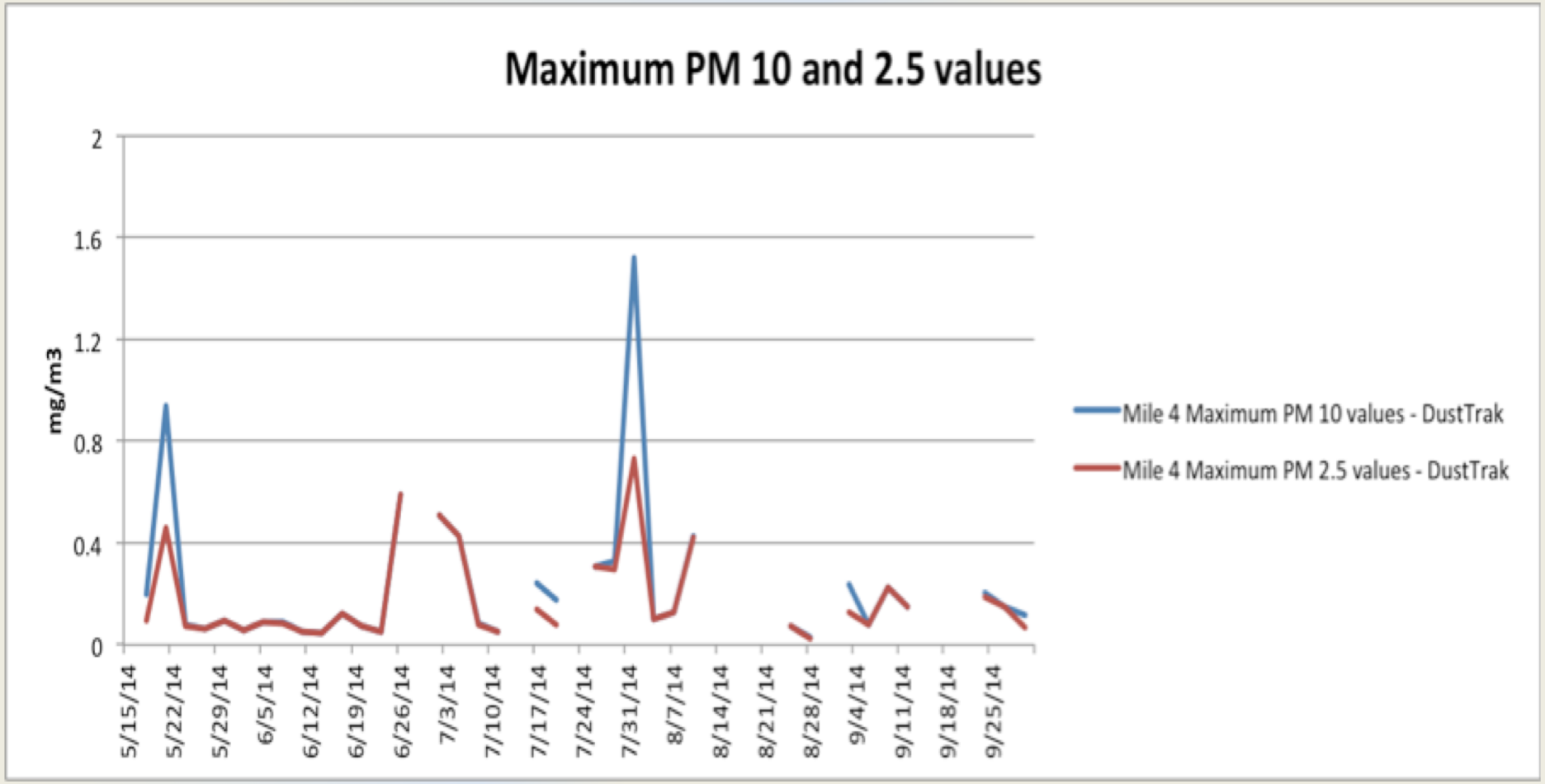
Although we have had days when the **maximum** PM 10 levels have exceeded .150 mg/m^3, we only had 1 exceedance of the **average** PM 10 value of a sampling run



Higher levels of dust at Mile 4 than at Miles 2 and 3



Results


Maximum PM 10 and 2.5 values
mg/m3
2
1.6
1.2
0.8
0.4
0
5/15/14
5/22/14
5/29/14
6/5/14
6/12/14
6/19/14
6/26/14
7/3/14
7/10/14
7/17/14
7/24/14
7/31/14
8/7/14
8/14/14
8/21/14
8/28/14
9/4/14
9/11/14
9/18/14
9/25/14
Mile 4 Maximum PM 10 values - DustTrak
Mile 4 Maximum PM 2.5 values - DustTrak

Conclusions

- Calcium Chloride makes a difference
- State now lays 2 tons of calcium chloride per mile – not ideal amount, but allows it to be used longer
- DustTrak aerosol monitors may be underestimating PM 10 levels on dusty days
- Large proportion of dust is made up of PM 2.5

Questions?

Michael Opheim – Environmental Coordinator

Stephen Payton – Environmental Assistant

Poll 3

What are the sources of dust in your community? (select all that apply)

- Roads
- Airport runway
- Agriculture
- Wind from dry fields or riverbeds
- Other (quarries, construction sites, etc.)

GILA RIVER INDIAN COMMUNITY
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Developing A Dust Mitigation Plan

Ryan Eberle, P.E.
Air Program Manager

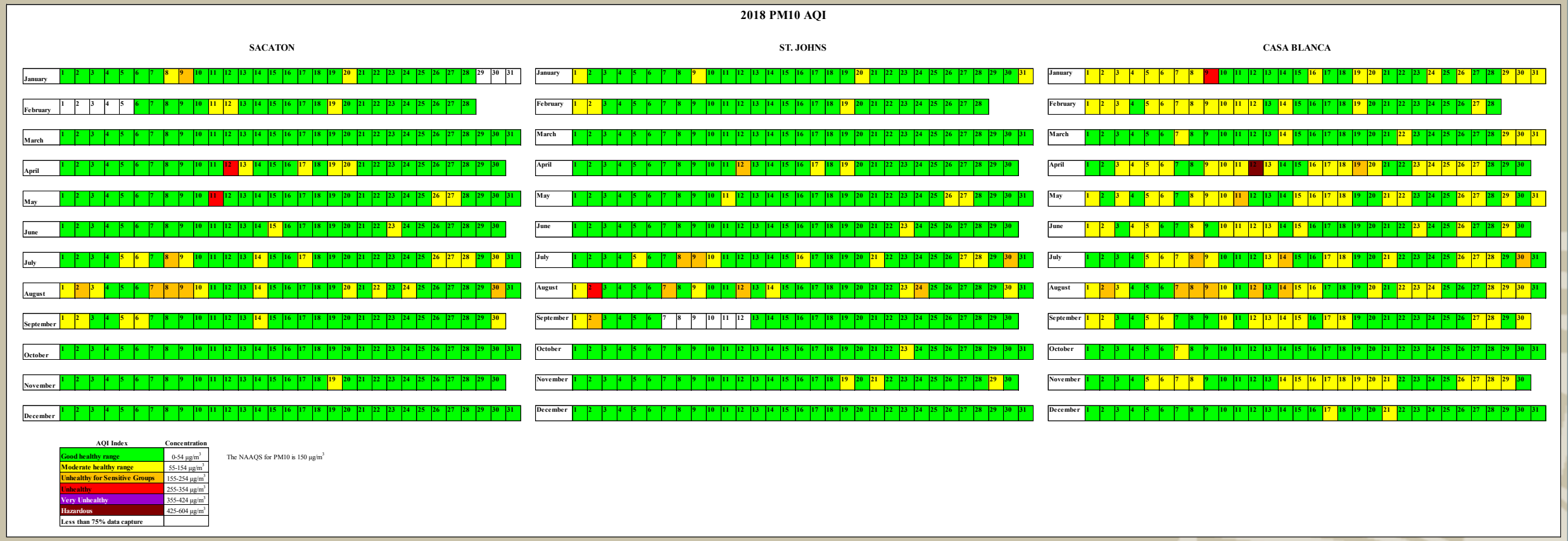
ITEP Road Dust Webinar Series 2020

What is a Dust Mitigation Plan?

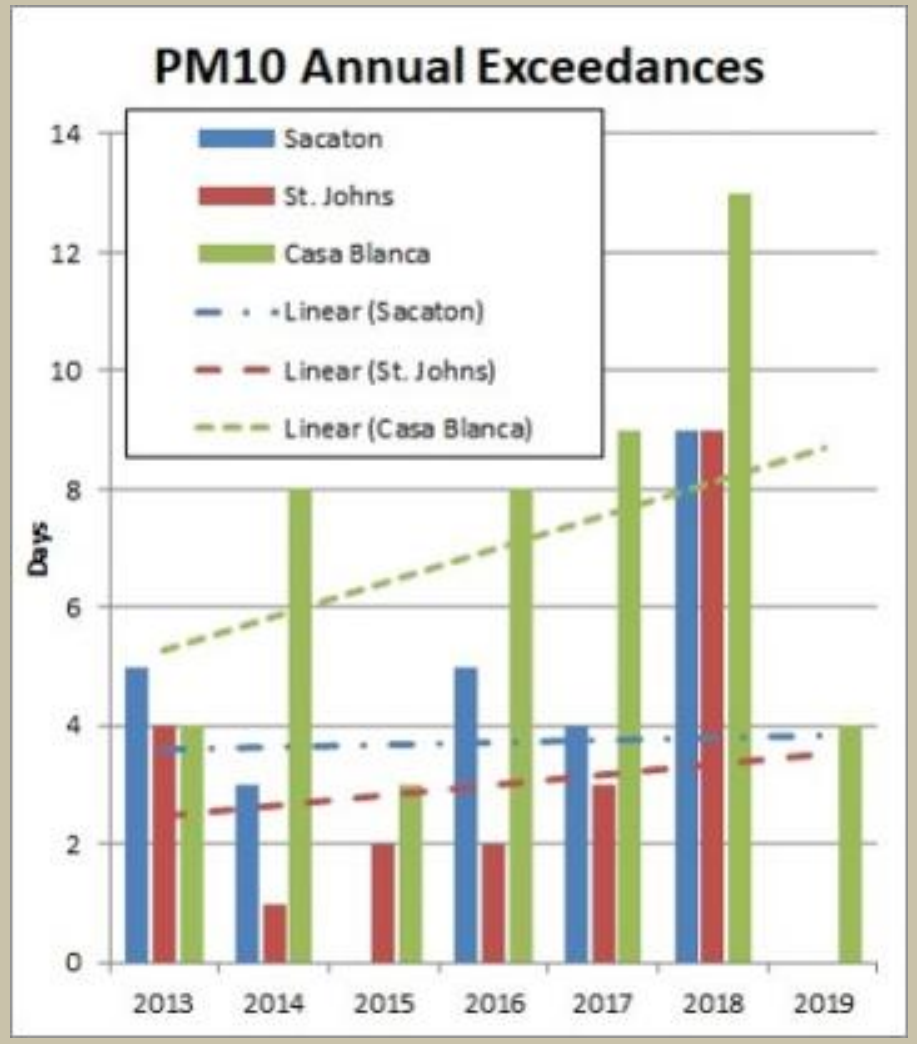
- Origin: 2016 Exceptional Events Rule
- Areas with “historically documented” or “known seasonal” exceptional events
- “Mitigation” = reducing exposure
- Why does GRIC need one?


Avondale
Phoenix
St Johns
Chandler
Queen Creek
San Tan Valley
Casa Blanca Monitor
Sacaton
Sacaton

PM10 Daily Averages (AQI)



PM10 Annual Exceedances



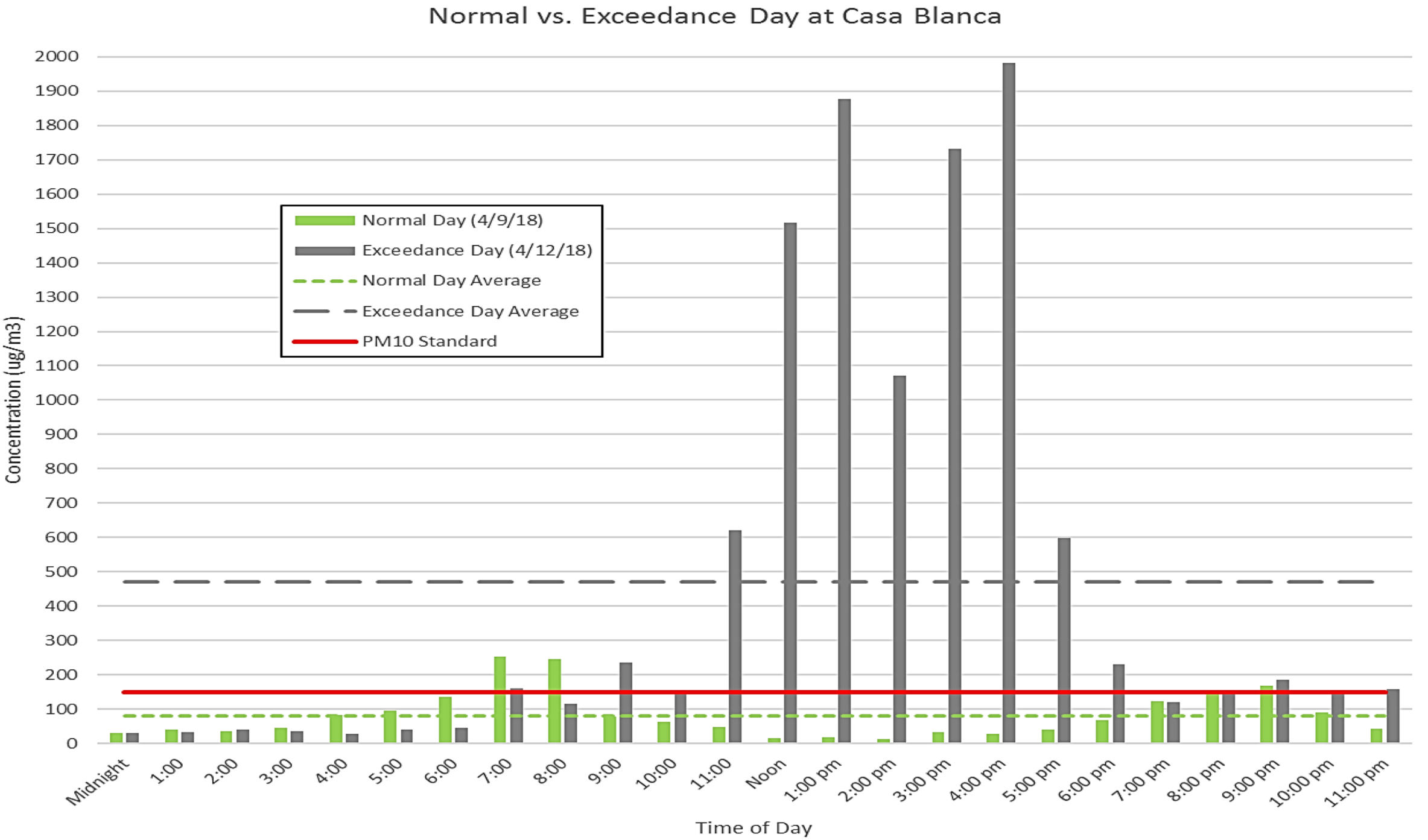
Normal vs. Exceedance Day

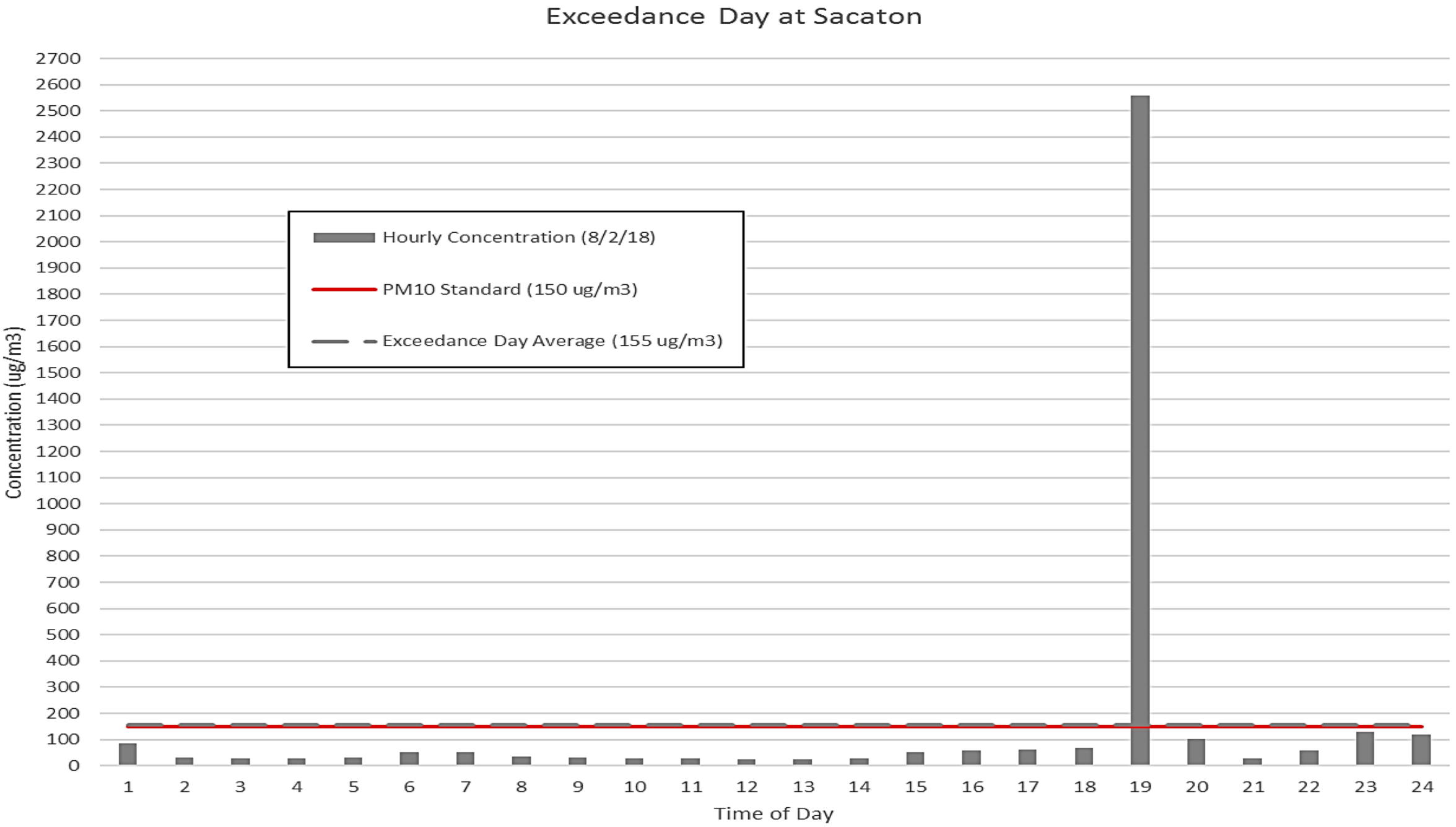
Normal Day

4/9/18 @ 4:15pm

Exceedance Day

4/12/18 @ 4:15pm


Normal vs. Exceedance Day at Casa Blanca
Concentration (ug/m3)
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
Normal Day (4/9/18)
Exceedance Day (4/12/18)
Normal Day Average
Exceedance Day Average
PM10 Standard
Midnight
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
Noon
1:00 pm
2:00 pm
3:00 pm
4:00 pm
5:00 pm
6:00 pm
7:00 pm
8:00 pm
9:00 pm
10:00 pm
11:00 pm
Time of Day


Exceedance Day at Sacaton
Concentration (ug/m3)
2700
2600
2500
2400
2300
2200
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
Hourly Concentration (8/2/18)
PM10 Standard (150 ug/m3)
Exceedance Day Average (155 ug/m3)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
Time of Day

Plan Elements

1. ID & Implementation of Mitigation Measures
    - Abate/minimize controllable sources
    - Minimize public exposure to high concentrations
    - Collect & maintain data
    - Consultation
2. Public Notification & Education Programs
3. Periodic Review & Evaluation
    - Public comment

Challenges

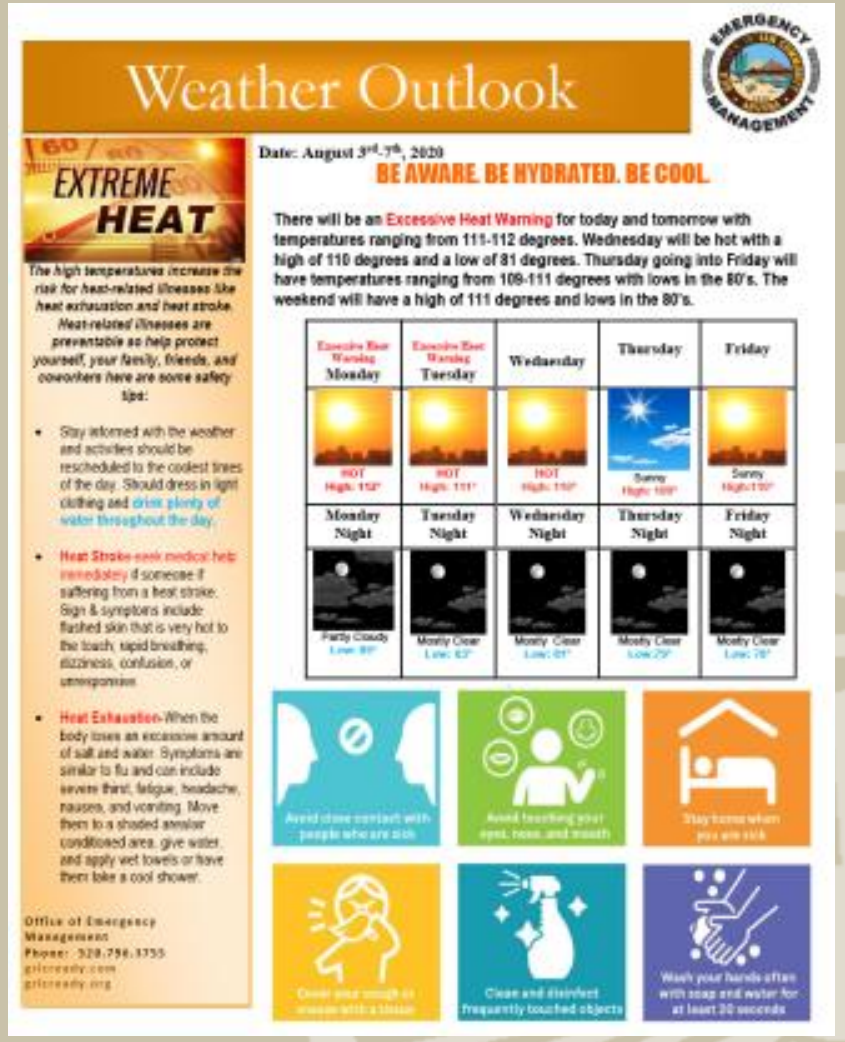
- Dust contributions on GRIC not extensively studied
- GRIC air quality rules exempts:
  - Normal farming practices
  - Road maintenance
- Multiple generations = multiple media preferences
  - Alert notification process
- Agricultural Best Management Practices (BMP) survey
  - State methods ≠ traditional/cultural methods
  - Do we know what these are?

Plan Contents

- Mitigation
  - GRIC Air Quality Rules (AQMP)
    - Open Burning
    - Fugitive Dust
    - Visible Emissions
    - Aggregate Processing
  - Voluntary Measures
    - Agricultural BMPs

Plan Contents

- Public Notification & Education
  - Weekly Weather Outlook (OEM)
  - Wireless emergency alerts
  - Air Quality Flag Program
  - Air Quality Alerts
  - Real-time monitoring data



Air Quality Alerts

AIR QUALITY ALERT

Gila River Indian Community
Air Quality Program

High winds and possible blowing dust are forecast for 11/20/19 and areas of the Community may experience 24-hour average PM_{10} (dust) concentrations in excess of the national health standard.

WHAT YOU CAN DO TO HELP REDUCE DUST GENERATION:

- Avoid travel on unpaved roads where possible
- Reduce speed of travel on unpaved roads
- Avoid travel off-road and disturbing soil
- Limit earthmoving and other soil disturbance activities during high wind periods
- Make sure disturbed areas are properly stabilized after conducting earthmoving activities

The Air Quality Program and the Department of Environmental Quality appreciate any efforts taken to reduce dust generation throughout the Community during high wind periods

air@gric.nsn.us

DATE GRIC Air Quality Program

High Wind/Blowing Dust Advisory

WHAT YOU CAN DO TO REDUCE DUST GENERATION AND MINIMIZE EXPOSURE:

Stay indoors and prevent dust exposure

Avoid off-road travel and slow down on unpaved roads!

Plant vegetation and water dry land to stabilize soil

For questions or comments, please email air@gric.nsn.us

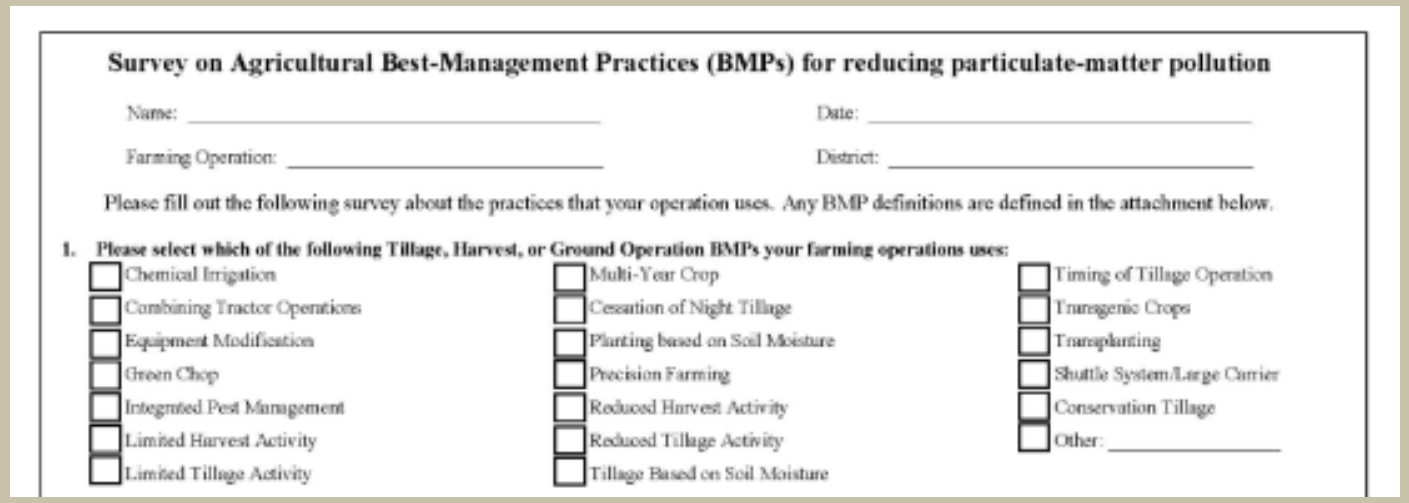
Real-Time Information

	St. Johns	Casa Blanca	Sacaton
Temperature	104 °F	106 °F	108 °F
Humidity	19 %	17 %	13 %
Precipitation	0 in	0 in	0 in
Wind Speed	7 mph	4 mph	4 mph
Wind Direction	E	WNW	SW
PM_{10} (AQI)	28	35	24
Ozone (AQI)	44		46

www.gricdeq.org/air-monitoring

Future Work

- Finalize AQ News Alert SOP
- Revisit Agricultural BMP survey



Survey on Agricultural Best-Management Practices (BMPs) for reducing particulate-matter pollution

Name: _____ Date: _____

Farming Operation: _____ District: _____

Please fill out the following survey about the practices that your operation uses. Any BMP definitions are defined in the attachment below.

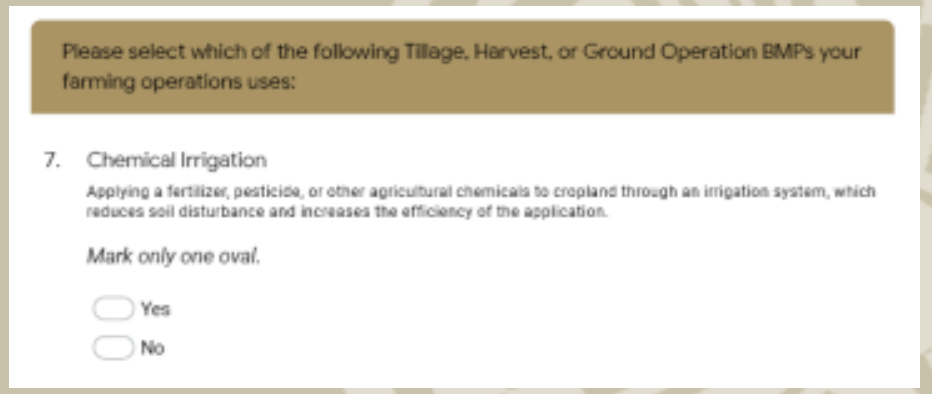
1. **Please select which of the following Tillage, Harvest, or Ground Operation BMPs your farming operations uses:**

- ☐ Chemical Irrigation
- ☐ Combining Tractor Operations
- ☐ Equipment Modification
- ☐ Green Chop
- ☐ Integrated Pest Management
- ☐ Limited Harvest Activity
- ☐ Limited Tillage Activity
- ☐ Multi-Year Crop
- ☐ Cessation of Night Tillage
- ☐ Planting based on Soil Moisture
- ☐ Precision Farming
- ☐ Reduced Harvest Activity
- ☐ Reduced Tillage Activity
- ☐ Tillage Based on Soil Moisture
- ☐ Timing of Tillage Operation
- ☐ Transgenic Crops
- ☐ Transplanting
- ☐ Shuttle System/Large Carrier
- ☐ Conservation Tillage
- ☐ Other: _____

Agricultural Best-Management Practices (BMPs) Survey

Name of Respondent

Your answer



Please select which of the following Tillage, Harvest, or Ground Operation BMPs your farming operations uses:

7. Chemical Irrigation

Applying a fertilizer, pesticide, or other agricultural chemicals to cropland through an irrigation system, which reduces soil disturbance and increases the efficiency of the application.

Mark only one oval.

- Yes
- No

Questions?

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Poll 4

What additional tools or resources would help you in managing dust in your community? (select all that apply)

- Short video about road dust for sharing with Tribal Council
- Sample speed ordinance
- Circuit-rider to provide on-site training for dust control
- Hands-on workshop (in person after COVID has subsided)
- Lesson plan for teaching students and kids about road dust

Questions?

Rural Alaska Dust Partnership

Working together to implement sustainable solutions for dust management