

Demonstration of Capability (DOC)

Department for Environmental Protection
Environmental & Public Protection Cabinet



To Protect and Enhance Kentucky's Environment

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WW Laboratory Certification Manual

- Chapter III; Section 7.1
 - Demonstration of Capability – the laboratory shall demonstrate their capability to report compliance sample results at or below the required reporting limit (RRL); established by either the Commonwealth of Kentucky or the EPA
 - IDC/ODC
 - MDL
 - RLS

Initial Demonstration of Capability (IDC / ODC)

Used to demonstrate that the laboratory and analyst are capable of performing analysis with acceptable precision, accuracy, sensitivity, and specificity pertaining to that particular method

IDC / ODC Continued

Analyze 4-mid range concentration laboratory fortified blanks (LFB) on the same or different day.

Acceptance Criteria:

- Each of the 4 replicates within 80 – 120% of mean;
- $\%RSD \leq 15\%$

Method Detection Limit (MDL)

Defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the target analyte concentration is greater than zero.

MDL Continued

- Analyze 7-low level replicates over 2-3 non-consecutive days;
- Calculate the MDL using procedure specified in 40 CFR 136 Appendix B;

Acceptance Criteria:

- Spike level must be with 10 times MDL
- $MDL < MRL < RRL$ (Action Limit)

Reporting Limit Standard (RLS)

Demonstrate laboratory's capability to report down to the required reporting limit (RRL) by analyzing a know standard at or below the RRL.

RLS Continued

- RRL is typically a low calibration standard; or
- Stand-alone verification standard

Acceptance Criteria:

- $RLS \leq MRL$
- Calculated %Recovery = 70 - 130%

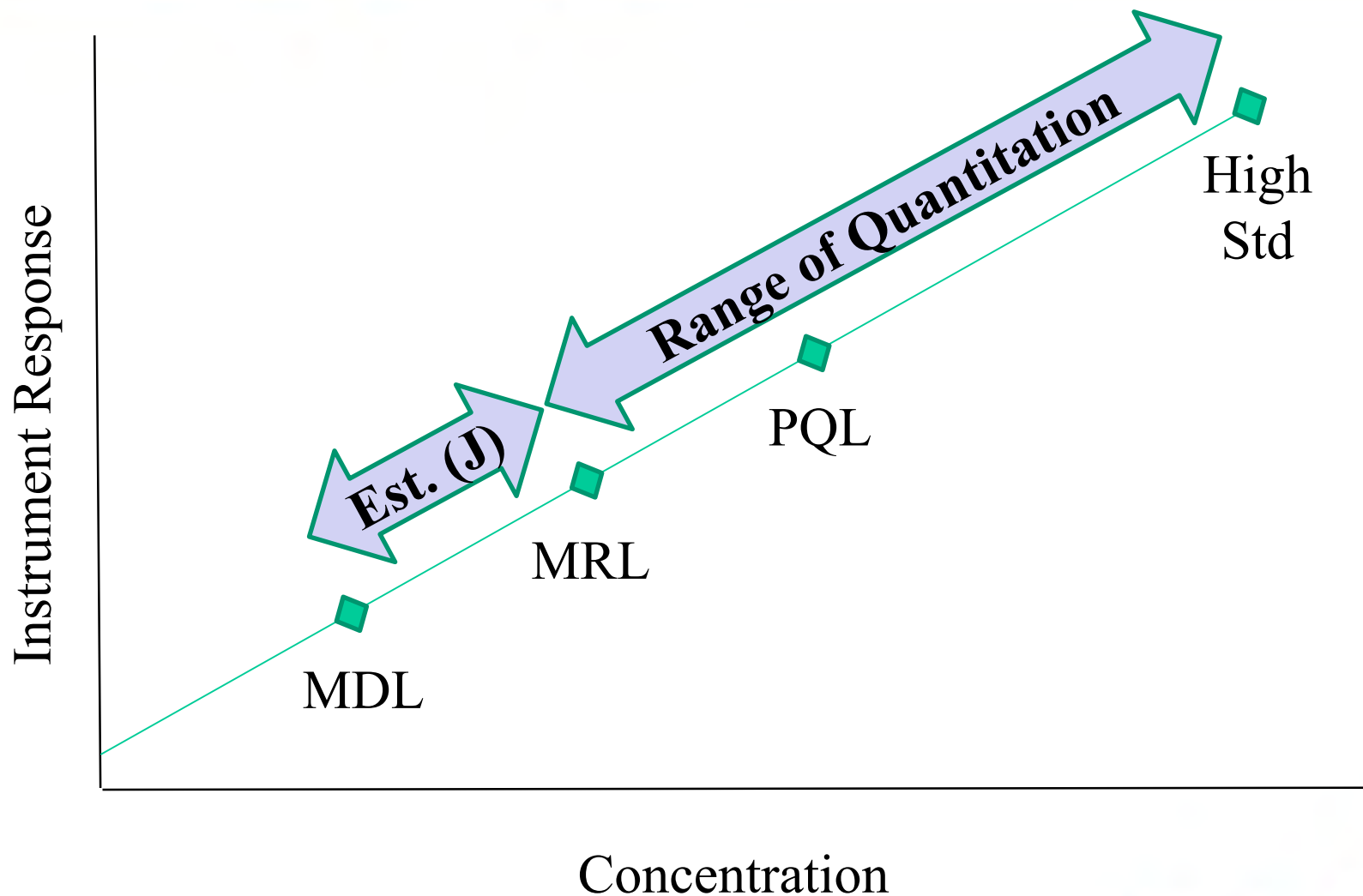
DOC Acceptance Criteria

Demonstration	Parameter	Requirement	Frequency
IDC / ODC	Replicates 4-mid range LSC	<ul style="list-style-type: none"> • 80-120% of mean; • %RSD \leq 15% 	Initial and Annual
MDL	Replicates 7-low range standard (or spikes)	<ul style="list-style-type: none"> • 2-3 non-consecutive days; • Calc MDL < RRL • Spike within 10 times the Calc MDL 	Initial and Annual or Any time major changes to instrument
RLS	Verification standard	<ul style="list-style-type: none"> • RLS \leq MRL 	Performed with each calibration, but at least quarterly

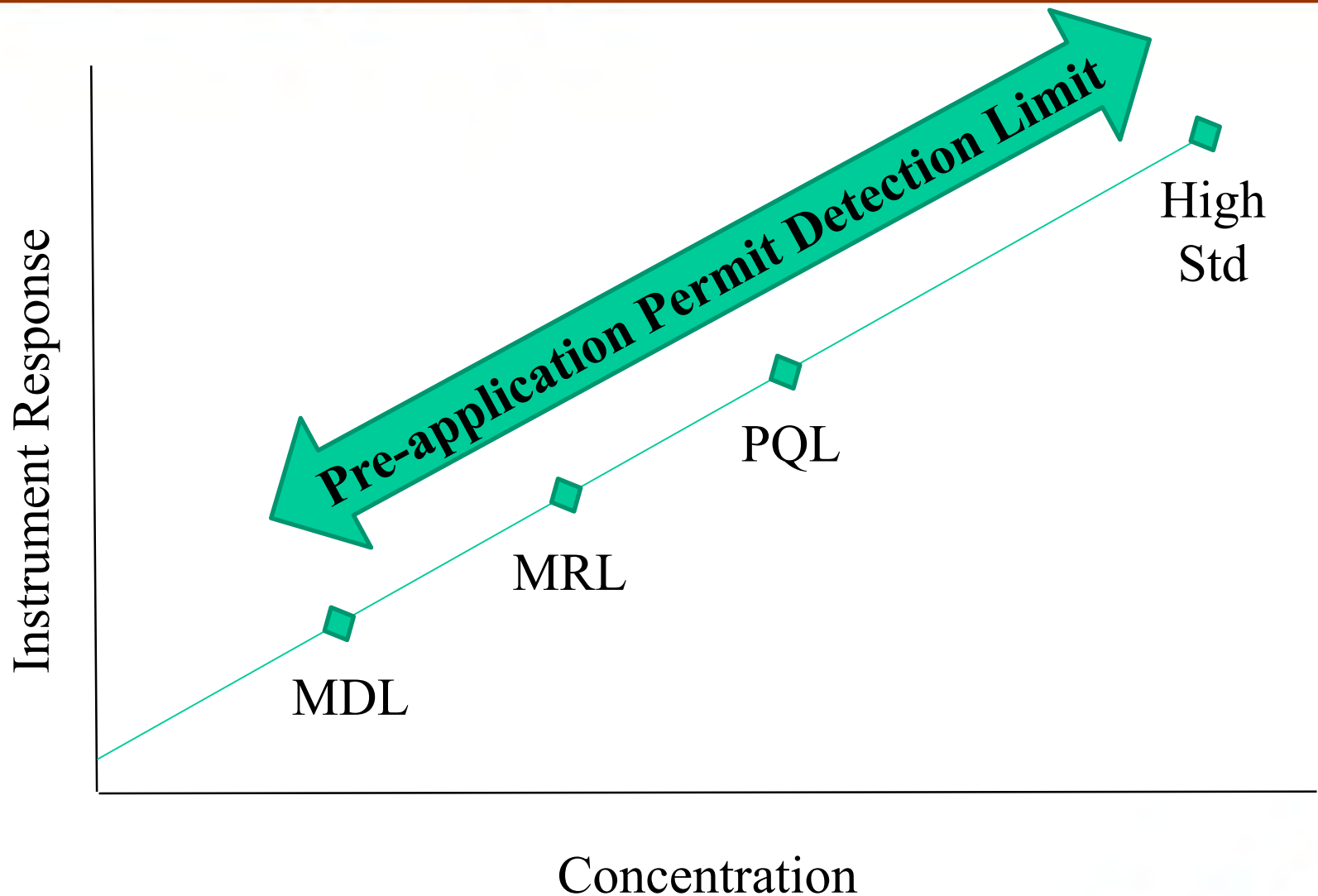
EPA Detection Limit Terms

- IDL – Instrument Detection Limit
- MDL – Method Detection Limit
- MRL – Minimum Reporting Limit
- Action Limit – Program or Permit Limit

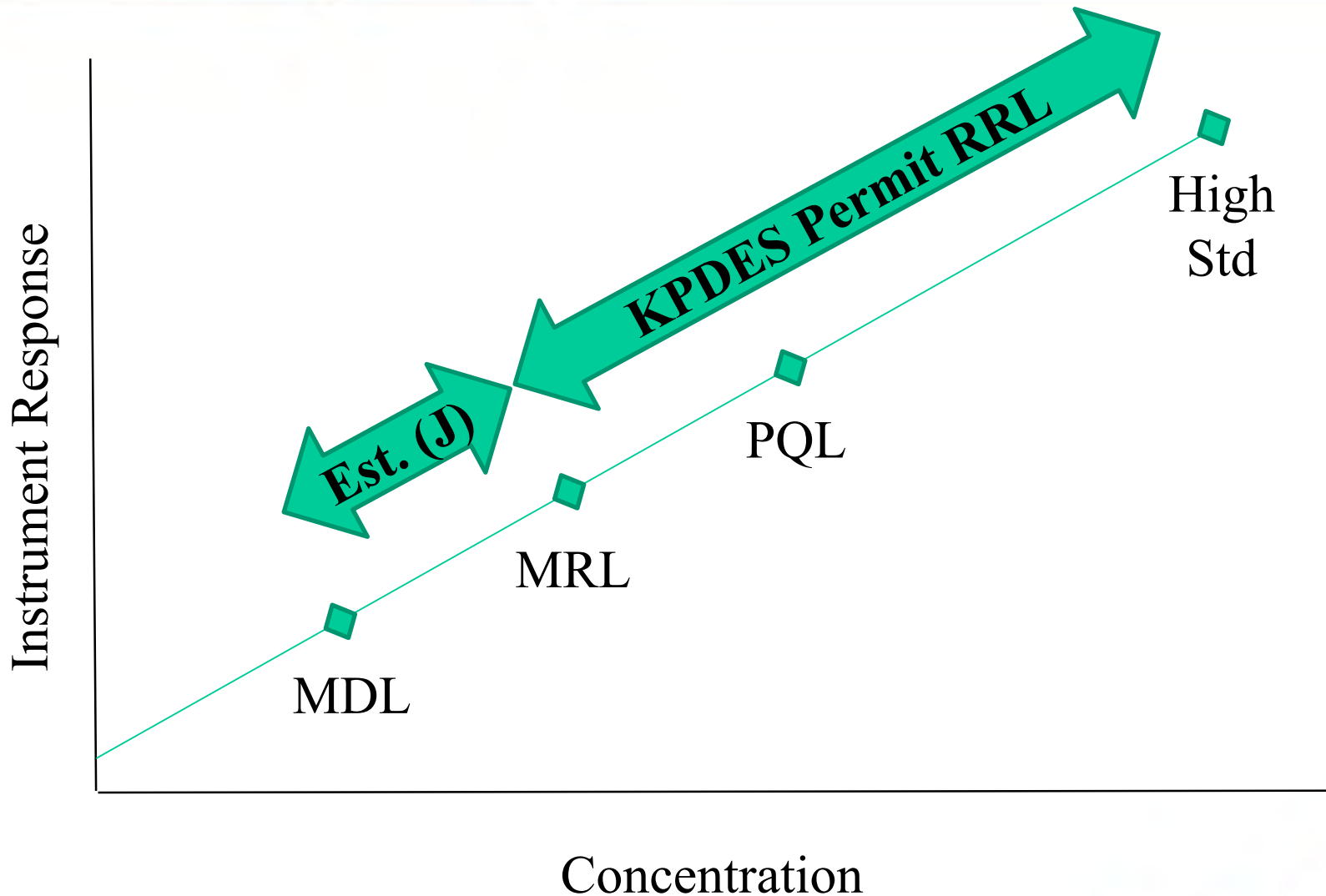
Quantitation and Estimated Values



Pre-application Permit RPA



Permit Required Reporting Limit



KY DOC Calculator

- DOW provides a DOC Calculator for use by laboratories
- Can also be used to report results using pre-established forms
- <http://water.ky.gov/permitting/Pages/labcert.aspx>

Calculator

Questions

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Contact Information

Patrick J. Garrity

Franklin C. Hall, Jr.

Division of Water

200 Fair Oaks Lane; 4th Floor

Frankfort, KY 40601

Phone: (502) 564-3410

Fax: (502) 564-2741

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