

# Monitoring and Reporting Requirements in NPDES Permits

NPDES Permit Writers' Course  
Online Training Curriculum



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## Purpose of Monitoring

- Determine compliance with permit conditions
- Establish a basis for enforcement actions
- Provide data for evaluating treatment efficiencies
- Improve characterization of the effluent during permit reissuance



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## Approaches to Monitoring

- Self-monitoring
  - permittee performs sampling and analysis
- Compliance monitoring
  - permitting authority monitors effluent (often during a compliance inspection)



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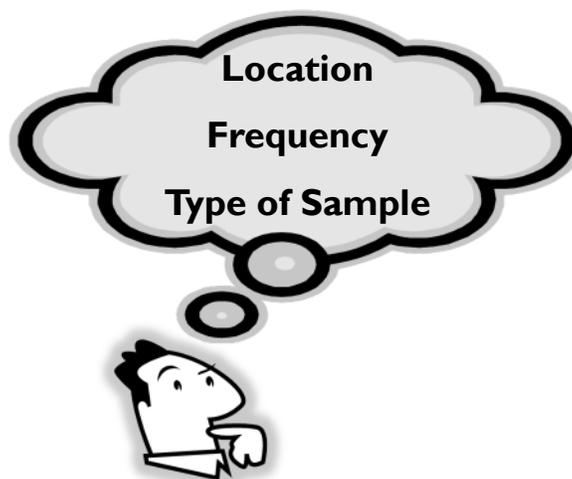
## Key Regulatory Requirements – Monitoring

- Permits must specify the type, intervals, and frequency of monitoring sufficient to yield data representative of the monitored activity [§ 122.48(b)]
- Monitoring required [§ 122.44(i)(1)]
  - the mass or other measurement specified in the permit for each pollutant limited in the permit
  - the volume of effluent discharged from each outfall
  - other measurements as appropriate (e.g., internal waste streams and determination of compliance with narrative requirements)

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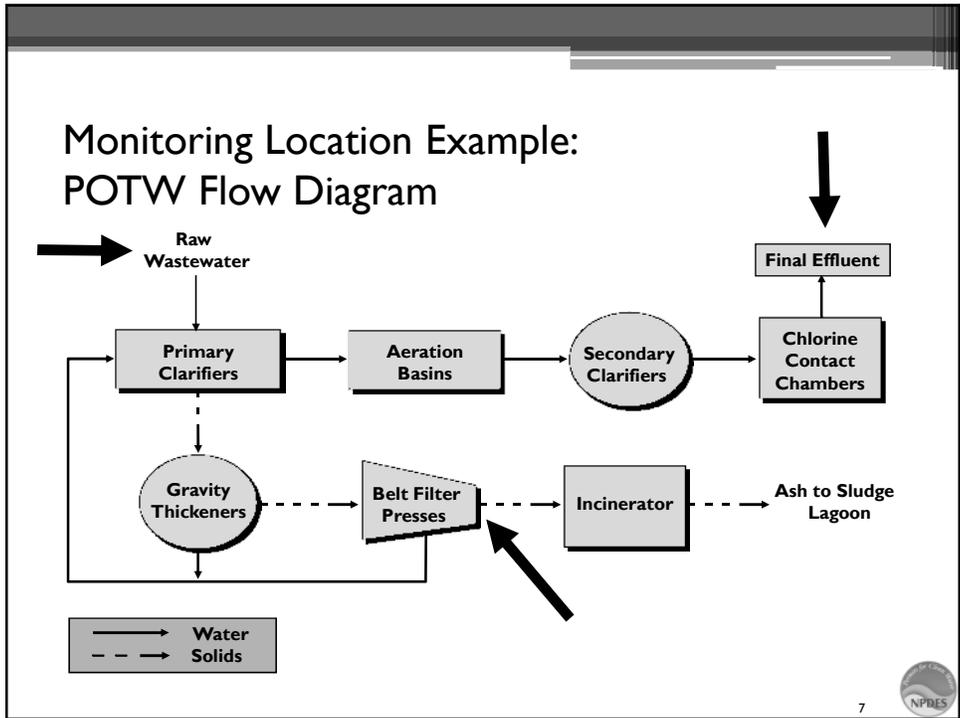
## Self Monitoring Considerations



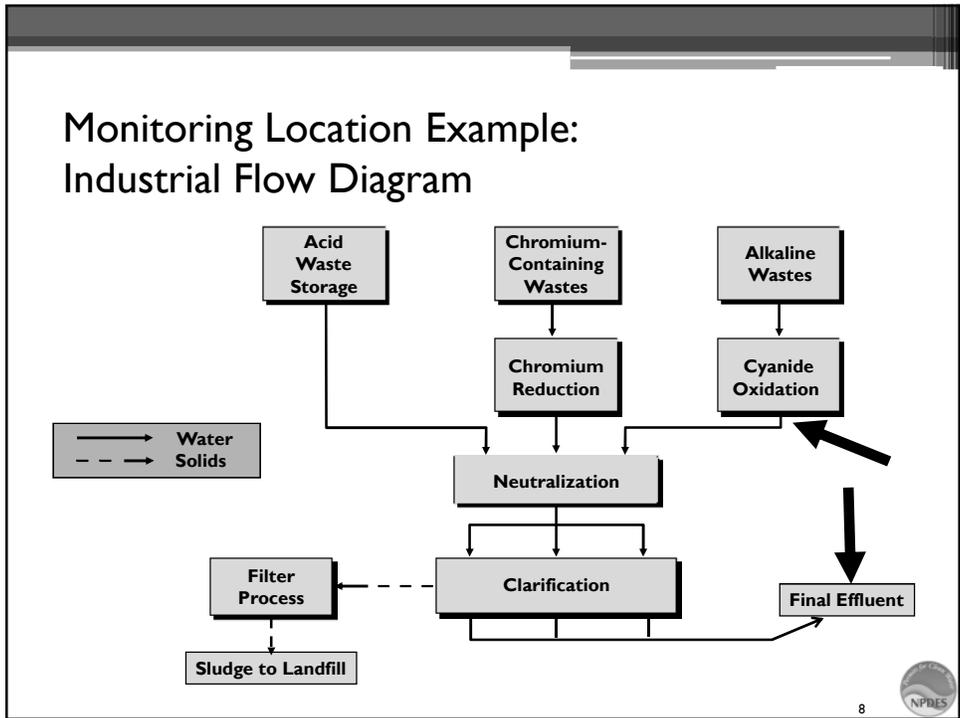
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### Monitoring Location Example: POTW Flow Diagram



### Monitoring Location Example: Industrial Flow Diagram



## Some Considerations for Monitoring Location

- Is it on the facility's property?
- Is it accessible?
- Will the results be representative of the targeted waste stream?
- Are internal monitoring points needed?



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## Monitoring Frequency Considerations

- Federal requirements
  - must be sufficient to yield data representative of the monitored activity [40 CFR 122.48(b)]
  - waivers available for certain effluent guideline-based pollutants [40 CFR 122.44(a)(2)]
- Permitting authority requirements
  - consult policy and procedures

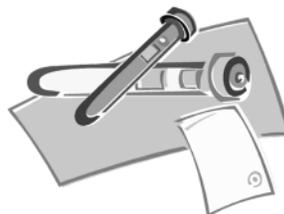


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## Frequency Considerations (continued)

- Size and design of facility
- Type of treatment
- Location of discharge
- Frequency of discharge  
(batch, continuous)
- Compliance history
- Nature of pollutants
- Cost



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## Types of Samples



- **Grab:** sample taken from a waste stream on a one-time basis without consideration of the flow rate of the waste stream and without consideration of the time
  - must be used to monitor certain parameters (e.g., pH [unless continuous], volatile organics)
  - used for monitoring batch discharges
- **Composite:** sample composed of two or more discrete aliquots
  - aggregate sample reflects the average water quality over the sample period
  - accounts for variability in the pollutant concentration and discharge flow rate
  - may be sequential discrete samples or a single combined sample

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## Composite Samplers



Sequential Discrete Composite Sampler



Single Combined Composite Sampler

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## Types of Samples (continued)

Composite sample is defined by the time interval between aliquots and the volume of each aliquot

- **Time Proportional:** interval time and sample volume are constant
- **Flow Proportional:** interval time or sample volume may vary



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## Types of Samples (continued)

- **Continuous:** automated collection and analysis of a parameter in a discharge
  - typically used for pH and flow
  - excursions of effluent guideline range allowed for pH when sampling continuously [§ 401.17]



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## Analytical Methods

- 40 CFR Part 136 Methods
  - Test methods in Appendix A to Part 136
  - Standard Methods for the Analysis of Water and Wastewater
  - Methods for the Chemical Analysis of Water and Wastes
  - Test Methods: Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater
- Alternate Test Procedures [§ 136.4-5] and Flexibility to Modify Methods [§ 136.6]
  - <http://water.epa.gov/scitech/methods/cwa/atp/index.cfm>
- National Environmental Methods Index (NEMI)
  - <http://www.nemi.gov>



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## Analytical Considerations in Establishing Monitoring Requirements



- **Method Detection Limit (MDL):** the minimum concentration of analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero [§ 136.2(f)]
- **Minimum Level (ML):** concentration at which the entire analytical system gives a recognizable signal and acceptable calibration point
- **Sufficiently Sensitive Methods (SSM):** Proposed regulations at § 122.44(i) and Part 136 require the use of sufficiently sensitive methods for analyses (75 FR 35712, June 23, 2010)

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## Key Regulatory Requirements – Reporting



- What is reported?
  - monitoring results as required in permit [§ 122.41(l)(4)]
  - data for pollutants monitored more frequently than required using approved methods [§ 122.41(l)(4)(ii)]
- When is information reported?
  - reporting requirements must be established on a case-by-case basis with the frequency dependent on the nature and effect of the discharge, but in no case less than once a year [§ 122.44(i)(2)]

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## Key Regulatory Requirements – Reporting (continued)

- Who is responsible for reporting?
  - the permittee [§ 122.22(b)]
- What format is used for reporting?
  - Discharge Monitoring Reports (DMR) [§ 122.41(l)(4)(i)]
    - states can alter format
    - states can require additional reporting
  - proposed rule (78 FR 46005, July 30, 2013) would require electronic reporting



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## Key Regulatory Requirements – Record Keeping

- Records of monitoring must be kept [§ 122.41(j)(2):
  - 3 years for wastewater
  - 5 years for sewage sludge use and disposal activities and CAFOs
- Monitoring records include [§ 122.41(j)(3):
  - date, place, and time
  - individual performing sampling
  - date of analysis
  - individual performing analysis
  - analytical methods used
  - analytical results
- While not required, permit should specify where records should be located



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## Other Requirements

- Permitting authorities sometimes include other requirements related to monitoring, reporting, and recordkeeping with routine monitoring requirements or as special conditions
  - special studies
  - visual monitoring of treatment systems
  - equipment inspection records
  - postings or public notice



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## Documentation

- Document in the fact sheet or statement of basis:
  - appropriate regulatory citations for monitoring and reporting requirements
  - basis for decisions on monitoring frequency, location, and sample type for new monitoring
  - rationale for increases or decreases in monitoring frequency or other changes from the previous permit
  - purpose of special studies or other requirements



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## Feedback and Other Presentations

Questions or comments?

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