

MEETING OF THE
BOARD OF DIRECTORS OF THE
MUNICIPAL WATER DISTRICT OF ORANGE COUNTY
Jointly with the
PLANNING & OPERATIONS COMMITTEE
September 6, 2011, 8:30 a.m.
Conference Room 101

Committee:

Director Royce, Chairman
Director Clark
Director Hinman

Staff: K. Hunt, K. Seckel,
R. Bell, J. Berg, D. Cordero,
K. Davanaugh

Ex Officio Member: J. Finnegan

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

PUBLIC PARTICIPATION

ITEMS RECEIVED TOO LATE TO BE AGENDIZED

Determine there is a need to take immediate action on item(s) and that the need for action came to the attention of the District subsequent to the posting of the Agenda. (Requires a unanimous vote of the Committee)

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

ACTION ITEMS

1. AWARD OF DESIGN AND CONSTRUCTION CONTRACTS FOR SOUTH ORANGE COASTAL OCEAN DESALINATION PROJECT PILOT PLANT OUTFALL EXTENSION
2. REVISIONS TO MWDOC'S URBAN WATER MANAGEMENT PLAN FOR 2010

DISCUSSION ITEMS

3. DRAFT NOTES FROM THE TECHNICAL AND MODELING ADVISORY COMMITTEE HELD ON AUGUST 16, 2011

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

4. UPDATE ON ALERT OC IMPLEMENTATION FOR WATER UTILITIES
5. ORAL REPORT ON FIRST STAKEHOLDER MEETING ON THE SECOND LOWER CROSS FEEDER PROJECT
6. STATUS OF ONGOING MWDOC RELIABILITY AND ENGINEERING AND PLANNING PROJECTS
7. WATER USE EFFICIENCY REPORTS
 - a. Status of Water Use Efficiency Projects
 - b. Water Use Efficiency Programs Savings and Implementation Report
8. REVIEW OF ISSUES RELATED TO CONSTRUCTION PROGRAMS, FACILITY AND EQUIPMENT MAINTENANCE, WATER STORAGE, WATER QUALITY, CONJUNCTIVE USE PROGRAMS, EDUCATION, DISTRICT FACILITIES, and MEMBER-AGENCY RELATIONS

CLOSED SESSION

9. PUBLIC EMPLOYEE PERFORMANCE EVALUATION
GOVERNMENT CODE SECTION 54957
Title: General Manager

ADJOURNMENT

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

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



SOUTH ORANGE COASTAL OCEAN DESALINATION PROJECT

ACTION ITEM

September 21, 2011

TO: Board of Directors

FROM: **Planning & Operations**
(Directors Royce, Clark, Hinman)

Kevin Hunter / Staff Contact: Karl Seckel/Richard Bell

SUBJECT: **Award of Design and Construction Contracts for South Orange Coastal Ocean Desalination Project Pilot Plant Outfall Extension**

STAFF RECOMMENDATION

Staff recommends the Board of Directors authorize the General Manager to award a construction contract to the lowest responsible bidder for extension of the test facility outfall to the end of the concrete groin, an extension of about 90 feet. This work is necessary to enable pumping of the test well to be re-started due to the formation of the sand berm that has blocked off the outfall. Funding is available from the South Orange Coastal Ocean Desalination Project. Please note that the work is out to bid at this time and the bid opening is not scheduled until September 19. An email package on the bid award will be provided to the directors before the award recommendation will be considered at the September 21 Board Meeting. The award by MWDOC will be contingent on action by the Project Participants at an upcoming meeting.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

Budgeted (Y/N): No	Budgeted amount: choice activity
Action item amount: \$	Line item: SOCOD Phase 3 Budget
Fiscal Impact (explain if unbudgeted): The additional funds requested are available from the Phase 3 SOCOD Project Funds.	

DETAILED REPORT

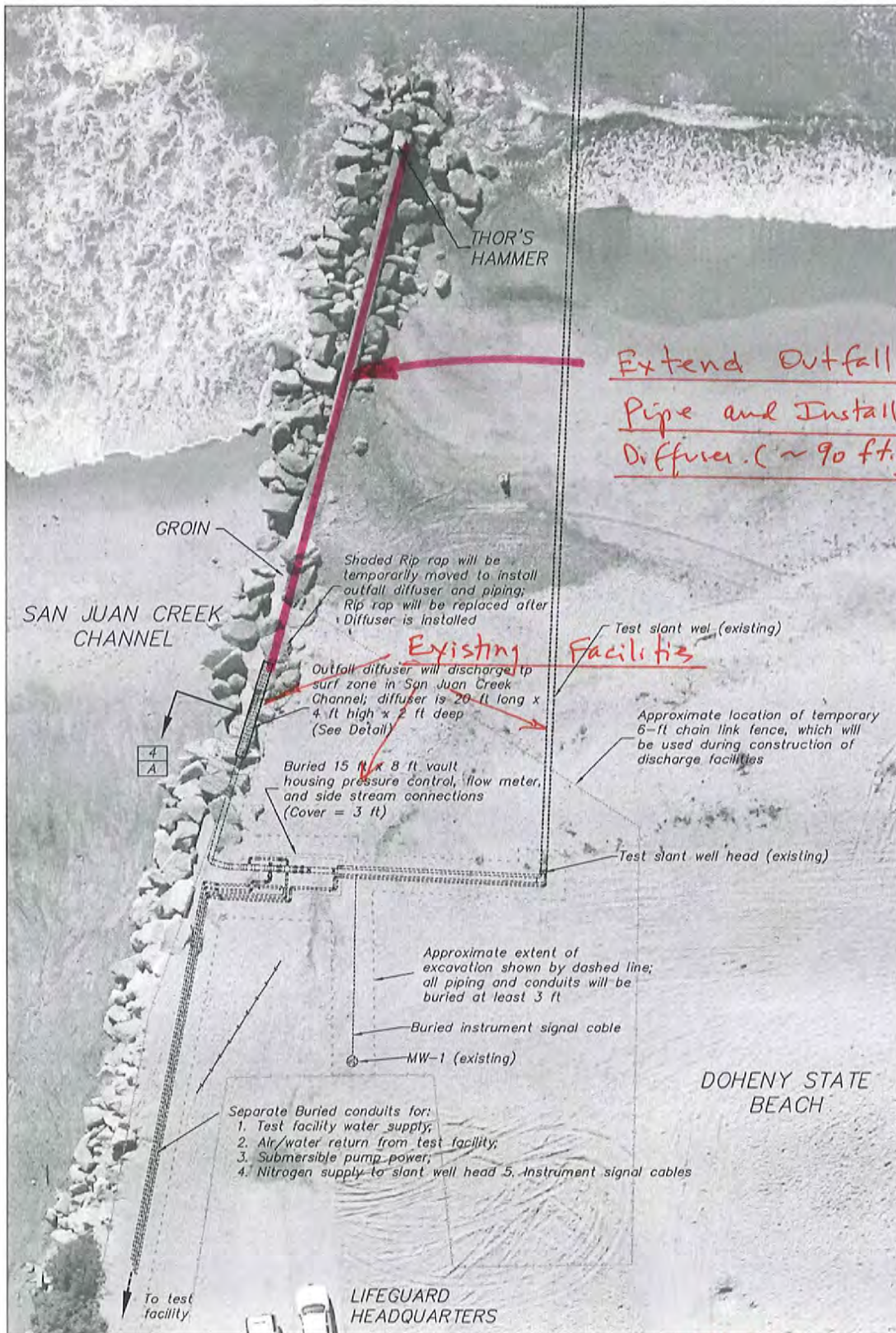
On July 9, 2011 the Phase 3 Extended Pumping and Pilot Plant Test work was shut down due to the formation of an unusually large sand berm oceanward of its normal location that blocked off the flow of water from our slant test well to the surf zone. A ponded lagoon then formed behind the sand berm. State Parks requested that our discharge into the lagoon be terminated due to safety considerations when high water levels can cause sudden breaching of the berm and high velocity outflow. In addition, the pumped groundwater does not comply with waste discharge requirements for discharges into lagoons. Consequently, it is necessary to extend the outfall 90-feet to the end of the concrete groin to clear the sand berm that will allow discharge to the surf zone to resume.

CEQA and permitting work was commenced in early July and permits have now been received or are in the process of being issued. A change order in the amount of \$12,950 was issued to Carollo Engineers, the design engineer of record, to prepare design plans and construction contract documents and to assist in the bidding and construction oversight work. Kidman, Behrens and Tague provided updated front end contractual documents. Pre-qualified construction firms were provided by South Coast Water District and the construction firms involved with our test facility work were also determined to be pre-qualified based on their prior contract work, high quality of work, and familiarity on this project.

The design work has been completed and a call for bids was issued on September 2. Bids will be open on September 19 and an award recommendation will be sent out on Tuesday, September 20. It is anticipated that the design and construction work will cost approximately \$100,000.

This work has been agreed to by State Parks and permits from the Coastal Commission, Regional Board and US Army Corps of Engineers have been received or are in the process of being issued (USACE general permit letter). The work is being conducted within the existing State Lands Commission lease area which allows our test facilities.

It is critical to move this work forward at this time as further delays in re-starting the Phase 3 extended pumping and pilot plant test will cause the freshwater-oceanwater groundwater interface to move further offshore. As the freshwater interfaces moves further offshore, it will result in lower salinity upon re-start of pumping. This work is necessary to allow completion of the pretreatment pilot testing work for evaluating alternative technologies for removal of iron and manganese and to complete the Phase 3 investigation work (well and pump performance, water quality, corrosion testing, microbial fouling testing, RO testing, and radium isotope and radiocarbon testing). Waiting for a major storm to wash out the sand berm is problematical and further delays would potentially place at risk our ability to complete the pretreatment testing work.



Aerial photo base taken December 6th, 2008

7-25-11

Detail Callout

4 Figure
A Detail

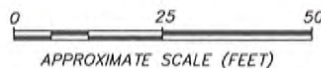


FIGURE:	REVISIONS				WMI	CLIENT: MUNICIPAL WATER DISTRICT OF ORANGE COUNTY PROJECT: SOUTH ORANGE COASTAL OCEAN DESALINATION PROJECT; PHASE 3 EXTENDED PUMPING AND PILOT PLANT TEST	Date: 12-11-2008
	Date	Discipline	Author	Approved			Drawn: MDW
2	1-13-09	Admin	Chain Link Fence	MDW	WILLIAMS-McCARROLL, INC. WATER PROCESS SOLUTIONS	Checked: MDW	Approved: _____
File:					PROPOSED TEMPORARY FACILITIES FOR PHASE III TESTING	Approved: _____	Title: _____



ACTION ITEM
September 21, 2011

TO: Board of Directors

FROM: **Planning & Operations Committee**
(Directors Royce, Clark, Hinman)

Kevin Hunt
General Manager

Staff Contact: Karl Seckel

SUBJECT: **Revisions to MWDOC's Urban Water Management Plan for 2010**

STAFF RECOMMENDATION

Staff recommends the Board of Directors receive and file the report and take actions as appropriate.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY

Because MWDOC has grant funds it has applied for that depend on having an approved Urban Water Management Plan (UWMP), the Department of Water Resources (DWR) moved its review of our recently completed UWMP to the top of the list. The review was recently completed and identified three areas where additional information is required. As of this time, DWR has not decided if our plan needs to be amended and readopted or if we can just supply the additional requested information by letter. DWR will be making a decision on this soon, so we may have to schedule Board approval of the amended plan.

The three items DWR has requested are:

1. Historical supply reliability under the normal, single dry year and multiple dry year scenarios for the hydrologic years selected. Our methodology for forecasting of this

Budgeted (Y/N):	Budgeted amount:	Core <input checked="" type="checkbox"/>	Choice __
Action item amount:		Line item:	
Fiscal Impact (explain if unbudgeted): No budgetary implications from this action			

information was accepted by DWR, however, we neglected to do the same for the current 2010 year. This must be added.

2. DWR requested documentation of the imported supply requests for each of our agencies for the 2015 to 2035 projection period. At the request of our agencies, we provided only the totals for this number and not the detailed numbers for each agency. This was found to be acceptable in the past, however, DWR is now requesting that wholesalers provide the details for all water sales to all agencies. We need to add this detail into our tables.
3. Our plan failed to specify to the public exactly where to obtain copies of the plan. We included only a general statement that the plan would be made available. We must note that copies can be obtained from our website or from the District office.

Once DWR makes a decision as to how to handle these changes, we will report to the Board and following up accordingly. We may want to put this time on our September Board meeting as an action item, if needed. Our grant funding should not be held up.



SOUTH ORANGE COASTAL OCEAN DESALINATION PROJECT

DISCUSSION ITEM

September 6, 2011

TO: Planning & Operations
(Directors Royce, Clark, Hinman)

FROM: Kevin Hunt
General Manager

Staff Contact: Karl Seckel/Richard Bell

SUBJECT: DRAFT Notes from the Technical and Modeling Advisory Committee
Held on August 16, 2011

STAFF RECOMMENDATION

Staff recommends the Committee receive and file the report.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY REPORT

Attached are DRAFT notes from the Technical Advisory and Modeling Advisory Committees for the South Orange Coastal Ocean Desalination Project. The Technical Advisory Committee (TAC) is made up of the technical staff representatives from MWDOC and the five Project Participants. The Modeling Advisory Committee (MAC) includes the TAC members plus additionally includes Santa Margarita Water District and the San Juan Basin Authority representatives to provide input and recommendations into the groundwater modeling process for the San Juan groundwater basin.

Budgeted (Y/N): n/a	Budgeted amount: CHOICE ACTIVITY
Action item amount: \$	Line item:
Fiscal Impact (explain if unbudgeted): No funds are required for this item.	

The three main topics discussed were:

- Surface water model component of the groundwater basin model. This is critical because it will help us understand the future supplies that can be developed for the basin. We made good progress on this issue, however, we pushed back the modeling work schedule by about a month. Results are expected by the end of this calendar year.
- The iron and manganese issues and how to address these issues in our future testing. The seeming consensus coming from the group is that an extension of our pumping test may not be the best expenditure of funds at this time, however, they were willing to get the pumping started again, finish our work which will require pumping for an additional 4 or 5 months (part of our original work) to complete our grant work in hand and then consider what to do. They also requested that we convene a group with specific expertise in offshore boring work to scope out and develop cost estimates for future work that would need to be accomplished, likely during the design phase for the project.
- Extension of the discharge piping to the ocean side of the berm so we can start the pumping again. They recommended we proceed ASAP with a construction contract to get the pumping started again to complete the testing work in hand.

Input and Discussions at the Technical Advisory Committee (TAC) and Model Advisory Committee (MAC) South Orange Coastal Ocean Desalination Project Discussions on August 16, 2011

Executive Summary of Meeting Discussions

1. With respect to the Surface Water Modeling, the following was agreed to:
 - PACE Water Engineering to meet with Wildermuth Environmental to review Selective Period Analyses for different types of storm events and periods of rainfall to see if any adjustments to the model are needed.
 - PACE to prepare the administrative draft of the surface water model documentation within about 3 weeks for the Technical Advisory Committee to review PRIOR to turning over the data to Geoscience for their calibration runs.
 - The next meeting of the Modeling Advisory Committee is in November to review the calibration and historical runs.
2. With respect to the cost-sharing of the surface and groundwater modeling:
 - The Technical Group recommended the item be brought back to the Participant's Group for discussion; the general consensus seems to be that the existing cost-sharing arrangement is acceptable.
3. With respect to the potential for extension of the pump test:
 - Concur with the recommendation that MWDOC get all the permits and extensions necessary for the work to be extended, but that we NOT make the final decision until the spring of 2012. The Technical Group questioned the benefits of extending the pumping test. It provides additional water quality data and information that is important to the groundwater modeling work and it will help to discern trends in the key parameters. However, it was noted in the discussion that the extension of pumping test would not provide exact data on the ultimate quality of water to be expected for our project. It was also noted that additional work in the form of offshore borings would be needed prior to completing the final design.
 - MWDOC was requested to develop additional information on the next steps for the project, the cost of the next steps and to identify the largest cost implications that might arise with implementation of the project. This information was to be used in the decision-making process.
 - Complete the discharge piping extension ASAP. The work needs to be bid and awarded in September, so pumping can begin again in October.
 - Once pumping begins, we need to pump for 4 or 5 months to complete the work associated with the BUREC Grant. That would put us in April of 2012.

Full Meeting Summary

Technical Committee Members and consultants in attendance:

- Joe Sovella, Mike Dunbar – South Coast Water District
- Dave Rebensdorf – San Clemente
- Bob Gumerman, Matt Collings, Eva Plajzer – Moulton Niguel Water District
- Richard Mathis – Laguna Beach County Water District
- West Curry – San Juan Capistrano & SJBA
- Dan Ferons – Santa Margarita Water District & SJBA
- Karl Seckel and Richard Bell – MWDOC
- Gerry Filteau – Separation Processes Inc.
- Andrew Ronnau, Bruce Philips – Pace Advanced Water Engineering
- Dennis Williams, Johnson Yeh – Geoscience Support Services Inc.
- Mark Wildermuth – Wildermuth Environmental Inc.
- Matt Charette, Woods Hole Oceanographic Institution, Coastal Geochemistry Group (by phone)

Others in attendance:

- Richard Runge, director, South Coast Water District
- Dick Dietmeier, former Board member South Coast Water District
- Gary Kurtz, director, Moulton Niguel Water District
- Susan Hinman, director, MWDOC

The three main topics covered at the meeting were:

1. The surface water component of the groundwater model. The importance of this work was noted since the surface runoff model provides the estimates of percolation which then turns into groundwater and becomes the long term sustainable yield from the basin.
2. Test results for the iron and manganese and course of action with respect to extension of the pumping test or conduct of offshore borings
3. Extension of discharge piping to get on the ocean side of the berm

The Surface Water Component Of The Groundwater Model

- Dennis Williams and Johnson Yeh from Geoscience discussed the groundwater model being developed.
- The boundary condition assumption at the Cristianitos Fault was raised and discussed. The Rancho Mission Viejo Company has riparian water rights in the upper watershed which they utilize. This had been previously discussed. This location is the generally accepted dividing point between the Upper and Middle Portions the San Juan Groundwater Basins – the alluvial materials are rather shallow at this location. Geoscience is handling this from a modeling perspective by setting a general head boundary condition, based on water levels, and will let the model determine the groundwater flow across this boundary. At the meeting, it was noted that Geoscience can take a look at what the model calculates and estimate

whether or not it looks reasonable during the calibration period runs and can check the sensitivity of the assumptions. This boundary condition is not expected to cause substantial changes in downstream access to groundwater. Another way of checking this is to assume zero inflow to the basin at this location during critical dry periods to see what impacts occur on the downstream groundwater yield. Dan Ferons noted that in reality, that situation arises in that downstream surface flows stop in dry years, and it take a while for the upstream area to become saturated to the point where streamflows begin again once the dry period ends. It was also noted that based on Mark Wildermuth's experience and expertise in working with the upper watershed with the Ranch, we should have him review the model calibration runs and get his input before moving forward.

- The lithologic model (subsurface soil/bedrock structure) was discussed. Geoscience used a new technology to take all of the existing data points in the basin (140 total) and interpolate and extrapolate from these to populate all of the cells in the model with the substructure properties. The model uses the characteristic properties to predict groundwater flows when the model is utilized. A discussion occurred about the nature and extent of the clay layer found in the lower basin. It is down about 13 feet and is about 4 feet thick. It is somewhat of a confining/constraining layer for vertical flows. Dennis Williams noted that the current pumping at 3 mgd does not put much stress on the basin. Based on trends that are starting, we may be seeing the beginning of the younger ocean water flowing vertically in the basin. His belief is that the ultimate project, at ten times the pumping (30 mgd), will stress the basin and result in a much larger vertical flow component from the younger ocean source.
- Andrew Ronnau from Pace Advanced Water Engineering discussed the surface water model development and how it would be incorporated into the groundwater model.
- The calibration period used was 1989 to 1999. The dry period for the watershed was deemed to be 1948 to 1977. Land use data from 2005 was used for current purposes. The future land use includes changes based on the Ranch Plan development. The difference in the level of development did not significantly affect the runoff as the majority of the watershed is in an undeveloped state for either existing or future conditions.
- Dry weather runoff was modeled in several ways and compared to actual measured flows. The dry weather flows were determined to be small compared to the overall yield analysis of the basin, but even at an annual amount of 750 af per year, that amount of water has a significant value.
- It was requested that future presentations include a graphic of the flow reaches and resultant infiltration for the major drainage areas of the watershed. It was also requested that the calibration runs be shown to indicate how well the model was doing in replicating the historical flows. Andrew indicated that he was very comfortable with the fit and response of the model.
- Mark Wildermuth suggested that the calibration runs be evaluated to look for the types of storms and periods when the match is good and to look for the periods when the match is not as good. Adjustments in precipitation may be the best way to adjust the calibration to get the model to reflect most accurately what occurs in the watershed. This method of

Selective Period Analysis can give insights as to the model performance. Mark stressed the importance of getting the runoff component right, but also getting it incorporated into the groundwater model in an appropriate manner. This later step would be done by Geoscience in the groundwater modeling phase.

- Mark also commented that the total amount of storage in the groundwater basin (in the sense of a reservoir) was on the order of 30,000 af and that is not a large reservoir size to work with when looking at annual yield out of the basin of 10,000 af or so. This basin is more like a stream. Mark suggested that we might want to approach the yield analysis in the manner of a streamflow analysis. Mark also suggested we begin thinking about what to call or how to best characterize this type of yield from the basin and how the estimate would be developed (long term sustainable yield, firm yield, critical period yield, variable yield, etc.).
- As to how to proceed at this point on the surface water modeling, the following was suggested:
 - Andrew Ronnau to meet with Mark Wildermuth to review Selective Period Analyses for different types of storm events and periods of rainfall. It was not expected this would take a lot of time to complete. The data are all available and just need to be analyzed to determine if any adjustments to the model are needed.
 - Several folks suggested that they would like to see the documentation to be prepared by PACE for the surface water model prior to turning over the data to Geoscience for their calibration runs. Bruce Phillips indicated it would take about 3 weeks to prepare an administrative draft.
 - Waiting for the administrative draft to be completed would slip our groundwater modeling by about a month. The group agreed that we should take the time to complete the front-end work in a complete manner so we do not have to go back and reanalyze the data or model once the surface water modeling is turned over to Geoscience.
 - PACE indicated that they had incurred extra costs for the calibration review and would be summarizing those costs for MWDOC.
- Karl Seckel raised a matter that was requested to be addressed by the SOCOD Participants Group and that involves the allocation of costs for the surface and groundwater modeling. The SOCOD Participants requested that MWDOC approach the San Juan Basin Authority to discuss cost-sharing of the \$325,000 being spent on this last phase of the groundwater modeling work. MWDOC met with the San Juan Basin Authority agency staff members, including Dan Ferons from SMWD, Eva Plajzer from MNWD, Joe Sovella from South Coast and West Curry from San Juan Capistrano. Cost share options were discussed. The San Juan Basin Authority agencies expressed three comments on cost-sharing of the groundwater modeling:

- First, they felt they were already cost sharing because of the work Wildermuth Environmental has been providing towards the surface and groundwater modeling work via their input and quality assurance work in reviewing the PACE and Geoscience Modeling work.
- The second cost share involves completing the Groundwater Management Plan by Wildermuth Environmental at an estimated cost of \$400,000 that will include options as to how the ocean desalination project can be included in the regional water resources to be managed among all of the agencies within the groundwater basin and with outside agencies such as San Clemente and Laguna Beach County Water District. The SOCOD desal group has not been requested to contribute towards this effort, other than in developing the surface water and groundwater modeling work.
- The third comment was that typically when a change is being requested that affects an entity such as the San Juan Basin Authority members, the proposing entity is generally responsible for analyzing the issue and its impacts and bringing it forward. In this sense, the ocean desalination group would be responsible for funding the surface and groundwater modeling effort because the ocean desal project cannot move forward without completion of this work.
- Geoscience was asked directly about the 2009 modeling work they conducted for the City of San Juan Capistrano and the modeling they conducted for South Coast for the location of new desalter wells. There was some sense that San Juan and South Coast had already paid for modeling work and were now paying again as part of the ocean desalination work. Geoscience explained the differences between the 2009 work for San Juan which related back to focused work on the MTBE and specific impacts on their wells and water production from the contamination areas. That modeling work being completed now is quite different, much more detailed and to be accomplished for the entire basin instead of just focused work in the vicinity of the City's wells. The same is true of the work for South Coast Water District several years ago. Data from those earlier assignments are incorporated into the new model.
- The group felt comfortable with this information and suggested the information be provided to the SOCOD Participants.

Test Results For The Iron And Manganese And Course Of Action With Respect To Extension Of The Pumping Test Or Conduct Of Offshore Borings

Dr. Matt Charette, a Coastal Geochemist from Woods Hole Institute in Massachusetts joined us by phone for the following discussions. Richard Bell summarized the major findings in the work completed over the past year and also discussed the five major uncertainties that we need to address at some point, these being:

1. Pumping levels in the Slant Well will continue to decline until it reaches a steady state condition. Our previous modeling indicated that steady state would be reached in about 3 years when pumping just the slant well. The actual pumping decline needs to be

analyzed to determine if the actual decline is consistent with the prior modeling and that we make sure we understand and adjust for any differences noted.

2. Maximum iron and manganese levels have been flat at about 10 mg/l for the last 6 months – what will happen with continued pumping? What will happen with the pumping for the ultimate project? Will the levels climb, fall or remain the same? Will they remain dissolved or will they precipitate out?
3. Oxidation Reduction Potential (ORP) is an important indicator and trend to monitor. It provides information about how reactive the water might be and whether the water will tend to be in a reducing, “anoxic” state (without oxygen) or an oxidizing “oxic” state (with oxygen). Dr. Charette has suggested that sufficient organic carbon and dissolved oxygen exists in ocean water to support natural microbiological activity in the subsurface sediments and that the aerobic bacteria would consume all of the oxygen and render the water anoxic as it travels to our wells. Will this hold for the future under the conditions of ultimate pumping? This is important because it relates to what might happen with the iron and manganese either staying in solution or being oxidized and precipitating out of solution. We do not have good trends on ORP due to equipment malfunctions.
4. What is the connection between the coastal lagoon and our slant well? We believe there is not a direct connection between the two because of the underlying clay layer. Calibration of the groundwater model will help us to better understand the flow path and leakage from the shallow zone through the semi-confining clay layer into the main middle aquifer. The tracer study showed no indication over 4.5 months but was inconclusive beyond that point in time.
5. Will we connect to the “young” ocean water and to what degree? Our recent pumping still indicates a predominance of the older marine water, but the radium isotope testing may be indicating that we are beginning to see the younger ocean water show up at our well. The constant iron levels may also be indicating some mixing and dilution with recharged ocean water. Within a week, we will have the next data point on the isotope testing that will shed more light on whether a trend is occurring or not

The matrix from the agenda materials showing four potential outcomes with respect to iron and manganese pretreatment was discussed. Other input was then requested and discussion points included:

- The trends we are seeing in our pumping are important and provide us with good information, but they will not necessarily tell us exactly what will happen under the conditions of ultimate pumping. It was reported that the more data we have to include in the model, the more precise the output will be. At this time, we have a very good model and predictive capability. It would be better with more data, but the additional improvement is difficult to quantify.
- Dr. Charette also noted that the chemistry is generally understood, but it is difficult to extrapolate because many of the interactions are not linear.
- The stress imposed on the basin with just our single well pumping 3 mgd is quite different from what would be experienced at 30 mgd (ten times more). Dennis Williams

belief is that under the higher pumping, more of the young ocean water will be drawn into the system as more water is drawn through the semi-confining clay layer. The travel time under this condition may still be sufficiently long enough that allows aerobic bacteria to deplete the dissolved oxygen in the ocean water that would flow into the aquifer. More work in this area would be very helpful in predicting the oxic/anoxic condition of water flowing to the wells under full production.

- We discussed the potential for an extension of the current pumping test. We will have the ability to pump for 4 to 5 more months once we get back up and running. This amount of time is needed to complete the iron/manganese pretreatment pilot work under the BUREC Grant.
- We noted that the Participants did not want an open ended pumping extension, so the group discussed various approaches to define “when has sufficient pumping been completed?” We are looking for reliable, predictable, discernable trends if we are to continue pumping. We could terminate the pumping if we find all three of the following:
 - If six consecutive months of data indicate that either no change in trends is occurring or we find that iron and manganese levels have declined
 - The radium isotopes indicate a connection with the younger ocean water
 - The groundwater remains anoxic with decreasing age.
- The group discussed the other approach to better understand the offshore hydrogeology and water chemistry by conducting borings. The work will cost between \$1.5 million and \$3.0 million to complete 3 to 10 borings and for collection and analysis of the data. This work needs to be done along with other geophysical work prior to completing the final design for the facility if the project is to move into implementation. This work would examine and test the dissolved oxygen depletion rates by native bacteria through periodic monitoring from the piezometers that would need to be completed under this work. It is probably too expensive to conduct at this time unless outside funding were secured.

Discussion on moving forward with extension of the pumping:

The group discussed the overall project, where we are at this time and what would be needed towards the decision for moving the project forward.

1. What does the extension of the pumping test do for us at this time? It provides additional water quality data and information that is important to the groundwater modeling work and will help to discern trends in the key parameters. However, it was noted in the discussion that the extension of pumping test would not provide exact data on the ultimate quality of water to be expected for our project. Additional work in the form of offshore borings would be needed prior to completing the final design.
2. It was noted that the iron and manganese is ultimately a \$50 million capital cost issue and we have done a pretty good job of quantifying the issue and potential impact. It is not fully resolvable at this time and so needs to be carried as a contingency. What other major questions still remain and are we able to fully quantify the potential impacts from

these issues? It was noted that potential mitigation costs for the San Juan Basin are still unknown, but we should have a much better handle on the potential mitigation approaches and costs after completion of the groundwater modeling work by Geoscience. Other potential issues include:

- San Juan Creek fisheries and environmental issues
 - Coastal lagoon and drawdown issues
 - Energy cost trends
 - What are the costs of modifying the SOCWA outfall for brine disposal in a manner consistent with regulations just now being developed?
 - Yield from the project – is it likely to go up or down depending on the groundwater modeling work and the potential for using longer flatter slant wells out under the ocean
 - What other technologies for wells might be perfected prior to the start of construction for our project?
 - Other?
3. The question was posed to the consultant group as to whether or not they thought there were any technical or environmental fatal flaws for the project. The answer was that as long as the potential need for removal of iron and manganese is not considered a fatal flaw, no others were identified. Economic feasibility will end up being an agency by agency decision at a point when all costs become refined. It was noted that this will be an iterative process. As more work is completed the project costs can be developed with a higher and higher degree of certainty. It was requested that MWDOC scope out the answers needed, the process and the next steps for implementation of the project along with the costs of those implementation steps. This would be good information for discussion of timing issues, cost issues, off-ramps and next steps. We also need a full understanding of issue of supply reliability of imported water sources and the reliability value and public health/economic benefit that the project would provide.
4. It was suggested that the following course of action be followed:
- a. Extend the diffuser and get the pumping going again ASAP so we can complete the pumping work and grant work originally anticipated.
 - b. There was a short discussion regarding how much ground we had lost with the pumping since the July 9 shutdown. We may not have to add on all of the time lost. We probably need to pump for 4 to 5 months once pumping begins again. We anticipate being able to start pumping up again in October and five months would take us through March 2012.
 - c. Between now and April 2012 we can continue to review the pumping results, develop the information requested above and we will have completed the groundwater modeling work.

- d. We can also have further discussions on extension of the pumping based on the data from completion of Phase 3 pumping or other work that is needed and develop a work plan and costs for implementation beginning in July 2012 to help the Participants in the decision-making process. This would also allow agencies to budget for any future work. The group recommended procuring permits/approvals for extending the pumping for up to one year with a decision to be made early next year.
- e. The cost implications of these actions was discussed and MWDOC advised the group that with the reprioritization of work done by MWDOC staff to date, there appears to be sufficient funding to cover the extra costs with being shutdown (costs being developed) and the total of all costs of extending the discharge piping (generally estimated at about \$90,000 in rough numbers).

Extension Of Discharge Piping To Get On The Ocean Side Of The Berm

The group reviewed the photos and sketch of the work necessary to extend the discharge piping so the discharge will occur on the ocean side of the berm. MWDOC previously started the permitting process so we would not be held up on completing this work. The permit from the Coastal Commission has already been received; the Regional Board permit is expected soon. The Army Corps permit is the one we are waiting on. The group discussed the proposal by Carollo Engineers to complete a simple drawing and spec package for the work. We anticipate they can complete the plan for the discharge piping by the end of August, we can bid out the work and receive bids on September 19 and award the contract later that week at the MWDOC Board meeting on September 21 and at a yet to be set Participants meeting. We would expect the work can be completed by mid October and that pumping could then be restarted. The group recommended MWDOC provide the notice to proceed to Carollo.



INFORMATION ITEM

September 6, 2011

TO: Planning & Operations Committee
(Directors Royce, Clark, Hinman)

FROM: Kevin Hunt, General Manager

Staff Contact: Kelly Hubbard

SUBJECT: Update on AlertOC Implementation for Water Utilities

STAFF RECOMMENDATION

Staff recommends the Planning & Operations Committee: hear the report.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY

AlertOC is a public mass notification system that is being used by most of the cities and water special districts, as well as the county to notify the public of emergency events and actions that should be taken in response to those events. The water utilities are in the process of implementing the full use of this system and can already use it if necessary at this time.

DETAILED REPORT

AlertOC is a public mass notification system that was initiated and is paid for by the County of Orange. AlertOC is used to notify residents and businesses of emergency notifications in which the public should take action, such as evacuation orders. The system utilizes two databases for notifications. The first is what is called E911 data. E911 data includes all landline phone numbers provided by the telephone companies. The second data set comes from self registration. The self-registration portal, www.alertoc.com, allows for residents and

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

people who work within Orange County to register additional contact information such as emails, cell phone numbers, and to opt into receiving text messages as well.

Initially AlertOC was only available as a tool to the County and the Cities within Orange County. This meant that only the cities and the County were able to send emergency messages to the public. Additionally the system provides a component for internal employee notifications. If the water utilities needed to send a message to the public, they would have had to either contract for this service separately or to request this to be done by the County Emergency Management Bureau or by one of the cities that the district served. In 2009 Kelly started to work with the County's Emergency Management Bureau and the County's Office of the Chief Information Officer to allow the water utilities in Orange County to also use the system. To participate, a water agency would need to sign a Memorandum of Understanding with the County and attend training on the use of the system. There is no cost to utilize the system at this time as the County is sponsoring this program. To date out of a potential thirteen water entities, nine water utilities have chosen to participate in the system, three decided not to and one is still considering participation.

Participating:

1. East Orange County Water District
2. El Toro Water District
3. Moulton Niguel Water District
4. Municipal Water District of Orange County
5. South Coast Water District
6. Serrano Water District
7. Santa Margarita Water District
8. Trabuco Water District
9. Yorba Linda Water District

Considering Participation:

1. Mesa Water District

Not Participating:

1. Golden State Water Company – Already has a companywide reverse dial system in place.
2. Irvine Ranch Water District – Already has a companywide reverse dial system in place.
3. Laguna Beach County Water District – Coordinates the use of the same system through established protocols and agreements with the City of Laguna Beach.

Each participant is allowed 2-3 users for the system. The users are the ones that access the system, enter the messages that will go to the public, and select who will receive the messages. Most districts have chosen emergency coordinators, customer service representatives and maybe someone from operations to be the district's users. The message content and approval to send the message still follows standard protocols of going through the utility's public affairs office and upper management approval. Additionally, prior to any message being sent to the public the utility is being asked to first share that message with the cities impacted and the County in order to ensure consistency of messages. Furthermore, if a Joint Information Center is set up during a larger event the utility would be

asked to coordinate all their messaging with the Joint Information Center as well. This follows standard emergency response procedures.

A majority of the water utility users have received the basic training on the system. Kelly Hubbard is now working with the County to issue those users passwords for the system. Once user ID's and passwords have been issued, there will be an additional workshop on how to upload employee contact information and to utilize shape file maps (this is the primary method of selecting the addresses to be notified).

Kelly has worked with Darcy Burke and Heather Collins, Department of Public Health, Drinking Water Division, to write pre-established language for the utilities to use for water quality notices. Although state water quality notices have very specific language that must be used when notifying the public, these lengthy statements will not fit in the formats of Alert OC. Therefore these pre-approved abbreviated versions can be used by the utilities to refer customers to the full water quality notice language that would be posted in a public location (typically the utility's website and front counter). Pre-scripted messages have been created for the following notices: Boil Order, Do Not Drink, Do Not Use and Conservation. These messages have been prepared in English in 3 formats: a voice message, email, and text message. If agencies have a known non-English speaking population we created some recommended additional verbiage that can be included to refer the public to the notices in another language.

Although the agencies are still learning the system and do not have their individual passwords, the system can be used right now. Agencies can choose to send messages through the Cities they serve, the County or through WEROC by providing the message content and the population to be notified to any of these entities. The message would then be sent on the utilities' behalf.



INFORMATION ITEM

September 6, 2011

TO: Planning & Operations Committee
(Directors Royce, Clark, Hinman)

FROM: Kevin Hunt
General Manager

Staff Contact: Karl Seckel

SUBJECT: Oral Report on First Stakeholder Meeting on the Second Lower Cross Feeder Project

STAFF RECOMMENDATION

Staff recommends the Committee receive and file an oral report from staff.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY

Staff will be meeting with owners of capacity in the East Orange County Feeder No. 2 and other potential stakeholders to discuss project concepts and interest in the Second Lower Cross Feeder Project. The first meeting will be held on September 1. Staff will report on how the discussions proceeded at the meeting.

Budgeted (Y/N):	Budgeted amount:	Core Ý	Choice ___
Action item amount:		Line item:	
Fiscal Impact (explain if unbudgeted):			

Status of Ongoing MWDOC Reliability and Engineering and Planning Projects

September 1, 2011

Description	Lead Agency	Status % Complete	Scheduled Completion Date	Comments
Baker Treatment Plant or Expansion of Baker Water Treatment Plant	IRWD, MNWD, SMWD, ETWD Trabuco CWD		On line date is Summer 2013	<p>(Nothing New to Report) IRWD is proceeding with the final design of the Baker Treatment Plant, including the treatment plant, a reservoir and a pump station to connect into the AMP. A pump station is also being designed to allow water from Irvine Lake to be delivered through the Baker Pipeline to the treatment plant. The treatment plant is being designed at 43.5 cfs with 10.5 cfs going directly to IRWD and 33 cfs going into the AMP. The updated schedule for this project is:</p> <ul style="list-style-type: none"> • Final design completed by September 2011 • Construction – Nov 2011 – June 2013 <p>The local agencies are considering other options for delivering water to their agencies. The options include leasing the Lower AMP and also construction of a pipeline to connect to the South County Pipeline. It appears they will proceed with the second option and we will not need to seek MET's approval for introduction of the water into the AMP.</p>
MET Interconnections – Second Lower Cross Feeder	MWDOC			A meeting is scheduled for September 1 to begin discussions with the local agencies. An oral report will be provided at the P&O Committee.

Description	Lead Agency	Status % Complete	Scheduled Completion Date	Comments
<p>South Orange Coastal Ocean Desalination Project</p>	<p>MWDOC</p>		<p>Phase 3 work completed in 2012.</p>	<p>A report is included on the September P&O agenda regarding the recent Technical Discussions with the representatives from the Project Participants and the San Juan Basin.</p> <p>An Open House for the Pilot Project was held on August 26; approximately 60 folks attended.</p> <p>Tours for the BUREC folks are planned on September 1 & 2.</p> <p>MWDOC conducted a tour and briefing of the SOCOD Pilot Plant Facility for MET Director Jim Blake, Chair of the MWD Committee on Recycling and Desalination. Committee Vice Chair Ed Little and MWDOC MWD directors Jack Foley and Larry Dick participated as well as MWDOC staff members Kevin Hunt, Richard Bell and Karl Seckel.</p> <p>MWDOC staff recently toured the membrane research and production facilities at NanoH2O. MWD staff members Bob Harding and Warren Teitz were able to attend with MWDOC. NanoH2O has produced and developed membranes with higher fluxes and higher salt removals and is continuing to refine their products to operate at lower energies.</p> <p>A tour of the SOCOD Pilot Plant was provided for Adolfo Bailon out of Senator Boxer's Office. MWDOC Director Susan Hinman attended.</p>

Description	Lead Agency	Status % Complete	Scheduled Completion Date	Comments
Budget Based Tiered Rates Grant from DWR				<p>Karl Seckel is continuing to work with the following agencies towards completion of their study work under this grant.</p> <ul style="list-style-type: none"> ○ City of Huntington Beach ○ Yorba Linda Water District ○ City of Newport Beach
Completion of Urban Water Management Plans for 2010				<p>DWR has recently completed their review of MWDOC's 2010 Urban Water Management Plan and has requested additional information in three areas. DWR is deciding whether or not the additional information can be submitted by letter or if the plan will need to be readopted by the Board.</p>
Poseidon Resources Ocean Desalination Project in Huntington Beach				<p>Work is still underway on the hydraulic modeling to understand the capability of the City of Huntington Beach system to convey additional water for integration of the Poseidon Project into that part of the County. Howard Johnson, former Utilities Director for the City of Huntington Beach was brought on board with Richard Brady & Associates to help in the process. Funding for the contract is coming from Poseidon.</p>
Other Meetings				
				<p>Upper Chiquita Reservoir filling operations are continuing. Some leakage has been noted, but so far it is within acceptable limits.</p>

Description	Lead Agency	Status % Complete	Scheduled Completion Date	Comments
				Karl Seckel attended the San Juan Utilities Commission.
				Karl Seckel and Kevin Hunt met with South Coast Water District staff and Director Ingrid McGuire to discuss the recent meetings on the technical work for the SOCOD Project.
				Karl Seckel and Keith Lyon met with John Kennedy from OCWD and Scott Miller and Will Davee from Westminster to discuss water quality issues from Westminster participation in the in-lieu storage program. The City is ceasing its participation for the remainder of this year due to their practice of break-point chlorination which leads to high tri-halo methane byproducts. This problem should cease when MET brings on the ozonation treatment at Diemer. Westminster is one of the few agencies that practices break pint chlorination, but it has worked well for them.
				MWDOC is still awaiting execution of ballots from the County of Orange to address on outstanding annexation issue with MET.
				Kevin Hunt and Harvey De La Torre met on several occasions with MET staff to discuss MET involvement in Ocean Desalination activities and to seek funding towards the current research efforts.
				Karl Seckel and Richard Bell met with ABS Consulting to discuss how they might be able to help MWDOC. They specialize in reliability planning for design projects.

Description	Lead Agency	Status % Complete	Scheduled Completion Date	Comments
				Kevin Hunt, Karl Seckel and Richard Bell met with Dawn Guendert from GHD to discuss ocean desalination activities and supply reliability planning.

Status of Water Use Efficiency Projects

August 2011

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
<p>Smart Timer Rebate Program</p>	<p>MWDSC</p>	<p>65%</p>	<p>December 2011</p>	<p>In July 2011, 3 smart timers were installed in the commercial sector, and 30 were installed in the residential sector, for an overall total of 33 smart timers.</p> <p>The South Orange County Integrated Regional Watershed Management Plan (SOCIRWMP) Water Use Efficiency Program Expansion (WUEPE) Project continues its next phase of the Grant requirement. The Project, titled “The SmartScape Irrigation Improvement Project,” has 201 of the 220 sites enrolled. Eighty-one participants have completed their site improvements, and 56 additional participants are in the construction/improvement phase of the Project. It is anticipated that this Project will be implemented through summer 2011.</p> <p>Staff is also working on a smart timer purchase and distribution project for those agencies in the SOCIRWMP implementation area. This project, in its preliminary planning stages, will purchase and distribute up to 850 smart timers to area homes. To date, Staff has met with the south county agencies to discuss the project’s concepts. Staff has also received responses back from smart timer manufacturers to a Request for Quote (RFQ) that MWDOC released. The purpose of the RFQ was to solicit pricing for smart timers that have been vetted as potential timers to include in the project.</p> <p>Staff will be meeting again with the south county agencies to further discuss the project and will bring the project’s information to the September P&O committee and, ultimately, the September Board meeting for approval.</p>

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
Smart Timer Rebate Program (cont.)				For program water savings and number of smart timer rebates, see MWDOC Water Use Efficiency Program Savings and Implementation Report.
Rotating Nozzles Rebate Program	MWDCS	83%	February 2013	<p>In July 2011, 1,143 residential and 40 commercial rotating nozzles were installed in Orange County.</p> <p>For the entire program, a total of 169,876 rotating nozzles have been installed and rebated on in Orange County (38,606 rotating nozzles in residential settings and 131,270 rotating nozzles in commercial settings).</p> <p>For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.</p>
Landscape Performance Certification Program	MWDOC	On-going	November 2011	<p>In June 2011, a total of 11,198 meters received monthly irrigation performance reports comparing actual water use to a landscape irrigation budget customized to each meter. This represents an increase of 237 meters since April 2011. Sixteen member agencies are participating in the program.</p> <p>Staff was awarded two grants, one from Metropolitan's Innovative Conservation Program and the other from the Bureau of Reclamation, for the development of a Return on Investment Calculator for landscape water efficiency improvements and an educational campaign. These grants include a partnership with the City of Santa Rosa and Contra Costa Water District to develop both the ROI Calculator and the educational campaign. Staff is in the process of finalizing the scopes of work for these agreements with the funding partners.</p> <p>For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.</p>

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
High Efficiency Clothes Washer Rebate Program	MWDCS	On-going	June 2015	<p>In July 2011, a total of 400 High Efficiency Clothes Washers were installed through this program.</p> <p>For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.</p>
Save Water, Save A Buck Rebate Program	MWDCS	On-going	June 2012	<p>In July 2011, a total of 4 devices were installed through this program.</p> <p>For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.</p>
Industrial Process Water Use Reduction Program	MWDOC	75%	December 2013	<p>Survey scheduling is ongoing. A total of 33 Focused Surveys and 13 Comprehensive Surveys have been completed or are in progress. To date, eight companies have signed Incentive Agreements, and eight companies have signed Statements of Interest forms.</p> <p>The Comprehensive Surveys for Oakley and Jazz Semiconductor are ongoing. The Comprehensive Survey Report has been finalized for B. Braun. Engineering assistance was provided to Hixson Metal, which amended the current Comprehensive Survey of this site.</p> <p>Implementation of water savings devices and recommendations at Boeing, Continuous Coatings, and Hixson is ongoing and in accordance with program criteria. The MacArthur Court Central Plant is also in the process of implementing cooling tower process improvements.</p> <p>Effort has begun by MWDOC, URS Corporation and, where applicable, IRWD to revisit program participation at stalled sites. Focused Surveys were conducted at Electronic Precision and Coastline Metal.</p>

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
Industrial Process Water Use Reduction Program (cont.)				For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.
Landscape Programs Database	MWDOC	90%	October 2011 (Revised)	<p>In May 2010, the Board authorized staff to hire Fortech to develop the Comprehensive Landscape Programs Database. Work began on development of the database in July 2010.</p> <p>Staff is in the final stages of testing the database to verify the defined functionality has been built in. It is expected that this testing will conclude in early September 2011. The next step is to populate the data base with historic program information.</p>
MWDOC Conservation Meeting	MWDOC	On-going	Monthly	This month's meeting was held on August 4, 2011 and hosted by the City of Santa Ana. The next meeting will be held on September 1, 2011 and will be hosted by MWDOC.
Metropolitan Conservation Meeting	MWDSC	On-going	Monthly	This month's meeting was held on August 18, 2011 at Metropolitan. The next meeting will be September 21, 2011.
Water Smart Hotel Program	MWDOC	55%	December 2013	<p>MWDOC was awarded a Proposition 50 Water Use Efficiency grant and a Bureau of Reclamation grant, to be matched with Metropolitan funds (Save Water, Save A Buck), to conduct up to 105 commercial and landscape audits of hotels. Enhanced financial incentives, not to exceed a total of \$633,900, will be distributed to augment rebate levels among Save A Buck fixtures.</p> <p>Survey scheduling is ongoing and targets small, medium, and large hotels. No surveys were scheduled or reports delivered in the month of July. Staff is working with WaterWise Consulting, the implementation contractor for the Program, to finalize the review and delivery of several pending reports.</p>
Turf Removal Program	MWDOC	0%	March 31, 2012	MWDOC has re-launched the Turf Removal Program for FY 11-12 throughout Orange County. There are 19 retail water agencies currently participating in the program. A total of 41

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
Turf Removal Program (cont.)				applications that have been received, representing a potential turf removal amount of 90,110 sqft (29,245 sqft for commercial sites and 60,865 sqft for residential sites).
UC Verde Turf Study Pilot Program	MWDOC	20%	December 2012	<p>MWDOC and The Bluffs Homeowners Community Association established a program to consider the appropriateness of UC Verde turfgrass at The Bluffs. The pilot project will measure: (1) the removal costs of the current turf, (2) soil preparation, (3) planting UC Verde plugs, (4) irrigation water use, and (5) mowing and maintenance compared to a control plot.</p> <p>Planting of the UC Verde plugs was completed in early May 2011, and establishment of roots and coverage is underway. Additionally, baseline turfgrass identification was performed on the control site to identify existing turf grass types, which will be used in the statistical water use evaluation.</p> <p>Irrigation audits at both sites and the installation of a tipping bucket rain gauge and datalogger were performed during early June 2011. Establishment should be complete by late-August/early-September. Evaluation of the establishment period will be performed within the first week of September by the project group, after which point water use data collection will commence.</p>

Orange County

Water Use Efficiency Programs Savings and Implementation Report

Retrofits and Acre-Feet Water Savings for Program Activity

Program	Program Start Date	Retrofits Installed Through	Month Indicated		Current Fiscal Year To Date		Overall Program To Date	
			Interventions	Water Savings	Interventions	Water Savings	Interventions	Water Savings
High Efficiency Clothes Washer Program	2001	July-11	400	0.92	400	0.9	77,085	10,195
Smart Timer Program - Irrigation Timers	2004	July-11	33	0.26	33	0.26	6,517	10,722
Rotating Nozzles Rebate Program	1997	July-11	1,183	0.39	1,183	5	169,876	3,811
Save Water Save A Buck Commercial Plumbing Fixture Rebate Program	2002	July-11	4	0.01	4	0.17	39,937	20,119
Landscape Certification Program [1]	1997	June-11	11,198	799.08	11,198	9,217	11,198	27,443
Industrial Process Water Use Reduction Program	2006	August-11	0	0.00	0	0	2	198
High Efficiency Toilet (HET) Program	2005	February-11	0	0	0	0	26,819	3,425
Synthetic Turf Rebate Program	2007	April-11	0	0	0	0	685,438	277
Ultra-Low-Flush-Toilet Programs [2]	1992	June-09	0	0	0	0	363,926	138,457
Home Water Surveys [2]	1995		0	0	0	0	11,867	1,708
Showerhead Replacements [2]	1991		0	0	0	0	270,604	19,083
Total Water Savings All Programs				800.7		9,223.6		235,436

(1) Landscape Certification Program participation is based on the number of water meters receiving monthly Irrigation Performance Reports.

(2) Cumulative Water Savings Program To Date totals are from a previous Water Use Efficiency Program Effort.

HIGH EFFICIENCY CLOTHES WASHERS INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY 01/02	FY 02/03	FY03/04	FY 04/05	FY 05/06	FY 06/07	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	Total	Current FY Water Savings Ac/Ft (Cumulative)	Cumulative Water Savings across all Fiscal Years
Brea	17	107	178	132	143	132	175	156	42	186	3	1,271	0.01	170.75
Buena Park	9	45	88	81	84	85	114	146	59	230	16	957	0.04	115.40
East Orange CWD RZ	3	8	20	20	11	18	22	17	3	23	-	145	0.00	19.74
El Toro WD	21	88	108	103	83	91	113	130	32	162	3	934	0.01	122.36
Fountain Valley	36	127	209	196	178	205	219	243	72	289	10	1,784	0.02	236.67
Garden Grove	39	173	278	243	243	238	304	332	101	481	13	2,445	0.03	314.10
Golden State WC	37	195	339	374	342	339	401	447	168	583	20	3,245	0.05	426.02
Huntington Beach	114	486	857	738	680	761	750	751	211	963	36	6,347	0.08	856.93
Irvine Ranch WD	159	626	1,087	1,093	1,445	1,972	2,052	1,844	1,394	2,621	102	14,395	0.23	1,826.97
La Habra	8	40	86	81	66	96	136	83	22	179	6	803	0.01	102.65
La Palma	3	5	13	21	18	33	35	51	25	76	2	282	0.00	32.96
Laguna Beach CWD	17	88	119	84	68	57	77	77	27	96	5	715	0.01	95.51
Mesa Consolidated WD	24	117	228	240	212	239	249	246	73	232	6	1,866	0.01	259.11
Moulton Niguel WD	158	630	841	640	570	652	716	742	250	1,127	33	6,359	0.08	825.39
Newport Beach	17	144	343	277	243	245	270	259	57	197	4	2,056	0.01	291.11
Orange	58	247	304	358	330	366	365	403	111	349	8	2,899	0.02	402.44
Orange Park Acres	-	-	-	-	-	4	8	-	-	-	-	12	0.00	1.77
San Juan Capistrano	16	95	120	107	102	109	103	127	43	190	4	1,016	0.01	132.26
San Clemente	32	182	235	170	136	204	261	278	63	333	13	1,907	0.03	243.60
Santa Margarita WD	140	510	743	573	592	654	683	740	257	1,105	34	6,031	0.08	780.42
Seal Beach	13	28	57	39	46	47	46	57	7	81	2	423	0.00	55.11
Serrano WD	9	16	54	39	39	30	31	23	7	21	1	270	0.00	39.31
South Coast WD	35	138	165	97	103	107	130	148	43	183	7	1,156	0.02	149.10
Trabuco Canyon WD	10	63	76	58	44	69	60	62	28	82	3	555	0.01	73.16
Tustin	21	89	152	138	127	152	146	144	45	174	5	1,193	0.01	161.84
Westminster	37	159	235	196	186	213	171	233	74	329	9	1,842	0.02	241.43
Yorba Linda	36	214	342	355	333	288	350	367	117	394	11	2,807	0.03	383.49
MWDOC Totals	1,069	4,620	7,277	6,453	6,424	7,406	7,987	8,106	3,331	10,686	356	63,715	0.82	8,359.57
Anaheim	917	677	904	1,364	701	854	847	781	860	910	12	8,827	0.03	1,225.42
Fullerton	40	196	369	289	263	269	334	330	69	397	20	2,576	0.05	343.74
Santa Ana	15	69	188	269	244	236	235	257	87	355	12	1,967	0.03	266.51
Non-MWDOC Totals	972	942	1,461	1,922	1,208	1,359	1,416	1,368	1,016	1,662	44	13,370	0.10	1,835.67
Orange County Totals	2,041	5,562	8,738	8,375	7,632	8,765	9,403	9,474	4,347	12,348	400	77,085	0.92	10,195.24

SMART TIMERS INSTALLED BY AGENCY
through MWDOC and Local Agency Conservation Programs

Agency	FY 04/05		FY 05/06		FY 06/07		FY 07/08		FY 08/09		FY 09/10		FY 10/11		FY 11/12		Total Program		Cumulative Water Savings across all Fiscal Years
	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	
Brea	2	0	1	3	8	6	0	40	3	9	0	0	2	0	0	0	16	58	176.29
Buena Park	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	3	1	2.91
East Orange CWD RZ	1	0	2	0	0	0	0	0	0	0	0	0	1	0	4	0	8	0	948.16
El Toro WD	1	0	8	0	4	95	1	174	0	25	2	18	5	5	0	0	21	317	41.37
Fountain Valley	3	3	2	2	11	0	4	0	1	0	0	6	2	2	0	0	23	13	36.14
Garden Grove	2	2	11	1	2	0	1	3	2	1	6	0	5	4	0	0	29	11	137.71
Golden State WC	0	0	15	2	24	12	8	8	1	2	9	22	7	4	0	0	64	50	1.98
Huntington Beach	5	2	21	9	12	12	7	1	13	1	6	27	6	36	3	0	73	88	201.53
Irvine Ranch WD	2	2	68	111	160	434	66	183	29	56	14	145	28	153	1	0	368	1,084	3,194.96
La Habra	0	0	0	0	7	1	1	0	0	0	0	21	0	0	0	0	8	22	42.74
La Palma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Laguna Beach CWD	3	0	5	0	21	0	5	0	2	0	2	14	4	1	1	0	43	15	36.62
Mesa Consolidated WD	5	0	13	27	14	6	12	0	6	7	13	7	7	22	1	0	71	69	203.27
Moulton Niguel WD	2	0	25	10	39	52	59	20	21	23	17	162	36	60	2	0	201	327	736.69
Newport Beach	3	17	35	4	125	86	98	40	10	27	7	58	6	0	0	0	284	232	756.24
Orange	8	4	37	13	28	38	4	0	5	2	2	13	5	8	2	0	91	78	268.76
San Juan Capistrano	0	0	5	4	5	4	11	1	10	0	7	49	13	1	0	0	51	59	1.29
San Clemente	4	0	483	1	46	7	21	60	81	20	13	209	46	11	5	0	699	308	130.68
Santa Margarita WD	3	0	15	8	40	96	53	70	25	44	10	152	61	53	3	0	210	423	830.14
Santiago CWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,052.36
Seal Beach	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0.00
Serrano WD	0	0	0	0	0	0	0	0	0	0	11	0	4	0	2	0	17	0	1.76
South Coast WD	2	0	6	1	17	29	7	49	11	6	3	10	13	3	1	3	60	101	300.22
Trabuco Canyon WD	0	0	29	0	10	93	4	0	1	0	2	0	2	10	0	0	48	103	353.56
Tustin	1	0	1	4	0	0	2	3	7	9	10	14	10	0	0	0	31	30	75.90
Westminster	1	0	8	12	6	0	1	0	3	0	3	0	1	1	0	0	23	13	56.47
Yorba Linda	0	0	30	6	31	5	20	41	8	5	5	21	25	0	2	0	121	78	239.13
MWDOC Totals	48	30	820	218	610	976	385	693	242	238	142	949	289	374	27	3	2,563	3,481	9,826.88
Non-MWDOC Totals	6	1	10	13	28	78	25	57	13	65	8	93	29	44	3	0	122	351	894.92
Orange County Totals	54	31	830	231	638	1,054	410	750	255	303	150	1,042	318	418	30	3	2,685	3,832	10,722

ROTATING NOZZLES INSTALLED BY AGENCY
through MWDOC and Local Agency Conservation Programs

Agency	FY 06/07			FY 07/08			FY 08/09			FY 09/10			FY 10/11			FY 11/12			Total Program			Cumulative Water Savings across all Fiscal Years
	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	
	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	
Brea	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	26	0	0	88	100	0	2.01
Buena Park	0	0	0	0	0	0	0	0	0	0	0	0	29	0	0	0	0	0	66	75	2,535	268.19
East Orange	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	340	0	0	445	0	0	3.04
El Toro	0	0	0	0	0	0	0	0	0	0	0	0	174	0	0	0	0	0	407	3,584	890	143.81
Fountain Valley	0	0	0	0	0	0	0	0	0	0	0	0	83	0	0	0	0	0	238	0	0	3.26
Garden Grove	0	0	0	0	0	0	0	0	0	0	0	0	38	0	0	0	0	0	386	151	0	7.68
Golden State	0	0	0	0	0	0	0	0	0	0	0	0	303	943	0	0	0	0	827	972	0	18.22
Huntington Beach	0	0	0	0	0	0	0	0	0	0	0	0	203	625	0	56	0	0	713	4,909	2,681	479.27
Irvine Ranch	0	0	0	0	0	0	0	0	0	0	0	0	2,411	2,861	0	64	0	0	5,713	69,845	2,004	1220.04
La Habra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	808	900	142.53
La Palma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0.16
Laguna Beach	0	0	0	0	0	0	0	0	0	0	0	0	156	0	0	15	0	0	578	47	0	8.26
Mesa Consolidated	0	0	0	0	0	0	0	0	0	0	0	0	118	0	0	0	0	0	594	108	343	69.96
Moulton Niguel	0	0	0	0	0	0	0	0	0	0	0	0	1,578	0	0	34	0	0	2,569	7,003	2,945	519.52
Newport Beach	0	0	0	0	0	0	0	0	0	0	0	0	337	1,208	0	0	0	0	516	6,728	0	86.38
Orange	0	0	0	0	0	0	0	0	0	0	0	0	135	30	0	79	0	0	1,462	193	0	24.32
San Clemente	0	0	0	0	0	0	0	0	0	0	0	0	2,612	851	0	162	0	0	4,087	2,175	0	62.88
San Juan Capistrano	0	0	0	0	0	0	0	0	0	0	0	0	1,452	0	0	0	0	0	2,612	7,369	0	122.85
Santa Margarita	0	0	0	0	0	0	0	0	0	0	0	0	3,959	3,566	0	142	0	0	7,076	4,571	611	178.54
Seal Beach	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	115	291	0	5.33
Serrano	0	0	0	0	0	0	0	0	0	0	0	0	364	0	0	0	0	0	1,980	0	0	23.14
South Coast	0	0	0	0	0	0	0	0	0	0	0	0	318	1,772	0	61	40	0	568	1,945	0	23.09
Trabuco Canyon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,487	791	0	28.36
Tustin	0	0	0	0	0	0	0	0	0	0	0	0	512	0	0	0	0	0	1,398	0	0	17.10
Westminster	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	191	0	0	2.73
Yorba Linda	0	0	0	0	0	0	0	0	0	0	0	0	529	0	0	0	0	0	1,903	3,369	500	137.83
MWDOC Totals	0	0	0	0	0	0	0	0	0	0	0	0	15,343	11,856	0	979	40	0	36,053	115,034	13,409	3598.51
Non-MWDOC Totals	0	0	0	0	0	0	0	0	0	0	0	0	841	382	0	164	0	0	2,553	1,238	1,589	212.54
Orange County Totals	0	0	0	0	0	0	0	0	0	0	0	0	16,184	12,238	0	1,143	40	0	38,606	116,272	14,998	3811.05

SAVE WATER SAVE A BUCK COMMERCIAL PLUMBING FIXTURES REBATE PROGRAM^[1]

INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY 01/02	FY 02/03	FY 03/04	FY 04/05	FY 05/06	FY 06/07	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	Totals	Cumulative Water Savings across all Fiscal Years
Brea	0	51	0	22	52	2	27	113	24	4	0	295	187
Buena Park	10	83	28	55	64	65	153	432	122	379	0	1,391	472
East Orange CWD RZ	0	0	0	0	0	0	0	0	0	0	0	0	0
El Toro WD	23	23	73	42	5	2	0	92	143	1	0	404	273
Fountain Valley	1	94	2	59	35	63	17	35	0	2	0	308	286
Garden Grove	21	199	51	297	34	136	5	298	130	22	0	1,193	833
Golden State WC	11	197	34	232	80	531	46	414	55	68	0	1,668	1,051
Huntington Beach	5	191	73	185	82	209	48	104	126	96	0	1,119	799
Irvine Ranch WD	306	1,085	87	325	1,044	429	121	789	2,708	1,002	0	7,896	3,189
La Habra	10	37	52	45	60	16	191	75	53	4	0	543	295
La Palma	0	0	0	0	5	0	0	140	21	0	0	166	37
Laguna Beach CWD	2	30	2	18	9	12	20	137	189	0	0	419	158
Mesa Consolidated WD	424	155	22	130	241	141	141	543	219	669	0	2,685	1,073
Moulton Niguel WD	31	74	65	172	3	0	9	69	151	6	0	580	468
Newport Beach	4	230	9	77	24	94	98	27	245	425	0	1,233	645
Orange	84	144	22	553	127	88	18	374	67	1	0	1,478	954
San Juan Capistrano	0	34	21	181	0	6	2	1	1	0	0	246	246
San Clemente	0	36	5	95	40	173	2	18	43	0	0	412	223
Santa Margarita WD	0	16	3	56	0	0	6	23	11	0	0	115	117
Santiago CWD	0	0	0	0	0	0	0	0	0	0	0	0	0
Seal Beach	3	34	44	40	61	45	1	2	124	0	0	354	236
Serrano WD	0	0	0	0	0	0	0	0	0	0	0	0	0
South Coast WD	0	31	8	54	8	4	9	114	56	422	0	706	196
Trabuco Canyon WD	0	1	0	6	0	0	0	4	0	0	0	11	9
Tustin	9	114	16	82	14	7	115	145	25	230	0	757	431
Westminster	16	109	32	153	57	104	40	161	16	63	0	751	563
Yorba Linda	0	36	12	42	4	118	10	24	8	30	0	284	311
MWDOC Totals	960	3,004	661	2,921	2,049	2,245	1,079	4,134	4,537	3,424	0	25,014	13,052
Anaheim	1,042	400	947	362	1,113	780	766	3,298	582	64	4	9,358	3,671
Fullerton	28	41	138	270	91	96	133	579	29	4	0	1,409	871
Santa Ana	115	153	589	227	624	373	493	815	728	39	0	4,156	2,525
Non-MWDOC Totals	1,185	594	1,674	859	1,828	1,249	1,392	4,692	1,339	107	4	14,923	7,067
Orange County Totals	2,145	3,598	2,335	3,780	3,877	3,494	2,471	8,826	5,876	3,531	4	39,937	20,119

[1] Retrofit devices include ULF Toilets and Urinals, High Efficiency Toilets and Urinals, Zero Water Urinals, High Efficiency Clothes Washers, Cooling Tower Conductivity Controllers, Ph Cooling Tower Conductivity Controllers, Flush Valve Retrofit Kits, Pre-rinse Spray heads, Hospital X-Ray Processor Recirculating Systems, Steam Sterilizers, Food Steamers, and Water Pressurized Brooms.

LANDSCAPE PERFORMANCE CERTIFICATION PROGRAM

Total Number of Meters in Program by Agency

Agency	FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	Overall Water Savings To Date (AF)
Brea	0	0	0	0	0	0	0	0.00
Buena Park	0	0	0	0	0	17	101	87.70
East Orange CWD RZ	0	0	0	0	0	0	0	0.00
El Toro WD	88	109	227	352	384	371	818	1,844.78
Fountain Valley	0	0	0	0	0	0	0	0.00
Garden Grove	0	0	0	0	0	0	0	0.00
Golden State WC	0	0	0	14	34	32	32	81.64
Huntington Beach	0	0	0	0	0	31	31	33.18
Irvine Ranch WD	277	638	646	708	1,008	6,297	6,345	13,515.03
Laguna Beach CWD	0	0	0	0	57	141	141	248.62
La Habra	0	0	0	0	23	22	22	54.88
La Palma	0	0	0	0	0	0	0	0.00
Mesa Consolidated WD	191	170	138	165	286	285	382	1,162.02
Moulton Niguel WD	80	57	113	180	473	571	593	1,700.28
Newport Beach	32	27	23	58	142	171	206	521.35
Orange	0	0	0	0	0	0	0	0.00
San Clemente	191	165	204	227	233	247	0	1,216.39
San Juan Capistrano	0	0	0	0	0	0	269	19.20
Santa Margarita WD	547	619	618	945	1,571	1,666	1,920	6,301.67
Seal Beach	0	0	0	0	0	0	0	0.00
Serrano WD	0	0	0	0	0	0	0	0.00
South Coast WD	0	0	0	62	117	108	116	354.66
Trabuco Canyon WD	0	0	0	12	49	48	60	127.66
Tustin	0	0	0	0	0	0	0	0.00
Westminster	0	0	0	10	18	18	18	49.45
Yorba Linda WD	0	0	0	0	0	0	0	0.00
MWDOC Totals	1,406	1,785	1,969	2,733	4,395	10,025	11,054	27,318.5
Anaheim	0	0	0	0	0	142	144	124.45
Fullerton	0	0	0	0	0	0	0	0.00
Santa Ana	0	0	0	0	0	0	0	0.00
Non-MWDOC Totals	0	0	0	0	0	142	144	124.45
Orange Co. Totals	1,406	1,785	1,969	2,733	4,395	10,167	11,198	27,442.94

INDUSTRIAL PROCESS WATER USE REDUCTION PROGRAM

Number of Process Changes by Agency

Agency	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	Total Program	Current Fiscal Year Water Savings ^[1]	Cumulative Water Savings across all Fiscal Years ^[1]
Brea	0	0	0	0	0	0	0	0
Buena Park	0	0	0	0	0	0	0	0
East Orange	0	0	0	0	0	0	0	0
El Toro	0	0	0	0	0	0	0	0
Fountain Valley	0	0	0	0	0	0	0	0
Garden Grove	0	0	0	0	0	0	0	0
Golden State	0	0	0	0	0	0	0	0
Huntington Beach	0	0	0	0	0	0	0	0
Irvine Ranch	0	0	1	0	0	1	0	44
La Habra	0	0	0	0	0	0	0	0
La Palma	0	0	0	0	0	0	0	0
Laguna Beach	0	0	0	0	0	0	0	0
Mesa Consolidated	0	0	0	0	0	0	0	0
Moulton Niguel	0	0	0	0	0	0	0	0
Newport Beach	0	0	0	0	0	0	0	0
Orange	1	0	0	0	0	1	0	154
San Juan Capistrano	0	0	0	0	0	0	0	0
San Clemente	0	0	0	0	0	0	0	0
Santa Margarita	0	0	0	0	0	0	0	0
Seal Beach	0	0	0	0	0	0	0	0
Serrano	0	0	0	0	0	0	0	0
South Coast	0	0	0	0	0	0	0	0
Trabuco Canyon	0	0	0	0	0	0	0	0
Tustin	0	0	0	0	0	0	0	0
Westminster	0	0	0	0	0	0	0	0
Yorba Linda	0	0	0	0	0	0	0	0
MWDOC Totals	1	0	1	0	0	2	0	198

[1] Acre feet of savings determined during a one year monitoring period.

If monitoring data is not available, the savings estimated in agreement is used.

HIGH EFFICIENCY TOILETS (HETs) INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	Total	Cumulative water Savings across all Fiscal Years
Brea	0	1	8	43	48	8	108	11.53
Buena Park	0	0	3	124	176	7	310	31.66
East Orange CWD RZ	0	0	7	14	2	0	23	3.32
El Toro WD	0	385	22	78	38	18	541	100.06
Fountain Valley	0	63	23	265	55	17	423	57.03
Garden Grove	0	6	34	454	183	24	701	82.61
Golden State WC	0	5	39	454	716	37	1,251	129.25
Huntington Beach	0	5	66	604	165	76	916	107.59
Irvine Ranch WD	0	913	918	5,161	2,120	325	9,437	1,215.91
Laguna Beach CWD	0	0	11	97	30	11	149	17.79
La Habra	0	3	8	306	34	20	371	45.24
La Palma	0	1	9	37	26	13	86	9.28
Mesa Consol. WD	0	244	20	736	133	7	1,140	161.21
Moulton Niguel WD	0	4	94	473	188	46	805	96.99
Newport Beach	0	3	16	168	54	13	254	30.26
Orange	0	15	54	437	79	40	625	77.50
San Juan Capistrano	0	1	12	80	39	11	143	16.81
San Clemente	0	2	15	214	66	21	318	37.54
Santa Margarita WD	0	0	16	307	151	44	518	56.99
Seal Beach	0	678	6	23	12	1	720	149.38
Serrano WD	0	2	1	13	5	0	21	2.77
South Coast WD	0	3	15	114	44	12	188	22.90
Trabuco Canyon WD	0	0	3	24	23	0	50	5.58
Tustin	0	180	30	391	479	17	1,097	135.25
Westminster	0	7	35	541	167	23	773	92.14
Yorba Linda WD	0	10	85	331	96	18	540	68.31
MWDOC Totals	0	2,531	1,550	11,489	5,129	809	21,508	2,764.89

Anaheim	0	253	73	2,778	619	114	3,837	478.87
Fullerton	0	0	26	292	60	23	401	48.22
Santa Ana	0	6	26	927	91	23	1,073	133.25
Non-MWDOC Totals	0	259	125	3,997	770	160	5,311	660.35

Orange County Totals	0	2,790	1,675	15,486	5,899	969	26,819	3,425.24
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SYNTHETIC TURF INSTALLED BY AGENCY^[1]

through MWDOC and Local Agency Conservation Programs

Agency	FY 07/08		FY 08/09		FY 09/10		FY 10/11		Total Program		Cumulative Water Savings across all Fiscal Years
	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	
Brea	0	0	2,153	2,160	500	0	0	0	2,653	2,160	1.95
Buena Park	0	0	1,566	5,850	0	0	0	0	1,566	5,850	3.11
East Orange	0	0	0	0	983	0	0	0	983	0	0.28
El Toro	3,183	0	2,974	0	3,308	0	895	0	10,360	0	4.08
Fountain Valley	11,674	0	1,163	0	2,767	0	684	0	16,288	0	7.90
Garden Grove	1,860	0	0	0	3,197	0	274	0	5,331	0	1.98
Golden State	6,786	0	13,990	0	15,215	0	2,056	0	38,047	0	14.22
Huntington Beach	15,192	591	12,512	0	4,343	1,504	0	0	32,047	2,095	15.73
Irvine Ranch	11,009	876	13,669	0	2,585	0	0	0	27,263	876	13.12
La Habra	0	0	0	0	0	0	0	0	0	0	-
La Palma	429	0	0	0	0	0	0	0	429	0	0.24
Laguna Beach	3,950	0	3,026	0	725	0	0	0	7,701	0	3.69
Mesa Consolidated	4,114	0	3,005	78,118	4,106	0	2,198	0	13,423	78,118	37.83
Moulton Niguel	14,151	0	25,635	2,420	7,432	0	0	0	47,218	2,420	21.79
Newport Beach	2,530	0	6,628	0	270	0	0	0	9,428	0	4.28
Orange	4,169	0	7,191	0	635	0	0	0	11,995	0	5.53
San Clemente	9,328	0	11,250	455	2,514	1,285	500	0	23,592	1,740	11.27
San Juan Capistrano	0	0	7,297	639	2,730	0	4,607	0	14,634	639	4.74
Santa Margarita	12,922	0	26,069	0	21,875	0	7,926	0	68,792	0	25.42
Seal Beach	0	0	817	0	0	0	0	0	817	0	0.34
Serrano	7,347	0	1,145	0	0	0	0	0	8,492	0	4.60
South Coast	2,311	0	6,316	0	17,200	0	1,044	0	26,871	0	8.91
Trabuco Canyon	1,202	0	9,827	0	0	0	0	0	11,029	0	4.80
Tustin	6,123	0	4,717	0	2,190	0	0	0	13,030	0	6.02
Westminster	2,748	16,566	8,215	0	890	0	0	0	11,853	16,566	14.52
Yorba Linda	11,792	0	12,683	0	4,341	5,835	0	0	28,816	5,835	14.78
MWDOC Totals	132,820	18,033	181,848	89,642	97,806	8,624	20,184	0	432,658	116,299	231.12

Anaheim	4,535	0	7,735	20,093	13,555	65,300	4,122	0	29,947	85,393	36.88
Fullerton	4,865	876	5,727	0	6,223	0	105	0	16,920	876	7.38
Santa Ana	0	0	2,820	0	525	0	0	0	3,345	0	1.33
Non-MWDOC Totals	9,400	876	16,282	20,093	20,303	65,300	4,227	0	50,212	86,269	45.59

Orange County Totals	142,220	18,909	198,130	109,735	118,109	73,924	24,411	0	482,870	202,568	276.72
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[1] Installed device numbers are calculated in square feet

ULF TOILETS INSTALLED BY AGENCY
through MWDOC and Local Agency Conservation Programs

Agency	Previous Years	FY 95-96	FY 96-97	FY 97-98	FY 98-99	FY 99-00	FY 00-01	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	Total	Cumulative Water Savings across all Fiscal Years
Brea	378	189	299	299	122	144	867	585	341	401	26	48	17	4	0	3,720	1,446.24
Buena Park	361	147	331	802	520	469	524	1,229	2,325	1,522	50	40	18	9	0	8,347	2,945.51
East Orange CWD RZ	2	0	33	63	15	17	15	50	41	44	19	18	13	2	0	332	116.24
El Toro WD	1,169	511	678	889	711	171	310	564	472	324	176	205	61	40	0	6,281	2,675.14
Fountain Valley	638	454	635	858	1,289	2,355	1,697	1,406	1,400	802	176	111	58	32	0	11,911	4,594.17
Garden Grove	1,563	1,871	1,956	2,620	2,801	3,556	2,423	3,855	3,148	2,117	176	106	67	39	0	26,298	10,413.55
Golden State WC	3,535	1,396	3,141	1,113	3,024	2,957	1,379	2,143	3,222	1,870	167	116	501	43	0	24,607	10,101.62
Huntington Beach	3,963	1,779	2,600	2,522	2,319	3,492	3,281	2,698	3,752	1,901	367	308	143	121	0	29,246	11,917.59
Irvine Ranch WD	4,016	841	1,674	1,726	1,089	3,256	1,534	1,902	2,263	6,741	593	626	310	129	0	26,700	10,080.76
Laguna Beach CWD	283	93	118	74	149	306	220	85	271	118	32	26	29	6	0	1,810	725.80
La Habra	594	146	254	775	703	105	582	645	1,697	1,225	12	31	6	7	0	6,782	2,508.52
La Palma	65	180	222	125	44	132	518	173	343	193	31	27	20	17	0	2,090	789.09
Mesa Consol. WD (100%)	1,610	851	1,052	2,046	2,114	1,956	1,393	1,505	2,387	988	192	124	56	14	0	16,288	6,575.43
Moulton Niguel WD	744	309	761	698	523	475	716	891	728	684	410	381	187	100	0	7,607	2,867.29
Newport Beach	369	293	390	571	912	1,223	438	463	396	1,883	153	76	36	16	0	7,219	2,688.62
Orange	683	1,252	1,155	1,355	533	2,263	1,778	2,444	2,682	1,899	193	218	88	53	4	16,600	6,248.42
San Juan Capistrano	1,234	284	193	168	323	1,319	347	152	201	151	85	125	42	39	0	4,663	2,015.57
San Clemente	225	113	191	65	158	198	667	483	201	547	91	66	37	34	0	3,076	1,110.90
Santa Margarita WD	577	324	553	843	345	456	1,258	790	664	260	179	143	101	29	0	6,522	2,569.03
Seal Beach	74	66	312	609	47	155	132	81	134	729	29	10	6	12	0	2,396	915.10
Serrano WD	81	56	68	41	19	52	95	73	123	98	20	15	14	2	0	757	288.52
South Coast WD	110	176	177	114	182	181	133	358	191	469	88	72	32	22	0	2,305	837.38
Trabuco Canyon WD	10	78	42	42	25	21	40	181	102	30	17	20	12	14	0	634	231.03
Tustin	968	668	557	824	429	1,292	1,508	1,206	1,096	827	69	89	26	12	0	9,571	3,789.94
Westminster	747	493	969	1,066	2,336	2,291	2,304	1,523	2,492	1,118	145	105	70	24	0	15,683	6,025.51
Yorba Linda WD	257	309	417	457	404	1,400	759	1,690	1,155	627	158	136	81	41	0	7,891	2,886.83
MWDOC Totals	24,256	12,879	18,778	20,765	21,136	30,242	24,918	27,175	31,827	27,568	3,654	3,242	2,031	861	4	249,336	97,363.80

Anaheim	447	1,054	1,788	3,661	1,755	7,551	4,593	6,346	9,707	5,075	473	371	462	341	1	43,625	15,470.01
Fullerton	1,453	1,143	694	1,193	1,364	2,138	1,926	2,130	2,213	1,749	172	77	44	23	2	16,321	6,354.20
Santa Ana	1,111	1,964	1,205	2,729	2,088	8,788	5,614	10,822	10,716	9,164	279	134	25	5	0	54,644	19,268.60
Non-MWDOC Totals	3,011	4,161	3,687	7,583	5,207	18,477	12,133	19,298	22,636	15,988	924	582	531	369	3	114,590	41,092.81

Orange County Totals	27,267	17,040	22,465	28,348	26,343	48,719	37,051	46,473	54,463	43,556	4,578	3,824	2,562	1,230	7	363,926	138,456.61
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