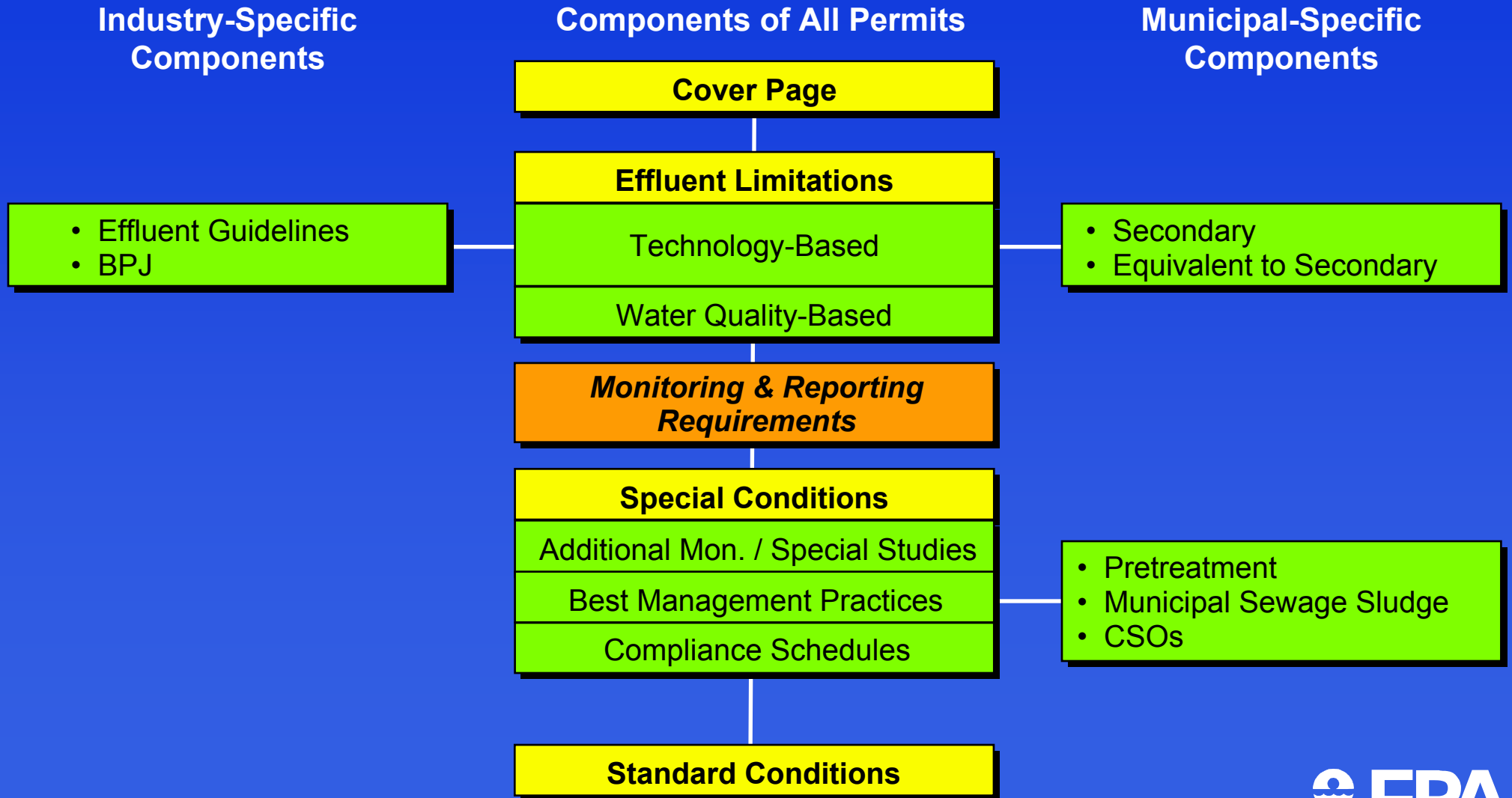

Monitoring and Reporting Requirements



Permit Components



Learning Objectives

- ◆ Describe purpose of monitoring requirements
- ◆ Discuss the considerations for establishing monitoring requirements
- ◆ Explain analytical method requirements
- ◆ Describe reporting requirements

Purpose of Monitoring

- ◆ **Determine compliance with permit conditions**
- ◆ **Establish a basis for enforcement actions**
- ◆ **Other**
 - **Assess treatment efficiency**
 - **Characterize effluents**
 - **Characterize receiving water**

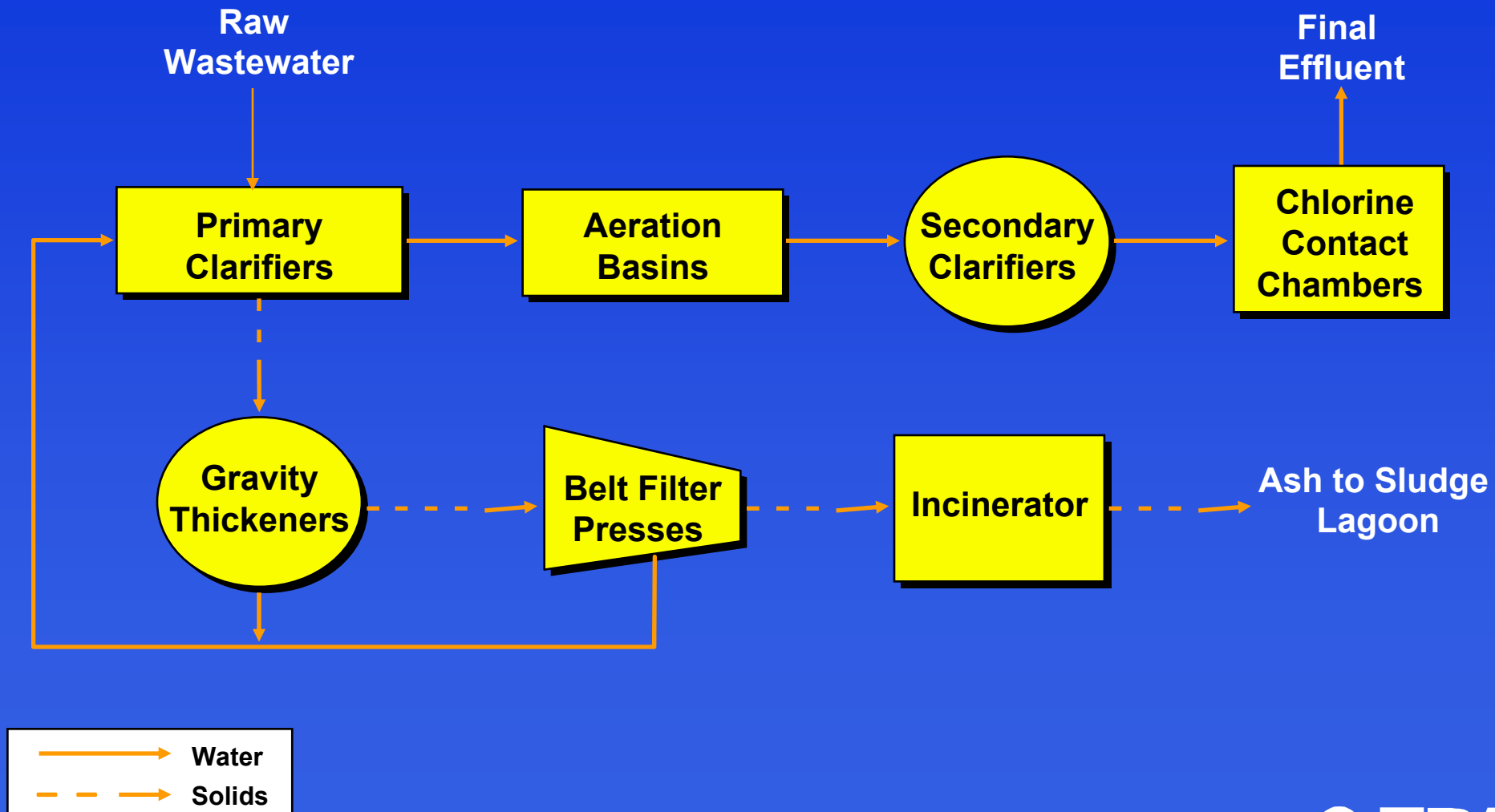
Types of Monitoring

- ◆ **Self-monitoring**
 - Permittee performs sampling and analysis
- ◆ **Compliance monitoring**
 - Permitting authority monitors effluent during compliance inspection

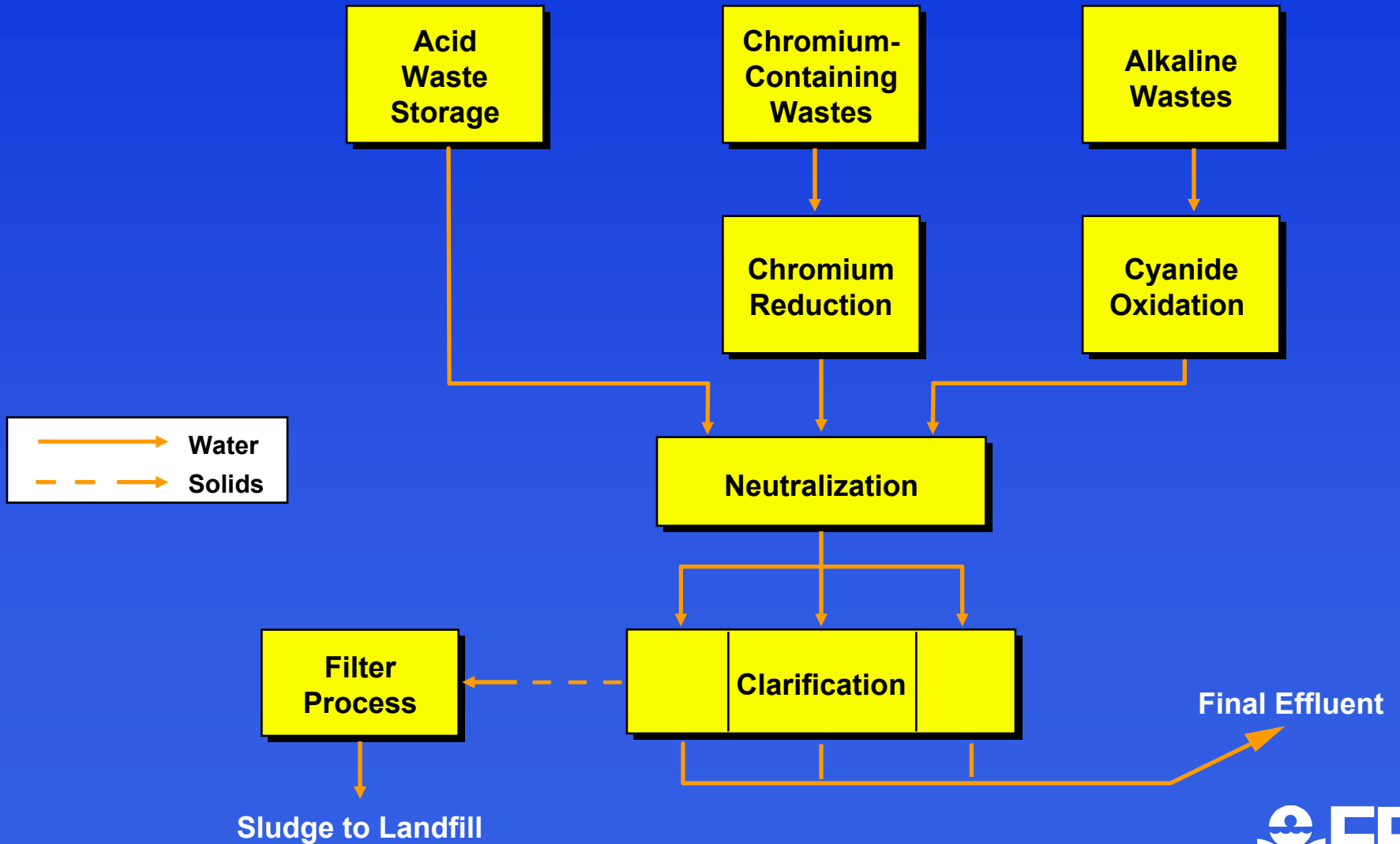
Self Monitoring Considerations

- ◆ Location
- ◆ Frequency
- ◆ Type of sample

Example: POTW Flow Diagram



Example: Industrial Flow Diagram



Considerations for Monitoring Location

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

Frequency Considerations

- ◆ **Federal Requirements**
 - Annual for all regulated pollutants
 - Waivers available for ELG based limits
 - 40 CFR 122.44(a)(2)
- ◆ **State Requirements**
 - Consult state policy and procedures

Frequency Considerations (Continued)

- ◆ **Size and design of facility**
- ◆ **Type of treatment**
- ◆ **Location of discharge**
- ◆ **Frequency of discharge
(batch, continuous)**
- ◆ **Compliance history**
- ◆ **Nature of pollutants**
- ◆ **Number of monthly samples used
in developing permit limit**
- ◆ **Cost**



Types of Samples

- ◆ **Grab Sample**: Taken from a wastestream on a one-time basis without consideration of the flow rate of the wastestream and without consideration of time
 - Must be used to monitor certain parameters (e.g., pH [unless continuous], volatile organics)
 - Used for monitoring batch discharges

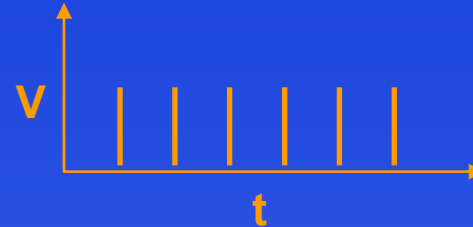
Types of Samples (Continued)

- ◆ **Composite**: Sample composed of two or more discrete aliquots. The aggregate sample will reflect the average water quality over the sample period
 - More representative measure of the discharge of pollutants over a given period of time
 - Accounts for variability in pollutant concentration and discharge flow rate
 - May be sequential discrete samples or a single combined sample

Types of Samples (Continued)

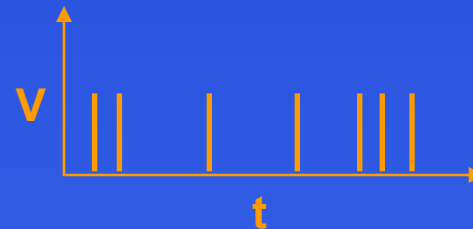
- ◆ Composite Sample is defined by the time interval between aliquots and the volume of each aliquot (t, V)

- Time Proportional (t_c, V_c): Interval time and sample volume are constant

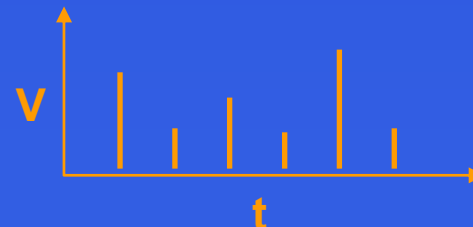


- Flow Proportional: Interval time or sample volume may vary

- Constant volume (t_v, V_c)



- Constant time (t_c, V_v)



Types of Samples (Continued)

- ◆ Continuous Sample: Automated collection and analysis of a parameter in a discharge

- Typically used for pH and flow
- 40 CFR §401.17 allows excursions for pH



Analytical Methods

- ◆ **40 CFR Part 136**
 - **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**

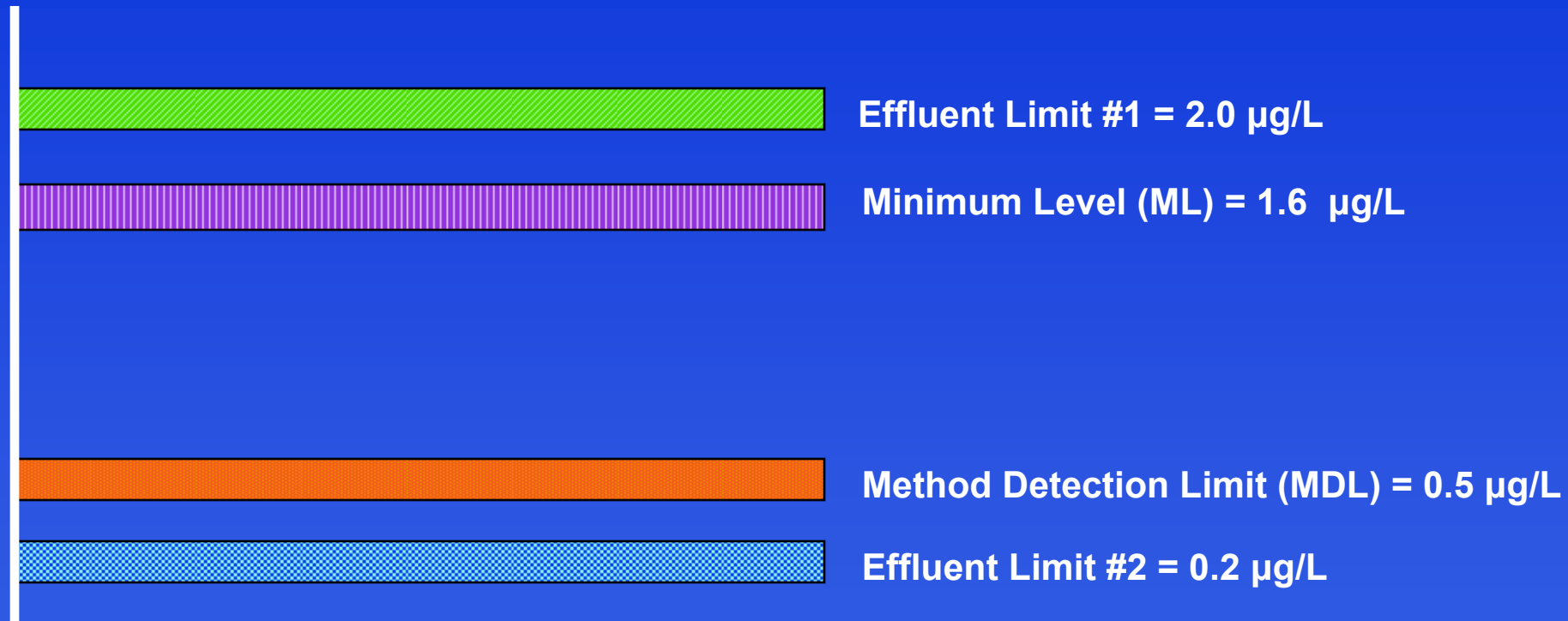
- ◆ **Alternative methods**



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
- ◆ **Minimum Level (ML):** concentration at which the entire analytical system gives a recognizable signal and acceptable calibration point

Analytical Considerations in Establishing Monitoring Requirements



- ◆ Compliance with Limit #1 → Use 40 CFR Part 136 method
- ◆ Compliance with Limit #2 → ? ? ?

Reporting Monitoring Results

- ◆ **What is reported?**
 - Data required in permit
 - Data for pollutants monitored more frequently than required
- ◆ **When is information reported?**
 - At least 1/year for limited pollutants
- ◆ **Who is responsible for reporting?**
 - The permittee
- ◆ **What format is used for reporting?**
 - Discharge monitoring reports
 - Supplemental state reporting forms



Discharge Monitoring Reports (DMRs)

- ◆ **Must be used to report self-monitoring data**
 - **Required at 40 CFR §122.41(1)(4)(i)**
 - **States may alter format**
 - **States may require additional reporting**

Record Keeping

- ◆ **Records of monitoring must be kept:**
 - 3 years for wastewater
 - 5 years for sewage sludge use and disposal activities
- ◆ **Monitoring records include:**
 - Date, place, and time
 - Individual performing sampling
 - Date of analysis
 - Individual performing analysis
 - Analytical methods used
 - Analytical results
- ◆ **Permit should specify where records should be located**