

***C. dubia* QA evaluation study**
Stakeholder Committee Meeting
#14

July 31, 2023

Agenda

1. Opening Remarks and Introductions
2. Approval of Minutes of Previous Meetings
3. Review of Second Intercalibration Data
4. Discussion on Expert Science Panel's Recommendations
5. Questions from the Public
6. Closing Remarks

Stakeholder Advisory Committee

- Katie Fong (SWRCB)
- Amelia Whitson (EPA Region IX)
- Veronica Cuevas (NPDES permits)
 - Steven Webb
- Mitch Mysliwicz (Wastewater)
- Jian Peng (Stormwater)
- Sarah Lopez (Agriculture)
- Peter Arth (Private Laboratories)
- Josh Westfall (Public Laboratories)
- Annelisa Moe (NGO)
- Steven Boggs (ELAP)
 - Chris Hand

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Project Tasks and Progress to Date

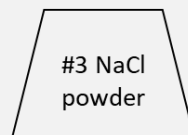
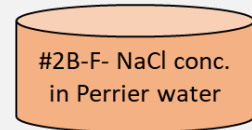
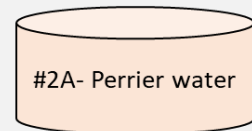
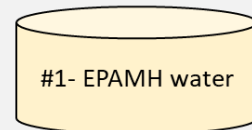
- Identify potential sources of variability within and among laboratories
 - ✓ Compile and analyze historical data
 - ✓ Conduct baseline intercalibration
- Conduct lab “training and education”
 - ✓ Lab visits
 - ✓ Roundtable workshop
- Evaluate efficacy of QA refinements
 - Conduct second intercalibration and analyze data ←
- Develop test guidance to reduce intra- and inter-lab variability ←

Second ILS Study Design

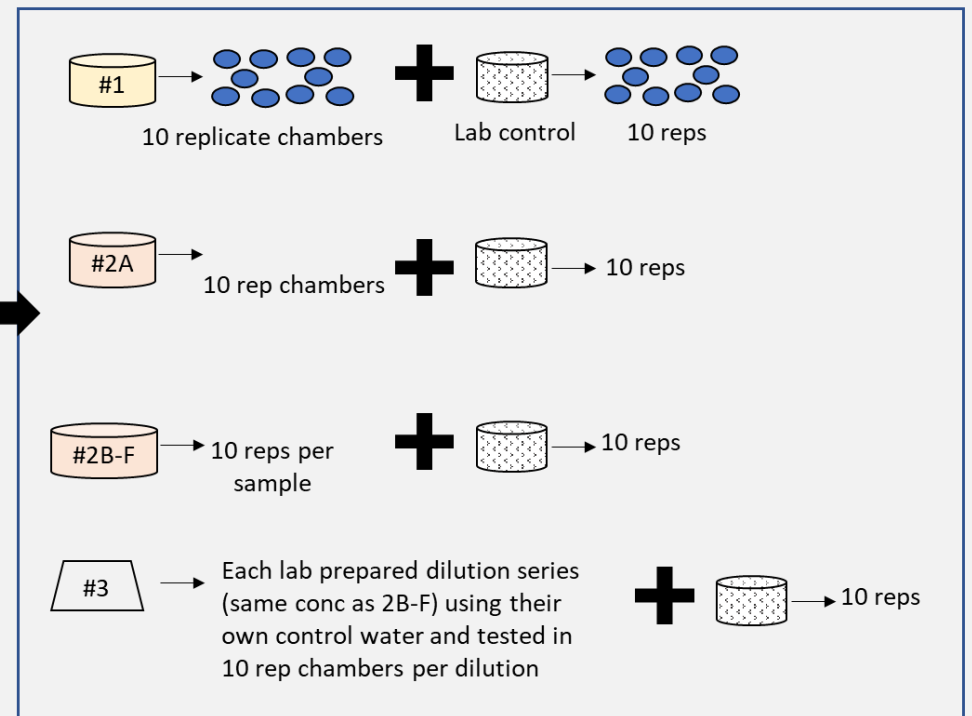
Does implementation of standardized parameters reduce intra- and inter-laboratory variability?

- Same design as the baseline ILS
- 10 participating laboratories

Bulk test samples prepared by SCCWRP and shipped to individual labs



Test batch per lab per testing round (x 3 rounds)



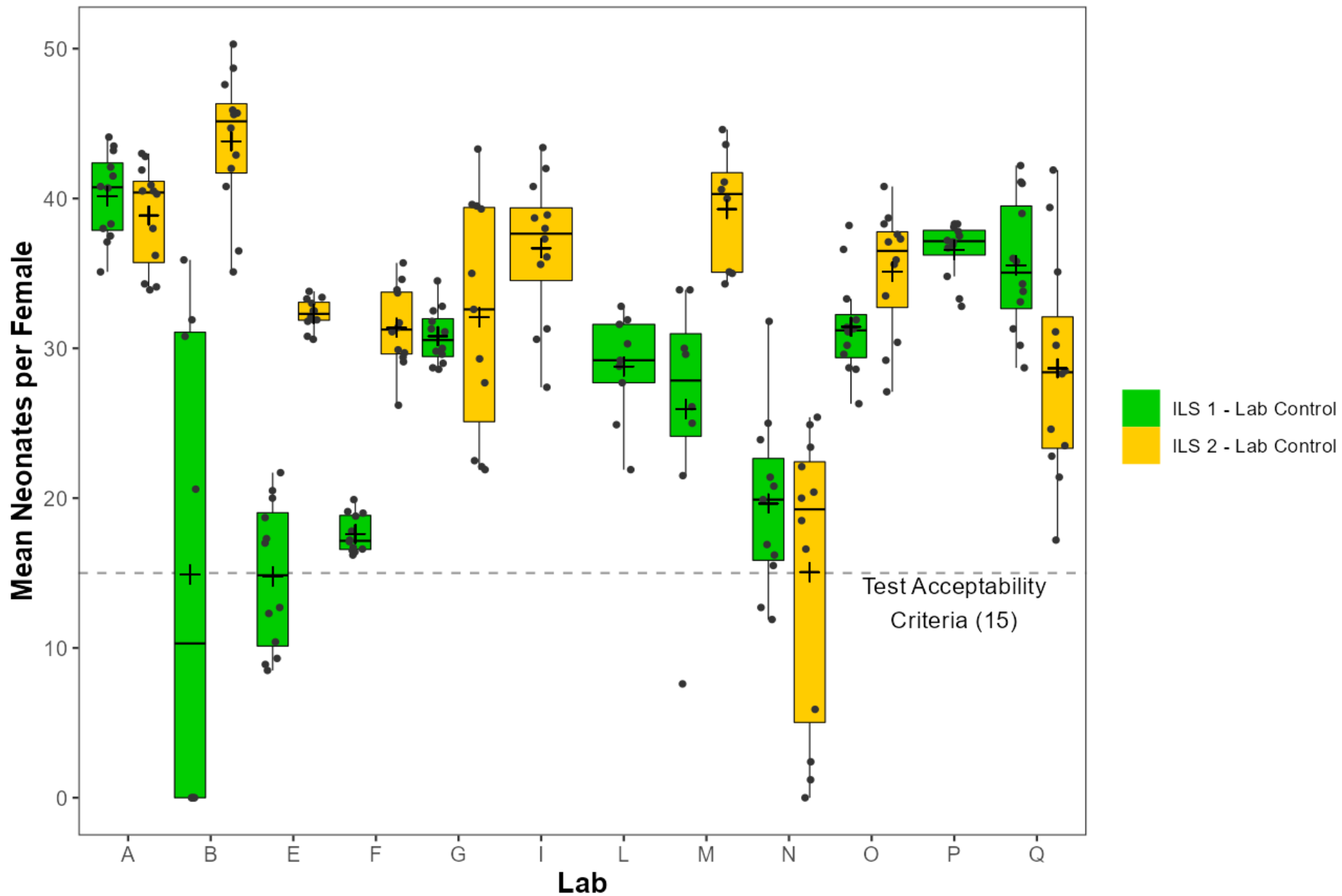
Inventory of datasets collected

Lab ID	Lab controls	#1- EPA MH	#2A- Perrier	#2B-F- SCCWRP dose-response	#3- Lab dose-response
A	12	3	3	3	3
B	12	3	3	3	3
E	12	3	3	3	3
F	12	3	3	3	3
G	12	3	3	3	2
I	12	3	3	3	3
L	-	-	-	-	-
M	8	2	2	2	2
N	12	3	3	3	3
O	12	3	3	3	3
P	-	-	-	-	-
Q	12	3	3	3	3
All Labs	116	29	29	29	28

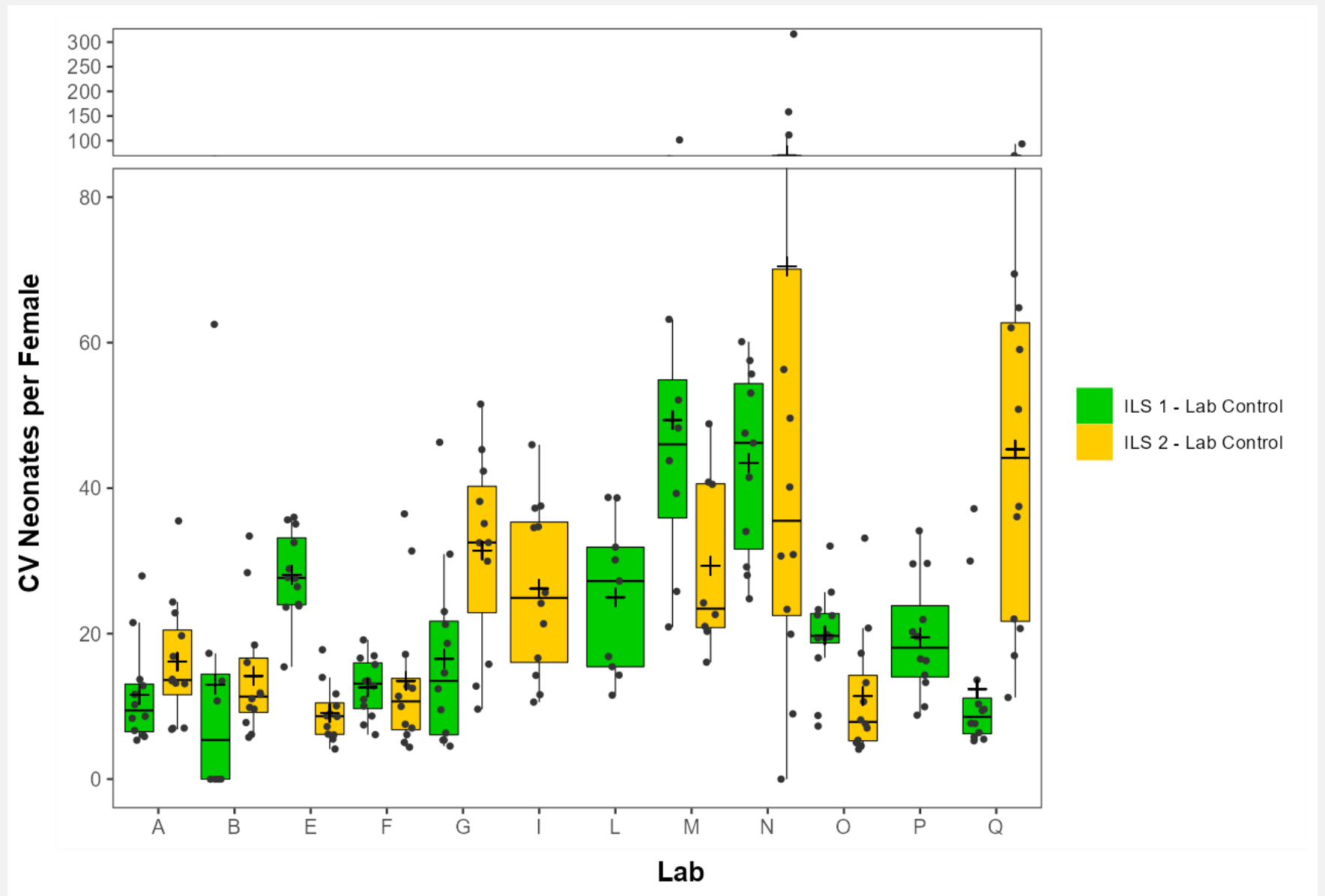
Second Intercalibration – Data Analyses

- Descriptive statistics (mean, range, CV and SD for neonate production, mortality, water quality measures)
- Comparisons of IC values, CV, PMSD within and among labs
- Direct comparisons of toxicity endpoints and point estimates between baseline and second ILS
- Multivariate analyses to identify standardized test parameters that may reduce variability

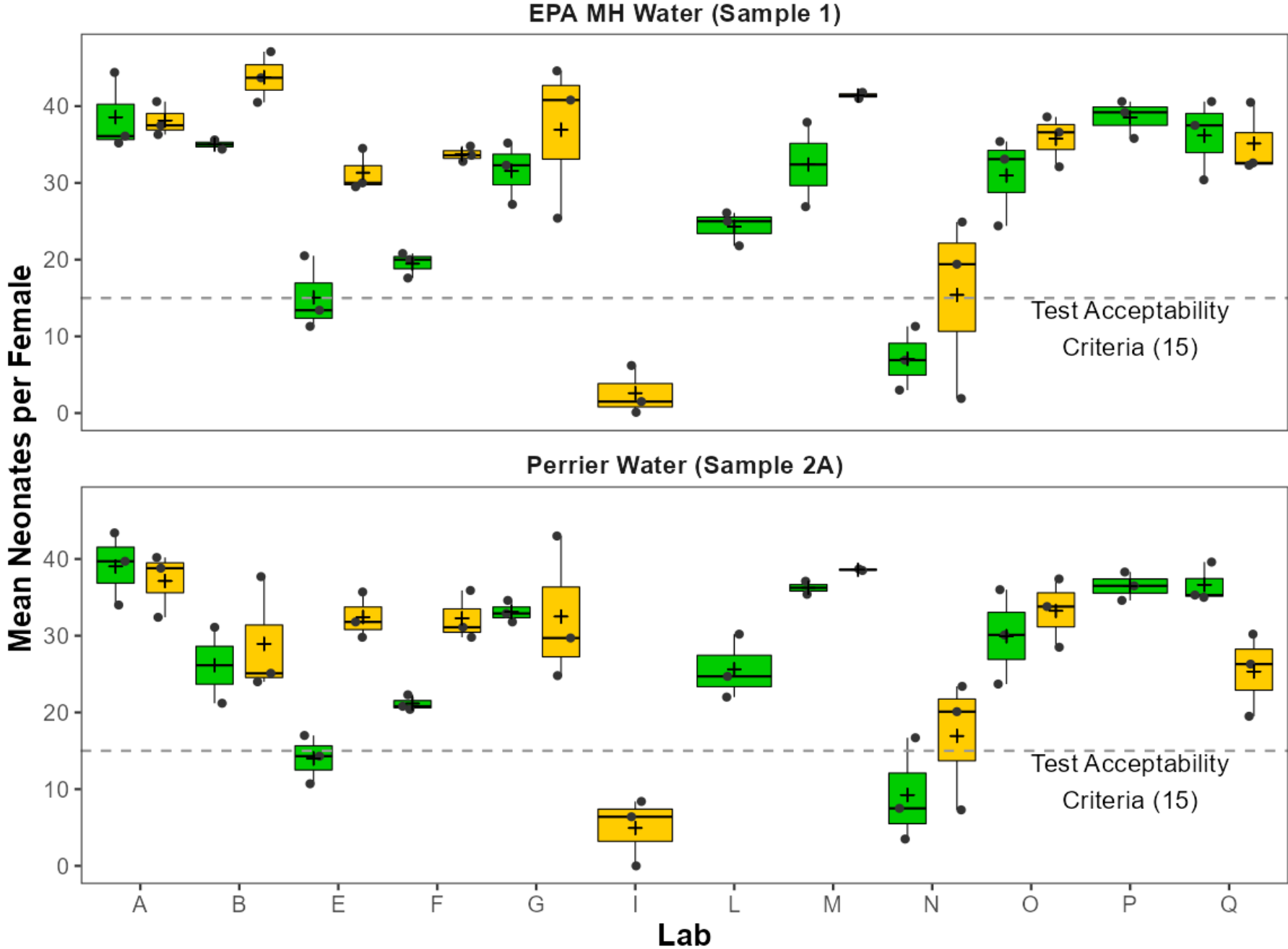
Comparison of mean reproduction in lab controls between the two ILS



Comparison of CV of
mean reproduction
in lab controls
between the two ILS

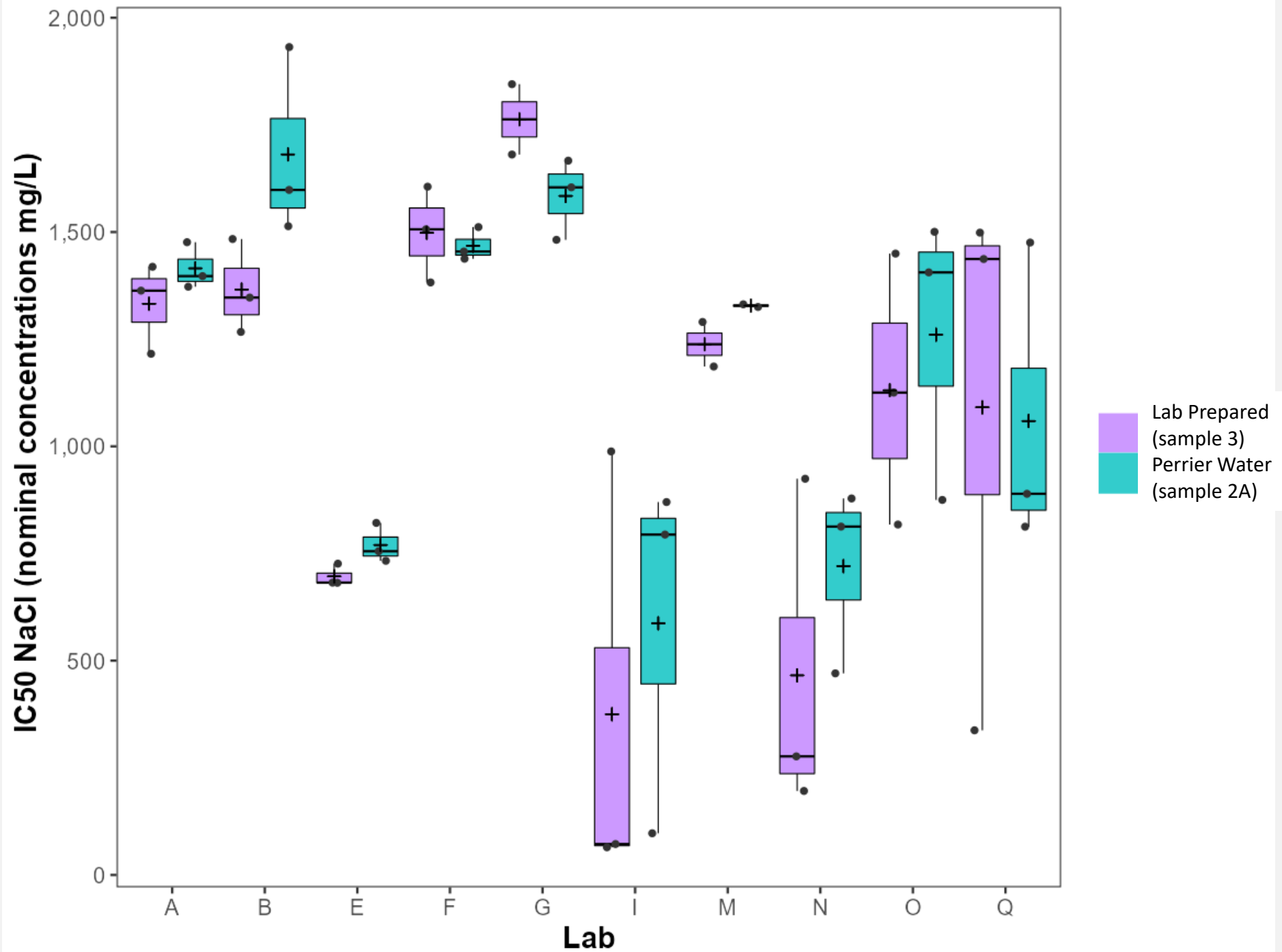


Comparison of mean reproduction in SCCWRP-provided waters between the two ILS



ILS 1
ILS 2

Comparison of NaCl IC50s among labs



Summary of Results

- Overall lab performance and comparability appear to have modestly improved
 - More labs met TAC in second ILS compared to baseline ILS
 - Reduced interlab variability in mean neonate production using unspiked water samples
- Causes of variability remain lab-specific
 - Multi-variable analysis did not point to a common reason for intra- and inter-lab consistency and comparability
 - Food and brood board health data collected provided no further insights

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Development of Test Guidance

Science Panel is reviewing

- Historical test data
- Lab SOPs
- Survey questionnaires and notes from phone interviews
- Observations during site visits
- Roundtable workshop
- Baseline and second ILS data

Recommendations Come in Four Categories

- Accreditation
- Method best practices
- Training
- Future studies

Accreditation

Rationale:

- Deviations for the promulgated test method were not "caught"
- Goals of existing proficiency testing (PT) program don't fully address the stakeholders concerns with inter-lab variability

Recommendations:

- Increase number and /or frequency of PT samples per year
- Submit additional data associated with the PT sample
- Optimize in-lab audits to ensure effective best practices and consistent lab procedures

Best Practices

Rationale:

- Labs have different interpretations of the method requirements.

Recommendations (must do):

- End test when 60% of surviving control females have produced 3rd brood, within a 2-hr window of test initiation
- Randomize test chambers
- Independently quantify food density and loading rate
- Store reagents appropriately
- Renew test solutions daily within a 2-hour window of test initiation time
- Use type 2 source water

Best Practices

Recommendations (should do):

- Conduct ongoing detailed quantitative assessments of brood board health
- Document split brood on bench sheets and record supporting observations
- Use different rooms to maintain cultures and conduct the tests
- Use appropriate surrogate to measure water quality parameters
- Improve record-keeping of lab practices

Training recommendations

- Augment auditors' knowledge of the method requirements
- Training will aid the development and implementation of training performance goals for laboratory personnel
- Formalize training documentation for standard testing among labs
- Provide guidance to regulated parties to evaluate WET test data

Your Reactions?

Update since the July 5 meeting

- Refining recommendations for best practices and future studies
- Developing lab performance evaluation metrics

Evaluating lab performance

- Benchmarks provide a clear and transparent way to assess lab capabilities.
- Important component to implement the Panel's recommendations
 - Will serve accreditation program, labs, regulators and dischargers
- Parameters under consideration
 - Test acceptability criteria (reproduction and survival)
 - Intra-lab consistency (e.g., long term CV)
 - Inter-lab comparability (e.g., PT sample)

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Next Steps

Activity	Timeline
Science Panel public meeting	July 5
List of recommendations	SAC feedback by July 10
Second ILS data analyses and interpretation	July 30
Draft executive summary	By Aug 31 SAC feedback by Sept 15
Draft technical guidance manual and appendices	Draft by Aug 31 SAC feedback by Sept 15
Final guidance document and appendices	Sept 30 to SWRCB