Class III vs Appendix B

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FDEP – December 2006

Points of Comparison

- Statistical Comparison (which is lower)
- Areas of Application
- Required Actions
- Sensitivity to Discharge

Statistical Comparison

- Long-term expectation ~10 ppb for both tests
- Both tests upper 90% confidence limit
- State rule is a long-term geometric mean of 10 ppb, applies equally in impacted & unimpacted areas
- Settlement Agreement long-term levels vary from 7-17 ppb, applies only to 14 station network

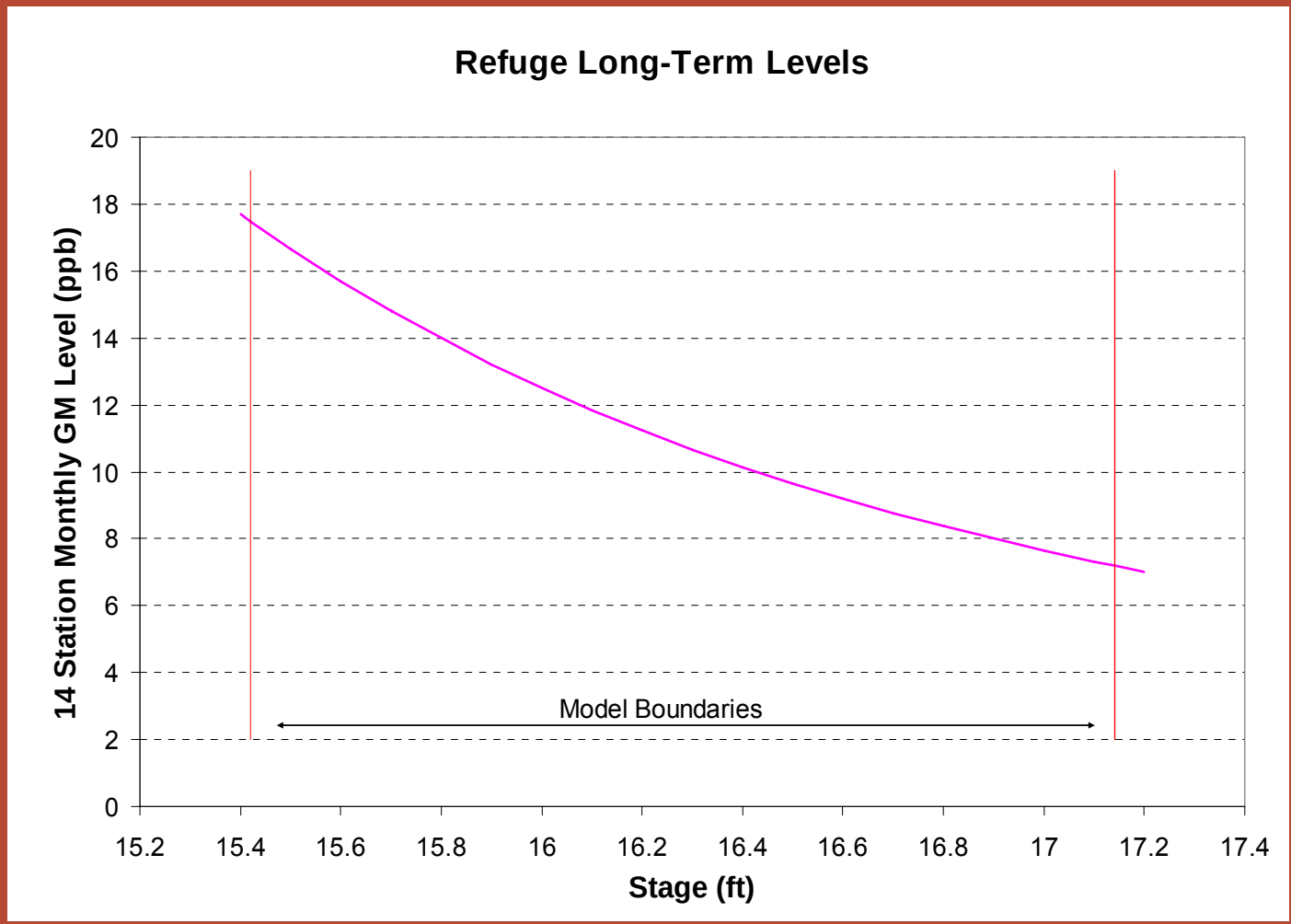
4-Part Test

- Includes rigorously-derived statistical tests to determine LTGM ≤ 10 ppb
  - 5-year network ≤ 10 ppb
  - AGM ≤ 11 ppb
  - AGM ≤ 10 ppb 3 of 5 years
  - Single station AGM ≤ 15 ppb

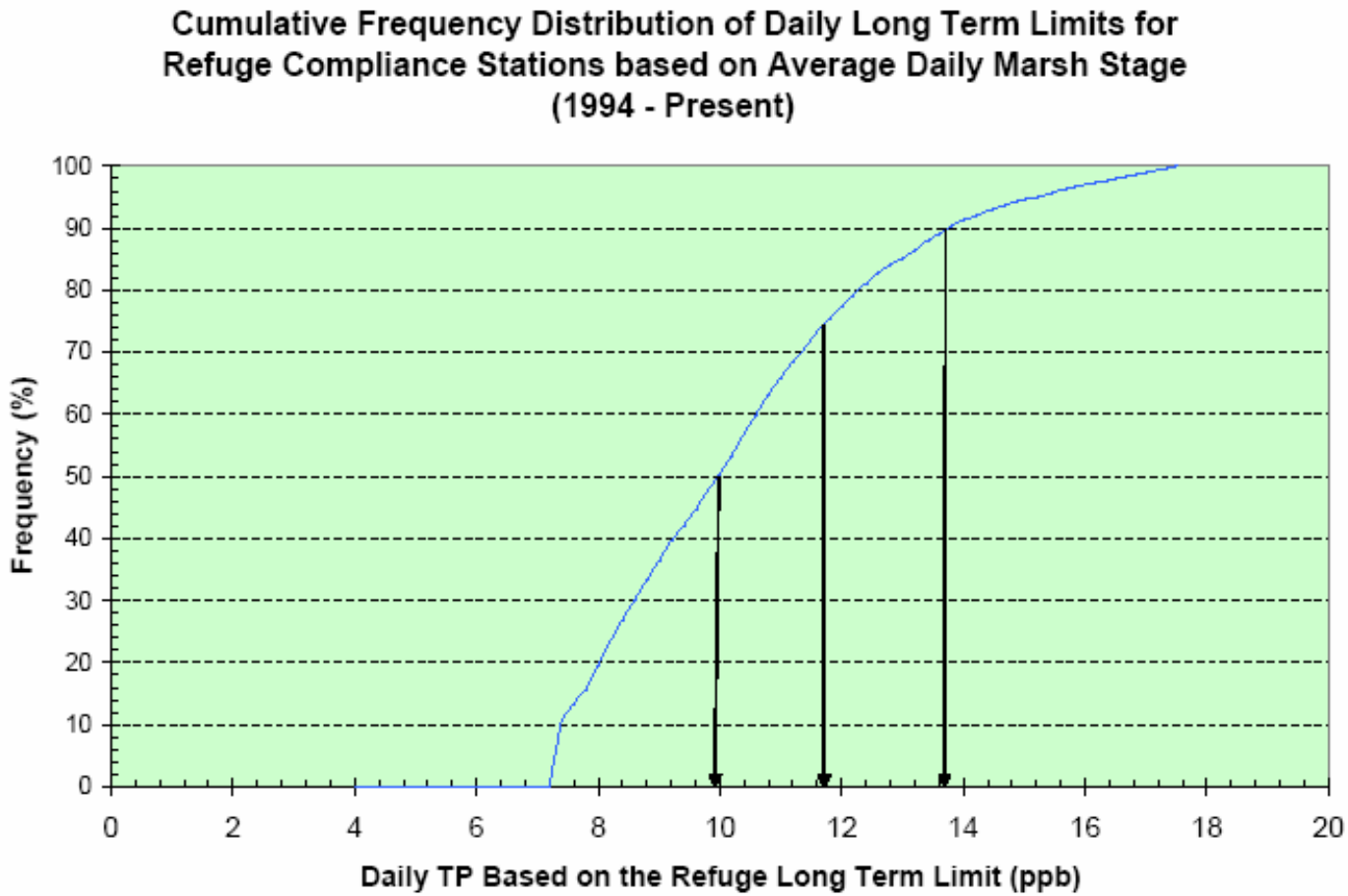
SA Long-Term Levels

- Monthly GM 7 – 17 ppb
- “Compliance with these concentration levels is expected to provide a long term average 14 station interior marsh concentration of approximately 7 ppb.”

Is “Expectation” Correct?



Actual Long-Term Level

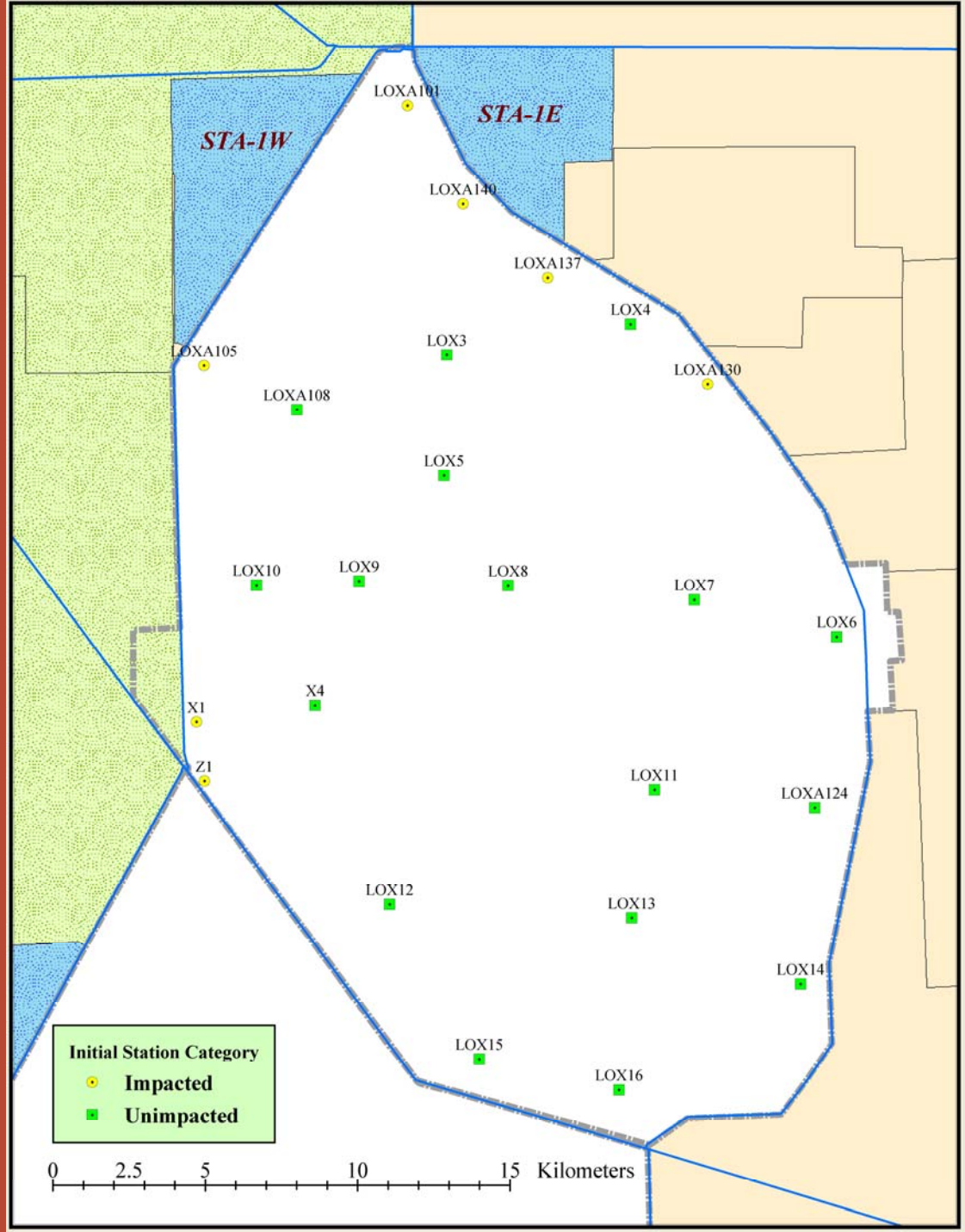


Area of Application

- 4-Part Test – applies equally but separately in networks of stations – impacted & unimpacted areas
- Long-Term Levels – applies only to 14 stations

4-Part Test

- Protects unimpacted and impacted areas equally
- Networks include many existing stations to ensure assessment immediately
- Individual station test to protect against local impacts


STA-1W
STA-1E
LOXA101
LOXA140
LOXA137
LOX4
LOX3
LOXA105
LOXA130
LOXA108
LOX5
LOX10
LOX9
LOX8
LOX7
LOX6
X4
X1
Z1
LOX11
LOXA124
LOX12
LOX13
LOX14
LOX15
LOX16
Initial Station Category
Impacted
Unimpacted
0
2.5
5
10
15
Kilometers

Public Process

- Public Workshop
- Report to Special Master
- Agency Testimony in Federal Court
- Incorporation into SFER

EPA Finding – 4-Part Test

"Paragraph (4)(c) of the Rule specifies that the four-part test will apply to the Refuge if the Settlement Agreement is no longer in force. USEPA evaluated an independent analysis of data from the Refuge with respect to the four-part test. These simulations indicate that **when the long-term geometric mean exceeds 10 ppb there is a high probability that the four part test will detect failure**, with about a 90 percent failure rate at 13 ppb. In addition, as desired, the four-part test consistently identified failures at impacted sites evaluated (the impacted portion of the marsh would not achieve the criterion, as expected). **Therefore, USEPA has concluded that the four-part test is an appropriate and protective methodology for determining achievement of the adopted phosphorus criterion in the Refuge and its application would be expected to protect the designated use."**

EPA Finding – Appendix B

"The use of the specific network of 14 interior marsh station's for the purpose of determining achievement of the phosphorus criterion does not fully represent water quality conditions throughout all areas of the Refuge. In order to determine the achievement of the phosphorus criterion throughout the water body, other monitoring stations are needed in addition to the 14 existing interior marsh stations. Because this Subparagraph limits application of the water quality criterion by restricting measurement to the 14 interior stations, **USEPA is not able to conclude that it is protective of the designated use of the entire Refuge."**

Required Actions

- Class III Standard – Implements Best Available Phosphorus Reduction Technology through Long-Term Plan Process
- Appendix B – Recommends measures less than those already being implemented

State Implementation

- Permits require enforceable implementation of BAPRT to achieve 4-Part Test
- BAPRT defined by Long-Term Plan
- Specific LTP projects required through permit process
- LTP has iterative adaptive implementation until 10 ppb criterion achieved
- Permits with TBELS
  - STA-1E – 24-34 ppb
  - STA-1W – 34-46 ppb

Components of LTP – STA-1W

- Internal improvements & enhancements:
  - **Compartmentalization of treatment Cells 1 and 2**
  - **New levees and associated water control structures within Cells 1 and 2.**
  - **Cell 5 Sediment, Topographic and Vegetative Enhancements**
  - **Conversion of vegetation from emergent to submergent**
  - **Retrofitting the gate controllers for the inflow structures (G-304) for the northern flow-way to allow for remote operation.**
  - **Refined operations – designed to balance the flows among the flow-ways.**

All to be completed by December 2007

Components of LTP Benefiting the Refuge

Regional water management projects:

- **Conversion of STA-1E to full flow-through operations – PSTA demo - 2008**
- **L-8 Diversion Project – diverts 75,000-100,000 acre-feet of H_2O - 2014**
- **Additional Treatment Area – 6,800 acres – compartment B - 2010**
- **Conveyance Improvements – Bolles/Cross canals - 2010**
- **EAA Storage Reservoir (A1) - 2010**
- **ACME Basin B diversion - 2006**

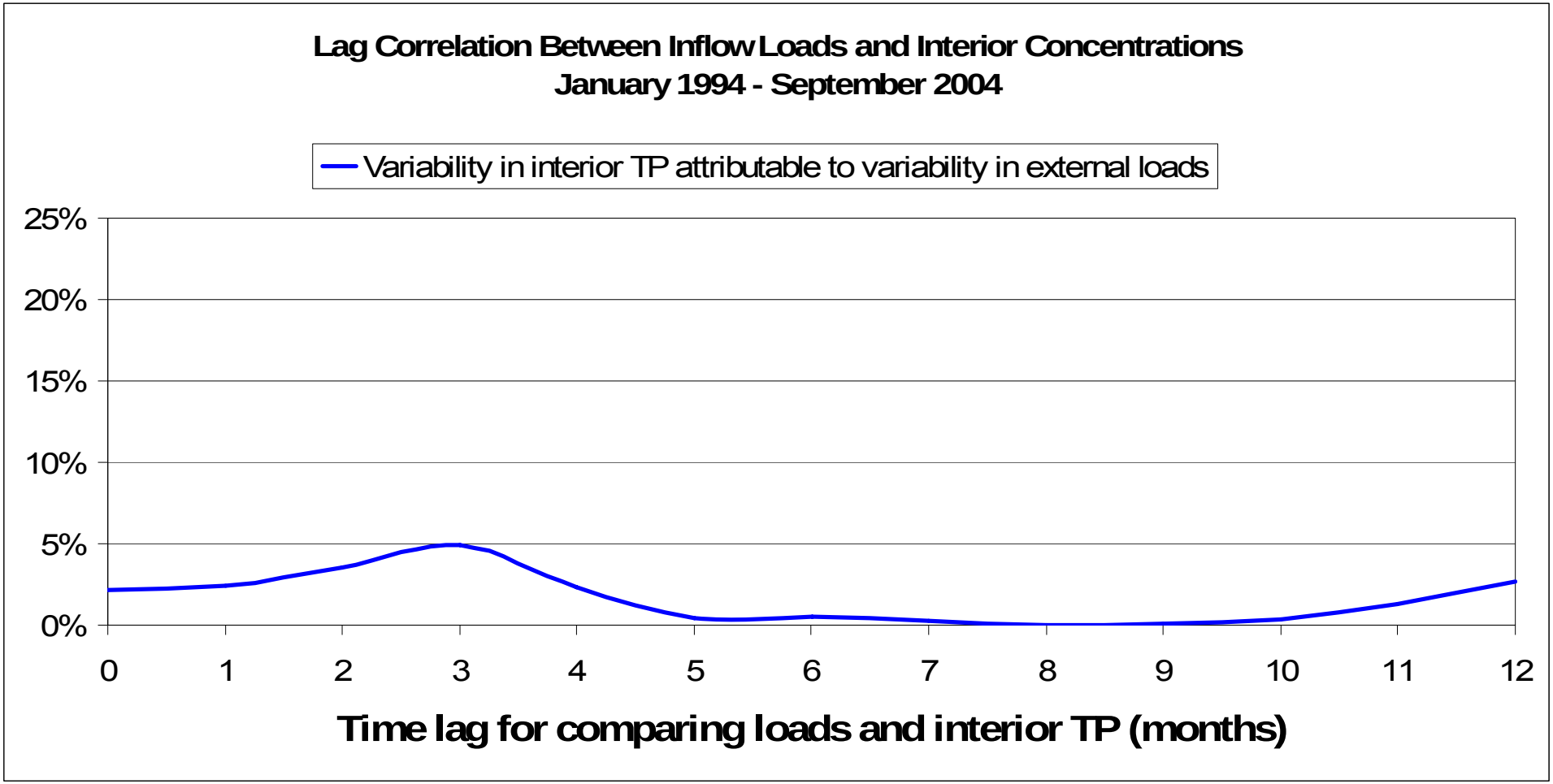
Appendix B

- Interior stations in compliance & Long-Term Discharge < 50 ppb

  NO ACTION REQUIRED
- Interior not in compliance – TOC recommends lower max annual limit
- DEP or SFWMD take actions – may include:
  - regulatory measures
  - increased STA acreage

Sensitivity

- DEP 4-Part Test sensitive to P load reduction measures
- Appendix B test has minimal correlation with discharges – insensitivity does not allow assessment of P reduction efforts



Square of the Pearson product moment correlation coefficient – relates interior concentrations to external loading. Calculated with time lags of from 0-12 months. Data Source: January 1994 – September 2004 monthly values for external loads to the Refuge compared to the monthly geometric mean of the 14 interior stations (SFWMD 2004).

Final Assessment on Points of Comparison

	Appendix B	Class III
Statistical Comparison	*	*
Area of Application		*
Required Actions		*
Sensitivity		*

* - indicates that requirement is more stringent/protective