I hereby certify that the following agenda was posted at least 24 hours prior to the time of the meeting so noticed below at 24251 Los Alisos Boulevard, Lake Forest, California.

DENNIS P. CAFFERTY, Secretary
of the El Toro Water District and
the Board of Directors thereof

AGENDA

EL TORO WATER DISTRICT

SPECIAL MEETING OF THE BOARD OF DIRECTORS

AUGUST 9, 2022

7:30 a.m.

Members of the public who wish to comment on any item within the jurisdiction of the District, or on any item on the agenda, may attend the meeting in person at the District's office or may observe and address the Meeting by joining at this link: https://us02web.zoom.us/j/86959104300 (Meeting ID: 869 5910 4300).

Members of the public who wish only to listen to the telephonic meeting may dial in at the following numbers (669) 900-6833 or (346) 248-7799 with the same Meeting ID noted above. Please be advised the Meeting is being recorded.

CALL TO ORDER – President Freshley

ORAL COMMUNICATIONS/PUBLIC COMMENTS

Members of the public may address the Board at this time or they may reserve this opportunity with regard to an item on the agenda until said item is discussed by the Board. Comments on other items will be heard at the times set aside for "COMMENTS REGARDING NON-AGENDA ITEMS". The public may identify themselves when called on and limit their comments to three minutes.

ACTION ITEM

1. <u>JTM Pump station Project</u> (Reference Material Included)

Staff will and comment on bids and proposals received relative to the construction of the JTM Pump Station Project.

<u>Recommended Action</u>:

Staff recommends that the Board of Directors authorize the General Manager to 1) enter into a contract with J.R. Filanc Construction Company, Inc. in the amount of $475,000 for the construction of the JTM Pump Station Project; 2) amend the existing contract with Black and Veatch in the amount of $65,788 for Engineering Services during Construction; and 3) amend the existing contract with Dudek in the amount of $15,761 for Paleontological Services. Staff further recommends that the Board authorize the General Manager to fund the project costs from District's Bond Covenant Reserves in accordance with the District's adopted Cash Reserve Policy.

INFORMATION ITEM

2. <u>Grand Jury Report Regarding MWDOC and OCWD</u>
(Reference Material Included)

Staff will lead a discussion regarding the Grand Jury Report regarding MWDOC and OCWD titled "Water in Orange County Needs "One Voice".

ADJOURNMENT

The agenda material for this meeting is available to the public at the District's Administrative Office, which is located at 24251 Los Alisos Blvd., Lake Forest, Ca. 92630. If any additional material related to an open session agenda item is distributed to all or a majority of the board of directors after this agenda is posted, such material will be made available for immediate public inspection at the same location.

<u>Request for Disability-Related Modifications or Accommodations</u>

If you require any disability-related accommodation, including auxiliary aids or services, in order to participate in this public meeting, please telephone the District's Recording Secretary, Polly Welsch at (949) 837-7050, extension 225 at least forty-eight (48) hours prior to said meeting. If you prefer, your request may be submitted in writing to El Toro Water District, P.O. Box 4000, Laguna Hills, California 92654, Attention: Polly Welsch.

Agenda Item No. 1

STAFF REPORT

To: Board of Directors **Meeting Date: August 9, 2022**

From: Hannah Ford, Engineering Manager

Subject: Joint Transmission Main (JTM) Pump Station Project
Construction and Engineering Services During Construction Contracts

BACKGROUND

The District is planning to construct a 2 cubic feet per second (cfs) pump station to lift the hydraulic grade line (HGL) in the JTM to the District's Gravity Zone. Pursuing this project offers the following benefits:

- Enhanced reliability through an alternative pipeline that brings water into the District's system on the west side of the I-5 Freeway
- Helps mitigate the impacts of a common failure of the AMP and Baker Pipelines
- Improved water quality by introducing a fresher supply on the west side of the service area
- Potential to access alternative water supplies generated by neighboring agencies and introduced into the JTM

These benefits would prove especially useful when the District lacks its typical water supply reliability (i.e., the R-6 Reservoir is out of service). The next planned outage of the R-6 Reservoir is from October 2022 to July 2023 to replace the floating cover and liner. The District is making every effort to expedite construction of the JTM Pump Station, such as requiring the contractor to complete construction by the end of January 2023 and prepurchasing major equipment.

Last year, the District hired Tetra Tech to develop a conceptual design, which established feasibility and estimated overall project costs at approximately $2.4M. This year, the District hired Black and Veatch to develop the final design. Design refinements, shown in Figure 1 such as avoiding excavation in the hillside and only installing one pump, significantly reduced the engineer's estimated construction cost.

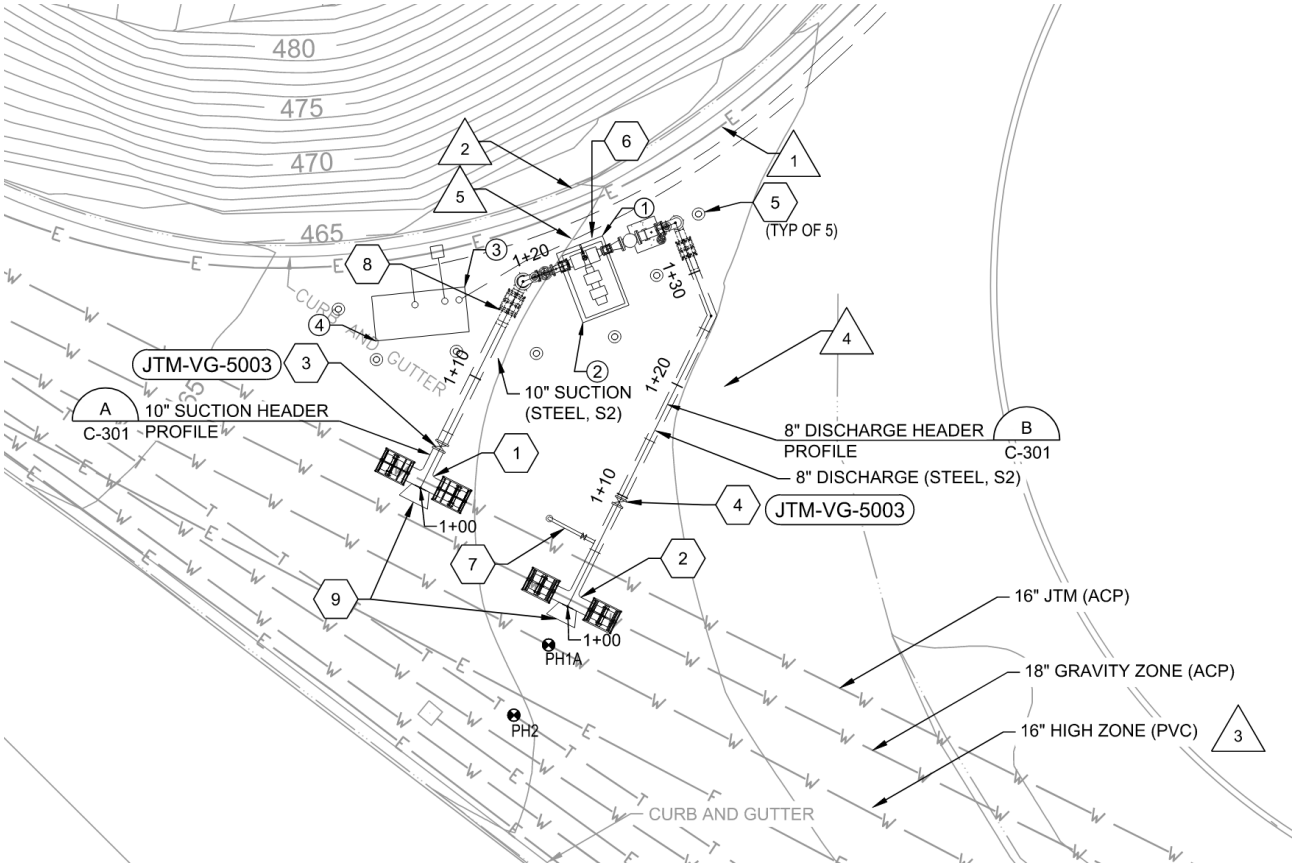

Figure 1- Final Design of JTM Pump Station Site Layout

BID EVALUATION

The District invited seven qualified contractors to bid on Friday, July 8. Six contractors attended the mandatory pre-bid meetings. Following the pre-bid meetings and a subsequent deadline for written questions, the District issued two addenda to the original bid documents. Staff opened three bids on Tuesday, August 2, with the breakdown shown in Table 1 and Figure 2.

Table 1 – Bid Comparison to Engineer's Estimate

Description	Engineer's Estimate	J.R. Filanc Construction Company, Inc. (Filanc)	Pacific Hydrotech	Schuler Construction
Mobilization/Demobilization/Record Drawings	$34,000	$23,000	$28,000	$47,663
Site Demolition and Improvements	$45,000	$72,000	$37,500	$96,000
Yard Piping	$62,000	$101,000	$240,600	$437,662
Pump, Above Grade Piping, Valves, and Appurtenances	$57,000	$101,000	$89,700	$173,000
Electrical & Instrumentation Equipment	$265,000	$168,000	$180,200	$193,257
Bonds and Insurance	$9,000	$10,000	$11,000	$20,502
Total Fee	**$472,000**	**$475,000**	**$587,000**	**$968,084**
Difference from Engineer's Estimate		$3,000	$115,000	$496,084
Subcontractors		• 2% for coatings • 4% for paving • 27% for EI&C	• 1.7% for asbestos • 1.9% for coatings • 1.8% for paving • 22.3% for EI&C	• 2.5% for asbestos • 2% for coatings • 4% for paving • 12% for EI&C • 2% for demo • 1.5% for rebar • 2% for potholing

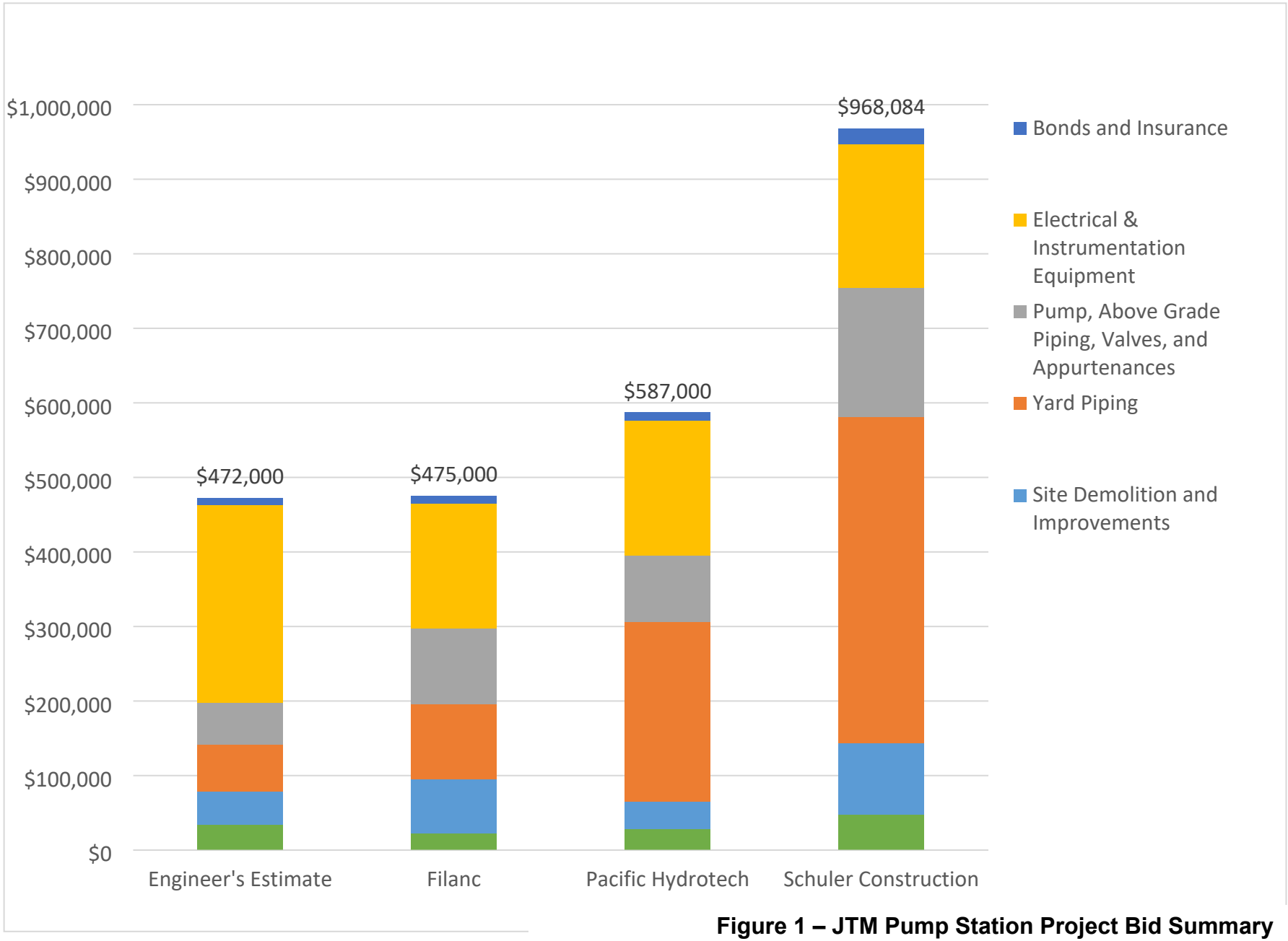

Figure 1 – JTM Pump Station Project Bid Summary

The spread between the low and high bids is approximately 104 percent. The low bidder required the fewest number of subconsultants and is currently managing several other construction contracts with the District, which likely explains their ability to reduce costs.

The apparent low bid was submitted by Filanc. Staff performed a detailed evaluation of the bids and did not find any errors or other discrepancies. Filanc is a reputable contractor with whom the District has significant previous successful experience on the Oso Lift Station Rehabilitation Project and Aeration Basin No. 1 Diffuser Replacement as well as ongoing work for the Effluent Pump Station Rehabilitation Project and Ocean Outfall Pump Station Generator Replacement Project.

ENGINEERING DURING CONSTRUCTION SERVICES (ESDC) AND INSPECTION

District staff recommends amending the current contract with the designer, Black and Veatch, to perform ESDC and its subconsultant, Associated Soils Engineering, to conduct the geotechnical inspection. This amendment would include a $4,200 adjustment to cover additional scope added to the design contract as well. Attachment A contains the proposal from Black and Veatch, which amounts to $65,788. Table 2 summarizes tasks, associated hours, and fee. Attachment A contains the scope of work associated with these services

Table 2 –ESDC and Inspection Tasks and Proposed Fee

Task	Hours	Fee
Final Design Amendment	-	$4,200
ESDC	245	$47,544
Inspection Services	38	$14,045
Total	**273**	**$65,788**

CEQA

The District contracted with Dudek to develop documentation in compliance with the California Environmental Quality Act (CEQA). Dudek prepared an Initial Study, which identified any potentially significant environmental effects. The subsequent Mitigated Negative Declaration (MND) identified mitigation measures for avoiding or reducing potentially significant effects to less than significant levels.

The Draft MND was distributed for public review including filing a Notice of Intent with the State Clearinghouse, the County Clerk's Office and posting of the Notice at the site and at the District's office. In addition, the MND was made available at the District's Customer Service Desk and on the District website. The public review period began on May 17, 2022 and ended on June 6, 2022, and the 30-day period expired with no public comment.

Dudek developed a Mitigation Monitoring and Reporting Plan (MM&RP) to supplement the MND to define implementation of each of the defined mitigation measures, as summarized in the June 2022 Engineering Committee Meeting report. On June 20 2022, the Board of Directors approved Resolution No. 22-6-2, which approves the JTM Pump Station Project

and adopts the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Plan and authorizes the General Manager or designee to file a Notice of Determination of same for the JTM Pump Station Project. Following Board Approval, staff filed the Notice of Determination (NOD) with the County.

However, the Gabrieleno tribe continued to provide comments via e-mail to District staff following adoption of the resolution. In response, District staff offered one week of tribal monitoring during pipeline trench activities without formally amending the Mitigated Negative Declaration with additional mitigation measures. The Gabrieleno tribe did not respond to the offer for monitoring, and the 30-day protest period following NOD filing ended on July 23, 2022. Due to the lack of response, the District considers tribal consultation closed.

The contractor is aware of the required mitigation measures to comply with the MND and MM&RP. The District will hire a paleontological monitor to develop a monitoring plan and witness excavation activities in-person during construction. The District proposes amending Dudek's contract in the amount of $15,761 for these services. Attachment B contains the proposal from Dudek related to this amendment.

BUDGET ANALYSIS

Table 3 summarizes total project costs. Total project costs remain well under the budget allocated in the revenue bond.

Table 3 – Summary of Costs

Organization	Description	Cost
Tetra Tech	Conceptual Design	$9,975
Black & Veatch	Design	$177,845
Dudek	CEQA	$43,465
Filanc	Construction Contract	$475,000
	Construction Contingency	$47,500
DXP Patterson	Pre-Purchased Pump	$58,450
One Source	Pre-Purchased MCC	$95,762
Black & Veatch	ESDC and Inspection	$65,788
Paleontological Monitor	Dudek	$15,761
	Total Project Cost	**$989,546**
	Budget in Revenue Bond	**$2,400,000**
	Difference	**$1,410,454**

To further reduce cost, in house staff will perform construction management. District staff are developing a revenue bond tracking mechanism to report progress on the revenue bond amount collected for the JTM Pump Station Project compared to actual. Using this tool, staff will monitor expenditures on all revenue bond projects and determine if there will be an overall deficit.

RECOMMENDATION

Recommended Action:

Staff recommends that the Board of Directors authorize the General Manager to 1) enter into a contract with J.R. Filanc Construction Company, Inc. in the amount of $475,000 for the construction of the JTM Pump Station Project; 2) amend the existing contract with Black and Veatch in the amount of $65,788 for Engineering Services during Construction; and 3) amend the existing contract with Dudek in the amount of $15,761 for Paleontological Services. Staff further recommends that the Board authorize the General Manager to fund the project costs from District's Bond Covenant Reserves in accordance with the District's adopted Cash Reserve Policy.

Attachment A

BLACK & VEATCH
Building a world of difference.

BLACK & VEATCH CORPORATION
5 PETERS CANYON RD, SUITE 300, IRVINE, CA 92606
+1 949-788-4233 **P** |+1 913-207-4396 **M**

August 1, 2022

Hannah Ford, P.E.
Project Manager
El Toro Water District
24251 Los Alisos Blvd., Lake Forest, California, 92630

Subject: Engineering Services for the Joint Transmission Main (JTM) Pump Station Project – Additional Services

Dear Ms. Ford:

Black & Veatch (BV) is pleased to submit this letter Proposal to provide Engineering Services During Construction and Construction Inspection support. This proposal also includes BV's costs for additional support during the design phase, as discussed previously.

CONSTRUCTION PHASE SERVICES

Engineering Services During Construction

During the construction phase, BV proposes providing the following services:

a. Project management: This task will cover the duration of the construction phase and includes; scheduling; invoicing; routing communications; preparation of monthly project status reports; and providing overall project direction and guidance to the team.
b. Conformed Construction Drawings and Specifications: BV will prepare a conformed set of Construction Drawings and Specifications to address changes identified during the bidding phase.
c. Pre-Construction Meeting: BV will attend the pre-construction meeting with the District and Contractor prior to beginning construction and prepare agenda and minutes.
d. Contractor's RFI: Respond to Requests for Information from the Contractor and the District.
e. Submittal and Shop Drawing Reviews: Review and acceptance of submittals resubmittals.
f. Site Visits: As requested by District staff.
g. Startup and Commissioning: BV will review startup and commissioning plan in detail and provide technical support during startup and commissioning as requested by the District or required to support the construction process.
h. Record Drawings: At the conclusion of the construction the contractor will prepare a single, consolidated set of red-lined as–built drawings for submittal to the District. BV will prepare the final record drawings based on this submittal.

The above services will be provided based on the effort included in our fee table. BV will provide services up to the contract limit. BV will communicate our spending to ETWD as the construction progresses and will request an Amendment, if needed, as the contract limit is approached.

Construction Inspection Services

During construction, BV proposes providing the following construction inspection services:

a. Structural: BV will provide up to two (2) site visits at four (4) hours per visit to observe the structural elements of the project such as steel reinforcement and equipment anchorage.
b. Electrical and I&C: BV will provide up to two (4) site visits at four (4) hours per visit to observe cable and conduit placement/routing, and as-needed support, confirm point-to-point and loop

testing, and coordinate with the contractor.

c. Soils and Materials Testing: This proposal includes an allowance for the project's geotechnical subconsultant, Associated Soils Engineering, to provide approximately two days (16hrs) of backfill inspection, four (4) soils compaction testing (via nuclear density gauge) and one (2) concrete sample/test for compressive strength.

Assumptions

- Due to the size and nature of the construction, certified inspectors for welding and structural steel, or similar, are not required.
- Contractor redlines will be of sufficient quality that additional site investigations or other efforts are not required. The record drawings will be developed solely based on the submitted redline drawings.

ADDITIONAL DESIGN SERVICES

As discussed through prior emails, the scope of work varied slightly from the original proposed scope. These changes were communicated to ETWD via email and phone calls as the project progressed and resulted in a net increase to BV's effort of approximately $4,200, summarized below:

1. During design phase 60% and 90% submittals were consolidated (reduction in scope)
2. Only 1 pre-purchase package was developed instead of 2 or 3 (reduction in scope)
3. Additional effort to perform a load study of the existing transformer/pump station to confirm the existing transformer could still meet SCE capacity requirements while serving the added JTM pump station loads.
4. Additional effort to evaluate construction of a permanent bypass pump, including additional vendor coordination and conceptual planning for site civil, piping, electrical and I&C connections.
5. Added effort to address an electrical comment to the 90% design which changes from several small panels to a single larger MCC.

Estimated Level of Effort and Fee

BV's estimated level of effort is presented in the Table 1. The original fee table is shown here with the Amendment activities shown in **green and bold** to clarify the additional scope items.

Table 1 - Black & Veatch Estimated Level of Effort (Hours)

Task/Description	Principal-in-Charge and QA/QC	Project Manager	Senior Engineer	Project Engineer II	Project Engineer I	Tech	Construction Inspection	Admin/ Clerical	Total Hours	Total Labor	Sub Effort	Expense	Total Cost
Rate	$320	$275	$225	$185	$145	$155	$225	$105				$8.75	
Task 1: Project Management and Meetings *(Subtotal)*	***8***	***44***	***0***	***24***	***16***	***0***	***0***	***24***	**116**	**$23,940**		**$1,015**	**$24,955**
Task 1a Project Management (8 mo)	*8*	*32*	*0*	*0*	*0*	*0*	*0*	*24*	*64*	*$13,880*		*$560*	*$14,440*
Task 1b Meetings (4ea, in-person)	*0*	*12*	*0*	*24*	*16*	*0*	*0*	*0*	*52*	*$10,060*		*$455*	*$10,515*
Task 2: Utility Research and Document Review	**0**	**0**	**0**	**2**	**4**	**0**	**0**	**2**	**8**	**$1,160**	**$2,815**	**$70**	**$4,045**
Task 3: Comprehensive Geotechnical Report	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**$290**	**$7,765**	**$18**	**$8,073**
Task 4: Final Design *(Subtotal)*	**12**	**20**	**52**	**140**	**208**	**208**	**0**	**12**	**652**	**$114,800**	**$6,550**	**$5,705**	**$127,055**
Task 4a 60% Design (29 dwgs + specs)	*4*	*8*	*24*	*64*	*80*	*128*	*0*	*8*	*316*	*$53,000*	*$6,550*	*$2,765*	*$62,315*
Task 4b 90% Design (29 dwgs + specs + OPCC)	*2*	*6*	*12*	*40*	*56*	*64*	*0*	*2*	*182*	*$30,640*		*$1,593*	*$32,233*
Task 4c Final Design (29 dwgs + specs + OPCC)	*2*	*2*	*8*	*12*	*32*	*16*	*0*	*2*	*74*	*$12,540*		*$648*	*$13,188*
Task 4d Key Equipment Prepurchase Packages	*4*	*4*	*8*	*24*	*40*	*0*	*0*	*0*	*80*	*$14,420*		*$700*	*$15,120*
Task 4e Additional Design Effort	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***$4,200***		***$0***	***$4,200***
Task 5: Consultant Quality Control Reviews	**2**	**0**	**64**	**0**	**0**	**0**	**0**	**0**	**66**	**$15,040**		**$578**	**$15,618**
Task 6: Bid Phase Support (1 Pre-bid Mtg and 1 Addenda)	**0**	**4**	**0**	**6**	**0**	**0**	**0**	**0**	**10**	**$2,210**		**$88**	**$2,298**
Task 7: Engineering Services During Construction *(Subtotal)*	***1***	***20***	***70***	***40***	***84***	***22***	***0***	***8***	***245***	***$45,400***	***$0***	***$2,144***	***$47,544***
Task 7a Project Management (4 mo)	***1***	***16***	***0***	***0***	***0***	***0***	***0***	***8***	***25***	***$5,560***		***$219***	***$5,779***
Task 7b Conformed Drawings and Specifications	***0***	***0***	***2***	***0***	***0***	***6***	***0***	***0***	***8***	***$1,380***		***$70***	***$1,450***
Task 7c Pre-Con KO Meeting	***0***	***4***	***4***	***0***	***0***	***0***	***0***	***0***	***8***	***$2,000***		***$70***	***$2,070***
Task 7d RFI Responses	***0***	***0***	***10***	***20***	***0***	***0***	***0***	***0***	***30***	***$5,950***		***$263***	***$6,213***
Task 7e Submittal and Shop Drawing Reviews	***0***	***0***	***20***	***20***	***80***	***0***	***0***	***0***	***120***	***$19,800***		***$1,050***	***$20,850***
Task 7f Site Visits	***0***	***0***	***8***	***0***	***0***	***0***	***0***	***0***	***8***	***$1,800***		***$70***	***$1,870***
Task 7g Startup and Commissioning Support	***0***	***0***	***24***	***0***	***0***	***0***	***0***	***0***	***24***	***$5,400***		***$210***	***$5,610***
Task 7h Record Drawings	***0***	***0***	***2***	***0***	***4***	***16***	***0***	***0***	***22***	***$3,510***		***$193***	***$3,703***
Task 8: Construction Inspection Services *(Subtotal)*	**0**	**0**	**4**	**0**	**0**	**0**	**24**	**0**	**28**	**$6,300**	**$7,500**	**$245**	**$14,045**
Task 8a Structural Inspection (2 x 4hr field visit)	***0***	***0***	***0***	***0***	***0***	***0***	***8***	***0***	***8***	***$1,800***		***$70***	***$1,870***
Task 8b Electrical and I&C Inspection (4 x 4hr field visit)	***0***	***0***	***0***	***0***	***0***	***0***	***16***	***0***	***16***	***$3,600***		***$140***	***$3,740***
Task 8c Soils and Materials Testing (16hr observ., 4 compaction test, 2 concrete tests)	***0***	***0***	***4***	***0***	***0***	***0***	***0***	***0***	***4***	***$900***	***$7,500***	***$35***	***$8,435***
AMENDED CONTRACT TOTAL	**23**	**88**	**190**	**212**	**314**	**230**	**24**	**46**	**1127**	**$209,140**	**$24,630**	**$9,861**	**$243,631**

BASE CONTRACT AMOUNT	**$177,843**
AMENDMENT 1 TOTAL	**$65,788**

We appreciate the opportunity to provide professional services to ETWD. If you have any questions about this proposal, please contact me or our project manager Derek Kurtti at +1-949-471-3898 or KurttiD@bv.com

Sincerely,

BLACK & VEATCH CORPORATION

Zeynep Erdal P.E.
Project Director/Principal-in-Charge
Cc: pw,dk,ze,kr
Attachments: NA

Attachment B

July 21, 2022

Hannah Ford, PE
Engineering Manager
El Toro Water District
24251 Los Alisos Boulevard
Lake Forest, California 92630

Subject: Proposal to Provide Paleontological Services for the El Toro Water District JTM Pump Station Project, Orange County, California

Dear Ms. Ford:

The following scope of work and cost estimate includes paleontological services for the El Toro Water District JTM Pump Station Project (Project) located in Orange County. The scope of work presented below is based on the mitigation measure (MM GEO-1) for the Project. Once completed, the tasks outlined below will satisfy environmental compliance requirements for paleontology under CEQA.

1 Scope of Work

Task 1 Paleontological Monitoring and Mitigation Program (PRIMP)

In accordance with the mitigation measure for the Project, Dudek's Orange County qualified paleontologist will be retained to prepare a paleontological monitoring and mitigation program to address the potential impacts to unique paleontological resources, as per CEQA guidelines. The written program will address the on-site monitoring procedures and requirements, salvage and curation techniques, and reporting requirements. The paleontological mitigation program will conform to the Society of Vertebrate Paleontology professional standards. As part of the program preparation, we will include a records search request at the Natural History Museum of Los Angeles County, to determine if there are any paleontological resource localities within or nearby the Project. This one-time-fee is anticipated not to exceed $500 and is included in the cost below.

Assumptions

- Up to one round of review by El Toro Water District and a digital copy of the PRIMP will suffice.

Estimated Cost for Task 1 ..... $3,500

Task 2 Preconstruction Meeting Attendance

A Dudek qualified paleontologist will attend the preconstruction and prepare a training presentation for construction personnel about the types of fossils that may be encountered during excavations and laws protecting them. This task includes roundtrip mileage (at a rate of $0.625) and travel time from the Dudek San Juan Capistrano office.

Assumptions

- Attendance to one (1) preconstruction meeting will be required.

Estimated Cost for Task 2 ..... $1,216

Task 3 Paleontological Monitoring

Dudek will provide a qualified paleontological monitor to observe excavations in sensitive formations as specified in paleontological mitigation program. The paleontological monitor will be present during all ground-disturbing activities within the Project area in which sediments determined likely to contain paleontological resources are being disturbed. This task includes management by the Dudek Qualified Paleontologist to determine when excavations are impacting paleontologically sensitive sediments.

Assumptions

- No overtime (no more than eight (8) hours in a day or forty hours in a week) will be required.
- Paleontological monitoring will be needed for no more than seven (7) days
- This includes GSA rate for mileage is $0.625 per mile
- In the event work is scheduled to occur requiring monitoring and less than a 48-hour notice is provided with a change in schedule that a monitor is no longer needed a half-day will be charged.
- No inadvertent discoveries or curation of fossils.

Estimated Cost for Task 3 ..... $6,095

Task 4 Paleontological Monitoring Report

Dudek will prepare a final paleontological monitoring report documenting monitoring activities. The reports will include the type of construction activities monitored, geological units impacted, and if applicable, paleontological resources recovered and the disposition of such resources. The report will be submitted to the El Toro Water District for review and comment.

Assumptions

- Up to one round of review by El Toro Water District
- A final report will be required, and that a letter report will be sufficient.

Estimated Cost for Task 4 ..... $4,950

2 Cost Summary

A total cost of **$15,761** will be required to complete the outlined scope of work for tasks 1,2, 3, and 4. All work will be billed in accordance with our 2022 Standard Schedule of Charges.

Please feel free to contact me at (760) 846-9326 or ssiren@dudek.com with any questions.

Sincerely,

Sarah Siren
Paleontologist

STAFF REPORT

To:	**Board of Directors**	**Meeting Date: August 9, 2022**
From:	**Dennis Cafferty, General Manager**	
Subject:	**Orange County Grand Jury Report Water in Orange County Needs "One Voice"**	

The District has been requested to respond to the Grand Jury Report that evaluates the Orange County Water District and Municipal Water District of Orange County.

Staff and the Board will discuss the report as well as the potential response to the Report findings and recommendations. The following documents are attached as reference materials to facilitate the discussion.

Attachment 1 – OC Grand Jury Report – 2022

Attachment 2 – OC Grand Jury Report – 2013

Attachment 3 – MWDOC Response to 2013 OC Grand Jury Report

Attachment 4 – OCWD Response to 2013 OC Grand Jury Report

ATTACHMENT 1

OC Grand Jury Report – 2022

Water in Orange County Needs “One Voice”

GRAND JURY 2021-2022

Water in Orange County Needs "One Voice"

Table of Contents

SUMMARY

The future of a reliable water supply for California, as well as Orange County (OC), is at risk. The intense dry spell in the West, the worst in 1,200 years, is being labeled a "Mega Drought."[1] Multiple years of drought and inconsistent availability of imported surface water from Northern California and the Colorado River should inspire OC leaders responsible for a reliable water supply to consider new ways to offset the likely depletion of aquifers and reservoirs.

Ronald Reagan once said: "No government ever voluntarily reduced itself in size." However, it is important that Orange County water providers consolidate their resources and establish a unified voice to lead the County more efficiently in its water policies and planning. Multiple water experts agree it is time to coordinate strategies in water conservation, development of new supply and infrastructure, and preparation for the possibility of continued drought, disaster, and State-mandated water cutbacks.

Providing water to Orange County residents is a complicated process and requires the work of water wholesalers and retailers. Retail water agencies (districts and cities) are the direct link to residential and commercial customers. It is they who set the retail price for the water that is delivered. Providers of drinkable water to these retail entities are the wholesalers (suppliers) of imported and local groundwater from the aquifer.

The current structure of wholesale water supply and operations in Orange County, although fragmented between Orange County Water District (OCWD), Metropolitan Water District of Southern California (MET), and Municipal Water District of Orange County (MWDOC), has been successful in providing reliable, high-quality drinking water. While differences in geology and geography dictate different water supplies, no single governmental body is solely responsible for wholesale water policy and operations in Orange County, even though providing future reliable water supply is becoming more challenging.

While the processes of supplying wholesale groundwater and imported water are arguably dramatically different, complex, and should remain separated in OC, the Orange County Grand Jury (OCGJ) has determined that all sources of water are interconnected and would be best administered by one governmental entity. All the water flowing to OC taps looks the same, whether imported or groundwater, so why do we need two wholesale agencies?

This single leadership structure, whether through consolidation of existing dual entities (OCWD and MWDOC) or creation of a new water authority, is achievable through a combination of governance and local and State legislative changes that authorizes the single organization to lead all aspects of Orange County wholesale water. Although any consolidation or formation of a new water agency would pose political, administrative, and operational challenges, the OCGJ concluded that, at long last, it is time for Orange County to operate with "one water voice."

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[1] February 14, 2022, Peer reviewed study published in the journal *Nature Climate Change* https://doi.org/10.1038/s41558-022-01290-z

BACKGROUND

Multiple prior Grand Jury Reports have addressed water issues, including water challenges and opportunities jointly being faced by all of Orange County. One report pointed out disparities between the North/Central and South County's water sources, the fragmented governance, and the significant differences in topography.[2] Another report informed the public about sustainability of the local water supply and future needs, along with evaluating the efforts of the two major wholesale water agencies in the County.[3]

Orange County relies heavily on imported water for its ongoing supply, as well as some of its groundwater storage replenishment needs. Metropolitan Water District of Southern California (MET) supplies imported water to Southern California. Municipal Water District of Orange County (MWDOC) buys imported water from MET and sells it to Orange County's retail water agencies (cities and special districts). Orange County Water District (OCWD) supplies ground water to the retail water agencies and cities geographically served by the aquifer and wells.

REASON FOR THE STUDY

The consolidation of OCWD and MWDOC has been explored in the past, debated by wholesale and retail water agencies, but ultimately never accomplished. The formation of a new Joint Powers Authority is one option. But no matter how a consolidation would be accomplished, the OCGJ concluded that now is the time to have a single wholesale water supply agency in Orange County. Based on statements made during numerous OCGJ interviews, multiple water professionals support moving from two to one wholesale entity for Orange County.

The OCGJ is concerned that opportunities to operate, innovate, lobby, capitalize and coordinate communication are not being optimized with Orange County's current wholesale water structure, which is split between two key, but very different, agencies. This report will, among other things, address the merits related to the formation of "One Voice" in the Orange County wholesale water structure. It will highlight ways in which Orange County can better address water supply, operations, and infrastructure. The report will not recommend specifically how a single structure comes to fruition legislatively.

METHOD OF STUDY

The Grand Jury evaluated the efforts of the existing primary water entities in Orange County—MWDOC and OCWD—to determine what is working well, and the challenges and opportunities currently existing. In its investigation, the OCGJ used the following sources.

[2] 2009-2009 Grand Jury report titled *Paper Water*
[3] 2012-2013 Grand Jury report titled *Orange County Water Sustainability: Who Cares?*

- In-person and virtual interviews. Specifically, interviews of current and former Water District Managers, City and Regional Water Managers and other involved State entities and individuals.
- Water District website meeting minutes and document review.
- Independent research (articles, websites, reports, minutes, documents, etc.).
- Research of applicable State and local water-related statutes and ordinances.
- Site tours of water and sanitation districts' operations.
- Past Grand Jury reports.
- 2021 Orange County Water Summit.

The interviews included personnel from water agencies that represented a cross section of regional and local wholesalers and retailers to obtain a diversity of perspectives based on geography, demographics, and practices. The investigation took into consideration the variety of characteristics that exist in the County, including:

- North compared to South County sources of water supply (reliance on imported water).
- Variety of projects to provide water supplies during normal and emergency times.
- Diversity of projects and plans to increase reliable sources of water supply including. categories related to conservation, recycling for irrigation and potable use, storage, desalination options, etc.
- Multi-agency collaboration.

INVESTIGATION AND ANALYSIS

Overall, California water sources come from imported supplies (State Water Project in Northern California and the Colorado River), groundwater, stormwater, water transfers, desalination, and water recycling. Orange County, like the rest of California, relies on a variety of sources, with the exception of desalination which is currently in the planning stage.

Status Quo

To best understand the background of wholesale water in California, and specifically Orange County, one must examine the three major governmental agencies involved: Metropolitan Water District of Southern California (MET), Municipal Water District of Orange County (MWDOC), and Orange County Water District (OCWD). These agencies have similar names but very different responsibilities. The role of retail water districts will also be explained.

Metropolitan Water District of Southern California

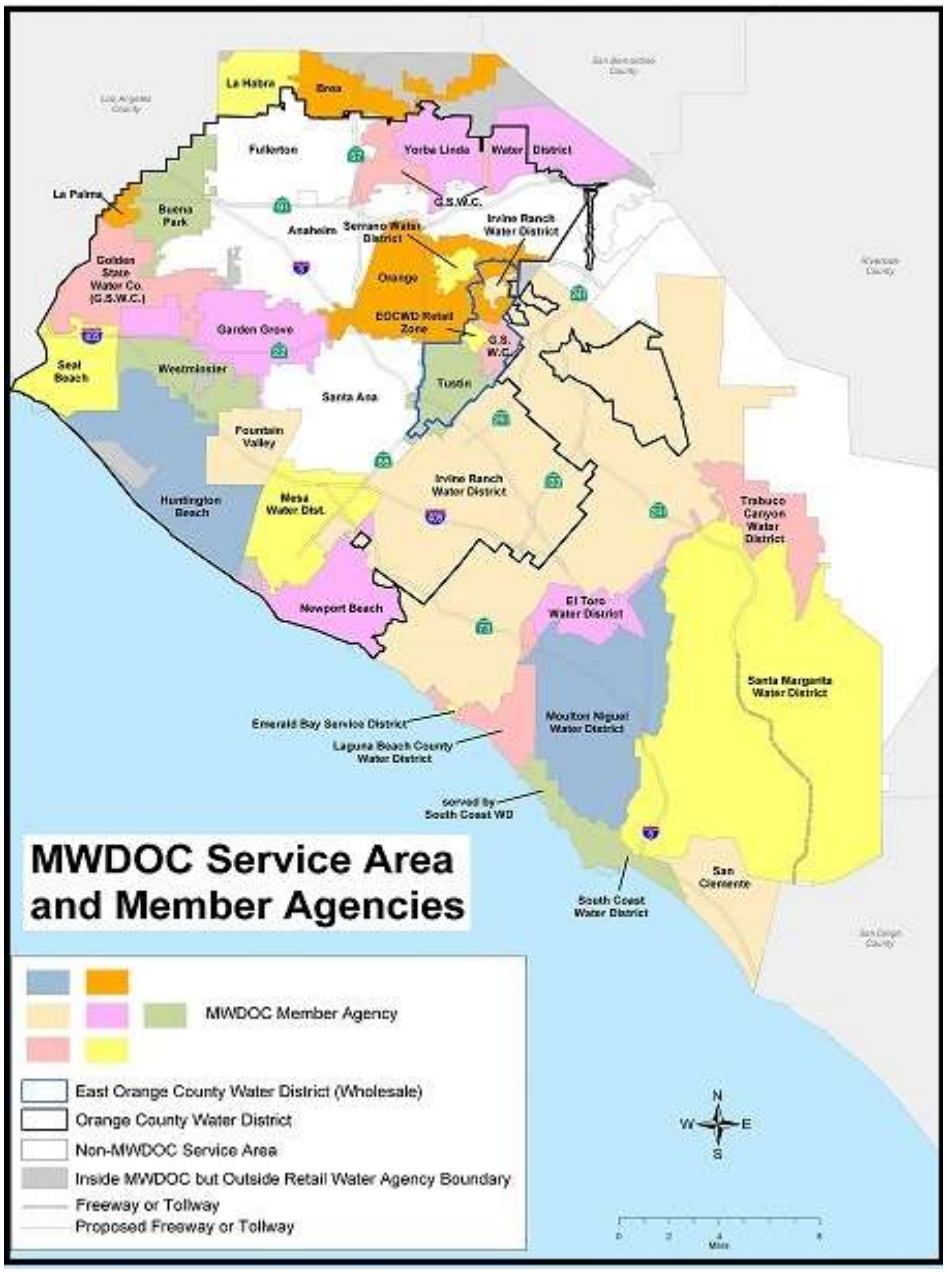
MET provides water from the Colorado River and the State Water Project from Northern California to Southern California. It wholesales this imported water to its Orange County member agencies, MWDOC and the independent cities of Anaheim, Fullerton, and Santa Ana.

Water in Orange County Needs "One Voice"

MET provides most of the water imported into Orange County. MET currently delivers an average of 1.7 billion gallons of water per day to a 5,200 square mile service area. MET is a group of 26 cities and water districts providing drinking water to over 19 million people in Los Angeles, Orange, San Diego, Riverside, San Bernardino, and Ventura counties.

Municipal Water District of Orange County

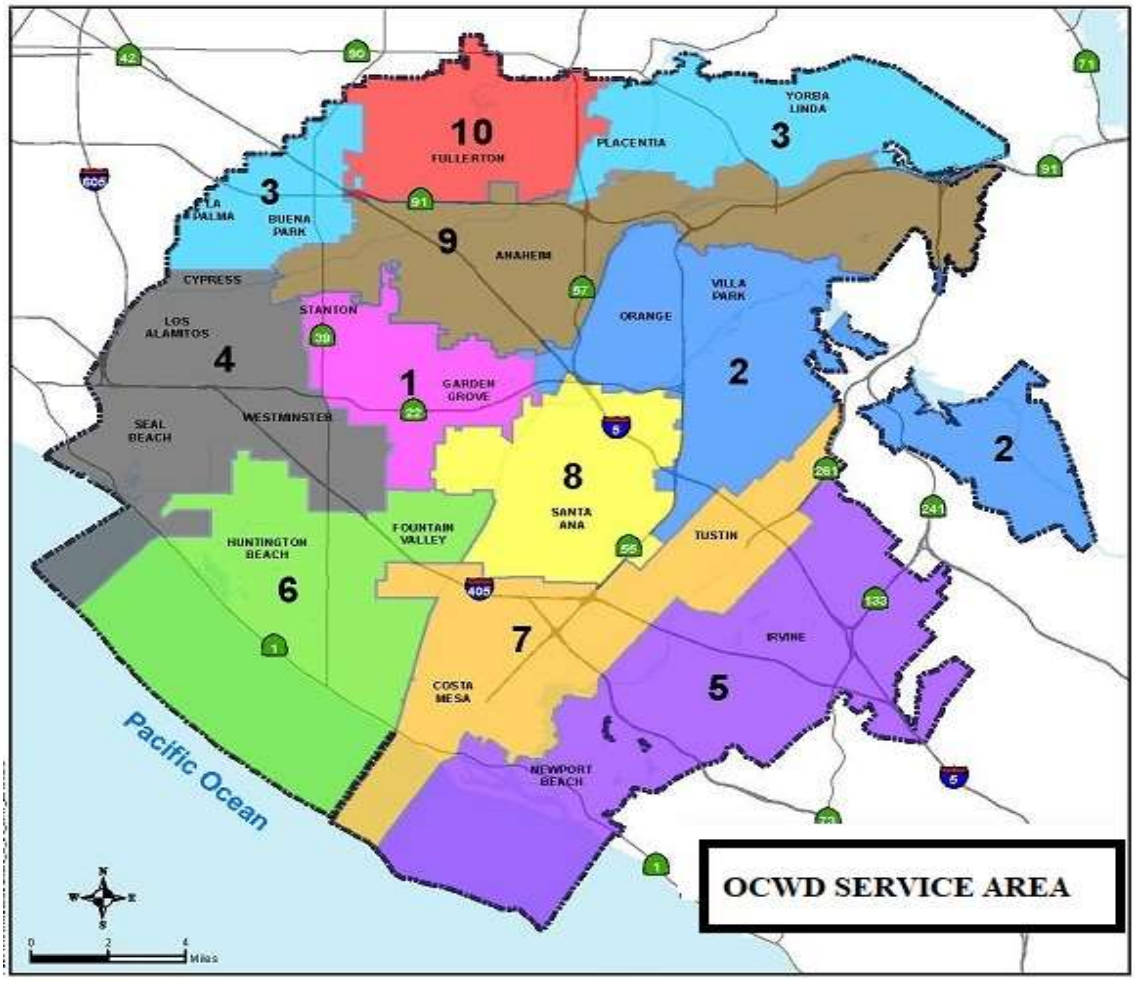
MWDOC acts as a pass-through agency for MET's imported water. This imported water is sold to MWDOC's 27 member agencies which, except for Fullerton, Anaheim and Santa Ana, covers the entire County. MWDOC also sell untreated water to OCWD for ground water discharge. MWDOC does not own or operate any water infrastructure.



Orange County Water District

OCWD manages the groundwater basin in the north and central part of the County. OCWD does not directly provide water to any residents or businesses, except treated wastewater for irrigation in the Green Acres Project. The Green Acres Project is a water reuse effort that provides recycled water for landscape irrigation at parks, schools and golf courses and some industrial

uses.[4] OCWD's primary role is to manage the basin and provide local water retailers with a reliable, adequate, and high-quality supply of water.[5] In addition, OCWD operates the Groundwater Replenishment System (GWRS) in partnership with the Orange County Sanitation District (OCSAN). This state-of-the-art water purification project can produce over 100 million gallons of high-quality potable water per day for aquifer recharge. OCWD provides groundwater to 19 municipal and special water districts and supplies approximately 77 percent of the water

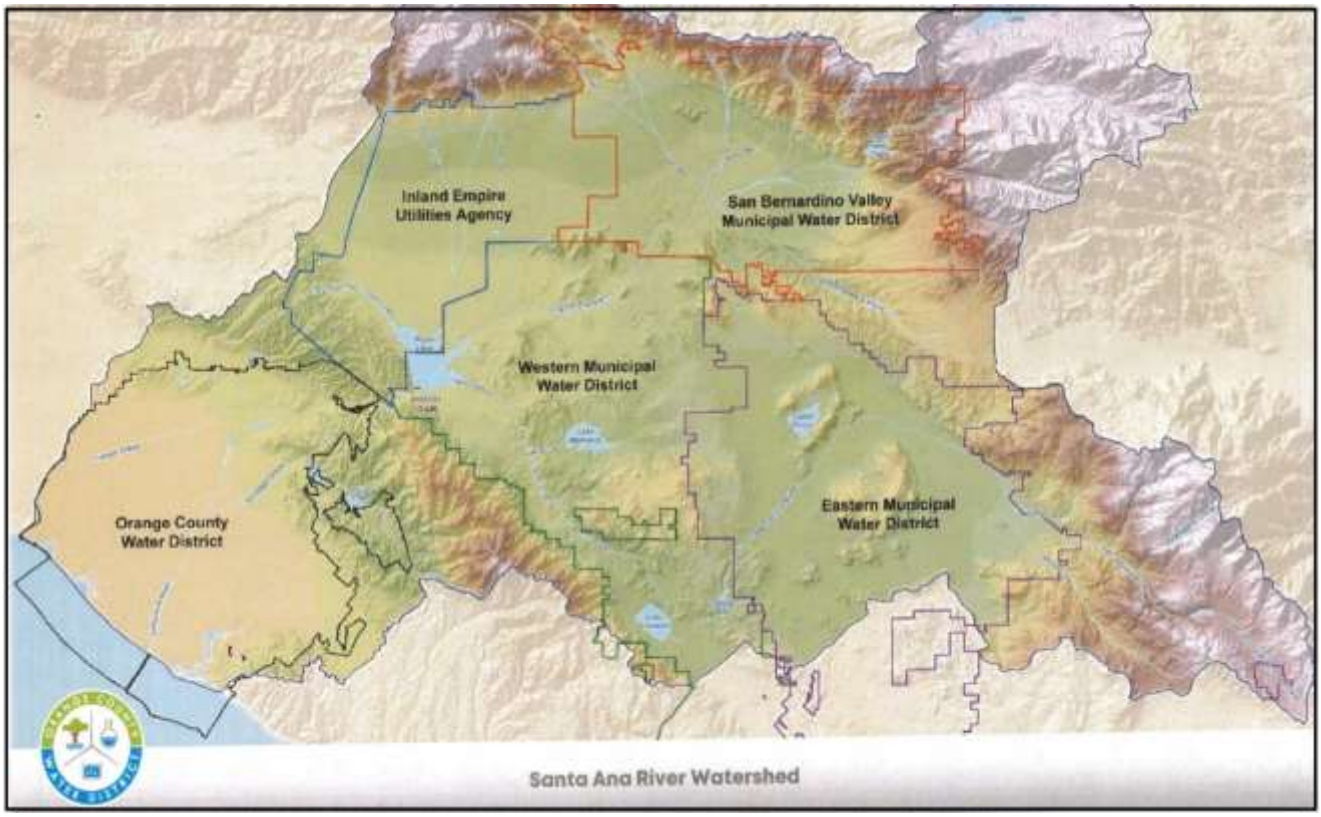


supply for North and Central Orange County. OCWD is the only wholesale groundwater agency for Orange County and is a customer of MWDOC for imported needs to supplement the aquifer recharge serving North/Central County. OCWD currently has $1.5 billion in capital infrastructure assets.

[4] www.ocwd.com/about/
[5] *Ibid.*

Additional Supply for OCWD

The Santa Ana River is the largest coastal stream in Southern California. Flowing west from the San Bernardino Mountains, the river winds through San Bernardino and Riverside Counties before reaching Orange County at Prado Dam, then traveling through the OCWD aquifer to supplement recharge, before terminating at the Pacific Ocean. The river is joined by Santiago Creek and flows to the ocean between Huntington Beach and Newport Beach.[6]



Retail Water Districts

Retail water organizations are the direct connection of supplying water to residential and commercial consumers. There are 29 retail water providers throughout Orange County. These water providers include cities, special water districts/agencies and one private water company.

[6] www.ocwd.com/what-we-do/

Differences in Supply Sources

South Orange County's approximate 600,000 residents rely primarily on imported water (70-100 percent of needed supply depending on location) from hundreds of miles away. The imported water is purchased through the Municipal Water District of Orange County (MWDOC).[7]

North and Central County's roughly 2.8 million residents rely primarily (19-99 percent depending on location) on groundwater supplied OCWD, which refills the Orange County Groundwater Basin with many different water supplies: water from the Santa Ana River; local rainfall; treated and purified wastewater through the Groundwater Replenishment System (GWRS); and imported water from the Colorado River and Northern California.[8]

[7] www.ocwd.com/about & www.mwdoc.com/wp-content/uploads/2017/05/Water-Supply.pdf
[8] www.mwdoc.com/wp-content/uploads/2017/05/Water-Supply.pdf

History, Governance and Authorizing Legislation

MET

In 1928, the Metropolitan Water District Act was established by the California Legislature. The original purpose was to construct and operate the 242-mile Colorado River Aqueduct, which runs from an intake at Lake Havasu on the California-Arizona border to an endpoint at Lake Mathews reservoir in Riverside County. MET has a 38-member board of directors representing the district's 26 agencies. Orange County is represented on the MET Board by seven Board members. MET has imported water from the Colorado River since 1941 and from Northern California since the early 1970s.[9]

MWDOC

MWDOC is a wholesale water supplier and resource planning agency that was established in 1951. Governed by a seven-member Board of Directors,[10] MWDOC is MET's third largest member agency and appoints four representatives to advocate the interests of Orange County on the Metropolitan Water District Board.[11]

OCWD

The Orange County Water District was formed in 1933 by a special act of the California Legislature to protect Orange County's rights to water in the Santa Ana River. OCWD is governed by a 10-member Board of Directors, seven of whom are elected, and three are appointed by the city councils of Anaheim, Fullerton, and Santa Ana.[12]

Retail Water Districts

Each retail water district was established throughout Orange County's history and provides water directly to consumers. They are each governed by an elected board of directors, respective city councils, or private investors.

Local Agency Formation Commission (LAFCO)

As part of California's water governance, LAFCO oversees geographic boundaries, evaluates cost-effective and efficient public service delivery, and explores potential alternatives to meet the service demands of the existing and future County population. Orange County LAFCO was founded in 1963 and strives to ensure the delivery of effective and efficient public services, including water, by local governments to the County's residents.[13] Orange County water

[9] www.mwdoc.com/about-mwdoc; www.mwdh2o.com/who-we-are/our-story/
[10] www.mwdoc/about-us/about-mwdoc
[11] www.mwdoc.com com/wp-content/uploads/2017/06/So-Cal-Water-Wholesale-Retailers.pdf
[12] www.ocwd.com/about/
[13] www.oclafco.org/about-us/agency/

professionals believe the process of creating one wholesale water agency would first go through LAFCO formation before moving on to State legislation and approval.

Services Provided by Wholesalers & Retailers

The following water services are currently in operation for Orange County.

MET

- Delivering wholesale water supplies from the Colorado River and State Water Project.
- Managing water resources including water storage programs (groundwater banking and reservoir), transfers and exchanges, groundwater recovery, recycling, stormwater capture, and potential seawater desalination.
- Operating water system including treatment, quality monitoring, conveyance, distribution, and support.
- Engineering, safety, and regulatory services such as infrastructure protection, maintenance, and improvement programs.
- Managing energy operations.
- Planning for emergency water supply interruption due to earthquake, fire, power failure, public health, and other unexpected crises.
- Planning for capital investment.

MWDOC

- Purchases wholesale water from MET, approximately 70.2 billion gallons of water annually, and delivers to its 27 member agencies.
- Provides studies, analysis and programs related to water supply development, including desalination, and system reliability and use efficiency.
- Offers planning assistance and local resource development in areas of water recycling, groundwater recharge, and conservation.
- Offers residential and commercial rebate programs.
- Offers leak detection services to its members.
- Develops and administrates disaster preparedness, response, and recovery strategies through the Water Emergency Response Organization of Orange County (WEROC). This organization involves both water and wastewater agencies.
- Provides public education and community outreach.

OCWD

- Manages Orange County's wholesale groundwater supplies: the basin consisting of a large underground aquifer to ensure a reliable supply, the Santa Ana River watershed, and the Groundwater Replenishment System (GWRS).

- Replaces groundwater that is pumped out of the basin every year with Santa Ana River watershed, recycled, imported, storm and natural incidental water recharge.
- Ensures groundwater supply safety and quality through monitoring and testing.
- Recycles water primarily through the GWRS which takes treated wastewater that otherwise would be sent to the Pacific Ocean and purifies it for aquifer recharge.
- Participates in legislative and community engagement and education.
- Develops additional innovative programs such as Forecast Informed Reservoir Operations (FIRO) at Prado Dam, capturing and recharging stormwater in the Santa Ana River, and anticipating and optimizing stormwater runoff.
- Coordinates contaminant treatment, financial resource needs, and policy such as for Per- and polyfluoroalkyl substances (PFAS) which enter the aquifer and wells primarily through the Santa Ana River flows. Additionally, organizes litigation and accountability for the contaminant sources.

Retail Water Districts

In addition to being the direct link to consumers, retail agencies provide several additional services beyond those provided by wholesalers. Those services include maintaining water quality and testing throughout their distribution systems, repair and replacement of critical infrastructure, regulatory compliance, customer service, water use conservation, recycled water for irrigation or other non-potable uses, and public outreach and health-related services.

Where Do We Go from Here?

Assessment of Current State

Reliable sources shared opinions with the OCGJ that the current OC wholesale structure is "dysfunctional", "prevents speaking with one voice for all of Orange County water interests" involving the aquifer and imported water sources, and "currently provides redundant services with redundant costs." Also, multiple member agencies of MWDOC have expressed dissatisfaction with MWDOC's operating effectiveness related to MET board and legislative representation, member charges for provided services, and the scope of emergency preparedness.[14]

In addition, this dual structure of MWDOC and OCWD has resulted in missed opportunities for the County in the form of more extensive multiple agency collaboration, increased operating efficiency, decreased reliance on imported water, and the creation of a more reliable water

[14] Information based on multiple interviews, past agreements between MWDOC and MWDOC member agencies, and LAFCO Municipal Service Reviews.

supply.[15] Currently, many projects are undertaken by individual or small groups of retail agencies that could be more expansive if guided by a single wholesale water supplier providing diverse water sources.

Another missed opportunity is a lack of coordinated County analysis about the benefits and drawbacks related to potential desalination projects. Even though desalination projects potentially impact the water supply for all of Orange County, OCWD and MWDOC independently consider these desalination projects and their impact.

Furthermore, many water experts believe that this fragmentation results in less than optimum legislative lobbying effectiveness. This affects programs such as water conservation, related water consumption standards such as State storage projects to capture more water supply during wet years, contamination treatment standards, and the Delta Conveyance System, which is a proposed more efficient and effective system to move water from Northern California to the central and southern part of the State.

Benefits of a Single County Agency - "One Voice"

The Orange County Grand Jury found that creation of a single County wholesale water agency to serve as a conduit for both imported and groundwater would be most effective in coordinating water supply diversification, major infrastructure investments, and developing forward-thinking policies and practices. This single agency would also help facilitate fiscal and environmental responsibility.

Orange County water agencies have earned a tremendous reputation for innovative projects and strategies related to increasing a reliable water supply, even in drought conditions. How do we leverage what already is exemplary and collaborative in Orange Counter water operations?

- Groundwater Replenishment System (GWRS)
- Santa Ana River Conservation and Conjunctive Use program (SARCCUP)[16]
- Inter-county perspective with neighboring jurisdictions of the Inland Empire, San Diego, and Los Angeles Counties.
- Purple water recycling for irrigation coming from treated waste and stormwater capture.
- Burris Basin conversion to Anaheim Coves Trail (OCWD / City partnership).[17]

Water experts believe "One Voice" would result in increased influence on the MET Board. The OCJG concluded that having all types (groundwater and imported water) of wholesale water

[15] Information based on multiple water professional interviews.
[16] www.ieua.org/read-our-reports/santa-ana-river-conservation-and-conjunctive-use-program/
[17] http://www.santa-ana-river-trail.com/trail/burris_basin.asp

providers occupy "seats at the table" would be beneficial to Orange County as a whole and for MET. Additional benefits of a one wholesale water entity include:

- Increased coordination of financial support and capital resources from local, State, and federal sources. An example is in the funding for well contamination remediation utilizing an ionization process.
- More influence at the local, State, and federal levels. Examples include the Delta Conveyance[18] system, additional storage capacity, and preservation of imported supplies from the State Water Project.
- Increased collaboration leading to additional infrastructure shared by wholesale and retail, both for emergency and longer-term everyday use, to move water around as needed.
- Centralized planning for emergency water supply interruptions rather than independent efforts of wholesale and retail water organizations.
- Increased coordination between North and South County for matters such as water banking in Central County for use in South County.
- Cost savings by eliminating duplication of administrative, professional, consultant, lobbying and other expenses currently existing at OCWD and MWDOC.
- Singular County leadership in forming conservation strategies, public outreach, and education.

Concerns related to creating "One Voice"

The Orange County Grand Jury recognizes that with any governance or business model change obstacles will exist to forming a consolidated or new wholesale water agency. Overall, proponents of this change are concerned that there is a lack of political will and that "protecting my own turf" philosophies will get in the way of doing the right thing for reliable water supply in the future. Some additional hesitation exists from some Orange County water board and management professionals that believe:

- Imported versus groundwater requires specialized knowledge and a unique operational approach and should not be combined.
- Staff reductions will occur.
- Merging of retirement pension and benefit liabilities will be complicated and expensive.
- Development of a new Board of Directors structure may cause a loss of representation of the unique water needs of different parts of the County.

[18] www.mwdoc.com/wp-content/uploads/2020/06/Delta-Conveyance-Project-and-EcoRestore.pdf

- Consolidation of the existing two wholesale water districts, OCWD and MWDOC, or the forming of a new agency would be complicated. The process would likely begin through Orange County LAFCO before moving to State legislative level, both of which would be divisive and risk political influence and interference when revising local and State water acts.

Despite these complications and challenges, the OCGJ concluded that the County will be better served by creating a "one voice" agency to lead and represent all aspects of wholesale water operations in Orange County.

FINDINGS

F1 A singular water authority for Orange County's wholesale water supply likely would result in further opportunities at the local, State, and federal levels in legislation, policy making and receiving subsidies and grants.

F2 The current fragmented water system structure and operations provides challenges as it relates to development of new interconnected infrastructure as well as maintenance of existing systems.

F3 There is a great disparity between the North/Central and South Orange County water sources, management, and operations carried out by OCWD and MWDOC.

F4 South Orange County has many smaller retail water districts that lack a formal centralized leadership. Notwithstanding this lack of structure, South Orange County retail water districts have displayed effective collaboration when dealing with one another.

F5 Orange County Water District is a recognized worldwide leader in groundwater resource management and reclamation. Its leadership, innovation, and expertise can be further utilized to serve all of Orange County in developing additional innovative and beneficial programs.

F6 Orange County currently does not have a countywide coordinated policy regarding water conservation, which results in difficulty when complying with any new State-mandated conservation regulations.

RECOMMENDATIONS

R1 By January 2023, Orange County wholesale water agencies should formally begin analysis and collaboration towards forming a single wholesale water authority or comparable agency to operate and represent wholesale water operations and interests of all imported and ground water supplies. (F1, F2, F3, F4, F6)

R2 Any future "One Voice" consolidated Orange County wholesale water authority should have Directors that examine and vote on issues considering the unique needs of all water districts. (F1, F2, F3, F4, F6)

COMMENDATIONS

- Orange County Water District (OCWD) commitment to sound planning and state-of-the-art technology to provide water to the people of Orange County. Highly recognized, OCWD, along with Orange County Sanitation District, has the world's largest Groundwater Replenishment System (GWRS).
- Municipal Water District of Orange County (MWDOC) for many provided services related to emergency planning, public education, water reliability and delivery reports, leak detection service, rebate and conservation programs and many other "choice" services.
- All the current wholesale and retail water districts in Orange County for their efforts to collaborate and strategize to better serve Orange County Citizens despite the lack of a centralized administration.

RESPONSES

The following excerpts from the California Penal Code provide the requirements for public agencies to respond to the Findings and Recommendations of this Grand Jury report:

California Penal Code Section 933 requires the governing body of any public agency which the Grand Jury has reviewed, and about which it has issued a final report, to comment to the Presiding Judge of the Superior Court on the findings and recommendations pertaining to matters under the control of the governing body. Such comment shall be made *no later than 90 days* after the Grand Jury publishes its report (filed with the Clerk of the Court). Additionally, in the case of a report containing findings and recommendations pertaining to a department or agency headed by an elected County official (e.g. District Attorney, Sheriff, etc.), such elected County official shall comment on the findings and recommendations pertaining to the matters under that elected official's control *within 60 days* to the Presiding Judge with an information copy sent to the Board of Supervisors.

Furthermore, California Penal Code Section 933.05 specifies the manner in which such comment(s) are to be made as follows:

(a) As to each Grand Jury finding, the responding person or entity shall indicate one of the following:

(1) The respondent agrees with the finding.

(2) The respondent disagrees wholly or partially with the finding, in which case the response shall specify the portion of the finding that is disputed and shall include an explanation of the reasons therefor.

(b) As to each Grand Jury recommendation, the responding person or entity shall report one of the following actions:

(1) The recommendation has been implemented, with a summary regarding the implemented action.

(2) The recommendation has not yet been implemented, but will be implemented in the future, with a time frame for implementation.

(3) The recommendation requires further analysis, with an explanation and the scope and parameters of an analysis or study, and a time frame for the matter to be prepared for discussion by the officer or head of the agency or department being investigated or reviewed, including the governing body of the public agency when applicable. This time frame shall not exceed six months from the date of publication of the Grand Jury report.

(4) The recommendation will not be implemented because it is not warranted or is not reasonable, with an explanation therefor.

(c) If a finding or recommendation of the Grand Jury addresses budgetary or personnel matters of a county agency or department headed by an elected officer, both the agency or department head and the Board of Supervisors shall respond if requested by the Grand Jury, but the response of the Board of Supervisors shall address only those budgetary /or personnel matters over which it has some decision making authority. The response of the elected agency or department head shall address all aspects of the findings or recommendations affecting his or her agency or department.

Responses Required

Comments to the Presiding Judge of the Superior Court in compliance with Penal Code §933.05 are required from:

90 Day Response Required	F1	F2	F3	F4	F5	F6
OCWD Board of Directors	X	X	X		X	X

90 Day Response Required	R1	R2
OCWD Board of Directors	X	X

90 Day Response Required	F1	F2	F3	F4	F5	F6
MWDOC Board of Directors	X	X	X	X	X	X

90 Day Response Required	R1	R2
MWDOC Board of Directors	X	X

Responses Requested

90 Day Response Requested	F1	F2	F3	F4	F5	F6
East Orange County Water District	X	X	X		X	X

90 Day Response Requested	R1	R2
East Orange County Water District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
El Toro Water District	X	X	X		X	X

90 Day Response Requested	R1	R2
El Toro Water District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
Emerald Bay Service District	X	X	X		X	X

90 Day Response Requested	R1	R2
Emerald Bay Service District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
Golden State Water Co	X	X	X		X	X

90 Day Response Requested	R1	R2
Golden State Water Co	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
Irvine Ranch Water District	X	X	X	X	X	X

90 Day Response Requested	R1	R2
Irvine Ranch Water District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
Laguna Beach County Water District	X	X	X	X	X	X

90 Day Response Requested	R1	R2
Laguna Beach County Water District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
Mesa Water District	X	X	X		X	X

90 Day Response Requested	R1	R2
Mesa Water District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
Moulton Niguel Water District	X	X	X	X	X	X

90 Day Response Requested	R1	R2
Moulton Niguel Water District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
Santa Margarita Water District	X	X	X	X	X	X

90 Day Response Requested	R1	R2
Santa Margarita Water District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
Serrano Water District	X	X	X	X	X	X

90 Day Response Requested	R1	R2
Serrano Water District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
South Coast Water District	X	X	X		X	X

90 Day Response Requested	R1	R2
South Coast Water District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
Trabuco Canyon Water District	X	X	X	X	X	X

90 Day Response Requested	R1	R2
Trabuco Canyon Water District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
Yorba Linda Water District	X	X	X		X	X

90 Day Response Requested	R1	R2
Yorba Linda Water District	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
City of Anaheim	X	X	X		X	X

90 Day Response Requested	R1	R2
City of Anaheim	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
City of Fullerton	X	X	X		X	X

90 Day Response Requested	R1	R2
City of Fullerton	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
City of Santa Ana	X	X	X		X	X

90 Day Response Requested	R1	R2
City of Santa Ana	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
City of Brea	X	X	X		X	X

90 Day Response Requested	R1	R2
City of Brea	X	X

90 Day Response Requested	F1	F2	F3	F4	F5	F6
Metropolitan Water District	X	X				X

90 Day Response Requested	R1	R2
Metropolitan Water District	X	X

GLOSSARY

AQUEDUCT	A structure for transporting water from one place to another by means of a pipeline, canal, conduit, tunnel, or a combination of these things.
AQUIFER	A geologic formation of sand, rock and gravel through which water can pass and which can store, transmit and yield significant quantities of water to wells and springs.
DELTA CONVEYANCE SYSTEM	Refers to State Water Project (SWP) infrastructure in the vast network of waterways comprising the Sacramento-San Joaquin Delta (Delta) that collects and moves fresh, clean, and affordable water to homes, farms, and businesses throughout major regions of the State from the Bay Area to Southern California.
FIRO	Forecast Informed Reservoir Operations is a flexible water management approach that uses data from watershed monitoring and improved weather forecasting to help water managers selectively retain or release water from reservoirs for increased resilience to droughts and floods.
GWRS	Groundwater Replenishment System. A process where water is replaced in the aquifer.
GREEN ACRES PROJECT	OCWD's Green Acres Project (GAP) is a water reuse effort that provides recycled water for landscape irrigation at parks, schools, and golf courses; industrial uses, such as carpet dying; toilet flushing; and power generation cooling.
GROUNDWATER BANKING	A process of diverting surface water into an aquifer where it can be stored until needed
JPA	Joint Power Authority. two or more public agencies to join together, under a joint powers authority (JPA), to provide more effective or efficient government services or to solve a service delivery problem.

LAFCO	Local Agency Formation Commission. Governed by State law, the Commission oversees proposed changes to local agency and county unincorporated boundaries and prepares special studies to encourage the orderly and efficient delivery of public services to Orange County residential and business communities.
MET	Metropolitan Water District, provides water from the Colorado River and the State Water Project from northern California to Southern California.
MWDOC	Municipal Water District of Orange County represents all of Orange County, excluding the three independent city members of MET, and acts as a pass-through agency for MET water sold to its constituent members and sells additional untreated water to OCWD for groundwater recharge.
OCSAN	Orange County Sanitation District treats and recycles sewer and grey water.
OCWD	Orange County Water District manages the groundwater basin of the north and central part of the County.
ONE VOICE	Orange County needs to have a central entity to speak for water and legislative matters.
PAPER WATER	Transfer water via paper, not physically.
PFAS	Per and polyfluoroalkyl substances chemical by product of past aerospace manufacturing in Orange County.
PURPLE WATER	Recycled water that has been treated for reuse in landscaping, agriculture, and commerce.
SAR	Santa Ana River.
SARCCUP	Santa Ana River Conservation and Conjunctive Use program. Guides the use and conservation of the Santa Ana River basin.
SPECIAL DISTRICTS	Special districts are public agencies created to provide one or more specific services to a community, such as water service, sewer service, and parks.

WATER TRANSFERS	A water transfer is a voluntary sale of water proposed and initiated by willing sellers who have legal rights to a supply of water to an interested buyer.
WEROC	Water Emergency Response Organization of Orange County, administered through MWDOC, develops disaster preparedness, response, and recovery strategies.

ATTACHMENT 2

OC Grand Jury Report – 2013

Orange County Water Sustainability: Who Cares?

SUMMARY

When you woke up this morning, used the bathroom, brushed your teeth and brewed your coffee or tea, did you have water? Yes? Think about how fortunate you are? Do you know where that water comes from and how far it must flow to be available to you? How would drought, earthquakes or terrorism impact the delivery of safe water for your use? And the cost – is it reasonable?

The Grand Jury studied the current water supply sources, quantities available and projections of future water needs, visited water storage facilities, dams, pumping stations and aqueducts, as well as examined budgets for maintenance of existing facilities and construction of new facilities.

There is no agency that is specifically responsible for water policy in Orange County; however, there are two agencies (the Municipal Water District of Orange County (MWDOC) and the Orange County Water District (OCWD)) that do work with all the water retailers in Orange County to ensure that all are heard before changes are made regarding imported water policy and the use and recharging[1] of groundwater.[2] This process appears to be working well as Orange County has been importing less water and groundwater is being efficiently recharged enabling water retailers to have more water available for their use. Water conservation has also played an important role in reducing the total amount of water used in Orange County.

REASON FOR STUDY

The Grand Jury is concerned that most Orange County residents are uninformed about where their water comes from and what needs to be done now to ensure that sufficient water is available in the future to avoid rationing and higher costs.

The Grand Jury initiated this study to inform the public about the sustainability of their water supply and what needs to be done in the future to keep the tap running. California Assembly Bill 685 (AB 685), as part of the State Water Code, mandates water for domestic purposes must be of the highest quality. Additionally, Section 106.3 of the State Water Code further proclaims that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes."

In addition to examining the sustainability and quality of water, the 2012 – 2013 Orange County Grand Jury also evaluated the efforts of two major water agencies in Orange County, MWDOC and OCWD. They provide and manage the water resources (imported and groundwater) for local water retailers. This study intends to provide an insight into these two major agencies.

[1] A process by which rainwater (precipitation) seeps into the groundwater system.
[2] The supply of fresh water found beneath the Earth's surface (usually in aquifers), which is often used for supplying wells and springs.

METHOD OF INVESTIGATION

The Grand Jury used the following resources for this report

Water Trips and Tours

- Inspection Trip of the State Water Project and the Sacramento-San Joaquin Delta (Oct. 26-27, 2012)
- Tour of Rancho Santa Margarita Water District including the Upper Chiquita Reservoir (Jan.4, 2013)
- Tour of MWDOC Pilot De Sal Project in Dana Point (Jan.16, 2013)
- Tour of Laguna Water District (Jan.16, 2013)
- Tour of OCWD Water Replenishment System (Jan. 29, 2013)
- Inspection Trip of the Colorado River Aqueduct[3] (Feb.1-2, 2013)

Meetings and Conferences

- CalDesal, 1st Annual Desalination Conference (Oct.29, 2012)
- Public Affairs/Water Use Efficiency (WUE) Joint Workgroup (Nov.1, 2012)
- Meeting between MWDOC and the Orange County Grand Jury Members of the Environmental and Transportation Committee (Mar. 14, 2013)

Interviews

- Upper Management MWDOC (Oct. 26, 2012)
- Professor and Director of Civil and Environmental Engineering Urban Research Center, the Henry Samueli School of Engineering, University of California, Irvine (Dec. 6, 2012)
- Upper Management Rancho Santa Margarita Water District (Jan. 4, 2013)
- Principal Engineer MWDOC (Jan. 16, 2013)
- Upper Management Laguna Beach County Water District (Jan. 16, 2013)
- Communications Manager, Mesa Consolidated Water District (Jan. 23, 2013)
- Member, Board of Directors Metropolitan Water District of Southern California (MWD) (Feb.1, 2013)
- Various Directors who also represent MWDOC on MWD Board of Directors, Upper Management of MWDOC (Mar.14, 2013)

Research

- Water facts and statistics supplied by MWDOC about Member Agencies including the following: water rates, financials, sources of revenue, Orange County water sources in 2035, today's sources of water per each member water district, use of tiered rates in Orange County, water consumption

[3] An Aqueduct is a canal used to carry water from a great distance.

and population, water storage update, South Orange County Water Reliability Study Update, and South Orange Coastal Ocean Desalination Project Status Update Jan., 2013

- 2010 Urban Water Management Plan, June 2011
- System and Supply Reliability, Rancho Santa Margarita Water District
- Cadiz, Inc.com/water-project
- San Bernardino County, Sentinel, "Opposition Forms Against Sending Desert Water to Orange County"
- Orange County Water Summit Congressman, Tom McClintock, representing the 4th District, May 20, 2011
- Sierra Club of Los Angeles Chapter Water Committee, July 2011
- Lecture on the Looming Global Crisis: Water Scarcity (Sept. 29, 2012)
- Various Web Sites of Orange County Water Districts
- Orange County Coastkeeper,[4] "Huntington Beach Desalination"
- Poseidon Resources
- "Two More Favorable Decisions Move Poseidon's Desalination Project Forward"
- "The Role of Desalination in Meeting California's Water Needs", Jerry Johns, Deputy Director, California Department of Water Resources, Jun. 15, 2006
- Kahrl, William, Floods, Droughts and Lawsuits; A brief History of California Water Policy, Water, and Power
- California State Water Project Contractors' website
- History of the California water Project website
- Various Water Articles," LA Times"
- Various Water Articles, "Orange County Register"
- 2010-2011 Engineer's Report on the Groundwater Conditions, Water Supply and Utilization in the Orange County Water District, February 2012

2012 – 2013 Orange County Grand Jury Questionnaire to OC Board of Supervisors

- Questionnaire response received from all supervisors

ACRONYMS

AF – Acre Foot
BDCP – Bay Delta Conservation Plan
CVP – Central Valley Project
GWRS – Ground Water Replenishment System
IRWD – Irvine Ranch Water District
MWD (MET) – Metropolitan Water District of Southern California
MWDOC – Municipal Water District of Orange County
O&M – Operation and Maintenance

[4] A local environmental group

OCWD – Orange County Water District
OCSD – Orange County Sanitation District
RA – Replenishment Assessment
RTS – Readiness-to-Serve
SMWD – Santa Margarita Water District
SOCOD – South Orange County Ocean Desalination Project
SWP – State Water Project
WUE – Water Use Efficiency

BACKGROUND AND FACTS

A review of the history of water in California is provided in this section for the reader to better understand the various agencies involved, how these agencies came about, and the laws by which they must abide. In dealing with Orange County water policy, there are three major agencies: MWD, MWDOC, and OCWD.

MWD imports water into Southern California. MWDOC is the wholesaler that provides imported water to the water retailers (water districts and most municipal water departments). OCWD is responsible for groundwater within Orange County.

History of Water in California

California has a very complex and diverse range of climates. Variations in rainfall are large as annual totals range from less than 25 percent to more than 200 percent of average. Consequently, water has always been a major topic of concern and debate in not only the State of California but in Orange County as well.

The Spanish settled Alta[5] California in 1769. They divided the lands into missions, pueblos, and ranchos and established the first system of water rights. Following the U.S.-Mexican War in 1848, the Treaty of Guadalupe Hidalgo recognized all property rights established under Spanish and Mexican law. Spanish law did not give water rights to the more than 800 ranchos created before the United States acquisition of California. The ranchos or the pueblos did not significantly change California's native waterscape.[6]

What did change California's native waterscape was the 1848 discovery of gold. With the discovery of gold, thousands of immigrants changed the state's nature and the way water resources were used. California's population grew from 10,000 non-natives to 100,000 non-natives in just one year. By 1900, California's population was more than 1.5 million.

Growth in population was not the only factor that influenced how water would be used, but as the easy gold was panned and mined out, the miners found that they had to move water from the rivers to the gold. These miners diverted water from streams in

[5] Alta means upper
[6] Source: Kahrl, William L.:*Floods, Droughts and Lawsuits: A Brief History of California Water Policy,* Water and Power, 1982.

the gold country and then used pressurized water to blast away hillsides. This first large-scale effort to industrialize California's water resources had huge consequences on the economy, environment and laws that govern water.

In 1855, the California Supreme Court decided whether the miners' rule of "prior appropriation"[7] or the common law doctrine of "riparian rights"[8] should apply to water. They decided in Irwin v. Phillips, et al 5 Cal. 140 (1855) to adopt the rule of "prior appropriation" as the law of the state, and over time, this became the dominant form of water rights. In other words, the principle of "first-in-time, first-in-right" decided who would receive water.[9]

The first investigation of California's water resources began in 1873. President Ulysses S. Grant commissioned an investigation by Colonel B. S. Alexander of the U.S. Army Corps of Engineers. He surveyed the Central Valley's irrigation needs and recommended development of the Sierra watersheds.

By the 1880's, the environmental and economic problems caused by gold mining were recognized. In People v. Gold Run Ditch and Mining Company, 66 Cal. 151 (1881), hydraulic mining was prevented in the watershed of the North Fork of the American River. At the same time, tension grew between riparian water users and appropriation water users. In 1886, Lux v. Haggin, 89 Cal.255 (1886) (one of the great legal cases in California history) decided that appropriative rights would continue to exist but would be inferior in priority to the rights of the riparians. This decision also held that disputes between riparians would thereafter be decided on the basis of reasonable use. This became the cornerstone of California water law. In 1887, the legislature enacted the Wright Act, which authorized the formation of irrigation districts with the power to acquire water rights, to construct water projects, to sell bonds, and impose property assessments. By the early 20th century, irrigation districts were successfully established throughout the state.

As Central Valley agriculture continued to expand, farmers turned to aquifers[10] as a source of water. Conflicts between surface and groundwater users followed. The California Supreme Court handed down an opinion in Katz v. Walkinshaw, 141 Cal. 116 (1903), which said that "absolute ownership" of groundwater was no longer compatible with California's hydrologic and economic conditions. It also said that the overlying landowners would have first claim to the available groundwater.

By 1900, Los Angeles had exhausted its local sources of water. Mayor Eaton appointed William Mulholland to be the chief engineer of the new Los Angeles

[7] The right of water is based on actual use and not ownership of the land.
[8] A doctrine of State water law under which a land owner is entitled to use the water on or bordering his/her property, including the right to prevent diversion or misuse of upstream water. Riparian land is land that borders on surface water.
[9] Source: Kahrl, Wiliam L. *Floods, droughts and lawsuits: A Brief History of California Water Policy,* Water and Power, 1982.
[10] A natural underground layer of porous, water-bearing materials (sand, gravel, rock) usually capable of yielding a large amount or supply of water.

Department of Water and Power. By 1905, he had acquired almost all riparian land and water rights in the Owens Valley, including the Reclamation Service's planned reservoir site. On November 5, 1913, the first Owens River water was pumped into the San Fernando Valley. Twenty years later, the population of Los Angeles was 1.2 million and Los Angeles needed more water. The Metropolitan Water District of Southern California (MWD) was formed by the Act of California legislature in 1927 and incorporated December 6, 1928. Today, it is made up of 26 agencies serving the 19 million people of Los Angeles, Orange, San Diego, Riverside, and San Bernardino Counties.[11]

By 1933, Los Angeles had acquired most of the remaining private land in the Owens Valley and began pumping groundwater. The Los Angeles voters approved a bond to extend the aqueduct into the Mono Basin. Over the next four decades, the City's diversion of water ultimately set the stage for the California Supreme Court's recognition of the public trust as a fundamental limit on the exercise of water rights.

Michael Maurice O'Shaughnessy was commissioned by the mayor of San Francisco to construct a dam and divert water high in the watershed at the mouth of the Hetch Hetchy Valley. However, Hetch Hetchy Valley was part of Yosemite National Park. After much contention, led by John Muir and the Sierra Club, San Francisco prevailed and the Raker Act (1913) was passed. This allowed San Francisco's use of Hetch Hetchy Valley as a reservoir. This act planted the seeds of the environmental movement that would play a major role in California water policy during the latter decades of the 20th century and the beginning of the 21st century. Today, surface water appropriations initiated after 1914 must be authorized by a water rights permit or license.

In 1926, Heminghaus v. Southern California Edison 200 Cal.81 (1926), the California Supreme Court held that downstream riparians were entitled to the unimpaired flow of the San Joaquin River. This decision resulted in the 1928 amendment of the California Constitution that changed California water law in four ways:

- It declared the doctrines of reasonable and beneficial use to be the foundation of all water rights in California.
- It stipulated that the requirement of reasonable use could be asserted in all water rights disputes.
- It invested all branches of government with significant authority to implement the mandates of reasonable and beneficial use.
- It laid the legal foundation for the statewide ***water projects*** that were on the drawing boards.[12]

The Boulder Canyon Project In 1928, Congress authorized the building of Boulder Dam, a 726-foot dam at Boulder Canyon. Later the dam's name was changed

[11] Inspection Trip Colorado River Aqueduct, Feb.1-2, 2013,booklet "About MWD"
[12] Source: Kahrl, William L.: *Floods, Droughts, and Lawsuits: A Brief History of California Water Policy,* Water and Power, 1982.

to Hoover Dam. The dam created a 28 million acre-foot (AF)[13] reservoir (Lake Mead). The statute provided additional political support for construction of the Imperial Dam and All-American Canal, Parker Dam, and the Colorado River Aqueduct. Arizona opposed the construction of Parker Dam. It took 50 years and a decision by the United States Supreme Court in Arizona v. California (1963) for the Colorado River Basin Project Act of 1968 to be approved and completion of the Central Arizona Project in 1982 to bring Arizona into compliance. The water provided by the Boulder Canyon Project's All-American Canal sustained farms in the Imperial Valley. It also fueled the rapid growth of cities within the MWD during and after World War II.

The Central Valley Project (CVP)[14] Robert Marshall, a retired U.S. Geological Survey hydrologist, presented a plan for a statewide scheme of reservoirs and aqueducts to bring water from the Sacramento River to the San Joaquin Valley and divert water from the Kern River to Southern California.[15] The Marshall Plan became the basis for California's preliminary plan for water in 1924 and the first State Water Plan of 1930 under the direction of State Engineer, Edward Hyatt. In 1933, the legislature authorized the Central Valley Project (CVP). Today, the CVP manages roughly 7 million AF of water annually. It is the largest water purveyor in California and is probably the most controversial. However, the 7 million AF of water was not enough for municipal and industrial users whose demands for water exceeded those of their agricultural neighbors.

State Water Project (SWP) California experienced a second economic "gold rush" after World War II ended in 1945. People flocked to California, attracted by climate, new jobs, businesses and housing developments. The increased population made it clear that local water supplies would not meet future needs. In 1945, the California legislature authorized an investigation of statewide water resources. The idea of a SWP began when the Legislature passed the State Water Resources Act. This act created the Water Resources Board. The board reported that 40% of harvestable water in California's rivers was allowed to flow unused to the Pacific Ocean. The board completed studies that culminated in the Feather River Project which was presented to the Legislature in 1951 by State Engineer, A.D. Edmonston. The water system that emerged would parallel the CVP. The capstone of this project was the 3.5 million AF Oroville Reservoir on the Feather River. Water was then pumped from the Southern Delta into the California Aqueduct.

The approval of the SWP did not come easily. There was much contention between the MWD and the San Francisco Bay area and Delta residents. Special committees met to draft a constitutional amendment that would satisfy everyone. Out of this emerged the Burns-Porter Act. Under this act the County of Origin and Watershed of Origin Acts were reaffirmed. For Southern California, it contained guarantees of

[13] One acre-foot = 325,851 U.S. Gallons
[14] Federally owned aqueduct carrying water from Northern California to regions in Los Angeles.
[15] Source: Kahrl, William L.: *Floods, Droughts, and Lawsuits: A Brief History of California Water Policy,* Water and Power, 1982

water, including contracts for firm water supplies that future legislatures could not change. It also guaranteed funds to pay for the facilities to deliver water to Southern California and funds to construct only facilities specified in the act and no others. After the legislative passage of the Burns-Porter Act and the voters' approval of the bond issue, construction started on the Project. First water deliveries began in 1970.

Existing Sources of Water in Orange County

Cities in Orange County, like most other places, were originally settled near flowing water supplies. As the cities grew and their water needs increased, water wells allowed growth to other areas further from flowing water. Orange County today relies on ***imported water*** from Northern California and from the Colorado River Aqueduct and ***groundwater*** from local wells for the majority of its potable[16] water.

The majority of ***imported water*** in Orange County is available from the MWD through MWDOC. The majority of Orange County ***groundwater*** is made available and managed by the OCWD, which is a member water district of MWDOC. See Figure 1 for a relationship among MWD, MWDOC, OCWD, and Orange County local water districts and cities for imported and groundwater distribution.

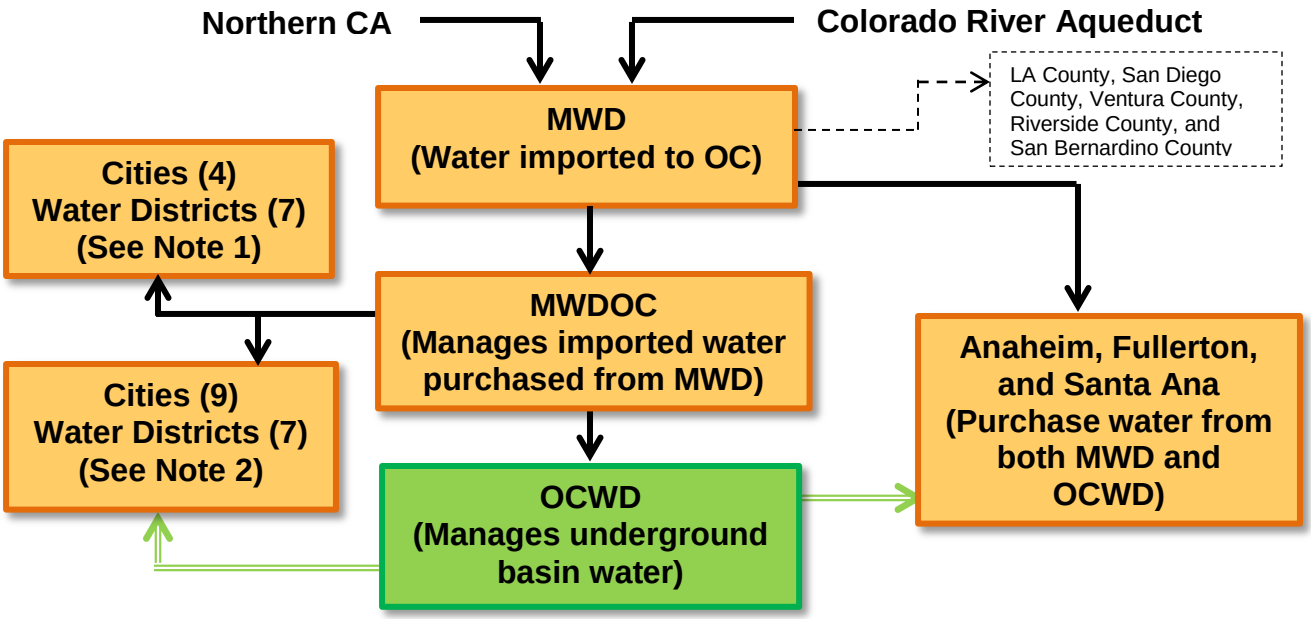


Figure 1 Relationship among MWD, MWDOC, OCWD, OC local water districts and cities

[16] Water that is safe and satisfactory for drinking and cooking.

Metropolitan Water District of Southern California (MWD) The MWD is a regional wholesaler that delivers water to 26 member public agencies serving 19 million people living in Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura counties. It is governed by a 37-member board of directors representing the 26 member agencies consisting of 14 cities, 11 municipal water districts and one county water authority, which collectively serve the residents and businesses of more than 300 cities and numerous unincorporated communities.

The mission of MWD is to provide its 5,200-square-mile service area with adequate and reliable supplier of high-quality water to meet present and future needs in an environmentally and economically responsible way.[17]

To supply Southern California with reliable and safe water, MWD owns and operates an extensive range of capital facilities including the Colorado River Aqueduct, 16 hydroelectric facilities, nine reservoirs, nearly 1,000 miles of large-scale pipes and five water treatment plants. Four of these treatment plants are among the 10 largest plants in the world. In fact, MWD is the largest distributor of treated drinking water in the United States.[18]

As shown in Figure 1, the MWD imports water from the Colorado River Aqueduct and Northern California (via the State Water Project) to supplement local supplies, and helps its member agencies develop increased water conservation, recycling, storage and other local resource programs.

Municipal Water District of Orange County (MWDOC) As stated previously, MWDOC was formed in 1951. It is a wholesale water supplier and resource planning agency that serves all of Orange County (except Anaheim, Fullerton, and Santa Ana) through 28 retail water agencies. Local water supplies meet nearly half of Orange County's total water demand. To meet the remaining demand, MWDOC purchases imported water – from Northern California and the Colorado River Aqueduct – through MWD and distributes it to MWDOC member agencies, which provide retail water services to the public. It plays a pivotal role by working with all of its member agencies to ensure adequate water is available for Orange County residents.

Figure 2 shows MWDOC's service area, which covers all of Orange County, with the exception of the cities of Anaheim, Fullerton, and Santa Ana.

[17] Inspection trip of Colorado River Aqueduct, Feb. 1-2, 2013.
[18] Inspection trip of Colorado River Aqueduct, Feb. 1-2, 2013.

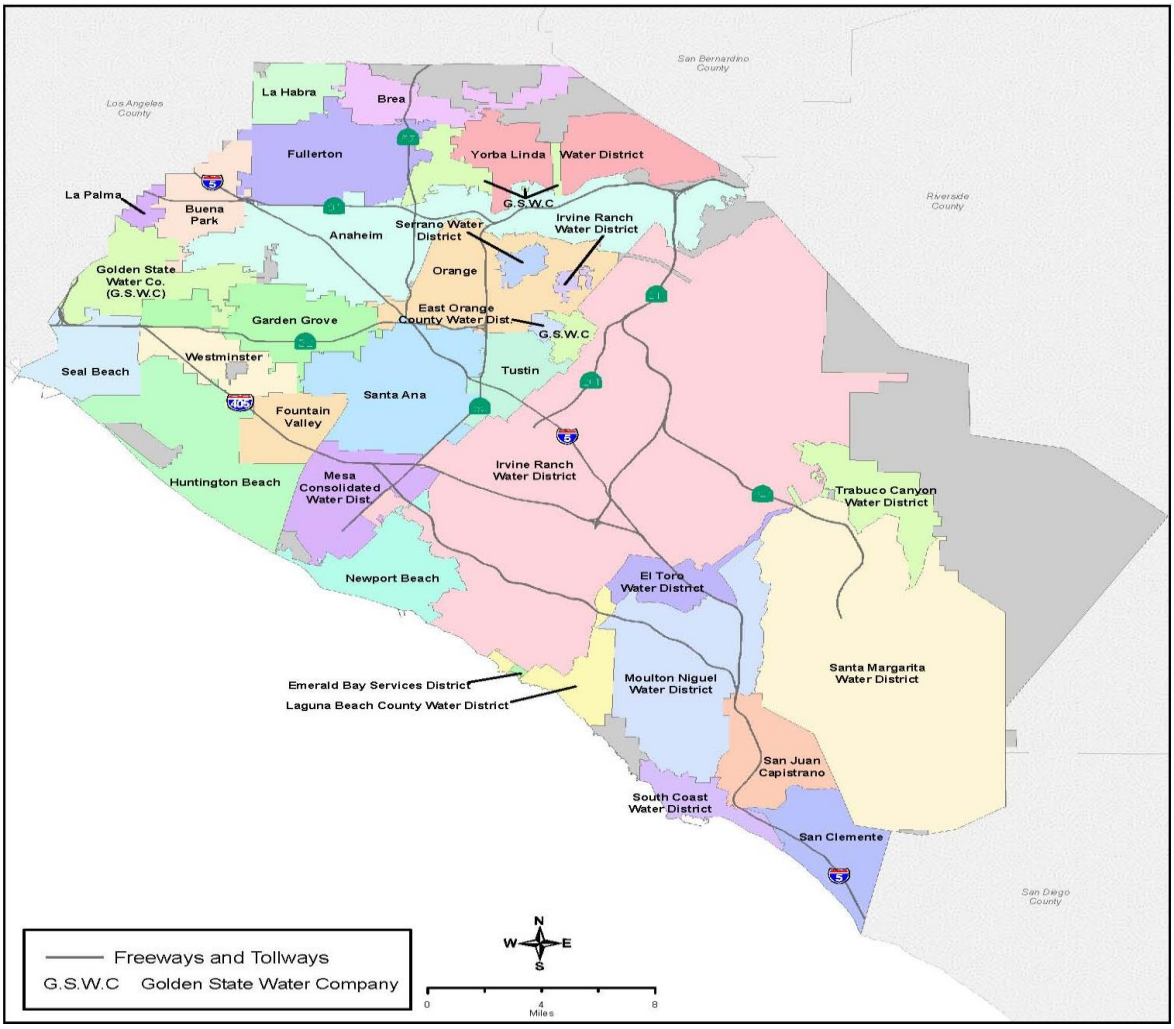


Figure 2 MWDOC Service Areas
Image Source: MWDOC Website

Orange County Water District (OCWD) The Orange County Water District had its beginning in 1933. The newly formed Orange County Water District covered more than 163,000 acres and was authorized "to represent the water users and landowners of the Coastal Plain in all litigation involving outsiders."[19] In the previous decade, water levels had dropped. Artesian wells, once common in Tustin, Irvine and Fountain Valley, had gradually disappeared. The Santa Ana River was carrying less water into Orange County due to below-average rainfall and upstream storage and operations.

In the early years of the District, above-average rainfall (1937 to 1944) created bountiful run-off[20] for recharge[21] of the groundwater. The District Act did not adjudicate

[19] Source: Orange County's Groundwater Authority: Orange County Water District, Historical Information.
[20] The part of precipitation, snowmelt, or irrigation water that runs off the land into streams or other surface water. It can carry pollutants from the air and land into the receiving waters.
[21] Process by which rainwater (precipitation) seeps into the groundwater system.

the groundwater basin;[22] consequently, users could pump as much water as needed from the basin. Problems resulted because the users did pump as much water as they wanted. OCWD wanted to fulfill its mandate to protect the groundwater basin from depletion.

As OCWD entered its second decade, a drought that began in 1945 (relieved by only two wet years) lasted until 1969, bringing issues to the groundwater basin. Some wells along the coast began producing brackish water;[23] groundwater levels dropped to 15 feet and ocean water moved into the aquifers. The District then turned to the MWD to supply water for basin replenishment. The cost of importing water for replenishment of the basin water proved to be so expensive that the District was not able to complete the mission. In 1954, OCWD implemented a Replenishment Assessment to generate revenues to allow the purchase of greater amounts of imported water. The cost to purchase the amount of imported water from MWD was finally apportioned to all pumpers in the District's service area. Now OCWD had the means to reverse the trend of groundwater depletion. Between 1956 and 1964, the replenishment program outpaced the rate of extraction by a wide enough margin to bring groundwater storage to 24 feet above sea level.

OCWD has grown more extensively and rapidly than anyone could have anticipated in 1933. Now the District covers well over 200,000 acres and serves a population of more than 2.4 million. Today, less than 4 percent of water is used for agricultural purposes. With new technologies and exciting research opening doors daily and with people more aware of conservation of water, perhaps, we can look to the future with confidence. See Figure 3 for OCWD service area.

[22] A groundwater reservoir defined by the entire overlying land surface and the underlying aquifers that contain water stored in the reservoir. Boundaries of successively deeper aquifers may differ and make it difficult to define the limits of the basin.
[23] Mixed fresh and salt water

Figure 3 OCWD Service Areas
Image Source: OCWD Website

For the percentages of imported and groundwater for retail suppliers' water in Orange County, see Table 1. (Note: Table1 Information provided by MWDOC on 21 March 2013)

Table 1
RETAIL SUPPLIERS' WATER SOURCES, FY 2011-12
Source of Water, %

	Retail Water Supplier	Metropolitan Water [1]	Ground Water	Surface Water	Recycled / Non-Potable Water [2]	Total	Comments
1	Anaheim, City of	46%	54%			100%	
2	Brea, City of	33%	67%			100%	
3	Buena Park, City of	35%	65%			100%	Including C.U.P pumping
4	East Orange CWD Retail Z	38%	62%			100%	
5	El Toro WD	96%	N/A		4%	100%	
6	Emerald Bay Serv. Distr.	100%	0%			100%	
7	Fountain Valley, City of	47%	41%		12%	100%	
8	Fullerton, City of	37%	63%			100%	692.7 AF of "In-Lieu" including under MWD
9	Garden Grove, City of	32%	68%			100%	
10	Golden State WC *	37%	63%			100%	
11	Huntington Beach, City of	35%	65%			100%	
12	Irvine Ranch WD	21%	51%	4%	24%	100%	
13	La Habra, City of	21%	79%		0%	100%	
14	La Palma, City of	35%	65%			100%	
15	Laguna Beach CWD	100%	0%			100%	
16	Mesa WD	37%	58%		5%	100%	Colored water (redwood-tinted amber water) included with groundwater
17	Moulton Niguel WD	82%	N/A		18%	100%	
18	Newport Beach, City of	35%	65%		<1%	100%	
19	Orange, City of	50%	45%	5%	0%	100%	
20	San Clemente, City of	90%	2%		8%	100%	
21	San Juan Capistrano, City	46%	49%		5%	100%	
22	Santa Ana, City of	32%	68%		<1%	100%	
23	Santa Margarita WD	83%	0%		17%	100%	
24	Seal Beach, City of *	37%	63%			100%	
25	Serrano WD	N/A	59%	41%		100%	
26	South Coast WD	77%	13%		10%	100%	Includes the South Laguna service area.
27	Trabuco Canyon WD	60%	16%	2%	22%	100%	
28	Tustin, City of	37%	63%			100%	Metropolitan source includes the In-Lieu program, otherwise, it would be 22%
29	Westminster, City of	37%	63%			100%	
30	Yorba Linda WD	52%	48%			100%	

[1] Metropolitian Water District of Southern California (known as MWD) imports water to Southern California from the Colorado River Basin and from Northern California. Long-Term "In-Lieu" water deliveries that indirectly replenish acquifers are counted here as MWD water, and are not counted as Groundwater, unless indicated otherwise.
[2] Recycled municipal wastewater and/or Non-Potable surface or ground water.
C.U.P: In the Conjunctive Use Program, MWD stores water in the groundwater basin. The storage may be accomplished by :In-Lieu" deliveries.
n.r.: No response was received for this item.
*** This agency did not respond with any data for this table. Previous year's information is shown.**

2012-13 Groundwater and Imported Water Production Costs for Non-Irrigation Use

The estimated cost for groundwater production for a large groundwater producing entity such as a city water department or a water district in OCWD service area is presented in Table 2.[24]

Table 2 Estimated 2012-13 Water Production Costs

Non-Irrigation Use	Groundwater Cost ($/AF)
Fixed Cost	
Capital Cost	56.00
Variable Cost	
Energy	64.00
Proposed Replenishment Assessment (RA)	266.00
Operation and Maintenance (O&M)	57.00
Total Cost to Producers	**443.00**

The total cost to produce an AF of groundwater in 2012-13 is estimated to be $443. This is based on a survey conducted by OCWD in fall 2011 of nineteen large groundwater producers. The capital cost component ($56 per AF) was derived using the available actual project cost data for eight production wells constructed in 2008 under the MWD Long-Term Groundwater Storage Program and adjusted using the Engineering News-Record Construction Cost Index. It is based on 2008 average cost for design and construction of a production well (excluding land cost) under the MWD Long-Term Groundwater Storage Program (cost amortized over 30 years at 5 percent interest). The energy cost ($64 per AF) is based upon the quantity of groundwater pumped. The OCWD RA cost is the estimate of the proposed RA for 2012-13. O&M costs ranged from $23 to $259 per AF with a median cost of approximately $57 per AF. Elements that influence these costs include load factors and variations in groundwater levels. Recent wells are generally deeper than those drilled decades ago. Based on the survey, the average load factor (which indicates the percent-of-use of an extraction facility) equaled 47 percent.

Imported water is supplied to OCWD's service area by MWD through MWDOC, which delivers both treated and untreated water. There are several categories of water available from MWD. The categories most applicable to this comparison are "*full-service water and "In-Lieu water",* and untreated water (*referred to as "replenishment water").* Treated water is used directly by various groundwater producers for municipal and industrial purposes, while untreated water is used by OCWD for groundwater replenishment. Table 3 shows the estimated costs for MWD treated water category for 2012-13 water years.

[24] Source: 2010-2011 Engineer's Report on the Groundwater Conditions, Water Supply and Basin Utilization in the Orange County Water District.

Table 3 Estimated 2012-13 Imported Water Costs (See Note 1)

Rate and Charge Components	Treated Water Rates ($/AF)
Firm Deliveries	**Full Service Water**
MWD Supply Rate (MWDOC Melded Rate)	140.00
MWD System Access Rate	223.00
MWD System Power Rate	189.00
MWD Water Stewardship Rate	41.00
MWD Treatment Surcharge	254.00
MWD Readiness-to-Serve and Capacity Charges (See Note 2)	80.00
MWDOC Surcharge	3.25
Total	**930.25**

Note 1: Rates are an average of calendar year 2012 and proposed calendar year 2013. Imported water costs for MWD's member agencies (i.e., Anaheim, Fullerton, and Santa Ana) are not reported here due to the variability among these agencies on water supply allocations between MWD's Tier 1 and Tier 2. (Information provided by OCWD on 25 April 2013)

Note 2: Readiness-to-serve and Capacity Charges have been converted to an approximate cost per AF, but are not normally reported in terms of unit cost.

Cost components for imported treated and untreated water are listed in Table 3. The System Access charge is for costs associated with the conveyance and distribution system, including capital and O&M costs. The Water Stewardship charge is used to support MWD's financial commitment to conservation, water recycling, groundwater recovery, and other water management programs approved by MWD. MWD uses the Capacity charge to recover its cost for use of peaking capacity within its distribution system. The Readiness-to-Serve (RTS) charge is to recover MWD's cost associated with providing standby and peak conveyance capacity and system emergency storage capacity. As of January 1, 2003, the RTS charge was discontinued for interruptible deliveries and the Capacity Charge commenced for full service and agricultural program deliveries. The Capacity Charge does not apply to replenishment water. The MWDOC surcharge applies to the MWD imported water purchased by local agencies and provides general funding for MWDOC. Anaheim, Fullerton, and Santa Ana are not charged MWDOC surcharge as these MWD member agencies purchase imported water directly from MWD.

Table 4 summarizes and presents a comparison between groundwater and imported water production costs for 2012-13 water year.

Table 4 Estimated 2012-13 Water Production Cost Comparison

Non-Irrigation Use	Groundwater Cost ($/AF)	Imported Water Cost ($/AF)
Fixed Cost	56.00[1]	930.25[3]
Variable Cost	387.00[2]	0.00[3]
Total Cost to Producers	**443.00**	**930.25**

[1] Capital Cost
[2] Cost for energy, O&M, and RA
[3] Delineation of fixed and variable costs not available

Imported Water

Orange County is dependent on imported water for nearly half of its total water usage. It has two main sources of imported water. The first source the Grand Jury looked at was the State Water Project that included the California Aqueduct. This aqueduct starts on the Feather River by Stockton and brings water to Lakes Pyramid, Castaic, and finally to Lake Perris in Riverside County. The second source was the Colorado River Aqueduct which diverts water from the Colorado River at Parker Dam, Lake Havasu, to the east side of the Santa Ana Mountains.

State Water Project (SWP) The SWP is a state water management project under the supervision of the California Department of Water Resources. It spans 700 miles thus making it the world's largest publicly built and operated water and power development system. It provides water to more than 23 million people and generates an average of 6.5 million megawatts of hydroelectricity annually. It includes pumping and power plants, reservoirs, lakes and storage tanks, aqueducts, tunnels and pipelines. These facilities capture, store and convey water to 29 water agencies. Most of the water (80%) carried by the project is used for agriculture.

The SWP includes the Oroville Dam, the San Luis Reservoir, and the California Aqueduct. (The aqueduct is 444-miles-long.) The water in the main stem of the California aqueduct travels south to the Edmonston Pumping Plant (the State Water Project's largest pumping plant). This pumping station lifts the water nearly 2,000 feet up and over the Tehachapi Mountains through 10 miles of tunnels. Once clearing the mountains, the aqueduct splits into East and West Branches. The West Branch travels southwest to feed Pyramid Lake and Castaic Lake in the Los Angeles Mountains. The East Branch (the main stem) continues southeast eventually filling Lake Perris (via the 28-mile-long Santa Ana Pipeline). This provides water to the MWD. On average the California Aqueduct brings a total of 6,023 AF daily to Southern California.

The Colorado River Aqueduct The Colorado River Aqueduct is 242 miles long and delivers 53,000 acre-feet of water daily to Southern California. It was constructed between 1933 and 1941 by MWD to ensure a steady supply of drinking water to Los Angeles. It now serves Southern California communities from Ventura County to San Diego County.

The aqueduct begins at Parker Dam on the Colorado River, southeast of Lake Havasu City, Arizona. It crosses the Mojave Desert and enters the Coachella Valley north of the Salton Sea. It then flows northwest along the Little San Bernardino Mountains and crosses the San Jacinto Mountains west of Palm Springs. It finally terminates at Lake Mathews in Riverside County. Another part of the Colorado Aqueduct system was recently added. The Diamond Valley Dam and Lake is located just to the south of Hemet and was completed in 1999.

Today, the aqueduct consists of four reservoirs, five pumping plants, 63 miles of canals, 92 miles of tunnels, and 87 miles of buried conduit and siphons. It is operated by MWD.

Groundwater

Groundwater is used for drinking and irrigating crops. It comes from rain, snow, sleet, and hail that soak into the ground. The water moves down into the ground because of gravity, passing between particles of soil, sand, gravel, or rock until it reaches a depth where the ground is filled, or saturated, with water. The area that is filled with water is called the saturated zone[25] and the top of this zone is called the water table. The water table may be very near the ground's surface or it may be hundreds of feet below depending on many factors. Heavy rains or melting snow may cause the water table to rise, or heavy pumping of groundwater supplies may cause the water table to fall. The water in lakes, rivers, or oceans is called surface water. Groundwater and surface water sometimes trade places. Groundwater can move through the ground and into a lake or stream. Water in a lake can soak down into the ground and become groundwater. Groundwater is stored in the ground in materials like gravel or sand. It can also move through rock formations like sandstone or through cracks in rocks. Wells pump groundwater from the aquifer and water retailers deliver the water. See Figure 4.

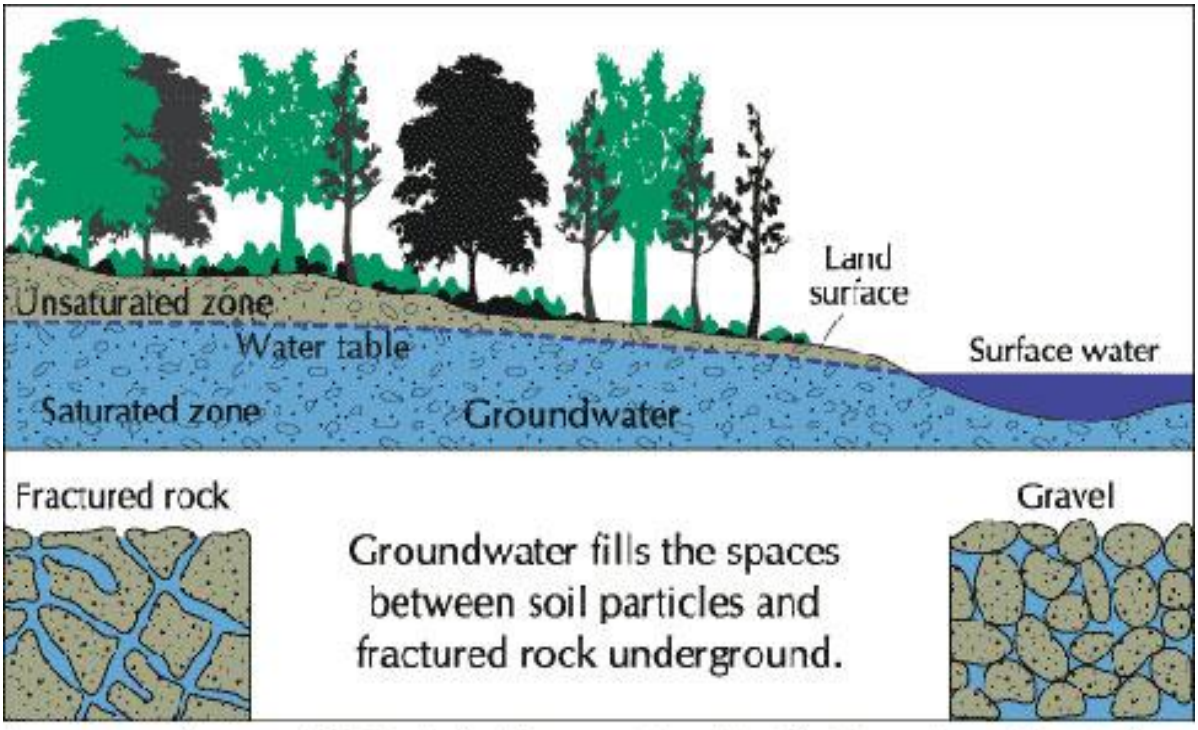


Image compliments of US Geological Survey, adapted by The Groundwater Foundation.

Figure 4 Groundwater Basic Concepts

[25] The area where water fills the aquifer is called the saturated zone (or saturation zone).

Some communities rely on groundwater for most of its water needs. Replenishing the groundwater supply is an important part of managing this valuable natural resource because over time the water table or the depth at which groundwater can be found, may drop. The replenishment of groundwater (recharge) closes the gap between the supply of groundwater and the demand the community puts on it. There are two types of recharge: natural and artificial. *Natural recharge* occurs in streams, channels, and ponds. As water flows through streams and channels, or into ponds, water soaks into the soil and eventually makes its way to the groundwater table. Natural recharge is an important part of the hydrologic cycle. *Artificial recharge* is a man-made means of recharge. An example of artificial recharge is the use of "reclaimed municipal wastewater"[26] through infiltration basins[27] or direct injection[28]. The biggest drawback of this artificial recharge is the health risk if there is insufficient treatment. Hence, it is essential that the water go through a certain number of pretreatment steps before the water can be introduced to the groundwater to prevent any contamination and be used for indirect potable reuse. It is noted that both these forms of recharge are not limited to reclaimed municipal wastewater.

In Orange County, the Groundwater Replenishment System (GWRS), a jointly funded project by the Orange County Water District (OCWD) and the Orange County Sanitation District (OCSD), is the world's largest wastewater purification system for indirect potable reuse. The GWRS takes highly treated wastewater from OCSD that would have previously been discharged into the Pacific Ocean and purifies it using a three-step advanced treatment process consisting of microfiltration[29], reverse osmosis[30] and ultraviolet light with hydrogen peroxide[31]. The process produces high-quality water that exceeds all state and federal drinking water standards. Operational since January 2008, this state-of-the-art water purification project can produce up to 70 million gallons (265,000 cubic meters) of high-quality water every day. This is enough water to meet the needs of nearly 600,000 residents in north and central Orange County, California. These two public agencies have worked together for more than 30 years. They are leading the way in water recycling and providing a locally-controlled, drought-proof and reliable supply of high-quality water in an environmentally sensitive and economical manner. The facility provides approximately 15% of this region's water supply. GWRS water is reliable, safe, and locally-controlled. It is also more cost-effective and energy efficient to produce GWRS water than it is to import water supplies from the Delta and Colorado River. Of considerable significance is the uninterruptible nature of the

[26] Reclaimed municipal wastewater is defined as any surface water that is not drinkable.
[27] An infiltration basin is where "recharge waters such as treated municipal wastewater percolates from spreading through the unsaturated groundwater zone". Requires the least maintenance and is most efficient. It is used in huge open areas where animal life is not disturbed.
[28] Direct injection is where the treated water is put directly into the groundwater. Used where the topography of the land is not suitable for large infiltration basins.
[29] Water is pushed through hollow fibers that remove bacteria and protozoa. (Source: USA TODAY, March 3, 2011)
[30] Water is pushed through a semi-permeable membrane, removing salts and pharmaceuticals. (Source: USA TODAY, March 3, 2011)
[31] As a precaution, water is exposed to high-intensity Ultra Violet (UV) light and hydrogen peroxide to destroy trace organics. (Source: USA TODAY, March 3, 2011)

wastewater supply, providing a measure of protection from imported water supply variability and curtailments.

Water Conservation

The Grand Jury has found that for many years, Orange County water districts have promoted water conservation. If the state has several years of drought or other catastrophes which affect the conveyance of water, the water districts ask the public to conserve and use various, suggested methods to accomplish this. Some of their suggestions are as follows:

- Wash only full loads of laundry or dishes. (Saves up to 50 gallons per week)
- Fix household leaks promptly. (Saves up to 20 gallons per day)
- Take 5 minute showers. (Saves up to 8 gallons each time)
- Turn off the water when you brush your teeth. (Saves up to 2.5 gallons per minute)
- Water your lawn only 1-2 days a week. (Saves up to 840 gallons per week)
- Use a broom rather than a hose to clean your patio and driveway. (Saves up to 40 gallons per day)
- Water your plants in the early morning or at night to reduce evaporation and ineffective watering due to wind gusts.
- Cut back washing your car. Use efficient public car washes for less runoff.[32]

The public, in general, is usually cooperative when water rationing is a voluntary suggestion. However, conservation may become mandatory in the future if imported supplies are interrupted for any length of time. The California Water Project has allowed the levees up north to deteriorate for over 30 years. The San Andreas Earthquake Fault can cause serious damage to this water project, as can other smaller earthquake faults throughout the state, and interrupt service to many areas north and south. Drought is a constant threat to California especially in the south. Consequently, wise use of water has been one of the mantras of Orange County water districts for many years. A memorandum of understanding was developed in 1991 by the California Urban Water Conservation Council for advancing efficient use of water. Fourteen recommendations for cost-effective best management practices were suggested for the future. They are as follows:

- Residential water surveys
- Residential plumbing retrofits
- System water audits, leak detection and repairs
- Metering commodity rates
- Large landscape conservation programs
- High-efficiency washing machine rebate programs
- Public information programs

[32] Bewaterwise.com, Metropolitan Water District of Southern California

- School education programs
- Commercial, institutional and industrial programs
- Wholesale agency assistance programs
- Conservation pricing, tiered pricing
- Conservation coordinator
- Water waste prohibition
- Residential ultra- low-flow toilet replacement programs[33]

The public is familiar with these programs and that has decreased water usage in Orange County for many years. The use of water efficient appliances, plumbing fixtures, and shower heads are common to many households because they not only save water but save money. MWD and MWDOC have been in the forefront of promoting these conservation methods and programs with some member agencies following their lead in the 1990's and others joining in the twenty-first century. The MWDOC told the Grand Jury that despite the increase of population in Orange County and climate change throughout the county consumers are using less water and continue to do so. Urban conservation appears to be working. See Figure 5 for MWDOC water demand and population projection in Orange County information.

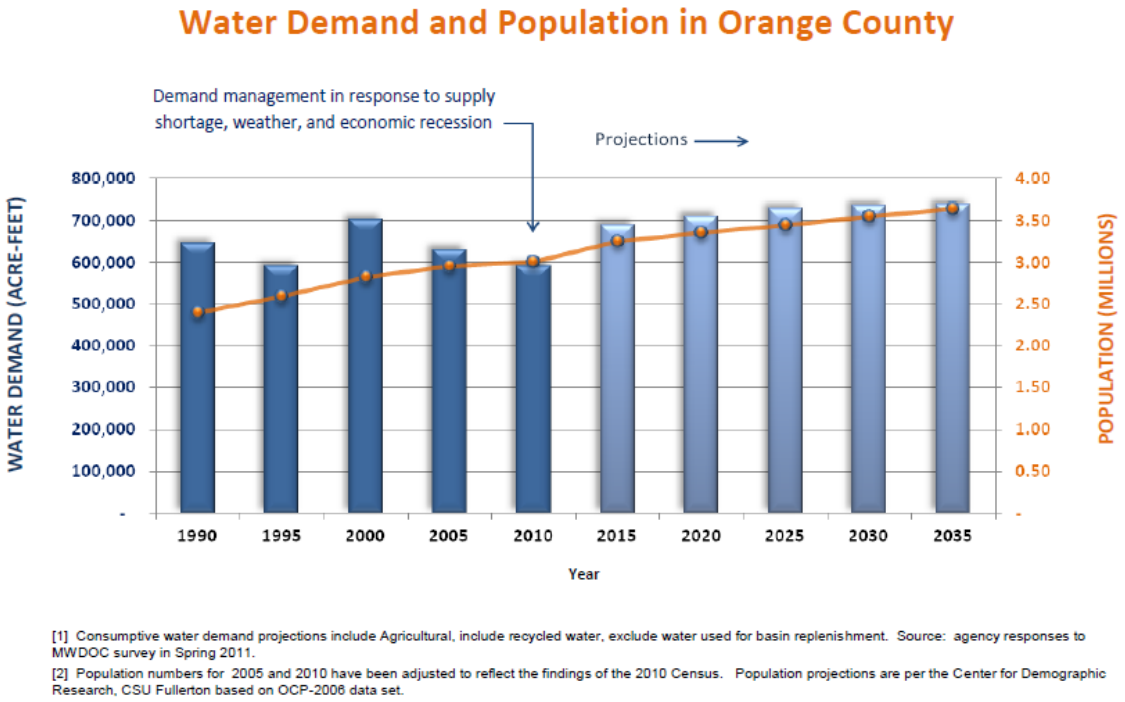


Figure 5 Water Demand and Population Projection
Image Source: Orange County Water Supplier Water Rates and Financial Information (updated March 2012)

[33] "Memorandum of Understanding Regarding Urban Water Conservation in California", California Urban water Conservation Council, 1991.

Irvine Ranch Water District (IRWD), in particular, has followed the suggestions for conservation. They instituted tiered billing in 1991 and have given rebates to both commercial and residential customers who use water-saving devices and equipment. Innovation describes the pathway this water district follows to conserve.

Educational programs are another way to advance the mantra of conservation. Again, MWDOC has been the long- time leader in this area. Through the escapades of Ricki the Rambunctious Raindrop, school children receive the message of how to conserve water and share this information with their parents. It also distributes more than 15,000 copies of the Water Education School Calendar to Orange County Schools every year.[34] The calendars contain drawings on water conservation by elementary and secondary students. MWDOC also has a contract with the Discovery Science Center of Orange County for implementation of their School Education Program. The message is loud and clear: conservation is good for the environment and good for the community.

Conservation does not stop with residential programs. California is an agricultural state and farming uses large amounts of water. In 2009, after three years of drought, political gridlock in Sacramento and the worst economy the state has ever seen since the Great Depression the state legislature passed a comprehensive package of water legislation not seen since SWP was built mid-20th century. In 2010, the Department of Water Resources convened the Agricultural Stakeholders Committee, composed of agricultural water agencies, production agriculture, environmental and academic representatives. The Grand Jury recognizes that the days of major agriculture are at a minimum today in Orange County. However, Orange County imported water from SWP and the Colorado River Aqueduct would be affected by this legislation. Agricultural management plans are required by Senate Bill SBX7 7 which requires all agricultural water suppliers providing water to 25,000 acres or more (excluding acreage using recycled water) to measure the volume of delivered water to customers or be out of compliance. These documents must be updated every five years. If out of compliance, the agricultural water district is ineligible to receive state water grants or loans.[35]

The Department of Water Resources intends to review and update statewide targets for regional water; whether urban or agricultural. Therefore, this legislation becomes relative to all counties including Orange County. Efficient water usage does not stop at county lines.

Recycling

According to the Association of California Water Agencies, water recycling, also known as reclamation or reuse is a reliable, economically feasible and environmentally sensitive means to maximize California's water resources and reduce the demand on freshwater systems. Orange County already uses reclaimed water for agricultural and landscape.

[34] Informational Pamphlet, Municipal Water District of Orange County.
[35] Ibid.

Additional use of reclaimed water depends on public acceptance. Groups opposed to the use of reclaimed water have labeled it “toilet water” which has given its use a negative connotation. Some, reclaimed water is required to be filtered to a greater purity than our present tap water.

It may also be of interest to some that Las Vegas, Nevada, has been placing reclaimed water into the Colorado River for years in accordance with their local water recycling policy which allows them to withdraw an additional gallon beyond Nevada’s base allocation for every gallon of treated Colorado River water returned to the Colorado River.

An example of a successful recycling program is the one run by the Irvine Ranch Water District (IRWD). The main purpose of the water recycling program is to maximize drinking water supplies by reducing the need to use potable water for non-potable uses. IRWD pumps about 48 percent of its water from local groundwater wells and 27 percent of its water needs are fulfilled from surface water from the Colorado River and Northern California purchased from the Metropolitan Water District of Southern California. About 21 percent of their water needs are fulfilled by recycled water. The remaining 4 percent is supplied by other sources.

IRWD uses recycled water for landscape irrigation. Eighty percent of all business and public area landscaping in the district is irrigated with recycled water (also known as purple pipe water). IRWD was able to achieve these results because of good planning during development of the City of Irvine.

While it may not be possible for most water districts to achieve the same level of recycling success as IRWD, the use of recycled water could enable many districts to reduce their use of potable water for landscape watering.

Future Sources of Additional Water

Imported Water

SWP‘s East Branch Extension (13-miles of buried pipeline, three pump stations, and a 90 AF regulatory reservoir) was completed in 2003. It is expected to meet the region’s water needs for the next 40 years. SWP water will be used to recharge over drafted groundwater basins and allow more flexibility for local water.

Bay Delta Conservation Plan

The Bay Delta Conservation Plan (BDCP) is a joint State and Federal project to restore the Sacramento/San Joaquin Delta ecosystem by constructing water supply infrastructure to deliver water to 25 million Californians, 3 million acres of farmland and businesses throughout the State. Currently, the cost for this project is estimated to be 14 billion initially.

A major disaster could affect water service to Southern California for up to 3 years.[36] The new water system would include twin tunnels designed to meet environmental standards, withstand earthquakes and sea level challenges for the next 50 years.

Groundwater

The GWRS is currently undergoing a $142.7 million expansion project, which broke ground in Jan. 2012. The project is scheduled for completion in Feb. 2015. Currently, water districts take 68 percent of their water needs from the basin's clear groundwater. However, that is expected to rise to 75 percent by 2015 as the OCWD expands its production of purified wastewater that is added to the drinking-water aquifer.

Recently, Orange County's Mesa Water District has built a facility that removes the organic materials, making the redwood-tinted amber water clear for local customers' consumption. It uses nano-filtration membranes to clear redwood-tinted amber water, which is an untapped resource of water in the aquifer, to provide 100 percent groundwater to customers, with a 100 percent reliable "backup" import supply. (In 2010, Mesa Water District reached an unusual agreement with the OCWD. In accordance with this agreement, Mesa District was permitted to draw as much water as they could pull from the redwood-tinted portion of the aquifer, about 600 to 1,000 feet down, an untapped resource for decades. This agreement is beneficial to other entities also who draw from the aquifer as pulling up the redwood-tinted amber water keeps it from spreading into the broader aquifer and becoming a treatment problem at nearby wells.)

Conservation

The Grand Jury has learned that Water Use Efficiency (WUE) is critical to the element of water supplies as fewer water sources will be developed. The most important aspect of this is educating the consumer about the value of water not the cost. The public seems to focus on cost. The main message to the consumer is, "Price is what you pay. Value is what you get."[37] Therefore, conservation must continue to be a source of additional water now and in the future.

The State Legislature passed Senate Bill SBX7 7 in November 2009. Senate Bill SBX7 7 requires the Department of Water Resources, along with other state agencies, to develop a single standardized water reporting form, used by urban and agriculture agencies alike. Water suppliers must increase water use efficiency and set targets to accomplish. This bill also mandates that water agencies must reduce per capita water use by 20 percent by 2020. Agricultural suppliers have until 2013 and urban water

[36] Inspection Trip of the State Water Project and the Sacramento-San Joaquin Delta, Oct. 2012.
[37] Municipal Water District of Orange County Public Affairs Workgroup and Water Use Efficiency Workgroup Joint Meeting, Nov.1, 2012.

suppliers have until 2016 to meet these requirements. If these requirements are not met, water suppliers will not be eligible for state loans or grants.[38]

Under this legislation, retail suppliers are able to form regional alliances to comply with the State mandate. The benefits of an alliance are that MWDOC does all the monitoring and reporting; the alliance helps with compliance. The agencies reap the benefits of water use efficiency, and there is no risk to the involved agencies. All this encourages further cooperation among the retail water agencies of Orange County.[39]

Since the Grand Jury Report of 2007-2008, the water districts of Orange County have done much to teach the public to conserve water both inside the home and out. Some of the Water Use Efficiency (WUE) Programs include the following:

- Rotating Nozzles Rebate Program (continuing today)
- Turf Removal Program (continuing today)
- Synthetic Turf Rebate

Other WUE Programs that have been in effect throughout the 1990's and into the 21st century are as follows:

- High Efficiency Washer Program
- Smart Timer Program-Irrigation Timers
- Plumbing Fixture Rebate Program
- Landscape Certification
- Industrial Process Water Use Reduction Program
- High Efficiency Toilet Program
- Ultra-Low Flush-Toilet Program
- Home Water Surveys
- Showerhead Replacements

Some other possible new grant-funded WUE programs are as follows:

- Home Certification Program
- Public Spaces Program
- Spray to Drip Research Program
- Water Smart Industrial Program
- Weather-based irrigation controller
- Smart Timer Rebate Program[40]

[38] MWDOC meeting with the Orange County Grand Jury Environmental and Transportation Committee (Mar. 14, 2013)
[39] MWDOC, Overview of Water Issues, p2, February 21, 2013
[40] Municipal Water District of Orange County, Public Affairs Workgroup and Water Use Efficiency Workgroup, Joint Meeting (November 1, 2012).

The Orange County water retailers as a whole have established very informative web sites that share information about conservation methods inside and outside residential buildings. Open house dates at water facilities are posted on the web site so the customer has the opportunity to attend conservation workshops and receive water conserving devices such as water saving hose nozzles or drought-resistant plants. Water retailers provide to customers phone numbers for a water survey which aids in conservation on their property. Many of the Orange County water districts told the Grand Jury that water use efficiency has been accomplished in residential buildings.

One method of conservation that The Grand Jury 2007-2008 recommended in their report was to: "Develop a tiered-pricing structure with the first tier based on individual customers, water allocation priced at a commodity rate, and subsequent tiers priced significantly higher to encourage conservation. The pricing shall be structured in a manner that will preclude the necessity of price increases as a result of reduced water use."[41]

Since the 2007-2008 Grand Jury Report and before some water agencies instituted budget based tiered-rate some rate payers were provided a water budget for their property. This allows a reasonable amount of water usage inside and outside each month. If more water is used the customer is charged at a higher rate. This sends the message that using less water is an economically and environmentally sound practice. The less a rate payer wastes more water is available for everyone else. Unfortunately, many water districts have not decided to use tiered-rate pricing like other utilities such as electric and natural gas companies. Currently, the only water districts using tiered-rates are as follows:[42]

- El Toro Water District
- Emerald Bay Service District
- Irvine Ranch Water District
- Laguna Beach County Water district
- Moulton Niguel Water District
- Trabuco Canyon Water District (seasonal rates[43])
- City of San Clemente (seasonal rates[44])

The municipal (city) water districts with tiered-billing are the following:

- City of Brea
- City of Buena Park
- City of La Palma (effective 2013)
- City of San Juan Capistrano

[41] 2007-2008 Orange County Grand Jury Report, "Water Budgets, Not Water Rationing, Recommendation R-2b.
[42] Memo, Budget Based Tiered Rates, Municipal Water District of Orange County, (November 7, 2012)
[43] Water is more expensive in the summer.
[44] Ibid

In 2012 one water district told the Grand Jury that tiered-rates were data intensive and that smaller districts did not have enough customers to employ this method of billing. However, the Grand Jury noted that Laguna Beach County Water District uses tiered-rates, and they have a small customer base. Tiered-rates are one of the best practices in the search for new methods of conservation.

Much conservation of water has been accomplished in Orange County since the Grand Jury Report of 2007-2008. However, with the threat of climate change and periods of long drought, conservation of water continues to be an important method of water sustainability.

Recycling

In 2008, the 2007 – 2008 Orange County Grand Jury wrote a report on water that stated more than half of Orange County's water, 53 per cent, was imported by the MWD, which in turn sold it to the MWDOC and three cities.[45] Today, approximately 50 per cent of the water used throughout Orange County is imported.[46] This means efforts to conserve and recycle water are having an impact.

MWDOC's 2010 Regional Urban Water Management Plan of June 2011 provided many areas where recycled water could be used in the future. The Grand Jury is concerned that some water districts have not met prior estimates for recycling, and is therefore skeptical of the predictions contained in the report. However, MWDOC is encouraged to continue supporting the use of recycled water as a positive alternative for some present potable water uses.

Cadiz Water Project

Founded in 1983, Cadiz Inc. is a renewable resources company based in Los Angeles. This company began accruing land in the Cadiz Valley of eastern San Bernardino County. NASA funded a project in this area that integrated satellite imagery with geological, geophysical, and geochemical survey methods to help in the selection and evaluation of this land. Thus, the Cadiz Water Project was born. NASA found a reliable, natural underground aquifer system that could be used for recharging water and producing high quality drinking water for areas that needed it. A bonus was the large area of underground storage for surplus water.[47]

In 1984, the first production wells were installed on the property to determine the viability of this system. These wells yielded a high-quality of groundwater and Cadiz Incorporated decided to purchase more of this land which doubled the size of the Cadiz property. Now this company owns 45,000 acres of which 34,000 acres are located in

[45] 2007 – 2008 Orange County Grand Jury, Water Budgets, Not Water Rationing
[46] http://www.Metropolitan Water District.com/about/resources
[47] Cadizinc.com/history

the Cadiz Valley.[48] Since 1989, they have grown agricultural crops quite successfully there.

In 1998, Cadiz Inc. decided to establish a water supply and storage project on the site. Originally the design was to store surplus Colorado River water there. This water and groundwater would then be returned to the MWD as needed. The storage capacity is over one million acre feet.

By 2008 Cadiz Inc. began to design a project that would recover the water that was lost to evaporation and send it to customers in need of reliable supplies. They changed the pipeline route to avoid federal land. A 99-year lease was negotiated with Arizona and California Railroad Company to use a section of the railroad's right-of – way, and a pipeline was constructed to connect to the Colorado Aqueduct.

In 2012, Santa Margarita Water District (SMWD) became the lead agency promoting the project as a new source of drinking water for their customers. SMWD proceeded through the various environmental impact studies to respond to any complaints or problems before the project was approved. MWD ultimately rejected the original project. If this project had been approved, there would have been an average 50,000 AF (1.6 billion gallons) of water for participating water providers.[49] One million AF of underground storage would have been available to conserve or bank imported water; thereby, cutting the cost. If implemented, drought would not have continued to be a large problem because of the stored water space in this aquifer. The expected costs of delivered treated water from the Cadiz Project have been estimated to be $1,100 to $1,500 an AF. Unfortunately, past and present litigation against Cadiz has prevented the project from moving forward. Also MWD did not want Cadiz using the Colorado River Aqueduct for conveyance. Because of past litigation, the relationship between MWD and Cadiz has been tolerant at best.

Originally, Cadiz did an analysis of the water and found chromium. This however, was not chromium 6 which is a carcinogen. Treatment of this particular chromium is now considered a minor issue.

One of the loudest activists to decry the Cadiz Project is a former archeologist of the Bureau of Land Management assigned to the California Desert District.[50] This archeologist contends that this project will not help the desert residents, but take water from San Bernardino County to be used by Orange County. This individual also pointed out that hearings about this project are held in areas much too far from the desert area preventing citizens from attending. Rancho Santa Margarita is 217 miles from Cadiz and meetings on this project are held there on occasion.

[48] Ibid.
[49] Ibid.
[50] San Bernardino County Sentinel, "Opposition Forms Against Sending Desert Water to Orange County, Feb. 26, 2012.

Federal opposition to this water project comes from a California senator. The Grand Jury noted that the senator has taken the position that Cadiz will never become a reality. In the eyes of the federal government, environmental concerns and finances seem to be the major reasons not to proceed with this project.

Ultimately, Cadiz remains a controversial issue as a future source of water. Regardless of differences; however, it is a future source of water that should not be ignored.

Desalination

The domestic use of seawater has been the dream of many coastal communities located in areas where potable water is not readily available. Until recently, that dream seemed unrealistic for the residents of Orange County; however, several Southern California projects may soon make that dream a reality. The two main stumbling blocks for most desalination projects are environmental and financial. The environmental concerns are the impact of seawater extraction and what to do with the salt that is produced. The financial concern has to do with the cost of the water produced because present desalination technology requires large amounts of electrical power to produce potable water. The three most publicized projects are in Carlsbad, Huntington Beach, and Dana Point.

Carlsbad Project The Carlsbad project is a private development by Poseidon Resources Corp. The San Diego Water Authority approved a Water Purchase Agreement with Poseidon Resources Corp. in November 2012. The water authority states the plant will produce 50 million gallons a day starting in 2016. By 2020, it will generate enough water to meet 10 percent of the San Diego County's water needs.[51] This will be the first large-scale desalination plant on the West Coast and the largest of its kind in the Western Hemisphere. Poseidon and the water authority are financing the $954 million Carlsbad project with $781 million in tax-exempt construction bonds. The balance is coming from investors who anticipate a return of about 13 per cent.

Poseidon chose the Carlsbad location, next to the Encina Power Station, so it could draw from the power plant's cooling water discharge – thus avoiding the environmental harm of operating its own ocean intake.[52] While using the power plant's cooling water discharge appeared to be a good idea, it did not take into account the California Energy Commission's approval on May 31, 2012 to build a new natural gas power plant at that location which would entail destruction of the existing power station and removal of the water discharge system.[53] The price of the water produced will be a challenge because present figures suggest that water will cost about twice what water from other sources cost.

[51] Los Angeles Times, February 18, 2013, Is desalt a drop in bucket?
[52] Los Angeles Times, February 18, 2013, Is desalt a drop in bucket?
[53] California Energy Commission, News Release, May 31, 2012

Huntington Beach Project The Huntington Beach project is also a private development by Poseidon Resources Corp. It would consist of the construction and operation of a 50 million gallon per day seawater desalination facility within the City of Huntington Beach. The proposed desalination project would consist of a seawater intake system, pretreatment facilities, a seawater desalination facility utilizing reverse osmosis technology, post-treatment facilities, product water storage, chemical storage, electrical substation, on and off site pump stations, and 48 to 54 inch diameter product water transmission pipelines in Huntington Beach and Costa Mesa.[54]

Like the Carlsbad project, this project would also use seawater from a neighboring power plant to eliminate the need for its own seawater intake system; however, a state policy adopted in 2010 will phase out the use of seawater to cool coastal power plants.[55] That policy could end seawater cooling at the Huntington Beach plant as early as 2020. That policy does not apply to stand-alone desalination plants.[56]

The cost of the produced water is also a challenge to this project. Another challenge is the need to cross a neighboring city to deliver the water to potential customers in South County. Groups within Costa Mesa have raised concerns about the construction of a major pipeline through their city.

Dana Point Project The official name of the Dana Point project is Doheny DeSal, and it is located in South Orange County. It is much smaller in scope than the two Poseidon projects discussed above. This project will not use an existing seawater intake to obtain the water required to supply the facility. It uses subsurface slant-well technology to tap beneath San Juan Creek and under the ocean floor to draw feed water.[57] Since the use of this technology will utilize a natural filtering process it should reduce costs by eliminating the need for costly pretreatment facilities and open-water intake systems.

This project is in pilot testing. Three phases of the pilot project have been completed. A final analysis of the results is required before future implementation can be evaluated. Cost may also be a major obstacle for implementation.

Is desalination in Orange County's future? The Grand Jury reviewed various documents and articles to evaluate desalination as a potential future water source. The final determination is that while it may present some challenges in the area of environmental concerns and the cost of water, it must be included in any discussion of future water sources for Orange County.

[54] http://www.hungtingtonbeachca.gov/government/departments/major/poseidon.cfm
[55] Los Angeles Times, Proposed desalination facility in Huntington Beach wins permit, February 10, 2012
[56] Los Angeles Times, Proposed desalination facility in Huntington Beach wins permit, February 10, 2012
[57] MDWOC Briefing Paper

Orange County's Water Policy

As stated at the beginning of this study, Orange County does not have an agency that is responsible for water policy in the County. It does have several major agencies that coordinate the desires of the water retailers to ensure Orange County has a viable water policy that warrants sustainability. The following is the role of the various agencies:

MWDOC was formed in 1951 and consolidated with Coastal Municipal Water District in 2001, which provided wholesale imported water supplies to water agencies and cities serving the coastal areas of Orange County from Newport Beach south to San Clemente. MWDOC's primary responsibility is to ensure that the present and future water needs of its members are met through system and supply reliability. It represents its members at regional, state and federal levels by advocating for development and protection of water supplies, as well as planning and coordinating the water needs for its service area. The District also maintains an award winning water use efficiency program and coordinates countywide water/wastewater emergency preparedness and response efforts.

OCWD was formed in 1933 by a special act of the California State Legislature to protect Orange County's rights to water in the Santa Ana River. OCWD's primary responsibility is managing the vast groundwater basin under northern and central Orange County that supplies water to more than 19 cities and water agencies serving more than 2.3 million Orange County residents. Since 1933, OCWD has replenished and maintained the groundwater basin at safe levels while more than doubling the basins' annual yield. This important source of water provides local groundwater producers with a reliable supply of high-quality water.

OCWD primarily recharges the basin with water from the Santa Ana River and, to a lesser extent, with imported water purchased from the Metropolitan Water District of Southern California. OCWD currently holds rights to all Santa Ana River flows reaching Prado Dam. Water enters the groundwater basin via settling or percolation ponds in the cities of Anaheim and Orange. Behind Prado Dam (constructed and owned by the U. S. Army Corps of Engineers for flood prevention), it also owns 2,400 acres in Riverside County, which the District uses for water conservation and water quality improvement enhancement.

OCWD monitors the groundwater taken out each year to ensure that the basin is not overdrawn, refills the basin, and carries out an assessment program to pay for operating expenses and the cost of imported replenishment water. The groundwater basin holds millions of AF of water, and provides more than half of all water used within the District. Protection, safety and enhancement of groundwater are OCWD's highest priorities. OCWD is leading the way in purification of wastewater for reuse to provide a reliable, new, drought-proof high quality source of water.

Orange County's Present Water Policy Determination Process

Presently, there is no agency or body that is responsible for setting the water policy for Orange County. Each water retailer, whether water district or city water department, determines what is in the best interest of their rate payers; that includes plans for the future and pricing. The agency that has assumed the responsibility of working with the water retailers to facilitate planning is MWDOC. Through coordination meetings at various levels, determination is made on what can be done to maintain the sustainability of water for the entire county.

The present water policy process does not lead to a formal planning document. However, it does lead to a set of various options that are under consideration by the various stakeholders.

Whether this process is the best way to deal with water sustainability is not a matter for this study. However, the process must be working well as Orange County is doing a good job of building infrastructure that has allowed it to use less imported water and utilize more local resources.

MWDOC is addressing the options in the prior section, and it does appear that coordination is bringing about cooperation between the diverse water interests in the county.

Should the County of Orange Be Involved in Setting Water Policy?

The 2012 – 2013 Orange County Grand Jury requested the opinion of the Orange County Board of Supervisors regarding the present water policy process and whether that function should come under their jurisdiction. The Board members had a diverse opinion. Generally, they believe that the present process is working well. Some thought it may be best to centralize authority with the Board of Supervisors.

The Grand Jury believes that adding another layer of bureaucracy would not improve the water policy making process. The subject matter is very technical in nature, which is why leaving it in the hands of existing water agencies makes more sense.

FINDINGS

In accordance with California Penal Code Sections §933 and §933.05, the 2012-2013 Grand Jury requires responses from each agency affected by the findings presented in this section. The responses are to be submitted to the Presiding Judge of the Superior Court.

Based on the study, the 2012-2013 Orange County Grand Jury has arrived at eight principal findings, as follows:

F1 There is no central authority responsible for water policy in Orange County.

F2 MWDOC and OCWD in conjunction with the local water districts and city water departments are doing a comprehensive job of coordinating water planning.

F3 Water use efficiency has helped ease the use of imported water.

F4 Desalination is a possible future source of water.

F5 The Groundwater Replenishment process is having a favorable impact on relieving the dependency on imported water.

F6 Only a few water districts in Orange County use tiered pricing for water conservation.

F7 Cadiz, while a controversial water supply and storage project, is a possible future source of water.

F8 Bay Delta Project is critical to ensure the continual flow of imported water into Orange County.

RECOMMENDATIONS

California Penal Code Sections §933 and §933.05 require governing bodies and elected officials to which a report is directed to respond to findings and recommendations. Responses are requested from departments and local agencies and their non-elected department heads.

In accordance with *California Penal Code Sections §933 and §933.05*, the 2012-2013 Grand Jury requires responses from each agency affected by the recommendations presented in this section. The responses are to be submitted to the Presiding Judge of the Superior Court.

Based on the study, the 2012-2013 Orange County Grand Jury makes the following seven recommendations:

R1 MWDOC and OCWD should continue their role in coordinating water planning. (F1, F2)

R2 MWDOC shall find additional ways of promoting water use efficiency. (F3)

R3 Desalination must be included in any discussion of future water sources for Orange County. (F4)

R4 The Groundwater Replenishment project shall continue looking for additional ways in which its water can be used. (F5)

R5 MWDOC shall continue providing data to the water districts and city water departments encouraging tiered pricing to assist with water conservation. (F6)

R6 Water districts in South Orange County shall consider the Cadiz Project in any discussion on sustainability of water in the southern part of the county. (F7)

R7 All the Orange County Water Districts shall support legislation for the Bay Delta Conservation Plan to ensure sustainability of imported water to Orange County. (F8)

REQUIRED RESPONSES

The California Penal Code §933 requires any public agency which the Grand Jury has reviewed, and about which it has issued a final report, to comment to the Presiding Judge of the Superior Court on the findings and recommendations pertaining to matters under the control of the agency. Such comment shall be made *no later than 90 days* after the Grand Jury publishes its report (filed with the Clerk of the Court); except that in the case of a report containing findings and recommendations pertaining to a department or agency headed by an elected County Official (e.g., District Attorney, Sherriff, etc.), such comment shall be made *within 60 days* to the Presiding Judge with an information copy sent to the Board of Supervisors.

Furthermore, the *California Penal Code* Section §933.05 (a), (b), and (c) details, as follows, the manner in which such comment(s) are to be made:

(a) As to each Grand Jury finding, the responding person or entity shall indicate one of the following:

(1) The respondent agrees with the finding.

(2) The respondent disagrees wholly or partially with the finding, in which case the response shall specify the portion of the finding that is disputed and shall include an explanation of the reasons therefore.

(b) As to each grand jury recommendation, the responding person or entity shall report one of the following actions:

(1) The recommendation has been implemented, with a summary regarding the implemented action.

(2) The recommendation has not yet been implemented, but will be implemented in the future, with a timeframe for implementation.

(3) The recommendation requires further analysis, with an explanation and the scope and parameters of an analysis or study, and a timeframe for the matter to be prepared for discussion by the officer or head of the agency or

department being investigated or reviewed, including the governing body of the public agency when applicable. This timeframe shall not exceed six months from the date of publication of the grand jury report.

(4) The recommendation will not be implemented because it is not warranted or is not reasonable, with an explanation therefore.

REQUESTED RESPONSES

Responses to **Findings F1, 2, 3, 4, 6, 7, 8** are required from the Board of Directors of the Municipal Water District of Orange County.

Responses to **Findings F1, 3, 5, 8** are required from the Board of Directors of the Orange County Water District.

Responses to **Recommendations R1, 2, 3, 4, 6, 7,** are required from the Board of Directors of the Municipal Water District of Orange County.

Responses to **Recommendations R1, 3, 5, 7** are required from the Board of the Orange County Water District.

ATTACHMENT 3

MWDOC Response to 2013 OC Grand Jury Report

MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

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September 3, 2013

The Honorable Thomas J. Borris
Presiding Judge
Orange County Superior Court
700 Civic Center Drive West
Santa Ana, CA 92701

Dear Judge Borris,

The Municipal Water District of Orange County (MWDOC) hereby submits its required responses to the findings and recommendations in the Orange County Grand Jury report, **"Orange County Water Sustainability: Who Cares?"**

MWDOC recognizes and appreciates the significant time and effort the Orange County Grand Jury invested in engaging and understanding the complex water issues Orange County is facing, and the diversified and collaborative manner in which the family of Orange County Water Agencies work together. MWDOC played a significant role in that process by escorting the Water Committee of the Grand Jury on water trips to Northern California and to the Colorado River as well as made numerous introductions, provided substantial background information, took them to a number of meetings and had individual meetings with them. Overall, the 2013 Grand Jury made a substantial investment in understanding Orange County Water and the issues we are facing. We congratulate them on the process and the report that was published.

For over sixty years, MWDOC has been instrumental in the planning, coordination, collaboration and facilitation of sound water resource management. These efforts have resulted in a number of local and regional reliability projects including Orange County Water District's (OCWD) Ground Water Replenishment System and Phase One Expansion; the Irvine Regional Interconnection Project, Santa Margarita Water District's Upper Chiquita Reservoir, Irvine Ranch Water District's Strand Ranch Banking and Recovery Project; as well as MWDOC's comprehensive and effective Water Use Efficiency Program. For these projects and many others, it is the integrated planning and coordination among the water agencies that ensures Orange County's water sustainability and reliability while preserving local control and water rights protection.

FINDINGS

F1- There is no central authority responsible for water policy in Orange County.

RESPONSE: Agree

Authority for water supply and reliability is not necessarily a simple issue to understand. Historically, it has always been a shared responsibility among regional, local, state, and federal entities. It is important to acknowledge that we live in an arid region; land ownership and development triggered the need for water. As a result, as population and development grew there was a growing need

for imported water. Imported water supply oversight is ultimately shared between the State's Department of Water Resources and the Federal Department of Interior as well as many other agencies as the water works its way from a variety of sources, ultimately to the local distribution system that carries it to the residents and businesses that rely on it. Water quality authority is also shared between the United States Environmental Protection Agency and the California Department of Public Health. Water quality is regulated through the various systems, until it ultimately is delivered through the local distribution system to residents and businesses.

In Orange County, authority is shared for not only the quantity and quality of water available, but also for the system that delivers it. Although there is not one central authority for water policy, the diverse representation at the local level and at the regional level ensures that the needs of Orange County are addressed in a collaborative, integrated and coordinated manner.

F2- MWDOC and OCWD in conjunction with the local water districts and city water departments are doing a comprehensive job of coordinating water planning.

RESPONSE: Agree

MWDOC, OCWD, the city water departments and the local water agencies work closely together to coordinate regional reliability and sustainability efforts. This coordination is an on-going effort with a number of regular planning meetings, coordination meetings and project meetings held each month. These meetings are a critical part of the on-going investment in Orange County's water sustainability efforts that enable local control and decisions by retail governing boards, which are responsible for looking out for the interest of the local residents and businesses.

A great example of this collaboration is in the required updating of MWDOC's Urban Water Management Plan. This mandatory planning document requires every urban retail water agency, including MWDOC, to submit to the California Department of Water Resources a reliability plan every five years. In coordination with the water agencies in the County, MWDOC was able to draft critical sections of these plans in order to provide integration and consistency in the areas of regional water sources and reliability management measures. Through MWDOC's facilitation, a number of agencies participated in a joint consulting contract to assist them in the completion of their Plans which resulted directly in a substantial savings to ratepayers.

F3- Water use efficiency has helped ease the use of imported water.

RESPONSE: Agree

Water use efficiency has been an integral part of effective water management since the early 1990's. Not only does water use efficiency ease the demands on imported and local water, but it also allows the conserved water to remain in storage until it is needed; saving money, reducing run-off and improving environmental water quality and reducing the number of beach closures. The following table shows that today's demands are approximately 10% lower than they would otherwise be without our investment in Water Use Efficiency:

Orange County Total Water Supply
1990 vs. Today

Source	1990	Today
Import Water – Direct Use – For GW replenishment	**59%**	**45%**
Surface Water	**2.5%**	**<1%**
Groundwater – Santa Ana River, SJ Basin & Local Runoff	**36%**	**39%**
Recycled Water - Direct use - GWRS Purified	**2.5%**	**15%**
Total Consumptive Demand	**645,950 AF**	**606,000 AF**
Water Use Efficiency Savings	**-**	**71,000 AF**

F4- Desalination is a possible future source of water.

RESPONSE: Agree
MWDOC has a responsibility to consider and explore all new sources of water for long term water reliability and sustainability. For over a decade, MWDOC has facilitated the exploration and investigation of two ocean desalination projects in Orange County; the Doheny Ocean Desalination Project and the Huntington Beach Ocean Desalination Project. As the process proceeds for each of these projects, a full analysis will be developed and presented to the various governing boards of participating water entities for consideration. Decisions about when these future investments will move forward are NOT easy and must take into consideration many factors and can require as much as 20 years to develop.

F6 - Only a few water districts in Orange County use tiered pricing for water conservation.

RESPONSE: Agree

Water agencies and city water departments consider a myriad of elements when determining a rate structure for their customers. Currently, most all water agencies in Orange County use some form of tiered pricing. However, out of the 31 retail agencies in Orange County, 6 or 7 currently have some form of budget based tiered rates or allocation based rates. We believe more and more agencies will be moving in this direction. In working with a number of our agencies over the past 3 or 4 years, a very basic but driving consideration is the local sentiment and philosophy of the governing body in regards to determining what level of water use is appropriate and what level becomes excessive. Not all agencies approach rates, budgets, and reserve funding in the same manner, but typically these decisions are vested in the philosophy embedded in the local communities. Although data has indicated that budget based tier pricing can improve the level of water use efficiency and the pricing

signal sent to the consumers, there are many other demonstrated ways water agencies can achieve that goal.

F7 - Cadiz, while a controversial water supply and storage project, is a possible future source of water.

RESPONSE: Agree
MWDOC has a responsibility to consider and explore all new sources of water for long term water reliability and sustainability.

F8 - Bay Delta Project is critical to ensure the continual flow of imported water into Orange County.

RESPONSE: Agree
The Bay Delta Conservation Plan and construction of an alternate conveyance system is the largest water delivery effort in California in over half a century. Fixing the Bay Delta, by investing in a new conveyance system ***and*** in environmental restoration projects, is necessary to ensure water reliability and sustainability to Orange County and to 25 million Californians throughout the state. There is not a more important issue facing California - the State will not be able to keep operating effectively with a broken water supply system.

RECOMMENDATIONS

R1 - MWDOC and OCWD should continue their role in coordinating water planning. (F1, F2)

RESPONSE: Agree
Historically, MWDOC and OCWD have worked together on regional planning efforts in an integrated and collaborative manner. Although, OCWD's historical efforts have focused on development and management of local groundwater supplies, there has always been an important imported water component to meet the remaining needs in the OCWD service area and to use imported water to replenish the groundwater basin during periods of water availability. There are a number of venues to ensure this regional effort stays in place. They include a quarterly Board of Directors workshop meeting of both Boards of Directors as well as a number of ad hoc committees at both the Board and staff level. MWDOC's monthly managers meetings for all member agencies, including OCWD, and project meetings such as the Huntington Beach Ocean Desalination Project Workgroup will continue to keep us coordinated.

R2 - MWDOC shall find additional ways of promoting water use efficiency. (F3)

RESPONSE: Agree
In September 2011, the United States Bureau of Reclamation awarded MWDOC a grant to fund the development of a WUE Master Plan (Master Plan) for all of Orange County. The goals of this five-year Master Plan are twofold; to identify programs and strategies to assist retail water agencies to comply with the SBx7-7 state requirement calling for a 20% reduction in per capita water use by the year 2020, and to achieve its share of Metropolitan's Integrated Resources Plan goal for water supply reliability through water use efficiency and water recycling. The approach of the Master Plan is to build upon existing programs, while leveraging regional and local agency programs, partnerships,

and resources as well as identify new ways to expand the promotion and education of water use efficiency in an innovative and collaborative manner.

MWDOC just completed a public review process for the Draft Plan and anticipates adoption by the Board in September 2013.

R3 Desalination must be included in any discussion of future water sources for Orange County. (F4)

RESPONSE: Agree

MWDOC has a responsibility to consider and explore all new sources of water for long term water reliability and sustainability. As part of that responsibility, MWDOC conducts and updates water reliability studies in collaboration with retail water agencies throughout the county. These studies identify all potential projects, including ocean desalination. Currently, MWDOC is exploring two ocean desalination projects; the Doheny Ocean Desalination Project (Doheny Project) and the Huntington Beach Ocean Desalination (HB Project).

Since 2002, MWDOC has explored the feasibility of developing an ocean desalination facility in south Orange County for the purpose of producing local drinking water and decreasing its reliance upon imported water supplies. A 2004 Water Reliability Study concluded that a desalination project in Dana Point would provide for both supply and system reliability benefits. This location was recommended due to the geology, availability of land, existing outfall for brine disposal, and proximity to existing water distribution pipelines.

These factors make it conducive to employ environmentally sensitive and sustainable desalination technology that utilizes a slant well intake.
The Doheny Desalination facility could supply 15 million gallons of drought-proof, highly reliable, local drinking water a day, which would represent approximately 25% of the participating agencies' potable water demand and serve approximately 50,000 south Orange County households. The project has recently completed phase three and the participating agencies are considering its next steps.

The second desalination project currently being reviewed is the proposed Huntington Beach Project, which would produce 50-million gallons of water per day (MGD) – enough water for more than 168,000 Orange County households per year or approximately 8% of Orange County's total water supply. The proposed facility would utilize the Huntington Beach Generating Station's existing ocean water intake/outfall infrastructure, requiring no additional development into the ocean, thus reducing further construction costs.

The Huntington Beach project would be built by Poseidon Resources (Poseidon), a U.S.-based company that specializes in developing and financing water infrastructure projects. MWDOC, OCWD and 20 local retail water providers are evaluating the potential benefits and costs of purchasing water from the Huntington Beach Project. To date, no binding commitments to purchase the water have been made.

R4 - The Groundwater Replenishment project shall continue looking for additional ways in which its water can be used. (F5)

RESPONSE: Agree

MWDOC has been a long-time supporter of the Ground Water Replenishment System (GWRS) Project and has worked diligently with Metropolitan Water District of Southern California to secure Local Resource Program funding. The project has been on-line for just over five years and is currently under construction for its Phase One Expansion, which is expected to be completed by 2015. The two major objectives for the project are to use the water for protection of the groundwater basin from seawater intrusion and replenishment of the groundwater basin. Even with the current expansion that is under way and another one coming behind it, there are plenty of uses for the water. One that is being studied currently is to use the water for "mid-basin injection" to increase levels of water in the groundwater basin in specific areas near to where pumping levels are high and water levels have been lowered. In the future, following regulatory changes, there is the potential that the project water could be used for direct potable reuse.

R5 - MWDOC shall continue providing data to the water districts and city water departments encouraging tiered pricing to assist with water conservation. (F6)

RESPONSE: Agree

MWDOC is assuming (as was done under F6) that the Finding and Recommendation pertains to water budget based tiered rates or allocation based rates or similar types of retail pricing programs. With respect to water pricing, it is difficult to identify a "one-size fits all" type of pricing for every agency in the county and we have already noted that local control plays a large part in how a retail agency interacts with the public. However, MWDOC agrees that water budget based tiered rates, where each customer is provided a scientifically or reasonably determined "target use of water" helps the customer to identify how they are performing with respect to standardized criteria. MWDOC agrees that it will continue to work with agencies to share information regarding such efforts.

In 2008, MWDOC was awarded a $685,000 grant from the California Department of Water Resources to assist retail water agencies and city water departments in evaluating and implementing Budget Based Tiered Rate Structures. To date, several agencies have either implemented new rate structures or are using the water budget information to educate their customers regarding efficient water use each billing cycle. Through this grant, other agencies are still in the process of evaluating the feasibility of efficiency based rate structures. The trend is clear; agencies are moving toward rate structures that signal efficiency. Although 6 to 7 agencies in Orange County have already implemented budget based tiered rate structures, it is remains a *local* decision. There is not one silver bullet in water use efficiency implementation; rather a toolbox of options that best serve the community where they are implemented and meet long term water used efficiency goals.

MWDOC has and will continue to work with all of our member agencies in facilitating implementation of water rate structures that best fit the needs of their local community. This facilitation includes data collection, analysis and reporting on a variety of key indictors including but not limited to water consumption, water supply, water rates and consumer sentiment.

R6 Water districts in South Orange County shall consider the Cadiz Project in any discussion on sustainability of water in the southern part of the county. (F7)

RESPONSE: Agree

MWDOC has a responsibility to consider and explore all new sources of water for long term water reliability and sustainability.

R7 All the Orange County Water Districts shall support legislation for the Bay Delta Conservation Plan to ensure sustainability of imported water to Orange County. (F8)

RESPONSE:

The Bay Delta Conservation Plan (BDCP) and the construction of an alternative conveyance is the single most critical water project in our life time. Both the State Water Project and the Colorado River Aqueduct are part of the foundation of water delivery in Orange County. Investments in fixing the Delta as well as repairs on the State Water Project and Colorado River Aqueduct system are necessary water reliability and sustainability investments.

MWDOC will support not only legislation, but other efforts that advance the BDCP process and calls for Delta improvements as long as they hold up the co-equal goals that ensures a reliable and affordable supply of water from the Bay-Delta for southern California. MWDOC and our member agencies are currently reaching out to city councils, elected officials, and community groups to provide information, education and gain support for the BDCP.

Sincerely,

Jeff Thomas
Vice President

ATTACHMENT 4

OCWD Response to 2013 OC Grand Jury Report

SINCE 1933

ORANGE COUNTY WATER DISTRICT

ORANGE COUNTY'S GROUNDWATER AUTHORITY

August 22, 2013

Thomas J. Borris,
Presiding Judge of the Superior Court
700 Civic Center Drive West
Santa Ana CA 92701

SUBJECT: Orange County Grand Jury Report – ORANGE COUNTY WATER SUSTAINABILITY; WHO CARES – June 19, 2013

Dear Judge Borris:

Thank you for the opportunity to respond to the Orange County Grand Jury's June 19, 2013 Report entitled "Orange County Water Sustainability; Who Cares." The Orange County Water District (OCWD or District) was formed in 1933 by a special act of the California State Legislature to protect Orange County's rights to water in the Santa Ana River and to manage the local groundwater basin. OCWD's primary responsibility is managing the vast groundwater basin under north-and central Orange County that supplies water to 19 cities and water agencies, serving more than 2.4 million Orange County residents. The District owns and operates approximately $850 million in assets and infrastructure and has an annual operating budget of $118 million.

Since 1933, OCWD has replenished and maintained the groundwater basin at safe levels while more than doubling the basin's annual yield by investing in local water supply projects such as the Groundwater Replenishment System. This important source of water provides local cities and retail water agencies with a reliable supply of high quality water and reduces the need for imported water from the Colorado River and Northern California.

Local groundwater accounts for approximately 70% of north and central Orange County's water supply and is about 1/2 the cost of imported supplies, which have been restricted in the last five years. This local water supply is more reliable and has a lower carbon footprint than imported supplies, and saves each municipality within the OCWD tens of millions of dollars annually. OCWD is the entrusted guardian of this valuable asset which is vital to Orange County and Southern California's economy, public health and safety. OCWD receives hundreds of tour requests annually from water agencies and public officials around the world to review its facilities and management programs. Since 2008, more than 20,000 guests have toured OCWD facilities.

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recharge facilities in the cities of Anaheim and Orange. In normal storm years, the District can cumulatively capture 50,000 to 60,000 acre feet per year of water behind the dam. OCWD is currently working with the Corps to increase the allowable storage elevation behind the dam. Depending on rainfall this increase will result in a savings of $12 million to $24 million annually in less dependence on imported water supplies.

Additionally OCWD has constructed wetlands on nearly 465 acres of land behind Prado Dam. One half of Santa Ana River flows are routed through the wetlands to naturally remove nitrates and other contaminants in the water. In addition to improving water quality, OCWD's wetlands provide an opportunity for native habitat to thrive. OCWD has invested substantial resources to protect the least Bell's vireo, an endangered California songbird that nests in the willows of Prado Basin. OCWD is also working closely with the Corps to complete the Prado Basin Feasibility Study which will explore opportunities for ecosystem restoration and additional storm water capture using a comprehensive watershed approach. The Study provides an excellent opportunity to create and restore the region's native ecosystems and enhance recreational and educational uses through regional watershed planning. The project will include water quality enhancements, wetland pond creation, habitat restoration, nature trails and additional recreational facilities.

- Water Quality Monitoring and Contamination Clean-Up - Protection, safety, and enhancement of groundwater quality are one of OCWD's highest priorities. OCWD uses more than 700 wells providing more than 1,400 sampling points – from which OCWD takes more than 18,000 water samples and conducts more than 350,000 analyses every year. OCWD's monitoring program looks for more than 330 constituents – far more than the 122 required by the regulatory agencies. OCWD conducts these tests in its state-of the-art Advanced Water Quality Assurance Laboratory. The OCWD lab is only one of six laboratories in the nation, and the only public agency laboratory, certified by the Environmental Protection Agency to monitor unregulated contaminants of emerging concern. OCWD provides water quality monitoring and testing for 19 cities and water districts in Orange County.

- Groundwater Contamination Remediation - Pollutants have been detected in shallow portions of the groundwater basin. This contamination is a result of the improper disposal of chemical solvents and other compounds traced to companies that operated industrial and manufacturing facilities in Orange County over the course of many decades. As the guardian of the groundwater basin, OCWD is also charged with containing and removing the contamination before it migrates into the main drinking water aquifers and endangers local drinking water supplies. OCWD has filed lawsuits against parties responsible for the contamination so water ratepayers do not absorb the cost.

- Education and Environmental Stewardship - As part of OCWD's commitment to environmental stewardship, the District has a robust water education program that reaches tens of thousands of individuals throughout Orange County and around the globe. Some of these programs include the annual Children's Water

Education Festival, the largest festival of its kind in the nation. The event is in its eighteenth year and serves more than 7,000 3rd, 4th and 5th grade students throughout Orange County annually. Since its inception, more than 100,000 students have participated in the Festival. The event is co-hosted by the National Water Research Institute and the Disneyland Resort. It is very structured and exposes children to hands-on instruction about water and environmental issues, all taught by seasoned professionals and experts representing more than 60 companies and organizations in Southern California, including NASA and National Geographic. The 2013 festival was held at the University of California at Irvine exposing students to a top university and careers in science, technology, engineering and mathematics. OCWD also co-hosts the annual OC Water Summit with MWDOC and the Disneyland Resort. The event brings together approximately 400 business professionals, water leaders, policy makers and scientists to discuss pressing water issues and vet possible solutions. The event is in its sixth year. OCWD also co-created the Water Hero Program, with MWDOC which inspires students to make a commitment to water conservation. More than 22,000 students have each made a commitment to conserve more than 20 gallons of water a day.. OCWD also hosts approximately 4,000 guests from around the world annually for tours of its award-winning Groundwater Replenishment System, the Advanced Water Quality Assurance Laboratory, seawater intrusion barrier, 24 recharge basins and Prado Wetlands. OCWD staff are also sought out by local, state, national and international agencies and governments to provide expert advice and participate in important research in numerous fields resulting in innovative technology and water projects. Staff serve on prominent and prestigious boards and expert panels that help solve global water problems.

OCWD works collaboratively with local, state and federal agencies to successfully manage the groundwater basin. OCWD is recognized as a leader in groundwater management, water quality monitoring and testing, environmental stewardship, financial responsibility, planning and engineering. The groundwater basin has been valued at over $4 billion and must be sustainably managed for future generations.

June 19, 2013 Orange County Grand Jury Report

Orange County Water District is required to respond to the recent Grand Jury report titled – *Orange County Water Sustainability: Who Cares?* The report was released on June 19, 2013. More specifically the District needs to respond to four findings and four recommendations from the report. We have repeated each of the findings and recommendations and provided our response in ***bold italicized type.***

FINDINGS

F.1: There is no central authority responsible for water policy in Orange County.

Orange County Water District agrees there is no central authority responsible for water policy in Orange County. However, for 80 years, OCWD has been setting industry standards for groundwater management, water quality monitoring and testing, water recycling, financial

management, environmental stewardship, planning and engineering, and public engagement that have helped shape water policy not only in Orange County, but worldwide. OCWD is the central authority responsible for managing the Orange County Groundwater Basin and working together with 19 retail agencies, MWD and MWDOC to ensure maximum groundwater yield and sustained local water supplies. OCWD is leading the effort in helping the region lower its dependence on imported water supplies.

F.3: Water use efficiency has helped ease the use of imported water.

Orange County Water District agrees; however, water use efficiency is not enough to help sustain the region's future water demands. OCWD is committed to continue working with stakeholders to design and build projects that will lessen Orange County's dependence on imported water supplies which are fiscally and environmentally responsible.

F.5: The Groundwater Replenishment process is having a favorable impact on relieving the dependency on imported water.

Orange County Water District agrees. The Groundwater Replenishment System is the world's largest advanced water purification system for potable reuse, producing 72,000 acre-feet of water annually. The GWRS significantly reduces the area's dependency upon imported water supplies. It produces enough water for nearly 600,000 Orange County residents. The OCWD is currently constructing an expansion of the project. When completed, the GWRS will produce up to 103,000 acre-feet per year, enough water for nearly 850,000 people. This investment in local water supply reliability is also cost effective, being produced for less than the cost of importing supplies.

F.8: Bay Delta Project is critical to ensure the continual flow of imported water into Orange County.

Orange County Water District agrees.

RECOMMENDATIONS:

R.1: MWDOC and OCWD should continue their role in coordinating water planning.

The recommendation has been implemented. The District and MWDOC work very closely in coordinating water issues for the benefit of the region.

R.3: Desalination must be included in any discussion of future water sources for Orange County

The recommendation has been implemented. The District is now studying the option of developing a desalination plant in the City of Huntington

Primary OCWD functions and tasks include:

- Annually recharging the groundwater basin – OCWD recharges approximately 160,000 acre-feet per year of Santa Ana River (SAR) water into the basin to support annual groundwater pumping. OCWD owns more than 1,500 acres of land in the cities of Anaheim and Orange to accomplish this task. Additionally small amounts of imported water are also purchased from the Metropolitan Water District of Southern California via the Municipal Water District of Orange County (MWDOC) to recharge the groundwater basin.

- Preventing seawater intrusion – OCWD prevents seawater intrusion into the groundwater basin by constructing, operating and maintaining injection wells along the coast. Water is pumped into different groundwater basin aquifers via the injection wells forming a hydraulic barrier. Approximately 35,000 acre-feet per year of water is injected along the coast through 36 injection wells. This injected water also assists in annually recharging the groundwater basin.

- Protecting Santa Ana River Water rights – OCWD maintains and protects the regions rights to SAR flows as part of the 1969 SAR Stipulated Judgment. The 1969 Judgment resolved decades of lawsuits between OCWD and agencies in the upper SAR watershed. OCWD now works with these agencies to monitor and manage SAR flows and to avoid water rights issues and future litigation.

- Sustainably manage the groundwater basin – The basin is a reservoir that can be over drafted and refilled depending upon the needs of the area. The practical useable storage volume of the groundwater basin is 500,000 to 700,000 acre-feet. The OCWD Board annually sets the amount of allowable pumping. Determining the annual basin pumping depends upon many factors including basin management goals that particular year, projected water conditions and available imported water supplies.

- Operating the Groundwater Replenishment System – The GWRS creates 72,000 acre-feet per year of water supply that is used to replenish the groundwater basin. The GWRS construction was a joint partnership with the Orange County Sanitation District (OCSD). The GWRS cost $481 million to construct and has an annual operating cost of about $39 million. The unit cost of GWRS water is less than imported water and is more reliable. The GWRS has won numerous awards, including the Stockholm Industry Water Award, the highest international water award, and the American Society of Civil Engineer's 2009 Project of the Year Award, the highest national engineering award. OCWD works in partnership with the OCSD to purify more than 50% of Orange County's wastewater that would normally have been lost to the Pacific Ocean. OCWD is currently expanding the project to 103,000 acre-feet per year, which is enough water for nearly 850,000 residents and the equivalent of over $100 million in imported water. The GWRS is a historic water project that serves as a model for other water agencies worldwide.

- Prado Dam Operations – OCWD works closely with the U.S. Army Corps of Engineers (the Corps) to capture winter time SAR storm waters behind Prado Dam which are then released at lower rates so that they can be captured at

Beach. This facility could provide an additional 50,000 acre-feet per year of new local water supplies for the region.

OCWD is also committed to engaging the public in the process of exploring ocean desalination and will be establishing an Ocean Desalination Citizens' Advisory Committee to provide input to the Board as it considers the project.

R.5. The MWDOC shall continue providing data to the water districts and city water departments encouraging tiered pricing to assist with water conservation.

This recommendation is not applicable to OCWD but has been implemented by MWDOC.

R.7. All the Orange County Water Districts shall support legislation which the Bay Delta Conservation Plan to ensure sustainability of imported water to Orange County.

As a buyer of limited amounts of imported water supplies, OCWD is a member agency of MWDOC; And through MWDOC, this recommendation has been implemented. The State Water Project supplies about 25% of the water used in Southern California. It is critical that the water distribution and environmental issues in the Bay Delta be adequately resolved to secure this water supply.

The District hopes our information and responses are informative and meet the needs of the Grand Jury. Please call our General Manager Mike Markus at (714) 378-3305 if you would like to meet, tour our facilities or have additional questions.

Sincerely

Shawn Dewane
Board President
Orange County Water District

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