East Fork Lewis TMDL
TAG Meeting

Overview of Fecal Coliform Bacteria Data

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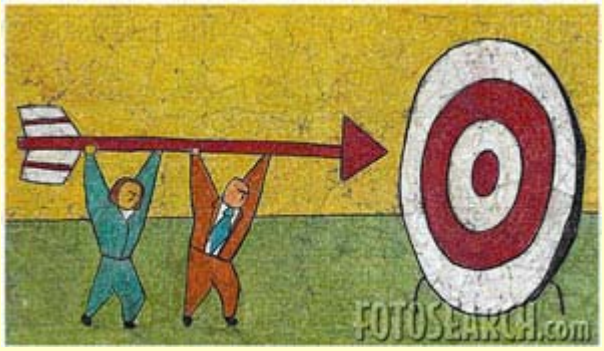
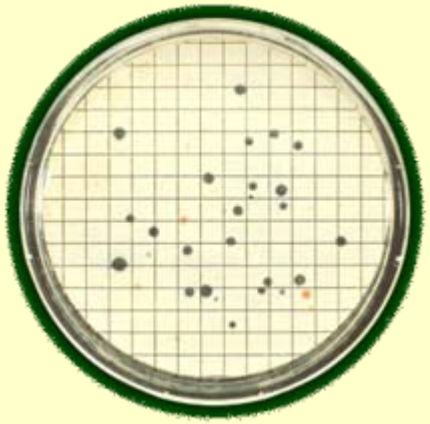
Purpose

- Review of available data
- Quality Assurance
- Comparison to water quality standards
  - All Data
  - Wet and Dry Season Data
- Fecal Coliform Loading
- Next steps
  - Fecal Coliform Analysis
  - Load and Wasteload Allocations
  - Management Strategies



Available Fecal Coliform Bacteria Data

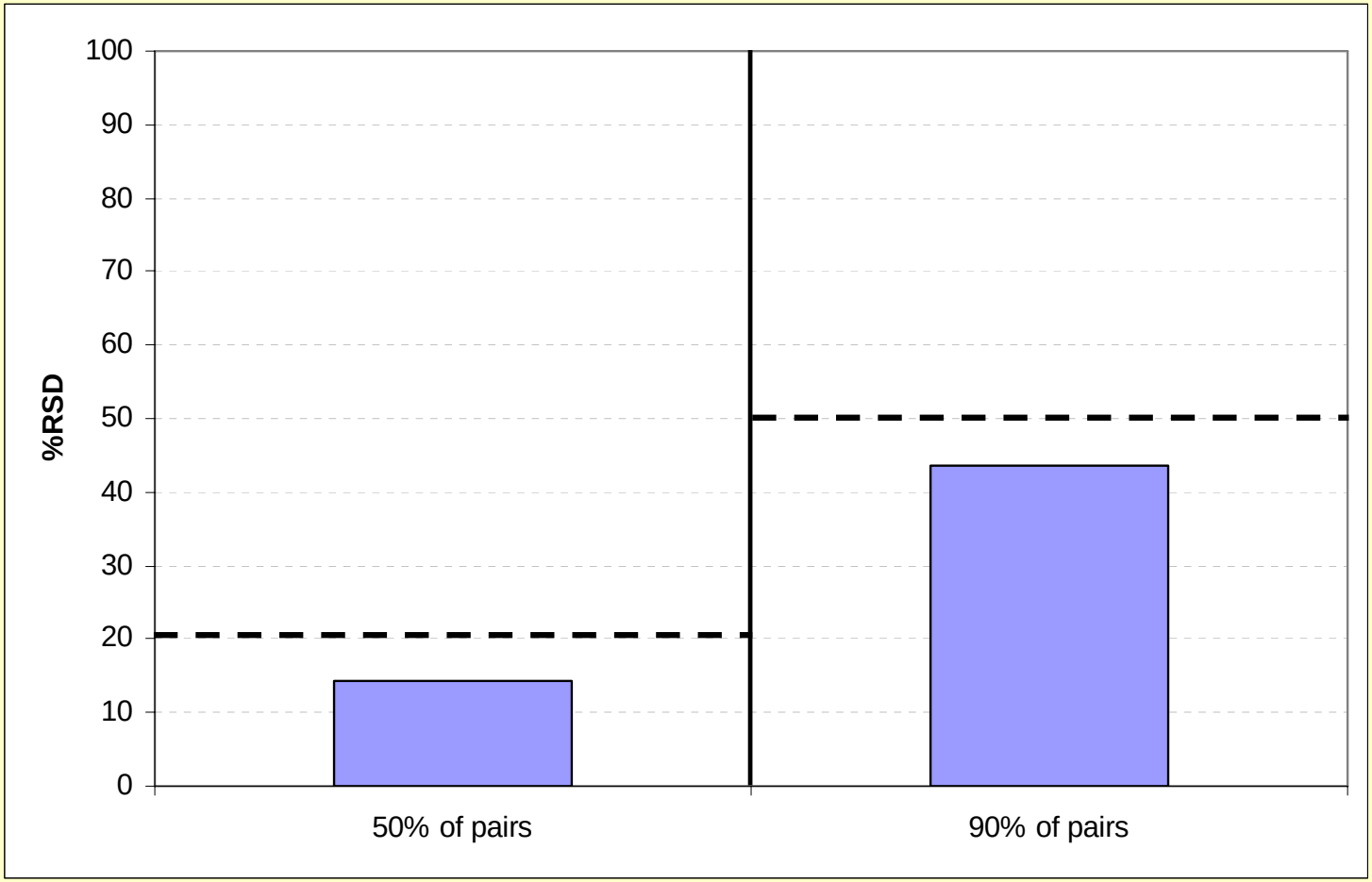
- Fecal coliform results from bi-monthly sampling runs from May 2005 through August 2006. Additional storm event sampled November 6 – 7, 2006.



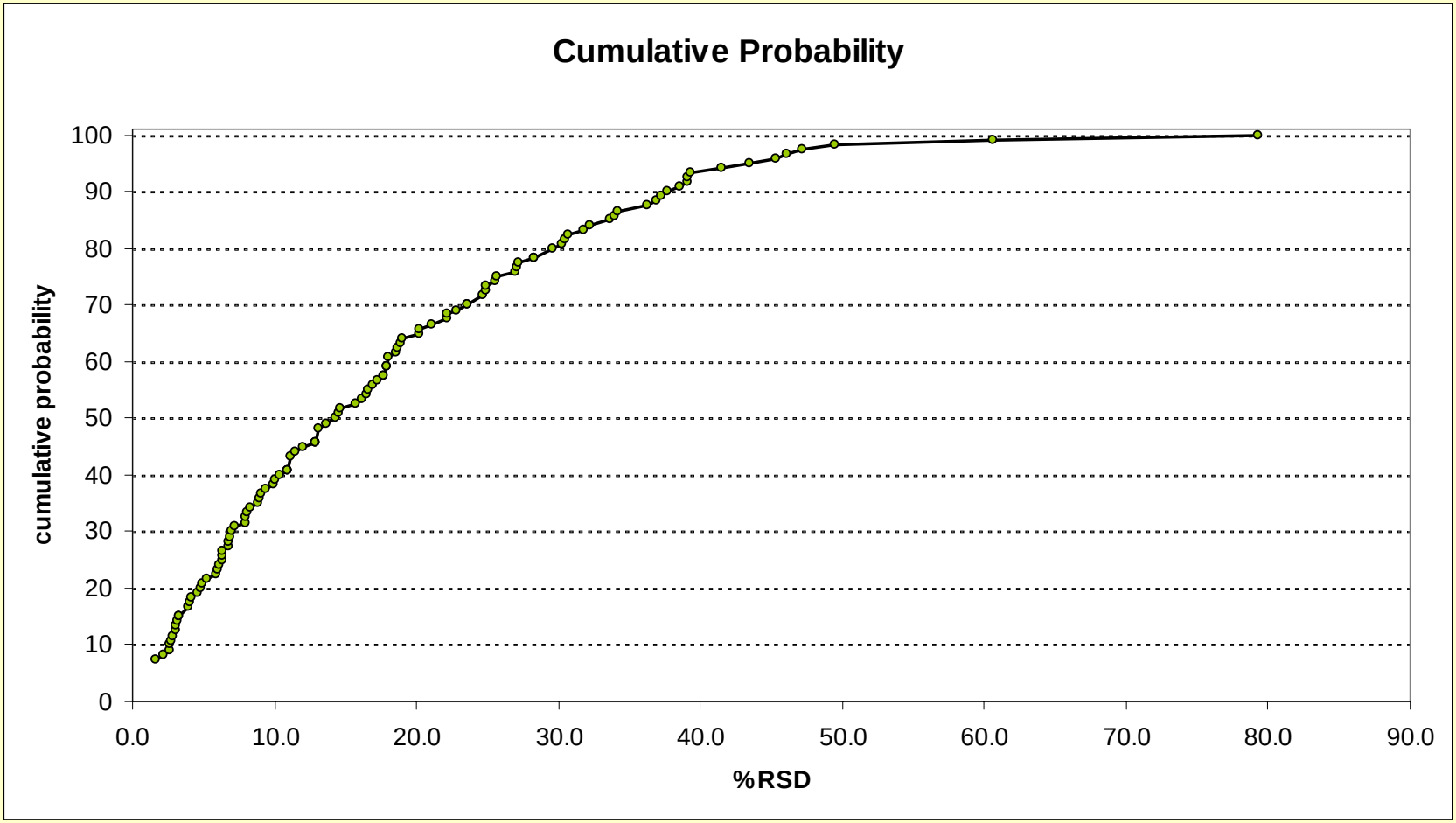
- Flow measurements from bi-monthly sampling runs from May 2005 through August 2006.

(data are provisional, final QA/QC has not been completed)

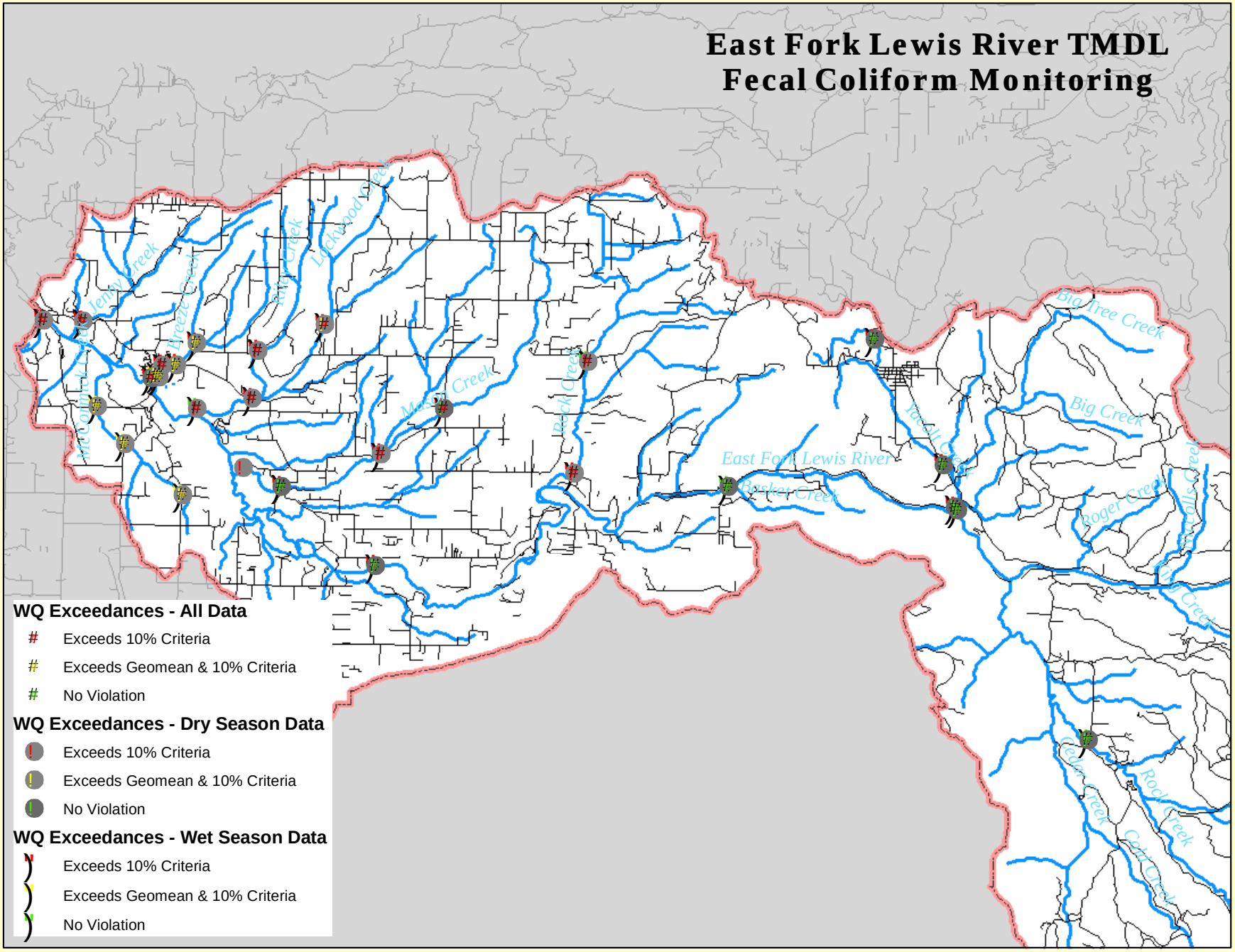
Percent RSD for QA samples (cfu/100 mL > 20) in East Fork Lewis River (2005)

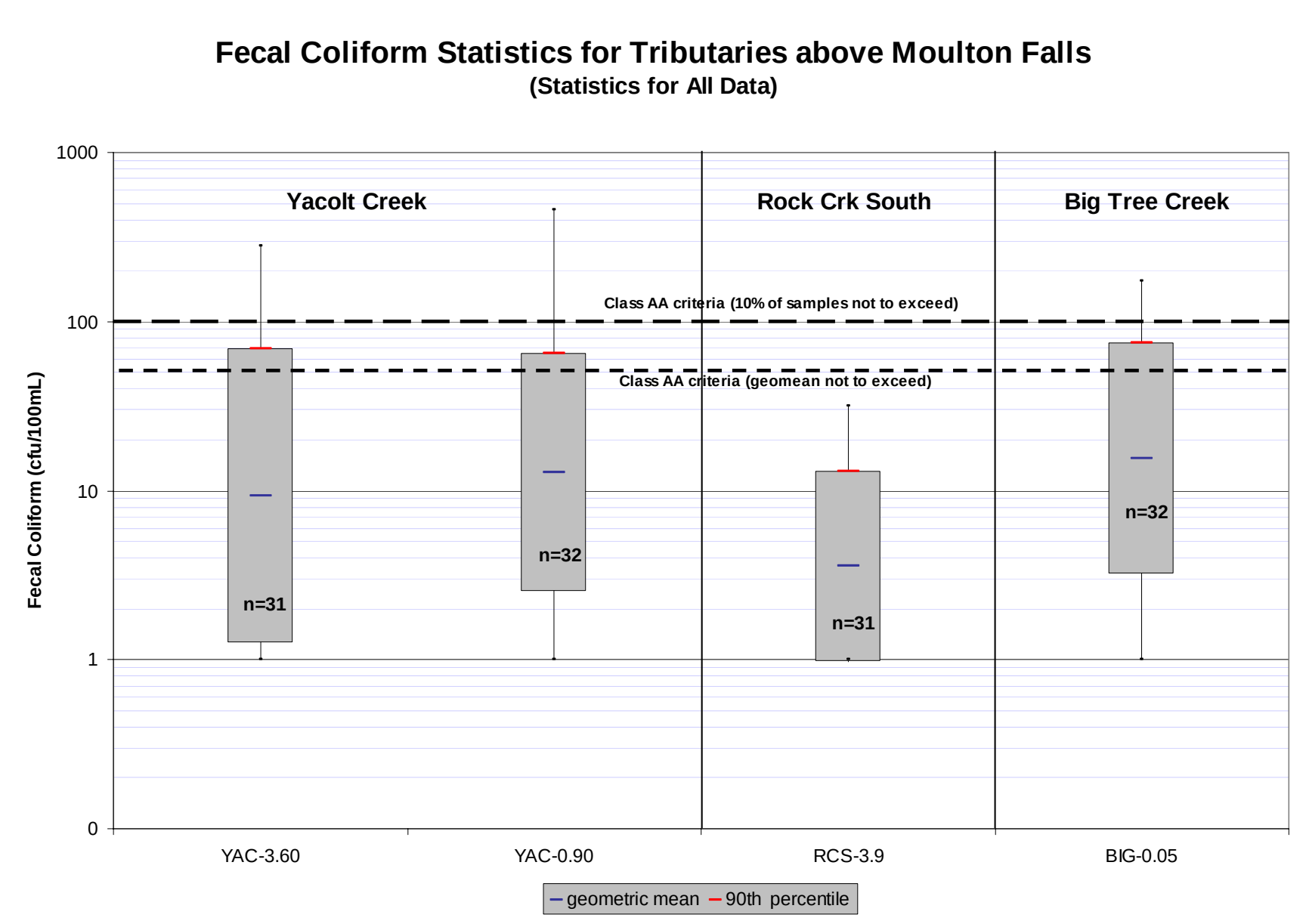


Cumulative Probability Distrubution of % RSD for the QA samples with cfu/100 mL > 20



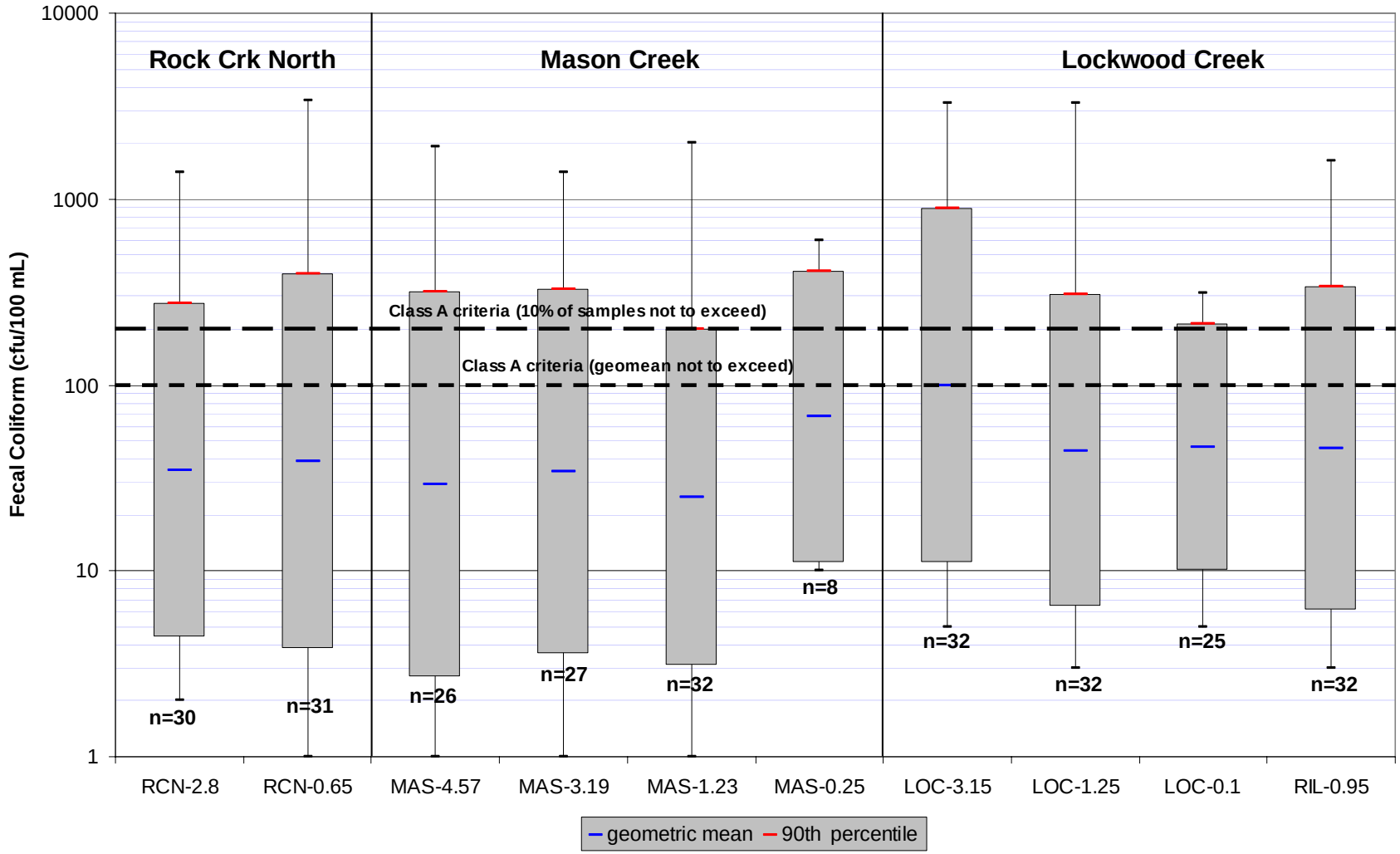
East Fork Lewis River TMDL
Fecal Coliform Monitoring

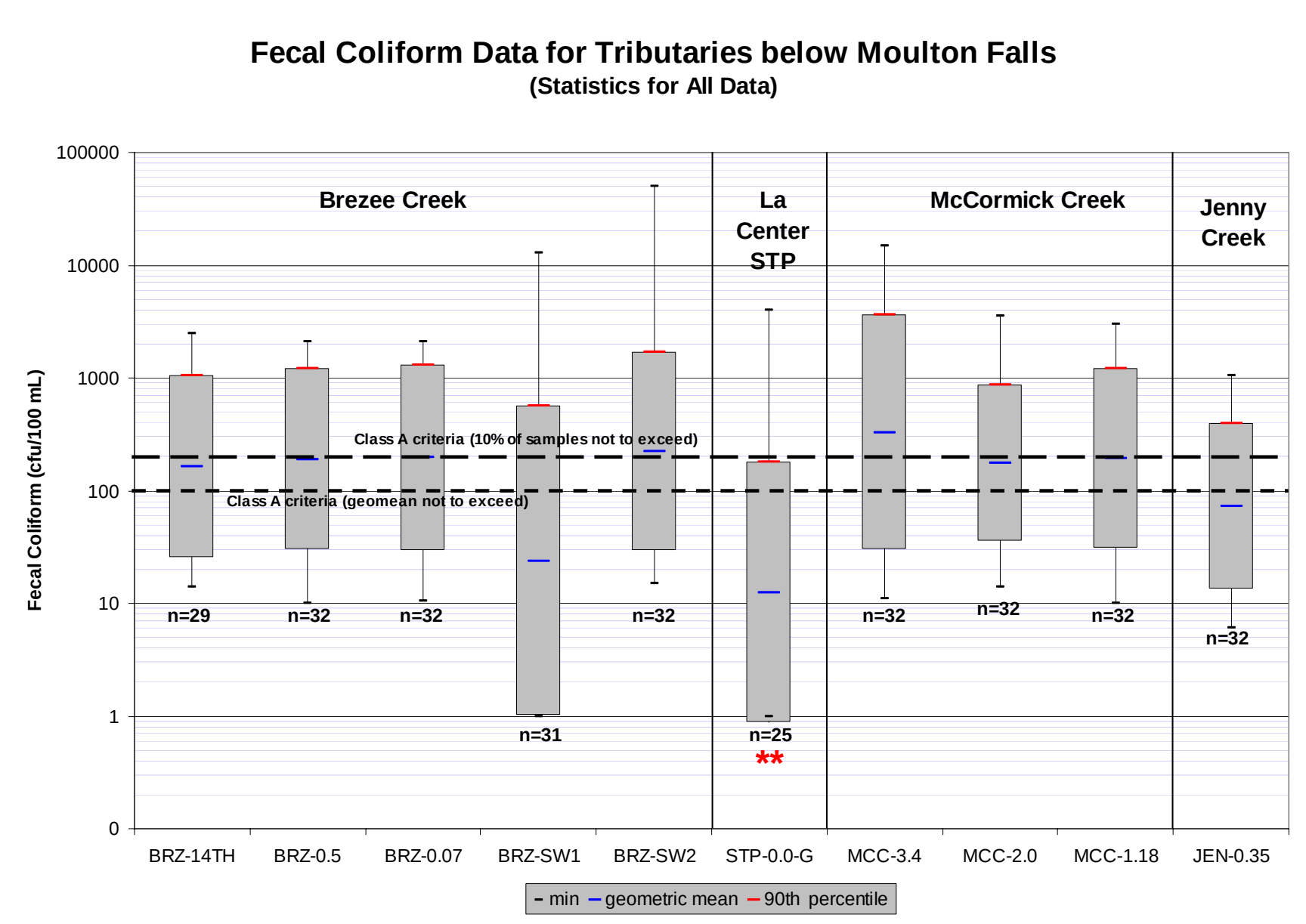



Fecal Coliform Statistics for Tributaries above Moulton Falls
(Statistics for All Data)
Yacolt Creek
Rock Crk South
Big Tree Creek
Class AA criteria (10% of samples not to exceed)
Class AA criteria (geomean not to exceed)
Fecal Coliform (cfu/100mL)
1000
100
10
1
0
n=31
n=32
n=31
n=32
YAC-3.60
YAC-0.90
RCS-3.9
BIG-0.05
geometric mean
90th percentile

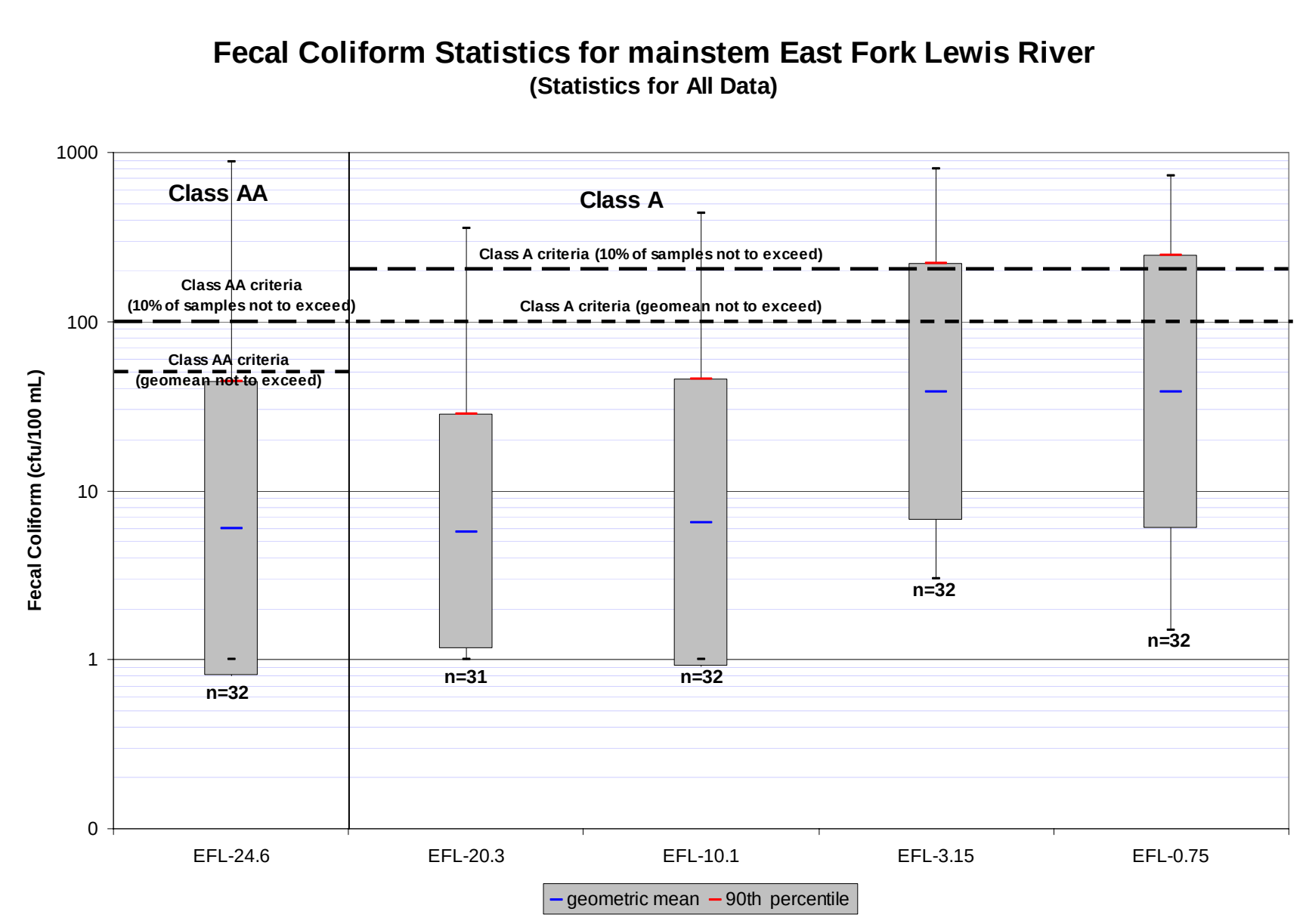
Fecal Coliform Statistics for Tributaries below Moulton Falls

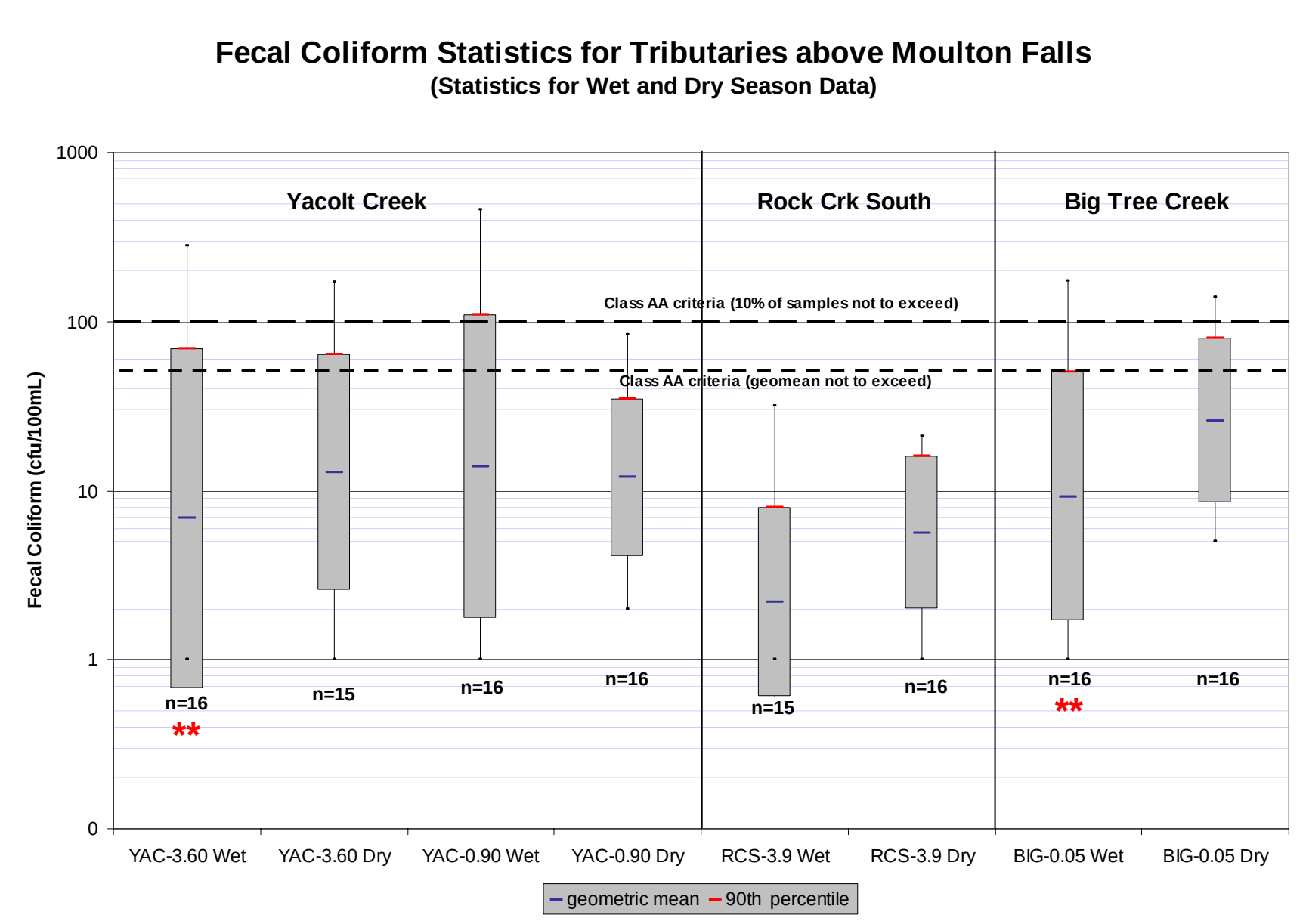
(Statistics for All Data)





**Exceeds WQ standard because 10% or more samples exceed 100 cfu/100 mL

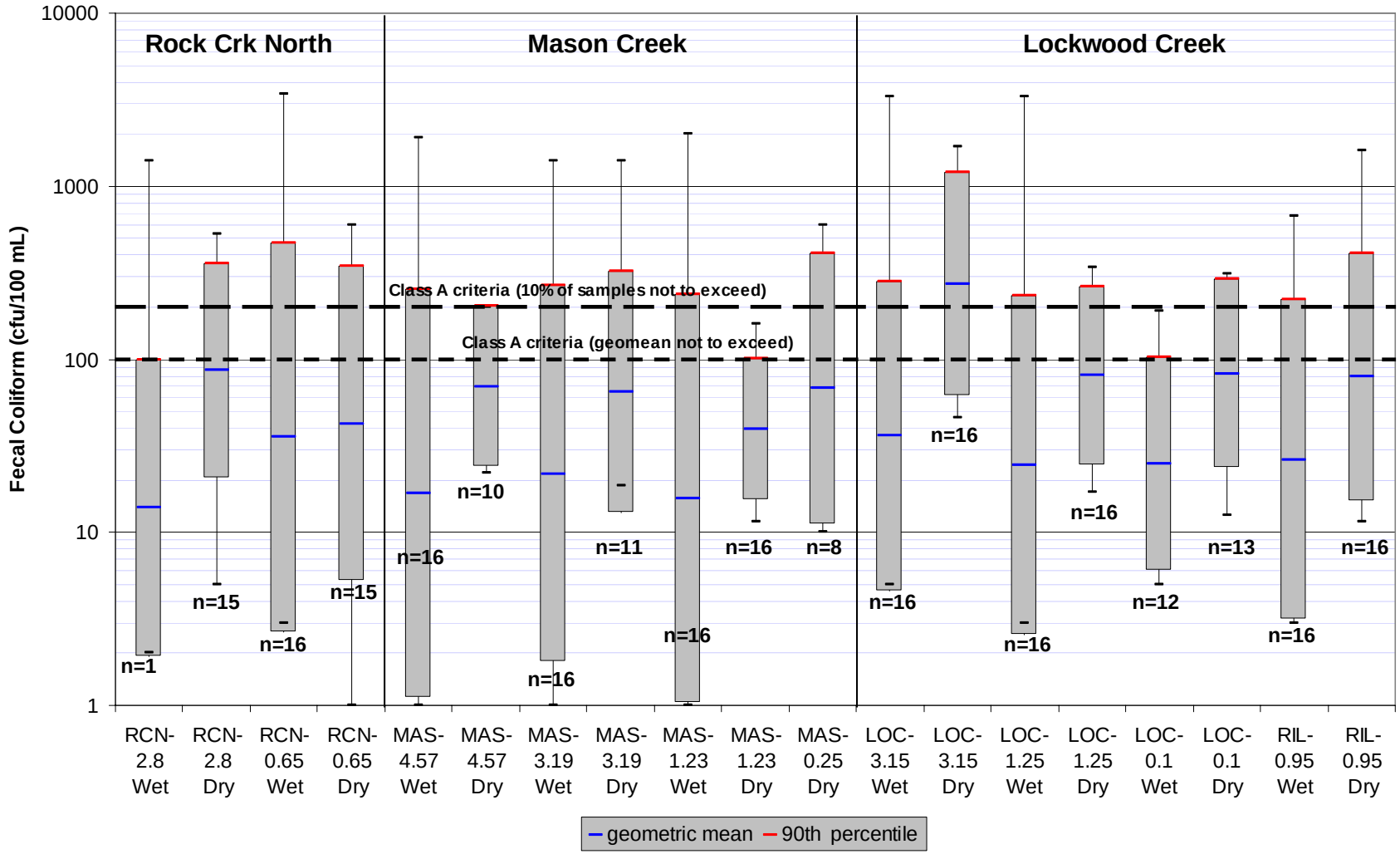

Fecal Coliform Statistics for mainstem East Fork Lewis River
(Statistics for All Data)
Class AA
Class A
Class A criteria (10% of samples not to exceed)
Class AA criteria
(10% of samples not to exceed)
Class A criteria (geomean not to exceed)
Class AA criteria
(geomean not to exceed)
Fecal Coliform (cfu/100 mL)
1000
100
10
1
0
n=32
n=31
n=32
n=32
n=32
EFL-24.6
EFL-20.3
EFL-10.1
EFL-3.15
EFL-0.75
geometric mean
90th percentile

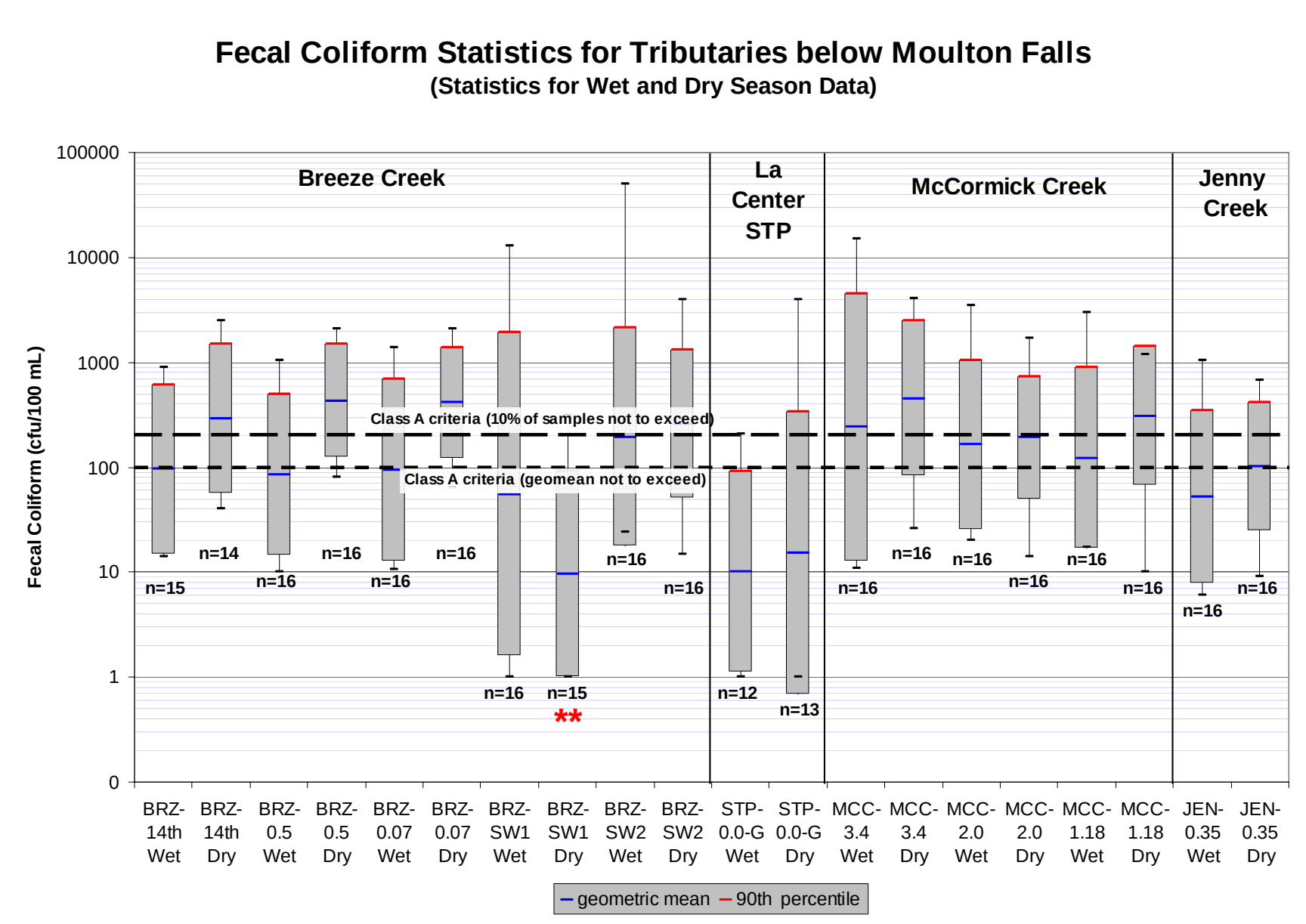


**Exceeds WQ standard because 10% or more samples exceed 100 cfu/100 mL

Fecal Coliform Statistics for Tributaries below Moulton Falls

(Statistics for Wet and Dry Season Data)





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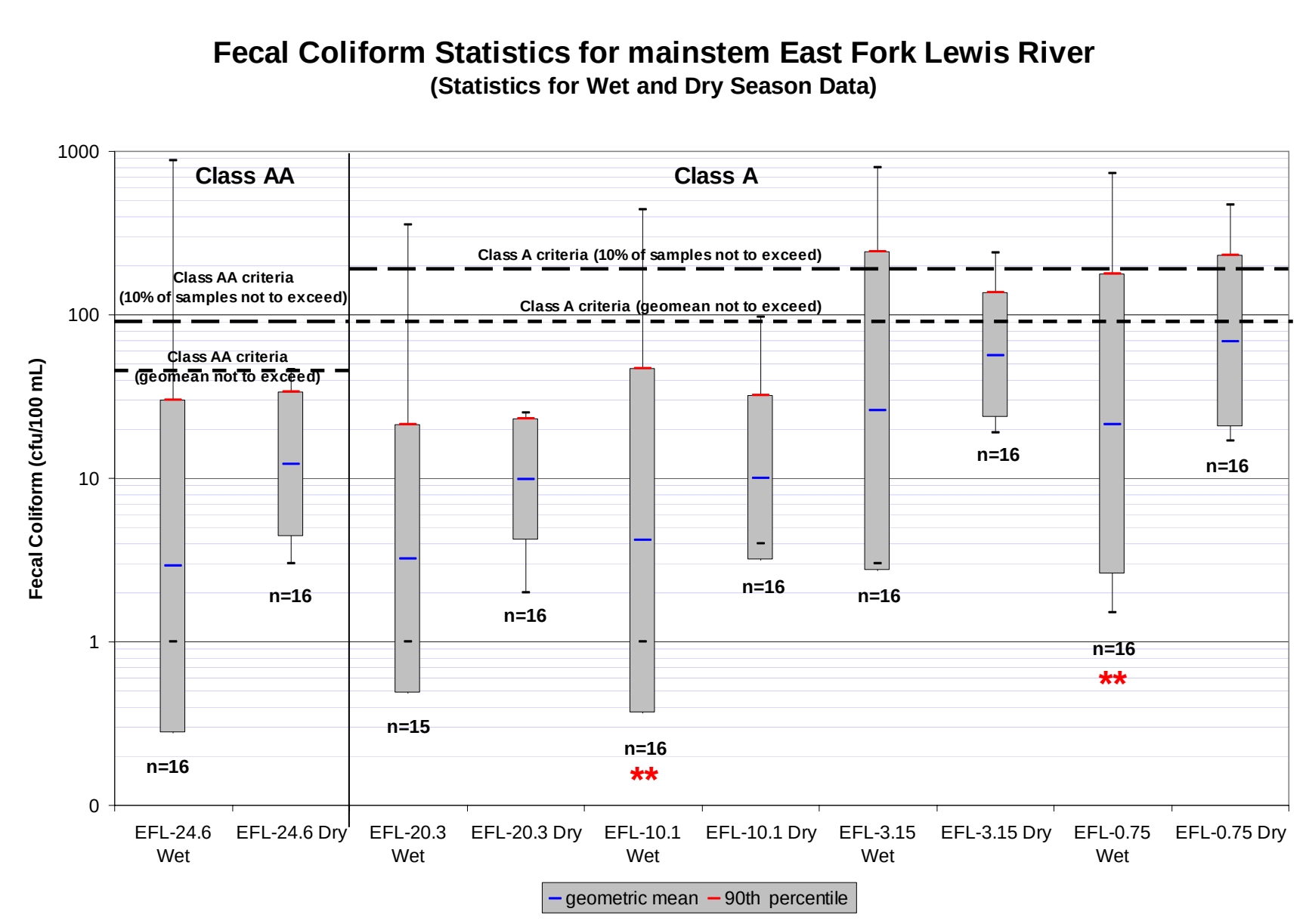

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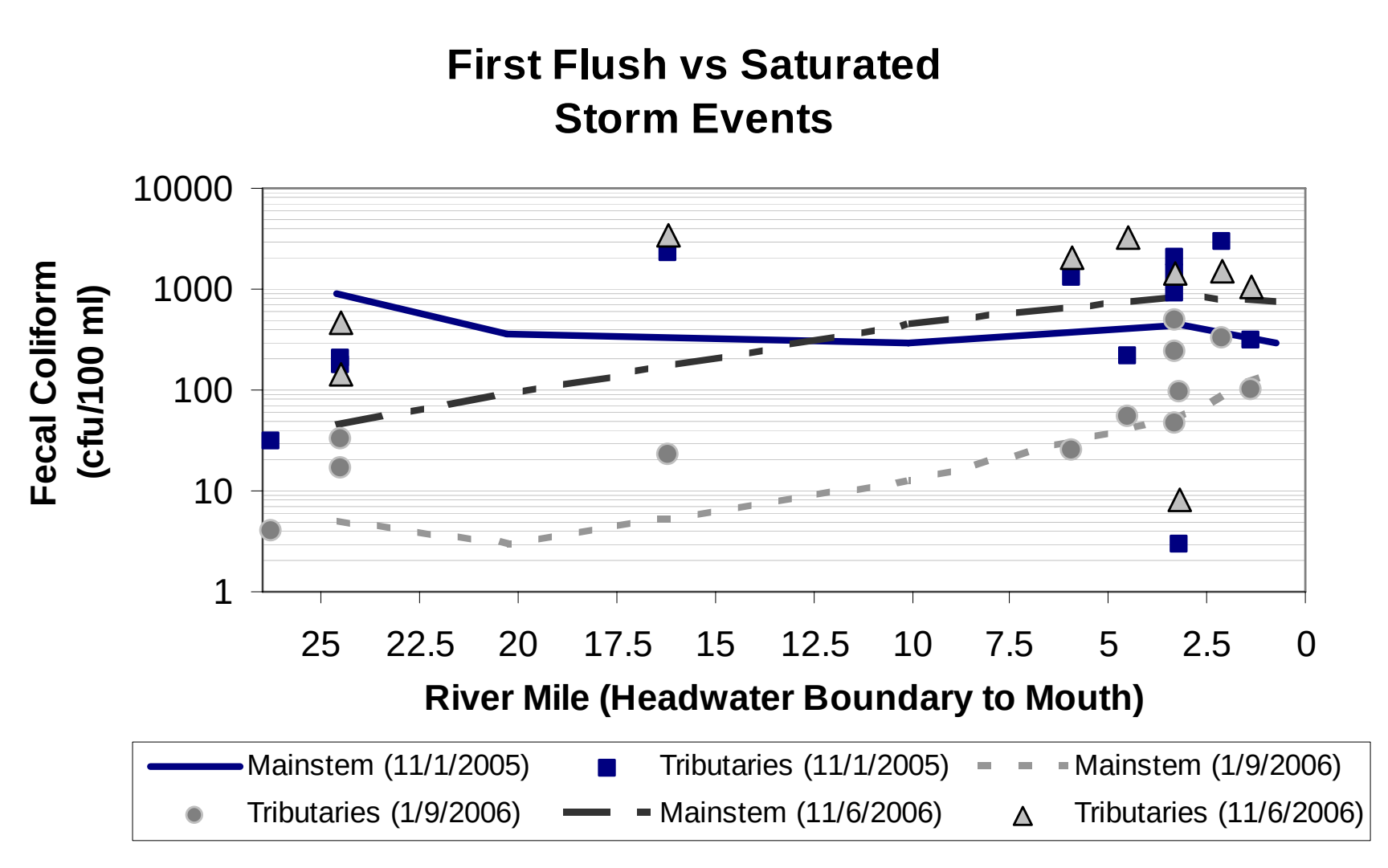
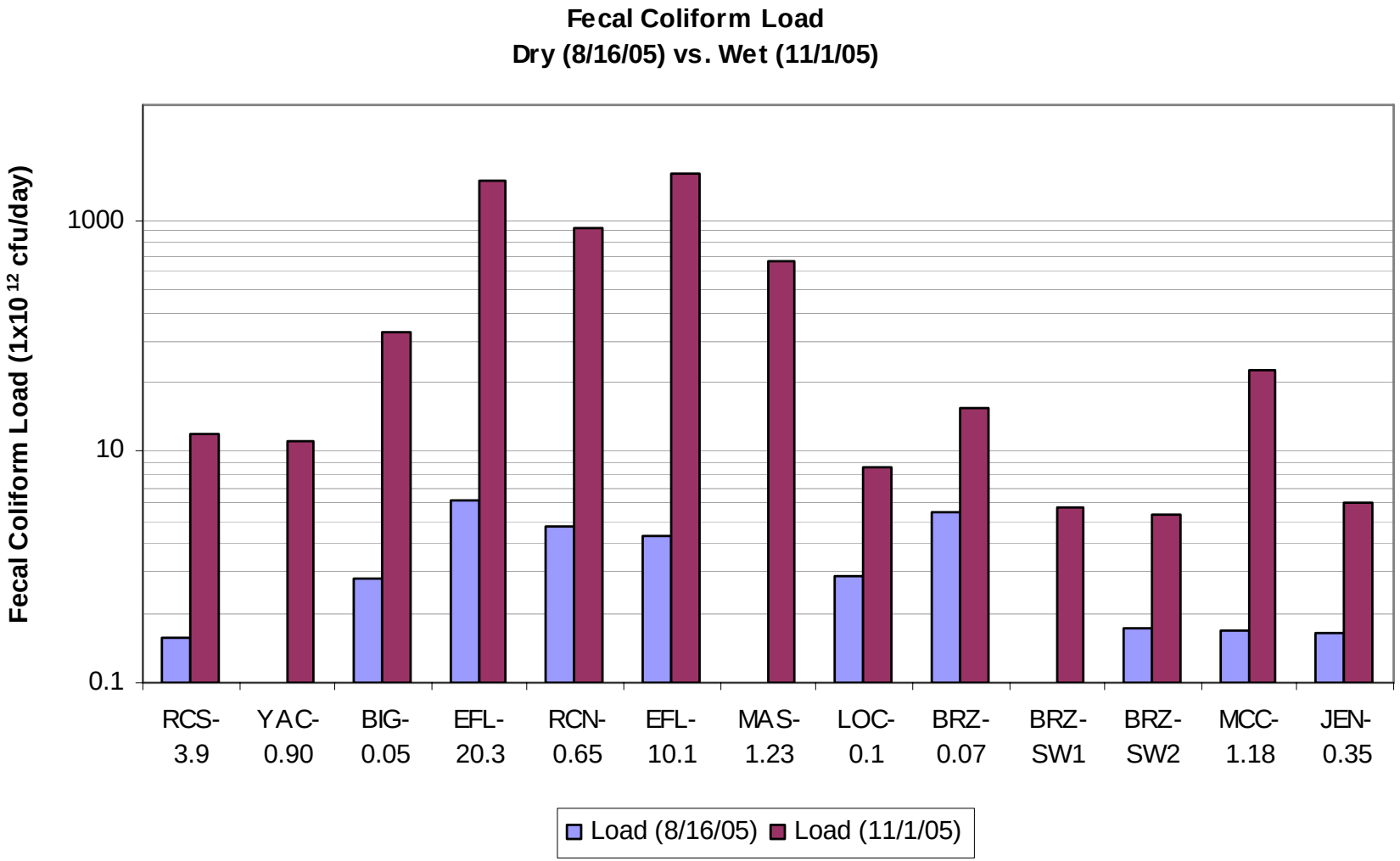
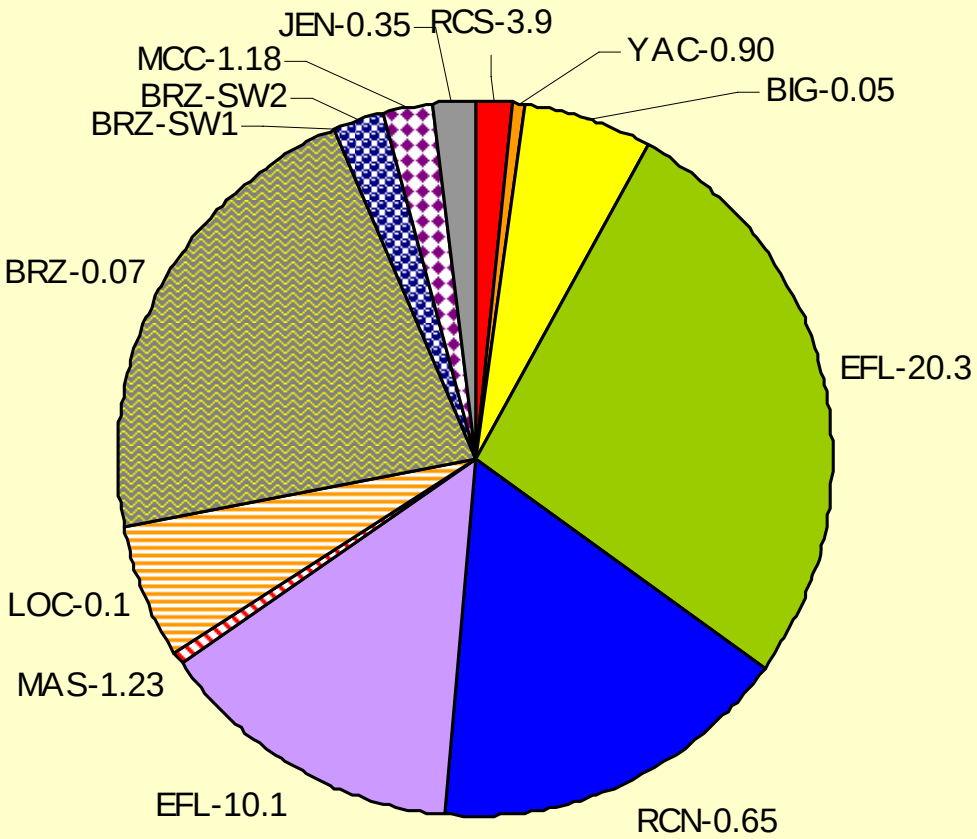
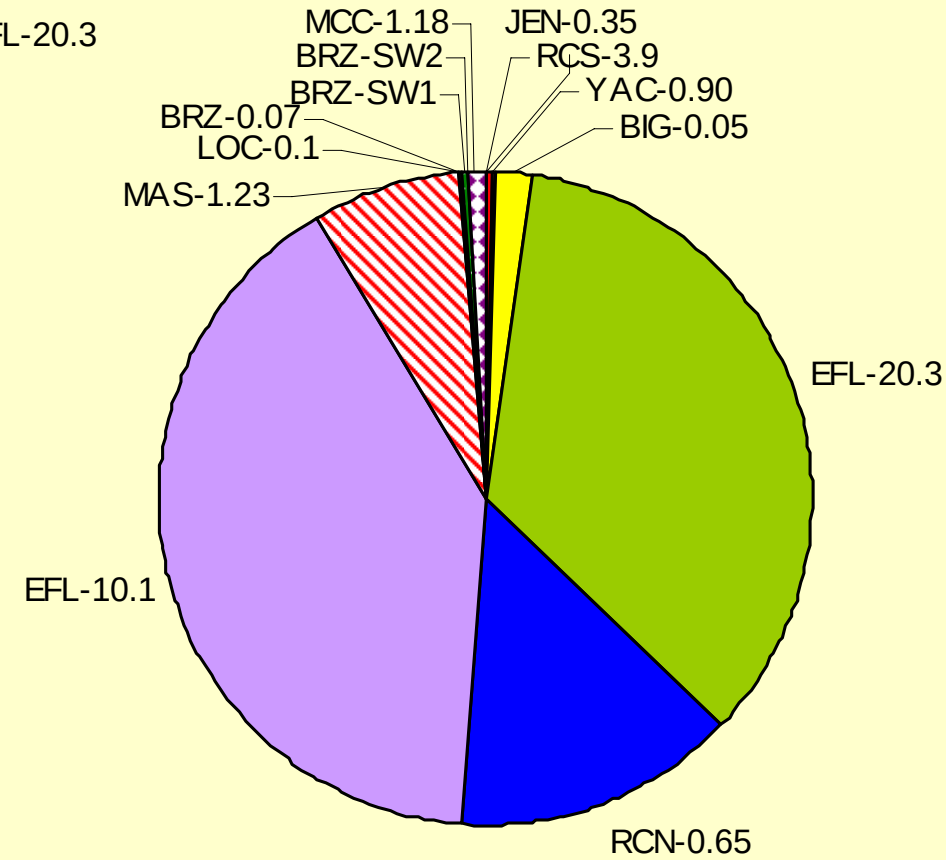

First Flush vs Saturated Storm Events
Fecal Coliform (cfu/100 ml)
10000
1000
100
10
1
25
22.5
20
17.5
15
12.5
10
7.5
5
2.5
0
River Mile (Headwater Boundary to Mouth)
Mainstem (11/1/2005)
Tributaries (11/1/2005)
Mainstem (1/9/2006)
Tributaries (1/9/2006)
Mainstem (11/6/2006)
Tributaries (11/6/2006)


Fecal Coliform Load
Dry (8/16/05) vs. Wet (11/1/05)
Fecal Coliform Load (1x10 12 cfu/day)
1000
10
0.1
RCS-3.9
YAC-0.90
BIG-0.05
EFL-20.3
RCN-0.65
EFL-10.1
MAS-1.23
LOC-0.1
BRZ-0.07
BRZ-SW1
BRZ-SW2
MCC-1.18
JEN-0.35
Load (8/16/05)
Load (11/1/05)

Fecal Coliform Load ($1x10^{12}$ cfu/day)
Dry Period (August 16, 2005)

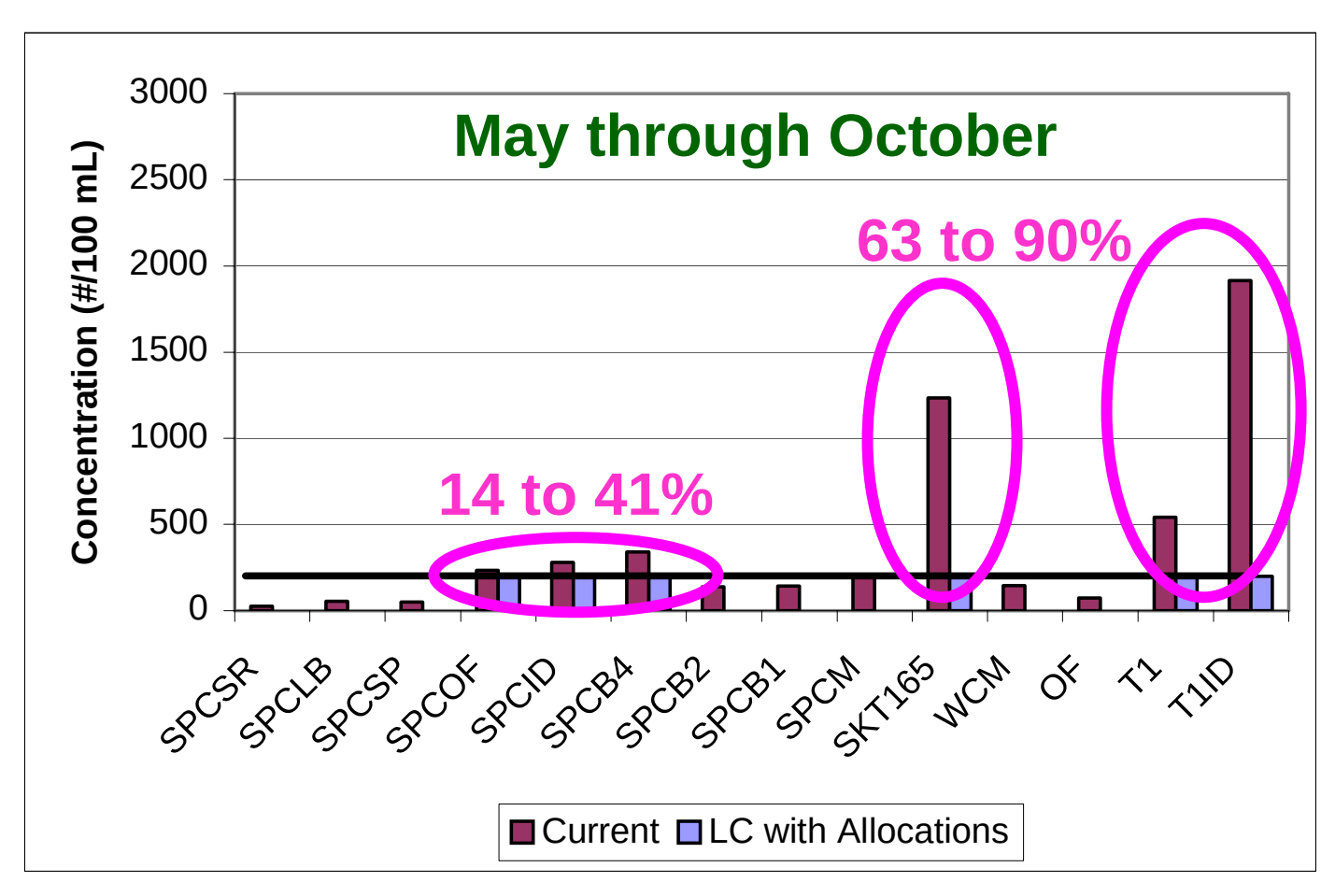


Fecal Coliform Load ($1x10^{12}$ cfu/day)
Storm Event (November 1, 2005)



Fecal Coliform Analysis

- Rollback method to calculate reduction factors necessary to meet both parts of the water quality standard



Possible Management Strategies and Recommendations

- Load Allocations
  - % fecal coliform reduction to meet WQ standards
- Wasteload Allocation
  - fecal coliform load/day to meet WQ standards
- Management Strategies
  - Activities to reduce storm water and sediment loading to surface waters from upland
  - Investigate on-site sewage treatment systems
  - Activities to reduce loads from recreational activities, such as swimming and boating
  - Exclude livestock from waterways and wet areas year-round

Where we are going from here…

- Data analysis
- Rollback Method
- Assign Load and Wasteload Allocations
- Draft technical report for external review in spring 2008

Thanks!

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