

**AGENDA
REGULAR MEETING
GROUNDWATER REPLENISHMENT SYSTEM STEERING COMMITTEE
(A Committee of Orange County Water District
and Orange County Sanitation District Directors*)
OCWD Boardroom 18700 Ward Street, Fountain Valley
Monday, April 11, 2016, 5:00 p.m.**

* Orange County Water District Notice: The GWRS Steering Committee (SC) meeting is being noticed as a joint meeting with the Orange County Water District (OCWD) Board of Directors and Orange County Sanitation District (OCSD) Board of Directors for the purpose of strict compliance with the Brown Act and it provides an opportunity for all Directors to hear presentations and participate in discussions. The SC has been delegated limited authority by the OCWD and OCSD Boards of Directors. Agenda items requiring Board approval will be placed on future OCWD and/or OCSD Board meeting Agendas. OCWD Directors receive no additional compensation or stipend as a result of simultaneously convening this meeting.

PLEDGE OF ALLEGIANCE

ROLL CALL

ITEMS RECEIVED TOO LATE TO BE AGENDIZED

RECOMMENDATION: Determine need to take action on item(s) which arose subsequent to posting of the Agenda (ROLL CALL VOTE: Adoption of this recommendation requires two-thirds vote of the Board/Committee, or, if less than two-thirds of the members are present, a unanimous vote)

VISITOR PARTICIPATION

Time has been reserved at this point in the agenda for persons wishing to comment for up to three minutes to the Board of Directors on any item that is not listed on the agenda, but within the subject matter jurisdiction of the District. By law, the Board of Directors is prohibited from taking action on such public comments. As appropriate, matters raised in these public comments will be referred to District staff or placed on the agenda of an upcoming Board meeting.

At this time, members of the public may also offer public comment for up to three minutes on any item on the Consent Calendar. While members of the public may not remove an item from the Consent Calendar for separate discussion, a Director may do so at the request of a member of the public.

CONSENT CALENDAR (ITEM NO. 1)

All matters on the Consent Calendar are to be approved by one motion, without separate discussion on these items, unless a Board member or District staff request that specific items be removed from the Consent Calendar for separate consideration.

1. MINUTES OF PREVIOUS MEETING

RECOMMENDATION: Approve Minutes of the January 11, 2016 GWRS Steering Committee meeting as presented

INFORMATIONAL ITEMS

2. GWRS OPERATING BUDGET SUMMARY

3. GWRS OPERATIONS UPDATE

4. UPDATE ON SP-173 EFFLUENT REUSE STUDY
5. QUARTERLY OUTREACH REPORT

DIRECTORS' ANNOUNCEMENTS/REPORTS

GENERAL MANAGERS' REPORT

- Next GWRS Steering Committee meeting – August 8, 2016 @ 5:00 p.m.

DETERMINATION OF ITEMS TO BE PLACED ON CONSENT CALENDAR FOR AGENDIZE FOR THE APRIL 20 OCWD AND APRIL 27 OCSD BOARD MEETING

ADJOURNMENT

In accordance with the requirements of California Government Code Section 54954.2, this agenda has been posted for viewing at the guard shack and in the main lobby of the Orange County Water District, 18700 Ward Street, Fountain Valley, CA not less than 72 hours prior to the meeting date and time above. All written materials relating to each agenda item are available for public inspection in the office of the District Secretary. Backup material for the Agenda is available at the District offices for public review and can be viewed online at the District's website: www.ocwd.com.

Pursuant to the Americans with Disabilities Act, persons with a disability who require a disability-related modification or accommodation in order to participate in a meeting, including auxiliary aids or services, may request such modification or accommodation from the District Secretary at (714) 378-3233, by email at jdurant@ocwd.com by fax at (714) 378-3373. Notification 24 hours prior to the meeting will enable District staff to make reasonable arrangements to assure accessibility to the meeting.

As a general rule, agenda reports or other written documentation has been prepared or organized with respect to each item of business listed on the agenda, and can be reviewed at www.ocwd.com. Copies of these materials and other disclosable public records distributed to all or a majority of the members of the Board of Directors in connection with an open session agenda item are also on file with and available for inspection at the Office of the District Secretary, 18700 Ward Street, Fountain Valley, California, during regular business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday. If such writings are distributed to members of the Board of Directors on the day of a Board meeting, the writings will be available at the entrance to the Board of Directors meeting room at the Orange County Water District office.

MINUTES OF MEETING
GROUNDWATER REPLENISHMENT SYSTEM STEERING COMMITTEE
ORANGE COUNTY WATER DISTRICT & ORANGE COUNTY SANITATION DISTRICT
January 11, 2016, 5:00 p.m.

Committee Chair Beamish called the Groundwater Replenishment System Steering Committee meeting to order in the Boardroom at the District office. Following the Pledge of Allegiance to the flag, the OCWD Assistant District Secretary called the roll and reported a quorum.

2016 Committee Members

Roger Yoh OCWD Director, Chair (not present)
Cathy Green OCWD Director
Philip Anthony OCWD Director
John Nielsen OCSD Director, Vice Chair
Tom Beamish OCSD Director
Jim Ferryman OCSD Director

Alternates

Denis Bilodeau OCWD Director (No. 1) (not present)
Jordan Brandman OCWD Director (No. 2) (not present)
Dina Nguyen OCWD Director (No. 3) (not present)
Lucille Kring OCSD Director (No. 1) (not present)
Greg Sebourn OCSD Director (No. 2)
Steve Jones OCSD Director (No. 3) (arrived 5:05 p.m.)

OCWD	OCSD
Mike Markus	Jim Herberg
William Dunivin	Kathy Millea
Mehul Patel	Cindy Murra
Sandy Scott-Roberts	Eros Yong
Gina Ayala	Jennifer Cabral
Paula Bouyounes	
Alicia Dunkin	Other(s)
Judy-Rae Karlsen, Recording Secretary	Debbie Burris, DDB Engineering

• Annual Reorganization of GWRS Steering Committee Officers

The 2015 GWRS Steering Committee Chair Tom Beamish stated the Committee reorganizes on an annual basis. It was a consensus of the Committee members present to approve the following nominations:

- 2016 GWRS Committee Chair - OCWD Director Roger Yoh
- 2016 GWRS Committee Vice Chair - OCSD Director John Nielsen

Orange County Water District (OCWD) President Green reported that Director Brandman has been appointed as OCWD Alternate Director No. 2.

Orange County Sanitation District (OCSD) Alternate Director No. 3 Steve Jones arrived during the following discussion.

CONSENT CALENDAR

The Consent Calendar was approved upon motion by Director Green, seconded by Director Beamish and carried [5-0] as follows.

[Yes- Green, Anthony, Nielson, Beamish, Ferryman /No-0]

1. Minutes of Previous Meeting

The Minutes of the GWRS Steering Committee meeting held October 13, 2015 are approved as presented.

2. OCWD & OCSD Joint Resolution of Support for the MWD Indirect Potable Reuse Project

Recommended by Committee for approval at January 20 OCWD and January 27 OCSD Board meeting: Adopt resolution supporting the Metropolitan Water District efforts to implement an indirect potable reuse project with County Sanitation District No. 2 of Los Angeles County.

MATTER FOR CONSIDERATION

3. Joint Security Vulnerability Assessment

Director of Water Production/GWRS Mehul Patel advised that the Joint Operating Agreement allows for a security vulnerability assessment every 5 years if significant changes on the joint campus take place. He noted that Pinkerton recently completed the OCSD security vulnerability assessment and staff is recommending that Pinkerton extend its assessment to include a joint campus security vulnerability assessment for an amount not to exceed \$15,000. The Committee then took the following action.

Upon motion by Director Anthony, seconded by Director Ferryman and carried [5-0], the Committee recommended that the OCWD Board at its February 17 Board meeting: Authorize issuance of Agreement to Pinkerton for an amount not to exceed \$15,000 for a joint security vulnerability assessment of the joint OCWD and OCSD Fountain Valley campus as a cost shared item between both agencies.

[Yes- Green, Anthony, Nielson, Beamish, Ferryman /No-0]

INFORMATIONAL ITEMS

4. GWRS Operations Update

Executive Director of Operations Bill Dunivin provided an update on GWRS water production is 3,100 acre feet above the projected target production of 103,000 acre feet. He advised the treatment plant is operating very efficiently and he reported that staff commenced installation of new reverse osmosis membranes in 6 of the original 15 membrane units and the life expectancy of the membrane unit was approximately 5-6 years. These membranes lasted over 8 years.

5. Change Position to Co-Sponsor Proposed Bill to Bottle Advanced Purified Water for Educational Purposes

OCWD General Manager Mike Markus reported that OCWD has supported the introduction of legislation in the past that allowed for the bottling of GWRS water and there was significant resistance and the bill was dropped. He stated that bottling GWRS water for drinking at demonstrations is a key component of education and reaffirms the safety factor of the water treatment purification process. Mr. Markus reported that Water ReUse is looking for an author for new bill to bottle GWRS water and has recommended OCWD participate as a co-sponsor for the legislation. OCWD Director Anthony recommended the GWRS Steering Committee formally invite OCSD to participate as another co-sponsor of the bill. The Committee then took the following action.

Upon motion by Director Anthony, seconded by Director Green and carried [5-0], the Committee recommended that the OCWD Board at its January 27 Board meeting: Invite the Orange County Sanitation District to co-sponsor proposed legislation to bottle GWRS water for educational purposes.

[Yes- Green, Anthony, Nielson, Beamish, Ferryman /No - 0]

6. Update on SP-173 Effluent Reuse Study

OCWD Principal Engineer Sandy Scott-Roberts gave an update on the SP-173 Effluent Reuse study and reported the Final Expansion of GWRS production water will be capable of increased production from 100 million gallons per day (mgd) to 130 mgd. She reported on improvements and expansions needed onsite and the need for increased source water. Ms. Scott-Roberts noted that the GWRS facilities will need 174 mgd of secondary effluent to achieve the 130 mgd water production goal. She discussed the current challenges with recycling the Santa Ana River Intercept (SARI) line source water and then reviewed the initial technical recommendations from the OCSD SP-173 Effluent Reuse Study. Ms. Scott-Roberts stated the draft implementation plan is scheduled to be available in May 2016 and completed in July 2016.

OCSD General Manager Jim Herberg advised that OCSD has initiated plans on diverting more non SARI line water into Plant 1 for GWRS water.

7. Quarterly Outreach Report [Oct - Dec 2015]

OCWD Public Affairs Specialist Gina Ayala provided the fourth quarter outreach report and stated the Public Affairs staff from both agencies meet on a regular basis to review outreach related goals, pertinent legislation issues, brochures, press releases and website issues. She stated the GWRS has won two awards: the IUVA award, "UV Engineering Project of the Year" and the American Membrane Technology Association award, "Membrane Facility of the Year".

DIRECTOR COMMENTS

Director Anthony requested that staff distribute the final draft of the GWRS brochure to the Steering Committee members prior to distribution. He also requested that staff provide updates on the MWD Los Angeles Sanitation project.

VERBAL REPORTS

Mr. Markus stated the OCWD and OCWD joint resolution on today's agenda supports the Metropolitan Water District efforts to implement an indirect potable reuse project with County Sanitation District No. 2 of Los Angeles County.

OCSD Director John Nielsen announced the next GWRS Steering Committee meeting is scheduled for Monday, April 11, 2016 @ 5:00 p.m.

ADJOURNMENT

There being no further business, the meeting was adjourned at 5:38 p.m.

John Nielsen, Vice Chair

AGENDA ITEM SUBMITTAL

Meeting Date: April 11, 2016

To: GWRs Steering Committee

From: Mike Markus

Staff Contact: W. Dunivin/M. Patel

Budgeted: N/A

Budgeted Amount: N/A

Cost Estimate: N/A

Funding Source: N/A

Program/Line Item No.: N/A

General Counsel Approval: N/A

Project Report Approved: N/A

CEQA Compliance: N/A

Subject: GWRs OPERATING BUDGET SUMMARY

SUMMARY

The Joint Exercise of Powers Agreement between OCWD and OCSD governs the operation of the Groundwater Replenishment System (GWRs). This document requires OCWD to prepare and submit its annual operating budget for the GWRs to OCSD.

Attachment(s)

- Water Production Group Work Plan
- FY 2016-17 Department Budget

RECOMMENDATION

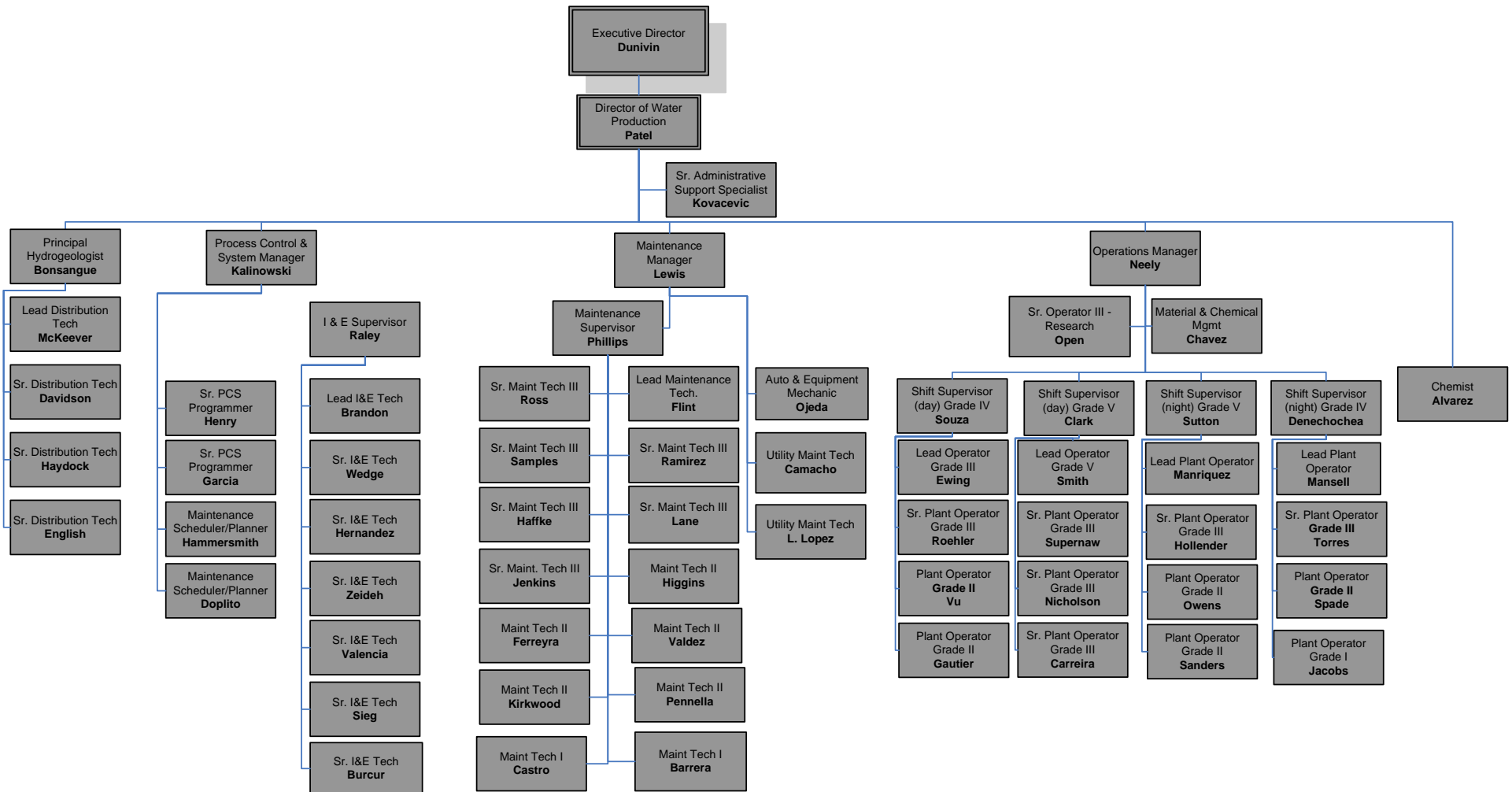
Informational

DISCUSSION/ANALYSIS

The Amended Joint Exercise of Powers Agreement was established to provide details on the obligations of OCWD and OCSD for the operation of the GWRs. As part of this agreement is a requirement to report the OCWD annual budget for operations, maintenance, and capital expenditures for the GWRs to OCSD. A presentation will be given to show details of the GWRs operational budget. In addition, key cost centers and observations on the operational economics will be presented.

Attached to this submittal is a Water Production Group work plan (Attachment A) and a proposed Fiscal Year 16-17 line-item department budget for (Attachment B). This budget will be submitted to the OCWD Board of Directors for its consideration at the April Board meeting.

WATER PRODUCTION/GROUNDWATER REPLENISHMENT SYSTEM



Existing Staff – 64 FTEs

- 1 – Executive Director of Operations
- 1 – Director of Water Production
- 1 – Senior Administrative Support Specialist

- 4 – Supervisors (Operations Manager, , Process Control & System Manager and Maintenance Manager)
- 21 – Operators (includes Operator III GWRS/Applied Research)
- 14 – Maintenance Technicians
 - 1 – Vehicle and Equipment Technician
 - 2 – Utility Maintenance Technicians
 - 2 – Maintenance Scheduler/Planners
 - 1 – Material and Chemical Management Technician
 - 8 – Instrumentation & Electrical Technicians
 - 2 – Process Control System Programmers
 - 1 – Chemist
 - 1 – Principal Hydrogeologist
 - 3 – Senior Distribution Technicians
 - 1 – Distribution Technician

Mission

Operations and maintenance (O&M) of the GWRS Advanced Water Purification Facility (AWPF), Mid Basin Injection, Talbert Barrier and Green Acres (GAP)

Key Issues for FY 2016-17

- ◆ Maximize operation of GWRS processes:
 - With the GWRS initial expansion complete work with the Orange County Sanitation District to make as much water as possible for GWRS production.
 - Goal for 2016-17 production 103,000 acre feet.
 - Send all non-barrier production to Mid Basin Injection Well, Canyon Power, Arctic, Miraloma and Kraemer/Miller basins.
 - Continue to control or reduce the water treatment unit cost by getting the best possible price on electricity, chemicals and spreading the system's fixed costs over the maximum possible production.
 - Optimize operation of new 15 million gallon flow equalization facilities to maximize GWRS production.

- ◆ Reduce GWRS processing costs:
 - Continue optimization of MF backwash and cleaning regimes.

- Optimization of RO cleaning regimes by optimizing clearing chemical concentrations and cleaning intervals.
 - Optimization of RO pretreatment chemical program, which includes the use of acid and antiscalant to reduce cost and prevent mineral scaling of membranes in the 3rd stage of RO units.
 - Optimize use of new RO energy recovery devices in six new RO units to reduce energy cost and/or balance flux performance.
 - With the current success of identifying an antiscalant that helps control mineral scaling, continue pilot research to make the final steps toward RO operations at pH 7. Progress to date has saved approximately \$1,800,000 annually. Adjustment from pH 6.9 to 7.0 would further reduce acid usage - potentially saving another \$300,000 annually. At the same time, continue to engage manufacturers to develop and evaluate antiscalant formulations toward this goal.
 - Work with purchasing to find and procure the best chemical pricing.
 - Energy use reduction, load shifting to less expensive nighttime hours where possible, and participation in demand response programs that offset the cost of electricity.
 - In the second year of 5 year energy contract that is helping maintain costs of energy.
 - Lifespan extension of both MF and RO membranes.
 - Continue to replace older MF membranes in phases and planned approach to maintain production and water quality with purchase of 7 cells of MF membranes (684 membranes per cell)
 - Continue efforts to maximize UV lamp life to 12,000 hours.
 - Continue to replace older RO membranes in phases and planned approach to maintain water quality with the purchase of 3 sets of 1,050 RO membrane elements.
- ◆ Manage GWRS assets by:
- Continued implementation of a robust preventative maintenance program using the Maximo computerized maintenance management system (CMMS).
 - Staff continues to update GWRS the work plans in the CMMS to reflect knowledge gain with 8 years of experience operating the treatment plant.
 - Continued development of staff capabilities to make both minor and major mechanical and electrical repairs on equipment and facilities. These internal capabilities assure fast response, quality repairs and lower cost.

- Continue replacement of 5-7 cells worth of MF membranes based on manufacturing availability from Evoqua.
- Install at least a portion or all of the replacement MF filtrate headers for 24 existing cells. Headers provided as part of settlement agreement with Evoqua in 2015.
- The new Tekken lime system is being optimized for delivery of non-corrosive water into distribution system by effective lime post treatment with confirmatory testing.
- Protection of injection wells by delivery of low particle water.
- Effectively manage the warranty claims and contractor required repairs for the GWRS initial expansion equipment during the one year warranty period.

Account Information	FY 2014-15 Actual	FY 2015-16 Budget	FY 2016-17 Proposed Budget
Salaries and Benefits	8,182,731	8,812,826	9,143,532
Services and Supplies	16,813,241	19,966,434	22,813,590
Total	\$24,995,972	\$28,779,260	\$31,957,122

I FY 2016-17 Major New Initiatives/Programs

- ◆ Continue to monitor changes in the MF membrane backwash and cleaning intervals to increase process efficiency and production.
- ◆ Engage low-pressure membrane manufacturers to initiate evaluations of alternative products capable of successfully operating on AWPF source water and could be retrofitted into existing infrastructure.
- ◆ As the RO membranes age, investigate methods to effectively clean them extend their life to 5 years without reducing salt rejection effectiveness and to control energy use.
- ◆ Develop key performance factors that help identify and predict MF and RO membrane end of life conditions.

II Core Activities

- ◆ O&M of the 100 mgd GWRS AWPF.
- ◆ O&M of the 102 well Talbert Injection Barrier
- ◆ O&M of Mid Basin Injection Demonstration well
- ◆ O&M of the GAP treatment plant.

- ◆ Work with Research and Development on engineering and research aimed at maintaining and optimizing treatment plant performance, production and the Talbert Barrier.
- ◆ Administering the joint OCWD & OCSD GWRS Steering Committee meetings.
- ◆ Facilitate monthly OCWD and OCSD Joint Operation Committee meetings.

III Non-Core Activities

- ◆ Participate in technology transfer on advanced treatment with other water districts, consultants, public agencies, and industry organizations.
- ◆ Provide in-kind support as specified by OCWD for participating Water Reuse Research Foundation and Water Research Foundation research projects.
- ◆ Provide technical support on various wellhead treatment systems throughout Santa Ana Watershed.
- ◆ Provide technical support as needed to the Water Quality, Engineering, Hydrogeology, Public Relations and Health & Regulatory Departments.
- ◆ Provide facility maintenance support for OCWD's Fountain Valley facilities.
- ◆ Provide support to set up meetings and events.
- ◆ Provide instrumentation and electrical support to OCWD's recharge and Prado operations.
- ◆ Provide data collection and monitoring support for the Research & Development Department.
- ◆ Provide technical updates and participate in meetings with the GWRS Independent Advisory Panel.
- ◆ Provide assistance with GWRS tours for the Publics Affairs Department as necessary.
- ◆ Provide any required GWRS technical and operational information for outside data requests.

IV Group Goals for FY 2016-17

GWRS –

1. Produce up to 103,000 acre feet of water for recharge and injection.
2. Continue efforts to control net production cost to less than \$500 per acre foot.
3. Continued development of the CMMS for the GWRS and update maintenance requirements for existing and new equipment associated with the GWRS Initial Expansion.

4. Continued development of databases to help staff monitor the individual process performance of the MF, RO and UV treatment systems.

OCSD –

1. Continue with joint operations meetings with OCSD plant operations and source control and OCWD staff to ensure both agencies are knowledgeable of issues with each other's operations.
2. Coordinated day to day operation and optimization of the new 15 million gallon volume flow equalization storage tanks.

CDPH and the RWQCB –

1. Prepare an Annual Report on the GWRS operation with District staff and outside consultant.

Talbert Barrier –

1. In conjunction with the barrier staff continue evaluating the corrosivity and injection well fouling propensity of the GWRS finished product water.

V Pending Activities

Continue to develop staff to effectively operate and maintain the GWRS Initial Expansion Facilities.

VI Staff Addition Needed for FY 2016-17

Add one new Senior Plant Operator III to provide support for Applied Research pilot systems operation and for the Research and Development department for GWRS and Forebay operations Optimization.

VII Future Issues

In the next two years, issues the District will need to consider include:

1. Optimization of the GWRS AWPf treatment process to lower operational costs, including operation of new flow equalization facilities.
2. Continue to optimize MF and RO membrane replacement strategies.
3. Process optimization and adjustment of preventative maintenance requirements as necessary.
4. Continue forward-looking review of water treatment technologies and opportunities to optimize current GWRS membrane and advanced oxidation treatment processes.
5. Continue to monitor energy issues to ensure the lowest possible power expenditures for the GWRS.

6. Support the planning, construction, start-up, operation, maintenance and optimization of the District's future Centennial park mid-basin injection wells.

GENERAL FUND OPERATING BUDGET FY 16-17
WATER PRODUCTION (1050)

JDE Account Number	Description	General	GWR System O&M	Process Optimization	Talbert Barrier O&M	FV Facility O&M	GAP O&M	Lab Maintenance	Alamitos Barrier O&M	Forebay O&M	MWDOC	MBI	Total	FY 2015-16 Budget
	ACTIVITY CODE	9900	9922	9952	9908	9901	9911	9974	9932	9920	9970	9990		
	SALARIES & BENEFITS													
1050.50104	REGULAR SALARIES	728,260	3,093,932	470,456	392,263	423,962	692,866	134,746	17,725	153,779	77,951	134,148	6,320,088	6,153,998
1050.50106	OVERTIME SALARIES	24,005	190,881	23,183	7,866	17,813	40,453	5,456		3,586	3,696	1,579	318,518	306,848
1050.50210	PAYROLL TAXES	10,908	47,630	7,158	5,802	6,406	10,633	2,033	257	2,282	1,184	1,968	96,261	94,892
1050.50202	RETIREMENT	125,252	546,921	82,191	66,621	73,556	122,098	23,344	2,951	26,201	13,594	22,599	1,105,328	1,072,483
1050.50204	HEALTH INSURANCE	114,177	538,889	72,841	69,054	85,025	121,954	25,364	2,672	23,391	14,693	23,490	1,091,551	1,011,704
1050.50206	WORKERS' COMPENSATION	22,627	104,745	15,021	12,257	14,820	24,268	4,495	617	5,435	2,798	4,705	211,787	172,901
	SALARIES & BENEFITS TOTAL	1,025,229	4,522,998	670,850	553,863	621,582	1,012,272	195,438	24,222	214,674	113,916	188,489	9,143,534	8,812,826
	TRAVEL/CONFERENCE/MILEAGE													
1050.51301	PATEL APRIL 2016 AMTA WORKSHOP AND BOARD MEETING, HOUSTON, TEXAS (JUST ATTENDING AMTA BOARD MEETING AT EVENT, TRIP COSTS PARTIALLY REIMBURSED BY AMTA)		300										300	
	PATEL FEB 2017 AWWA/AMTA JOINT MEMBRANE TECHNOLOGY CONF, LONG BEACH, CA (CONF ORGANIZER, ABSTRACT WILL BE SUBMITTED, AMTA BOARD MEETING)		800										800	
	PATEL JULY 2016 AMTA WORKSHOP, VANCOUVER, WA (SPEAKING AND ATTENDING AMTA BOARD MEETING AT EVENT, TRIP COSTS PARTIALLY REIMBURSED BY AMTA)		800										800	
	PATEL MARCH 2017 WATEREUSE CA ANNUAL CONFERENCE, (TBD, SOUTHERN CALIFORNIA)		500										500	
	DUNIVIN CONFERENCE ATTENDANCE TBD		2,000										2,000	
	CWEA ANNUAL CONFERENCE (2), MAINTENANCE (SAN JOSE, CA)		3,000										3,000	
	KALINOWSKI EMERSON USER CONFERENCE		2,500										2,500	
	PCS PROGRAMMER EMERSON USER CONFERENCE		2,500										2,500	
	MAINTENANCE CWEA LOCAL SECTION TRISTATE CONFERENCE (3)		3,000										3,000	
	BONSANGUE BISMAR MEXICO CITY (PAPER ON MBI)				1,500								1,500	
	BONSANGUE/MCKEEVER NGWA ANNUAL EXPO, NEVADA (PRESENT AND ATTEND)				1,600								1,600	18,750
	TRAVEL/CONFERENCE/MILEAGE TOTAL	-	15,400	-	3,100	-	-	-	-	-	-	-	18,500	18,750
	PROFESSIONAL SERVICES-GENERAL													
1050.53001	MEMBRANE DATABASE (HAZEN AND SAWYER)		35,000										35,000	
	CONSULTING SERVICES GWRS		75,000										75,000	75,000
	PROFESSIONAL SERVICES-GENERAL TOTAL	-	110,000	-	-	-	-	-	-	-	-	-	110,000	75,000
	OFFICE EXPENSE - GENERAL													
1050.51501	BLUE PRINT AND COPIES		2,000										2,000	2,000
	FILING CABINETS, CHAIRS		3,500										3,500	3,500
	OFFICE SUPPLIES		9,100	400									9,500	12,400
	OFFICE EXPENSE - GENERAL TOTAL	-	14,600	400	-	-	-	-	-	-	-	-	15,000	17,900
	HARDWARE/SOFTWARE													
1050.51510	PCS SYSTEM SOFTWARE SUPPORT (EMERSON GUARDIAN)		51,740										51,740	50,500
	PCS SYSTEM HARDWARE		8,500										8,500	7,000
	LAB BUILDING BMS SYSTEM HARDWARE/SOFTWARE UPGRADE							5,700					5,700	5,700
	ADOBE PROFESSIONAL				500								500	
	HARDWARE/SOFTWARE TOTAL	-	60,240	-	500	-	-	5,700	-	-	-	-	66,440	63,700
	GAS & DIESEL FUEL													
1050.51520	FUEL		8,500		11,000	2,000							21,500	21,500
	GAS & DIESEL FUEL TOTAL	-	8,500	-	11,000	2,000	-	-	-	-	-	-	21,500	21,500
	UNIFORMS & SAFETY													
1050.51530	BOTTLED WATER AS REQUIRED IN TREATMENT AREA		2,500										2,500	2,500
	JACKETS, POLO SHIRTS, RAINGEAR		1,400		2,100								3,500	3,500
	DISTRICT SUPPLIED UNIFORMS		40,000										40,000	40,000
	UNIFORMS & SAFETY TOTAL	-	43,900	-	2,100	-	-	-	-	-	-	-	46,000	46,000
	MAINTENANCE - SUPPLIES & MATERIAL - ELECTRICAL/INSTRUMENTATION													
1050.57001	MISC MOTOR, PUMP WAREHOUSE SUPPLIES		4,500		1,000	500	1,000						7,000	7,000
	PLANT UPS SYSTEM REPAIRS		5,500		1,000		500						7,000	7,000
	ELECTRICAL WAREHOUSE SUPPLIES		3,000				500						4,500	4,500
	INSTRUMENTATION PARTS AND SUPPLIES		6,500	5,000			500						12,000	12,000

	LIGHTING & EMERGENCY, LIGHT SUPPLIES			3,000			1,000	200	500					4,700	4,700
	OFFICE ELECTRICAL & LIGHTING REPAIRS			1,500			1,000		500					3,000	3,000
	MAINTENANCE - SUPPLIES & MATERIAL - ELECTRICAL/INSTRUMENTATION TOTAL			24,000	6,000	2,000	2,500	2,700	1,000					38,200	38,200
1050.57004	MAINTENANCE - SUPPLIES & MATERIAL														
	BARRIER FIELD EQUIPMENT REPAIR SUPPLIES					2,000								2,000	2,000
	BOTTLED GAS NITROGEN ECT FOR BARRIER, OPTIONS & MAINTENANCE			500				750						4,450	4,450
	EQUIPMENT AND STRUCTURE REPAIRS SUPPLIES			4,000			2,000	2,000	1,500					9,500	7,500
	EQUIPMENT LUBRICATION SUPPLIES			25,000	2,000		1,000	3,500						31,500	27,500
	FENCING AND SECURITY GATE REPAIRS			2,500		1,500	1,500							5,500	5,500
	GASKETS, BEARINGS, AND GEARS WAREHOUSE SUPPLIES			9,000		500	750	1,250						11,500	8,500
	HARDWARE SUPPLIES FOR BUILDINGS AND PROCESSES			7,000	500	1,000	1,500	1,000						11,000	9,500
	IRRIGATION SUPPLIES				2,000	1,000	3,000	2,000						8,000	7,000
	JANITORIAL SUPPLIES						10,000							10,000	10,000
	ADMINISTRATION, LABORATORY & ANNEX REPAIRS						5,000		5,000					10,000	8,000
	LANDSCAPE SUPPLIES						3,000							3,000	3,000
	LUMBER, PAINT, HARDWARE SUPPLIES			2,000				2,000						4,000	3,500
	PIPE AND SUPPLIES			8,000	8,000		3,000	1,500						20,500	18,500
	PVC PIPE REPAIRS AND SUPPLIES			7,500	4,000		1,000	2,500						15,000	15,000
	SIGNAGE SUPPLIES			4,000			4,000	2,000						10,000	5,000
	SITE FACILITY PAINTING/SUPPLIES			6,000			5,000	2,000						13,000	10,000
	STRUCTURE BLDG REPAIRS MISC			7,000		1,000	3,000	2,000	2,000					15,000	12,000
	WELDING MATERIAL (SHEET METAL, STAINLESS, ANGLE IRON)			9,000	2,000	2,000	2,000	2,000						17,000	13,000
	SUMP PUMP REPLACEMENT ELECTRICAL MANHOLES			6,000		1,000	750	750						8,500	8,500
	WELDING SUPPLIES			6,000		500	750	1,250						8,500	6,750
	US FLAGS						2,000							2,000	2,000
	MAINTENANCE - SUPPLIES & MATERIAL TOTAL			103,500	18,500	13,700	49,250	26,500	8,500					219,950	187,200
1050.57006	MAINTENANCE EQUIPMENT - COMMUNICATION														
	REPAIR AND REPLACEMENT OF HANDHELD AND CAR RADIOS			4,000		800		750						5,550	5,550
	MAINTENANCE EQUIPMENT - COMMUNICATION TOTAL			4,000		800		750						5,550	5,550
1050.57008	MAINTENANCE EQUIPMENT - CARTS														
	REPAIR OF CARTS			2,500	7,500									10,000	8,000
	MAINTENANCE EQUIPMENT - CARTS TOTAL			2,500	7,500									10,000	8,000
1050.57010	MAINTENANCE EQUIPMENT - VEHICLES														
	MAINTENANCE OF ALL VEHICLES IN OCWD FV POOL			38,000										38,000	32,000
	SOFTWARE UPGRADE VEHICLE SCANNER			3,000										3,000	2,000
	MAINTENANCE EQUIPMENT - VEHICLES TOTAL			41,000										41,000	34,000
1050.57012	MAINTENANCE EQUIPMENT - HEAVY EQUIPMENT														
	MAINTENANCE OF HEAVY EQUIPMENT FOR WATER PRODUCTION			3,500										3,500	3,500
	MAINTENANCE OF LARGE AIR COMPRESSOR FOR INJECTION WELLS					3,500								3,500	1,500
	MAINTENANCE EQUIPMENT - HEAVY EQUIPMENT TOTAL			3,500		3,500								7,000	5,000
1050.57016	MAINTENANCE STRUCTURE AND IMPROVEMENT - OUTSIDE SERVICES														
	FV SITE BUILDING REPAIRS			2,000			2,000							4,000	4,000
	ROOF REPAIRS			1,000			1,000	200						2,200	2,200
	ANNUAL INSPECTION/REPAIR OF RPPD			3,500			1,500	3,000						8,000	8,000
	PLANT WIDE CRANE SERVICE AND INSPECTION			11,500			1,000							12,500	12,500
	CONCRETE REPAIRS & CORE DRILLING			1,000		250	300							1,550	1,550
	ELEVATOR YEARLY INSPECTION AND CERTIFICATION (MF, RO, ANNEX & LAB)			3,000			7,300							10,300	10,300
	FIRE SPRINKLER SERVICE WET AND DRY QUARTERLY AND ANNUAL TEST			10,500			4,500							15,000	15,000
	FIRE EXTINGUISHER SERVICE PM			5,000										5,000	5,000
	LABORATORY FIRE ALARM SERVICE								5,000					5,000	5,000
	FV SITE FIRE ALARM SERVICE/REPAIR			8,500			3,000							11,500	11,500
	HVAC & AIR HANDLING PREVENTIVE MAINT GWRS & FV OFFICES			33,500			24,500	1,500	8,000					67,500	67,500
	HVAC & AIR HANDLING REPAIRS GWRS AND FV SITE OFFICES			12,000			6,000	1,000						19,000	19,000
	HVAC LAB PM/REPAIR INCLUDES PHOENIX AND ANDOVER CONTROLS & BOILERS												34,000	34,000	34,000
	JANITORIAL SERVICE GWRS, FV, LAB BLDGS & WINDOWS INCLUDES SHARED MWDOC						104,800							104,800	79,000
	GWRS EXTERIOR PANEL MAINTENANCE						4,000							4,000	4,000
	EMERGENCY JANITORIAL SERVICES & CARPET CLEANING						3,000							3,000	3,000
	LANDSCAPE SERVICES INCLUDING SHARED MWDOC						45,000							45,000	45,000
	TREE TRIMMING SERVICE						7,500							7,500	7,500
	INDOOR PLANT SERVICES						3,300							3,300	3,300
	EXTERMINATOR PEST CONTROL SERVICES			1,500			5,000							6,500	6,500

	RAINBOW DISPOSAL TRASH PICKUP INCLUDES SHARED MWDOC		3,000			20,000								23,000	23,000
	SITE STREET SWEEPING					4,500								4,500	4,500
	MEDIUM VOLTAGE VFD ANNUAL PM		36,500											36,500	36,500
	MOTOR CONTROL CENTER PM		2,000			1,000	1,000							4,000	4,000
	MEDIUM VOLTAGE DISTRIBUTOR & SWITCHGEAR PM & OIL TESTING		21,000											21,000	21,000
	MEDIUM VOLTAGE DISTRIBUTOR & SWITCHGEAR PM REPAIRS 20% OF PM		4,200											4,200	4,200
	NFPA SAFETY EQUIPMENT CERTIFICATION/TESTING		1,500											1,500	1,500
	NIST CERTIFICATION CALIBRATION ELECTRICAL SHOP EQUIPMENT		2,000											2,000	2,000
	GWRS EMERGENCY GENERATORS QUARTERLY INSPECTION & LOAD TEST		4,000											4,000	4,000
	MOTOR OIL ANALYSIS		4,000					2,000						6,000	6,000
	MOTOR VIBRATION ANALYSIS		1,000					250						1,250	1,250
	PLUMBING SERVICE BUILDINGS		1,500			1,500	500							3,500	3,500
	PUMP MISC INSPECTION AND MODIFICATION		1,500			1,000								2,500	2,500
	REPAIR STAINLESS STEEL VALVE, FITTINGS AND MISC PIPES		1,300		500			950						2,750	2,750
	REPAIR/INSPECTION OF AIR VAC AND PRESS RELIEF & BF VALVES		1,000		800			950						2,750	2,750
	USA OUTSOURCE UNDERGROUND SERVICE ALERTS		28,000		13,000			33,000						74,000	74,000
	USA NOTIFICATION REQUEST FEE		4,000					4,000						8,000	8,000
	STOCKING MAINTENANCE PARTS CAGE		2,150	900	1,000	1,000	1,000	1,000						6,050	6,050
	WINDOW AND DOOR REPAIRS AND SUPPLIES		1,000		500	750	750							3,000	3,000
	VIBRALIGN CALIBRATION & SERVICE		1,500											1,500	1,500
	ANNUAL GARAGE DOOR MAINTENANCE		1,500			500								2,000	2,000
	FUME HOOD CERTIFICATION		400											400	400
	UE SYSTEMS ULTRASONIC CALIBRATION SERVICE		600											600	600
	MAINTENANCE STRUCTURE AND IMPROVEMENT - OUTSIDE SERVICES TOTAL		216,650	900	16,050	253,950	50,100	47,000	-	-	-	-	-	584,650	558,850
1050.57044	MAINTENANCE STRUCTURE AND IMPROVEMENT - GWRS SCREENINGS														
	SCREENINGS PM		18,000											18,000	18,000
	MAINTENANCE STRUCTURE AND IMPROVEMENT - GWRS SCREENINGS TOTAL		18,000	-	-	-	-	-	-	-	-	-	-	18,000	18,000
1050.57031	MAINTENANCE STRUCTURE AND IMPROVEMENT - GWRS MICROFILTRATION														
	MF BACKWASH PUMP PM		4,000											4,000	4,000
	MF FILTRATE PUMP PM		8,000	2,000										10,000	10,000
	MF PUMP VFD PM/REPAIRS		14,000	800										14,800	14,800
	MF PCS EQUIPMENT		5,000	500										5,500	5,500
	MF CHEMICAL PUMPS		7,000	2,000										9,000	9,000
	MF INSTRUMENTATION PM		6,500	1,000										7,500	7,500
	MF CHLORINE ANALYZER PM (INCLUDES \$1800 FOR POTASSIUM IODIDE)		7,500	1,000										8,500	8,500
	MF PIPE REPAIRS		18,000	500										18,500	18,500
	MF COMPRESSOR PM		4,000											4,000	4,000
	MF BLOWER PM		10,000											10,000	10,000
	MF VALVE/ACTUATOR PM		26,000	2,000										28,000	28,000
	TRANSFER PUMP, BACKWASH PUMP AND VALVE PM		14,000											14,000	14,000
	MISC MF ELEMENT REPLACEMENT NON WARRANTY/TESTING OF NEW (MANUFACTURERS) ELEMENT APPROX. 18 ELEMENTS @ \$690 EACH			5,000										5,000	5,000
	MAINTENANCE STRUCTURE AND IMPROVEMENT - GWRS MICROFILTRATION TOTAL		124,000	14,800	-	-	-	-	-	-	-	-	-	138,800	138,800
1050.57032	MAINTENANCE STRUCTURE/IMPROVEMENT - GWRS REVERSE OSMOSIS														
	RO FEED PUMP PM		18,000	4,000										22,000	19,000
	REPLACE 4 MECHANICAL SEALS RO FEED PUMPS		10,000											10,000	10,000
	RO ACID PUMP PM		5,000	1,000										6,000	6,000
	RO VFD PM		6,000											6,000	5,000
	RO PCS EQUIPMENT		6,000											6,000	5,000
	RO INSTRUMENTATION PM		6,000	5,000										11,000	10,000
	RO PRESSURE VESSEL END CAP ORING REPLACEMENT		12,000											12,000	12,000
	RO PIPE REPAIRS		18,000	5,000										23,000	20,000
	REPLACING RO CLEANING PVC PIPE		18,000											18,000	15,000
	TOC ANALYZER CHEMICALS/MISC.		12,000											12,000	12,000
	TOC ANALYZER PM		18,000											18,000	18,000
	RO VALVE ACTUATOR PM		6,000											6,000	4,000
	MISC RO MEMBRANES (FULL-SCALE EVALUATIONS)		8,000	5,000										13,000	13,000
	MAINTENANCE STRUCTURE/IMPROVEMENT - GWRS REVERSE OSMOSIS TOTAL		143,000	20,000	-	-	-	-	-	-	-	-	-	163,000	149,000
1050.57038	MAINTENANCE STRUCTURE/IMPROVEMENT - GWRS UV SYSTEM														
	UV CHEMICAL PUMP PM		5,000											5,000	5,000
	UV PCS EQUIPMENT		3,500											3,500	3,500
	UV INSTRUMENT PM		2,500											2,500	2,500
	UV LAMP ASSEMBLY PM ORINGS END ADAPTERS		5,000											5,000	5,000
	UV BALLASTS		10,000											10,000	10,000

	UV LAMP REPLACEMENT AND SPARES	528,000											528,000	528,000
	UV LAMP RECYCLING FEE	6,000											6,000	6,000
	UV QUARTZ SLEEVES	5,000											5,000	5,000
	UV TRANSMITTANCE METER PM	2,000											2,000	2,000
	UV VALVE ACTUATOR PM	2,500											2,500	2,500
	MAINTENANCE STRUCTURE/IMPROVEMENT - GWRS UV SYSTEM TOTAL	569,500											569,500	569,500
1050.57046	MAINTENANCE STRUCTURE/IMPROVEMENT - GWRS LIME SYSTEM													
	LIME MIXING EQUIPMENT PM	7,000											7,000	6,000
	POLYMER EQUIPMENT	2,500											2,500	2,000
	LIME INSTRUMENTATION	2,500											2,500	2,000
	LIME LOOP PUMP PM / SLAKER PM	8,000											8,000	8,000
	LIME 4 INCH SLUDGE LINE PLUMBING PM	6,000											6,000	6,000
	LIME SOLIDS HAULING	2,000											2,000	2,000
	LIME VALVE PM	3,000											3,000	3,000
	MAINTENANCE STRUCTURE/IMPROVEMENT - GWRS LIME SYSTEM TOTAL	31,000											31,000	29,000
1050.57048	MAINTENANCE STRUCTURE/IMPROVEMENT - GWRS PRODUCT WATER PUMP STATION													
	VFD PM	3,500											3,500	3,500
	MOTOR PM	2,000											2,000	2,000
	PUMP PM	7,000											7,000	6,500
	VALVE PM	5,000											5,000	4,000
	INSTRUMENTATION PM	3,000											3,000	2,500
	MAINT STRUCTURE/IMPROVEMENT - GWRS PRODUCT WATER PUMP STATION TOTAL	20,500											20,500	18,500
1050.57034	MAINTENANCE STRUCTURE/IMPROVEMENT - GREEN ACRES PROJECT													
	GAP EFFLUENT PUMP VFD PM					3,500							3,500	2,500
	GAP EFFLUENT MOTOR PM					3,000							3,000	3,000
	GAP EFFLUENT PUMP PM					2,500							2,500	2,500
	GAP BACKWASH PUMP PM					1,000							1,000	1,000
	GAP CHEMICAL PUMP PM					1,500							1,500	1,500
	GAP FLOCCULATOR PM					1,500							1,500	1,500
	GAP PCS REPAIRS					2,500							2,500	2,500
	GAP CL2 ANALYZER PM					2,500							2,500	2,500
	GAP INSTRUMENT PM					3,000							3,000	3,000
	GAP PIPING REPAIRS					1,000							1,000	1,000
	GAP VALVE PM					1,500							1,500	1,500
	GAP AIR VAC AND PIPELINE EMERGENCY REPAIRS					6,000							6,000	6,000
	GAP CHLORINE MIXER REPAIRS					2,000							2,000	2,000
	VACUUM TRUCK TO CLEAN BW SUMP					11,000							11,000	8,000
	MAINTENANCE STRUCTURE/IMPROVEMENT - GREEN ACRES PROJECT TOTAL					42,500							42,500	38,500
1050.57036	MAINTENANCE STRUCTURE/IMPROVEMENT - INJECTION WELLS													
	INJECTION WELL INSTRUMENT PM				4,000								4,000	4,000
	INJECTION WELL PCS PM				4,000								4,000	3,000
	REPAIR & RECALIBRATION OF FLOW METERS/INSTRUMENTS/9 MAG METERS				2,500								2,500	2,500
	REPAIR ACCESS HATCHES AND VAULTS				25,000								25,000	25,000
	REPAIR OF DOWN-HOLE VALVES AND BF PUMPS				20,000								20,000	20,000
	REPAIR/INSPECTION OF SEB 10 INCH BACK FLOW PREVENTION				2,000								2,000	2,000
	REPLACEMENT PARTS AND SUPPLIES FOR BARRIER				30,000								30,000	30,000
	REPAIR STAINLESS STEEL VALVE, FITTINGS AND MISC PIPES				5,000								5,000	5,000
	REPAIR/INSPECTION OF AIR VAC AND PRESS RELIEF & BF VALVES				4,000								4,000	4,000
	INJECTION WELL SUMP PUMP PM				3,500								3,500	3,500
	NEW LASER TURBIDITY METER				4,900								4,900	4,900
	NEW WHEELS AND TIRES FOR HIGH PRESSURE AIR COMPRESSOR				2,400								2,400	
	NEW IN-SITU RUGGED READER DATALOGGER DOWNLOAD KIT				2,400								2,400	
	SPINNER LOG MEASUREMENT/TEST FOR MBI									10,000			10,000	
	BARRIER FIELD EQUIPMENT SUPPLIES REPAIRS				2,000								2,000	2,000
	MAINTENANCE FOR 3 LASER TURBIDITY METERS				1,500								1,500	
	PATRICAL COUNTER MAINTENANCE				1,200								1,200	1,200
	MAINTENANCE STRUCTURE/IMPROVEMENT - INJECTION WELLS TOTAL				114,400							10,000	124,400	332,100
1050.51540	CARTRIDGE FILTERS - REVERSE OSMOSIS													
	REPLACEMENT OF RO PRE-TREATMENT FILTERS 3 REPLACEMENTS OF 14 HOUSING WITH 283 FILTERS EACH	75,000											75,000	50,000
	CARTRIDGE FILTERS - REVERSE OSMOSIS TOTAL	75,000											75,000	50,000
1050.51545	SMALL TOOLS													

	TOOLS OPERATIONS		1,500	300	1,000														2,800	2,800
	TOOLS MAINTENANCE		2,500	500	500														3,500	3,500
	TOOLS I&E		3,000																3,000	3,000
	INSTRUMENT SHOP CALIBRATION EQUIPMENT		3,200		1,500														4,700	4,700
	SPECIALIZED TOOLS FOR TREATMENT PROCESS AREAS		6,000																6,000	6,000
	SMALL TOOLS TOTAL		16,200	800	3,000														20,000	20,000
1050.51550	SAFETY SUPPLIES																			
	TRAFFIC SAFETY SUPPLIES		800		1,000														1,800	1,800
	CONFINED SPACE GAS DETECTORS		2,000		1,500														3,500	3,500
	CONFINED SPACE BLOWERS		1,000		300														1,300	1,300
	PPE FOR EMPLOYEES		2,000	200															2,200	2,200
	FULL FACE RESPIRATORS		1,500																1,500	1,000
	RESPIRATOR FILTERS		1,000																1,000	750
	SCBA TESTING REPAIR		1,500																1,500	1,500
	SAFETY EQUIPMENT FOR 12 KV ELECTRICAL SYSTEM PM AND EMERGENCY TESTING		2,500																2,500	2,000
	SPILL CONTAINMENT SUPPLIES		1,500	500															2,000	1,750
	SAFETY AND OPERATION SIGNS			200	500														700	700
	SAFETY SUPPLIES TOTAL		13,800	900	3,300														18,000	16,500
1050.57040	MAINT STRUCTURE/IMPROVEMENT - GREEN ACRES INFLUENT PUMP STATION																			
	INSTRUMENTATION PM							1,000											1,000	1,000
	VFD PM							1,000											1,000	1,000
	MOTOR PM							500											500	500
	PUMP PM							500											500	500
	VALVE ACTUATOR PM							500											500	500
	VALVE PM							500											500	500
	MAINT STRUCTURE/IMPROVEMENT - GREEN ACRES INFLUENT PUMP STATION TOTAL							4,000											4,000	4,000
1050.57042	MAINTENANCE - SANTA ANA RESERVOIR																			
	CHEMICAL PUMP PM							500											500	500
	INSTRUMENTATION PM							1,500											1,500	1,500
	MOTOR PM							1,000											1,000	1,000
	PUMP PM							1,000											1,000	1,000
	VALVE MOTOR ACTUATOR PM							2,500											2,500	2,500
	VALVE PM							1,000											1,000	1,000
	MAINTENANCE - SANTA ANA RESERVOIR TOTAL							7,500											7,500	7,500
1050.54001	CHEMICALS - CHLORINE (NO TAX)																			
	GWRS SODIUM HYPOCHLORITE (11,500 TONS)		1,265,000	2,000															1,267,000	992,000
	GAP INFLUENT AND CL CONTACT SODIUM HYPOCHLORITE (1100 TONS)							200,000											200,000	150,000
	CHEMICALS - CHLORINE TOTAL		1,265,000	2,000				200,000											1,467,000	1,142,000
1050.54060	CHEMICALS - ANHYDROUS AMMONIA (TAX)																			
	GAP CL CONTACT AMMONIA							5,000											5,000	30,000
	CHEMICALS - ANHYDROUS AMMONIA TOTAL							5,000											5,000	30,000
1050.54045	CHEMICALS - POST TREATMENT HYDRATED LIME (NO TAX)																			
	HYDRATED LIME (3,900 TONS)		860,000																860,000	400,000
	CHEMICALS - POST TREATMENT HYDRATED LIME TOTAL		860,000																860,000	400,000
1050.54050	CHEMICALS - HYDROGEN PEROXIDE UV (NO TAX)																			
	HYDROGEN PEROXIDE UV (875 TONS)		465,000																465,000	425,000
	CHEMICALS - HYDROGEN PEROXIDE UV TOTAL		465,000																465,000	425,000
1050.54055	CHEMICALS - SODIUM BISULFITE (TAX)																			
	SODIUM BISULFITE RO FLUSH AND SAR DISCHARGE (15 TONS)		5,100																5,100	4,500
	CHEMICALS - SODIUM BISULFITE TOTAL		5,100																5,100	4,500
1050.54015	CHEMICALS - POLYMER (TAX)																			
	ANIONIC POLYMER LIME SATURATOR (16.5 TONS)		35,000																35,000	20,000
	CHEMICALS - POLYMER TOTAL		35,000																35,000	20,000
1050.54020	CHEMICALS - GWRS REVERSE OSMOSIS SULFURIC ACID (NO TAX)																			
	SULFURIC ACID OPERATING WITH SEASONAL ADJUSTMENTS BETWEEN PH (3,000 TONS) 6.9 TO 7.0 PH		460,000	1,500															461,500	321,500
	CHEMICALS - GWRS REVERSE OSMOSIS SULFURIC ACID TOTAL		460,000	1,500															461,500	321,500
1050.54025	CHEMICALS - GWRS REVERSE OSMOSIS ANTISCALANT (NO TAX)																			

	RO ANTISCALANT (570 TONS)													1,775,000								1,775,000	1,720,000									
	CHEMICALS - GWRS REVERSE OSMOSIS ANTISCALANT TOTAL													1,775,000								1,775,000	1,720,000									
1050.54030	CHEMICALS - GWRS MF CLEANING CHEMICALS (TAX)																															
	MF MEMBRANE CLEANING CHEMICALS CAUSTIC (700 TONS)																							342,500	300,000							
	MF MEMBRANE CLEANING CHEMICALS CITRIC (685 TONS)																								630,000	413,000						
	MF PROPRIETARY CLEANING CHEMICAL STUDY																								1,000	1,000						
	MF MEMCLEAN (35 TONS)																								42,000	36,000						
	CHEMICALS - GWRS MF CLEANING CHEMICALS TOTAL													1,014,500	1,000										1,015,500	750,000						
1050.54033	CHEMICALS - GWRS RO CLEANING CHEMICALS (TAX)																															
	RO MEMBRANE GENERIC CLEANING CHEMICALS CLEANINGS (51 TONS)																								170,000	171,500						
	RO MEMBRANE CITRIC (20 TONS)																								15,000	20,000						
	RO MEMBRANE CAUSTIC (15 TONS)																								7,500	7,500						
	RO MEMBRANE DDBS CLEANINGS (12.5 TONS)																								70,000	70,000						
	RO CLEANING CHEMICAL STUDY																								500	500						
	RO MEMBRANE PROPRIETARY CLEANING CHEMICALS 3 STAGE CLEANINGS																								10,000	20,500						
	CHEMICALS - GWRS RO CLEANING CHEMICALS TOTAL													272,500	2,500										275,000	282,500						
1050.54040	GAP ALUM																															
	PRETREATMENT COAGULANT (21 TONS)																									6,000	6,000					
	CHEMICALS GAP ALUM																									6,000	12,000					
1050.51555	LAB SUPPLIES																															
	CALIBRATION STANDARDS FOR BARRIER FIELD EQUIPMENT																									20,000	20,600					
	CHEMICALS AND SUPPLIES																										2,500	2,500				
	LABORATORY DI WATER SYSTEM																										1,400	1,400				
	PEROXIDE AND CHLORINE TEST STRIPS																										2,500	2,500				
	2 NEW HANDHELD EC PH METERS																										2,500	2,500				
	LAB SUPPLIES TOTAL													28,900													29,500	29,500				
1050.51560	LAB SAMPLES ANALYSIS																															
	GENERAL LAB ANALYSIS BY OUTSIDE LAB																										4,000	9,200				
	LAB SAMPLES ANALYSIS TOTAL													4,000	3,000	2,200											9,200	9,200				
1050.51565	RENT EQUIPMENT- GENERAL																															
	RENTAL OF EQUIPMENT FOR PM PROJECTS																										3,000	3,000				
	RENT EQUIPMENT - GENERAL TOTAL													3,000													3,000	3,000				
1050.54501	UTILITIES - ELECTRICITY (OFFSITE & MISC ELECTRICAL METERS)																															
	GAP CATHODIC PROTECTION																												12,000	12,000		
	GAP DEEP WELL WATER ELECTRICITY																												35,000	35,000		
	GAP INFLUENT PUMPING ELECTRICITY																												30,000	30,000		
	GAP SANTA ANA RESERVOIR PUMP STATION POWER (CNE/SCE)																												140,000	146,000		
	MID BASIN INJECTION WELL																												55,000	55,000		
	INJECTION WELLS																												25,000	34,000		
	UTILITIES - ELECTRICITY (OFFSITE & MISC ELECTRICAL METERS) TOTAL													55,000														242,000	297,000	257,000		
1050.54505	UTILITIES - ELECTRICITY (66KV FV SITE SCE) 70,000 AF																															
	ADMIN BLDG ELECTRICITY																													44,000	49,000	
	MWDOC BLDG ELECTRICITY																													32,000	35,000	
	GAP ELECTRICITY																													275,000	325,000	
	WAREHOUSE, ANNEX & MAINTENANCE SHOPS																													120,000	120,000	
	LABORATORY SCREENINGS																													200,000	205,000	
	MICROFILTRATION																													11,000	12,400	
	REVERSE OSMOSIS																													3,216,000	2,825,585	
	UV SYSTEM ELECTRICITY																													5,760,000	5,320,337	
	DECARB																													880,000	868,841	
	CHEMICAL FEED/LIME SYSTEM																													114,000	96,000	
	PRODUCT WATER PUMP STATION																													22,800	17,000	
	BARRIER PUMP STATION																													2,358,000	1,425,000	
	UTILITIES - ELECTRICITY (66KV FV SITE SCE) 70,000 AF TOTAL													660,000															660,000	800,000		
1050.54505.250	UTILITIES ELECTRICAL CURTAILMENT POWER CREDITS																															
	ESTIMATED PAYMENTS NAPP \$1,000,000																														(1,000,000)	(1,000,000)
	UTILITIES ELECTRICAL CURTAILMENT POWER CREDITS TOTAL													(1,000,000)																(1,000,000)	(1,000,000)	
1050.54510	UTILITIES - GAS																															

	NATURAL GAS FOR HVAC OFFICES & ANNEX BUILDING						6,000						6,000	6,000
	NATURAL GAS FOR LABORATORY												35,000	39,000
	UTILITIES - GAS TOTAL	-	-	-	-	-	6,000	-	-	-	-	-	41,000	45,000
1050.54515	UTILITIES - WATER													
	POTABLE WATER AND INDUSTRIAL WATER		40,000										40,000	48,000
	UTILITIES - WATER TOTAL	-	40,000	-	-	-	-	-	-	-	-	-	40,000	48,000
1050.51102	MEMBERSHIPS/CERTIFICATION FEES													
	MEHUL - WEF, AWWA, ASCE MEMBERSHIP FEES		800	200									1,000	1,000
	OPERATOR & MAINTENANCE CERTIFICATION FEES (\$1900 MORE FOR OPS)		8,900										8,900	7,000
	MEMBERSHIPS/ CERTIFICATION FEES TOTAL	-	9,700	200	-	-	-	-	-	-	-	-	9,900	8,000
1050.51192	TECHNICAL TRAINING													
	DELTA V PROCESS CONTROL TRAINING (2 NEW SENIOR TECHS)		3,500										3,500	3,500
	I&E MEDIUM VOLTAGE SAFETY TRAINING CLASSES		3,500										3,500	3,500
	MICROSOFT OFFICE TRAINING	750	750										1,500	1,500
	MANAGEMENT TRAINING		1,200										1,200	1,200
	MAINTENANCE TRAINING		1,500										1,500	1,500
	WPG TRAINING LIBRARY			400									400	400
	OPERATOR CERTIFICATION CLASSES		3,000										3,000	3,000
	ON SITE O&M TECHNICAL TRAINING		1,500										1,500	1,500
	CRANE TRAINING		3,500										3,500	3,500
	ULTRASONIC MONITOR TRAINING & CERTIFICATION		1,500										1,500	1,500
	WATER DISTRIBUTION TRAINING BARRIER STAFF				500								500	500
	TECHNICAL TRAINING TOTAL	750	19,950	400	500	-	-	-	-	-	-	-	21,600	21,600
1050.51112	SPECIAL DEPARTMENT EXPENSE													
	CONSULTING SERVICE PERMITS		2,000										2,000	2,000
	SCAQMD AND CITY PERMIT FEES		14,000										14,000	14,000
	UNITED PARCEL SERVICE		1,000										1,000	1,000
	ORANGE COUNTY PUBLIC FACILITIES PERMIT				16,500								16,500	421
	SPECIAL DEPARTMENT EXPENSE TOTAL	-	17,000	-	16,500	-	-	-	-	-	-	-	33,500	17,421
1050.56026	LADPW CURRENT EXPENSE													
	LADPW BARRIER								850,000				850,000	850,000
	LADPW CURRENT EXPENSE TOTAL	-	-	-	-	-	-	-	850,000	-	-	-	850,000	850,000
	WATER PRODUCTION GRAND TOTAL	1,069,479	24,617,238	743,750	747,113	1,286,282	1,599,322	492,638	874,222	214,674	113,916	198,488	31,957,124	28,779,260

AGENDA ITEM SUBMITTAL

Meeting Date: January 11, 2016

To: GWRS Steering Committee

From: Mike Markus/Jim Herberg

Staff Contact: W. Dunivin/M. Patel

Budgeted: N/A

Budgeted Amount: N/A

Cost Estimate: N/A

Funding Source: N/A

Program/Line Item No.: N/A

General Counsel Approval: N/A

Project Report Approved: N/A

CEQA Compliance: N/A

Subject: GWRS OPERATIONS UPDATE

SUMMARY

Operation of the Groundwater Replenishment System (GWRS) commenced on January 10, 2008. The GWRS operations update will be discussed at Committee.

RECOMMENDATION

Informational

DISCUSSION/ANALYSIS

Since startup in 2008 GWRS continues produce water that meets regulatory requirements. The quality of the secondary effluent received from the Orange County Sanitation District (OCSD) continues to meet all water quality requirements while operating in the nitrified/denitrified (NDN) mode. The GWRS Microfiltration (MF) and Reverse Osmosis (RO) treatment processes have benefited in overall operational improvements as a result of OCSD's efforts to successfully maintain stable operation in the NDN mode.

The average daily average production for the quarter January through March 2016 has been 91.52 mgd. OCSD staff is working to optimize flow availability while OCWD staff works on operational strategies to make as much water as possible.

In addition, OCWD staff has completed installation of new RO membranes in 6 of the 15 original 5 mgd RO units. The membrane life in 12 of the 15 original RO units was greater than 8 years. Replacement of these membranes should result in improved water quality as well as lower RO operating energy costs. It is planned to have the remaining 6 original RO units replaced with new membranes in the next fiscal year 2016-2017.

OCWD has placed an order to replace MF membranes in 7 of the 21 original MF treatment cells. These 21 cells contain originally installed GWRS MF membranes that are now over 8 years old near the end of their useful life. The first delivery of MF membranes occurred at the end of December 2015 and another delivery occurred in January 2016. The remaining 5 deliveries should occur over the next 3 months. As the deliveries arrive from Australia, Water Production staff will begin installation one cell at a time. The installation of these membranes should improve MF water quality while also helping improve cleaning frequencies for the MF

process. Finally, OCWD placed an order for the 14 remaining treatment cells in March 2016 for delivery of all membranes by July 2017 or sooner. It is planned to replace the remaining 14 cells containing original membranes over the next year.

The GWRS effluent production for the months of January through March 2016 is shown in the following tables:

**GWRS EFFLUENT PRODUCTION
(January – March 2016)**

	January 2016 (million gallons)	January 2016 (acre feet)
Mira Loma, Kraemer/Miller Basin Recharge, Mid Basin Injection, Artic, and Canyon Power	1,824.02	5,599.73
Seawater Intrusion Barrier	890.45	2,733.69
Total	2,714.47	8,333.42

	February 2016 (million gallons)	February 2016 (acre feet)
Mira Loma, Kraemer/Miller Basin, Recharge, Mid Basin Injection, Artic and Canyon Power	1,919.01	5,891.36
Seawater Intrusion Barrier	820.35	2,518.48
Total	2,739.36	8,409.84

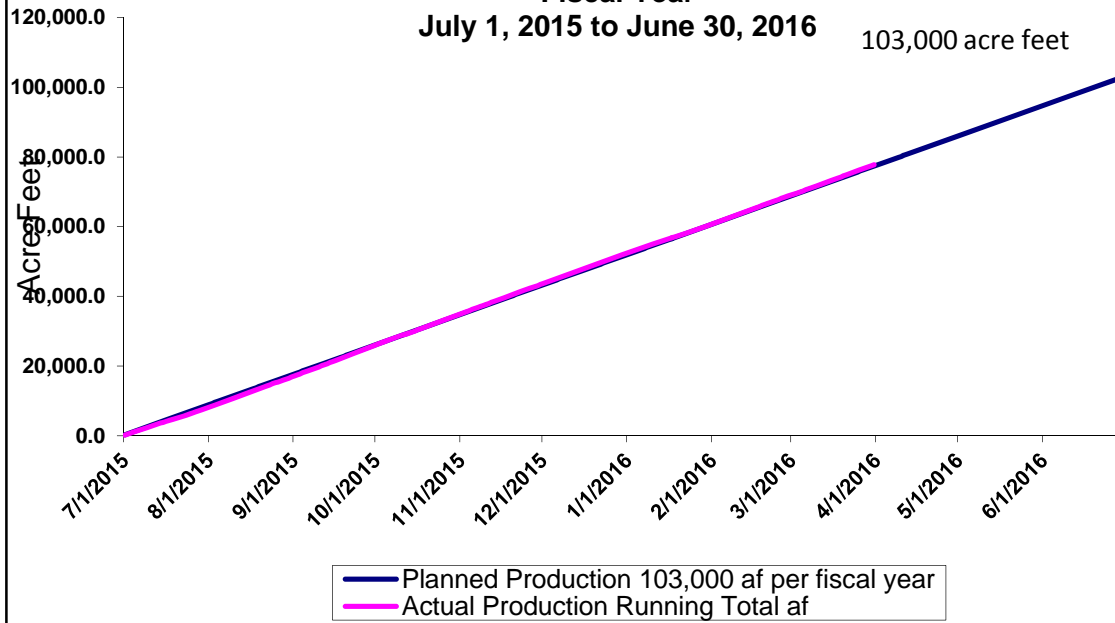
	March 2016 (million gallons)	March 2016 (acre feet)
Mira Loma, Kraemer/Miller Basin Recharge, Mid Basin Injection, Artic and Canyon Power	1,966.47	6,037.05
Seawater Intrusion Barrier	919.19	2,821.93
Total	2,885.66	8,858.98

The following graph shows the 2016/2017 fiscal year production to date compared to the fiscal year production target of 103,000 acre feet (af). This target is based on the design annual production for the GWRSIE. As of March 31, 2016 the GWRS production was 77,813.21 af which is 422.50 af above the target production for this date.

GWRS ACTUAL PRODUCTION TO TARGET PRODUCTION Fiscal Year

July 1, 2015 to June 30, 2016

103,000 acre feet



AGENDA ITEM SUBMITTAL

Meeting Date: April 11, 2016

To: GWRS Steering Committee

From: Mike Markus/Jim Herberg

Staff Contact: M. Patel

Budgeted: N/A

Budgeted Amount: N/A

Cost Estimate: N/A

Funding Source: N/A

Program/Line Item No.: N/A

General Counsel Approval: N/A

Project Report Approved: N/A

CEQA Compliance: N/A

Subject: UPDATE ON SP-173 EFFLUENT REUSE STUDY

SUMMARY

Orange County Sanitation District (OCSD) and Orange County Water District (OCWD) staff have started a Effluent Reuse Study known as SP-173 to determine how to achieve flows required for the GWRS Final Expansion.

RECOMMENDATION

Informational.

DISCUSSION/ANALYSIS

OCSD has seen a decrease in the available sewer flows to their Plant No. 1 facility that feeds GWRS. This decrease is a result of the ongoing drought and increased conservation. The GWRS Final Expansion will require 173 mgd to produce 130 mgd. A joint study has been started that will look into where the additional flows required for the final expansion will originate. The study will also look at water quality issues associated with bringing in the additional required flows from OCSD Plant No. 2, including those associated with the Santa Ana Regional Interceptor (SARI) line.

BACKGROUND

The GWRS has the treatment capacity to produce 100 million gallons per day (mgd) of purified water. The GWRS was designed to accommodate a Final Expansion that would increase the treatment capacity beyond the 100 mgd Initial Expansion recently completed. The Environmental Impact Report certified for GWRS evaluated an ultimate facility with a treatment capacity to produce 130 mgd of purified water.

The availability of sufficient quantities of both raw wastewater and secondary treated wastewater from OCSD is an important consideration in planning for the Final Expansion. To produce 130 mgd of purified water, approximately 173 mgd of treated secondary wastewater is needed (based on a 25 percent loss through the GWRS advanced treatment system).

To increase the amount of flow that can be recycled via the GWRS Final Expansion, additional sewage flows need to be conveyed to OCSD Plant No. 1; or treated secondary effluent from OCSD Plant No. 2 needs to be recycled through the GWRS; or

a combination of the two. Flows that are conveyed to OCSD Plant No. 2 for treatment include sewage from the Plant No. 2 tributary area (primarily the western and coastal section of the OCSD service area), flows from SARI, microfiltration and reverse osmosis cleaning flows from GWRS and other minor flows from the GWRS (for example, from sumps and pump cooling water), OCSD Plant No. 1 truck disposal station flows, and some process water flows from OCSD Plant No. 1.

OCSD, with input from District staff, issued a Request for Proposals (RFP) in January 2015 for an Effluent Reuse Study (SP-173). The scope of work for the study includes:

- Hydraulic model for OCSD Plant No. 1 and No. 2
- Plant No. 2 secondary treatment processes water quality study
- SARI and sidestream separate treatment evaluation and concept design
- Plant No. 2 pump stations/conveyance to GWRS evaluation and concept design
- Flow equalization concept design
- GWRS Final Expansion impacts to ocean and OCSD discharge permit
- Potential opportunities for collections diversions and acceptance of urban runoff
- Potential for future water recycling
- Potential for grant funding opportunities to support the GWRS Final Expansion

The results from this study are key to planning the GWRS Final Expansion. OCSD and OCSD will share 50/50 in the study's cost. The consulting firm CDM-Smith with Brown and Caldwell are performing the study. OCSD staff oversee the management of this contract and OCWD staff participate in all major decisions. This includes review of all project deliverable and attendance at all project related meetings.

OCSD began the Effluent Reuse Study (SP-173) in May 2015. The draft report for the study is anticipated to be completed in May 2016 and the final in July 2016. Currently, the most feasible alternative to get available flows to the final expansion has been identified. Technical memo level design and costs are being developed by the consultant as well as a preliminary implementation schedule.

A quarterly update of the study's progress will be given at the GWRS Steering Committee meetings until the study is complete.

PRIOR BOARD/COMMITTEE ACTIONS

AGENDA ITEM SUBMITTAL

Meeting Date: April 11, 2016

To: GWRS Steering Committee

From: Mike Markus

Staff Contact: E. Torres/G. Ayala

Budgeted: N/A

Budgeted Amount: N/A

Cost Estimate: N/A

Funding Source: N/A

Program/Line Item No.: N/A

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

Subject: QUARTERLY OUTREACH REPORT [JANUARY–MARCH 2016]

SUMMARY

Outreach for OCWD and the GWRS continues with a major focus to build and maintain support, as well as field media interest and media coverage. The following is a report of activities from January through March 2016.

Attachment(s): 2016 first quarter GWRS news clip report

RECOMMENDATION

Informational

DISCUSSION/ANALYSIS

Tour Update

From January through March 2016, OCWD conducted 34 tours for nearly 1,000 guests. Below is a monthly breakdown that shows the number of tours and guests:

Month	# of Tours	# of Guests
January	8	219
February	13	397
March	13	376

Following is a list of groups that toured the GWRS during this quarter:

- Students from Dana Hills High School
- National Science Foundation/NWRI Direct Potable Reuse Workshop attendees
- Members of Orange Canaan Presbyterian Church
- A Chinese delegation accompanied by representatives from MWH Global
- Members of Westminster's Junior Ambassadors Civic Leadership Program
- Moulton Niguel Water District staff
- Members of the International Symposium on Potable Reuse

- Central Valley Farmers, in association with Metropolitan Water District of Southern California
- Members of two public tours
- Students from Rancho Alamitos High School
- Nursing students from California State University, Fullerton (CSUF)
- Two classes from San Clemente High School
- Hydrogeology students from California State University, San Bernardino
- Representatives from Horshiba Instruments
- Students from Godinez High School, in association with OC Coastkeepers
- Two groups of nursing students from California State University, Long Beach (CSULB)
- Representatives from Hampton Road Sanitation District
- Certified Unified Program Agency
- Nursing students from Vanguard University
- Students from Estancia High School
- Residents from Huntington Beach
- University of California, Irvine (UCI) Extension Program
- Dartmouth Alumni
- Students from the University of California, Riverside and Josai University
- Representatives from the World Bank Group
- Students from Edison High School
- Students from Katella High School
- Students from El Modena High School
- The Natural Resources Defense Council Los Angeles Leadership Council
- Attendees of the American Society of Civil Engineers(ASCE)/CSULB conference

Upcoming Tours:

- Huntington Beach High School, April 6 & 7
- Soka University, April 8
- Citrus College, April 8
- CSULB, April 8,15 & 19
- The City of Westminster Water Division, April 12
- UCI, April 21 & June 20
- Assistance League, April 29
- City of Pico Rivera, April 29
- Cal Poly Pomona, May 2 & 3
- West Coast University, May 4 & 16
- CSUF, May 5
- Public tour, May 6 & June 17
- Godinez High School, May 23 & 24
- Jordan High School, May 25
- California Higher Education Sustainability Conference, June 30

Speakers Bureau:

As part of OCWD's standard to forge and maintain long-term, positive and proactive relationships with members of the community and be transparent about its operations and programs, OCWD board members and staff participate, regularly, at community events and speak before civic groups. Below is a listing of speakers bureau engagements. (Note: The GWRS is mentioned in the majority of OCWD speakers bureau presentations.)

- Groundwater Management Districts Association Conference
- UCI Environmental Engineering Seminar Series
- City of Fullerton City Council
- Fullerton Sunrise Rotary
- WaterReuse
- Mesa Water District's Water Issues Study Group
- Mid-Basin Injection project meetings
- Surf City Tea
- Morningside Men's Club
- The National Association of Environmental Professionals
- California Council of Land Trusts
- California Water Environment Association
- Anaheim Chamber of Commerce

Upcoming Speakers Bureau:

- Autonetics Rockwell Boeing Retirement Group, April 13
- Fountain Valley Chamber of Commerce, April 15
- Buena Park City Council, April 26
- UCI Earth System Science Annual Industry Networking Night, May 19

Media:

- There were 34 global news hits for the GWRS. This number includes same source stories that ran in multiple media outlets. The news clips report for this quarter is attached.

Other:

- On February 8, a joint press release was issued titled [International Water Reuse Leaders Support Los Angeles Water Reliability Project](#).
- On February 25, a press release was issued entitled [Orange County Water and Sanitation Districts \\$600 Million Investment in Water Reuse Project Continues to Pay Off](#).
- On March 17, a joint press release was issued about the awards the GWRS Initial Expansion has received: http://www.ocwd.com/media/4034/gwrsie-awards_final.pdf.
- The updated GWRS technical brochure is posted on the website, http://www.ocwd.com/media/4047/ocwd-technicalbrochure_combined-v23-v40-r.pdf,

and is currently being printed.

- Two booths about the Groundwater Replenishment System were featured at the Children's Water Education Festival. The event hosted nearly 7,000 Orange County Students. Information about the GWRS was also featured in the activity book and program, which was distributed to all attendees.
- On March 31, AB2022, legislation for the bottling of advanced purified water for educational purposes, was heard before the Assembly Committee on Environmental Safety and Toxic Materials. Mehul Patel testified during the hearing in support of the bill. Alicia Dunkin also attended. The bill passed through this committee.

Stat Name	Groundwater Replenishment System	
Number of hits	34	
Outlet/Publication	Date	Headline
Los Angeles Times	03/31/16	Local water districts get a break on conservation requirements
Noodls-USA	03/31/16	Mesa Water District Exceeds State-Mandated Goal With 21% Conservation; Qualifies for Reduced Conservation Due to Mesa Water Reliability Facility
Inovar.org	03/21/16	Water industry movers and shakers for February 2016
Phys.org	03/21/16	Californians are ready for recycled water
State of the Planet	03/18/16	Californians Are Ready for Recycled Water
Press-Enterprise (AP)	03/10/16	DISNEYLAND: Rivers of America drained for 'Star Wars' construction
Styrk	03/09/16	Disneyland begins draining Rivers of America as prep for 'Star Wars' land continues
Orange County Register	03/09/16	Disneyland begins draining Rivers of America as prep for 'Star Wars' land continues
Los Angeles Times	03/04/16	O.C. Water District narrows distribution options for desalinated water from proposed H.B. plant
Association of California Water Agen	02/26/16	Orange County Water and Sanitation Districts \$600 Million Investment in Water Reuse Project Continues to Pay Off
Topanga Messenger	02/25/16	Water Reuse Project May Bring 150 Million Gallons a Day to L.A.
Orange County Register	02/16/16	Water conservation mandate loosened for Fullerton
Fox4KC.com	02/12/16	Watch raw sewage turn into drinkable water in just minutes
Fox6now.com	02/12/16	Watch raw sewage turn into drinkable water in just minutes
KTLA 5	02/12/16	From Toilet to Tap in a Matter of Minutes
Noodls	02/09/16	State Extends Water Conservation Mandate through Fall
Desalination & Water Reuse	02/08/16	AMTA and AWWA announce ward winners
Empowering Pumps	02/05/16	AMTA and AWWA announce awardees at this year's Membrane Technology Conference
American Water Works Association	02/04/16	AMTA and AWWA announce awardees at this year's Membrane Technology Conference
Water & Wastes Digest	02/05/16	AMTA, AWWA Announce Awardees at Membrane Technology Conference
Los Angeles Times (Premium)	02/04/16	Local water districts may get break from state on use reductions
Los Angeles Times	02/03/16	Local water districts may get break from state on use reductions
Los Angeles Times (Premium)	02/04/16	Yes, you still have to conserve water. But the state's rules might ease soon
Water Online	02/03/16	AMTA And AWWA Announce Awardees At This Year's Membrane Technology Conference
Environmental Expert.com	02/03/16	AMTA and AWWA announce awardees at this year's Membrane Technology Conference
Water Online	02/03/16	AMTA Awards And AMTA/AWWA MTC16 Awards
Orange County Register	01/27/16	Water cremation on animals can continue in Orange County, board says
Eco-Business.com	01/24/16	Breaking barriers: How California tackled its water challenges to become a global leader
Orange County Register	01/15/16	Newport Beach, Mesa Water fail to meet conservation targets in November
Orange County Register	01/11/16	Concept art: How Disneyland's Rivers of America will look after 'Star Wars' land construction is finished
Orange County Register	01/11/16	Disneyland is building a new waterfront on the Rivers of America
Orange County Register	01/06/16	Cities miss November water-cut targets
Silicon Investor	01/05/16	Big Dog's Boom Boom Room Message Board - Msg: 30390857
Orange County Register	01/05/16	Cities miss November water cut targets