Bioassessment Sample Processing

Laboratory Procedures
Preservation and Processing

- Replace Ethyl Alcohol with 70%
- Ensure All Jars Are Secured and Properly Stored
- Inventory All Samples
- Track Processing Regularly
- Oversight by QA/QC Officer
Equipment

- Stereo-zoom Scope
- Bench Sheets
- #5a Forceps
- Sorting Tray
- Grid Tray (2cm²)
- Random Number Table
- Tally Counter(s)
- Petri Dishes

- Ethyl Alcohol (70%)
- Storage Space for Archived Samples
- COC’s
- Pre-Cut Labels
- Vials
- Time
- QAPP and Literature
- $$$ to Buy Literature
Lab Approaches

• Citizen
  – Combined Picking and Identifications
  – Picking Team and Identifying Team
  – Pay a Professional Lab to do the Work

• Professional
  – Assembly Line
  – Picking Contracted Out
  – Focus on Taxonomy and Reporting
  – Combined Approach
Professional Laboratories

- CDFG OSPR Aquatic Bioassessment Laboratory
- David Herbst, SNARL CA
- Jim Carter, USGS - CO
- USFS - Provo, UT
- Mark Vinson, National Aquatic Monitoring Center, UT
- Rhithron Associates, Inc., MT
- Aquatic Biology Assoc., OR
- EcoAnalysts, Inc. ID
- Jon Lee Consulting, CA
- Wayne Fields, Hydrozoology
- Sustainable Land Stewardship Institute, CA
- Thomas King, CA
- Cressey & Associates, CA
- ECORP Consulting, Inc., CA
- Richard Bottorff, CA
- Andre Macedo, City of San Diego MWWD
- MEC Analytical, CA
Processing

• Initial Cleaning
  – Remove Large Debris
  – Green, Solid Leaves
  – Rocks
  – Twigs

• All Debris Checked under Scope

• Use 500um Sieve

• QC Check Minimum 10%
Picking and Sorting

- Sub-sample Using Grid Tray, Random Selection
- Pick Through Debris
- 100 Organisms (Citizen)
- 300 Organisms (Professional)
- Count and Set Aside Remainders and Picked Debris
Taxonomic Determinations

- Family (Citizens)
- Genus (Professional)

- QC
  - In House Validation
  - External Validation

- QA
  - Split Samples
Quality Assurance Program Plan

• Standard Operating Procedures
• Documentation
  – Sample Handling, COC’s
  – Data Management
  – Lab Notebook, Calibration Records
  – Training Records, Corrective Actions
• Validations (Internal and External)
  – Taxonomic Validation
  – Bioassessment Validation
• Audits (Field and Lab)
Benthic Macroinvertebrates

• Primarily Insects
  – Ephemeroptera
  – Plecoptera
  – Trichoptera
  – Coleoptera
  – Diptera
  – Hemiptera
  – Odonata

• Non Insects
  – Ostrocoda
  – Cladocera
  – Acari (Mites)
  – Aranae (Spiders)
  – Oligochaeta (Worms)
  – Nematoda (round worms)
  – Molluscs (clams & snails)
  – Amphipoda
Ephemeroptera
Mayflies
Trichoptera
Case Builders
Diptera
Flies

Simuliidae
Black Flies
Empididae
Dance Flies

Chironomidae
Midges
Plecoptera
Perlodidae
Hemiptera - Bugs

Belostomatidae
Giant Water Bug
Corixidae
Water Boatmen
Naucoridae
Creeping Water Bugs
• Nepidae
• Waterscorpions
Notonectidae
Backswimmers
Coleoptera - Beetles

Elmidae
Riffle Beetle
Ostrocododa
Odonata
Dragonflies