



Indiana Harbor & Canal
PROPOSED
Air and Water Quality Monitoring
During Dredging/CDF operation

Public Presentation
August 13, 2008
East Chicago, Indiana

Monitoring Guidance Document

Purpose and Goals

- Purpose

- An aid for the USACE to help in this and future projects.
- Not incorporated directly into contracts.
- Each contractor to prepare and implement an EPP consistent with Guidance Document.

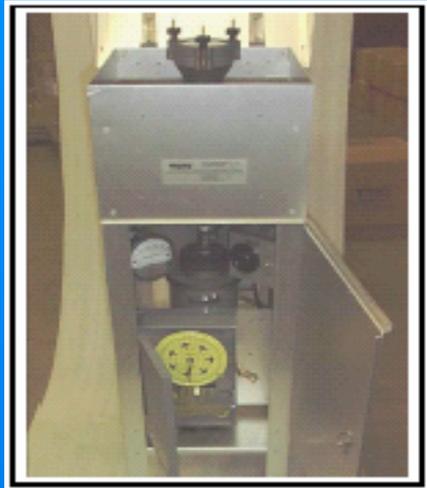
- Goals

- Provide framework for water monitoring program.
 - Verify dredging not negatively impacting water quality.
- Provide framework for air monitoring program.
 - Verify air quality at CDF perimeter is not negatively impacted.

Two Types of Media Monitored

- Air Monitoring

- Long Term (Chronic)
- Short Term (Acute)



- Water Monitoring

- Oil & Grease
- Turbidity



Notebook
PC
Eric De Carlo
UH Oceanography



Water Monitoring - Turbidity

- Action Levels

- >50 NTU above background initiates response actions
- Monitor 600 ft upstream & downstream.
 - Turbidity Meter or Data Sondes

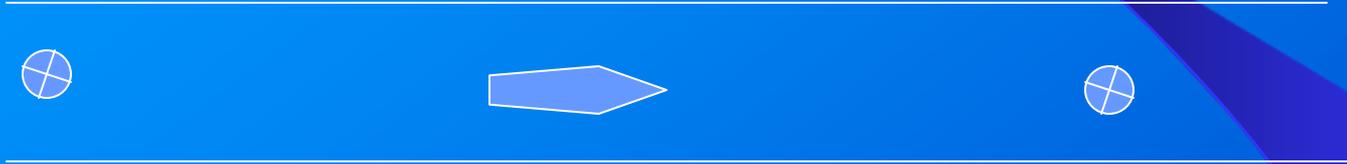
- Responses

- Increase monitoring frequency
- Optimize dredging operation
- Shutdown dredge operations

Relative Locations of Water Monitoring

600' upstream

600' downstream



Dredge

Water Monitoring – Oil & Grease

- Oil boom in place during dredge operations
- Primarily by visual observation
 - Conducted minimum of every two hours.
 - Log maintained of observations.
 - Oil collected by sorbents and disposed of at appropriate facility

Air Monitoring



Air Monitoring

- Long Term

- Demonstrate that local air quality not adversely impacted by CDF operation.
- Evaluate trends to make adjustments to CDF operation.
- Similar to background ambient air monitoring

- Short Term

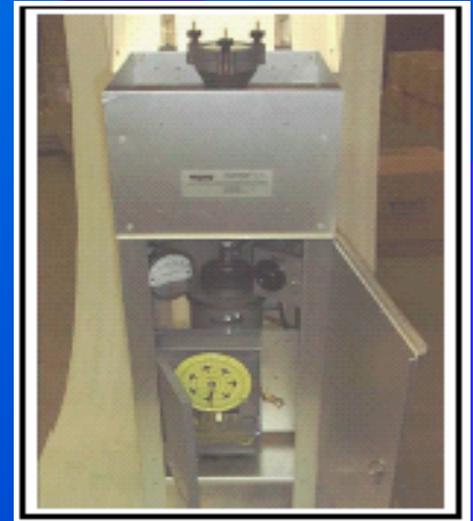
- “Real-Time” monitoring
- Data available to aid in:
 - Managing daily operation to avoid impacts,
 - Determining if air monitoring or operation should be adjusted.

Long-Term Air Monitoring

- Compliance with IDEM limits demonstrated with emissions model.
 - Air Emission Standards
 - 25 Tons per year for PM
 - 25 Tons per year for Total VOCs
 - 10 Tons per year for individual compounds

Long-Term Air Monitoring

- High Volume Sampler
 - 62 organic compounds, Metals and Particulate Matter
 - Air Monitoring Stations on CDF dikes
 - Measurements made within CDF property fenceline
 - positioned between emission sources and community
 - 24-Hour Sample Every 6 Days
 - 300 m³ of Air Sampled



Short Term Air Monitoring



Short Term Air Monitoring Particulate Emissions

- Action Levels

- IDEM limit of 50 $\mu\text{g}/\text{m}^3$ above background for 60 minutes.
- More stringent than the 25 ton/year limit.
- Continuous monitor to record 15 minute averages.

- Response Actions

- Initial exceedance triggers source investigation.
- Second exceedance activates control measures.
 - Physical barriers
 - Chemical suppressants
 - Water spray systems

Short Term Air Monitoring Particulate Emissions

- Selected Monitor
 - Thermo-Scientific Model 5030
 - Range – 0 to 10,000 $\mu\text{g}/\text{m}^3$.
 - Detection Limit - $<0.5 \mu\text{g}/\text{m}^3$.
 - Updated every 4 seconds.



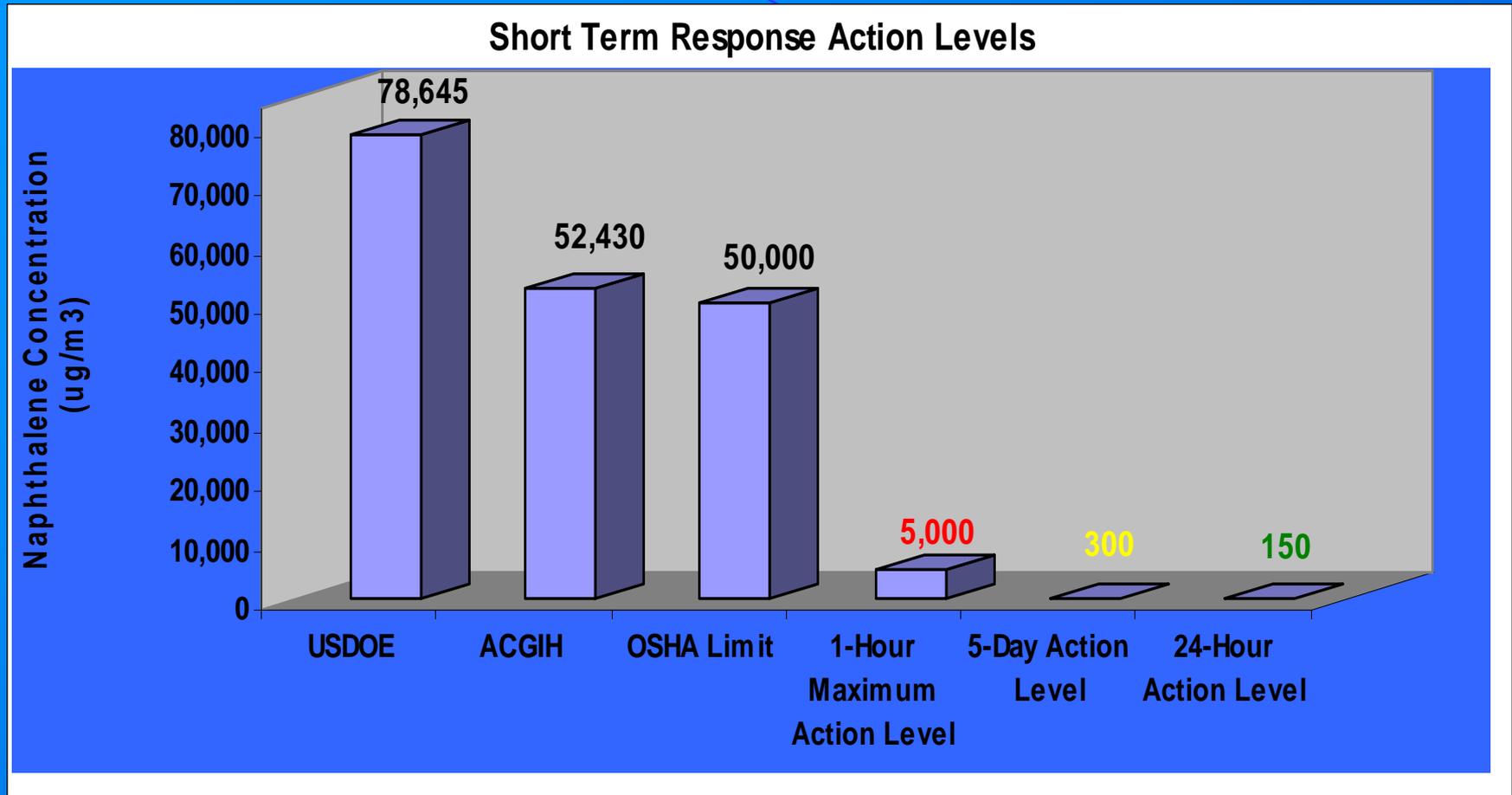
Short Term Air Monitoring Naphthalene Emissions

- Action Level Development
 - Based on USEPA SRA report.
 - 25 tons/year naphthalene emissions.
 - Used 5-year average wind speed of meter/second.
 - Used “breathing zone” of 2 meters.

Short Term Air Monitoring Naphthalene Emissions

- Action Levels (Above Background) at CDF dikes
 - 24-Hour Action Level (24 hour average)
 - $<150 \mu\text{g}/\text{m}^3$ – No Action Required.
 - $>150 \mu\text{g}/\text{m}^3$ – Heighten awareness, use best management practices for CDF.
 - 5-Day Action Level (24 hour average)
 - $300 \mu\text{g}/\text{m}^3$ for 5 consecutive days – emission control measures required.
 - 1-Hour Maximum Action Level
 - $5,000 \mu\text{g}/\text{m}^3$ (1 hour average) – CDF disposal activities cease.

Short Term Response Action Levels



Responses & Control Measures

- Applied in proportion to concentration and duration.
- May include but not limited to:
 - Notification of IDEM, ECWMD, USEPA.
 - Increasing emission control measures.
 - Physical or chemical covers
 - Powdered activated carbon
 - Modifying CDF operation to minimize emissions.
 - Temporarily ceasing dredging and disposal activities.

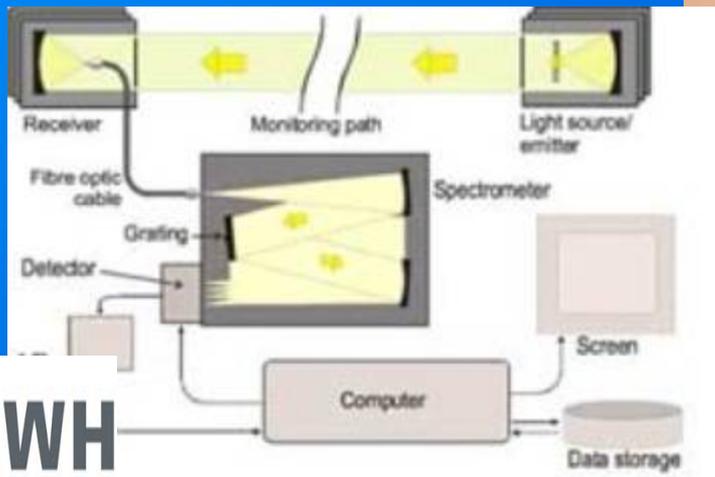
DOAS

- **Advantages**

- **Monitors Several Compounds Simultaneously**
- **No Calibration Required**
- **Rotates Automatically to Measure at Various Locations**

- **Disadvantages**

- **Only Provides Average Concentration**
- **Dependence on Unobstructed Line-of-Sight**
- **Does Not Work Well in Heavy Fog**



Selected Monitor

- UV Sentry (UV-DOAS System)
 - Pathlengths from 10 to 1,000 meters.
 - Detection limit in the single digit $\mu\text{g}/\text{m}^3$.
 - User-friendly Microsoft-Excel based software.
 - Lightweight and easy to deploy.



ArSLID Demonstration



Thank You!

Questions?

