



*Dedicated to
Satisfying our Community's
Water Needs*

**AGENDA
MESA WATER DISTRICT
BOARD OF DIRECTORS
Tuesday, December 19, 2017
1965 Placentia Avenue, Costa Mesa, CA 92627
3:30 p.m. Special Board Meeting**

**ENGINEERING AND OPERATIONS COMMITTEE MEETING
Tuesday, December 19, 2017 at 3:30 p.m.**

CALL TO ORDER

PLEDGE OF ALLEGIANCE

PUBLIC COMMENTS

Non-Agendized Matters: Members of the public are invited to address the Board on matters which are not on the Agenda. Each speaker is limited to three (3) minutes. The Board will set aside thirty (30) minutes for public comments.

Agendized Matters: Members of the public may comment on Agenda items before action is taken, or after the Board has discussed the item. Each speaker is limited to five (5) minutes.

CONSENT CALENDAR ITEMS:

Approve all matters under the Consent Calendar by one motion unless a Board member, staff, or a member of the public requests a separate action.

1. Developer Project Status Report
2. Mesa Water® and Other Agency Projects Status Report
3. Water Quality Call Report
4. Committee Policy & Resolution Review or Development
5. Water Operations Status Report

PRESENTATION AND DISCUSSION ITEMS:

Items recommended for approval at this meeting may be agendized for approval at a future Board meeting.

6. Committee Meeting Dates and Chair Appointment
7. Nitrification Control

ACTION ITEMS:

8. On-Call Pipeline Construction Services
9. General Legal Counsel Services

REPORTS:

10. Report of the General Manager
11. Directors' Reports and Comments



INFORMATION ITEMS:

12. HVAC System

In compliance with California law and the Americans with Disabilities Act, if you need disability-related modifications or accommodations, including auxiliary aids or services in order to participate in the meeting, or if you need the agenda provided in an alternative format, please contact the District Secretary at (949) 631-1206. Notification 48 hours prior to the meeting will enable Mesa Water District (Mesa Water) to make reasonable arrangements to accommodate your requests.

Members of the public desiring to make verbal comments utilizing a translator to present their comments into English shall be provided reasonable time accommodations that are consistent with California law.

Agenda materials that are public records, which have been distributed to a majority of the Mesa Water Board of Directors (Board), will be available for public inspection at the District Boardroom, 1965 Placentia Avenue, Costa Mesa, CA and on Mesa Water's website at www.MesaWater.org. If materials are distributed to the Board less than 72 hours prior or during the meeting, the materials will be available at the time of the meeting.

ADJOURNMENT

DEVELOPER PROJECT STATUS REPORT

PROJECT STATUS - DEVELOPER PROJECTS			
FILE NO.	PROJECT ADDRESS	PROJECT DESCRIPTION	PROJECT NOTES/STATUS
MC 2149	1620-1644 Whittier Ave and 970 16th St	89 Single Family Homes	Plans received and plan check fees paid 2/2/14. Permit issued on 7/23/15. Pre-con meeting held on 7/27/15. Pipeline installation on 10/21/15. Pressure test and chlorination on 11/5/15. Bac-T testing completed on 11/24/15 and 11/25/15. Waterline tied-in at Whittier, Newhall, and West 16th Street and angle-stops locked on 12/14/15. 4 - 1" meters installed on model homes on 2/25/16. 1 - 1.5" irrigation meter and 1 - 1" domestic meter installed and locked on 4/5/16. Inspected rock base on 7/11/16. Installed 7 - 1" meters on 7/13/16. Flow-thru tested on 8/25/16 and 9/8/16. Rock base and meters installed on 11/3/16. Flow-thru check on 12/1/16. Flow-thru check on 4/5/17. Meters installed on 8/21/17. Meter box placement on 10/5/17. Meters installed on 11/21/17. (12/8/17)
MC 2196	580 Anton Ave	250 Unit Apartment Complex	Plans received and plan check fees paid on 7/28/15. Plan check comments returned 8/28/15, requesting information to complete a hydraulic model. Requested information provided on 10/25/15. Hydraulic model initiated on 11/5/15. Hydraulic model completed on 2/1/16. Mesa Water system improvements are not required. Fees paid and permit issued on 2/9/16. Pre-con held on 2/29/16. Abandoned waterline on 3/15/16. Shutdown test on 7/19/16. Valve replaced on 10/3/16 to allow for abandonment. Pressure test and backflow placement on 3/6/17. Bac-t test on 3/18/17. Site visit and abandonment coordination on 10/3/17. Pressure test on 11/9/17. Bac-t on 11/16/17. (12/8/17)
MC 2204	1672 Placentia	31 Single Family Homes	Plans received and plan check fees paid on 8/26/15. Plan check picked up by customer on 10/6/15. Second plan check submitted on 2/11/16 and returned on 2/26/16. Mylars submitted, fees paid, and permit issued on 5/5/16. Tee cut-ins on 6/22/16. Pressure Test and Bac-T test on 7/7/16. Water main turned on 7/21/16. Services installed and locked off on 9/6/16. Meter installation on 10/28/16. Backflows tested on 11/16/16. Backflow tested on 12/9/16. Rock base on 2/1/17. Service placement on 2/16/17. Meters installed on 3/28/17. Backflows tested on 3/30/17. Meters installed on 6/5/17. Site visit to check progress on 11/6/17, homes currently under construction. (12/8/17)

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FILE NO.	PROJECT ADDRESS	PROJECT DESCRIPTION	PROJECT NOTES/STATUS
MC 2208	353 & 355 Rochester St.	2 Single Family Homes	Plans received and plan check fees paid on 9/22/15. First submittal picked up on 10/23/15. Second plan check submitted on 11/19/15. Second plan check completed 12/3/16. Second plan check picked up from counter on 2/29/16. Third plan check submitted on 3/14/16. Fees paid and permit issued on 11/4/16. Pre-con held on 8/2/17. Meter placement on 8/28/17. (12/8/17)
MC2232	189-191 Merrill Place	2 Single Family Homes	Plans received and plan check fees paid on 2/1/16. Plan check completed on 2/12/16 and picked up on 2/29/16. Second plan check received on 3/10/16. Fees paid and permit issued on 5/8/17. Meters installed on 7/27/17. (12/8/17)
MC2233	1560 Placentia	81 Single Family Homes	Plans received and plan check fees paid on 1/20/16. Request for additional information requested on 1/28/16. Requested information submitted on 2/24/16. Plan check picked up on 4/18/16. Second plan check submitted on 5/18/16. Mylar drawings and fee payment received on 7/5/16. Permit issued on 7/11/16. Mainline installed on 8/24/16. Hydrant laterals installed on 8/25/16. Services installed on 9/1/16. Mainline installed on 9/20/16. Pressure and Bac-T test on 9/28/16. Laterals installed on 9/29/16 and 10/5/16. Mainline charged on 10/17/16. Angle stop adjusted on 12/6/16. Meter and meter box placement on 1/5/17. Services adjusted to grade on 3/2/17. Meter installation on 5/3/17. Site coordination meeting on 7/26/17. Service placement on 9/6/17. Meter box placement on 11/3/17. (12/8/17)
MC2235	671 W 17th Street	177 Condos	Plans received and plan check fees paid on 1/21/16. Hydraulic model initiated 2/24/16. Second plan check submitted on 3/24/16 and picked up 4/17/16. Mylar drawings and fee payment received on 7/5/16. Permit issued on 7/11/16. Demolition of existing services on 8/16/16. Mainline installation on 12/6/16. Service laterals installed on 1/9/17. Pressure test on 2/6/17. Bac-t test on 2/15/17. Bedding and service line placement on 4/3/17. Meter box placement on 5/8/17. Follow-up site visit on 5/17/17. Service abandonment on 8/30/17. Valve cans raised on 9/22/17. Meter box placement on 10/19/17. Gravel base on 12/5/17. (12/8/17)

DEVELOPER PROJECT STATUS REPORT

PROJECT STATUS - DEVELOPER PROJECTS			
FILE NO.	PROJECT ADDRESS	PROJECT DESCRIPTION	PROJECT NOTES/STATUS
MC2236	527-531 Bernard Street	10 Single Family Homes	Plans received and plan check fees paid on 2/8/16. Plan check returned on 2/12/16. Second plan check received on 4/21/16. Fees paid and permit issued on 6/13/16. Manifold installed on 7/19/16. Meter placement on 5/18/17. Meter boxes cleared of construction debris on 10/30/17. Homes currently under construction. (12/8/17)
MC2245	522-526 Bernard Street	10 Single Family Homes	Plans received and plan check fees paid on 5/11/16. Second plan check received on 6/10/16. Second plan check returned on 6/22/16. Permit issued on 7/11/16. Manifold installed on 7/19/16. Regular inspection site visit on 11/4/16 with no progress to report. Homes currently under construction. (12/8/17)
MC2247	1808-1810 Pomona Ave	2 Single Family Homes	Plans received and plan check fees paid on 5/20/16. Second plan check received on 6/23/16. Second plan check returned on 7/11/16. Fees paid and permit issued on 7/28/16. Pre-con on 9/9/17. Service line on 11/9/17. (11/10/17)
MC2252	1100 South Bristol Street	Ganahl Lumber	Plans received and plan check fees paid on 6/1/16. Hydrant flow test completed on 9/7/16. Final plan check completed and returned on 10/28/16. Fees paid and permit issued on 11/29/16. Pre-con held on 4/17/17. Potholing inspection on 5/8/17. Mainline installation on 6/6/17. Fireline installation on 6/29/17. Backflow tested on 7/13/17. Irrigation meter placement on 9/7/17. (12/8/17)
C003-16-01	788 Center Street	2 Single Family Homes	Plans received and plan check fees paid on 6/28/16. Plans returned on 7/14/16. Fees paid and permit issued on 1/6/17. Owner contacted on 12/6/17, construction to begin in January 2018. (12/8/17)
C0005-17-01	22nd and Santa Ana	12 Single Family Homes	Plans received and plan check fees paid on 7/22/16. Plans returned on 8/3/16. Fees paid and permit issued on 9/28/16. Manifold installed on 11/2/16. Service abandonment on 12/7/16. Meter installation on 12/19/16. Meters installed on 3/15/17. Site visit on 11/6/17, homes under construction. (12/8/17)
C0008-17-01	410 Walnut Place	4 Single Family Homes	Plans received and plan check fees paid on 8/10/16. Plans returned on 8/24/16. Awaiting resubmittal. Fees paid and permit issued on 4/7/17. Service installation on 7/5/17. Meters installed on 7/13/17. (12/8/17)

DEVELOPER PROJECT STATUS REPORT

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FILE NO.	PROJECT ADDRESS	PROJECT DESCRIPTION	PROJECT NOTES/STATUS
C0012-17-01	2626 Harbor Blvd	33 Detached Condos	Plans received and plan check fees paid on 9/15/16. Plans picked up on 10/18/16. Plans submitted for second plan check on 12/6/16. Fees paid and permit issued on 3/24/17. Mainline turned on 5/8/17. Gravel base on 6/16/17. Meters installed on 7/26/17. Gravel base and meter box on 12/6/17. (12/8/17)
C0012-17-02	929 Baker Street	55 Detached Condos	Plans received and plan check fees paid on 9/27/16. Plans picked up on 10/18/16. Plans submitted on 2/22/17. Plans returned on 3/6/17. Fees paid and permit issued on 3/21/17. Precon held on 6/1/17. Mainline turned on 9/14/17. (12/8/17)
C0013-17-01	2803 Royal Palm Drive	Fire Station	Plans received and plan check fees paid on 8/25/16. Plans picked up on 10/4/16. Plans resubmitted on 3/1/17. Fees paid and permit issued on 5/5/17. City has issued a contract for construction, awaiting call for inspection of water utility. (12/8/17)
C0017-17-01	166 Rochester	2 Single Family Homes	Plans received and plan check fees paid on 12/7/16. Plans returned on 12/15/16 and resubmitted on 1/5/17. Fees paid and permit issued on 5/5/17. Precon held on 10/4/17. Service installed on 11/14/17. Meter box and gravel base on 11/17/17. (12/8/17)
C0018-17-01	1951 Tustin	2 Single Family Homes	Plans received and plan check fees paid on 12/6/16. Plans returned on 12/7/16. Fees paid and permit issued on 4/13/17. Service line placement on 11/9/17. Meter box and gravel base on 11/13/17. (12/8/17)
C0021-17-01	2068 Maple Ave	4 Single Family Homes	Plans received and plan check fees paid on 1/13/17. Fees paid and permit issued on 4/21/17. Hot-tap on 5/31/17. Meter box installed on 6/28/17. Backflow tested on 9/13/17. (12/8/17)
C0024-17-01	1989 Orange	Meter Upgrade	Plans received and plan check fees paid on 3/27/17. Fees paid and permit issued on 4/25/17. Site visit on 10/30/17 with no progress to report. (12/8/17)
C0025-17-01	2053 Tustin	2 Single Family Homes	Plans received and plan check fees paid on 3/22/17. Awaiting final fee payment. (12/8/17)
C0026-17-01	326 E 16th Street	2 Single Family Homes	Plans received and plan check fees paid on 3/20/17. Awaiting final fee payment. (12/8/17)
C0027-17-01	231 Flower Street	Meter Upgrade	Plans received and plan check fees paid on 3/23/17. Fees paid and permit issued on 4/21/17. Site visit on 10/30/17 with no progress to report. (12/8/17)
C0029-17-01	127 23rd St.	4 Single Family Homes	Plans received and plan check fees paid on 5/12/17. Fees paid and permit issued on 8/3/17. (12/8/17)

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FILE NO.	PROJECT ADDRESS	PROJECT DESCRIPTION	PROJECT NOTES/STATUS
C0030-17-01	208 Camella Lane	New Home	Plans received and plan check fees paid on 5/12/17. Fees paid and permit issued on 5/25/17. Service installation on 6/8/17. Meter box placement on 9/8/17. (12/8/17)
C0033-17-01	353 E 18th Street	4 Single Family Homes	Plans received and plan check fees paid on 7/5/17. Fees paid and permit issued on 7/27/17. (12/8/17)
C0034-17-01	350 E 17th Street	Commercial Building	Plans received and plan check fees paid on 7/18/17. Plans returned on 7/27/17. Fees paid and permit issued on 9/27/17. Fireline installation on 11/15/17. (11/10/17)
C0035-18-01	146 18th Street	2 Single Family Homes	Plans received and plan check fees paid on 8/8/17. Fees paid and permit issued on 9/21/17. Service installed on 10/20/17. (12/8/17)
C0037-18-01	2850 Mesa Verde Drive East	11 Single Family Homes	Plans received and plan check fees paid on 8/17/17. Fees paid and permit issued on 10/18/17. Manifold installation on 12/6/17. (12/8/17)
C0039-18-01	172/174 Costa Mesa Street	2 Single Family Homes	Plans received and plan check fees paid on 8/22/17. Fees paid and permit issued on 8/29/17. (12/8/17)
C0040-18-01	365 Costa Mesa Street	Meter Upgrade	Plans received and plan check fees paid on 8/22/17. Awaiting final fee payment. (12/8/17)
C0041-18-01	160 & 162 E. 18TH ST.	2 Single Family Homes	Plans received and plan check fees paid on 9/27/17. Fees paid and permit issued on 11/2/17. (12/8/17)
C0042-18-01	335 & 337 16th Place	2 Single Family Homes	Plans received and plan check fees paid on 10/26/17. Awaiting final fee payment. (12/8/17)
C0043-18-01	2252 Fairview Road	CMSD Corporate Yard	Plans received and plan check fees paid on 11/2/17. First plan check returned on 11/7/17. (12/8/17)
C0044-18-01	276 E 19th Street	Meter Upgrade	Plans received and plan check fees paid on 1/21/17. Awaiting final fee payment. (12/8/17)

MESA WATER® AND OTHER AGENCY PROJECTS STATUS REPORT

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Project Title: OC-44 Replacement and Rehabilitation Evaluation and Cathodic Protection Study

File No.: M 2034

Description: Evaluate potential repair and replacement options

Status: The Habitat Mitigation and Monitoring Plan (HMMP) has been updated by Michael Baker (former RBF) to reflect the USACE's process and submitted to Mesa Water® for review on 1/8/16. Once the HMMP is revised and approved (1/19/16) it will be forward to all agencies, including Coastal Commission. Draft 1602 Streambed Permit obtained on 12/18/15. Final 1602 Streambed Permit pending CDFW will be issued while HMMP is accepted. U.S. Army Corps of Engineers' 404 permit received on 2/10/16. Revised HMMP sent to CCC for review and approval. Project is pending CCC's approval at an upcoming hearing. On 2/29/16 a meeting with Fletcher Jones Motorcars, City of Newport Beach, MBI (former RBF), and City of Huntington Beach was held to discuss issues associated with proposed construction activities. Traffic Plan prepared and submitted to the City of Newport Beach for approval on 6/29/16. Per request of CCC a dewatering plan was prepared and submitted for approval. Mesa Water® staff, MBI and CCC met on 10/6/16 and discussed mitigation conditions. Project approved at CCC Public Hearing on 12/7/16. MBI is working on finalizing the HMMP and construction plans and will submit them to CCC. Staff met with MBI on 5/1/17 and discussed comments after reviewing the draft final HMMP. New proposed mitigation criteria received from CCC on 7/5/17 reducing mitigation requirements from 1.6 acres to 0.66 acres. Coastal Development Permit for Construction is anticipated in December, 2017. The project re-start meeting was held on 9/7/17. On 10/30/17 met with City of Newport Beach and City of HB to discuss permit requirements and project access. Met w/Fletcher Jones, Skender Construction, City of HB, MBI to discuss access to the site and scheduling on November 21, 2017. Reviewing the 100% Design Plans & Specs (received on 11/28/17) along with the Pipeline Design Schedule, Construction Monitoring Treatment Plan (CMTP), and proposal for Natural Resources/Regulatory Services during construction activities. Bid solicitation is scheduled for late January 2018. Project in progress.

Project Title: Well Automation and Rehabilitation

File No.: MC 2101

Description: Rehabilitate all clear water wells and add remote control SCADA capabilities

Status: Construction activities began at Well 5 on October 3, 2016 with demolition and well rehabilitation beginning in the first week. Video of Well 5 showed scale on the louvers, and potential failure of an unused sounding tube and a small area of the louvers potentially requiring swage patches. Repair completed on November 29, 2016. Well 5 rehabilitation resumed on December 3, 2016. Well 5 chemical facility pad has

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been constructed and is awaiting a weather forecast of 8 days with no predicted rain to apply the chemical-resistant coatings to the concrete. Well 5 pumping development began on January 4, 2017, and produced fine sand at pumping rates above 1100 gpm. Repairs were made to Well 5, and test pumping performed in February showed acceptable well production over 2500 gpm with manageable sand. Construction is substantially complete at the Well 5 site. A start up planning meeting was held on March 29, 2017. Well 5 is running as needed and producing good quality water. Well 7 rehabilitation is complete, The Well 7 pump was installed the week of August 28, 2017, and Well 7 is operational. Construction of the Well 3 chemical facilities was begun in July 2017. The concrete for the Well 3 chemical facilities is cured and coated. Well 3 rehabilitation is complete and test pumping is currently in progress. Construction at Well 9 began in October with relocation of the backup generator and chemical facilities construction. Coating of the Well 9 chemical facilities is planned for December. The Engineer is reviewing submittals for the approved Variable Frequency Drives (VFDs) for the electric motors at Wells 1, 3, 7, and 9.

Project Title: MWRP Parking Project

File No.: M 2052

Description: Conduct parking layout design

Status: Parking study prepared by Onward Engineering in November 2013. The Board approved alternative # 3 Parking Along the MWRP Frontage on Gisler Ave. on 3/15/2014. RFP for the parking design in consultants' review (11/6/14). RFP sent out to consultants 11/25/14. Proposals due 12/19/14. Interview with three consultants held on 1/7/15. Recommendation brought to January E and O for consideration of approval and will be brought to the Board on 2/12/15 for approval. Project approved 2/12/15. Kick-off meeting held on 2/19/15. Design in progress. 30% design submittal submitted 3/23/15. Staff met with C.J. Segerstrom and discussed concept and details of the proposed parking layout. Segerstrom verbally approved the project. City of Costa Mesa approved the concept and currently consultant is evaluating the landscape requirements with the City of Costa Mesa. E and O Committee accepted the conceptual design and provided comments on 5/19/15. The condition approval from Segerstrom received on 6/29/15. Staff is working with the designer (CivilSource), Mesa Water's attorney, and City of Costa Mesa on addressing Segerstrom's comments. Staff is reviewing the Initial Study/Summary of Findings Report received on 8/3/15. Staff has addressed all Segerstrom's requests included in their 6/29/15 letter and prepared a response letter. Approved construction plans were received from the City of Costa Mesa on 12/29/15. The final bid package completed 3/15/16. Encroachment Permit Application submitted to the City on 3/6/16. Hold Harmless Agreement for the Installation of Off-Site Parking Improvements within Public Right-of-Way received on

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5/4/16. Staff reviewed the Agreement and sent comments to the City of Costa Mesa on 5/27/16. City approved all revisions as proposed by Mesa Water® and sent the agreement for signature on 6/24/16. The Engineering and Operations Committee reviewed the Agreement at July 19, 2016 meeting and recommended Board approval. Board approval obtained on August 11, 2016. Agreement sent to the City for execution and recording on 9/7/16. Recorded Agreement received from the City on 10/19/16.

Project Title: Pipeline Testing Program

File No.: MC129

Description: Implement Resolution No. 1442 Replacement of Assets to annually perform non-destructive testing of 1% of the distribution system, and destructive testing of segments that are shown to have less than 70% of original wall thickness by non-destructive testing.

Status: Identifying segments for FY 2015 non-destructive testing and arranging for excavation and removal of segments that tested below 70% remaining wall thickness in FY2014 non-destructive testing. Released a Request for Proposal for a consultant to administer the program and develop standard operating processes on February 6, 2015. Three proposals were received on February 26, 2015, and interviews conducted on March 4, 2015. A contract with RBF was approved by the Board on April 9, 2015. Kickoff meeting held on April 21, 2015. Project status meeting held on June 8, 2015. Draft deliverable of prioritization of asbestos concrete pipe (ACP) for non-destructive testing received on June 26, 2015; updated draft received on August 7, 2015. Draft deliverable with recommendations for non-destructive testing technologies for metallic pipe received on August 7, 2015. Draft evaluation of destructive testing laboratories and tests received on August 21, 2015; final report received on September 16, 2015. Echologics performed non-destructive testing of 3 miles of ACP from July 13-17, 2015. Draft report received on August 14, 2015; final report received on September 1, 2015. Based on the Echologics reports from 2013 and 2015, ten ACP segments were selected for sampling and destructive testing. Three ferrous material pipelines with a history of repairs were also selected for field sampling and destructive testing. Draft bid documents for field sampling received on October 16, 2015. Final bid documents were released to three on-call contractors on November 23, 2015, for bids. Pre-bid meeting was held on December 7, 2015 and attended by all three of the bidders. Three bids were received on December 16, 2015. All bids exceeded the budget and the General Manager's signing authority. An action item to approve a contract with the low bidder was approved by the Engineering and Operations Committee on January 19, 2016, and by the Board on February 11, 2016. Notice to Proceed with field sampling was given on March 7, 2016. An encroachment permit from the City of Costa Mesa was received on April 25, 2016. Field sampling began on May 16, 2016 and completed on June 28, 2016. Samples were shipped to MEIC Lab in Portland, Oregon, for destructive testing on July 7, 2016. Samples were received at MEIC on July 11, 2016. Lab results, including estimates of remaining useful life, were received on October 24, 2016. Non-

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destructive testing of the next 3 miles of ACP was completed on September 16, 2016, and the draft report was received October 1, 2016. All of the ACP and Cast Iron Pipe (CIP) showed less than 70% remaining wall thickness compared to its assumed original thickness. Extraction of six sections of ACP and two sections of CIP are in process for 2017 destructive testing. ACP samples were sent to WSP Canada for destructive testing. Results were received on August 1, 2017. CIP samples will be sent to McWane Ductile's lab in Ohio for destructive testing. Results were received on June 30, 2017. A Request for Qualifications for consulting services for the Pipeline Integrity Testing Program was released in May 2017. Four Statements of Qualifications were received and a recommendation for contract award to HDR was approved by the Committee on July 20, 2017. ACP test results were received on July 31, 2017. Results have been analyzed, and were presented at the November Committee meeting. Average ACP total useful life is expected to be approximately 142 years. A process for determining when a pipeline has reached the end of its useful life and how much of the pipeline to replace was implemented. One 8" ACP line in Harbor Boulevard from Wilson to 19th Street was recommended for replacement. Cathodic protection station planning and testing is in process for metallic pipelines, and condition assessment of 6 inch and 8 inch CMLC Steel Pipe installed in 1951, and 12" Cast Iron Pipe in 19th Street installed prior to 1951. Operations staff is collecting opportunistic ACP pipe samples for EDS wall thickness measurements during valve replacement projects.

Project Title: MWRP Outreach Center

File No.: MC 2147

Description: Report on the feasibility of reconfiguring and potentially expanding the functional uses of the MWRP Operations and Administration Building to include a multi-purpose room and educational forum.

Status: Mesa Water® is coordinating with IBI Group (designer) on the feasibility of implementing an education and outreach center at the MWRP. Kick-off meeting was held on 6/1/2015. Program Requirement Questionnaire meetings were held on 6/9/2015 and 6/17/15. Program Report delivered to Mesa Water® for review on 7/7/2015. 60% design concepts are scheduled for submittal on 08/14/15. 100% concept design received on 09/29/15. Virtual rendering received on 10/6/15. Concept designs presented at the October Board Workshop. A follow-up planning session was held at the November Engineering and Operations Committee Meeting to capture the Board's input on evaluating reduced cost options and to revisit the existing Boardroom improvements. Board directed staff to develop a scope of work to evaluate scaled down layouts of the MWRP Outreach Center and revisit expanded layouts of the main Boardroom. Engineering and Operations Committee approved a contract amendment with IBI Group to reflect the revised scope of work. Item was approved by the Board February 11, 2016. IBI Group performed an inspection of the existing Boardroom on February 25, 2016 and are in the process of developing conceptual layouts. Staff review and meeting occurred on April 11, 2016. Conceptual layout work has been

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completed. Mesa Water® staff are reviewing new alternatives.

Project Title: Mesa Water® Main Office HVAC Study

File No.: MC 2171

Description: Evaluate the existing HVAC system and provide recommendations for improved efficiency and operations of the system.

Status: Mesa Water® has contracted with Goss Engineering Inc. to perform this study. Kick off meeting was held January 13, 2016. Goss Engineering performed a field survey of both main campus buildings over the course of three days. Draft report with results and recommendations was reviewed by staff. The final report was delivered on June 30, 2016 and was reviewed by staff for completeness. Staff presented the findings and recommendation to the Board of Directors at the July E&O Committee Meeting. Board approved contract to move forward with the design of a complete Variable Refrigerant Flow system. Contract has been executed and returned to Goss Engineering. Project kick-off and notice to proceed was issued on November 30, 2016. 50% drawings have been delivered for review and comments returned. Stakeholder meeting was held on February 2, 2017 to provide comments for the new VRF system 50% design. 90% design drawings and specifications were submitted for Mesa Water® review on March 10, 2017. Mesa Water® managers met with the Consultant to discuss construction phasing. Roof design is currently being reviewed by Mesa Water® and the prime consultant. Bid set documents are due on December 15, 2017.

Project Title: Reservoirs 1 & 2 Pumps, Controls, and Chemical System Assessment Project

File No.: MC 2173

Description: Evaluate the existing Pumps, Controls, and Chemical Systems at Reservoirs 1 & 2. The project includes lab testing of pump efficiency, physical assessment of pumps and pipework, assessment of the existing control system, and preliminary design of a chemical dosing system. Recommendations for improved efficiency and operations of the system will be included in a final report.

Status: Mesa Water® has contracted with Hazen & Sawyer to perform this study. Kick off meeting was held September 30, 2015. The consultant performed a field survey of both Reservoirs 1 & 2 over two days. A preliminary outline of technical memo 1 was provided on December 11, 2015. Initial data requests were responded to by December 7, 2015, with follow up responses provided on January 7, 2016 (SCADA Data) and February 9, 2016 (Jockey Pump Data). Pump testing scope of work has been reviewed by Mesa Water® and returned to the Consultant for revision. TM-1 has been reviewed by staff and returned to the consultant. Pump extraction plan and bid documents are currently being reviewed by staff. The Consultant has begun the preliminary design of a chemical dosing system. Request for bids for the pump

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extraction will be released in August 2016. Bids for the pump extraction were submitted and reviewed. The item was presented to the Engineering and Operations Committee at the September 20, 2016 meeting. Contract has been executed. Field assessment was completed on October 19, 2016. Factory pump testing scheduled in early January 2017. Further field tests conducted on December 2, 2016. Pump 2 from Reservoir 1 was removed and sent to the factory test facility on January 3, 2017. Factory testing was completed on February 27, 2017 with results aligning with the results obtained in the field. The pump has undergone a physical assessment and a refurbishment scope of work developed. The pump will be installed and operational on May 9, 2017. TM-2, TM-3, and PDR final revisions are currently under review. Results will be presented to the Board at the December 2017 Engineering and Operations Committee.

Project Title: Mesa Water® Valve Replacements Project

File No.: M18-104

Description: Replacement of water main and hydrant valves in various locations in the City of Costa Mesa.

Status: The Request for Proposals (RFP) for the Mesa Water District Valve Replacements Project was completed and put out to bid in September 2017. The RFP consisted of the Base bid that included replacement of 17 valves and two Alternative bids consisting of replacement additional 3 and 5 valves, respectively. Three bids were received on October 4, 2017. Staff has recommended that the construction contract be awarded to Paulus Engineering, Inc., as the lowest responsive bidder. Board approved awarding contract to Paulus Engineering on November 2, 2017. The contract was finalized. (11/7/17) and signed on 11/17/17. Working w/City of CM, MWH, and Paulus Eng. on the project schedule and start of construction. (12/7/17)

Project Title: Other Agency Project Coordination

File No.:

Description: Median construction in Placentia Ave. between Wilson St. and Adams Ave.

Status: Mesa Water® 16" main runs 5' East of the street center line. Mesa Water® is coordinating with designer and City on design of necessary protection and root barrier for the water main. 85% design plans received on (12/22/14). Plan review in progress 1/8/15. Plan review comments sent to the City 2/6/15. Mesa Water® provided update comments to landscaping plans on 6/17/15. Mesa Water® continuing to coordinate with the City, Stivers and Associates, Inc., and City Designer on layout of project. Revised final plans submitted for Mesa Water® review on 11/19/15. Staff reviewed the submittal in cooperation with Mesa Water® landscape consultant (Stivers Associates) and submitted comments to the City Designer on 12/28/15. The comments have been accepted by the Designer and Final Plans were submitted on 2/9/16. New comments sent to the Designer on 2/18/16. The revised final plans received on 3/21/16 and

MESA WATER® AND OTHER AGENCY PROJECTS STATUS REPORT
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approved by Mesa Water® on 3/31/16. On May 24, 2017 the City Designer notified Mesa Water® that the City was planning to advertise the project in the first half of June, 2017. City received bids at the end of June, 2017 and is taking the project to the City Council for approval on 7/18/17. The project kicked off on 7/28/17 and construction started on October 11, 2017. Mesa Water® is inspecting the root barrier installations for protection of Mesa Water® pipelines adjacent to construction activities. Project in progress. (12/7/17)

Project Title: Chandler and Croddy Wells and Pipeline Project

File No.: M18-113

Description: Design, documentation, and permitting for two new wells located on Chandler Avenue and Croddy Way in the City of Santa Ana and the distribution pipeline connecting the wells to Mesa Water's supply system.

Status: Tetra Tech has been contracted to complete the design, documentation, and permitting for the Chandler and Croddy Wells and Pipeline Project. Initial data request sent to Tetra Tech on September 7, 2017. Met with Division of Drinking Water regarding well locations on September 20, 2017. Preliminary hydrological evaluation received on September 29, 2017. Board approved demolition of existing structures and dedicated well facility with option to evaluate long-term lease potential as market conditions dictate at both sites at November 2017 E&O. Preliminary Design Report for both well locations is due on January 29, 2018.

Water Quality Call Report

December 2017

Date: 11/13/2017

Source: Phone

Address: 677 Victoria St.

Description: Customer was concerned about the musty/dirty taste of the water that her roommate noticed for a week. The water appears clear and has no odor.

Outcome: Assured customer that the water meets state and federal drinking water standards. Explained to her that some individuals are more sensitive to taste than others. She agreed and said that the water tastes fine to her and she will call back if her, and her roommate have any further concern.

Date: 11/29/2017

Source: Phone/Visit

Address: 2332 Cornell

Description: Customer concerned about cloudy water after valve replacement job.

Outcome: During site visit, air and cloudy water was observed. Assured customer the entrained air is not a health concern and flushed the water at customer's home until it cleared. Checked pH and chlorine residual and both were within normal range.

**MESA WATER DISTRICT
COMMITTEE POLICY & RESOLUTION
REVIEW OR DEVELOPMENT**

ENGINEERING & OPERATIONS COMMITTEE

Policy Assignments for 2017

Policy Name	Resolution	Date Adopted	Revision Schedule	Next Review
Rules and Regulations for Water Services (will include review of meter capacity charges and easement procedures)	Resolution No. 1470	02/09/16	Review and update as needed	TBD
Standard Specifications and Drawings	Resolution No. 1449	01/12/17	Review and update as needed	TBD

Water Operations Status Report
July 1, 2017 - November 30, 2017

Operations Department Status Report	Wk Unit	Plan Days	Act Days	Plan Qty	Act Qty	Plan Cost	Actual Cost
01 - HYDRANTS							
WD-0101 - HYDRANT MAINTENANCE	HYDRANTS	71	29	1421	602	\$56,432	\$21,296
WD-0102 - HYDRANT PAINTING	HYDRANTS	7	21	177	613	\$5,036	\$14,209
WD-0103 - HYDRANT REPAIR	HYDRANTS	22	13	25	19	\$14,221	\$11,511
Program 01 TOTAL		100	63			\$75,689	\$47,016
02 - VALVES							
WD-0201 - DISTRIBUTION VALVE MAINTENANCE	VALVES	47	54	1010	1080	\$37,219	\$40,758
WD-0202 - NIGHT VALVE MAINTENANCE	VALVES	8	0	82	0	\$6,487	\$0
Program 02 TOTAL		55	54			\$43,706	\$40,758
03 - METERS							
WD-0301 - NEW METER INSTALLATION	METERS	7	10	50	75	\$19,025	\$33,700
WD-0302 - RAISE REPLACE METER BOX	BOXES	9	5	43	11	\$10,688	\$3,771
WD-0303 - METER LEAK INVESTIGATION/REPAIR	INV/REP	11	20	83	146	\$6,480	\$19,378
WD-0305 - ANGLE STOP/BALL VALVE REPLACE	REPLACE	28	32	56	62	\$26,209	\$22,990
WD-0306 - LARGE METER TEST/REPAIR - C	TESTS	10	11	49	39	\$7,539	\$8,129
Program 03 TOTAL		65	78			\$69,941	\$87,968
04 - MAIN LINES							
WD-0401 - MAIN LINE REPAIR	REPAIRS	50	75	8	13	\$41,662	\$253,388
WD-0402 - AIR VAC MAINTENANCE/REPAIR	REPAIRS	11	15	67	116	\$8,315	\$9,701
WD-0403 - UNIDIRECTIONAL FLUSHING	FEET			153,938	0	\$0	\$0
Program 04 TOTAL		61	90			\$49,977	\$263,089
05 - SERVICE LINES							
WD-0501 - SERVICE LINE REPAIR	REPAIRS	24	44	9	19	\$18,435	\$33,539
Program 05 TOTAL		24	44			\$18,435	\$33,539
06 - CAPITAL							
CAP AV - CAPITAL AIR VACUUM REPLACE	AIR VACS	0	9	0	4	\$0	\$7,229
CAP BI - CAPITAL BYPASS & METER INSTALL	REPLACE	13	0	1	0	\$10,999	\$0
CAP FH - CAPITAL HYDRANT UPGRADE	HYDRANTS	86	96	12	15	\$99,062	\$103,058
CAP LM - CAPITAL LARGE METERS	METERS	21	6	58	16	\$66,239	\$12,800
CAP MV - CAPITAL MAINLINE VALVE REPLACE	VALVES	63	82	13	15	\$68,903	\$74,264
CAP SL - CAPITAL SERVICE LINE REPLACE	SERVICES	10	15	4	4	\$8,439	\$11,139
CAP SM - CAPITAL SMALL METERS	METERS	46	33	581	358	\$70,268	\$55,226
CAP SS - CAPITAL SAMPLE STATION REPLACE	STATIONS	0	2	0	5	\$0	\$1,629
Program 06 TOTAL		239	243			\$323,910	\$265,345
VACANT POSITIONS							\$0
TOTAL						\$581,658	\$737,715



*Dedicated to
Satisfying our Community's
Water Needs*

MEMORANDUM

TO: Engineering and Operations Committee
FROM: Phil Lauri, P.E., Assistant General Manager
DATE: December 19, 2017
SUBJECT: Committee Meeting Dates and Chair Appointment

RECOMMENDATION

Confirm the 2018 Engineering and Operations Committee regular meetings for the third Tuesday of each month, starting at 3:30 p.m., and appoint the Committee Chair.

STRATEGIC PLAN

Goal #4: Increase public awareness about Mesa Water® and about water.

PRIOR BOARD ACTION/DISCUSSION

This item is annually updated at a meeting of the Engineering and Operations (E&O) Committee.

DISCUSSION

Annually, the E&O committee appoints a Committee Chair and approves the regular meeting date and time. Historically, the E&O committee has been meeting at 3:30 p.m. on the third Tuesday of the month, unless that day falls on a holiday in which case the meeting moves to the following Tuesday.

Following are the proposed 2018 Engineering and Operations Committee Meeting dates:

- January 16
- February 20
- March 20
- April 17
- May 15
- June 19
- July 17
- August 21
- September 18
- October 16
- November 20
- December 18

FINANCIAL IMPACT

None.

ATTACHMENTS

None.



*Dedicated to
Satisfying our Community's
Water Needs*

MEMORANDUM

TO: Engineering and Operations Committee
FROM: Phil Lauri, P.E., Assistant General Manager
DATE: December 19, 2017
SUBJECT: Nitrification Control

RECOMMENDATION

Recommend that the Board of Directors award a contract in the amount of \$154,760 to Trussell Technologies, Inc. to evaluate the feasibility of converting from chloramination disinfection to free chlorine disinfection.

STRATEGIC PLAN

Goal #1: Provide a safe, abundant, and reliable water supply.
Goal #2: Practice perpetual infrastructure renewal and improvement.

PRIOR BOARD ACTION/DISCUSSION

At its January 21, 2014 meeting, the Engineering and Operations (E&O) Committee received an information item shortly after a series of nitrification events occurred within the distribution system.

At its October 21, 2014 meeting, the E&O Committee received an information item regarding the intention to retain professional engineering services to perform a Nitrification Control Study and provide a Nitrification Mitigation and Control Plan.

At its May 14, 2015 meeting, the Board of Directors (Board) authorized the General Manager to execute a contract with Carollo Engineering (Carollo) in the amount of \$248,746 to perform the Nitrification Control Study.

At its December 20, 2016 meeting, the E&O Committee received a presentation on the results of the nitrification study and authorized a change order in the amount of \$81,123 to Carollo to perform the water age modeling study.

BACKGROUND

Mesa Water has historically experienced periodic nitrification events in both storage reservoirs as well as in the southeastern distribution area where nitrification events have been difficult to address. Nitrification is one of the main challenges encountered by water providers that use monochloramine as a distribution system residual disinfectant. Monochloramine is a chlorine and ammonia compound with an optimal 5-to-1 ratio by weight. When this optimal ratio is exceeded, monochloramine is destroyed and disinfection by-products and taste and odor compounds are formed. When the ratio is sub-optimal, free ammonia is made available as a food source to nitrifying bacteria leading to nitrification. System operations must then be adjusted to maintain consistently high-quality water.

While the health standard for nitrite is limited to drinking water sources rather than distribution systems, the challenge with nitrification in the distribution system is that its byproducts degrade chloramines, which weakens the disinfection residual in the distribution system and increases the



potential of contaminants and bacterial growth. This chloramine instability can lead to potential violation of regulated water quality parameters, corrosion issues, and reduced pipeline life. Operational challenges required during nitrification events include reduced reservoir storage, increased water sampling, removing affected reservoirs from service in order to perform break-point chlorination, distribution system flushing, and the potential use of costly imported water. Therefore, control or elimination of nitrification is important to the operation of the water system.

In late November through December 2013, there was an unusual series of four nitrification events that occurred in the Kemp Reservoir, although at no time were water quality compliance or health standards exceeded. The close sequence of nitrification events resulted in a determination that the quality of water going into the reservoir, rather than events occurring within the reservoir itself, appeared to be the source for these events.

With the consultation and approval of the Division of Drinking Water, targeted unidirectional flushing (UDF) and a 30-day conversion from chloramine to free chlorine for disinfection was undertaken. Both techniques yielded positive, but short-term results. Elevated nitrification levels within the distribution system and Kemp Reservoir returned within three months of the conclusion of the free chlorine conversion. Based on the aforementioned incidents, the 2014 Water Master Plan Update recommended that Mesa Water undertake a more detailed study of nitrification in the distribution system.

In July 2015, Mesa Water and Carollo launched a Nitrification Control Study to resolve this issue by assessing the impacts of nitrification and the effectiveness of the disinfection protocols used at its production and distribution facilities, developing a Nitrification Mitigation and Prevention Plan (NMPP), and developing a plan and cost estimate for proposed system modifications to address nitrification. Evaluation techniques included:

- Extensive review and analysis of historical water quality and operational data,
- Targeted field sampling and analyses at source water entry points, reservoirs, and distribution system, and
- Water system modeling performed using various operational scenarios to determine water age and identify areas where reservoirs share influence.

Additionally, bench scale testing of all water sources was conducted to evaluate the viability of converting to a free chlorine residual water system permanently while continuing to meet all water quality standards.

Nitrification Control Study Recommendations

Carollo encapsulated the results and recommendations from the Nitrification Control Study in a series of technical memos (TM). The recommendations are summarized and prioritized in Table 1.

Table 1. Nitrification Control Study Recommendations to Limit Nitrification				
Category	Priority	Description	Impact	Status
Water Quality Goals	Higher	1. Continue implementation of the Well Automation Project	Decrease free ammonia at entry points; stabilize chlorine and ammonia dosing	Complete at Wells 5 and 7 In construction at Wells 3 & 9 Construction at Well 1 in 2018
		2. Implement complete chloramine booster stations at reservoir sites	Maintain higher chloramine residuals and control free ammonia	Preliminary Design
	Lower	3. Continue periodic reservoir inspections and cleaning	Reduce sediment build-up	Scheduled for 2018
Operational Goals	Higher	1. Increase reservoir cycling rates	Decrease water age	Complete
		2. Hydraulic modeling to identify alternative system operations to decrease water age	Identify system modifications to reduce water age	Complete
		3. Update the Nitrification Mitigation and Monitoring Plan	Allow for early detection of water quality changes	Not implemented
		4. Develop additional water sources to aid in reservoir cycling	Allow for rapid deep reservoir cycling and decreased water age	Preliminary Design of two new wells
	Lower	1. Pipe flushing	Reduce sediment build-up in pipes	Not implemented
		2. Replace unlined steel and ductile iron pipe (DIP)	Remove potential for nitrification where these pipe are installed	Not implemented

Implementation is continuing for high priority recommendations including the well automation project and the acquisition of additional well sites to increase supply. A recommendation to complete chloramine booster stations at reservoir sites will be brought to a future E&O Committee Meeting. Implementation of the high priority operational goal to perform hydraulic modeling to identify alternative system options to decrease water age is discussed herein.

DISCUSSION

Water Age Modeling was performed using recent water quality and hydraulic operations data. The hydraulic model was first updated to enable long-term scenarios and solution convergence. The



locations and anticipated production from the Chandler and Croddy well sites were added to the model. Four reservoir scenarios were modeled:

1. Two Reservoirs (existing conditions)
2. No Reservoirs
3. Reservoir 1 Only
4. Reservoir 2 Only

The four reservoir scenarios were modeled to assess performance compared to three key goals:

- Minimizing water age on an average demand day (15.5 million gallons per day (mgd)) in the reservoirs and in the distribution system.
- Supplying demands on the peak hour (34.8 mgd) of the maximum demand day.
- Meeting fire flow demands on maximum demand day (23.2 mgd), while maintaining a minimum residual system pressure of greater than 40 pounds per square inch (psi). Fire flow demand was evaluated at fire “worst case” locations, as shown in Table 2.

Table 2. Fire Flow Demand Analysis

Location	Demand (Gallons per Minute)	Duration (hours)
South Coast Plaza	4,000	4
John Wayne Airport Tank Farm	6,000	4
John Wayne Airport Terminal	6,000	4
Orange Avenue and East 17 th Street	4,000	4
Industrial Way and Newport Boulevard (2016 Production Place fire)	4,000	4
16 th Street and Monrovia Avenue (Highest elevation)	4,000	4

Results of the Analyses

- **Two Reservoirs:** Mesa Water currently has two water storage reservoirs. Reservoir 1 has a capacity of 10 million gallons. The Kemp Reservoir (Reservoir 2) has a capacity of 18 million gallons. In this scenario, the average water age at the test location is approximately 6.8 days. Peak hour demands are met, and all fire flow scenario demands are met with greater than 40 psi residual system pressure.
- **No Reservoirs:** If Mesa Water were to eliminate both reservoirs, peak hour demand could not be met from Mesa Water production facilities even with the addition of the two new wells. A supply deficit of approximately 3.8 million gallons per day would need to be addressed, potentially from imported water. Fire flow residual pressure is below 40 psi in four of the six fire flow analyses. However, the water age at the test location is lowest in this scenario at approximately 1.3 days.
- **Reservoir 1 or Reservoir 2 Only.** The results of eliminating one of the two reservoirs are similar. Peak hour demands are met with the existing supply plus one reservoir. Fire flow



residual pressure is below 40 psi in two of the six fire flow analyses. The average water age at the test location is approximately 3.5 days.

Conclusions and Next Steps

The results of the analyses show that Mesa Water needs at least one of its reservoirs to meet demands using 100% local supplies; the No Reservoir scenario was not considered further. Mesa Water could potentially eliminate one reservoir and reduce water age in the test location, however, the residual system pressures during a fire would be below the target of 40 psi in some parts of the system. Keeping just one reservoir is viable, but reduces operational flexibility for a small benefit in water age. Maintaining two reservoirs preserves operational flexibility while meeting peak hour and fire flow demands throughout the distribution system, and is the preferred option. Eliminating nitrification events within the two reservoirs and the distribution system will require implementation of a capital project to improve the water disinfection process. The two projects under consideration are as follows:

- A. **Implementation of Reservoir Chemical Management Systems.** A recommendation to award a contract to complete Final Design of the reservoir chloramination systems may be brought to a future committee meeting.
- B. **Disinfection Conversion to Free Chlorine.** Implementation of free chlorine disinfection will eliminate sources of nitrogen in the reservoirs and distribution system by converting to free chlorine. This option is discussed below.

Disinfection Conversion to Free Chlorine

The Nitrification Control Study did consider converting disinfection from chloramines to free chlorine. Free chlorine does not bring ammonia into the system, and therefore there are no nitrogen-containing compounds to form nitrites. Free chlorine; however, can promote the formation of disinfection by-products (DBP) such as trihalomethanes and haloacetic acids that have maximum contaminant levels (MCL) in the parts per billion range. Thorough study of a free chlorine conversion was beyond the scope of the nitrification control study. The initial results indicated that clear well water and imported water supplies could be converted to free chlorine without exceeding the MCL for disinfection by-products. However, the Mesa Water Reliability Facility (MWRF) water could exceed the trihalomethane MCL. Staff held subsequent meetings with the California State Water Resources Control Board Division of Drinking Water (DDW) to discuss converting to free chlorine and learned that several California water systems have both chloramination and free chlorine systems, and are able to meet their water quality requirements.

A proposal to perform a thorough evaluation of the potential conversion to free chlorine was requested from Trussell Technologies, Inc. (Trussell), an industry leader in water quality. With an in-house water quality lab and a staff of scientist-engineers, Trussell is uniquely qualified for this study. Trussell has previously provided Mesa Water with similar support to evaluate the odor concerns in the MWRF source water, and develop a pilot solution to remove the cause. Trussell's solution was pilot tested for a year and was so successful that it was implemented permanently as part of the MWRF Improvements Project. Trussell has recommended a phased approach to free



chlorine conversion. Their proposal is provided in Attachment A. The tasks are summarized below:

Task 1. Technical Evaluation. This task will include bench-scale evaluation of DBP formation in each of Mesa Water’s sources of supply, as well as in blended supply sources.

Task 2. Feasibility Assessment. This task will use the results of Task 1 to develop DBP mitigation strategies, and identify points in the distribution system for free chlorine booster stations and potential process changes at the MWRf.

Task 3. Full Scale Test Plan and Execution. Based on the results of Task 2, develop a test plan to evaluate free chlorine disinfection for approximately six months, and evaluate the water quality. This task will be performed with coordination and approval from DDW.

Task 4. Permit Amendments. As part of implementation, Trussell will complete permit modification requests to DDW for all permitted sources.

Should the six month free chlorine pilot test prove that Mesa Water could maintain an acceptable chlorine residual and compliance with water quality regulations throughout the distribution system, a recommendation for a permanent conversion to free chlorine disinfection will be made to the Board for consideration. It is therefore recommended that the Board of Directors consider awarding a contract in the amount of \$154,760, to Trussell Technologies, Inc. to evaluate the feasibility of converting from chloramination disinfection to free chlorine disinfection.

FINANCIAL IMPACT

In Fiscal Year 2018, no funds are budgeted for nitrification control studies. Funds for the proposed study will come from Cash On Hand.

	Project Estimate Amounts	Project Cost Amounts
Initial Project Estimate	\$ 154,760	
Original Contracts		\$ 0
Change orders		0
Requested funding		154,760
Revised Contracts		<u>\$ 154,760</u>
Actual spent to date		\$ 0
Revised Project Estimate	\$ 154,760	

ATTACHMENTS

Attachment A: Trussell Technologies, Inc.’s Proposal to Evaluate Conversion of Mesa Water Supply from Disinfection with Chloramines to Disinfection with Free Chlorine



December 13, 2017

Mr. Phil Lauri
Assistant General Manager
Mesa Water District
1965 Placentia Avenue
Costa Mesa, CA 92627

Subject: Proposal to Evaluate Conversion of Mesa Water Supply from Disinfection with Chloramines to Disinfection with Free Chlorine

Dear Phil,

We are pleased to submit the enclosed proposal to evaluate the conversion of the Mesa Water drinking water supply from chloramines to free chlorine disinfection. Our project approach involves a phased evaluation that includes a Technical Evaluation focused on DBP formation, followed by a Feasibility Assessment to develop strategies for successful implementation of free chlorine disinfection, leading into Full-Scale Testing that engages the DDW through a period of testing that will ensure any proposed changes to the Mesa Water system are allowing for successful conversion to free chlorine without unintended consequences, and culminating with the development of a Permit Amendment to be approved by the DDW for the conversion to free chlorine.

We are looking forward to working with you and your staff on this challenging project. I am available to discuss all aspects of this proposal in further detail as needed.

Respectfully,

A handwritten signature in blue ink that reads "David R. Hokanson". The signature is fluid and cursive, with a long horizontal flourish at the end.

David R. Hokanson, Ph.D., P.E., BCEE
Principal, Trussell Technologies, Inc.



SCOPE OF WORK

Free Chlorine Conversion Study

The Mesa Water District (Mesa Water) is considering switching to free chlorine disinfection as a strategy to avoid nitrification in its distribution system. Mesa Water currently uses chloramines for disinfection, targeting a chlorine-to-ammonia ratio of 4.5:1 and a 2.5 mg/L residual to match the residual of imported water (treated surface water) from the Metropolitan Water District of Southern California (MWD). Free chlorine will eliminate the possibility of nitrification while at the same time increasing the possibility of disinfection byproduct formation. This scope of work defines a phased study by Trussell Technologies (Trussell Tech) to convert the Mesa Water drinking water supply from chloramines to free chlorine disinfection¹.

TASK 1 – Technical Evaluation

An initial technical evaluation will focus on potential formation of disinfection byproducts (DBPs) from Mesa Water's sources. Mesa Water's primary source water is local groundwater (clear water wells, as well as colored water treated at the Mesa Water Reliability Facility, MWRF), supplemented by water from MWD. Free chlorine disinfection will completely eliminate nitrification in the distribution system; however, it increases the potential to form DBPs. DBPs of particular regulatory concern include trihalomethanes (THMs) and haloacetic acids (HAAs).

Bench-scale testing of the three water sources will be completed, including an assessment of chlorine demand, characterization of chlorine decay, DBP formation testing, as well as odor assessment. A parallel effort will assess DBP-related parameters from existing Mesa Water system data, including well production and source water blends over time, general WQ trends (e.g., total organic carbon, bromide) for each source, as well as water age evaluations.

Trussell Tech will facilitate a workshop with Mesa Water staff focused on the distribution system and key operating parameters that influence the formation of DBPs with the three water sources (clear water wells, MWRF treated water, and MWD water). The primary outcome of Task 1 will be to confirm that free chlorine disinfection is technically feasible option for Mesa Water. Another outcome will be identification of issues that require further evaluation prior to implementation. Task 1 results will be summarized in a draft Technical Memorandum No. 1 (TM 1) to be submitted to Mesa Water for comments. The project team will finalize TM 1 based on Mesa Water comments.

Deliverables:

1. *Distribution System Workshop*
2. *Technical Memorandum No. 1*

TASK 2 – Feasibility Assessment

The second phase of the study will build upon findings from Task 1 to further assess the feasibility of implementing free chlorine disinfection for the Mesa Water system. The project team will propose possible strategies to address issues identified in Task 1 (e.g., DBPs, water age). At a minimum, an evaluation of the following will be completed:

- Mitigation strategies for minimizing DBP formation (based on Task 1 results)
- Distribution system free chlorine boosting recommendations
- Process changes for MWRF

Hydraulic Modeling

As a part of Task 2, Task 1 bench testing results characterizing free chlorine decay and DBP formation will be incorporated in developing a series of hydraulic model runs to determine

¹ This project will build upon previous bench-scale testing with free chlorine disinfection completed for Mesa Water as part of the recent Nitrification Control Study by Carollo and AQUALity.



theoretical DBP formation within the Mesa Water distribution system as a function of source water and hydraulic detention time. Carollo Engineers will be engaged as a sub-consultant to Trussell Tech to build upon previous modeling work for Mesa Water and complete a total of up to four modeling scenarios (to be determined by the Trussell Tech project team) aimed at optimizing operations to limit water age for source water(s) correlated with higher DBP formation. Costs associated with this effort are reflected in this budget, with a detailed scope of Carollo's hydraulic modeling work shown below.

Carollo Engineers has recently completed nitrification hydraulic modeling for Mesa Water, evaluating the impact of modifications to reservoir operations on the water age of the water system. Carollo understands that Mesa Water would like to investigate the feasibility of converting their water distribution system from chloramines to free chlorine to decrease the possibility of nitrification, but are concerned with the potential for DBP formation within the water system.

The Carollo Engineers hydraulic modeling task (Task 2.2 in budget) consists of three sub-tasks, (2.2a) Project Management and Meetings; (2.2b) Hydraulic Modeling Analysis; and (2.2c) Documentation.

Task 2.2a – Project Management and Meetings

Subtask 2.2a includes general project management for a duration of up to four (4) months. Carollo will coordinate work effort, conduct project communications with the project team, Trussell Tech, and Mesa Water. Carollo will prepare for and attend up to one (1) project meeting and up to three (3) conference calls with Trussell Tech and/or Mesa Water. Carollo will prepare meeting materials to present findings and results related to subtasks 2.2b and 2.2c.

Task 2.2b – Hydraulic Modeling Analysis

Carollo understands that Trussell Technologies intends to investigate up to four (4) scenarios of different water sources to evaluate the formation potential of DBPs in the water system. It is expected that two of those scenarios will include 100% Metropolitan Water District supply and 100% groundwater supplies. The remaining two scenarios will consist of a mix of different supplies. It is assumed that Trussell Technologies will provide a summary of the average daily flow rates of each supply for a select set of demand conditions. For each scenario, Carollo will perform a water age evaluation of each scenario and a multi-species extension (MSX) simulation. It is expected that the MSX model setup will occur first, followed by water age and MSX model runs for the first scenario. The remaining three scenarios will be completed after Trussell Technologies and Mesa Water confirm that the presentation format of the results of the first scenario meets the needs of the project.

Task 2.2b.1 – MSX Model Setup

Carollo will set up the hydraulic model for MSX model runs. The model will be set up for up to four chemical constituents (TOC, bromide, and chlorine, for example) such that the model runs and produces results throughout the distribution system. In their scope, it is assumed that Carollo Engineers will provide neither the bulk and wall concentration formation coefficients for each constituent by water source², nor the flow rates of each water supply. For comparison purposes, it is also assumed that all four scenarios will be run with the same hydraulic controls, reservoir configurations, and demand conditions so that the water supply mix is the only variable.

Task 2.2b.2 – Water Age Model Runs

Carollo will setup and run the hydraulic model for water age for each of the four scenarios. Carollo will evaluate the proposed operation of the water system on the expected water age of the system. Carollo will prepare one water age map for each of the four scenarios in the same

²It will be decided by the project team (Trussell Technologies and Carollo) in consultation with Mesa Water how to determine the bulk and wall concentration formation coefficients for each constituent by water source.



format as used for the Nitrification Modeling Study prepared by Carollo in November 2017. The system-wide average water age of all demand nodes, as well as a select representative location in the south of the system, will be calculated and summarized for all four scenarios.

Task 2.2b.3 – MSX Model Runs

Carollo will run the hydraulic model for each of the four scenarios with the MSX model extension to evaluate DBP formation potential. Carollo will use the bulk and wall concentration formation coefficients determined by the project team². For each scenario, Carollo will provide a map of predicted DBP concentrations in the water distribution system. Additionally, the system-wide average DBP concentration of all demand nodes, as well as a select representative location in the south of the system, will be calculated and summarized for all four scenarios.

Task 2.2c – Documentation

Subtask 2.2c includes preparation of a draft Model Analysis TM that documents the key information, assumptions, description of analysis scenarios, and model analysis results. Comments from Trussell Tech and Mesa Water will be incorporated into a Final TM, and five (5) hard copies and an electronic copy will be submitted to Trussell Tech and Mesa Water staff.

Workshop and TM No. 2

Trussell Tech will conduct a workshop with Mesa Water operations and engineering staff to present its findings on technical issues to be addressed for successful implementation of free chlorine disinfection (Task 1), along with potential solutions (Task 2). The focus of the workshop will be to select the most promising solution to pursue as part of the third phase of the study. Task 2 results will be summarized in a draft Technical Memorandum No. 2 (TM 2) to be submitted to Mesa Water for comments. The project team will finalize TM 2 based on Mesa Water comments.

Deliverables:

1. *Hydraulic Modeling Results (Carollo Engineers)*
 - a. *Water Age Maps (one for each of 4 modeling scenarios)*
 - b. *DBP Concentration Maps (one for each of 4 modeling scenarios)*
 - c. *Summary table with average water age and DBP concentrations (4 scenarios)*
 - d. *Model Analysis Technical Memorandum*
2. *Feasibility Workshop*
3. *Technical Memorandum No. 2*

TASK 3 – Full-Scale Testing

A full-scale pilot test in a portion of the Mesa Water system will be the focus of the third phase of this study. A detailed test plan will be developed, addressing proposed system modifications (Task 2 outcomes), full-scale testing schedule, operations plan, as well as monitoring activities. The test plan will be submitted for review by Mesa Water and then comments will be incorporated ahead of submission to the California State Water Resources Control Board Division of Drinking Water (DDW). Trussell Tech will organize a meeting (in person or teleconference) with DDW to introduce the testing project and its objectives, as well as discuss the proposed test plan. Following comments from DDW, Mesa Water will make any required system modifications ahead of the full-scale testing period. Costs associated with detailed engineering and implementation of full-scale testing (e.g., system modifications, equipment, analytical) are not included in this Scope and Budget. Trussell Tech will work with Mesa Water staff to coordinate any proposed additional monitoring efforts throughout the full-scale testing period (estimated 6 months). A draft Technical Memorandum No. 3 (TM 3) will be developed to summarize results from the full-scale testing and provide recommendations for permanent system changes associated with conversion to free chlorine disinfection. The project team will finalize TM 3 based on Mesa Water comments.

Deliverables:

1. *Test Plan*
2. *DDW Meeting*



3. Technical Memorandum No. 3

TASK 4 – Permanent System Conversion

The final phase in the study is permanent conversion of the Mesa Water distribution system to free chlorine disinfection. Following the full-scale testing (Task 3), Trussell Tech will organize a meeting (in person or teleconference) with DDW and Mesa Water to present the testing results and discuss permanent system conversion to free chlorine disinfection. Trussell Tech will work with Mesa Water to review the existing permit and draft an amendment to request permanent use of free chlorine disinfection. The draft permit amendment will be submitted to DDW, and Trussell Tech will incorporate any comments into a final version. Costs associated with detailed engineering and implementation of the permanent system conversion (e.g., system modifications, equipment, analytical) are not included in this Scope and Budget.

Deliverables:

1. DDW Meeting
2. Draft and final permit amendment

SCHEDULE

The schedule for the proposed project is presented in the table below. The timing of full-scale testing (Task 3) and permanent system conversion (Task 4) is uncertain, pending input by DDW and system modifications. A draft of the final project deliverable (TM 3), will be prepared and delivered to Mesa Water 3 weeks after the completion of the data collection for the full-scale testing. The Task 4 DDW meeting will be scheduled within one month of the completion of the Task 3 full-scale testing.

PROJECT SCHEDULE
MESA WATER FREE CHLORINE CONVERSION STUDY

TASK DESCRIPTION	MARKER INDICATION	2018												2019		
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	
Technical Evaluation	WORKSHOP, TM 1		●	●												
Feasibility Assessment	WORKSHOP, TM 2				●	●										
Full-Scale Testing*	TEST PLAN, DDW MEETING, TM 3					●	●								●	
Permanent System Conversion*	DDW MEETING, PERMIT AMENDMENT														●	●

*Timing and duration of Tasks 3 and 4 is uncertain, pending input by DDW and necessary system modifications.



PROPOSED FEE

Our proposed professional fee for the scope of work outlined above is \$154,760, with the details of the proposed budget shown below.



TRUSSELL TECHNOLOGIES - PROFESSIONAL SERVICE FEE
MESA WATER FREE CHLORINE CONVERSION STUDY

Scope		Budget									
TASK	DESCRIPTION	Trussell Technologies						Sub Consultant		TOTAL COSTS	
		RRT	RST	DRH	ELO	CCY	LABOR COST	TT LAB FEE	CAROLLO ENGINEERS		ODCs *
		HOURLY BILLING RATE	\$299	\$245	\$230	\$172	\$108				
1	Technical Evaluation	5	3	9	66	94	\$25,804	\$2,052	\$0	\$2,038	\$29,996
1.1	Evaluate free chlorine demand via bench-scale testing (3 source waters, 3 free chlorine doses per source water, residual measurements over 1 hour)				6	6	\$1,680	\$216			\$1,896
1.2	Characterize free chlorine decay via bench-scale testing (3 source waters, 3 free chlorine doses per source water, residual measurements over 7 days)				14	16	\$4,136	\$756		\$64	\$4,959
1.3	Complete free chlorine DBP formation testing (for each of 3 source waters: 1 free chlorine dose (Task 1.2), 5 measurements of THMs, and 1 of HAAs over 7 days)				16	24	\$5,344	\$972		\$1,800	\$8,206
1.4	Assess odor via sniff testing and TON analysis (3 source waters, 1 free chlorine dose (Task 1.2), 2 hold times)				2	2	\$560	\$108		\$120	\$794
1.5	Evaluate existing data from Mesa Water related to DBP formation	1		1	4	16	\$2,945				\$2,945
1.6	Distribution System Workshop	2	1	4	8	6	\$3,787			\$54	\$3,843
1.7	Prepare draft technical memorandum (TM 1); finalize, incorporating comments from Mesa Water	2	2	4	16	24	\$7,352				\$7,352
2	Feasibility Assessment	6	3	10	30	44	\$14,741	\$0	\$69,954	\$54	\$89,998
2.1	Evaluate strategies to address issues identified in Task 1	2	1	4	12	20	\$5,987				\$5,987
2.2a	Hydraulic modeling of DBP formation - Part a: Project management and meetings						\$0		\$9,940		\$10,686
2.2b	Hydraulic modeling of DBP formation - Part b: Hydraulic model analysis						\$0		\$42,790		\$45,999
2.2c	Hydraulic modeling of DBP formation - Part c: Documentation						\$0		\$17,224		\$18,516
2.3	Feasibility Workshop	2		4	8	8	\$3,758			\$54	\$3,814
2.4	Prepare draft technical memorandum (TM 2); finalize, incorporating comments from Mesa Water	2	2	2	10	16	\$4,996				\$4,996
3	Full-Scale Testing	3	2	10	60	100	\$24,807	\$0	\$0	\$0	\$24,807
3.1	Develop test plan for full-scale testing	1		2	16	32	\$6,967				\$6,967
3.2	Meet with DDW to gain approval for full-scale testing			4	4		\$1,608				\$1,608
3.3	Full-scale testing support (water quality monitoring, data assessment, etc.)				24	48	\$9,312				\$9,312
3.4	Prepare draft technical memorandum (TM 3); finalize, incorporating comments from Mesa Water	2	2	4	16	20	\$6,920				\$6,920
4	Permanent System Conversion	2	2	8	28	20	\$9,904	\$0	\$0	\$54	\$9,960
4.1	Meet with DDW to discuss permit amendment for permanent system conversion			4	8		\$2,296			\$54	\$2,352
4.2	Prepare draft permit amendment; finalize, incorporating comments from Mesa Water and DDW	2	2	4	20	20	\$7,608				\$7,608
TOTAL		14	8	29	156	238	\$65,352	\$2,052	\$69,954	\$2,091	\$154,760

* Mileage for vehicle use to be reimbursed at current IRS rate.

Cost includes the following markups: ODC 5%
Subs 7.5%

Initials	Staff
RRT	Rhodes Trussell, Ph.D., P.E., BCEE
RST	Shane Trussell, Ph.D., P.E., BCEE
DRH	David Hokanson, Ph.D., P.E., BCEE
ELO	Emily Owens-Bennett, P.E.
CCY	Chao-Chun Yang



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MEMORANDUM

TO: Engineering and Operations Committee
FROM: Tracy E. Manning, Water Operations Manager
DATE: December 19, 2017
SUBJECT: On-Call Pipeline Construction Services

RECOMMENDATION

Recommend that the Board of Directors approve an increase to the On-Call Pipeline Repair and Construction contracts by \$150,000 for a total not-to-exceed amount of \$400,000 for Fiscal Year 2018, and authorize execution of the change order.

STRATEGIC PLAN

Goal #1: Provide a safe, abundant, and reliable water supply.
Goal #2: Practice perpetual infrastructure renewal and improvement.
Goal #3: Be financially responsible and transparent.

PRIOR BOARD ACTION/DISCUSSION

At its June 20, 2017 meeting, the Engineering & Operations (E&O) Committee received an information item regarding the preparation of the Request for Bid for On-Call Emergency Pipeline Repair and Construction.

At its September 14, 2017 meeting, the Board of Directors (Board) approved On-Call Pipeline Construction Services with GCI Construction, Inc. (GCI), Paulus, and W.A. Rasic Construction Company, Inc. (Rasic).

At its November 9, 2017 meeting, the Board approved a \$100,000 change order to the On-Call Pipeline Construction Services contracts with GCI, Paulus, and Rasic.

DISCUSSION

The use of on-call pipeline construction contractors allows Mesa Water District (Mesa Water®) to react quickly to urgent operational events, such as the series of main line breaks that occurred between August 29 and August 31, 2017, and to safely perform work outside the expertise of Mesa Water crews (deep excavations requiring extensive shoring, etc.). The on-call contractors are also an efficient resource to complete small projects that take away from traditional capital replacement work efforts performed by Mesa Water crews.

To date, \$194,177 has been expended from this contract for the main line break repairs and siphon replacement. Two additional projects have been identified that will consume the remaining approved budget for this contract (See Table 1).

Staff anticipates that additional projects will be identified in the third and fourth quarters of the fiscal year that will require additional funding.



Table 1.

Completed FY17 Projects	Date	Construction Contractor Costs
Mendoza 12" Valve Cut-in	8/30/2017	\$25,432
Airport Loop 8" Repair	8/30/2017	\$32,920
Harbor & Wilson 12" Repair	8/30/2017	\$37,821
936 Wilson 6" Repair	8/30/2017	\$16,837
2145 Placentia 14" Repair	8/30/2017	\$24,855
Mendoza 12" Siphon Fabrication and Installation (30 feet length)	10/17/2017	\$56,316
TOTAL:		\$194,177
Upcoming Projects		
		Engineering Estimate
16" Transmission Main Valve Replacement (4 Valves)		\$35,000
Lyons Park Main Line Abandonment with Install of 2 Valves		\$50,000

Staff recommends that the Board of Directors consider approving an additional \$150,000 for Fiscal Year 2018 for On-Call Pipeline Repair and Construction contracts with GCI, Paulus, and Rasic, and authorize execution of the contract change order. This increase will not be made available in subsequent years of the contract without prior approval from the Board of Directors.

FINANCIAL IMPACT

\$150,000 is budgeted in Fiscal Year 2018; requested funding will come from Cash on Hand.

	<u>Contract Actual Amounts</u>	<u>Contract Cost Amounts</u>
Initial Contract Estimate (FY 2018)	\$ 150,000	
Original Contracts		\$ 150,000
Change orders		\$ 100,000
Requested funding		\$ 150,000
Revised Contracts		<u>\$ 400,000</u>
Actual spent to date		\$ 194,177
Revised Contract Estimate	\$ 400,000	



ATTACHMENTS

None.



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MEMORANDUM

TO: Engineering and Operations Committee
FROM: Paul E. Shoenberger, P.E., General Manager
DATE: December 19, 2017
SUBJECT: General Legal Counsel Services

RECOMMENDATION

Approve a general legal services contract agreement with Atkinson, Andelson, Loya, Ruud & Romo, effective January 1, 2018, on the same terms entered into with Bowie, Arneson, Wiles & Giannone in 2016.

The action the Board is taking is to amend a previous action; therefore, this item will be approved and will not appear on a future Board Meeting Consent Calendar.

STRATEGIC PLAN

- Goal #1: Provide a safe, abundant, and reliable water supply.
- Goal #2: Practice perpetual infrastructure renewal and improvement.
- Goal #3: Be financially responsible and transparent.
- Goal #4: Increase public awareness about Mesa Water® and about water.
- Goal #5: Attract and retain skilled employees.
- Goal #6: Provide outstanding customer service.
- Goal #7: Actively participate in regional water issues.

PRIOR BOARD ACTION/DISCUSSION

At its March 21, 2015 workshop, the Board of Directors (Board) directed staff to prepare a Request for Proposal (RFP) for General Legal Counsel Services.

At its July 14, 2016 meeting, the Board approved the General Legal Counsel Services Request for Proposal process.

At its September 8, 2016 meeting, the Board directed staff to schedule interviews with the four highest ranked firms Aleshire & Wynder, LLP, Bowie, Arneson, Wiles & Giannone, Meyers Nave, and Rutan & Tucker, LLP.

At its October 21, 2016 meeting, the Board interviewed three firms and retained the firm of Bowie, Arneson, Wiles & Giannone as Mesa Water District's General Legal Counsel and authorized the General Manager to sign a five-year contract.

DISCUSSION

The firm of Bowie, Arneson & Wiles (Firm) has represented Mesa Water District (Mesa Water®) for more than 35 years. In 2016, the Board of Directors of Mesa Water (Board), after undergoing a selection process for general legal counsel services, authorized an agreement for such services with the Firm.



The Firm's Managing Partner, Mr. Alexander Bowie, and the members of the Firm have been discussing Mr. Bowie's desire to limit the extent of his involvement in the active practice of law.

Effective as of January 1, 2018, attorneys Robert Anslow, Wendy Wiles, Jeff Hoskinson and the other attorneys of the Firm will be joining Atkinson, Andelson, Loya, Ruud & Romo, a Professional Corporation (AALRR), and it is anticipated that Mr. Bowie will become Of Counsel to AALRR. It is proposed that the Mesa Water Board approve a contract with AALRR, on the same terms as authorized with the Firm in 2016, for the provision of general legal services effective January 1, 2018. This would not terminate the services arrangement with the Firm, or any successor firm, as there may be a transition period where the District would be able to utilize the services of both law firms.

FINANCIAL IMPACT

In Fiscal Year 2018, \$400,000 is budgeted for Legal Services.

ATTACHMENTS

None.

REPORTS:

10. REPORT OF THE GENERAL MANAGER:

REPORTS:

11. DIRECTORS' REPORTS AND COMMENTS:



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MEMORANDUM

TO: Engineering and Operations Committee
FROM: Phil Lauri, P.E., Assistant General Manager
DATE: December 19, 2017
SUBJECT: HVAC System

RECOMMENDATION

This item is provided for information only.

STRATEGIC PLAN

Goal #2: Practice perpetual infrastructure renewal and improvement.

PRIOR BOARD ACTION/DISCUSSION

At its August 11, 2016 meeting, the Board of Directors (Board) awarded a contract to Goss Engineering, Inc. to perform design of a new heating, ventilation, and air conditioning (HVAC) system for the Administration and Operation Buildings.

At its June 20, 2017 meeting, the Engineering and Operations (E&O) Committee received an information item that a Request for Proposals was being solicited.

At its July 18, 2017 meeting, the E&O Committee approved a contract amendment to Goss Engineering, Inc. in the amount of \$52,467 to provide design and documentation for a new roof and skylight on the Administration and Operations Buildings as part of the HVAC System Design Project, and authorized execution of the contract amendment.

DISCUSSION

Mesa Water District's (Mesa Water®) current HVAC system has provided 24 years of service. The HVAC system is a roof top mounted fan-coil type system consisting of seven units placed atop the Operations and Administration Buildings. The system has been periodically maintained throughout the years and various repairs made to accommodate changing office configurations. With an increasing frequency in repairs, a need for more systematic control to address varying thermal conditions within the office environment, changing code compliance requirements, and the age of the current system, Mesa Water engaged Goss Engineering, Inc. (GEI) in July 2015 to perform an assessment of Mesa Water's HVAC system.

The assessment recommended that Mesa Water replace the rooftop units with a new variable refrigerant flow (VRF) system. VRF systems provide more flexibility with improved zoning ability with the installation of individual cooling units in each occupant's space. VRF systems consist of interior fan-coil units that can be ducted, ceiling mounted or wall-mounted and rooftop condensing units. The most appropriate fan-coil solution would include a ceiling-mounted approach. Ceiling-mounted units are preferred as they simplify condensate pipe installation and provide a cleaner appearance once installed. Installing a fan-coil unit in each space would allow individual occupant control of temperature in each office or workspace. GEI was awarded a contract to complete the design of a new VRF system.



GEI has completed the design drawings, specifications, and contract documents and are currently preparing for bid solicitation. Bid solicitation will be initiated in early January with bid results brought to a future Engineering and Operations Committee. **Copies of the design drawings and specifications are available upon request.**

FINANCIAL IMPACT

In Fiscal Year 2018, \$970,000 is budgeted for HVAC Study & Improvements.

	<u>Project Estimate Amounts</u>	<u>Project Cost Amounts</u>
Project Estimate (FY 2018)	\$970,000	
Original Design Contracts		\$79,882
Contract Amendment		\$52,467
Requested funding		\$0
Revised Contracts		\$132,349
Actual spent to date		\$51,930
Revised Project Estimate	\$970,000	

ATTACHMENTS

None.