MEETING OF THE BOARD OF DIRECTORS OF THE
MUNICIPAL WATER DISTRICT OF ORANGE COUNTY
Jointly with the
PLANNING & OPERATIONS COMMITTEE
February 3, 2020, 8:30 a.m.
Conference Room 101

P&O Committee:
Director McVicker, Chair
Director Dick
Director Yoo Schneider

Staff: R. Hunter, K. Seckel, J. Berg, H. De La Torre, K. Davanaugh, D. Harrison

Ex Officio Member: Director Tamaribuchi

MWDOC Committee meetings are noticed and held as joint meetings of the Committee and the entire Board of Directors and all members of the Board of Directors may attend and participate in the discussion. Each Committee has designated Committee members, and other members of the Board are designated alternate committee members. If less than a quorum of the full Board is in attendance, the Board meeting will be adjourned for lack of a quorum and the meeting will proceed as a meeting of the Committee with those Committee members and alternate members in attendance acting as the Committee.

PUBLIC COMMENTS - Public comments on agenda items and items under the jurisdiction of the Committee should be made at this time.

ITEMS RECEIVED TOO LATE TO BE AGENDIZED - Determine there is a need to take immediate action on item(s) and that the need for action came to the attention of the District subsequent to the posting of the Agenda. (Requires a unanimous vote of the Committee)

ITEMS DISTRIBUTED TO THE BOARD LESS THAN 72 HOURS PRIOR TO MEETING -- Pursuant to Government Code section 54957.5, non-exempt public records that relate to open session agenda items and are distributed to a majority of the Board less than seventy-two (72) hours prior to the meeting will be available for public inspection in the lobby of the District's business office located at 18700 Ward Street, Fountain Valley, California 92708, during regular business hours. When practical, these public records will also be made available on the District's Internet Web site, accessible at http://www.mwdoc.com.

ACTION ITEMS

1. FY 2019-20 WATER USE EFFICIENCY RESEARCH ACTIVITIES

DISCUSSION ITEM

2. REGIONAL SYSTEM PLANNING & LOCAL WATER SUPPLY INTEGRATION UPDATE

INFORMATION ITEMS (The following items are for informational purposes only – background information is included in the packet. Discussion is not necessary unless a Director requests.)

3. STATUS REPORTS
   a. Ongoing MWDOC Reliability and Engineering/Planning Projects
   b. WEROC
   c. Water Use Efficiency Projects

4. REVIEW OF ISSUES RELATED TO CONSTRUCTION PROGRAMS, WATER USE EFFICIENCY, FACILITY AND EQUIPMENT MAINTENANCE, WATER STORAGE, WATER QUALITY, CONJUNCTIVE USE PROGRAMS, EDUCATION, DISTRICT FACILITIES, and MEMBER-AGENCY RELATIONS

ADJOURNMENT

NOTE: At the discretion of the Committee, all items appearing on this agenda, whether or not expressly listed for action, may be deliberated, and may be subject to action by the Committee. On those items designated for Board action, the Committee reviews the items and makes a recommendation for final action to the full Board of Directors; final action will be taken by the Board of Directors. Agendas for Committee and Board meetings may be obtained from the District Secretary. Members of the public are advised that the Board consideration process includes consideration of each agenda item by one or more Committees indicated on the Board Action Sheet. Attendance at Committee meetings and the Board meeting considering an item consequently is advised.

Accommodations for the Disabled. Any person may make a request for a disability-related modification or accommodation needed for that person to be able to participate in the public meeting by telephoning Maribeth Goldsby, District Secretary, at (714) 963-3058, or writing to Municipal Water District of Orange County at P.O. Box 20895, Fountain Valley, CA 92728. Requests must specify the nature of the disability and the type of accommodation requested. A telephone number or other contact information should be included so that District staff may discuss appropriate arrangements. Persons requesting a disability-related accommodation should make the request with adequate time before the meeting for the District to provide the requested accommodation.

Item No. 1

ACTION ITEM
February 19, 2020

TO: Board of Directors

FROM: **Planning & Operations Committee**
(Directors McVicker, Yoo Schneider, Dick)

Robert Hunter, General Manager Staff Contact: J. Berg

SUBJECT: **FY 2019-20 Water Use Efficiency Research Activities**

STAFF RECOMMENDATION

Staff recommends the Board of Directors approve implementation of research projects as detailed below:

1. A contribution of $20,000 for participation in the Alliance for Water Efficiency Cooling Tower Study,
2. A contribution of $17,500 for participation in the University of California Landscape Plant Irrigation Trials, and
3. Implementation of a Residential End Uses of Water Study including:
    a. Authorize use of MWDOC-budgeted funds totaling $128,250 and Metropolitan funds totaling $79,000 for a total of $207,250
    b. Authorize a Professional Services Contract with Flume in the amount of $207,250.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY

Staff has identified the following three research projects for Board consideration this fiscal year:

- Alliance for Water Efficiency Cooling Tower Study
- University of California Landscape Plant Irrigation Trials
- Orange County Residential End Uses of Water Study

Budgeted (Y/N): Yes	Budgeted amount: $215,000	Core _X_	Choice __
Action item amount: $165,750	Line item: 35-7040 = $125,750 & 21-7010 = $40,000		
Fiscal Impact (explain if unbudgeted): There is no unplanned fiscal impact; proposed funding is budgeted.			

All three research projects are designed to assist agencies in complying with new water use efficiency standards included in Senate Bills 555 and 606, and Assembly Bill 1668.

The total cost for all three research activities is $752,750. Staff proposes to use a combination of budgeted research funds ($75,000), budgeted engineering funds ($40,000) and budgeted, but repurposed, landscape area measurement funds ($50,750) for a total MWDOC contribution of $165,750 or 22 percent for MWDOC's contribution to the three research projects. Repurposed landscape area measurement funding is available because the regional aerial imagery effort lead by the Southern California Area of Governments is nearing final development. MWDOC funds will leverage an additional $587,000 or 78 percent from other funding sources such as Metropolitan, and water suppliers from throughout the state.

DETAILED REPORT

Descriptions of the three research projects are as follows:

Cooling Tower Technology Study

The Alliance for Water Efficiency (AWE) is conducting research and developing important tools and resources to assist water agencies with tapping into the huge water savings potential through improved cooling tower management. Many AWE member utilities, including MWDOC, offer water use efficiency incentive and education programs for cooling systems; however, participation has been underwhelming. Knowing that cooling systems offer great opportunity for water savings, AWE has taken aim to 1) identify the barriers to higher customer participation, and 2) create resources to better drive program participation and market response.

Specifically, AWE has contracted with Pacific Northwest National Laboratory (PNNL) to conduct a national study to understand the demand and potential savings in utility service areas and develop best-in-class utility programs that will drive activity.

This first-of-a-kind study is complicated, and the scope requires PNNL to, among other deliverables, create an estimating model comprised of a yet undetermined list of variables. The building's original design, local water quality, local climate, and the owner's commitment to sustainability and efficiency are just some of the variables that need to be considered and weighted within the model. Deliverables for this study are invaluable in our efforts to drive water efficiency in the commercial market. The final deliverables will include:

1. A best practices guide and Excel-based modeling tool that will help water utility staff build cooling tower inventory for their service areas. This is the foundation of a successful utility cooling tower program and will give insight into the number of cooling towers, locations, cooling loads, water use, and potential for savings.
2. Evaluation and documentation of commercially available alternative cooling technologies to offset or replace traditional cooling towers and their respective water savings potential.
3. Practical operations and maintenance guides for existing cooling towers.

4. Outreach materials to educate facility engineers and operations staff on the efficient operation of their cooling towers.
5. Best options and strategies for utility incentive programs.

In the end, water utilities will be able to model cooling tower water use in their service area, estimate potential savings, promote best practices, introduce alternative technologies and offer best-in-class programs. This will result in significant water savings from a largely untapped savings opportunity.

The total project cost is $528,000. To date, a total of $435,000 has been committed by the funding partners listed below. AWE is seeking to raise the final $93,000 to complete this very important research. Funders providing $10,000 or more gain a seat on the Project Advisory Committee. This provides the opportunity to be part of the process, and gain early access to resources.

There are currently 16 funders/PAC members:

1. Metropolitan Water District of Southern California, California, United States
2. Southern Nevada Water Authority, Nevada, United States
3. San Antonio Water System, Texas, United States
4. California Water Service, California, United States
5. City of Guelph, Ontario, Canada
6. Denver Water, Colorado, United States
7. Los Angeles Department of Water and Power, California, United States
8. Austin Water, Texas, United States
9. City of Dallas, Texas, United States
10. City of Tucson, Arizona, United States
11. City of Santa Fe, New Mexico, United States
12. Santa Clara Valley Water District, California, United States
13. City of Calgary, Alberta, Canada
14. East Bay Municipal Utility District, California, United States
15. SCV Water, California, United States
16. Western Municipal Water District, California, United States

Staff is proposing a $10,000 contribution to fund this research and an additional $10,000 to have AWE's consultant model water savings potential for Orange County for a total contribution of $20,000.

University of California Landscape Plant Irrigation Trials

UC Davis, UC Irvine, and UC Riverside horticulturists are evaluating ornamental landscape plant water needs with the potential to be good performers in low-water use gardens. In the first years of the trials, plants evaluated were from the UC Davis Arboretum All-Stars lists. To date, 157 plant trials have been completed, and 37 are under way. Today the plants are exciting new cultivars provided by growers and breeders who want to evaluate their new plant varieties for low-water use in urban landscapes throughout California. The results of these trials are providing growers and retailers with the information they need to successfully distribute and market these plants to the public. The results are also providing

water agencies and consumers the information they need to choose proven water efficient plant species.

Trials are done separately for sun and shade loving plant species. During the first year of each trial, plants receive a regular watering regime to establish deep, healthy roots. The second year of each trial, plants are irrigated with one of three different irrigation frequencies that correspond to the **Water Use Classification of Landscape Species** (WUCOLS IV) categories of Low, Moderate, and High. These categories are based on percentages of reference evapotranspiration with local weather station data used to estimate these percentages. Height and width are measured monthly to calculate a growth index for each species at each irrigation level. Overall appearance, flowering time and duration, and pest or disease problems are rated monthly to provide a comprehensive assessment of performance, allowing irrigation recommendations to be made for these plants. The results of the Trials will be incorporated into WUCOLS, the water industry's leading reference document to gauge ornamental plant water needs.

Organizations funding the research are given the opportunity to choose the plant species to be included in the trials. To that end, staff evaluated the most common species purchased by participants in MWDOC's Turf Removal Rebate Program. These include Kangaroo Paw, New Zealand Flax, Agave, Coral Aloe, Date Palms, Yankee Point, Dymondia, California Fescue, Jade, Aeonium, and Elephant Bush.

Financial contributors to this research have included: nurseries, US Department of Agriculture, the California Association of Nurserymen Endowment for Research and Scholarship, the Elvenia J. Slosson Endowment for Ornamental Horticulture, and the Saratoga Horticultural Research Endowment. UC researchers currently have two USDA grant applications pending. Should these grants be approved, many more plant species will be added to the next cycle of research, greatly expanding the information available to water agencies and consumers.

The cost to include one plant species in a trial is $1,750. Staff proposes MWDOC fund ten plant species each year for a total of five years. The total cost for the first year is $17,500. Staff will budget additional funding each year for the next four years.

OC Residential End Uses of Water Study

Staff is proposing to implement an Orange County Residential End Uses of Water Study (End Use Study) for several reasons:

1. To improve our understanding of current levels of water use at the residential level;
2. Gauge Orange County's compliance with the proposed indoor and outdoor water use standards and better inform the State's current water use standard setting processes;
3. Incorporate, for the first time, localized End Use Study results into MWDOC's long-term water demand forecasting efforts; and
4. Use Orange County's End Use Study results to inform Metropolitan's Integrated Resources Planning process with actual single-family end use consumption and plumbing fixture saturation data from OC.

Background

Recent water use efficiency legislation: Senate Bills 606 and 555 and Assembly Bill 1668 require the State Water Resources Control Board (Water Board), in coordination with the Department of Water Resources (DWR), to adopt long-term standards for efficient water use (for indoor residential, outdoor landscape and distribution system water loss) on or before June 30, 2022. The bill, until January 1, 2025, established 55 gallons per capita per day as the initial standard for indoor residential water use. The bill also calls for DWR and the Water Board to conduct necessary studies and investigations, and authorizes DWR and the Water Board to jointly recommend to the Legislature a revised standard for indoor residential water use no later than October 1, 2021. Unless DWR and the Water Board recommend a higher standard, beginning January 1, 2025, the indoor standard will be the greater of 52.5 gallons per capita per day and beginning January 1, 2030, the indoor standard will be 50 gallons per capita per day. Further, DWR in coordination with the Water Board are required to conduct necessary studies and investigations to develop recommendations to the Water Board by October 1 for a residential outdoor water use standard that incorporates principles of the Model Water Efficient Landscape Ordinance, 2021.

DWR and the Water Board are in the process of beginning their studies and investigations to evaluate what the future indoor and outdoor residential water use standards will be if different than described above. MWDOC intends to use this study to better inform the state's current indoor and outdoor residential water use standard setting process and gauge Orange County's compliance with the proposed standards.

Incorporate, for the first time, localized End Use Study results into MWDOC's long-term demand forecasting efforts: The Board has recently raised questions about the accuracy of using historical demand projections as a basis of future demand forecasting. The question relates to the impact of years of sustained and successful Water Use Efficiency efforts in Orange County and how the impact of those efforts relate to future water demand projections. The Board has asked that demand projections be reviewed and for staff to evaluate other methods to evaluate future demand trends. The Residential End Uses of Water Study is specifically targeted at reevaluating in-door residential demand capturing the impact of WUE efforts to better inform future demand forecasting analysis. The end-use study will also quantify existing outdoor water usage. Other methods are also under review with the Orange County Sanitation District, to help develop a more complete picture of indoor water demands.

Incorporate Orange County End Use Study results into Metropolitan's Integrated Resources Planning process: Results of the Residential End Uses of Water Study will also be used to inform and assist with MWDOC discussions concerning Metropolitan's Integrated Resources Planning.

Study Framework

Staff is proposing to conduct an Orange County based investigation of residential water use in partnership with member agencies. The End Use Study will utilize the "Flume" water sensor, which attaches to a typical residential positive displacement water meter. The Flume devices will collect water consumption flow data in 5-second intervals during a 30-day data collection period and will store the data in the cloud. This data will establish a baseline for indoor water use since indoor water use does not change at different times of

year. This data will be coupled with annual consumption data to obtain a clear separation of indoor and outdoor water use throughout the year.

Using the Flume device, the study will be able to disaggregate residential water use into indoor and outdoor volumes. In addition, the Flume device will also allow for disaggregation of indoor residential water use by type of use such as toilet, faucet, shower, clothes washer, leaks, bath, dishwasher, and other.

A total of 200 Flume units will be installed, half in north county and half in south county, allowing for end use data to be incorporated into both demand forecasts. A statistically valid sample of single-family homes within participating member agency service areas will be targeted for Flume installation.

Staff presented the End Use Study concept to the Member Agencies at their January 23 Managers Meeting. While a few agencies raised concerns about encroachment on the metering process and potential use of the results in a way that may be perceived to be harmful to agencies, others expressed interest in participating in the study. In the end, staff agreed to send a description of the study to the agencies for their consideration. Staff is comfortable moving this study forward and obtaining necessary participation by up to six agencies. Should additional agencies express an interest to participate or if participating agencies desire additional Flume installations within their service area to achieve a statistically valid sample size, MWDOC will welcome higher levels of participation but will depend on available funding and may require agencies to contribute financially.

Staff is proposing to contract with Flume as the primary contractor. Flume will provide the Flume water sensors, scheduling, installation and activation, phone support, and data formatting, transformation, and transmission to AutoFlow. Flume will utilize three subcontractors:

- Auto Flow, an Australian based company, who will provide the disaggregation of water use using algorithms and routines to disaggregate raw usage data for each home;
- Western Policy Research who will take the lead on statistical sampling of household participation in the study; and
- Water Demand Management who will provide project coordination, data analysis and report writing.

Per the Administrative Code, this is considered a sole source contract. As such, staff provides the following justification:

- Specialized expertise and experience from Peter Mayer at Water Demand Management. Peter was the lead researcher who performed two Water Research Foundation end use studies in 1999 and 2016;
- The Flume technology is superior to other technologies from both cost, data logging ability, accuracy and cost; and
- The need to complete the research as quickly as possible in order to apply results to Metropolitan's Integrated Resources Planning process.

The total cost for the End Use Study is $207,250. Staff proposed to fund this study using a combination of budgeted funding from the Water Use Efficiency ($88,250) and Engineering Department ($40,000) and a contribution from the Metropolitan Water District Conservation Credits Program ($79,000; final approval from Metropolitan is pending).

Summary

In summary, these research efforts are designed to assist agencies in complying with new water use efficiency standards contained in Senate Bills 555 and 606, and Assembly Bill 1668. This research will provide quality data to better inform indoor and outdoor efficiency standards, gauge member agency compliance with proposed standards, and improve long-term demand forecasting for MWDOC and Metropolitan.

As shown in Table 1, the total cost for all three research activities is $752,750. Staff proposes to use a combination of budgeted research funds ($75,000), budgeted engineering funds ($40,000) and budgeted, but repurposed, landscape area measurement funds ($50,750) for a total MWDOC contribution of $165,750 or 22 percent for MWDOC's contribution to the three research projects. Repurposed landscape area measurement funding is available because the regional aerial imagery effort led by the Southern California Area of Governments is nearing final development. MWDOC funds will leverage an additional $587,000 or 78 percent from other funding sources such as Metropolitan, and water suppliers from throughout the state.

Table 1
Summary of Research Projects

Research Project	MWDOC Contribution	Metropolitan or Other Contributions	Total:
Cooling Tower Study	$20,000	Other = $508,000	$528,000
University of California Landscape Plant Irrigation Trials	$17,500	Varies	$17,500
OC Residential End Uses of Water Study	$128,250	Metropolitan = $79,000	$207,250
Total:	**$165,750**	**$587,000**	**$752,750**

BOARD OPTIONS

Option #1
Staff recommends the Board of Directors approve implementation of research projects as detailed below:

1. A contribution of $20,000 for participation in the Alliance for Water Efficiency Cooling Tower Study,
2. A contribution of $17,500 for participation in the University of California Landscape Plant Irrigation Trials, and
3. Implementation of a Residential End Uses of Water Study including:
    a. Authorize use of MWDOC-budgeted funds totaling $128,250 and Metropolitan funds totaling $79,000 for a total of $207,250
    b. Authorize a Professional Services Contract with Flume in the amount of $207,250.

Fiscal Impact: The staff recommendation utilizes budgeted MWDOC funds ($165,750) and leverages considerable grant and outside funding ($587,000) for the proposed research projects.
Business Analysis: These research efforts are designed to assist agencies in comply with new water use efficiency standards contained in Senate Bills 555 and 606, and Assembly Bill 1668. This research will provide quality data to better inform indoor and outdoor efficiency standards, gauge member agency compliance with proposed standards, and improve long-term demand forecasting for MWDOC and Metropolitan.

Option #2

- The Board consider authorization of proposed research projects individually.

Fiscal Impact: There would be reduced budgeted expenditures and reduced leveraging of grant and outside funding.
Business Analysis: There would be reduced research to assist member agencies in complying with water use efficiency standards and data to inform MWDOC and Metropolitan demand forecasting.

Option #3

- The Board declines authorization of all proposed research projects.

Fiscal Impact: No budgeted expenditures and no leveraging of grant and outside funding.
Business Analysis: There would be no research to assist member agencies to comply with water use efficiency standards and no data to inform MWDOC and Metropolitan demand forecasting.

STAFF RECOMMENDATION

Option #1

DISCUSSION ITEM
February 3, 2020

TO: **Planning & Operations Committee**
(Directors McVicker, Yoo Schneider, Dick)

FROM: **Robert Hunter, General Manager**
Staff Contact: K. Seckel
C. Busslinger

SUBJECT: **Regional System Planning & Local Water Supply Integration Update**

STAFF RECOMMENDATION

Staff recommends the Planning & Operations Committee receive and file the report.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY

Multiple water supply projects are currently under consideration in Orange County which include desalinated water, percolation of treated recycled water, and capture of stormwater into groundwater basins for subsequent pumping and treatment. Without proper planning, the possible integration of multiple treated water sources into the OC water distribution system at various points, or simply the reduction in demands, could result in unintended water quality consequences. The attached presentation provides an update on the progress of investigation efforts for development of a Hydraulic Model of the regional distribution pipeline system in Orange County.

Budgeted (Y/N): Y	Budgeted amount:	Core X	Choice __
Action item amount: 0	Line item:		
Fiscal Impact (explain if unbudgeted):			

DETAILED REPORT

Staff and consultants have been working on identification and understanding of key issues, and development of strategic pathways toward solutions, for the successful integration of multiple local water supply sources into the OC distribution system; prior to the time these projects are implemented.

Background

As part of these efforts, on May 16, 2018 the Board authorized the General Manager to enter into contracts with water quality consultants Black & Veatch and Hazen & Sawyer for their participation in a scoping workshop on local water supply integration issues.

On August 31, 2018 MWDOC held a Water System Operations and Integration Workshop which was attended by both consulting firms, technical staff from multiple OC water agencies, MET technical staff and other water quality/water operations experts. The collaborative discussion identified a number of potential issues that could arise within the OC water distribution system resulting from the introduction of multiple sources of water over time.

On October 18, 2018 MWDOC staff met with MET Facility Planning staff to understand the various uses MET has for their hydraulic model and to understand the benefits of such a model. MET shared their background, some of their experiences, and lessons learned with MWDOC staff.

On November 21, 2018 the Board approved development of two White Papers to review and provide recommendations concerning potential water quality issues identified in the August 31, 2018 workshop. Ed Means Consulting was brought in to help guide the water quality review effort.

The White Papers included 13 recommendations:

SCOPE	EXPECTED OUTCOME
1. Develop & Utilize Base Hydraulic Model	• Determine flow routing and seasonal variations • Identify system pressures • Predict water age • Identify areas experiencing flow reversal
2. Examine Groundwater Pump Back Well Siting	• Identify preferred locations for new wells
3. Evaluate Operational Scenario Study	• Define operation of proposed facilities Identify facilities needed to manage flows, pressures, system control. Determine impact on operation of existing facilities (i.e. Diemer) Determine impact on Member Agency operations Inform detailed hydraulic modeling analyses
4. Develop Conceptual Design Report	• Define new facilities needed for supply integration Identify modification to existing facilities needed to accommodate new supplies, proposed operations,

	management of water quality • Define cost of facilities • Provide basis of final design
5. Conduct Bench Scale Testing	• Determine disinfection residual decay rates to inform modeling evaluation, determination of disinfection management facility needs.
6. Hydraulic Modeling Based Analyses would include:	
6A. Water Age	• Predict locations of concern for disinfection residual decay • Locate disinfection management facilities • Assess concentrations of other constituents
6B. Reverse Flow	• Identify locations expected to experience reverse flow • Develop strategy to address concerns for areas expected to experience reverse flow
6C. Piping/Water Interaction	• Predict locations in OC where new water supplies will interact with pipe materials of concern
6D. Assess Impacts on wastewater and water recycling facilities	• Predict locations in sewersheds that will be supplied with new water supplies • Determine if change in constituent loading from new water supply has adverse effect on facility operation and regulatory compliance
6E.Agricultural/ Horticultural Impacts	• Predict locations in OC where new water supplies would impact agriculture/horticulture • Identify strategies to mitigate areas of concern
7. Preparation of Engineering Reports	• Necessary operating permit DDW
8. Bench and Pilot Testing (pipe loops)	• Identification of Conditions to minimize corrosion outcomes
9. Aesthetics Testing	• Conduct consumer taste tests with desalinated water vs. blends

Hydraulic & Water Quality Model Investigation

On April 17, 2019 the Board authorized the General Manager to enter into a professional services agreement with Black & Veatch Corporation to investigate the feasibility of regional distribution hydraulic and water quality model and provide recommendations for development of such a model for the pipeline distribution system in Orange County.

The investigation includes:

1. Review existing available OC distribution system information and ranges of future supply and demand flow scenarios from MET/MWDOC; then to identify and document gaps necessary for development of the hydraulic model.

2. Identify stakeholder hydraulic modeling needs and MET requirements to successfully model the integration of “other sources of water” from local water projects into the OC distribution system while maintaining high quality water. The Consultant will assist with prioritizing the identified hydraulic and water quality needs.
3. Develop a software specification that incorporates the identified hydraulic and water quality modeling needs into model requirements.
4. Conduct a software review and identify software products that match the software specification.
5. Prioritize software products based upon model requirements and recommend a ‘best fit’ for MWDOC’s future uses.
6. Define scopes of work and associated cost estimates for purchasing and implementing the modeling software with a recommended implementation plan and alternatives. The plan alternatives are then to be documented in an OC Hydraulic Model Investigation Report.

South Orange County Workshop

On November 6, 2019 MWDOC held a Regional System Planning & Local Water Supply Integration Workshop with South Orange County member agencies. The workshop discussed a variety of issues including:

- Extension/Expansion of South Orange County Emergency Service Program
- Additional Options for Emergency Water for South OC
- Expert Panel Discussion on potential water quality impacts from the integration of various source waters
- Solicited feedback from member agencies on hydraulic & water quality model options

Based upon the feedback from SOC member agencies, some efforts were generally believed to make sense moving forward with, and others were deemed premature or very project specific and might be handled at a future time when more information is available; and possibly at the cost of the project proponent. Takeaways from the hydraulic modeling discussion included:

1. Development of a model was generally seen as valuable.
2. The approach to modeling should focus on South County needs since the Huntington Beach Poseidon Project future is unclear. Modeling efforts should focus on south county issues and potential pump back projects into the EOCF#2. Santa Margarita WD suggested consideration of modeling via mass balance/spreadsheet tools, before embarking on hydraulic/water quality modeling. We are currently evaluating whether it would be better to use a hydraulic model to serve the purpose/need suggested by SMWD (which would require additional effort to implement), vs. expending effort to develop spreadsheet tools which may be lost if that effort does not contribute/integrate to the long term hydraulic model. SCWD also is slated to do an “Integration Study” for Doheny desalination project which could rely on an OC hydraulic model.
3. Key issue regarding EOCF#2 shared ownership – all owners want to be involved in discussions regarding how the pipeline could be used and assurance that if used for certain purposes (e.g. OCWD pump back), that other uses aren’t curtailed without active involvement (IRWD expressed this concern).

North Orange County Workshop

A second workshop is scheduled for February 20, 2020 with the North OC member agencies at the MWDOC Agencies Managers Meeting to provide an update on the work to date.

Investigation Report

The final OC Hydraulic Model Investigation Report is expected by the end of February 2020.

Staff will be returning to the P&O Committee next month with a recommendation to move forward with the purchase of a hydraulic model software package and to develop a hydraulic model for the OC Distribution system.

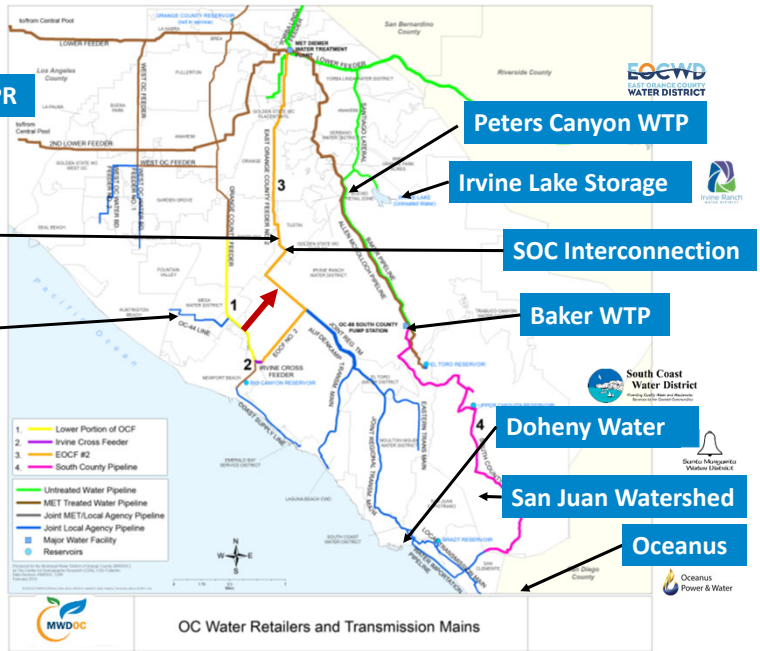
MWDOC P&O Committee Meeting

Regional System Planning & Local Water Supply Integration Update

February 3, 2020

System Reliability Projects Being Discussed

- Carson IPR
- Groundwater
- Poseidon Water
- Peters Canyon WTP
- Irvine Lake Storage
- SOC Interconnection
- Baker WTP
- Doheny Water
- San Juan Watershed
- Oceanus



Recent WQ & Metering Issues

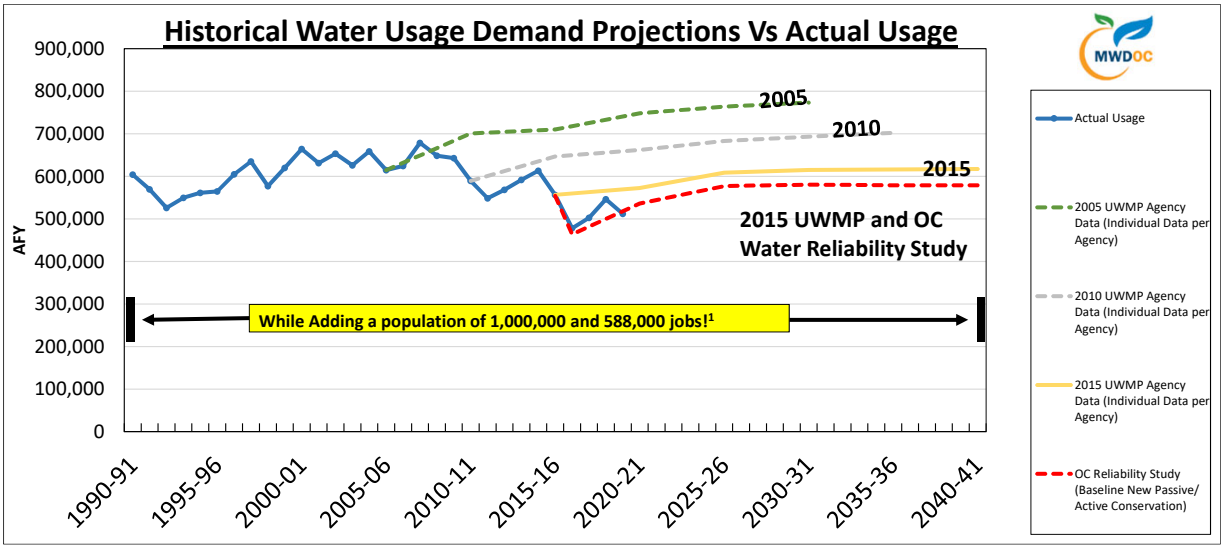
1	Cl_2 Residual/Nitrite/Flushing OC-9, OC-35, OC-53	Aug 2019
2	Low Flow Penalties OC-42	Oct/Nov 2019
3	Low Flow Penalties CM-12	Jan/Feb/Mar/Dec 2019
4	Cl_2 Residual HB OC-44 line	Aug 2019
5	Low Demand CM-10, JTM	Jan/Feb/Dec 2019
6	Water Age/Nitrite/Flushing CM-1, CM-8	Oct 2018

Potential Future WQ Issues

A	AMP PCCP Lining Long Duration Shutdowns
B	Low Flows EOCF #2
C	Reverse Flows/ Water Age JTM
D	Reverse Flows/ Water Age SCP
E	Base Loading Local Projects during Winter Baker, Doheny, Poseidon, San Juan

As we integrate additional local water supply sources into the distribution system, what potential issues may arise and what do we do about them

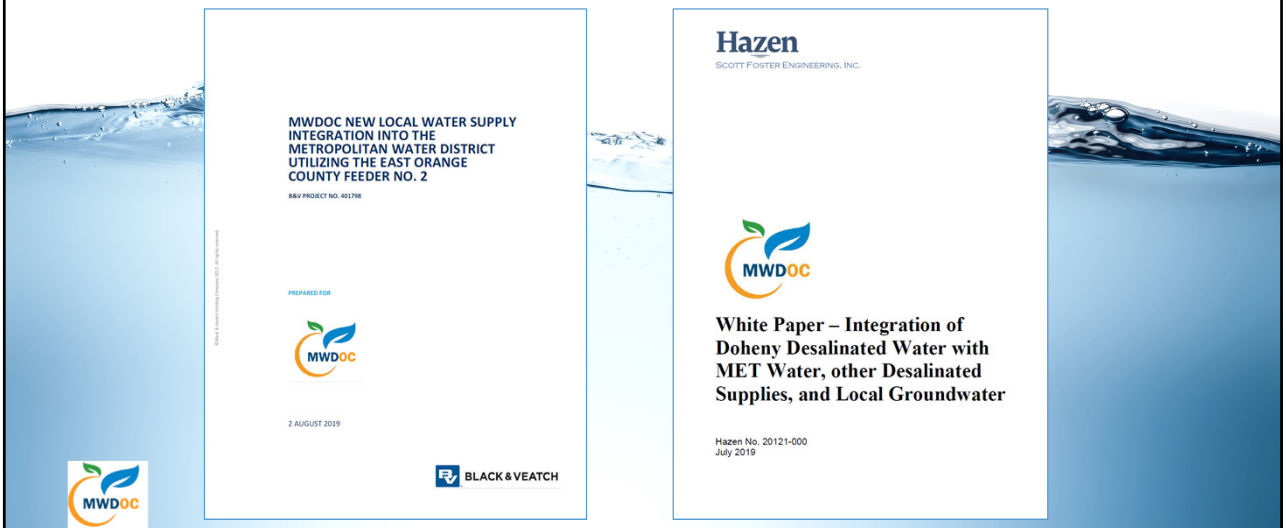
OC Water Demand Forecast



[1] CSUF Center for Demographic Research

Water Quality Experts

Water Quality White Papers



MWDOC

Recap of 13 Recommendations of the White Papers

White Papers Recommendations:	Expected Outcomes
Develop & Utilize Base Hydraulic Model	Determine flow routing and seasonal variations, Identify system pressures, Predict water age, Identify areas experiencing flow reversal
Examine GW Pump Back Well Siting	ID preferred locations for new wells
Evaluate Operational Scenario Study	(Assumes hydraulic model is built). Define proposed facilities ops, ID flows, pressures, system controls; determine impacts on existing facilities & member agency ops; Develop operating strategies to minimize impacts, & identify facility requirements
Develop Conceptual Design Report	Define new facilities needed for integration; Identify modifications to existing facilities to accommodate new supplies, proposed ops, & mgmt. of water quality. Identify impacts & required modifications to Diemer. Define costs.
Conduct Disinfection & DBP Bench Scale Testing	Determine disinfection residual decay rates to inform modeling evaluation, Determine disinfection mgmt. facility needs (boosters, clearwell size, etc.)

MWDOC

Recap of 13 Recommendations of the White Papers

White Papers Recommendations:	Expected Outcomes
Hydraulic Modeling Based Analyses would include:	
Water Age	Predict locations of concern for disinfection residual decay· Locate disinfection mgmt. facilities; Assess concentrations of other constituents
Reverse Flow	Identify locations expected to experience reverse flow· Develop strategy to address concerns for areas expected to experience reverse flow
Piping/Water Interaction	Predict & prioritize locations where new supplies will interact with pipe materials of concern; Assess pipe conditions. Develop R&R program for pipelines & facilities identified through hydraulic model as potentially impacted.
Assess Impacts on Discharge Permits	Predict locations in sewersheds that will be supplied with new water supplies. Determine if change in constituent loading from new supplies has adverse effect on facility ops & regulatory compliance
Ag./Horticultural Impacts	Predict locations where new supplies would impact ag./horticulture. ID mitigation strategies
Preparation of Engineering Reports	Necessary operating permit from DDW
Bench & Pilot Testing (Pipe Loops)	Identification of conditions to minimize corrosion outcomes
Aesthetics Testing	Conduct consumer taste tests with desalinated water versus blends

Hydraulic Model Investigation - Phase 1

BLACK & VEATCH

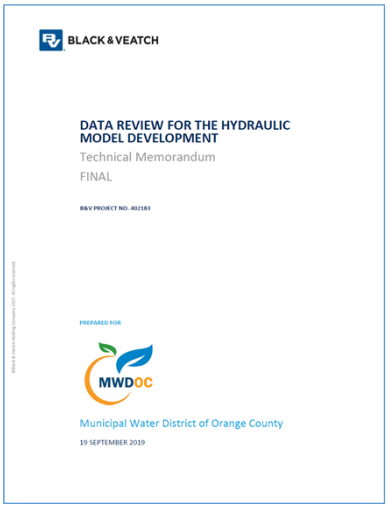
Scope of Work

1. Review existing available information; identify & document gaps necessary for model development.
2. Identify hydraulic modeling needs and requirements to model local water projects into the OC distribution system while maintaining high quality water. Assist with prioritizing identified hydraulic & water quality needs.
3. Develop a software specification and model requirements.
4. Conduct a software review and identify software products that match the software specification.
5. Prioritize software products based upon model requirements and recommend a 'best fit'.
6. Define scopes of work and associated cost estimates for purchasing and implementing the modeling software taking a 'modular' approach for an initial base model with future expansions including a recommended implementation plan.
7. The plan alternatives shall be documented in the OC Hydraulic Model Investigation Report.

MWDOC

Hydraulic Model Investigation - Phase 1

"No significant data gaps are identified in developing the hydraulic model from this data review task."



BLACK & VEATCH

DATA REVIEW FOR THE HYDRAULIC MODEL DEVELOPMENT

Technical Memorandum

FINAL

B&V PROJECT NO. 402183

PREPARED FOR

MWDOC

Municipal Water District of Orange County

19 SEPTEMBER 2019

#	Description	Importance for Hydraulic Model Development			Availability			
		Background	Potential Use	Essential	Requested - Not Provided Yet	Significant Gap	Partially Available	Completely Available
A. DEMAND AND SUPPLY DATA								
A1	Historical supply data from Metropolitan to MWDOC agencies for the past 5 years (including specific turnouts)			x				x
A2	Historical supply data from OCWD to MWDOC agencies for the past 5 years			x				x
A3	Historical other local supply data for the past 5 years			x				x
A4	Future supply portfolios (including the timing of any new supplies)			x				x
A5	Location of all existing and future water supplies		x	x	x			
A6	Existing and future demands for MWDOC member agencies			x				x
B. WATER QUALITY DATA								
B1	Historical imported water quality data for source and supplied water (to member agencies) such as disinfection concentration (chlorine/chloramines)	x			x			
B2	Locations of water quality data collection or sampling points (TCR and other such locations)	x			x			
B3	Water quality reports/studies by member agencies	x			x			
C. HYDRAULIC MODEL DATA								
C1	List of agencies with hydraulic models, software used, and last calibration date	x			x			
C2	List of uses of the hydraulic model by agencies including water quality modeling and new source water integration analysis				x			
C3	Metropolitan's MIKE Urban model			x			x	
D. GIS DATA								
D1	GIS database for all regional pipelines, distribution pipelines, reservoirs, pump stations, treatment plants, pressure control facilities, valve vaults, etc.	x		x			x	
E. OPERATIONAL DATA								
E1	Reports and documents describing/outlining the operations of Metropolitan's/MWDOC regional system under different supply, demand, and seasonal variations	x						x
F. MISCELLANEOUS DATA								
F1	Previous reports/study on the hydraulics or modeling of MWDOC's system	x						x
F2	Previous reports/study on OC's Regional Water Distribution system	x						x

MWDOC P&O Committee Meeting Feb 3, 2020

11

SOC Workshop Recap (Nov 6, 2019)

- Vetted implications of integration of local water supplies and recommended studies
  - White Papers by Black & Veatch and Hazen Sawyer on Water Quality Impacts from operations and blending of various sources
  - Reviewed Potential for a Hydraulic Model for OC/SOC
    - Hydraulic modeling options and data needs
    - Feedback from participants on appropriate hydraulic modeling direction

MWDOC P&O Committee Meeting Feb 3, 2020

12

SOC Workshop Feedback

SOC Workshop Feedback	Green	Yellow	Red
Groundwater Pump Back Well Siting	6	2	
Operational Scenario Study	6	2	
Conceptual Design Report	4	1	1
Disinfection and DBP Bench Scale Testing	1	6	
Water Age	5		
Reverse Flow	8	1	
Piping/Water Interaction		2	5
Assess Impacts on Discharge Permits	2	3	
AG/Horticultural Impacts	1	2	4
Preperation of Engineering Reports		2	
Bench and Pilot Testing (pipe loops)			2
Aesthetics Testing			4

Red - "I oppose it and why"
Yellow - "I have these significant concerns" (with note explaining)"
Green - "Seems reasonable"

Groundwater Pump Back Well Siting	
Green	Already in process
Green	Project specific
Green	
Green	
Green	
Green	
Yellow	Already underway by OCWD & IRWD
Yellow	Already underway

Operational Scenario Study	
Green	Project specific by project proponent
Green	Capacity and time frame level to build water age model
Green	Every project except Poseidon and Peters Canyon - Not ready
Green	
Green	
Green	
Yellow	Too soon. No reason to do at this time
Yellow	HB Poseidon not ready

Conceptual Design Report	
Green	Project specific
Green	GW
Green	
Green	
Yellow	Depends on level of design
Red	Should be done by project proponent

Disinfection and DBP Bench Scale Testing	
Green	
Yellow	After project
Yellow	HB Poseidon not ready
Yellow	Too soon
Yellow	When required by project proponent
Yellow	After project is moving forward
Yellow	Poseidon plant not defined. Too early

SOC Workshop Feedback

Water Age	
Green	South County regional pipes
Green	Regional pipes
Green	
Green	
Green	

Reverse Flow	
Green	Link to water age
Green	With water age analysis
Green	Tie with water age
Green	
Green	
Green	
Green	
Green	
Yellow	Pipeline ownership is an issue to address

Piping/Water Interaction	
Yellow	To be done by local districts?
Yellow	Project specific
Red	Too early and massive effort
Red	Not yet
Red	As defined for project proponents for their needs
Red	Premature
Red	

Assess Impacts on Discharge Permits	
Green	Project specific
Green	Important for desal projects
Yellow	To specific projects . Too early
Yellow	Conceptual/premature for these projects
Yellow	

AG/Horticultural Impacts	
Green	Important to feasability and oceal desal plant
Yellow	Could effect golf courses if blended with other
Yellow	Sounsces(SP) and used for irrigation
Red	How much AG?
Red	Issue for project proposals
Red	
Red	

Preperation of Engineering Reports	
Yellow	Project level
Yellow	Specific projects

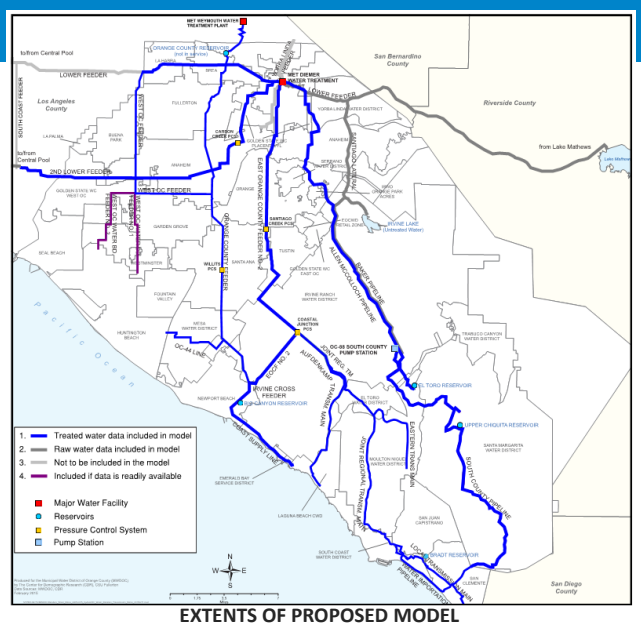
Bench and Pilot Testing (pipe loops)	
Red	Legal issues
Red	Site specific

Aesthetics Testing	
Red	Way premature
Red	Project specific. Too soon. Tie with water age
Red	Site Specific
Red	

Local Supply Integration Tools

Phase 2 – Model Build

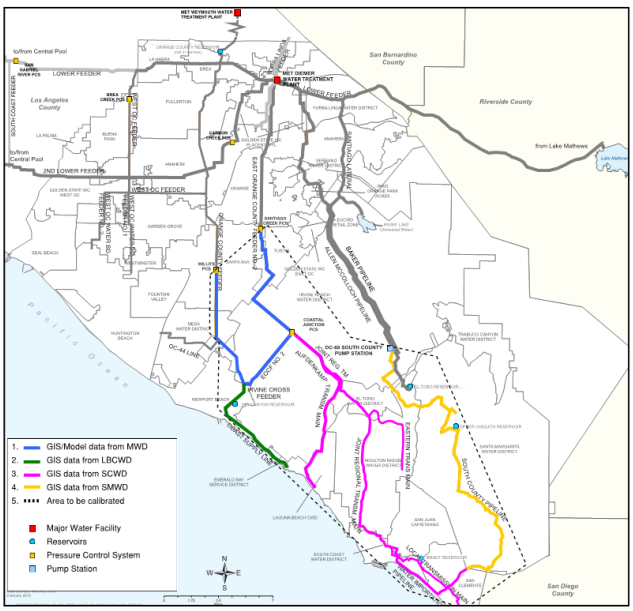
- Build model of treated water system backbone:
  - Utilize information provided by Metropolitan
  - Utilize GIS data provided by OC Member Agencies
- Provides:
  - Fully GIS based dynamic model using a commercial software platform
  - Can simulate basic system hydraulics and operations
  - Reliable for mass balance/delivery quantities (same functionality as spreadsheet based models)
  - Unreliable for pressures and water age/water quality evaluations until calibrated



EXTENTS OF PROPOSED MODEL

Phase 3 –Model Calibration

- Calibrate treated water system backbone model so model accurately reflects the real world



INITIAL AREA TO BE CALIBRATED IF PHASED

Work Plan

Activity	Duration	Timing	Budgetary Cost	Funding Source
Phase 2 – Model Build	2 – 3 mos	FY 19-20	$50k - $75k	MWDOC
Phase 3 – Model Calibration	3 – 4 mos	FY 20-21*	$200k - $300k	MWDOC*
Phase 4 - (TBD)				
New Supply Integration Studies (White Paper/Study Plan)	Varies	Varies	Varies	Project Proponents or Shared Services

* SCWD/Doheny Project may have nearer term need; could begin work in FY 19-20 via funding by participating agencies through Shared Services

Final Investigation Report to P&O Committee in March 2020

Outcomes

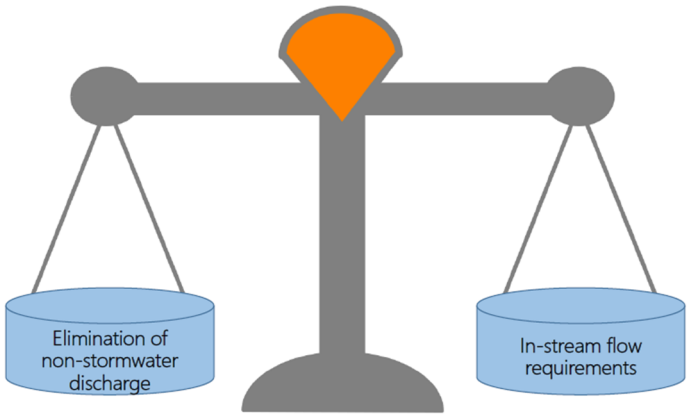
Integration of New Supplies or Changed Conditions Without Unintended Consequences

ENGINEERING & PLANNING	
Doheny Ocean Desalination Project	On October 30, 2019, South Coast held a workshop on a Peer Review Cost Estimate for the Doheny Desal Project. Rich Svindland, of California American Water (CalAm), who helped develop the 6.4 MGD Monterey Ocean Desal Project using slant well technology, completed a peer review cost estimate for the Doheny Ocean Desal Project. The CalAm review of the previous Doheny Desal cost estimate by GHD indicated some differences in capital and operating costs including a higher level of staffing for the plant as suggested by CalAm. Overall the cost differences resulted in estimated increased costs: • Capital costs were estimated at 5.4% higher • O&M costs were estimated at 15.8% higher • Overall, the unit cost of water increased from $1556 per AF to $1805 per AF, an increase of $249 per AF, an overall increase of about 16.0% South Coast WD's Board has voiced their opinion that a 5 MGD project provides too much water and is beyond the ability of South Coast WD to shoulder by themselves. Without other partners, they may consider a plant size as small as 2.0 mgd without any oversizing to protect the potential for an ultimate 15 mgd project. The use of excess recycled supplies potentially to be blended with ocean supplies was also discussed with the Latham wastewater plant in near proximity to the Doheny Desal Project. **Next Steps by South Coast WD:** 1. Look for partners 2. High Level Schedule (has slipped a bit due to the Regional Board schedule) a. Environmental permitting — Late Summer 2020 b. DBOM Contract Develop — Early 2020 c. DBOM Contract Award — Early 2021 d. Construction Completion — Early 2023
MET 2019-20 Shutdown Schedule	MWDOC staff have held many meetings with MET and MWDOC member agencies since July 2019 to review the extensive MET 2019-2020 Shutdown Schedule. The January 21-27, 2020 Diemer shutdown has been completed and the plant has returned to service. MWDOC is currently working with MET and affected agencies on the February 9 – 16, 2020 West Orange County Feeder (WOCF) shutdown which was rescheduled to accommodate the Diemer shutdown. The WOCF shutdown is needed to replace 13 primary isolation valves between the OC/LA County Line in Fullerton down to the connection with the OC Feeder in Anaheim. These valves are past their useful life.

SMWD Rubber Dams Project (San Juan Watershed Project)	Santa Margarita WD continues to focus on diversifying its water supply portfolio for south Orange County residents, businesses, schools, and visitors. On June 21, 2019, the San Juan Watershed Environmental Impact Report (EIR) was approved. The original project had three Phases; Phase 1 was three rubber dams recovering about 700 AFY; Phase 2 added up to 8 more rubber dams with the introduction of recycled water into the creek to improve replenishment of the basin for up to 6,120 AFY, and Phase 3 added more recycled water topping out at approximately 9,480 AFY. Under this arrangement, most or all of the production and treatment involved the existing San Juan Groundwater Desalter with expansions scheduled along the way to increase production over 5 mgd. Fish passage and regulatory hurdles to satisfy subsurface travel time requirements are presenting some difficulties. SMWD is working with the Ranch on the next phase of development within SMWD and have access to riparian groundwater from the Ranch. Furthermore, they have discovered that the local geology has high vertical percolation rates and sufficient groundwater basin travel time to potentially allow percolation of treated recycled water. SMWD is of opinion that groundwater production and treatment of the groundwater can be initiated in a relatively short time-frame while permitting for percolation augmentation using recycled water from the nearby Trampas reservoir can be added as permitting allows. They believe the new project area may be able to ultimately produce 4,000 to 5,000 AF per year; they believe the original project will continue to be developed for production out of the wells and treatment provided by San Juan Capistrano as the two agencies merge. Ultimate production out of the basin could exceed 10,000 AF per year if all goes well.
SOC Workshop-Local Supply Integration	An update on the workshop is provided in this packet.
South Orange County Emergency Service Program	MWDOC, IRWD, and Dudek have completed the study to determine if the existing IRWD South Orange County Interconnection capacity for providing emergency water to South Orange County can be expanded and/or extended beyond its current time horizon of 2030. The options considered appeared to be cost-prohibitive to the SOC agencies, except for the installation of Variable Speed Drives at the IRWD pump station that sends water to South Orange County. IRWD is pursuing more work that could open up options in the future depending on the outcome of the studies. Dudek participated in the November 6 SOC workshop to re-engage with the SOC agencies on this project. Support from the agencies was expressed to take a small next step to install Variable Frequency Drives at a pump station within IRWD which would be paid for by SOC to help move water from the IRWD system to SOC in an emergency. The Variable Frequency Drives will provide more flexibility to the IRWD operations staff to allow additional water to be sent to SOC while meeting all of the IRWD needs.

Strand Ranch Project	Staff from MWDOC and IRWD are still discussing how to capture the benefits that can be provided by the development of "extraordinary supplies" from the Strand Ranch Project. A meeting is scheduled for Feb. 14th to further exchange ideas on how to implement the program.
Poseidon Resources Huntington Beach Ocean Desalination Project	The Santa Ana Regional Water Quality Control Board (SARWQCB) continues to work with Poseidon on renewal of the National Pollutant Discharge Elimination System (NPDES) Permit for the proposed HB Desalination Project. At the December 6, 2019 SARWQCB meeting in Huntington Beach, Regional Board staff conducted a workshop on the renewal of the NPDES permit for the proposed desalination facility. Along with the NPDES permit renewal, the facility requires a California Water Code section 13142.5(b) determination in accordance with the State's Ocean Plan (a.k.a. the Desalination Amendment). The workshop reviewed the proposed facility, the draft renewal of the NPDES permit, and the associated draft Water Code section determination. To make a determination consistent with the Desalination Amendment the Regional Board is required to analyze the project using a two-step process: 1. Analyze separately as independent consideration a range of feasible alternatives for the best available to minimize intake and mortality of all forms of marine life: a. Site b. Design c. Technology d. Mitigation Measures 2. Then consider all four factors collectively and determine the best combination of feasible alternatives. Regional Board staff reviewed hundreds of documents and input from both an independent reviewer and a neutral 3rd party reviewer to develop the tentative Order and proposed Water Code section 13142.5(b) determination. The key areas required by the Ocean Plan on which the Santa Ana Water Board is required to make a determination, includes: • Facility onshore location; • Intake considerations including subsurface and surface intake systems; • **Identified need for the desalinated water;** • Concentrated brine discharge considerations; • Calculation of the marine life impacts; and • Determination of the best feasible mitigation project available. In evaluating the proposed project, Santa Ana Regional Board staff interpreted "the identified need for the desalinated water" as whether or not the project is included in local area water planning documents, rather than a reliability need as analyzed in the OC Water Reliability Study. The Regional Board staff referenced several water planning documents; Municipal Water District of

	Orange County's (MWDOC) 2015 Urban Water Management Plan (UWMP), the OC Water Reliability Study, OCWD's Long Term Facilities Plan, and other OCWD planning documents in their evaluation of Identified Need. The workshop was heavily attended. There were a considerable range of views expressed at the meeting. Several of the SARWQCB members were somewhat confused about the evaluation of Identified Need for the project (inclusion in local water planning documents vs. an identified reliability need for the project) and requested staff to help them understand the issue better. The Regional Board schedule for the permit is: Final Permit Anticipated issuance at the April 3, 2020 meeting Assuming success, Poseidon would then seek its final permits from the California Coastal Commission (CCC). The CCC has committed to reviewing the permit within 90 days of the SARWQCB NPDES permit issuance (CCC permit issuance estimated to be Summer 2020). The latest information is for the SARWQCB to conduct a meeting on March 13 where both MWDOC and OCWD have been invited to participate regarding the "need" for the Poseidon Project. The definition of "need" varies between the 2014 Ocean Plan Amendment definition where the project must be included in an Urban Water Management Plan or other planning document to a more conventional definition of "need" being from a supply reliability perspective.
Trampas Canyon Dam and Reservoir	Construction of Trampas Canyon Dam and Reservoir by SMWD, Orange County's largest recycled water reservoir, is on track to be completed in the summer of 2020. The 5,000 AF reservoir will store recycled water in low demand months to provide supplies to SMWD and other agencies in the summer periods. The dam and pipeline phase of the project is 73% complete. The pump station construction contract was award to Kingmen Construction on November 22, 2019 for $3.356 million. Substantial completion of the pump station is anticipated August 31, 2020.
Meetings	
	Charles Busslinger and Chris Lingad attended multiple meetings with MET and agencies affected by the January 21st-27th Diemer Shutdown. Repairs to Diemer were successfully completed and the plant has been returned to service. During return to service operations for the AMP pipeline after the Diemer shutdown, a taste and odor water quality issue developed which resulted in several hours of pipeline flushing of the AMP to clear the issue. The AMP was returned to service following successful resolution of the water quality issue.
	Charles Busslinger attended the January 8, 2020 South OC Watershed Management Area (SOCWMA) Flow Ecology Study Workshop. The SOCWMA committed to implementing a comprehensive Water Quality Improvement Plan (WQIP) in association with the regional stormwater discharge permits (aka. Municipal Separate Storm Sewer System [MS4] permits of the National Pollutant Discharge Elimination System [NPDES] authorized through the Clean Water Act).

	 The purpose of the workshop was to discuss an element of the WQIP that addresses surface water flows and stream restoration which are referred to as 'Unnatural Water Balance'. The Flow Ecology Study seeks to clarify which flows in the SOCWMA are the result of human activity (such as overwatering) vs. flows that are necessary to foster stream restoration. One issue that remains to be resolved is establishing a baseline that current flows will be measured against. This is a technical challenging effort and staff is continuing to monitor and participate.
	Karl Seckel and Charles Busslinger met independently with South Coast Water District and Santa Margarita Water District to discuss the progress on their local projects and to seek input regarding the work MWDOC has been doing with respect to integration of local projects into the regional system and the need for a hydraulic model.
	Karl Seckel and Charles Busslinger participated with Joe Berg and others in a discussion regarding an End-Uses Study in Orange County using metering devices manufactured by Flume that are strapped onto the outside of existing water meters to accurately record water use. The water use records can be disaggregated into indoor and outdoor uses and can be apportioned over various in-home water using devices. The information would be useful in helping to understand existing demands and what trends are occurring at this time.
	Karl Seckel and Heather Baez participated in the monthly ISDOC meeting where Karl covered the WEROC and Operational Area Report.

Status of Ongoing WEROC Projects
January 2020

Description	Comments
WEROC Coordination	On January 13, 2020, Vicki Osborn joined the team as the Director of Emergency Management. Vicki presented the Draft WEROC Budget to the funding agencies on January 29th. This provided an opportunity for the funding agencies to ask questions about the budget and suggest any needed program support. Vicki and Karl will be meeting with those agencies who were unable to attend separately in February. WEROC Quarterly Meeting is scheduled for February 4th. Items on the agenda include California Office of Emergency Services (CalOES) and Dam Planning and Compliance Assistance, AWIA update, Hazard Mitigation and the readiness initiative for the WEROC program as the new Director develops the strategic plan for the organization. On January 29th, water agencies were invited to view a demo on tiger dam products. Daniel has completed the creation of a Cyber Information Sharing Distribution list. WEROC will continue inform member agencies to threat trends when information from the Orange County Intelligence and Assessment Center (OCIAC) or other member agencies is received. Janine is working with member agencies on updating the AlertOC mass notification user agreement and performing an audit on users training credentials.
Coordination with the County of Orange and outside agencies	Daniel attended the January OCEMO meeting held at Cal State Fullerton Arboretum. Operational Area (OA) EOC Director Donna Boston from the Emergency Management Division (EMD) provided an overview of the Emergency Management Division projects and goals for 2019. Other presentation topics included OA Managers Report, Grant Updates, CalOES report, and Sub-committee updates. Vicki is working with CalOES Mitigation and Dam Safety Division and the County/OA on a tool to assist agencies responsible for dam safety compliance and creation of Emergency Response Plans. A presentation on this subject is occurring at the WEROC Quarterly Meeting.

Coordination with the County of Orange and outside agencies (continued)	CalOES Southern California Catastrophic Earthquake Planning Officer reached out to Vicki for assistance with compiling a dataset of all water agencies within Orange County and the Southern California Regional Area. Additionally, Vicki has been invited to participate in a California Emergency Support Functions (CA-ESFs) workshop in March where all of the multimodal transportation system partners will be together for the first time, to discuss corridor access and commodity movement task force operations for a catastrophic event. California ESFs consist of 18 primary disciplines or activities essential to addressing the emergency management needs of communities in all phases of emergency management. Led by a State agency, each CA-ESF is designed to bring together discipline-specific stakeholders at all levels of government to collaborate and function within the four phases of emergency management: mitigation, preparedness, response, and recovery. At the state level, the CA-ESFs consist of an alliance of State agencies, departments, and other stakeholders with similar discipline-specific responsibilities. This grouping will allow each CA-ESF to collaboratively mitigate, prepare for, cohesively respond to, and effectively recover from an emergency. Vicki's focus at this workshop will be ensuring water/waste water critical needs are heard and received. WEROC continues to support California Water/Wastewater Agency Response Network (CalWarn). Janine and Leah are updating the CalWarn contact lists. These lists are vital during any event, large or small requiring mutual assistance.
America's Water Infrastructure Act (AWIA)	WEROC and its consultant, Herndon Solutions Group (HSG) are continuing to work with the WEROC agencies to achieve compliance with America's Water Infrastructure Act (AWIA). AWIA requires utilities to conduct a Risk and Resilience Assessment (RRA) of their community water systems and develop a corresponding Emergency Response Plan (ERP) by March 31, 2020, for systems serving a population of 100,000 or more and for later dates for smaller agencies. New Actions: • 25 Agencies participated in the Phase 1 Compliance Crosswalk • All Phase 1 Crosswalks were developed and provided to agencies and Phase I was completed in October 2019. The crosswalks remain a draft as agencies work through the Phase 2 and Phase 3 processes. • There are 23 agencies participating in the Phase 2 Risk and Resilience Assessment and Phase 3 Emergency Response Plans.

	• Workshops with the agencies are two-day events with key staff from each of the agencies to complete the asset and threat characterization. A second workshop completes the consequence and vulnerability analysis. The combination of these workshops provide the basis for completion of the Risk and Resiliency Assessment (RRA). • Workshops have been completed for all of the larger agencies with a due date of March 2020, and these Tier I agencies are in process of receiving and reviewing their RRA. Phase III, the Emergency Response Plans, are due 6 months later in September 2020 and work will be beginning on those. • Tier II Agencies (RRA Due December 2020) will begin Phase II in March with scheduling of their RRA Workshops.
Hazard Mitigation Planning	WEROC continues to follow-up with the 19 member agencies who participated in the 2018 update of the Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan. There are only three (3) agencies from whom we have not received their agency resolution letters formally adopting the plan. Once this step is completed, the plan will be sent back to FEMA for closeout on the certification process.
PSPS Events	On-going: California Public Utilities Commission (PUC) proceedings regarding the Impacts from De-Energization with a Focus on First Responders and Local Government. MWDOC has received party status to these proceedings. Party Status was intended to ensure that we receive all communications regarding the proceedings and that our comments are included officially for consideration. Vicki is monitoring the release of any documents for review and comment over the next few months. Vicki has been working with both SCE and SDGE in January to establish a collaborative partnership in her new position. She has been added to their notification lists, and will be working with agencies impacted by the PSPS program to update their contacts points and critical infrastructure. On January 22nd, Vicki attended the SCE PSPS Water Utilities Resiliency Workshop in Ventura. This workshop provided an overview on the current SCE programs, updated processes, communication procedures, and presentation on lessons learned from 2019 PSPS events from Kern River Valley Water District.

EOC Readiness	Janine Schunk and Daniel participated in the OA and MET radio tests and WebEOC tests. Janine is working to register the new WEROC/MWDOC EOC generator and obtain insurance. Daniel completed the installation required for towing capabilities. Carryover to February. Daniel is working with the vendor on the replacement antenna to repair our satellite rooftop antenna. Janine completed updates to Safety Center, the Concept of Operations Plan (COOP), and WEROC contact lists.
Training and Exercises	WEROC is hosting two radio user classes on February 19 and February 27th. Orange County Sheriff's Department Communication Division is teaching the course. Vicki and Daniel participated in the annual County EOC Earthquake Functional Exercise on January 30th. The exercise was based on a 6.7 earthquake on the Chino Hills Fault impacting the east side of Orange County. The objectives on this exercise focused on coordination and communication including an activation of the Joint Information Center used for media outreach. In March, WEROC will include an action items list in its Planning and Operations Committee Report. On April 29th, WEROC and partner agencies will be participating in a Prado Dam Failure Tabletop Exercise being conducted by the United States Army Corps of Engineers (USACE). Vicki is currently transitioning her teaching credentials at the state level. Once completed, the Training and Exercise Program Plan will be revised based on the assessment and needs identified at the WEROC Quarterly Meeting.

Status of Water Use Efficiency Projects

January 2020

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
Smart Timer Rebate Program	MWDSC	Ongoing	Ongoing	In December 2019, 118 smart timers were installed in Orange County. To date, 26,390 smart timers have been installed through this program.
Rotating Nozzles Rebate Program	MWDSC	Ongoing	Ongoing	In December 2019, 132 rotating nozzles were installed in Orange County. To date, 570,221 rotating nozzles have been installed through this program.
SoCal Water$mart Residential Indoor Rebate Program	MWDSC	Ongoing	Ongoing	In December 2019, 103 high efficiency clothes washers and 17 premium high efficiency toilets were installed in Orange County. To date, 120,300 high efficiency clothes washers and 60,491 high efficiency toilets have been installed through this program.
SoCal Water$mart Commercial Rebate Program	MWDSC	Ongoing	Ongoing	In December 2019, 719 commercial premium high efficiency toilets were installed in Orange County. To date, 108,145 commercial devices have been installed through this program.
Industrial Process/ Water Savings Incentive Program (WSIP) **Industrial Process/ Water Savings Incentive**	MWDSC	Ongoing	Ongoing	This program is designed to improve water efficiency for commercial customers through upgraded equipment or services that do not qualify for standard rebates. Incentives are based on the amount of water customers save and allow for customers to implement custom water-saving projects.

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
Program (WSIP) (cont.)				Total water savings to date for the entire program is 1,257 AFY and 4,416 AF cumulatively.
Turf Removal Program	MWDOC	Ongoing	Ongoing	In December 2019, 27 rebates were paid, representing $188,702 in rebates paid this month in Orange County. To date, the Turf Removal Program has removed approximately 22.6 million square feet of turf.
Spray to Drip Rebate Program	MWDOC	Ongoing	Ongoing	This is a rebate program designed to encourage residential and commercial property owners to convert their existing conventional spray heads to low-volume, low-precipitation drip technology. To date, the Spray to Drip Rebate Program has converted approximately 1.3 million square feet of area irrigated by conventional spray heads to drip irrigation.
Recycled Water Retrofit Program	MWDSC	Ongoing	Ongoing	This program provides incentives to commercial sites for converting dedicated irrigation meters to recycled water. To date, 157 sites, irrigating a total of 1,563 acres of landscape, have been converted. MWDOC has paid a total of $56,950.00 in grant funding to 20 of those sites. The total potable water savings achieved by these projects is 3,362 AFY and 11,469 AF cumulatively.