



Meeting of the DDW Advisory Group to the Expert Panel on DPR
October 22, 2015 ♦ Richmond, California

Update and Review of Activities of the DDW Expert Panel for Direct Potable Reuse

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NWRI | *National
Water
Research
Institute*

Overview

- ❑ NWRI Expert Panel on DPR
- ❑ Summary of DPR Seminar (9/23 in Berkeley)
- ❑ Surface Water Augmentation (SWA) criteria
- ❑ DPR

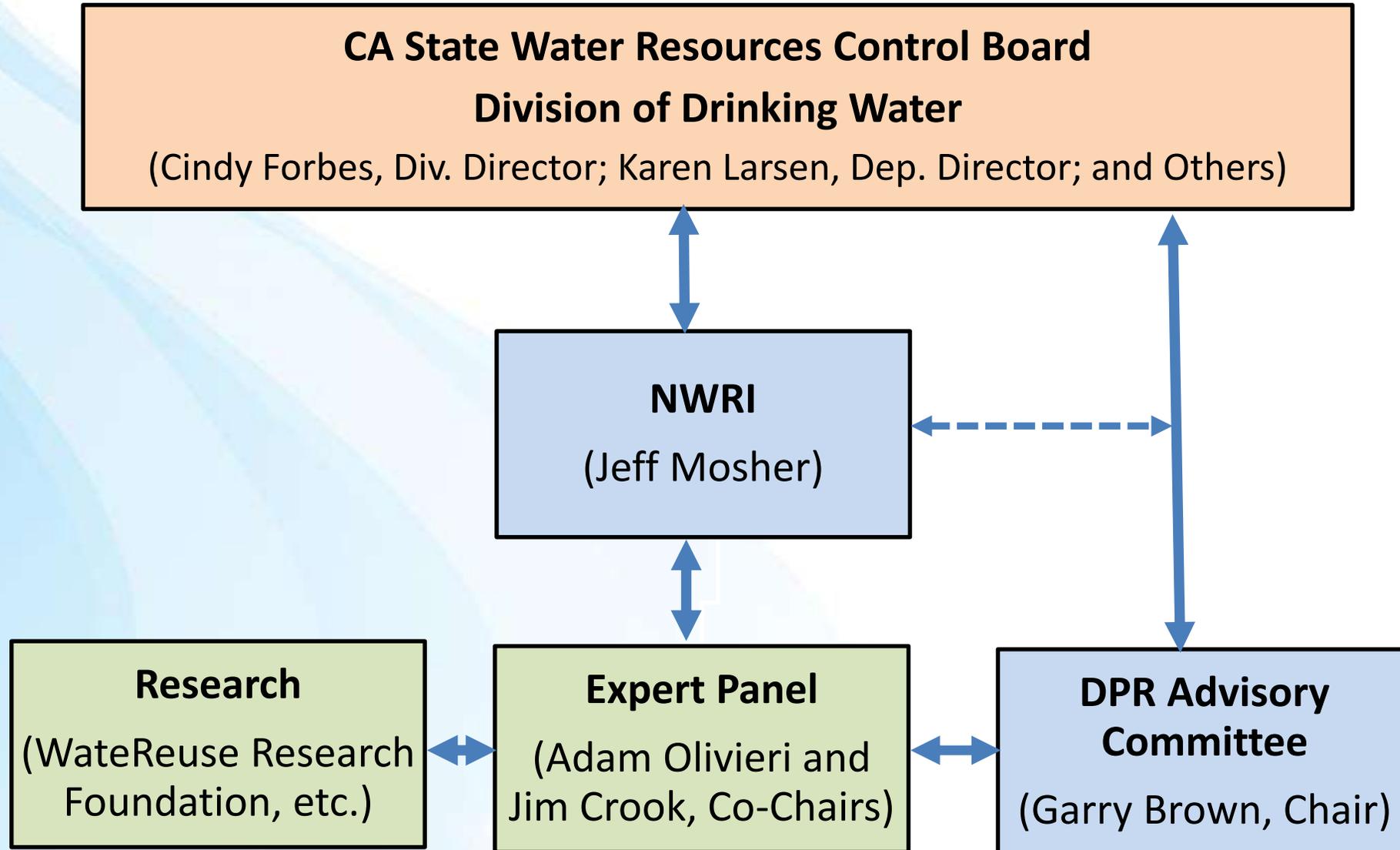




Purpose of Expert Panel

1. Assess what, if any, additional areas of research are needed for establishing criteria for DPR.
2. Advise DDW on public health issues and scientific and technical matters regarding the development of surface water augmentation (IPR) criteria.
3. Advise DDW on public health issues and scientific and technical matters regarding the feasibility of developing criteria for DPR.

SWRCB Expert Panel Organization



DPR Timeline

◆ = Meeting
▶ = Deadline

Advisory Panel:

Meeting #7
(10/22/2015)

Meeting #8
(TBD – before
2/23/2016)

Expert Panel:

DPR Research:

Meeting #7
(12/1/2015)

Meeting #8
(2/23/2016)

Legislated Dates:

Draft Expert Panel DPR Report ▶

Final Report on DPR Feasibility ▶



Panel Members



Panel Members

- ❑ **Co-Chair: Adam Olivieri, Dr.P.H., P.E.,** EOA, Inc. (CA)
- ❑ **Co-Chair: James Crook, Ph.D., P.E.,** Environmental Engineering Consultant (MA)
- ❑ **Michael Anderson, Ph.D.,** University of California, Riverside (CA)
- ❑ **Richard Bull, Ph.D.,** MoBull Consulting (WA)
- ❑ **Jörg Drewes, Ph.D.,** Technische Universität München (Germany)
- ❑ **Charles Haas, Ph.D.,** Drexel University (PA)
- ❑ **Walter Jakubowski, M.S.,** WaltJay Consulting (WA)
- ❑ **Perry McCarty, Sc.D.,** Stanford University (CA)
- ❑ **Kara Nelson, Ph.D.,** University of California, Berkeley (CA)
- ❑ **Joan Rose, Ph.D.,** Michigan State University (MI)
- ❑ **David Sedlak, Ph.D.,** University of California, Berkeley (CA)
- ❑ **Tim Wade, Ph.D.,** U.S. Environmental Protection Agency (NC)

Expert Panel Meeting #6

- ❑ Date: September 23-24, 2015
 - ❑ DPR Seminar (Sept 23)
 - ❑ Expert Panel Meeting (Sept 24)
- ❑ Location: Berkeley, California



Day 1: “DPR in California Specialty Seminar”

Morning presentations focused on **how to implement DPR**

- ❑ **California Water Supply Plan: Where Does Recycling Fit In?**
 - ❑ Frances Spivy-Weber, SWRCB

- ❑ **Regulating Potable Reuse in California**
 - ❑ Robert Hultquist, California Department of Public Health (ret.)

- ❑ **OCWD: Groundwater Replenishment System**
 - ❑ Jason Dadakis, OCWD

- ❑ **The Future of Potable Reuse**
 - ❑ George Tchobanoglous, UC Davis

- ❑ **Update on the WateReuse Research Initiative**
 - ❑ Julie Minton, WateReuse

New Publication: Framework for DPR



Purpose: To provide an overview of the key elements that make up a DPR program and a framework for assessing the specific topics and issues that need to be addressed in the development of future DPR Guidelines.

Independent Advisory Panel

- George Tchobanoglous, Ph.D., P.E., NAE, BCEE (Panel Chair) *University of California, Davis*
- Joseph Cotruvo, Ph.D., BCES *Joseph Cotruvo & Associates, LLC*
- James Crook, Ph.D., P.E, BCEE *Environmental Engineering Consultant*
- Ellen McDonald, Ph.D., P.E. *Alan Plummer Associates, Inc.*
- Adam Olivieri, Dr.P.H., P.E. *EOA, Inc.*
- Andrew Salveson, P.E. *Carollo Engineers, Inc.*
- R. Shane Trussell, Ph.D., P.E., BCEE *Trussell Technologies, Inc.*

Editors

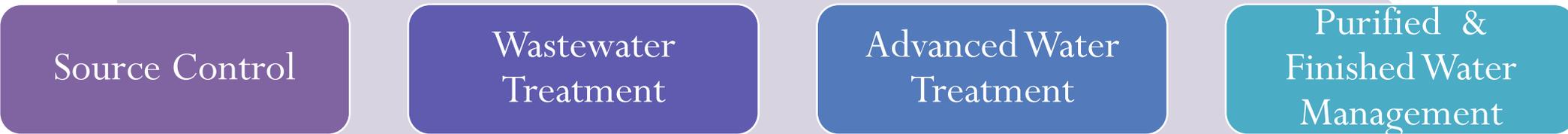
- Jeff Mosher and Gina Melin Vartanian *National Water Research Institute*

Organization of the DPR Framework

Chapters 1 - 4

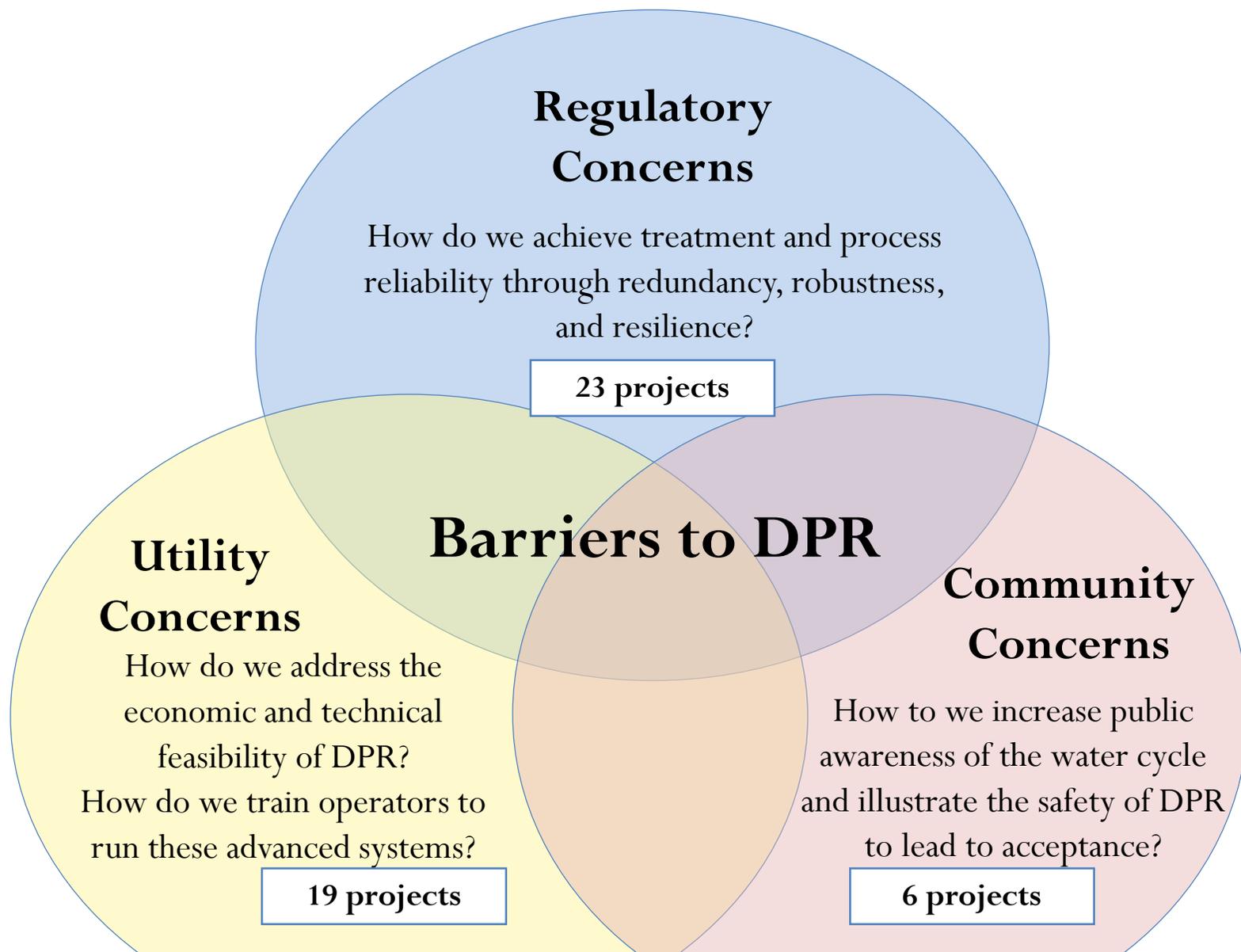
- Introduction
- What is DPR?
- Key Components of a Successful/Sustainable DPR Program
- Public Health Protection

Chapters 5 - 8



Chapters 9 - 13

- Monitoring and Instrumentation Requirements
- Residuals Management
- Facility Operation
- Public Outreach
- Future Developments



WRRF DPR research program worth over \$20M is underway to address these concerns & illustrate the feasibility of DPR



WRRF Project 15-01

Potable Reuse Research Compilation: Synthesis of Findings

- Summarize and synthesize the results of research
- Present information to the DDW Expert Panel
- Useful to other regions interested in Potable Reuse.

Project Team and Support



Jeff Mosher – PI;
Gina Vartanian – Editor

Authors

George Tchobanoglous – technical
lead, lead editor

Authors being selected by topic



PAC

Jim Crook, *Environmental
Engineering Consultant*

Bob Hultquist, *Retired CDPH*

Jing-Tying Chao, *SWRCB DDW*

Mike Wehner, *OCWD*

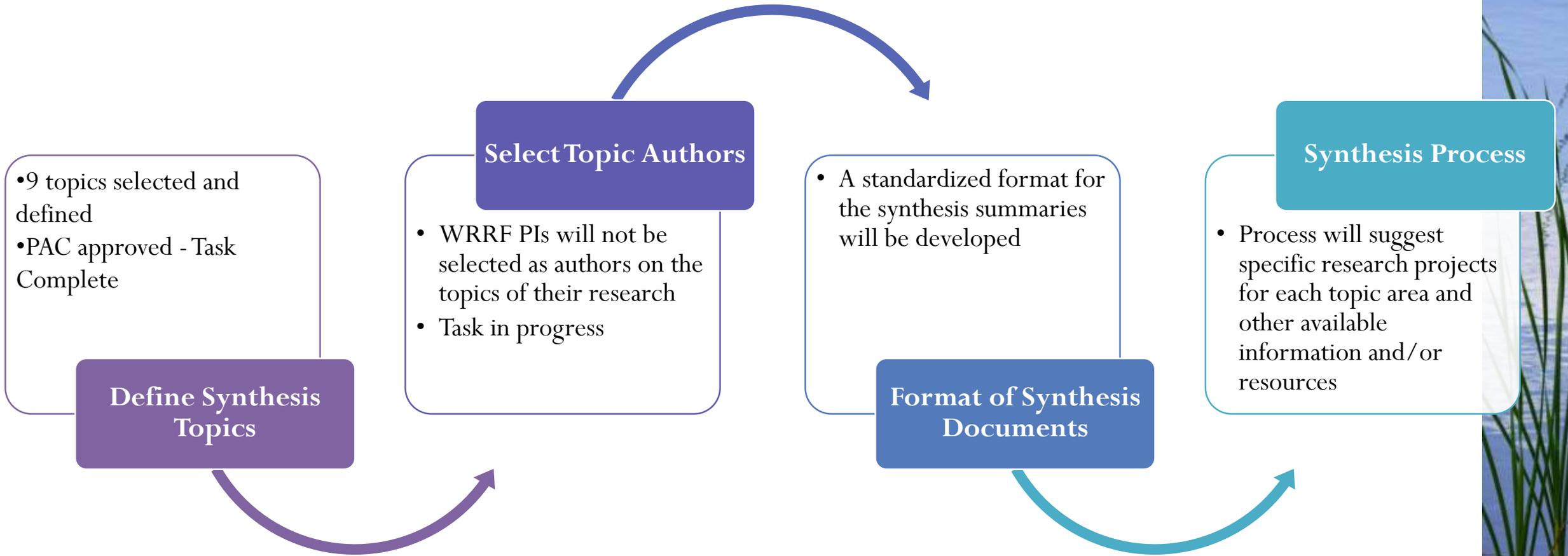
Serge Haddad, *LADWP*

Amy Dorman, *San Diego*

Katie Henderson, *WRF*

PM: Julie Minton

Project Approach



Day 1: DPR in California Specialty Seminar

Afternoon presentations addressed challenges associated with implementing DPR projects

- ❑ **Design of High-Throughput Screens and their Applications in the Biomedical Sciences**
 - ❑ Michael Denison, UC Davis
- ❑ **Translating HTP Bioassay Results to Risk Estimates**
 - ❑ Kevin Crofton, US EPA Computational Toxicology Program
- ❑ **Issues Related to Application of Bioassays to Wastewater and Drinking Water**
 - ❑ Richard Bull, Washington State University (ret)
- ❑ **Demonstrating Redundancy and Monitoring to Achieve Reliable Potable Reuse**
 - ❑ Shane Trussell, President, Trussell Technologies Inc.

Expert Panel Meeting #6

Day 2: Session with Panel and DDW staff

- SWA Criteria
 - Discussed revisions and conceptual draft letter

Day 2: Closed Panel Session

- DPR Briefing Papers
 - Topics
 - Assignments
 - Schedule

Surface Water Augmentation

- Panel reviewed DDW's draft SWA criteria in June
- Panel will provide an “Expert Panel Finding of Proposed Criteria for Regulating Indirect Potable Reuse of Advanced Treated Water by Surface Water Augmentation in California” once:
 - DDW has completed additional internal State Board review of the criteria
 - The Panel reviews DDW's proposed revision to the criteria
- Reviewing the “proposed criteria” may generate additional support from the public and stakeholders

DPR Briefing Paper Topics

1. Bioanalytical Tools: Issues related to Use in Advanced Treated Wastewater (ATW) and Drinking Water
2. Quantifying Treatment Facility Reliability
3. Analytical Methods/Tools for Measuring Chemical Water Quality in ATW and Drinking Water
4. Molecular and Other Methods for Monitoring Pathogens in ATW and Drinking Water

DPR Briefing Paper Topics

5. Antibiotic Resistant Bacteria and Antibiotic Resistant Genes
6. Potential Health Risk Assessments Associated with Existing Potable water supplies subject to discharge from municipal wastewater, storm water, and agricultural runoff
7. Public Health Surveillance

Future Expert Panel Meetings

Meeting #7

December 1-2, 2015, in Orange County

- Topic 1: Bioanalytical Tools: Issues related to Use in Advanced Treated Wastewater (ATW) and Drinking Water
- Topic 2: Quantifying Treatment Facility Reliability
- Topic 3: Analytical Methods/Tools for Measuring Chemical Water Quality in ATW and Drinking Water

Meeting #8

February 23-24, 2016, in San Jose

- Topic 5: Antibiotic Resistant Bacteria (ARB) and Antibiotic Resistant Genes (ARG)