

**AGENDA
IRVINE RANCH WATER DISTRICT
BOARD OF DIRECTORS
REGULAR MEETING**

November 27, 2017

PLEDGE OF ALLEGIANCE

CALL TO ORDER 5:00 p.m., Board Room, District Office
15600 Sand Canyon Avenue, Irvine, California

ROLL CALL Directors LaMar, Matheis, Swan, Withers and President Reinhart

NOTICE

If you wish to address the Board on any item, including Consent Calendar items, please file your name with the Secretary. Forms are provided on the lobby table. Remarks are limited to three minutes per speaker on each subject. Consent Calendar items will be acted upon by one motion, without discussion, unless a request is made for specific items to be removed from the Calendar for separate action.

COMMUNICATIONS TO THE BOARD

1. A. Written:
- B. Oral:
2. ITEMS RECEIVED TOO LATE TO BE AGENDIZED
 Recommendation: Determine the need to discuss and/or take immediate action on item(s).

PRESENTATION

3. Representatives from SCE will be presenting an incentive check for the District's successful implementation of the LEAP –MBR project.

CONSENT CALENDAR

Resolution No. 2017-25

Items 4-6

4. RATIFY/APPROVE BOARD OF DIRECTORS' ATTENDANCE AT MEETINGS AND EVENTS
 Recommendation: That the Board ratify/approve the events for Mary Aileen Matheis and Steve LaMar as described.
5. MINUTES OF REGULAR BOARD MEETING
 Recommendation: That the minutes of the November 13, 2017 Regular Board Meeting be approved as presented.

CONSENT CALENDAR	Resolution No. 2017-25	Items 4-6
6. <u>OCTOBER 2017 TREASURY REPORT</u>	Recommendation: That the Board receive and file the Treasurer's Investment Summary Report, the Monthly Interest Rate Swap Summary for October, and Disclosure Report of Reimbursements to Board Members and Staff; approve the October 2017 Summary of Payroll ACH payments in the total amount of \$1,783,312 and approve the October 2017 Accounts Payable Disbursement Summary of Warrants 380838 through 381563, Workers' Compensation distributions, wire transfers, payroll withholding distributions and voided checks in the total amount of \$32,528,998.	

ACTION CALENDAR

7. <u>MICHELSON WATER RECYCLING PLANT BIOSOLIDS AND ENERGY RECOVERY FACILITIES VARIANCES AND BUDGET INCREASE</u>	Recommendation: That the Board authorize the General Manager to execute Variance No. 7 with Black & Veatch in the amount of \$3,190,018 for supplemental contract administration, construction phase, and start-up and commissioning services; authorize the General Manager to execute Variance No. 2 with Arcadis, Inc. in the amount of \$1,451,173 for supplemental construction inspection, construction management, and document control system services; authorize the General Manager to execute Variance No. 3 with HDR Engineering, Inc. in the amount of \$576,739.28 for supplemental construction inspection; authorize the General Manager to execute Variance No. 2 with EI&C Engineering, Inc. in the amount of \$958,720 for supplemental process control system construction management services, start-up testing, and development of process control system operation manuals and associated training presentations; and authorize a budget increase in the amount of \$11,500,000, from \$216,073,100 to \$227,573,100, to the FY 2017-18 Capital Budget for the Michelson Water Recycling Plant Biosolids and Energy Recovery Facilities, Project 04286.	
8. <u>SANTIAGO CREEK DAM OUTLET TOWER REPLACEMENT BUDGET INCREASE AND CONSULTANT SELECTION</u>	Recommendation: That the Board authorize a budget increase in the amount of \$1,300,000 for Project 01813, from \$568,700 to \$1,868,700; and authorize the General Manager to execute a Professional Services Agreement in the amount of \$787,625 with AECOM to complete the preliminary and final designs for the Santiago Creek Dam Outlet Tower Replacement, Project 01813.	

OTHER BUSINESS

Pursuant to Government Code Section 54954.2, members of the Board of Directors or staff may ask questions for clarification, make brief announcements, make brief reports on his/her own activities. The Board or a Board member may provide a reference to staff or other resources for factual information, request staff to report back at a subsequent meeting concerning any matter, or direct staff to place a matter of business on a future agenda. Such matters may be brought up under the General Manager's Report or Directors' Comments.

9. A. General Manager's Report

B. Directors' Comments

C. Closed Session

Closed Session: CONFERENCE WITH LEGAL COUNSEL RELATIVE TO EXISTING LITIGATION – Government Code Section 54956.9(d)(1) IRWD v. OCWD Case No. 30-2016-00858584-CU-WM-CJC).

D. Open Session

E. Adjourn

Availability of agenda materials: Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the Irvine Ranch Water District Board of Directors in connection with a matter subject to discussion or consideration at an open meeting of the Board of Directors are available for public inspection in the District's office, 15600 Sand Canyon Avenue, Irvine, California ("District Office"). If such writings are distributed to members of the Board less than 72 hours prior to the meeting, they will be available from the District Secretary of the District Office at the same time as they are distributed to Board Members, except that if such writings are distributed one hour prior to, or during, the meeting, they will be available at the entrance to the Board of Directors Room of the District Office. The Irvine Ranch Water District Board Room is wheelchair accessible. If you require any special disability-related accommodations (e.g., access to an amplified sound system, etc.), please contact the District Secretary at (949) 453-5300 during business hours at least seventy-two (72) hours prior to the scheduled meeting. This agenda can be obtained in alternative format upon written request to the District Secretary at least seventy-two (72) hours prior to the scheduled meeting.

November 27, 2017

Prepared and

Submitted by: L. Bonkowski

Approved by: P. Cook

CONSENT CALENDAR

RATIFY/APPROVE BOARD OF DIRECTORS'
ATTENDANCE AT MEETINGS AND EVENTS

SUMMARY:

Pursuant to Resolution 2006-29 adopted on August 28, 2006, approval of attendance of the following events and meetings are required by the Board of Directors.

Event/Meeting

Mary Aileen Matheis

November 27

WaterStar Certification Presentation to Hyatt House, Irvine

Steven LaMar

December 4

Meeting with California Department of Water Resources' Grant Davis, Sacramento

RECOMMENDATION:

THAT THE BOARD RATIFY/APPROVE THE EVENTS FOR MARY AILEEN MATHEIS AND STEVEN LAMAR AS DESCRIBED.

LIST OF EXHIBITS:

None.

November 27, 2017
Prepared and
Submitted by: K. Swan *KS*
Approved by: P. Cook *P. Cook*

CONSENT CALENDAR

MINUTES OF BOARD MEETING

SUMMARY:

Provided are the minutes of the November 13, 2017 Board Meeting for approval.

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

COMMITTEE STATUS:

Not applicable.

RECOMMENDATION:

THAT THE MINUTES OF THE NOVEMBER 13, 2017 BOARD MEETING BE APPROVED AS PRESENTED.

LIST OF EXHIBITS:

Exhibit "A" – November 13, 2017 Minutes of Board Meeting

EXHIBIT "A"

MINUTES OF REGULAR MEETING – NOVEMBER 13, 2017

The regular meeting of the Board of Directors of the Irvine Ranch Water District (IRWD) was called to order at 5:00 p.m. by President Reinhart on November 13, 2017 in the District office, 15600 Sand Canyon Avenue, Irvine, California.

Directors Present: LaMar, Reinhart, Matheis, and Withers

Directors Absent: Swan

Also Present: General Manager Cook, Executive Director of Water Policy Weghorst, Executive Director of Engineering and Water Quality Burton, Executive Director of Finance and Administration Clary, Executive Director of Operations Shields, Director of Human Resources Roney, Director of Treasury and Risk Manager Jacobson, Director of Water Operations Roberts, Director of Recycling Operations Zepeda, Director of Maintenance Drake, Director of Water Resources Sanchez, Government Relations Officer Compton, Legal Counsel Smith, Assistant District Secretary Swan, Manager of Risk and Contracts Administration Shinbashi, Asset Systems Manager Meserlian, Principle Engineer Cortez, Principle Engineer Akiyoshi, and Mr. Bruce Newell.

WRITTEN AND ORAL COMMUNICATIONS: Irvine resident, Mr. Tony Russell, thanked staff for their professionalism and keeping him up-to-date regarding the draining and filling of the Sand Canyon Reservoir Project.

ITEMS TOO LATE TO BE AGENDIZED: None.

CONSENT CALENDAR

Prior to the consideration of the Consent Calendar, President Reinhart provided comments on Item 7, Changes to General Manager's Compensation. Mr. Reinhart reported that on October 23, 2017, the Board conducted its annual performance evaluation of the General Manager. The Board was asked to consider changes to his compensation as a result of that performance review.

Mr. Reinhart said that pursuant to Government Code Section 54953(c)(3), prior to taking final action on changes to the General Manager's compensation, he was providing a summary of the recommended action before the Board. The recommendation is to increase the base salary of the General Manager by \$13,784 to \$295,000 per year effective October 1, 2017, and to provide him a one-time performance award of \$8,400. All other aspects of the General Manger's compensation remains unchanged.

There being no further comments, on MOTION by Matheis, seconded by LaMar and unanimously carried, **CONSENT CALENDAR ITEMS 3 THROUGH 7 WERE APPROVED AS FOLLOWS:**

CONSENT CALENDAR (CONTINUED)

3. RATIFY/APPROVE BOARD OF DIRECTORS' ATTENDANCE AT MEETINGS AND EVENTS

Recommendation: That the Board ratify/approve the meetings and events for Steven LaMar, Mary Aileen Matheis, Peer Swan, Douglas Reinhart and John Withers, as described.

4. MINUTES OF REGULAR BOARD MEETING

Recommendation: That the minutes of the October 23, 2017 Regular Board Meeting be approved as presented.

5. STOCKDALE WEST INTEGRATED WATER BANKING FINAL ACCEPTANCE

Recommendation: That the Board authorize the General Manager to accept construction of Stockdale West Integrated Water Banking, project 03766, authorize the General Manager to file a Notice of Completion, and authorize the release of retention 35 days after filing of the Notice of Completion.

6. BAKER WATER TREATMENT PLANT LANDSCAPING FINAL ACCEPTANCE

Recommendation: That the Board accept construction of the Baker Water Treatment Plant Landscaping, project 05027, authorize the General Manager to file a Notice of Completion, and authorize the release of retention 35 days after filing of the Notice of Completion.

7. CHANGES TO GENERAL MANAGER'S COMPENSATION

Recommendation: That the Board approve an increase to the annual salary of the General Manager to the amount of \$295,000 and a one-time performance award in the amount of \$8,400, effective October 1, 2017.

ACTION CALENDAR

REVIEW OF 2017 LEGISLATIVE ACTIVITIES AND 2018 LEGISLATIVE PLANNING

General Manager Cook asked Government Relations Officer Compton to report on the annual discussion to recap last year's legislative efforts, and present what will be seen as next year's efforts on this front. Ms. Compton presented this recap and also provided a description of the proposals that the District's associations and stakeholders are considering for sponsorship.

On **MOTION** by Matheis, seconded by LaMar and unanimously carried, the **BOARD ADOPTED THE PROPOSED INITIAL 2018 LEGISLATIVE AND REGULATORY RESOURCE ALLOCATION PLAN AND THE LEGISLATIVE/REGULATORY ISSUES AND ACTIVITIES OF HIGH CONCERN TO IRWD IN 2018.**

ACWA 2017 MEMBERSHIP MEETING AND 2018-2019 ELECTION

General Manager Cook reported that this item is to authorize the Board President to vote on behalf of the District in the upcoming elections at the ACWA Fall Conference. At the conference, ACWA members will elect the 2018-2019 ACWA President and Vice President; and to approve changes in ACWA's bylaws that make them more consistent with other governance documents and daily operations. He said that the slate of Mr. Brent Hastey for President and Mr. Steve LaMar for Vice President was approved by the ACWA Nominating Committee and that they also recommend approval of the changes in the bylaws as presented. ACWA requires each agency that intends to participate in the election to designate a representative for that agency. On MOTION by Matheis, seconded by Withers, and unanimously carried, **THE BOARD APPROVED SUPPORT OF THE CANDIDATES SELECTED BY THE ACWA NOMINATING COMMITTEE; SUPPORT OF THE PROPOSED BYLAW AMENDMENTS; AND DESIGNATED PRESIDENT DOUG REINHART AS THE IRWD VOTING DELEGATE FOR THE NOVEMBER 29, 2017 MEMBERSHIP MEETING.**

GENERAL MANAGER'S REPORT

General Manager Cook reported on a couple of outreach items for the District. On October 26, 2017, the District hosted a San Diego Creek Stakeholder workshop at the Learning Center to discuss IRWD's proposal to secure a permit to divert de-chlorinated recycled water to the San Diego Creek watershed during emergency conditions. He said that the workshop was a success and well attended by members of the Newport Water Quality/Coastal Tidelands Committee, OCSD, OCWD, the City of Newport Beach, Orange County Coastkeeper, and other stakeholders. He further said that following the workshop, Ms. Nancy Gardner reached out about the possibility of featuring IRWD in four or five segments on the Newport Beach TV station to highlight resource recovery at the Michelson Water Recycling Plant and the Natural Treatment Systems to showcase recent accomplishments at the District.

Mr. Cook also said he will be speaking on a panel hosted by the South Orange County Economic Coalition on Friday, November 17, 2017 and will be joined by representatives from Metropolitan Water District and the Municipal Water District of Orange County. The panel will discuss the "California Water Fix" from each agency's unique perspective.

Mr. Cook said that the District will also be hosting the Association of California Cities – Orange County's Thanksgiving Reception at the Learning Center on Wednesday, November 15, 2017.

DIRECTORS' COMMENTS

Director Matheis reported on her attendance at the Irvine City Council Meeting where they presented the District with a Certificate of Appreciation for sponsoring their annual Global Village Festival where they had over 25,000 attendees. She said she also attended the Orange County Business Council's Economic Forecast; an ISDOC Quarterly Luncheon; the Water Education Foundation's 40th Anniversary; a Sea & Sage Audubon Society's 25th Annual Pancake Breakfast; and the Irvine Historical Society's "Water on the Irvine Ranch" where they honored the District. She further reported that she verified that the minutes were corrected at the ISDOC Executive Meeting and that she attended a meeting on Thursday with the Santa Margarita Water District staff.

Director Withers reported his attendance at an OCSD Legislative Committee meeting.

Director LaMar reported on his attendance at the Orange County Business Council's Economic Forecast; the Southern California Water Committee's Annual Meeting and Dinner; an Orange County Forum series featuring Honorable John Chiang, a MWDOC workshop with MWD Directors; an OCWD Board Meeting; a monthly WACO meeting, a MWDOC Administration and Finance Committee, an Irvine Ranch Conservancy event, an OCFA's rescheduled Annual "Pre-Fire Season" Partnership event, and an ACWA weather seminar in Sacramento which highlighted topics on management of reservoirs and the introduction of Mr. Grant Davis, the new Director of DWR.

President Reinhart reported that he attended an OCSD Board Meeting; Southern California Water Committee' Annual meeting and dinner; a MWDOC Workshop with MWD Directors; a SOCWA Board meeting; a MWDOC Board and Member Agency Elected Officials' Forum; and a WACO monthly meeting.

ADJOURNMENT

There being no further business, President Reinhart adjourned the meeting.

APPROVED and SIGNED this 27th day of November, 2017.

President, IRVINE RANCH WATER DISTRICT

Secretary IRVINE RANCH WATER DISTRICT

APPROVED AS TO FORM:

Alfred Smith, Legal Counsel – Nossaman LLP

November 27, 2017 *80*

Prepared by: J. Davis/T. Fournier *JDF*

Submitted by: R. Jacobson/C. Clary *CC*

Approved by: Paul Cook *PC*

CONSENT CALENDAR

OCTOBER 2017 TREASURY REPORTS

SUMMARY:

The following is submitted for the Board's information and approval:

- A. The Investment Summary Report for October 2017. This Investment Summary Report is in conformity with the 2017 Investment Policy and provides sufficient liquidity to meet estimated expenditures during the next six months, as outlined in Exhibit "A".
- B. The Summary of Fixed and Variable Debt as of October 31, 2017, as outlined in Exhibit "B".
- C. The Monthly Interest Rate Swap Summary as of October 31, 2017, as outlined in Exhibit "C".
- D. The October 31, 2017 Disbursement Summary of warrants 380838 through 381563, wire transfers, Workers' Compensation distributions, payroll withholding distributions, and voided checks in the total amount of \$32,528,998 as outlined in Exhibit "D".
- E. The Summary of Payroll ACH payments in the total amount of \$1,783,312, as outlined in Exhibit "E".
- F. The Disclosure Report of Reimbursements to Board Members and Staff for October 2017, detailing payments or reimbursements for individual charges of \$100.00 or more per transaction, as outlined in Exhibit "F".

FISCAL IMPACTS:

As of October 31, 2017, the book value of the investment portfolio was \$362,579,633, with a 1.10% rate of return and a market value of \$360,892,352. Based on the District's September 30, 2017 quarterly real estate investment rate of return of 8.79%, the weighted average return for the fixed income and real estate investments was 3.38%.

As of October 31, 2017, the outstanding principal amount of fixed and variable rate debt was \$684,735,000. The monthly weighted average all-in variable rate was 1.21%. Including the District's weighted average fixed rate bond issues of 3.70% and the previous month's negative cash accruals from fixed payer interest rate swaps, which hedge a portion of the District's variable rate debt, the total average debt rate was 3.49%.

As of October 31, 2017, the total notional amount of the interest rate swap portfolio was \$130 million of fixed payer swaps. Cash accrual in October from all swaps was negative \$544,831.

Payroll ACH payments totaled \$1,783,312, and wire transfers, all other ACH payments, and checks issued for debt service, accounts payable, payroll, and water purchases for October totaled \$32,528,998.

ENVIRONMENTAL COMPLIANCE:

This item is not a project as defined in the California Environmental Quality Act Code of Regulations, Title 14, Chapter 3, Section 15378.

COMMITTEE STATUS:

This item was not submitted to a Committee; however, the investment and interest rate swap reports are submitted to the Finance and Personnel Committee on a monthly basis.

RECOMMENDATION:

THAT THE BOARD RECEIVE AND FILE THE TREASURER'S INVESTMENT SUMMARY REPORT, THE SUMMARY OF FIXED AND VARIABLE RATE DEBT, THE MONTHLY INTEREST RATE SWAP SUMMARY FOR OCTOBER 2017, AND DISCLOSURE REPORT OF REIMBURSEMENTS TO BOARD MEMBERS AND STAFF; APPROVE THE OCTOBER 2017 SUMMARY OF PAYROLL ACH PAYMENTS IN THE TOTAL AMOUNT OF \$1,783,312 AND APPROVE THE OCTOBER 2017 ACCOUNTS PAYABLE DISBURSEMENT SUMMARY OF WARRANTS 380838 THROUGH 381563 WORKERS' COMPENSATION DISTRIBUTIONS, WIRE TRANSFERS, PAYROLL WITHHOLDING DISTRIBUTIONS AND VOIDED CHECKS IN THE TOTAL AMOUNT OF \$32,528,998.

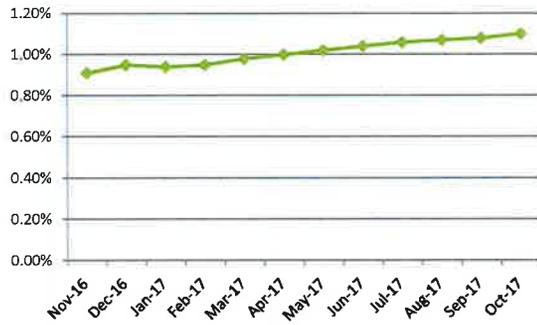
LIST OF EXHIBITS:

- Exhibit "A" – Investment Summary Report
- Exhibit "B" – Summary of Fixed and Variable Debt
- Exhibit "C" – Monthly Interest Rate Swap Summary
- Exhibit "D" – Monthly Summary of District Disbursements
- Exhibit "E" – Monthly Payroll ACH Summary
- Exhibit "F" – Disclosure of Reimbursements to Board Members and Staff

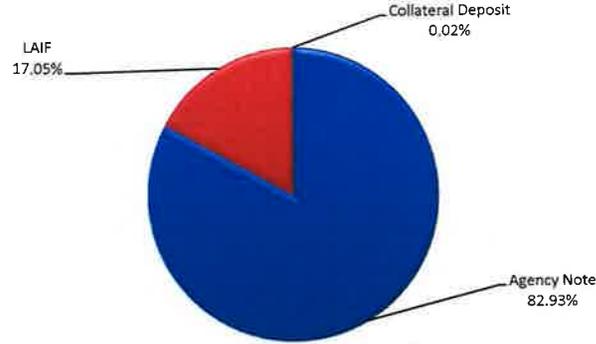
Exhibit "A"

Irvine Ranch Water District Investment Portfolio Summary October 2017

Monthly Fixed Income Yield



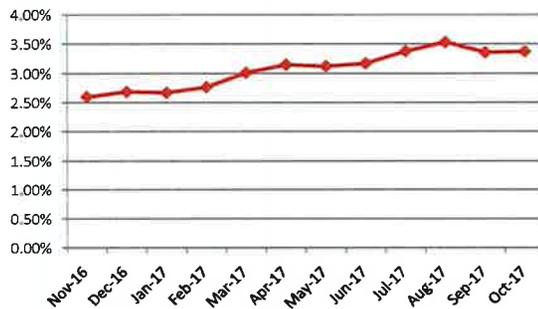
Portfolio Distribution



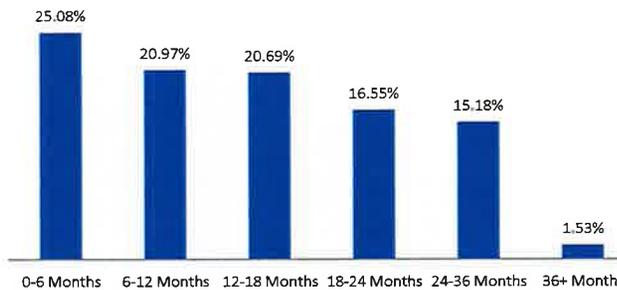
Investment Summary

Type	PAR	Book Value	Market Value
Agency Note	300,550,000	300,693,995	299,057,640
LAIF	61,800,000	61,800,000	61,749,074
Collateral Deposit	85,638	85,638	85,638
Grand Total	362,435,638	362,579,633	360,892,352

Weighted Average Return Including Real Estate Portfolio



Maturity Distribution



Top Issuers

Issuer	PAR	% Portfolio
Fed Home Loan Bank	106,000,000	29.25%
Fed Home Loan Mortgage Corp	79,000,000	21.80%
State of California Treasury - LAIF	61,800,000	17.05%
Fed Natl Mortgage Assoc	60,550,000	16.71%
Fed Farm Credit Bank	55,000,000	15.18%
Citi-Group Collateral	85,638	0.02%
Merrill Lynch Collateral	0	0.00%
Grand Total	362,435,638	100%

IRVINE RANCH WATER DISTRICT
INVESTMENT SUMMARY REPORT

10/31/17

SETTLMT	Call Schedule	Initial Call	Maturity Date	Rating	INVESTMENT TYPE	INSTITUTION / ISSUER	PAR Amount	COUPON DISCOUNT	YIELD	ORIGINAL COST	CARRY VALUE	MARKET VALUE ⁽¹⁾ 10/31/2017	UNREALIZED ⁽²⁾ GAIN/(LOSS)
08/23/17			11/01/17		LAIF	State of California Tsy.	\$61,800,000		1.150%	\$61,800,000.00	\$61,800,000.00	61,749,073.77	(50,926.23)
12/08/16	N/A	N/A	11/21/17	AAA/NR/NR	FHLB - Note	Fed Home Loan Bank	10,000,000	0.750%	0.866%	9,989,000.00	9,999,367.82	9,998,100.00	(1,267.82)
12/18/15	Continuous after	12/13/13	12/12/17	Aaa/AA+/NR	FFCB - Note	Fed Farm Credit Bank	5,000,000	0.820%	1.132%	4,969,500.00	4,998,275.17	4,997,950.00	(325.17)
04/22/16	N/A	N/A	01/29/18	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	4,000,000	0.850%	0.856%	3,999,600.00	3,999,944.98	3,996,600.00	(3,344.98)
03/01/16	Quarterly	05/26/16	02/26/18	NR/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	5,000,000	1.050%	1.050%	5,000,000.00	5,000,000.00	4,996,400.00	(3,600.00)
03/23/16	N/A	N/A	03/23/18	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	5,000,000	1.100%	0.908%	5,019,000.00	5,003,695.89	4,995,550.00	(8,145.89)
04/07/16	N/A	N/A	04/09/18	NA	FHLMC - Note	Fed Home Loan Mortgage Corp	5,000,000	0.750%	0.790%	4,996,000.00	4,999,131.15	4,988,350.00	(10,781.15)
05/16/16	N/A	N/A	05/16/18	Aaa/AA+/NR	FFCB - Note	Fed Farm Credit Bank	5,000,000	0.750%	0.801%	4,995,000.00	4,998,657.53	4,986,700.00	(11,957.53)
05/13/16	N/A	N/A	05/21/18	Aaa/AA+/AAA	FNMA - Note	Fed Natl Mortgage Assoc	5,000,000	0.875%	0.768%	5,010,700.00	5,002,914.23	4,987,550.00	(15,364.23)
05/24/16	N/A	N/A	06/08/18	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	11,000,000	1.250%	0.995%	11,056,540.00	11,016,620.48	10,993,840.00	(22,780.48)
06/29/16	N/A	N/A	06/29/18	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	10,000,000	1.000%	0.679%	10,016,000.00	10,005,260.27	9,972,100.00	(33,160.27)
09/01/16	N/A	N/A	07/27/18	Aaa/AA+/AAA	FNMA - Note	Fed Natl Mortgage Assoc	5,000,000	0.750%	0.928%	4,983,250.00	4,993,531.70	4,976,850.00	(16,681.70)
12/21/16	N/A	N/A	08/15/18	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	5,000,000	1.000%	1.245%	4,980,000.00	4,990,465.12	4,981,400.00	(9,065.12)
09/01/16	One Time	02/28/17	08/28/18	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	5,000,000	1.000%	1.000%	5,000,000.00	5,000,000.00	4,981,800.00	(18,200.00)
09/01/16	NA	NA	09/14/18	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	5,000,000	1.125%	0.916%	5,021,000.00	5,008,959.62	4,986,350.00	(22,609.62)
12/28/16	NA	NA	09/14/18	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	5,000,000	1.125%	1.225%	4,991,500.00	4,995,688.80	4,986,350.00	(9,338.80)
10/12/16	N/A	N/A	09/27/18	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	10,000,000	0.900%	0.952%	9,990,000.00	9,995,104.90	9,958,200.00	(36,904.90)
10/12/16	N/A	N/A	09/28/18	Aaa/AA+/AAA	FFCB - Note	Fed Farm Credit Bank	5,000,000	0.880%	0.942%	4,994,000.00	4,997,058.66	4,977,600.00	(19,458.66)
09/01/16	NA	NA	10/01/18	Aaa/AA+/NR	FFCB - Note	Fed Farm Credit Bank	5,000,000	1.030%	0.925%	5,010,750.00	5,004,724.34	4,985,000.00	(19,724.34)
10/12/16	N/A	N/A	10/12/18	Aaa/NR/NR	FFCB - Note	Fed Farm Credit Bank	10,000,000	1.000%	1.041%	9,992,000.00	9,996,000.00	9,944,800.00	(51,200.00)
10/12/16	N/A	N/A	11/27/18	Aaa/AA+/AAA	FNMA - Note	Fed Natl Mortgage Assoc	10,000,000	1.625%	0.956%	10,140,360.00	10,074,340.15	10,010,400.00	(63,940.15)
12/21/16	N/A	N/A	12/05/18	Aaa/AA+/AAA	FFCB - Note	Fed Farm Credit Bank	5,000,000	1.100%	1.319%	4,978,900.00	5,044,664.75	4,978,950.00	(65,714.75)
09/01/16	NA	NA	12/14/18	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	5,000,000	1.750%	0.941%	5,091,300.00	5,023,635.66	5,012,600.00	(11,035.66)
12/27/16	NA	NA	12/14/18	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	5,000,000	1.750%	1.320%	5,041,536.20	4,988,208.82	5,012,600.00	24,391.18
09/01/16	One Time	07/30/18	01/30/19	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	5,000,000	0.950%	1.009%	4,993,000.00	4,996,384.79	4,958,300.00	(38,084.79)
10/26/16	One Time	07/30/18	01/30/19	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	5,000,000	0.950%	1.035%	4,990,500.00	4,994,697.94	4,958,300.00	(36,397.94)
10/26/16	One Time	07/30/18	01/30/19	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	5,000,000	0.950%	1.040%	4,990,000.00	4,994,418.89	4,958,300.00	(36,118.89)
10/12/16	Continuous after	02/12/18	02/12/19	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	10,000,000	1.050%	1.093%	9,990,000.00	9,994,279.02	9,923,600.00	(70,679.02)
09/01/16	NA	NA	03/08/19	Aaa/AA+/AAA	FHLB - Note	Fed Home Loan Bank	5,000,000	1.500%	0.964%	5,066,500.00	5,035,640.52	4,996,400.00	(39,240.52)
10/12/16	N/A	N/A	03/29/19	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	5,000,000	1.050%	1.050%	4,999,950.00	4,999,970.32	4,957,900.00	(42,070.32)
10/12/16	N/A	N/A	04/15/19	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	10,000,000	1.125%	0.992%	10,032,800.00	10,019,715.85	9,935,100.00	(84,615.85)
10/31/16	N/A	N/A	04/26/19	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	5,000,000	1.050%	1.060%	4,998,750.00	4,999,253.03	4,956,500.00	(42,753.03)
09/01/16	One Time	08/28/17	05/28/19	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	5,000,000	1.030%	1.048%	4,997,550.00	4,998,594.74	4,946,550.00	(52,044.74)
09/01/16	NA	NA	06/14/19	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	5,000,000	1.625%	0.987%	5,087,400.00	5,050,753.94	5,002,200.00	(48,553.94)
10/12/16	NA	NA	06/14/19	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	5,000,000	1.625%	1.103%	5,068,515.88	5,042,866.35	5,002,200.00	(40,666.35)
10/12/16	NA	NA	07/19/19	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	5,000,000	0.875%	1.098%	4,969,652.90	4,980,619.92	4,937,950.00	(42,669.92)
09/01/16	NA	NA	07/26/19	Aaa/AA+/AAA	FNMA - Note	Fed Natl Mortgage Assoc	5,000,000	1.150%	1.180%	4,995,700.00	4,997,431.38	4,954,150.00	(43,281.38)
09/01/16	One Time	08/28/17	08/28/19	Aaa/AA+/AAA	FNMA - Note	Fed Natl Mortgage Assoc	5,000,000	1.150%	1.160%	4,998,500.00	4,999,085.70	4,920,400.00	(78,685.70)
09/01/16	NA	NA	08/28/19	Aaa/AA+/AAA	FNMA - Note	Fed Natl Mortgage Assoc	5,000,000	1.125%	1.132%	4,999,000.00	4,999,390.47	4,949,050.00	(50,340.47)

IRVINE RANCH WATER DISTRICT
INVESTMENT SUMMARY REPORT

10/31/17

SETTLMT	Call Schedule	Initial Call	Maturity Date	Rating	INVESTMENT TYPE	INSTITUTION / ISSUER	PAR Amount	COUPON DISCOUNT	YIELD	ORIGINAL COST	CARRY VALUE	MARKET VALUE ⁽¹⁾ 10/31/2017	UNREALIZED ⁽²⁾ GAIN/(LOSS)
09/28/16	Quarterly	03/09/17	09/09/19	Aaa/AA+/AAA	FNMA - Note	Fed Natl Mortgage Assoc	5,000,000	1.125%	1.142%	4,997,500.00	4,998,424.47	4,943,150.00	(55,274.47)
09/28/16	Continuous after	12/27/16	09/27/19	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	5,000,000	1.250%	1.189%	5,001,500.00	5,000,952.93	4,958,200.00	(42,752.93)
10/12/16	Continuous after	10/03/17	10/03/19	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	10,000,000	1.125%	1.160%	9,989,780.00	9,993,214.90	9,892,500.00	(100,714.90)
10/12/16	Continuous after	10/11/17	10/11/19	Aaa/AA+/NR	FFCB - Note	Fed Farm Credit Bank	5,000,000	1.120%	1.205%	9,975,000.00	9,983,340.95	9,885,300.00	(98,040.95)
11/08/16	Quarterly	05/08/17	11/08/19	Aaa/AA+/NR	FNMA - Note	Fed Natl Mortgage Assoc	5,000,000	1.250%	1.245%	5,000,750.00	5,000,504.79	4,944,550.00	(55,954.79)
11/28/16	NA	NA	11/15/19	Aaa/AA+/NR	FHLB - Note	Fed Home Loan Bank	5,000,000	1.375%	1.440%	4,990,550.00	4,993,502.03	4,971,750.00	(21,752.03)
11/28/16	Quarterly	05/25/17	11/25/19	Aaa/AA+/NR	FNMA - Note	Fed Natl Mortgage Assoc	5,000,000	1.400%	1.503%	4,985,000.00	4,989,642.86	4,962,750.00	(26,892.86)
12/12/16	NA	NA	12/12/19	Aaa/AA+/NR	FFCB - Note	Fed Farm Credit Bank	5,000,000	1.450%	1.440%	5,001,450.00	5,001,020.57	4,974,650.00	(26,370.57)
12/21/16	NA	NA	12/19/19	Aaa/AA+/NR	FFCB - Note	Fed Farm Credit Bank	5,000,000	1.500%	1.621%	4,982,350.00	4,987,436.69	4,979,750.00	(7,686.69)
10/16/17	NA	NA	02/28/20	Aaa/AA+/AAA	FNMA - Note	Fed Natl Mortgage Assoc	5,000,000	1.500%	1.612%	4,987,025.00	4,987,265.00	4,976,150.00	(11,115.00)
10/03/17	NA	NA	04/20/20	Aaa/AA+/AAA	FHLMC - Note	Fed Home Loan Mortgage Corp	5,000,000	1.375%	1.630%	4,968,350.00	4,969,336.94	4,955,950.00	(13,386.94)
10/31/17	One Time	10/30/18	10/30/20	Aaa/NR/AAA	FNMA - Note	Fed Natl Mortgage Assoc	5,550,000	1.850%	1.850%	5,550,000.00	5,550,000.00	5,550,000.00	

SUB-TOTAL \$362,350,000 \$362,673,009.98 \$362,493,995.02 \$360,806,713.77 (\$1,687,281.25)

RESTRICTED CASH (Swap Collateral Deposits)⁽⁴⁾

04/01/17	Collateral Deposit	Citi-Group	\$85,638	1.160%	\$85,637.97	\$85,637.97	85,637.97
	Collateral Deposit	Merrill Lynch	-				
SUB-TOTAL			\$85,638		\$85,637.97	\$85,637.97	\$85,637.97

TOTAL INVESTMENTS \$362,435,638 \$362,758,647.95 \$362,579,632.99 \$360,892,351.74

Petty Cash					3,400.00		
Ck Balance	Bank of America				941,091.65		
					<u>\$363,703,139.60</u>		

⁽¹⁾ LAIF market value is as of the most recent quarter-end as reported by LAIF. Security market values are determined using Bank of New York ("Trading Prices"), Bloomberg and/or broker dealer pricing. ⁽²⁾ Gain (loss) calculated against carry value using the trading value provided by Bank of New York/or Brokers ⁽³⁾ Real estate rate of return is based on most recent quarter end return ⁽⁴⁾ Swap Collateral Deposits assumes 6 month maturity, dependent on interest rate changes	Outstanding Variable Rate Debt \$284,200,000 Net Outstanding Variable Rate Debt (Less \$130 million fixed-payer swaps) \$154,200,000 Investment Balance: \$363,703,140 Investment to Variable Rate Debt Ratio: 236% Portfolio - Average Number of Days To Maturity ⁽⁴⁾ 382															
	<table border="1" style="width: 100%;"> <thead> <tr> <th></th> <th>Investment Portfolio</th> <th>Real Estate⁽³⁾ Portfolio</th> <th>Weighted Avg. Return</th> </tr> </thead> <tbody> <tr> <td>October</td> <td>1.10%</td> <td>8.79%</td> <td>3.38%</td> </tr> <tr> <td>September</td> <td>1.08%</td> <td>8.79%</td> <td>3.36%</td> </tr> <tr> <td>Change</td> <td>0.02%</td> <td></td> <td>0.02%</td> </tr> </tbody> </table>		Investment Portfolio	Real Estate ⁽³⁾ Portfolio	Weighted Avg. Return	October	1.10%	8.79%	3.38%	September	1.08%	8.79%	3.36%	Change	0.02%	
	Investment Portfolio	Real Estate ⁽³⁾ Portfolio	Weighted Avg. Return													
October	1.10%	8.79%	3.38%													
September	1.08%	8.79%	3.36%													
Change	0.02%		0.02%													

This Investment Summary Report is in conformity with the 2017 Investment Policy and provides sufficient liquidity to meet the next six months estimated expenditures.
*S - Step up

IRVINE RANCH WATER DISTRICT
SUMMARY OF MATURITIES

10/31/17

DATE	TOTAL	%	LAIF	Agency Notes	Agency Discount Notes	Collateral Deposit	US Treasury
10/17	\$61,800,000	17.05%	\$61,800,000				
11/17	10,000,000	2.76%		10,000,000			
12/17	5,000,000	1.38%		5,000,000			
01/18	4,085,638	1.13%		4,000,000		85,638	
02/18	5,000,000	1.38%		5,000,000			
03/18	5,000,000	1.38%		5,000,000			
04/18	5,000,000	1.38%		5,000,000			
05/18	10,000,000	2.76%		10,000,000			
06/18	21,000,000	5.79%		21,000,000			
07/18	5,000,000	1.38%		5,000,000			
08/18	10,000,000	2.76%		10,000,000			
09/18	25,000,000	6.90%		25,000,000			
SUB-TOTAL	\$166,885,638	46.05%	\$61,800,000	\$105,000,000		\$85,638	
13 Months - 3 YEARS							
10/01/18 - 12/31/2018	40,000,000	11.04%		40,000,000			
1/01/19 - 3/31/2019	35,000,000	9.66%		35,000,000			
4/01/19 - 6/30/2019	30,000,000	8.28%		30,000,000			
7/01/2019 - 9/30/19	30,000,000	8.28%		30,000,000			
10/01/19 - 12/31/2019	45,000,000	12.42%		45,000,000			
1/01/2020 - 3/31/2020	5,000,000	1.38%		5,000,000			
04/01/2020 - 06/30/2020	5,000,000	1.38%		5,000,000			
07/01/2020 -9/30/2020	-						
10/01/2020 -12/31/2020	5,550,000	1.53%		5,550,000			
	-						
TOTALS	\$362,435,638	100.00%	\$61,800,000	\$300,550,000		\$85,638	

% OF PORTFOLIO

17.05%

82.93%

0.02%

Irvine Ranch Water District
 Summary of Real Estate - Income Producing Investments
 9/30/2017

	ACQUISITION DATE	PROPERTY TYPE	OWNERSHIP INTEREST	ORIGINAL COST	ESTIMATED MARKET VALUE 9/30/2017	RATE OF RETURN QUARTER ENDED 9/30/2017
Sycamore Canyon	Dec-92	Apartments	Fee Simple	\$ 43,550,810	\$ 147,507,750	18.69%
Wood Canyon Villas	Jun-91	Apartments	Limited Partner	\$ 6,000,000	\$ 28,934,076	8.56%
ITC (230 Commerce)	Jul-03	Office Building	Fee Simple	\$ 5,739,845	\$ 9,571,680	7.12%
Waterworks Business Pk.	Nov-08	Research & Dev.	Fee Simple	\$ 8,630,577	\$ 7,803,000	5.57%
Sand Canyon Professional Center	Jul-12	Medical Office	Fee Simple	\$ 8,648,594	\$ 10,820,160	8.66%
Total - Income Properties				\$ 72,569,826	\$ 204,636,666	14.18%
OTHER REAL ESTATE						
DESCRIPTION						
Serrano Summit - Promissory Note	Sep-17	NA	NA	\$ 81,600,000	\$ 81,600,000	4.00%
Total - Income Producing Real Estate Investments				\$ 154,169,826	\$ 286,236,666	8.79%

IRVINE RANCH WATER DISTRICT INVESTMENT SUMMARY REPORT
INVESTMENT ACTIVITY
Oct-17

MATURITIES/SALES/CALLS

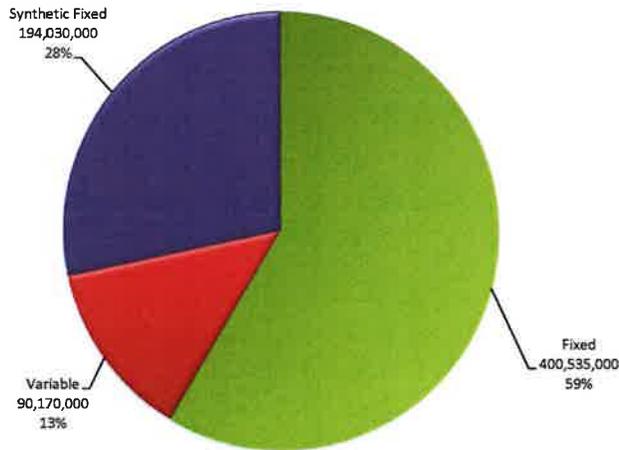
PURCHASES

DATE	SECURITY TYPE	PAR	YIELD	Settlement Date	Maturity Date	SECURITY TYPE	PAR	YIELD TO MATURITY
10/3/2017	FHLB - Discount Note	\$4,000,000	1.04%	10/3/2017	4/20/2020	FHLMC - Note	\$5,000,000	1.63%
10/16/2017	US Treasury	\$6,000,000	1.09%	10/16/2017	2/28/2020	FNMA - Note	\$5,000,000	1.61%
10/27/2017	FHLMC - Note	\$5,000,000	1.73%	10/31/2017	10/30/2020	FNMA - Note	\$5,550,000	1.85%
10/31/2017	US Treasury	\$5,000,000	0.74%					
10/31/2017	FHLB - Discount Note	\$5,000,000	1.05%					

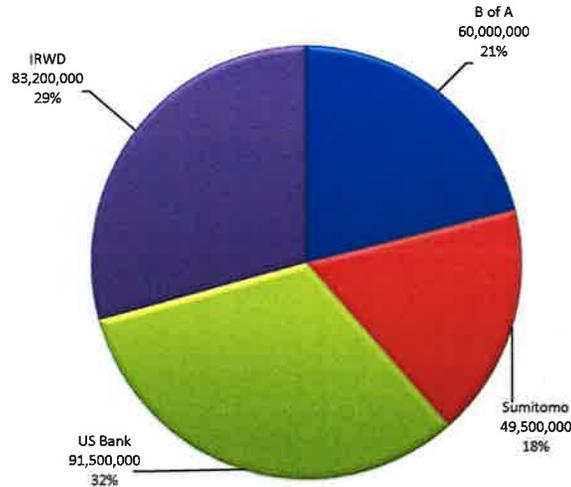
Exhibit "B"

Irvine Ranch Water District Summary of Fixed and Variable Rate Debt October 2017

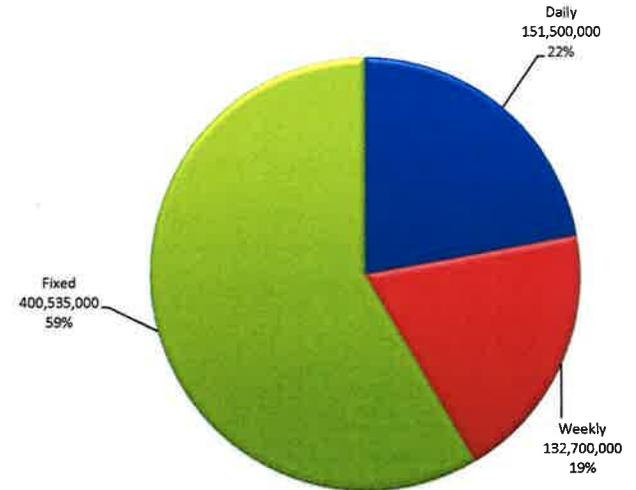
Current Debt Mix By Type



Letters of Credit / Support



Current Debt Rate Reset



Outstanding Par by Series

Series	Issue Date	Maturity Date	Remaining		Letter of Credit	Rmkt Agent	Mode	Reset
			Principal	Percent				
Series 1993	05/19/93	04/01/33	\$31,500,000	4.60%	US Bank	BAML	Variable	Daily
Series 2008-A Refunding	04/24/08	07/01/35	\$49,500,000	7.23%	Sumitomo	BAML	Variable	Weekly
Series 2011-A-1 Refunding	04/15/11	10/01/37	\$49,920,000	7.29%	IRWD	Goldman	Variable	Weekly
Series 2011-A-2 Refunding	04/15/11	10/01/37	\$33,280,000	4.86%	IRWD	Morgan	Variable	Weekly
Series 2009 - A	06/04/09	10/01/41	\$60,000,000	8.76%	US Bank	US Bank	Variable	Daily
Series 2009 - B	06/04/09	10/01/41	\$60,000,000	8.76%	B of A	Goldman	Variable	Daily
2010 Refunding Cops	02/23/10	03/01/20	\$5,390,000	0.79%	N/A	N/A	Fixed	Fixed
2016 COPS	09/01/16	03/01/46	\$116,745,000	17.05%	N/A	N/A	Fixed	Fixed
2010 Build America Taxable Bond	12/16/10	05/01/40	\$175,000,000	25.56%	N/A	N/A	Fixed	Fixed
Series 2016	10/12/16	02/01/46	\$103,400,000	15.10%	N/A	N/A	Fixed	Fixed
Total			\$684,735,000	100.00%				

IRVINE RANCH WATER DISTRICT
SUMMARY OF FIXED & VARIABLE RATE DEBT

October-17

ITN
Daily
Weekly

GENERAL BOND INFORMATION							LETTER OF CREDIT INFORMATION							TRUSTEE INFORMATION							
VARIABLE RATE ISSUES	Issue Date	Maturity Date	Principal Payment Date	Payment Date	Original Par Amount	Remaining Principal	Letter of Credit	Reimbursement Agreement Date	L/C Exp. Date	MOODY'S	S&P	FITCH	LOC Stated Amount	LOC Fee	Annual LOC Cost	Rmkt Agent	Reset	Rmkt Fees	Annual Cost	Trustee	
SERIES 1993	05/19/93	04/01/33	APR 1 (2014)	5th Bus. Day	\$38,300,000	\$31,500,000	US BANK	05/07/15	11/07/18	Aa3/VMIG1	AA-/A-1+	N/R	\$31,924,603	0.3300%	\$105,351	BAML	DAILY	0.10%	\$31,500	BANK OF NY	
SERIES 2008-A Refunding	04/24/08	07/01/35	JUL 1	5th Bus. Day	\$60,215,000	\$49,500,000	SUMITOMO	04/01/11	07/21/21	A1/P-1	A/A-1	A/F1	\$50,232,329	0.3150%	\$158,232	BAML	WED	0.07%	\$34,650	BANK OF NY	
SERIES 2011-A-1 Refunding	04/15/11	10/01/37	Oct 1	1st Bus. Day	\$60,545,000	\$49,920,000	N/A	N/A	N/A	Aa1/VMIG1	A-1+	AAA/F1+	N/A	N/A	N/A	Goldman	WED	0.13%	\$62,400	BANK OF NY	
SERIES 2011-A-2 Refunding	04/15/11	10/01/37	Oct 1	1st Bus. Day	\$40,370,000	\$33,280,000	N/A	N/A	N/A	Aa1/VMIG1	A-1+	AAA/F1+	N/A	N/A	N/A	Morgan S.	WED	0.13%	\$41,600	BANK OF NY	
SERIES 2009 - A	06/04/09	10/01/41	Oct 1	1st Bus. Day	\$75,000,000	\$60,000,000	US BANK	04/01/11	12/22/20	Aa2/VMIG1	AA-/A-1+	AA/F1+	\$60,670,685	0.4100%	\$248,750	US Bank	DAILY	0.07%	\$42,000	US BANK	
SERIES 2009 - B	06/04/09	10/01/41	Oct 1	1st Bus. Day	\$75,000,000	\$60,000,000	B of A	04/01/11	07/15/19	A1/VMIG1	A/A-1	A1/F1+	\$60,670,685	0.4000%	\$242,683	Goldman	DAILY	0.10%	\$60,000	US BANK	
					\$349,430,000	\$284,200,000	SUB-TOTAL VARIABLE RATE DEBT							\$203,498,301	0.3711%	\$755,016					
														(Wt. Avg)		(Wt. Avg)					
FIXED RATE ISSUES																					
2010 REFUNDING COPS	02/23/10	03/01/20	Mar -1	MAR/SEPT	\$85,145,000	\$5,390,000	N/A	N/A	N/A	Aa1	AAA	AAA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	BANK OF NY	
2010 GO Build America Taxable Bonds	12/16/10	05/01/40	MAY (2025)	MAY/NOV	\$175,000,000	\$175,000,000	N/A	N/A	N/A	Aa1	AAA	NR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	US BANK	
2016 COPS	09/01/16	03/01/46	Mar -1	MAR/SEPT	\$116,745,000	\$116,745,000	N/A	N/A	N/A	NR	AAA	AAA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	US BANK	
SERIES 2016	10/12/16	02/01/46	Feb -1	FEB/AUG	\$103,400,000	\$103,400,000	N/A	N/A	N/A	NR	AAA	AAA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	BANK OF NY	
					\$480,290,000	\$400,535,000	SUB-TOTAL FIXED RATE DEBT														
					\$829,720,000	\$684,735,000	TOTAL- FIXED & VARIABLE RATE DEBT														

Remarketing Agents			GO VS COP's		
Goldman	109,920,000	39%	GO:	562,600,000	82%
Morgan Stanley	33,280,000	12%	COPS:	122,135,000	18%
BAML	81,000,000	29%	Total	684,735,000	
US Bank	60,000,000	21%			
	284,200,000				

LOC Banks		Breakdown Between Variable & Fixed Rate Mode	
SUMITOMO	49,500,000	Daily Issues	151,500,000 22%
BANK OF AMERICA	60,000,000	Weekly Issues	49,500,000 7%
US BANK	91,500,000	ITN Issues	83,200,000 12%
	201,000,000	Sub-Total	284,200,000
		Fixed Rate Issues	\$400,535,000 58%
		Sub-Total - Fixed	400,535,000
		TOTAL DEBT	
		FIXED & VAR.	684,735,000 100%

IRVINE RANCH WATER DISTRICT
SUMMARY OF DEBT RATES
Oct-17

Rmkt Agent	GOLDMAN DAILY	GOLDMAN WEEKLY	MORGAN STANLEY WEEKLY	MERRILL LYNCH DAILY	MERRILL LYNCH WEEKLY	US BANK DAILY
Bond Issue	2009 - B	2011 A-1	2011 A-2	1993	2008-A	2009-A
Par Amount	60,000,000	49,920,000	33,280,000	31,500,000	49,500,000	60,000,000
Bank	BOFA	(SIFMA+7)	(SIFMA+7)	US BANK	Sumitomo	US BANK
Reset		Wednesday	Wednesday		Wednesday	
10/1/2017	0.86%	1.01%	1.01%	0.86%	0.90%	0.85%
10/2/2017	0.82%	1.01%	1.01%	0.78%	0.90%	0.82%
10/3/2017	0.75%	1.01%	1.01%	0.75%	0.90%	0.78%
10/4/2017	0.75%	1.01%	1.01%	0.76%	0.90%	0.75%
10/5/2017	0.73%	0.99%	0.99%	0.76%	0.84%	0.73%
10/6/2017	0.73%	0.99%	0.99%	0.75%	0.84%	0.73%
10/7/2017	0.73%	0.99%	0.99%	0.75%	0.84%	0.73%
10/8/2017	0.73%	0.99%	0.99%	0.75%	0.84%	0.73%
10/9/2017	0.73%	0.99%	0.99%	0.75%	0.84%	0.73%
10/10/2017	0.73%	0.99%	0.99%	0.72%	0.84%	0.73%
10/11/2017	0.71%	0.99%	0.99%	0.73%	0.84%	0.73%
10/12/2017	0.71%	0.98%	0.98%	0.71%	0.82%	0.72%
10/13/2017	0.71%	0.98%	0.98%	0.72%	0.82%	0.72%
10/14/2017	0.71%	0.98%	0.98%	0.72%	0.82%	0.72%
10/15/2017	0.71%	0.98%	0.98%	0.72%	0.82%	0.72%
10/16/2017	0.73%	0.98%	0.98%	0.74%	0.82%	0.73%
10/17/2017	0.74%	0.98%	0.98%	0.76%	0.82%	0.74%
10/18/2017	0.75%	0.98%	0.98%	0.76%	0.82%	0.75%
10/19/2017	0.77%	0.98%	0.98%	0.81%	0.85%	0.77%
10/20/2017	0.79%	0.98%	0.98%	0.81%	0.85%	0.80%
10/21/2017	0.79%	0.98%	0.98%	0.81%	0.85%	0.80%
10/22/2017	0.79%	0.98%	0.98%	0.81%	0.85%	0.80%
10/23/2017	0.81%	0.98%	0.98%	0.81%	0.85%	0.81%
10/24/2017	0.81%	0.98%	0.98%	0.80%	0.85%	0.82%
10/25/2017	0.81%	0.98%	0.98%	0.79%	0.85%	0.82%
10/26/2017	0.81%	0.99%	0.99%	0.79%	0.85%	0.82%
10/27/2017	0.81%	0.99%	0.99%	0.81%	0.85%	0.82%
10/28/2017	0.81%	0.99%	0.99%	0.81%	0.85%	0.82%
10/29/2017	0.81%	0.99%	0.99%	0.81%	0.85%	0.82%
10/30/2017	0.81%	0.99%	0.99%	0.81%	0.85%	0.82%
10/31/2017	0.82%	0.99%	0.99%	0.79%	0.85%	0.82%
Avg Interest Rates	0.77%	0.99%	0.99%	0.77%	0.85%	0.77%
Rmkt Fee	0.10%	0.13%	0.13%	0.10%	0.07%	0.07%
LOC Fee	0.40%			0.33%	0.32%	0.41%
All-In Rate	1.27%	1.11%	1.11%	1.20%	1.23%	1.26%
Par Amount	109,920,000		33,280,000	81,000,000		60,000,000

Interest Rate Mode	Percent of Total Variable Rate Debt	Par Outstanding	Weighted All-In Average Rate	Base Rate Average
Daily	53.31%	151,500,000	1.25%	0.77%
Weekly	46.69%	132,700,000	1.16%	0.94%
	100.00%	\$ 284,200,000	1.21%	0.85%
Fixed				
COPS 2010	1.35%	5,390,000	3.82%	
COPS 2016	29.15%	116,745,000	2.90%	
BABS 2010	43.69%	175,000,000	4.46%	(1)
SERIES 2016	25.82%	103,400,000	3.32%	
	100.00%	\$ 400,535,000	3.70%	
All-In Debt Rate Including \$130 Million Notional Amount of Swaps				3.49%

(1) Rate adjusted up from 4.35% as a result of sequestration reducing BAB's subsidy by 6.8%

**IRVINE RANCH WATER DISTRICT
INTEREST RATE SWAP MONTHLY SUMMARY REPORT - DETAIL
October 31, 2017**

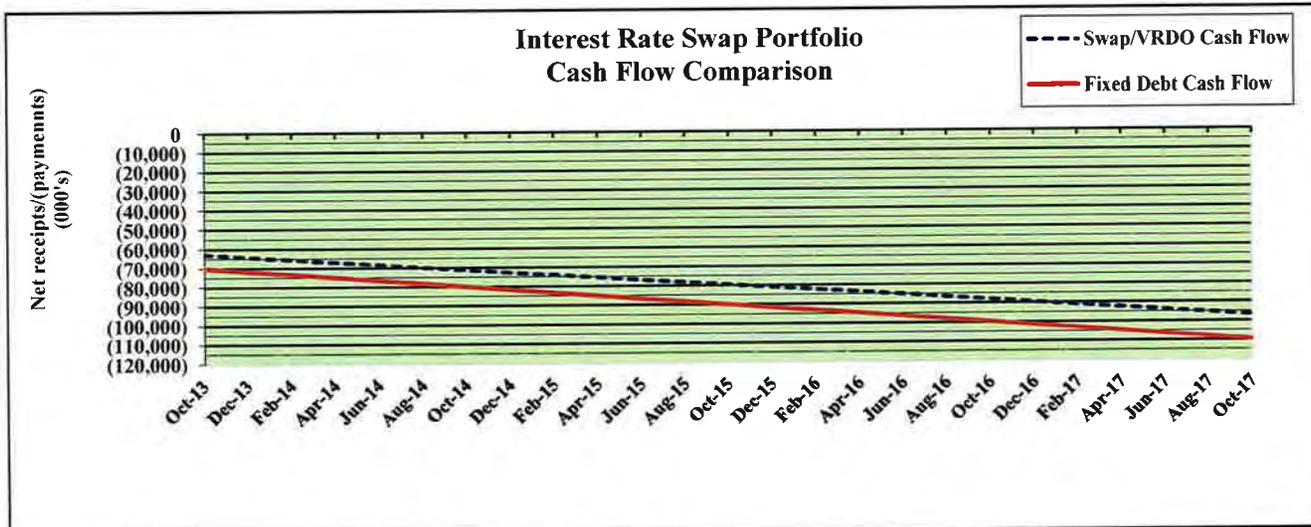
Exhibit "C"

LIBOR Avg %	Prior Mo. 1.23%	Current Mo. 1.24%	12-Mo Avg 0.99%
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Current Fiscal Year Active Swaps								Cash Flow				Mark to Market	
Effective Date	Maturity Date	Years to Maturity	Counter Party	Notional Amt	Type	Base Index	Fixed Rate	Prior Month	Current Month	Fiscal YTD	(Since 6/06)	Current Mark to Market	Notional Difference
											Cumulative Cash Flow		
Fixed Payer Swaps - By Effective Date													
6/4/2006	6/4/2019	1.6	ML	\$ 20,000,000	FXP	LIBOR	6.200%	(76,603)	(88,301)	\$ (333,088)	\$ (11,256,380)	\$ 18,582,793	\$ (1,417,207)
6/4/2006	6/4/2019	1.6	CG	20,000,000	FXP	LIBOR	6.200%	(76,603)	(88,301)	(333,088)	(11,256,380)	18,582,271	(1,417,729)
6/17/2006	6/17/2019	1.6	CG	30,000,000	FXP	LIBOR	6.140%	(113,518)	(130,789)	(493,299)	(16,695,956)	27,857,319	(2,142,681)
3/10/2007	3/10/2029	11.4	ML	30,000,000	FXP	LIBOR	5.687%	(102,873)	(118,720)	(448,222)	(15,054,029)	19,851,106	(10,148,894)
3/10/2007	3/10/2029	11.4	CG	30,000,000	FXP	LIBOR	5.687%	(102,873)	(118,720)	(448,222)	(15,054,029)	19,840,640	(10,159,360)
Totals/Weighted Avgs				6.1	\$ 130,000,000		5.949%	\$ (472,471)	\$ (544,831)	\$ (2,055,918)	\$ (69,316,774)	\$ 104,714,129	\$ (25,285,871)
Total Current Year Active Swaps					\$ 130,000,000			\$ (472,471)	\$ (544,831)	\$ (2,055,918)	\$ (69,316,774)	\$ 104,714,129	\$ (25,285,871)

Current Fiscal Year Terminated Swaps								Cash Flow				Mark to Market	
Effective Date	Maturity Date	Counter Party	Notional Amt	Type	Base Index	Fixed Rate	Prior Month	Current Month	Fiscal YTD	Cumulative Cash Flow	Current Mark to Market	Notional Difference	
													Total Current Year Terminated Swaps
				\$ -			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

Current Fiscal Year - Total Swaps								Cash Flow				Mark to Market	
Effective Date	Maturity Date	Counter Party	Notional Amt	Type	Base Index	Fixed Rate	Prior Month	Current Month	Fiscal YTD	Cumulative Cash Flow	Current Mark to Market	Notional Difference	
													Total Current Year Active & Terminated Swaps
				\$ 130,000,000			\$ (472,471)	\$ (544,831)	\$ (2,055,918)	\$ (69,316,774)	\$ 104,714,129	\$ (25,285,871)	



Cash Flow Comparison Synthetic Fixed vs. Fixed Rate Debt	
Cash Flow to Date	
Synthetic Fixed =	\$96,458,783
Fixed Rate =	\$109,479,403
Assumptions:	
- Fixed rate debt issued at 5.10% in Jun-06, and 4.93% in Mar-07 (estimated TE rates - Bloomberg)	
- 'Synthetic' includes swap cash flow + interest + fees to date	

Exhibit "D"

IRWD Ledger Upgrade

Void Payment Register

Report Date: 31-OCT-2017 15:18

Include Zero Amount Payments: Yes
Display Payee Address: No

Period From: 01-OCT-17

Page: 1
To: 31-OCT-17
Date: Void Date

Bank: Bank of America N.A.

Branch: Los Angeles

Account: Checking AP and FR

Bank Account Currency: USD

Payment Currency: USD (US Dollar)

Payment Number	Date	Payee Name	Site	Address	Payment Amount	Void Date
Payment Document: IRWD CHECK						
376900	04-MAY-17	Figueroa, Jorge (Jorge)	HOME		58.63	03-OCT-17
376910	04-MAY-17	Sheilds, Patrick	HOME		6.00	19-OCT-17
376946	04-MAY-17	CHEN, ZIRAN	PAY		95.42	03-OCT-17
377457	18-MAY-17	TIC-RETAIL PROPERTIES	PAY		21.32	03-OCT-17
377555	25-MAY-17	KALANCARY, KAZEN	PAY		13.12	03-OCT-17
377604	25-MAY-17	RICHMOND AMERICAN HOMES OF	PAY		136.21	03-OCT-17
377918	08-JUN-17	SYED, FAROOQ	PAY		224.30	30-OCT-17
377946	08-JUN-17	ZHOU, JIE	PAY		20.19	18-OCT-17
378171	22-JUN-17	BGDOIAN, TINA	PAY		2.54	18-OCT-17
378345	29-JUN-17	ALBANO, JAIME	PAY		5.51	18-OCT-17
378532	29-JUN-17	SUN, YELUN	PAY		10.38	18-OCT-17
380648	28-SEP-17	ARC	IRVINE		395.73	09-OCT-17
380893	05-OCT-17	CITY OF IRVINE	IRVINE 1		112.00	09-OCT-17
381488	26-OCT-17	MC GREW, CAROLYN	PAY		1,542.96	31-OCT-17

Payment Document Subtotal	2,644.31
Bank Account Subtotal	2,644.31
Report Total	2,644.31

Report Count: 14

Voids

*** End of Report ***

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 1
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
380838		02-OCT-17	BURNS, JOHN C	IRVINE	31,581.83	02-OCT-17	31,581.83	Reconciled
380839		04-OCT-17	JCI JONES	TAMPA	4,672.69	11-OCT-17	4,672.69	Reconciled
380840		05-OCT-17	CHEMICALS INC					
			Bertsch, Frederick J (Jeff)		47.08	10-OCT-17	47.08	Reconciled
380841		05-OCT-17	Chaney, David (Dave)		180.00	10-OCT-17	180.00	Reconciled
380842		05-OCT-17	Davis, Jennifer R (Jennifer)		114.07	06-OCT-17	114.07	Reconciled
380843		05-OCT-17	Figueroa, Jorge (Jorge)		58.63	10-OCT-17	58.63	Reconciled
380844		05-OCT-17	Fournier, Tanja L (Tanja)		40.65	06-OCT-17	40.65	Reconciled
380845		05-OCT-17	Lieuw, Jessica		139.77	05-OCT-17	139.77	Reconciled
380846		05-OCT-17	Matheis, Mary Aileen		919.42	10-OCT-17	919.42	Reconciled
380847		05-OCT-17	Morabito, Chadd		180.00	10-OCT-17	180.00	Reconciled
380848		05-OCT-17	Nash, Joel		25.68	12-OCT-17	25.68	Reconciled
380849		05-OCT-17	Obenshain, Jenna		200.00	11-OCT-17	200.00	Reconciled
380850		05-OCT-17	Oldewage, Lars D (Lars)		781.26	10-OCT-17	781.26	Reconciled
380851		05-OCT-17	Severin, Victoria		200.00	06-OCT-17	200.00	Reconciled
380852		05-OCT-17	Sidlin, Wayne		180.00	10-OCT-17	180.00	Reconciled
380853		05-OCT-17	Swan, Peer		1,338.25			Negotiable
380854		05-OCT-17	ABADIAN, BEHROOZ		27.79	13-OCT-17	27.79	Reconciled
380855		05-OCT-17	ABADILA, AIMEE		30.72	11-OCT-17	30.72	Reconciled
380856		05-OCT-17	ACWA		2,139.00	12-OCT-17	2,139.00	Reconciled
380857		05-OCT-17	ADAM'S FALCONRY SERVICE, LLC		440.00	11-OCT-17	440.00	Reconciled
380858		05-OCT-17	ADS LLC		15,344.00	13-OCT-17	15,344.00	Reconciled
380859		05-OCT-17	AERATION INDUSTRIES INTERNATIONAL INC		2,150.63	10-OCT-17	2,150.63	Reconciled
380860		05-OCT-17	AGUILAR, ROSS		50.00	16-OCT-17	50.00	Reconciled
380861		05-OCT-17	ALEXANDER'S CONTRACT SERVICES, INC.		115,292.55	12-OCT-17	115,292.55	Reconciled
380862		05-OCT-17	ALEXANDER'S CONTRACT SERVICES, INC.		1,795.00	11-OCT-17	1,795.00	Reconciled
380863		05-OCT-17	ALLEN, BONNIE		36.72	26-OCT-17	36.72	Reconciled
380864		05-OCT-17	ALPHA TRAFFIC SERVICES, INC.		620.00	12-OCT-17	620.00	Reconciled
380865		05-OCT-17	ALSTON & BIRD LLP		50,833.13	16-OCT-17	50,833.13	Reconciled
380866		05-OCT-17	AMAZON CAPITAL SERVICES, INC.		2,217.65	10-OCT-17	2,217.65	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 2
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
380867		05-OCT-17	ASSOCIATION OF CALIFORNIA WATER AGENCIES/JPIA		34,651.68	16-OCT-17	34,651.68	Reconciled
380868		05-OCT-17	AT&T		52.47	11-OCT-17	52.47	Reconciled
380869		05-OCT-17	AT&T		504.72	11-OCT-17	504.72	Reconciled
380870		05-OCT-17	AUTOZONE PARTS, INC.		264.53	12-OCT-17	264.53	Reconciled
380871		05-OCT-17	AVISTA TECHNOLOGIES, INC		16,955.49	13-OCT-17	16,955.49	Reconciled
380872		05-OCT-17	BALASUBRAMANI, SANKAR		16.03	11-OCT-17	16.03	Reconciled
380873		05-OCT-17	BEHRENS AND ASSOCIATES, INC.		1,196.50	10-OCT-17	1,196.50	Reconciled
380874		05-OCT-17	BEST DRILLING AND PUMP, INC.		25,250.14	12-OCT-17	25,250.14	Reconciled
380875		05-OCT-17	BILL'S SWEEPING SERVICE INC		750.00	16-OCT-17	750.00	Reconciled
380876		05-OCT-17	BITECH CONSTRUCTION COMPANY INC		1,510.74	12-OCT-17	1,510.74	Reconciled
380877		05-OCT-17	BLAIRS TOWING INC		300.00	19-OCT-17	300.00	Reconciled
380878		05-OCT-17	BRENNTAG PACIFIC INC		1,449.16	10-OCT-17	1,449.16	Reconciled
380879		05-OCT-17	BRUCE CLARK		6,000.00	10-OCT-17	6,000.00	Reconciled
380880		05-OCT-17	C WELLS PIPELINE MATERIALS INC		1,815.59	17-OCT-17	1,815.59	Reconciled
380881		05-OCT-17	CALATLANTIC HOMES		73.74	19-OCT-17	73.74	Reconciled

380882	05-OCT-17	CALIFORNIA BARRICADE RENTAL, INC.		7,356.78	10-OCT-17	7,356.78	Reconciled
380883	05-OCT-17	CAPTIVE AUDIENCE MARKETING INC.		79.00	11-OCT-17	79.00	Reconciled
380884	05-OCT-17	CARLSON, KRISTINA		5.69	18-OCT-17	5.69	Reconciled
380885	05-OCT-17	OCL CONTRACTING INC.		173,023.50	13-OCT-17	173,023.50	Reconciled
380886	05-OCT-17	CDW GOVERNMENT LLC		2,952.45	10-OCT-17	2,952.45	Reconciled
380887	05-OCT-17	CHAIREL CUSTOM HAY, INC.		1,330.00	12-OCT-17	1,330.00	Reconciled
380888	05-OCT-17	CHARLES F CROWLEY COMPANY INC		5,044.01	13-OCT-17	5,044.01	Reconciled
380889	05-OCT-17	CHEM TECH INTERNATIONAL INC		29,855.28	18-OCT-17	29,855.28	Reconciled
380890	05-OCT-17	CHUNG, MARK		50.00			Negotiable
380891	05-OCT-17	CITY CIRCUIT BREAKERS		6,578.58	10-OCT-17	6,578.58	Reconciled
380892	05-OCT-17	CITY OF IRVINE		1,590.00	11-OCT-17	1,590.00	Reconciled

IRWD Ledger Upgrade
 BANK: Bank of America N.A. Branch : Los Angeles
 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 3

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
380893		05-OCT-17	CITY OF IRVINE		112.00			Voided
380894		05-OCT-17	CITY OF TUSTIN		288.02	10-OCT-17	288.02	Reconciled
380895		05-OCT-17	CLEAN ENERGY		2,476.26	17-OCT-17	2,476.26	Reconciled
380896		05-OCT-17	CLEANTECH SERVICES, LLC		1,657.14	24-OCT-17	1,657.14	Reconciled
380897		05-OCT-17	COMMERCIAL DOOR OF ORANGE COUNTY, INC.		2,354.86	11-OCT-17	2,354.86	Reconciled
380898		05-OCT-17	COUNTY OF ORANGE		1,348.84	12-OCT-17	1,348.84	Reconciled
380899		05-OCT-17	COX COMMUNICATIONS, INC.		256.21	11-OCT-17	256.21	Reconciled
380900		05-OCT-17	CULLIGAN OF SANTA ANA		4,011.40	11-OCT-17	4,011.40	Reconciled
380901		05-OCT-17	D & G SIGNS		930.55	11-OCT-17	930.55	Reconciled
380902		05-OCT-17	DAN FRANCES LEANO		26.45			Negotiable
380903		05-OCT-17	DELL MARKETING LP		502.18	10-OCT-17	502.18	Reconciled
380904		05-OCT-17	DIVITA BUILDERS INC.		1,000.00	16-OCT-17	1,000.00	Reconciled
380905		05-OCT-17	DMS FACILITY SERVICES, INC.		18,251.93	12-OCT-17	18,251.93	Reconciled
380906		05-OCT-17	DPR CONSTRUCTION		831.06	17-OCT-17	831.06	Reconciled
380907		05-OCT-17	DRA ARCHITECTS, A CALIFORNIA CORPORATION		39.21	12-OCT-17	39.21	Reconciled
380908		05-OCT-17	EAGLE PRINT DYNAMICS		3,982.81	10-OCT-17	3,982.81	Reconciled
380909		05-OCT-17	ENTERPRISE RIDESHARE		26,781.67	11-OCT-17	26,781.67	Reconciled
380910		05-OCT-17	ENVIRONMENTAL RESOURCE ASSOCIATES		652.49	12-OCT-17	652.49	Reconciled
380911		05-OCT-17	ENVIRONMENTAL SCIENCE ASSOCIATES		15,937.50	16-OCT-17	15,937.50	Reconciled
380912		05-OCT-17	EXECUTIVE LIGHTING & ELECTRIC		7,567.95	11-OCT-17	7,567.95	Reconciled
380913		05-OCT-17	FARRELL & ASSOCIATES		4,499.41	10-OCT-17	4,499.41	Reconciled
380914		05-OCT-17	FEDEX		249.83	11-OCT-17	249.83	Reconciled
380915		05-OCT-17	FIDELITY SECURITY LIFE INSURANCE COMPANY		6,663.94	10-OCT-17	6,663.94	Reconciled
380916		05-OCT-17	FIRST CHOICE SERVICES		1,628.64	12-OCT-17	1,628.64	Reconciled
380917		05-OCT-17	FISHER SCIENTIFIC COMPANY LLC		2,117.09	10-OCT-17	2,117.09	Reconciled

IRWD Ledger Upgrade
 BANK: Bank of America N.A. Branch : Los Angeles
 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 4

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
380918		05-OCT-17	FRONTIER CALIFORNIA INC.		321.11	12-OCT-17	321.11	Reconciled
380919		05-OCT-17	FUSCOE ENGINEERING, INC.		1,749.55	10-OCT-17	1,749.55	Reconciled
380920		05-OCT-17	GANAHL LUMBER CO.		48.27	13-OCT-17	48.27	Reconciled
380921		05-OCT-17	GCI CONSTRUCTION, INC.		36,741.25	11-OCT-17	36,741.25	Reconciled
380922		05-OCT-17	GENERAL MONITORS		4,487.79	10-OCT-17	4,487.79	Reconciled

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
380923	05-OCT-17	INC.			6,088.57	10-OCT-17	6,088.57	Reconciled
380924	05-OCT-17	GRAINGER			230.13	31-OCT-17	230.13	Reconciled
380925	05-OCT-17	GRAYBAR ELECTRIC COMPANY			331.31	10-OCT-17	331.31	Reconciled
380926	05-OCT-17	HAN, HAN			457.08			Negotiable
380927	05-OCT-17	HARRINGTON INDUSTRIAL PLASTICS LLC			2,510.91	10-OCT-17	2,510.91	Reconciled
380928	05-OCT-17	HDPE SUPPLY			52.22	12-OCT-17	52.22	Reconciled
380929	05-OCT-17	HELP/SYSTEMS, LLC			15,300.00	13-OCT-17	15,300.00	Reconciled
380930	05-OCT-17	HELPMATES STAFFING SERVICES			11,302.13	12-OCT-17	11,302.13	Reconciled
380931	05-OCT-17	HENKELS & MCCOY, INC.			972.05	16-OCT-17	972.05	Reconciled
380932	05-OCT-17	HILL BROTHERS CHEMICAL COMPANY			10,520.38	17-OCT-17	10,520.38	Reconciled
380933	05-OCT-17	HOME DEPOT USA INC			336.15	10-OCT-17	336.15	Reconciled
380934	05-OCT-17	HSG INC			1,613.00	11-OCT-17	1,613.00	Reconciled
380935	05-OCT-17	HUNTINGTON WEST PROPERTIES			98.22	11-OCT-17	98.22	Reconciled
380936	05-OCT-17	INDUSTRIAL METAL SUPPLY CO			80.67	11-OCT-17	80.67	Reconciled
380937	05-OCT-17	INORGANIC VENTURES INC			420.20	13-OCT-17	420.20	Reconciled
380938	05-OCT-17	IRVINE COMMUNITY DEVELOPMENT COMPANY LLC			88,870.43	18-OCT-17	88,870.43	Reconciled
380939	05-OCT-17	IRVINE PIPE & SUPPLY INC			5,650.81	10-OCT-17	5,650.81	Reconciled
380940	05-OCT-17	IRWD-PETTY CASH CUSTODIAN			789.58	10-OCT-17	789.58	Reconciled
380941	05-OCT-17	JAAF, RANJ			41.00	12-OCT-17	41.00	Reconciled
380942	05-OCT-17	JCI JONES CHEMICALS INC			5,255.25	11-OCT-17	5,255.25	Reconciled
380943	05-OCT-17	JIN, YIZHOU			143.66			Negotiable
380944	05-OCT-17	JOE RHODES MAINT SERVICE INC			1,313.40	11-OCT-17	1,313.40	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 5
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
380945	05-OCT-17	JOHN MICHAEL COVAS			191.70	23-OCT-17	191.70	Reconciled
380946	05-OCT-17	JOHNSON, STEPHEN L			5,021.00	16-OCT-17	5,021.00	Reconciled
380947	05-OCT-17	JURIC-SEKHAR, GORDANA			12.52	11-OCT-17	12.52	Reconciled
380948	05-OCT-17	KAESER COMPRESSORS, INC.			354.00	10-OCT-17	354.00	Reconciled
380949	05-OCT-17	KAR, KIAN			80.06	12-OCT-17	80.06	Reconciled
380950	05-OCT-17	KAYUGA SOLUTION INC			79,960.00	12-OCT-17	79,960.00	Reconciled
380951	05-OCT-17	KDC CONSTRUCTION			803.33	31-OCT-17	803.33	Reconciled
380952	05-OCT-17	KENT & AMY DAHLBERG			6,595.25	11-OCT-17	6,595.25	Reconciled
380953	05-OCT-17	KHAN, YASMIN			21.52			Negotiable
380954	05-OCT-17	KINGKADE, JEROME			270.53	06-NOV-17	270.53	Reconciled
380955	05-OCT-17	KNUTESON, LINDSEY			44.36			Negotiable
380956	05-OCT-17	KOELLER NEBEKER CARLSON & HALUCK, LLP			2,705.96	11-OCT-17	2,705.96	Reconciled
380957	05-OCT-17	KUO, AMY			44.20	12-OCT-17	44.20	Reconciled
380958	05-OCT-17	LAM, TRAN			2,508.09	19-OCT-17	2,508.09	Reconciled
380959	05-OCT-17	LAUTENSCHLAGER, JANIE			70.81	17-OCT-17	70.81	Reconciled
380960	05-OCT-17	LEGRAND, MIETTE			41.25	12-OCT-17	41.25	Reconciled
380961	05-OCT-17	LEONARD CHAIDEZ TREE SERVICE			2,495.00	11-OCT-17	2,495.00	Reconciled
380962	05-OCT-17	LESLIE, PATTI			45.65	10-OCT-17	45.65	Reconciled
380963	05-OCT-17	LEWIS BRISBOIS BISGAARD AND SMITH, LLP			1,306.00	13-OCT-17	1,306.00	Reconciled
380964	05-OCT-17	LGC GEOTECHNICAL, INC.			2,810.00	10-OCT-17	2,810.00	Reconciled
380965	05-OCT-17	LSA ASSOCIATES INC			3,275.00	10-OCT-17	3,275.00	Reconciled
380966	05-OCT-17	MALLORY MOHR AND JASON MONTES			33.35	10-OCT-17	33.35	Reconciled
380967	05-OCT-17	MARINA LANDSCAPE MAINTENANCE, INC.			6,081.01	10-OCT-17	6,081.01	Reconciled
380968	05-OCT-17	MC FADDEN-DALE INDUSTRIAL			188.65	11-OCT-17	188.65	Reconciled
380969	05-OCT-17	MENOR, RAMONCHITO			40.13	11-OCT-17	40.13	Reconciled
380970	05-OCT-17	METROPOLIS GARDENS LLC			747.34	18-OCT-17	747.34	Reconciled
380971	05-OCT-17	MICHAEL BAKER INTERNATIONAL, INC.			6,740.00	10-OCT-17	6,740.00	Reconciled
380972	05-OCT-17	MITECH CONTROLS			473.43	12-OCT-17	473.43	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54

BANK: Bank of America N.A. Branch : Los Angeles
 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Account: Checking AP and PR Page: 6
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
380973		05-OCT-17	MUNICIPAL WATER DISTRICT OF ORANGE COUNTY		162,078.96	12-OCT-17	162,078.96	Reconciled
380974		05-OCT-17	NALCO CAL WATER, LLC		240.00	10-OCT-17	240.00	Reconciled
380975		05-OCT-17	NATIONAL READY MIXED CONCRETE CO.		690.22	10-OCT-17	690.22	Reconciled
380976		05-OCT-17	NATURES IMAGE INC		1,889.60	11-OCT-17	1,889.60	Reconciled
380977		05-OCT-17	NCH CORPORATION		544.74	11-OCT-17	544.74	Reconciled
380978		05-OCT-17	NEWPORT COAST OCEAN HEIGHTS 2 O.C. SUPERIOR CUSTOM CLEANING SERVICES		875.56			Negotiable
380979		05-OCT-17	O.C. SUPERIOR CUSTOM CLEANING SERVICES		1,672.00	17-OCT-17	1,672.00	Reconciled
380980		05-OCT-17	OCTA		5,525.00	11-OCT-17	5,525.00	Reconciled
380981		05-OCT-17	OLIN CORPORATION		14,716.47	16-OCT-17	14,716.47	Reconciled
380982		05-OCT-17	OMAR DANDASHI		8,122.35	07-NOV-17	8,122.35	Reconciled
380983		05-OCT-17	ONESOURCE DISTRIBUTORS LLC		8,451.41	10-OCT-17	8,451.41	Reconciled
380984		05-OCT-17	PACIFIC HYDROTECH CORPORATION		7,115.00	11-OCT-17	7,115.00	Reconciled
380985		05-OCT-17	PACIFIC HYDROTECH CORPORATION		135,185.00	16-OCT-17	135,185.00	Reconciled
380986		05-OCT-17	PARK, JAY J		74.04	16-OCT-17	74.04	Reconciled
380987		05-OCT-17	PARK, SOHYON		12.69			Negotiable
380988		05-OCT-17	PASCAL & LUDWIG CONSTRUCTORS		6,144.85	10-OCT-17	6,144.85	Reconciled
380989		05-OCT-17	PASCAL & LUDWIG CONSTRUCTORS		116,752.15	13-OCT-17	116,752.15	Reconciled
380990		05-OCT-17	PELLETIER & ASSOCIATES, INC.		1,165.00	10-OCT-17	1,165.00	Reconciled
380991		05-OCT-17	PINNACLE TOWERS LLC		692.68	12-OCT-17	692.68	Reconciled
380992		05-OCT-17	PIVOT INTERIORS INC		4,913.40	10-OCT-17	4,913.40	Reconciled
380993		05-OCT-17	POLLARDWATER.COM		720.11	10-OCT-17	720.11	Reconciled
380994		05-OCT-17	PRAXAIR DISTRIBUTION INC		223.71	11-OCT-17	223.71	Reconciled
380995		05-OCT-17	PRO MOBILE AUTO DETAILING		800.00	10-OCT-17	800.00	Reconciled
380996		05-OCT-17	PROBOLSKY RESEARCH LLC		5,000.00	11-OCT-17	5,000.00	Reconciled
380997		05-OCT-17	PSOMAS		3,557.50	10-OCT-17	3,557.50	Reconciled
380998		05-OCT-17	RAM AIR ENGINEERING INC		19,058.84	12-OCT-17	19,058.84	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 7
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
380999		05-OCT-17	RANCHO MADERAS APTS		49.40	20-OCT-17	49.40	Reconciled
381000		05-OCT-17	REACH EMPLOYEE ASSISTANCE INC		971.60	16-OCT-17	971.60	Reconciled
381001		05-OCT-17	REFRIGERATION SUPPLIES DISTRIBUTOR		391.62	10-OCT-17	391.62	Reconciled
381002		05-OCT-17	RICHARD C. SLADE & ASSOCIATES LLC		13,034.00	23-OCT-17	13,034.00	Reconciled
381003		05-OCT-17	RONO COMPANY		157.32	23-OCT-17	157.32	Reconciled
381004		05-OCT-17	SADRI, SAASAAN		1.15			Negotiable
381005		05-OCT-17	SAN CARLO APARTMENTS		56.42	20-OCT-17	56.42	Reconciled
381006		05-OCT-17	SANTA ANA BLUE PRINT		329.47	12-OCT-17	329.47	Reconciled
381007		05-OCT-17	SANTA MARGARITA FORD		111.01	11-OCT-17	111.01	Reconciled
381008		05-OCT-17	SATYASHISH, FNU		18.44	17-OCT-17	18.44	Reconciled
381009		05-OCT-17	SCHINDLER ELEVATOR CORPORATION		202.95	12-OCT-17	202.95	Reconciled
381010		05-OCT-17	SHAMROCK SUPPLY CO INC		770.69	11-OCT-17	770.69	Reconciled
381011		05-OCT-17	SITMATIC		721.41	11-OCT-17	721.41	Reconciled
381012		05-OCT-17	SOUTH BAY FOUNDRY, INC		7,898.08	11-OCT-17	7,898.08	Reconciled
381013		05-OCT-17	SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT		505.74	16-OCT-17	505.74	Reconciled
381014		05-OCT-17	SOUTH COAST WATER		2,378.81	10-OCT-17	2,378.81	Reconciled

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
381015	05-OCT-17		DISTRICT SOUTHERN CALIFORNIA EDISON COMPANY		377,905.10	10-OCT-17	377,905.10	Reconciled
381016	05-OCT-17		SOUTHERN CALIFORNIA SECURITY CENTERS, INC.		813.03	12-OCT-17	813.03	Reconciled
381017	05-OCT-17		STATE NET		2,500.00	10-OCT-17	2,500.00	Reconciled
381018	05-OCT-17		STICE COMPANY, INC		1,499.78	20-OCT-17	1,499.78	Reconciled
381019	05-OCT-17		SUNSHINE SUPPLY COMPANY, INC.		647.36	11-OCT-17	647.36	Reconciled
381020	05-OCT-17		TETRA TECH, INC		8,232.50	10-OCT-17	8,232.50	Reconciled
381021	05-OCT-17		THE FURMAN GROUP, INC.		12,753.00	16-OCT-17	12,753.00	Reconciled

IRWD Ledger Upgrade
 BANK: Bank of America N.A. Branch : Los Angeles
 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 8

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381022	05-OCT-17		THYSSENKRUPP ELEVATOR CORPORATION		371.67	11-OCT-17	371.67	Reconciled
381023	05-OCT-17		TOTAL RESOURCE MANAGEMENT, INC.		89,220.00	11-OCT-17	89,220.00	Reconciled
381024	05-OCT-17		TRI-STATE GENERAL CONTRACTORS INC		1,284.04	11-OCT-17	1,284.04	Reconciled
381025	05-OCT-17		TRIFAC MARKETING INC		155.64	11-OCT-17	155.64	Reconciled
381026	05-OCT-17		TROPICAL PLAZA NURSERY INC		6,230.93	10-OCT-17	6,230.93	Reconciled
381027	05-OCT-17		TYCO INTEGRATED SECURITY, LLC		474.11	11-OCT-17	474.11	Reconciled
381028	05-OCT-17		UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA		1,123.75	13-OCT-17	1,123.75	Reconciled
381029	05-OCT-17		UNITED STATES POST OFFICE		25,000.00	13-OCT-17	25,000.00	Reconciled
381030	05-OCT-17		VERIZON WIRELESS SERVICES LLC		3,137.93	11-OCT-17	3,137.93	Reconciled
381031	05-OCT-17		WACO FILTERS CORPORATION		6,743.62	11-OCT-17	6,743.62	Reconciled
381032	05-OCT-17		WANG, ANDREW		100.07	26-OCT-17	100.07	Reconciled
381033	05-OCT-17		WANG, LUYING		2.74	16-OCT-17	2.74	Reconciled
381034	05-OCT-17		WATERLINE TECHNOLOGIES INC		2,410.00	10-OCT-17	2,410.00	Reconciled
381035	05-OCT-17		WAXIE'S ENTERPRISES, INC		1,917.72	11-OCT-17	1,917.72	Reconciled
381036	05-OCT-17		WECK LABORATORIES INC		3,075.00	13-OCT-17	3,075.00	Reconciled
381037	05-OCT-17		WESTAMERICA COMMUNICATIONS, INC.		2,857.00	10-OCT-17	2,857.00	Reconciled
381038	05-OCT-17		WESTERN SAFETY PRODUCTS INC		2,103.55	10-OCT-17	2,103.55	Reconciled
381039	05-OCT-17		WHITE, STEPHEN		15.70			Negotiable
381040	05-OCT-17		YUAN, JIACHENG		85.67	16-OCT-17	85.67	Reconciled
381041	05-OCT-17		ZEE MEDICAL SERVICE CO		353.90	11-OCT-17	353.90	Reconciled
381042	10-OCT-17		CITY OF IRVINE	IRVINE 1	96.00	17-OCT-17	96.00	Reconciled
381043	11-OCT-17		JCI JONES CHEMICALS INC	TAMPA	6,236.82	17-OCT-17	6,236.82	Reconciled
381044	12-OCT-17		Fournier, Tanja L (Tanja)		1,114.27	12-OCT-17	1,114.27	Reconciled
381045	12-OCT-17		La, Jason (Jason)		118.53	13-OCT-17	118.53	Reconciled

IRWD Ledger Upgrade
 BANK: Bank of America N.A. Branch : Los Angeles
 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 9

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381046	12-OCT-17		Reideler, Kevin		90.00	23-OCT-17	90.00	Reconciled
381047	12-OCT-17		Reyes Aguirre, Lizbhet (Liz)		42.37	16-OCT-17	42.37	Reconciled
381048	12-OCT-17		Stragier, Stephanie		150.85	17-OCT-17	150.85	Reconciled
381049	12-OCT-17		Willis, Andrew R (Andrew)		105.00			Negotiable
381050	12-OCT-17		COUNTY OF ORANGE	1241 E DYER RD	10,066.75	18-OCT-17	10,066.75	Reconciled
381051	12-OCT-17		COUNTY OF ORANGE	1241 E DYER RD	7,922.50	20-OCT-17	7,922.50	Reconciled
381052	12-OCT-17		COUNTY OF ORANGE	1241 E	3,964.50	20-OCT-17	3,964.50	Reconciled

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
381053		12-OCT-17	CANON SOLUTIONS AMERICA, INC.	DYER RD CHICAGO	3,603.29	17-OCT-17	3,603.29	Reconciled
381054		12-OCT-17	4IMPRINT, INC.		581.94	18-OCT-17	581.94	Reconciled
381055		12-OCT-17	A AND Y COMPANY INC		14,077.00	23-OCT-17	14,077.00	Reconciled
381056		12-OCT-17	AAF INTERNATIONAL		1,338.70	18-OCT-17	1,338.70	Reconciled
381057		12-OCT-17	ACCUSTANDARD INC		319.00	19-OCT-17	319.00	Reconciled
381058		12-OCT-17	ADS LLC		2,160.00	17-OCT-17	2,160.00	Reconciled
381059		12-OCT-17	AFLAC		6,809.81	20-OCT-17	6,809.81	Reconciled
381060		12-OCT-17	AFLAC		203.12	24-OCT-17	203.12	Reconciled
381061		12-OCT-17	AIR TECHNOLOGY LABORATORIES		503.00	26-OCT-17	503.00	Reconciled
381062		12-OCT-17	AIRGAS, INC.		114.47	16-OCT-17	114.47	Reconciled
381063		12-OCT-17	AM LEONARD INC		284.92	16-OCT-17	284.92	Reconciled
381064		12-OCT-17	AMAZON CAPITAL SERVICES, INC.		1,290.84	16-OCT-17	1,290.84	Reconciled
381065		12-OCT-17	ANDERSON'S NU POWER CO., INC		24,500.00	19-OCT-17	24,500.00	Reconciled
381066		12-OCT-17	ARC		395.73	17-OCT-17	395.73	Reconciled
381067		12-OCT-17	ARCADIS U.S., INC.		82,081.74	19-OCT-17	82,081.74	Reconciled
381068		12-OCT-17	ARCHITERRA INC.		8,494.71	17-OCT-17	8,494.71	Reconciled
381069		12-OCT-17	AT&T		3,587.32	18-OCT-17	3,587.32	Reconciled
381070		12-OCT-17	AT&T		48.99	18-OCT-17	48.99	Reconciled
381071		12-OCT-17	AT&T		1,661.41	18-OCT-17	1,661.41	Reconciled
381072		12-OCT-17	AUTOZONE PARTS, INC.		169.95	19-OCT-17	169.95	Reconciled
381073		12-OCT-17	BARTEL ASSOCIATES, LLC		3,082.50	16-OCT-17	3,082.50	Reconciled
381074		12-OCT-17	BIOQUIP PRODUCTS INC		706.19	16-OCT-17	706.19	Reconciled
381075		12-OCT-17	BLAIRS TOWING INC		95.00	20-OCT-17	95.00	Reconciled
381076		12-OCT-17	BRUCE NEWELL		1,250.00	17-OCT-17	1,250.00	Reconciled

IRWD Ledger Upgrade
 BANK: Bank of America N.A. Branch : Los Angeles
 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 10

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381077		12-OCT-17	BURKE, WILLIAMS & SORENSEN, LLP		11,493.45	23-OCT-17	11,493.45	Reconciled
381078		12-OCT-17	C WELLS PIPELINE MATERIALS INC		5,479.09	17-OCT-17	5,479.09	Reconciled
381079		12-OCT-17	CALIFORNIA BARRICADE RENTAL, INC.		4,423.75	16-OCT-17	4,423.75	Reconciled
381080		12-OCT-17	CANON SOLUTIONS AMERICA, INC.		10,845.43	19-OCT-17	10,845.43	Reconciled
381081		12-OCT-17	CHO DESIGN ASSOCIATES, INC		15,350.00	19-OCT-17	15,350.00	Reconciled
381082		12-OCT-17	CLEARINGHOUSE		477.67	19-OCT-17	477.67	Reconciled
381083		12-OCT-17	COLONIAL LIFE & ACCIDENT INSURANCE CO.		1,094.30	19-OCT-17	1,094.30	Reconciled
381084		12-OCT-17	CONNEXUS INDUSTRIES INC.		39,895.80	02-NOV-17	39,895.80	Reconciled
381085		12-OCT-17	CULLIGAN OF SANTA ANA		5,014.25	16-OCT-17	5,014.25	Reconciled
381086		12-OCT-17	DATASITE INC		38,581.00	27-OCT-17	38,581.00	Reconciled
381087		12-OCT-17	DAVID TAUSSIG & ASSOCIATES, INC.		590.19	30-OCT-17	590.19	Reconciled
381088		12-OCT-17	DDB ENGINEERING, INC.		720.00	17-OCT-17	720.00	Reconciled
381089		12-OCT-17	EAST ORANGE COUNTY WATER DISTRICT		67,839.34	19-OCT-17	67,839.34	Reconciled
381090		12-OCT-17	ENTERPRISE RIDESHARE		10,730.00	23-OCT-17	10,730.00	Reconciled
381091		12-OCT-17	ENVIRONMENTAL RESOURCE ASSOCIATES		158.79	18-OCT-17	158.79	Reconciled
381092		12-OCT-17	EXECUTIVE LIGHTING & ELECTRIC		1,814.94	17-OCT-17	1,814.94	Reconciled
381093		12-OCT-17	FEDEX TRADE NETWORKS TRANSPORT & BROKERAGE, INC.		531.50	16-OCT-17	531.50	Reconciled
381094		12-OCT-17	FLEET SOLUTIONS LLC		4,821.10	16-OCT-17	4,821.10	Reconciled
381095		12-OCT-17	FUSCOE ENGINEERING, INC.		414.31	16-OCT-17	414.31	Reconciled
381096		12-OCT-17	GEIGER BROS		77.23	18-OCT-17	77.23	Reconciled
381097		12-OCT-17	GHD INC.		10,035.78	18-OCT-17	10,035.78	Reconciled
381098		12-OCT-17	GRAINGER		1,065.66	16-OCT-17	1,065.66	Reconciled
381099		12-OCT-17	GRAYBAR ELECTRIC COMPANY		191.30	16-OCT-17	191.30	Reconciled

IRWD Ledger Upgrade
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 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 11

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381100		12-OCT-17	HAAKER EQUIPMENT COMPANY		41,858.93	19-OCT-17	41,858.93	Reconciled
381101		12-OCT-17	HACH COMPANY		1,328.15	17-OCT-17	1,328.15	Reconciled
381102		12-OCT-17	HANNA INSTRUMENTS UNITED STATES, INC		259.68	16-OCT-17	259.68	Reconciled
381103		12-OCT-17	HARMSWORTH ASSOCIATES		2,349.00	27-OCT-17	2,349.00	Reconciled
381104		12-OCT-17	HARTFORD LIFE AND ACCIDENT INSURANCE COMPANY		99.09	19-OCT-17	99.09	Reconciled
381105		12-OCT-17	HDR ENGINEERING INC		11,557.50	19-OCT-17	11,557.50	Reconciled
381106		12-OCT-17	HELPMATES STAFFING SERVICES		15,010.99	17-OCT-17	15,010.99	Reconciled
381107		12-OCT-17	HILL BROTHERS CHEMICAL COMPANY		1,660.60	18-OCT-17	1,660.60	Reconciled
381108		12-OCT-17	HOME DEPOT USA INC		2,013.04	18-OCT-17	2,013.04	Reconciled
381109		12-OCT-17	INDUSTRIAL METAL SUPPLY CO		172.42	17-OCT-17	172.42	Reconciled
381110		12-OCT-17	INGERSOLL RAND CO		2,335.92	17-OCT-17	2,335.92	Reconciled
381111		12-OCT-17	INORGANIC VENTURES INC		179.45	16-OCT-17	179.45	Reconciled
381112		12-OCT-17	INTEGRITY IT SOLUTIONS INC.		750.00	18-OCT-17	750.00	Reconciled
381113		12-OCT-17	IRELAND, INC.		16,307.25	18-OCT-17	16,307.25	Reconciled
381114		12-OCT-17	IRVINE PIPE & SUPPLY INC		2,245.00	16-OCT-17	2,245.00	Reconciled
381115		12-OCT-17	IRWD EMPLOYEE ASSOCIATION		1,280.00	20-OCT-17	1,280.00	Reconciled
381116		12-OCT-17	JACKSON TIDUS, A LAW CORPORATION		94,599.19	17-OCT-17	94,599.19	Reconciled
381117		12-OCT-17	JIA, SHIMIN		2,965.63	18-OCT-17	2,965.63	Reconciled
381118		12-OCT-17	JOE RHODES MAINT SERVICE INC		699.72	18-OCT-17	699.72	Reconciled
381119		12-OCT-17	JOHNSON-PELTIER		89,324.39	18-OCT-17	89,324.39	Reconciled
381120		12-OCT-17	KIM, SOON TAE		750.00	17-OCT-17	750.00	Reconciled
381121		12-OCT-17	KORENGOLD, RACHEL		42.02	26-OCT-17	42.02	Reconciled
381122		12-OCT-17	KS DIRECT LLC		950.36	17-OCT-17	950.36	Reconciled
381123		12-OCT-17	LA HABRA FENCE COMPANY INC		10,871.00	23-OCT-17	10,871.00	Reconciled
381124		12-OCT-17	MC MASTER CARR SUPPLY CO		693.02	17-OCT-17	693.02	Reconciled
381125		12-OCT-17	MC PAINTING		6,995.00	18-OCT-17	6,995.00	Reconciled
381126		12-OCT-17	MCR TECHNOLOGIES INC		25,926.55	18-OCT-17	25,926.55	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 12
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381127		12-OCT-17	MICHAEL BAKER INTERNATIONAL, INC.		18,095.27	19-OCT-17	18,095.27	Reconciled
381128		12-OCT-17	MORRISROE, EDWARD		212.37	18-OCT-17	212.37	Reconciled
381129		12-OCT-17	MUNICIPAL MAINTENANCE EQUIPMENT INC		975.06	16-OCT-17	975.06	Reconciled
381130		12-OCT-17	MUNICIPAL WATER DISTRICT OF ORANGE COUNTY		125,747.39	17-OCT-17	125,747.39	Reconciled
381131		12-OCT-17	NATIONAL READY MIXED CONCRETE CO.		1,298.13	16-OCT-17	1,298.13	Reconciled
381132		12-OCT-17	NATURALWELL, LLC		1,292.50	16-OCT-17	1,292.50	Reconciled
381133		12-OCT-17	NEW RESOURCES GROUP INC		416.63	16-OCT-17	416.63	Reconciled
381134		12-OCT-17	NOSSAMAN LLP		12,529.23	18-OCT-17	12,529.23	Reconciled
381135		12-OCT-17	OLIN CORPORATION		14,715.23	20-OCT-17	14,715.23	Reconciled
381136		12-OCT-17	ONESOURCE DISTRIBUTORS LLC		5,687.29	16-OCT-17	5,687.29	Reconciled
381137		12-OCT-17	ORANGE COUNTY SANITATION DISTRICT		3,653,373.04	17-OCT-17	3,653,373.04	Reconciled
381138		12-OCT-17	ORANGE COUNTY SHERIFF'S OFFICE		62.50	23-OCT-17	62.50	Reconciled
381139		12-OCT-17	ORANGE COUNTY WATER DISTRICT		83,749.00	17-OCT-17	83,749.00	Reconciled
381140		12-OCT-17	PACIFIC COAST BOLT CORP		971.44	18-OCT-17	971.44	Reconciled
381141		12-OCT-17	PALO VERDE IRRIGATION DISTRICT		2,336.13	18-OCT-17	2,336.13	Reconciled
381142		12-OCT-17	PAPER DEPOT DOCUMENT DESTRUCTION LLC		720.00	20-OCT-17	720.00	Reconciled

381143	12-OCT-17	PARKWAY LAWNMOWER SHOP	84.10	17-OCT-17	84.10	Reconciled
381144	12-OCT-17	PAUL, RICHARD	377.38	20-OCT-17	377.38	Reconciled
381145	12-OCT-17	FAULUS ENGINEERING, INC.	5,056.73	16-OCT-17	5,056.73	Reconciled
381146	12-OCT-17	PERS LONG TERM CARE	878.66	18-OCT-17	878.66	Reconciled
381147	12-OCT-17	PMC ENGINEERING LLC.	1,376.90	20-OCT-17	1,376.90	Reconciled
381148	12-OCT-17	PRE-PAID LEGAL SERVICES INC	1,300.29	20-OCT-17	1,300.29	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 13
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381149	12-OCT-17	12-OCT-17	PRUDENTIAL OVERALL SUPPLY		5,972.68	17-OCT-17	5,972.68	Reconciled
381150	12-OCT-17	12-OCT-17	QUALITY ENVIRONMENTAL CONTAINERS		7,333.05	18-OCT-17	7,333.05	Reconciled
381151	12-OCT-17	12-OCT-17	QUINN RENTAL SERVICES		2,688.40	16-OCT-17	2,688.40	Reconciled
381152	12-OCT-17	12-OCT-17	RAM AIR ENGINEERING INC		2,915.00	17-OCT-17	2,915.00	Reconciled
381153	12-OCT-17	12-OCT-17	RED WING SHOE STORE		498.85	17-OCT-17	498.85	Reconciled
381154	12-OCT-17	12-OCT-17	RINGCLEAR LLC		129.00	17-OCT-17	129.00	Reconciled
381155	12-OCT-17	12-OCT-17	RON TURLEY ASSOCIATES INC		2,754.00	16-OCT-17	2,754.00	Reconciled
381156	12-OCT-17	12-OCT-17	SANTA MARGARITA FORD		77.22	17-OCT-17	77.22	Reconciled
381157	12-OCT-17	12-OCT-17	SCHWEITZER ENGINEERING LABORATORIES, INC.		398.68	16-OCT-17	398.68	Reconciled
381158	12-OCT-17	12-OCT-17	SECURITAS SECURITY SERVICES USA, INC.		28,964.33	18-OCT-17	28,964.33	Reconciled
381159	12-OCT-17	12-OCT-17	SEPARATION PROCESSES INC		1,573.25	17-OCT-17	1,573.25	Reconciled
381160	12-OCT-17	12-OCT-17	SHAMROCK SUPPLY CO INC		287.91	17-OCT-17	287.91	Reconciled
381161	12-OCT-17	12-OCT-17	SHERWIN WILLIAMS COMPANY		1,555.71	17-OCT-17	1,555.71	Reconciled
381162	12-OCT-17	12-OCT-17	SHIELDS, HARPER & CO.		1,504.20	16-OCT-17	1,504.20	Reconciled
381163	12-OCT-17	12-OCT-17	SHOETERIA		140.59	23-OCT-17	140.59	Reconciled
381164	12-OCT-17	12-OCT-17	SIGMA-ALDRICH INC		162.18	17-OCT-17	162.18	Reconciled
381165	12-OCT-17	12-OCT-17	SOFTCHOICE CORPORATION		1,595.92	17-OCT-17	1,595.92	Reconciled
381166	12-OCT-17	12-OCT-17	SOUTH COAST ANSWERING SERVICE		625.42	16-OCT-17	625.42	Reconciled
381167	12-OCT-17	12-OCT-17	SOUTHERN CALIFORNIA EDISON COMPANY		18,324.15	16-OCT-17	18,324.15	Reconciled
381168	12-OCT-17	12-OCT-17	SOUTHERN CALIFORNIA SECURITY CENTERS, INC.		379.27	23-OCT-17	379.27	Reconciled
381169	12-OCT-17	12-OCT-17	SOUTHERN COUNTIES LUBRICANTS LLC		1,769.10	17-OCT-17	1,769.10	Reconciled
381170	12-OCT-17	12-OCT-17	SPX FLOW US, LLC		342.83	17-OCT-17	342.83	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 14
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
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Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381171	12-OCT-17	12-OCT-17	SUKLE ADVERTISING INC.		130,330.62	24-OCT-17	130,330.62	Reconciled
381172	12-OCT-17	12-OCT-17	SUNSHINE SUPPLY COMPANY, INC.		1,900.76	17-OCT-17	1,900.76	Reconciled
381173	12-OCT-17	12-OCT-17	SUSAN A. SIROTA		4,295.00	16-OCT-17	4,295.00	Reconciled
381174	12-OCT-17	12-OCT-17	TESTAMERICA LABORATORIES, INC		192.15	19-OCT-17	192.15	Reconciled
381175	12-OCT-17	12-OCT-17	THE GAS COMPANY		4,742.01	18-OCT-17	4,742.01	Reconciled
381176	12-OCT-17	12-OCT-17	THOMAS, MARVA D		32.94	23-OCT-17	32.94	Reconciled
381177	12-OCT-17	12-OCT-17	TIGHT QUARTERS INC.		25,600.00	23-OCT-17	25,600.00	Reconciled
381178	12-OCT-17	12-OCT-17	TROPICAL PLAZA NURSERY INC		1,320.50	16-OCT-17	1,320.50	Reconciled
381179	12-OCT-17	12-OCT-17	TRUCPARCO		2,896.52	24-OCT-17	2,896.52	Reconciled
381180	12-OCT-17	12-OCT-17	TSE, JOHN		9,193.14	13-OCT-17	9,193.14	Reconciled
381181	12-OCT-17	12-OCT-17	UNITED PARCEL SERVICE INC		118.22	17-OCT-17	118.22	Reconciled

381182	12-OCT-17	UNITED RENTALS NORTHWEST INC	4,503.91	16-OCT-17	4,503.91	Reconciled
381183	12-OCT-17	UNITED SITE SERVICES OF CALIFORNIA INC	152.29	18-OCT-17	152.29	Reconciled
381184	12-OCT-17	USA BLUEBOOK	253.54	19-OCT-17	253.54	Reconciled
381185	12-OCT-17	VRIDE INC	2,153.93	17-OCT-17	2,153.93	Reconciled
381186	12-OCT-17	WASTE MANAGEMENT OF ORANGE COUNTY	4,551.53	17-OCT-17	4,551.53	Reconciled
381187	12-OCT-17	WATERLINE TECHNOLOGIES INC	5,822.00	16-OCT-17	5,822.00	Reconciled
381188	12-OCT-17	WAXIE'S ENTERPRISES, INC	379.71	19-OCT-17	379.71	Reconciled
381189	12-OCT-17	WEST COAST SAFETY SUPPLY INC	9,999.90	23-OCT-17	9,999.90	Reconciled
381190	12-OCT-17	WESTAMERICA COMMUNICATIONS, INC.	450.00	16-OCT-17	450.00	Reconciled
381191	12-OCT-17	YALE/CHASE EQUIPMENT AND SERVICES, INC.	13,575.75	18-OCT-17	13,575.75	Reconciled
381192	12-OCT-17	YP LLC	125.00	18-OCT-17	125.00	Reconciled
381193	12-OCT-17	ZEE MEDICAL SERVICE CO	940.15	17-OCT-17	940.15	Reconciled
381194	19-OCT-17	Akiyoshi, Eric S (Eric)	1,069.25	24-OCT-17	1,069.25	Reconciled
381195	19-OCT-17	Garcia, Juan	206.75			Negotiable
381196	19-OCT-17	Lam, Chau B (Joe)	170.16			Negotiable

IRWD Ledger Upgrade
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 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 15

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381197		19-OCT-17	Martin, Didene J (De)		150.00	03-NOV-17	150.00	Reconciled
381198		19-OCT-17	Morabito, Chadd		90.00	20-OCT-17	90.00	Reconciled
381199		19-OCT-17	Murphy, Alexander J (Alexander)		115.00	31-OCT-17	115.00	Reconciled
381200		19-OCT-17	Sheilds, Patrick		6.00			Negotiable
381201		19-OCT-17	Spangenberg, Carl W (Carl)		72.23	19-OCT-17	72.23	Reconciled
381202		19-OCT-17	KILL-N-BUGS TERMITE AND PEST CONTROL SERVICES	PAY	1,850.00	23-OCT-17	1,850.00	Reconciled
381203		19-OCT-17	ACCUSOURCE, INC.		832.45	26-OCT-17	832.45	Reconciled
381204		19-OCT-17	AIRGAS, INC.		1,105.90	23-OCT-17	1,105.90	Reconciled
381205		19-OCT-17	ALTMAN, DANIEL		952.73	02-NOV-17	952.73	Reconciled
381206		19-OCT-17	ANDERSONPENNA PARTNERS, INC.		6,436.00	24-OCT-17	6,436.00	Reconciled
381207		19-OCT-17	ANTHEM BLUE CROSS		1,092.66	25-OCT-17	1,092.66	Reconciled
381208		19-OCT-17	ANTHEM BLUE CROSS		281.97	25-OCT-17	281.97	Reconciled
381209		19-OCT-17	ANTHEM BLUE CROSS		208.43	25-OCT-17	208.43	Reconciled
381210		19-OCT-17	ANTHEM BLUE CROSS		1,092.66	25-OCT-17	1,092.66	Reconciled
381211		19-OCT-17	APCO GRAPHICS INC		237.55	23-OCT-17	237.55	Reconciled
381212		19-OCT-17	APEX LIFE SCIENCES, LLC		1,400.00	24-OCT-17	1,400.00	Reconciled
381213		19-OCT-17	AQUA BEN CORPORATION		37,137.33	26-OCT-17	37,137.33	Reconciled
381214		19-OCT-17	AQUA-METRIC SALES COMPANY		36,507.58	30-OCT-17	36,507.58	Reconciled
381215		19-OCT-17	ARC		47.52	24-OCT-17	47.52	Reconciled
381216		19-OCT-17	ARCHITERRA INC.		2,100.05	23-OCT-17	2,100.05	Reconciled
381217		19-OCT-17	ARIZONA INSTRUMENT LLC		1,780.32	23-OCT-17	1,780.32	Reconciled
381218		19-OCT-17	AT&T		3,783.65	25-OCT-17	3,783.65	Reconciled
381219		19-OCT-17	AT&T		2,060.42	25-OCT-17	2,060.42	Reconciled
381220		19-OCT-17	ATHENS SERVICES		7,340.62	26-OCT-17	7,340.62	Reconciled
381221		19-OCT-17	AUTOZONE PARTS, INC.		745.06	25-OCT-17	745.06	Reconciled
381222		19-OCT-17	BAKER RANCH COMMUNITY ASSOCIATION		8,504.85	25-OCT-17	8,504.85	Reconciled
381223		19-OCT-17	BAKER, ROBERT J		95.51	06-NOV-17	95.51	Reconciled
381224		19-OCT-17	BARBA, ROMA		24.40	30-OCT-17	24.40	Reconciled
381225		19-OCT-17	BATTERIES PLUS AND BATTERIES PLUS BULBS		415.75	25-OCT-17	415.75	Reconciled
381226		19-OCT-17	BDC SPECIAL WASTE		1,270.55	25-OCT-17	1,270.55	Reconciled

IRWD Ledger Upgrade
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 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 16

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								

381227	19-OCT-17	BEST DRILLING AND PUMP, INC.	30,796.75	26-OCT-17	30,796.75	Reconciled
381228	19-OCT-17	BIGWIG MONSTER, LLC	26,400.00	20-OCT-17	26,400.00	Reconciled
381229	19-OCT-17	BIOMAGIC INC	21,444.08	25-OCT-17	21,444.08	Reconciled
381230	19-OCT-17	BIOQUIP PRODUCTS INC	594.51	24-OCT-17	594.51	Reconciled
381231	19-OCT-17	BOYD & ASSOCIATES	228.00	24-OCT-17	228.00	Reconciled
381232	19-OCT-17	BREDFELDT, BARBARA	55.38	25-OCT-17	55.38	Reconciled
381233	19-OCT-17	BRENNTAG PACIFIC INC	10,666.02	26-OCT-17	10,666.02	Reconciled
381234	19-OCT-17	BRITHINEE ELECTRIC	14,035.74	26-OCT-17	14,035.74	Reconciled
381235	19-OCT-17	CALIFORNIA BARRICADE RENTAL, INC.	3,957.68	23-OCT-17	3,957.68	Reconciled
381236	19-OCT-17	CALIFORNIA MUNICIPAL STATISTICS INC	50.00	31-OCT-17	50.00	Reconciled
381237	19-OCT-17	CANON FINANCIAL SERVICES, INC	401.91	24-OCT-17	401.91	Reconciled
381238	19-OCT-17	CANON SOLUTIONS AMERICA, INC.	216.84	24-OCT-17	216.84	Reconciled
381239	19-OCT-17	CHAIREL CUSTOM HAY, INC.	10,674.81	30-OCT-17	10,674.81	Reconciled
381240	19-OCT-17	CHANG, HUEI	130.80			Negotiable
381241	19-OCT-17	CITY OF LAKE FOREST	161.51			Negotiable
381242	19-OCT-17	CITY OF SANTA ANA	224.01	23-OCT-17	224.01	Reconciled
381243	19-OCT-17	CITY OF TUSTIN	616.19	23-OCT-17	616.19	Reconciled
381244	19-OCT-17	CIVILSOURCE, INC.	54,940.50	30-OCT-17	54,940.50	Reconciled
381245	19-OCT-17	COASTAL IGNITION & CONTROLS, INC	1,916.69	25-OCT-17	1,916.69	Reconciled
381246	19-OCT-17	COMMERCIAL DOOR OF ORANGE COUNTY, INC.	1,412.89	25-OCT-17	1,412.89	Reconciled
381247	19-OCT-17	COUNTY OF RIVERSIDE	65,771.74	31-OCT-17	65,771.74	Reconciled
381248	19-OCT-17	COX CONSTRUCTION CO.	685.64	24-OCT-17	685.64	Reconciled
381249	19-OCT-17	CR & R INCORPORATED	384.48	24-OCT-17	384.48	Reconciled
381250	19-OCT-17	DAVIS FARR LLP	32,000.00	30-OCT-17	32,000.00	Reconciled
381251	19-OCT-17	DEE JASPAR & ASSOCIATES, INC.	18,144.20	31-OCT-17	18,144.20	Reconciled
381252	19-OCT-17	DIACONESCU, DIANA	19.20	30-OCT-17	19.20	Reconciled

IRWD Ledger Upgrade
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Report Date: 09-NOV-2017 10:54
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar) Page: 17
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381253		19-OCT-17	DIVITA BUILDERS INC.		1,448.58	24-OCT-17	1,448.58	Reconciled
381254		19-OCT-17	DIVITA BUILDERS, INC.		1,430.06	24-OCT-17	1,430.06	Reconciled
381255		19-OCT-17	DRA ARCHITECTS, A CALIFORNIA CORPORATION		7,243.50	24-OCT-17	7,243.50	Reconciled
381256		19-OCT-17	EI&C ENGINEERING INC		55,559.00	26-OCT-17	55,559.00	Reconciled
381257		19-OCT-17	EMPLOYEE BENEFIT SPECIALIST, INC		1,285.00	26-OCT-17	1,285.00	Reconciled
381258		19-OCT-17	EXCHANGE CLUB OF IRVINE		500.00			Negotiable
381259		19-OCT-17	EXECUTIVE LIGHTING & ELECTRIC		10,309.75	26-OCT-17	10,309.75	Reconciled
381260		19-OCT-17	FARRELL & ASSOCIATES		4,844.21	23-OCT-17	4,844.21	Reconciled
381261		19-OCT-17	FEDEX		354.23	24-OCT-17	354.23	Reconciled
381262		19-OCT-17	FISHER SCIENTIFIC COMPANY LLC		4,087.36	23-OCT-17	4,087.36	Reconciled
381263		19-OCT-17	FLOOM, SUSAN		313.83	25-OCT-17	313.83	Reconciled
381264		19-OCT-17	FLUID COMPONENTS INTERNATIONAL L.L.C.		2,236.43	23-OCT-17	2,236.43	Reconciled
381265		19-OCT-17	FLUID CONSERVATION SYSTEMS INC		218.07	23-OCT-17	218.07	Reconciled
381266		19-OCT-17	FLW SERVICE CORPORATION		675.00	25-OCT-17	675.00	Reconciled
381267		19-OCT-17	FORESTRY SUPPLIERS INC		4,666.91	23-OCT-17	4,666.91	Reconciled
381268		19-OCT-17	FRONTIER CALIFORNIA INC.		528.80	27-OCT-17	528.80	Reconciled
381269		19-OCT-17	GAINQUICK LLC		74.82			Negotiable
381270		19-OCT-17	GCI CONSTRUCTION, INC		1,633.83	25-OCT-17	1,633.83	Reconciled
381271		19-OCT-17	GENTERRA CONSULTANTS INC		518.00	23-OCT-17	518.00	Reconciled
381272		19-OCT-17	GOODMAN, GUY		44.96	03-NOV-17	44.96	Reconciled
381273		19-OCT-17	GRAINGER		2,163.68	23-OCT-17	2,163.68	Reconciled

381274	19-OCT-17	GRAYBAR ELECTRIC COMPANY		3,612.23	23-OCT-17	3,612.23	Reconciled
381275	19-OCT-17	HACH COMPANY		10,188.28	27-OCT-17	10,188.28	Reconciled
381276	19-OCT-17	HARRINGTON INDUSTRIAL PLASTICS LLC		29,324.41	26-OCT-17	29,324.41	Reconciled
381277	19-OCT-17	HASLER INC.		270.38	23-OCT-17	270.38	Reconciled

IRWD Ledger Upgrade
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Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 18

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
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381278		19-OCT-17	HELPMATES STAFFING SERVICES		13,973.65	25-OCT-17	13,973.65	Reconciled
381279		19-OCT-17	HILL BROTHERS CHEMICAL COMPANY		15,445.76	26-OCT-17	15,445.76	Reconciled
381280		19-OCT-17	HOME DEPOT USA INC		4,575.62	24-OCT-17	4,575.62	Reconciled
381281		19-OCT-17	IRON MOUNTAIN INFORMATION MANAGEMENT INC		1,473.63	25-OCT-17	1,473.63	Reconciled
381282		19-OCT-17	IRVINE COMMUNITY DEVELOPMENT COMPANY LLC		167,418.00	30-OCT-17	167,418.00	Reconciled
381283		19-OCT-17	IRVINE PIPE & SUPPLY INC		1,704.38	23-OCT-17	1,704.38	Reconciled
381284		19-OCT-17	IRWD-PETTY CASH CUSTODIAN		1,178.98	23-OCT-17	1,178.98	Reconciled
381285		19-OCT-17	JCI JONES CHEMICALS INC		4,508.00	25-OCT-17	4,508.00	Reconciled
381286		19-OCT-17	JIANG, LAN		1,361.14	08-NOV-17	1,361.14	Reconciled
381287		19-OCT-17	JIG CONSULTANTS		460.00	27-OCT-17	460.00	Reconciled
381288		19-OCT-17	JIN, LING		32.86	23-OCT-17	32.86	Reconciled
381289		19-OCT-17	KASA CONSTRUCTION		1,312.90			Negotiable
381290		19-OCT-17	KATZ & ASSOCIATES, INC.		420.00	23-OCT-17	420.00	Reconciled
381291		19-OCT-17	KERN COUNTY TREASURER TAX COLLECTOR		37,767.68	01-NOV-17	37,767.68	Reconciled
381292		19-OCT-17	KILL-N-BUGS TERMITE AND PEST CONTROL SERVICES		6,970.00	23-OCT-17	6,970.00	Reconciled
381293		19-OCT-17	KLEINFELDER, INC.		11,027.64	27-OCT-17	11,027.64	Reconciled
381294		19-OCT-17	LANDCARE HOLDINGS, INC.		79,230.95	30-OCT-17	79,230.95	Reconciled
381295		19-OCT-17	LCS TECHNOLOGIES, INC.		3,982.50	23-OCT-17	3,982.50	Reconciled
381296		19-OCT-17	LEE, JOOHYUN		74.73	24-OCT-17	74.73	Reconciled
381297		19-OCT-17	MBC APPLIED ENVIRONMENTAL SCIENCES		1,300.00	23-OCT-17	1,300.00	Reconciled
381298		19-OCT-17	MC FADDEN-DALE INDUSTRIAL		35.56	23-OCT-17	35.56	Reconciled
381299		19-OCT-17	MC MASTER CARR SUPPLY CO		2,437.92	23-OCT-17	2,437.92	Reconciled
381300		19-OCT-17	METTLER-TOLEDO RAININ, LLC		1,220.31	24-OCT-17	1,220.31	Reconciled

IRWD Ledger Upgrade
 BANK: Bank of America N.A. Branch : Los Angeles
 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 19

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381301		19-OCT-17	MICHAEL BAKER INTERNATIONAL, INC.		4,609.72	23-OCT-17	4,609.72	Reconciled
381302		19-OCT-17	MILLER, BENJAMIN		247.84	24-OCT-17	247.84	Reconciled
381303		19-OCT-17	MOBILE MODULAR MANAGEMENT CORPORATION		1,018.24	23-OCT-17	1,018.24	Reconciled
381304		19-OCT-17	MR CRANE INC		980.50	23-OCT-17	980.50	Reconciled
381305		19-OCT-17	MUNICIPAL WATER DISTRICT OF ORANGE COUNTY		25,953.15	25-OCT-17	25,953.15	Reconciled
381306		19-OCT-17	NEELD, DOUGLAS A		49.13	31-OCT-17	49.13	Reconciled
381307		19-OCT-17	NEPTUNE TECHNOLOGY GROUP, INC.		21.55	23-OCT-17	21.55	Reconciled
381308		19-OCT-17	NMG GEOTECHNICAL INC		3,283.80			Negotiable
381309		19-OCT-17	OLIN CORPORATION		21,182.20	27-OCT-17	21,182.20	Reconciled
381310		19-OCT-17	ONESOURCE DISTRIBUTORS LLC		7,907.52	23-OCT-17	7,907.52	Reconciled
381311		19-OCT-17	ORANGE COUNTY MOSQUITO AND VECTOR CONTROL		72.69			Negotiable

381312	19-OCT-17	DISTRICT ORTIZ ENTERPRISES INC.		1,160.45				Negotiable
381313	19-OCT-17	PALO VERDE IRRIGATION DISTRICT		22,258.00	31-OCT-17	22,258.00		Reconciled
381314	19-OCT-17	PARKHOUSE TIRE INC		812.23	23-OCT-17	812.23		Reconciled
381315	19-OCT-17	PARKHOUSE TIRE INC		430.54	23-OCT-17	430.54		Reconciled
381316	19-OCT-17	PINNACLE TOWERS LLC		692.68	24-OCT-17	692.68		Reconciled
381317	19-OCT-17	PIPELINE PRODUCTS INC		1,176.85	23-OCT-17	1,176.85		Reconciled
381318	19-OCT-17	POWERS BROS. MACHINE, INC.		4,469.00	24-OCT-17	4,469.00		Reconciled
381319	19-OCT-17	PRAXAIR DISTRIBUTION INC		943.11	24-OCT-17	943.11		Reconciled
381320	19-OCT-17	PROCARE WORK INJURY CENTER		1,471.22	24-OCT-17	1,471.22		Reconciled
381321	19-OCT-17	PSOMAS		2,841.32	23-OCT-17	2,841.32		Reconciled
381322	19-OCT-17	QUICK MANUFACTURING INC		340.77	24-OCT-17	340.77		Reconciled
381323	19-OCT-17	RAINBOW DISPOSAL CO INC		357.36	26-OCT-17	357.36		Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 20
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381324		19-OCT-17	REAL WATER CONSULTANTS INC.		19,927.75	27-OCT-17	19,927.75	Reconciled
381325		19-OCT-17	REFRIGERATION SUPPLIES DISTRIBUTOR		4,044.57	23-OCT-17	4,044.57	Reconciled
381326		19-OCT-17	RINCON TRUCK CENTER INC.		575.15	23-OCT-17	575.15	Reconciled
381327		19-OCT-17	ROYAL WHOLESALE ELECTRIC		5,552.16	23-OCT-17	5,552.16	Reconciled
381328		19-OCT-17	S & J SUPPLY CO INC		11,259.65	26-OCT-17	11,259.65	Reconciled
381329		19-OCT-17	SAFECHECKS		2,016.30	24-OCT-17	2,016.30	Reconciled
381330		19-OCT-17	SAN MARCO APTS		11.91	08-NOV-17	11.91	Reconciled
381331		19-OCT-17	SANTA ANA BLUE PRINT		303.28	26-OCT-17	303.28	Reconciled
381332		19-OCT-17	SANTA CLARA APTS		120.33	08-NOV-17	120.33	Reconciled
381333		19-OCT-17	SANTA MARGARITA FORD		1,055.99	25-OCT-17	1,055.99	Reconciled
381334		19-OCT-17	SANTA MARGARITA FORD		38.67	23-OCT-17	38.67	Reconciled
381335		19-OCT-17	SHAMROCK SUPPLY CO INC		974.42	24-OCT-17	974.42	Reconciled
381336		19-OCT-17	SIMI VALLEY LANDFILL AND RECYCLING CENTER		878.18	25-OCT-17	878.18	Reconciled
381337		19-OCT-17	SKORUZ TECHNOLOGIES INC		17,172.00	27-OCT-17	17,172.00	Reconciled
381338		19-OCT-17	SOLANA APTS		178.55	08-NOV-17	178.55	Reconciled
381339		19-OCT-17	SONG, SHUGUANG		33.02	06-NOV-17	33.02	Reconciled
381340		19-OCT-17	SOUTH COAST ATR QUALITY MANAGEMENT DISTRICT		1,517.22	31-OCT-17	1,517.22	Reconciled
381341		19-OCT-17	SOUTH COAST WATER CO.		151.66	27-OCT-17	151.66	Reconciled
381342		19-OCT-17	SOUTH COAST WATER CO.		40.00	24-OCT-17	40.00	Reconciled
381343		19-OCT-17	SOUTHERN CALIFORNIA EDISON COMPANY		327,200.37	24-OCT-17	327,200.37	Reconciled
381344		19-OCT-17	SPX CORP		879.16	24-OCT-17	879.16	Reconciled
381345		19-OCT-17	STANDARD REGISTER, INC.		2,565.77	24-OCT-17	2,565.77	Reconciled
381346		19-OCT-17	STATE BOARD OF EQUALIZATION		1,854.00	24-OCT-17	1,854.00	Reconciled
381347		19-OCT-17	SUKLE ADVERTISING INC.		40,200.00	30-OCT-17	40,200.00	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 21
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381348		19-OCT-17	TALLEY INC		293.04	24-OCT-17	293.04	Reconciled
381349		19-OCT-17	TEKDRAULICS		8,277.58	27-OCT-17	8,277.58	Reconciled
381350		19-OCT-17	TESTAMERICA LABORATORIES, INC		157.50	26-OCT-17	157.50	Reconciled

381351	19-OCT-17	THE GAS COMPANY	410.15	25-OCT-17	410.15	Reconciled
381352	19-OCT-17	THE NEW HOME COMPANY SOUTHERN CALIFORNIA LLC	106.52			Negotiable
381353	19-OCT-17	TIC-IPG-COMMON	75.84	03-NOV-17	75.84	Reconciled
381354	19-OCT-17	TIC-RETAIL PROPERTIES	163.35	03-NOV-17	163.35	Reconciled
381355	19-OCT-17	TIC-SPECTRUM OFFICE	355.68	03-NOV-17	355.68	Reconciled
381356	19-OCT-17	TIC-WESTVIEW APARTMENTS	238.69	08-NOV-17	238.69	Reconciled
381357	19-OCT-17	TIGERCOMM LLC	14,250.00	31-OCT-17	14,250.00	Reconciled
381358	19-OCT-17	TOLL BROS., INC.	331,776.93	30-OCT-17	331,776.93	Reconciled
381359	19-OCT-17	TRUCPARCO	4,837.94	02-NOV-17	4,837.94	Reconciled
381360	19-OCT-17	ULANOVSKY, MARK D	9.59			Negotiable
381361	19-OCT-17	ULTRA SCIENTIFIC	492.12	24-OCT-17	492.12	Reconciled
381362	19-OCT-17	UNITED PARCEL SERVICE INC	93.99	23-OCT-17	93.99	Reconciled
381363	19-OCT-17	UNITED SITE SERVICES OF CALIFORNIA INC	478.06	24-OCT-17	478.06	Reconciled
381364	19-OCT-17	UNIVAR USA INC	600.00	23-OCT-17	600.00	Reconciled
381365	19-OCT-17	VWR INTERNATIONAL, LLC	1,210.30	24-OCT-17	1,210.30	Reconciled
381366	19-OCT-17	WALTERS WHOLESALE ELECTRIC	18.71	23-OCT-17	18.71	Reconciled
381367	19-OCT-17	WATERSMART SOFTWARE, INC	27,195.00	26-OCT-17	27,195.00	Reconciled
381368	19-OCT-17	WEEKS & FALCONE CONSTRUCTION	1,269.14	24-OCT-17	1,269.14	Reconciled
381369	19-OCT-17	WEN, CHANGI	35.57	23-OCT-17	35.57	Reconciled
381370	19-OCT-17	WEST COAST SAFETY SUPPLY INC	2,787.29	31-OCT-17	2,787.29	Reconciled
381371	19-OCT-17	WESTERN NATIONAL CONTRACTOR	624.65			Negotiable
381372	19-OCT-17	WESTERN WATER WORKS SUPPLY COMPANY	122,345.43	26-OCT-17	122,345.43	Reconciled
381373	19-OCT-17	WHITE CAP CONSTRUCTION SUPPLY	936.33	23-OCT-17	936.33	Reconciled
381374	19-OCT-17	YAN, TING	1,414.41	06-NOV-17	1,414.41	Reconciled

IRWD Ledger Upgrade
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Report Date: 09-NOV-2017 10:54
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar) Page: 22
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381375		19-OCT-17	YELLOW JACKET DRILLING SERVICES, LLC		1,068.08	24-OCT-17	1,068.08	Reconciled
381376		19-OCT-17	YEUNG, IRENE AND XIAO HAN		34.17	03-NOV-17	34.17	Reconciled
381377		19-OCT-17	STATE WATER RESOURCES CONTROL BOARD	ELAP BOX 1888	11,251.00	01-NOV-17	11,251.00	Reconciled
381378		26-OCT-17	Bennett, Ray R (Ray)		227.41	02-NOV-17	227.41	Reconciled
381379		26-OCT-17	Chaney, David (Dave)		300.00	30-OCT-17	300.00	Reconciled
381380		26-OCT-17	Cotton, Derrien		79.44			Negotiable
381381		26-OCT-17	Ho, Connie		75.35	30-OCT-17	75.35	Reconciled
381382		26-OCT-17	Murphy, Alexander J (Alexander)		280.00	31-OCT-17	280.00	Reconciled
381383		26-OCT-17	Pascual, Allan		175.74	27-OCT-17	175.74	Reconciled
381384		26-OCT-17	Saini, Mohit		54.84	26-OCT-17	54.84	Reconciled
381385		26-OCT-17	Silva, Constantino (Tino)		170.00			Negotiable
381386		26-OCT-17	COUNTY OF RIVERSIDE	PO BOX 12005	163,050.46	03-NOV-17	163,050.46	Reconciled
381387		26-OCT-17	ACWA		37,170.00	08-NOV-17	37,170.00	Reconciled
381388		26-OCT-17	ACWA		2,463.40	31-OCT-17	2,463.40	Reconciled
381389		26-OCT-17	ADAM'S FALCONRY SERVICE, LLC		1,540.00	30-OCT-17	1,540.00	Reconciled
381390		26-OCT-17	AECOM TECHNICAL SERVICES, INC.		1,805.00	30-OCT-17	1,805.00	Reconciled
381391		26-OCT-17	AIRGAS, INC.		4,059.37	30-OCT-17	4,059.37	Reconciled
381392		26-OCT-17	ALPHA TRAFFIC SERVICES, INC.		620.00	31-OCT-17	620.00	Reconciled
381393		26-OCT-17	ALSTON & BIRD LLP		41,441.16	02-NOV-17	41,441.16	Reconciled
381394		26-OCT-17	ANDERSONPENNA PARTNERS, INC.		59,542.00	01-NOV-17	59,542.00	Reconciled
381395		26-OCT-17	ANIKTER INC		7,111.50	30-OCT-17	7,111.50	Reconciled
381396		26-OCT-17	ANTHONY N. LARSEN		400.00	02-NOV-17	400.00	Reconciled
381397		26-OCT-17	ANTONIA R. MONZON		975.00	01-NOV-17	975.00	Reconciled
381398		26-OCT-17	APD CONSULTANTS INC		16,390.00	03-NOV-17	16,390.00	Reconciled
381399		26-OCT-17	ARC		160.66	30-OCT-17	160.66	Reconciled
381400		26-OCT-17	ARCHITERRA INC.		1,367.00	30-OCT-17	1,367.00	Reconciled
381401		26-OCT-17	AT&T		5,531.19	01-NOV-17	5,531.19	Reconciled

381439	26-OCT-17	DELL MARKETING LP		3,006.35	30-OCT-17	3,006.35	Reconciled
381440	26-OCT-17	DEPARTMENT OF WATER RESOURCES		710.84	01-NOV-17	710.84	Reconciled
381441	26-OCT-17	DIGITAL MAP PRODUCTS, INC.		4,200.00	31-OCT-17	4,200.00	Reconciled
381442	26-OCT-17	DIRECTV INC		121.98	02-NOV-17	121.98	Reconciled
381443	26-OCT-17	DISCOUNT COURIER SERVICE		67.47	30-OCT-17	67.47	Reconciled
381444	26-OCT-17	DISCOVERY SCIENCE CENTER OF ORANGE COUNTY		61,313.64	03-NOV-17	61,313.64	Reconciled
381445	26-OCT-17	DOWNSTREAM SERVICES, INC.		6,194.00	01-NOV-17	6,194.00	Reconciled
381446	26-OCT-17	ECO SERVICES LLC		5,037.30	30-OCT-17	5,037.30	Reconciled
381447	26-OCT-17	EMERGENCY POWER CONTROLS INC		4,800.00	02-NOV-17	4,800.00	Reconciled
381448	26-OCT-17	ENDRESS AND HAUSER INC		9,285.00	01-NOV-17	9,285.00	Reconciled
381449	26-OCT-17	ENVIRONMENTAL EXPRESS INC		2,496.41	31-OCT-17	2,496.41	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 25
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381450		26-OCT-17	FARWEST CORROSION CONTROL COMPANY		6,962.13	30-OCT-17	6,962.13	Reconciled
381451		26-OCT-17	FEDEX		489.17	30-OCT-17	489.17	Reconciled
381452		26-OCT-17	FIRE EXTINGUISHING SAFETY & SERVICE		687.73	31-OCT-17	687.73	Reconciled
381453		26-OCT-17	FIREWALLS.COM, INC.		8,259.04			Negotiable
381454		26-OCT-17	FISERV		17,780.93	01-NOV-17	17,780.93	Reconciled
381455		26-OCT-17	FISHER SCIENTIFIC COMPANY LLC		7,740.46	30-OCT-17	7,740.46	Reconciled
381456		26-OCT-17	FRONTIER CALIFORNIA INC.		99.60	02-NOV-17	99.60	Reconciled
381457		26-OCT-17	GALLADE CHEMICAL INC		969.75	31-OCT-17	969.75	Reconciled
381458		26-OCT-17	GANAHL LUMBER CO.		1,670.25	01-NOV-17	1,670.25	Reconciled
381459		26-OCT-17	GEIGER BROS		1,629.77	31-OCT-17	1,629.77	Reconciled
381460		26-OCT-17	GENTERRA CONSULTANTS INC		3,698.00	30-OCT-17	3,698.00	Reconciled
381461		26-OCT-17	GEORGE HILLS COMPANY, INC.		501.50	01-NOV-17	501.50	Reconciled
381462		26-OCT-17	GHD INC.		1,625.48	31-OCT-17	1,625.48	Reconciled
381463		26-OCT-17	GJ AUTOMOTIVE EQUIPMENT CO INC		391.00	01-NOV-17	391.00	Reconciled
381464		26-OCT-17	GRAINGER		6,967.55	01-NOV-17	6,967.55	Reconciled
381465		26-OCT-17	GRAYBAR ELECTRIC COMPANY		3,142.64	30-OCT-17	3,142.64	Reconciled
381466		26-OCT-17	H2O INNOVATION USA INC		3,292.06	02-NOV-17	3,292.06	Reconciled
381467		26-OCT-17	HACH COMPANY		3,377.53	30-OCT-17	3,377.53	Reconciled
381468		26-OCT-17	HARRINGTON INDUSTRIAL PLASTICS LLC		2,950.36	30-OCT-17	2,950.36	Reconciled
381469		26-OCT-17	HELPMATES STAFFING SERVICES		12,099.58	01-NOV-17	12,099.58	Reconciled
381470		26-OCT-17	HENRY PRATT COMPANY, LLC		28,803.73	02-NOV-17	28,803.73	Reconciled
381471		26-OCT-17	HILL BROTHERS CHEMICAL COMPANY		4,222.09	02-NOV-17	4,222.09	Reconciled
381472		26-OCT-17	HOME DEPOT USA INC		693.37	31-OCT-17	693.37	Reconciled
381473		26-OCT-17	HORIZON TECHNOLOGY INC		264.31	30-OCT-17	264.31	Reconciled
381474		26-OCT-17	INDUSTRIAL NETWORKING SOLUTIONS		913.22	30-OCT-17	913.22	Reconciled
381475		26-OCT-17	IRVINE PIPE & SUPPLY INC		879.24	30-OCT-17	879.24	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 26
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381476		26-OCT-17	IRWD-PETTY CASH CUSTODIAN		767.18	30-OCT-17	767.18	Reconciled
381477		26-OCT-17	JACKSON TIDUS, A LAW CORPORATION		2,503.80	30-OCT-17	2,503.80	Reconciled
381478		26-OCT-17	JAMES A. STORMS		380.00			Negotiable
381479		26-OCT-17	JCI JONES CHEMICALS INC		3,100.28	01-NOV-17	3,100.28	Reconciled

381480	26-OCT-17	JUST ENERGY SOLUTIONS INC.		50.54	31-OCT-17	50.54	Reconciled
381481	26-OCT-17	KERSLAKE, JOHN		249.13	31-OCT-17	249.13	Reconciled
381482	26-OCT-17	KOELLER NEBEKER CARLSON & HALUCK, LLP		2,422.70	30-OCT-17	2,422.70	Reconciled
381483	26-OCT-17	LAGUNA BEACH COUNTY WATER DISTRICT		3,149.88	01-NOV-17	3,149.88	Reconciled
381484	26-OCT-17	LIAO, JULIA		168.35	02-NOV-17	168.35	Reconciled
381485	26-OCT-17	LIU, NANA		27.06			Negotiable
381486	26-OCT-17	MAILFINANCE INC		610.21	31-OCT-17	610.21	Reconciled
381487	26-OCT-17	MARVIN GARDENS LLC		1,341.14	26-OCT-17	1,341.14	Reconciled
381488	26-OCT-17	MC GREW, CAROLYN		1,542.96			Voided
381489	26-OCT-17	MC MASTER CARR SUPPLY CO		1,847.21	30-OCT-17	1,847.21	Reconciled
381490	26-OCT-17	MCR TECHNOLOGIES INC		4,981.71	31-OCT-17	4,981.71	Reconciled
381491	26-OCT-17	MERRILL LYNCH, PIERCE, FENNER & SMITH INCORPORATED		16,673.43	01-NOV-17	16,673.43	Reconciled
381492	26-OCT-17	MULTIQUIP INC		501.64	31-OCT-17	501.64	Reconciled
381493	26-OCT-17	MUTUAL PROPANE		98.07	31-OCT-17	98.07	Reconciled
381494	26-OCT-17	OCTA		1,525.00	31-OCT-17	1,525.00	Reconciled
381495	26-OCT-17	OLIN CORPORATION		12,757.41	02-NOV-17	12,757.41	Reconciled
381496	26-OCT-17	ONESOURCE DISTRIBUTORS LLC		3,176.50	30-OCT-17	3,176.50	Reconciled
381497	26-OCT-17	ORANGE COUNTY MOSQUITO AND VECTOR CONTROL DISTRICT		1,827.14			Negotiable
381498	26-OCT-17	ORANGE COUNTY TREASURER		332.19	31-OCT-17	332.19	Reconciled
381499	26-OCT-17	PACIFIC COAST BOLT CORP		235.93	01-NOV-17	235.93	Reconciled
381500	26-OCT-17	PAUW, TED		5,750.50	30-OCT-17	5,750.50	Reconciled
381501	26-OCT-17	BELLICER, HEATHER		27.64	07-NOV-17	27.64	Reconciled
381502	26-OCT-17	PENHALL COMPANY		335.00	30-OCT-17	335.00	Reconciled

IRWD Ledger Upgrade
 BANK: Bank of America N.A. Branch : Los Angeles
 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 Account: Checking AP and PR Page: 27
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381503		26-OCT-17	PLUMBERS DEPOT INC.		82.56	30-OCT-17	82.56	Reconciled
381504		26-OCT-17	POWERS BROS. MACHINE, INC.		2,065.67	02-NOV-17	2,065.67	Reconciled
381505		26-OCT-17	PRAXAIR DISTRIBUTION INC		629.68	31-OCT-17	629.68	Reconciled
381506		26-OCT-17	PRH I, LP		7,918.05	01-NOV-17	7,918.05	Reconciled
381507		26-OCT-17	PTI SAND & GRAVEL INC		2,020.91	31-OCT-17	2,020.91	Reconciled
381508		26-OCT-17	PUB CONSTRUCTION, INC.		886.27	31-OCT-17	886.27	Reconciled
381509		26-OCT-17	RAM AIR ENGINEERING INC		21,660.73	02-NOV-17	21,660.73	Reconciled
381510		26-OCT-17	RINCON TRUCK CENTER INC.		460.73	30-OCT-17	460.73	Reconciled
381511		26-OCT-17	SANDERS PAVING INC		30,841.18	01-NOV-17	30,841.18	Reconciled
381512		26-OCT-17	SANTA ANA BLUE PRINT		549.16	31-OCT-17	549.16	Reconciled
381513		26-OCT-17	SANTA MARGARITA FORD		380.04	31-OCT-17	380.04	Reconciled
381514		26-OCT-17	SECURITAS SECURITY SERVICES USA, INC.		27,911.07	01-NOV-17	27,911.07	Reconciled
381515		26-OCT-17	SENEGENCE INTERNATIONAL		136.63	03-NOV-17	136.63	Reconciled
381516		26-OCT-17	SITEONE LANDSCAPE SUPPLY, LLC		10,599.01	01-NOV-17	10,599.01	Reconciled
381517		26-OCT-17	SITMATIC		1,450.24	30-OCT-17	1,450.24	Reconciled
381518		26-OCT-17	SOUTHERN CALIFORNIA EDISON COMPANY		269,117.37	30-OCT-17	269,117.37	Reconciled
381519		26-OCT-17	SOUTHERN CALIFORNIA SECURITY CENTERS, INC.		314.44	08-NOV-17	314.44	Reconciled
381520		26-OCT-17	SPARKLETTS		348.49	02-NOV-17	348.49	Reconciled
381521		26-OCT-17	STANTEC CONSULTING SERVICES INC.		7,680.00	30-OCT-17	7,680.00	Reconciled
381522		26-OCT-17	STERIS CORPORATION		4,581.94	31-OCT-17	4,581.94	Reconciled
381523		26-OCT-17	SUEZ TREATMENT SOLUTIONS INC.		25,273.46	03-NOV-17	25,273.46	Reconciled
381524		26-OCT-17	SUKLE ADVERTISING INC.		9,819.50	30-OCT-17	9,819.50	Reconciled
381525		26-OCT-17	SUMMIT CHEMICAL SPECIALTY PRODUCTS		10,622.00			Negotiable
381526		26-OCT-17	SUNSHINE SUPPLY COMPANY, INC.		2,734.70	31-OCT-17	2,734.70	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 28
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381527		26-OCT-17	SUNSTATE EQUIPMENT CO		3,098.21	30-OCT-17	3,098.21	Reconciled
381528		26-OCT-17	TEKDRAULICS		1,496.44	02-NOV-17	1,496.44	Reconciled
381529		26-OCT-17	TESTAMERICA		192.15	31-OCT-17	192.15	Reconciled
381530		26-OCT-17	LABORATORIES, INC					
381531		26-OCT-17	TETRA TECH, INC		65,377.50	02-NOV-17	65,377.50	Reconciled
381532		26-OCT-17	THOMPSON INDUSTRIAL SUPPLY		240.22	07-NOV-17	240.22	Reconciled
381533		26-OCT-17	TREE OF LIFE NURSERY		562.99	02-NOV-17	562.99	Reconciled
381534		26-OCT-17	TROPICAL PLAZA NURSERY INC		35,535.12	01-NOV-17	35,535.12	Reconciled
381535		26-OCT-17	TRUCPARCO		265.83	02-NOV-17	265.83	Reconciled
381536		26-OCT-17	U S RIGGING SUPPLY		936.36	30-OCT-17	936.36	Reconciled
381537		26-OCT-17	UNITED PARCEL SERVICE INC		236.76	31-OCT-17	236.76	Reconciled
381538		26-OCT-17	US BANK NAT'L ASSOC N.DAKOTA		11,027.39	06-NOV-17	11,027.39	Reconciled
381539		26-OCT-17	US BANK NAT'L ASSOCIATION NORTH DAKOTA		126,992.01	03-NOV-17	126,992.01	Reconciled
381540		26-OCT-17	USA BLUEBOOK		917.78	01-NOV-17	917.78	Reconciled
381541		26-OCT-17	UTILITY SPECIALISTS, INC		4,960.00			Negotiable
381542		26-OCT-17	VERIZON WIRELESS SERVICES LLC		7,536.17	31-OCT-17	7,536.17	Reconciled
381543		26-OCT-17	VERTECH INDUSTRIAL SYSTEMS, LLC		1,316.94	01-NOV-17	1,316.94	Reconciled
381544		26-OCT-17	VULCAN MATERIALS COMPANY		1,383.14			Negotiable
381545		26-OCT-17	VWR INTERNATIONAL, LLC		1,228.86	31-OCT-17	1,228.86	Reconciled
381546		26-OCT-17	W.A. RASIC CONSTRUCTION CO., INC.		1,478.53			Negotiable
381547		26-OCT-17	WARE MALCOMB WASTE MANAGEMENT OF ORANGE COUNTY		280.03	30-OCT-17	280.03	Reconciled
381548		26-OCT-17	WATERWISE CONSULTING, INC.		692.00	30-OCT-17	692.00	Reconciled
381549		26-OCT-17	WECK LABORATORIES INC		1,500.00	30-OCT-17	1,500.00	Reconciled
381550		26-OCT-17	WEST COAST SAFETY SUPPLY INC		409.00	01-NOV-17	409.00	Reconciled
381551		26-OCT-17	WILLIAMS, JOE G		6,819.34	31-OCT-17	6,819.34	Reconciled

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 29
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD CHECK								
381552		26-OCT-17	XYLEM WATER SOLUTIONS USA, INC.		1,331.79	31-OCT-17	1,331.79	Reconciled
381553		27-OCT-17	PERS LONG TERM CARE	PASADENA	878.66	30-OCT-17	878.66	Reconciled
381554		27-OCT-17	CVS PHARMACY, INC.	CHICAGO	2,976.00	30-OCT-17	2,976.00	Reconciled
381555		27-OCT-17	ORANGE COUNTY SHERIFF'S OFFICE	JAMBOREE	62.50	02-NOV-17	62.50	Reconciled
381556		27-OCT-17	CLEARINGHOUSE	PHOENIX	477.67	30-OCT-17	477.67	Reconciled
381557		27-OCT-17	IRWD EMPLOYEE ASSOCIATION	15600 SC	1,295.00			Negotiable
381558		27-OCT-17	NEGOV	300 COTINENTAL	* 19,440.85	03-NOV-17	19,440.85	Reconciled
381559		27-OCT-17	MARVIN GARDENS	LLCHUNGTINGTO N BEA	1,252.56	27-OCT-17	1,252.56	Reconciled
381560		27-OCT-17	CDB INVESTMENTS, LP	PAY	29.95			Negotiable
381561		27-OCT-17	CDB INVESTMENTS, LP	PAY	156.95			Negotiable
381562		27-OCT-17	JCI JONES CHEMICALS INC	TAMPA	4,920.03	03-NOV-17	4,920.03	Reconciled
381563		31-OCT-17	JCI JONES CHEMICALS INC	TAMPA	3,556.81	06-NOV-17	3,556.81	Reconciled

Payment Document Subtotal: 10,720,893.43 10,658,153.16

Payment Document : IRWD Wire

12271	03-OCT-17	YORK INSURANCE SERVICES GROUP INC - CA	PAY		8,084.12		Negotiable
12272	04-OCT-17	INTERNAL REVENUE SERVICE	FRESNO		202,363.85		Negotiable
12273	04-OCT-17	FRANCHISE TAX BOARD	SACRAMENTO		55,850.87		Negotiable
12274	04-OCT-17	EMPLOYMENT DEVELOPMENT DEPARTMENT	W SACRAMENTO		10,264.20		Negotiable
12275	04-OCT-17	ORDONEZ, CYNTHIA MARIE	DESERT HOT SPR		230.77		Negotiable
12276	04-OCT-17	CALIFORNIA DEPARTMENT OF CHILD SUPPORT SERVICES	SACRAMENTO		2,134.60		Negotiable

IRWD Ledger Upgrade
 BANK: Bank of America N.A. Branch : Los Angeles
 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 30

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD Wire								
12277		04-OCT-17	EMPLOYEE BENEFIT SPECIALIST, INC	PAY	12,134.94			Negotiable
12278		04-OCT-17	GREAT-WEST LIFE & ANNUITY INSURANCE COMPANY	DENVER	116,738.08			Negotiable
12279		09-OCT-17	CALPERS	SACRAMENTO	177,529.56			Negotiable
12280		09-OCT-17	CALPERS	SACRAMENTO	177,896.32			Negotiable
12281		09-OCT-17	CALPERS	SACRAMENTO	178,352.20			Negotiable
12282		11-OCT-17	CALPERS	SACRAMENTO 1	466,702.90			Negotiable
12283		11-OCT-17	CALPERS	SACRAMENTO 1	2,867.15			Negotiable
12284		13-OCT-17	BANK OF NEW YORK MELLON TRUST COMPANY NA	NEWARK	31,128.47			Negotiable
12285		13-OCT-17	SUMITOMO MITSUI BANKING CORPORATION	NEW YORK	42,738.92			Negotiable
12286		13-OCT-17	U.S. BANK NATIONAL ASSOCIATION	ST. LOUIS	66,968.12			Negotiable
12287		13-OCT-17	BANK OF AMERICA	SAN FRANCISCO	64,603.04			Negotiable
12288		13-OCT-17	U.S. BANK NATIONAL ASSOCIATION	ST. LOUIS	19,193.42			Negotiable
12289		13-OCT-17	SUMITOMO MITSUI BANKING CORPORATION	NEW YORK	31,123.97			Negotiable
12290		16-OCT-17	FILANC-BALFOUR BEATTY JV	ACT 4427724347	1,537,069.80			Negotiable
12291		16-OCT-17	FILANC-BALFOUR BEATTY JV	ESR 211084000	2,733.55			Negotiable
12292		17-OCT-17	EMPLOYEE BENEFIT SPECIALIST, INC	PAY	9,385.96			Negotiable
12293		17-OCT-17	U.S. BANK NATIONAL ASSOCIATION	ST. LOUIS	7,624.98			Negotiable
12294		17-OCT-17	MUNICIPAL WATER DISTRICT OF ORANGE COUNTY	FOUNTAIN VALLEY	3,615,314.13			Negotiable
12295		17-OCT-17	U.S. BANK NATIONAL ASSOCIATION	ST. LOUIS	27,423.08			Negotiable
12296		17-OCT-17	BANK OF NEW YORK MELLON TRUST COMPANY NA	NEWARK	2,765,966.50			Negotiable
12297		17-OCT-17	U.S. BANK NATIONAL ASSOCIATION	ST. LOUIS	2,537,654.11			Negotiable

IRWD Ledger Upgrade
 BANK: Bank of America N.A. Branch : Los Angeles
 Bank Account Currency: USD (US Dollar)
 Payment Type: All

Payment Register For 01-OCT-17 To 31-OCT-17
 Account: Checking AP and PR
 Payment Currency: USD (US Dollar)
 Display Supplier Address: No

Report Date: 09-NOV-2017 10:54
 Page: 31

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD Wire								
12298		17-OCT-17	BANK OF AMERICA	SAN FRANCISCO	2,537,602.71			Negotiable
12299		17-OCT-17	INTERNAL REVENUE SERVICE	FRESNO	208,683.59			Negotiable
12300		17-OCT-17	FRANCHISE TAX BOARD	SACRAMENTO	58,114.97			Negotiable
12301		17-OCT-17	EMPLOYMENT DEVELOPMENT DEPARTMENT	W SACRAMENTO	10,175.05			Negotiable
12302		17-OCT-17	ORDONEZ, CYNTHIA MARIE	DESERT HOT SPR	230.77			Negotiable

12303	17-OCT-17	CALIFORNIA DEPARTMENT OF CHILD SUPPORT SERVICES	SACRAMENTO		2,134.60	Negotiable
12304	17-OCT-17	EMPLOYEE BENEFIT SPECIALIST, INC	PAY		12,043.40	Negotiable
12305	17-OCT-17	GREAT-WEST LIFE & ANNUITY INSURANCE COMPANY	DENVER		117,885.78	Negotiable
12306	27-OCT-17	CALPERS	SACRAMENTO		175,843.46	Negotiable
12307	27-OCT-17	CALPERS	SACRAMENTO		175,403.68	Negotiable
12308	30-OCT-17	YORK INSURANCE SERVICES GROUP INC - CA	PAY		101,047.52	Negotiable
12309	30-OCT-17	YORK INSURANCE SERVICES GROUP INC - CA	PAY		8,558.23	Negotiable
12310	30-OCT-17	BANK OF NEW YORK MELLON TRUST COMPANY NA	NEWARK		10,000.00	Negotiable
12311	30-OCT-17	U.S. BANK NATIONALST ASSOCIATION	LOUIS		250.00	Negotiable
12312	30-OCT-17	INTERNAL REVENUE SERVICE	FRESNO		221,544.81	Negotiable
12313	30-OCT-17	FRANCHISE TAX BOARD	SACRAMENTO		62,170.15	Negotiable
12314	30-OCT-17	EMPLOYMENT DEVELOPMENT DEPARTMENT	W SACRAMENTO		9,229.18	Negotiable
12315	30-OCT-17	ORDONEZ, CYNTHIA MARIE	DESERT HOT SPR		230.77	Negotiable
12316	30-OCT-17	CALIFORNIA DEPARTMENT OF CHILD SUPPORT SERVICES	SACRAMENTO		1,811.53	Negotiable

IRWD Ledger Upgrade Payment Register For 01-OCT-17 To 31-OCT-17 Report Date: 09-NOV-2017 10:54
 BANK: Bank of America N.A. Branch : Los Angeles Account: Checking AP and PR Page: 32
 Bank Account Currency: USD (US Dollar) Payment Currency: USD (US Dollar)
 Payment Type: All Display Supplier Address: No

Payment Number	Sequence Num	Date	Supplier Name	Site	Payment Amount	Cleared Date	Cleared Amount	Status
Payment Document : IRWD Wire								
12317		30-OCT-17	EMPLOYEE BENEFIT SPECIALIST, INC	PAY	11,440.83			Negotiable
12318		30-OCT-17	GREAT-WEST LIFE & ANNUITY INSURANCE COMPANY	DENVER	114,785.22			Negotiable
12319		31-OCT-17	ZHANG, HANKIAO	PAY	23.19			Negotiable
12320		31-OCT-17	U.S. BANK NATIONALST ASSOCIATION	LOUIS	5,794,250.00			Negotiable
12321		31-OCT-17	YORK INSURANCE SERVICES GROUP INC - CA	PAY	7,211.62			Negotiable
Payment Document Subtotal:					21,610,748.67			
Bank Account Subtotal :					32,531,642.10		10,658,153.16	
Report Count : 777	Report Total:				32,531,642.10		10,658,153.16	

Disbursements

*** End of Report ***

\$ 32,531,642.10 Disbursements
<2,644.31> Voids
 \$ 32,528,997.79 Total Disbursements and Voids

Exhibit "E"

MONTHLY SUMMARY OF PAYROLL ACH PAYMENTS

October
2017

	AMOUNT	VENDOR	PURPOSE
10/13/2017	891,013.06	BANK OF AMERICA	ACH Payments for Payroll
10/27/2017	892,298.67	BANK OF AMERICA	ACH Payments for Payroll
	<u><u>\$1,783,311.73</u></u>		

Exhibit "F"

IRWD Gov Code 53065.5 Disclosure Report

Payment or Reimbursements for Individual charges of \$100 or more per transaction for services or product received.

01-OCT-17 to 31-OCT-17

NAME	CHECK NO.	CHECK DATE	AMOUNT	ITEM DESCRIPTION	EXPENSE JUSTIFICATION
Bennett, Rav	381378	26-Oct-17	163.71	Mileage	Rosedale Rio Bravo October progress monthly meeting, Bakersfield, CA
Chaney, Dave	380841	5-Oct-17	180.00	Membership Renewal	CWEA membership fee
Chaney, Dave	381379	26-Oct-17	300.00	Certification Renewal	Wastewater Treatment Plant Operator Grade II certification
Fournier, Tanja	381044	12-Oct-17	299.55	Other(Misc)	National Save for Retirement week promotion supplies
Fournier, Tanja	381044	12-Oct-17	325.78	Lodging	Pensions & Investments Deferred Comp Conf., San Diego, CA - Oct. 8, 2017
Fournier, Tanja	381044	12-Oct-17	325.78	Lodging	Pensions & Investments Deferred Comp Conf., San Diego, CA - Oct. 9, 2017
La, Jason	381045	12-Oct-17	118.53	Other(Misc)	Safety shoe allowance
Lieuw, Jessica	380845	5-Oct-17	139.77	Other(Misc)	Safety shoe allowance
Matheis, Mary Aileen	380846	5-Oct-17	226.86	Lodging	Water Education Foundation's Bay-Delta Tour, Sacramento, CA - June 13, 2017
Matheis, Mary Aileen	380846	5-Oct-17	246.81	Lodging	Urban Water Institute's Annual Conf., San Diego, CA - August 16, 2017
Matheis, Mary Aileen	380846	5-Oct-17	246.81	Lodging	Urban Water Institute's Annual Conf., San Diego, CA - August 17, 2017
Morabito, Chadd	380847	5-Oct-17	180.00	Membership Renewal	CWEA membership fee
Murphy, Alex	381199	19-Oct-17	115.00	Certification Renewal	PE license renewal fee
Murphy, Alex	381382	26-Oct-17	280.00	Membership Renewal	ASCE membership Fee
Obenshain, Jenna	380849	5-Oct-17	200.00	Other(Misc)	Safety shoe allowance
Oldewage, Lars	380850	5-Oct-17	297.38	Airfare	LABWORKS 2017 Annual User Conf., Park City, UT - Sept. 24-27, 2017
Oldewage, Lars	380850	5-Oct-17	248.26	Auto Rental	LABWORKS 2017 Annual User Conf., Park City, UT - Sept. 24-27, 2017
Severin, Victoria	380851	5-Oct-17	200.00	Other(Misc)	Safety shoe allowance
Sidlin, Wayne	380852	5-Oct-17	180.00	Membership Renewal	CWEA membership fee
Silva, Constantino	381385	26-Oct-17	170.00	Certification Renewal	Wasterwater Treatment Operator Grade I certification
Stragier, Stephanie	381048	12-Oct-17	150.85	Other(Misc)	Safety shoe allowance
Swan, Peer	380853	5-Oct-17	246.81	Lodging	Urban Water Institute's Annual Conf., San Diego, CA - August 17, 2017
Swan, Peer	380853	5-Oct-17	292.15	Lodging	Calif. Assoc. of Sanitation Agencies 62nd Annual Conf., San Diego - August 22, 2017
Swan, Peer	380853	5-Oct-17	292.15	Lodging	Calif. Assoc. of Sanitation Agencies 62nd Annual Conf., San Diego - August 23, 2017
Willis, Andrew	381049	12-Oct-17	105.00	Certification Renewal	Water Treatment Operator Grade V certification
Total Amount:			\$5,531.20		

November 27, 2017

Prepared by: S. Malloy

Submitted by: K. Burton 

Approved by: Paul A. Cook 

ACTION CALENDAR

MICHELSON WATER RECYCLING PLANT BIOSOLIDS AND ENERGY RECOVERY FACILITIES VARIANCES AND BUDGET INCREASE

SUMMARY:

Filanc/Balfour-Beatty (FBB) is constructing the Michelson Water Recycling Plant (MWRP) Biosolids and Energy Recovery Facilities (Biosolids Project). According to FBB's October 2017 Schedule Update, the Biosolids Project will be extended to May 2019. The services of various consultants are needed to supplement the construction management team of the Biosolids project through this time extension. Staff recommends that the Board:

- Authorize the General Manager to execute Variance No. 7 with Black & Veatch in the amount of \$3,190,018 for supplemental contract administration, construction phase, and start-up and commissioning services;
- Authorize the General Manager to execute Variance No. 2 with Arcadis, Inc. in the amount of \$1,451,173 for supplemental construction inspection, construction management, and document control system services;
- Authorize the General Manager to execute Variance No. 3 with HDR Engineering, Inc. in the amount of \$576,739.28 for supplemental construction inspection;
- Authorize the General Manager to execute Variance No. 2 with EI&C Engineering, Inc. in the amount of \$958,720 for supplemental process control system construction management services, start-up testing, and development of operation manuals and associated training presentations; and
- Authorize a budget increase in the amount of \$11,500,000, from \$216,073,100 to \$227,573,100, to the FY 2017-18 Capital Budget for the MWRP Biosolids and Energy Recovery Facilities project.

BACKGROUND:

Construction of the Biosolids Project was awarded to FBB in March 2013 in the amount of \$163,513,307. The Biosolids Project will provide biosolids digestion, dewatering, energy production, and on-site sludge drying. The project includes excavation for subsurface structures; installation of 3,009 foundation piles; three egg-shaped digesters; a state-of-the-art odor control system; a biogas conditioning system and power generation using micro-turbines; a fats, oil and grease receiving station; and new utility services. These facilities are being constructed on the land north of IRWD's existing Operations Center, maintenance shops, water quality laboratory, and warehouse.

Variance No. 7 with Black & Veatch:

Black & Veatch (B&V) has provided contract administration, construction inspection, and construction management services since 2013. Variance No. 7 is summarized below:

- Additional Submittal Reviews – The number of submittals (2,776) through October 16, 2017 has significantly exceeded the estimated number of submittals (2,400), and the submittals (shop drawings) are anticipated to continue through approximately April 2018. A total of 3,076 submittals (including approximately 200 new and 100 record copy submittals) are now anticipated through April 2018. As of October 6, 2017, the actual expenditures were at approximately 102.5% of the budget allowance. The increase in the number of submittals is primarily due to the large number of re-submittals that have occurred. To date, 1,329 re-submittals have occurred compared with 1,447 initial submittals, which represents a very high re-submittal rate of 92% for FBB.
- Additional Request for Information (RFI) Reviews – The current number of RFIs (2,821) has exceeded the estimated number of RFIs (2,500), and additional RFIs are anticipated to continue through approximately November 2018. A total of 3,060 RFIs (approximately 240 new) are now anticipated through November 2018. As of October 6, 2017, the actual expenditures were at 105.4% of the budget allowance.
- Electronic Operations and Maintenance (O&M) Manual Development, Installation, and Training – Based on ongoing feedback from operations staff during electronic O&M manual (EOM) development to date, additional effort is needed for labeling, linking, and organization of startup documentation, Energy Control Procedures (ECPs), Job Safety Analysis (JSAs), Standard Operating Procedures (SOPs), electrical shutdown plans, drawings, air permitting reports, and adding vendor O&Ms to the EOM. This level of effort was not anticipated at the beginning of the project. Also, there has been a greater number of EOM reviews and meetings to demonstrate the EOM to the operations staff, to receive feedback, and to increase the comfort level of operations staff using the EOM. Multiple submittals and meetings were not originally envisioned, but due to the lengthened project schedule, these meetings have been helpful by providing sufficient time for comments and corrections in order to produce a better final project deliverable with more documentation included than originally scoped. In addition, a user's manual will be developed to provide directions on updating the manual as this is required due to the growth in complexity of the manual.
- Start-Up Testing Coordination – Monthly onsite start-up and commissioning meetings with the operations staff have provided valuable interaction between the B&V commissioning team and the IRWD operations staff, which staff will continue to hold. The informal planning sessions provide an opportunity to brainstorm and discuss upcoming startup and commissioning activities. In addition to the onsite meetings, considerable time has been spent, and will continue to be spent, answering questions posed by the operations staff on topics such as ammonia returned to the plant, digesters commissioning plan, centrate treatment commissioning plan, mass balance for recycling

solids to build up the solids concentration in the digester, dewatering/dryer commissioning plan, and other requests. Also, the startup material submitted by FBB has required multiple reviews for accuracy and correctness. This effort was beyond what was originally planned. Staff requested that B&V provide a resource for FBB in its development of the start-up plans.

- Record Drawings and Atlas Update – The Contract Documents require that FBB maintain a current set of redline drawings that reflect all revisions to the contract drawings using a “redline” drawing marking approach that results in an “as-built” drawing set that is ready for CAD revisions by B&V upon completion of the project. Since approximately November 2016, FBB has not provided redline drawings that are ready for CAD revisions; it is only noting locations on drawings that are being changed and referencing RFIs or construction change orders (CCOs) via hyperlinks to those documents. Therefore, B&V will require additional engineering time to process the information provided by FBB that will be used to prepare the record drawings for this project.

Variance No. 7, attached as Exhibit “A”, with B&V in the amount of \$3,190,018 is for supplemental contract administration, construction phase, and start-up and commissioning services.

Variance No. 2 with Arcadis, Inc.:

Arcadis has provided construction inspection, construction management, and document control system services since the start of the Biosolids project. Through Variance No. 2, Arcadis will continue to negotiate and prepare CCOs, provide as-needed construction management support, assist with resolving project cost and delay claims submitted by FBB, and assist with project close-out activities. These construction management services will be provided through June 30, 2019. Arcadis will also provide construction inspection services through June 30, 2018. Although the project schedule shows that physical construction is scheduled to be completed in May 2018, additional time will likely be needed for completion of punch list items. Arcadis will provide document control services until June 30, 2019, including assistance with the archiving of project documents. Variance No. 2, attached as Exhibit “B”, with Arcadis, Inc. in the amount of \$1,451,173 is for construction management, construction inspection services, and document control support.

Variance No. 3 with HDR Engineering, Inc.:

HDR Engineering has provided construction inspection since the start of the Biosolids project. With Variance No. 3, HDR will provide construction inspection services through April 30, 2019. It is assumed that close-out activities such as punch list items and record drawings will require HDR’s assistance. Variance No. 3, attached as Exhibit “C”, with HDR Engineering in the amount of \$576,739.28 is for construction inspection services.

Variance No. 2 with EI&C Engineering, Inc.:

EI&C Engineering has provided technical oversight of the process control system (PCS) development. EI&C will continue to provide technical oversight of the PCS development through June 2019. This includes witnessing various computer software tests at the manufacturer's panel fabrication facility, bench tests, and field tests. Additionally, EI&C will provide additional automation staff to supplement the start-up testing when it is anticipated that multiple start-up tests are scheduled simultaneously. EI&C will also provide technical writing support to prepare the operation manuals and associated training presentations related to the PCS. Variance No. 2, attached as Exhibit "D", with EI&C Engineering, Inc. in the amount of \$958,720 is for supplemental PCS construction management services, start-up testing, and development of PCS operation manuals and associated training presentations.

Budget Increase:

With the approval of CCO No. 65 in October 2017, an increase in the capital budget for the Biosolids Project is required. Additional budget is being requested to fund the future CCOs for which individual Change Requests (CRs) have been submitted by FBB. These CRs are being negotiated and are estimated to be worth approximately \$3,000,000. This does not include any CRs submitted by FBB for extended or expanded overhead.

IRWD costs also need to be funded by the budget increase for the extended project duration. This will cover costs for Construction Management staff, outside specialty legal and claims analysis staff to help resolve more complex construction items, Operations and Maintenance staff during start-up and training, and the MWRP Construction Trailer and supplies. These costs will be approximately \$1,500,000.

FISCAL IMPACTS:

The MWRP Biosolids and Energy Recovery Facilities, project 04286, is included in the FY 2017-18 Capital Budget. Staff requests a budget increase in the amount of \$11,500,000 for the above variances, future staff time, and future construction change orders as shown in the following tables.

<u>Item</u>	<u>Amount</u>
Construction Management Consultants	\$ 6,180,000
IRWD Staff	\$ 1,500,000
Legal	\$ 500,000
Future Contract Change Orders	\$ 3,000,000
Contingency (3% of this request)	\$ 320,000
Total	\$11,500,000

Project No.	Current Budget	Addition <Reduction>	Total Budget
04286	\$216,073,100	\$11,500,000	\$227,573,100

ENVIRONMENTAL COMPLIANCE:

The MWRP Biosolids and Energy Recovery Facilities is subject to the California Environmental Quality Act (CEQA) and in conformance with the California Code of Regulations Title 14, Chapter 3, Article 7, a Supplemental Environmental Impact Report, SCH # 2011031091, was certified by IRWD on October 22, 2012. The City of Irvine Planning Commission approved a conditional use permit for the IRWD Biosolids Project on December 6, 2012.

COMMITTEE STATUS:

This item was reviewed by the Engineering and Operations Committee on November 21, 2017.

RECOMMENDATION:

THAT THE BOARD AUTHORIZE THE GENERAL MANAGER TO EXECUTE VARIANCE NO. 7 WITH BLACK & VEATCH IN THE AMOUNT OF \$3,190,018 FOR SUPPLEMENTAL CONTRACT ADMINISTRATION, CONSTRUCTION PHASE, AND START-UP AND COMMISSIONING SERVICES; AUTHORIZE THE GENERAL MANAGER TO EXECUTE VARIANCE NO. 2 WITH ARCADIS, INC. IN THE AMOUNT OF \$1,451,173 FOR SUPPLEMENTAL CONSTRUCTION INSPECTION, CONSTRUCTION MANAGEMENT, AND DOCUMENT CONTROL SYSTEM SERVICES; AUTHORIZE THE GENERAL MANAGER TO EXECUTE VARIANCE NO. 3 WITH HDR ENGINEERING, INC. IN THE AMOUNT OF \$576,739.28 FOR SUPPLEMENTAL CONSTRUCTION INSPECTION; AUTHORIZE THE GENERAL MANAGER TO EXECUTE VARIANCE NO. 2 WITH EI&C ENGINEERING, INC. IN THE AMOUNT OF \$958,720 FOR SUPPLEMENTAL PROCESS CONTROL SYSTEM CONSTRUCTION MANAGEMENT SERVICES, START-UP TESTING, AND DEVELOPMENT OF PROCESS CONTROL SYSTEM OPERATION MANUALS AND ASSOCIATED TRAINING PRESENTATIONS; AND AUTHORIZE A BUDGET INCREASE IN THE AMOUNT OF \$11,500,000, FROM \$216,073,100 TO \$227,573,100, TO THE FY 2017-18 CAPITAL BUDGET FOR THE MICHELSON WATER RECYCLING PLANT BIOSOLIDS AND ENERGY RECOVERY FACILITIES, PROJECT 04286.

LIST OF EXHIBITS:

- Exhibit "A" – Variance No. 6 with Black & Veatch
- Exhibit "B" – Variance No. 2 with Arcadis, Inc.
- Exhibit "C" – Variance No. 3 with HDR Engineering, Inc.
- Exhibit "D" – Variance No. 2 with EI&C Engineering, Inc.

EXHIBIT "A"

IRVINE RANCH WATER DISTRICT

PROFESSIONAL SERVICES VARIANCE

Project Title: MWRP Biosolids & Energy Recovery Facilities – Construction Phase Services

Project No.: 04286 (21146)
Purchase Order No.: 600700

Date: October 18, 2017
Variance No.: 7

Originator: IRWD ENGINEER/CONSULTANT Other (Explain) _____

Description of Variance (*attach any back-up material*): At the request of IRWD provide additional services associated with (1) project management, (2) submittal reviews, (3) RFI reviews, (4) schedule reviews, (5) structural observations, (6) claims avoidance, (7) onsite design representative (8) electrical inspections, (9) I&C inspections, (10) electrical/automation field engineering, (11) civil/mechanical field engineering, (12) EOM development, (13) startup testing coordination, and (14) record drawings. See attached detailed scope of work description.

Engineering & Management Cost Impact:

Classification	Manhours	Billing Rate	Labor \$	Direct Costs	Subcon. \$	Total \$
See attached summary level of effort						
Total \$ =						3,190,018

Schedule Impact:

Task No.	Task Description	Original Schedule	Schedule Variance	New Schedule
All		December 31, 2017	16 months	April 30, 2019

Required Approval Determination:

Total Original Contract	\$ <u>12,509,031</u>	<input type="checkbox"/> Director: Cumulative total of Variances less than or equal to \$50,000.
Previous Variances \$	<u>5,826,550</u>	<input type="checkbox"/> Executive Director: Cumulative total of Variances less than or equal to \$75,000.
This Variance	\$ <u>3,190,018</u>	
Total Sum of Variances	\$ <u>9,016,568</u>	<input type="checkbox"/> General Manager: Cumulative total of Variances less than or equal to \$100,000.
New Contract Amount	\$ <u>21,525,599</u>	
Percentage of Total Variances to Original Contract	<u>72.1%</u>	<input checked="" type="checkbox"/> Board: Cumulative total of Variances greater than \$100,000.

ENGINEER/CONSULTANT: Black & Veatch Corp.
Company Name

IRVINE RANCH WATER DISTRICT

Devin K. Erdmaster
Project Engineer/Manager

October 18, 2017
Date

Department Director

_____ Date

[Signature]
Engineer's/Consultant's Management

October 18, 2017
Date

General Manager/Board

_____ Date

IRVINE RANCH WATER DISTRICT

PROFESSIONAL SERVICES VARIANCE REGISTER

Project Title: MWRP Biosolids and Energy Recovery Facilities – Construction Phase Services

Project No.: 04286 (21146) Project Manager: Steve Malloy

Variance No.	Description	Dates		Variance Amount
		Initiated	Approved	
1	Add a Field Electrical & Automation Engineer	02-05-14	03-25-14	\$664,600
2	Prepare an Odor Control Maintenance and Monitoring Program (OCMMP)	04-29-14	05-28-14	\$112,665
3	Add a Field Civil/Mechanical Engineer	10-06-14	11-10-14	\$899,000
4	Additional Startup Monitoring Activities	10-09-15	11-03-15	\$370,570
5	Additional Services for: (1) project management, (2) submittal reviews, (3) RFI reviews, (4) schedule reviews, (5) electrical inspections, (6) electrical/automation field engineering, (7) civil/mechanical field engineering, and (8) air quality permitting services.	04-07-16	09-27-16	\$3,564,215
6	Additional services for Standard Operating Procedures: (1) convert "existing" 60 SOPs from process summary type to individual equipment type, (2) expand the scope of the "existing" SOPs, and (3) prepare 70 new SOPs.	02-09-17	04-11-17	\$215,500

7	Additional Services for: (1) project management, (2) submittal reviews, (3) RFI reviews, (4) schedule reviews, (5) structural observations, (6) claims avoidance, (7) onsite design representative (8) electrical inspections, (9) I&C inspections, (10) electrical/automation field engineering, (11) civil/mechanical field engineering, (12) EOM development, (13) startup testing coordination, and (14) record drawings	10-18-17	pending	\$3,190,018



MEMORANDUM

Irvine Ranch Water District
MWRP Biosolids & Energy Recovery Facilities
Proposed Variance #6 – Additional SOP Work

179900
October 18, 2017

To: Steve Malloy – Principle Engineer
From: Dan Buhrmaster – Project Manager

Thank you for the opportunity to submit **Proposed Variance #7** to IRWD to accommodate the anticipated time extension for FBB (Contractor), extending our construction phase services completion schedule from December 31, 2017 to approximately April 30, 2019 (16 month time extension). The amount of this **Proposed Variance #7** is **\$3,190,018**. Attached are the following documents that make up our proposal to OCSD:

- IRWD Professional Services Variance Form – Proposed Variance #7.
- Scope of Services
- Budget Projection Spreadsheet
- Proposed Level of Effort and Engineering Fee Spreadsheet

We hope that the above information is satisfactory for you to review our proposal, approve the proposed engineering fee, and to submit for Board approval. As always, we are ready to discuss any of the items described above, or anything else that is of concern in support of moving your approval process forward.

Thank you once again for offering this opportunity to the Black & Veatch.

**IRVINE RANCH WATER DISTRICT
MWRP BIOSOLIDS & ENERGY RECOVERY FACILITIES
(BIOSOLIDS PROJECT)
CONSTRUCTION PHASE SERVICES
Project No. 21146 (4286)**

**VARIANCE #7
OCTOBER 18, 2017**

SCOPE OF WORK

BACKGROUND

The Irvine Ranch Water District (IRWD) owns and operates the Michelson Water Recycling Plant (MWRP). New biosolids and energy recovery facilities are currently under construction by Filanc-Balfour Beatty (FBB), the construction contractor. IRWD and FBB are negotiating a time extension to FBB that apparently will extend the contract completion date from December 2017 to April 2019 (16 month time extension). At the request of IRWD Black & Veatch will furnish additional project management; construction administration support; construction field support; electronic O&M manual; and training, commissioning, and start-up services to cover the additional time period granted to FBB and also cover out of scope work requested by IRWD.

BASIS FOR VARIANCE

The MWRP Biosolids & Energy Recovery Facilities Project (Biosolids Project) is currently under construction. The following events have occurred that resulted in this proposed variance for Black & Veatch:

- **Contract Time Extension** - FBB has been in negotiations with IRWD to obtain an extension in the construction schedule. It is anticipated that the project completion date will be extended from the current date of December 2017 to April 2019 (16 month time extension). This time extension directly affects the following scope of work tasks by extending the number of months that Black & Veatch services are required:
 - Task 1 - Project Management
 - Task 2.4 – Schedule Review
 - Task 2.5 – Structural Observations
 - Task 3.1 thru 3.8 – On-Site Design Team Representative
 - Task 3.9 – Electrical Inspection
 - Task 3.10 – Instrumentation and Control Inspections
 - Task 3.14 – Electrical/Automation Field Engineering
 - Task 3.15 – Civil/Mechanical Field Engineering
- **Submittal Reviews (Scope Task 2.1 – B&V Phase 201)** – The number of submittals (2,776) through October 16, 2017 has significantly exceeded the estimated number of submittals (2,400) and the shop drawing submittals are

anticipated to continue through approximately April 2018. A total of 3,076 submittals (including approximately 200 new and 100 record copy submittals) are now anticipated through April 2018. As of October 6, 2017, the actual expenditures were at approximately 102.5% of the budget allowance and a variance is necessary. Black & Veatch believes that the increase in the number of submittals is primarily due to the large number of re-submittals that have occurred. To date, 1,329 re-submittals have occurred compared with 1,447 initial submittals – this represents a very high re-submittal rate of 92% for FBB. B&V assumed a resubmittal rate of about 20% during the scope/fee development for this project and a re-submittal rate of about 20-40% is typical on projects.

- ***RFIs (Scope Task 2.2 – B&V Phase 202)*** – The current number of RFIs (2,821) has exceeded the estimated number of RFIs (2,500) and additional RFIs are anticipated to continue through approximately November 2018. A total of 3,060 RFIs (approximately 240 new) are now anticipated through November 2018. As of October 6, 2017, the actual expenditures were at 105.4% of budget allowance and a variance is necessary. Following are several reasons for the number of RFIs exceeding the estimated number.
 - IRWD has initiated a number of owner generated RFIs. This provides excellent documentation but is beyond what we normally experience on our projects.
 - There are a large number of programming/configuration RFIs required for this project due to the very detailed specifications and specific IRWD standards – much higher than a normal B&V project.
 - In some cases, RFIs were submitted by the contractor just to clarify what was in the contract documents or request additional design information and did not represent a design change.
 - The contractor has initiated changes to the work due to his lack of proper coordination of suppliers and subcontractors.
 - The contractor has initiated additional RFIs because he has proceeded at risk with fabrication of some electrical/I&C equipment without complete approved mechanical shop drawings, resulting in revisions.

- ***Claims Avoidance and Dispute Resolution (Scope Task 2.7 – B&V Phase 207)*** – The contractor (FBB) has made several claims for extra cost and delays on this project. B&V anticipates these contractor claims to continue and accelerate before this project is complete and we are recommending an increase in the budget for this task to accommodate responding to the anticipated increase in activity by FBB.

- ***Electronic O&M Manual (Scope Task 4.1 thru 4.2 – B&V Phase 401)*** - Based on ongoing feedback from IRWD operations staff during electronic O&M manual (EOM) development to date, additional effort is needed for labelling, linking, and organization of startup documentation, ECPs, JSAs, SOPs, electrical shutdown plan, drawings, air permitting reports, vendor O&Ms to the electronic O&M. This was not anticipated at the beginning of the project. Also, there have been a larger

number of EOM reviews and meetings to demonstrate the electronic O&M to the operations staff, to get comments from the operations staff, and have the operations staff be more comfortable with usage of the electronic O&M. Multiple submittals and meetings were not originally envisioned, but due to the lengthening project schedule these meetings have been helpful to IRWD and provide sufficient time for comments and correction to produce a better final project deliverable with more documentation included than originally scoped. In addition, a user's manual is to be developed to provide directions on updating the manual as this is required due to the growth in complexity of the manual.

- ***Start-Up Testing Coordination (Scope Task 5.3 – B&V Phase 503)*** –The contractor is showing their contract completion date extending to April 2019 in their most recent schedule update. Monthly onsite start-up and commissioning meetings with the operations staff has provided valuable interaction between the B&V commissioning team and the IRWD operations staff and B&V proposes to continue these monthly meetings. The planning sessions provide for informal meetings to brainstorm and discuss upcoming startup and commissioning activities. In addition to the onsite meetings, considerable time has been spent and will continue to be used to answer questions posed by the operations staff on topics such as ammonia in influent to the plant, digesters commissioning plan, centrate treatment commissioning plan, mass balance for recycling solids to build up the solids concentration in the digester, dewatering/dryer commissioning plan and other request from IRWD Operations. Also, the startup material submitted by the contractor has required multiple reviews for accuracy and correctness – above what was originally planned – and B&V has offered to be a resource for FBB in their development of the start-up plans.
- ***Record Drawings & Atlas Update (Scope Task 6.3 - B&V Phase 603)*** – The Contract Documents require that FBB (Contractor) maintain a current set of redline drawings that reflect all revisions to the contract drawings using a “redline” drawing marking approach that results in an “as-built” drawing set that is ready for CAD revisions by Black & Veatch upon completion of the project (see Section 01720 – Record Documents). Beginning approximately November 2016 FBB has refused to provide redline drawings that are ready for CAD revisions and are only noting locations on drawings that are being changed and referencing RFIs or CCOs via hyperlinks. Therefore, Black & Veatch will have additional engineering time to prepare the redline drawings that will be used in preparing the as-built drawings for this project and this represents out of scope work.

SCHEDULE AND LEVEL OF EFFORT

The level of effort has been estimated by projecting expenditures through the end of the new contract completion date of April 2019 (a 16 month time extension) for the tasks identified above – see Attachment A. The assumptions made for these projections are given in the attachment. The cumulative costs for each task on this project are shown for

the thirty-three (33) total project tasks. Nineteen (19) tasks are not affected by the time extension since the work effort is the same regardless of the timing of the work. Fourteen (14) tasks are affected by the time extension or IRWD requests for out of scope work. These tasks are listed above and shaded in pink color in the attachment.

The following B&V field staff and key team members will continue in their current role on this project through April 2019 unless otherwise approved by IRWD:

- Jim Clark – Project Director.
- Dan Buhrmaster – Project Manager.
- Mark Wilson – Engineering Manager.
- Neil Massart – Commissioning Manager.
- Jon Hay – Onsite Design Team Representative.
- Keene Matsuda – Electrical Field Inspector.
- Marc Zamora – I&C Inspector.
- Mark Lowe – Structural Field Engineer.
- Daniel Cearley – Civil/Mechanical Field Engineer (EI&C Sub-Consultant).
- Chris Carey - Civil/Mechanical Field Engineer.
- Shawn Rohr – Electrical/Automation Field Engineer.
- Sheila Moredo - Electrical/Automation Field Engineer.
- Thomas Cherian – Schedule Reviewer.

LEVEL OF EFFORT FOR VARIANCE #7 - OCTOBER 18, 2017	Project Director/VP	Project Manager 3	Engineer 7	Engineer 6	Engineer 4	Construction Manager 7	Construction Manager 5	O&M Specialist 6	O&M Specialist 4	Engineer 2	Clerical	Technician 3	Manhours	Sub- Consultants, Misc. Expenses, and Travel Costs	Variance #7 Fees
Hourly Rate	\$315	\$260	\$220	\$210	\$175	\$225	\$170	\$175	\$140	\$120	\$100	\$100			
Variance #7 Tasks															
Task 1 - Project Management	96	440									680		1,216	\$20,192	\$232,832
Task 2.1 - Submittal Reviews		120	240	480				120		720	40		1,720	\$18,315	\$314,515
Task 2.2 - RFI Reviews		80	150	300				80		480	32		1,122	\$11,651	\$203,251
Task 2.4 - Schedule Reviews							96						96	\$1,636	\$17,956
Task 2.5 - Structural Observations				360									360	\$4,953	\$80,553
Task 2.7 - Claims Avoidance and Dispute Resolution	80	240	240	120		240		64			40		1,024	\$15,200	\$250,000
Task 3.1 thru Task 3.8 - Onsite Design Team Representative				2,624									2,624	\$33,209	\$584,249
Task 3.9 - Electrical Inspection			840										840	\$12,151	\$196,951
Task 3.10 - I&C Inspections					540								540	\$8,644	\$103,144
Task 3.14 - Electrical/Automation Field Engineering				680						680			1,360	\$36,394	\$260,794
Task 3.15 - Civil/Mechanical Field Engineering										1,280			1,280	\$155,342	\$308,942
Task 4.1 thru Task 4.2 - Electronic O&M Manual Development, Installation, and Training									80	400			480	\$8,200	\$67,400
Task 5.3 - Startup Testing Coordination Services								1,200					1,200	\$59,431	\$269,431
Task 6.3 - Record Drawings & Atlas Update					1,000							1,000	2,000	\$25,000	\$300,000
Totals - Variance #7	176	880	1,470	4,564	1,540	240	96	1,464	80	3,560	792	1,000	15,862	\$410,318	\$3,190,018

B&V Phase/Task Description	B&V Phase No.	Cumulative Costs Thru August 2017	Projected Future Costs through March 2018	Projected Cumulative Total Costs	Approved Budget	Approved Budget Cost - Projected Cumulative Total Cost	Projected Percent Complete Versus Budget	Comments Regarding Remaining Work Assumptions Through March 2018 (18 months)
Task 1 - Construction Phase Project Management								
Task 1.1 - Submittal Review	301	\$805,608.46	\$3,133,32.33	\$3,233,092.81	\$898,420.00	(\$112,810.41)	124.8%	Assume current burn rate thru April 2018 (18 months)
Task 2.1 - Requests for information (RFIs)	302	\$4,174,654.54	\$7,078,384.26	\$4,148,658.30	\$4,098,887.00	(\$149,871.70)	108.3%	Assume current burn rate thru January 2017 (15 months) then ramp to zero by June 2018 (12 months)
Task 2.2 - Meetings/Technical Site Visits	303	\$5,950,088.83	\$1,264,301.53	\$1,821,967.36	\$1,428,598.00	(\$153,391.81)	113.3%	Assume current burn rate thru January 2017 (15 months) then ramp to zero by June 2018 (12 months)
Task 2.4 - Schedule Review	304	\$655,567.54	\$352,831.60	\$998,400.00	\$998,400.00	\$0.00	100.0%	Assume no budget overrun
Task 2.5 - Specialist Observations	305	\$411,719.08	\$144,035.92	\$555,754.00	\$555,754.00	\$0.00	100.0%	Assume no budget overrun
Task 2.6 - Proceed Contractor Change Orders	306	\$291,276.13	\$45,526.38	\$337,506.83	\$291,175.00	(\$46,331.82)	115.6%	Assume current burn rate thru January 2018 (15 months) - Mark case
Task 2.7 - Claims Avoidance and Dispute Resolution Assistance	307	\$178,508.75	\$294,801.25	\$473,310.00	\$473,310.00	\$0.00	100.0%	Assume no budget overrun
Task 2.8 - Final Walk-Through	308	\$40,425.00	\$40,796.00	\$206,200.00	\$206,200.00	(\$120,000.00)	198.7%	Assume significant claims by F&B to review and respond to - add \$150 k
Task 2 - Construction Administration Support Services								
Task 2.1 - Construction Administration Support Services	301	\$0.00	\$112,560.00	\$112,560.00	\$112,560.00	\$0.00	100.0%	No change - work is the same but pushed out to April 2018
Task 3 - Construction Field Support Services								
Task 3.1 - Invoicing & Billing	301	\$1,589,875.42	\$623,564.78	\$2,207,853.43	\$1,894,800.00	(\$313,053.43)	125.8%	Assume current burn rate thru June 2018 (18 months) - see RFI
Task 3.2 - Electrical Inspection	302	\$1,027,027.54	\$100,406.31	\$1,127,433.85	\$1,077,240.00	(\$50,193.85)	122.7%	Assume current burn rate thru June 2018 (18 months) then ramp to zero by April 2019 (12 months) - Assume Walk-out
Task 3.10 - Instrumentation and Control Inspections	308	\$311,748.43	\$529,074.40	\$1,242,843.03	\$866,200.00	(\$146,643.03)	119.2%	Assume current burn rate through March 2018 (17 months) then ramp to zero through January 2019 (10 months) - Mark Case
Task 3.11 - Edison Savings by "Design Grant" Application Support	304	\$10,801.25	\$10,198.75	\$40,000.00	\$40,000.00	\$0.00	100.0%	Assume no budget overrun
Task 3.12 - Control System Configuration & Programming Services (E&C)	305	\$349,640.00	\$30,160.00	\$380,000.00	\$380,000.00	\$0.00	100.0%	Assume no budget overrun
Task 3.13 - Mechanical Inspections	306	\$34,219.26	\$13,946.74	\$38,160.00	\$38,160.00	\$0.00	100.0%	Assume no budget overrun
Task 3.14 - Electrical/Automation Field Engineering (Variance #1)	307	\$338,248.39	\$418,318.22	\$1,750,034.03	\$588,084.00	(\$1,161,950.03)	114.3%	Assume current burn rate thru January 2019 (17 months) - Shelly D'Amico and Shelly-Rose
Task 3.15 - Civil/Mechanical Field Engineering (Variance #2)	308	\$756,264.39	\$483,200.00	\$1,313,264.39	\$999,000.00	(\$314,264.39)	114.9%	Assume burn rate engineers fulltime thru June 2018 (18 months) - Dan Coates and Chuck Case
Task 3 - Construction Field Support Services								
Task 4.1 thru 4.2 - Electronic O&M Manual Develop, Install, and Training	401	\$322,096.40	\$81,496.60	\$415,589.00	\$415,589.00	\$0.00	100.0%	Assume no budget overrun
Task 4.3 - Energy Control Procedures (ECPs)	402	\$167,232.51	\$48,908.49	\$209,136.00	\$209,136.00	\$0.00	100.0%	Assume no budget overrun
Task 4.4 - Job Safety Analysis (JSA) Documents	403	\$101,445.64	\$11,411.36	\$112,857.00	\$112,857.00	\$0.00	100.0%	Assume no budget overrun
Task 4.5 - Asset Management Data Collection	404	\$205,685.00	\$21,680.00	\$184,000.00	\$184,000.00	\$0.00	100.0%	Task complete - budget overrun occurred - reallocate from other tasks if possible at a later date.
Task 4.6 - Odor Control Maintenance & Monitoring Program (Variance #2)	405	\$65,813.59	\$47,091.41	\$112,605.00	\$112,605.00	\$0.00	100.0%	Assume no budget overrun
Task 4.7 - Prepare Summary Standard Operating Procedure (SOP) Documents	406	\$51,299.70	\$270,353.30	\$321,653.00	\$321,653.00	\$0.00	100.0%	New task requested by IFWD
Task 4 - Electronic O&M Manual								
Task 5.1 - Contractor/Vendor Training & Commissioning Meetings	501	\$0.00	\$81,454.00	\$81,454.00	\$81,454.00	\$0.00	100.0%	Assume no budget overrun
Task 5.2 - Pre-Startup Process Overview Training	502	\$80,459.18	\$11,641.34	\$112,100.00	\$112,100.00	\$0.00	100.0%	Assume no budget overrun
Task 5.3 - Start-Up Testing Coordination (Including Variance #4 - \$370,870)	503	\$513,411.70	\$420,000.00	\$936,411.70	\$688,750.00	(\$247,661.70)	114.1%	Additional costs for B&V Startup Coordinator to continue his monthly meetings with plant staff for 17 additional months - see RFI
Task 5.4 - Factory Witness Testing	504	\$46,296.86	\$78,107.14	\$124,504.00	\$124,504.00	\$0.00	100.0%	Assume no budget overrun
Task 5.5 - S-7 - Commissioning & Process Optimization Services	505	\$120,000.98	\$688,893.02	\$788,896.00	\$788,896.00	\$0.00	100.0%	Assume no budget overrun
Task 5.6 - AP Quality Permit Services	506	\$86,490.43	\$16,548.53	\$103,039.00	\$103,039.00	\$0.00	100.0%	Assume no budget overrun
Task 5 - Training, Commissioning, and Start-Up Services								
Task 6.1 - Post Start-Up Services	601	\$0.00	\$54,100.00	\$54,100.00	\$54,100.00	\$0.00	100.0%	Assume no budget overrun
Task 6.2 - Update Electronic O&M Manual	602	\$1,266.25	\$21,011.75	\$22,278.00	\$22,278.00	\$0.00	100.0%	Assume no budget overrun
Task 6.3 - Record Drawings & As-Built Update	603	\$15,848.38	\$450,347.62	\$470,796.00	\$170,792.00	(\$300,004.00)	275.7%	F&B will not be providing outline for B&V per contract - alternative additional B&V engineering is required to complete outline drawings for CAZ revisions
Task 6.4 - Project Closeout	604	\$0.00	\$43,711.00	\$43,711.00	\$43,711.00	\$0.00	100.0%	Assume no budget overrun
Task 6 - Post Construction Services								
		\$14,434,596.54	\$6,893,045.34	\$21,328,032.08	\$18,235,581.00	(\$3,092,451.08)	118.3%	
		Variance #7 = \$		2,992,451.08				

EXHIBIT "B"

**IRVINE RANCH WATER DISTRICT
PROFESSIONAL SERVICES VARIANCE**

Project Title: MWRP Biosolids and Energy Recovery Facilities

Project No.: 04286

Date: October 19, 2017

Purchase Order No.: 521366

Variance No.: 02

Originator: IRWD ENGINEER/CONSULTANT Other (Explain) _____

Description of Variance (*attach any back-up material*):

Provide supplemental construction management services through June 30, 2019 and construction inspection services through June 30, 2018

Engineering & Management Cost Impact:

Classification	Manhours	Billing Rate	Labor \$	Direct Costs	Subcon. \$	Total \$
Sr. Construction Manager 2	3,720	\$225-236	\$863,165			\$863,165
Sr. Construction Inspector 5	1,585	\$162-249	\$343,302			\$343,302
Document Control System			\$112,781			\$112,781
Administration/ODCs						\$131,925
Total \$ =						\$1,451,173

Schedule Impact:

Task No.	Task Description	Original Schedule	Schedule Variance	New Schedule
	CM and Inspection Services	October 31, 2016	+15 months	June 30, 2018 (Inspection)
				June 30, 2019 (CM)

Required Approval Determination:

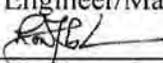
Total Original Contract	\$ 2,931,368.00	<input type="checkbox"/> Director: Cumulative total of Variances less than or equal to \$50,000. <input type="checkbox"/> Executive Director: Cumulative total of Variances less than or equal to \$75,000. <input type="checkbox"/> General Manager: Cumulative total of Variances less than or equal to \$100,000. <input checked="" type="checkbox"/> Board: Cumulative total of Variances greater than \$100,000.
Previous Variances	\$ 1,345,755	
This Variance	\$ 1,451,173	
Total Sum of Variances	\$ 2,796,928	
New Contract Amount	\$ 5,728,296	
Percentage of Total Variances to Original Contract	95%	

ENGINEER/CONSULTANT: Arcadis
Company Name

IRVINE RANCH WATER DISTRICT


Project Engineer/Manager Date

Department Director Date


Engineer's/Consultant's Management Date

General Manager/Board Date

IRVINE RANCH WATER DISTRICT

PROFESSIONAL SERVICES VARIANCE REGISTER

Project Title: MWRP Biosolids and Energy Recovery Facilities

Project No.: 04286 Project Manager: Ron Esmilla

Variance No.	Description	Dates		Variance Amount
		Initiated	Approved	
01	Supplemental CM & Inspection Services	8/29/2016	10/29/2016	\$1,345,755
02	Supplemental CM & Inspection Services	10/18/2017		\$1,451,173

Steve Malloy
Principal Engineer – MWRP Construction
Michelson Water Recycling Plant
3512 Michelson Drive
Irvine, CA 92612

Arcadis U.S., Inc
320 Commerce
Suite 200
Irvine
California 92602
Tel 714 730 9052
Fax 714 730 9345
[www arcadis com](http://www.arcadis.com)

Subject:
MWRP Biosolids and Heat Recovery Facilities PR 4286
Variance No. 2 – Service Extension to June 2018 (Inspection) and March 2019
(Construction Management)

Water - Construction

Date:
October 31, 2017

Dear Steve:

We are submitting Variance No. 2 to our scope of work to account for extended project duration and additional contract administration to satisfy prevailing wage requirements.

Contact:
Ron Esmilla

We have organized and listed the tasks below to follow the contract task numbering. This variance seeks to reconcile all remaining work items to arrive at a final project scope and budget based on the terms set forth in this letter.

Phone:
949-231-8971

The requested fee for Variance 2 is \$1,451,173, and is summarized in the attached Variance No. 2 Fee Summary. These attachments supplement the summary and descriptions below. Inspection services will be provided by Tim Brown (Senior Construction Inspector). I will provide the construction management services.

Email:
Ron.Esmilla@arcadis.com

Our ref:
01120038.0000

TASK 10000 – CONSTRUCTION MANAGEMENT SUPPORT SERVICES

I will provide construction management support services through June 30, 2019. I will negotiate and prepare change orders and provide as-needed construction management support, assist with resolving project claims and delays submitted by the Contractor, and assist in project close-out activities. My 2017 hourly rate is \$225; 2018 hourly rate is \$231; and 2019 hourly rate is \$236.

TASK 20000 – CONSTRUCTION INSPECTION SERVICES

Tim will provide construction inspection through June 30, 2018. Although the project schedule shows that physical construction is scheduled to be completed on May 23, 2018, we assumed that time is required for completion of punchlist items. We assumed full-time throughout this time period with an additional 20% of over time. His hourly wage will meet California Prevailing Wage requirements. For portion of 2017 remaining, Tim's hourly rate is \$162 for regular time and

Malloy
October 19, 2017

\$243 for over time at 1.5 times regular pay. For 2018, Tim's hourly rate will be \$166 for regular time and \$249 for over time at 1.5 times regular pay.

TASK 30000 – DOCUMENT CONTROL SYSTEM SUPPORT

Provide DCS support through June 30, 2019 including help with the archiving of vital project documents. This effort will also be for project close-out activities, coordinating with IRWD's information services and engineering library on capturing project documentation.

TASK 00000 – CONTRACT ADMINISTRATION/OTHER DIRECT COSTS

Per California SB 854, Arcadis must meet California Prevailing Wage requirements that include payroll tracking, reporting, certification, and payment to apprenticeship council. The variance amount for this task incorporates these costs. The ODCs also include the maintenance of computers and servers that store the document control system.

Sincerely,

Arcadis U.S., Inc.



Ron J. Esmilla, PE

Sr. Construction Manager

Copies:

Jon Westervelt, PE

Enclosures:

Attachments

- 1 Variance No. 2
- 2 Variance No. 2 Fee Summary

Irvine Ranch Water District
MWRP Biosolids and Heat Recovery Facilities
PR 04286
Variance No. 2 Fee Summary

Task	Description	Effort (Hrs)			Fee, Dollars			Fee, Dollars
		11/1/2017 to 12/31/2017	1/2018 thru 12/2018	01-2019 thru 06- 2019	11/1/2017 to 12/31/2017	1/2018 thru 12/2018	01-2019 thru 06-2019	Total
10000	Construction Management	360	2100	1260	\$ 81,000	\$ 484,313	\$ 297,852	\$ 863,165
20000	Inspection							
	Regular Time	360	1225	0	\$ 58,320	\$ 203,411	\$ -	\$ 261,731
	Overtime (25%) (1.5 X Regular)	72	257	0	\$ 17,496	\$ 64,075	\$ -	\$ 81,571
30000	DCS Support	20	240	152	\$ 21,500	\$ 55,350	\$ 35,931	\$ 112,781
	Subtotal				\$ 178,316	\$ 807,148	\$ 333,784	\$ 1,319,248
00000	Administration/ODCs (10%)				\$ 17,832	\$ 80,715	\$ 33,378	\$ 131,925
	Variance No. 2 Request				\$ 196,148	\$ 887,863	\$ 367,162	\$ 1,451,173

EXHIBIT "C"

IRVINE RANCH WATER DISTRICT PROFESSIONAL SERVICES VARIANCE

Project Title: Michelson Water Recycling Plant, Biosolids Construction Management Services

Project No.: 4286 Date: November 8, 2017
Purchase Order No.: 521288 Variance No.: 3

Originator: IRWD ENGINEER/CONSULTANT Other (Explain) _____

Description of Variance (*attach any back-up material*):

Additional construction support services to meet the new project completion date of April 30, 2019. See attached proposal for detailed breakdown.

Engineering & Management Cost Impact:

Classification	Manhours	Billing Rate	Labor \$	Direct Costs	Subcon. \$	Total \$
Additional Support through 4/30/2019	4,784	Varies				\$576,739.28
Total \$ =						\$576,739.28

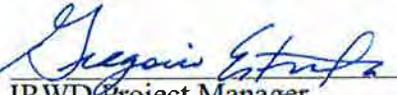
Schedule Impact:

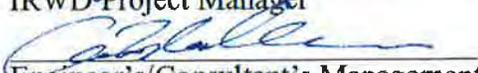
Task No.	Task Description	Original Schedule	Schedule Variance	New Schedule
1	Additional Support	Feb 28, 2017	26 months	Apr 30, 2019

Required Approval Determination:

Total Original Contract \$ <u>1,867,153.78</u>	<input type="checkbox"/> General Manager: Single Variance less than or equal to \$30,000. <input type="checkbox"/> Committee: Single Variance greater than \$30,000, and less than or equal to \$60,000. <input type="checkbox"/> Board: Single Variance greater than \$60,000. <input checked="" type="checkbox"/> Board: Cumulative total of Variances greater than \$60,000, or 30% of the original contract, whichever is higher.
Previous Variances \$ <u>(393,997.50)</u> This Variance \$ <u>576,739.28</u>	
Total Sum of Variances \$ <u>182,741.78</u> New Contract Amount \$ <u>2,049,895.56</u>	
Percentage of Total Variances to Original Contract <u>9.8%</u>	

ENGINEER/CONSULTANT: HDR Engineering Inc.
Company Name


IRWD Project Manager 11/8/17
Date


Engineer's/Consultant's Management 11/8/17
Date

IRVINE RANCH WATER DISTRICT

Department Director Date

General Manager/Comm./Board Date

IRVINE RANCH WATER DISTRICT

PROFESSIONAL SERVICES VARIANCE REGISTER

Project Title: Michelson Water Recycling Plant, Biosolids Construction Management Services

Project No.: 4286 Project Manager: Steve Malloy

Variance No.	Description	Dates		Variance Amount
		Initiated	Approved	
1	Reduction in Scope		10/17/2014	(\$890,000.00)
2	Additional construction support through extended project duration.	9/9/2016		\$496,002.50
3	Additional construction support through extended project duration.	11/8/2017		\$576,739.28



November 8, 2017

Mr. Steve Malloy, P.E.
Principal Engineer
Irvine Ranch Water District
15600 Sand Canyon Avenue
Irvine, California 92618

Subject: MWRP Biosolids Construction Management Services - Variance No. 3

Dear Mr. Malloy,

HDR Engineering, Inc. (HDR) is requesting a variance to our scope of work to account for extended project duration.

Per your request, we are preparing this additional scope of services as Variance No. 3 to the Michelson Water Recycling Plant (MWRP) Biosolids Construction Management (CM) Services contract. We have organized and listed the tasks below to follow the contract task numbering. This variance seeks to reconcile all remaining work items to arrive at a final project scope and budget based on a project completion date of April 30, 2019.

The requested fee for Variance No. 3 is \$576,739.28, and is summarized in the attached **Cost-to-Complete Estimate** and **Variance No. 3 Fee Summary**. These attachments supplement the summary and descriptions below. The estimates are based on the project completion date noted above. Inspection services will be provided by John Walker (Senior Inspector) at the rates described below.

TASK 1 – PROJECT MANAGEMENT

Project Management is a continuous activity during the project and provides project oversight, workload projections, staff management, budget, scope and schedule tracking, and on-going coordination to address project management issues.

The extended schedule is projected to have an impact on project management activities, including additional project controls and contract administration. In addition, California Prevailing Wage requirements include payroll tracking, reporting, and certification. The variance amount for Project Management incorporates these costs and estimates the fee based on a project completion of April 30, 2019.

TASK 6 – INSPECTION SERVICES - 2017

The estimated cost to complete for this task includes full-time inspection (40 hours per week) and 25% overtime inspection at 1.5x overtime for September to December 2017. The billable rate for John Walker for the remaining portion of 2017 is established at \$157 per straight time hour and

Mr. Steve Malloy, P.E.
November 8, 2017

\$209 per 1.5 overtime hour. We have assumed that double overtime will not be required; however a rate of \$262 per 2.0 overtime hour is established should it be required.

TASK 7 –ON-CALL SERVICES

This task was established as part of Variance No. 2 to cover as-needed and as-requested engineering support services for on-call consultation related to construction, start-up, operations, process, or other support work. We have expended the majority of the original budget and are requesting an additional \$9,300 to cover as-needed services through the end of the project.

TASK 8 – INSPECTION SERVICES - 2018

The estimated cost for this task includes full-time inspection (40 hours per week) and 25% overtime inspection at 1.5x overtime for January to December 2018. The billable rate for John Walker for 2018 is established at \$161 per straight time hour and \$215 per 1.5 overtime hour. We have assumed that double overtime will not be required; however a rate of \$268 per 2.0 overtime hour is established should it be required.

TASK 9 – INSPECTION SERVICES - 2019

The estimated cost for this task includes full-time inspection (40 hours per week) and 25% overtime inspection at 1.5x overtime for January to April 2019. The billable rate for John Walker for 2019 is established at \$165 per straight time hour and \$220 per 1.5 overtime hour. We have assumed that double overtime will not be required; however a rate of \$275 per 2.0 overtime hour is established should it be required.

We appreciate the opportunity to continue provided inspection services for this important project. Please do not hesitate to contact either of the undersigned if you wish to discuss the proposed scope of services further.

Sincerely,
HDR Engineering, Inc.


Aaron M. Meilleur, P.E.
Vice President


Gregorio Estrada, P.E.
Project Manager

Enclosures: Professional Services Variance Form
Cost-to-Complete Estimate
Variance No.3 Fee Summary

**Irvine Ranch Water District
 Michelson Water Recycling Plant | Biosolids Construction Management Services
 Variance No. 3 Fee Summary**



Original Authorization	\$2,834,476.00 a
Transfer to PO#515759 (9/3/2013)	\$400,000.00 b
Transfer to PO#515759 (10/14/2014)	\$350,000.00 c
Billed Through July 2014	\$217,322.22 d
Amount Authorized Under PO#521288	\$1,867,153.78 e = a - b - c - d
Scope Reduction (10/17/2014)	\$890,000.00 f
Variance No. 2 (9/27/2016)	\$496,002.50 g
Available Authorization Under PO#521288	\$1,473,156.28 h = e - f + g
Total Cost-to-Date (through August 2017)	\$1,243,795.56 i
Remaining Authorization	\$229,360.72 j = h - i
Estimated Cost to Complete (Aug 2016 - Dec 2017)	\$806,100.00 k (see attached Cost-to-Complete Estimate)
Variance No. 2 Amount	\$576,739.28 l = k - j
Total Authorization with Variance No. 3	\$2,049,895.56 m = h + l

Tasks	Current Budget	Cost to Date August 2017	Remaining Budget	Cost to Complete	Variance No. 3	New Budget
Task 1 - Project Management	\$73,902.33	\$67,646.01	\$6,256.32	\$38,800.00	\$32,543.68	\$106,446.01
Task 2 - Inspection and Engineering Services - 2013	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Task 3 - Inspection and Engineering Services - 2014	\$294,242.03	\$294,242.03	\$0.00	\$0.00	\$0.00	\$294,242.03
Task 4 - Inspection Services - 2015	\$299,610.92	\$299,610.92	\$0.00	\$0.00	\$0.00	\$299,610.92
Task 5 - Inspection Services - 2016	\$350,201.00	\$330,588.35	\$19,612.65	\$0.00	-\$19,612.65	\$330,588.35
Task 6 - Inspection Services - 2017	\$425,200.00	\$224,308.25	\$200,891.75	\$146,500.00	-\$54,391.75	\$370,808.25
Task 7 - On-Call Services	\$30,000.00	\$27,400.00	\$2,600.00	\$11,900.00	\$9,300.00	\$39,300.00
Task 8 - Inspection Services - 2018	\$0.00	\$0.00	\$0.00	\$452,700.00	\$452,700.00	\$452,700.00
Task 9 - Inspection Services - 2019	\$0.00	\$0.00	\$0.00	\$156,200.00	\$156,200.00	\$156,200.00
Total	\$1,473,156.28 (h)	\$1,243,795.56 (i)	\$229,360.72 (j)	\$806,100.00 (k)	\$576,739.28 (l)	\$2,049,895.56 (m)



No.	Description	LEVEL OF EFFORT, HOURS															FEE DOLLARS								
		Principal	Project Manager 2017	Project Manager 2018	Project Manager 2019	Sr Insp. ST 2017	Sr Insp. 1.5 OT 2017	Sr Insp. 2.0 OT 2017	Sr Insp. ST 2018	Sr Insp. 1.5 OT 2018	Sr Insp. 2.0 OT 2018	Sr Insp. ST 2019	Sr Insp. 1.5 OT 2019	Sr Insp. 2.0 OT 2019	Senior Engineer	Project Engineer	Staff Engineer	Asstg	Admin	Total Labor	Costs	Total	CLIENT TOTAL		
	Client Billing Rates	\$300	\$270	\$255	\$255	\$191	\$200	\$202	\$161	\$175	\$168	\$165	\$222	\$275	\$220	\$185	\$120	\$180	\$30	\$173	2.00%		-		
	Project Management																								
1.1	Project Management 2017, Oct-Dec	1	14																9	6	30	6,110	122	6,232	
1.2	Project Management 2018, Jan-Dec	1		54															36	24	116	23,660	473	24,133	
1.3	Project Management 2019, Jan-Apr	1			18														12	8	39	6,300	166	6,466	
	Subtotal, Task 1 Project Management	3	14	54	18	0	0	0	0	0	0	0	0	0	0	0	0	57	38	185	36,070	761	36,831		
	Inspection Services 2017 (Sept - Dec)																								
6.1	Inspection Services - Straight Time					696		174													696	109,272	696	109,968	
6.2	Inspection Services - 1.5 Overtime							0													174	36,366	174	36,540	
6.3	Inspection Services - 2.0 Overtime							0													0	0	0	0	
	Subtotal, Task 6 Inspection Services 2017 (Sept - Dec)	0	0	0	0	696	174	0	0	0	0	0	0	0	0	0	0	0	0	0	870	145,638	870	146,508	
	Inspection Services 2018 (Jan - Dec)																								
6.1	Inspection Services - Straight Time							2,096		524											2,096	337,456	2,096	339,552	
6.2	Inspection Services - 1.5 Overtime									524											524	112,680	524	113,194	
6.3	Inspection Services - 2.0 Overtime									0											0	0	0	0	
	Subtotal, Task 6 Inspection Services 2018 (Jan - Dec)	0	0	0	0	0	0	2,096	524	0	0	0	0	0	0	0	0	0	0	0	2,620	450,136	2,620	452,756	
	Inspection Services 2019 (Jan - Apr)																								
6.1	Inspection Services - Straight Time										696										696	114,840	2,297	117,137	
6.2	Inspection Services - 1.5 Overtime										174										174	36,260	788	39,048	
6.3	Inspection Services - 2.0 Overtime										0										0	0	0	0	
	Subtotal, Task 6 Inspection Services 2019 (Jan - Apr)	0	0	0	0	0	0	0	0	0	696	174	0	0	0	0	0	0	0	0	870	151,100	2,785	153,885	
	On-Call Services																								
7.1	On-Call Services		6												20	18	24				70	11,900	0	11,900	
	Subtotal, Task 7 On-Call Services	0	6	0	0	0	0	0	0	0	0	0	0	0	20	18	24	0	0	0	70	11,900	0	11,900	
	TOTAL hours	3	20	54	18	696	174	0	2,096	524	0	696	174	0	20	18	24	67	42	4,314					
	TOTAL dollars																					758,044	7,314	806,158	806,100

EXHIBIT "D"
IRVINE RANCH WATER DISTRICT
PROFESSIONAL SERVICES VARIANCE

Project Title: MWRP Biosolids & Energy Recovery Facilities

Project No.: 4286 Date: September 15, 2017
 Purchase Order No.: 600246 (formerly 518742) Variance No.: 2

Originator: IRWD ENGINEER/CONSULTANT Other (Explain) _____

Description of Variance (attach any back-up material):
Extend contractor for Construction Management Services due to project schedule extension. For detailed explanation of
Scope of Work see attached.

Engineering & Management Cost Impact:

Classification	Hours	Billing Rate	Labor \$	Direct Costs	Subcon. \$	Total \$
Process Control Startup Engineer	3080	166				\$ 345,280
Process Control Startup Engineer	1080	170				\$ 183,600
Associate Automation Engineer	3080	135				\$ 280,800
Associate Automation Engineer	1080	138				\$ 149,040
Total \$ =						\$ 958,720

Schedule Impact:

Task No.	Task Description	Original Schedule	Schedule Variance	New Schedule
1	Construction Management Support	May 2014 – December 2017	January 2018 - July 2019	May 2014 – July 2019

Required Approval Determination:

Total Original Contract	\$ <u>1,239,007</u>	<input type="checkbox"/> Director: Cumulative total of Variances less than or equal to \$50,000.
Previous Variances \$	<u>734,600</u>	<input type="checkbox"/> Executive Director: Cumulative total of Variances less than or equal to \$75,000.
This Variance \$	<u>958,720</u>	
Total Sum of Variances	\$ <u>1,693,320</u>	<input type="checkbox"/> General Manager: Cumulative total of Variances less than or equal to \$100,000.
New Contract Amount	\$ <u>2,932,327</u>	
Percentage of Total Variances to Original Contract %	<u>137</u>	<input checked="" type="checkbox"/> Board: Cumulative total of Variances greater than \$100,000.

ENGINEER/CONSULTANT: EI&C Engineering Inc.
 Company Name

Laura M Thomas 11/9/2017
 Project Engineer/Manager Date
Laura M Thomas 11/9/2017
 Engineer's/Consultant's Management Date

IRVINE RANCH WATER DISTRICT

 Department Director Date

 General Manager/Board Date

IRVINE RANCH WATER DISTRICT

PROFESSIONAL SERVICES VARIANCE REGISTER

Project Title: MWRP Biosolids & Energy Recovery Facilities

Project No.: 4286 Project Manager: Steve Malloy

Variance No.	Description	Dates		Variance Amount
		Initiated	Approved	
1	Expansion of Construction Management Support	8/16/2016		\$734,600
2	Expansion of Construction Management Support	9/08/2017		\$958,720

September 15, 2017

Irvine Ranch Water District
 Steve L. Malloy, PE
 Principal Engineer, MWRP Construction
 15600 Sand Canyon Avenue
 Irvine, CA 92618-3101

Re: Proposal for Variance 2 for Purchase Order No. 600246 (formerly 518742)
 for the MWRP Biosolids and Energy Recovery Facilities Project

Dear Steve,

Enclosed is a proposal for a variance to extend the role of EI&C Engineering Inc. for construction management services for the Michelson Water Recycling Plant (MWRP) Biosolids and Energy Recovery Facilities Project to April 12, 2019.

Task 1 is to extend the role of the team for Process Control System (PCS) Construction Management Services that is already working on the project for an additional 79 weeks to mid July 2019.

Task	Role	Year	Hours	Rate	Fee
1	Process Control Startup Engineer	2018	2080	\$166	\$345,280
		2019	1080	\$170	\$183,600
	Associate Automation Engineer	2018	2080	\$135	\$280,800
		2019	1080	\$138	\$149,040
Total					\$958,720

Enclosed is the scope of work, the schedule and fee breakdown, and resumes for your consideration. If you have any questions or need additional information please call me at 714-334-8912 or email me at lthomas@eiceinc.com.

Sincerely,

Laura Thomas

Laura Thomas, PE
 CEO, Principal Engineer

Enclosure

Section 1

Scope of Work

Scope of Work

The schedule for the Biosolids and Energy Recovery Facilities Project (Biosolids Project) has been extended to the end of March 2019. EI&C Engineering Inc. is actively working on the project to provide startup support services for the Process Control System (PCS). EI&C Engineering Inc. will support the testing of the PCS software. The activities include (1) review the contractor's start-up plans; (2) provide oversight of Process Control System field testing; (3) support for the Process Control System training; (4) review as-built documentation; and 5) developing deficiency lists and punch lists specific to process control.

- **Task 1: Extension of existing support staff to July 12, 2019.** This variance extends the services already in place for the Biosolids PCS Startup Engineer (Laura Thomas, PE), the Associate Automation Engineer (Pavan Mutyala, EIT).

Task 1a: Process Control Start-up Engineer

The role of Start-up Engineer would extend beyond software development to control system start-up testing and coordination. This role allows the construction management team to retain the institutional knowledge gained during the Process Control System (PCS) software development throughout the field testing phase for the project.

The PCS Start-up Engineer will have the following duties:

- Participate in "Start-up testing" including but not limited to witnessed Process Control System field checks, communication network validation, and system functional testing.
- Attend project meetings.
- Coordinate key decisions with IRWD staff including operations and the CM team.
- Coordinate start-up testing with CM team members
- Review start-up submittals including test procedures and test schedules.
- Develop SCADA training program for operators including SCADA Operations and Maintenance Manual developed with as-built Process Control Descriptions, SCADA Operations and Maintenance training presentations and training videos showing operation of live SCADA screens.

Task 1b: Associate Automation Engineer

The Associate Automation Engineer will work under the direction of the Process Control Startup Engineer have the following duties:

- Witness the Process Control System bench-tests which test the PLC code and HMI screens against forced values.
- Witness the field testing for the Process Control System with live mechanical equipment, local control panels, and instrumentation.
- Witness functional acceptance testing of Process Control System where multiple systems are tested together under process conditions.
- Produce and maintain daily logs of test issues.
- Produce and maintain deficiency and punch lists for PCS related issues.
- Support SCADA training program for operators including SCADA Operations and Maintenance Manual, SCADA Operations and Maintenance training presentations and training videos showing operation of live SCADA screens.

Section 2

Schedule and Fee Breakdown

Schedule and Fee Breakdown

Purchase Order 518742 presently provides the budget for EI&C Engineering Inc. to provide support services full time until December 31, 2017 for a Startup Engineer and Software Test Engineer. This variance includes the cost to extend the schedule for Task 1 an additional 91 weeks from January 1, 2018 to July 12, 2019.

Table 1: Schedule Extension

Task	Role	Start	Finish	Weeks
1	Process Control Startup Engineer	January 1, 2018	July 12, 2019	79
	Associate Automation Engineer			

Table 2: Hourly Estimate

The on-site resources for Task 1 are anticipated to be utilized 100% until the end of the project with an additional 3 months to allow for project close-out tasks including final punch list verification and documentation. Table 2 shows an hourly estimate for Tasks based on the scheduled number of weeks.

Task	Role	Year	Weeks	Utilization	Hours
1	Process Control Startup Engineer	2018	52	100%	2080
		2019	27	100%	1080
	Associate Automation Engineer	2018	52	100%	2080
		2019	27	100%	1080

Table 3: Fee Estimate for Variance 2

The total fee for this variance is based on the estimated hours shown in the previous tables. The following table shows fee breakdown:

Task	Role	Year	Hours	Rate	Fee
1	Process Control Startup Engineer	2018	2080	\$166	\$345,280
		2019	1080	\$170	\$183,600
	Associate Automation Engineer	2018	2080	\$135	\$280,800
		2019	1080	\$138	\$149,040
Total					\$958,720

November 27, 2017

Prepared by: J. Smyth/M. Cortez

Submitted by: K. Burton *(KLB)*

Approved by: Paul A. Cook *(Signature)*

ACTION CALENDAR

SANTIAGO CREEK DAM OUTLET TOWER REPLACEMENT BUDGET INCREASE AND CONSULTANT SELECTION

SUMMARY:

Since 2008, Irvine Ranch Water District (IRWD) and Serrano Water District (SWD) have been working with the Division of Safety of Dams (DSOD) to address concerns regarding the seismic stability of the Santiago Creek Dam and the outlet tower. After reviewing ten alternatives for replacement of the Santiago Creek Dam outlet tower, staff selected and the DSOD concurred with the alternative to construct a new sloped outlet pipe on the dam face or adjacent embankment. Staff recommends that the Board:

- Authorize a budget increase in the amount of \$1,300,000, from \$568,700 to \$1,868,700; and
- Authorize the General Manager to execute a Professional Services Agreement in the amount of \$787,625 with AECOM to complete the preliminary and final designs for the Santiago Creek Dam Outlet Tower Replacement.

BACKGROUND:

In 2008, the DSOD requested seismic analyses of three elements critical to the Santiago Creek Dam: (1) liquefaction of the foundation alluvium (2) the status of the Terrace Fault, and (3) the seismic stability of the outlet tower. The foundation alluvium and terrace fault studies were completed in November 2011 and March 2012, respectively. The studies concluded that liquefaction of the foundation alluvium is unlikely and that the terrace fault is inactive. The DSOD agreed with the conclusions and did not require further investigation.

For the seismic stability analysis of the outlet tower, a phased approach was taken:

- Phase 1: Determination of failure modes of the outlet tower;
- Phase 2: Drawdown capability study, conceptual alternatives of improvements and selection of an improvement alternative; and
- Phase 3: Preliminary and final design for replacement of the outlet tower.

In Phase 1, the seismic hazard analysis and a structural evaluation of the existing outlet tower concluded that the tower would fail in a “maximum credible earthquake” event and that debris and/or silt could obstruct the outlet conduit and prevent a controlled drawdown of Irvine Lake. The DSOD concurred with this conclusion in March 2015, and Phase 2 was undertaken based on this conclusion.

Phase 2 completed an evaluation of the operability and drawdown capability of the outlet tower after a major seismic event. A 90% draft report was also completed in December 2015 that identified seven alternatives to seismically improve the outlet tower. Staff presented the report

to the IRWD/SWD Ad Hoc Committee on January 12, 2016, and then to the SWD Board of Directors on February 9, 2016. The recommended alternative at that time consisted of using H-pile bracing to support the existing outlet tower.

The SWD Board requested that an independent review of all alternatives be conducted and Genterra Consultants was subsequently retained to provide a peer review. On June 30, 2016, Genterra submitted its peer review report that included its recommendations and three additional outlet tower alternatives.

Staff recommended a new alternative for a sloped outlet with a vertical shaft through the dam face to intercept the outlet conduit beneath the dam to the Ad Hoc Committee on November 9, 2016. The recommended alternative and other alternatives were sent in the Outlet Tower Alternatives Report to the DSOD for review on January 6, 2017. The DSOD accepted the sloped outlet, and some other alternatives, but rejected the vertical shaft through the dam in its response letter dated June 19, 2017, attached as Exhibit "A". The DSOD also added a request to inspect the outlet conduit beneath the dam if it is to be re-used.

Consultant Selection:

Staff distributed a Request for Proposal (RFP) to six geotechnical engineering firms to provide Preliminary and Final Design services for the new outlet: AECOM, Black and Veatch, Bart Patton Consulting, Genterra, GEI Consulting, and Kleinfelder. Black and Veatch, Kleinfelder and Bart Patton Consulting declined to submit proposals citing lack of resources for the project or proposal. Proposals from the remaining three firms, AECOM, GEI Consulting, and Genterra, were received. IRWD and SWD reviewed and evaluated the proposals based on the consultants' team, project approach, and relevant experience, and recommends the selection of AECOM based on its responsiveness to the RFP, past performance, and best value. AECOM's proposal is attached as Exhibit "B".

FISCAL IMPACTS:

Projects 01813 is included in the FY 2017-18 Capital Budget. Staff requests a budget increase in the amount of \$1,300,000 to fund the project's design and CEQA (California Environmental Quality Act) as shown in the following table:

Project No.	Current Budget	Addition <Reduction>	Total Budget
01813	\$568,700	\$1,300,000	\$1,868,700

The cost split between IRWD and SWD will be in accordance with the Irvine Lake ownership agreements to be determined at a later date.

Action Calendar: Santiago Creek Dam Outlet Tower Replacement Budget Increase and
Consultant Selection
November 27, 2017
Page 3

ENVIRONMENTAL COMPLIANCE:

This project is subject to the CEQA. In conformance with the California Code of Regulations Title 14, Chapter 3, Section 15004, the appropriate environmental document will be prepared when "meaningful information" becomes available.

COMMITTEE STATUS:

This item was reviewed by the Serrano Water District/Irvine Ranch Water District Ad Hoc Committee on November 20, 2017.

RECOMMENDATION:

THAT THE BOARD AUTHORIZE A BUDGET INCREASE IN THE AMOUNT OF \$1,300,000 FOR PROJECT 01813, FROM \$568,700 TO \$1,868,700; AND AUTHORIZE THE GENERAL MANAGER TO EXECUTE A PROFESSIONAL SERVICES AGREEMENT IN THE AMOUNT OF \$787,625 WITH AECOM TO COMPLETE THE PRELIMINARY AND FINAL DESIGNS FOR THE SANTIAGO CREEK DAM OUTLET TOWER REPLACEMENT, PROJECT 01813.

LIST OF EXHIBITS:

Exhibit "A" – DSOD Alternatives Response Letter
Exhibit "B" – AECOM's proposal

DEPARTMENT OF WATER RESOURCES

1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791



JUN 19 2017

Mr. Paul A. Cook, General Manager
Irvine Ranch Water District
Post Office Box 57000
Irvine, California 92619-7000

Attention: Mr. Kevin L. Burton
Executive Director of Engineering and Water Quality

Santiago Creek Dam, No. 75
Orange County

This is in response to Mr. Burton's letter dated January 6, 2017, transmitting for our review the Draft Santiago Creek Dam Outlet Tower Seismic Evaluation Phase 2 - Alternatives Analysis Report, prepared by URS/AECOM. You requested our review of the report and the conceptual tower repair alternatives presented by the Irvine Ranch Water District and Serrano Water District (Districts).

We understand that the Districts' selected alternative, Alternative 8, would mitigate the seismic deficiencies of the tower by abandoning the existing tower and constructing a new sloped intake on the upstream face of the dam, with a vertical shaft connected to the existing outlet pipe beneath the dam. Based on our review of the report and our knowledge of the performance, materials, construction, and seismic stability of Santiago Creek Dam, this alternative is not acceptable. The installation of a 20-foot-diameter, 44-foot deep shaft through the upstream embankment could compromise the integrity of the dam. We are concerned that any ground movement could damage the outlet shaft and cause disturbance of the upstream embankment and concrete liner, increasing the potential for seepage alongside of the shaft and through the embankment.

Of the remaining conceptual alternatives presented in the report, four may be acceptable. Alternative 1, allowing the tower to fail along the predefined score lines during an earthquake, may be acceptable if modifications are implemented to ensure the outlet can release water even after failure of the top portion of the tower. Alternative 2, shortening the tower, is acceptable if the remaining portion is proven to be seismically stable. Alternatives 6 and 7, constructing new inclined intakes on the abutments, are acceptable. However, with the exception of Alternative 7, an inspection of the existing outlet conduit to verify that it is in good condition will be required of all the other alternatives.

Alternatives 3, 4, and 5 are not likely feasible or acceptable for various reasons including concerns of inadequate concrete confinement on the interior of the tower, uncertain problems associated with additional stiffening and weight of the tower, possible buckling of the pipe brace supports, and embedment of components in silt that will preclude periodic inspection to ensure continued structural integrity.

Mr. Paul A. Cook

JUN 19 2017

Page 2

We greatly appreciate your cooperation in resolving the seismic stability deficiency of the outlet tower, and if needed, we can meet with you and your consultant to further discuss the selection of an acceptable design.

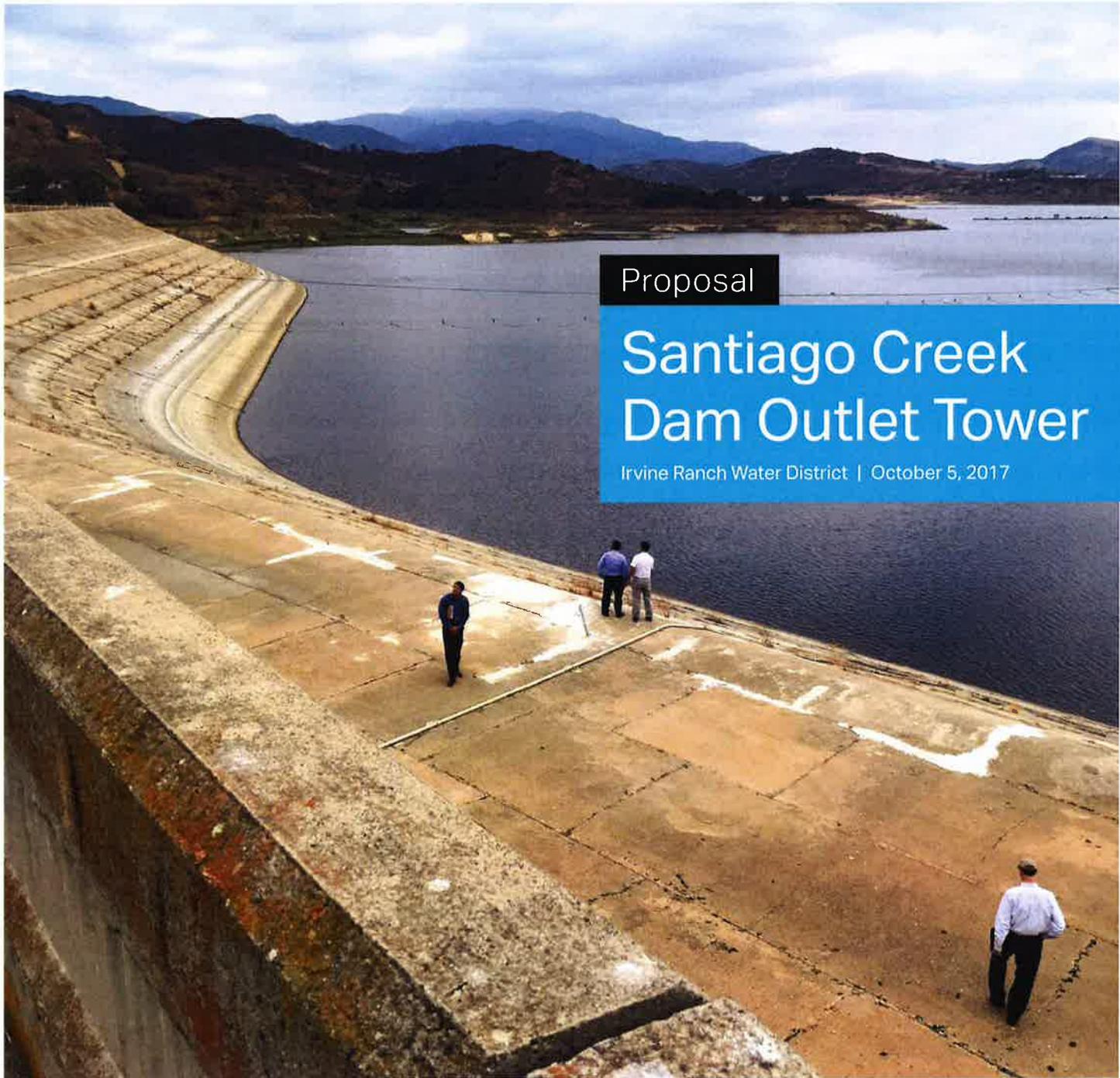
If you have any question or need additional information, you may contact Design Engineer Everett Penn at (916) 227-0261, or Project Engineer Mutaz B. Mihyar at (916) 226-4636.

Sincerely,

A handwritten signature in cursive script that reads "Sharon K. Tapia".

Sharon K. Tapia, Chief
Division of Safety of Dams

cc: Mr. Jerry Vilander, General Manager
Serrano Water District
18021 East Lincoln Street
Villa Park, California 92861-6446



Proposal

Santiago Creek Dam Outlet Tower

Irvine Ranch Water District | October 5, 2017

October 5, 2017

Malcolm A. Cortez, P.E.
Principal Engineer
Engineering Operations Support
Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92612

Subject: Santiago Creek Dam Outlet - Proposal to Provide Engineering Services for Preliminary Design Report and Final Design

Dear Mr. Cortez:

On behalf of AECOM, we are pleased to submit four (4) copies of our proposal to provide engineering services for the above referenced project. We have selected key individuals for this project who are experienced and knowledgeable in the planning, design and implementation of similar facilities, and have unique knowledge of Irvine Ranch Water District (IRWD) facilities and the Santiago Creek Dam. Our combined experience provides you with a project team that will address all of the capabilities requested to ensure the successful completion of the project. With our depth of local resources, we will be able to provide all design services in-house.

AECOM will manage and implement the project from our Orange office. Our team will be led by Bryan Paine, PE, a Senior Project Manager whose 20-year career includes 15 years with AECOM/URS, and who has significant experience in the planning, design, construction and operations of public infrastructure with a focus on dams, reservoirs, and flood control facilities. Mr. Paine and Gregory Reichert, PE will provide design of the sloped outlet structure along with Mourad Attala, SE, PE and Allan Randall, PE providing design services for the structural and electrical portions of the project, respectively. To complement the overall design team, Joseph Ehasz, PE and Michael Forrest, PE will provide design oversight, constructability reviews, and important cofferdam and water-based construction experience for the overall project. Together, the core project team has worked with IRWD for more than a decade, and has demonstrated our abilities in the planning, design, management, and successful completion of similar projects including the following:

- IRWD Santiago Creek Dam Outlet Tower Seismic Hazard Analysis, Seismic Evaluation Structural Engineering Services, and Alternatives Analysis Report
- SMWD Trampas Canyon Reservoir and Dam
- LA County Department of Public Works Santa Anita Debris Dam Modifications
- EBMUD Upper San Leandro Outlet Tower Retrofit

Our previous four years of experience on this dam and similar IRWD facilities and an understanding of the issues associated with this project (e.g. limited access to tower, local geology and faults, hydrology/hydraulics, importance of maintaining water supply) allow us to hit the ground running and complete the project efficiently within the schedule.

The AECOM team pledges our commitment to IRWD on this project to provide exceptional quality of service.

At your convenience, please contact Bryan Paine, PE with any questions, comments, or requests at (714) 689-7191 or email bryan.paine@aecom.com.

Thank you for your consideration. We look forward to the opportunity to partner with your staff to deliver another outstanding project.

Sincerely,

AECOM Technical Services, Inc.



Joseph Long, PE
Vice President/Engineering Manager



Bryan Paine, PE
Project Manager

Table of Contents

1.	SCOPE	1
2.	TEAM	1
3.	REFERENCES	32
4.	SCHEDULE	47
5.	BUDGET	49
6.	JOINT VENTURE	49
7.	CONFLICT OF INTEREST	49
8.	INSURANCE	49
9.	CONTRACT:	51
10.	PUBLIC WORK REQUIREMENTS:	51
	Appendix A - Resumes	52

1. SCOPE

Detailed scope of work and methodology that comprehensively define and describe the individual tasks. The scope of work shall include a drawing plan of all proposed site work. This scope of work will be used as a basis for later contract negotiations. Scope of work shall be based upon, but is not limited to, the information contained in Section II of this Request for Proposal.

Project Understanding



The Irvine Ranch Water District (IRWD) and the Serrano Water District (SWD) jointly operate Irvine Lake and the Santiago Creek Dam that serves as a critical water supply reservoir for significant portions of Villa Park, and smaller portions of the Cities of Orange and Irvine. Over the course of several years, IRWD and SWD have been working with the California Department of Water Resources, Division of Safety of Dams (DSOD) to evaluate differing structural elements of the existing Santiago Creek Dam, including the evaluation of the right abutment for presence of an active fault, liquefaction potential of the alluvium beneath the dam, the seismic performance of the existing outlet tower, and an alternatives analysis for seismic retrofits or replacements of the tower. These issues have been evaluated and reported back to DSOD and they have agreed with the

recommended findings. AECOM has determined that the existing outlet tower will likely fail during the design seismic event, which could block the existing outlet conduit with pieces of the concrete tower or with reservoir silt. The next phase of work is to prepare preliminary and final design documents for a sloped outlet structure that will meet DSOD design and drawdown requirements.

The Santiago Creek Dam is a rolled earth fill embankment completed in 1933 that falls under the jurisdiction of the DSOD. The DSOD identifier for the dam is Dam No. 75-000. The dam is located in Orange County, California, and impounds the 25,000 ac-ft. Irvine Lake Reservoir along Serrano Creek, a tributary to the Santa Ana River. The dam crest is at a nominal elevation of 810-feet. The dam has a height of 136-feet and a crest length of 1,425-feet.



The outlet works for the dam consist of a tower, an outlet conduit and downstream control house. The outlet tower is 135-feet high and has an interior diameter of 8-feet and an exterior diameter of 11-feet. The tower contains eight intakes located at 10-foot intervals from Elevation 680 to 750 ft. There are butterfly valves at elevations 730 and 750 and the remaining six valves are slide gates. The lower four slide gates (Elevations 680, 690, 700, and 710) are below the reservoir silt line and are no longer functional. The intake at Elevation 710 has been raised using a snorkel to elevation 735.

The welded steel pipe outlet conduit at the base of the outlet tower is 60-inches in diameter and approximately 800 feet long. The outlet runs beneath the dam to the toe of the dam where a bifurcation splits the flow into a 36-inch diameter main pipe and 30-inch diameter diverter pipe.

Releases through the outlet works conduit can be controlled by the main valve located in the Control House, directly downstream of the pipe bifurcation at the toe of the dam. The main pipe supplies water to IRWD and SWD customers. In the event of an emergency drawdown, the diverter valve, which is normally kept closed, can be opened and releases can be made through the diverter pipe, to discharge into the streambed immediately downstream of the Control House.

This Project consists of replacing the existing seismically-deficient outlet tower with a sloping outlet structure and determining whether additional improvements are needed to the outlet conduit. The key deliverables and services associated with include a Preliminary Design Report and Final Design, topographic and bathymetric surveys, outlet conduit inspection, construction plans, Project Manual with technical specifications, Engineer's estimate, schedule, Geotechnical Report, permitting, CEQA Support, and bid phase services.

Due to the overall value of the water in storage and the vital need for domestic purposes, it is goal of the design team to develop a sloped outlet structure design that can be implemented in a wet environment.

The following approach and scope of services provides a detailed breakdown of the aforementioned project tasks identifying specific activities and design efforts.

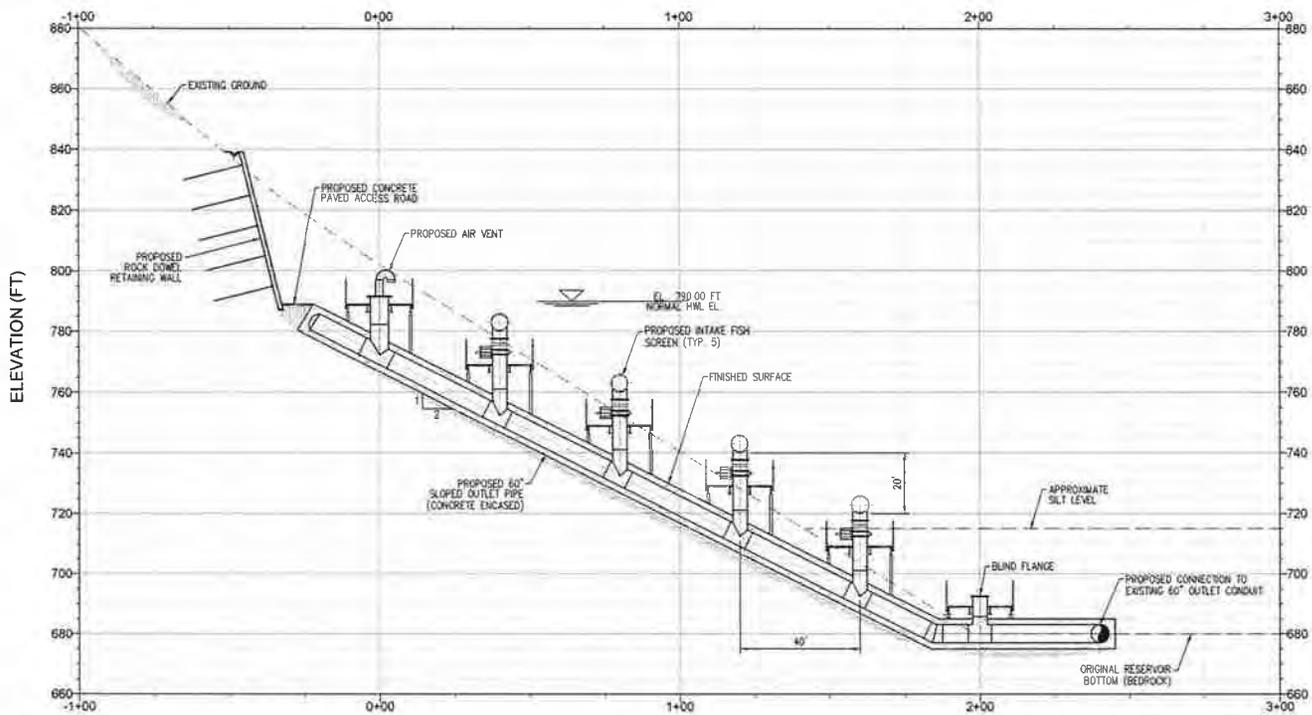
Approach

AECOM's approach aligns with IRWD and SWD's goals and objectives to improve the aging and seismically-deficient outlet tower with a new structure that will meet DSOD requirements. The existing tower was completed in 1933 and does not meet current seismic and structural design code. We have developed concepts that will provide economical tower replacement solutions for the District and will reduce or greatly eliminate reservoir and outlet down time. The following discussion and figures below present alternatives that we will evaluate in the preliminary design phase:

Sloped Outlet Structure Construction: AECOM has developed two alternatives for constructing a new sloped outlet structure. Each of the alternatives has two options for locating the sloped structure. These alternatives are both derivatives of the preferred outlet works concept developed in AECOM's Phase 2 Alternative Analysis Report (90%). We understand that DSOD will not accept a drilled shaft through the dam embankment to connect to the existing outlet conduit and will not move forward with that concept.

1. **Alternative 1:** This alternative involves constructing a new sloped outlet structure with five or more screened inlets, which connects to the existing 60" diameter outlet conduit just downstream of the tower. This option will require a cofferdam to make the connection to the conduit and to construct the inlets below the silt line. We've provided two options for placement of the sloped outlet structure. Option 1 places the outlet structure on the left bank of the reservoir adjacent to the spillway. This option may require construction of a new access road and rock dowel retaining wall from the spillway crest to the outlet structure, which will allow Operations staff to drive or walk up to the structure for visual inspection and maintenance. The property line is very close to this access road and will need to be accurately plotted if this is the preferred outlet location. Option 2 places the outlet structure on the dam embankment just upstream of the spillway crest. This option eliminates the access road, but is on the dam and is not as favorable to DSOD. DSOD recommends that sloped outlets be placed within competent bedrock because placing the outlet on the dam embankment could potentially create a sinkhole if the outlet were to leak. See Figures 1 and 2 for a visual representation of this alternative.
2. **Alternative 2:** This alternative involves removing the top half of the existing outlet tower and connecting to it with a sloped outlet structure that is constructed above the silt line and supported by piers. This option may not require a cofferdam since the silt does not need to be removed. The construction work could take place from a barge with diver support to greatly reduce the project costs. See Figures 3 and 4 for a visual representation of this alternative.

Plans and Profile figures for Alternatives 1 and 2 are presented in the following pages:



PROFILE
SCALE: 1" = 20'



AECOM

IRVINE RANCH WATER DISTRICT
15600 SAND CANYON AVENUE
IRVINE, CA 92618

**ALTERNATIVE 1
SLOPED OUTLET
STRUCTURE PROFILE**

Fig. No.	Date
Project	Figure

SANTIAGO CREEK DAM
OUTLET TOWER REPLACEMENT

2



AECOM

IRVINE RANCH WATER DISTRICT
15800 SAND CANYON AVENUE
IRVINE, CA 92615

**ALTERNATIVE 2
SLOPED OUTLET
STRUCTURE PLAN**

Proj No:	Date:
Project:	Figure:
SANTIAGO CREEK DAM OUTLET TOWER REPLACEMENT	3

B - 9

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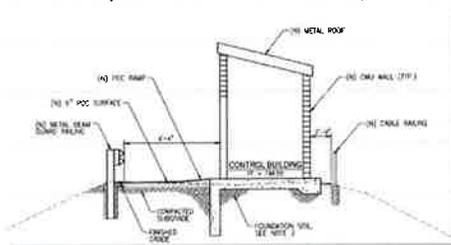
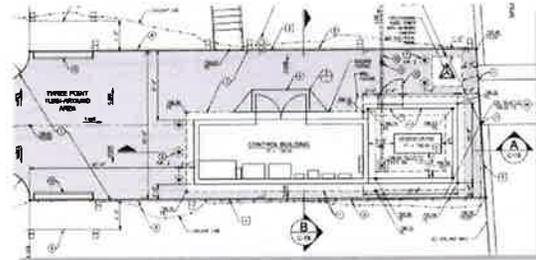
Cofferdam Considerations: AECOM has contacted internal cofferdam specialist and cofferdam contractors, such as Dutra Group, to develop a feasible concept that will meet all of the Districts' needs while also being cost effective. The selected cofferdam design is a cellular cofferdam constructed of circular sheet piles. It could look similar to the cofferdam built for San Diego County Water Authority's Lake Hodges intake structure and pump station project (shown at right). AECOM provided geotechnical engineering services for the Lake Hodges project. We understand that the Districts would like to maintain the lake level at around elevation 740 feet. The cofferdam could be built to just above this elevation to reduce the cofferdam footprint, height, and cost. A floodgate could be installed in the cofferdam to allow water to temporarily flood the work area if a storm occurred during the construction phase. This water would be pumped out immediately after the storm passes, although we would aim for this work to occur in the summer months to avoid stormwater impacts.



Safety and Access Considerations: The safety of the Districts' Operations staff and the contractor is of utmost importance to our proposed project improvements. We will evaluate improvements to the dam crest road, such as the addition of metal beam guard rail and widening of the narrow portions of the road, to improve the safety of access to the new sloped outlet. We will also consider the addition of a concrete-lined ramp that will allow the operations staff to drive from the dam crest road down to the spillway crest and to the new sloped outlet.

The existing outlet tower also does not allow the reservoir to be drained within the DSOD-mandated emergency drawdown time. Our reservoir drawdown results show that the total depth of the reservoir decreases by 8.7 feet after seven days while the DSOD criteria is to drain 10% of the total depth in seven days, which is 11 feet.

Control Building: AECOM recommends constructing a dedicated Control Building for the valve actuator controls, site security, and telemetry equipment for the new sloped outlet structure. This building could be an economical pre-fab building or a rugged CMU wall structure. The optimum location would be adjacent to the existing building on the dam crest so that the Operations staff can have line of site from the building to the sloped outlet. We recently worked with DSOD on



the LADPW Santa Anita Debris Dam to obtain approval for a new 8'x15' CMU building on the dam crest that houses valve controls and telemetry equipment for a new outlet tower. This building could also house the existing air compressor for the reservoir aeration system, which could improve the compressors performance due to the higher elevation and associated drop in static pressure. See approved plan and section to the right and left, respectively.

Electrical Service: There appears to be adequate three phase 480V overhead power in the vicinity of the project. This power will be used for lighting, ventilation, site security, telemetry, instrumentation, and valve controls for the new sloped outlet structure and Control Building. We will coordinate with SCE to develop an electrical power supply plan for the project.

Modifications to Meet DSOD Drawdown Requirement: The following modifications can be made to the outlet works system to improvement the drain time with the goal of meeting DSOD's drain time requirements:

1. Add additional and/or large diameter inlet ports and valves to the new sloped outlet structure.
2. Line the existing 60" diameter outlet conduit with a cured-in-place pipe liner to improve the friction coefficient of the conduit, which will increase the flow capacity.
3. Add a large diameter outlet/manway tee to the steel pipeline downstream of the Control Building, which will allow the evacuation of larger flows into the creek during an emergency drain event.

AECOM'S QUALITY CONTROL PROCESSES

At AECOM, all deliverables go through a prescribed review process prior to submittal to our clients. AECOM has developed a Quality Management System (QMS) that is ISO 9001:2008-certified. Unique to the engineering consulting industry, our ISO 9001-certified QMS directly interacts with our project managers for timely reviews. This system also provides guidance and uniformity for document and electronic file control and ensures that all deliverables undergo a thorough quality review by pre-qualified experts.

Initiating Quality: Quality begins with our understanding of your project goals and objectives, emphasizing communication with IRWD and SWD and a thorough review of project inputs. Our initial planning and scheduling will include defining project work tasks and quality reviews.

Producing Quality: AECOM will prepare a Project Work Plan that includes a Quality Assurance/Quality Control Plan and will define processes and procedures to guide the project team. The plan will be discussed at the project team kickoff meeting and updated as needed to include:

- Proper application of codes, standards and design criteria
- Oversight and supervision for accuracy and completeness
- In-progress quality reviews
- Coordination among disciplines
- Resolving and closing in-progress review comments

Confirming Quality: While it is important to build quality into the work as it is performed, formal checking and review are critical QMS activities. Quality checking activities will include:

- Calculations to verify correctness and completeness of mathematics, methodology, selection of software, application of standards and codes, and general approach
- Drawings within each discipline to confirm design layout, dimensions and details, and potential interferences
- Studies and reports for content, logic, clarity, and recommendations for soundness and reasonableness, as well as grammar, punctuation, and format

Delivering Quality: All deliverables will undergo a final verification check before they are submitted. An independent reviewer evaluates the deliverable for completeness and consistency, adherence to quality requirements, and resolution of comments. The reviewer will then signs a Deliverable Release Record and transmits it to our project manager, who is then responsible for the final overlook, approval, and submittal.

Improving Quality: A key component of our quality program and ISO 9001 is continuous improvement. We learn from our experiences and apply those lessons to future work through a formal, iterative process.

For this project, Joe Ehasz, PE, will lead an independent quality control team. Mr. Ehasz is one of AECOM's most experienced quality control (QC) managers and has 45 years of experience in the field of

dam facility design and dam safety. His role is to clearly communicate requirements and documentation of reviews conforming to our ISO-certified QC program.

HOW AECOM WILL MANAGE THE WORK WITHIN BUDGET AND ON SCHEDULE

AECOM implements a Project Delivery System (PDS) to assist its project managers in the successful execution of every project. This PDS encompasses elements such as:

- Project Work Plan (PWP) to define project goals, limits, deliverables, schedule, and scope. The PWP includes plans for quality control and a risk register
- Staffing and communication plan
- Document control and management information systems
- Staffing resources, equipment, and tools
- QMS protocol
- Risk management issues
- Safety, Health, and Environment (SH&E) procedures and training needs
- Subconsultant roles and budgets

Using ePM, AECOM's proprietary software, PMs quickly view dashboard reports designed to show current fiscal and schedule status at-a-glance.

Our processes are set to monitor budget and schedule frequently. AECOM's ePM is a powerful tool that improves our project manager's efficiency. Senior managers meet with project managers monthly to identify any trends that can be adjusted early to stay on schedule and within budget.

Our Project Manager, Bryan Paine, is responsible for managing project controls and is an AECOM Certified Project Manager. We use several methods of tracking progress such as the critical path method and earned value management (EVM). By using proven project management tools, such as EVM, we can proactively identify and mitigate issues before they begin to adversely impact schedule and budget.

Our subconsultants, PSOMAS and PRO-ROV, were selected for their delivery track record with AECOM and experience on similar local projects. Our delivery team has a strong working relationship with each proposed subconsultant. Mr. Paine will manage and direct our subconsultants to make sure all participants know their assigned roles and responsibilities as we work toward a set of scheduled deliverables. AECOM will conduct regular team meetings using the latest communication technologies, such as WebEx teleconferencing, to keep all informed and to coordinate all activities.

Scope of Work and Methodology

The scope of work for this project includes preparation of a Preliminary Design Report and Final Design documents. Task 1 Preliminary Design will involve additional investigations and evaluations of the site and existing and proposed outlet works facilities that have not been collected in the previous work by URS/AECOM. Design criteria, site and operational constraints, and preliminary layouts for the sloped outlet structure will be completed and documented for this task. Task 2 will involve final design of the sloped outlet structure and ancillary facilities. AECOM will work closely with IRWD, SWD, and DSOD throughout the design process in order to develop the most economical solution that meets the needs of all project stakeholders.

It is anticipated that AECOM, IRWD, and SWD will work collaborative as a team with the exchange of information and reviews of potential project solutions, specifically in areas of lake operations, potential site access constraints, water quality requirements, and preferred alternatives during the design process.

Work will consist of the following tasks:

Task 1 Preliminary Design

1. **Background Material:** AECOM will review all available background material for the dam, including all documents listed in the RFP and all of the files that we've collected from our previous IRWD dam monitoring contract and DSOD correspondence.
Cost Savings: AECOM's team has worked on various studies for the outlet tower from 2013 through 2017 and is up to speed on the background material for the dam and existing outlet works system, which will result in significant labor cost and time savings.
2. **Inspection of Existing Outlet Conduit:** AECOM will subcontract with Pro-ROV Services (PRS), LLC to conduct a remote-operated vehicle (ROV) inspection of the outlet conduit from the outlet tower to the control building downstream of the dam (approximately 800 feet). PRS will access the tower by boat and set up a work station on top of the outlet tower. The ROV would be deployed by hand down the vertical shaft until it enters the water. It would then move down to the base of the tower and enter the horizontal pipeline. At this point the Digital Line Counter (DLC) would be zeroed out to start inspection. Inspection would be by video with audio overlay, along with pipe profiling sonar and measurements of pipe wall thickness using ultrasonic equipment.

Inspection will be by a 270-degree rotating Color Video and Audio by a ROV. The ROV will a SeaBotix LBV 300-5. The 300-5 has 2-forward 100mm thrusters, 2-vertical thrusters and one lateral. Both interior and exterior LED lighting providing 6,000 lumens of light along with a three-fingered grabber. The ROV will also carry a variety of sensors, including Video, Audio, Tritech Scanning Sonar, Imagenex 831L Pipe Profiling Sonar, LYNN Imaging System, and a Digital Line Counter (DLC) that will show on the monitor and recorded along with video and audio. Two ROV tethers will be brought along in case of malfunction or breakage of one tether. A high-bright color video monitor for the ROV will be used to allow for easy viewing during inspection. In addition, a second ROV, a SeaBotix LBV 300-6 will be brought along as a backup ROV.

The ROV will move down the pipeline and stop approximately every 10 feet for sonar snapshot of the interior of the outlet conduit, along with taking U/T thickness measurements at the 9-o'clock or 3-o'clock positions. The Imagenex 831L Pipe Profiling Sonar can be used in either pencil beam or fan beam format, and can be changed on the fly from one to the other. The Cygnus U/T sensor is a highly sensitive device measuring the metal thickness of the pipeline. Video and audio along with the pipe profiling sonar will be recorded, along with a written Video Timeline (log) of the inspection.

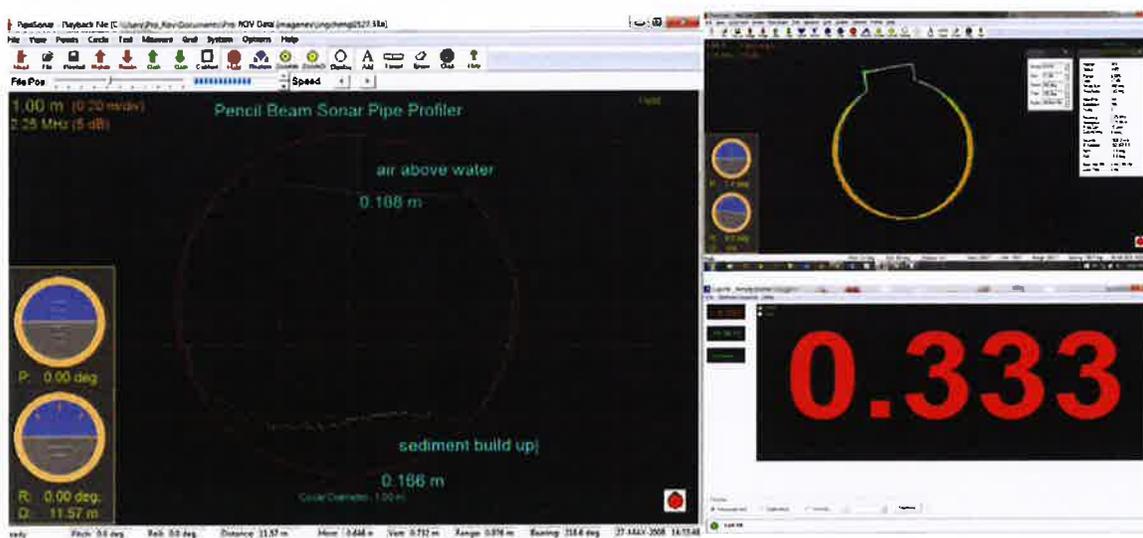


Figure 1 Pipe Profiling Sonar and Ultrasonic Pipe Wall Measurement by PRS

Deliverable: AECOM will work with PRS to prepare a technical memorandum for the outlet conduit inspection. The memorandum along with a CD with the inspection video and audio, sonar snapshots, and U/T thickness measurements will be prepared for IRWD and SWD.

3. **Seismic Design:** The design earthquake ground motions for Santiago Creek Dam will be developed using a deterministic seismic hazard analysis (DSHA), in accordance with the requirements of DSOD. The approach to develop the design acceleration response spectra, time histories, and associated earthquake parameters consist of the following steps:

Cost Savings: AECOM (formerly URS) prepared a Seismic Hazard Analysis for the Outlet Tower in 2013 and has completed a seismic design analysis for the outlet works. AECOM will update this analysis for the proposed sloped outlet structure.

- i. Identify the seismic source faults that can generate significant earthquake ground motions at the dam site (local faults are shown in Figure 2);
- ii. Estimate the maximum earthquake magnitudes, fault slip rates, fault-to-site distances (rupture distance, Joyner-Boore distance), fault dip, and sense of slip for the identified source faults;
- iii. Establish the dam consequence classification as defined by DSOD (Fraser and Howard, 2002) and assess the site conditions for purposes of estimating earthquake ground motions;
- iv. Select appropriate ground motion prediction equations, such as the Next Generation Attenuation Relationships for the Western U.S. (NGA-West2), to estimate ground motions as a function of earthquake magnitude, distance, faulting style, and site condition;
- v. Develop design acceleration response spectra for the controlling maximum earthquakes at the statistical levels dictated by the DSOD consequence-hazard matrix (Fraser and Howard, 2002), based on the dam consequence classification and slip rate of the controlling faults;
- vi. Estimate Arias Intensity (AI) values for subsequent use in the selection of acceleration time histories for outlet works analysis; and
- vii. Develop acceleration time histories for outlet works analysis, which adequately represent the intensity of ground motions corresponding to the controlling maximum earthquakes as characterized by the design response spectra and estimated AI values.

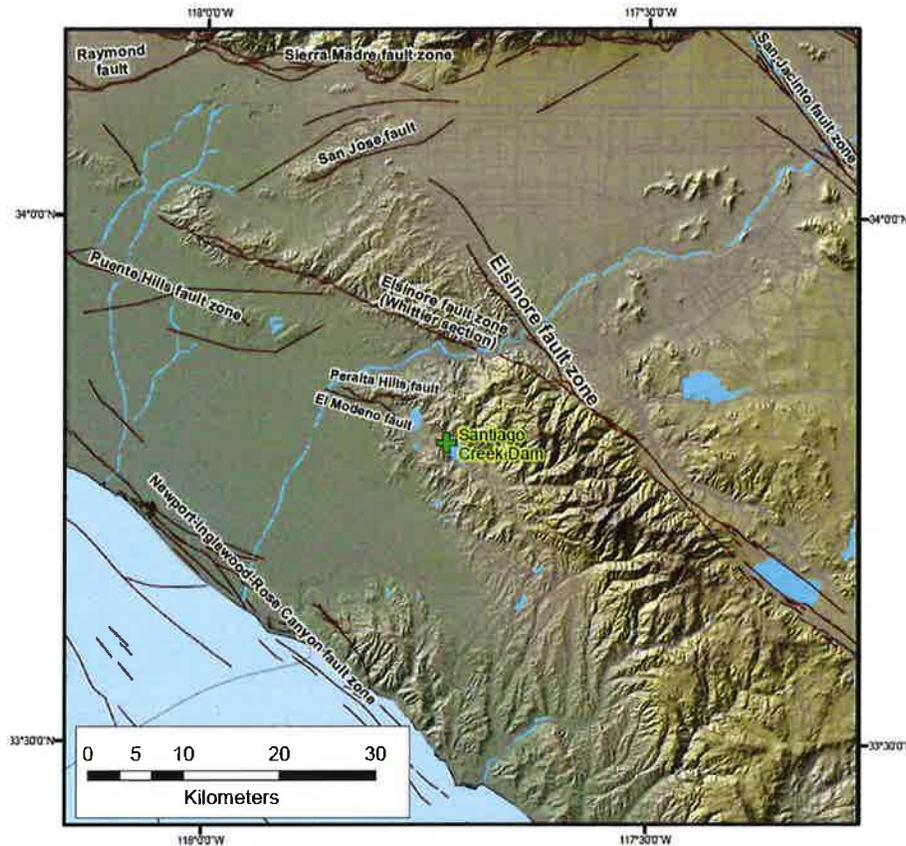


Figure 2 Fault Map for Santiago Creek Dam

4. **Topographic Field Survey:** AECOM will subcontract with PSOMAS to provide the topographic survey for the project. A field survey will be conducted to obtain topography of the dam abutments, spillway area, dam, control buildings, trees/vegetation, utilities, access roads and other ancillary features for preliminary and final design. The topographic survey will consist of the following tasks:
- Field Topographic Survey:** Field surveying will be provided for the locations identified above. Topographic mapping will be provided for the upland areas shown on Figure 2 herein. Mapping will be based upon the County of Orange established horizontal and vertical control network and provided in conformance with FGDC Geospatial Positioning Accuracy Standards, Part 4: Architecture, Engineering, Construction, and Facilities Management (FGDC-STD-007.4-2002), nominally with a plotting scale of 1"= 40' and vertical accuracy suitable for 1' interval contours.
 - Location of Existing Outlet Conduit:** The survey team will use ground penetrating radar (GPR) to locate and survey the outlet conduit from the Control Building to the downstream toe of the dam. We will also use the ROV from Subtask 2 above to record the bearing and deflection points of the outlet conduit. These two sets of data will be combined to determine the alignment of the outlet conduit between the outlet tower and the Control Building. This is an important step in the preliminary design process because it will verify the point of connection for the sloped outlet structure and allow the geotechnical boring driller and contractor to avoid damaging this buried conduit while performing their work.
 - Optional Task - Aerial Topographic Mapping:** AECOM recommends conducting an aerial survey of the proposed project work limits due to the steep topography surrounding the dam and outlet tower. AECOM can subcontract with PSOMAS to conduct the aerial survey and have provided the cost for this optional task.

Deliverable: Final deliverables will be a CADD base file with a DTM surface in AutoCAD format, and natural color digital orthophotography with 0.25' pixel resolution in geotiff format (optional).

- 5. **Geotechnical Investigation:** AECOM will prepare a Geotechnical Exploration Plan for DSOD review and approval. The geotechnical investigation will be performed in a site exploration program consisting of two core borings located along the preferred tower alignment and laboratory testing. As requested in the RFP, the information collected will be reviewed after preliminary design prior to mobilizing for the geotechnical exploration borings during the final design phase (mobilization includes preparing a Health and Safety Plan, obtaining drilling permits, subcontracting and scheduling the subcontractor). AECOM will map the surface geology of the left abutment and spillway area and provide an updated geologic map and interpretive geologic sections at each proposed tower alignment.

AECOM will apply for the necessary permits to perform the geotechnical work for Task 2. We understand that the Irvine Company's ownership of the lake was recently acquired by the County of Orange; therefore, a County encroachment permit will likely be required.

Deliverable: Exploration Plan for geotechnical investigation, an updated geologic map and preliminary cross sections.

- 6. **Outlet Pipe, Outlet Valves, and Operators:** AECOM will evaluate alternative location and configurations for the sloped outlet structure. The current state of the practice for sloped inlet/outlets structures is to construct them of welded steel pipe encased in reinforced concrete and locate them in either in the bedrock surface of dam abutments (preferred) or in the upstream dam face. The sloping intake arrangement is favored by operators for its ease of maintenance. The photo at right shows a stainless steel cylindrical fish screen with hydraulically actuated butterfly



valve at SMWD's Upper Oso Reservoir. We've recently designed a similar sloped outlet structure for SMWD's Trampas Canyon Dam with eight deep-sea rated 24" butterfly valves with a pneumatic valve actuator system, which was recently approved by DSOD. We've also recently designed a new outlet tower and supplemental sloped outlet structure with 48" electrically actuated gates for LA County Department of Public Works' Santa Anita Debris Dam. The photo at left shows a pneumatic valve actuator system that was designed by AECOM at SMWD's Upper Chiquita Reservoir.

AECOM will evaluate a variety of outlet pipe materials, valves, actuators (electric, pneumatic, hydraulic), screens, ancillary equipment, and power supplies for the new sloped outlet structure. This task will include conceptual foundation/footing design as requested in the RFP. We will also evaluate an exterior stairway, platform and guardrail system that will allow operators to safety access each of the valve actuators and screens.

Quagga Mussel Impacts

Quagga Mussels were first discovered in Irvine Lake in March 2008 and will impact the screens, valves, and riser pipes of the proposed sloped outlet structure unless prevented or controlled. AECOM will select the appropriate coatings and/or materials to prevent this invasive species from clogging the outlet works. Methods used to prevent mussel colonies from forming include applying coatings that are copper, zinc, or silicone-based or selecting equipment with copper, brass or galvanized materials.



7. Construction Duration, Constructability, and Access: Constructability and construction access to the work site is of primary importance for this project. The dam crest access road allows for limited access to the outlet tower area and narrows to around eight feet in one section. Due to this limited access, most of the large construction equipment will need to access the construction site by barge. Construction of the sloped outlet structure will require the installation of a temporary cofferdam or other means that will allow dewatering of the work area so that connection to the existing 60" diameter outlet conduit can be made below the reservoir water and silt line. We understand that the reservoir is the primary water source for SWD and is an important source for IRWD; therefore, minimizing reservoir outlet works downtime and efficient construction is critical. To this end, AECOM will design a cofferdam system that makes construction of the sloped outlet structure possible from a barge-mounted crane. We will stage this construction to occur in the dry, summer season to minimize potential for storm impacts. In order to expedite construction and avoid impacts from reservoir runoff, we will recommend long/night work shifts and use of efficient construction methods such as using precast materials and quick-setting concrete.

Access Improvement to the Outlet Works

We will recommend improvements to the dam crest road and spillway area so that the proposed sloped outlet is accessible by land. These improvements may include additional metal beam guard rail on the dam crest road, a widened dam crest road, and an access ramp from the dam crest road to the spillway crest.

8. Permits, Licenses, and Fees: During the development of the Preliminary Design Report, AECOM will identify required permits for the implementation of the project. The expected permits and licenses include a DSOD dam alteration application, a U.S. Army Corps of Engineers (USACE) Section 404 Permit, a Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification, a California Department of Fish and Wildlife (CDFW) Section 1602 Lake or Streambed Alteration Agreement, and a County of Orange encroachment permit.
9. CEQA Documentation: AECOM understands that IRWD will prepare and file the CEQA documentation for the project. AECOM has included an appropriate budget for providing IRWD with data regarding construction activities that will impact the environment. AECOM's CEQA support may include review of the environmental document, preparation of exhibits, attendance at meetings, and sharing of project-related information.
10. Point of Connection: AECOM will determine the optimum point of connection to the existing 60" diameter outlet conduit for the proposed sloped outlet structure. Alternative 1 discussed above in the approach shows the original concept requested by IRWD with connection to the existing conduit. Alternative 2 shows the sloping outlet connected to the existing tower. Structural connection details will be provided in the Preliminary Design Report for this connection. We will stage this connection so that downtime to the existing outlet works system is minimized to maintain SWD/IRWD water usage and emergency drawdown capabilities. **Cost Savings: Alternative 2 may save IRWD/SWD significant costs associated with construction of the cofferdam and tower abandonment.**
11. Drawdown Capability: AECOM will analyze the reservoir outflow drawdown capability by modeling the full reservoir drain time using the proposed outlet structure with all valves open. For reservoirs that impound over 5,000 acre-feet of water, such as Irvine Lake, DSOD requires that the outlet system should be capable of lowering the maximum storage depth by 10 percent within 7 days and draining its full contents within 90 days. Reservoir drain time will be calculated based on the reservoir draining from the high water elevation (i.e. spillway crest) to the lowest inlet near the reservoir floor elevation. AECOM will verify that the improved outlet works meets the DSOD drawdown requirements for both of the following cases:

Case I: Reservoir Drain time from high water elevation to current silt line (approx. Elevation 715 ft).

Case II: Reservoir Drain time from high water elevation to original reservoir floor (approx. Elevation 680 ft).

The outlet works configuration will be used to create an outlet rating curve. This rating curve and the stage-storage curves will be used as inputs for the lake model simulation. The results of the drawdown capability study will be summarized in graphs and tables (e.g., stage-discharge curves, stage-storage curves). AECOM will utilize the U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS) program to develop the watershed hydrograph for the reservoir and EPANET to model the drain time through the with the sloped outlet.

Cost Savings: AECOM has already developed the HEC-RAS model for the Irvine Lake watershed and the EPANET drain time hydraulic model in previous studies for both the existing tower and the sloped outlet structure.

Bathymetric Mapping: Bathymetric mapping is to be accomplished using a single-beam fathometer for depths over two feet for the area shown on Figure 2 herein. The DTM will be provided in conformance with FGDC Geospatial Positioning Accuracy Standards, Part 4: Architecture, Engineering, Construction, and Facilities Management (FGDC-STD-007.4-2002) at an equivalent vertical and horizontal accuracy conforming to one-foot interval contours and a plotting scale of 1"= 40', and will comply with the US Army Corps of Engineers Hydrographic Survey Manual, EM 1110-2- 1003, November 2013. Final deliverables will be a CADD base file with a triangulated irregular network DTM.

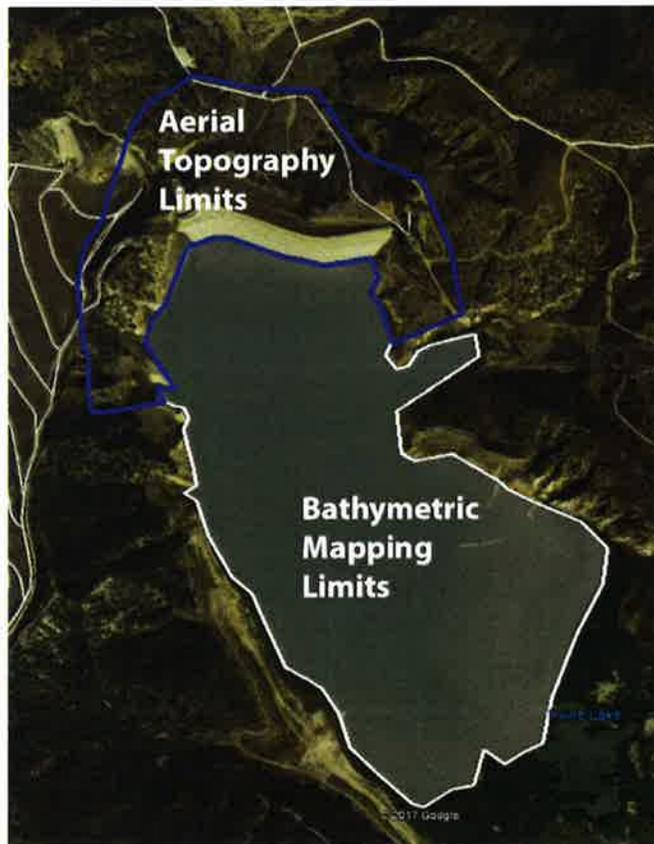


Figure 5: Mapping Limits

12. **Tower Abandonment:** AECOM will evaluate requirements and methods for abandonment of the existing outlet tower. In order to reduce risk of tower failure during a seismic event, the top half of the tower will be demolished. The reduction in seismic mass and height will improve the overall seismic

response of the intake tower structure and will reduce bending moments at the potential plastic hinge location near the bottom of the tower. The entire construction can be done by divers with handheld underwater concrete cutters lowered from a barge. Therefore, construction of a cofferdam around the tower is not likely required. Alternatively, the contractor may build a small cofferdam to perform most or all of the demolition in the dry.

The figure below shows a tower abandonment that will be efficient and low cost. The existing outlet tower could be cut and removed by barge-mounted crane above elevation 740 feet. The remaining outlet tower and short segment of outlet conduit could be plugged and filled with cellular concrete fill. This concept will save significant demolition costs because the portion of the tower beneath the silt line would not need to be removed. At the SFPUC's Crystal Springs Reservoir, the top of both outlet towers were removed to reduce the seismic load and new gates were installed outside the tower as part of the seismic improvement project.

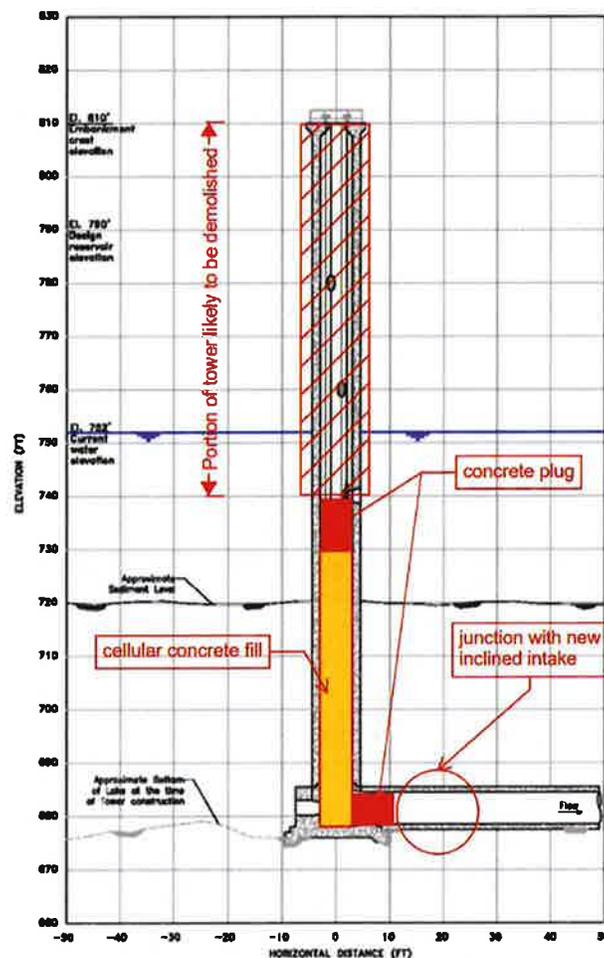


Figure 6 Tower Abandonment Concept

13. Opinion of Probable Construction Cost: AECOM will prepare a preliminary Opinion of Probable Construction Costs for all elements of the project. Our professional cost estimator will use recent IRWD construction bids, Caltrans Cost Data Books, bid results from other dam projects we are involved with in California, and other resources to develop the cost estimate.
14. Project Schedule: AECOM will prepare a project schedule during the preliminary design phase for the design, advertisement, bidding, and construction phases. The schedule will be prepared in Gantt chart format using Microsoft Project. The schedule will identify major design activities, permits,

coordination activities, review periods, DSOD coordination, and bid and construction phase activities such as shop drawing review/approval and manufacturing and delivery for long lead time items.

15. **Project Meetings:** AECOM will schedule and lead meetings with IRWD and SWD’s team to ensure that all design, operational and maintenance issues are being addressed. AECOM will provide agendas of upcoming project coordination meetings five working days in advance of the meeting and prepare meeting minutes and action items within five working days subsequent to the meetings. These efforts are intended to ensure that all technical issues are being addressed and that the project remains on schedule. Per the RFP, there will be seven (7) meetings and one (1) optional meeting at the DSOD offices. Of these meetings, the following meetings will occur in the preliminary design phase:

Meeting/Workshops Task 1 - Preliminary Design	Description
Project Kick-off Meeting	One (1) two-hour meeting
Site Meeting	One (1) two-hour meeting
IRWD/SWD Ad Hoc Committee Meeting to Discuss/Present Preliminary Design	One (1) two-hour meeting
Optional Meeting at DSOD Offices to Present Preliminary Design	One (1) two-hour meeting

16. **Task Deliverables:**

- a. **Preliminary Design Report:** AECOM will summarize and compile each of the subtask items listed above into a PDR. The PDR will include design criteria for all elements of the project. As stipulated in the RFP, AECOM will provide ten (10) copies of the 60%, 100% Draft PDR and Final PDR and electronic files of all documents in MS Word and PDF format. Three (3) copies of the Final PDR will be wet stamped/signed by our California-licensed civil, geotechnical, and structural engineers. We propose the following Table of Contents for the PDR:

**Santiago Creek Dam Outlet Works Improvement Project
Preliminary Design Report
(Proposed Table of Contents)**

Section

- 0.0 EXECUTIVE SUMMARY**
- 1.0 INTRODUCTION**
 - 1.1 Project Background
 - 1.2 Project Purpose
 - 1.3 Evaluation of Background Information
- 2.0 OUTLET CONDUIT INVESTIGATION**
 - 2.1 Existing Outlet Conduit As-Builts
 - 2.2 Outlet Conduit Mapping
 - 2.3 Outlet Conduit Inspection and Condition Assessment
 - 2.4 Recommended Outlet Conduit Improvements & Lining (e.g. CIPP Liner)
- 3.0 SEISMIC DESIGN**
 - 3.1 Deterministic Seismic Hazard Analysis
 - 3.2 Seismic Design Parameters
- 4.0 GEOTECHNICAL CONSIDERATIONS**
 - 4.1 Introduction

- 4.2 Review of Existing Geotechnical Information
- 4.3 Develop Final Geotechnical Scope of Services
- 4.4 Geotechnical Testing and Recommendations
- 5.0 **PERMITTING, LICENSES, AND ENVIRONMENTAL CONCERNS**
 - 5.1 Permits and Licenses
 - 5.2 Environmental Concerns
- 6.0 **OUTLET STRUCTURE, VALVES, AND OPERATORS**
 - 6.1 Sloped Outlet Structure Configuration Alternatives
 - 6.2 Outlet Pipe Materials
 - 6.3 Valves
 - 6.4 Valve Actuators
 - 6.5 Fish Screens
 - 6.6 Ancillary Equipment
 - 6.7 Power Supply
 - 6.8 Quagga Mussel Mitigation
- 7.0 **DRAWDOWN CAPABILITY**
 - 7.1 Drawdown Analysis for Proposed Outlet Structure
 - 7.2 Recommended Outlet Works Improvements to Meet DSOD Emergency Drawdown Requirements
- 8.0 **CONSTRUCTION CONSIDERATIONS**
 - 8.1 Construction Duration and Phasing
 - 8.2 Constructability Review
 - 8.3 Access to Construction Site & Safety Considerations
 - 8.4 Temporary Cofferdam Construction and Removal
 - 8.5 Silt Dredging and Removal for Cofferdam
 - 8.6 Operation of Outlet Works during Construction
 - 8.7 Mitigation of Storms and Reservoir Level Fluctuations
 - 8.8 Tower Abandonment
 - 8.9 Connection of Sloped Outlet Structure to Existing Outlet Conduit
 - 8.10 Material Deliveries and Associated Lead Times
 - 8.11 Project Schedule
 - 8.12 Drawing List
 - 8.13 Specifications List and Project Manual Outline
 - 8.14 Opinion of Probable Construction Costs

- b. Conceptual Plans: AECOM will provide 30% level plans for the sloped outlet structure, valves, and ancillary equipment. The plans will be placed within an appendix of the PDR or provided separately, if requested.

Task 2 Final Design

1. Rehabilitation of Existing Outlet Conduit: AECOM will review the outlet conduit inspection results from the preliminary design phase and provide a design for pipeline rehabilitation. On a recent, similar project, we inspected a 48" diameter outlet conduit beneath a dam by ROV and determined that a cured-in-place pipe liner (CIPP) was the optimum solution for the conduit. We will evaluate conduit rehabilitation with a CIPP liner or other means after the ROV inspection.
2. Seismic Design: Geotechnical explorations will provide data required to develop the ground motions and to design the foundations of the new structures. Borings on the reservoir shoreline will provide data on the rock type and structure, and downhole geophysics will provide dynamic properties for use in developing the ground motions. A boring in the reservoir will provide data on the composition and behavior of the reservoir sediment and on the underlying rock for design of the permanent structures as well as for design of the cofferdam. A test trench program may be required to confirm the absence of faults crossing the foundation of the new sloping intake.

Seismic analysis of the sloping intake where it is founded on rock may be performed using the rock outcrop motions developed in Task 1. If the structure is to be supported by drilled piers over reservoir sediment then a site response analysis, as well as static and seismic analysis of the piers will be performed using the design earthquake ground motions with material properties developed based on the site exploration program.

3. Geotechnical Investigation: AECOM will perform a supplementary geotechnical investigation as required for the final design of the proposed sloped outlet structure. This will provide geotechnical information of the site including soil stratigraphy, subsurface conditions, and depth to bedrock. The Geotechnical Site Investigation Plan will be provided to DSOD for review and comment. The field work is currently anticipated to include the following, subject to revisions arising from DSOD review:

- 2 rotary wash/core borings to 50 to 75 feet depth along the selected outlet conduit alignment. Borings will be advanced from a barge that will be deployed on the lake.

Laboratory Testing: Subsequent to the field exploration, geotechnical laboratory tests will be conducted on selected samples that were collected from core/soil borings to obtain engineering parameters of the materials. For cost estimating purposes we anticipate that the laboratory testing will include:

- 50 water content tests
- 25 dry density tests
- 25 particle-size distribution tests
- 8 corrosivity suites
- 15 liquid limit and plastic limit tests
- 15 unconfined compressive strength tests on rock
- 40 point load strength tests on rock

Final Geotechnical Report: AECOM will prepare a Final Geotechnical Investigation Report to support the final design of the proposed project facilities. The report will present a summary of all of the geotechnical information obtained at the site including feasibility, preliminary design and final design geotechnical investigations. In addition the subsurface conditions at the selected tower location, including bearing and other properties required for construction and structural design. Geologic and geotechnical sections will be presented. Conclusions and recommendations will be presented for each structure that will be used for design. AECOM will submit five (5) copies of a draft report for IRWD/SWD review and five (5) copies of a final report. This will include:

- Geotechnical recommendations and design parameters for appurtenances required in conjunction with the outlet structure including existing outlet conduit, control building, and cofferdam.
- Stress and deformation analysis of outlet works for post construction settlement and seismic deformation
- Foundation design for appurtenant structures

4. Outlet Pipe, Outlet Valves, and Operators: AECOM will provide final design for the outlet pipe, foundation, valves, actuators, screens, ancillary equipment, and power supply for the new sloped outlet. We have designed multiple DSOD-approved sloped outlet structures with electrical (L.A. County DPW-Santa Anita Debris Dam), pneumatic (SMWD-Trampas Canyon Dam), and hydraulic actuation systems (Contra Costa Water District-Los Vaqueros Dam) for Southern California dams within the last five years. This will allow us to recommend the most appropriate design for the Districts and quickly prepare construction plans and specifications for these components.

5. **Constructability and Access:** AECOM will design appropriate construction access, staging areas, and cofferdams for the project. We will use the findings in Task 1 to confirm that our solutions are constructible and safe for the contractors.
6. **Permits, Licenses, and Fees:** AECOM will apply for project permits as delineated previously and assist with the project permitting process. We feel that we are uniquely qualified for this task because we've recently secured approvals from CDFW DSOD*, USACE, RWQCB, CDFW, DSOD, and the local Counties for similar dam and outlet works projects.
7. **Point of Connection:** AECOM will complete the point of connection notes and details for connection of the new sloped outlet to the existing outlet conduit. Timing of this connection is critical to minimize reservoir downtime.
8. **Tower Abandonment:** We have included abandonment design for the existing outlet conduits and tower as an optional item. One concept that we will evaluate for final design is removing the top of the existing tower down to the silt line area. We've run a SAP model on the shortened outlet tower (see below) and determined that this tower should withstand the MCE event if it is cut and the upper portion removed to below elevation 740 feet. This will likely be a very economical solution for abandoning the existing outlet tower.

Table 1: D/C Ratio for Flexure in the Tower

Tower SAP Frames	Moments in the 2-2 Direction					Moments in the 3-3 Direction				
	M _{D2-2} ⁽¹⁾ (kips-ft)	Φ.M _{n2-2} ⁽²⁾ (kips-ft)	D/C	Max Acceptable D/C	Status	M _{D3-3} ⁽¹⁾ (kips-ft)	Φ.M _{n3-3} ⁽²⁾ (kips-ft)	D/C	Max Acceptable D/C	Status
1	6,988	17,281	0.40	1.00	OK	7,072	17,286	0.41	1.00	OK
2	6,564	11,514	0.57	1.00	OK	6,644	11,920	0.56	1.00	OK
3	6,353	8,363	0.76	1.00	OK	6,430	8,946	0.72	1.00	OK
4	5,932	9,665	0.61	1.00	OK	6,006	9,662	0.62	1.00	OK
5	5,619	9,606	0.58	1.00	OK	5,690	9,604	0.59	1.00	OK
8	3,171	9,550	0.33	1.00	OK	3,214	8,738	0.37	1.00	OK
11	1,864	8,617	0.22	1.00	OK	1,887	8,615	0.22	1.00	OK
14	301	8,664	0.03	1.00	OK	304	7,735	0.04	1.00	OK
15	25	4,819	0.01	1.00	OK	25	4,549	0.01	1.00	OK

9. **Opinion of Probable Construction Cost:** AECOM will provide IRWD/SWD with an engineer's estimate of probable construction costs for the 60%, 90% 100% and final submittals. AECOM will incorporate and address comments from IRWD/SWD related to the cost estimate. Construction costs will be developed by AECOM's professional cost estimator certified by the Association for the Advancement of Cost Engineering International (AACE). The estimator will use a variety of resources, including: vendor quotes, Caltrans Cost Data Books, recent IRWD/SWD construction bids, and bids from other local dam projects that AECOM has recently designed.
10. **Project Schedule:** AECOM will submit monthly project schedule updates and with each stage of final design submittal, include a construction schedule. The project schedule will reflect coordination items, submittal milestones, critical path items, IRWD/SWD review times, shop drawing approvals, manufacturing, delivery, seasonal weather impacts, and affected construction projects. AECOM will prepare the schedule in Microsoft Project format.
11. **Project Meetings:** AECOM will schedule and lead meetings with IRWD and SWD's team to ensure that all design, operational and maintenance issues are being addressed. AECOM will provide agendas of upcoming project coordination meetings five working days in advance of the meeting and prepare meeting minutes and action items within five working days subsequent to the meetings. These efforts are intended to ensure that all technical issues are being addressed and that the project remains on schedule. Per the RFP, there will be seven meetings and one optional meeting at the DSOD offices. Of these meetings, the following meetings will occur in the final design phase:

Meeting/Workshops Task 2 - Final Design	Description
60% Design Review Meeting with IRWD/SWD	One (1) two-hour workshop
Site Meeting	One (1) two-hour meeting
90% Design Review Meeting with IRWD/SWD	One (1) two-hour workshop
100% Design Review Meeting with IRWD/SWD	One (1) two-hour workshop

12. **Liquidated Damages Calculations:** AECOM will assist in calculating liquidated damages for the project, which would take effect if the Contractor exceeds the contract time. AECOM will complete and submit IRWD's standard liquidated damage calculation form in electronic format. We understand that the liquidated damages calculations should take into account the daily cost impact for IRWD and SWD not being able to use the reservoir water supply when the outlet works is out of commission for construction work.
13. **Bid Period Assistance:** During the bidding period, AECOM will provide bidding support and assistance as it pertains to the contract documents and construction drawings. For budgetary purposes, we have assumed a number of hours in our fee estimate to answer questions from prospective bidding contractors, and assist IRWD and SWD in providing information and clarification of the bid documents. AECOM will consult with IRWD and SWD to address concerns or answer their questions in support of administering the bid process. AECOM has budgeted for one (1) addendum to the construction plans and/or Project Manual for prospective bidders, if requested by IRWD/SWD. Addendum preparation will include:
- Plan Revisions: AECOM has budgeted forty (40) hours of staff time for plans revisions.
 - Specification Revisions: AECOM has budgeted twenty (20) hours of staff time for revisions to the Project Manual.
 - Bidder Questions: AECOM has budgeted forty (40) hours of staff time to address and respond to bidder questions.
 - Pre-Bid Meeting: Two senior AECOM staff will attend one (1) two-hour pre-bid meeting along with a site visit with potential bidders, if required.

14. **Task Deliverables:**

- a. **Improvement Plans:** AECOM will prepare detailed construction drawings in AutoCAD 2016 using NCS V4.0 layering standards. Construction plans will be prepared on IRWD standard 24-inch x 36-inch sheet with IRWD title block. Pipeline plan and profile sheets will be prepared of two-strip (e.g. profile over plan view) at a scale of 1"=40' horizontal and 1"=4' vertical. The horizontal and vertical control will be established with NAD83 and NAVD88 survey standards, respectively. The following table presents our proposed listing of the potential construction drawings.

Construction Drawing List

Sheet No.	Drawing No.	Sheet Title
1	G-1	Title Sheet
2	G-2	Location Map, Vicinity Map, and Sheet Index
3	G-3	Construction Notes, Symbols, Agency Index & Abbreviations
4	G-4	General Notes and Hydrologic Information
5	G-5	General Arrangement Plan

Sheet No.	Drawing No.	Sheet Title
6	C-1	Demolition and Salvage Plan
7	C-2	Tower Abandonment Plan, Section and Details
8	C-3	Horizontal Control Plan
9	C-4	Sloped Outlet Access Road and Retaining Wall Plan
10	C-5	Dam Access Safety Improvement Plan, Sections and Details
11	OW-1	Outlet Works General Plan
12	OW-2	Outlet Works Cofferdam General Notes and Arrangement
13	OW-3	Outlet Works Cofferdam Sections and Details
14	OW-4	Outlet Works Cofferdam Details
15	OW-5	Outlet Works Excavation Plan and Profile
16	OW-6	Outlet Works Plan and Profile
17	OW-7	Outlet Works Point of Connection Details
18	OW-8	Outlet Works Mechanical Details
19	OW-9	Outlet Works Platform and Stairway Plan, Profile, and Details
20	S-1	Outlet Works Structural Notes, Legend, and Abbreviations
21	S-2	Outlet Works Structural Plan, Sections, and Details
22	S-3	Outlet Works Structural Details - 1
23	S-4	Outlet Works Structural Details - 2
24	S-5	Outlet Works Control Building Structural Notes - 1
25	S-6	Outlet Works Control Building Foundation Plan
26	S-7	Outlet Works Control Building Roof Framing Plan and Details
27	S-8	Outlet Works Control Building Sections and Elevations
28	S-9	Outlet Works Control Building Structural Details
29	E-1	Overall Electrical Site Plan, Legend & Abbreviations
30	E-2	Single Line Diagram
31	E-3	Control Building Electrical Site Plan
32	E-4	Outlet Works and Control Building Conduit Plan
33	E-5	Outlet Works Control Building Panel Elevations
34	E-6	PLC and Telemetry Schematic
35	E-7	Security Camera and Telemetry Details
36	E-8	Electrical Details
37	E-9	Cable and Conduit Schedule
38	E-10	Electrical Panel Schedules and Lighting
39	I-1	Instrumentation Legend and Symbols
40	I-2	Outlet Works P&ID
41	I-3	Instrumentation Details

- b. **Project Manual:** AECOM will prepare the Project Manual for the project in standard IRWD format and complete IRWD templates for the bidding and contract requirements section of the manual. AECOM will use the latest version of IRWD's Project Manual for the front-end documents related to bidding, agreements, general provisions, and special provisions. The special provisions will be tailored for the project. The Project Manual will

reference the applicable sections of IRWD's General Technical Specifications, modify these sections as needed, and provide new technical sections as needed for the project. The Project Manual will also include an Appendix with District holidays, District Alternating Friday Closure Schedule, standard construction forms, permit documents, NPDES documents, Project Sign figure, and various other forms for construction.

Final Design Deliverable: AECOM will provide final design deliverables pursuant to IRWD's Design Process Manual. Hard copies of construction plans will be reproduced in either full-size (24"x36") bond format or tabloid (11"x17") bond format, per IRWD/SWD preference. The Project Manual will be reproduced in double-sided letter-size format with color paper per IRWD standards. The submittals will be provided as described below.

- i. AECOM will submit ten (10) full-size bond copies and two (2) half-size bond copies of the first (60%) submittal. Plans for the first submittal will include a draft set of drawings for the entire project. The 60% plans will include the components listed in the RFP. The first submittal will include ten (10) copies of the Project Manual with technical specifications and an engineer's estimate of probable construction cost.
- ii. AECOM will submit ten (10) full-size bond copies and two (2) half-size bond copies of the entire plan set for the second (90%) submittal. Plans for the second submittal will show all of the design elements of the 60% Submittal, but in much greater detail. AECOM will incorporate IRWD/SWD staff comments on the 60% submittal. AECOM will provide ten (10) copies of the complete Project Manual and engineer's estimate of probable construction cost for this submittal. All sections of the Project Manual will be provided for this submittal, including contract requirements, general provisions, special provisions, general requirements, technical specifications, and appendix.
- iii. AECOM will submit ten (10) full-size bond copies and two (2) half-size bond copies of the entire plans set and ten (10) copies of the Project Manual. This submittal will include the complete plan set and specifications and a notebook with the design calculations (including hydrologic, hydraulic, mechanical, civil, structural, geotechnical HVAC, and electrical). AECOM will incorporate IRWD/SWD staff and DSOD comments on the 90% submittal, as well as comments received at the 90% plan review meeting. AECOM will update the Project Manual and engineer's estimate of probable construction cost for this submittal.
- iv. AECOM will submit stamped and signed reproducible plans (mylars) of the final construction plans and original signed Project Manual for IRWD/SWD signatures after incorporating any final District and DSOD comments to the 100% design documents. A CD with electronic files (PDF, AutoCAD, MS Word) will be provided for the entire construction drawing set and Project Manual. AECOM will attend IRWD/SWD's meeting for signatures to explain the project and answer questions. A final engineer's estimate of probable construction cost will be submitted with the final plans and Project Manual.

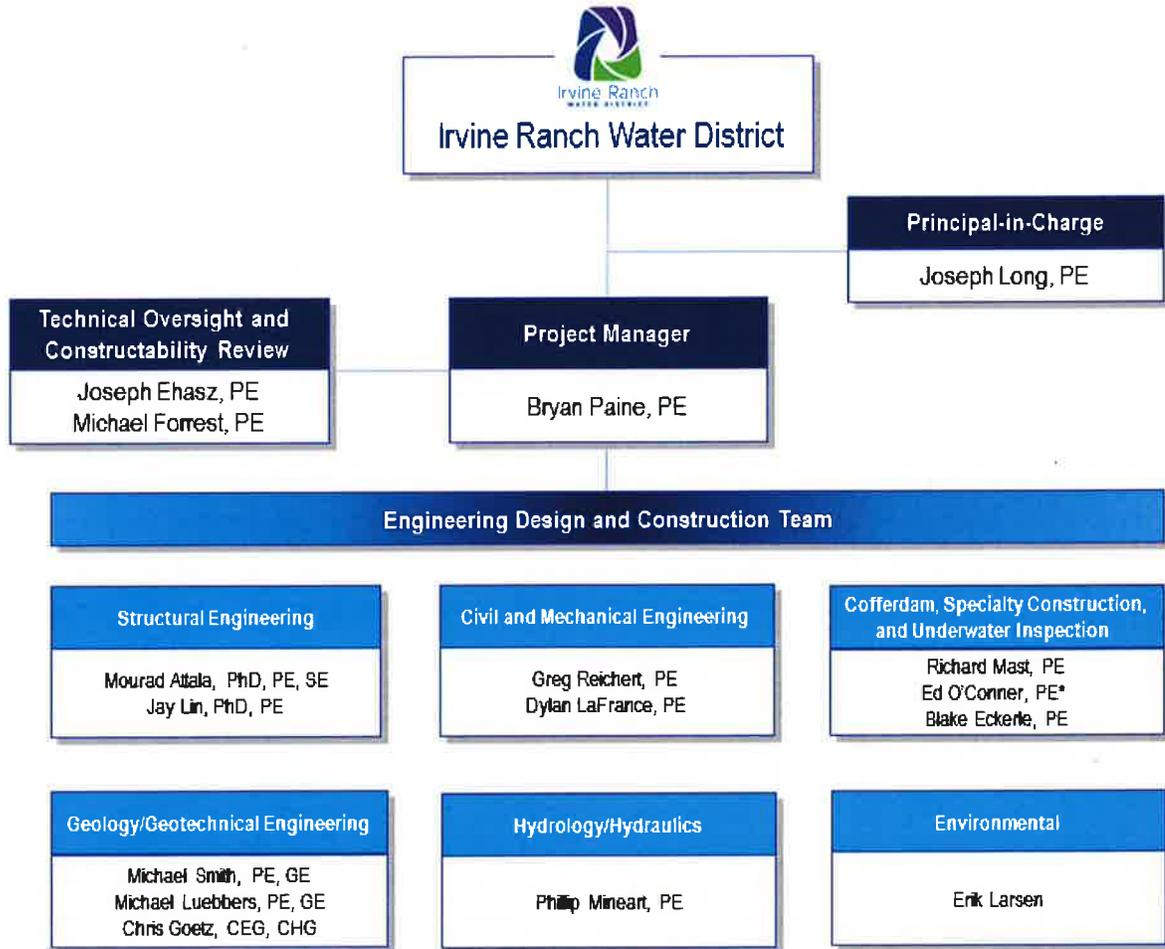
2. TEAM

Descriptions of specific experience and capabilities of designated project manager, project engineers, and support staff related to the previously outlined scope of work. Include a schedule showing the percentage of time each member will contribute to the project. Key personnel, as defined by the Districts, assigned to the project shall not be reassigned without prior written approval.

The team shall include a State of California 74110-licensed civil, geotechnical, or structural engineer with experience performing seismic evaluations on DSOD jurisdictional dams.

AECOM has taken great care in assembling a project team that reflects IRWD and SWD's priorities for this project. Our team members have a long history of working with IRWD staff. They have performed work on relevant projects such as Trampas Canyon Dam and Reservoir (SMWD), Upper San Leandro Reservoir Outlet Tower Retrofit (EBMUD), Los Vaqueros Dam Outlet Tunnel (CCWD), Santa Anita Debris Dam Outlet Tower Replacement (LACDPW), and Crystal Springs/San Andreas Transmission System Upgrades (SFPUC). Our team members are familiar with the District's standards and will work as an extension of the IRWD and SWD staff. The project will be managed by Bryan Paine, PE who has more than 20 years of direct experience specializing in the planning, design, and construction support services for water resource projects and 15 years of experience working with IRWD. He has managed projects for two of the District's dams, including Syphon Reservoir Dam and Santiago Creek Dam. We pledge that the key personnel on this team will be available to the extent proposed for the duration of the project, and that no person designated as "key" to the project shall be removed or replaced without the prior written concurrence of IRWD and SWD.

Joe Long has been selected as the Principal-in-Charge for the project and is responsible for committing our firm to deliver a quality project that is completed on-time and on-budget. Bryan Paine will be the District's direct day-to-day contact and is very familiar with the District's staff, design standards, and procedures. Our technical review and design oversight team includes Joe Ehasz and Michael Forrest. Mr. Ehasz was the Project Director for MWD's \$1.9B Diamond Valley Reservoir, which was one of the largest earthworks projects in the United States. Mr. Forrest is in charge of AECOM's dam practice in Northern California and brings over 40 years of experience on similar projects with outlet tower modifications and replacements. Both of these gentlemen are highly regarded by DSOD and will help us find the most economical solutions for the project that will meet the District's needs and obtain DSOD approval. The remainder of our team includes technical experts in the fields of permitting, hydrology/hydraulics, pipelines, cofferdams, underwater construction, geology, geotechnical engineering, and seismic and structural engineering.



Subconsultants

Psomas – Greg Helmer, PLS -- Bathymetry Surveys
 Pro-ROV Services, LLC, – Mark Stepanek & Bailly Logan, Outlet Conduit Inspection

* not CA PE

We have provided brief highlights and availability of our key team members for this work in the table below. More details on their qualifications can be found in their resumes in Appendix A.

Key Personnel Project Role	Specialty and Capabilities	Project Experience	Contribution to Project (% Time of Key Staff)
Joseph Long, PE <i>Principal-In-Charge</i> BS, Civil Engineering Civil Engineer, CA #54329	27 years of experience in engineering consulting, project leadership/project management, and operations/fiscal management, focused on multidiscipline project solutions for public infrastructure. His expertise includes the design of	<ul style="list-style-type: none"> IRWD, Syphon Reservoir Interim Outlet Facilities IRWD, Orange Park Acres Well No. 1 Headworks and Booster Pumping Facilities IRWD, Irvine Lake 	10%

4. SCHEDULE

Assurance of the firm's ability to complete all work, considering the firm's current and planned workload based on the proposed schedule.

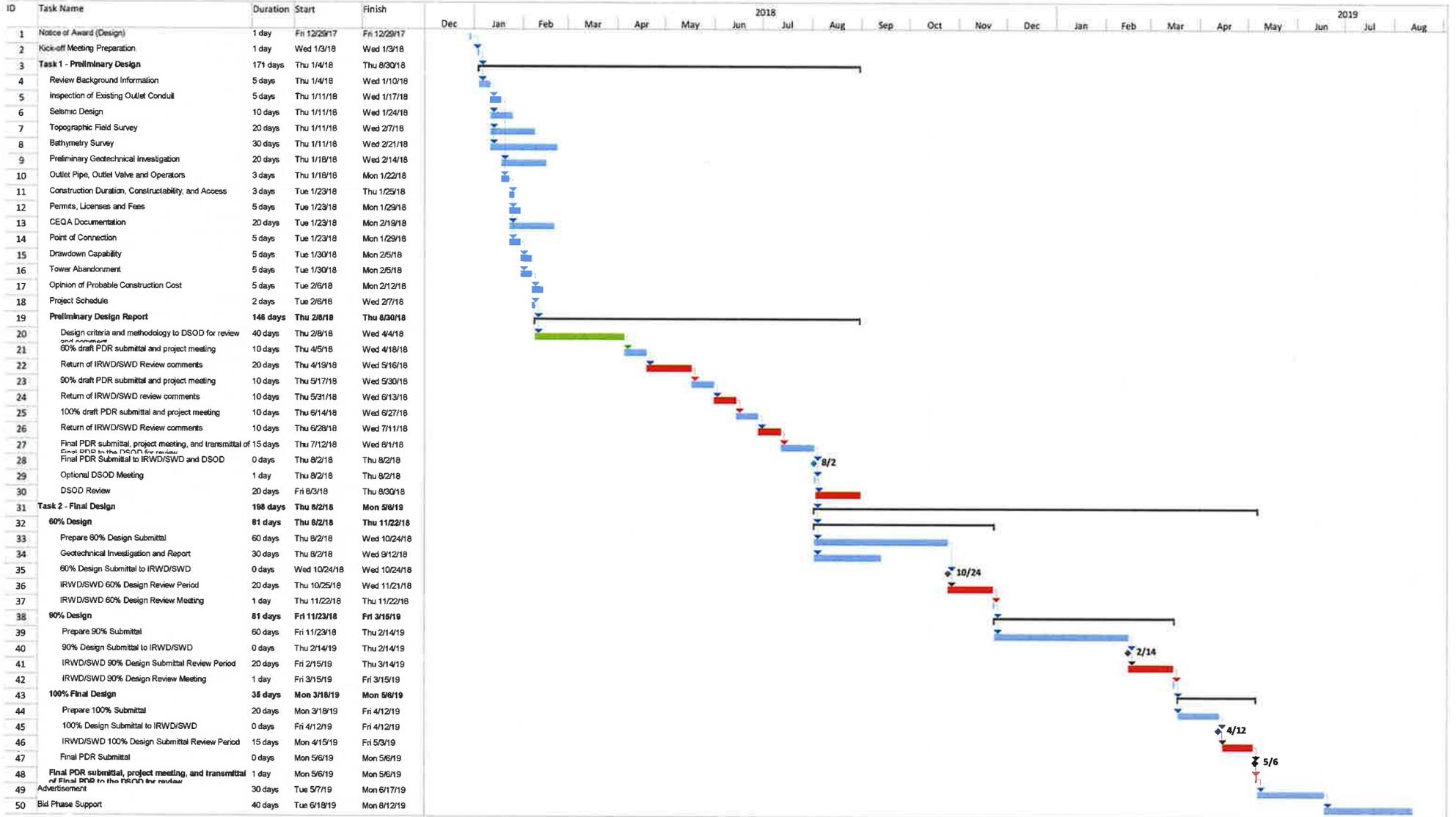
The project schedule defined in the RFP requires a well-managed effort and quick response to stay on schedule.

For this project, it is clear that the consultant must have the right individuals available to perform the work, as well as a depth of engineering resources to call on quickly and as needed. Our design schedule will be managed by Bryan Paine, an experienced AECOM-Certified Project Manager who has demonstrated his capabilities in delivering high quality design projects on budget and schedule for IRWD and other clients such as the Santa Margarita Water District, Los Angeles Dept. of Public Works, Orange County Water District, City of Anaheim Public Utilities Department, U.S. Army Corps of Engineers, and Rancho California Water District. We understand that individuals are important to our clients and are the only ones who can successfully deliver projects on time.

AECOM's history on this project will allow our design team to move forward efficiently without a learning curve. Our team has already prepared the site-specific seismic analysis and outlet works hydraulic model for the project and developed the design criteria for the project, which will allow us to save time and budget in the preliminary and final design phases. We've included an estimate for DSOD review duration based on our previous experience with the agency.

Our estimated schedule to complete the proposed scope of work defined in the RFP is provided on the following page. We do not anticipate changes to this schedule, as we have the resources already lined up to begin work on the project.

Santiago Creek Dam Outlet - Preliminary and Final Design Schedule



Project: Santiago Creek Dam Outlet

Task

Milestone



Summary

Project Summary



Task



Milestone

Client Review Period

Summary



Estimated Cost Breakdown of Total Fee
Irvine Ranch Water District
Santiago Creek Dam Outlet-Engineering Services for Preliminary Design Report and Final Design
October 5, 2017

Task No.	Task Description	AECOM Labor Hours							TOTAL HOURS	TOTAL LABOR	Subconsultants		Direct Costs / Materials ¹	TOTAL	
		Principal-in-Charge	Principal Engineer / Scientist	Senior Project Engineer / Scientist	Project Manager	Project Engineer / Scientist	Staff Engineer / Scientist	CAD/GIS Technician			Admin / Repro	PSOMAS			PRO-ROV Services, LLC
		\$250	\$210	\$180	\$170	\$150	\$110	\$100			\$95				
Task 1 Preliminary Design															
1	Background Material	4	4	4	2					14	\$2,900			\$2,900	
2	Inspection of the Existing Outlet Conduit		2		4	20	8		6	40	\$5,550		\$5,850	\$11,500	
3	Seismic Design		2	24		32			4	62	\$9,920			\$9,920	
4	Topographic Field Survey				4			4	4	12	\$1,460	\$22,950		\$24,410	
5	Geotechnical Investigation		2	12	4	16	24	12	8	78	\$10,260			\$10,260	
6	Outlet Pipe, Outlet Valves, and Operators		2	4	4	8		8		26	\$3,820			\$3,820	
7	Construction Duration, Constructability, and Access	8	2	4	4	8		8		34	\$5,820			\$5,820	
8	Permits, Licenses, and Fees		2		4	20	16	8	4	54	\$7,040			\$7,040	
9	CEQA Documentation			2	4	8	8	16	2	40	\$4,910			\$4,910	
10	Point of Connection	2	2	4	2	4		16		30	\$4,180			\$4,180	
11	Drawdown Capability		2		2	16		16	4	40	\$5,140	\$26,200		\$31,340	
12	Tower Abandonment	2	2	4	2			8		18	\$2,780			\$2,780	
13	Opinion of Probable Construction Cost		2		4	16	8	8	2	40	\$5,370			\$5,370	
14	Project Schedule				4					4	\$680			\$680	
15	Project Meetings (3 Meetings)			9	12	9				30	\$5,010		\$100	\$5,110	
16	Task Deliverables														
	a. Preliminary Design Report	10	20	24	80	80	160	24	20	418	\$58,520		\$1,000	\$59,520	
	b. Conceptual Plans	4	20	24	40	100	80	120		388	\$52,120			\$52,120	
	SUBTOTAL TASK 1	30	64	115	176	337	304	248	54	1,328	\$185,480	\$49,180	\$5,850	\$1,200	\$241,680
Task 2 Final Design															
1	Rehabilitation of the Existing Outlet Conduit	2	2	4	4	8				20	\$3,520			\$3,520	
2	Seismic Design		8			20	60		2	90	\$11,470			\$11,470	
3	Geotechnical Investigation	2	8	16	16	40	80	40	8	210	\$27,340		\$79,350	\$106,690	
4	Outlet Pipe, Outlet Valves, and Operators		4	4	8	24		40		80	\$10,520			\$10,520	
5	Constructability and Access	16	4	8	4	16		16		64	\$10,960			\$10,960	
6	Permits, Licenses, and Fees	2	8	8	24	60	40	24	16	182	\$25,020		\$2,000	\$27,020	
7	Point of Connection	2	4	16	2			24		48	\$6,960			\$6,960	
8	Tower Abandonment (See Optional Task Below)														
9	Opinion of Probable Construction Cost	2	2	40	8		8	20	2	82	\$12,550			\$12,550	
10	Project Schedule		2		10					12	\$2,120			\$2,120	
11	Project Meetings (4 Meetings)			12	16	12				40	\$6,680		\$150	\$6,830	
12	Liquidated Damages Calculations		1		2	4				7	\$1,150			\$1,150	
13	Bid Period Assistance		2	4	20	12	20	40	4	102	\$12,920		\$200	\$13,120	
16	Task Deliverables														
	a. Improvements Plans (41 Sheets)	24	80	60	164	328	492	820		1968	\$246,800		\$3,000	\$249,800	
	b. Project Manual	20	40	40	60	160			40	360	\$58,600		\$1,500	\$60,100	
	SUBTOTAL TASK 2	70	166	212	338	684	700	1024	72	3,265	\$436,610		\$86,200	\$522,810	
	TOTAL	100	229	327	514	1,021	1,004	1,272	126	4,593	\$622,090	\$49,180	\$5,850	\$87,400	\$764,490

Optional Tasks

Task No.	Task Description	AECOM Labor Hours							TOTAL HOURS	TOTAL LABOR	Subconsultants		Direct Costs / Materials ¹	TOTAL	
		Principal-in-Charge	Principal Engineer / Scientist	Senior Project Engineer / Scientist	Project Manager	Project Engineer / Scientist	Staff Engineer / Scientist	CAD/GIS Technician			Admin / Repro	PSOMAS			PRO-ROV Services, LLC
		\$250	\$210	\$180	\$170	\$150	\$110	\$100			\$95				
Optional Tasks															
1	Task 1, Subtask 4 - Add Aerial Mapping to Topographic Survey				2			4		6	\$740	\$2,300		\$3,040	
2	Task 1, Subtask 15 - One (1) Meeting at DSOD Offices	10	10		12					32	\$6,640		\$2,175	\$8,815	
3	Task 2, Subtask 8 - Abandonment of Excess Outlet Pipe and Tower	2	4	20	2	24		24		76	\$11,280			\$11,280	
	TOTAL	12	14	20	16	24		28		114	\$18,660	\$2,300		\$2,175	\$23,135

Notes & Assumptions:

1.) Direct Costs / Materials include costs such as geotechnical borings, lab testing, mileage to meetings/site, courier fees, rental cars, airfare to DSOD offices (optional), and document reproduction costs.



Estimated Cost Breakdown of Subconsultant Fees

Irvine Ranch Water District

Santiago Creek Dam Outlet-Engineering Services for Preliminary Design Report and Final Design

October 5, 2017

Task No.	Task Description	PSOMAS					TOTAL HOURS	TOTAL LABOR	Direct Costs / Materials	TOTAL
		Principal Land Surveyor	Project Manager	Senior Surveyor / Crew Chief	Surveyor	Drafter / Chainman				
		\$250.00	\$200.00	\$175.00	\$150.00	\$100.00				
1.	Research Review	1	4				5	\$1,050		\$1,050
2.	Field Prep/Coordination		1			2	3	\$400		\$400
3.	Field Survey		4	32	23	32	91	\$13,050		\$13,050
4.	Drafting / Photogrammetry		4			45	49	\$5,300		\$5,300
5.	Review/Coordination	5	5				10	\$2,250		\$2,250
6.	Aerial Photography (Pacific Air Photo)						0	\$0	\$2,300	\$2,300
7.	Hydrographic Survey (MBC Environmental)		1	8		8	17	\$1,450	\$24,750	\$26,200
8.	Project Management and Coordination	2	2				4	\$900		\$900
TASK TOTALS		8	21	40	23	87	179	\$24,400	\$27,050	\$51,450

Task No.	Task Description	PRO-ROV Services, LLC				TOTAL HOURS	TOTAL LABOR	Direct Costs / Materials	TOTAL
		Project Manager	Field Supervisor	Field Technician	Admin.				
		\$150.00	\$100.00	\$75.00	\$50.00				
1.	Mobilization	2	2			4	\$500	\$50	\$550
2.	ROV Inspection	8	8		6	22	\$2,300	\$500	\$2,800
3.	Pipe Profiling Sonar					0	\$0	\$300	\$300
4.	UT Thickness Measurement					0	\$0	\$500	\$500
5.	Report	4	8		4	16	\$1,600	\$100	\$1,700
TASK TOTALS		14	18	0	10	42	\$4,400	\$1,450	\$5,850