

Stillwater Mine DPM Sampling Strategy

DPM Workshop
Elko, Nevada

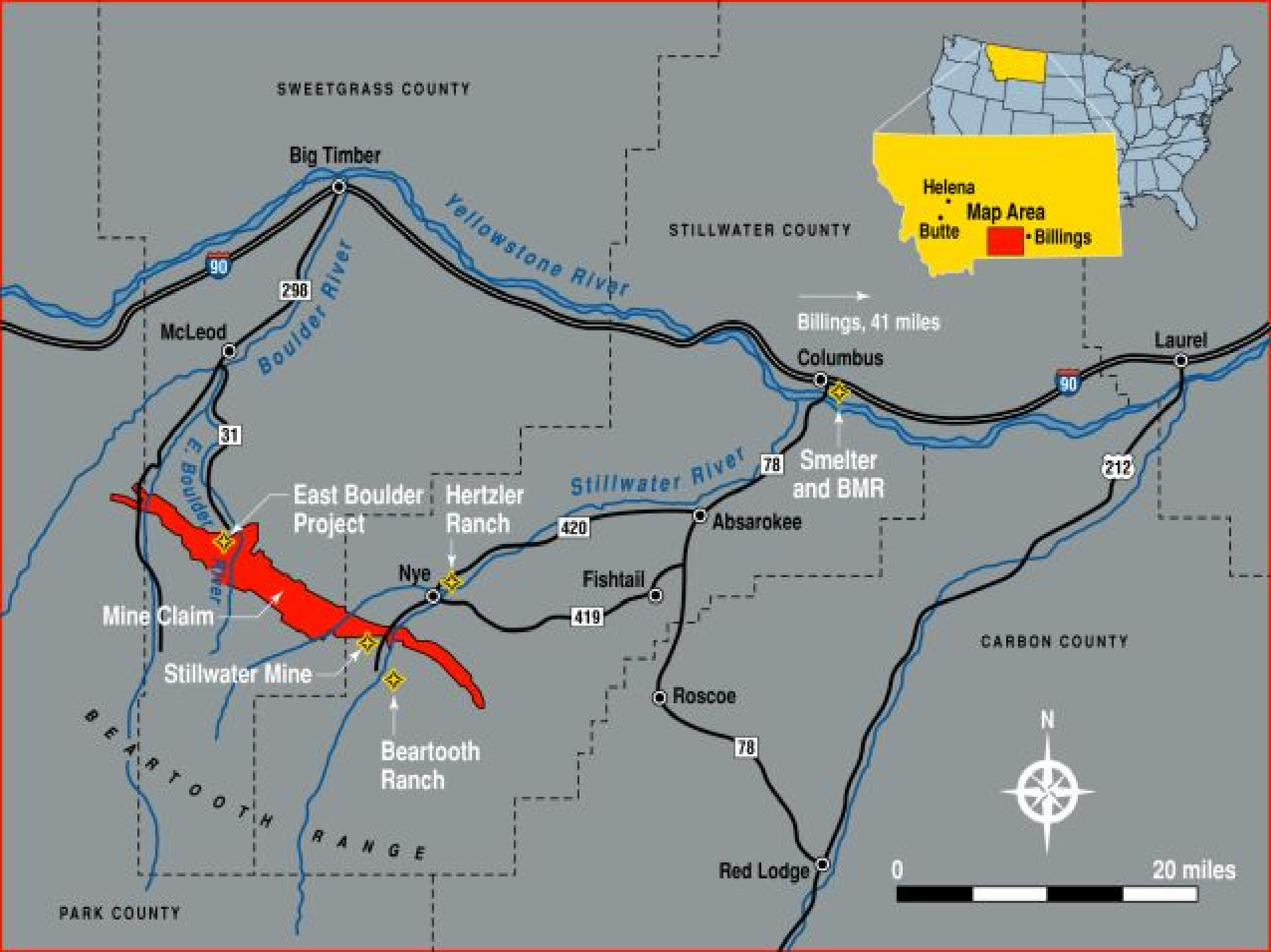




Topics



- Introduction
- Stillwater Mine Overview
- Sample Strategy
- Sample Preparation
- Area Sampling
- Personal Sampling
- Data Recollection



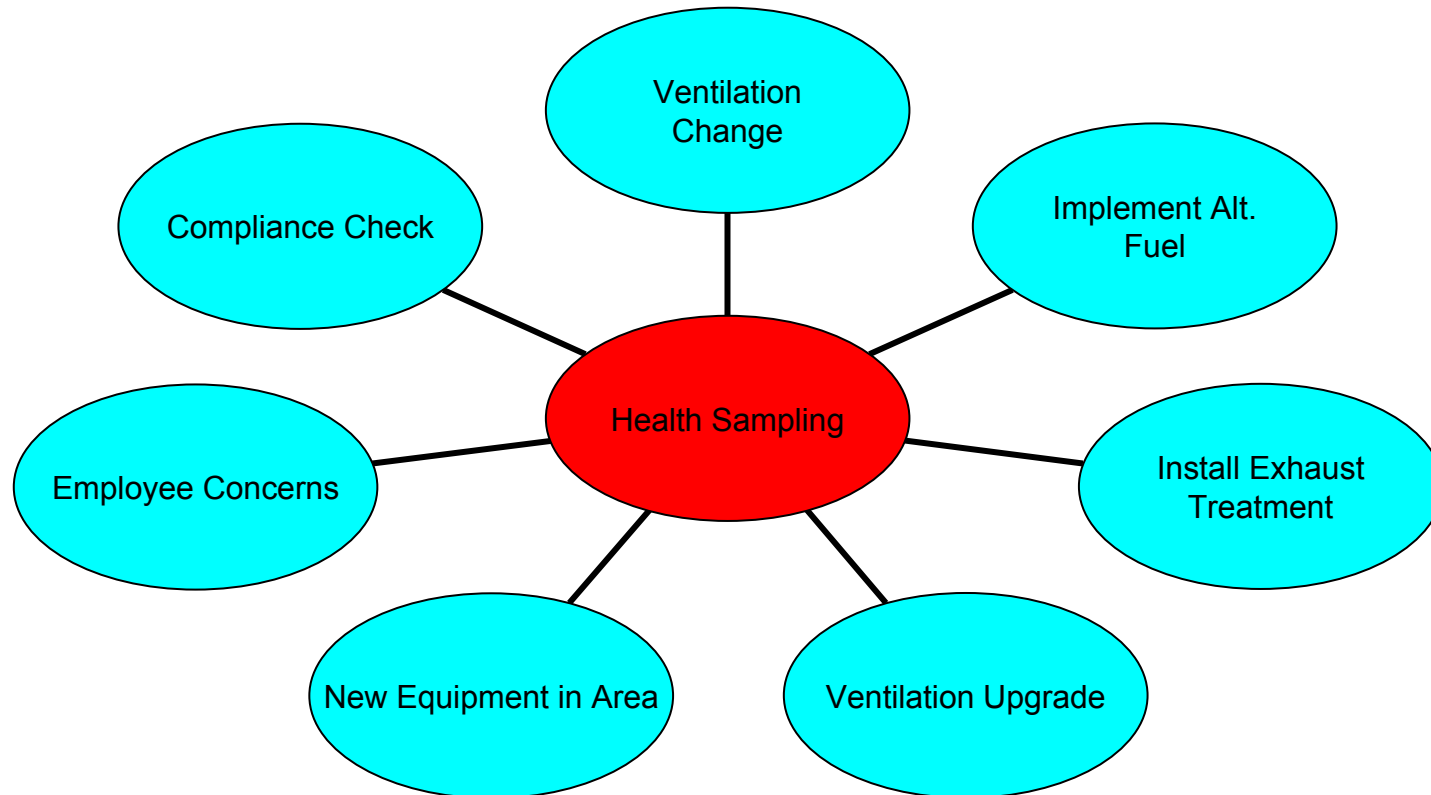


Stillwater Mine Overview

- DPM loading at Stillwater Mine made by three groups based upon horsepower and estimated utilization.
 - 1/3 of total DPM loading from 27 Unit Muckhaul fleet
(19 ea 10-ton, 4 ea 30-ton & 4 ea 20-ton loci's)
 - 1/3 of total DPM loading from 73 Unit LHD Fleet
(25 ea 4yd³, 24 ea 2yd³ & 24 ea 1.5yd³)
 - 1/3 of total DPM loading from <200 Unit Utility Fleet
(37 Mantrips, 20 Delivery, 83 Tractors/ATV's, 31 Skid Steer/Forklifts & 10 others)
- 350 Underground Diesel Equipment



Sample Strategy





Sample Strategy

- What, How are you going to sample for DPM????
 - Area
 - Personal





Sampling Strategy

- Exposure assessment is evaluated by conducting both area and personal samples
 - Area = Identify areas of concern and determine how concentrations are effected by a series of stopes. Used to evaluate newly implemented controls.
 - Personal = To determine and evaluate exposures and compliance.



Sample Preparation

- Calibration
 - Personal Sampling Pump
 - Tygon Tubing
 - 10-mm Nylon Cyclone
 - SKC DPM Cassette
 - Calibration Chamber Jar
- Calibrate pumps to 1.7 LPM





Sample Preparation

- Area Sampling
 - Sample Pump and Media
 - Gas Monitor
 - Temperature & RH Meter
 - Vein Anemometer
 - Sample Notes





Sample Preparation



- Personal Sampling
 - Sample Pump and Media
 - Gas Monitor
 - Temperature & RH Meter
 - Vein Anemometer
 - Digital Manometer
 - Pitot Tube
 - Sample Notes



Location: _____
Date: _____
Shift: _____

Diesel Particulate Sampling Field Notes

Sampled by: _____

INDIVIDUAL SAMPLE

Name: _____
Occupation: _____
Equipment: _____
Inside Cab? Y N N/A

Reason for Sample

____ New location / Baseline
____ MSHA
____ Ventilation Change
____ Personal Sample
____ Other: _____

Pump #: _____
Cass. #: _____
Total Time: _____

Pump and Cassette Information

Pre-Cal _____
Post-Cal _____
AVG Flow _____

Volume: _____

AREA SAMPLE

Vent Rate: _____ (CFM)

	Initial	Final
Temps (F)	_____	_____
Humidity	_____	_____

Additional Readings? Y / N

Additional Readings? Y / N

If so, see
attachment

Gas Readings

ITX / TMX # _____

	Initial	Final
NO2	_____	_____
CO	_____	_____
O2	_____	_____

Additional Readings? Y / N

If so, see attachment

Was a TMX with a Hygiene Board used?

Y / N

Analytical Results

Organic Carbon µg/sample	Elemental Carbon µg/sample	Total Carbon µg/sample	Organic Carbon µg/m ³	Elemental Carbon µg/m ³	Total Carbon µg/m ³

Notes / Observations

Location

Equip in Area	Type of dpm device, if any

Ventilation Readings

Quantities				Calibration	Quantity
Q1	Q2		Q Avg	Correction	PPM

Area				Area Correction	Area
W1	W2		W Avg	Factor*	
H1	H2	H3	H Avg		Sq Feet
			W Avg x H Avg		CFM
				Area x Quantity:	

* Area Correction Factor

Subtract 0.5 for large pipes

Subtract 3.0 for 24" ventline

Subtract 7.0 for 36" ventline



Area Sampling



- Identify areas of concern
- Determine how concentrations are effected by a series of stopes/work areas
- Used to evaluate newly implemented controls
- Evaluate ventilation splits
- Determine needed administrative controls



Area Sampling

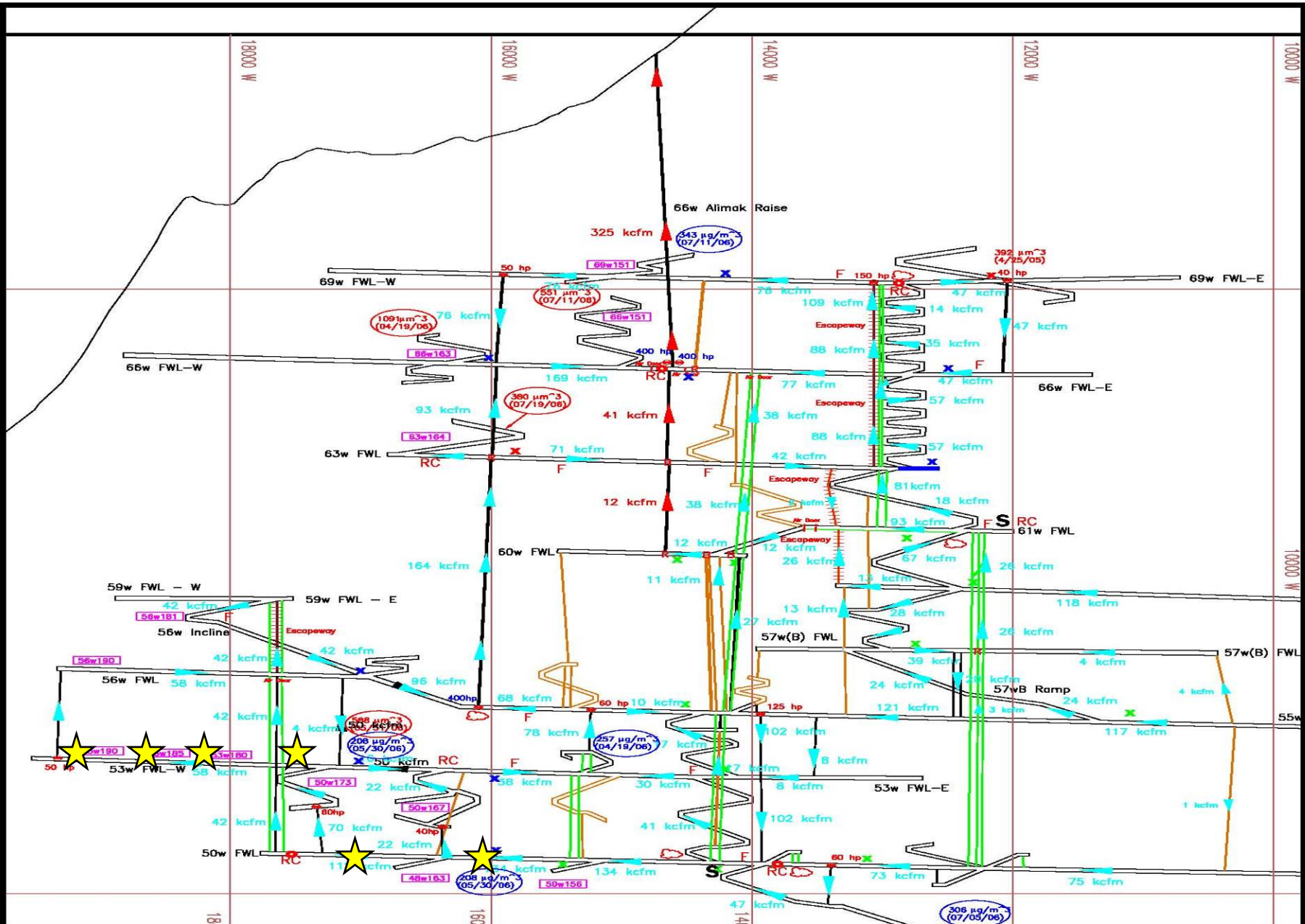


- Area Sampling
 - Sample Pump and Media
 - Gas Monitor
 - Temperature & RH Meter
 - Vein Anemometer
 - Sample Notes



Area Sampling





STILLWATER MINING COMPANY
 HC - 54 Box 365
 Nye, MT 59061

TITLE:

UPPERWEST
 2007 Ventilation Plan

DRAWN BY: RLL

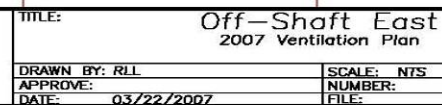
SCALE: 1"=1000'

APPROVE:

NUMBER:

DATE: 03/22/2007

FILE:





Personal Sampling

- Evaluate exposures
- Evaluate control technologies
- Evaluate regulatory compliance



Personal Sampling

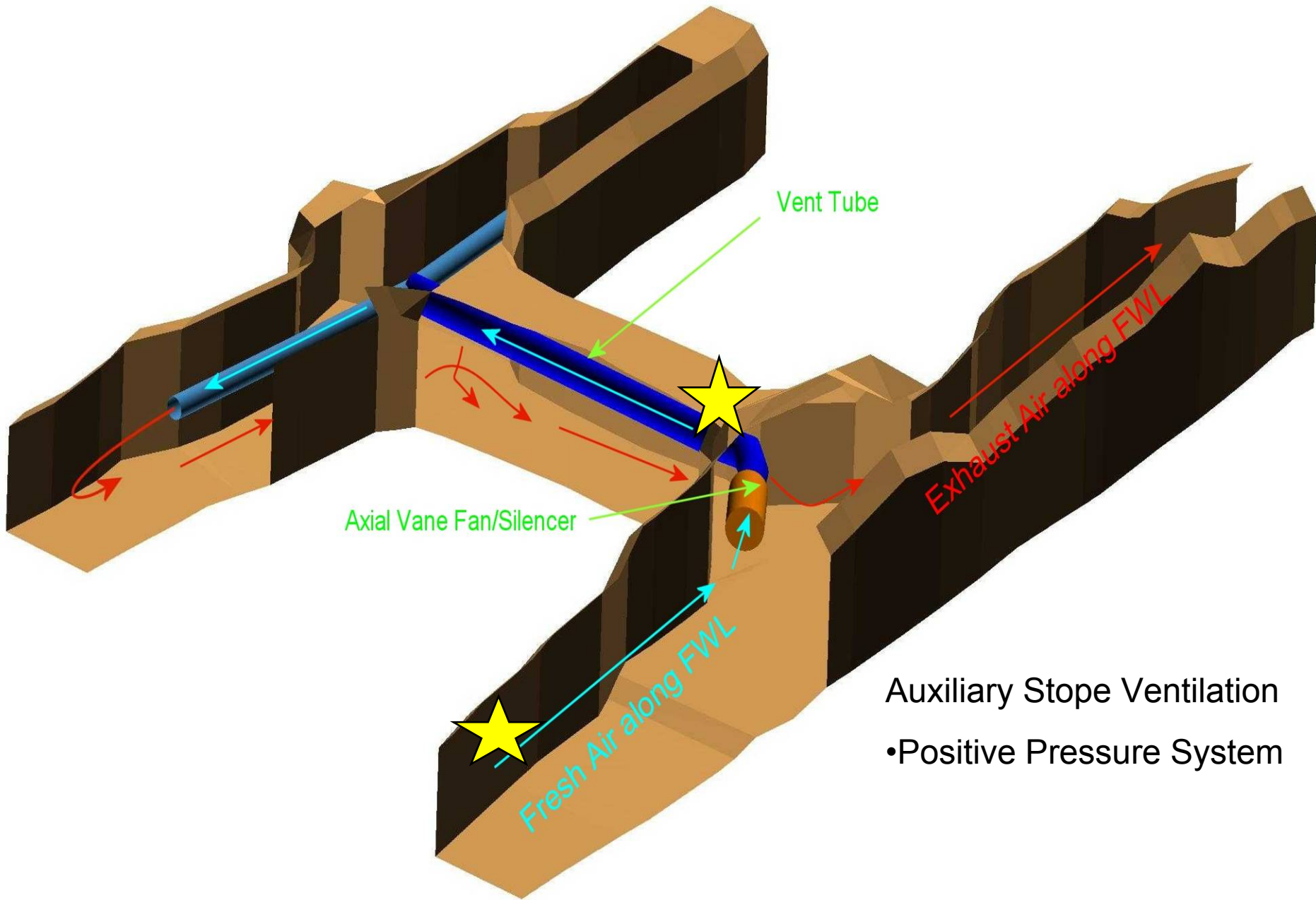
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 - Pitot Tube
 - Sample Notes





Personal Sampling







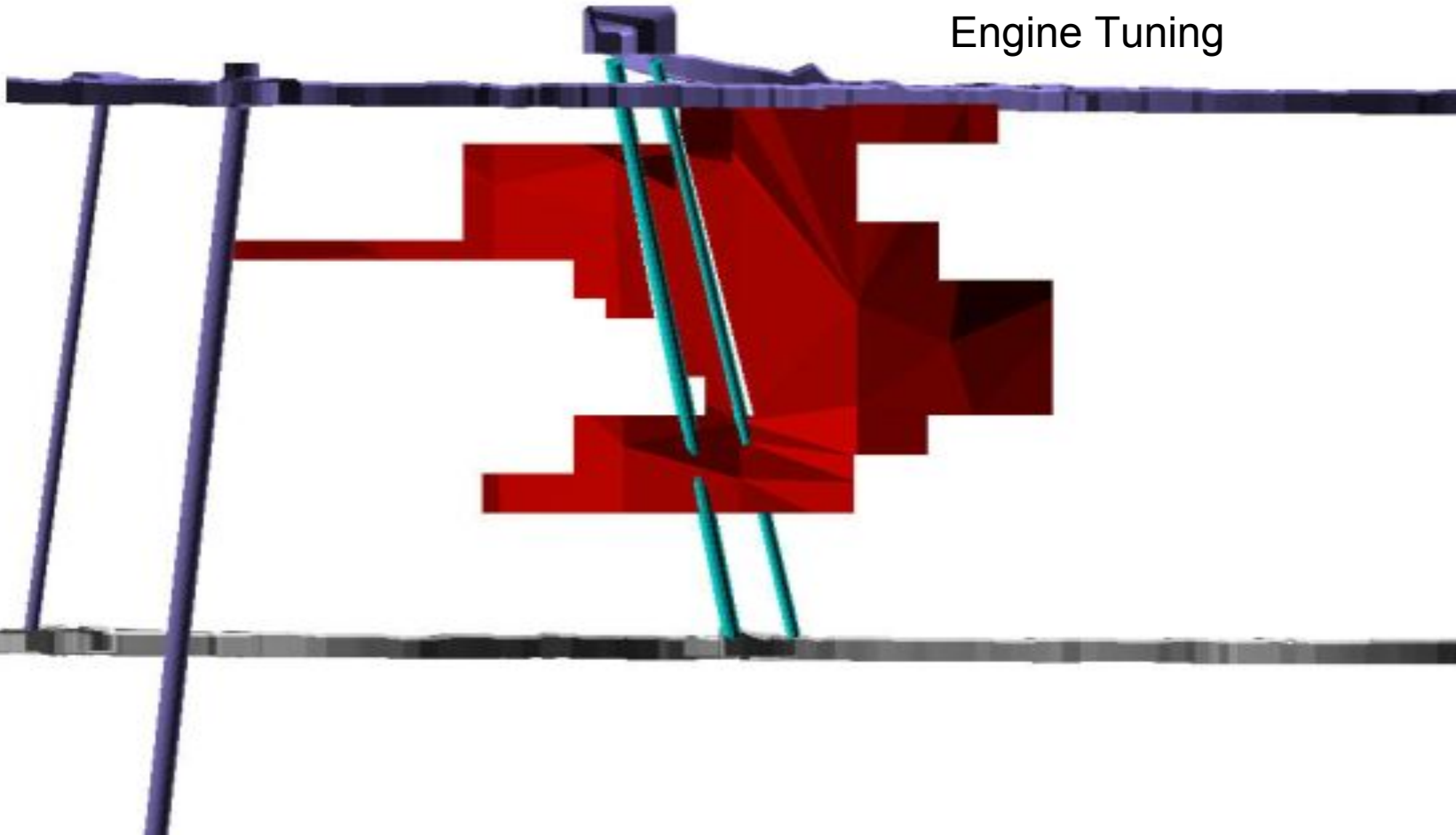
Personal/Area Sampling

41W9500 Captive Mucker
Stope

Bio-diesel

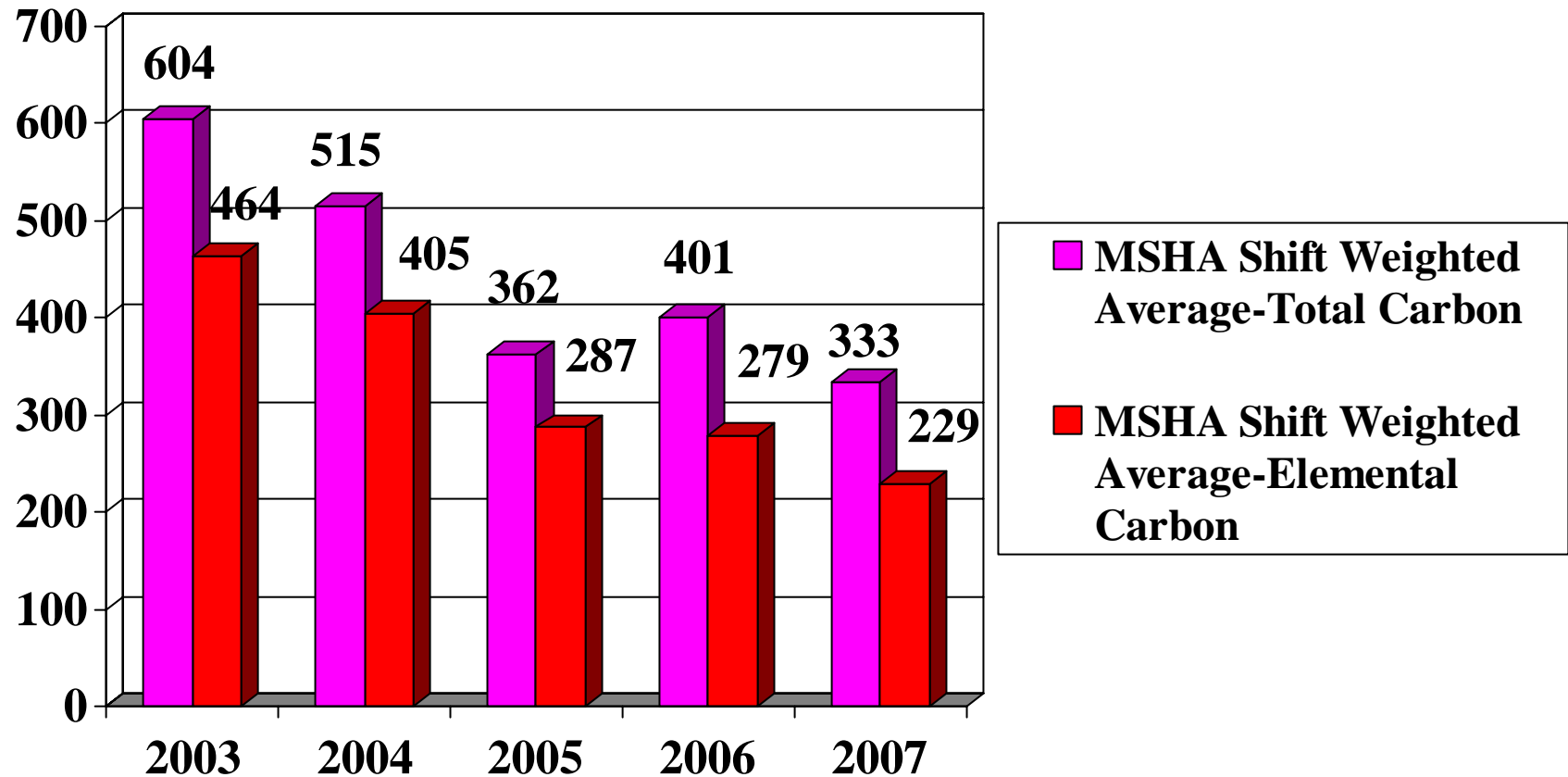
Exhaust Controls

Engine Tuning



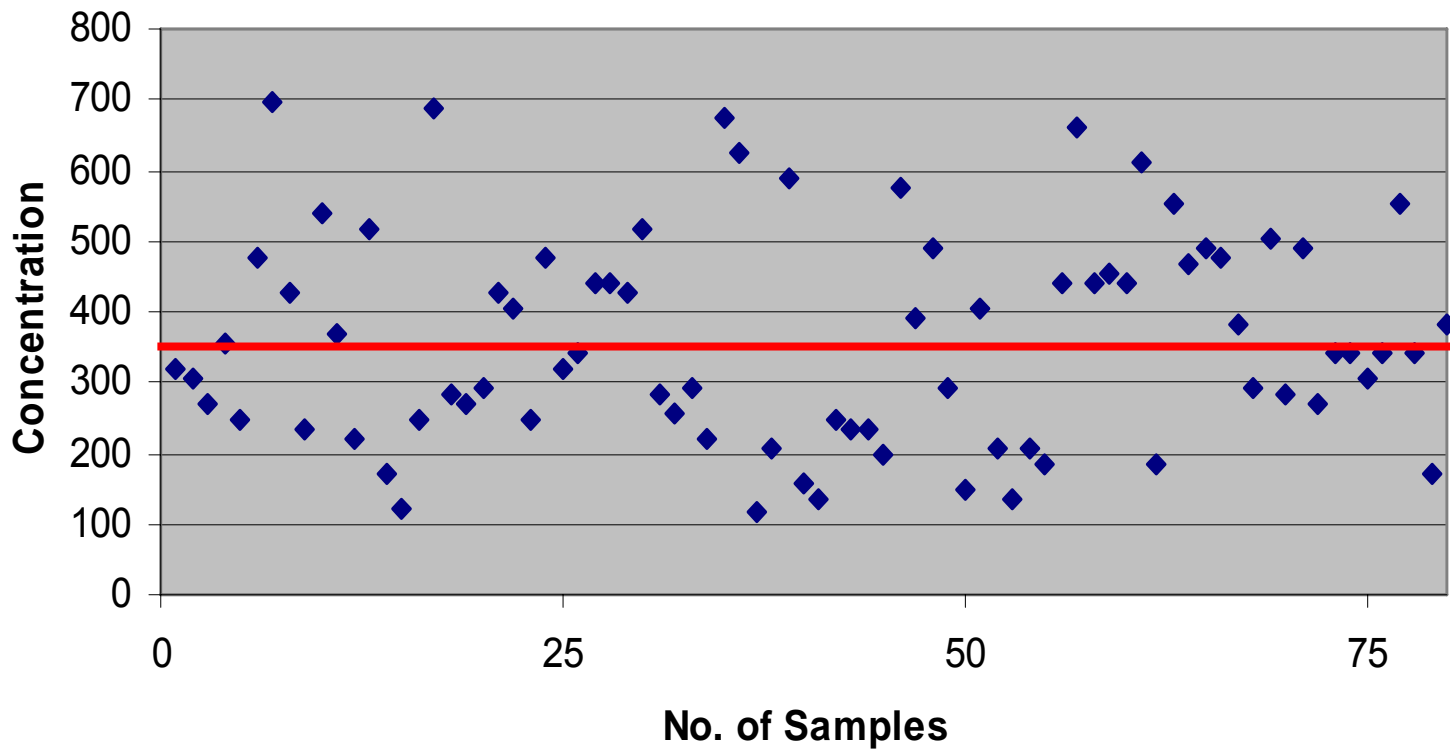


Data Recollection





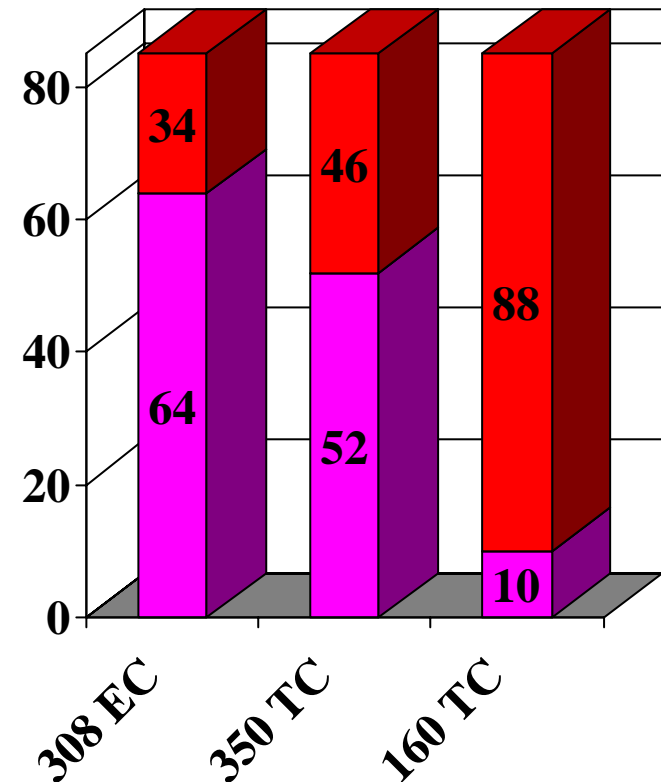
Data Recollection





Data Recollection

- 65% compliance with $308_{\text{EC}} \mu\text{g}/\text{m}^3$
- 53% compliance with $350_{\text{TC}} \mu\text{g}/\text{m}^3$
- 10% compliance with $160_{\text{TC}} \mu\text{g}/\text{m}^3$



THANK YOU



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