MINUTES OF MEETING NO. 8
State Water Resources Control Board Division of Drinking Water
Advisory Group for Expert Panel on Direct Potable Reuse
January 19, 2016

Chair Garry Brown called to order the eighth meeting of the Advisory Group for the Expert Panel on Direct Potable Reuse (DPR), held on behalf of the State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW), at 10:00 a.m. on January 19, 2016, at Orange County Water District (OCWD) in Fountain Valley, California. The meeting was facilitated by the National Water Research Institute (NWRI).

Advisory Group Members Present:

- Garry Brown, Chair, Orange County Coastkeeper
- Randy Barnard, California State Water Resources Control Board
- Amy Dorman, City of San Diego
- Conner Everts, Environmental Justice Coalition for Water
- Julie Labonte, San Diego Regional Chamber of Commerce
- Al Lau, Padre Dam Municipal Water District
- Bruce Macler, U.S. EPA
- Traci Minamide, City of Los Angeles, Bureau of Sanitation
- Keith Solar, San Diego County Taxpayers Association
- Ray Tremblay, Los Angeles County Sanitation Districts
- Andria Ventura, Clean Water Action
- Michael Wehner, Orange County Water District

Advisory Group Members Absent:

- Jim Fiedler, Santa Clara Valley Water District
- Francis Spivy-Weber, California State Water Resources Control Board

Others Present:

- Mark Bartson, California State Water Resources Control Board
- Brian Bernados, California State Water Resources Control Board
- Wendy Broley, CUWA/Brown and Caldwell
- Annette Carraway, California State Water Resources Control Board
- Jing Chao, California State Water Resources Control Board
- Suzanne Faubl, National Water Research Institute
- Steven Garner, AWWA Cal-Nev Section
- Larry Honeybourne
- Robert Hultquist, California Department of Public Health (retired)
- Karen Larsen, California State Water Resources Control Board
- Alec Mackie, CWEA
- Maria Mariscal, SDCWA
- Michael McKibben, California State Water Resources Control Board
- Jeff Mosher, National Water Research Institute
- Brian Olney, Helix Water District
- Tom Richardson, RMC
- Sherly Rosilela, California State Water Resources Control Board
- Chris Stacklin, OCSD
- Austin Straus, LADWP
- Bob Sun, LADWP

- Chris Thompson, Edison Water
- Udi Tirosh, IDE Technologies
- Gina Vartanian, National Water Research Institute
- Erica Wolski, California State Water Resources Control Board
- Paula Zeller, OCSD-CWEA/WEF

Remote Participants (via GoToMeeting webinar and/or teleconference):

- Shadi Bader
- Janet Bell
- Wendy Danielle Bellah
- Ben (?)
- Mickey Chaudhuri
- Ufuk Erdal
- Christopher Gabelich
- Carolyn Ginno
- Patrizia Hall
- Heal the Ocean
- Robert A. (Bob) Hulsey
- Dawn Koepke
- Paul Liu
- Dave Martin
- Edward Moreno
- Cris Morris
- Deb Smith
- Kurt Souza
- Mark T. Steichen
- Peter von Langen
- Jason Yim

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1. WELCOME AND INTRODUCTIONS

Garry Brown, Chair of the Advisory Group, called the meeting to order and acknowledged members of the public participating via teleconference and webinar.

2. REVIEW AND APPROVAL OF AGENDA

Garry Brown, Chair of the Advisory Group, reviewed the day's agenda and asked the Advisory Group for comments on the agenda. No comments.

3. REVIEW AND APPROVAL OF MINUTES FROM PREVIOUS MEETING

The minutes of Advisory Group Meeting #7, held on October 22, 2016, were presented to the Advisory Group. A motion was made to approve the minutes. The motion was seconded and approved unanimously.

4. PUBLIC COMMENTS, INCLUDING PUBLIC COMMENTS ON MATTERS NOT ON THE AGENDA

No comments.

5. CAPACITY DEVELOPMENT

George Faggella, Capacity Development Coordinator for the State Water Resources Control Board, presented a talk on the technical, managerial, and financial (TMF) aspects of capacity development. A summary of his presentation is provided below.

- What is SWRCB's TMF capacity development program?
    - Capacity development ensures that utilities (especially small systems) can keep providing water that meets all regulatory requirements
    - There is an emphasis to provide information to small water systems on how to maintain their ability to provide safe water for the long term
- The program provides a method for evaluating and approving a new water system
    - TMF capacity review is a requirement for obtaining State funding (grants and Safe Water State Revolving Fund)
    - The U.S. EPA requires that the State looks at TMF capacity before, during, or after a system comes online
    - Specific areas of review include:
        - Technical
            - Consolidation feasibility
            - System description
            - Certified operators
            - Source capacity assessment
            - Operations plan
            - Training
        - Managerial
            - Ownership
            - Water rights
            - Organization
            - Emergency response plan
            - Policies
        - Financial
            - Capital improvement plan
            - Budget control
    - The SWRCB's Division of Financial Assistance manages State Revolving Fund
        - Prop I has funding for technical assistance
    - Important components for a systems to consider:
        - Asset management plan
        - Sufficient revenue to cover O&M and capital improvements
        - Long-term financial strategy
        - Rate study every five years

QUESTION from Garry Brown: Do you have templates for public outreach for utilities to use regarding TMF?

RESPONSE from George Faggella: We work with Self Help Enterprises and RCAC. They help with the rate studies and public outreach for small systems. Both of these organizations are working on a long-term plan for regionalization in the Central Valley.

RESPONSE from Mark Bartson: Things you may look at differently from small systems view could be added for outreach efforts. Throughout our district offices we have a lot of experience with TMF concerning drinking water systems.

QUESTION from Julie Labonte: If an agency was to apply for a new potable reuse project, is the Title 22 report meant to provide all the information necessary to assess the system?

RESPONSE from Brian Bernados: I read through the engineering reports looking for things on this list, operators, what kinds of plans and policies they have. We want to make sure it is done correctly. As a district engineer I've going through this checklist many times and it's often rigorous, where you send the report back and tell them they need to make improvements.

RESPONSE from Mark Bartson: Drinking water systems must provide a reliable water supply for their communities. That is, the water systems must be viable and TMF helps to assure this capacity.

QUESTION from Traci Minamide: It sounds like you are focused on the funding for water and recycled water. Is that correct? I don't see TMF in the grant applications (for wastewater).

RESPONSE from George Faggella: This approach started under the 1996 Amendment to the Safe Drinking Water Act. The TMF capacity requirement is not part of the Clean Water Act (or the Clean Water State Revolving Fund requirements).

QUESTION from Bruce Macler: Are you saying that the state is looking to use TMF with respect to the SDWA? You are talking about the state's activities, correct? Not the U.S. EPA. I'm not aware of anything like TMF going into the Clean Water Act.

RESPONSE from George Faggella: Yes, the State uses TMF for evaluating drinking water systems in California.

QUESTION from Jeff Mosher: Do you get instructions or information from EPA Headquarters on your TMF capacity program?

RESPONSE from George Faggella: Not specific instructions per se, but it's approved by EPA (EPA Region 9). We have the latitude to organize the program to achieve our objectives.

Al Lau, member of the Advisory Group and Director of Engineering and Planning at Padre Dam Municipal Water District (PDMWD), presented a talk on capacity development for Padre Dam's potable reuse program . A summary of his presentation is provided below.

- PDMWD is contemplating a potable reuse program and began the process in 2010
- The goal for the program is to increase water and wastewater independence
- Program has evolved into a larger project in collaboration with Helix Water District
    - As a result, by 2023 we plan to capture all the wastewater generated in our region
- What is "capacity" from a utility's point of view?
    - We feel is it the ability to plan, achieve, and maintain compliance for the project
- Why is capacity development important?
    - Ensure effective protection of public health
    - Use public funds efficiently
    - Maintain sustainable public investments
- The components of capacity from a utility point of view of board and includes the following:

    - Managerial
        - Ownership accountability
        - Staffing and organization
        - Master planning
        - Effective external linkages
        - Emergency response planning
    - Technical
        - Source water quality
        - Infrastructure adequacy
        - Technical knowledge and implementation
        - Compliance records
        - Operator training and certification
        - O&M Plan
    - Financial
        - Revenue sufficiency
        - Credit worthiness
        - Fiscal management and control
- TMF for potable reuse needs to address the following:
    - First, the fundamentals are same as SDWA
        - Ability to protect public health in a sustainable manner
    - Higher level of accountability is required
        - Quality of source water (work with wastewater treatment facility)
        - Advanced water treatment is needed
        - Shorter response time
        - Consequences of failure can be greater (for public health)
        - Maintaining public trust and confidence is critical
- The purpose of potable reuse demonstration facility at PDMWD is to:
    - Gain regulatory approval for the using the minimum aquifer storage (the basin is small)
    - Operator experience in advanced water treatment
    - Demonstrate treatment performance, including the use of critical control points
        - Likely that there will be off-spec water at some point
        - Need to respond quickly
    - Provide an opportunity for public outreach and education
- The general organization of launching demonstration facility included:
    - Adopting strategic plans and goals (first step)
    - Adopting business plan and CIP (Capital Improvement Plan)
    - A dedicated reserve fund
    - Strong management support and involvement
    - Certified and experienced operators
    - AA rating (demonstrates strong financial standing)
    - Strong reserve and debt service coverage
    - Outstanding compliance records with regulatory agencies
        - Water loss last year was less than two percent
        - Wastewater compliance records are good

QUESTION from Mike Wehner: Do you have one dedicated reserve fund that covers everything or separate reserve funds?

> **RESPONSE from Al Lau:** We have separate businesses and separate reserve funds for wastewater and drinking water. For the potable reuse program, we set it up as a separate business unit. The reserve fund is seed money for the development and deployment of the potable reuse program.

QUESTION from Garry Brown: The water quality monitoring and lab work are important to the community. I didn't see that mentioned. Is that just assumed that it's in there? This is very important to the public.

> **RESPONSE from Al Lau:** Yes, we look at the laboratory as part of the normal course of doing business.

QUESTION from Mike Wehner: Are you relying on contract services or do you have your own lab?

> **RESPONSE from Al Lau:** We do both. We have our own lab, for more exotic things we outsource. Part of the process for us is deciding how much expansion we want to do.

QUESTION from Julie Labonte: Are you thinking long-term that you would have a third separate rate structure? The industry is grappling with how to structure these rates, what is considered wastewater cost and what is considered drinking water cost. If you distribute those costs it gets complicated.

> **RESPONSE from Al Lau:** No. It will be a separate business, but we will treat the recycled water as a wholesale operation.

COMMENT from Julie Labonte: At our last meeting, Adam Olivieri, the DPR Expert Panel Chair, included a number of things you would have to do as you lose the environmental buffer. Enhanced monitoring was one of them; it's critical. We need to get better as an industry on monitoring.

COMMENT from Ray Tremblay: Jeff [Mosher], you're involved nationally. Can you talk about Big Spring Texas and any concerns they have experienced.

> **RESPONSE from Jeff Mosher:** They had experienced operational issues early on. I would not call it TMF issues; they just didn't have the correct engineering. They have since fixed the problem and replaced RO modules and adding chloramines and it is running much better now. They are back on track so to me that means TMF is working. Also, the systems is not as small as you might think; the system serves three cities, 40,000-50,000 people.

COMMENT from Mark Bartson: There is also a good discussion in the Framework on TMF.

> **RESPONSE from Jeff Mosher:** We have a project with the state of New Mexico and they specifically asked us to address this issue; we can share it when it is ready in a few weeks. The Framework just touches on it.

QUESTION from Bruce Macler: Will New Mexico use the TMF criteria in these projects? Will they expand from the drinking water to the wastewater side? TMF was set up with respect to drinking water systems, but there is discussion as to whether it would apply to the wastewater side as well.

> **RESPONSE from Jeff Mosher:** I'm not sure they would change the program, but they could adapt to conduct these types of reviews for potable reuse projects, but not all wastewater facilities.

QUESTION from Bruce Macler: They are already doing these types of reviews. Does it need to be formalized?

> **RESPONSE from Jeff Mosher:** Part of the NM thinking is the concern for the small systems. They're not worried about Albuquerque. They do want to encourage rural areas to address water supply issues and they want something in place to review these projects.

COMMENT from Andria Ventura: What we've been working on is coastal-centric. We've been looking at places that can do this. But the places that are really hurting for water are the smaller communities inland that don't have access to good water sources to begin with. Giving them this tool to develop capacity is important; I'm glad to see this happen today.

QUESTION from Jeff Mosher: Are you recommending that DDW work with these small utilities to be able to do DPR?

> **RESPONSE from Mark Bartson:** It helps when smaller agencies talk to large agencies on technical issues.

QUESTION from Jeff Mosher: Unless there is a state agency working with them, will the small agencies do that? Seek out the larger agencies?

COMMENT from Andria Ventura: There needs to be an avenue by which these small systems can pursue these projects. Every water supply needs to look at their water sources. It may not make sense for every community.

COMMENT from Karen Larsen: As we move toward thinking about how this could be applied to small communities, it may be important to look at TMF on the wastewater side. Because they may have issues with compliance and their permits.

COMMENT from Bruce Macler: We're not looking at getting the bottom quartile of systems to implement DPR. I don't think we'd want to encourage them to do potable reuse.

COMMENT from Jeff Mosher: What I hear is that TMF applies to everyone, and that these small systems should not be left out. They need to develop TMF if they want to implement a potable reuse system.

COMMENT from Tom Richardson [Public Comment]: How do you approach this? Are you talking about source water augmentation or directly putting the recycled water into the system? For raw water augmentation you can just extrapolate the work that DDW has already done. If you're talking about flange-to-flange, then you have to meld the wastewater and drinking water worlds.

6. UPDATE ON DDW PROGRESS AND DEADLINES

Mark Bartson, Supervising Sanitary Engineer with the SWRCB Division of Drinking Water, presented an update on the activities of DDW related to the Expert Panel on DPR. A summary of his presentation is provided below.

- A presentation was made to State Water Board on December 15, 2015
  - There is a video of meeting
  - DDW informed the SWRCB of progress to date and the overall schedule for DPR
- Regarding the December 2015 letter from DDW to Advisory Group:
  - It is intended to document conversations with Garry Brown and NWRI on scope and schedule
  - Provides a summary of the charge of the Advisory Group
  - It lists deliverables and deadlines
- Regarding the schedule for deliverables and activities:
  - Need written formal comments from Advisory Group by June 30, 2016 on the feasibility of developing criteria for DPR
  - Draft report from Expert Panel due June 30, 2016 (focus on research needs)

- Draft Feasibility Report released for public review on September 1, 2016
- Public workshop to be scheduled after September 1, 2016
- End of public comment period on October 15, 2016
- Final feasibility report to the legislature on December 31, 2016

7. ADVISORY GROUP'S RECOMMENDATIONS TO DDW

Garry Brown, Chair of the Advisory Group, and Jeff Mosher of NWRI spoke about the Content/Topics, Form, and Structure of the written report that the Advisory Group plans to submit to DDW. A summary of their presentation follows.

- DDW needs the written report from the Advisory Group in June to inform their "feasibility of DPR criteria" report
- Content of the Advisory Group report:
  - Findings and recommendations from the Advisory Group
    - Example "finding" – the Expert Panel had the correct people to do the work
    - Example "recommendation" – augment the TMF program so that it can be used to evaluate potable reuse projects
- Possible topics for Advisory Group Report:
  - Operating Certification and Training
    - CUWA report released today; ad hoc committee will meet again
    - Terminology – we are clear on our recommendations
  - TMF Capacity
    - It is less clear how we integrate TMF with various processes
      - What is the role for smaller communities?
      - What is the effect of going to DPR instead of IPR? Many of the smaller areas that are not sitting on top of an aquifer could benefit from DPR
  - Other issues
    - DDW staff reminder that the Expert Panel's recommendations will be technical
    - Garry Brown wants to add a public outreach topic
      - There is a need to "tell the story" – the report generated by the Expert Panel is not just a science and technical document, but also the story of how this will be implemented
      - OCWD provides hundreds of tours each year. Many of the questions occur at the laboratory because that's what the public is interested in
        - How does the water district ensure that the water is safe?
      - Stress importance of monitoring, which will help the public feel secure about water quality
- Form and Structure of the Advisory Group report:
  - NWRI will develop a template for the final report

COMMENT from Mike Wehner: When GWRS was first being planned, the visitor started in the visitor center and ended in the lab, with the very idea that the public would go away knowing the measures taken to ensure that the water is safe.

COMMENT from Andria Ventura: As we look beyond communities that are sending wastewater into the ocean, if we look at the inland communities, there is an issue with flow. If you are taking water out of

the delta and not putting it back in, that can cause issues. A CEQA scoping would not capture that effect. Somewhere we need to say that this is going to be part of the equation, we must look case-by-case at the environmental impact of not putting water back into the system. In one case I am looking at, we are seeing cyanobacteria and macrophyte problems and the issue is flow.

QUESTION from Julie Labonte: Our report would focus only on the DPR feasibility, correct? Versus giving recommendation on the surface water augmentation criteria?

> **RESPONSE from Jeff Mosher:** This is my opinion, others can weigh in. I think there is some overlap because the shrinking environmental buffer. The Expert Panel has an active conversation about this, when an environmental buffer becomes too small for IPR. DPR would need to cover these possibilities.

COMMENT from Julie Labonte: We should organize on how we will prepare that report, and dedicate at least one meeting to writing the report. Everyone is very busy.

COMMENT from Garry Brown: If we determine which subjects we are going to write about, that's a good start. We may need to have more than one meeting between now and June.

> **RESPONSE from Jeff Mosher:** NWRI will develop a template within the next four weeks. We will include placeholders for topics we know of, potential ones, and a space topics developed at future meetings. Perhaps Garry will make writing assignments.

QUESTION from Bruce Macler: In addition to the permits the state is bringing forward, are there other reviews and hoops that applicants need to get through? This whole idea of a TMF review has me wondering what else is out there.

> **Response from Randy Barnard:** The required reviews will be a combination of drinking water permits and what the regional boards do for waste water permits. The regional boards will be responsible for permitting up to a certain spot.

> **Response from Ray Tremblay:** The regional boards regulate us for NPDES and source control.

COMMENT from Jeff Mosher: There was discussion at earlier meetings on topics of interest. We will pull those out of the minutes and see if they still resonate.

COMMENT from Mark Bartson: With respect to permitting by the regional board. Will that same type of model follow with DPR? How will we handle that? When we talk about groundwater recharge and surface water augmentation, building that relationship between the recycling agencies and the drinking water agencies is a big part of the process.

COMMENT from Conner Everts: The environmental DPR workshop was good but I'm not sure it was a complete success – more work is needed. It brought up a lot of issues and the environmentalists want to be heard. A lot of people brought up ocean desalination. A lot of them are in favor of DPR and knew a lot about it. We had keepers from across the state, Surfrider, Heal the Bay, and agency people. It was an interesting day.

COMMENT from Andria Ventura: Regarding desalination and DPR, these are both things people talk about, and how do they compare. I came away with the same idea that I went in with, that DPR is better in terms of sustainability and environmental impact.

RESPONSE from Garry Brown: We had a presentation comparing DPR and desalination. Most of the environmental community supports IPR and DPR.

COMMENT from Mark Bartson: People are more aware of the trade-offs between energy and sustainability. If the Advisory Group said something about how the public perceives DPR, and the need for confidence, that might be worthwhile.

RESPONSE from Andria Ventura: Mark brings up a good point. We are all engaged in this and are learning about it. The average person doesn't know and they think we need more water, where are we going to get it, and we live next to this big ocean. Every month I open the newspaper and there's an editorial about the drought and why aren't we desalinating. To the public, taking salt out of the ocean sounds a lot better than the concept of drinking your sewage water. You are right, awareness of energy and costs is growing, but we all have a big job to do with setting the hierarchy of the tools in the toolbox.

RESPONSE from Conner Everts: We have a rare opportunity here because of the drought. People have had to change the way they do things and the media is covering this. A lot of what we need to do is educate politicians.

COMMENT from Garry Brown: Regarding public outreach and education. WateReuse has done so much. We can reference their work and discuss the importance of having that public outreach and education at every level. At a higher level we could mention sustainability and the goal of discharging less water into the ocean, and using water multiple times. There is going to be a huge discussion on desalination and potable reuse. Maybe some discussion on the comparison of the two.

RESPONSE from Randy Barnard: Because of our time limitations, let me know if there are WateReuse studies out there, a link would be better. Because DDW is already looking at those sources.

RESPONSE from Julie Labonte: We need to focus our report on helping DDW with their report. We don't want to suggest that they mandate public outreach; it's too restrictive. We need to focus on the ruling of the feasibility of DPR.

COMMENT from Jeff Mosher: Do the recommendations need to be a consensus of the group?

RESPONSE from Mark Bartson: What I heard on the environmental part of the issue was that everyone should be aware of the sustainability issue. I'm interested in, what questions are people always asking? And after they are educated, which questions are they asking?

RESPONSE from Karen Larsen: It doesn't make sense for us to have an Advisory Group without being able to say this is what the stakeholders thought. It would be unfortunate for someone on the board to come forward and say that I was on this board and no one listened to me, the public process was not good, etc. I recommend something close to consensus that everyone can get behind. If anyone vehemently disagrees with something in the report then that would be unfortunate.

RESPONSE from Garry Brown: Our role should be to have consensus as much as we can.

There was a brief discussion on the workshop held January 17, 2016, at OCWD, on "Engaging the Environmental Community on Direct Potable Reuse." David Metz of FM3 research delivered a presentation on "Public Attitudes Toward Potable Use of Recycled Water." It was suggested that he be invited to speak at the next meeting to educate the Advisory Group on issues related to public outreach.

ACTION ITEM: Garry Brown will write up the position statement on desalination versus DPR and distribute it to the group.

ACTION ITEM: NWRI will invite David Metz to the next Advisory Group meeting.

ACTION ITEM: NWRI will follow up with Garry Brown and Andria Ventura within three weeks to solicit feedback on the report template.

ACTION ITEM: NWRI and DDW will work with the Advisory Group to schedule remaining meetings for January through June 2016.

8. REPORT FROM THE AD HOC COMMITTEE ON OPERATOR TRAINING

Traci Minamide, Chair of the ad hoc committee on Operator Training and Certification, provided an update on the committee's progress.

- Basic principles
  - Wastewater is a resource, not a waste
  - Need to promote this idea and gain acceptance
- Overarching goal
  - Ensure protection of public health and safety
  - Gain public acceptance and build confidence in a reliable water quality source
- Challenge
  - Existing wastewater and water certification programs do not sufficiently address advanced water treatment
- White paper analysis: Project scope summary
  - Collaborative effort: CUWA, WateReuse CA, DDW, Advisory Group, and other stakeholders including AWWA CA-NV, CWEA, and CAWA
  - Phase I – Literature Review, Survey, Draft matrix of approaches
  - Phase II – Workshop (Oct 19-20): Reviewing alternatives, discussed pros and cons, reach consensus on approach
- Starting Point for a Framework
  - Certification program should cover both IPR and DPR (except surface spreading with tertiary treated water)
  - Certification program needs to work for both water and wastewater operators
  - Certification program needs to encompass the variation in operating scenarios at utilities
    - WW treatment plants or water reclamation plants with advanced treatment included (staffed by wastewater operators)
- White Paper Conclusions
  - One certification for both water and wastewater operators as a standalone add-on to existing wastewater and water certification

    - Technology aspects of the potable reuse treatment train should be covered (IPR/DPR)
    - Place more emphasis on operator's role: ability to trouble shoot and react quickly to problems, understanding of critical control points. The human factor will save the day.
    - Timely development of a certification program is needed for DPR to move forward
        - Recognize that this will take time; preferable to get ahead of the process because IPR is already happening
    - Program must be manageable/enforceable by SWRCB
- Follow-Up Issues
    - Who should be the certification program sponsor?
        - Would SWRCB administer the certification program?
        - Would an interim trade organization certification be endorsed by SWRCB?
    - State funding/Resource Needs
    - Grandfathering
    - Career mobility – cross over between water and wastewater
    - Determination of grade level operators needing certification
        - Add-on certification to existing licenses
        - Who needs certification? Chief operator, others?
    - Implementation time frame
        - Want to get this in place before DPR projects are launched
- Ongoing Activities
    - White paper was released January 2016
    - AWWA/CWEA Membership Survey released January 11, 2016, to gather baseline data
    - WateReuse Research Foundation (WRRF)
        - Soliciting proposals (WRRF 15-05) on developing a DPR training/certification program

COMMENT from Andria Ventura: Jim Fiedler and I were discussing this issue. We need to get those who do operational training involved with this process. Should the Advisory Group disseminate this white paper to schools that have these programs as well as trade organizations? Should we be sharing this beyond us and the state board?

> **RESPONSE from Traci Minamide**: We may want to have some discussion on this. Our committee has not met for several months because this paper was being developed.
>
> **RESPONSE from Bruce Macler:** We may want to see what the results are from the survey that went out. This would ground-truth the results.

COMMENT from Steve Garner: We asked for responses by January 22. We plan to analyze the materials before we meet on February 10 in San Diego.

ACTION ITEM: NWRI and Traci Minamide will schedule a conference call of the ad hoc committee on Operator Training/Certification after February 10, 2016.

9. REPORT FROM THE AD HOC COMMITTEE ON TERMINOLOGY

Amy Dorman, Chair of the ad hoc committee on Terminology, provided an update on the committee's progress.

- Terminology project was initiated this time last year by Marsi Steirer
- It has been several months since the committee met
- The committee has received comments from several groups
- The terminology document has been provided to the Expert Panel
- NWRI is working on the formatting so that it will be report-friendly
- The final document will go back to the ad hoc committee for a final review

QUESTION from Mike Wehner: will the Expert Panel include a glossary to show that they have adopted the terminology in their document?

> **RESPONSE from Jeff Mosher:** We use "Terminology" rather than "Glossary." How they are using the word in the report, not a regulatory definition.

QUESTION from Andria Ventura: Will we use this document to inform the certification process?

> **RESPONSE from Amy Dorman:** We have no terms specific to operator certification. We can look at it again.

10. RECAP OF EXPERT PANEL MEETING #7

Ray Tremblay, the Advisory Group liaison to the EP, reported on the topics covered during the open portion of Meeting #7.

- Expert Panel agreed with activities of the Advisory Group including the following:
    - Forming a subcommittee to review the briefing papers
    - Evaluate "capacity" or "TMF" to help advise rural or disadvantaged communities
    - Outline additional topics for Advisory Group to weigh in on
        - Feasibility of implementing DPR projects
        - Development of regulations
        - Legislative changes
            - Expert Panel is constrained by the Water Code requirements
            - Impacts SWA criteria
                - Is there room to change the law and provide some flexibility to the regulators and the project proponents?
        - Terminology
        - Operator Certification
- Role of Advisory Group:
    - To provide comments on the Expert Panel's work to DDW by June 30 (or sooner)
    - Expert Panel emphasized that they will not have time to directly address comments by the Advisory Group due to their own June 30 deadline, but understands the comments will be reviewed by DDW.
- Status of Briefing Papers
- Status of WateReuse Project 15-01

    - Synthesis of DPR research projects
    - NWRI is working with subject matter experts to write a synthesis document on all the DPR projects that WateReuse has completed or is currently working on
    - Draft due to Expert Panel and PAC in February 2016.
    - Possible that Advisory Group and DDW may have access to draft documents as well.
- IPR-SWA Criteria
    - Expert Panel completed their review of DDW's proposed original and revised criteria.
    - Expert Panel submitted their findings to DDW.
    - DDW is contracting to conduct a peer review.
- Future Panel Meetings
    - Meeting #8 on February 24-25, 2016 in Northern California.
    - Entire meeting will be "Panel Only"
    - Need time to finalize the briefing papers.

COMMENT from Jeff Mosher: The bioanalytical tools paper is almost ready for DDW. The Expert Panel wants the DDW to see it next. The Expert Panel will not release these papers, DDW will.

QUESTION from Mike Wehner: Will the Advisory Group meet before the next Expert Panel meeting?

> **RESPONSE from Jeff Mosher:** There is very little time in the schedule for the Advisory Group to weigh in technically on the briefing papers. However, the Advisory Group should review the recommendations. Those might be policy statements that the Advisory Group can review and comment on.

COMMENT from Bruce Macler: EPA is going back and doing risk assessments for drinking water MCLs. If Briefing Paper #2 talks about the treatment trains and what they can and can't do, I think that information will impact what EPA is doing.

11. PROGRESS ON DPR BRIEFING PAPERS

Adam Olivieri, Co-Chair of the Expert Panel, prepared a presentation for use at the meeting. He was unable to attend so Jeff Mosher of NWRI presented the slides in his absence.

- Overview of DPR Project Configurations
    - DPR project illustrations
        - Limit to the size of the reservoir for SWA projects
            - 1) Smaller reservoir (reduced environmental buffer
            - 2) DPR – advanced treated water as approved water supply
            - 3) DPR – advanced treated water as approved finished drinking water
            - Note that purveyor can control detention time by minimizing flow out
    - Focus on maintaining functionality provided by the reservoir (environmental buffer)
        - Means to maintain positive attributes of environmental buffer by considering the following:
            - More robust multiple treatment barriers
            - Enhanced monitoring for CECs or surrogates
            - Real-time or near-time monitoring capability

        - Short-term storage of product water to provide time for monitoring results
- Evaluating feasibility of DPR criteria
    - Overarching questions
        - Definition of DPR (continuum) including absences of an environmental buffer
        - Availability/reliability of recycled water treatment technologies
        - Multiple barriers and sequential treatment processes
        - Available information on health effects
        - Mechanism to protect public health from off-spec water
    - Summary of approach
        - Scope: issue and background, solutions, research and conclusion on feasibility
        - Topics
            - Bioassays
            - Quantifying treatment facility
            - Reliability analytical methods/tools
            - Molecular and other pathogen monitoring methods
                - Molecular methods can be used to evaluate concentrations of pathogens, but may have shortcomings
            - Antibiotic resistant bacteria and antibiotic resistant genes
            - Comparative health risks
            - Public health surveillance
                - What should you do to detect any changes in your community related to a newly implemented DPR project (hospital stays, illness, etc.)? Not to be confused with epidemiology.
    - Preliminary findings
        - In vitro assays of selected biological activities of chemicals in water samples do not perform on an equivalent basis as chemical analyses for specific chemicals with established health effects in monitoring water quality
        - In vitro bioassays could be useful in directing identification of chemicals with particular biological activities (genotoxicity, other points of interest) whose health effects can be determined
        - A certification process is essential, and should be initiated where bioassays are intended for use in monitoring or screening of water and needs to include appropriate
    - Several issues identified
        - Inadequate evaluation of bioassays for application to complex mixtures with varying composition
        - Development of target values
        - Despite the absence of approved adverse outcome pathways, there are existing in vivo human and animal data that could be used to develop target values

COMMENT from Andria Ventura: Given that drinking water needs to meet specific standards, how does this help?

> **RESPONSE from Jeff Mosher:** We only have MCLs for a limited number of chemicals. There's a philosophy that we need to rethink how we regulate drinking water. The power of these methods is they give you an indication, a response, for a range of known and unknown chemicals

in the water. A number of chemicals could be contributing to the response that you see from a bioassay. Also, this can provide information on the synergistic effects of a mix of chemicals.

QUESTION from Andria Ventura: I'm very interested in emerging contaminants, which we don't regulate completely. How can we translate this information into policy?

RESPONSE from Jeff Mosher: The question is, should we augment the MCL approach using bioassays?

COMMENT from Mike Wehner: It's even more complex. We can't run the bioassays after the chlorine has been added because that interferes with the test; the chlorine produces higher biological activity.

RESPONSE from Jeff Mosher: Yes, we create disinfection byproducts that are different from what was in the source water.

COMMENT from Bruce Macler: If RO is being put in to deal with constituents of unknown toxicity, we won't have MCLs. In vitro bioassays could be really valuable.

QUESTION from Traci Minamide: Can these bioassays be used to set regulatory limits? The Sacramento and Colorado Rivers contain discharged wastewater. Would it be useful too?

RESPONSE from Jeff Mosher: The Expert Panel says that bioassays are not ready to be used for regulatory purposes – but for performance assessment. Also, the Expert Panel will provide a finding that we don't need them specifically to pursue DPR. We can implement DPR with current monitoring capabilities.

COMMENT from Tom Richardson [Public Comment]: If we wanted to back off on the two barriers (RO and AOP), then it seems this technique could be developed over time and used for that purpose.

QUESTION from Garry Brown: When GWRS was started, we tested for hundreds of contaminants. Over time we reduced that list because we had so many non-detects. None of that involved bioassays. I understand that this could enhance DPR, but it seems by the description that there's a lot of unknowns still. Is this something that going to DPR would be dependent on?

RESPONSE from Jeff Mosher: The panel believes that our current monitoring techniques are capable of demonstrating that the water produced under a DPR is approach could be shown to be safe. This issue is not going away; we need to track the development bioassays and determine how they can best be utilized.

QUESTION from Andria Ventura: I worked with a community that had a big spike in its drinking water monitoring and no one identified it. Would bioassays help?

RESPONSE from Jeff Mosher: Not from an operational point of view. These are not real time. You would test your water and see what the target value should be. Then you have to figure out which chemicals are contributing to the biological activity. It could turn out that three chemicals are contributing, and one is a health issue and the other two or not. Reliability briefing paper

- Working assumptions
  - DPR criteria consistent with IPR criteria for protection of public health
  - Treatment reliability and constituent removal efficiency criteria accepted for IPR relying on RO, and AOPs are acceptable for DPR

- Major DPR issues to define which additional reliability criteria are needed to replace environmental buffer
- Need to define feasibility of DPR criteria from a technical perspective

12. DISCUSSION AND COMMENTS FOR EXPERT PANEL

No discussion or comments.

13. ESTABLISH MEETING SCHEDULE FOR ADVISORY GROUP FOR 2016

- Expert Panel Meeting #8 – February 23-24, 2016
- Expert Panel Meeting #9 – March 30-31, 2016
- Expert Panel Meeting #10 – April 2016
- Expert Panel Meeting #11 – May 2016
- Expert Panel Meeting #11b – early June 2016
- Expert Panel Meeting #12 – last week of June 2016

Schedule meetings to discuss DPR (Jan-Jun 2016)

- Review Expert Panel Process
- Develop recommendation for DDW
- Finalize recommendations
    - Terminology
    - Operator Training and Certification
    - Capacity Development/TMF
    - Expert Panel Process
    - Others
- Review Expert Panel Draft Report at July 2016 meeting
- Review Draft DDW Feasibility Report (Public Review) at September 2016 meeting
- Provide input to DDW on request

Mark Bartson said that DDW would like to have someone from the AG to take part in the public workshop that DDW will hold in September. Mark Bartson and Karen Larsen emphasized that DDW needs the AG's final report by early June.

Proposed meeting dates: Late February/early March, April, and May.

COMMENT from Randy Barnard: We need to determine what will be accomplished at each meeting.

ACTION ITEM: NWRI and Jing Chao will generate a list of potential topics for inclusion in the report and send it out to the AG.

ACTION ITEM: NWRI will Poll AG for availability for Meeting #9, to be held the last week of February or the first week of March.

14. FINAL DISCUSSION AND REVIEW

Mark Bartson mentioned that there were several presentations on bioassays at the DPR Symposium held in September at Berkeley. Jeff Mosher confirmed that Michael Dennison, Kevin Croften, and Dick Bull all spoke on this topic.

ACTION ITEM: NWRI will send the link to the DPR seminar presentations to Advisory Group and DDW.

15. ADJOURN

Meeting adjourned at 2:00 pm.