

**MINUTES OF MEETING NO. 4**  
**State Water Resources Control Board Division of Drinking Water**  
**Advisory Committee for Expert Panel on Direct Potable Reuse**  
**February 20, 2015**

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Chair Garry Brown called to order the fourth meeting of the Advisory Committee 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 February 20, 2015, in City of San Diego North City Water Reclamation Plant in San Diego, California. The meeting was facilitated by the National Water Research Institute (NWRI).

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**Advisory Committee Members Present:**

- Garry Brown, Chair, Orange County Coastkeeper
- Randy Barnard, California State Water Resources Control Board
- Conner Everts, Environmental Justice Coalition for Water
- Julie Labonte, San Diego Regional Chamber of Commerce
- Al Lau, Padre Dam Municipal Water District
- Traci Minamide, City of Los Angeles, Bureau of Sanitation
- Keith Solar, San Diego County Taxpayers Association
- Frances Spivy-Weber, California State Water Resources Control Board
- Marsi Steirer, City of San Diego
- Andria Ventura, Clean Water Action

**Advisory Committee Members Absent:**

- Jim Fielder, Santa Clara Valley Water District
- Bruce Macler, U.S. Environmental Protection Agency
- Charles Mosher, Mariposa County Health Department
- Roy Tremblay, County Sanitation Districts of Los Angeles County
- Mike Wehner, Orange County Water District

**Others Present:**

- Mark Bartson, California State Water Resources Control Board
- Brian Bernados, California State Water Resources Control Board
- Jing Chao, California State Water Resources Control Board
- Suzanne Faubl, National Water Research Institute
- Steven Garner, American Water Works Association, CA-NV Section
- Jodie Lanza, Los Angeles County Sanitation Districts
- Karen Larsen, California State Water Resources Control Board
- Sun Liang, Metropolitan Water District of Southern California
- Maria Mariscal, San Diego County Water Authority
- Peter Martin, City of San Diego
- Jeff Mosher, National Water Research Institute
- Jeffrey Pasek, City of San Diego

- Brian Pecson, Trussell Technologies
  - Karen Scott, Metropolitan Water District of Southern California
  - Bob Sun, Los Angeles Department of Water and Power
  - Jennifer West, WateReuse California
  - Erica Wolski, State Water Resources Control Board
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## **1. WELCOME AND INTRODUCTIONS**

Garry Brown, Chair of the Advisory Committee, called the meeting to order.

Jeff Mosher of NWRI welcomed attendees to the meeting. He described the purpose of the DPR Advisory Committee, acknowledged the committee members present, and explained the open meeting requirements, including the use of public comment cards.

Garry Brown asked for introductions of those in attendance.

Mark Bartson introduced Karen Larsen, Jing Chao, and Erica Wolski, who are new additions to the SWRCB drinking water team.

A new member of the DPR Advisory Committee, Julie Labonte, was present. Julie is replacing Alisa Reinhart as the representative of the San Diego Regional Chamber of Commerce.

## **2. REVIEW AND APPROVAL OF AGENDA**

Jeff Mosher proposed altering the agenda so that Brian Pecson of Trussell Technologies could present his talk on Potable Reuse before the lunchtime tour of the City of San Diego's Water Purification Demonstration Project facility. Pecson's presentation would be moved to the morning and Mosher would present his talk after lunch. All the committee members agreed.

## **3. REVIEW AND APPROVAL OF MINUTES FROM PREVIOUS MEETING**

The minutes of the third Advisory Committee Meeting, held on November 10, 2014, was presented to the Advisory Committee. A motion was made to approve the minutes. The motion was seconded and approved unanimously.

## **4. UPDATE AND REVIEW OF EXPERT PANEL ACTIVITIES**

Presentation moved to after lunch (in time slot for Item 7).

## **5. REPORT FROM THE AD HOC COMMITTEE ON TERMINOLOGY**

Marsi Steirer of the City of San Diego provided an update on the activities of the Ad Hoc Committee on Potable Reuse Terminology. The Ad Hoc Committee held a teleconference on Friday, February 6, 2015, to discuss issues related to terminology. Steirer made the following points:

- There is general confusion on terminology and there is a need to rework the terms that are regularly used.
- The Advisory Committee may wish to make recommendations to the DPR Expert Panel because the Panel is not consistently using terms related to potable reuse.
- Members of Steirer’s team at the City of San Diego created a draft document that identifies commonly used terms, definitions, and references. The document was circulated to everyone who participated in the Ad Hoc Committee conference call (i.e., Al Lau, Keith Solar, Ray Tremblay, Mark Bartson, Randy Barnard, Jing Chao, and Suzanne Faubl).
- Randy Barnard added the column on the far right of the terminology table to indicate where the term was referenced in California regulations or statutes.
- Different words are being used to describe the same things.
- Can we reconcile the technical terminology with the regulatory language and public language? Can we marry these terms with the best possible intention?
- The Advisory Committee should also tap into the work being done by WateReuse Research Foundation (WRRF).

Steirer asked the Advisory Committee members and the audience for comments.

- Jeff Mosher: This document is useful. NWRI is working with the WateReuse Association (WRA) on national DPR guidelines. What is the goal here? To have something that can be distributed on a wider basis? Can this document meet that need? Do you need input from these other sources?
  - Marsi Steirer: I am not sure; we can talk about that today. We should try to have agreement among different groups. If we can make recommendations to the Expert Panel, the way to make changes is through their work product. If they send out a report on Surface Water Augmentation this summer, they could apply the agreed-upon terms in that report. We want to take advantage of this open window now so that we can have some influence.
- Traci Minamide: Was there discussion on whether we should make a distinction between direct and indirect potable reuse? The distinction gets complex, especially for the public.
  - Marsi Steirer: We did not address that question specifically. We had a high-level discussion on the concept of developing a comprehensive list and determining the process for making recommendations.
- Garry Brown: A year ago, NWRI sponsored a conference on messaging. We need input from the public and do some polling to get information on public acceptance.
  - Jeff Mosher: Work has been done on this, and Marsi Steirer was on the committee. We do have some public input on preferred terms (“Purified Water” was near the top), but someone needs to sift through this information. The Expert Panel would like to receive input from this Committee; it would save time. The question is, how do we take this Committee’s recommendations to the State?

- Traci Minamide: Is this a regulatory issue or a technical one? Remember Mike Wehner’s presentation at the SWRCB Research Needs Workshop in October 2014? He said there is “Direct Potable” and “Direct-Direct Potable.”
- Andria Ventura: This document is great. Marsi Steirer’s work will help those who will eventually have to translate this to the public, whether it is DDW or a non-governmental organization (NGO), and determine we are all on the same page. Personally, if I am going to describe this to someone in a community, I try to describe it as what it is doing and what it is. I would never use jargon. You are talking about reusing water for drinking water purposes. It is not so much that we need to use a specific term for the public, but rather that we must ensure we are using terms consistently amongst ourselves.

Two questions were posed by the Advisory Committee:

- 1) Are we going to develop a different term for “Groundwater Recharge”?
- 2) When we talk about “recycled water,” are we talking about “potable reuse”?

Responses included:

- Marsi Steirer: We need to come up with preferred terms because “recycled water” is also referred to as “Purified” or “Advanced Treated Water,” but in the Water Code, these terms refer to tertiary-treated water. If we are moving forward with these projects and we have public hearings and engineering reports, the people participating in the meetings are going to spend a lot of time explaining what means what.
- Frances Spivy-Weber: Will we need to make changes to the Water Code?
  - Randy Barnard: If we change the definition of the terms, we need to ensure the terms still mean the same thing that they did before. There will be a ripple effect. If we change anything in the Groundwater Regulations, we will need to do a new statement of reasons and undergo additional review and public comments.
    - Andria Ventura: Weren’t you already doing that when you wrote the regulations?
- Marsi Steirer: The purpose of this document is to illustrate the diversity in the terms and expose inconsistencies. What we need to decide is how to move forward with the work product. The discussion with WRA sparked this issue for me; it is my pet peeve now. At a level outside our Advisory Committee, other people are engaged and concerned because they believe things should change. This is the opportunity to do it, when we are meeting and the Expert Panel is meeting.
  - Randy Barnard: The Advisory Committee’s purpose is to advise DDW and the Expert Panel. The Expert Panel is charged with looking at surface water augmentation and determining the feasibility of DPR. Sending this to the Panel may help them to understand the terms. However, we are NOT sending it to them for approval. That is not their role; the Expert Panel can use the terms if they want to, but this needs to be submitted to DDW for review and acceptance. DDW will

look at the terms and cross-reference them with what is in the regulations and the Water Code. If the Expert Panel uses a term and it does not work with our regulations, that will be a problem.

- Jeff Mosher: The benefit to the Expert Panel is that they will not need to spend time defining these terms. If they are using the terms in a way that is consistent to what the Advisory Committee has suggested, that will be a benefit.
- Mark Bartson: The Expert Panel may not have specific recommendations, and they are not going to deal with public perception.
  
- Andria Ventura: Will the Expert Panel include a glossary with their reports?
  - Jeff Mosher: The surface water augmentation reports are working reports. The DPR feasibility report will be more formal, and I could see that a glossary would be valuable.
  
- Mark Bartson: There are some disconnects. For example, we use the term “Groundwater Replenishment.”
  - Randy Barnard: We had to change the terminology from “Groundwater Recharge” to “Groundwater Replenishment.”
  
- Jeff Mosher: For decades, the industry has debated using the terms “reclamation,” “reuse,” and “recycled water.” I am not sure we will ever find consensus. It is unfortunate because it causes confusion. In California, we say “recycled water” and people are comfortable with it, but it does not work in Florida.
  - Frances Spivy-Weber: Where will it be used consistently? It may not be used consistently in every situation. Anyone trained is going to need to know what the regulatory term is, and what they might encounter in other documentation.
    - Jeff Mosher: The document containing the terms will be used by the Expert Panel to incorporate into their reports, and it will be make available to DDW and may help steer future regulatory language. You made a suggestion on creating guidance, but I’m not sure what that would look like.
  - Fran Spivy-Weber: Changing words in the regulations will be a rare occurrence because of the costs associated with doing that. Regarding training: it is important that whoever is trained understands what the regulations say and what they may experience in the real world, whether they are in Santa Clara or San Diego or Florida. Those are the two places that I see a need to be conservative in terms of making changes. If we wanted to move to “Pure Water” instead of “Direct Potable,” that will be difficult if not impossible to do.
    - Jeff Mosher: It would be beneficial to get this into the public domain so that other agencies can incorporate these changes into what they are doing. As far as DDW is concerned, what kind of communication do you have with other agencies and with sanitation? How much consistency do we need with these other players?
    - Jeff: Mosher: If this Advisory Committee can come up with a version of this table to post on the Advisory Committee’s website, then NWRI would

promote it and link to it so that other states can see it. I am advocating that the Advisory Committee develop an approach to finalize this. We could create a version that has been reviewed by folks and call it “Recommended Terminology.”

- Andria Ventura: Maybe the document should be “Recommended Term” and we can specify that this is how we are defining it, based on regulations and other information.
- Jeff Mosher: The document could include the term and then “also known as” or other common terms that people use. I do not think the column should necessarily say “regulatory terms” because many are not. And these are California-centric. If California has a regulatory definition, then that is the one we should use.
  - Randy Barnard: We should add a column for Regulatory Term. If it does not exist, then leave it blank. Knowing what the regulatory term is will be important, because that is when you get fined.
  - Mark Bartson: This is something our field staff needs, too.
  - Frances Spivy-Weber: When the Expert Panel takes this, they should use the “Term” or the “Regulatory Term.”
- Jeff Mosher: This Expert Panel will embrace this initiative since not all of them are from California. This draft does need to be vetted and another version needs to be developed. Everyone on the committee needs to review this, or refer it to someone else.

Marsi Steirer: So do we need to prepare another version of this or should we edit it based on the conversation today? And then recirculate?

- Al Lau: We might circulate this to WRA because they might have some comments.
- Jeff Mosher: We should come up with the next version, then send it to these other organizations by contacting one person at each and ask for specific feedback by a deadline. That way, they can submit a combined response. Marsi Steirer, will you update and redistribute it to the Advisory Committee?

**ACTION ITEM: Marsi Steirer will edit the Terminology document as discussed in the meeting and send it to Jeff Mosher and Suzanne Faubl of NWRI by mid-March.**

Garry Brown asked for any public comment on the discussion.

- Karen Scott of Metropolitan Water District of Southern California: I would like to make a plea: everyone talks about DPR, but some are talking about upstream and downstream. These are very different, and we would like to have terminology to describe these situations.

## 6. REPORT FROM THE AD HOC COMMITTEE ON OPERATOR TRAINING

Traci Minamide of the City of Los Angeles, Bureau of Sanitation provided an update on the activities of the Ad Hoc Committee on Operator Training and Certification. The Committee held a teleconference on Friday, February 6, 2015, to discuss issues related to terminology. Minamide made the following points:

- The State has a wastewater certification program and drinking water certification program.
- When we talk about direct and indirect potable reuse, it becomes important that all our operators are well trained, and that there is public confidence.
- There may be a deeper analysis of whether or not the certification programs that we have will cover advanced treatment.
- For example, if you consider the Advanced Certification Framework, the raw wastewater comes in and then goes on to Advanced Treatment at the same facility. In other scenarios where the wastewater is treated and then piped to another facility, often there is a transition between wastewater and drinking water. With those two scenarios, the question was: how do you incorporate advanced treatment?
- We discussed the possibility of adding on advanced treatment certification.
  - Currently, the operator certification goes up to Level Five on both sides.
  - Do you need two separate licenses?
  - Does it make sense to combine them into one certification program?
- We also talked about training. On both drinking and wastewater certification, you must complete training and take additional credits before you can get your operator's license.
  - What are the training requirements?
  - What does the certification entail?
- This issue is similar to Terminology in that certification is through SWRCB, so we do not need to talk to the Expert Panel about this.

Christopher Stevens of SWRCB joined the meeting by phone. He referred to slides in a PowerPoint presentation that was projected in the meeting room.

Slide 2: Everything I am talking about can be found in Title 23, Division 3, Chapter 26.

- There are approximately 6,000 certified wastewater operators in California.
- The basic question is: who has to be certified? That depends on the definition of "Operate," as described on the slide.
  - Operators must be trained to make decisions that lead to the desired outcomes.
  - There are five grades of operator and plant class. Operators must acquire a number of educational points, have a certain amount of practical experience, and pass the grade level exam.
  - The exam is administered twice a year in April and October.
  - There is some overlap between drinking water and wastewater operators.

Side 3: In the wastewater regulations, we further identify beyond the grade level the treatment plant classification. This information is also taken from the California Code of Regulations, Title 23, Division 3, Chapter 26.

- The Chief Plant Operator is responsible for the overall operation of a wastewater treatment plant, including compliance with effluent limitations and supervision of operators-in-training, as required by Section 3682.

Slides 4 and 5: These slides lay out the education requirements. For each grade level, there are different pathways to achieve the certification. If you have more educational points, then you need less experience, but every level requires practical experience.

Slide 6: Plant Classifications. This is based on the flow rates and the treatment process used.

Slide 7: Exam Formats.

- Grades I and II are much alike, and include a combination of True/False, Multiple Choice, and Multiple Choice Math.
- Grade III includes fewer True/False and more Multiple Choice, plus essays and long-hand math problems. Grades IV and V are more difficult.
- There is no True/False, and most of the exam includes essays and long-hand math problems.

Slide 8: Typical Exam Pass Rates.

Slide 9: The table shows the level of training required to operate the different plants. There is some crossover between the drinking water and wastewater treatment training operations.

Slide 10: Advisory Committee

- Nine members.
- Statutorily regulated and appointed by SWRCB.
- Meets once or twice a year to discuss how the program is being managed.

Garry Brown asked for questions and comments from the Advisory Committee.

- Julie Labonte: You said that a water operator could run the water recycling plant. How do you mix the water operators at a facility that includes both secondary and tertiary treatments? What is going to happen when we add in advanced treatment?
  - Christopher Stevens: Under the regulations, you could have a mix of certified drinking water and wastewater operators at the same facility.
- Julie Labonte: Sometimes a control room will operate both sides of the same plant. Does San Diego have this situation?
  - Marsi Steirer: No, these are wastewater operators. We would install an advanced treatment facility across the street with a separate control room. We would like to be able to pull from both drinking water and wastewater operators so that we can maximize the staff. The workforce is aging, and we need to train enough new workers to take over the new facilities. Anyone with an advanced treatment facility might need operators 24/7.
  - Jeff Mosher: What I am hearing from Julie Labonte is that there is flexibility on the wastewater side. If there is an advanced certification program, how is it that

both drinking water and wastewater operators can achieve it? You might want operators from both areas to be able to get this certification.

- Traci Minamide: Julie Labonte asked that if you have one facility that does both secondary and tertiary, then how do you manage that situation?
  - Julie Labonte: This is one reason that we might push the State to consider one combined certification so that the same operator is qualified for all these tasks.
  
- Andria Ventura: Is treating one as an operator, in the physical sense, more complex for wastewater than it is for drinking water? Once it gets to the drinking water stage, is this like water that is coming from any source, such as a river or reservoir or recycled water?
  - Jeff Mosher: If it is a DPR plant, it must have a drinking water operator.
  - Traci Minamide: Most of us have IPR now.
  
- Al Lau: When you talk about DPR, what are you talking about? Are you sending it to another treatment facility?
  - Jeff Mosher: There is a difference because one is going into the environment (wastewater) and one is going into the drinking water supply (drinking water). One is not harder than the other; they are just different because the process is different. To me, trying to merge the programs and coming up with one, that is a big lift. But maybe you could have the advanced treatment program and both wastewater and drinking water could feed into that.
    - Julie Labonte: We need to be clear about the responsibilities that operators could have in the control room.
  
- Traci Minamide: The agency can determine which certification they will require their operators to have. If you have one facility that treats all the way to advanced treatment, you may say we want a wastewater operator with the advanced treatment certification.
  - Jeff Mosher: To be clear on this point: right now, there is no advanced certification. At the Orange County Water District (OCWD), they are wastewater operators, and the District trains them on the advanced processes.
  - Marsi Steirer: So few facilities have the advanced treatment processes. If these facilities do not exist, then how do you gain experience operating these facilities? Do you envision a way this can be addressed?
    - Christopher Stevens: That is a chicken-and-egg question. If you stay with the principle that it is a practical matter to be able to operate an advanced treatment facility, we must have a period where people can use related experience as a stepping stone to acquiring the advanced treatment operator certification.
      - Frances Spivy-Weber: You could also give conditional approval that would be finalized a year after you have performed adequately.
  
- Christopher Stevens: I am an engineer, so I approach things from that bias. To me, all water treatment is a sequence of physical, chemical, and biological processes to alter the characteristics of water. There is no such thing as pure water. If what it contains is bad or

good, well that is a judgment that depends on what you are going to be using the water for. All this is interrelated; I do not see such a bright line between these trainings.

- Jeff Mosher: There is strong interest at the state level for an advanced treatment certification.
- Randy Barnard: Instead of a third program, we would like to do an add-on type of certification. Here is a suggestion, and we have not figured out what we are going to do: a wastewater III operator is the lowest level that can deal with tertiary. As you increase to IV and V, then the only change is the volume of the plant. At wastewater and drinking water III level, we can probably allow the advanced treatment add-ons. Because there is different training for wastewater and drinking water, the advanced treatment certification would incorporate BOTH wastewater and drinking water operator training. Once the operator goes into this combined path, they become an advanced treatment operator. You can make the chief operator and advanced treatment operator.
  - Julie Labonte: Then once you get the advanced treatment, you could go back and operator either a drinking water or wastewater plant. And once you get to that point, maybe there are only three grades based on flow.
- Randy Barnard: We could have advanced treatment training based on the technology, because there are different types (reverse osmosis, ultraviolet disinfection, etc.).
  - Mark Bartson: The distribution of water can affect water quality, so we have on that side the drinking water operators.

Jon Strutzel of SWRCB joined the meeting by phone to provide an overview on operator training for drinking water plants. He referred to the “Job Analysis” document that he provided during the conference call of the Ad Hoc Committee on Operator Training and Certification (this document was provided to the Advisory Committee via ShareFile in advance of the meeting) and outlined the requirements for the operator training programs.

- Mark Bartson: Continuing Education for drinking water can be just about anything you want. We have an opportunity here to make the training more specific to what the operators are doing. The drinking water people are not going to be familiar with source control or the nuances of public health and protection of the water supply.
- Jeff Mosher: Traci Minamide, how are we moving forward on this? We need to work out some of the options. It sounds like we need to have another ad hoc committee meeting. The Expert Panel is not interested in this and does not need to know the details. This is for DDW.
  - Frances Spivy-Weber: If we add advanced certification on both sides, does SWRCB make that decision?
    - Randy Barnard: I believe so. We would write that into our regulations and it would be adopted by SWRCB.
    - Jeff Mosher: I view this as a DPR issue. We have precedent from the IPR work.

- Traci Minamide: Because our facilities are indirect potable reuse (IPR) now, the concern was whether we have enough operators trained so that we have public confidence.
- Randy Barnard: This advisory group is ONLY supposed to be working on DPR issues. It is important for both IPR and DPR, but we need to focus on DPR.
- Brian Bernados: How can the American Water Works Association (AWWA) or other third parties help with this effort? Steve Garner, can you comment?

Steve Garner (AWWA CA-NV Section): We are tackling this same issue. We are struggling to find out if this interest in DPR should drive a new certification on its own, wastewater, drinking water, and Recycled Water, or should it be an add-on. I like the idea of having Level III and above being advanced treatment. One question is: does the operator need to pass a test that covers all the advanced treatments or just the one that the plant uses? For example, an endorsement for ultraviolet disinfection, reverse osmosis, ozone, etc. That way, there is no requirement for the operator to learn everything if only one technology is used at the plant. The cost/burden to learn all is an ongoing challenge and debate. What does the market require? The answer is not clear, but we lean toward incremental changes so that we can add only the endorsement that the operator needs.

- Sun Liang: The wastewater treatment plant delivers a certain quality of water to the advanced water treatment plant for OCWD's Groundwater Replenishment System. The operator needs to have this mentality: our plant operates 24/7, and we sample every two hours, and we need to prevent any upset of the drinking water plant. The drinking water plant operator must have two licenses.
  - Jeff Mosher: You are not talking just about operators; you are talking about operations plant. Your comment is very broad, and is bigger than just the operators.
  - Al Lau: On the wastewater side, I disagree that the wastewater operator would tend to just let the water go. Our agency has a strict requirement and failsafes. The common goal on both the drinking water and wastewater sides is to prevent upset.
- Julie Labonte: I do not like the separate endorsement. It is an administrative nightmare. If we have six processes at our plant, and then someone has to keep track of what endorsement every operator has, that will be very difficult to track. In a bigger facility, the operators might need six endorsements.
  - Steve Garner: We need to attract staff, too. Some of these small disadvantaged water treatment facilities have only one process, and it is difficult enough to find someone trained on that one technology.
    - Jennifer West: We will bring this issue up at WateReuse California. How would something like this work into your overall timeline?
    - Randy Barnard: The program will be developed outside of the regulatory framework.
    - Frances Spivy-Weber: The handful of agencies that do this now (e.g., OCWD, Santa Clara Valley Water District) should weigh in, because they know what they are doing. You should document in a white paper format what the considerations are. The State has the two certification programs

now. Does the California Water Environment Association (CWEA) do this as part of the wastewater training?

- Jeff Mosher: I would like to nominate Julie Labonte to join the Ad Hoc Committee on Operator Training and Certification.

**ACTION ITEM: Set up another meeting of the Ad Hoc Committee on Operator Training and Certification.**

**LUNCH BREAK 12:00-12:30**

## **7. DPR DEMONSTRATION STUDY PRESENTATION**

Presentation by Brian Pecson, Trussell Technologies

- Why Water Reuse?
  - The water sources in California are getting squeezed.
  - Population is increasing.
  - We are subject to drought and climate change.
- We are already doing de facto potable reuse.
  - A community is pulling water from a river downstream from a wastewater treatment plant.
  - In the past, these de facto contributions were small, but as cities grow, the amount of wastewater increases.
- Moving on to planned potable reuse and IPR.
  - There are additional elements included to protect public health.
    - Source control.
    - Wastewater treatment.
    - Advanced water treatment.
  - We can introduce into the water source by aquifer injection/spreading or by surface water augmentation.
  - The water is eventually extracted and treated to be used for drinking water.
- In DPR, the existing surface water supply is treated and then introduced directly into the distribution center (flange to flange).
- Seven potable reuse projects exist in California.
- IPR projects include groundwater recharge through surface spreading through an environmental buffer, where it receives soil aquifer treatment.
  - Biological treatment, degradation, and chemical transformation in the soil.
  - Less treatment is required at the treatment plant.
  - The Sanitation Districts of Los Angeles County's Montebello Forebay has been in operation since 1962.

- They spread 40 million gallons per day (MGD) over 50 acres.
  - Have performed extensive testing and epidemiological studies.
- IPR projects also accomplish groundwater recharge through subsurface injection.
  - Bypass the benefits of soil aquifer treatment.
  - Treatment train at the plant includes:
    - Biological treatment.
    - Membrane filtration.
    - Advanced treatment processes.
      - This technique is used by OCWD. They use injection to create a seawater intrusion barrier.
- By the end of 2016, there will be regulations for surface water augmentation and the feasibility of DPR.
- Trends from present experience include: Tertiary Treatment, Long Retention Times.
  - Additional treatment and monitoring can reduce the amount of time the water must be retained.
  - Our goal is to decrease the retention time to only hours (DPR).
- DDW needs help to determine the feasibility of implementing DPR projects throughout California. Treatment, monitoring, public perception, etc.
- WRRF 14-12 Project on “Demonstrating Redundancy and Monitoring to Achieve Reliable Potable Reuse.” The Project Goal is to leverage industry experience and recent DPR research to demonstrate that we can safely implement potable reuse without an environmental buffer.
- The industry has a lot of knowledge; we can produce safe water and implement multiple barriers. We want to incorporate our experience with the latest research and help the State move safely into DPR.
- What can we learn from groundwater?
  - When we began spreading projects, we put much of the burden on the environmental buffer.
  - We moved toward injection and included more treatment and monitoring to reach safe potable water in a shorter time period.
  - To move toward a very short retention time (DPR), we must further increase treatment and monitoring requirements.
- Schematic of a Demonstration Facility: [Pretreatment: Ozone System, BAC], Membrane Filtration, RO, UV, Conventional Water Treatment Plant, Distribution System.
- The treatment is intense because we are eliminating the dilution of water.
  - DDW is worried about chemicals.
  - If a taste and odor compound makes it through the treatment train (like acetone), then we have a problem.

- What unknowns could be sneaking through the treatment train?
- Ozone and BAC can provide the barrier we need for chemicals and pathogens.
- Toxic chemicals in wastewater are chronic threats.
  - The levels are so low that you would need to experience of lifetime of exposure to experience a health threat.
- Pathogens are acute contaminants.
  - If you ingest them once, you may become sick.
  - It is not acceptable to allow pathogens through.
  - This demonstration project includes enough barriers to prevent pathogens from migrating into the finished water.
  - The treatment train has multiple barriers and provides protection from chemicals, pathogens, and unknown contaminants.
  - Our goal is to consistently protect public health and to prevent public outcry.
- Conclusions: DPR is safe; multiple solutions must be pursued; need to ensure public health protection; and public acceptance is critical.

The Advisory Committee members asked several technical questions regarding the treatment trains at the demonstration facility, including the size of the ozone dose, the ammonia level, content of total organic carbon after AOP treatment, and NDMA concentration of water on leaving the membrane.

## **12:45-1:15 TOUR OF SAN DIEGO'S DEMONSTRATION PROJECT FACILITY**

### **8. UPDATE AND REVIEW OF DPR EXPERT PANEL ACTIVITIES**

**Presented by Jeff Mosher of NWRI**

The charge of the DPR Expert Panel is to:

- 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.
  - DPR Timeline: Advisory Committee meetings are staggered with Expert Panel meetings.
  - Meeting #3 of the Expert Panel was December 11-12, 2014, at San Diego North City Reclamation Plant.
  - The discussion focused on surface water augmentation criteria and DPR.
  - Meeting #2 deliverable was a report on surface water augmentation, which was finalized and delivered to DDW yesterday.
  - After DDW reviews the report, we will post it online.

- Today, we provided a table listing responses to your questions from the last meeting. I will go through those now.
  - a) Bioanalytical tool for chemicals: the Panel will address at a future meeting dedicated to water quality and monitoring.
  - b) Public outreach on DPR: This is not part of what the Panel is reviewing. It should be directed to WRRF Project 13-02.
  - c) Interest by EPA and State Regulators (Q12): The Panel agreed that these perspectives are important. If we have a workshop, then we will invite EPA personnel.
  - d) Public Health Surveillance (Q13): The Panel suggested that a study on public health surveillance and WateReuse has approved a project in this area. You could design a program to track outbreaks of pathogens (e.g., Giardia) to identify problems in a community.
  - e) Response for DPR treatment lapses/failures (Q14): This issue will be addressed.
  - f) Timeline for current research (Q15): Agreed. What is the current research? When will the information become available?
  - g) Summary of Expert Panel questions (Q16): The Panel will develop a list.
  - h) Presentations by Principal Investigators (Q17): Agreed.

The next meeting of the Expert Panel will take place March 11-12, 2015, in Richmond, California, at the San Francisco Estuary Institute. Meeting topics will include:

- Review draft DDW Surface Water Augmentation Criteria.
- Update on Advisory Committee Activities.
- Update on DPR Research Activities.
- Review WateReuse Association DPR Framework project.
  - This is meant to be a national reference document.
  - Several Expert Panel members are also working on this report.
  - We may have George Tchobanoglous come to an Advisory Committee meeting to talk about this report; it is due in May or June 2015.

Garry Brown asked the Advisory Committee for comments to relay to the Expert Panel.

- Andria Ventura: Will we give the Terminology table to the Expert Panel?
  - Jeff Mosher: No, but we will let them know you are working on it.

Garry Brown invited public comments, including public comments on matters not on the agenda.

- Maria Mariscal of the San Diego County Water Authority: We are looking at IPR with different agencies and starting public outreach on potable reuse. We will present the results to the Advisory Committee.
- Marsi Steirer asked what portion of the March 11-12 meeting will be open to the public.
  - Jeff Mosher: The afternoon of March 11 and morning of March 12.

**ACTION ITEM: Send draft agenda for March 11-12 meeting of the Expert Panel to Marsi Steirer. She will attend the meeting on behalf of the Advisory Committee.**

- Mark Bartson: We want to brief Mariposa County Health Department and get a new representative from that group. Charles Mosher has not been able to attend the meetings. We are going to make an effort to do more outreach to them.
  - Garry Brown: Do you think we will have a representative by our next meeting?
    - Mark Bartson: I would say yes. They are having a meeting in March and we will attend that. This is really important to us.
- Frances Spivy-Weber: When will there be a session on water quality?
  - Jeff Mosher: We had a meeting in March and a lot has to get done. We need to fit in another meeting of the Expert Panel in May or June, to finish up surface water augmentation. Early fall would be the earliest, assuming that surface water augmentation will be wrapped up and they start on DPR.
  - Frances Spivy-Weber: It seems there will be water quality questions related to surface water augmentation too. So it might not just be a DPR issue. Tuesday we had a meeting with folks from SCCWRP, NWRI, and WateReuse. It was interesting how people were interacting. SCCWRP is focused on environmental issues and is using biological testing and monitoring, the WateReuse people are doing a range of things. When we have the water quality meeting, it would be good to have all these pieces.
    - Mark Bartson: There is a workshop summary posted online. Someone can send it out.

**ACTION ITEM: NWRI will send out a copy of the workshop summary out to the Advisory Committee (available on the SCCWRP website).**

- Andria Ventura: How are we going to balance the need for the water source and the environmental impacts? We might want to pull that out of the report.
- Mark Bartson: What did Jeff Mosher learn in Australia last week?
  - Jeff Mosher: I was at the National Center for Research in Recycled Water, talking about bioassays. These are world-class microbiologists and toxicologists. I said there is a lot we can do with this, but we are looking at a 5-10 year timeline. We are wondering how these tools can be used with DPR. The benefit of bioassays is that you can get information on mixtures of chemicals. EPA has a test that they can run on a mix of “bad actors.” This is useful so that we can find these contaminants in our water supply. They want to develop a pathway for using bioassays and a white paper for regulators. The Australians want to continue these collaborations.
  - Mark Bartson: One of our staff, Eric Miguelino, attended as well.
    - Jeff Mosher: His experience on the pesticide program deals with this type of question; it was great to have him there. There were regulators, researchers, and a couple of us from the foundations. I would support using them where they make sense. But their use needs to be meaningful.
  - Mark Bartson: Bioassays have been around for a long time, but for drinking water, this technology is in its infancy.
    - Jeff Mosher: EPA has conducted bioassays on 18,000 chemicals. For many of these chemicals, there are no toxicity standards. EPA wants to get away from

animal testing. ToxCas has invested \$50 million a year to work on these chemicals; that is a lot of money. It is a good role for EPA to play here. Other offices will benefit. They will tie the “bad actors” to human health effects and determine the exposure level that would be a concern.

- Andria Ventura: I also do chemical policy reform. We do not require testing for new chemicals that come on the market. There is going to be a lot of other interested parties who would love to have that data as it becomes available.
- Jeff Mosher: They are asking the chemical manufacturers to pay for some of the testing.

**ACTION ITEM: Jeff Mosher will send a copy of a presentation on this topic to Andria Ventura, with the caveat that it will be a bit cryptic.**

## **9. PUBLIC COMMENTS INCLUDING PUBLIC COMMENTS ON MATTERS NOT ON THE AGENDA**

No additional comments or questions regarding the activities of the Advisory Committee.

## **10. AGENDA ITEMS AND POTENTIAL OPTICS FOR FUTURE MEETINGS OF THE ADVISORY COMMITTEE**

- Garry Brown asked the group for thoughts on future agendas.
- Garry Brown suggested that the group revisit terminology at the next meeting. He also asked Jeff Mosher to provide a presentation on bioassays.

**ACTION ITEM: Jeff Mosher agreed to prepare a presentation on bioassays for the next meeting of the Advisory Committee.**

- Jeff Mosher suggested inviting George Tchobanoglous to speak on DPR.
- Frances Spivy-Weber: The future is not going to look like the past; efficiency is better and less water is coming into homes and businesses. Does that affect the work that we are doing? Do we need to think about this now? If so, when might we grapple with this?
  - Marsi Steirer: We are doing it right now. Every time we update our plans, the wastewater side uses that information to do modeling. As we use less water, there is less wastewater flow, and the characteristics of the water are different.
  - Frances Spivy-Weber: The California energy commission might be interested in this. They find that the fixtures are much more efficient than the house can handle. So they are starting to look at building standards so that you can deal with energy as well as water. Issues such as where you put your water tank can help them to address these problems.

**ACTION ITEM: NWRI will send out a Doodle scheduling request for the next meeting.**

**ACTION ITEM: Send draft agenda for upcoming Expert Panel meeting to the Advisory Committee.**

## **11. FINAL DISCUSSION AND REVIEW**

No additional comments or questions regarding the activities of the Advisory Committee.

## **12. ADJOURN**

The meeting was adjourned at 2:45 pm.

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*Meeting Minutes prepared by Suzanne Faubl, National Water Research Institute, (714) 378-3278 or email [sfaubl@nwri-usa.org](mailto:sfaubl@nwri-usa.org).*