



How to Make the Business Case for Air Quality Control

May 23, 2019

Benefits of NAEM Community

Conferences



Research



Networking



Publications



Actionable Strategies that Empower Corporate
EHS&S Leaders to Make an Impact



A Diverse Community for EHS&S Leaders



Today's Speakers



Kelley Begin

Vice President, Air
Quality Technical
Practice Leader;
Woodard & Curran



Matthew Jones

Meteorologist, Project
Manager; Woodard &
Curran



Rick Love

Manager,
Environmental
Sustainability; United
Technologies Corp.



Michael Newman

Chemical Engineer,
Technical Manager;
Woodard & Curran



NAEM Webinar

New Ways to Communicate the Business Case for Air Quality

Your Speakers

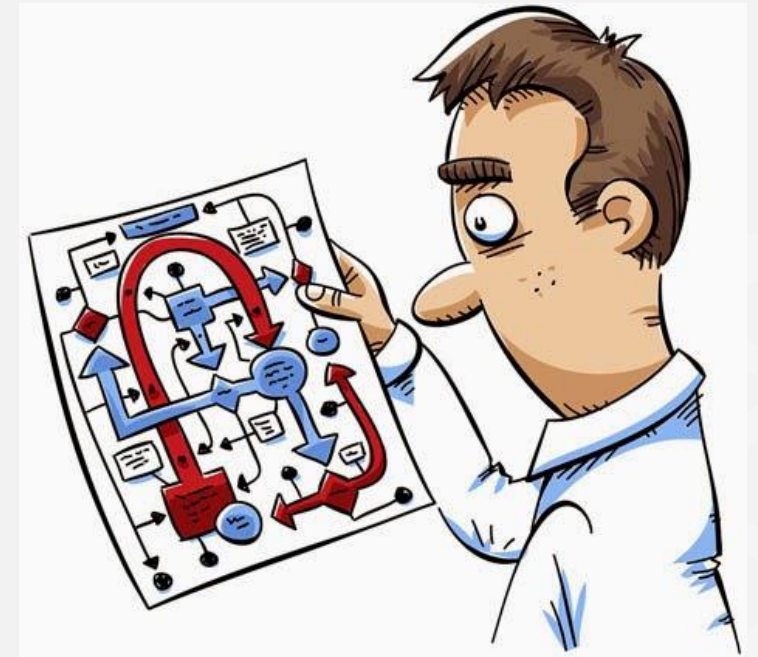
- **Kelley Begin:** Techniques you can use to **effectively communicate** with different audiences
- **Mike Newman:** Fresh ideas for making **air quality information** relevant and meaningful
- **Rick Love (UTC):** Expert advice on how **companies like yours** have solved complicated air issues

Communicating Effectively in Air Quality Projects

Kelley Begin, Woodard & Curran

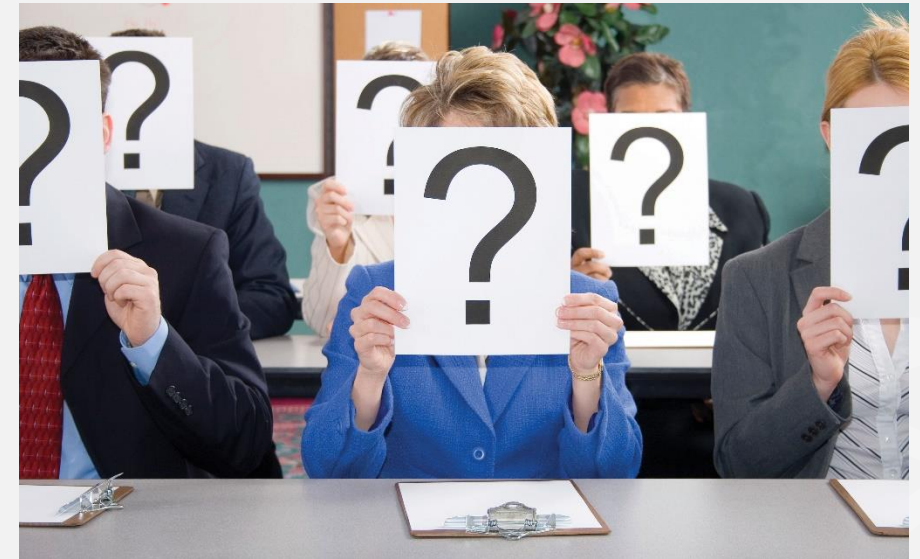
Communication is Critical to Project Success!

- Air permitting regulations are **complicated**
- **Timing** is critical
- Multiple **stakeholders**
- Communicate effectively to positively **influence** project implementation
- Miscommunications can **delay** or sink a project



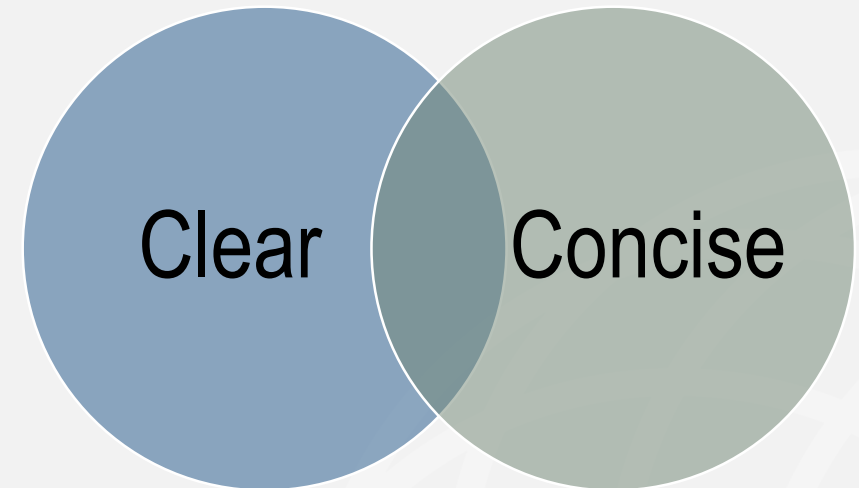
Know Your Audience

- **Who** are you communicating with?
- What are their perspectives and **priorities**?
- What type of information do they **need**?
- What level of **detail** do they need?



Clear Purpose & Message

- **Purpose** of communication
- Clear message
 - Keep message **simple**
 - Consider **stakeholder** perspectives
 - Organize information so audience doesn't have to work to find what's **relevant** to them



Method of Communication

- Depends on **purpose** and **audience**
- Meetings/calls
 - Written **agenda**
 - Minutes
- **Written** communications
 - Formal/informal



Tips for Successful Air Permitting Projects

- Communicate **realistic permitting timeline** for project schedule
- Key to timely permit is **regular communication with permitting engineer**
 - Provide timely, focused and clear **responses to questions**
 - Vague or delayed responses can result in delays and/or miscommunications
 - Keep **operational flexibility** in mind
- Provide **status updates** to regulators, project team & senior management - no surprises!
- Translate information into **audience's language** to avoid miscommunications

Making Air Quality Data Relevant & Meaningful

Mike Newman, Woodard & Curran

Typical Questions That Data Answers



Does the project pass all the air quality standards?

How much pollution in general is being emitted?

Where, when, and how often are the highest impacts occurring?

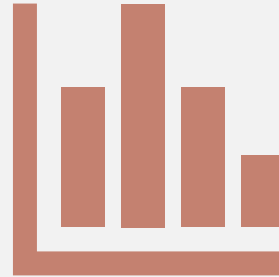
Are the data comprehensive enough to address other stakeholder concerns?

Tools for Data Communication



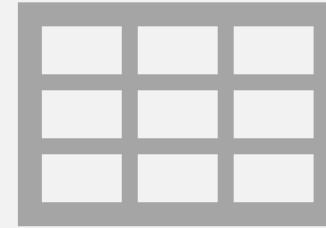
Maps

ArcGIS
QGIS
Google Earth



Graphs

Excel
Scripting Languages
(Python, Perl)
Statistica, R



Tables

Excel vs Word

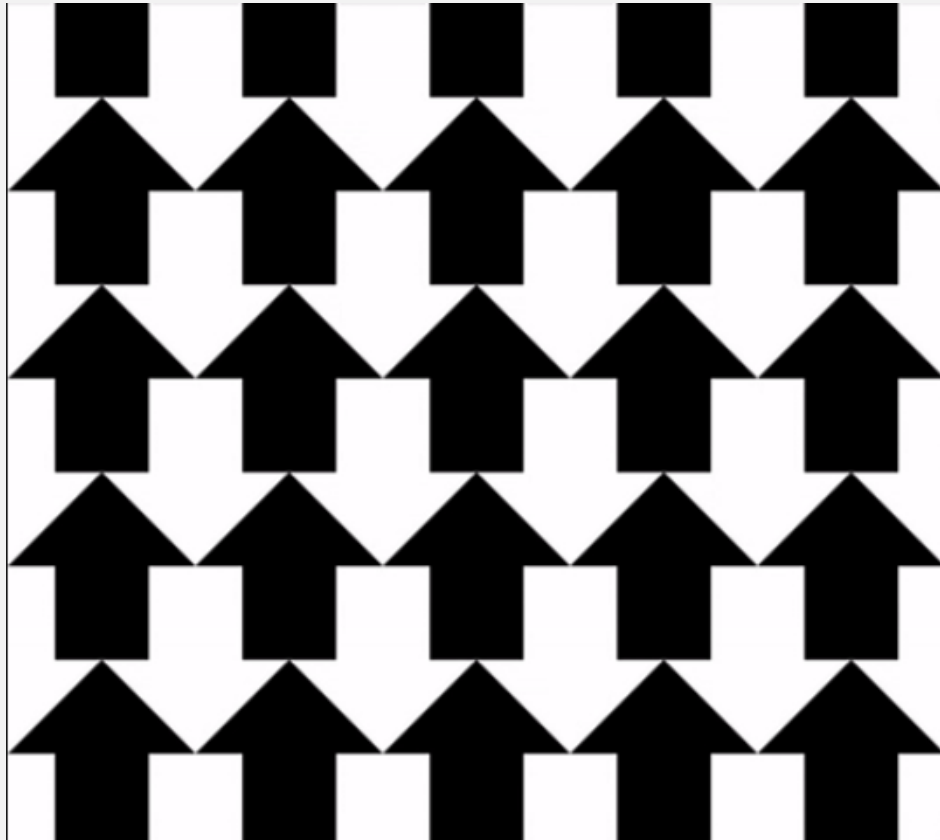
Biggest Pitfall: **Lack of Context** for Complex Data

Look for the **worst way to interpret** your data. Assume no context!



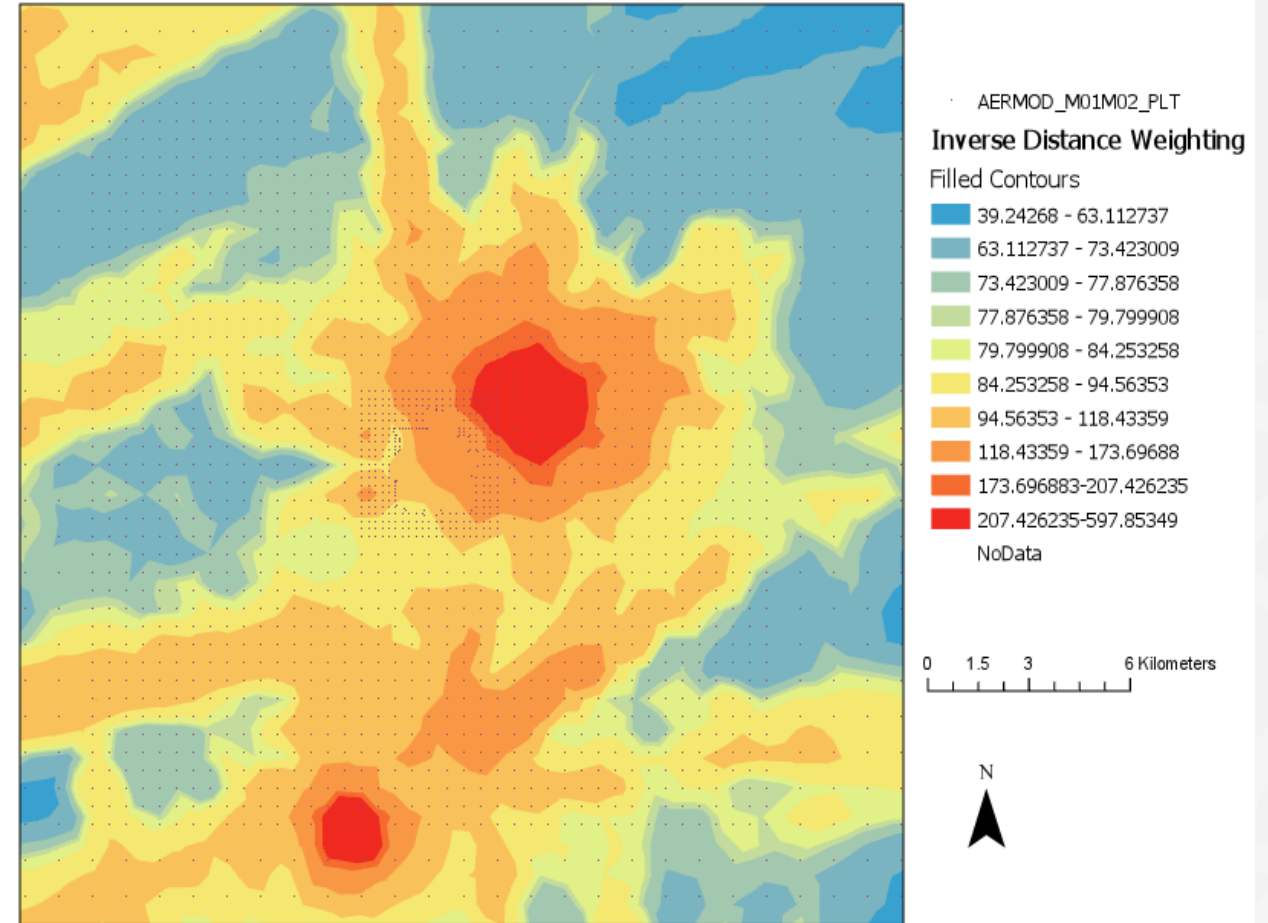
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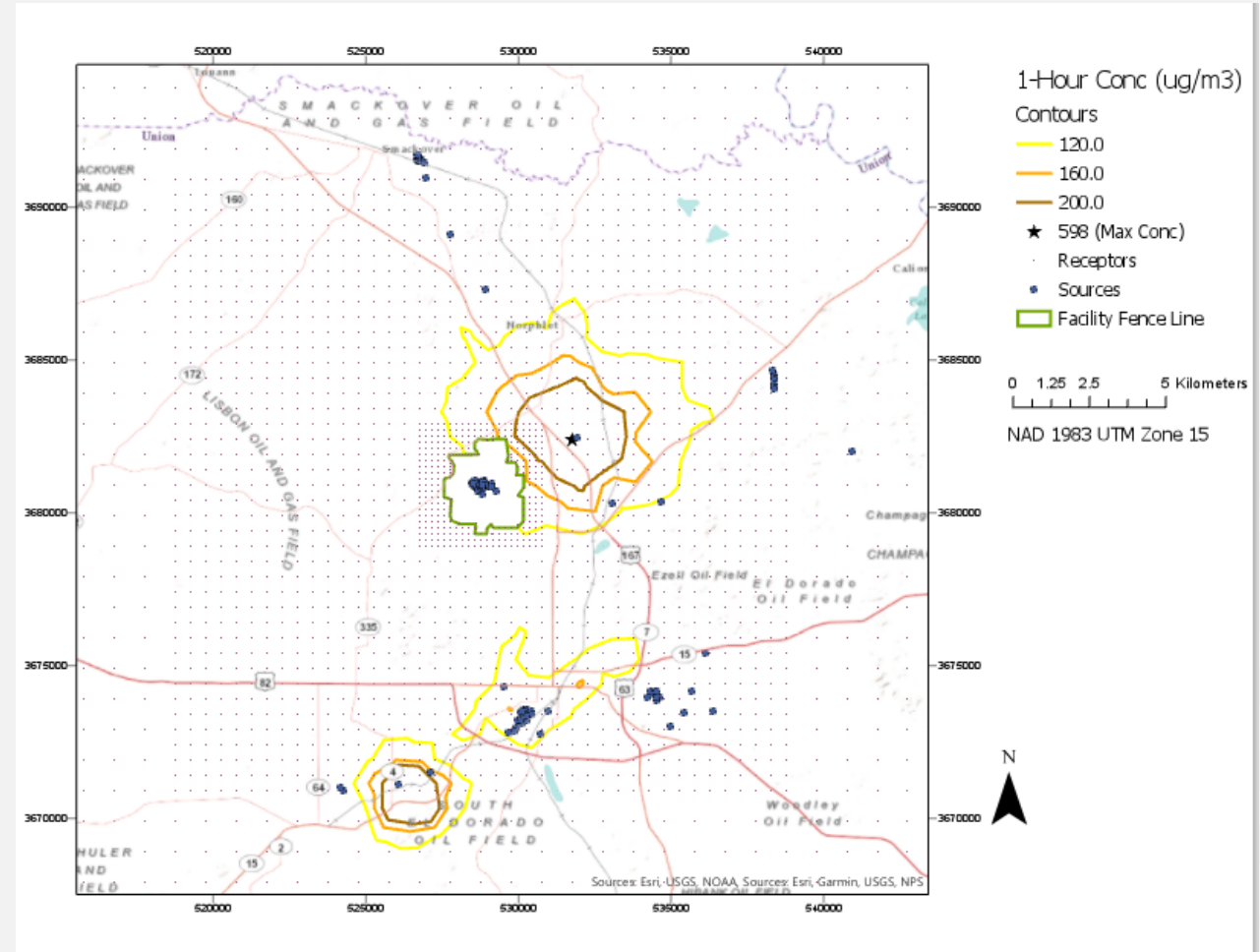
Maps: Red Lines Are Dread Lines

- **Red lines** give overly negative connotation.
- Color scale should imply **high to low** (not hot to cold).
- Beware **arbitrary** concentration intervals.
- Don't display **on-property** impacts for ambient analyses.
- Show max location to **avoid ambiguity**.



Maps for Regulators

- Demonstrate yellow to brown intervals (just a few lines). Equal intervals which clearly show below standard of concern.
- Use contour lines, not filled areas so underlying map can be seen. On-property cut out.
- Show max location
- Show source locations.
- Map X Y tick marks and map projection. Scale Bar. North arrow.



NAVASOTA

MONTGOMERY

SMOKE PLUME FORECAST

AccuWeather

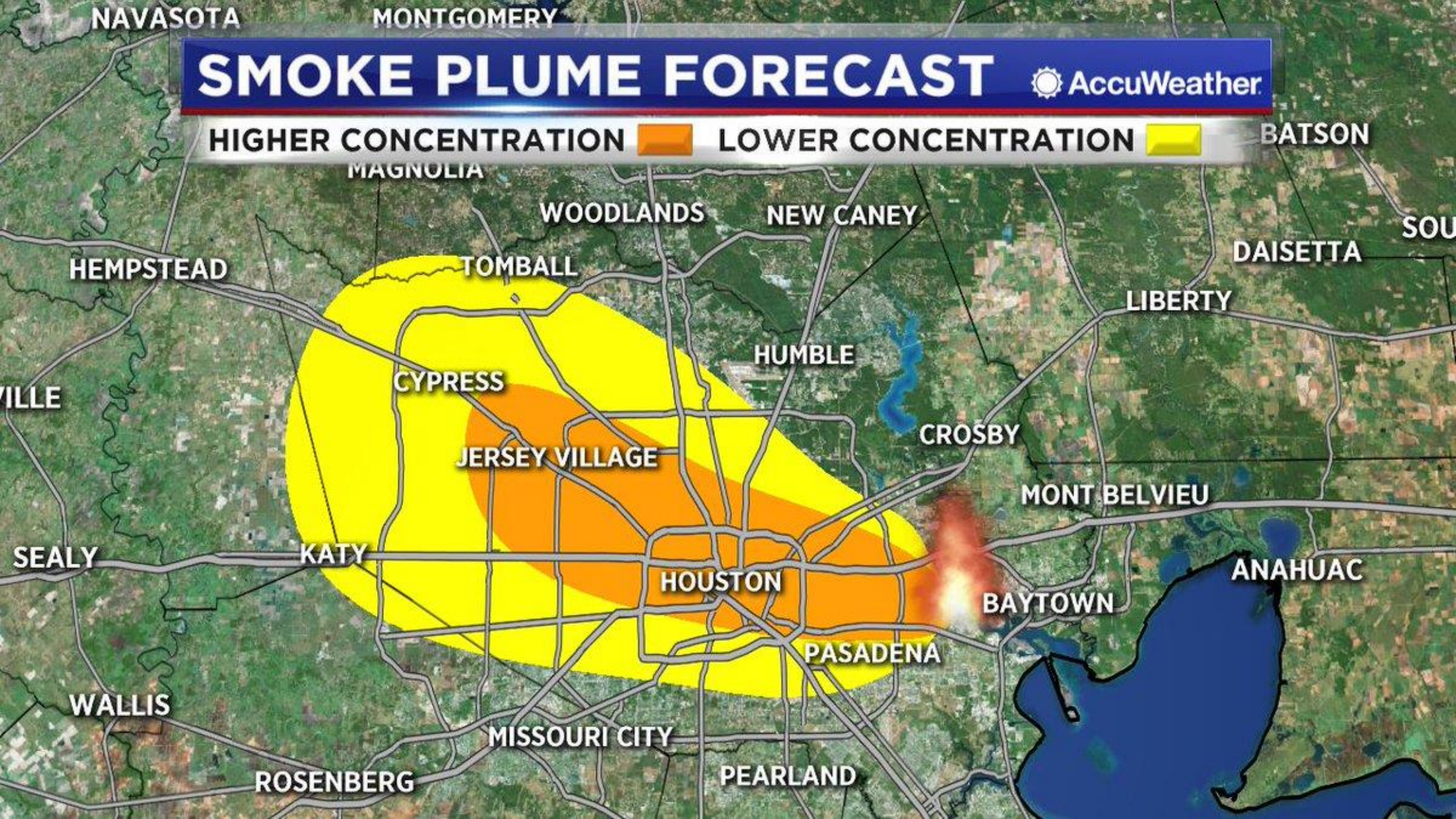
HIGHER CONCENTRATION



LOWER CONCENTRATION

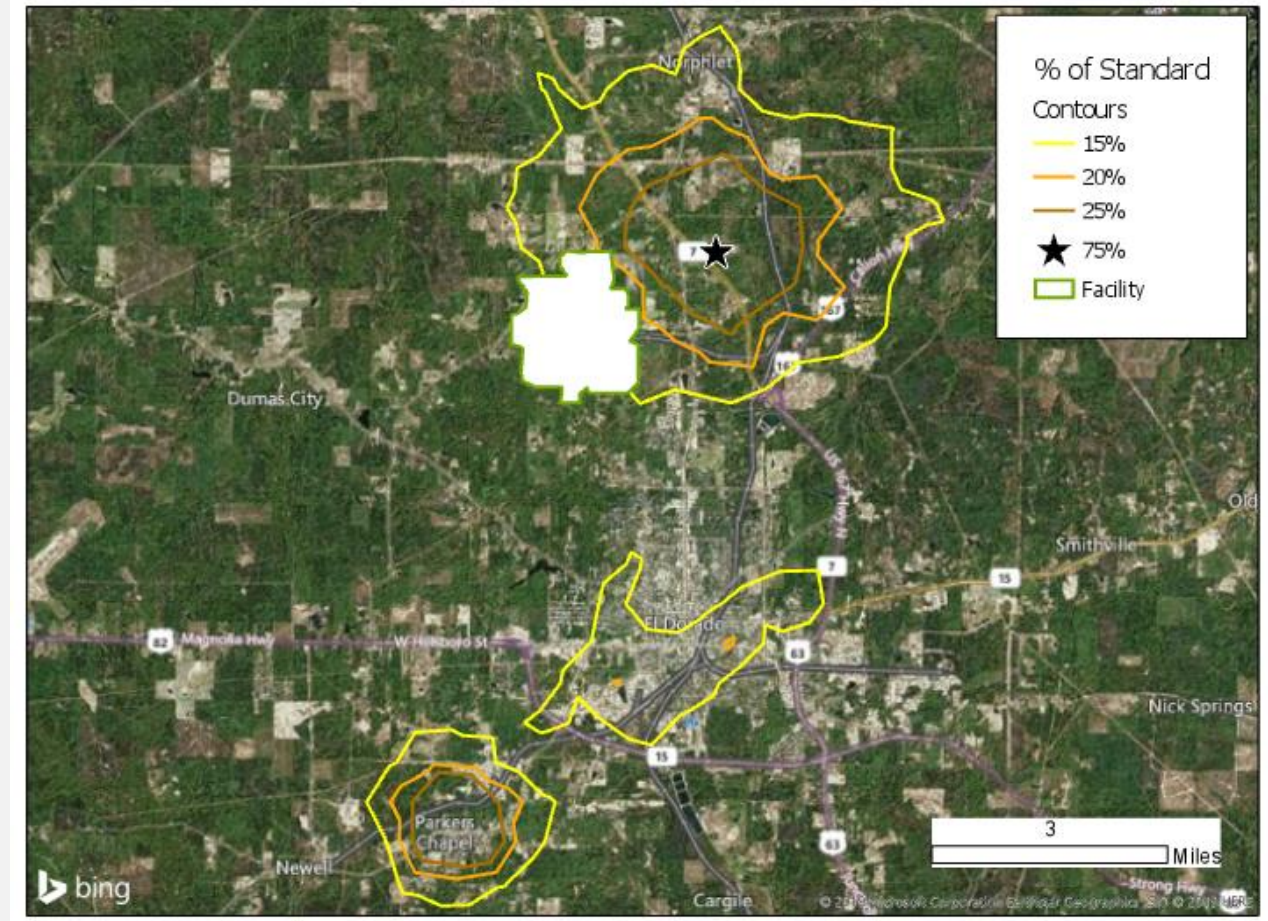


BATSON



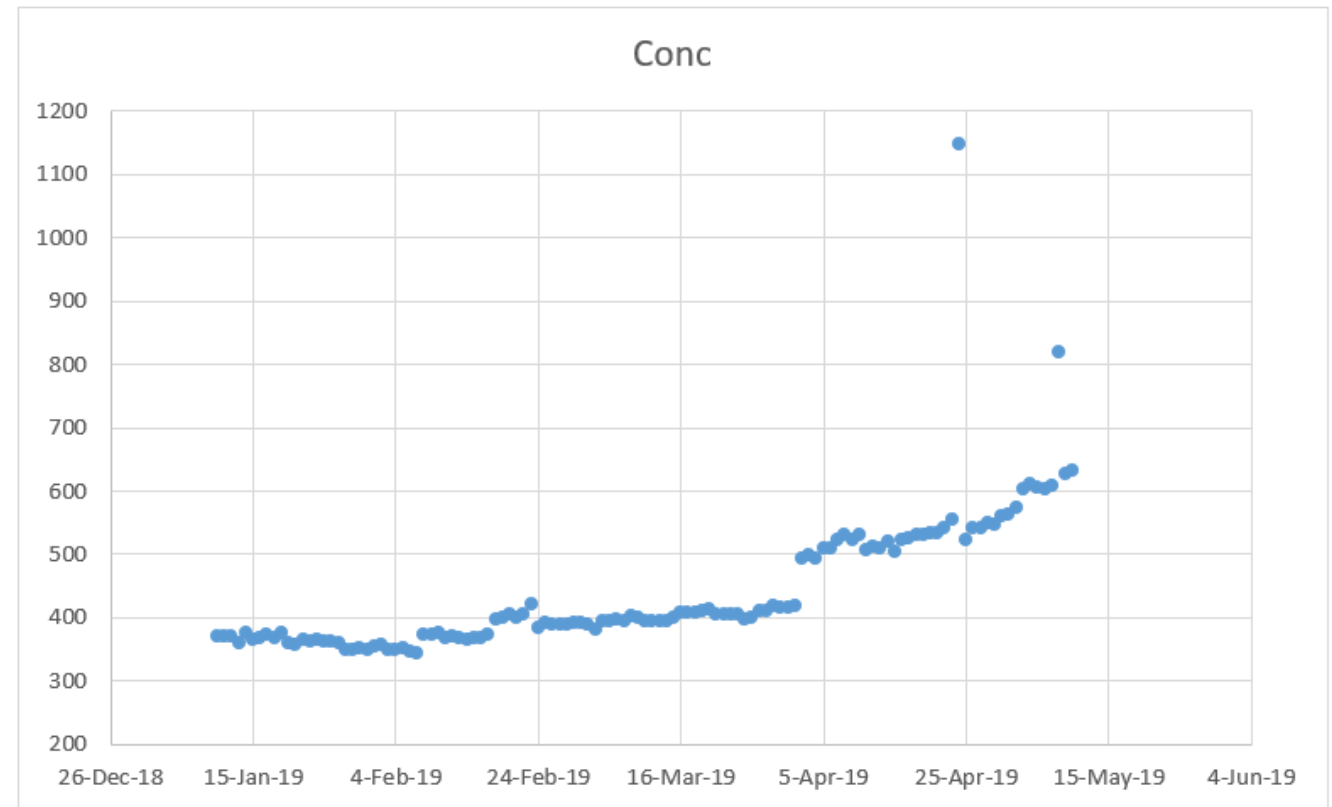
Maps for the Public

- Demonstrate yellow to brown intervals (as few intervals as possible).
- Use contour lines, not filled areas so underlying map can be seen. On-property cut out.
- Show max location
- Use aerial imagery if it looks good, include local roads/highways are reference points.
- Simplify as much as possible: facility symbol rather than individual sources. Avoid detailed map reference points: No need for: Map X Y tick marks and map projection. Scale Bar.

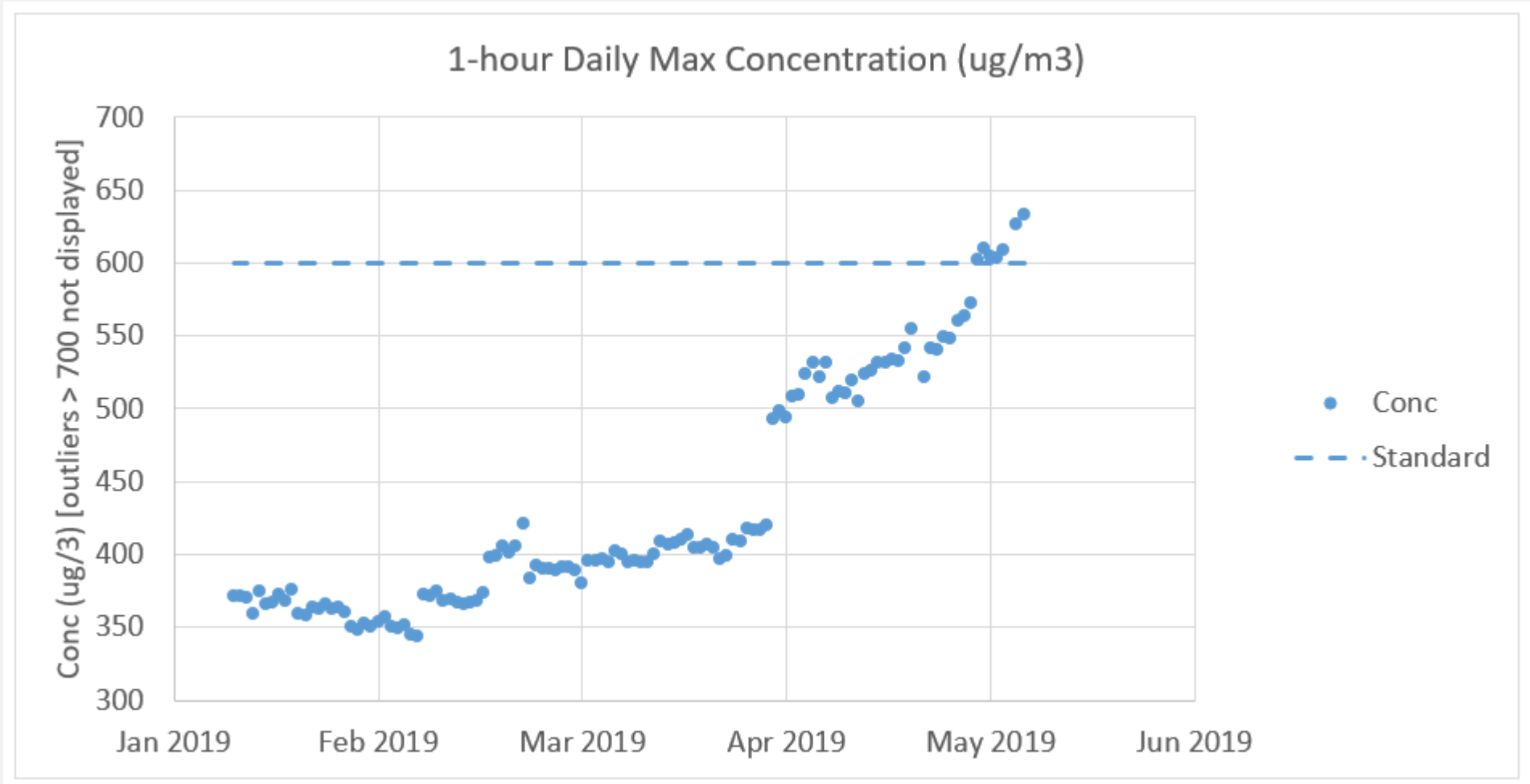


Graphs: Ineffective Case

- X-axis: **ambiguous** intervals in time
- Y-axis: **scale matters** (min to max)
 - Consider importance of including/excluding **outliers**
 - Is data stretched or compressed beyond **significance**?
 - Y-axis units not labeled, no **frame of reference** on time period



Graphs: Improved Case



Tables

- Orphaned Asterisks*
- Scientific Notation: Fear the exponent.
- Lots of zeros means a small number. 1E-06 vs 0.000001
- Tables are helpful for executive summaries.
- Your table may end up **on a blog**.

Table 2. Modeled maximum 1-hour and annual average concentrations, compared with TCEQ Effect Screening Levels

Pollutant	Max. 1-hour Average Modeled Concentration, µg/m ³	TCEQ 1-hour ESL, µg/m ³	1-hour ESL exceeded ?	Max. Annual Average Modeled Concentration, µg/m ³	TCEQ Annual ESL, µg/m ³	Annual ESL exceeded ?
Benzene	472.8	170	Yes	39.8	4.5	Yes
Carbon disulfide	35,942	30	Yes	3025	3	Yes
Carbonyl sulfide	10,404	135*	Yes	875.7	2.6*	Yes
Dimethyl disulfide	7661	20	Yes	644.8	2	Yes
Styrene	454.0	110*	Yes	38.2	140*	No
Toluene	2081	640*	Yes	175.1	1200*	No
1,2,4- Trimethylbenzene	2743	1250	Yes	230.9	125	Yes

<http://wackyworldofwaste.blogspot.com/2011/02/air-quality-in-barnett-shale-part-16-dr.html>

A Case Study in Air Project Communication

Rick Love, UTC

Pratt & Whitney: air permit = jobs

P&W Geared Turbofan Engine wildly successful

Engine require **blades**

Blades are made in Lansing, MI

Lansing needed to **expand**

Expansion requires **permit**



Pratt & Whitney: Lansing air permit

Compressing 6 months into 3:

Communication

- DNR management and permit writer
- Site general manager

Modeling

- Expertise, collaboration with DNR
- Iterative flexibility
- Perfect is enemy of good

Coordination

- P&W, DNR, consultants always on same page



Questions & Discussion



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