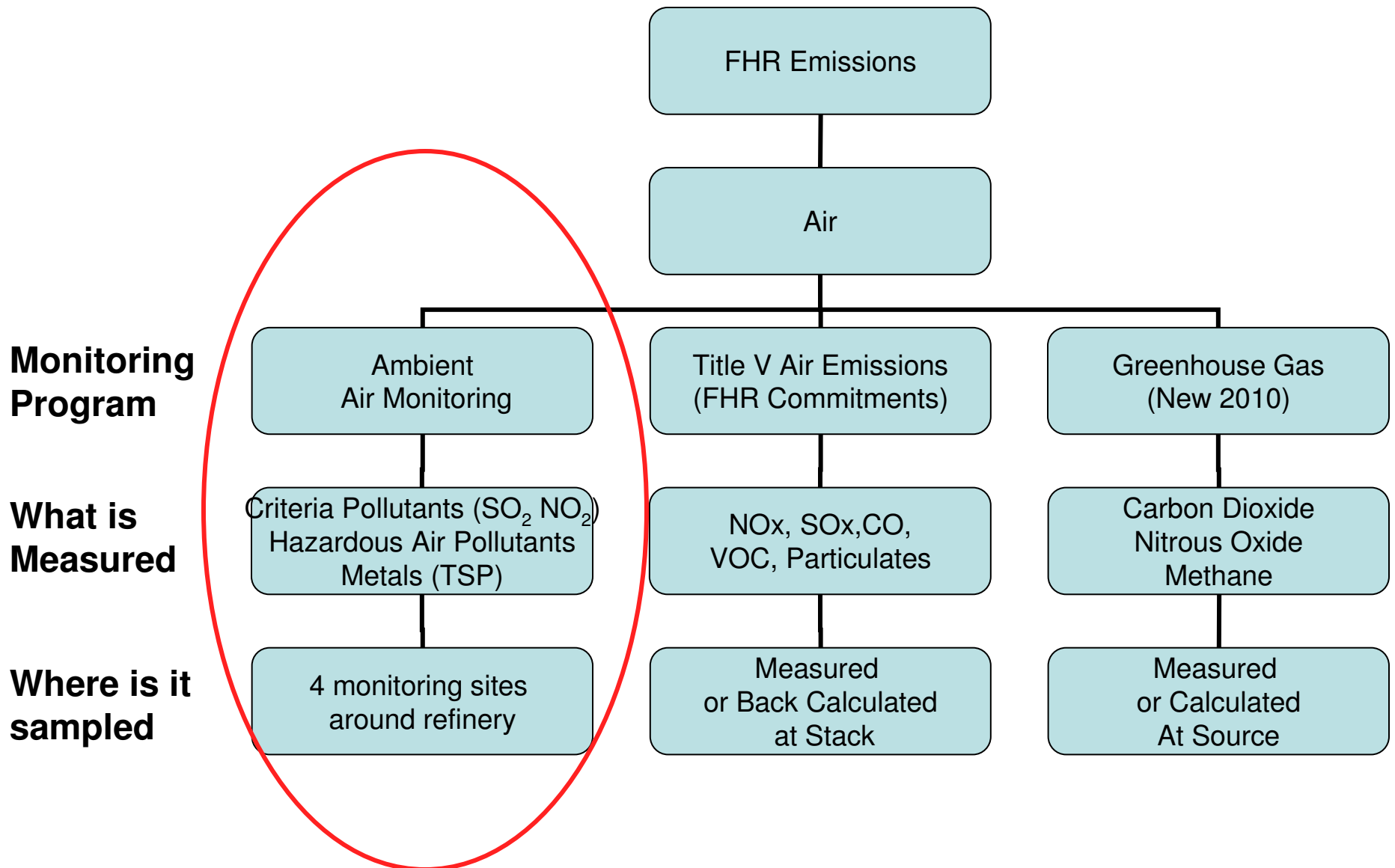


Air Monitoring Locations Historical Review & Current Issues

Roger Tippett
CAC Environmental Committee

CAC/FHR Air Emissions Monitoring/Reporting



Ambient Air Monitoring Program

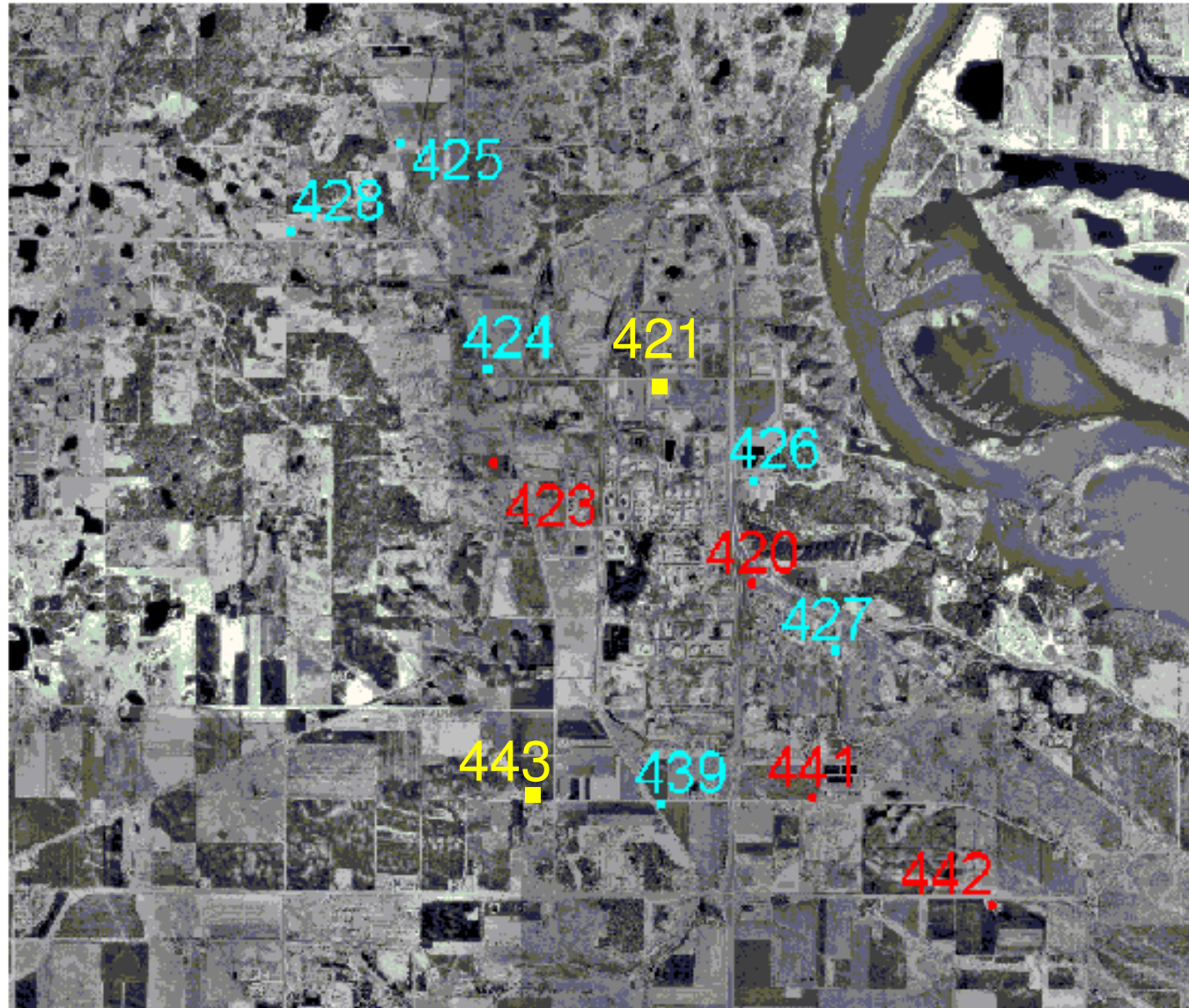
Four Key Points

- Ambient air monitoring samples are collected at four sites around the refinery
- Other sites or sources could be contributing some or all of the measured amount of a pollutant from the samples at the monitoring site.
- Analysis of the samples is completed by MPCA
- Consultants have reviewed and analyzed the data for the CAC from 2002 – 2008. However the source of data has always been from the MPCA.

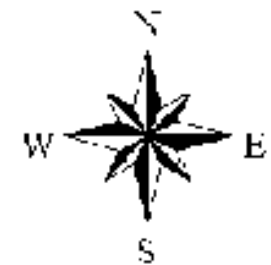
Current Status

- 4 active monitoring locations
 - FHR 420 (East of refinery)
 - FHR 423 (North West of refinery)
 - FHR 442 (South East of refinery)
 - FHR 443 (South West of the refinery)
- There have been several monitor moves over the years
- CAC has had strong input into monitor placement
 - CAC has requested guidance from MPCA previously
- Request was received to move monitor 443

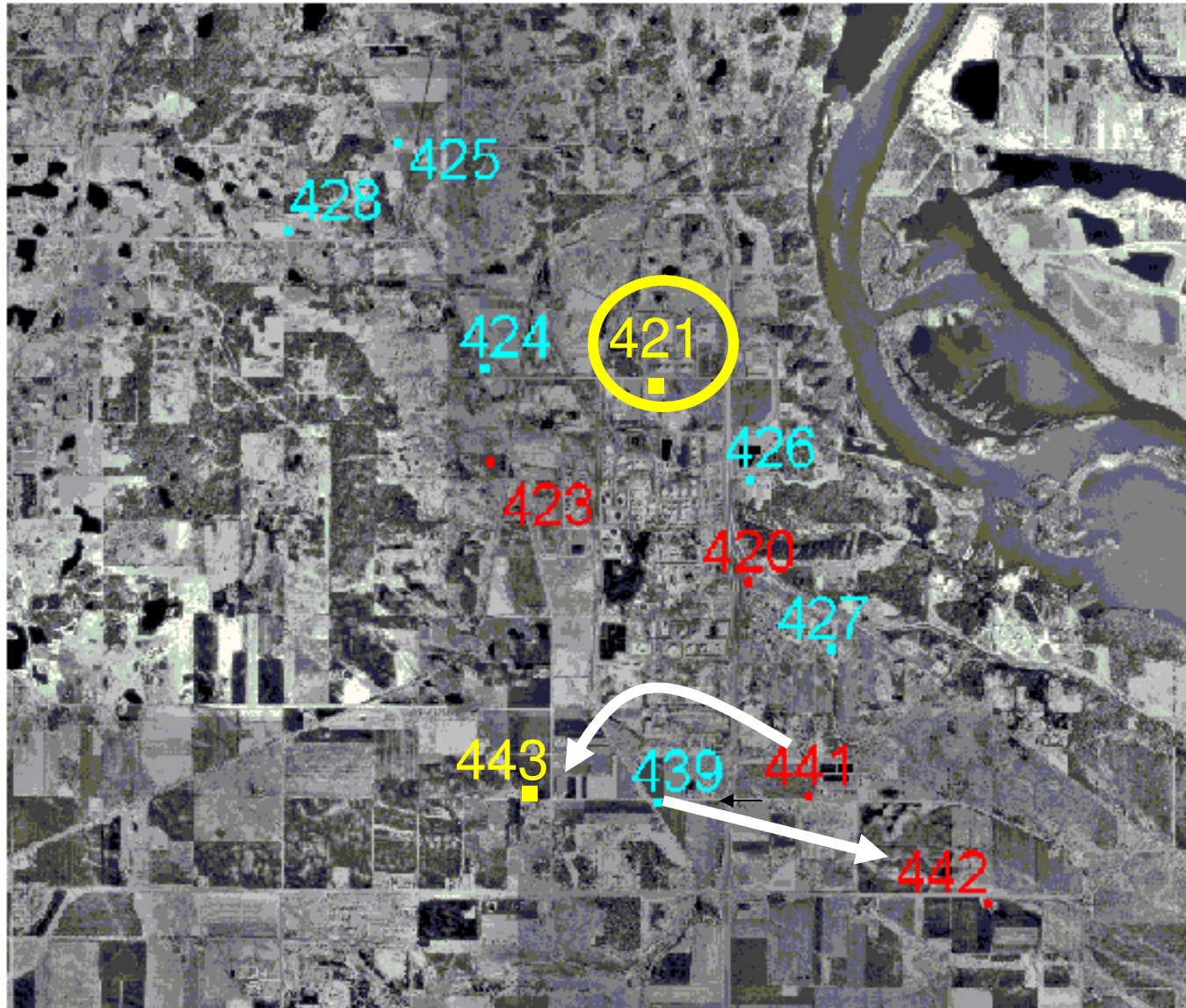
Flint Hills MPCA Monitoring Sites



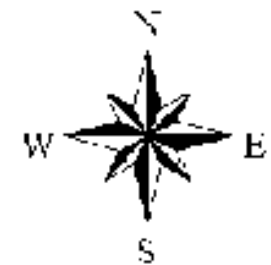
- Historical Sites
- 2002 Sites
- Sites Added After 2002



Flint Hills MPCA Monitoring Sites



- Historical Sites
- 2002 Sites
- Sites after 2002



FHR Monitoring Locations

Site	A / I	Dates Active	Address
420	Active	1972 - current	12821 Pine Bend Trail - Rosemount
423	Active	1990 - current	2141 120 th St E. Rosemount
442	Active	2000 - current	CR 42 (SE of refinery)
443	Active	2008 - current	14035 Blaine Avenue, Rosemount
441	Inactive	1999 - 2007	12555 Clayton Avenue, Rosemount
421	Inactive	2003 - 2007	3134 117 th Street East, Rosemount
439	Inactive	1998 - 2000	3110 140 th Street, Rosemount
427	Inactive	1991- 1992	Hwy 55 & Hwy 52
426	Inactive	1990 - 1996	NE of refinery (cemetery)
424	Inactive	1990 - 1993	11680 Rich Valley Blvd, IGH
428	Inactive	1991 - 1993	10880 Akron Avenue IGH

Last Monitor Movement

- Moved 441 to current 443 location.
- Evaluated several potential sites SW of refinery
- Formal request made by CAC to FHR on 10/15/2007
- 441 was directly in line with 442
 - 441 data highly correlated to 442 data
- No air quality data was being collected to the South and West of refinery
- Rosemount growth plants
 - CR 42 corridor
 - U More park
- CAC requested that metals monitoring be added to 441 at the time it moved.

MPCA Input on 441 Move in 2007

- MPCA favored monitors in North/South and East/West configuration
- Recommended against DCTC SW location initially proposed by CAC Environmental Committee
 - Location too far from refinery
 - Winds come from NE and E (<10% of the time)
- MPCA recommended a closer location
 - Preference is fence line monitors
 - Suggested Rich Valley/Blaine Avenue & 140th Street (current 443 site)

Key Issues for CAC Consideration

- A request was made to the CAC to evaluate moving 443 again. This time further away, but onto higher ground.
- Generally the CAC does not have good historical or supporting archived documents that outline the rationale for previous monitor location changes.
- Changes to what is being monitored at these locations are being made without consultation with the CAC

Issues for CAC to Consider in Deciding Whether to Move a Monitor

- Loss of comparative data
 - Are FHR measured emissions increasing or decreasing?
- Likelihood of higher readings at the new site
 - MPCA and FHR /FHR consultants have dispersion models that can help
 - Dispersion modeling is commonly used for this purpose (Ref - MPCA Citizen's Guide to Air Dispersion Modeling)
- The ability of the new location to fill a data gap
 - Do we have blind spots?
- Does the location maximize value to the local community
 - Significant factor in moving 443 further west than 441
 - Large population growth to the South and West of the refinery
- Relocation Challenges
 - Utility requirements
 - Cost (this has been paid for by FHR previously)

Monitoring Sites Near Flint Hills, 2009



Site 443 Location

- Moved from 441 location in 2007/2008.
- Located SW of refinery
- Stack Heights
 - Stacks ~ 150ft
 - Refinery @ approx 900ft above sea level
 - Total height = 1050ft above sea level
- Monitor Height 886 ft above sea level
 - 164 ft below top of stack
 - Approximately 4,000 ft away from southern stacks
 - Equivalent to a 4.1% grade (down)
- Land rises to the west
 - ~ 986ft above sea level at about 1.5 miles (~ 8,000 ft) west of the refinery
 - ~ 950 ft at 1.3 miles (6,864 ft) from the southern stacks.
 - 100ft rise in land requires locating the monitor 4,000ft further away

*all distances from refineries are initial rough estimates from a topographical map

What is Monitored

	420									423									442									441/443							
	Metals	VOC	Carbonyl	CO	SO2	Nox	Met	TRS		Metals	VOC	Carbonyl	CO	SO2	Nox	Met	TRS		Metals	VOC	Carbonyl	CO	SO2	Nox	Met	TRS		Metals	VOC	Carbonyl	CO	SO2	Nox	Met	TRS
2008	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X		X						X	X		X			
2009	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X		X					A	X	X		X			
2010	X	X	X	X	X	X	X	X		T	X	X	X	X	X	X	X		T	X	X		X					T	X	X		X			A
2011	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X			X	X		X						X	X		X			T
2012?																																			

- Sampling Terminated
- Sampling Started

CAC Issues

- Who decides what is monitored at each location?
- How should the CAC be involved if new parameters are added or removed?
- What changes if any are proposed for 2012?
 - MPCA public comment period is in the May – June timeframe for their 2012 Network plan